

114TH CONGRESS
1ST SESSION

H. R. 1806

IN THE SENATE OF THE UNITED STATES

MAY 21, 2015

Received; read twice and referred to the Committee on Commerce, Science,
and Transportation

AN ACT

To provide for technological innovation through the prioritization of Federal investment in basic research, fundamental scientific discovery, and development to improve the competitiveness of the United States, and for other purposes.

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

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

2 (a) **SHORT TITLE.**—This Act may be cited as the
3 “America COMPETES Reauthorization Act of 2015”.

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

Sec. 1. Short title; table of contents.

Sec. 2. Definitions.

TITLE I—NATIONAL SCIENCE FOUNDATION

Sec. 101. Authorization of appropriations.

Sec. 102. Findings.

Sec. 103. Policy objectives.

Sec. 104. Definitions.

Sec. 105. Accountability and transparency.

Sec. 106. Greater accountability in Federal funding for research.

Sec. 107. Obligation of major research equipment and facilities construction funds.

Sec. 108. Management and oversight of large facilities.

Sec. 109. Whistleblower education.

Sec. 110. Graduate student support.

Sec. 111. Permissible support.

Sec. 112. Expanding STEM opportunities.

Sec. 113. Review of education programs.

Sec. 114. Recompetition of awards.

Sec. 115. Sense of the Congress regarding industry investment in STEM education.

Sec. 116. Misrepresentation of research results.

Sec. 117. Research reproducibility and replication.

Sec. 118. Research grant conditions.

Sec. 119. Computing resources study.

Sec. 120. Scientific breakthrough prizes.

Sec. 121. Rotating personnel.

Sec. 122. Sense of Congress regarding Innovation Corps.

Sec. 123. Brain Research through Advancing Innovative Neurotechnologies Initiative.

Sec. 124. Noyce scholarship program amendments.

Sec. 125. Informal STEM education.

Sec. 126. Experimental Program to Stimulate Competitive Research.

Sec. 127. Hispanic Opportunity Program in Education and Science.

TITLE II—SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS

Sec. 201. Findings; sense of Congress.

Sec. 202. STEM Education Advisory Panel.

Sec. 203. Committee on STEM Education.

Sec. 204. STEM Education Coordinating Office.

TITLE III—OFFICE OF SCIENCE AND TECHNOLOGY POLICY

- Sec. 301. Authorization of appropriations.
- Sec. 302. Regulatory efficiency.
- Sec. 303. Coordination of international science and technology partnerships.
- Sec. 304. Alternative research funding models.
- Sec. 305. Amendments to prize competitions.
- Sec. 306. United States Chief Technology Officer.
- Sec. 307. National Research Council study on technology for emergency notifications on university campuses.

TITLE IV—NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

- Sec. 401. Authorization of appropriations.
- Sec. 402. Standards and conformity assessment.
- Sec. 403. Visiting Committee on Advanced Technology.
- Sec. 404. Police and security authority.
- Sec. 405. Education and outreach.
- Sec. 406. Programmatic planning report.
- Sec. 407. Assessments by the National Research Council.
- Sec. 408. Hollings Manufacturing Extension Partnership.
- Sec. 409. Elimination of obsolete reports.
- Sec. 410. Modifications to grants and cooperative agreements.
- Sec. 411. Information systems standards consultation.
- Sec. 412. United States-Israeli cooperation.

TITLE V—DEPARTMENT OF ENERGY SCIENCE

- Sec. 501. Mission.
- Sec. 502. Basic energy sciences.
- Sec. 503. Advanced scientific computing research.
- Sec. 504. High energy physics.
- Sec. 505. Biological and environmental research.
- Sec. 506. Fusion energy.
- Sec. 507. Nuclear physics.
- Sec. 508. Science laboratories infrastructure program.
- Sec. 509. Domestic manufacturing.
- Sec. 510. Authorization of appropriations.
- Sec. 511. Definitions.

TITLE VI—DEPARTMENT OF ENERGY APPLIED RESEARCH AND DEVELOPMENT

Subtitle A—Crosscutting Research and Development

- Sec. 601. Crosscutting research and development.
- Sec. 602. Strategic research portfolio analysis and coordination plan.
- Sec. 603. Strategy for facilities and infrastructure.
- Sec. 604. Energy Innovation Hubs.

Subtitle B—Electricity Delivery and Energy Reliability Research and Development

- Sec. 611. Distributed energy and electric energy systems.
- Sec. 612. Electric transmission and distribution research and development.

Subtitle C—Nuclear Energy Research and Development

- Sec. 621. Objectives.

- Sec. 622. Program objectives study.
- Sec. 623. Nuclear energy research and development programs.
- Sec. 624. Small modular reactor program.
- Sec. 625. Fuel cycle research and development.
- Sec. 626. Nuclear energy enabling technologies program.
- Sec. 627. Technical standards collaboration.
- Sec. 628. Available facilities database.

Subtitle D—Energy Efficiency and Renewable Energy Research and Development

- Sec. 641. Energy efficiency.
- Sec. 642. Next Generation Lighting Initiative.
- Sec. 643. Building standards.
- Sec. 644. Secondary electric vehicle battery use program.
- Sec. 645. Network for Manufacturing Innovation Program.
- Sec. 646. Advanced Energy Technology Transfer Centers.
- Sec. 647. Renewable energy.
- Sec. 648. Bioenergy program.
- Sec. 649. Concentrating solar power research program.
- Sec. 650. Renewable energy in public buildings.

Subtitle E—Fossil Energy Research and Development

- Sec. 661. Fossil energy.
- Sec. 662. Coal research, development, demonstration, and commercial application programs.
- Sec. 663. High efficiency gas turbines research and development.

Subtitle F—Advanced Research Projects Agency—Energy

- Sec. 671. ARPA—E amendments.

Subtitle G—Authorization of Appropriations

- Sec. 681. Authorization of appropriations.

Subtitle H—Definitions

- Sec. 691. Definitions.

TITLE VII—DEPARTMENT OF ENERGY TECHNOLOGY TRANSFER

Subtitle A—In General

- Sec. 701. Definitions.
- Sec. 702. Savings clause.

Subtitle B—Innovation Management at Department of Energy

- Sec. 712. Technology transfer and transitions assessment.
- Sec. 713. Sense of Congress.
- Sec. 714. Nuclear energy innovation.

Subtitle C—Cross-Sector Partnerships and Grant Competitiveness

- Sec. 721. Agreements for Commercializing Technology pilot program.
- Sec. 722. Public-private partnerships for commercialization.

Sec. 723. Inclusion of early-stage technology demonstration in authorized technology transfer activities.

Sec. 724. Funding competitiveness for institutions of higher education and other nonprofit institutions.

Sec. 725. Participation in the Innovation Corps program.

Subtitle D—Assessment of Impact

Sec. 731. Report by Government Accountability Office.

TITLE VIII—SENSE OF CONGRESS

Sec. 801. Sense of Congress.

1 **SEC. 2. DEFINITIONS.**

2 In this Act—

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

5 (2) the term “STEM education” means edu-
6 cation in the subjects of STEM, including computer
7 science; and

8 (3) the term “Committee on STEM Education”
9 means the Committee on Science, Technology, Engi-
10 neering, and Mathematics Education established
11 under section 101 of the America COMPETES Re-
12 authorization Act of 2010 (42 U.S.C. 6621).

13 **TITLE I—NATIONAL SCIENCE**
14 **FOUNDATION**

15 **SEC. 101. AUTHORIZATION OF APPROPRIATIONS.**

16 (a) FISCAL YEAR 2016.—

17 (1) IN GENERAL.—There are authorized to be
18 appropriated to the Foundation \$7,597,140,000 for
19 fiscal year 2016.

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

3 (A) \$6,186,300,000 shall be made avail-
4 able to carry out research and related activities,
5 including—

6 (i) \$823,000,000 for the Biological
7 Science Directorate;

8 (ii) \$1,038,000,000 for the Computer
9 and Information Science and Engineering
10 Directorate;

11 (iii) \$1,010,000,000 for the Engineer-
12 ing Directorate;

13 (iv) \$1,200,000,000 for the Geo-
14 sciences Directorate;

15 (v) \$1,500,000,000 for the Mathe-
16 matical and Physical Science Directorate;

17 (vi) \$150,000,000 for the Social, Be-
18 havioral, and Economics Directorate, of
19 which \$50,000,000 shall be for the Na-
20 tional Center for Science and Engineering
21 Statistics;

22 (vii) \$38,520,000 for the Office of
23 International Science and Engineering;

24 (viii) \$425,300,000 for Integrative
25 Activities; and

1 (ix) \$1,480,000 for the United States
2 Arctic Commission;

3 (B) \$866,000,000 shall be made available
4 for education and human resources;

5 (C) \$200,310,000 shall be made available
6 for major research equipment and facilities con-
7 struction;

8 (D) \$325,000,000 shall be made available
9 for agency operations and award management;

10 (E) \$4,370,000 shall be made available for
11 the Office of the National Science Board; and

12 (F) \$15,160,000 shall be made available
13 for the Office of Inspector General.

14 (b) FISCAL YEAR 2017.—

15 (1) IN GENERAL.—There are authorized to be
16 appropriated to the Foundation \$7,597,140,000 for
17 fiscal year 2017.

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19 authorized by paragraph (1)—

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2 for agency operations and award management;

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4 the Office of the National Science Board; and

5 (F) \$15,160,000 shall be made available
6 for the Office of Inspector General.

7 **SEC. 102. FINDINGS.**

8 Congress finds the following:

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

12 (2) The Foundation has made major contribu-
13 tions for more than 60 years to strengthen and sus-
14 tain the Nation's academic research enterprise.

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

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

22 (5) Congress applauds the Foundation's rec-
23 ognition that wise stewardship of taxpayer dollars is
24 necessary to maintain and ensure the public's trust

1 for funding of fundamental scientific and engineer-
2 ing research.

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

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

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

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

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

1 (11) Many of the complex problems and chal-
2 lenges facing the Nation increasingly require the col-
3 laboration of multiple scientific disciplines. The
4 Foundation should continue to emphasize cross-di-
5 rectorate research collaboration and activities to ad-
6 dress these issues and encourage interdisciplinary re-
7 search.

8 (12) The Foundation should meet the highest
9 standards of efficiency, transparency, and account-
10 ability in its stewardship of public funds.

11 (13) The Foundation is charged with the re-
12 sponsibilities—

13 (A) to develop and encourage the pursuit
14 of a national policy for the promotion of basic
15 research and education in the sciences;

16 (B) to initiate, support, and conduct basic
17 scientific research and to appraise the impact of
18 research on industrial development and the gen-
19 eral welfare;

20 (C) to initiate, support, and conduct sci-
21 entific research activities in connection with
22 matters relating to the national defense, at the
23 request of the Secretary of Defense;

24 (D) to award scholarships and graduate
25 fellowships in the sciences;

1 (E) to foster the interchange of scientific
2 information among scientists and across sci-
3 entific disciplines;

4 (F) to evaluate scientific research pro-
5 grams undertaken by agencies of the Federal
6 Government, and to correlate the Foundation's
7 scientific research with that undertaken by indi-
8 viduals and by public and private research
9 groups;

10 (G) to communicate effectively to Amer-
11 ican citizens the relevance of public investments
12 in scientific discovery and technological innova-
13 tion to the Nation's security, prosperity, and
14 welfare; and

15 (H) to establish such special commissions
16 as the Board considers necessary.

17 (14) The emerging global economic, scientific,
18 and technical environment challenges long standing
19 assumptions about domestic and international policy,
20 requiring the Foundation to play a more proactive
21 role in sustaining the competitive advantage of the
22 United States through superior research capabilities.

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

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

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

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

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

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

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

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

5 (2) To increase overall workforce skills by—

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

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

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

15 **SEC. 104. DEFINITIONS.**

16 In this title:

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

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

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

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

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

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

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

18 It is the sense of Congress that—

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

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

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

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

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

15 (b) DETERMINATION.—A determination referred to
16 in subsection (a) is a justification by the responsible Foun-
17 dation official as to how the research grant or cooperative
18 agreement promotes the progress of science in the United
19 States, consistent with the Foundation mission as estab-
20 lished in the National Science Foundation Act of 1950 (42
21 U.S.C. 1861 et seq.), and further—

22 (1) is worthy of Federal funding; and

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

1 (A) increased economic competitiveness in
2 the United States;

3 (B) advancement of the health and welfare
4 of the American public;

5 (C) development of an American STEM
6 workforce that is globally competitive;

7 (D) increased public scientific literacy and
8 public engagement with science and technology
9 in the United States;

10 (E) increased partnerships between aca-
11 demia and industry in the United States;

12 (F) support for the national defense of the
13 United States; or

14 (G) promotion of the progress of science in
15 the United States.

