

[DISCUSSION DRAFT]

OCTOBER 28, 2013

113TH CONGRESS
1ST SESSION**H. R.** _____

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

IN THE HOUSE OF REPRESENTATIVES

M____. _____ introduced the following bill; which was referred to the
Committee on _____

A BILL

To provide for investment in innovation through research and development and STEM education, 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 2013”.

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

Sec. 1. Short title; table of contents.

TITLE I—OSTP; GOVERNMENTWIDE SCIENCE

Subtitle A—General Provisions

Sec. 101. National Science and Technology Council amendments.

Sec. 102. Streamlining university regulations.

Sec. 103. Prize competition amendments.

Subtitle B—Reauthorization of the National Nanotechnology Initiative

Sec. 111. Short title.

Sec. 112. National Nanotechnology Program amendments.

Sec. 113. Societal dimensions of nanotechnology.

Sec. 114. Nanotechnology education.

Sec. 115. Technology transfer.

Sec. 116. Signature initiatives in areas of national importance.

Sec. 117. Nanomanufacturing research.

Sec. 118. Definitions.

TITLE II—STEM EDUCATION AND DIVERSITY

Subtitle A—STEM Education and Workforce

Sec. 201. Sense of Congress.

Sec. 202. Coordination of Federal STEM education.

Sec. 203. Grand challenges in education research.

Sec. 204. Establishment of the Advanced Research Project Agency-Education.

Sec. 205. Community college and industry partnerships pilot grant program.

Sec. 206. National Research Council report on STEAM education.

Subtitle B—Broadening Participation in STEM

Sec. 211. Short title.

Sec. 212. Purpose.

Sec. 213. Federal science agency policies for caregivers.

Sec. 214. Collection and reporting of data on Federal research grants.

Sec. 215. Policies for review of Federal research grants.

Sec. 216. Collection of data on demographics of faculty.

Sec. 217. Cultural and institutional barriers to expanding the academic and
Federal STEM workforce.

Sec. 218. Research and dissemination at the National Science Foundation.

Sec. 219. Report to Congress.

Sec. 220. National Science Foundation support for increasing diversity among
STEM faculty at institutions of higher education.

Sec. 221. National Science Foundation support for broadening participation in
undergraduate STEM education.

Sec. 222. Definitions.

TITLE III—NATIONAL SCIENCE FOUNDATION

Subtitle A—General Provisions

- Sec. 301. Authorization of appropriations.
- Sec. 302. Sense of Congress on support for all fields of science and engineering.
- Sec. 303. Management and oversight of large facilities.
- Sec. 304. Data management plans.
- Sec. 305. Support for potentially transformative research.
- Sec. 306. Strengthening institutional research partnerships.
- Sec. 307. Innovation Corps.
- Sec. 308. Definitions.

Subtitle B—STEM Education

- Sec. 321. National Science Board report on consolidation of STEM education activities at the Foundation.
- Sec. 322. Models for graduate student support.
- Sec. 323. Undergraduate STEM education reform.
- Sec. 324. Advanced manufacturing education.
- Sec. 325. STEM education partnerships.
- Sec. 326. Noyce scholarship program amendments.

TITLE IV—NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

- Sec. 401. Short title.
- Sec. 402. Authorization of appropriations.
- Sec. 403. Advanced manufacturing technology consortia.
- Sec. 404. Network for manufacturing innovation.
- Sec. 405. Hollings Manufacturing Extension Partnership.
- Sec. 406. Bioscience measurement science and standards.
- Sec. 407. National Academy of Sciences review.
- Sec. 408. Improving NIST collaboration with other agencies.
- Sec. 409. Miscellaneous provisions.

TITLE V—INNOVATION

- Sec. 501. Office of Innovation and Entrepreneurship.
- Sec. 502. Federal loan guarantees for innovative technologies in manufacturing.
- Sec. 503. Regional Innovation Program.
- Sec. 504. Innovation voucher pilot program.
- Sec. 505. Federal Acceleration of State Technology Commercialization Pilot Program.

TITLE VI—DEPARTMENT OF ENERGY

Subtitle A—Office of Science

- Sec. 601. Short title.
- Sec. 602. Definitions.
- Sec. 603. Mission of the Office of Science.
- Sec. 604. Basic energy sciences program.
- Sec. 605. Biological and environmental research.
- Sec. 606. Advanced scientific computing research program.
- Sec. 607. Fusion energy research program.
- Sec. 608. High energy physics program.
- Sec. 609. Nuclear physics program.
- Sec. 610. Science laboratories infrastructure program.
- Sec. 611. Authorization of appropriations.

Subtitle B—ARPA–E

- Sec. 621. Short title.
Sec. 622. ARPA–E amendments.

Subtitle C—Energy Innovation

- Sec. 641. Energy innovation hubs.
Sec. 642. Participation in the Innovation Corps program.
Sec. 643. Technology transfer.
Sec. 644. Elimination of cost sharing requirement for research and development activities conducted by universities and nonprofit institutions.
Sec. 645. Pilot Race to the Top for Energy Efficiency and Grid Modernization Program.
Sec. 646. External regulation.

1 **TITLE I—OSTP;**
2 **GOVERNMENTWIDE SCIENCE**
3 **Subtitle A—General Provisions**
4 **SEC. 101. NATIONAL SCIENCE AND TECHNOLOGY COUNCIL**
5 **AMENDMENTS.**

6 Section 401 of the National Science and Technology
7 Policy, Organization, and Priorities Act of 1977 (42
8 U.S.C. 6651) is amended—

9 (1) in subsection (a), by striking “Federal Co-
10 ordinating Council for Science, Engineering, and
11 Technology” and inserting “National Science and
12 Technology Council”;

13 (2) in subsection (b), by striking “and Energy
14 Research and Development Administration” and in-
15 serting “Department of Energy, and any other agen-
16 cy designated by the President”; and

17 (3) in subsection (e)—

1 (A) by striking “engineering, and tech-
2 nology” and inserting “engineering, technology,
3 innovation, and STEM education”;

4 (B) in paragraph (1), by striking “engi-
5 neering, and technological” and inserting “engi-
6 neering, technological, innovation, and STEM
7 education”;

8 (C) by redesignating paragraphs (3) and
9 (4) as paragraphs (4) and (5), respectively; and

10 (D) by inserting after paragraph (2) the
11 following new paragraph:

12 “(3) address research needs identified under
13 paragraph (2) through appropriate funding mecha-
14 nisms, which many include solicitations involving 2
15 or more agencies and public-private partnerships;”.

16 **SEC. 102. STREAMLINING UNIVERSITY REGULATIONS.**

17 **SEC. 103. PRIZE COMPETITION AMENDMENTS.**

18 **Subtitle B—Reauthorization of the**
19 **National Nanotechnology Initiative**

20 **SEC. 111. SHORT TITLE.**

21 This title may be cited as the “National
22 Nanotechnology Initiative Amendments Act of 2013”.

1 **SEC. 112. NATIONAL NANOTECHNOLOGY PROGRAM AMEND-**
2 **MENTS.**

3 The 21st Century Nanotechnology Research and De-
4 velopment Act (15 U.S.C. 7501 et seq.) is amended—

5 (1) in section 2—

6 (A) in subsection (c), by amending para-
7 graph (4) to read as follows:

8 “(4) develop, and update every 3 years there-
9 after, a strategic plan to guide the activities de-
10 scribed under subsection (b) that specifies near-term
11 and long-term objectives for the Program, the antici-
12 pated timeframe for achieving the near-term objec-
13 tives, and the metrics to be used for assessing
14 progress toward the objectives, and that describes—

15 “(A) how the Program will move results
16 out of the laboratory and into applications for
17 the benefit of society, including through co-
18 operation and collaborations with
19 nanotechnology research, development, and
20 technology transition initiatives supported by
21 the States;

22 “(B) how the Program will encourage and
23 support interdisciplinary research and develop-
24 ment in nanotechnology; and

25 “(C) proposed research in areas of national
26 importance in accordance with the requirements

1 of section 116 of the National Nanotechnology
2 Initiative Amendments Act of 2013;”;

3 (B) in subsection (d)—

4 (i) by redesignating paragraphs (1)
5 through (5) as paragraphs (2) through (6),
6 respectively;

7 (ii) by inserting before paragraph (2),
8 as redesignated by clause (i), the following:

9 “(1) the Program budget, for the previous fiscal
10 year, for each agency that participates in the Pro-
11 gram, including a breakout of spending for the de-
12 velopment and acquisition of research facilities and
13 instrumentation, for each program component area,
14 and for all activities pursuant to subsection
15 (b)(10);”; and

16 (iii) by amending paragraph (6), as
17 redesignated by clause (i), to read as fol-
18 lows:

19 “(6) an assessment of how Federal agencies are
20 implementing the plan described in subsection
21 (c)(7), a description of the amount of Small Busi-
22 ness Innovative Research and Small Business Tech-
23 nology Transfer Research funds supporting the plan,
24 and a description of the projects which received pri-

1 vate sector funding beyond the period of phase II
2 support.”; and

3 (C) by adding at the end the following new
4 subsection:

5 “(e) STANDARDS SETTING.—The agencies partici-
6 pating in the Program shall support the activities of com-
7 mittees involved in the development of standards for
8 nanotechnology and may reimburse the travel costs of sci-
9 entists and engineers who participate in activities of such
10 committees.”;

11 (2) in section 3—

12 (A) by amending subsection (b)(1) to read
13 as follows:

14 “(b) FUNDING.—

15 “(1) IN GENERAL.—The operation of the Na-
16 tional Nanotechnology Coordination Office shall be
17 supported by funds from each agency participating
18 in the Program.

19 “(2) PROPORTION.—The portion of such Of-
20 fice’s total budget provided by each agency for each
21 fiscal year shall be in the same proportion as the
22 agency’s share of the total budget for the Program
23 for the previous fiscal year, as specified in the report
24 required under section 2(d)(1).

1 “(3) MINIMUM CONTRIBUTION.—The Director
2 of the National Nanotechnology Coordination Office
3 may establish a minimum contribution for partici-
4 pating agencies whose share of the total budget for
5 the Program is below a threshold level, to be set by
6 the Director.”; and

7 (B) by adding at the end the following new
8 subsection:

9 “(d) PUBLIC INFORMATION.—

10 “(1) DATABASE.—

11 “(A) IN GENERAL.—The National
12 Nanotechnology Coordination Office shall de-
13 velop and maintain a database accessible by the
14 public of projects funded under at least the En-
15 vironmental, Health, and Safety program com-
16 ponent area, or any successor program compo-
17 nent area, including a description of each
18 project, its source of funding by agency, and its
19 funding history.

20 “(B) ORGANIZATION.—Projects shall be
21 grouped by major objective as defined by the re-
22 search plan required under section 3(b) of the
23 National Nanotechnology Initiative Amend-
24 ments Act of 2013.

25 “(2) ACCESSIBLE FACILITIES.—

1 “(A) IN GENERAL.—The National
2 Nanotechnology Coordination Office shall de-
3 velop, maintain, and publicize information on
4 nanotechnology facilities supported under the
5 Program, and may include information on
6 nanotechnology facilities supported by the
7 States, that are accessible for use by individuals
8 from academic institutions and from industry.

9 “(B) WEBSITES.—The National
10 Nanotechnology Coordination Office shall main-
11 tain active web links to the websites for each of
12 these facilities and shall work with each facility
13 supported under the Program to ensure that
14 each facility publishes on its respective website
15 updated information on the terms and condi-
16 tions for the use of the facility, a description of
17 the capabilities of the instruments and equip-
18 ment available for use at the facility, and a de-
19 scription of the technical support available to
20 assist users of the facility.”;

21 (3) in section 4—

22 (A) in subsection (a), by adding at the end
23 the following: “The co-chairs of the Advisory
24 Panel shall meet the qualifications of Panel
25 membership required in subsection (b) and may

1 be members of the President’s Council of Advi-
2 sors on Science and Technology. The Advisory
3 Panel shall include members having specific
4 qualifications tailored to enable it to carry out
5 the requirements of subsection (c)(6).”;

6 (B) in subsection (c)—

7 (i) by striking paragraph (1); and

8 (ii) by redesignating paragraphs (2)
9 through (7) as paragraphs (1) through (6),
10 respectively; and

11 (C) by amending subsection (d) to read as
12 follows:

13 “(d) REPORTS.—The Advisory Panel shall report not
14 less frequently than every 3 years, and, to the extent prac-
15 ticable, 1 year following each of the National Research
16 Council triennial reviews required under section 5, to the
17 President on its assessments under subsection (c) and its
18 recommendations for ways to improve the Program. The
19 Director of the Office of Science and Technology Policy
20 shall transmit a copy of each report under this subsection
21 to the Committee on Commerce, Science, and Transpor-
22 tation of the Senate, the Committee on Science, Space,
23 and Technology of the House of Representatives, and
24 other appropriate committees of the Congress.”;

25 (4) by amending section 5 to read as follows:

1 **“SEC. 5. TRIENNIAL EXTERNAL REVIEW OF THE NATIONAL**
2 **NANOTECHNOLOGY PROGRAM.**

3 “(a) IN GENERAL.—The Director of the National
4 Nanotechnology Coordination Office shall enter into an ar-
5 rangement with the National Research Council of the Na-
6 tional Academy of Sciences to conduct a triennial review
7 of the Program. The Director shall ensure that the ar-
8 rangement with the National Research Council is con-
9 cluded in order to allow sufficient time for the reporting
10 requirements of subsection (b) to be satisfied. Each tri-
11 ennial review shall include an evaluation of the—

12 “(1) research priorities and technical content of
13 the Program, including whether the allocation of
14 funding among program component areas, as des-
15 ignated according to section 2(c)(2), is appropriate;

16 “(2) Program’s scientific and technological ac-
17 complishments and its success in transferring tech-
18 nology to the private sector; and

19 “(3) adequacy of the Program’s activities ad-
20 dressing ethical, legal, environmental, and other ap-
21 propriate societal concerns, including human health
22 concerns.

23 “(b) PRIORITY REPORTS.—If the Director of the Na-
24 tional Nanotechnology Coordination Office, working with
25 the National Research Council and with input from the
26 Advisory Panel, determines that a more narrowly focused

1 review of the Program is in the best interests of the Pro-
2 gram, the Director may enter into such an arrangement
3 with the National Research Council in lieu of a full review
4 as required under subsection (a), but not more often than
5 every second triennial review.

6 “(c) EVALUATION TO BE TRANSMITTED TO CON-
7 GRESS.—The National Research Council shall document
8 the results of each triennial review carried out in accord-
9 ance with this section in a report that includes any rec-
10 ommendations for changes to the Program’s objectives,
11 technical content, or other policy or Program changes.
12 Each report shall be submitted to the Director of the Na-
13 tional Nanotechnology Coordination Office, who shall
14 transmit it to the Advisory Panel, the Committee on Com-
15 merce, Science, and Transportation of the Senate, and the
16 Committee on Science, Space, and Technology of the
17 House of Representatives.

18 “(d) FUNDING.—Of the amounts provided in accord-
19 ance with section 3(b)(1), the following amounts shall be
20 available to carry out this section:

21 “(1) \$500,000 for fiscal year 2014.

22 “(2) \$500,000 for fiscal year 2015.

23 “(3) \$500,000 for fiscal year 2016.”; and

24 (5) in section 10—

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

3 “(2) NANOTECHNOLOGY.—The term
4 ‘nanotechnology’ means the science and technology
5 that will enable one to understand, measure, manip-
6 ulate, and manufacture at the nanoscale, aimed at
7 creating materials, devices, and systems with fun-
8 damentally new properties or functions.”; and

9 (B) by adding at the end the following new
10 paragraph:

11 “(7) NANOSCALE.—The term ‘nanoscale’ means
12 one or more dimensions of between approximately 1
13 and 100 nanometers.”.

14 **SEC. 113. SOCIETAL DIMENSIONS OF NANOTECHNOLOGY.**

15 (a) COORDINATOR FOR ENVIRONMENTAL, HEALTH,
16 AND SAFETY RESEARCH.—The Director of the Office of
17 Science and Technology Policy shall designate an associate
18 director of the Office of Science and Technology Policy
19 or other appropriate senior government official as the Co-
20 ordinator for Environmental, Health, and Safety Re-
21 search. The Coordinator shall be responsible for oversight
22 of the coordination, planning, and budget prioritization of
23 research and other activities related to environmental,
24 health, safety, and other appropriate societal concerns re-

1 lated to nanotechnology. The responsibilities of the Coor-
2 dinator shall include—

3 (1) ensuring that a research plan for the envi-
4 ronmental, health, and safety research activities re-
5 quired under subsection (b) is developed, updated,
6 and implemented and that the plan is responsive to
7 the recommendations of the Advisory Panel estab-
8 lished under section 4(a) of the 21st Century
9 Nanotechnology Research and Development Act (15
10 U.S.C. 7503(a));

11 (2) encouraging and monitoring the efforts of
12 the agencies participating in the Program to allocate
13 the level of resources and management attention
14 necessary to ensure that the environmental, health,
15 safety, and other appropriate societal concerns re-
16 lated to nanotechnology are addressed under the
17 Program, including the implementation of the re-
18 search plan described in subsection (b); and

19 (3) encouraging the agencies required to de-
20 velop the research plan under subsection (b) to iden-
21 tify, assess, and implement suitable mechanisms for
22 the establishment of public-private partnerships and
23 international partnerships for support of environ-
24 mental, health, and safety research.

25 (b) RESEARCH PLAN.—

1 (1) IN GENERAL.—The Coordinator for Envi-
2 ronmental, Health, and Safety Research shall con-
3 vene and chair a panel comprised of representatives
4 from the agencies funding research activities under
5 the Environmental, Health, and Safety program
6 component area of the Program, or any successor
7 program component area, and from such other agen-
8 cies as the Coordinator considers necessary to de-
9 velop, periodically update, and coordinate the imple-
10 mentation of a research plan for this program com-
11 ponent area. Such panel may be a subgroup of the
12 Nanoscale Science, Engineering, and Technology
13 Subcommittee of the National Science and Tech-
14 nology Council. In developing and updating the plan,
15 the panel convened by the Coordinator shall solicit
16 and be responsive to recommendations and advice
17 from—

18 (A) the Advisory Panel established under
19 section 4(a) of the 21st Century
20 Nanotechnology Research and Development Act
21 (15 U.S.C. 7503(a)); and

22 (B) the agencies responsible for environ-
23 mental, health, and safety regulations associ-
24 ated with the production, use, and disposal of
25 nanoscale materials and products.

1 (2) DEVELOPMENT OF STANDARDS.—The plan
2 required under paragraph (1) shall include a de-
3 scription of how the Program will help to ensure the
4 development of—

5 (A) standards related to nomenclature as-
6 sociated with engineered nanoscale materials;

7 (B) engineered nanoscale standard ref-
8 erence materials for environmental, health, and
9 safety testing; and

10 (C) standards related to methods and pro-
11 cedures for detecting, measuring, monitoring,
12 sampling, and testing engineered nanoscale ma-
13 terials for environmental, health, and safety im-
14 pacts.

15 (3) COMPONENTS OF PLAN.—The plan required
16 under paragraph (1) shall, with respect to activities
17 described in paragraphs (1) and (2)—

18 (A) specify near-term research objectives
19 and long-term research objectives;

20 (B) specify milestones associated with each
21 near-term objective and the estimated time and
22 resources required to reach each milestone;

23 (C) with respect to subparagraphs (A) and
24 (B), describe the role of each agency carrying
25 out or sponsoring research in order to meet the

1 objectives specified under subparagraph (A) and
2 to achieve the milestones specified under sub-
3 paragraph (B); and

4 (D) specify the funding allocated to each
5 major objective of the plan and the source of
6 funding by agency for the current fiscal year.

7 (4) TRANSMITTAL TO CONGRESS.—Not later
8 than 6 months after the date of enactment of this
9 Act, the plan required under paragraph (1) shall be
10 transmitted to the Committee on Commerce,
11 Science, and Transportation of the Senate and the
12 Committee on Science, Space, and Technology of the
13 House of Representatives.

14 (5) UPDATING AND APPENDING TO REPORT.—
15 The plan required under paragraph (1) shall be up-
16 dated at least every 3 years and may be submitted
17 as part of the report required under section 2(c)(4)
18 of the 21st Century Nanotechnology Research and
19 Development Act (15 U.S.C. 7501(c)(4)).

20 **SEC. 114. NANOTECHNOLOGY EDUCATION.**

21 (a) UNDERGRADUATE EDUCATION PROGRAMS.—As
22 part of the activities included under the Education and
23 Societal Dimensions program component area, or any suc-
24 cessor program component area, the Program shall sup-
25 port efforts to introduce nanoscale science, engineering,

1 and technology into undergraduate science and engineer-
2 ing education through a variety of interdisciplinary ap-
3 proaches. Activities supported may include—

4 (1) development of courses of instruction or
5 modules to existing courses;

6 (2) faculty professional development; and

7 (3) acquisition of equipment and instrumenta-
8 tion suitable for undergraduate education and re-
9 search in nanotechnology.

10 (b) INTERAGENCY COORDINATION OF EDUCATION.—

11 The Nanoscale Science, Engineering, and Technology
12 Subcommittee of the National Science and Technology
13 Council shall coordinate, as appropriate, with the Com-
14 mittee on Science, Technology, Engineering, and Math
15 Education to prioritize, plan, and assess the educational
16 activities supported under the Program.

17 (c) SOCIETAL DIMENSIONS IN NANOTECHNOLOGY

18 EDUCATION ACTIVITIES.—Activities supported under the
19 Education and Societal Dimensions program component
20 area, or any successor program component area, that in-
21 volve informal, precollege, or undergraduate
22 nanotechnology education shall include education regard-
23 ing the environmental, health and safety, and other soci-
24 etal aspects of nanotechnology.

1 (d) REMOTE ACCESS TO NANOTECHNOLOGY FACILI-
2 TIES.—

3 (1) IN GENERAL.—Agencies supporting
4 nanotechnology research facilities as part of the Pro-
5 gram shall require the entities that operate such fa-
6 cilities to allow access via the Internet, and support
7 the costs associated with the provision of such ac-
8 cess, by secondary school students and teachers, to
9 instruments and equipment within such facilities for
10 educational purposes. The agencies may waive this
11 requirement for cases when particular facilities
12 would be inappropriate for educational purposes or
13 the costs for providing such access would be prohibi-
14 tive.

15 (2) PROCEDURES.—The agencies identified in
16 paragraph (1) shall require the entities that operate
17 such nanotechnology research facilities to establish
18 and publish procedures, guidelines, and conditions
19 for the submission and approval of applications for
20 the use of the facilities for the purpose identified in
21 paragraph (1) and shall authorize personnel who op-
22 erate the facilities to provide necessary technical
23 support to students and teachers.

24 **SEC. 115. TECHNOLOGY TRANSFER.**

25 (a) PROTOTYPING.—

1 (1) ACCESS TO FACILITIES.—In accordance
2 with section 2(b)(7) of 21st Century Nanotechnology
3 Research and Development Act (15 U.S.C.
4 7501(b)(7)), the agencies supporting nanotechnology
5 research facilities as part of the Program shall pro-
6 vide access to such facilities to companies for the
7 purpose of assisting the companies in the develop-
8 ment of prototypes of nanoscale products, devices, or
9 processes (or products, devices, or processes enabled
10 by nanotechnology) for determining proof of concept.
11 The agencies shall publicize the availability of these
12 facilities and encourage their use by companies as
13 provided for in this section.

14 (2) PROCEDURES.—The agencies identified in
15 paragraph (1)—

16 (A) shall establish and publish procedures,
17 guidelines, and conditions for the submission
18 and approval of applications for use of
19 nanotechnology facilities;

20 (B) shall publish descriptions of the capa-
21 bilities of facilities available for use under this
22 subsection, including the availability of tech-
23 nical support; and

24 (C) may waive recovery, require full recov-
25 ery, or require partial recovery of the costs as-

1 sociated with use of the facilities for projects
2 under this subsection.

3 (3) SELECTION AND CRITERIA.—

4 (A) IN GENERAL.—In cases when less than
5 full cost recovery is required pursuant to para-
6 graph (2)(C), projects provided access to
7 nanotechnology facilities in accordance with this
8 subsection shall be selected through a competi-
9 tive, merit-based process, and the criteria for
10 the selection of such projects shall include at a
11 minimum—

12 (i) the readiness of the project for
13 technology demonstration;

14 (ii) evidence of a commitment by the
15 applicant for further development of the
16 project to full commercialization if the
17 proof of concept is established by the pro-
18 totype; and

19 (iii) evidence of the potential for fur-
20 ther funding from private sector sources
21 following the successful demonstration of
22 proof of concept.

23 (B) SPECIAL CONSIDERATION.—The agen-
24 cies may give special consideration in selecting

1 projects to applications that are relevant to im-
2 portant national needs or requirements.

3 (b) COLLABORATION WITH INDUSTRY.—The Pro-
4 gram shall coordinate with industry from all industrial
5 sectors that would benefit from applications of
6 nanotechnology by—

7 (1) enhancing communication of information re-
8 lated to nanotechnology innovation, including infor-
9 mation about research, education and training, man-
10 ufacturing issues, and market-driven needs;

11 (2) advancing and accelerating the creation of
12 new products and manufacturing processes derived
13 from discovery at the nanoscale by working with in-
14 dustry, including small and medium-sized manufac-
15 turers;

16 (3) developing innovative methods for transfer-
17 ring nanotechnology products and processes from
18 Federal agencies to industry; and

19 (4) facilitating industry-led partnerships be-
20 tween the Program and industry sectors, including
21 regional partnerships.

22 (d) COORDINATION WITH STATE INITIATIVES.—Sec-
23 tion 2(b)(5) of the 21st Century Nanotechnology Research
24 and Development Act (15 U.S.C. 7501(b)(5)) is amended
25 to read as follows:

1 “(5) ensuring United States global leadership in
2 the development and application of nanotechnology,
3 including through the coordination and leveraging of
4 Federal investments with nanotechnology research,
5 development, and technology transition initiatives
6 supported by the States;”.

7 **SEC. 116. SIGNATURE INITIATIVES IN AREAS OF NATIONAL**
8 **IMPORTANCE.**

9 (a) IN GENERAL.—The Program shall include sup-
10 port for nanotechnology research and development activi-
11 ties directed toward application areas that have the poten-
12 tial for significant contributions to national economic com-
13 petitiveness and for other significant societal benefits. The
14 activities supported shall be designed to advance the devel-
15 opment of research discoveries by demonstrating technical
16 solutions to important problems in such areas as nano-
17 electronics, energy efficiency, solar energy, health care,
18 and water remediation and purification. The Advisory
19 Panel shall make recommendations to the Program for
20 candidate research and development areas for support
21 under this section.

22 (b) CHARACTERISTICS.—

23 (1) IN GENERAL.—Research and development
24 activities under this section shall—

1 (A) include projects selected on the basis
2 of applications for support through a competi-
3 tive, merit-based process;

4 (B) involve collaborations among research-
5 ers in academic institutions and industry, and
6 may involve nonprofit research institutions and
7 Federal laboratories, as appropriate;

8 (C) when possible, leverage Federal invest-
9 ments through collaboration with related State
10 initiatives; and

11 (D) include a plan for fostering the trans-
12 fer of research discoveries and the results of
13 technology demonstration activities to industry
14 for commercial development.

15 (2) PROCEDURES.—To the extent practicable,
16 determination of the requirements for applications
17 under this section, review and selection of applica-
18 tions for support, and subsequent funding of
19 projects shall be carried out by a collaboration of no
20 fewer than 2 agencies participating in the Program.
21 In selecting applications for support, agencies may,
22 as appropriate, give special consideration to projects
23 that include cost sharing from non-Federal sources.

24 (3) INTERDISCIPLINARY RESEARCH CENTERS.—
25 Research and development activities under this sec-

1 tion may be supported through interdisciplinary
2 nanotechnology research centers, as authorized by
3 section 2(b)(4) of the 21st Century Nanotechnology
4 Research and Development Act (15 U.S.C.
5 7501(b)(4)), that are organized to investigate basic
6 research questions and carry out technology dem-
7 onstration activities in areas such as those identified
8 in subsection (a).

9 (c) REPORT.—Reports required under section 2(d) of
10 the 21st Century Nanotechnology Research and Develop-
11 ment Act (15 U.S.C. 7501(d)) shall include a description
12 of research and development areas supported in accord-
13 ance with this section, including the same budget informa-
14 tion as is required for program component areas under
15 paragraphs (1) and (2) of such section 2(d).

16 **SEC. 117. NANOMANUFACTURING RESEARCH.**

17 (a) RESEARCH AREAS.—The Program shall include
18 research on—

19 (1) the development of instrumentation and
20 tools required for the rapid characterization of
21 nanoscale materials and for monitoring of nanoscale
22 manufacturing processes; and

23 (2) approaches and techniques for scaling the
24 synthesis of new nanoscale materials to achieve in-
25 dustrial-level production rates.

1 (b) GREEN NANOTECHNOLOGY.—Interdisciplinary
2 research centers supported under the Program in accord-
3 ance with section 2(b)(4) of the 21st Century
4 Nanotechnology Research and Development Act (15
5 U.S.C. 7501(b)(4)) that are focused on
6 nanomanufacturing research and centers established
7 under the authority of section 116(b)(3) of this Act shall
8 include as part of the activities of such centers—

9 (1) research on methods and approaches to de-
10 velop environmentally benign nanoscale products and
11 nanoscale manufacturing processes, taking into con-
12 sideration relevant findings and results of research
13 supported under the Environmental, Health, and
14 Safety program component area, or any successor
15 program component area;

16 (2) fostering the transfer of the results of such
17 research to industry; and

18 (3) providing for the education of scientists and
19 engineers through interdisciplinary studies in the
20 principles and techniques for the design and develop-
21 ment of environmentally benign nanoscale products
22 and processes.

23 **SEC. 118. DEFINITIONS.**

24 In this subtitle, terms that are defined in section 10
25 of the 21st Century Nanotechnology Research and Devel-

1 opment Act (15 U.S.C. 7509) have the meaning given
2 those terms in that section.

3 **TITLE II—STEM EDUCATION AND**
4 **DIVERSITY**
5 **Subtitle A—STEM Education and**
6 **Workforce**

7 **SEC. 201. SENSE OF CONGRESS.**

8 (a) FISCAL YEAR 2014 BUDGET PROPOSAL.—It is
9 the sense of Congress that Federal agencies need to de-
10 velop and implement a comprehensive Federal STEM edu-
11 cation strategy that focuses on leveraging the limited
12 STEM education funding and other assets we have to in-
13 vest for maximum student learning benefit, and that such
14 a strategy will involve a reorganization of the current port-
15 folio of Federal STEM investments. However, it is the
16 sense of Congress that the Administration’s fiscal year
17 2014 proposal to consolidate or eliminate 120 STEM pro-
18 grams across 14 Federal agencies lacked input or support
19 from the Federal agencies and the stakeholder commu-
20 nities implicated in the proposal, was not based on evi-
21 dence about program effectiveness, lacks clarity in how it
22 will meet the goals of the strategic plan required in the
23 America COMPETES Reauthorization Act of 2010, and
24 is not an adequate basis for implementing changes to ex-
25 isting agency and interagency STEM activities.

1 (b) CoSTEM.—It is the sense of Congress that the
2 National Science and Technology Council’s Committee on
3 STEM Education (CoSTEM), required under the America
4 COMPETES Reauthorization Act of 2010, has taken im-
5 portant initial steps toward developing a comprehensive
6 and defensible strategic plan through its completion of its
7 first “Federal STEM Education 5-Year Strategic Plan,”
8 but that much more work must be done to develop a clear
9 evidence base for reorganization decisions and to solicit
10 and take into account views and experience from stake-
11 holders who help implement or are the beneficiaries of
12 Federal STEM programs across the Nation. It is further
13 the sense of Congress that agencies, through CoSTEM,
14 should play a leading role in developing the Administra-
15 tion’s budget proposals for STEM education just as they
16 play a leading role in developing the budget proposals for
17 other major interagency initiatives, such as the National
18 Nanotechnology Initiative.

19 (c) MISSION AGENCIES.—It is the sense of Congress
20 that science mission agencies such as the National Aero-
21 nautics and Space Administration, the National Oceanic
22 and Atmospheric Administration, and the Department of
23 Energy are essential partners in contributing to the goals
24 and implementation of a Federal STEM strategic plan be-
25 cause such agencies have unique scientific and techno-

1 logical facilities as well as highly trained scientists who
2 are eager and able to contribute to improved STEM learn-
3 ing outcomes in their own communities. It is further the
4 sense of Congress that the Department of Education can
5 play an important role in implementing any Federal
6 STEM education strategy because of its unique relation-
7 ship with States, local educational agencies, schools, and
8 institutions of higher education, as well as its capacity to
9 scale and disseminate proven programs and models, but
10 that the Department must take steps to build capacity in
11 STEM education to maximize the effectiveness of any
12 Governmentwide leadership role in K-12 STEM education.

13 **SEC. 202. COORDINATION OF FEDERAL STEM EDUCATION.**

14 Section 101 of America COMPETES Reauthoriza-
15 tion Act of 2010 (42 U.S.C. 6621) is amended—

16 (1) in subsection (b)(5)—

17 (A) by redesignating subparagraphs (A)
18 through (D) as subparagraphs (B) through (E),
19 respectively; and

20 (B) by inserting before subparagraph (B),
21 as so redesigned by subparagraph (A) of this
22 paragraph, the following new subparagraph:

23 “(A) have as its primary goal to leverage
24 the limited STEM education funding and other
25 assets, including intellectual capital, invested by

1 Federal STEM agencies for maximum benefit
2 to student learning;”;

3 (2) by striking the second subsection (b);

4 (3) by redesignating subsection (c) as sub-
5 section (f);

6 (4) by inserting after subsection (b), the fol-
7 lowing new subsections:

8 “(c) COORDINATOR FOR STEM EDUCATION.—The
9 Director of the Office of Science and Technology Policy
10 shall designate an associate director of the Office of
11 Science and Technology Policy as the Coordinator for
12 STEM Education. The Coordinator shall chair the com-
13 mittee established under subsection (a). The Coordinator
14 shall, with the assistance of appropriate senior officials
15 from other Committee on STEM Education agencies, en-
16 sure that the requirements of this section are satisfied.

17 “(d) STAKEHOLDER INPUT.—

18 “(1) INTERAGENCY CONSOLIDATION.—For all
19 agency proposals to consolidate or transfer budgets
20 or functions for STEM education programs or ac-
21 tivities between agencies, at the time of submission
22 of such proposals to Congress, the Director shall re-
23 port to Congress on activities undertaken by the Of-
24 fice of Science and Technology Policy or by relevant
25 agencies to solicit and take into consideration input

1 on such proposals from the STEM Education Advi-
2 sory Panel established under subsection (e) and
3 other relevant education stakeholders.

4 “(2) INTRAAGENCY CONSOLIDATION.—For all
5 agency proposals to internally consolidate or termi-
6 nate STEM education programs with budgets ex-
7 ceeding \$3,000,000, at the time of submission of
8 such proposals to Congress, the head of the relevant
9 agency shall report to Congress on activities to so-
10 licit and take into consideration input on such pro-
11 posals from the STEM Education Advisory Panel
12 established under subsection (e) and other relevant
13 education stakeholders.

14 “(e) STEM EDUCATION ADVISORY PANEL.—

15 “(1) IN GENERAL.—The President shall estab-
16 lish or designate a STEM Education Advisory
17 Panel. The cochairs of the Advisory Panel shall meet
18 the qualifications of Panel membership required in
19 paragraph (2) and may be members of the Presi-
20 dent’s Council of Advisors on Science and Tech-
21 nology.

22 “(2) QUALIFICATIONS.—The Advisory Panel es-
23 tablished or designated by the President under this
24 subsection shall consist of members from academic
25 institutions, industry, informal education providers,

1 nonprofit STEM education organizations, founda-
2 tions, and local and State educational agencies.
3 Members of the Advisory Panel shall be qualified to
4 provide advice on Federal STEM education pro-
5 grams, best practices in STEM education, assess-
6 ment of STEM education programs, STEM edu-
7 cation standards, industry needs for STEM grad-
8 uates, and public-private STEM education partner-
9 ships.

10 “(3) DUTIES.—The Advisory Panel shall advise
11 the President and the committee established under
12 subsection (a) on implementing the Federal STEM
13 education strategic plan required under subsection
14 (b)(5) and coordinating Federal STEM programs
15 with nongovernmental STEM initiatives and State
16 and local educational agencies.

17 “(4) REPORT.—The Advisory Panel shall re-
18 port, not more than 1 year after enactment of the
19 America Competes Reauthorization Act of 2013, on
20 options for evidence-based implementation of the
21 Federal STEM strategic plan required under sub-
22 section (b)(5), including options for designating cer-
23 tain agencies as coordinating leads for different pri-
24 ority investment areas, timelines for implementation,
25 and specific management, budget, policy, or other

1 steps that agencies must take to effectively imple-
2 ment the strategic plan.

3 “(5) SUNSET.—The authorization for the Advi-
4 sory Panel established under this subsection shall
5 expire 3 years after the date of enactment of the
6 America Competes Reauthorization Act of 2013.”;
7 and

8 (5) in subsection (f), as so redesignated by
9 paragraph (3) of this section—

10 (A) by inserting “progress made in imple-
11 menting” after “describing”;

12 (B) by striking paragraph (3); and

13 (C) by redesignating paragraphs (4) and
14 (5) as paragraphs (3) and (4), respectively.

15 **SEC. 203. GRAND CHALLENGES IN EDUCATION RESEARCH.**

16 (a) IN GENERAL.—The Director of the National
17 Science Foundation and the Secretary of Education shall
18 collaborate in—

19 (1) identifying, prioritizing, and developing
20 strategies to address grand challenges in research
21 and development, including assessment, on the
22 teaching and learning of STEM at the pre-K-12
23 level, in formal and informal settings, for diverse
24 learning populations, including individuals identified
25 in section 33 or 34 of the Science and Engineering

1 Equal Opportunities Act (42 U.S.C. 1885a or
2 1885b); and

3 (2) ensuring the dissemination and promoting
4 the utilization of the results of such research and de-
5 velopment.

6 (b) STAKEHOLDER INPUT.—In identifying the grand
7 challenges under subsection (a), the Director and the Sec-
8 retary shall—

9 (1) take into consideration critical research
10 gaps identified in existing reports, including reports
11 by the National Academies, on the teaching and
12 learning of STEM at the pre-K-12 level in formal
13 and informal settings; and

14 (2) solicit input from a wide range of stake-
15 holders, including officials from State educational
16 agencies and local educational agencies, STEM
17 teachers, STEM education researchers, scientific
18 and engineering societies, STEM faculty at institu-
19 tions of higher education, informal STEM education
20 providers, businesses with a large STEM workforce,
21 and other stakeholders in the teaching and learning
22 of STEM at the pre-K-12 level, and may enter into
23 an arrangement with the National Research Council
24 for these purposes.

1 (c) TOPICS TO CONSIDER.—In identifying the grand
2 challenges under subsection (a), the Director and the Sec-
3 retary shall, at a minimum, consider research and develop-
4 ment on—

5 (1) scalability, sustainability, and replication of
6 successful STEM activities, programs, and models,
7 in formal and informal environments;

8 (2) model systems that support improved teach-
9 ing and learning of STEM across entire local edu-
10 cational agencies and States, and encompassing and
11 integrating the teaching and learning of STEM in
12 formal and informal venues;

13 (3) implementation of new State mathematics
14 and science standards;

15 (4) what makes a STEM teacher effective and
16 STEM teacher professional development effective,
17 including development of tools and methodologies to
18 measure STEM teacher effectiveness;

19 (5) cyber-enabled and other technology tools for
20 teaching and learning, including massive open online
21 courses;

22 (6) STEM teaching and learning in informal
23 environments, including development of tools and
24 methodologies for assessing STEM teaching and
25 learning in informal environments; and

1 (7) how integrating engineering with mathe-
2 matics and science education may—

3 (A) improve student learning of mathe-
4 matics and science;

5 (B) increase student interest and persist-
6 ence in STEM; or

7 (C) improve student understanding of engi-
8 neering design principles and of the built world.

9 (d) REPORT TO CONGRESS.—Not later than 12
10 months after the date of enactment of this Act, the Direc-
11 tor and the Secretary shall report to Congress with a de-
12 scription of—

13 (1) the grand challenges identified pursuant to
14 this section;

15 (2) the role of each agency in supporting re-
16 search and development activities to address the
17 grand challenges;

18 (3) the common metrics that will be used to as-
19 sess progress toward meeting the grand challenges;

20 (4) plans for periodically updating the grand
21 challenges;

22 (5) how the agencies will disseminate and pro-
23 mote the utilization of the results of research and
24 development activities carried out under this section
25 to STEM education practitioners, to other Federal

1 agencies that support STEM programs and activi-
2 ties, and to non-Federal funders of STEM edu-
3 cation; and

4 (6) how the agencies will support implementa-
5 tion of best practices identified by the research and
6 development activities.

7 **SEC. 204. ESTABLISHMENT OF THE ADVANCED RESEARCH**
8 **PROJECT AGENCY-EDUCATION.**

9 (a) PROGRAM ESTABLISHED.—From the amounts
10 appropriated for section 14007 of division A of the Amer-
11 ican Recovery and Reinvestment Act of 2009 (Public Law
12 111–5), the Secretary of Education may reserve up to 30
13 percent to—

14 (1) establish and carry out the Advanced Re-
15 search Projects Agency-Education (in this section
16 referred to as “ARPA–ED”) to—

17 (A) identify and promote advances in
18 learning, fundamental and applied sciences, and
19 engineering that may be translated into new
20 learning technologies;

21 (B) develop, test, and evaluate new learn-
22 ing technologies and related processes; and

23 (C) accelerate transformational techno-
24 logical advances in education;

1 (2) convene an advisory panel under subsection
2 (d); and

3 (3) carry out the evaluation and dissemination
4 requirements under subsection (e).

5 (b) APPOINTMENTS.—

6 (1) DIRECTOR.—ARPA–ED shall be under the
7 direction of the Director of ARPA–ED, who shall be
8 appointed by the Secretary.

9 (2) QUALIFIED INDIVIDUALS.—The Secretary
10 shall appoint, for a term of not more than 4 years,
11 qualified individuals who represent scientific, engi-
12 neering, professional, and other personnel with ex-
13 pertise in carrying out the activities described in this
14 section to positions in ARPA–ED, at rates of com-
15 pensation determined by the Secretary, without re-
16 gard to the provisions of title 5, United States Code,
17 except that such rates of compensation shall not to
18 exceed the rate for level I of the Executive Schedule
19 under section 5312 of such title.

20 (c) FUNCTIONS OF ARPA–ED.—Upon consultation
21 with the advisory panel convened under subsection (d), the
22 Secretary shall select public and private entities to carry
23 out the activities described in subsection (a)(1) by—

24 (1) awarding such entities grants, contracts, co-
25 operative agreements, or cash prizes; or

1 (2) entering into such other transactions with
2 such entities as the Secretary may prescribe in regu-
3 lations.

4 (d) ADVISORY PANEL.—

5 (1) IN GENERAL.—The Secretary shall convene
6 an advisory panel to advise and consult with the
7 Secretary, the Director, and the qualified individuals
8 appointed under subsection (b)(2) on—

9 (A) ensuring that the awards made and
10 transaction entered into under subsection (c)
11 are consistent with the purposes described in
12 subsection (a)(1); and

13 (B) ensuring the relevance, accessibility,
14 and utility of such awards and transactions to
15 education practitioners.

16 (2) APPOINTMENT OF MEMBERS.—The Sec-
17 retary shall appoint the following qualified individ-
18 uals to serve on the advisory panel:

19 (A) Education practitioners.

20 (B) Experts in technology.

21 (C) Specialists in rapid gains in student
22 achievement and school turnaround.

23 (D) Specialists in personalized learning.

24 (E) Researchers, including at least one
25 representative from a comprehensive center es-

1 established under section 203 of the Educational
2 Technical Assistance Act of 2002 (20 U.S.C.
3 9602) or the regional laboratories system estab-
4 lished under section 174 of the Education
5 Sciences Reform Act (20 U.S.C. 9564).

6 (F) Other individuals with expertise who
7 will contribute to the overall rigor and quality
8 of ARPA–ED.

9 (3) APPLICABILITY OF FACCA.—The Federal Ad-
10 visory Committee Act (5 U.S.C. App.) shall not
11 apply to the panel convened under this subsection
12 and any appointee to such panel shall not be consid-
13 ered an “employee” under section 2105 of title 5,
14 United States Code.

15 (e) EVALUATION AND DISSEMINATION.—

16 (1) EVALUATION.—The Secretary shall obtain
17 independent, periodic, and rigorous evaluation of—

18 (A) the effectiveness of the processes
19 ARPA–Ed is using to achieve the purposes de-
20 scribed in subsection (a)(1);

21 (B) the relevance, accessibility, and utility
22 of the awards made and transactions entered
23 into under subsection (c) to education practi-
24 tioners; and

1 (C) the effectiveness of the projects carried
2 out through such awards and transactions,
3 using evidence standards developed in consulta-
4 tion with the Institute of Education Sciences,
5 and the suitability of such projects for further
6 investment or increased scale.

7 (2) DISSEMINATION AND USE.—The Secretary
8 shall disseminate information to education practi-
9 tioners, including teachers, principals, and local and
10 State superintendents, on effective practices and
11 technologies developed under ARPA–ED, as appro-
12 priate, through—

13 (A) the comprehensive centers established
14 under 203 of the Educational Technical Assist-
15 ance Act of 2002 (20 U.S.C. 9602);

16 (B) the regional laboratories system estab-
17 lished under section 174 of the Education
18 Sciences Reform Act (20 U.S.C. 9564); and

19 (C) such other means as the Secretary de-
20 termines to be appropriate.

21 (f) ADMINISTRATIVE REQUIREMENTS.—Notwith-
22 standing section 437(d) of the General Education Provi-
23 sions Act (20 U.S.C. 1232(d)), the Secretary shall estab-
24 lish such processes as may be necessary for the Secretary
25 to manage and administer ARPA–ED, which are not con-

1 strained by other Department-wide administrative require-
2 ments that may prevent ARPA–ED from carrying out the
3 purposes described in subsection (a)(1).

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

5 (1) DEPARTMENT.—The term “Department”
6 means the Department of Education.

7 (2) DIRECTOR.—The term “Director” means
8 the Director of ARPA–ED.

9 (3) SECRETARY.—The term “Secretary” means
10 the Secretary of Education.

11 **SEC. 205. COMMUNITY COLLEGE AND INDUSTRY PARTNER-**
12 **SHIPS PILOT GRANT PROGRAM.**

13 (a) ESTABLISHMENT.—The Secretary of Labor shall
14 establish a competitive grant pilot program for the pur-
15 pose of developing, offering, improving, or providing edu-
16 cational or career training programs for workers.

17 (b) ELIGIBLE ENTITY.—

18 (1) IN GENERAL.—Entities eligible for a grant
19 under this section are any of the following (or a con-
20 sortium of any of the following) in partnership with
21 employers or an association of employers—

22 (A) a junior or community college (as de-
23 fined in section 312(f) of the Higher Education
24 Act of 1965 (20 U.S.C. 1085(f)));

1 (B) a postsecondary vocational institution
2 (as defined in section 102(c) of the Higher
3 Education Act of 1965 (20 U.S.C. 1002(c)));

4 (C) a four-year public institution of higher
5 education (as defined in section 101 of the
6 Higher Education Act of 1965 (20 U.S.C.
7 1001)) that offers two year degrees, will use
8 funds provided under this section for activities
9 at the certificate and associate degree levels,
10 and is not reasonably close, as determined by
11 the Secretary of Labor, to a community college;

12 (D) a tribal college or university (as de-
13 fined in section 316(b) of the Higher Education
14 Act of 1965 (20 U.S.C. 1059c(b))); or

15 (E) at the discretion of the Secretary of
16 Labor, a private, not-for-profit, two-year insti-
17 tution of higher education in Puerto Rico,
18 Guam, the United States Virgin Islands, Amer-
19 ican Samoa, the Commonwealth of the North-
20 ern Mariana Islands, the Republic of the Mar-
21 shall Islands, the Federated States of Micro-
22 nesia, or the Republic of Palau.

23 (2) ADDITIONAL PARTNERSHIPS.—In addition
24 to partnering with employers or an association of
25 employers, the eligible entities described in para-

1 graph (1) may partner with any of the following or-
2 ganizations:

3 (A) An adult education provider or institu-
4 tion of higher education (as defined in section
5 101 of the Higher Education Act of 1965 (20
6 U.S.C. 1001)).

7 (B) A community-based organization.

8 (C) A joint labor-management partnership.

9 (D) Any other organization that the Sec-
10 retary of Labor considers appropriate.

11 (3) WORKFORCE INVESTMENT BOARD.—Any
12 such partnership shall collaborate with, and may in-
13 clude, the State or local workforce investment board.

14 (c) APPLICATION.—An eligible entity seeking a grant
15 under this section shall submit a grant proposal to the
16 Secretary of Labor at such time and containing such infor-
17 mation as the Secretary may require. The proposal shall
18 include, at a minimum, a detailed description of—

19 (1) the specific project for which the grant pro-
20 posal is submitted, including the manner in which
21 the grant will be used to develop, offer, improve, or
22 provide an educational or career training program;

23 (2) the extent to which the project will meet the
24 educational or career training needs of workers in
25 the area served by the eligible entity;

1 (3) the extent to which the project will meet the
2 needs of employers in the region for skilled workers
3 in in-demand industry sectors and in-demand occu-
4 pations;

5 (4) the extent to which the project fits within
6 any overall strategic plan developed by an eligible
7 entity; and

8 (5) any previous experience of the eligible entity
9 in providing educational or career training pro-
10 grams, the absence of which shall not automatically
11 disqualify an eligible institution from receiving a
12 grant under this section.

13 (d) SPECIFICATIONS OF GRANTS.—

14 (1) DURATION.—A grant shall be awarded
15 under this section for a period of up to 36 months
16 in duration.

17 (2) SIZE OF GRANT.—The amount of a grant
18 awarded under this subsection may not exceed
19 \$3,000,000 for an individual entity and \$20,000,000
20 for a consortium.

21 (e) CRITERIA FOR AWARD.—

22 (1) IN GENERAL.—Grants under this section
23 shall be awarded based on—

24 (A) a determination of the merits of the
25 grant proposal submitted by the eligible entity

1 to develop, offer, improve, or provide edu-
2 cational or career training programs to be made
3 available to workers;

4 (B) an assessment of the likely employ-
5 ment opportunities available in the region to in-
6 dividuals who complete an educational or career
7 training program that the eligible entity pro-
8 poses to develop, offer, improve, or provide;

9 (C) an assessment of prior demand for
10 training programs by individuals eligible for
11 training served by the eligible entity as well as
12 availability and capacity of existing training
13 programs to meet future demand for training
14 programs; and

15 (D) any additional criteria established by
16 the Secretary of Labor.

17 (2) PRIORITY.—The Secretary of Labor shall
18 give priority to eligible entities that—

19 (A) include a partnership with a business
20 or industry or sector partnership that—

21 (i) pays a portion of the costs of such
22 programs; or

23 (ii) agrees to hire individuals who
24 have completed a particular postsecondary
25 degree, certificate, or credential resulting

1 from the training program of the eligible
2 entity;

3 (B) enter into a partnership with a labor
4 organization or labor-management training pro-
5 gram that provides technical expertise for occu-
6 pationally specific education necessary for a rec-
7 ognized postsecondary credential leading to a
8 skill occupation in an in-demand industry sec-
9 tor;

10 (C) are focused on serving individuals with
11 barriers to employment, particularly individuals
12 who have been unemployed for 27 weeks or
13 longer;

14 (D) are community colleges serving areas
15 with high unemployment rates, including rural
16 areas; and

17 (E) are eligible entities that include an in-
18 stitution of higher education eligible for assist-
19 ance under title III or V of the Higher Edu-
20 cation Act of 1965.

21 (f) USE OF FUNDS.—Grants awarded under this sec-
22 tion shall be used for one or more of the following:

23 (1) The development, offering, improvement, or
24 provision of academic programs or training pro-
25 grams that provide relevant job training for skilled

1 occupations that will meet the needs of employers in
2 in-demand industry sectors, which may include reg-
3 istered apprenticeship programs, on-the-job training
4 programs, and programs that support employers in
5 upgrading the skills of their workforce.

6 (2) The development and implementation of
7 policies and programs to expand opportunities for
8 students to earn a recognized postsecondary creden-
9 tial or degree in in-demand industry sectors and in-
10 demand occupations, including by—

11 (A) facilitating the transfer of academic
12 credits between institutions of higher education,
13 including the transfer of academic credits for
14 courses in the same field of study;

15 (B) expanding articulation agreements and
16 policies that guarantee transfer between such
17 institutions, including through common course
18 numbering and general core curriculum; and

19 (C) developing or enhancing student sup-
20 port services programs.

21 (3) The creation of workforce programs that
22 provide a sequence of education and occupational
23 training that leads to a recognized postsecondary
24 credential or degree, including programs that—

1 (A) blend basic skills and occupational
2 training;

3 (B) facilitate means of transitioning from
4 noncredit occupational, basic skills, or develop-
5 mental coursework to for-credit coursework
6 within and across institutions;

7 (C) build or enhance linkages including the
8 development of dual enrollment programs and
9 early college high schools between secondary
10 education or adult education programs (includ-
11 ing programs established under the Carl D.
12 Perkins Career and Technical Education Act of
13 2006);

14 (D) implement other innovative programs
15 designed to increase the provision of training
16 for students, including students who are vet-
17 eran members of the National Guard or Re-
18 serves, to enter skilled occupations in in-de-
19 mand industry sectors; and

20 (E) support paid internships that will allow
21 students to simultaneously earn credit for work-
22 based learning and gain relevant employment
23 experience in an in-demand industry sector or
24 in-demand occupation, which shall include op-

1 portunities that transition individuals into em-
2 ployment.

3 (4) The support of regional or national in-de-
4 mand industry sectors to develop skills consortia
5 that will identify pressing workforce needs and de-
6 velop solutions such as—

7 (A) standardizing industry certifications;

8 (B) developing new training technologies;

9 and

10 (C) collaborating with industry employers
11 to define and describe how specific skills lead to
12 particular jobs and career opportunities.

13 (g) AUTHORIZATIONS OF APPROPRIATIONS.—There
14 are authorized to be appropriated to the Secretary of
15 Labor \$100,000,000 for each of fiscal years 2014 through
16 2016 to carry out this section.

17 (h) DEFINITIONS.—For the purposes of this sec-
18 tion—

19 (1) the term “in-demand industry sector”
20 means an industry sector that has a substantial cur-
21 rent or potential impact (including through jobs that
22 lead to economic self-sufficiency and opportunities
23 for advancement) on the State, regional, or local
24 economy, as appropriate, and that contributes to the

1 growth or stability of other supporting businesses, or
2 the growth of other industry sectors; and

3 (2) the term “in-demand occupation” means an
4 occupation that currently has or is projected to have
5 a number of positions (including positions that lead
6 to economic self-sufficiency and opportunities for ad-
7 vancement) in an industry sector so as to have a sig-
8 nificant impact on the State, regional, or local econ-
9 omy.