16 (c) WRITTEN JUSTIFICATION.—Public announce-
17 ment of each award of Federal funding described in sub-
18 section (a) shall include a written justification from the
19 responsible Foundation official as to how a grant or coop-
20 erative agreement meets the requirements of subsection
21 (b).

22 (d) IMPLEMENTATION.—A determination under sub-
23 section (b) shall be made after a research grant or cooper-
24 ative agreement proposal has satisfied the Foundation's
25 reviews for Merit and Broader Impacts. Nothing in this

1 section shall be construed as altering the Foundation’s in-
2 tellectual merit or broader impacts criteria for evaluating
3 grant applications.

4 **SEC. 107. OBLIGATION OF MAJOR RESEARCH EQUIPMENT**
5 **AND FACILITIES CONSTRUCTION FUNDS.**

6 No funds may be obligated for a fiscal year for a con-
7 struction project for the Foundation that has not com-
8 menced before the date of enactment of this Act until 30
9 days after the report required with respect to each such
10 fiscal year under section 14(a)(2) of the National Science
11 Foundation Authorization Act of 2002 (42 U.S.C. 1862n-
12 4(a)(2)) is transmitted to the Congress.

13 **SEC. 108. MANAGEMENT AND OVERSIGHT OF LARGE FA-**
14 **CILITIES.**

15 (a) **LARGE FACILITIES OFFICE.**—The Director shall
16 maintain a Large Facilities Office within the Office of the
17 Director. The functions of the Large Facilities Office shall
18 be to support the research directorates in the development,
19 implementation, and assessment of major multi-user re-
20 search facilities, including by—

21 (1) serving as the Foundation’s primary re-
22 source for all policy or process issues related to the
23 development and implementation of major multi-user
24 research facilities;

1 (2) serving as a Foundation-wide resource on
2 project management, including providing expert as-
3 sistance on nonscientific and nontechnical aspects of
4 project planning, budgeting, implementation, man-
5 agement, and oversight;

6 (3) coordinating and collaborating with research
7 directorates to share best management practices and
8 lessons learned from prior projects; and

9 (4) assessing projects during preconstruction
10 and construction phases for cost and schedule risk.

11 (b) OVERSIGHT OF LARGE FACILITIES.—The Direc-
12 tor shall appoint a senior agency official within the Office
13 of the Director whose primary responsibility is oversight
14 of major multi-user research facilities. The duties of this
15 official shall include—

16 (1) oversight of the development, construction,
17 and operation of major multi-user research facilities
18 across the Foundation;

19 (2) in collaboration with the directors of the re-
20 search directorates and other senior agency officials
21 as appropriate, ensuring that the requirements of
22 section 14(a) of the National Science Foundation
23 Authorization Act of 2002 are satisfied;

1 (3) serving as a liaison to the National Science
2 Board for approval and oversight of major multi-
3 user research facilities; and

4 (4) periodically reviewing and updating as nec-
5 essary Foundation policies and guidelines for the de-
6 velopment and construction of major multi-user re-
7 search facilities.

8 (c) POLICIES FOR LARGE FACILITY COSTS.—

9 (1) IN GENERAL.—The Director shall ensure
10 that the Foundation’s policies for developing and
11 managing major multi-user research facility con-
12 struction costs are consistent with the best practices
13 described in the March 2009 Government Account-
14 ability Office Report GAO–09–3SP, or any successor
15 report thereto.

16 (2) REPORT.—Not later than 12 months after
17 the date of enactment of this Act, the Director shall
18 submit to Congress the results of a study and a re-
19 port reforming the Foundation’s policies on financial
20 management of major multi-user research facilities,
21 including a description of any aspects of the policies
22 that diverge from the best practices recommended in
23 Government Accountability Office Report GAO–09–
24 3SP and the Uniform Guidance in 2 CFR Part 200.

25 (3) MANAGEMENT FEES.—

1 (A) DEFINITION.—In this paragraph, the
2 term “management fee” means a portion of an
3 award made by the Foundation for the purpose
4 of covering ordinary and necessary business ex-
5 penses necessary to maintain operational sta-
6 bility which are not otherwise allowable under
7 Cost Principles Uniform Guidance in 2 CFR
8 part 200, Subpart E, or any successor regula-
9 tion thereto.

10 (B) LIMITATION.—The Foundation may
11 provide management fees under an award only
12 if the awardee has demonstrated that it has
13 limited or no other financial resources available
14 for covering the expenses for which the manage-
15 ment fees are sought.

16 (C) FINANCIAL INFORMATION.—The
17 Foundation shall require award applicants to
18 provide income and financial information cov-
19 ering a period of no less than 3 prior years (or
20 in the case of an entity established less than 3
21 years prior to the entity’s application date, the
22 period beginning on the date of establishment
23 and ending on the application date), including
24 cash on hand and net asset information, in sup-
25 port of a request for management fees. The

1 Foundation shall also require awardees seeking
2 subsequent management fees to report to the
3 Foundation, prior to the consideration of such
4 a request, any sources of non-Federal funds re-
5 ceived in excess of \$100,000. This reporting
6 shall apply to the period following any initial
7 management fee award and for the consider-
8 ation of any subsequent fee.

9 (D) EXPENSE REPORTING.—The Founda-
10 tion shall require awardees to track and report
11 to the Foundation annually all expenses reim-
12 bursed or otherwise paid for with management
13 fee funds, in accordance with Federal account-
14 ing practices as established in Government Ac-
15 countability Office Report GAO–12–331G, or
16 any successor report thereto.

17 (E) REVIEW.—The Inspector General of
18 the Foundation may audit or review any Foun-
19 dation award for compliance with this sub-
20 section.

21 (F) PROHIBITED USES.—An awardee may
22 not use management fees for—

23 (i) costs allowable under Cost Prin-
24 ciples Uniform Guidance in 2 CFR part

1 200, Subpart E, or any successor regula-
2 tion thereto;

3 (ii) alcoholic beverages;

4 (iii) tickets to concerts, or sporting
5 and other entertainment events;

6 (iv) vacation or other travel for non-
7 business purposes;

8 (v) charitable contributions;

9 (vi) social or sporting club member-
10 ships;

11 (vii) meals or social activities for non-
12 business purposes;

13 (viii) luxury or personal items;

14 (ix) lobbying, as described in the Uni-
15 form Guidance at 2 CFR 200.450 or FAR
16 31.205–22; or

17 (x) any other purpose the Foundation
18 determines is inappropriate.

19 (G) REVIEW.—The Foundation shall re-
20 view management fee usage under each Foun-
21 dation award on at least an annual basis for
22 compliance with this paragraph and the Foun-
23 dation’s Large Facilities Manual.

24 (4) REPORT.—Not later than 12 months after
25 the date of enactment of this Act, the Director shall

1 submit to Congress a report describing the Founda-
2 tion's policies for developing and managing major
3 multi-user research facility construction costs, in-
4 cluding a description of any aspects of the policies
5 that diverge from the best practices recommended in
6 Government Accountability Office Report GAO-09-
7 3SP, or any successor report thereto, and the Uni-
8 form Guidance in 2 CFR part 200.

9 **SEC. 109. WHISTLEBLOWER EDUCATION.**

10 (a) IN GENERAL.—The Foundation shall be subject
11 to section 4712 of title 41, United States Code.

12 (b) EDUCATION AND TRAINING.—The Foundation
13 shall provide education and training for Foundation man-
14 agers and staff on the requirements of such section 4712,
15 and provide information on the law to all grantees, con-
16 tractors, and employees of such grantees and contractors.

17 **SEC. 110. GRADUATE STUDENT SUPPORT.**

18 (a) SENSE OF CONGRESS.—It is the sense of Con-
19 gress that the essential elements of the NSF Research
20 Traineeship Program, formerly the Integrative Graduate
21 Education and Research Traineeship program, (or any
22 successor thereto) should be maintained, including—

23 (1) collaborative research that transcends tradi-
24 tional disciplinary boundaries to solve large and

1 complex research problems of significant scientific
2 and societal importance; and

3 (2) providing students the opportunity to be-
4 come leaders in the science and engineering of the
5 future.

6 (b) MODELS FOR SUPPORT.—The Director shall
7 enter into an agreement with the National Research Coun-
8 cil to convene a workshop or roundtable to examine models
9 of Federal support for STEM graduate students, includ-
10 ing the Foundation’s Graduate Research Fellowship pro-
11 gram and comparable fellowship programs at other agen-
12 cies, traineeship programs, and the research assistant
13 model.

14 (c) PURPOSE.—The purpose of the workshop or
15 roundtable shall be to compare and evaluate the extent
16 to which each of these models helps to prepare graduate
17 students for diverse careers utilizing STEM degrees, in-
18 cluding at diverse types of institutions of higher education,
19 in industry, and at government agencies and research lab-
20 oratories, and to make recommendations regarding—

21 (1) how current Federal programs and models,
22 including programs and models at the Foundation,
23 can be improved;

1 (2) the appropriateness of the current distribu-
2 tion of funding among the different models at the
3 Foundation and across the agencies; and

4 (3) the appropriateness of creating a new edu-
5 cation and training program for graduate students
6 distinct from programs that provide direct financial
7 support, including the grants authorized in section
8 527 of the America COMPETES Reauthorization
9 Act of 2010 (42 U.S.C. 1862p–15).

10 (d) CRITERIA.—At a minimum, in comparing pro-
11 grams and models, the workshop or roundtable partici-
12 pants shall consider the capacity of such programs or
13 models to provide students with knowledge and skills—

14 (1) to become independent, creative, successful
15 researchers;

16 (2) to participate in large interdisciplinary re-
17 search projects, including in an international con-
18 text;

19 (3) to adhere to the highest standards for re-
20 search ethics;

21 (4) to become high-quality teachers utilizing the
22 most currently available evidence-based pedagogy;

23 (5) in oral and written communication, to both
24 technical and nontechnical audiences;

1 (6) in innovation, entrepreneurship, and busi-
2 ness ethics; and

3 (7) in program management.

4 (e) GRADUATE STUDENT INPUT.—The participants
5 in the workshop or roundtable shall include current or re-
6 cent STEM graduate students.

7 (f) REPORT.—Not later than 1 year after the date
8 of enactment of this Act, the National Research Council
9 shall submit to Congress a summary report of the findings
10 and recommendations of the workshop or roundtable con-
11 vened under this section.

12 **SEC. 111. PERMISSIBLE SUPPORT.**

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

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

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

24 (B) incentives and stipends for teachers
25 and instructional leaders who are involved in

1 assisting students and preparing students for
2 such competitions, if such activities fall outside
3 the regular duties and responsibilities of such
4 teachers and instructional leaders; and

5 (2) to broaden underrepresented secondary
6 school students' access to, and interest in, careers
7 that require academic preparation in STEM sub-
8 jects.

9 **SEC. 112. EXPANDING STEM OPPORTUNITIES.**

10 (a) IN GENERAL.—Within the Directorate for Edu-
11 cation and Human Resources (or any successor thereto),
12 under existing programs targeting broadening participa-
13 tion, the Director shall provide grants on a merit-reviewed,
14 competitive basis for research on programming that en-
15 gages underrepresented students in grades kindergarten
16 through 8 in STEM.

17 (b) USE OF FUNDS.—

18 (1) IN GENERAL.—Grants awarded under this
19 section shall be used for research to advance the en-
20 gagement of underrepresented students in grades
21 kindergarten through 8 in STEM through the devel-
22 opment and implementation of innovative before-
23 school, after-school, out-of-school, or summer activi-
24 ties, including programs (if applicable to the target
25 population) provided in a single-gender environment,

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

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

9 (A) the development and implementation of
10 programming described in subsection (a) for the
11 purpose of research;

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

15 (C) exposure of underrepresented youth to
16 role models in the fields of STEM, including re-
17 searchers in the National Laboratories, and
18 nearpeer mentors;

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

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

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

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

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

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

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

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

23 (K) efforts to effectively expand, broaden,
24 or scale-up existing activities or programs;

1 (L) creating State and regional workshops
2 to train K–12 teachers in science and tech-
3 nology project-based learning to provide instruc-
4 tion in how to initiate robotics and other STEM
5 competition team development programs; and

6 (M) encouraging and supporting efforts led
7 by institutions of higher education, businesses,
8 and local public and private educational agen-
9 cies to establish collaborative efforts to provide
10 K–12 students residing in areas with unemploy-
11 ment rates that exceed the national average by
12 1 percent or more.