10 **SEC. 206. NATIONAL RESEARCH COUNCIL REPORT ON**
11 **STEAM EDUCATION.**

12 (a) IN GENERAL.—The National Science Foundation
13 shall enter into an arrangement with the National Re-
14 search Council to conduct a workshop on the integration
15 of arts and design with STEM education. The workshop
16 shall include a discussion of—

17 (1) how the perspectives and experience of art-
18 ists and designers may contribute to the advance-
19 ment of science, engineering, and innovation, for ex-
20 ample through the development of visualization aids
21 for large experimental and computational data sets;

22 (2) how arts and design-based education experi-
23 ences might support formal and informal STEM
24 education at the pre-K-12 level, particularly in fos-
25 tering creativity and risk taking, and encourage

1 more students to pursue STEM studies, including
2 students from groups historically underrepresented
3 in STEM;

4 (3) how the teaching of design principles can be
5 better integrated into undergraduate engineering
6 and other STEM curricula, including in the first two
7 years of undergraduate studies, to enhance student
8 capacity for creativity and innovation and improve
9 student retention, including students from groups
10 historically underrepresented in STEM; and

11 (4) what additional steps, if any, Federal
12 science agencies should take to promote the inclu-
13 sion of arts and design principles in their respective
14 STEM programs and activities in order to improve
15 student STEM learning outcomes, increase the re-
16 cruitment and retention of students into STEM
17 studies and careers, and increase innovation in the
18 United States.

19 (b) REPORT.—Not later than 18 months after the
20 date of enactment of this Act, the National Research
21 Council shall submit a report to Congress providing a
22 summary description of the discussion and findings from
23 the workshop required under subsection (a).

1 **Subtitle B—Broadening**
2 **Participation in STEM**

3 **SEC. 211. SHORT TITLE.**

4 This subtitle may be cited as the “STEM Opportuni-
5 ties Act of 2013”.

6 **SEC. 212. PURPOSE.**

7 (a) **IN GENERAL.**—The Director of the Office of
8 Science and Technology Policy, acting through the Fed-
9 eral science agencies, shall carry out programs and activi-
10 ties with the purpose of ensuring that Federal science
11 agencies and institutions of higher education receiving
12 Federal research and development funding are fully en-
13 gaging their entire talent pool.

14 (b) **PURPOSES.**—The purposes of this subtitle are as
15 follows:

16 (1) To promote research on and increase under-
17 standing of the participation and trajectories of
18 women and underrepresented minorities in STEM
19 careers at institutions of higher education and Fed-
20 eral science agencies, including Federal laboratories.

21 (2) To raise awareness within Federal science
22 agencies, including Federal laboratories, and institu-
23 tions of higher education about cultural and institu-
24 tional barriers limiting the recruitment, retention,
25 promotion, and other indicators of participation and

1 achievement of women and underrepresented minori-
2 ties in academic and Government STEM research
3 careers at all levels.

4 (3) To identify, disseminate, and implement
5 best practices at Federal science agencies, including
6 Federal laboratories, and at institutions of higher
7 education to remove or reduce cultural and institu-
8 tional barriers limiting the recruitment, retention,
9 and success of women and underrepresented minori-
10 ties in academic and Government STEM research
11 careers.

12 (4) To provide grants to institutions of higher
13 education to recruit, retain, and advance STEM fac-
14 ulty members from underrepresented minority
15 groups and to implement or expand reforms in un-
16 dergraduate STEM education in order to increase
17 the number of students from underrepresented mi-
18 nority groups receiving degrees in these fields.

19 **SEC. 213. FEDERAL SCIENCE AGENCY POLICIES FOR CARE-**
20 **GIVERS.**

21 (a) OSTP GUIDANCE.—Not later than 6 months
22 after the date of enactment of this Act, the Director of
23 the Office of Science and Technology Policy shall provide
24 guidance to Federal science agencies to establish policies
25 that—

1 (1) apply to all—

2 (A) intramural and extramural research
3 awards; and

4 (B) primary investigators who have
5 caregiving responsibilities, including care for a
6 newborn or newly adopted child and care for an
7 immediate family member who is sick or dis-
8 abled; and

9 (2) provide—

10 (A) flexibility in timing for the initiation of
11 approved research awards;

12 (B) no-cost extensions of research awards;

13 (C) grant supplements as appropriate to
14 research awards for research technicians or
15 equivalent to sustain research activities; and

16 (D) any other appropriate accommodations
17 at the discretion of the head of each agency.

18 (b) UNIFORMITY OF GUIDANCE.—In providing such
19 guidance, the Director of the Office of Science and Tech-
20 nology Policy shall encourage uniformity and consistency
21 in the policies across all agencies.

22 (c) ESTABLISHMENT OF POLICIES.—Consistent with
23 the guidance provided under this section, Federal science
24 agencies shall maintain or develop and implement policies

1 for caregivers and shall broadly disseminate such policies
2 to current and potential grantees.

3 (d) DATA ON USAGE.—Federal science agencies
4 shall—

5 (1) collect data on the usage of the policies
6 under subsection (c), by gender, at both institutions
7 of higher education and Federal laboratories; and

8 (2) report such data on an annual basis to the
9 Director of the Office of Science and Technology
10 Policy in such form as required by the Director.

11 **SEC. 214. COLLECTION AND REPORTING OF DATA ON FED-**
12 **ERAL RESEARCH GRANTS.**

13 (a) COLLECTION OF DATA.—

14 (1) IN GENERAL.—Each Federal science agency
15 shall collect standardized record-level annual infor-
16 mation on demographics, primary field, award type,
17 review rating (as practicable), budget request, fund-
18 ing outcome, and awarded budget for all applications
19 for merit-reviewed research and development grants
20 to institutions of higher education and Federal lab-
21 oratories supported by that agency.

22 (2) UNIFORMITY AND STANDARDIZATION.—The
23 Director of the Office of Science and Technology
24 Policy shall establish a policy to ensure uniformity

1 and standardization of the data collection required
2 under paragraph (1).

3 (3) RECORD-LEVEL DATA.—

4 (A) REQUIREMENT.—On an annual basis,
5 beginning with the deadline under subpara-
6 graph (C), each Federal science agency shall
7 submit to the Director of the National Science
8 Foundation record-level data collected under
9 paragraph (1) in the form required by such Di-
10 rector.

11 (B) PREVIOUS DATA.—As part of the first
12 submission under subparagraph (A), each Fed-
13 eral science agency, to the extent practicable,
14 shall also submit comparable record-level data
15 for the 5 years preceding the deadline under
16 subparagraph (C).

17 (C) DEADLINE.—The deadline under this
18 paragraph is 2 years after the date of enact-
19 ment of this Act.

20 (b) REPORTING OF DATA.—The Director of the Na-
21 tional Science Foundation shall publish statistical sum-
22 mary data collected under this section, disaggregated and
23 cross-tabulated by race, ethnicity, gender, age, and years
24 since completion of doctoral degree, including in conjunc-
25 tion with the National Science Foundation's report re-

1 quired by section 37 of the Science and Technology Equal
2 Opportunities Act (42 U.S.C. 1885d; Public Law 96–
3 516).

4 **SEC. 215. POLICIES FOR REVIEW OF FEDERAL RESEARCH**
5 **GRANTS.**

6 (a) IN GENERAL.—The Director of the Office of
7 Science and Technology Policy, in collaboration with the
8 Director of the National Science Foundation, shall identify
9 information and best practices useful for educating pro-
10 gram officers and members of standing peer review com-
11 mittees at Federal science agencies about—

12 (1) research on implicit bias based on gender,
13 race, or ethnicity; and

14 (2) methods to minimize the effect of such bias
15 in the review of extramural and intramural Federal
16 research grants.

17 (b) GUIDANCE TO ALL FEDERAL SCIENCE AGEN-
18 CIES.—The Director of the Office of Science and Tech-
19 nology Policy shall disseminate the information and best
20 practices identified in subsection (a) to all Federal science
21 agencies and provide guidance as necessary on policies to
22 implement such practices within each agency.

23 (c) ESTABLISHMENT OF POLICIES.—Consistent with
24 the guidance provided in subsection (b), Federal science
25 agencies shall maintain or develop and implement policies

1 and practices to minimize the effects of implicit bias in
2 the review of extramural and intramural Federal research
3 grants.

4 (d) REPORT TO CONGRESS.—Not later than 2 years
5 after the date of enactment of this Act, the Director of
6 the Office of Science and Technology Policy shall report
7 to Congress on what steps all Federal science agencies
8 have taken to implement policies and practices to minimize
9 the effects of bias in the review of extramural and intra-
10 mural Federal research grants.

11 **SEC. 216. COLLECTION OF DATA ON DEMOGRAPHICS OF**
12 **FACULTY.**

13 (a) COLLECTION OF DATA.—

14 (1) IN GENERAL.—Not later than 3 years after
15 the date of enactment of this Act, and at least every
16 5 years thereafter, the Director of the National
17 Science Foundation shall carry out a survey to col-
18 lect institution-level data on the demographics of
19 STEM faculty, by broad fields of STEM, at dif-
20 ferent types of institutions of higher education.

21 (2) CONSIDERATIONS.—To the extent prac-
22 ticable, the Director of the National Science Foun-
23 dation shall consider, by gender, race, ethnicity, citi-
24 zenship status, age, and years since completion of
25 doctoral degree—

1 (A) the number and percentage of faculty;

2 (B) the number and percentage of faculty

3 at each rank;

4 (C) the number and percentage of faculty

5 who are in nontenure-track positions, including

6 teaching and research;

7 (D) the number and percentage of faculty

8 who are reviewed for promotion, including ten-

9 ure, and the percentage of that number who are

10 promoted, including being awarded tenure;

11 (E) faculty years in rank;

12 (F) the number and percentage of faculty

13 to leave tenure-track positions;

14 (G) the number and percentage of faculty

15 hired, by rank; and

16 (H) the number and percentage of faculty

17 in leadership positions.

18 (b) EXISTING SURVEYS.—The Director of the Na-

19 tional Science Foundation—

20 (1) may carry out the requirements under sub-

21 section (a) by collaborating with statistical centers

22 at other Federal agencies to modify or expand, as

23 necessary, existing Federal surveys of higher edu-

24 cation; or

1 (A) conducting periodic campus culture
2 surveys of STEM departments, with a par-
3 ticular focus on identifying any cultural or in-
4 stitutional barriers to or successful enablers for
5 the recruitment, retention, promotion, and
6 other indicators of participation and achieve-
7 ment, of women and underrepresented minori-
8 ties in STEM degree programs and academic
9 STEM careers; and

10 (B) providing educational opportunities, in-
11 cluding workshops as described in subsection
12 (c), for STEM faculty and administrators to
13 learn about current research on implicit bias in
14 recruitment, evaluation, and promotion of fac-
15 ulty in STEM and recruitment and evaluation
16 of undergraduate and graduate students in
17 STEM degree programs.

18 (2) EXISTING GUIDANCE.—In developing the
19 guidance in paragraph (1), the Director of the Na-
20 tional Science Foundation shall utilize guidance al-
21 ready developed by the National Aeronautics and
22 Space Administration, the Department of Energy,
23 and the Department of Education.

24 (3) DISSEMINATION OF GUIDANCE.—The Direc-
25 tor of the National Science Foundation shall broadly

1 disseminate the guidance developed in paragraph (1)
2 to institutions of higher education that receive Fed-
3 eral research funding.

4 (4) REPORTS TO THE NATIONAL SCIENCE
5 FOUNDATION.—The Director of the National Science
6 Foundation shall develop a policy that—

7 (A) applies to, at a minimum, the institu-
8 tions classified by the Carnegie Foundation for
9 the Advancement of Teaching on January 1,
10 2013, as a doctorate-granting university with a
11 very high level of research activity; and

12 (B) requires each institution identified in
13 subparagraph (A), not later than 3 years after
14 the date of enactment of this Act, to report to
15 the Director of the National Science Founda-
16 tion on activities and policies developed and im-
17 plemented based on the guidance provided in
18 paragraph (1).

19 (b) BEST PRACTICES AT FEDERAL LABORA-
20 TORIES.—

21 (1) DEVELOPMENT OF GUIDANCE.—Not later
22 than 6 months after the date of enactment of this
23 Act, the Director of the Office of Science and Tech-
24 nology Policy shall develop written guidance for Fed-

1 eral laboratories to develop and implement practices
2 and policies to—

3 (A) conduct periodic laboratorywide culture
4 surveys of research personnel at all levels, with
5 a particular focus on identifying any cultural or
6 institutional barriers to the recruitment, reten-
7 tion, and success of women and underrep-
8 resented minorities in STEM careers at Federal
9 laboratories; and

10 (B) provide educational opportunities, in-
11 cluding workshops as described in subsection
12 (c), for STEM research personnel to learn
13 about current research in implicit bias in re-
14 cruitment, evaluation, and promotion of re-
15 search personnel at Federal laboratories.

16 (2) ESTABLISHMENT OF POLICIES.—Consistent
17 with the guidance provided in paragraph (1), Fed-
18 eral science agencies with Federal laboratories shall
19 maintain or develop and implement policies for their
20 respective Federal laboratories.

21 (c) WORKSHOPS TO ADDRESS CULTURAL BARRIERS
22 TO EXPANDING THE ACADEMIC AND FEDERAL STEM
23 WORKFORCE.—

24 (1) IN GENERAL.—Not later than 6 months
25 after the date of enactment of this Act, the Director

1 of the National Science Foundation shall recommend
2 a uniform policy for Federal science agencies to
3 carry out a program of workshops that educate
4 STEM department chairs at institutions of higher
5 education, senior managers at Federal laboratories,
6 and other federally funded researchers about meth-
7 ods that minimize the effects of implicit bias in the
8 career advancement, including hiring, tenure, pro-
9 motion, and selection for any honor based in part on
10 the recipient's research record, of academic and Fed-
11 eral STEM researchers.

12 (2) INTERAGENCY COORDINATION.—The Direc-
13 tor of the National Science Foundation shall ensure
14 that workshops supported under this subsection are
15 coordinated across Federal science agencies and
16 jointly supported as appropriate.

17 (3) MINIMIZING COSTS.—To the extent prac-
18 ticable, workshops shall be held in conjunction with
19 national or regional STEM disciplinary meetings to
20 minimize costs associated with participant travel.

21 (4) PRIORITY FIELDS FOR ACADEMIC PARTICI-
22 PANTS.—In considering the participation of STEM
23 department chairs and other academic researchers,
24 the Director of the National Science Foundation
25 shall prioritize workshops for the broad fields of

1 STEM in which the national rate of representation
2 of women among tenured or tenure-track faculty or
3 non-faculty researchers at doctorate-granting institu-
4 tions of higher education is less than 25 percent, ac-
5 cording to the most recent data available from the
6 National Center for Science and Engineering Statis-
7 tics.

8 (5) ORGANIZATIONS ELIGIBLE TO CARRY OUT
9 WORKSHOPS.—Federal science agencies may carry
10 out the program of workshops under this subsection
11 by making grants to eligible organizations. In addi-
12 tion to any other organizations made eligible by the
13 Federal science agencies, the following organizations
14 are eligible for grants under this subsection:

15 (A) Nonprofit scientific and professional
16 societies and organizations that represent one
17 or more STEM disciplines.

18 (B) Nonprofit organizations that have the
19 primary mission of advancing the participation
20 of women or underrepresented minorities in
21 STEM.

22 (6) CHARACTERISTICS OF WORKSHOPS.—The
23 workshops shall have the following characteristics:

24 (A) Invitees to workshops shall include at
25 least—

1 (i) the chairs of departments in the
2 relevant STEM discipline or disciplines
3 from at least the top 50 institutions of
4 higher education, as determined by the
5 amount of Federal research and develop-
6 ment funds obligated to each institution of
7 higher education in the prior year based on
8 data available from the National Science
9 Foundation; and

10 (ii) in the case of Federal laboratories,
11 individuals with personnel management re-
12 sponsibilities comparable to those of an in-
13 stitution of higher education department
14 chair.

15 (B) Activities at the workshops shall in-
16 clude research presentations and interactive dis-
17 cussions or other activities that increase the
18 awareness of the existence of implicit bias in re-
19 cruitment, hiring, tenure review, promotion, and
20 other forms of formal recognition of individual
21 achievement for faculty and other federally
22 funded STEM researchers and shall provide
23 strategies to overcome such bias.

24 (C) Research presentations and other
25 workshop programs, as appropriate, shall in-

1 clude a discussion of the unique challenges
2 faced by underrepresented subgroups, including
3 minority women, minority men, and first gen-
4 eration minority graduates in research.

5 (D) Workshop programs shall include in-
6 formation on best practices for mentoring un-
7 dergraduate and graduate women and under-
8 represented minority students.

9 (7) DATA ON WORKSHOPS.—Any proposal for
10 funding by an organization seeking to carry out a
11 workshop under this subsection shall include a de-
12 scription of how such organization will—

13 (A) collect data on the rates of attendance
14 by invitees in workshops, including information
15 on the home institution and department of
16 attendees, and the rank of faculty attendees;

17 (B) conduct attitudinal surveys on work-
18 shop attendees before and after the workshops;
19 and

20 (C) collect follow-up data on any relevant
21 institutional policy or practice changes reported
22 by attendees not later than one year after at-
23 tendance in such a workshop.

24 (8) REPORT TO NSF.—Organizations receiving
25 funding to carry out workshops under this sub-

1 section shall report the data required in paragraph
2 (7) to the Director of the National Science Founda-
3 tion in such form as required by such Director.

4 (d) REPORT TO CONGRESS.—Not later than 4 years
5 after the date of enactment of this Act, the Director of
6 the National Science Foundation shall submit a report to
7 Congress that includes—

8 (1) a summary and analysis of the types and
9 frequency of activities and policies developed and
10 carried out under subsection (a) based on the re-
11 ports submitted under paragraph (4) of such sub-
12 section; and

13 (2) a description and evaluation of the status
14 and effectiveness of the program of workshops re-
15 quired under subsection (c), including a summary of
16 any data reported under paragraph (8) of such sub-
17 section.

18 (e) AUTHORIZATION OF APPROPRIATIONS.—There
19 are authorized to be appropriated to the Director of the
20 National Science Foundation \$2,000,000 for each of fiscal
21 years 2014 through 2018 to carry out this section.

22 **SEC. 218. RESEARCH AND DISSEMINATION AT THE NA-**
23 **TIONAL SCIENCE FOUNDATION.**

24 (a) IN GENERAL.—The Director of the National
25 Science Foundation shall award research grants and carry

1 out dissemination activities consistent with the purposes
2 of this subtitle, including—

3 (1) research grants to analyze the record-level
4 data collected under section 214 and section 216,
5 consistent with policies to ensure the privacy of indi-
6 viduals identifiable by such data;

7 (2) research grants to study best practices for
8 work-life accommodation;

9 (3) research grants to study the impact of poli-
10 cies and practices that are implemented under this
11 subtitle or that are otherwise consistent with the
12 purposes of this subtitle;

13 (4) collaboration with other Federal science
14 agencies and professional associations to exchange
15 best practices, harmonize work-life accommodation
16 policies and practices, and overcome common bar-
17 riers to work-life accommodation; and

18 (5) collaboration with institutions of higher
19 education in order to clarify and catalyze the adop-
20 tion of a coherent and consistent set of work-life ac-
21 commodation policies and practices.

22 (b) AUTHORIZATION OF APPROPRIATIONS.—There
23 are authorized to be appropriated to the Director of the
24 National Science Foundation \$5,000,000 for each of fiscal
25 years 2014 through 2018 to carry out this section.

1 **SEC. 219. REPORT TO CONGRESS.**

2 Not later than 4 years after the date of enactment
3 of this Act, the Director of the Office of Science and Tech-
4 nology Policy shall submit a report to Congress that in-
5 cludes—

6 (1) a description and evaluation of the status
7 and usage of caregiver policies at all Federal science
8 agencies, including any recommendations for revis-
9 ing or expanding such policies;

10 (2) a description of any significant updates to
11 the policies for review of Federal research grants re-
12 quired under section 215, and any evidence of the
13 impact of such policies on the review or awarding of
14 Federal research grants; and

15 (3) a description and evaluation of the status of
16 Federal laboratory policies and practices required
17 under section 217(b), including any recommenda-
18 tions for revising or expanding such policies.

19 **SEC. 220. NATIONAL SCIENCE FOUNDATION SUPPORT FOR**
20 **INCREASING DIVERSITY AMONG STEM FAC-**
21 **ULTY AT INSTITUTIONS OF HIGHER EDU-**
22 **CATION.**

23 (a) GRANTS.—The Director of the National Science
24 Foundation shall award grants to institutions of higher
25 education (or consortia thereof) for the development of in-
26 novative reform efforts designed to increase the recruit-

1 ment, retention, and advancement of individuals from
2 underrepresented minority groups in academic STEM ca-
3 reers.

4 (b) MERIT REVIEW; COMPETITION.—Grants shall be
5 awarded under this section on a merit-reviewed, competi-
6 tive basis.

7 (c) USE OF FUNDS.—Activities supported by grants
8 under this section may include—

9 (1) institutional assessment activities, such as
10 data analyses and policy review, in order to identify
11 and address specific issues in the recruitment, reten-
12 tion, and advancement of faculty members from
13 underrepresented minority groups;

14 (2) implementation of institution-wide improve-
15 ments in workload distribution, such that faculty
16 members from underrepresented minority groups are
17 not disadvantaged in the amount of time available to
18 focus on research, publishing papers, and engaging
19 in other activities required to achieve tenure status
20 and run a productive research program;

21 (3) development and implementation of training
22 courses for administrators and search committee
23 members to ensure that candidates from underrep-
24 resented minority groups are not subject to implicit
25 biases in the search and hiring process;

1 (4) development and hosting of intra- or inter-
2 institutional workshops to propagate best practices
3 in recruiting, retaining, and advancing faculty mem-
4 bers from underrepresented minority groups;

5 (5) professional development opportunities for
6 faculty members from underrepresented minority
7 groups;

8 (6) activities aimed at making undergraduate
9 STEM students from underrepresented minority
10 groups aware of opportunities for academic careers
11 in STEM fields;

12 (7) activities to identify and engage exceptional
13 graduate students from underrepresented minority
14 groups at various stages of their studies and to en-
15 courage them to enter academic careers; and

16 (8) other activities consistent with subsection
17 (a), as determined by the Director of the National
18 Science Foundation.

19 (d) SELECTION PROCESS.—

20 (1) APPLICATION.—An institution of higher
21 education (or consortia thereof) seeking funding
22 under this section shall submit an application to the
23 Director of the National Science Foundation at such
24 time, in such manner, and containing such informa-
25 tion and assurances as such Director may require.

1 The application shall include, at a minimum, a de-
2 scription of—

3 (A) the reform effort that is being pro-
4 posed for implementation by the institution of
5 higher education;

6 (B) any available evidence of specific dif-
7 ficulties in the recruitment, retention, and ad-
8 vancement of faculty members from underrep-
9 resented minority groups in STEM academic
10 careers within the institution of higher edu-
11 cation submitting an application, and how the
12 proposed reform effort would address such
13 issues;

14 (C) how the institution of higher education
15 submitting an application plans to sustain the
16 proposed reform effort beyond the duration of
17 the grant; and

18 (D) how the success and effectiveness of
19 the proposed reform effort will be evaluated and
20 assessed in order to contribute to the national
21 knowledge base about models for catalyzing in-
22 stitutional change.

23 (2) REVIEW OF APPLICATIONS.—In selecting
24 grant recipients under this section, the Director of

1 the National Science Foundation shall consider, at a
2 minimum—

3 (A) the likelihood of success in under-
4 taking the proposed reform effort at the institu-
5 tion of higher education submitting the applica-
6 tion, including the extent to which the adminis-
7 trators of the institution are committed to mak-
8 ing the proposed reform effort a priority;

9 (B) the degree to which the proposed re-
10 form effort will contribute to change in institu-
11 tional culture and policy such that greater value
12 is placed on the recruitment, retention, and ad-
13 vancement of faculty members from underrep-
14 resented minority groups;

15 (C) the likelihood that the institution of
16 higher education will sustain or expand the pro-
17 posed reform effort beyond the period of the
18 grant; and

19 (D) the degree to which evaluation and as-
20 sessment plans are included in the design of the
21 proposed reform effort.

22 (3) GRANT DISTRIBUTION.—The Director of
23 the National Science Foundation shall ensure, to the
24 extent practicable, that grants awarded under this

1 section are made to a variety of types of institutions
2 of higher education.

3 (e) AUTHORIZATION OF APPROPRIATIONS.—There
4 are authorized to be appropriated to the Director of the
5 National Science Foundation \$10,000,000 for each of fis-
6 cal years 2014 through 2018 to carry out this section.

7 **SEC. 221. NATIONAL SCIENCE FOUNDATION SUPPORT FOR**
8 **BROADENING PARTICIPATION IN UNDER-**
9 **GRADUATE STEM EDUCATION.**

10 (a) GRANTS.—The Director of the National Science
11 Foundation shall award grants to institutions of higher
12 education (or consortia thereof) to implement or expand
13 research-based reforms in undergraduate STEM edu-
14 cation for the purpose of recruiting and retaining students
15 from minority groups who are underrepresented in STEM
16 fields, with a priority focus on natural science and engi-
17 neering fields.

18 (b) MERIT REVIEW; COMPETITION.—Grants shall be
19 awarded under this section on a merit-reviewed, competi-
20 tive basis.

21 (c) USE OF FUNDS.—Activities supported by grants
22 under this section may include—

23 (1) implementation or expansion of innovative,
24 research-based approaches to broaden participation

1 of underrepresented minority groups in STEM
2 fields;

3 (2) implementation or expansion of bridge, co-
4 hort, tutoring, or mentoring programs designed to
5 enhance the recruitment and retention of students
6 from underrepresented minority groups in STEM
7 fields;

8 (3) implementation or expansion of outreach
9 programs linking institutions of higher education
10 and K–12 school systems in order to heighten
11 awareness among pre-college students from under-
12 represented minority groups of opportunities in col-
13 lege-level STEM fields and STEM careers;

14 (4) implementation or expansion of faculty de-
15 velopment programs focused on improving retention
16 of undergraduate STEM students from underrep-
17 resented minority groups;

18 (5) implementation or expansion of mechanisms
19 designed to recognize and reward faculty members
20 who demonstrate a commitment to increasing the
21 participation of students from underrepresented mi-
22 nority groups in STEM fields;

23 (6) expansion of successful reforms aimed at in-
24 creasing the number of STEM students from under-
25 represented minority groups beyond a single course

1 or group of courses to achieve reform within an en-
2 tire academic unit, or expansion of successful reform
3 efforts beyond a single academic unit to other
4 STEM academic units within an institution of high-
5 er education;

6 (7) expansion of opportunities for students from
7 underrepresented minority groups to conduct STEM
8 research in industry, at Federal laboratories, and at
9 international research institutions or research sites;

10 (8) provision of stipends for students from
11 underrepresented minority groups participating in
12 research;

13 (9) development of research collaborations be-
14 tween research-intensive universities and primarily
15 undergraduate minority-serving institutions;

16 (10) support for graduate students and post-
17 doctoral fellows from underrepresented minority
18 groups to participate in instructional or assessment
19 activities at primarily undergraduate institutions, in-
20 cluding primarily undergraduate minority-serving in-
21 stitutions and two-year institutions of higher edu-
22 cation; and

23 (11) other activities consistent with subsection
24 (a), as determined by the Director of the National
25 Science Foundation.

1 (d) SELECTION PROCESS.—

2 (1) APPLICATION.—An institution of higher
3 education (or consortium thereof) seeking a grant
4 under this section shall submit an application to the
5 Director of the National Science Foundation at such
6 time, in such manner, and containing such informa-
7 tion and assurances as such Director may require.

8 The application shall include, at a minimum—

9 (A) a description of the proposed reform
10 effort;

11 (B) a description of the research findings
12 that will serve as the basis for the proposed re-
13 form effort or, in the case of applications that
14 propose an expansion of a previously imple-
15 mented reform, a description of the previously
16 implemented reform effort, including data about
17 the recruitment, retention, and academic
18 achievement of students from underrepresented
19 minority groups;

20 (C) evidence of an institutional commit-
21 ment to, and support for, the proposed reform
22 effort, including a long-term commitment to im-
23 plement successful strategies from the current
24 reform beyond the academic unit or units in-
25 cluded in the grant proposal;

1 (D) a description of existing or planned in-
2 stitutional policies and practices regarding fac-
3 ulty hiring, promotion, tenure, and teaching as-
4 signment that reward faculty contributions to
5 improving the education of students from
6 underrepresented minority groups in STEM;
7 and

8 (E) how the success and effectiveness of
9 the proposed reform effort will be evaluated and
10 assessed in order to contribute to the national
11 knowledge base about models for catalyzing in-
12 stitutional change.

13 (2) REVIEW OF APPLICATIONS.—In selecting
14 grant recipients under this section, the Director of
15 the National Science Foundation shall consider, at a
16 minimum—

17 (A) the likelihood of success of the pro-
18 posed reform effort at the institution submit-
19 ting the application, including the extent to
20 which the faculty, staff, and administrators of
21 the institution are committed to making the
22 proposed institutional reform a priority of the
23 participating academic unit or units;

24 (B) the degree to which the proposed re-
25 form effort will contribute to change in institu-

1 tional culture and policy such that greater value
2 is placed on faculty engagement in the retention
3 of students from underrepresented minority
4 groups;

5 (C) the likelihood that the institution will
6 sustain or expand the proposed reform effort
7 beyond the period of the grant; and

8 (D) the degree to which evaluation and as-
9 sessment plans are included in the design of the
10 proposed reform effort.

11 (3) PRIORITY.—For applications that include
12 an expansion of existing reforms beyond a single
13 academic unit, the Director of the National Science
14 Foundation shall give priority to applications for
15 which a senior institutional administrator, such as a
16 dean or other administrator of equal or higher rank,
17 serves as the principal investigator.

18 (4) GRANT DISTRIBUTION.—The Director of
19 the National Science Foundation shall ensure, to the
20 extent practicable, that grants awarded under this
21 section are made to a variety of types of institutions
22 of higher education, including two-year and minor-
23 ity-serving institutions of higher education.

24 (e) EDUCATION RESEARCH.—

1 (1) IN GENERAL.—All grants made under this
2 section shall include an education research compo-
3 nent that will support the design and implementa-
4 tion of a system for data collection and evaluation
5 of proposed reform efforts in order to build the
6 knowledge base on promising models for increasing
7 recruitment and retention of students from under-
8 represented minority groups in STEM education at
9 the undergraduate level across a diverse set of insti-
10 tutions.

11 (2) DISSEMINATION.—The Director of the Na-
12 tional Science Foundation shall coordinate with rel-
13 evant Federal agencies in disseminating the results
14 of the research under this subsection to ensure that
15 best practices in broadening participation in STEM
16 education at the undergraduate level are made read-
17 ily available to all institutions of higher education,
18 other Federal agencies that support STEM pro-
19 grams, non-Federal funders of STEM education,
20 and the general public.

21 (f) AUTHORIZATION OF APPROPRIATIONS.—There
22 are authorized to be appropriated to the Director of the
23 National Science Foundation \$15,000,000 for each of fis-
24 cal years 2014 through 2018 to carry out this section.

1 **SEC. 222. DEFINITIONS.**

2 (a) THIS SUBTITLE.—In this subtitle:

3 (1) FEDERAL LABORATORY.—The term “Fed-
4 eral laboratory” has the meaning given such term in
5 section 4 of the Stevenson-Wydler Technology Inno-
6 vation Act of 1980 (15 U.S.C. 3703).

7 (2) FEDERAL SCIENCE AGENCY.—The term
8 “Federal science agency” means any Federal agency
9 with at least \$100,000,000 in research and develop-
10 ment expenditures in fiscal year 2012.

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

15 (4) STEM.—The term “STEM” means science,
16 technology, engineering, and mathematics, including
17 computer science.

18 (b) NATIONAL SCIENCE FOUNDATION AUTHORIZA-
19 TION ACT OF 2002.—Section 4 of the National Science
20 Foundation Authorization Act of 2002 (42 U.S.C. 1862n
21 note) is amended—

22 (1) by redesignating paragraph (16) as para-
23 graph (17); and

24 (2) by inserting after paragraph (15) the fol-
25 lowing new paragraph:

1 “(16) STEM.—The term ‘STEM’ means
2 science, technology, engineering, and mathematics,
3 including computer science.”.

4 **TITLE III—NATIONAL SCIENCE**
5 **FOUNDATION**

6 **Subtitle A—General Provisions**

7 **SEC. 301. AUTHORIZATION OF APPROPRIATIONS.**

8 (a) FISCAL YEAR 2014.—

9 (1) IN GENERAL.—There are authorized to be
10 appropriated to the Foundation \$7,625,780,000 for
11 fiscal year 2014.

12 (2) SPECIFIC ALLOCATIONS.—Of the amount
13 authorized under paragraph (1)—

14 (A) \$6,212,290,000 shall be made avail-
15 able for research and related activities;

16 (B) \$880,290,000 shall be made available
17 for education and human resources;

18 (C) \$210,120,000 shall be made available
19 for major research equipment and facilities con-
20 struction;

21 (D) \$304,290,000 shall be made available
22 for agency operations and award management;

23 (E) \$4,470,000 shall be made available for
24 the Office of the National Science Board, in-
25 cluding salaries and compensation for members

1 of the Board and staff appointed under section
2 4 of the National Science Foundation Act of
3 1950 (42 U.S.C. 1863), travel and training
4 costs for members of the Board and such staff,
5 general and Board operating expenses, rep-
6 resentational expenses for the Board, honorary
7 awards made by the Board, Board reports
8 (other than the report entitled “Science and
9 Engineering Indicators”), and contracts; and

10 (F) \$14,320,000 shall be made available
11 for the Office of Inspector General.

12 (b) FISCAL YEAR 2015.—

13 (1) IN GENERAL.—There are authorized to be
14 appropriated to the Foundation \$7,986,830,000 for
15 fiscal year 2015.

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

18 (A) \$6,522,900,000 shall be made avail-
19 able for research and related activities;

20 (B) \$924,300,000 shall be made available
21 for education and human resources;

22 (C) \$200,760,000 shall be made available
23 for major research equipment and facilities con-
24 struction;

1 (D) \$319,500,000 shall be made available
2 for agency operations and award management;

3 (E) \$4,600,000 shall be made available for
4 the Office of the National Science Board, in-
5 cluding salaries and compensation for members
6 of the Board and staff appointed under section
7 4 of the National Science Foundation Act of
8 1950 (42 U.S.C. 1863), travel and training
9 costs for members of the Board and such staff,
10 general and Board operating expenses, rep-
11 resentational expenses for the Board, honorary
12 awards made by the Board, Board reports
13 (other than the report entitled “Science and
14 Engineering Indicators”), and contracts; and

15 (F) \$14,750,000 shall be made available
16 for the Office of Inspector General.

17 (c) FISCAL YEAR 2016.—

18 (1) IN GENERAL.—There are authorized to be
19 appropriated to the Foundation \$8,374,980,000 for
20 fiscal year 2016.

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

23 (A) \$6,849,050,000 shall be made avail-
24 able for research and related activities;

1 (B) \$970,520,000 shall be made available
2 for education and human resources;

3 (C) \$200,000,000 shall be made available
4 for major research equipment and facilities con-
5 struction;

6 (D) \$335,480,000 shall be made available
7 for agency operations and award management;

8 (E) \$4,740,000 shall be made available for
9 the Office of the National Science Board, in-
10 cluding salaries and compensation for members
11 of the Board and staff appointed under section
12 4 of the National Science Foundation Act of
13 1950 (42 U.S.C. 1863), travel and training
14 costs for members of the Board and such staff,
15 general and Board operating expenses, rep-
16 resentational expenses for the Board, honorary
17 awards made by the Board, Board reports
18 (other than the report entitled “Science and
19 Engineering Indicators”), and contracts; and

20 (F) \$15,190,000 shall be made available
21 for the Office of Inspector General.

22 (d) FISCAL YEAR 2017.—

23 (1) IN GENERAL.—There are authorized to be
24 appropriated to the Foundation \$8,783,330,000 for
25 fiscal year 2017.

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

3 (A) \$7,191,500,000 shall be made avail-
4 able for research and related activities;

5 (B) \$1,019,050,000 shall be made avail-
6 able for education and human resources;

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

10 (D) \$352,250,000 shall be made available
11 for agency operations and award management;

12 (E) \$4,880,000 shall be made available for
13 the Office of the National Science Board, in-
14 cluding salaries and compensation for members
15 of the Board and staff appointed under section
16 4 of the National Science Foundation Act of
17 1950 (42 U.S.C. 1863), travel and training
18 costs for members of the Board and such staff,
19 general and Board operating expenses, rep-
20 resentational expenses for the Board, honorary
21 awards made by the Board, Board reports
22 (other than the report entitled “Science and
23 Engineering Indicators”), and contracts; and

24 (F) \$15,650,000 shall be made available
25 for the Office of Inspector General.

1 (e) FISCAL YEAR 2018.—

2 (1) IN GENERAL.—There are authorized to be
3 appropriated to the Foundation \$9,212,090,000 for
4 fiscal year 2018.

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

7 (A) \$7,551,080,000 shall be made avail-
8 able for research and related activities;

9 (B) \$1,070,000,000 shall be made avail-
10 able for education and human resources;

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

14 (D) \$369,870,000 shall be made available
15 for agency operations and award management;

16 (E) \$5,030,000 shall be made available for
17 the Office of the National Science Board, in-
18 cluding salaries and compensation for members
19 of the Board and staff appointed under section
20 4 of the National Science Foundation Act of
21 1950 (42 U.S.C. 1863), travel and training
22 costs for members of the Board and such staff,
23 general and Board operating expenses, rep-
24 resentational expenses for the Board, honorary
25 awards made by the Board, Board reports

1 (other than the report entitled “Science and
2 Engineering Indicators”), and contracts; and
3 (F) \$16,120,000 shall be made available
4 for the Office of Inspector General.

5 **SEC. 302. SENSE OF CONGRESS ON SUPPORT FOR ALL**
6 **FIELDS OF SCIENCE AND ENGINEERING.**

7 It is the sense of Congress that in order to achieve
8 its mission “to promote the progress of science; to advance
9 the national health, prosperity, and welfare; to secure the
10 national defense...” the National Science Foundation must
11 continue to support unfettered, competitive, merit-re-
12 viewed basic research across all fields of science and engi-
13 neering, including the social and behavioral sciences. It is
14 further the sense of Congress that the Foundation’s proc-
15 ess for selecting proposals for funding, which includes
16 merit review based on both intellectual merit and broader
17 impacts, remains the gold standard for the world, and that
18 program officers and division directors at the Foundation
19 play an essential role in this process.

20 **SEC. 303. MANAGEMENT AND OVERSIGHT OF LARGE FA-**
21 **CILITIES.**

22 (a) LARGE FACILITIES OFFICE.—The Director shall
23 maintain a Large Facilities Office within the Foundation.
24 The functions of the Large Facilities Office shall be to

1 support the research directorates in the development and
2 implementation of major research facilities, including by—

3 (1) serving as the Foundation's primary re-
4 source for all policy or process issues related to the
5 development and implementation of major research
6 facilities;

7 (2) serving as a Foundation-wide resource on
8 project management, including providing expert as-
9 sistance on nonscientific and nontechnical aspects of
10 project planning, budgeting, implementation, man-
11 agement, and oversight; and

12 (3) coordinating and collaborating with research
13 directorates to share best management practices and
14 lessons learned from prior projects.

15 (b) OVERSIGHT OF LARGE FACILITIES.—The Direc-
16 tor shall appoint a senior agency official within the Office
17 of the Director whose primary responsibility is oversight
18 of major research facilities. The duties of this official shall
19 include—

20 (1) oversight of the development, construction,
21 and operation of major research facilities across the
22 Foundation;

23 (2) in collaboration with the directors of the re-
24 search directorates and other senior agency officials
25 as appropriate, ensuring that the requirements of

1 section 14(a) of the National Science Foundation
2 Authorization Act of 2002 are satisfied;

3 (3) serving as a liaison to the National Science
4 Board for approval and oversight of major research
5 facilities; and

6 (4) periodically reviewing and updating as nec-
7 essary Foundation policies and guidelines for the de-
8 velopment and construction of major research facili-
9 ties.

10 (c) POLICIES FOR COSTING LARGE FACILITIES.—

11 (1) IN GENERAL.—The Director shall ensure
12 that the Foundation’s policies for developing and
13 managing major research facility construction costs
14 are consistent with the best practices described in
15 the March 2009 General Accountability Office Re-
16 port GAO-09-3SP.

17 (2) REPORT.—Not later than 12 months after
18 the date of enactment of this Act, the Director shall
19 submit to Congress a report describing the Founda-
20 tion’s policies for developing and managing major re-
21 search facility construction costs, including a de-
22 scription of any aspects of the policies that diverge
23 from the best practices recommended in General Ac-
24 countability Office Report GAO-09-3SP.

1 **SEC. 304. DATA MANAGEMENT PLANS.**

2 (a) DEVELOPMENT OF DATA MANAGEMENT POLI-
3 CIES.—Not later than 6 months after the date of enact-
4 ment of this Act, the Director shall develop and implement
5 a policy requiring that all proposals for research funding
6 from the Foundation include a plan for management of
7 data resulting from such funding.

8 (b) REQUIREMENTS.—The policy shall—

9 (1) include a clear definition of what constitutes
10 data for the purposes of data management plans;

11 (2) include mechanisms to ensure appropriate
12 evaluation of the merits of submitted data manage-
13 ment plans required under this section;

14 (3) include mechanisms to ensure that research-
15 ers comply with approved data management plans;
16 and

17 (4) allow for the inclusion of appropriate costs
18 for data management in proposals for research
19 grants.

20 (c) PUBLIC DATABASES.—The Foundation shall pro-
21 mote the deposit of data covered under this section in pub-
22 licly accessible databases, where appropriate and available.

23 **SEC. 305. SUPPORT FOR POTENTIALLY TRANSFORMATIVE**
24 **RESEARCH.**

25 (a) IN GENERAL.—The Director shall establish and
26 periodically update grant solicitation, merit review, and

1 funding policies and mechanisms designed to identify and
2 provide support for high-risk, high-reward basic research
3 proposals.

4 (b) POLICIES AND MECHANISMS.—Such policies and
5 mechanisms may include—

6 (1) development of solicitations specifically for
7 high-risk, high-reward basic research;

8 (2) establishment of review panels for the pri-
9 mary purpose of selecting high-risk, high-reward
10 proposals;

11 (3) development of guidance to standard review
12 panels to encourage the identification and consider-
13 ation of high-risk, high-reward proposals; and

14 (4) support for workshops and other con-
15 ferences with the primary purpose of identifying new
16 opportunities for high-risk, high-reward basic re-
17 search, especially at interdisciplinary interfaces.

18 (c) DEFINITION.—For purposes of this section, the
19 term “high-risk, high-reward basic research” means re-
20 search driven by ideas that have the potential to radically
21 change our understanding of an important existing sci-
22 entific or engineering concept, or leading to the creation
23 of a new paradigm or field of science or engineering, and
24 that is characterized by its challenge to current under-
25 standing or its pathway to new frontiers.

1 **SEC. 306. STRENGTHENING INSTITUTIONAL RESEARCH**
2 **PARTNERSHIPS.**

3 (a) IN GENERAL.—For any Foundation research
4 grant, in an amount greater than \$5,000,000, to be car-
5 ried out through a partnership that includes one or more
6 minority-serving institutions or predominantly under-
7 graduate institutions and one or more institutions de-
8 scribed in subsection (b), the Director shall award funds
9 directly, according to the budget justification described in
10 the grant proposal, to at least two of the institutions of
11 higher education in the partnership, including at least one
12 minority-serving institution or one predominantly under-
13 graduate institution, to ensure a strong and equitable
14 partnership.

15 (b) INSTITUTIONS.—The institutions referred to in
16 subsection (a) are institutions of higher education that are
17 among the 100 institutions receiving, over the 3-year pe-
18 riod immediately preceding the awarding of grants, the
19 highest amount of research funding from the Foundation.

20 (c) REPORT.—Not later than 2 years after the date
21 of enactment of this Act, the Director shall provide a re-
22 port to Congress on institutional research partnerships
23 identified in subsection (a) funded in the 2 previous fiscal
24 years and make any recommendations for how such part-
25 nerships can continue to be strengthened.

1 **SEC. 307. INNOVATION CORPS.**

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

4 (1) the National Science Foundation’s Inno-
5 vation Corps (I-Corps) was established to foster a na-
6 tional innovation ecosystem by encouraging institu-
7 tions, scientists, engineers, and entrepreneurs to
8 identify and explore the innovation and commercial
9 potential of Foundation-funded research well beyond
10 the laboratory;

11 (2) the Foundation’s I-Corps includes invest-
12 ments in entrepreneurship and commercialization
13 education, training, and mentoring, ultimately lead-
14 ing to the practical deployment of technologies,
15 products, processes, and services that improve the
16 Nation’s competitiveness, promote economic growth,
17 and benefit society; and

18 (3) by building networks of entrepreneurs, edu-
19 cators, mentors, institutions, and collaborations, and
20 supporting specialized education and training, I-
21 Corps is at the leading edge of a strong, lasting
22 foundation for an American innovation ecosystem.

23 (b) PROGRAM.—

24 (1) IN GENERAL.—The Director shall carry out
25 a program to award grants for entrepreneurship and
26 commercialization education to Foundation-funded

1 researchers to increase the economic and social im-
2 pact of federally funded research.

3 (2) PURPOSES.—The purpose of the program
4 shall be to increase the capacity of STEM research-
5 ers and students to successfully engage in entrepre-
6 neurial activities and to help transition the results of
7 federally funded research into the marketplace by—

8 (A) identifying STEM research that can
9 lead to the practical deployment of technologies,
10 products, processes, and services that improve
11 the Nation’s economic competitiveness;

12 (B) bringing STEM researchers and stu-
13 dents together with entrepreneurs, venture cap-
14 italists, and other industry representatives expe-
15 rienced in commercialization of new tech-
16 nologies;

17 (C) supporting entrepreneurship and com-
18 mercialization education and training for fac-
19 ulty, students, postdoctoral fellows, and other
20 STEM researchers; and

21 (D) promoting the development of regional
22 and national networks of entrepreneurs, venture
23 capitalists, and other industry representatives
24 who can serve as mentors to researchers and

1 students at Foundation-funded institutions
2 across the country.

3 (3) ADDITIONAL USE OF FUNDS.—Grants
4 awarded under this subsection may be used to help
5 support—

6 (A) prototype and proof-of-concept devel-
7 opment for the funded project; and

8 (B) additional activities needed to build a
9 national infrastructure for STEM entrepreneur-
10 ship.

11 (4) OTHER FEDERAL AGENCIES.—The Director
12 may establish agreements with other Federal agen-
13 cies that fund scientific research to make research-
14 ers funded by those agencies eligible to participate
15 in the Foundation’s Innovation Corps program.

16 **SEC. 308. DEFINITIONS.**

17 For purposes of this title:

18 (1) DIRECTOR.—The term “Director” means
19 the Director of the Foundation.

20 (2) FOUNDATION.—The term “Foundation”
21 means the National Science Foundation.

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

1 (4) STEM.—The term “STEM” means science,
2 technology, engineering, and mathematics, including
3 computer science.

4 **Subtitle B—STEM Education**

5 **SEC. 321. NATIONAL SCIENCE BOARD REPORT ON CONSOLI-** 6 **DATION OF STEM EDUCATION ACTIVITIES AT** 7 **THE FOUNDATION.**

8 (a) IN GENERAL.—The National Science Board shall
9 review and evaluate the appropriateness of the Founda-
10 tion’s portfolio of STEM education programs and activi-
11 ties at the pre-K-12 and undergraduate levels, including
12 informal education, taking into account the mission of the
13 Foundation and the 2013 Federal STEM Education 5-
14 Year Strategic Plan.

15 (b) REPORT.—Not later than 1 year after the date
16 of enactment of this Act, the National Science Board shall
17 submit to Congress a report summarizing their findings
18 and including—

19 (1) an analysis of how well the Foundation’s
20 portfolio of STEM education programs is contrib-
21 uting to the mission of the Foundation;

22 (2) an analysis of how well STEM education
23 programs and activities are coordinated and best
24 practices are shared across the Foundation;

1 (3) an analysis of how well the Foundation's
2 portfolio of STEM education programs is aligned
3 with and contributes to priority STEM education in-
4 vestment areas described in the 2013 Federal STEM
5 Education 5-Year Strategic Plan;

6 (4) any Board recommendations regarding in-
7 ternal reorganization, including consolidation, of the
8 Foundation's STEM education programs and activi-
9 ties, taking into account both the mission of the
10 Foundation and the 2013 Federal STEM Education
11 5-Year Strategic Plan;

12 (5) any Board recommendations regarding the
13 Foundation's role in helping to implement the Fed-
14 eral STEM Education 5-Year Strategic Plan, includ-
15 ing opportunities for the Foundation to more effec-
16 tively partner and collaborate with other Federal
17 agencies; and

18 (6) any additional Board recommendations re-
19 garding specific management, policy, budget, or
20 other steps the Foundation should take to increase
21 effectiveness and accountability across its portfolio
22 of STEM education programs and activities.

23 **SEC. 322. MODELS FOR GRADUATE STUDENT SUPPORT.**

24 (a) IN GENERAL.—The Director shall enter into an
25 agreement with the National Research Council to evaluate

1 the Foundation's current programs and models for sup-
2 porting STEM graduate students, including the Graduate
3 Research Fellowship program, traineeship programs
4 across the Foundation, and the research assistantship
5 model, for their effectiveness in helping to prepare grad-
6 uate students for diverse careers utilizing STEM degrees,
7 including at diverse types of institutions of higher edu-
8 cation, in industry, and at government agencies and re-
9 search laboratories.

10 (b) REPORT ON MODELS FOR GRADUATE STUDENT
11 SUPPORT.—Not later than 2 years after the date of enact-
12 ment of this Act, the National Research Council shall sub-
13 mit to Congress a report on models for graduate student
14 support at the Foundation. At a minimum, the report
15 shall include the following:

16 (1) An analysis of the relative strengths and
17 limitations of the Foundation's current portfolio of
18 programs and mechanisms for support of graduate
19 student research and training, including the research
20 assistantship model funded through research grants,
21 including an analysis of the capacity of such pro-
22 grams and mechanisms to provide students with
23 knowledge and skills—

24 (A) to become independent, creative, suc-
25 cessful researchers;

1 (B) to participate in large interdisciplinary
2 research projects, including in an international
3 context;

4 (C) to adhere to the highest standards for
5 research ethics;

6 (D) to become high-quality teachers uti-
7 lizing the most currently available evidence-
8 based pedagogy;

9 (E) in oral and written communication, to
10 both technical and nontechnical audiences;

11 (F) in innovation, entrepreneurship, and
12 business ethics; and

13 (G) in program management.

14 (2) An analysis of the relative strengths and
15 limitations of the Foundation's current portfolio of
16 programs and mechanisms for support of graduate
17 student research to improve recruitment, retention,
18 and timely completion of doctoral degrees, including
19 for students from groups historically underrep-
20 resented in STEM.

21 (3) A recommendation or recommendations for
22 improvements to any of the current programs or
23 models or the creation of new programs or models.

24 (4) A recommendation or recommendations re-
25 garding the appropriateness of the current distribu-

1 tion of funding among the different programs and
2 models.

3 (5) A recommendation or recommendations re-
4 garding the appropriateness of creating a new edu-
5 cation and training program for graduate students
6 distinct from programs that provide financial sup-
7 port to students, including the grants authorized in
8 section. 527 of the America COMPETES Reauthor-
9 ization Act of 2010 (42 U.S.C. 1862p-15).

10 **SEC. 323. UNDERGRADUATE STEM EDUCATION REFORM.**

11 Section 17 of the National Science Foundation Au-
12 thorization Act of 2002 (42 U.S.C. 1862n-6) is amended
13 to read as follows:

14 **“SEC. 17. UNDERGRADUATE STEM EDUCATION REFORM.**

15 “(a) IN GENERAL.—The Director, through the Direc-
16 torate for Education and Human Resources, shall award
17 grants, on a competitive, merit-reviewed basis, to institu-
18 tions of higher education (or to consortia thereof) and to
19 other eligible nonprofit organizations to reform under-
20 graduate STEM education for the purpose of increasing
21 the number and quality of students studying toward and
22 completing baccalaureate degrees in STEM and improving
23 the STEM learning outcomes for all undergraduate stu-
24 dents.

1 “(b) INTERDIRECTORATE WORKING GROUP ON UN-
2 DERGRADUATE STEM EDUCATION.—In carrying out the
3 requirements of this section, the Directorate for Education
4 and Human Resources shall collaborate and coordinate
5 with the Research Directorates, including through the es-
6 tablishment of an interdirectorate working group on un-
7 dergraduate STEM education reform, in order to identify
8 and implement new and expanded opportunities for col-
9 laboration between STEM disciplinary researchers and
10 education researchers on the reform of undergraduate
11 STEM education.

12 “(c) GRANTS.—Research and development supported
13 by grants under this section may encompass a single dis-
14 cipline, multiple disciplines, or interdisciplinary education
15 at the undergraduate level, and may include—

16 “(1) research foundational to the improvement
17 of teaching, learning, and retention;

18 “(2) development, implementation, and assess-
19 ment of innovative, research-based approaches to
20 transforming teaching, learning, and retention; and

21 “(3) scaling of successful efforts on learning
22 and learning environments, broadening participation,
23 workforce preparation, employing emerging tech-
24 nologies, or other reforms in STEM education, in-
25 cluding expansion of successful STEM reform ef-

1 forts beyond a single course or group of courses to
2 achieve reform within an entire academic unit, or ex-
3 pansion of successful reform efforts beyond a single
4 academic unit to other STEM academic units within
5 an institution or to comparable academic units at
6 other institutions.

7 “(d) SELECTION PROCESS.—

8 “(1) APPLICATIONS.—An institution of higher
9 education or other eligible nonprofit organization
10 seeking a grant under this section shall submit an
11 application to the Director at such time, in such
12 manner, and containing such information as the Di-
13 rector may require. In addition to a description of
14 the proposed research, development, or scaling ef-
15 fort, including a description of the research findings
16 that will serve as the basis for the proposed effort,
17 applications shall include, at a minimum—

18 “(A) evidence of institutional support for,
19 and commitment to, the proposed effort, includ-
20 ing long-term commitment to implement and
21 scale successful strategies resulting from the
22 current effort;

23 “(D) a description of existing or planned
24 institutional policies and practices regarding
25 faculty hiring, promotion, tenure, and teaching

1 assignment that reward faculty contributions to
2 undergraduate STEM education; and

3 “(E) a description of the plans for assess-
4 ment and evaluation of the effort, including evi-
5 dence of participation by individuals with expe-
6 rience in assessment and evaluation of teaching
7 and learning programs.

8 “(2) REVIEW OF APPLICATIONS.—In selecting
9 grant recipients for funding under this section, the
10 Director shall consider, as appropriate to the scale
11 of the proposed effort—

12 “(A) the likelihood of success in under-
13 taking the proposed effort at the institution
14 submitting the application, including the extent
15 to which the faculty, staff, and administrators
16 of the institution are committed to making un-
17 dergraduate STEM education reform a priority
18 of the participating academic unit or units;

19 “(B) the degree to which the proposed ef-
20 fort will contribute to change in institutional
21 culture and policy such that a greater value is
22 placed on faculty engagement in undergraduate
23 education;

1 “(C) the likelihood that the institution will
2 sustain or expand the effort beyond the period
3 of the grant; and

4 “(D) the degree to which the proposed ef-
5 fort will contribute to the systematic accumula-
6 tion of knowledge on STEM education.

7 “(3) PRIORITY.—The Director shall give pri-
8 ority to proposals focused on the first 2 years of un-
9 dergraduate education, including STEM education
10 at 2-year institutions of higher education.

11 “(4) GRANT DISTRIBUTION.—The Director
12 shall ensure, to the extent practicable, that grants
13 awarded under this section are made to a variety of
14 types of institutions of higher education.”.