13 (c) APPLICATION.—An applicant seeking funding
14 under the section shall submit an application at such time,
15 in such manner, and containing such information as may
16 be required. The application shall include, at a minimum,
17 the following:

18 (1) A description of the target audience to be
19 served by the program.

20 (2) A description of the process for recruitment
21 and selection of students, as appropriate.

22 (3) A description of how such research activity
23 may inform programming that engages underrep-
24 resented students in grades kindergarten through 8
25 in STEM.

1 (4) A description of how such research activity
2 may inform programming that promotes student
3 academic achievement in STEM.

4 (5) An evaluation plan that includes, at a min-
5 imum, the use of outcome-oriented measures to de-
6 termine the impact and efficacy of activities being
7 researched.

8 (d) AWARDS.—In awarding grants under this section,
9 the Director shall give priority to applicants which, for the
10 purpose of grant activity, include or partner with a non-
11 profit, nongovernmental organization that has extensive
12 experience and expertise in increasing the participation of
13 underrepresented students in STEM.

14 (e) ACCOUNTABILITY AND DISSEMINATION.—

15 (1) EVALUATION REQUIRED.—Not later than 5
16 years after the date of enactment of this Act, the
17 Director shall evaluate the grants provided under
18 this section. In addition to evaluating the effective-
19 ness of the grant activities, such evaluation shall—

20 (A) use a common set of benchmarks and
21 assessment tools to identify best practices and
22 materials developed or demonstrated by the re-
23 search; and

24 (B) to the extent practicable, combine the
25 research resulting from the grant activity with

1 the current research on serving underrep-
2 resented students in grades kindergarten
3 through 8.

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

9 (A) the results of the evaluation; and

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

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

18 **SEC. 113. REVIEW OF EDUCATION PROGRAMS.**

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

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

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

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

15 **SEC. 114. RECOMPETITION OF AWARDS.**

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

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

20 (2) the majority of Foundation-funded multi-
21 user research facilities have transitioned to 5-year
22 cooperative agreements, and every 5 years the pro-
23 gram officer responsible for the facility makes a rec-
24 ommendation to the National Science Board as to

1 the renewal, recompetition, or termination of sup-
2 port for the facility; and

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

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

16 **SEC. 115. SENSE OF THE CONGRESS REGARDING INDUSTRY**
17 **INVESTMENT IN STEM EDUCATION.**

18 It is the sense of Congress that—

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

24 (2) partnerships with education providers,
25 STEM focused competitions, and other opportunities

1 have become important aspects of private sector ef-
2 forts to strengthen the STEM workforce;

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

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

11 **SEC. 116. MISREPRESENTATION OF RESEARCH RESULTS.**

12 (a) PROHIBITION.—The findings and conclusions of
13 any article authored by a principal investigator receiving
14 a research grant from the Foundation, using the results
15 of the research conducted under the grant, that is pub-
16 lished in a peer-reviewed publication, otherwise made pub-
17 licly available, or incorporated in an application for a re-
18 search grant or grant extension from the Foundation may
19 not contain any falsification, fabrication, or plagiarism, as
20 established in the Foundation's Research Misconduct reg-
21 ulation (45 CFR 689).

22 (b) PUBLICATION.—The Director shall make publicly
23 available any finding that research misconduct (as defined
24 in 45 CFR 689) has been committed, including the name

1 of the principal investigator, within 30 days of the final
2 administration action of the Foundation.

3 **SEC. 117. RESEARCH REPRODUCIBILITY AND REPLICA-**
4 **TION.**

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

7 (1) the gold standard of good science is the
8 ability of a researcher or research lab to reproduce
9 a published method and finding;

10 (2) there is growing concern that some pub-
11 lished research findings cannot be reproduced or
12 replicated, which can negatively affect the public’s
13 trust in science;

14 (3) there are a complex set of factors affecting
15 reproducibility and replication; and

16 (4) the increasing interdisciplinary nature and
17 complexity of scientific research may be a contrib-
18 uting factor to issues with research reproducibility
19 and replication.

20 (b) REPORT.—The Director shall—

21 (1) not later than 45 days after the date of en-
22 actment of this Act, enter into an agreement with
23 the National Research Council to provide, within 18
24 months after the date of enactment of this Act, a re-
25 port to assess research and data reproducibility and

1 replicability issues in interdisciplinary research and
2 to make recommendations on how to improve rigor
3 and transparency in scientific research; and

4 (2) not later than 60 days after receiving the
5 results of the assessment under paragraph (1), sub-
6 mit a report to the Committee on Science, Space,
7 and Technology of the House of Representatives and
8 the Committee on Commerce, Science, and Trans-
9 portation of the Senate on the findings of the assess-
10 ment, together with the agreement or disagreement
11 of the Director and Board with each of its findings
12 and recommendations.

13 **SEC. 118. RESEARCH GRANT CONDITIONS.**

14 The Foundation shall establish procedures to ensure
15 that—

16 (1) a research grant awarded by the Founda-
17 tion to a principal investigator supports a scope of
18 work not otherwise being directly funded by grants
19 provided by other Federal agencies;

20 (2) a principal investigator includes in any ap-
21 plication for a research grant awarded by the Foun-
22 dation a list of all Federal research funding received
23 by the principal investigator, as well as any funding
24 that is being requested as of that time;

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

4 (4) principal investigators who receive Founda-
5 tion research grant funding under more than one
6 grant at the same time have sufficient resources to
7 conduct the proposed research under each of those
8 grants appropriately under the terms of the grant;
9 and

10 (5) barriers to early career and new investigator
11 applicants are addressed, including taking into ac-
12 count the broader accomplishments and potential of
13 the individual investigator in addition to the poten-
14 tial impact of the project.

15 **SEC. 119. COMPUTING RESOURCES STUDY.**

16 Not later than 1 year after the date of enactment
17 of this Act, the Comptroller General shall transmit to the
18 Congress a report detailing the results of a study on the
19 use of scientific computing resources funded by the Foun-
20 dation at institutions of higher education. Such study shall
21 assess—

22 (1) efficiencies that can be achieved by using
23 shared scientific computing resources for projects
24 that have similar scientific computing requirements
25 or projects where specialized software solutions could

1 be shared with other practitioners in the scientific
2 community;

3 (2) efficiencies that can be achieved by using
4 shared hardware that can be cost effectively pro-
5 cured from cloud computing services;

6 (3) efficiencies that can be achieved by using
7 shared software from an open source repository or
8 platform; and

9 (4) cost savings that could be achieved by po-
10 tential sharing of scientific computing resources
11 across all Foundation grants.

12 **SEC. 120. SCIENTIFIC BREAKTHROUGH PRIZES.**

13 The Director shall place a high priority on designing
14 and administering pilot programs for scientific break-
15 through prizes, in conjunction with private entities, that
16 are consistent with Office of Science and Technology Pol-
17 icy guidelines. Breakthrough prizes shall center around
18 technological breakthroughs that are of strategic impor-
19 tance to the Nation, and have the capacity to spur new
20 economic growth.

21 **SEC. 121. ROTATING PERSONNEL.**

22 In order to control the costs to the Foundation of
23 individuals employed pursuant to the Intergovernmental
24 Personnel Act of 1970 (42 U.S.C. 4701 note)—

1 (1) the Foundation shall provide to Congress a
2 written justification and waiver by the Deputy Di-
3 rector in instances in which such an individual is to
4 be paid at a rate that exceeds the maximum rate of
5 pay for the Senior Executive Service, including, if
6 applicable, adjustment for the certified Senior Exec-
7 utive Service Performance Appraisal System;

8 (2) the Foundation shall provide to Congress a
9 written justification and waiver by the Director in
10 instances in which such an individual is to be paid
11 at a rate that exceeds the annual salary rate of the
12 Vice President of the United States; and

13 (3) the Foundation shall provide an annual re-
14 port to Congress on the costs to the Foundation of
15 employing such individuals, including—

16 (A) the timeliness and completeness of
17 Foundation actions in response to recommenda-
18 tions and findings from the Office of Inspector
19 General related to the employment of such indi-
20 viduals;

21 (B) actions taken by the Foundation to re-
22 duce the cost to the Foundation of the employ-
23 ment of such individuals at pay levels that ex-
24 ceed the threshold described in paragraph (1);

1 (C) the value to the Foundation of employ-
2 ing individuals pursuant to the Intergovern-
3 mental Personnel Act of 1970 (42 U.S.C. 4701
4 note) whose pay is set below the threshold de-
5 scribed in paragraph (1); and

6 (D) the value to the Foundation of employ-
7 ing individuals who are not permanent employ-
8 ees whose pay requires a justification and waiv-
9 er under paragraph (1) or (2).

10 **SEC. 122. SENSE OF CONGRESS REGARDING INNOVATION**

11 **CORPS.**

12 It is the sense of Congress that—

13 (1) the Foundation’s Innovation Corps (I-
14 Corps) was established to foster a national innova-
15 tion ecosystem by encouraging institutions, sci-
16 entists, engineers, and entrepreneurs to identify and
17 explore the innovation and commercial potential of
18 Foundation-funded research well beyond the labora-
19 tory;

20 (2) the Foundation’s I-Corps includes invest-
21 ment in entrepreneurship and commercialization
22 education, training, and mentoring, ultimately lead-
23 ing to the practical deployment of technologies,
24 products, processes, and services that improve the

1 Nation's competitiveness, promote economic growth,
2 and benefit society;

3 (3) by building networks of entrepreneurs, edu-
4 cators, mentors, institutions, and collaborations, and
5 supporting specialized education and training, I-
6 Corps is at the leading edge of a strong, lasting
7 foundation for an American innovation ecosystem;
8 and

9 (4) I-Corps should continue to promote a strong
10 innovation system by investing in and supporting fe-
11 male entrepreneurs, who are historically underrep-
12 resented in entrepreneurial fields, through
13 mentorship, education, and training.

14 **SEC. 123. BRAIN RESEARCH THROUGH ADVANCING INNO-**
15 **VATIVE NEUROTECHNOLOGIES INITIATIVE.**

16 The Foundation shall support research activities re-
17 lated to the Brain Research through Advancing Innovative
18 Neurotechnologies Initiative. The Foundation is encour-
19 aged to work in conjunction with the Interagency Working
20 Group on Neuroscience (IWGN) to determine how to use
21 the data infrastructure of the Foundation and other appli-
22 cable agencies to help neuroscientists collect, standardize,
23 manage, and analyze the large amounts of data that will
24 result from research attempting to understand how the
25 brain functions.

1 **SEC. 124. NOYCE SCHOLARSHIP PROGRAM AMENDMENTS.**

2 (a) AMENDMENTS.—Section 10A of the National
3 Science Foundation Authorization Act of 2002 (42 U.S.C.
4 1862n—1a) is amended—

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

7 (2) in subsection (c)—

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

10 (B) in paragraph (3)—

11 (i) by inserting “for teachers with
12 master’s degrees in their field” after
13 “Teaching Fellowships”; and

14 (ii) by striking the period at the end
15 of subparagraph (B) and inserting “;
16 and”; and

17 (C) by adding at the end the following new
18 paragraph:

19 “(4) in the case of National Science Foundation
20 Master Teaching Fellowships for teachers with bach-
21 elor’s degrees in their field and working toward a
22 master’s degree—

23 “(A) offering academic courses leading to
24 a master’s degree and leadership training to
25 prepare individuals to become master teachers
26 in elementary and secondary schools; and

1 “(B) offering programs both during and
2 after matriculation in the program for which
3 the fellowship is received to enable fellows to
4 become highly effective mathematics and
5 science teachers, including mentoring, training,
6 induction, and professional development activi-
7 ties, to fulfill the service requirements of this
8 section, including the requirements of sub-
9 section (e), and to exchange ideas with others
10 in their fields.”;

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

13 (4) by redesignating subsections (g) through (i)
14 as subsections (h) through (j), respectively; and

15 (5) by inserting after subsection (f) the fol-
16 lowing new subsection:

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

1 (b) DEFINITION.—Section 10(i)(5) of the National
2 Science Foundation Authorization Act of 2002 (42 U.S.C.
3 1862n–1(i)(5)) is amended by inserting “computer
4 science,” after “means a science,”.

5 **SEC. 125. INFORMAL STEM EDUCATION.**

6 (a) GRANTS.—The Director, through the Directorate
7 for Education and Human Resources, shall continue to
8 award competitive, merit-reviewed grants to support—

9 (1) research and development of innovative out-
10 of-school STEM learning and emerging STEM
11 learning environments in order to improve STEM
12 learning outcomes and engagement in STEM; and

13 (2) research that advances the field of informal
14 STEM education.