15 **SEC. 324. ADVANCED MANUFACTURING EDUCATION.**

16 Section 506(b) of the America COMPETES Reau-
17 thorization Act of 2010 (42 U.S.C. 1862p–1(b)) is amend-
18 ed to read as follows:

19 “(b) ADVANCED MANUFACTURING EDUCATION.—
20 The Director shall award grants, on a competitive, merit
21 reviewed basis, to community colleges for the development
22 and implementation of innovative advanced manufacturing
23 education reforms to ensure an adequate and well-trained
24 advanced manufacturing workforce. Activities supported
25 by grants under this subsection may include—

1 “(1) the development or expansion of edu-
2 cational materials, courses, curricula, strategies, and
3 methods that will lead to improved advanced manu-
4 facturing degree or certification programs, including
5 the integration of industry standards and workplace
6 competencies into the curriculum;

7 “(2) the development and implementation of
8 faculty professional development programs that en-
9 hance a faculty member’s capabilities and teaching
10 skills in advanced manufacturing, including efforts
11 to understand current advanced manufacturing tech-
12 nologies and practices;

13 “(3) the establishment of centers that provide
14 models and leadership in advanced manufacturing
15 education and serve as regional or national clearing-
16 houses for educational materials and methods;

17 “(4) activities to enhance the recruitment and
18 retention of students into certification and degree
19 programs in advanced manufacturing, including the
20 provision of improved mentoring and internship op-
21 portunities;

22 “(5) the establishment of partnerships with pri-
23 vate sector entities to ensure the development of an
24 advanced manufacturing workforce with the skills
25 necessary to meet regional economic needs; and

1 “(6) other activities as determined appropriate
2 by the Director.”.

3 **SEC. 325. STEM EDUCATION PARTNERSHIPS.**

4 Section 9 of the National Science Foundation Au-
5 thorization Act of 2002 (42 U.S.C. 1862n) is amended—

6 (1) in the section heading, by striking “**MATH-**
7 **EMATICS AND SCIENCE**” and inserting “**STEM**”;

8 (2) by striking “mathematics and science” each
9 place it appears in subsection (a) and (b) and insert-
10 ing “STEM”;

11 (3) by striking “mathematics or science” each
12 place it appears in subsection (a)(3) and (4)(A) and
13 inserting “STEM”;

14 (4) by striking “mathematics, science, or engi-
15 neering” in subsection (a)(2)(B) and inserting
16 “STEM”;

17 (5) by striking “mathematics, science, and tech-
18 nology” in subsection (a)(3)(B)(ii)(II) and (8) and
19 inserting “STEM”;

20 (6) by striking “professional mathematicians,
21 scientists, and engineers” in subsection (a)(3)(F)
22 and inserting “STEM professionals”;

23 (7) by striking “mathematicians, scientists, and
24 engineers” in subsection (a)(3)(J) and (M) and in-
25 serting “STEM professionals”;

1 (8) by striking “scientists, technologists, engi-
2 neers, or mathematicians” in subsection (a)(8) and
3 inserting “STEM professionals”;

4 (9) by striking “science, technology, engineer-
5 ing, and mathematics” each place it appears in sub-
6 section (a)(3)(K) and (10) and inserting “STEM”;

7 (10) by striking “science, technology, engineer-
8 ing, or mathematics” in subsection (a)(10)(A)(ii)(II)
9 and inserting “STEM”;

10 (11) by striking “science, mathematics, engi-
11 neering, and technology” each place it appears in
12 subsection (a)(5) and inserting “STEM”;

13 (12) by striking “science, mathematics, engi-
14 neering, or technology” in subsection (a)(5) and in-
15 serting “STEM”;

16 (13) by striking “mathematics, science, engi-
17 neering, and technology” in subsection (b)(1) and
18 (2) and inserting “STEM”; and

19 (14) by striking subsection (d).

20 **SEC. 326. NOYCE SCHOLARSHIP PROGRAM AMENDMENTS.**

21 Section 10A of the National Science Foundation Au-
22 thorization Act of 2002 (42 U.S.C. 1862n—1a) is amend-
23 ed—

24 (1) in subsection (a)(2)(B), by inserting “or
25 bachelor’s” after “master’s”;

1 (2) in subsection (c)—

2 (A) by striking “and” at the end of para-
3 graph (2)(B);

4 (B) in paragraph (3), by—

5 (i) inserting “for teachers with mas-
6 ter’s degrees in their field” after “Teach-
7 ing Fellowships”; and

8 (ii) by striking the period at the end
9 of subparagraph (B) and inserting “;
10 and”; and

11 (C) by adding at the end the following new
12 paragraph:

13 “(4) in the case of National Science Foundation
14 Master Teaching Fellowships for teachers with bach-
15 elor’s degrees in their field—

16 “(A) offering academic courses leading to
17 a master’s degree and leadership training to
18 prepare individuals to become master teachers
19 in elementary and secondary schools; and

20 “(B) offering programs both during and
21 after matriculation in the program for which
22 the fellowship is received to enable fellows to
23 become highly effective mathematics and
24 science teachers, including mentoring, training,
25 induction, and professional development activi-

1 ties, to fulfill the service requirements of this
2 section, including the requirements of sub-
3 section (e), and to exchange ideas with others
4 in their fields.”;

5 (3) in subsection (e), by striking “subsection
6 (g)” and inserting “subsection (h)”; and

7 (4) by after subsection (f) the following new
8 subsection:

9 “(g) SUPPORT FOR MASTER TEACHING FELLOWS
10 WHILE ENROLLED IN A MASTER’S DEGREE PROGRAM.—
11 A National Science Foundation Master Teacher Fellow
12 may receive a maximum of 1 year of fellowship support
13 while enrolled in a master’s degree program as described
14 in subsection (c)(4)(A), except that if such fellow is en-
15 rolled in a part-time program, such amount shall be pro-
16 rated according to the length of the program.”.

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

20 **SEC. 401. SHORT TITLE.**

21 This title may be cited as the “National Institute of
22 Standards and Technology Authorization Act of 2013”.

23 **SEC. 402. AUTHORIZATION OF APPROPRIATIONS.**

24 (a) FISCAL YEAR 2014.—

1 (1) IN GENERAL.—There are authorized to be
2 appropriated to the Secretary of Commerce
3 \$947,547,000 for the National Institute of Stand-
4 ards and Technology for fiscal year 2014.

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

7 (A) \$703,000,000 shall be authorized for
8 scientific and technical research and services
9 laboratory activities;

10 (B) \$60,040,000 shall be authorized for
11 the construction and maintenance of facilities;
12 and

13 (C) \$184,507,000 shall be authorized for
14 industrial technology services activities, of
15 which—

16 (i) \$153,078,000 shall be authorized
17 for the Hollings Manufacturing Extension
18 Partnership under section 25 of the Na-
19 tional Institute of Standards and Tech-
20 nology Act (15 U.S.C. 278k) and the pro-
21 gram under section 26 of such Act (15
22 U.S.C. 278l), of which not more than
23 \$20,000,000 shall be for the competitive
24 grant program under section 25(f) of such
25 Act; and

1 (ii) \$31,429,000 shall be authorized
2 for the Advanced Manufacturing Tech-
3 nology Consortia program established
4 under section 33 of such Act (15 U.S.C.
5 278r).

6 (b) FISCAL YEAR 2015.—

7 (1) IN GENERAL.—There are authorized to be
8 appropriated to the Secretary of Commerce
9 \$994,924,350 for the National Institute of Stand-
10 ards and Technology for fiscal year 2015.

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

13 (A) \$738,150,000 shall be authorized for
14 scientific and technical research and services
15 laboratory activities;

16 (B) \$63,042,000 shall be authorized for
17 the construction and maintenance of facilities;
18 and

19 (C) \$193,732,350 shall be authorized for
20 industrial technology services activities, of
21 which—

22 (i) \$160,731,900 shall be authorized
23 for the Hollings Manufacturing Extension
24 Partnership under section 25 of the Na-
25 tional Institute of Standards and Tech-

1 nology Act (15 U.S.C. 278k) and the pro-
2 gram under section 26 of such Act (15
3 U.S.C. 278l), of which not more than
4 \$20,000,000 shall be for the competitive
5 grant program under section 25(f) of such
6 Act; and

7 (ii) \$33,000,450 shall be authorized
8 for the Advanced Manufacturing Tech-
9 nology Consortia program established
10 under section 33 of such Act (15 U.S.C.
11 278r).

12 (c) FISCAL YEAR 2016.—

13 (1) IN GENERAL.—There are authorized to be
14 appropriated to the Secretary of Commerce
15 \$1,044,670,568 for the National Institute of Stand-
16 ards and Technology for fiscal year 2016.

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

19 (A) \$775,057,500 shall be authorized for
20 scientific and technical research and services
21 laboratory activities;

22 (B) \$66,194,100 shall be authorized for
23 the construction and maintenance of facilities;
24 and

1 (C) \$203,418,968 shall be authorized for
2 industrial technology services activities, of
3 which—

4 (i) \$168,768,495 shall be authorized
5 for the Hollings Manufacturing Extension
6 Partnership under section 25 of the Na-
7 tional Institute of Standards and Tech-
8 nology Act (15 U.S.C. 278k) and the pro-
9 gram under section 26 of such Act (15
10 U.S.C. 278l), of which not more than
11 \$20,000,000 shall be for the competitive
12 grant program under section 25(f) of such
13 Act; and

14 (ii) \$34,650,473 shall be authorized
15 for the Advanced Manufacturing Tech-
16 nology Consortia program established
17 under section 33 of such Act (15 U.S.C.
18 278r).

19 (d) FISCAL YEAR 2017.—

20 (1) IN GENERAL.—There are authorized to be
21 appropriated to the Secretary of Commerce
22 \$1,096,904,096 for the National Institute of Stand-
23 ards and Technology for fiscal year 2017.

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

1 (A) \$813,810,375 shall be authorized for
2 scientific and technical research and services
3 laboratory activities;

4 (B) \$69,503,805 shall be authorized for
5 the construction and maintenance of facilities;
6 and

7 (C) \$213,589,916 shall be authorized for
8 industrial technology services activities, of
9 which—

10 (i) \$177,206,920 shall be authorized
11 for the Hollings Manufacturing Extension
12 Partnership under section 25 of the Na-
13 tional Institute of Standards and Tech-
14 nology Act (15 U.S.C. 278k) and the pro-
15 gram under section 26 of such Act (15
16 U.S.C. 278l), of which not more than
17 \$20,000,000 shall be for the competitive
18 grant program under section 25(f) of such
19 Act; and

20 (ii) \$36,382,996 shall be authorized
21 for the Advanced Manufacturing Tech-
22 nology Consortia program established
23 under section 33 of such Act (15 U.S.C.
24 278r).

25 (e) FISCAL YEAR 2018.—

1 (1) IN GENERAL.—There are authorized to be
2 appropriated to the Secretary of Commerce
3 \$1,151,749,301 for the National Institute of Stand-
4 ards and Technology for fiscal year 2018.

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

7 (A) \$854,500,894 shall be authorized for
8 scientific and technical research and services
9 laboratory activities;

10 (B) \$72,978,995 shall be authorized for
11 the construction and maintenance of facilities;
12 and

13 (C) \$224,269,412 shall be authorized for
14 industrial technology services activities, of
15 which—

16 (i) \$186,067,266 shall be authorized
17 for the Hollings Manufacturing Extension
18 Partnership under section 25 of the Na-
19 tional Institute of Standards and Tech-
20 nology Act (15 U.S.C. 278k) and the pro-
21 gram under section 26 of such Act (15
22 U.S.C. 278l), of which not more than
23 \$20,000,000 shall be for the competitive
24 grant program under section 25(f) of such
25 Act; and

1 (ii) \$38,202,146 shall be authorized
2 for the Advanced Manufacturing Tech-
3 nology Consortia program established
4 under section 33 of such Act (15 U.S.C.
5 278r).

6 **SEC. 403. ADVANCED MANUFACTURING TECHNOLOGY CON-**
7 **SORTIA.**

8 Section 33 of the National Institute of Standards and
9 Technology Act (15 U.S.C. 278r) is amended to read as
10 follows:

11 **“SEC. 33. ADVANCED MANUFACTURING TECHNOLOGY CON-**
12 **SORTIA.**

13 “(a) **AUTHORITY.**—

14 “(1) **IN GENERAL.**—The Director shall carry
15 out a program to facilitate the development of and
16 provide support to industry-led consortia that will
17 identify, prioritize, and address long-term,
18 precompetitive industrial research needs in the area
19 of advanced manufacturing.

20 “(2) **PROGRAM OBJECTIVES.**—The objectives of
21 the program established under this section include
22 the following:

23 “(A) To promote collective public-private
24 efforts to develop key technology platforms and
25 infrastructure for advanced manufacturing.

1 “(B) To enable the prioritization of public
2 research portfolios to be more responsive to the
3 long-term technology development needs of in-
4 dustry.

5 “(C) To leverage Federal investment in ad-
6 vanced manufacturing with shared investment
7 by the private sector.

8 “(D) To increase industrial research and
9 development investment in precompetitive tech-
10 nology platforms and infrastructure.

11 “(E) To accelerate technological innovation
12 in advanced manufacturing.

13 “(F) To foster broad participation by in-
14 dustry, the Federal Government, institutions of
15 higher education, and State, local, and tribal
16 governments in advanced manufacturing re-
17 search and development.

18 “(b) ACTIVITIES.—As part of the program estab-
19 lished under this section, the Director shall—

20 “(1) support the formation of industry-led con-
21 sortia composed of representatives from industry (in-
22 cluding small and medium-sized manufacturers), in-
23 stitutions of higher education, the Federal Govern-
24 ment, State, local, and tribal governments, and other
25 entities, as appropriate;

1 “(2) collaborate with consortia participants in
2 the development of technology roadmaps that iden-
3 tify research needs in the area of advanced manufac-
4 turing;

5 “(3) support precompetitive research directed at
6 meeting the research needs identified in the road-
7 maps developed under paragraph (2);

8 “(4) promote the transfer of precompetitive
9 technology platforms and infrastructure resulting
10 from consortia research to the private sector and fa-
11 cilitate open access to the intellectual property un-
12 derpinning those platforms and technology; and

13 “(5) facilitate the development of new tech-
14 nologies into commercial products.

15 “(c) SELECTION CRITERIA.—In selecting applica-
16 tions for awards under this section, the Director shall con-
17 sider, at a minimum—

18 “(1) the degree to which the activities proposed
19 under the consortia will broadly impact manufac-
20 turing, including regional manufacturing efforts, and
21 increase the productivity and economic competitive-
22 ness of the United States;

23 “(2) the level of technical risk to be addressed
24 by the consortia;

1 “(3) the potential to produce fundamental new
2 knowledge; and

3 “(4) the likelihood that the consortia will be-
4 come self-sustaining, if appropriate.”.

5 **SEC. 404. NETWORK FOR MANUFACTURING INNOVATION.**

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

8 (1) by redesignating section 34 as section 36;
9 and

10 (2) by inserting after section 33 (15 U.S.C.
11 278r) the following:

12 **“SEC. 34. NETWORK FOR MANUFACTURING INNOVATION.**

13 “(a) ESTABLISHMENT OF NETWORK FOR MANUFAC-
14 TURING INNOVATION PROGRAM.—

15 “(1) IN GENERAL.—The Secretary shall estab-
16 lish within the Institute a program to be known as
17 the ‘Network for Manufacturing Innovation Pro-
18 gram’ (referred to in this section as the ‘Program’).

19 “(2) PURPOSES OF PROGRAM.—The purposes of
20 the Program are—

21 “(A) to improve the competitiveness of
22 United States manufacturing and to increase
23 domestic production;

1 “(B) to stimulate United States leadership
2 in advanced manufacturing research, innova-
3 tion, and technology;

4 “(C) to facilitate the transition of innova-
5 tive technologies into scalable, cost-effective,
6 and high-performing manufacturing capabili-
7 ties;

8 “(D) to facilitate access by manufacturing
9 enterprises to capital-intensive infrastructure,
10 including high-performance computing, in order
11 to improve the speed with which such enter-
12 prises commercialize new processes and tech-
13 nologies;

14 “(E) to accelerate the development of an
15 advanced manufacturing workforce;

16 “(F) to facilitate peer exchange of and the
17 documentation of best practices in addressing
18 advanced manufacturing challenges; and

19 “(G) to leverage non-Federal sources of
20 support to promote a stable and sustainable
21 business model without the need for long-term
22 Federal funding.

23 “(3) SUPPORT.—The Secretary, acting through
24 the Director, shall carry out the purposes set forth
25 in paragraph (2) by supporting—

1 “(A) the Network for Manufacturing Inno-
2 vation established under subsection (b); and

3 “(B) the establishment of centers for man-
4 ufacturing innovation.

5 “(4) DIRECTOR.—The Secretary shall carry out
6 the Program through the Director.

7 “(b) ESTABLISHMENT OF NETWORK FOR MANUFAC-
8 TURING INNOVATION.—

9 “(1) IN GENERAL.—As part of the Program,
10 the Secretary shall establish a network of centers for
11 manufacturing innovation.

12 “(2) DESIGNATION.—The network established
13 under paragraph (1) shall be known as the ‘Network
14 for Manufacturing Innovation’ (referred to in this
15 section as the ‘Network’).

16 “(c) CENTERS FOR MANUFACTURING INNOVATION.—

17 “(1) IN GENERAL.—For purposes of this sec-
18 tion, a ‘center for manufacturing innovation’ is a
19 center that—

20 “(A) has been established by a person to
21 address challenges in advanced manufacturing
22 and to assist manufacturers in retaining or ex-
23 panding industrial production and jobs in the
24 United States;

1 “(B) has a predominant focus on a manu-
2 facturing process, novel material, enabling tech-
3 nology, supply chain integration methodology,
4 or another relevant aspect of advanced manu-
5 facturing, as determined by the Secretary, with
6 the potential—

7 “(i) to improve the competitiveness of
8 United States manufacturing;

9 “(ii) to accelerate investment in ad-
10 vanced manufacturing production capacity
11 in the United States; and

12 “(iii) to enable the commercial appli-
13 cation of new technologies or industry-wide
14 manufacturing processes; and

15 “(C) includes active participation among
16 representatives from multiple industrial entities,
17 research universities, community colleges, and
18 such other entities as the Secretary considers
19 appropriate, which may include career and tech-
20 nical education schools, Federal laboratories,
21 State, local, and tribal governments, businesses,
22 educational institutions, and nonprofit organiza-
23 tions.

24 “(2) ACTIVITIES.—Activities of a center for
25 manufacturing innovation may include the following:

1 “(A) Research, development, and dem-
2 onstration projects, including proof-of-concept
3 development and prototyping, to reduce the
4 cost, time, and risk of commercializing new
5 technologies and improvements in existing tech-
6 nologies, processes, products, and research and
7 development of materials to solve pre-competi-
8 tive industrial problems with economic or na-
9 tional security implications.

10 “(B) Development and implementation of
11 education and training courses, materials, and
12 programs.

13 “(C) Development of innovative methodolo-
14 gies and practices for supply chain integration
15 and introduction of new technologies into sup-
16 ply chains.

17 “(D) Outreach and engagement with small
18 and medium-sized manufacturing enterprises, in
19 addition to large manufacturing enterprises.

20 “(E) Such other activities as the Sec-
21 retary, in consultation with Federal depart-
22 ments and agencies whose missions contribute
23 to or are affected by advanced manufacturing,
24 considers consistent with the purposes described
25 in subsection (a)(2).

1 “(3) ADDITIONAL CENTERS FOR MANUFAC-
2 TURING INNOVATION.—The National Additive Man-
3 ufacturing Innovation Institute and pending manu-
4 facturing centers under interagency review shall be
5 considered centers for manufacturing innovation.

6 “(d) FINANCIAL ASSISTANCE TO ESTABLISH AND
7 SUPPORT CENTERS FOR MANUFACTURING INNOVA-
8 TION.—

9 “(1) IN GENERAL.—In carrying out the Pro-
10 gram, the Secretary shall award financial assistance
11 to a person to assist the person in planning, estab-
12 lishing, or supporting a center for manufacturing in-
13 novation.

14 “(2) APPLICATION.—A person seeking financial
15 assistance under paragraph (1) shall submit to the
16 Secretary an application therefor at such time, in
17 such manner, and containing such information as
18 the Secretary may require.

19 “(3) OPEN PROCESS.—In soliciting applications
20 for financial assistance under paragraph (1), the
21 Secretary shall ensure an open process that will
22 allow for the consideration of all applications rel-
23 evant to advanced manufacturing regardless of tech-
24 nology area.

25 “(4) SELECTION.—

1 “(A) COMPETITIVE, MERIT REVIEW.—In
2 awarding financial assistance under paragraph
3 (1), the Secretary shall use a competitive, merit
4 review process.

5 “(B) COLLABORATION.—In awarding fi-
6 nancial assistance under paragraph (1), the
7 Secretary shall, acting through the National
8 Program Office established under subsection
9 (e)(1), collaborate with Federal departments
10 and agencies whose missions contribute to or
11 are affected by advanced manufacturing.

12 “(C) CONSIDERATIONS.—In selecting a
13 person who submitted an application under
14 paragraph (2) for an award of financial assist-
15 ance under paragraph (1), the Secretary shall
16 consider, at a minimum, the following:

17 “(i) The potential of the center for
18 manufacturing innovation to advance do-
19 mestic manufacturing and the likelihood of
20 economic impact in the predominant focus
21 areas of the center for manufacturing in-
22 novation.

23 “(ii) The commitment of continued fi-
24 nancial support, advice, participation, and
25 other contributions from non-Federal

1 sources to provide leverage and resources
2 to promote a stable and sustainable busi-
3 ness model without the need for long-term
4 Federal funding.

5 “(iii) How the center for manufac-
6 turing innovation will engage with small
7 and medium-sized manufacturing enter-
8 prises, to improve the capacity of such en-
9 terprises to commercialize new processes
10 and technologies.

11 “(iv) How the center for manufac-
12 turing innovation will carry out educational
13 and workforce activities that meet indus-
14 trial needs related to the predominant
15 focus areas of the center for manufac-
16 turing innovation.

17 “(v) How the center for manufac-
18 turing innovation will advance economic
19 competitiveness.

20 “(vi) How the center for manufac-
21 turing innovation will strengthen and lever-
22 age the assets of a region.

23 “(5) LIMITATION ON PERIOD FOR AWARDS.—
24 No award of financial assistance may be made under
25 paragraph (1) to a center of manufacturing innova-

1 tion after the 7-year period beginning on the date on
2 which the Secretary first awards financial assistance
3 to a center under such paragraph.

4 “(e) NATIONAL PROGRAM OFFICE.—

5 “(1) ESTABLISHMENT.—The Secretary shall es-
6 tablish, within the Institute, the National Office of
7 the Network for Manufacturing Innovation Program
8 (referred to in this section as the ‘National Program
9 Office’), which shall oversee and carry out the Pro-
10 gram.

11 “(2) FUNCTIONS.—The functions of the Na-
12 tional Program Office are—

13 “(A) to oversee the planning, management,
14 and coordination of the Program;

15 “(B) to enter into memorandums of under-
16 standing with Federal departments and agen-
17 cies, whose missions contribute to or are af-
18 fected by advanced manufacturing, to carry out
19 the purposes described in subsection (a)(2);

20 “(C) to develop, not later than 1 year after
21 the date of the enactment of the National Insti-
22 tute of Standards and Technology Authoriza-
23 tion Act of 2013, and update not less frequently
24 than once every 3 years thereafter, a strategic
25 plan to guide the Program;

1 “(D) to establish such procedures, proc-
2 esses, and criteria as may be necessary and ap-
3 propriate to maximize cooperation and coordi-
4 nate of the activities of the Program with pro-
5 grams and activities of other Federal depart-
6 ments and agencies whose missions contribute
7 to or are affected by advanced manufacturing;

8 “(E) to establish a clearinghouse of public
9 information related to the activities of the Pro-
10 gram; and

11 “(F) to act as a convener of the Network.

12 “(3) RECOMMENDATIONS.—In developing and
13 updating the strategic plan under paragraph (2)(C),
14 the Secretary shall solicit recommendations and ad-
15 vice from a wide range of stakeholders, including in-
16 dustry, small and medium-sized manufacturing en-
17 terprises, research universities, community colleges,
18 and other relevant organizations and institutions.

19 “(4) REPORT TO CONGRESS.—The Secretary
20 shall transmit the strategic plan required under
21 paragraph (2)(C) to the Committee on Commerce,
22 Science, and Transportation of the Senate and the
23 Committee on Science, Space, and Technology of the
24 House of Representatives.

1 “(5) HOLLINGS MANUFACTURING EXTENSION
2 PARTNERSHIP.—The Secretary shall ensure that the
3 National Program Office incorporates the Hollings
4 Manufacturing Extension Partnership into Program
5 planning to ensure that the results of the Program
6 reach small and medium-sized entities.

7 “(6) DETAILEES.—Any Federal Government
8 employee may be detailed to the National Program
9 Office without reimbursement. Such detail shall be
10 without interruption or loss of civil service status or
11 privilege.

12 “(f) REPORTING AND AUDITING.—

13 “(1) ANNUAL REPORTS TO THE SECRETARY.—

14 “(A) IN GENERAL.—The Secretary shall
15 require recipients of financial assistance under
16 subsection (d)(1) to annually submit a report to
17 the Secretary that describes the finances and
18 performance of the center for manufacturing in-
19 novation for which such assistance was award-
20 ed.

21 “(B) ELEMENTS.—Each report submitted
22 under subparagraph (A) shall include—

23 “(i) an accounting of expenditures of
24 amounts awarded to the recipient under
25 subsection (d)(1); and

1 “(ii) a description of the performance
2 of the center for manufacturing innovation
3 with respect to—

4 “(I) its goals, plans, financial
5 support, and accomplishments; and

6 “(II) how the center for manu-
7 facturing innovation has furthered the
8 purposes described in subsection
9 (a)(2).

10 “(2) ANNUAL REPORTS TO CONGRESS.—

11 “(A) IN GENERAL.—Not less frequently
12 than once each year, the Secretary shall submit
13 a report to Congress that describes the per-
14 formance of the Program during the most re-
15 cent 1-year period.

16 “(B) ELEMENTS.—Each report submitted
17 under subparagraph (A) shall include, for the
18 period covered by the report—

19 “(i) a summary and assessment of the
20 reports received by the Secretary under
21 paragraph (1);

22 “(ii) an accounting of the funds ex-
23 pended by the Secretary under the Pro-
24 gram; and

1 “(iii) an assessment of the Program
2 with respect to the purposes described in
3 subsection (a)(2).

4 “(3) TRIENNIAL ASSESSMENT BY GAO.—

5 “(A) IN GENERAL.—Not less frequently
6 than once every 3 years, the Comptroller Gen-
7 eral of the United States shall submit to Con-
8 gress an assessment of the operation of the
9 Program during the most recent 3-year period.

10 “(B) ELEMENTS.—Each assessment sub-
11 mitted under subparagraph (A) shall include,
12 for the period covered by the report—

13 “(i) a review of the management, co-
14 ordination, and industry utility of the Pro-
15 gram;

16 “(ii) an assessment of the extent to
17 which the Program has furthered the pur-
18 poses described in subsection (a)(2); and

19 “(iii) such recommendations for legis-
20 lative and administrative action as the
21 Comptroller General considers appropriate
22 to improve the Program.

23 “(g) ADDITIONAL AUTHORITIES.—

24 “(1) APPOINTMENT OF PERSONNEL AND CON-
25 TRACTS.—The Secretary may appoint such per-

1 sonnel and enter into such contracts, financial as-
2 sistance agreements, and other agreements as the
3 Secretary considers necessary or appropriate to
4 carry out the Program including support for re-
5 search and development activities involving a center
6 for manufacturing innovation.

7 “(2) TRANSFER OF FUNDS.—The Secretary
8 may transfer to other Federal agencies such sums as
9 the Secretary considers necessary or appropriate to
10 carry out the Program.

11 “(3) AUTHORITY OF OTHER AGENCIES.—In the
12 event that the Secretary exercises the authority to
13 transfer funds to another agency under paragraph
14 (2), such agency may award and administer all as-
15 pects of financial assistance awards under this sec-
16 tion.

17 “(4) USE OF RESOURCES.—In furtherance of
18 the purposes of the Program, the Secretary may use,
19 with the consent of a covered entity and with or
20 without reimbursement, the land, services, equip-
21 ment, personnel, and facilities of such covered entity.

22 “(5) ACCEPTANCE OF RESOURCES.—In addition
23 to amounts appropriated to carry out the Program,
24 the Secretary may accept funds, services, equipment,

1 personnel, and facilities from any covered entity to
2 carry out the Program.

3 “(6) COVERED ENTITY.—For purposes of this
4 subsection, a covered entity is any Federal depart-
5 ment, Federal agency, instrumentality of the United
6 States, State, local government, tribal government,
7 territory or possession of the United States, or of
8 any political subdivision thereof, or international or-
9 ganization, or any public or private entity or indi-
10 vidual.

11 “(h) PATENTS.—Chapter 18 of title 35, United
12 States Code, shall not apply if financial assistance is
13 awarded under this section solely for the purpose of plan-
14 ning, establishing, or supporting new or existing centers
15 for manufacturing innovation.

16 “(i) FUNDING.—

17 “(1) NETWORK FOR MANUFACTURING INNOVA-
18 TION FUND.—

19 “(A) ESTABLISHMENT.—There is estab-
20 lished in the Treasury of the United States a
21 fund to be known as the ‘Network for Manufac-
22 turing Innovation Fund’ (referred to in this
23 paragraph as the ‘Fund’).

24 “(B) ELEMENTS.—There shall be depos-
25 ited in the Fund, which shall constitute the as-

1 sets of the Fund, amounts appropriated or oth-
2 erwise made available to carry out the Program.

3 “(C) AVAILABILITY.—Amounts deposited
4 in the Fund shall be available to the Secretary,
5 at the discretion of the Secretary, or the Sec-
6 retary’s delegee, to carry out the Program with-
7 out further appropriation and without fiscal
8 year limitation.

9 “(2) AUTHORIZATION OF APPROPRIATIONS.—
10 There is authorized to be appropriated
11 \$600,000,000 to the Secretary to carry out this sec-
12 tion.

13 “(3) ADMINISTRATIVE EXPENSES.—The Sec-
14 retary may use not more than 5 percent of the
15 amounts appropriated pursuant to paragraph (2) to
16 pay the salaries, expenses, and other administrative
17 costs incurred by the Secretary under this section.”.

18 **SEC. 405. HOLLINGS MANUFACTURING EXTENSION PART-**
19 **nership.**

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

23 **“SEC. 25. HOLLINGS MANUFACTURING EXTENSION PART-**
24 **nership.**

25 “(a) ESTABLISHMENT AND PURPOSE.—

1 “(1) IN GENERAL.—The Secretary, through the
2 Director and, if appropriate, through other officials,
3 shall provide assistance for the creation and support
4 of regional manufacturing extension centers for the
5 transfer of manufacturing technology and best busi-
6 ness practices. These centers shall be known as the
7 ‘Hollings Manufacturing Extension Centers’ (in this
8 Act referred to as the ‘Centers’). The program under
9 this section shall be known as the ‘Hollings Manu-
10 facturing Extension Partnership’.

11 “(2) AFFILIATIONS.—Such Centers shall be af-
12 filiated with any United States-based public or non-
13 profit institution or organization, or group thereof,
14 that applies for and is awarded financial assistance
15 under this section.

16 “(3) OBJECTIVE.—The objective of the Centers
17 is to enhance productivity, competitiveness, and
18 technological performance in United States manufac-
19 turing through—

20 “(A) the transfer of manufacturing tech-
21 nology and techniques to Centers and, through
22 them, to manufacturing companies throughout
23 the United States;

24 “(B) the participation of individuals from
25 industry, institutions of higher education, State

1 governments, other Federal agencies, and, when
2 appropriate, the Institute in cooperative tech-
3 nology transfer activities;

4 “(C) efforts to make new manufacturing
5 technology and processes usable by United
6 States-based small and medium-sized compa-
7 nies;

8 “(D) the active dissemination of scientific,
9 engineering, technical, and management infor-
10 mation about manufacturing to industrial firms,
11 including small and medium-sized manufac-
12 turing companies;

13 “(E) the development of new partnerships,
14 networks, and services that will assist small and
15 medium-sized manufacturing companies expand
16 into new markets, including global markets;

17 “(F) the utilization, when appropriate, of
18 the expertise and capability that exists in Fed-
19 eral laboratories other than the Institute; and

20 “(G) the provision to community colleges
21 and area career and technical education schools
22 of information about the job skills needed in
23 small and medium-sized manufacturing busi-
24 nesses in the regions they serve.

1 “(b) ACTIVITIES.—The activities of the Centers shall
2 include—

3 “(1) the establishment of automated manufac-
4 turing systems and other advanced production tech-
5 nologies, based on research by the Institute and
6 other entities, for the purpose of demonstrations and
7 technology transfer;

8 “(2) assistance to Federal agencies in satisfying
9 the domestic preference requirements of chapter 83
10 of title 41, United States Code (popularly referred
11 to as the Buy American Act), and other similar pro-
12 visions by identifying and providing technical assist-
13 ance to small and medium-sized manufacturers to
14 help them meet Federal agency procurement and ac-
15 quisition needs;

16 “(3) the active transfer and dissemination of re-
17 search findings and Center expertise to a wide range
18 of companies and enterprises, particularly small and
19 medium-sized manufacturers; and

20 “(4) the facilitation of collaborations and part-
21 nerships between small and medium-sized manufac-
22 turing companies and community colleges and area
23 career and technical education schools to help such
24 colleges and schools better understand the specific
25 needs of manufacturers and to help manufacturers

1 better understand the skill sets that students learn
2 in the programs offered by such colleges and schools.

3 “(c) FINANCIAL ASSISTANCE AND REQUIRE-
4 MENTS.—

5 “(1) FINANCIAL SUPPORT.—The Secretary may
6 provide financial support to any Center created
7 under subsection (a) for an initial period of 5 years.
8 The Secretary may not provide to a Center more
9 than 50 percent of the capital and annual operating
10 and maintenance funds required to create and main-
11 tain such Center.

12 “(2) REGULATIONS.—The Secretary shall im-
13 plement, review, and update the sections of the Code
14 of Federal Regulations related to this section at
15 least once every 5 years.

16 “(3) APPLICATION.—

17 “(A) IN GENERAL.—Any public or non-
18 profit institution, or consortium thereof, may
19 submit to the Secretary an application for fi-
20 nancial support under this section, in accord-
21 ance with the procedures established by the
22 Secretary.

23 “(B) COST-SHARING.—In order to receive
24 assistance under this section, an applicant for
25 financial assistance under subparagraph (A)

1 shall provide adequate assurances that non-
2 Federal assets obtained from the applicant and
3 the applicant's partnering organizations will be
4 used as a funding source to meet not less than
5 50 percent of the costs incurred. For purposes
6 of the preceding sentence, the costs incurred
7 means the costs incurred in connection with the
8 activities undertaken to improve the manage-
9 ment, productivity, competitiveness, and techno-
10 logical performance of small and medium-sized
11 manufacturing companies.

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

22 “(D) LEGAL RIGHTS.—Each applicant
23 under subparagraph (A) shall submit a proposal
24 for the allocation of the legal rights associated

1 with any invention that may result from the
2 proposed Center's activities.

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

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

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

16 “(C) Geographical diversity and extent of
17 service area.

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

21 “(5) EVALUATION.—

22 “(A) IN GENERAL.—Each Center that re-
23 ceives financial assistance under this section
24 shall be evaluated during its third year of oper-

1 ation by an evaluation panel appointed by the
2 Secretary.

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

7 “(C) CHAIR.—An official of the Institute
8 shall chair the panel.

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

13 “(E) POSITIVE EVALUATION.—If the eval-
14 uation is positive, the Secretary may provide
15 continued funding through the fifth year.

16 “(F) CORRECTIVE ACTION PLAN.—The
17 Secretary may not provide funding for the re-
18 maining years of a Center’s operation unless
19 the evaluation is positive. A Center that has not
20 received a positive evaluation by the evaluation
21 panel shall be notified by the panel of the defi-
22 ciencies in its performance and shall be placed
23 on a corrective action plan and provided the op-
24 portunity to improve performance unless imme-
25 diate action is necessary to protect the public

1 interest. The panel shall re-evaluate the Center
2 within one year and if the Center has not ad-
3 dressed the deficiencies identified by the panel,
4 or shown a significant improvement in its per-
5 formance, the Director shall conduct a new
6 competition to select an operator for the Center
7 or may close the Center.

8 “(G) ADDITIONAL FINANCIAL SUPPORT.—
9 After the fifth year, a Center may receive addi-
10 tional financial support under this section if it
11 has received a positive evaluation through an
12 independent review, under procedures estab-
13 lished by the Institute. If a Center has received
14 financial support for 10 consecutive years, the
15 Director shall conduct a new competition to se-
16 lect an operator for the Center. The Director
17 may create classes of Centers to phase in re-
18 quirements related to recompetition.

19 “(6) OVERSIGHT BOARD.—

20 “(A) IN GENERAL.—Each Center that re-
21 ceives financial assistance under this section
22 shall establish an oversight board that is broad-
23 ly representative of regional stakeholders with a
24 majority of board members drawn from local
25 small and medium-sized manufacturing firms.

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

8 “(C) LIMITATION.—Board members may
9 not serve simultaneously on more than one Cen-
10 ter’s oversight board.

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

14 “(A) Confidential information on the busi-
15 ness operations of—

16 “(i) a participant under the program;

17 or

18 “(ii) a client of a Center.

19 “(B) Trade secrets possessed by any client
20 of a Center.

21 “(8) PATENT RIGHTS.—The provisions of chap-
22 ter 18 of title 35, United States Code, shall apply,
23 to the extent not inconsistent with this section, to
24 the promotion of technology from research by Cen-
25 ters under this section except for contracts for such

1 specific technology extension or transfer services as
2 may be specified by statute or by the Director.

3 “(d) REPORTING AND AUDITING REQUIREMENTS.—

4 The Director shall establish procedures regarding Center
5 financial reporting and auditing to ensure that awards are
6 used for the purposes specified in this section and are in
7 accordance with sound accounting practices.

8 “(e) 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, the Secretary and Director also may
13 accept funds from other Federal departments and
14 agencies and, under section 2(c)(7), from the private
15 sector for the purpose of strengthening United
16 States manufacturing.

17 “(2) ALLOCATION OF FUNDS.—

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

1 “(B) FUNDS ACCEPTED FROM THE PRI-
2 VATE SECTOR.—Funds accepted from the pri-
3 vate sector under section 2(c)(7), if allocated to
4 a Center, may not be considered in the calcula-
5 tion of the Federal share under subsection (c)
6 of this section.

7 “(f) MEP ADVISORY BOARD.—

8 “(1) ESTABLISHMENT.—There is established
9 within the Institute a Manufacturing Extension
10 Partnership Advisory Board (in this subsection re-
11 ferred to as the ‘MEP 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 on an advisory
18 board for the Centers, at least 1 member shall
19 represent a community college, and at least 5
20 other members shall be from United States
21 small businesses in the manufacturing sector.
22 No member shall be an employee of the Federal
23 Government.

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

1 member 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 his predecessor was
6 appointed shall be appointed for the remainder
7 of such term.

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

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

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

20 “(B) assessments of the soundness of Hol-
21 lings Manufacturing Extension Partnership
22 plans and strategies; and

23 “(C) assessments of current performance
24 against Hollings Manufacturing Extension
25 Partnership program plans.

1 “(4) FEDERAL ADVISORY COMMITTEE ACT AP-
2 PLICABILITY.—

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

8 “(B) EXCEPTION.—Section 14 of the Fed-
9 eral Advisory Committee Act shall not apply to
10 the MEP Advisory Board.

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

21 “(g) COMPETITIVE GRANT PROGRAM.—

22 “(1) ESTABLISHMENT.—The Director shall es-
23 tablish, within the Hollings Manufacturing Exten-
24 sion Partnership, a program of competitive awards

1 among participants described in paragraph (2) for
2 the purposes described in paragraph (3).

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

6 “(3) PURPOSE.—The purpose of the program
7 under this subsection is to add capabilities to the
8 Hollings Manufacturing Extension Partnership, in-
9 cluding the development of projects to solve new or
10 emerging manufacturing problems as determined by
11 the Director, in consultation with the Director of the
12 Hollings Manufacturing Extension Partnership, the
13 MEP Advisory Board, and small and medium-sized
14 manufacturers.

15 “(4) THEMES.—One or more themes for the
16 competition may be identified, which may vary from
17 year to year, depending on the needs of manufactur-
18 ers and the success of previous competitions. These
19 themes may include—

20 “(A) supply chain integration and quality
21 management;

22 “(B) the creation of partnerships to en-
23 courage the development of a workforce with
24 the skills necessary to meet the needs of a re-
25 gion, including the creation of apprenticeship

1 opportunities and the adoption of universally-
2 recognized credential programs, as appropriate;

3 “(C) energy efficiency, including efficient
4 building technologies and environmentally
5 friendly materials, products, and processes;

6 “(D) enhancing the competitiveness of
7 small and medium-sized manufacturers in the
8 global marketplace;

9 “(E) the transfer of technology based on
10 the technological needs of manufacturers and
11 available technologies from institutions of high-
12 er education, laboratories, and other technology
13 producing entities; and

14 “(F) areas that extend beyond traditional
15 areas of manufacturing extension activities, in-
16 cluding projects related to construction industry
17 modernization.

18 “(5) REIMBURSEMENT.—Centers may be reim-
19 bursed for costs incurred under the program under
20 this subsection.

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

1 “(7) SELECTION.—Awards under this sub-
2 section shall be peer reviewed and competitively
3 awarded. The Director shall endeavor to have broad
4 geographic diversity among selected proposals. The
5 Director shall select proposals to receive awards that
6 will—

7 “(A) utilize innovative or collaborative ap-
8 proaches to solving the problem described in the
9 competition;

10 “(B) improve the competitiveness of indus-
11 tries in the region in which the Center or Cen-
12 ters are located; and

13 “(C) contribute to the long-term economic
14 stability of that region, including the creation of
15 jobs or training employees.

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

19 “(9) DURATION.—Awards under this subsection
20 shall last no longer than 3 years.

21 “(h) INNOVATIVE SERVICES INITIATIVE.—

22 “(1) ESTABLISHMENT.—The Director, in co-
23 ordination with the Advanced Manufacturing Office
24 of the Department of Energy, shall establish, within
25 the Hollings Manufacturing Extension Partnership,

1 an innovative services initiative to assist small and
2 medium-sized manufacturers in—

3 “(A) reducing their energy usage, green-
4 house gas emissions, and environmental waste
5 to improve profitability;

6 “(B) accelerating the domestic commer-
7 cialization of new product technologies, includ-
8 ing components for renewable energy and en-
9 ergy efficiency systems; and

10 “(C) identifying and diversifying to new
11 markets, including support for transitioning to
12 the production of components for renewable en-
13 ergy and energy efficiency systems.

14 “(2) MARKET DEMAND.—The Director may not
15 undertake any activity to accelerate the domestic
16 commercialization of a new product technology
17 under this subsection unless an analysis of market
18 demand for the new product technology has been
19 conducted.

20 “(i) EXPORT ASSISTANCE TO SMALL AND MEDIUM-
21 SIZED MANUFACTURERS.—

22 “(1) IN GENERAL.—The Director shall—

23 “(A) evaluate obstacles that are unique to
24 small and medium-sized manufacturers that

1 prevent such manufacturers from effectively
2 competing in the global market;

3 “(B) implement a comprehensive export
4 assistance initiative through the Centers to help
5 small and medium-sized manufacturers address
6 such obstacles; and

7 “(C) to the maximum extent practicable,
8 ensure that the activities carried out under this
9 subsection are coordinated with, and do not du-
10 plicate the efforts of, other export assistance
11 programs within the Federal Government.

12 “(2) REQUIREMENTS.—The initiative shall in-
13 clude—

14 “(A) export assistance counseling;

15 “(B) the development of partnerships that
16 will provide small and medium-sized manufac-
17 turers with greater access to and knowledge of
18 global markets; and

19 “(C) improved communication between the
20 Centers to assist such manufacturers in imple-
21 menting appropriate, targeted solutions to such
22 obstacles.

23 “(j) DEFINITIONS.—In this section:

24 “(1) AREA CAREER AND TECHNICAL EDU-
25 CATION SCHOOL.—The term ‘area career and tech-

1 nical education school’ has the meaning given such
2 term in section 3 of the Carl D. Perkins Career and
3 Technical Education Improvement Act of 2006 (20
4 U.S.C. 2302).

5 “(2) COMMUNITY COLLEGE.—The term ‘com-
6 munity college’ means an institution of higher edu-
7 cation (as defined under section 101(a) of the High-
8 er Education Act of 1965 (20 U.S.C. 1001(a))) at
9 which the highest degree that is predominately
10 awarded to students is an associate’s degree.”.

11 **SEC. 406. BIOSCIENCE MEASUREMENT SCIENCE AND**
12 **STANDARDS.**

13 (a) IN GENERAL.—The National Institute of Stand-
14 ards and Technology Act (15 U.S.C. 271 et seq.) is
15 amended by inserting after section 34, as added by section
16 404 of this Act, the following:

17 **“SEC. 35. BIOSCIENCE MEASUREMENT SCIENCE AND**
18 **STANDARDS.**

19 “The Director shall—

20 “(1) establish a bioscience research program to
21 support the development of standards and measure-
22 ments and to create new data, tools, techniques, and
23 processes necessary to promote new research and in-
24 dustries at the intersection of the biological, phys-
25 ical, and information sciences and engineering;

1 “(2) provide access to user facilities with ad-
2 vanced or unique equipment, services, materials, and
3 other resources to industry, institutions of higher
4 education, nonprofit organizations, and government
5 agencies to perform research and testing related to
6 the biosciences program established under this sec-
7 tion; and

8 “(3) provide technical expertise to inform the
9 development of guidelines and safeguards for new
10 products, processes, and systems that may result
11 from advancements at the intersection of the biologi-
12 cal, physical, and information sciences and engineer-
13 ing.”.

14 **SEC. 407. NATIONAL ACADEMY OF SCIENCES REVIEW.**

15 Not later than 6 months after the date of enactment
16 of this Act, the Director of the National Institute of
17 Standards and Technology shall enter into a contract with
18 the National Academy of Sciences to conduct a single,
19 comprehensive review of the Institute’s laboratory pro-
20 grams. The review shall—

- 21 (1) assess the technical merits and scientific
22 caliber of the research conducted at the laboratories;
23 (2) examine the strengths and weaknesses of
24 the 2010 laboratory reorganization on the Institute’s
25 ability to fulfill its mission;

1 (3) evaluate how cross-cutting research and de-
2 velopment activities are planned, coordinated, and
3 executed across the laboratories; and

4 (4) assess how the laboratories are engaging in-
5 dustry, including the incorporation of industry need,
6 into the research goals and objectives of the Insti-
7 tute.

8 **SEC. 408. IMPROVING NIST COLLABORATION WITH OTHER**
9 **AGENCIES.**

10 Section 8 of the National Bureau of Standards Au-
11 thorization Act for Fiscal Year 1983 (15 U.S.C. 275b)
12 is amended—

13 (1) in the section heading, by inserting “AND
14 WITH” after “PERFORMED FOR”; and

15 (2) by adding at the end the following: “The
16 Secretary may accept, apply for, use, and spend
17 Federal, State, and non-governmental acquisition
18 and assistance funds to further the mission of the
19 Institute without regard to the source or the period
20 of availability of these funds as well as share per-
21 sonnel, associates, facilities, and property with these
22 partner organizations, with or without reimburse-
23 ment, upon mutual agreement.”.

1 **SEC. 409. MISCELLANEOUS PROVISIONS.**

2 (a) **FUNCTIONS AND ACTIVITIES.**—Section 15 of the
3 of the National Institute of Standards and Technology Act
4 (15 U.S.C. 278e) is amended—

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

7 (2) by striking “transportation services for em-
8 ployees of the Institute” and inserting “transpor-
9 tation services for employees, associates, or fellows
10 of the Institute”; and

11 (3) by striking “Code.” and inserting “Code;
12 and (i) the protection of Institute buildings and
13 other plant facilities, equipment, and property, and
14 of employees, associates, visitors, or other persons
15 located therein or associated therewith, notwith-
16 standing any other provision of law.”

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

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

22 “The Director, in conjunction with the National
23 Academy of Sciences, shall establish and conduct a post-
24 doctoral fellowship program that shall include not less
25 than 20 new fellows per fiscal year. In evaluating applica-
26 tions for fellowships under this section, the Director shall

1 give consideration to the goal of promoting the participa-
2 tion of underrepresented minorities in research areas sup-
3 ported by the Institute.”.

4 **TITLE V—INNOVATION**

5 **SEC. 501. OFFICE OF INNOVATION AND ENTREPRENEUR-** 6 **SHIP.**

7 Section 25 of the Stevenson-Wydler Technology Inno-
8 vation Act of 1980 (15 U.S.C. 3720) is amended—

9 (1) in subsection (a) by inserting “with a Direc-
10 tor and full-time staff” after “Office of Innovation
11 and Entrepreneurship”;

12 (2) in subsection (b)—

13 (A) by amending paragraph (3) to read as
14 follows:

15 “(3) providing access to relevant data, research,
16 and technical assistance on innovation and commer-
17 cialization, including best practices for university-
18 based incubators and accelerators;”;

19 (B) by redesignating paragraphs (4) and
20 (5) as paragraphs (6) and (7), respectively; and

21 (C) by inserting the following after para-
22 graph (3):

23 “(4) oversee the implementation of the loan
24 guarantee programs and the Regional Innovation

1 Program established under sections 26 and 27, re-
2 spectively;

3 “(5) develop, within 180 days after the date of
4 enactment of the America Competes Reauthorization
5 Act of 2013, and update at least every five years, a
6 strategic plan to guide the activities of the Office of
7 Innovation and Entrepreneurship which shall—

8 “(A) specify and prioritize near-term and
9 long-term goals, objectives, and policies to ac-
10 celerate innovation and advance the commer-
11 cialization of research and development, includ-
12 ing federally funded research and development,
13 set forth the anticipated time for achieving the
14 objectives, and identify metrics for use in as-
15 sessing progress toward such objectives;

16 “(B) describe how the Department of
17 Commerce is working in conjunction with other
18 Federal agencies to foster innovation and com-
19 mercialization across the United States; and

20 “(C) provide a summary of the activities,
21 including the development of metrics to evalu-
22 ate regional innovation strategies undertaken
23 through the Regional Innovation Research and
24 Information Program established under section
25 27(e).”;

1 (3) by amending subsection (c) to read as fol-
2 lows:

3 “(c) ADVISORY COMMITTEE.—

4 “(1) ESTABLISHMENT.—The Secretary shall es-
5 tablish or designate an advisory committee, which
6 shall meet at least twice each fiscal year, to provide
7 advice to the Secretary on carrying out the duties
8 and responsibilities of the Office of Innovation and
9 Entrepreneurship.

10 “(2) REPORT TO CONGRESS.—The advisory
11 committee shall prepare a report, to be submitted to
12 the Committee on Science, Space, and Technology of
13 the House of Representatives and the Committee on
14 Commerce, Science, and Transportation of the Sen-
15 ate every 3 years. The first report shall be submitted
16 not later than 1 year after the date of enactment of
17 the America Competes Reauthorization Act of 2013
18 and shall include—

19 “(A) an assessment of the strategic plan
20 developed under subsection (b)(5) and the
21 progress made in implementing the plan and
22 the duties of the Office of Innovation and En-
23 trepreneurship;

24 “(B) an assessment of how the Office of
25 Innovation and Entrepreneurship is working

1 with other Federal agencies to meet the goals
2 and duties of the office; and

3 “(C) any recommendations for how the Of-
4 fice of Innovation and Entrepreneurship could
5 be improved.”; and

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

7 “(d) AUTHORIZATION OF APPROPRIATIONS.—There
8 are authorized to be appropriated to the Secretary
9 \$5,000,000 for each of fiscal years 2014 through 2018
10 to carry out this section.”.

11 **SEC. 502. FEDERAL LOAN GUARANTEES FOR INNOVATIVE**
12 **TECHNOLOGIES IN MANUFACTURING.**

13 Section 26(t) of the Stevenson-Wydler Technology
14 Innovation Act of 1980 (15 U.S.C. 3721(t)) is amended
15 by striking “fiscal years 2011 through 2013” and insert-
16 ing “fiscal years 2014 through 2018”.

17 **SEC. 503. REGIONAL INNOVATION PROGRAM.**

18 Section 27 of the Stevenson-Wydler Technology Inno-
19 vation Act of 1980 (15 U.S.C. 3722) is amended—

20 (1) in subsection (b), by adding at the end the
21 following:

22 “(8) FUNDING.—The Secretary may accept
23 funds from other Federal agencies to support grants
24 and activities under this subsection.”; and

1 (2) in subsection (i), by striking “fiscal years
2 2011 through 2013” and inserting “fiscal years
3 2014 through 2018”.

4 **SEC. 504. INNOVATION VOUCHER PILOT PROGRAM.**

5 Section 25 of the Stevenson-Wydler Technology Inno-
6 vation Act of 1980 (15 U.S.C. 3720) as amended by sec-
7 tion 501 of this Act, is further amended by adding at the
8 end the following:

9 “(e) INNOVATION VOUCHER PILOT PROGRAM.—

10 “(1) IN GENERAL.—The Secretary, acting
11 through the Office of Innovation and Entrepreneur-
12 ship and in conjunction with the States, shall estab-
13 lish an innovation voucher pilot program to accel-
14 erate innovative activities and enhance the competi-
15 tiveness of small and medium-sized manufacturers in
16 the United States. The pilot program shall—

17 “(A) foster collaborations between small
18 and medium-sized manufacturers and research
19 institutions; and

20 “(B) enable small and medium-sized man-
21 ufacturers to access technical expertise and ca-
22 pabilities that will lead to the development of
23 innovative products or manufacturing processes,
24 including through—

1 “(i) research and development, includ-
2 ing proof of concept, technical develop-
3 ment, and compliance testing activities;

4 “(ii) early-stage product development,
5 including engineering design services; and

6 “(iii) technology transfer and related
7 activities.

8 “(2) AWARD SIZE.—The Secretary shall com-
9 petitively award vouchers worth up to \$20,000 to
10 small and medium-sized manufacturers for use at el-
11 igible research institutions to acquire the services de-
12 scribed in paragraph (1)(B).

13 “(3) STREAMLINED PROCEDURES.—The Sec-
14 retary shall streamline and simplify the application,
15 administrative, and reporting procedures for vouch-
16 ers administered under the program.

17 “(4) REGULATIONS.—Prior to awarding any
18 vouchers under the program, the Secretary shall pro-
19 mulgate regulations—

20 “(A) establishing criteria for the selection
21 of recipients of awards under this subsection;

22 “(B) establishing procedures regarding fi-
23 nancial reporting and auditing—

24 “(i) to ensure that awards are used
25 for the purposes of the program; and

1 “(ii) that are in accordance with
2 sound accounting practices; and

3 “(C) describing any other policies, proce-
4 dures, or information necessary to implement
5 this subsection, including those intended to
6 streamline and simplify the program in accord-
7 ance with paragraph (3).

8 “(5) TRANSFER AUTHORITY.—The Secretary
9 may transfer funds appropriated to the Department
10 of Commerce to other Federal agencies for the per-
11 formance of services authorized under this sub-
12 section.

13 “(6) ADMINISTRATIVE COSTS.—All of the
14 amounts appropriated to carry out this subsection
15 for a fiscal year shall be used for vouchers awarded
16 under this subsection, except that the Secretary may
17 set aside a percentage of such amounts for eligible
18 research institutions performing the services de-
19 scribed in paragraph (1)(B) to defray administrative
20 costs associated with the services. The Secretary
21 shall establish a single, fixed percentage for such
22 purposes that will apply to all eligible research insti-
23 tutions.

24 “(7) OUTREACH.—The Secretary may use cen-
25 ters established under section 25 of the National In-

1 stitute of Standards and Technology Act (15 U.S.C.
2 278k) to provide information about the program es-
3 tablished under this subsection and to conduct out-
4 reach to potential applicants, as appropriate.