15 (b) USES OF FUNDS.—Activities supported by grants
16 under this section may encompass a single STEM dis-
17 cipline, multiple STEM disciplines, or integrative STEM
18 initiatives and shall include—

19 (1) research and development that improves our
20 understanding of learning and engagement in infor-
21 mal environments, including the role of informal en-
22 vironments in broadening participation in STEM;
23 and

24 (2) design and testing of innovative STEM
25 learning models, programs, and other resources for

1 informal learning environments to improve STEM
2 learning outcomes and increase engagement for K–
3 12 students, K–12 teachers, and the general public,
4 including design and testing of the scalability of
5 models, programs, and other resources.

6 **SEC. 126. EXPERIMENTAL PROGRAM TO STIMULATE COM-**
7 **PETITIVE RESEARCH.**

8 The Foundation shall continue to operate a robust
9 Experimental Program to Stimulate Competitive Research
10 (EPSCoR). The EPSCoR program helps ensure that aca-
11 demic research institutions in more than half the States
12 develop a strong research infrastructure and participate
13 fully in federally funded research activities. The program
14 should be a high priority for the Foundation.

15 **SEC. 127. HISPANIC OPPORTUNITY PROGRAM IN EDU-**
16 **CATION AND SCIENCE.**

17 Not later than 120 days after the date of enactment
18 of this Act, the Director of the National Science Founda-
19 tion shall establish the program described in section 7033
20 of the America COMPETES Act (42 U.S.C. 1862o–12)
21 for Hispanic-serving institutions (as defined in section 502
22 of the Higher Education Act of 1965 (20 U.S.C. 1101a)).

1 **TITLE II—SCIENCE, TECH-**
2 **NOLOGY, ENGINEERING, AND**
3 **MATHEMATICS**

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

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

6 (1) According to the National Science Board’s
7 Science and Engineering Indicators, the science and
8 engineering workforce has shown sustained growth
9 for more than half a century, and workers with
10 science and engineering degrees tend to earn more
11 than comparable workers in other fields.

12 (2) According to the Program for International
13 Student Assessment 2012 results, America lags be-
14 hind many other nations in STEM education. Amer-
15 ican students rank 21st in science and 26th in
16 mathematics.

17 (3) Junior Achievement USA and ING found a
18 decrease of 25 percent in the percentage of teenage
19 students interested in STEM careers.

20 (4) According to a 2007 report from the De-
21 partment of Labor, industries and firms dependent
22 on a strong science and mathematics workforce have
23 launched a variety of programs that target K–12
24 students and undergraduate and graduate students
25 in STEM fields.

1 (5) The Federal Government spends nearly \$3
2 billion annually on STEM education related program
3 and activities, but encouraging STEM education ac-
4 tivities beyond the scope of the Federal Government,
5 including privately sponsored competitions and pro-
6 grams in our schools, is crucial to the future tech-
7 nical and economic competitiveness of the United
8 States.

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

11 (1) more effective coordination and adoption of
12 performance measurement based on objective out-
13 comes for federally supported STEM programs is
14 needed;

15 (2) leveraging private and nonprofit invest-
16 ments in STEM education will be essential to
17 strengthening the Federal STEM portfolio;

18 (3) strengthening the Federal STEM portfolio
19 may require program consolidations and termi-
20 nations, but such changes should be based on evi-
21 dence with stakeholder input;

22 (4) coordinating STEM programs and activities
23 across the Federal Government in order to limit du-
24 plication and engage stakeholders in STEM pro-
25 grams and related activities for which objective out-

1 comes can be measured will bolster results of Fed-
2 eral STEM education programs, improve the return
3 on taxpayers' investments in STEM education pro-
4 grams, and in turn strengthen the United States
5 economy; and

6 (5) as the Committee on STEM Education im-
7 plements the 5-year Strategic Plan for Federal
8 STEM education required under section 101(b)(5)
9 of the America COMPETES Reauthorization Act of
10 2010 (42 U.S.C. 6621(b)(5)), STEM education
11 stakeholders must be engaged and outcome-based
12 evaluation metrics should be considered in the co-
13 ordination and consolidation efforts for the Federal
14 STEM portfolio.

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

16 (a) **ESTABLISHMENT.**—The President shall establish
17 or designate a STEM Education Advisory Panel that in-
18 corporates key stakeholders from the education and indus-
19 try sectors. The co-chairs shall be members of the Presi-
20 dent's Council of Advisors on Science and Technology.

21 (b) **QUALIFICATIONS.**—The Advisory Panel estab-
22 lished or designated by the President under subsection (a)
23 shall consist primarily of members from academic institu-
24 tions, nonprofit organizations, and industry and shall in-
25 clude in-school, out-of-school, and informal educational

1 practitioners. Members of the Advisory Panel shall be
2 qualified to provide advice and information on STEM edu-
3 cation research, development, training, implementation,
4 interventions, professional development, or workforce
5 needs or concerns. In selecting or designating an Advisory
6 Panel, the President may also seek and give consideration
7 to recommendations from the Congress, industry, the sci-
8 entific community (including the National Academy of
9 Sciences, scientific professional societies, and academia),
10 State and local governments, and other appropriate orga-
11 nizations. The Advisory Panel shall consist of 15 mem-
12 bers, with 3 members appointed by the Speaker of the
13 House of Representatives and 2 members appointed by the
14 Majority Leader of the Senate.

15 (c) DUTIES.—The Advisory Panel shall advise the
16 President, the Committee on STEM Education, and the
17 STEM Education Coordinating Office established under
18 section 204 on matters relating to STEM education, and
19 shall each year provide general guidance to every Federal
20 agency with STEM education programs or activities, in-
21 cluding in the preparation of requests for appropriations
22 for activities related to STEM education. The Advisory
23 Panel shall also assess and develop recommendations
24 for—

1 (1) progress made in implementing the STEM
2 education Strategic Plan required under section 101
3 of the America COMPETES Reauthorization Act of
4 2010 (42 U.S.C. 6621), and any needs or opportuni-
5 ties to update the strategic plan;

6 (2) the management, coordination, and imple-
7 mentation of STEM education programs and activi-
8 ties across the Federal Government;

9 (3) the appropriateness of criteria used by Fed-
10 eral agencies to evaluate the effectiveness of Federal
11 STEM education programs and activities;

12 (4) ways to leverage private and nonprofit
13 STEM investments and encourage public-private
14 partnerships to strengthen STEM education and
15 help build the STEM workforce pipeline;

16 (5) ways to incorporate workforce needs into
17 Federal STEM education programs, particularly for
18 specific fields of national interest and areas experi-
19 encing high unemployment rates;

20 (6) ways to better vertically and horizontally in-
21 tegrate Federal STEM programs and activities from
22 pre-K through graduate study and the workforce,
23 and from in-school to out-of-school in order to im-
24 prove transitions for students moving through the
25 STEM pipeline;

1 (7) whether societal and workforce concerns are
2 adequately addressed by current Federal STEM
3 education programs and activities;

4 (8) the extent to which Federal STEM edu-
5 cation programs and activities are contributing to
6 recruitment and retention of women and underrep-
7 resented students in the STEM education and work-
8 force pipeline; and

9 (9) ways to encourage geographic diversity in
10 STEM education and the workforce pipeline.

11 (d) REPORTS.—The Advisory Panel shall report, not
12 less frequently than once every 3 fiscal years, to the Presi-
13 dent and Congress on its assessments under subsection
14 (c) and its recommendations for ways to improve Federal
15 STEM education programs. The first report under this
16 subsection shall be submitted within 1 year after the date
17 of enactment of this Act.

18 (e) TRAVEL EXPENSES OF NON-FEDERAL MEM-
19 BERS.—Non-Federal members of the Advisory Panel,
20 while attending meetings of the Advisory Panel or while
21 otherwise serving at the request of the head of the Advi-
22 sory Panel away from their homes or regular places of
23 business, may be allowed travel expenses, including per
24 diem in lieu of subsistence, as authorized by section 5703
25 of title 5, United States Code, for individuals in the Gov-

1 ernment serving without pay. Nothing in this subsection
2 shall be construed to prohibit members of the Advisory
3 Panel who are officers or employees of the United States
4 from being allowed travel expenses, including per diem in
5 lieu of subsistence, in accordance with existing law.

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

7 Section 101 of the America COMPETES Reauthor-
8 ization Act of 2010 (42 U.S.C. 6621) is amended—

9 (1) in the first subsection (b)—

10 (A) by redesignating paragraphs (3)
11 through (6) as paragraphs (5) through (8), re-
12 spectively;

13 (B) by inserting after paragraph (2) the
14 following new paragraphs:

15 “(3) collaborate with the STEM Education Ad-
16 visory Panel established under section 202 of the
17 America COMPETES Reauthorization Act of 2015
18 and other outside stakeholders to ensure the engage-
19 ment of the STEM education community;

20 “(4) review evaluation measures used for Fed-
21 eral STEM education programs;” and

22 (C) in paragraph (8), as so redesignated
23 by subparagraph (A) of this paragraph, by
24 striking “, periodically update,” and

1 (2) in the second subsection (b) and in sub-
2 section (c), by striking “subsection (b)(5)” and in-
3 serting “subsection (b)(7)”.

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

5 (a) ESTABLISHMENT.—The Director of the National
6 Science Foundation shall establish within the Directorate
7 for Education and Human Resources a STEM Education
8 Coordinating Office, which shall have a Director and staff
9 that shall include career employees detailed from Federal
10 agencies that fund STEM education programs and activi-
11 ties.

12 (b) RESPONSIBILITIES.—The STEM Education Co-
13 ordinating Office shall—

14 (1) provide technical and administrative support
15 to—

16 (A) the Committee on STEM Education,
17 especially in its coordination of Federal STEM
18 programs and strategic planning responsibil-
19 ities;

20 (B) the Advisory Panel established under
21 section 202; and

22 (C) Federal agencies with STEM edu-
23 cation programs;

24 (2) periodically update and maintain the inven-
25 tory of federally sponsored STEM education pro-

1 grams and activities established under section
2 101(b)(8) of the America COMPETES Reauthoriza-
3 tion Act of 2010 (42 U.S.C. 6621); and

4 (3) provide for dissemination of information on
5 Federal STEM education programs and activities, as
6 appropriate, to stakeholders in academia, industry,
7 nonprofit organizations with expertise in STEM edu-
8 cation, State and local educational agencies, and
9 other STEM stakeholders.

10 (c) REPORT.—The Director of the STEM Education
11 Coordinating Office shall transmit a report annually to
12 Congress not later than 60 days after the submission of
13 the President’s budget request. The annual report shall
14 include—

15 (1) any updates to the inventory required under
16 subsection (b)(2);

17 (2) a description of all consolidations and ter-
18 minations of Federal STEM education programs im-
19 plemented in the previous fiscal year, including an
20 explanation of the reasons for consolidations and
21 terminations;

22 (3) recommendations for consolidations and ter-
23 minations of STEM education programs or activities
24 in the upcoming fiscal year;

1 (4) a description of any significant new STEM
2 Education public-private partnerships; and

3 (5) description of the progress made in carrying
4 out the strategic plan required under section 101 of
5 the America COMPETES Reauthorization Act of
6 2010 (42 U.S.C. 6621), including a description of
7 the outcome of any program assessments completed
8 in the previous year.

9 (d) RESPONSIBILITIES OF NSF.—The Director of
10 the National Science Foundation shall encourage and
11 monitor the efforts of the STEM Education Coordinating
12 Office to ensure that the Coordinating Office is carrying
13 out its responsibilities under subsection (b) appropriately.

14 **TITLE III—OFFICE OF SCIENCE**
15 **AND TECHNOLOGY POLICY**

16 **SEC. 301. AUTHORIZATION OF APPROPRIATIONS.**

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

19 (1) \$4,550,000 for fiscal year 2016; and

20 (2) \$4,550,000 for fiscal year 2017.

21 **SEC. 302. REGULATORY EFFICIENCY.**

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

24 (1) high and increasing administrative burdens
25 and costs in Federal research administration, par-

1 particularly in the higher education sector where most
2 federally sponsored research is performed, are erod-
3 ing funds available to carry out basic scientific re-
4 search;

5 (2) progress has been made over the last decade
6 in streamlining the pre-award grant application
7 process through Grants.gov, the Federal Govern-
8 ment’s website portal;

9 (3) post-award administrative costs have grown
10 as Federal research agencies have continued to im-
11 pose agency-unique compliance and reporting re-
12 quirements on researchers and research institutions;

13 (4) facilities and administration costs at re-
14 search universities can exceed 50 percent of the total
15 value of Federal research grants, and it is estimated
16 that nearly 30 percent of the funds invested annu-
17 ally in federally funded research is consumed by pa-
18 perwork and other administrative processes required
19 by Federal agencies; and

20 (5) it is a matter of critical importance to
21 American competitiveness that administrative costs
22 of federally funded research be streamlined so that
23 a higher proportion of taxpayer dollars flow into di-
24 rect research activities.