5 “(8) REPORTS TO CONGRESS.—

6 “(A) PLAN.—Not later than 180 days
7 after the date of enactment of the America
8 Competes Reauthorization Act of 2013, the
9 Secretary shall transmit to Congress a plan
10 that will serve as a guide for the activities of
11 the program. The plan shall include a descrip-
12 tion of the specific objectives of the program
13 and the metrics that will be used in assessing
14 progress toward those objectives.

15 “(B) OUTCOMES.—Not later than 3 years
16 after the date of enactment of the America
17 Competes Reauthorization Act of 2013, the
18 Secretary shall transmit to Congress a report
19 containing—

20 “(i) a summary of the activities car-
21 ried out under this subsection;

22 “(ii) an assessment of the impact of
23 such activities on the innovative capacity of
24 small and medium-sized manufacturers re-

1 ceiving assistance under the pilot program;
2 and

3 “(iii) any recommendations for admin-
4 istrative and legislative action that could
5 optimize the effectiveness of the pilot pro-
6 gram.

7 “(9) COORDINATION AND NONDUPLICATION.—
8 To the maximum extent practicable, the Secretary
9 shall ensure that the activities carried out under this
10 subsection are coordinated with, and do not dupli-
11 cate the efforts of, other programs within the Fed-
12 eral Government.

13 “(10) ELIGIBLE RESEARCH INSTITUTIONS DE-
14 FINED.—For the purposes of this subsection, the
15 term ‘eligible research institution’ means—

16 “(A) an institution of higher education, as
17 such term is defined in section 101(a) of the
18 Higher Education Act of 1965 (20 U.S.C.
19 1001(a));

20 “(B) a Federal laboratory;

21 “(C) a federally funded research and devel-
22 opment center; or

23 “(D) a Hollings Manufacturing Extension
24 Center established under section 25 of the Na-

1 tional Institute of Standards and Technology
2 Act (15 U.S.C. 278k).

3 “(11) AUTHORIZATION OF APPROPRIATIONS.—
4 There are authorized to be appropriated to the Sec-
5 retary to carry out the pilot program in this sub-
6 section \$5,000,000 for each of fiscal years 2014
7 through 2018.”.

8 **SEC. 505. FEDERAL ACCELERATION OF STATE TECH-**
9 **NOLOGY COMMERCIALIZATION PILOT PRO-**
10 **GRAM.**

11 The Stevenson-Wydler Technology Innovation Act of
12 1980 (15 U.S.C. 3701 et seq.) is amended by adding at
13 the end the following:

14 **“SEC. 28. FEDERAL ACCELERATION OF STATE TECH-**
15 **NOLOGY COMMERCIALIZATION PILOT PRO-**
16 **GRAM.**

17 “(a) AUTHORITY.—

18 “(1) ESTABLISHMENT.—The Secretary shall es-
19 tablish a Federal Acceleration of State Technology
20 Commercialization Pilot Program or FAST Com-
21 mercialization Pilot Program to award grants to
22 States, or consortia thereof, for the purposes de-
23 scribed in paragraph (2). Awards under this section
24 shall be made through a competitive, merit-based
25 process.

1 “(2) PURPOSE.—The purpose of the program
2 under this section is to advance United States pro-
3 ductivity and global competitiveness by accelerating
4 commercialization of innovative technology by
5 leveraging Federal support for State commercializa-
6 tion efforts. The program shall provide matching
7 funds to a State, or consortium thereof, for the ac-
8 celeration of commercialization activities and the
9 promotion of small manufacturing enterprises in the
10 United States.

11 “(b) APPLICATION.—Applications for awards under
12 this section shall be submitted in such a manner, at such
13 a time, and containing such information as the Secretary
14 shall require, including—

15 “(1) a description of the current state of tech-
16 nology commercialization in the State or States, in-
17 cluding successes and barriers to commercialization;
18 and

19 “(2) a description of the State’s or consortium’s
20 plan for increasing commercialization of new tech-
21 nologies, products, processes, and services.

22 “(c) SELECTION CRITERIA.—The Secretary shall es-
23 tablish criteria for the selection of awardees, which shall
24 consider at a minimum a review of efforts during the fiscal
25 year prior to submitting an application to—

1 “(1) promote manufacturing; and

2 “(2) commercialize new technologies, products,
3 processes, and services, including activities to trans-
4 late federally funded research and technologies to
5 small manufacturing enterprises.

6 “(d) MATCHING REQUIREMENT.—A State or consor-
7 tium receiving a grant under this section shall provide
8 non-Federal cash contributions in an amount equal to 50
9 percent of the total cost of the project for which the grant
10 is provided.

11 “(e) COORDINATION AND NONDUPLICATION.—In
12 carrying out the program under this section, the Secretary
13 shall ensure that grants made under the program are co-
14 ordinated with, and do not duplicate, the efforts of other
15 commercialization programs within the Federal Govern-
16 ment.

17 “(f) EVALUATION.—

18 “(1) IN GENERAL.—Not later than 3 years
19 after the date of enactment of the America Com-
20 petes Reauthorization Act of 2013, the Secretary
21 shall enter into a contract with an independent enti-
22 ty, such as the National Academy of Sciences, to
23 conduct an evaluation of the program established
24 under subsection (a).

25 “(2) REQUIREMENTS.—The evaluation shall—

1 “(A) assess whether the program is achiev-
2 ing its goals;

3 “(B) include any recommendations for how
4 the program may be improved; and

5 “(C) include a recommendation as to
6 whether the program should be continued or
7 terminated.

8 “(g) DEFINITIONS.—In this section—

9 “(1) the term ‘State’ has the meaning given
10 that term in section 3 of the Public Works and Eco-
11 nomic Development Act of 1965 (42 U.S.C. 3122);
12 and

13 “(2) the term ‘commercialization’ has the
14 meaning given that term in section 9(e)(10) of the
15 Small Business Act (15 U.S.C. 638(e)(10)).

16 “(h) DURATION.—Each award shall be for a 5-year
17 period.

18 “(i) AUTHORIZATION OF APPROPRIATIONS.—There
19 are authorized to be appropriated to the Secretary
20 \$50,000,000 for each of fiscal years 2014 through 2016
21 to carry out this section.”.

1 **TITLE VI—DEPARTMENT OF**
2 **ENERGY**
3 **Subtitle A—Office of Science**

4 **SEC. 601. SHORT TITLE.**

5 This subtitle may be cited as the “Department of En-
6 ergy Office of Science Authorization Act of 2013”.

7 **SEC. 602. DEFINITIONS.**

8 Except as otherwise provided, in this subtitle:

9 (1) DEPARTMENT.—The term “Department”
10 means the Department of Energy.

11 (2) DIRECTOR.—The term “Director” means
12 the Director of the Office of Science.

13 (3) OFFICE OF SCIENCE.—The term “Office of
14 Science” means the Department of Energy Office of
15 Science.

16 (4) UNDER SECRETARY.—The term “Under
17 Secretary” means the Under Secretary for Science
18 and Energy.

19 (5) SECRETARY.—The term “Secretary” means
20 the Secretary of Energy.

21 **SEC. 603. MISSION OF THE OFFICE OF SCIENCE.**

22 Section 209 of the Department of Energy Organiza-
23 tion Act (42 U.S.C. 7139) is amended by adding at the
24 end the following:

1 “(c) MISSION.—The mission of the Office of Science
2 shall be the delivery of scientific discoveries, capabilities,
3 and major scientific tools to transform the understanding
4 of nature and to advance the energy, economic, and na-
5 tional security of the United States.

6 “(d) DUTIES.—In support of this mission, the Direc-
7 tor shall carry out programs on basic energy sciences, bio-
8 logical and environmental research, advanced scientific
9 computing research, fusion energy sciences, high energy
10 physics, and nuclear physics through activities focused
11 on—

12 “(1) Science for Discovery to unravel nature’s
13 mysteries through activities which range from the
14 study of subatomic particles, atoms, and molecules
15 that make up the materials of our everyday world to
16 the study of DNA, proteins, cells, and entire biologi-
17 cal systems;

18 “(2) Science for National Need by—

19 “(A) advancing a clean energy agenda
20 through research on energy production, storage,
21 transmission, efficiency, and use; and

22 “(B) advancing our understanding of the
23 Earth and its climate through research in at-
24 mospheric and environmental sciences and cli-
25 mate change; and

1 “(3) National Scientific User Facilities to de-
2 liver the 21st century tools of science, engineering,
3 and technology and provide the Nation’s researchers
4 with the most advanced tools of modern science in-
5 cluding accelerators, colliders, supercomputers, light
6 sources and neutron sources, and facilities for study-
7 ing complex molecular systems and the nanoworld.

8 “(e) SUPPORTING ACTIVITIES.—The activities de-
9 scribed in subsection (d) shall include providing for rel-
10 evant facilities and infrastructure, programmatic analysis,
11 interagency coordination, and education and outreach ac-
12 tivities.

13 “(f) USER FACILITIES.—The Director shall carry out
14 the construction, operation, and maintenance of user fa-
15 cilities to support the activities described in subsection (d).
16 As practicable, these facilities shall serve the needs of the
17 Department, industry, the academic community, and other
18 relevant activities for the purposes of advancing the mis-
19 sions of the Department.

20 “(g) OTHER AUTHORIZED ACTIVITIES.—In addition
21 to the activities authorized under the Department of En-
22 ergy Office of Science Authorization Act of 2013, the Of-
23 fice of Science shall carry out other such activities as it
24 is authorized or required to carry out by law.

1 “(h) COORDINATION AND JOINT ACTIVITIES WITH
2 OTHER DEPARTMENT OF ENERGY PROGRAMS.—The
3 Under Secretary shall ensure the coordination of activities
4 under the Department of Energy Office of Science Author-
5 ization Act of 2013 with the other activities of the Depart-
6 ment, and shall support joint activities among the pro-
7 grams of the Department.”.

8 **SEC. 604. BASIC ENERGY SCIENCES PROGRAM.**

9 (a) PROGRAM.—As part of the activities authorized
10 under the amendment made by section 603, the Director
11 shall carry out a program in basic energy sciences, includ-
12 ing materials sciences and engineering, chemical sciences,
13 physical biosciences, and geosciences, for the purpose of
14 providing the scientific foundations for new energy tech-
15 nologies.

16 (b) BASIC ENERGY SCIENCES USER FACILITIES.—

17 (1) IN GENERAL.—The Director shall carry out
18 a subprogram to support and oversee the construc-
19 tion, operation, and maintenance of national user fa-
20 cilities that support the program under this section.
21 As practicable, these facilities shall serve the needs
22 of the Department, industry, the academic commu-
23 nity, and other relevant entities to create and exam-
24 ine new materials and chemical processes for the
25 purposes of advancing new energy technologies and

1 improving the competitiveness of the United States.

2 These facilities shall include—

3 (A) x-ray light sources;

4 (B) neutron sources;

5 (C) electron beam microcharacterization
6 centers;

7 (D) nanoscale science research centers;

8 and

9 (E) other facilities the Director considers
10 appropriate, consistent with section 209(f) of
11 the Department of Energy Organization Act
12 (42 U.S.C. 7139(f)).

13 (2) FACILITY RESEARCH AND DEVELOPMENT.—

14 The Director shall carry out research and develop-
15 ment on advanced accelerator and storage ring tech-
16 nologies relevant to the Basic Energy Sciences user
17 facilities, in consultation with the Office of Science's
18 High Energy Physics and Nuclear programs.

19 (3) FACILITY CONSTRUCTION AND UP-

20 GRADES.—Consistent with the Office of Science's

21 project management practices, the Director shall

22 support construction of—

23 (A) an upgrade of the Advanced Photon

24 Source to improve brightness and performance;

1 (B) a Second Target Station at the Spall-
2 ation Neutron Source to double user capacity
3 and expand the range of useful neutron ener-
4 gies produced; and

5 (C) the Linear Coherent Light Source II
6 to increase user capacity, expand the x-ray
7 wavelength range, and improve user control ca-
8 pabilities of the Linear Coherent Light Source.

9 (c) LIGHT SOURCE LEADERSHIP INITIATIVE.—

10 (1) ESTABLISHMENT OF INITIATIVE.—In sup-
11 port of the program authorized in subsection (b), the
12 Director shall establish an initiative to sustain and
13 advance global leadership of light source user facili-
14 ties.

15 (2) STRATEGY.—Not later than 9 months after
16 the date of enactment of this Act, and biennially
17 thereafter, the Director shall prepare, in consulta-
18 tion with relevant stakeholders, and submit to the
19 Committee on Science, Space, and Technology of the
20 House of Representatives and the Committee on En-
21 ergy and Natural Resources of the Senate a light
22 source leadership strategy that—

23 (A) identifies, prioritizes, and describes
24 plans for the development, construction, and op-
25 eration of light sources over the next decade;

1 (B) describes plans for optimizing manage-
2 ment and use of existing light source facilities;
3 and

4 (C) assesses the international outlook for
5 light source user facilities and describes plans
6 for United States cooperation in such projects.

7 (3) COMMENTS AND RECOMMENDATIONS.—Not
8 later than 45 days after submission of the plan de-
9 scribed in paragraph (2), the Basic Energy Sciences
10 Advisory Committee shall provide the Director and
11 the Committee on Science, Space, and Technology of
12 the House of Representatives and the Committee on
13 Energy and Natural Resources of the Senate com-
14 ments on and recommendations for improving the
15 plan.

16 (4) PROPOSED BUDGET.—The Director shall
17 transmit annually to Congress a proposed budget
18 corresponding to the activities identified in the plan.

19 (d) ENERGY FRONTIER RESEARCH CENTERS.—

20 (1) IN GENERAL.—The Director shall carry out
21 a grant program to provide awards, on a competi-
22 tive, merit-reviewed basis, to multi-institutional col-
23 laborations or other appropriate entities to conduct
24 fundamental and use-inspired energy research to ac-

1 celerate scientific breakthroughs related to needs
2 identified in—

3 (A) the Grand Challenges report of the
4 Department’s Basic Energy Sciences Advisory
5 Committee;

6 (B) the report of the Department’s Basic
7 Energy Sciences Advisory Committee entitled
8 “From Quanta to the Continuum: Opportuni-
9 ties for Mesoscale Science”;

10 (C) the Basic Energy Sciences Basic Re-
11 search Needs workshop report;

12 (D) energy-related Grand Challenges for
13 Engineering, as described by the National
14 Academy of Engineering; or

15 (E) other relevant reports identified by the
16 Director.

17 (2) COLLABORATIONS.—A collaboration receiv-
18 ing a grant under this subsection may include mul-
19 tiple types of institutions and private sector entities.

20 (3) SELECTION AND DURATION.—

21 (A) IN GENERAL.—A collaboration under
22 this subsection shall be selected for a period of
23 5 years. An Energy Frontier Research Center
24 already in existence and supported by the Di-
25 rector on the date of enactment of this Act may

1 continue to receive support for a period of 5
2 years beginning on the date of establishment of
3 that center.

4 (B) REAPPLICATION.—After the end of the
5 period described in subparagraph (A), a grantee
6 may reapply for selection for a second period of
7 5 years on a competitive, merit-reviewed basis.

8 (C) TERMINATION.—The Director may ter-
9minate an underperforming center at any time.

10 (4) NO FUNDING FOR CONSTRUCTION.—No
11 funding provided pursuant to this subsection may be
12 used for the construction of new buildings or facili-
13 ties.

14 **SEC. 605. BIOLOGICAL AND ENVIRONMENTAL RESEARCH.**

15 (a) IN GENERAL.—As part of the activities author-
16 ized under section 209 of the Department of Energy Orga-
17 nization Act (42 U.S.C. 7139), and coordinated with the
18 activities authorized under section 604 and section 606,
19 the Director shall carry out a program of research, devel-
20 opment, and demonstration in the areas of biological sys-
21 tems science and climate and environmental science, in-
22 cluding subsurface science, to support the energy and en-
23 vironmental missions of the Department.

24 (b) BIOLOGICAL SYSTEMS SCIENCE ACTIVITIES.—

1 (1) ACTIVITIES.—As part of the activities au-
2 thorized under subsection (a), the Director shall
3 carry out research, development, and demonstration
4 activities in fundamental, structural, computational,
5 and systems biology to increase systems-level under-
6 standing of the complex biological systems, which
7 shall include activities to—

8 (A) accelerate breakthroughs and new
9 knowledge that will enable cost-effective sus-
10 tainable production of—

11 (i) biomass-based liquid transpor-
12 tation fuels;

13 (ii) bioenergy; and

14 (iii) biobased materials,

15 that support the energy and environmental mis-
16 sions of the Department;

17 (B) improve understanding of the global
18 carbon cycle, including processes for removing
19 carbon dioxide from the atmosphere, through
20 photosynthesis and other biological processes,
21 for sequestration and storage; and

22 (C) understand the biological mechanisms
23 used to destroy, immobilize, or remove contami-
24 nants from subsurface environments.

25 (2) BIOENERGY RESEARCH CENTERS.—

1 (A) IN GENERAL.—In carrying out activi-
2 ties under paragraph (1), the Director shall
3 support at least 3 bioenergy research centers to
4 accelerate advanced research and development
5 of biomass-based liquid transportation fuels,
6 bioenergy, and biobased materials that support
7 the energy and environmental missions of the
8 Department and are produced from a variety of
9 regionally diverse feedstocks.

10 (B) SELECTION AND DURATION.—A center
11 established under subparagraph (A) shall be se-
12 lected on a competitive, merit-reviewed basis for
13 a period of 5 years beginning on the date of es-
14 tablishment of that center. A center already in
15 existence on the date of enactment of this Act
16 may continue to receive support for a period of
17 5 years beginning on the date of establishment
18 of that center.

19 (C) TERMINATION.—The Director may ter-
20 minate an underperforming center at any time.

21 (3) REPEAL.—Section 977 of the Energy Policy
22 Act of 2005 (42 U.S.C. 16317) is repealed.

23 (c) CLIMATE AND ENVIRONMENTAL SCIENCE ACTIVI-
24 TIES.—

1 (1) IN GENERAL.—As part of the activities au-
2 thorized under subsection (a), and in coordination
3 with activities carried out under subsection (b), the
4 Director shall carry out climate and environmental
5 science research, which shall include activities to—

6 (A) understand, observe, and model the re-
7 sponse of Earth’s atmosphere and biosphere to
8 increased concentrations of greenhouse gas
9 emissions and any associated changes in cli-
10 mate;

11 (B) understand the processes for immo-
12 bilization, or removal of, and understand the
13 movement of, energy production-derived con-
14 taminants such as radionuclides and heavy met-
15 als, and understand the process of sequestration
16 and destruction of carbon dioxide in subsurface
17 environments, including at facilities of the De-
18 partment; and

19 (C) inform potential mitigation and adap-
20 tation options for increased concentrations of
21 greenhouse gas emissions and any associated
22 changes in climate.

23 (2) SUBSURFACE BIOGEOCHEMICAL RE-
24 SEARCH.—

1 (A) IN GENERAL.—As part of the activities
2 described in paragraph (1), the Director shall
3 carry out research to advance a fundamental
4 understanding of coupled physical, chemical,
5 and biological processes for controlling the
6 movement of sequestered carbon and subsurface
7 environmental contaminants.

8 (B) COORDINATION.—

9 (i) DIRECTOR.—The Director shall
10 carry out activities under this paragraph in
11 accordance with priorities established by
12 the Under Secretary to support and accel-
13 erate the decontamination of relevant fa-
14 cilities managed by the Department.

15 (ii) UNDER SECRETARY.—The Under
16 Secretary shall ensure the coordination of
17 activities of the Department, including ac-
18 tivities under this paragraph, to support
19 and accelerate the decontamination of rel-
20 evant of relevant facilities managed by the
21 Department.

22 (3) CLIMATE AND EARTH MODELING.—As part
23 of the activities described in paragraph (1), the Di-
24 rector, in collaboration with the Advanced Scientific
25 Computing Research program described in section

1 606, shall carry out research to develop, evaluate,
2 and use high-resolution regional climate, global cli-
3 mate, and Earth models to inform decisions on re-
4 ducing the impacts of a changing climate. Such
5 modeling shall include greenhouse gas emissions,
6 land use, and interaction among human and Earth
7 systems.

8 (4) LOW DOSE RADIATION RESEARCH PRO-
9 GRAM.—

10 (A) IN GENERAL.—The Director shall
11 carry out a research program on low dose radi-
12 ation. The purpose of the program is to en-
13 hance the scientific understanding of and re-
14 duce uncertainties associated with the effects of
15 exposure to low dose radiation in order to in-
16 form improved risk management methods.

17 (B) STUDY.—Not later than 60 days after
18 the date of enactment of this Act, the Director
19 shall enter into an agreement with the National
20 Academies to conduct a study assessing the
21 current status and development of a long-term
22 strategy for low dose radiation research. The
23 study shall be conducted in coordination with
24 Federal agencies that perform ionizing radi-
25 ation-effects research.

1 (C) CONTENTS.—The study performed
2 under subparagraph (B) shall—

3 (i) identify current scientific chal-
4 lenges for understanding the long-term ef-
5 fects of ionizing radiation;

6 (ii) assess the status of current low
7 dose radiation research in the United
8 States and internationally;

9 (iii) formulate overall scientific goals
10 for the future of low dose radiation re-
11 search in the United States;

12 (iv) recommend a long-term strategic
13 and prioritized research agenda to address
14 scientific research goals for overcoming the
15 identified scientific challenges in coordina-
16 tion with other research efforts;

17 (v) define the essential components of
18 a research program that would address
19 this research agenda within the universities
20 and the National Laboratories; and

21 (vi) assess the cost-benefit effective-
22 ness of such a program.

23 (D) 5-YEAR RESEARCH PLAN.—Not later
24 than 90 days after the completion of the study
25 performed under subparagraph (C), the Sec-

1 retary shall deliver to the Committee on
2 Science, Space, and Technology of the House of
3 Representatives and the Committee on Energy
4 and Natural Resources of the Senate a 5-year
5 research plan that responds to the study's find-
6 ings and recommendations and identifies and
7 prioritizes research needs.

8 **SEC. 606. ADVANCED SCIENTIFIC COMPUTING RESEARCH**
9 **PROGRAM.**

10 (a) IN GENERAL.—As part of the activities author-
11 ized under section 209 of the Department of Energy Orga-
12 nization Act (42 U.S.C. 7139), the Director shall carry
13 out a research, development, demonstration, and commer-
14 cial application program to advance computational and
15 networking capabilities for data-driven discovery and to
16 analyze, model, simulate, and predict complex phenomena
17 relevant to the development of new energy technologies
18 and the competitiveness of the United States.

19 (b) COORDINATION.—

20 (1) DIRECTOR.—The Director shall carry out
21 activities under this section in accordance with prior-
22 ities established by the Under Secretary to deter-
23 mine and meet the computational and networking
24 research and facility needs of the Office of Science

1 and all other relevant energy technology and energy
2 efficiency programs within the Department.

3 (2) UNDER SECRETARY.—The Under Secretary
4 shall ensure the coordination of the activities of the
5 Department, including activities under this section,
6 to determine and meet the computational and net-
7 working research and facility needs of the Office of
8 Science and all other relevant energy technology and
9 energy efficiency programs within the Department.

10 (c) RESEARCH TO SUPPORT ENERGY APPLICA-
11 TIONS.—

12 (1) IN GENERAL.—As part of the activities au-
13 thorized under subsection (a), the program shall
14 support research in high-performance computing and
15 networking relevant to energy applications including
16 modeling, simulation, and advanced data analytics
17 for basic and applied energy research programs car-
18 ried out by the Secretary.

19 (2) REPORT.—Not later than one year after the
20 date of enactment of this Act, the Secretary shall
21 transmit to the Congress a plan to integrate and le-
22 verage the expertise and capabilities of the program
23 described in subsection (a), as well as other relevant
24 computational and networking research programs
25 and resources supported by the Federal Government,

1 to advance the missions of the Department’s applied
2 energy and energy efficiency programs.

3 (d) APPLIED MATHEMATICS AND SOFTWARE DEVEL-
4 OPMENT FOR HIGH-END COMPUTING SYSTEMS.—The Di-
5 rector shall carry out activities to develop, test, and sup-
6 port mathematics, models, and algorithms for complex
7 systems, as well as programming environments, tools, lan-
8 guages, and operating systems for high-end computing
9 systems (as defined in section 2 of the Department of En-
10 ergy High-End Computing Revitalization Act of 2004 (15
11 U.S.C. 5541)).

12 (e) EXASCALE COMPUTING PROGRAM.—Section 3 of
13 the Department of Energy High-End Computing Revital-
14 ization Act of 2004 (15 U.S.C. 5542) is amended—

15 (1) in subsection (a)—

16 (A) in paragraph (1), by striking “pro-
17 gram” and inserting “coordinated program
18 across the Department”;

19 (B) by striking “and” at the end of para-
20 graph (1);

21 (C) by striking the period at the end of
22 paragraph (2) and inserting “; and”; and

23 (D) by adding at the end the following new
24 paragraph:

1 “(3) partner with universities, National Labora-
2 tories, and industry to ensure the broadest possible
3 application of the technology developed in this pro-
4 gram to other challenges in science, engineering,
5 medicine, and industry.”;

6 (2) in subsection (b)(2), by striking “vector”
7 and all that follows through “architectures” and in-
8 serting “computer technologies that show promise of
9 substantial reductions in power requirements and
10 substantial gains in parallelism of multicore proc-
11 essors, concurrency, memory and storage, band-
12 width, and reliability”; and

13 (3) by striking subsection (d) and inserting the
14 following:

15 “(d) EXASCALE COMPUTING PROGRAM.—

16 “(1) IN GENERAL.—The Secretary shall con-
17 duct a coordinated research program to develop
18 exascale computing systems to advance the missions
19 of the Department.

20 “(2) EXECUTION.—The Secretary shall,
21 through competitive merit review, establish two or
22 more National Laboratory-industry-university part-
23 nerships to conduct integrated research, develop-
24 ment, and engineering of multiple exascale architec-
25 tures, and—

1 “(A) conduct mission-related co-design ac-
2 tivities in developing such exascale platforms;

3 “(B) develop those advancements in hard-
4 ware and software technology required to fully
5 realize the potential of an exascale production
6 system in addressing Department target appli-
7 cations and solving scientific problems involving
8 predictive modeling and simulation and large-
9 scale data analytics and management; and

10 “(C) explore the use of exascale computing
11 technologies to advance a broad range of
12 science and engineering.

13 “(3) ADMINISTRATION.—In carrying out this
14 program, the Secretary shall—

15 “(A) provide, on a competitive, merit-re-
16 viewed basis, access for researchers in United
17 States industry, institutions of higher edu-
18 cation, National Laboratories, and other Fed-
19 eral agencies to these exascale systems, as ap-
20 propriate; and

21 “(B) conduct outreach programs to in-
22 crease the readiness for the use of such plat-
23 forms by domestic industries, including manu-
24 facturers.

25 “(4) REPORTS.—

1 “(A) INTEGRATED STRATEGY AND PRO-
2 GRAM MANAGEMENT PLAN.—The Secretary
3 shall submit to Congress, not later than 90
4 days after the date of enactment of the Depart-
5 ment of Energy Office of Science Authorization
6 Act of 2013, a report outlining an integrated
7 strategy and program management plan, in-
8 cluding target dates for prototypical and pro-
9 duction exascale platforms, interim milestones
10 to reaching these targets, functional require-
11 ments, roles and responsibilities of National
12 Laboratories and industry, acquisition strategy,
13 and estimated resources required, to achieve
14 this exascale system capability. The report shall
15 include the Secretary’s plan for Departmental
16 organization to manage and execute the
17 Exascale Computing Program, including defini-
18 tion of the roles and responsibilities within the
19 Department to ensure an integrated program
20 across the Department. The report shall also
21 include a plan for ensuring balance and
22 prioritizing across ASCR subprograms in a flat
23 or slow-growth budget environment.

24 “(B) STATUS REPORTS.—At the time of
25 the budget submission of the Department for

1 each fiscal year, the Secretary shall submit a
2 report to Congress that describes the status of
3 milestones and costs in achieving the objectives
4 of the exascale computing program.

5 “(C) EXASCALE MERIT REPORT.—At least
6 18 months prior to the initiation of construction
7 or installation of any exascale-class computing
8 facility, the Secretary shall transmit a plan to
9 the Congress detailing—

10 “(i) the proposed facility’s cost projec-
11 tions and capabilities to significantly accel-
12 erate the development of new energy tech-
13 nologies;

14 “(ii) technical risks and challenges
15 that must be overcome to achieve success-
16 ful completion and operation of the facility;
17 and

18 “(iii) an independent assessment of
19 the scientific and technological advances
20 expected from such a facility relative to
21 those expected from a comparable invest-
22 ment in expanded research and applica-
23 tions at terascale-class and petascale-class
24 computing facilities, including an evalua-
25 tion of where investments should be made

1 in the system software and algorithms to
2 enable these advances.”.

3 (f) DEFINITIONS.—Section 2 of the Department of
4 Energy High-End Computing Revitalization Act of 2004
5 (15 U.S.C. 5541) is amended by striking paragraphs (1)
6 through (5) and inserting the following:

7 “(1) CO-DESIGN.—The term ‘co-design’ means
8 the joint development of application algorithms,
9 models, and codes with computer technology archi-
10 tectures and operating systems to maximize effective
11 use of high-end computing systems.

12 “(2) DEPARTMENT.—The term ‘Department’
13 means the Department of Energy.

14 “(3) EXASCALE.—The term ‘exascale’ means
15 computing system performance at or near 10 to the
16 18th power floating point operations per second.

17 “(4) HIGH-END COMPUTING SYSTEM.—The
18 term ‘high-end computing system’ means a com-
19 puting system with performance that substantially
20 exceeds that of systems that are commonly available
21 for advanced scientific and engineering applications.

22 “(5) INSTITUTION OF HIGHER EDUCATION.—
23 The term ‘institution of higher education’ has the
24 meaning given the term in section 101(a) of the
25 Higher Education Act of 1965 (20 U.S.C. 1001(a)).

1 “(6) NATIONAL LABORATORY.—The term ‘Na-
2 tional Laboratory’ means any one of the seventeen
3 laboratories owned by the Department.

4 “(7) SECRETARY.—The term ‘Secretary’ means
5 the Secretary of Energy.

6 “(8) SOFTWARE TECHNOLOGY.—The term
7 ‘software technology’ includes optimal algorithms,
8 programming environments, tools, languages, and
9 operating systems for high-end computing systems.”.

10 **SEC. 607. FUSION ENERGY RESEARCH PROGRAM.**

11 (a) PROGRAM.—As part of the activities authorized
12 under section 209 of the Department of Energy Organiza-
13 tion Act (42 U.S.C. 7139), the Director shall carry out
14 a fusion energy sciences research and enabling technology
15 development program to effectively address the scientific
16 and engineering challenges to building a cost-competitive
17 fusion power plant and a competitive fusion power indus-
18 try in the United States. As part of this program, the Di-
19 rector shall carry out research activities to expand the fun-
20 damental understandings of plasmas and matter at very
21 high temperatures and densities.

22 (b) ITER.—The Director shall coordinate and carry
23 out the responsibilities of the United States with respect
24 to the ITER international fusion project pursuant to the
25 Agreement on the Establishment of the International Fu-

1 sion Energy Organization for the Joint Implementation of
2 the ITER Project.

3 (c) IDENTIFICATION OF PRIORITIES.—

4 (1) REPORT.—Not later than 18 months after
5 the date of enactment of this Act, the Secretary
6 shall transmit to the Congress a report on the De-
7 partment's proposed research and development ac-
8 tivities in magnetic fusion over the 10 years fol-
9 lowing the date of enactment of this Act under at
10 least three realistic budget scenarios. The report
11 shall—

12 (A) identify specific areas of fusion energy
13 research enabling technology development in
14 which the United States can and should estab-
15 lish or solidify a lead in the global fusion energy
16 development effort; and

17 (B) identify priorities for initiation of facil-
18 ity construction and facility decommissioning
19 under each of those scenarios.

20 (2) REVIEW.—The report shall be reviewed by
21 the Fusion Energy Sciences Advisory Committee
22 prior to its transmittal to Congress. The Secretary
23 shall provide the Fusion Energy Sciences Advisory
24 Committee with the opportunity and sufficient re-
25 sources to submit its own recommendations and ad-

1 ditional views on the Department's final report to
2 Congress.

3 (d) FUSION MATERIALS RESEARCH AND DEVELOP-
4 MENT.—The Director, in coordination with the Assistant
5 Secretary for Nuclear Energy of the Department, shall
6 carry out research and development activities to identify,
7 characterize, and create materials that can endure the
8 neutron, plasma, and heat fluxes expected in a commercial
9 fusion power plant. As part of the activities authorized
10 under subsection (c), the Secretary shall—

11 (1) provide an assessment of the need for a fa-
12 cility or facilities that can examine and test potential
13 fusion and next generation fission materials and
14 other enabling technologies relevant to the develop-
15 ment of commercial fusion power plants; and

16 (2) provide an assessment of whether a single
17 new facility that substantially addresses magnetic
18 fusion, inertial fusion, and next generation fission
19 materials research needs is feasible, in conjunction
20 with the expected capabilities of facilities operational
21 as of the date of enactment of this Act.

22 (e) INERTIAL FUSION ENERGY RESEARCH AND DE-
23 VELOPMENT PROGRAM.—The Secretary shall carry out a
24 program of research and technology development in iner-

1 tial fusion for energy applications, including ion beam,
2 laser, and pulsed power fusion systems.

3 **SEC. 608. HIGH ENERGY PHYSICS PROGRAM.**

4 (a) IN GENERAL.—As part of the activities author-
5 ized under section 209 of the Department of Energy Orga-
6 nization Act (42 U.S.C. 7139), the Director shall carry
7 out a research program on the elementary constituents of
8 matter and energy and the nature of space and time.

9 (b) NEUTRINO RESEARCH.—As part of the program
10 described in subsection (a), the Director shall carry out
11 research activities on rare decay processes and the nature
12 of the neutrino, which may—

13 (1) include collaborations with the National
14 Science Foundation or international collaborations
15 on relevant research projects; and

16 (2) utilize components of existing accelerator
17 facilities to produce neutrino beams of sufficient in-
18 tensity to explore research priorities identified by the
19 High Energy Physics Advisory Panel or the National
20 Academy of Sciences.

21 (c) DARK ENERGY AND DARK MATTER RE-
22 SEARCH.—As part of the program described in subsection
23 (a), the Director shall carry out research activities on the
24 nature of dark energy and dark matter. These activities
25 shall be consistent with the research priorities identified

1 by the High Energy Physics Advisory Panel or the Na-
2 tional Academy of Sciences, and may include—

3 (1) collaborations with the National Aeronautics
4 and Space Administration, the National Science
5 Foundation, or international collaborations on rel-
6 evant research projects; and

7 (2) the development of space-based, land-based,
8 and underground facilities and experiments.

9 (d) ACCELERATOR RESEARCH AND DEVELOP-
10 MENT.—As part of the program described in subsection
11 (a), the Director shall carry out research and development
12 in advanced accelerator concepts and technologies, includ-
13 ing laser technologies, to reduce the necessary scope and
14 cost for the next generation of particle accelerators.

15 (e) UNDERGROUND RESEARCH FACILITIES STEW-
16 ARDSHIP.—

17 (1) IN GENERAL.—As part of the program de-
18 scribed in subsection (a), and coordinated with the
19 activities authorized under section 609, the Director
20 shall—

21 (A) construct, operate, and maintain facili-
22 ties necessary to underground research con-
23 ducted by the Department; and

1 (B) carry out a competitive grant program
2 to conduct research in underground science and
3 engineering.

4 (2) REPORT.—Not later than 180 days after
5 the date of enactment of this Act, the Director shall
6 transmit to Congress a report describing the under-
7 ground research priorities of the Department, taking
8 into consideration previous reports by the High En-
9 ergy Physics Advisory Panel, the National Research
10 Council, the Department, the National Science
11 Foundation, and other appropriate entities.

12 (3) COORDINATION WITH OTHER FEDERAL
13 AGENCIES.—The Director shall conduct outreach
14 programs and may form partnerships to improve the
15 utilization of and ensure access to underground re-
16 search facilities by other Federal agencies.

17 (4) TRANSFER OF STEWARDSHIP.—If the De-
18 partment determines that one or more underground
19 research facilities are no longer required to carry out
20 the program described in subsection (a), the Sec-
21 retary may designate another appropriate steward of
22 underground research facilities. If such stewardship
23 is transferred, the Secretary shall provide notifica-
24 tion to Congress within 30 days.

1 (f) INTERNATIONAL COLLABORATION.—The Direc-
2 tor, as practicable and in coordination with other appro-
3 priate Federal agencies as necessary, shall ensure the ac-
4 cess of United States researchers to the most advanced
5 accelerator facilities and research capabilities in the world,
6 including the Large Hadron Collider.

7 **SEC. 609. NUCLEAR PHYSICS PROGRAM.**

8 (a) PROGRAM.—As part of the activities authorized
9 under section 209 of the Department of Energy Organiza-
10 tion Act (42 U.S.C. 7139), the Director shall carry out
11 a research program, and support relevant facilities, to dis-
12 cover and understand various forms of nuclear matter.

13 (b) FACILITY CONSTRUCTION.—Consistent with the
14 Office of Science’s project management practices, the Di-
15 rector shall continue to support the construction of the
16 Facility for Rare Isotope Beams.

17 (c) ISOTOPE DEVELOPMENT AND PRODUCTION FOR
18 RESEARCH APPLICATIONS.—

19 (1) IN GENERAL.—The Director shall carry out
20 a program for the production of isotopes that the
21 Secretary determines are needed for research, in-
22 cluding—

23 (A) the development of techniques to
24 produce isotopes; and

1 (B) support for infrastructure required for
2 isotope research and production.

3 (2) COORDINATION.—In making the determina-
4 tion described in paragraph (1), the Secretary
5 shall—

6 (A) ensure that, consistent with Federal
7 Register notice 30 Fed. Reg. 3247 1965, iso-
8 tope production activities do not compete with
9 private industry unless critical national inter-
10 ests necessitate the Federal Government's in-
11 volvement; and

12 (B) consider any relevant recommendations
13 made by Federal advisory committees, the Na-
14 tional Academies, and interagency working
15 groups in which the Department participates.

16 **SEC. 610. SCIENCE LABORATORIES INFRASTRUCTURE PRO-**
17 **GRAM.**

18 (a) PROGRAM.—The Director shall carry out a pro-
19 gram to improve the safety, efficiency, and mission readi-
20 ness of infrastructure at Office of Science laboratories.
21 The program shall include projects to—

22 (1) renovate or replace space that does not
23 meet research needs;

24 (2) replace facilities that are no longer cost ef-
25 fective to renovate or operate;

1 (3) modernize utility systems to prevent failures
2 and ensure efficiency;

3 (4) remove excess facilities to allow safe and ef-
4 ficient operations; and

5 (5) construct modern facilities to conduct ad-
6 vanced research in controlled environmental condi-
7 tions.

8 (b) APPROACH.—In carrying out this section, the Di-
9 rector shall utilize all available approaches and mecha-
10 nisms, including capital line items, minor construction
11 projects, energy savings performance contracts, utility en-
12 ergy service contracts, alternative financing, and expense
13 funding, as appropriate.

14 **SEC. 611. AUTHORIZATION OF APPROPRIATIONS.**

15 There are authorized to be appropriated to the Sec-
16 retary for the activities of the Office of Science—

17 (1) \$5,247,000,000 for fiscal year 2014;

18 (2) \$5,410,389,600 for fiscal year 2015;

19 (3) \$5,680,909,080 for fiscal year 2016;

20 (4) \$5,964,954,534 for fiscal year 2017; and

21 (5) \$6,263,202,261 for fiscal year 2018.

22 **Subtitle B—ARPA-E**

23 **SEC. 621. SHORT TITLE.**

24 This subtitle may be cited as the “ARPA-E Reau-
25 thorization Act of 2013”.

1 **SEC. 622. ARPA-E AMENDMENTS.**

2 Section 5012 of the America COMPETES Act (42
3 U.S.C. 16538) is amended—

4 (1) by redesignating subsection (n) as sub-
5 section (o) and inserting after subsection (m) the
6 following new subsection:

7 “(n) PROTECTION OF PROPRIETARY INFORMA-
8 TION.—The following categories of information collected
9 by the Advanced Research Projects Agency—Energy from
10 recipients of financial assistance awards shall be consid-
11 ered privileged and confidential and not subject to dislo-
12 sure pursuant to section 552 of title 5, United States
13 Code:

14 “(1) Plans for commercialization of technologies
15 developed under the award, including business plans,
16 technology to market plans, market studies, and cost
17 and performance models.

18 “(2) Investments provided to an awardee from
19 third parties, such as venture capital, hedge fund, or
20 private equity firms, including amounts and percent-
21 age of ownership of the awardee provided in return
22 for such investments.

23 “(3) Additional financial support that the
24 awardee plans to invest or has invested into the
25 technology developed under the award, or that the
26 awardee is seeking from third parties.

1 “(4) Revenue from the licensing or sale of new
2 products or services resulting from the research con-
3 ducted under the award.”; and

4 (2) in paragraph (2) of subsection (o), as so re-
5 designated by paragraph (1) of this section, by—

6 (A) striking “and” at the end of subpara-
7 graph (D);

8 (B) striking the period at the end of sub-
9 paragraph (E) and inserting a semicolon; and

10 (C) adding at the end the following:

11 “(F) \$379,000,000 for fiscal year 2014;

12 “(G) \$397,950,000 for fiscal year 2015;

13 “(H) \$417,847,500 for fiscal year 2016;

14 “(I) \$438,739,875 for fiscal year 2017;

15 and

16 “(J) \$460,676,869 for fiscal year 2018.”.

17 **Subtitle C—Energy Innovation**

18 **SEC. 641. ENERGY INNOVATION HUBS.**

19 (a) AUTHORIZATION OF PROGRAM.—

20 (1) IN GENERAL.—The Secretary of Energy
21 shall carry out a program to enhance the Nation’s
22 economic, environmental, and energy security by
23 making grants to consortia for establishing and op-
24 erating Energy Innovation Hubs to conduct and
25 support, whenever practicable at one centralized lo-

1 cation, multidisciplinary, collaborative research, de-
2 velopment, demonstration, and commercial applica-
3 tion of advanced energy technologies.

4 (2) TECHNOLOGY DEVELOPMENT FOCUS.—The
5 Secretary shall designate for each Hub a unique ad-
6 vanced energy technology focus.

7 (3) COORDINATION.—The Secretary shall en-
8 sure the coordination of, and avoid unnecessary du-
9 plication of, the activities of Hubs with those of
10 other Department of Energy research entities, in-
11 cluding the National Laboratories, the Advanced Re-
12 search Projects Agency-Energy, Energy Frontier Re-
13 search Centers, and within industry. Such coordina-
14 tion shall include convening and consulting with rep-
15 resentatives of staff of the Department of Energy,
16 representatives from Hubs and the qualifying enti-
17 ties that are members of the consortia operating the
18 Hubs, and representatives of such other entities as
19 the Secretary considers appropriate, to share re-
20 search results, program plans, and opportunities for
21 collaboration.

22 (b) CONSORTIA.—

23 (1) ELIGIBILITY.—To be eligible to receive a
24 grant under this section for the establishment and
25 operation of a Hub, a consortium shall—

1 (A) be composed of no fewer than 2 quali-
2 fying entities;

3 (B) operate subject to a binding agreement
4 entered into by its members that documents—

5 (i) the proposed partnership agree-
6 ment, including the governance and man-
7 agement structure of the Hub;

8 (ii) measures to enable cost-effective
9 implementation of the program under this
10 section;

11 (iii) a proposed budget, including fi-
12 nancial contributions from non-Federal
13 sources;

14 (iv) a plan for managing intellectual
15 property rights; and

16 (v) an accounting structure that en-
17 ables the Secretary to ensure that the con-
18 sortium has complied with the require-
19 ments of this section; and

20 (C) operate as a nonprofit organization.

21 (2) APPLICATION.—A consortium seeking to es-
22 tablish and operate a Hub under this section, acting
23 through a prime applicant, shall transmit to the Sec-
24 retary an application at such time, in such form,
25 and accompanied by such information as the Sec-

1 retary shall require, including a detailed description
2 of the elements of the consortium agreement re-
3 quired under paragraph (1)(B). If the consortium
4 members will not be located at one centralized loca-
5 tion, such application shall include a communica-
6 tions plan that ensures close coordination and inte-
7 gration of the Hub's activities.

8 (c) SELECTION AND SCHEDULE.—The Secretary
9 shall select consortia for grants for the establishment and
10 operation of Hubs through competitive selection processes.
11 In selecting consortia, the Secretary shall consider the in-
12 formation a consortium must disclose according to sub-
13 section (b), as well as any existing facilities a consortium
14 will provide for Hub activities. Grants made to a Hub shall
15 be for a period not to exceed 5 years, after which the grant
16 may be renewed, subject to a competitive selection process.
17 A Hub already in existence on the date of enactment of
18 this Act may continue to receive support for a period of
19 5 years beginning on the date of establishment of that
20 Hub.

21 (d) HUB OPERATIONS.—

22 (1) IN GENERAL.—Each Hub shall conduct or
23 provide for multidisciplinary, collaborative research,
24 development, demonstration, and commercial appli-
25 cation of advanced energy technologies within the

1 technology development focus designated under sub-
2 section (a)(2). Each Hub shall—

3 (A) encourage collaboration and commu-
4 nication among the member qualifying entities
5 of the consortium and awardees by conducting
6 activities whenever practicable at one central-
7 ized location;

8 (B) develop and publish on the Depart-
9 ment of Energy’s website proposed plans and
10 programs;

11 (C) submit an annual report to the Sec-
12 retary summarizing the Hub’s activities, includ-
13 ing detailing organizational expenditures, and
14 describing each project undertaken by the Hub;
15 and

16 (D) monitor project implementation and
17 coordination.

18 (2) CONFLICTS OF INTEREST.—

19 (A) PROCEDURES.—Hubs shall maintain
20 conflict of interest procedures, consistent with
21 those of the Department of Energy, to ensure
22 that employees and consortia designees for Hub
23 activities who are in decisionmaking capacities
24 disclose all material conflicts of interest, includ-

1 ing financial, organizational, and personal con-
2 flicts of interest.

3 (B) DISQUALIFICATION AND REVOCA-
4 TION.—The Secretary may disqualify an appli-
5 cation or revoke funds distributed to a Hub if
6 the Secretary discovers a failure to comply with
7 conflict of interest procedures established under
8 subparagraph (A).

9 (3) PROHIBITION ON CONSTRUCTION.—

10 (A) IN GENERAL.—No funds provided pur-
11 suant to this section may be used for construc-
12 tion of new buildings or facilities for Hubs.
13 Construction of new buildings or facilities shall
14 not be considered as part of the non-Federal
15 share of a Hub cost-sharing agreement.

16 (B) TEST BED AND RENOVATION EXCEP-
17 TION.—Nothing in this subsection shall prohibit
18 the use of funds provided pursuant to this sec-
19 tion, or non-Federal cost share funds, for the
20 construction of a test bed or renovations to ex-
21 isting buildings or facilities for the purposes of
22 research if the Secretary determines that the
23 test bed or renovations are limited to a scope
24 and scale necessary for the research to be con-
25 ducted.

1 (e) TERMINATION.—The Secretary may terminate an
2 underperforming Hub at any time.

3 (f) DEFINITIONS.—For purposes of this section:

4 (1) ADVANCED ENERGY TECHNOLOGY.—The
5 term “advanced energy technology” means—

6 (A) an innovative technology—

7 (i) that produces energy from solar,
8 wind, geothermal, biomass, tidal, wave,
9 ocean, or other renewable energy resources;

10 (ii) that produces nuclear energy;

11 (iii) for carbon capture and sequestra-
12 tion;

13 (iv) that enables advanced vehicles,
14 vehicle components, and related tech-
15 nologies that result in significant energy
16 savings;

17 (v) that generates, transmits, distrib-
18 utes, utilizes, or stores energy more effi-
19 ciently than conventional technologies, in-
20 cluding through Smart Grid technologies;
21 or

22 (vi) that enhances the energy inde-
23 pendence and security of the United States
24 by enabling improved or expanded supply
25 and production of domestic energy re-

1 sources, including coal, oil, and natural
2 gas; or

3 (B) research, development, demonstration,
4 and commercial application activities necessary
5 to ensure the long-term, secure, and sustainable
6 supply of energy critical elements.

7 (2) ENERGY CRITICAL ELEMENT.—The term
8 “energy critical element” means any of a class of
9 chemical elements that have a high risk of a supply
10 disruption and are critical to one or more new, en-
11 ergy-related technologies such that a shortage of
12 such element would significantly inhibit large-scale
13 deployment of technologies that produce, transmit,
14 store, or conserve energy.

15 (3) HUB.—The term “Hub” means an Energy
16 Innovation Hub established in accordance with this
17 section.

18 (4) QUALIFYING ENTITY.—The term “quali-
19 fying entity” means—

20 (A) an institution of higher education;

21 (B) an appropriate State or Federal entity,
22 including the Department of Energy Federally
23 Funded Research and Development Centers;

24 (C) a nongovernmental organization with
25 expertise in advanced energy technology re-

1 search, development, demonstration, or com-
2 mercial application; or

3 (D) any other relevant entity the Secretary
4 considers appropriate.

5 **SEC. 642. PARTICIPATION IN THE INNOVATION CORPS PRO-**
6 **GRAM.**

7 The Secretary of Energy shall enter into an agree-
8 ment with the Director of the National Science Founda-
9 tion to enable researchers funded by the Department of
10 Energy to participate in the Innovation Corps program
11 authorized by section 307.

12 **SEC. 643. TECHNOLOGY TRANSFER.**

13 (a) AMENDMENTS.—Section 1001 of the Energy Pol-
14 icy Act of 2005 (42 U.S.C. 16391) is amended—

15 (1) in subsection (e) by adding at the end the
16 following: “Distribution of awards from the Fund
17 shall be made, on a merit-reviewed basis, under the
18 direction of the Technology Transfer Coordinator
19 appointed under subsection (a).”;

20 (2) by redesignating subsections (f) and (g) as
21 subsections (h) and (i), respectively; and

22 (3) by inserting after subsection (e) the fol-
23 lowing new subsections:

24 “(f) AGREEMENTS FOR COMMERCIALIZING TECH-
25 NOLOGY.—

1 “(1) IN GENERAL.—The Secretary may permit
2 the directors of the National Laboratories to exercise
3 Agreements for Commercializing Technology author-
4 ity and execute agreements with non-Federal entities
5 to sponsor research and development activities at the
6 National Laboratories.

7 “(2) ELIGIBILITY.—The Secretary shall permit
8 the directors of the National Laboratories to execute
9 agreements authorized by this section with non-Fed-
10 eral entities, including non-Federal entities that have
11 received Federal funding.

12 “(3) CONTINUATION OF AUTHORITY.—The Sec-
13 retary shall continue to provide Agreements for
14 Commercializing Technology authority for at least 2
15 years after the date of enactment of this Act.

16 “(4) REPORT.—Upon completion of the Agree-
17 ments for Commercializing Technology pilot pro-
18 gram, the Secretary shall submit a report to the
19 Committee on Science, Space, and Technology of the
20 House of Representatives and the Committee on En-
21 ergy and Natural Resources of the Senate that in-
22 cludes the results of the pilot program and explains
23 the Department’s decision whether or not to con-
24 tinue permitting the directors of the National Lab-

1 oratories to exercise Agreements for Commer-
2 cializing Technology authority.

3 “(g) INCLUSION OF TECHNOLOGY MATURATION IN
4 AUTHORIZED TECHNOLOGY TRANSFER ACTIVITIES.—The
5 Secretary shall permit the directors of the National Lab-
6 oratories to use funds appropriated to support technology
7 transfer to carry out technology maturation activities to
8 identify and improve potential commercial application op-
9 portunities and demonstrate applications of research and
10 technologies arising from National Laboratory activities.”.

11 (b) DELEGATION OF AUTHORITY FOR TECHNOLOGY
12 TRANSFER AGREEMENTS.—

13 (1) AUTHORITY.—The Secretary of Energy
14 shall delegate to directors of the National Labora-
15 tories signature authority for any technology trans-
16 fer agreement with a total cost of not more than
17 \$500,000, including both National Laboratory con-
18 tributions and the project recipient cost share con-
19 tribution.

20 (2) AGREEMENTS INCLUDED.—The agreements
21 to which this subsection applies include—

22 (A) Cooperative Research and Develop-
23 ment Agreements;

24 (B) non-Federal Work for Others Agree-
25 ments; and

1 (C) Agreements for Commercializing Tech-
2 nology.

3 **SEC. 644. ELIMINATION OF COST SHARING REQUIREMENT**
4 **FOR RESEARCH AND DEVELOPMENT ACTIVI-**
5 **TIES CONDUCTED BY UNIVERSITIES AND**
6 **NONPROFIT INSTITUTIONS.**

7 Section 988(b) of the Energy Policy Act of 2005 (42
8 U.S.C. 16352(b)) is amended—

9 (1) in paragraph (1), by striking “Except as
10 provided in paragraphs (2) and (3)” and inserting
11 “Except as provided in paragraphs (2), (3) and
12 (4)”;

13 (2) by adding at the end the following new
14 paragraph:

15 “(4) EXEMPTIONS.—

16 “(A) IN GENERAL.—Paragraph (1) shall
17 not apply to a research or development activity
18 performed by universities and other nonprofit
19 institutions.

20 “(B) DEFINITION.—In this paragraph, the
21 term ‘nonprofit institution’ has the meaning
22 given that term in section 4(3) of the Steven-
23 son-Wydler Technology Innovation Act of 1980
24 (15 U.S.C. 3703(3)).”

1 **SEC. 645. PILOT RACE TO THE TOP FOR ENERGY EFFI-**
2 **CIENCY AND GRID MODERNIZATION PRO-**
3 **GRAM.**

4 The Secretary of Energy shall carry out a pilot pro-
5 gram to promote innovative technologies and practices at
6 the State, local, or tribal level or by electric cooperatives
7 to increase energy efficiency, increase distributed elec-
8 tricity generation, and modernize the grid. The Depart-
9 ment shall provide—

10 (1) informational resources as appropriate to
11 potential applicants; and

12 (2) technical assistance awards to carry out
13 these activities on a competitive merit-reviewed
14 basis.

15 **[SEC. 646. EXTERNAL REGULATION.**

16 **[(a) IN GENERAL.—**The Secretary shall coordinate
17 with the Occupational Safety and Health Administration
18 and Nuclear Regulatory Commission to provide for the ef-
19 ficient external regulation of nuclear safety and occupa-
20 tional and health responsibilities at any nonmilitary en-
21 ergy laboratory owned or operated by the Department.]

22 **[(b) DECOMMISSIONING.—**Not later than 1 year
23 after the date of enactment of this Act, the Secretary shall
24 enter into a memorandum of understanding with the Nu-
25 clear Regulatory Commission establishing decommis-

1 sioning procedures and requirements for nonmilitary en-
2 ergy laboratories owned or operated by the Department.】

3 【(c) MEMORANDA OF UNDERSTANDING.—Not later
4 than 1 year after the date of enactment of this Act, the
5 Nuclear Regulatory Commission and the Occupational
6 Safety and Health Administration shall enter into and
7 transmit to the Congress a memorandum of under-
8 standing to govern the exercise of their respective authori-
9 ties over nuclear safety and occupational safety and health
10 of nonmilitary energy laboratories owned or operated by
11 the Department.】

12 【(d) PLAN.—Not later than 18 months after the date
13 of enactment of this Act, the Secretary shall transmit to
14 the Congress a plan for the termination of the Depart-
15 ment’s regulatory and enforcement responsibilities for
16 nonmilitary energy laboratories owned or operated by the
17 Department.】