1 (b) IN GENERAL.—The Director of the Office of
2 Science and Technology Policy shall establish a working
3 group under the authority of the National Science and
4 Technology Council, to include the Office of Management
5 and Budget. The working group shall be responsible for
6 reviewing Federal regulations affecting research and re-
7 search universities and making recommendations on how
8 to—

9 (1) harmonize, streamline, and eliminate dupli-
10 cative Federal regulations and reporting require-
11 ments;

12 (2) minimize the regulatory burden on United
13 States institutions of higher education performing
14 federally funded research while maintaining account-
15 ability for Federal tax dollars; and

16 (3) identify and update specific regulations to
17 refocus on performance-based goals rather than on
18 process while still meeting the desired outcome.

19 (c) STAKEHOLDER INPUT.—In carrying out the re-
20 sponsibilities under subsection (b), the working group
21 shall take into account input and recommendations from
22 non-Federal stakeholders, including federally funded and
23 nonfederally funded researchers, institutions of higher
24 education, scientific disciplinary societies and associations,
25 nonprofit research institutions, industry, including small

1 businesses, federally funded research and development
2 centers, and others with a stake in ensuring effectiveness,
3 efficiency, and accountability in the performance of sci-
4 entific research.

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

13 **SEC. 303. COORDINATION OF INTERNATIONAL SCIENCE**
14 **AND TECHNOLOGY PARTNERSHIPS.**

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

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

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

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

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

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

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

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

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

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

9 (d) REPORT TO CONGRESS.—The Director of the Of-
10 fice of Science and Technology Policy shall transmit a re-
11 port, to be updated every 2 years, to the Committee on
12 Science, Space, and Technology and the Committee on
13 Foreign Affairs of the House of Representatives, and to
14 the Committee on Commerce, Science, and Transportation
15 and the Committee on Foreign Relations of the Senate.
16 The report shall also be made available to the public on
17 the reporting agency’s website. The report shall contain
18 a description of—

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

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

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

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

4 (e) **ADDITIONAL REPORTS TO CONGRESS.**—The Di-
5 rector of the Office of Science and Technology Policy shall
6 transmit, not later than 60 days after the date of enact-
7 ment of this Act and annually thereafter, to the Com-
8 mittee on Science, Space, and Technology and the Com-
9 mittee on Foreign Affairs of the House of Representatives,
10 and to the Committee on Commerce, Science, and Trans-
11 portation and the Committee on Foreign Relations of the
12 Senate, a report that lists and describes all foreign travel
13 by Office of Science and Technology Policy staff and
14 detailees. Each report shall specify the dates of each trip,
15 the purpose of the trip, Office of Science and Technology
16 Policy participants on the trip, total Office of Science and
17 Technology Policy costs associated with the trip, and de-
18 tails of all international meetings, including meeting par-
19 ticipants and topics addressed.

20 **SEC. 304. ALTERNATIVE RESEARCH FUNDING MODELS.**

21 (a) **PILOT PROGRAM AUTHORITY.**—The heads of
22 Federal science agencies, in consultation with the Director
23 of the Office of Science and Technology Policy, shall con-
24 duct appropriate pilot programs to validate alternative re-
25 search funding models, including—

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

4 (2) novel mechanisms of funding including ob-
5 taining non-Federal funds through crowd source
6 funding.

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

12 (c) PRIZE COMPETITION JUDGES.—

13 (1) REQUIREMENTS.—Judges for a prize com-
14 petition carried out under this section shall not be
15 required to be Federal employees. An individual who
16 serves as a judge for a prize competition carried out
17 under this section who is not a Federal employee
18 shall be required to sign an agreement, developed by
19 the Office of Science and Technology Policy, with re-
20 spect to nondisclosure, conflict of interest, and judg-
21 ing code of conduct requirements.

22 (2) DISCLOSURE OF PERSONAL FINANCIAL IN-
23 TERESTS.—A judge for a prize competition with a
24 total purse of \$10,000 or more, or for an aggregate
25 of prize competitions with a total purse of \$50,000

1 or more, shall be required to disclose all personal fi-
2 nancial interests.

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

8 (d) PUBLIC NOTICE.—The heads of Federal science
9 agencies shall widely advertise prize competitions to be
10 conducted under this section to ensure maximum partici-
11 pation.

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

14 (1) the National Aeronautics and Space Admin-
15 istration;

16 (2) the National Science Foundation;

17 (3) the National Institute of Standards and
18 Technology; and

19 (4) the National Weather Service.

20 (f) REPORT TO CONGRESS.—Not later than 1 year
21 after the date of enactment of this Act, and annually
22 thereafter as part of the annual budget submission to Con-
23 gress, the Director of the Office of Science and Technology
24 Policy shall transmit to the Congress a report on pro-
25 grams identified and conducted under subsection (a).

1 **SEC. 305. AMENDMENTS TO PRIZE COMPETITIONS.**

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

4 (1) in subsection (c)—

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

7 (B) by inserting “types” after “following”;

8 and

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

11 (2) in subsection (f)—

12 (A) by striking “in the Federal Register”
13 and inserting “on a publicly accessible Govern-
14 ment website, such as www.challenge.gov,”; and

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

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

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

21 (5) in subsection (i)—

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

24 (B) in paragraph (2)(A), by inserting
25 “prize” before “competition” both places it ap-
26 pears;

1 (C) by redesignating paragraph (3) as
2 paragraph (4); and

3 (D) by inserting after paragraph (2) the
4 following new paragraph:

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

11 (6) in subsection (k)—

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

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

16 (7) in subsection (l), by striking all after “may
17 enter into” and inserting “a grant, contract, cooper-
18 ative agreement, or other agreement with a private
19 sector for-profit or nonprofit entity to administer the
20 prize competition, subject to the provisions of this
21 section.”;

22 (8) in subsection (m)—

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

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

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

17 (C) in paragraph (3)(A)—

18 (i) by striking “No prize” and insert-
19 ing “No prize competition”; and

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

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

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

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

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

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

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

11 (11) in subsection (p)(2)—

12 (A) in subparagraph (C), by striking “cash
13 prizes” both places it occurs and inserting
14 “cash prize purses”; and

15 (B) by adding at the end the following new
16 subparagraph:

17 “(G) PLAN.—A description of crosscutting
18 topical areas and agency-specific mission needs
19 that may be the strongest opportunities for
20 prize competitions during the upcoming 2 fiscal
21 years.”.

22 **SEC. 306. UNITED STATES CHIEF TECHNOLOGY OFFICER.**

23 Title II of the National Science and Technology Pol-
24 icy, Organization, and Priorities Act of 1976 (42 U.S.C.

1 6611 et seq.) is amended by adding at the end the fol-
2 lowing new section:

3 “UNITED STATES CHIEF TECHNOLOGY OFFICER

4 “SEC. 210. (a) APPOINTMENT.—The President may
5 appoint a United States Chief Technology Officer. Not
6 later than 1 year after the date of enactment of the Amer-
7 ica COMPETES Reauthorization Act of 2015, such offi-
8 cer shall be one of the Associate Directors of the Office
9 of Science and Technology Policy.

10 “(b) DUTIES.—The duties of the United States Chief
11 Technology Officer should include—

12 “(1) advising the President and the Director of
13 the Office of Science and Technology Policy on Fed-
14 eral information systems, technology, data, and in-
15 novation policies and initiatives;

16 “(2) promoting an improved exchange of infor-
17 mation among the Federal Government, the public,
18 and Congress;

19 “(3) promoting the use of innovative techno-
20 logical approaches across the Federal Government to
21 ensure a modern information technology infrastruc-
22 ture;

23 “(4) working with the Chief Technology Offi-
24 cers and Chief Information Officers of all Federal
25 agencies to ensure the use of best technologies and
26 security practices for information systems;

1 “(5) establishing a working group with such Of-
2 ficers to exchange best practices about information
3 systems;

4 “(6) promoting transparency and accountability
5 across the Federal Government for all technological
6 implementation by working with agencies to ensure
7 that each arm of the Federal Government, including
8 the executive branch, makes its records open and ac-
9 cessible;

10 “(7) promoting security and privacy protection
11 policies for all Federal information technology sys-
12 tems that are consistent with Federal law, regula-
13 tions, and current best practices;

14 “(8) promoting technological interoperability of
15 key Government functions;

16 “(9) in consultation with the Office of Manage-
17 ment and Budget, providing an annual report to the
18 President, the Director of the Office of Science and
19 Technology Policy, and Congress on the current
20 state of information systems of all Federal agencies,
21 including—

22 “(A) the status of information systems, in-
23 cluding potential technology and security con-
24 cerns about these information systems in all
25 Federal agencies;

1 “(B) a review of all Federal websites with
2 third-party embedded tools that—

3 “(i) identifies each embedded tool,
4 who it belongs to, and the data it collects;
5 and

6 “(ii) addresses effects on cybersecu-
7 rity and consumer privacy, including
8 whether each website provides prominent
9 notice to consumers about the presence of
10 the tool and whether the consumer may
11 opt-out of the tool;

12 “(C) the amount of money being spent on
13 various technologies; and

14 “(D) technology recommendations and best
15 practices; and

16 “(10) such other functions and activities as the
17 President and Director of the Office of Science and
18 Technology Policy may assign.

19 “(c) REPORT.—In the absence of a United States
20 Chief Technology Officer, the Director of the Office of
21 Science and Technology Policy shall be responsible for
22 providing the report required under subsection (b)(9).”.

1 **SEC. 307. NATIONAL RESEARCH COUNCIL STUDY ON TECH-**
2 **NOLOGY FOR EMERGENCY NOTIFICATIONS**
3 **ON UNIVERSITY CAMPUSES.**

4 (a) **IN GENERAL.**—Not later than 90 days after the
5 date of enactment of this Act, the Director of the Office
6 of Science and Technology Policy shall enter into an ar-
7 rangement with the National Research Council to conduct
8 and complete a study to identify and review technologies
9 employed at institutions of higher education to provide no-
10 tifications to students, faculty, and other personnel during
11 emergency situations in accordance with the requirements
12 of existing law. The study shall address—

13 (1) the timeliness of notifications during emer-
14 gency situations provided by various technologies;

15 (2) the durability of such technologies in deliv-
16 ering such notifications to students, faculty, and
17 other personnel; and

18 (3) the limitations exhibited by such tech-
19 nologies to successfully deliver notifications not more
20 than 30 seconds after the institution of higher edu-
21 cation transmits such notifications.

22 (b) **REPORT REQUIRED.**—Not later than 1 year after
23 the date on which the National Research Council enters
24 into the arrangement required by subsection (a), the Di-
25 rector of the Office of Science and Technology Policy shall

1 submit to Congress a report on the study conducted under
2 such subsection.

3 **TITLE IV—NATIONAL INSTITUTE**
4 **OF STANDARDS AND TECH-**
5 **NOLOGY**

6 **SEC. 401. AUTHORIZATION OF APPROPRIATIONS.**

7 (a) FISCAL YEAR 2016.—

8 (1) IN GENERAL.—There are authorized to be
9 appropriated to the Secretary of Commerce
10 \$938,700,000 for the National Institute of Stand-
11 ards and Technology for fiscal year 2016.

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

14 (A) \$744,700,000 shall be for scientific
15 and technical research and services laboratory
16 activities;

17 (B) \$59,000,000 shall be for the construc-
18 tion and maintenance of facilities; and

19 (C) \$135,000,000 shall be for industrial
20 technology services activities, of which
21 \$130,000,000 shall be for the Manufacturing
22 Extension Partnership program under sections
23 25 and 26 of the National Institute of Stand-
24 ards and Technology Act (15 U.S.C. 278k and
25 278I) and \$5,000,000 shall be for the Network

1 for Manufacturing Innovation Program under
2 section 34 of the National Institute of Stand-
3 ards and Technology Act (15 U.S.C. 278s).

4 (b) FISCAL YEAR 2017.—

5 (1) IN GENERAL.—There are authorized to be
6 appropriated to the Secretary of Commerce
7 \$938,700,000 for the National Institute of Stand-
8 ards and Technology for fiscal year 2017.

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

11 (A) \$744,700,000 shall be for scientific
12 and technical research and services laboratory
13 activities;

14 (B) \$59,000,000 shall be for the construc-
15 tion and maintenance of facilities; and

16 (C) \$135,000,000 shall be for industrial
17 technology services activities, of which
18 \$130,000,000 shall be for the Manufacturing
19 Extension Partnership program under sections
20 25 and 26 of the National Institute of Stand-
21 ards and Technology Act (15 U.S.C. 278k and
22 278I) and \$5,000,000 shall be for the Network
23 for Manufacturing Innovation Program under
24 section 34 of the National Institute of Stand-
25 ards and Technology Act (15 U.S.C. 278s).

1 **SEC. 402. STANDARDS AND CONFORMITY ASSESSMENT.**

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

4 (1) in subsection (b)—

5 (A) in the matter preceding paragraph (1),
6 by striking “authorized to take” and inserting
7 “authorized to serve as the President’s principal
8 adviser on standards policy pertaining to the
9 Nation’s technological competitiveness and in-
10 novation ability and to take”;

11 (B) in paragraph (3), by striking “compare
12 standards” and all that follows through “Fed-
13 eral Government” and inserting “facilitate
14 standards-related information sharing and co-
15 operation between Federal agencies”; and

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

22 (2) in subsection (c)—

23 (A) in paragraph (22), by striking “and”
24 after the semicolon;

25 (B) by redesignating paragraph (23) as
26 paragraph (25); and

1 (C) by inserting after paragraph (22) the
2 following:

3 “(23) participate in and support scientific and
4 technical conferences;

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

9 **SEC. 403. VISITING COMMITTEE ON ADVANCED TECH-**
10 **NOLOGY.**

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

13 (1) in subsection (a)—

14 (A) by striking “15 members” and insert-
15 ing “not fewer than 11 members”;

16 (B) by striking “at least 10” and inserting
17 “at least two-thirds”; and

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

19 “The Committee may consult with the National
20 Research Council in making recommendations
21 regarding general policy for the Institute.”; and

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

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

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

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

6 (2) by striking “United States Code.” and in-
7 serting “United States Code; and (i) the protection
8 of Institute buildings and other plant facilities,
9 equipment, and property, and of employees, associ-
10 ates, visitors, or other persons located therein or as-
11 sociated therewith, notwithstanding any other provi-
12 sion of law.”.

13 **SEC. 405. EDUCATION AND OUTREACH.**

14 The National Institute of Standards and Technology
15 Act (15 U.S.C. 271 et seq.) is amended by striking sec-
16 tions 18, 19, and 19A and inserting the following:

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

18 “(a) IN GENERAL.—The Director may support, pro-
19 mote, and coordinate activities and efforts to enhance pub-
20 lic awareness and understanding of measurement sciences,
21 standards, and technology by the general public, industry,
22 government, and academia in support of the Institute’s
23 mission.

24 “(b) RESEARCH FELLOWSHIPS.—

25 “(1) IN GENERAL.—The Director may award
26 research fellowships and other forms of financial and

1 logistical assistance, including direct stipend awards,
2 to—

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

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

9 “(2) SELECTION.—The Director shall select
10 persons to receive such fellowships and assistance on
11 the basis of ability and of the relevance of the pro-
12 posed work to the mission and programs of the In-
13 stitute.

14 “(3) DEFINITION.—For the purposes of this
15 subsection, financial and logistical assistance in-
16 cludes, notwithstanding section 1345 of title 31,
17 United States Code, or any contrary provision of
18 law, temporary housing and local transportation to
19 and from the Institute facilities.

20 “(c) POST-DOCTORAL FELLOWSHIP PROGRAM.—The
21 Director shall establish and conduct a post-doctoral fellow-
22 ship program, subject to the availability of appropriations,
23 that shall include not fewer than 20 fellows per fiscal year.
24 In evaluating applications for fellowships under this sub-
25 section, the Director shall give consideration to the goal

1 of promoting the participation of underrepresented stu-
2 dents in research areas supported by the Institute.”.

3 **SEC. 406. PROGRAMMATIC PLANNING REPORT.**

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

11 **SEC. 407. ASSESSMENTS BY THE NATIONAL RESEARCH**
12 **COUNCIL.**

13 (a) NATIONAL ACADEMY OF SCIENCES REVIEW.—
14 Not later than 6 months after the date of enactment of
15 this Act, the Director of the National Institute of Stand-
16 ards and Technology shall enter into a contract with the
17 National Academy of Sciences to conduct a single, com-
18 prehensive review of the Institute’s laboratory programs.
19 The review shall—

20 (1) assess the technical merits and scientific
21 caliber of the research conducted at the laboratories;

22 (2) examine the strengths and weaknesses of
23 the 2010 laboratory reorganization on the Institute’s
24 ability to fulfill its mission;

1 (3) evaluate how crosscutting 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 (b) **ADDITIONAL ASSESSMENTS.**—Section 24 of the
9 National Institute of Standards and Technology Act (15
10 U.S.C. 278j) is amended to read as follows:

11 **“SEC. 24. ASSESSMENTS BY THE NATIONAL RESEARCH**
12 **COUNCIL.**

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

17 “(b) **SCHEDULE.**—Two laboratories shall be assessed
18 under subsection (a) each year, and each laboratory shall
19 be assessed at least once every 3 years.

20 “(c) **SUMMARY REPORT.**—Beginning in the year
21 after the first assessment is conducted under subsection
22 (a), and once every 2 years thereafter, the Institute shall
23 contract with the National Research Council to prepare
24 a report that summarizes the findings common across the
25 individual assessment reports.

1 “(d) **ADDITIONAL ASSESSMENTS.**—The Institute, at
2 the discretion of the Director, also may contract with the
3 National Research Council to conduct additional assess-
4 ments of Institute programs and projects that involve col-
5 laboration across the Institute laboratories and centers
6 and assessments of selected scientific and technical topics.

7 “(e) **CONSULTATION WITH VISITING COMMITTEE ON**
8 **ADVANCED TECHNOLOGY.**—The National Research Coun-
9 cil may consult with the Visiting Committee on Advanced
10 Technology established under section 10 in performing the
11 assessments under this section.

12 “(f) **REPORTS.**—Not later than 30 days after the
13 completion of each assessment, the Institute shall transmit
14 the report on such assessment to the Committee on
15 Science, Space, and Technology of the House of Rep-
16 resentatives and the Committee on Commerce, Science,
17 and Transportation of the Senate.”.

18 **SEC. 408. 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 manufacturing extension centers, to be known as
5 the ‘Hollings Manufacturing Extension Centers’, for
6 the transfer of manufacturing technology and best
7 business practices (in this Act referred to as the
8 ‘Centers’). The program under this section shall be
9 known as the ‘Hollings Manufacturing Extension
10 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 competitiveness, productivity, and
18 technological performance in United States manufac-
19 turing through—

20 “(A) the transfer of manufacturing tech-
21 nology and techniques developed at the Insti-
22 tute to Centers and, through them, to manufac-
23 turing companies throughout 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 utilization, when appropriate, of
14 the expertise and capability that exists in Fed-
15 eral laboratories other than the Institute;

16 “(F) the provision to community colleges
17 and area career and technical education schools
18 of information about the job skills needed in
19 small and medium-sized manufacturing busi-
20 nesses in the regions they serve; and

21 “(G) promoting and expanding certifi-
22 cation systems offered through industry, asso-
23 ciations, and local colleges, when appropriate.

24 “(b) ACTIVITIES.—The activities of the Centers shall
25 include—

1 “(1) the establishment of automated manufac-
2 turing systems and other advanced production tech-
3 nologies, based on Institute-supported research, for
4 the purpose of demonstrations and technology trans-
5 fer;

6 “(2) the active transfer and dissemination of re-
7 search findings and Center expertise to a wide range
8 of companies and enterprises, particularly small and
9 medium-sized manufacturers; and

10 “(3) the facilitation of collaborations and part-
11 nerships between small and medium-sized manufac-
12 turing companies and community colleges and area
13 career and technical education schools to help such
14 colleges and schools better understand the specific
15 needs of manufacturers and to help manufacturers
16 better understand the skill sets that students learn
17 in the programs offered by such colleges and schools.

18 “(c) OPERATIONS.—

19 “(1) FINANCIAL SUPPORT.—The Secretary may
20 provide financial support to any Center created
21 under subsection (a). The Secretary may not provide
22 to a Center more than 50 percent of the capital and
23 annual operating and maintenance funds required to
24 create and maintain such Center.

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

5 “(3) APPLICATION.—

6 “(A) IN GENERAL.—Any nonprofit institu-
7 tion, or consortium thereof, or State or local
8 government, may submit to the Secretary an
9 application for financial support under this sec-
10 tion, in accordance with the procedures estab-
11 lished by the Secretary.

12 “(B) COST SHARING.—In order to receive
13 assistance under this section, an applicant for
14 financial assistance under subparagraph (A)
15 shall provide adequate assurances that non-
16 Federal assets obtained from the applicant and
17 the applicant’s partnering organizations will be
18 used as a funding source to meet not less than
19 50 percent of the costs incurred. For purposes
20 of the preceding sentence, the costs incurred
21 means the costs incurred in connection with the
22 activities undertaken to improve the competi-
23 tiveness, management, productivity, and techno-
24 logical performance of small and medium-sized
25 manufacturing companies.

1 “(C) AGREEMENTS WITH OTHER ENTI-
2 TIES.—In meeting the 50 percent requirement,
3 it is anticipated that a Center will enter into
4 agreements with other entities such as private
5 industry, institutions of higher education, and
6 State governments to accomplish programmatic
7 objectives and access new and existing resources
8 that will further the impact of the Federal in-
9 vestment made on behalf of small and medium-
10 sized manufacturing companies.

11 “(D) LEGAL RIGHTS.—Each applicant
12 under subparagraph (A) shall also submit a
13 proposal for the allocation of the legal rights as-
14 sociated with any invention which may result
15 from the proposed Center’s activities.

16 “(4) MERIT REVIEW.—The Secretary shall sub-
17 ject each such application to merit review. In mak-
18 ing a decision whether to approve such application
19 and provide financial support under this section, the
20 Secretary shall consider, at a minimum, the fol-
21 lowing:

22 “(A) The merits of the application, par-
23 ticularly those portions of the application re-
24 garding technology transfer, training and edu-
25 cation, and adaptation of manufacturing tech-

1 nologies to the needs of particular industrial
2 sectors.

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

4 “(C) Geographical diversity and extent of
5 service area.

6 “(D) The percentage of funding and
7 amount of in-kind commitment from other
8 sources.

9 “(5) EVALUATION.—

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

15 “(B) COMPOSITION.—Each such evalua-
16 tion panel shall be composed of private experts,
17 none of whom shall be connected with the in-
18 volved Center, and Federal officials.

19 “(C) CHAIR.—An official of the Institute
20 shall chair the panel.

21 “(D) PERFORMANCE MEASUREMENT.—
22 Each evaluation panel shall measure the in-
23 volved Center’s performance against the objec-
24 tives specified in this section.

1 “(E) POSITIVE EVALUATION.—If the eval-
2 uation is positive, the Secretary may provide
3 continued funding through the sixth year.

4 “(F) PROBATION.—The Secretary shall
5 not provide funding unless the Center has re-
6 ceived a positive evaluation. A Center that has
7 not received a positive evaluation by the evalua-
8 tion panel shall be notified by the panel of the
9 deficiencies in its performance and shall be
10 placed on probation for 1 year, after which time
11 the panel shall reevaluate the Center. If the
12 Center has not addressed the deficiencies iden-
13 tified by the panel, or shown a significant im-
14 provement in its performance, the Director shall
15 conduct a new competition to select an operator
16 for the Center or may close the Center.

17 “(G) ADDITIONAL FINANCIAL SUPPORT.—
18 After the sixth year, a Center may receive addi-
19 tional financial support under this section if it
20 has received a positive evaluation through an
21 independent review, under procedures estab-
22 lished by the Institute.

23 “(H) EIGHT-YEAR REVIEW.—A Center
24 shall undergo an independent review in the
25 eighth year of operation. Each evaluation panel

1 shall measure the Center’s performance against
2 the objectives specified in this section. A Center
3 that has not received a positive evaluation as a
4 result of an independent review shall be notified
5 by the Program of the deficiencies in its per-
6 formance and shall be placed on probation for
7 1 year, after which time the Program shall re-
8 evaluate the Center. If the Center has not ad-
9 dressed the deficiencies identified by the review,
10 or shown a significant improvement in its per-
11 formance, the Director shall conduct a new
12 competition to select an operator for the Center
13 or may close the Center.

14 “(I) RECOMPETITION.—If a recipient of a
15 Center award has received financial assistance
16 for 10 consecutive years, the Director shall con-
17 duct a new competition to select an operator for
18 the Center consistent with the plan required in
19 this Act. Incumbent Center operators in good
20 standing shall be eligible to compete for the new
21 award.

22 “(J) REPORTS.—

23 “(i) PLAN.—Not later than 180 days
24 after the date of enactment of the America
25 COMPETES Reauthorization Act of 2015,

1 the Director shall transmit to the Com-
2 mittee on Science, Space, and Technology
3 of the House of Representatives and the
4 Committee on Commerce, Science, and
5 Transportation of the Senate a plan as to
6 how the Institute will conduct reviews, as-
7 sessments, and reapplication competitions
8 under this paragraph.

9 “(ii) INDEPENDENT ASSESSMENT.—

10 The Director shall contract with an inde-
11 pendent organization to perform an assess-
12 ment of the implementation of the re-
13 application competition process under this
14 paragraph within 3 years after the trans-
15 mittal of the report under clause (i). The
16 organization conducting the assessment
17 under this clause may consult with the
18 MEP Advisory Board.

19 “(iii) COMPARISON OF CENTERS.—

20 Not later than 2 years after the date of en-
21 actment of the America COMPETES Re-
22 authorization Act of 2015, the Director
23 shall transmit to the Committee on
24 Science, Space, and Technology of the
25 House of Representatives and the Com-

1 committee on Commerce, Science, and Trans-
2 portation of the Senate a report providing
3 information on the first and second years
4 of operations for centers operating from
5 new competitions or recompetition as com-
6 pared to longstanding centers. The report
7 shall provide detail on the engagement in
8 services provided by Centers and the char-
9 acteristics of services provided, including
10 volume and type of services, so that the
11 Committees can evaluate whether the cost-
12 sharing ratio has an effect on the services
13 provided at Centers.

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

21 “(7) PROTECTION OF CENTER CLIENT CON-
22 FIDENTIAL INFORMATION.—Section 552 of title 5,
23 United States Code, shall apply to the following in-
24 formation obtained by the Federal Government on a
25 confidential basis in connection with the activities of

1 any participant involved in the Hollings Manufac-
2 turing Extension Partnership:

3 “(A) Information on the business operation
4 of any participant in a Hollings Manufacturing
5 Extension Partnership program or of a client of
6 a Center.

7 “(B) Trade secrets possessed by any client
8 of a Center.

9 “(8) ADVISORY BOARDS.—Each Center’s advi-
10 sory boards shall institute a conflict of interest pol-
11 icy, approved by the Director, that ensures the
12 Board represents local small and medium-sized man-
13 ufacturers in the Center’s region. Board Members
14 may not serve as a vendor or provide services to the
15 Center, nor may they serve on more than one Cen-
16 ter’s oversight board simultaneously.

17 “(d) ACCEPTANCE OF FUNDS.—

18 “(1) IN GENERAL.—In addition to such sums
19 as may be appropriated to the Secretary and Direc-
20 tor to operate the Hollings Manufacturing Extension
21 Partnership, the Secretary and Director also may
22 accept funds from other Federal departments and
23 agencies and, under section 2(c)(7), from the private
24 sector, to be available to the extent provided by ap-

1 appropriations Acts, for the purpose of strengthening
2 United States manufacturing.

3 “(2) ALLOCATION OF FUNDS.—

4 “(A) FUNDS ACCEPTED FROM OTHER FED-
5 ERAL DEPARTMENTS OR AGENCIES.—The Di-
6 rector shall determine whether funds accepted
7 from other Federal departments or agencies
8 shall be counted in the calculation of the Fed-
9 eral share of capital and annual operating and
10 maintenance costs under subsection (c).

11 “(B) FUNDS ACCEPTED FROM THE PRI-
12 VATE SECTOR.—Funds accepted from the pri-
13 vate sector under section 2(c)(7), if allocated to
14 a Center, may not be considered in the calcula-
15 tion of the Federal share under subsection (c)
16 of this section.

17 “(e) MEP ADVISORY BOARD.—

18 “(1) ESTABLISHMENT.—There is established
19 within the Institute a Manufacturing Extension
20 Partnership Advisory Board (in this subsection re-
21 ferred to as the ‘MEP Advisory Board’).

22 “(2) MEMBERSHIP.—

23 “(A) IN GENERAL.—The MEP Advisory
24 Board shall consist of not fewer than 10 mem-
25 bers broadly representative of stakeholders, to

1 be appointed by the Director. At least two
2 members shall be employed by or on an advisory
3 board for the Centers, at least one member
4 shall represent a community college, and at
5 least five other members shall be from United
6 States small businesses in the manufacturing
7 sector. No member shall be an employee of the
8 Federal Government.

9 “(B) TERM.—Except as provided in sub-
10 paragraph (C) or (D), the term of office of each
11 member of the MEP Advisory Board shall be 3
12 years.

13 “(C) VACANCIES.—Any member appointed
14 to fill a vacancy occurring prior to the expira-
15 tion of the term for which his predecessor was
16 appointed shall be appointed for the remainder
17 of such term.

18 “(D) SERVING CONSECUTIVE TERMS.—
19 Any person who has completed two consecutive
20 full terms of service on the MEP Advisory
21 Board shall thereafter be ineligible for appoint-
22 ment during the 1-year period following the ex-
23 piration of the second such term.

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

4 “(A) advice on Hollings Manufacturing
5 Extension Partnership programs, plans, and
6 policies;

7 “(B) assessments of the soundness of Hol-
8 lings Manufacturing Extension Partnership
9 plans and strategies; and

10 “(C) assessments of current performance
11 against Hollings Manufacturing Extension
12 Partnership program plans.

13 “(4) FEDERAL ADVISORY COMMITTEE ACT AP-
14 PLICABILITY.—

15 “(A) IN GENERAL.—In discharging its du-
16 ties under this subsection, the MEP Advisory
17 Board shall function solely in an advisory ca-
18 pacity, in accordance with the Federal Advisory
19 Committee Act.

20 “(B) EXCEPTION.—Section 14 of the Fed-
21 eral Advisory Committee Act shall not apply to
22 the MEP Advisory Board.

23 “(5) REPORT.—The MEP Advisory Board shall
24 transmit an annual report to the Secretary for
25 transmittal to Congress within 30 days after the

1 submission to Congress of the President’s annual
2 budget request in each year. Such report shall ad-
3 dress the status of the program established pursuant
4 to this section and comment on the relevant sections
5 of the programmatic planning document and updates
6 thereto transmitted to Congress by the Director
7 under subsections (c) and (d) of section 23.

8 “(f) COMPETITIVE GRANT PROGRAM.—

9 “(1) ESTABLISHMENT.—The Director shall es-
10 tablish, within the Hollings Manufacturing Exten-
11 sion Partnership, under this section and section 26,
12 a program of competitive awards among participants
13 described in paragraph (2) for the purposes de-
14 scribed in paragraph (3).

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

18 “(3) PURPOSE.—The purpose of the program
19 under this subsection is to add capabilities to the
20 Hollings Manufacturing Extension Partnership, in-
21 cluding the development of projects to solve new or
22 emerging manufacturing problems as determined by
23 the Director, in consultation with the Director of the
24 Hollings Manufacturing Extension Partnership pro-
25 gram, the MEP Advisory Board, and small and me-

1 dium-sized manufacturers. One or more themes for
2 the competition may be identified, which may vary
3 from year to year, depending on the needs of manu-
4 facturers and the success of previous competitions.
5 Centers may be reimbursed for costs incurred under
6 the program.

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

12 “(5) SELECTION.—Awards under this sub-
13 section shall be peer reviewed and competitively
14 awarded. The Director shall endeavor to have broad
15 geographic diversity among selected proposals. The
16 Director shall select proposals to receive awards that
17 will—

18 “(A) improve the competitiveness of indus-
19 tries in the region in which the Center or Cen-
20 ters are located;

21 “(B) create jobs or train newly hired em-
22 ployees; and

23 “(C) promote the transfer and commer-
24 cialization of research and technology from in-

1 stitutions of higher education, national labora-
2 tories, and nonprofit research institutes.

3 “(6) PROGRAM CONTRIBUTION.—Recipients of
4 awards under this subsection shall not be required
5 to provide a matching contribution.

6 “(7) GLOBAL MARKETPLACE PROJECTS.—In
7 making awards under this subsection, the Director,
8 in consultation with the MEP Advisory Board and
9 the Secretary, may take into consideration whether
10 an application has significant potential for enhanc-
11 ing the competitiveness of small and medium-sized
12 United States manufacturers in the global market-
13 place.

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

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

18 “(1) evaluate obstacles that are unique to small
19 manufacturers that prevent such manufacturers
20 from effectively competing in the global market;

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

23 “(3) facilitate improved communication between
24 the Centers to assist such manufacturers in imple-

1 menting appropriate, targeted solutions to such ob-
2 stacles.

3 “(h) DEFINITIONS.—In this section—

4 “(1) the term ‘area career and technical edu-
5 cation school’ has the meaning given such term in
6 section 3 of the Carl D. Perkins Career and Tech-
7 nical Education Improvement Act of 2006 (20
8 U.S.C. 2302); and

9 “(2) the term ‘community college’ means an in-
10 stitution of higher education (as defined under sec-
11 tion 101(a) of the Higher Education Act of 1965
12 (20 U.S.C. 1001(a))) at which the highest degree
13 that is predominately awarded to students is an as-
14 sociate’s degree.”.

15 **SEC. 409. ELIMINATION OF OBSOLETE REPORTS.**

16 Section 28 of the National Institute of Standards and
17 Technology Act (15 U.S.C. 278n) is amended—

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

19 (2) in subsection (k)—

20 (A) in paragraph (3), by inserting “and”
21 after the semicolon at the end;

22 (B) in paragraph (4)(B), by striking “;
23 and” at the end and inserting a period; and

24 (C) by striking paragraph (5).

1 **SEC. 410. MODIFICATIONS TO GRANTS AND COOPERATIVE**
2 **AGREEMENTS.**

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

8 **SEC. 411. INFORMATION SYSTEMS STANDARDS CONSULTA-**
9 **TION.**

10 Section 20(c)(1) of the National Institute of Stand-
11 ards and Technology Act (15 U.S.C. 278g–3(c)(1)) is
12 amended by striking “the National Security Agency,”.

13 **SEC. 412. UNITED STATES-ISRAELI COOPERATION.**

14 It is the Sense of Congress that—

15 (1) partnerships that facilitate basic scientific
16 research between the United States and Israel ad-
17 vance technology development, innovation, and com-
18 mercialization leading to growth in various sectors,
19 including manufacturing, and creating benefits for
20 both nations;

21 (2) joint research and development agreements
22 carried out through government organizations like
23 the National Institute of Standards and Technology
24 support these efforts;

1 (3) partnerships between the United States and
2 Israel that further the basic scientific enterprise
3 should be encouraged; and

4 (4) the National Institute of Standards and
5 Technology should continue to facilitate scientific
6 collaborations between Israel and United States'
7 technical agencies working in measurement science
8 and standardization.

9 **TITLE V—DEPARTMENT OF**
10 **ENERGY SCIENCE**

11 **SEC. 501. MISSION.**

12 Section 209 of the Department of Energy Organiza-
13 tion Act (42 U.S.C. 7139) is amended by adding at the
14 end the following:

15 “(c) MISSION.—The mission of the Office of Science
16 shall be the delivery of scientific discoveries, capabilities,
17 and major scientific tools to transform the understanding
18 of nature and to advance the energy, economic, and na-
19 tional security of the United States. In support of this
20 mission, the Director shall carry out programs on basic
21 energy sciences, advanced scientific computing research,
22 high energy physics, biological and environmental re-
23 search, fusion energy sciences, and nuclear physics, includ-
24 ing as provided under subtitle A of title V of the America

1 COMPETES Reauthorization Act of 2015, through activi-
2 ties focused on—

3 “(1) fundamental scientific discoveries through
4 the study of matter and energy;

5 “(2) science in the national interest, includ-
6 ing—

7 “(A) advancing an agenda for American
8 energy security through research on energy pro-
9 duction, storage, transmission, efficiency, and
10 use; and

11 “(B) advancing our understanding of the
12 Earth’s climate through research in atmos-
13 pheric and environmental sciences; and

14 “(3) National Scientific User Facilities to de-
15 liver the 21st century tools of science, engineering,
16 and technology and provide the Nation’s researchers
17 with the most advanced tools of modern science in-
18 cluding accelerators, colliders, supercomputers, light
19 sources and neutron sources, and facilities for study-
20 ing materials science.

21 “(d) COORDINATION WITH OTHER DEPARTMENT OF
22 ENERGY PROGRAMS.—The Under Secretary for Science
23 and Energy shall ensure the coordination of Office of
24 Science activities and programs with other activities of the
25 Department.”.

1 **SEC. 502. BASIC ENERGY SCIENCES.**

2 (a) PROGRAM.—The Director shall carry out a pro-
3 gram in basic energy sciences, including materials sciences
4 and engineering, chemical sciences, physical biosciences,
5 and geosciences, for the purpose of providing the scientific
6 foundations for new energy technologies.

7 (b) MISSION.—The mission of the program described
8 in subsection (a) shall be to support fundamental research
9 to understand, predict, and ultimately control matter and
10 energy at the electronic, atomic, and molecular levels in
11 order to provide the foundations for new energy tech-
12 nologies and to support Department missions in energy,
13 environment, and national security.

14 (c) BASIC ENERGY SCIENCES USER FACILITIES.—
15 The Director shall carry out a subprogram for the develop-
16 ment, construction, operation, and maintenance of na-
17 tional user facilities to support the program under this
18 section. As practicable, these facilities shall serve the
19 needs of the Department, industry, the academic commu-
20 nity, and other relevant entities to create and examine new
21 materials and chemical processes for the purposes of ad-
22 vancing new energy technologies and improving the com-
23 petitiveness of the United States. These facilities shall in-
24 clude—

- 25 (1) x-ray light sources;
26 (2) neutron sources;

1 (3) nanoscale science research centers; and

2 (4) other facilities the Director considers appro-
3 priate, consistent with section 209 of the Depart-
4 ment of Energy Organization Act (42 U.S.C. 7139).

5 (d) LIGHT SOURCE LEADERSHIP INITIATIVE.—

6 (1) ESTABLISHMENT.—In support of the sub-
7 program authorized in subsection (c), the Director
8 shall establish an initiative to sustain and advance
9 global leadership of light source user facilities.

10 (2) LEADERSHIP STRATEGY.—Not later than 9
11 months after the date of enactment of this Act, and
12 biennially thereafter, the Director shall prepare, in
13 consultation with relevant stakeholders, and submit
14 to the Committee on Science, Space, and Technology
15 of the House of Representatives and the Committee
16 on Energy and Natural Resources of the Senate a
17 light source leadership strategy that—

18 (A) identifies, prioritizes, and describes
19 plans for the development, construction, and op-
20 eration of light sources over the next decade;

21 (B) describes plans for optimizing manage-
22 ment and use of existing light source facilities;
23 and

1 (C) assesses the international outlook for
2 light source user facilities and describes plans
3 for United States cooperation in such projects.

4 (3) ADVISORY COMMITTEE FEEDBACK AND
5 RECOMMENDATIONS.—Not later than 45 days after
6 submission of the strategy described in paragraph
7 (2), the Basic Energy Sciences Advisory Committee
8 shall provide the Director, the Committee on
9 Science, Space, and Technology of the House of
10 Representatives, and the Committee on Energy and
11 Natural Resources of the Senate a report of the Ad-
12 visory Committee’s analyses, findings, and rec-
13 ommendations for improving the strategy, including
14 a review of the most recent budget request for the
15 initiative.

16 (4) PROPOSED BUDGET.—The Director shall
17 transmit annually to Congress a proposed budget
18 corresponding to the activities identified in the strat-
19 egy.

20 (e) ACCELERATOR RESEARCH AND DEVELOP-
21 MENT.—The Director shall carry out research and devel-
22 opment on advanced accelerator and storage ring tech-
23 nologies relevant to the development of Basic Energy
24 Sciences user facilities, in consultation with the Office of

1 Science's High Energy Physics and Nuclear Physics pro-
2 grams.

3 (f) ENERGY FRONTIER RESEARCH CENTERS.—

4 (1) IN GENERAL.—The Director shall carry out
5 a program to provide awards, on a competitive,
6 merit-reviewed basis, to multi-institutional collabora-
7 tions or other appropriate entities to conduct funda-
8 mental and use-inspired energy research to accel-
9 erate scientific breakthroughs.

10 (2) COLLABORATIONS.—A collaboration receiv-
11 ing an award under this subsection may include mul-
12 tiple types of institutions and private sector entities.

13 (3) SELECTION AND DURATION.—

14 (A) IN GENERAL.—A collaboration under
15 this subsection shall be selected for a period of
16 5 years. An Energy Frontier Research Center
17 already in existence and supported by the Di-
18 rector on the date of enactment of this Act may
19 continue to receive support for a period of 5
20 years beginning on the date of establishment of
21 that center.

22 (B) REAPPLICATION.—After the end of the
23 period described in subparagraph (A), an
24 awardee may reapply for selection for a second

1 period of 5 years on a competitive, merit-re-
2 viewed basis.

3 (C) TERMINATION.—Consistent with the
4 existing authorities of the Department, the Di-
5 rector may terminate an underperforming cen-
6 ter for cause during the performance period.

7 (4) NO FUNDING FOR CONSTRUCTION.—No
8 funding provided pursuant to this subsection may be
9 used for the construction of new buildings or facili-
10 ties.

11 **SEC. 503. ADVANCED SCIENTIFIC COMPUTING RESEARCH.**

12 (a) PROGRAM.—The Director shall carry out a re-
13 search, development, and demonstration program to ad-
14 vance computational and networking capabilities to ana-
15 lyze, model, simulate, and predict complex phenomena rel-
16 evant to the development of new energy technologies and
17 the competitiveness of the United States.

18 (b) FACILITIES.—The Director, as part of the pro-
19 gram described in subsection (a), shall develop and main-
20 tain world-class computing and network facilities for
21 science and deliver critical research in applied mathe-
22 matics, computer science, and advanced networking to
23 support the Department's missions.

24 (c) DEFINITIONS.—Section 2 of the Department of
25 Energy High-End Computing Revitalization Act of 2004

1 (15 U.S.C. 5541) is amended by striking paragraphs (1)
2 through (5) and inserting the following:

3 “(1) CO-DESIGN.—The term ‘co-design’ means
4 the joint development of application algorithms,
5 models, and codes with computer technology archi-
6 tectures and operating systems to maximize effective
7 use of high-end computing systems.

8 “(2) DEPARTMENT.—The term ‘Department’
9 means the Department of Energy.

10 “(3) EXASCALE.—The term ‘exascale’ means
11 computing system performance at or near 10 to the
12 18th power floating point operations per second.

13 “(4) HIGH-END COMPUTING SYSTEM.—The
14 term ‘high-end computing system’ means a com-
15 puting system with performance that substantially
16 exceeds that of systems that are commonly available
17 for advanced scientific and engineering applications.

18 “(5) INSTITUTION OF HIGHER EDUCATION.—
19 The term ‘institution of higher education’ has the
20 meaning given the term in section 2 of the Energy
21 Policy Act of 2005 (42 U.S.C. 15801).

22 “(6) LEADERSHIP SYSTEM.—The term ‘leader-
23 ship system’ means a high-end computing system
24 that is among the most advanced in the world in

1 terms of performance in solving scientific and engi-
2 neering problems.

3 “(7) NATIONAL LABORATORY.—The term ‘Na-
4 tional Laboratory’ means any one of the seventeen
5 laboratories owned by the Department.

6 “(8) SECRETARY.—The term ‘Secretary’ means
7 the Secretary of Energy.

8 “(9) SOFTWARE TECHNOLOGY.—The term
9 ‘software technology’ includes optimal algorithms,
10 programming environments, tools, languages, and
11 operating systems for high-end computing systems.”.

12 (d) DEPARTMENT OF ENERGY HIGH-END COM-
13 PUTING RESEARCH AND DEVELOPMENT PROGRAM.—Sec-
14 tion 3 of the Department of Energy High-End Computing
15 Revitalization Act of 2004 (15 U.S.C. 5542) is amended—

16 (1) in subsection (a)—

17 (A) in paragraph (1), by striking “pro-
18 gram” and inserting “coordinated program
19 across the Department”;

20 (B) by striking “and” at the end of para-
21 graph (1);

22 (C) by striking the period at the end of
23 paragraph (2) and inserting “; and”; and

24 (D) by adding at the end the following new
25 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 America
5 COMPETES Reauthorization Act of 2015, a
6 report outlining an integrated strategy and pro-
7 gram management plan, including target dates
8 for prototypical and production exascale plat-
9 forms, interim milestones to reaching these tar-
10 gets, functional requirements, roles and respon-
11 sibilities of National Laboratories and industry,
12 acquisition strategy, and estimated resources
13 required, to achieve this exascale system capa-
14 bility. The report shall include the Secretary’s
15 plan for Departmental organization to manage
16 and execute the Exascale Computing Program,
17 including definition of the roles and responsibil-
18 ities within the Department to ensure an inte-
19 grated program across the Department. The re-
20 port shall also include a plan for ensuring bal-
21 ance and prioritizing across ASCR subprograms
22 in a flat or slow-growth budget environment.

23 “(B) STATUS REPORTS.—At the time of
24 the budget submission of the Department for
25 each fiscal year, the Secretary shall submit a

1 report to Congress that describes the status of
2 milestones and costs in achieving the objectives
3 of the exascale computing program.

4 “(C) EXASCALE MERIT REPORT.—At least
5 18 months prior to the initiation of construction
6 or installation of any exascale-class computing
7 facility, the Secretary shall transmit a plan to
8 the Congress detailing—

9 “(i) the proposed facility’s cost projec-
10 tions and capabilities to significantly accel-
11 erate the development of new energy tech-
12 nologies;

13 “(ii) technical risks and challenges
14 that must be overcome to achieve success-
15 ful completion and operation of the facility;
16 and

17 “(iii) an independent assessment of
18 the scientific and technological advances
19 expected from such a facility relative to
20 those expected from a comparable invest-
21 ment in expanded research and applica-
22 tions at terascale-class and petascale-class
23 computing facilities, including an evalua-
24 tion of where investments should be made

1 in the system software and algorithms to
2 enable these advances.”.

3 **SEC. 504. HIGH ENERGY PHYSICS.**

4 (a) PROGRAM.—The Director shall carry out a re-
5 search program on the fundamental constituents of matter
6 and energy and the nature of space and time.

7 (b) SENSE OF CONGRESS.—It is the sense of the
8 Congress that—

9 (1) the Director should incorporate the findings
10 and recommendations of the Particle Physics Project
11 Prioritization Panel’s report entitled “Building for
12 Discovery: Strategic Plan for U.S. Particle Physics
13 in the Global Context”, into the Department’s plan-
14 ning process as part of the program described in
15 subsection (a);

16 (2) the Director should prioritize domestically
17 hosted research projects that will maintain the
18 United States position as a global leader in particle
19 physics and attract the world’s most talented physi-
20 cists and foreign investment for international col-
21 laboration; and

22 (3) the nations that lead in particle physics by
23 hosting international teams dedicated to a common
24 scientific goal attract the world’s best talent and in-

1 spire future generations of physicists and tech-
2 nologists.

3 (c) NEUTRINO RESEARCH.—As part of the program
4 described in subsection (a), the Director shall carry out
5 research activities on rare decay processes and the nature
6 of the neutrino, which may include collaborations with the
7 National Science Foundation or international collabora-
8 tions.

9 (d) DARK ENERGY AND DARK MATTER RE-
10 SEARCH.—As part of the program described in subsection
11 (a), the Director shall carry out research activities on the
12 nature of dark energy and dark matter, which may include
13 collaborations with the National Aeronautics and Space
14 Administration or the National Science Foundation, or
15 international collaborations.

16 (e) ACCELERATOR RESEARCH AND DEVELOP-
17 MENT.—The Director shall carry out research and devel-
18 opment in advanced accelerator concepts and technologies,
19 including laser technologies, to reduce the necessary scope
20 and cost for the next generation of particle accelerators.
21 The Director shall ensure access to national laboratory ac-
22 celerator facilities, infrastructure, and technology for
23 users and developers of accelerators that advance applica-
24 tions in energy and the environment, medicine, industry,
25 national security, and discovery science.

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. 505. BIOLOGICAL AND ENVIRONMENTAL RESEARCH.**

8 (a) PROGRAM.—The Director shall carry out a pro-
9 gram of research, development, and demonstration in the
10 areas of biological systems science and climate and envi-
11 ronmental science to support the energy and environ-
12 mental missions of the Department.

13 (b) PRIORITY RESEARCH.—In carrying out this sec-
14 tion, the Director shall prioritize fundamental research on
15 biological systems and genomics science with the greatest
16 potential to enable scientific discovery.

17 (c) ASSESSMENT.—Not later than 12 months after
18 the date of enactment of this Act, the Comptroller General
19 shall submit a report to Congress identifying climate
20 science-related initiatives under this section that overlap
21 or duplicate initiatives of other Federal agencies and the
22 extent of such overlap or duplication.

23 (d) LIMITATION.—The Director shall not approve
24 new climate science-related initiatives to be carried out
25 through the Office of Science without making a determina-

1 tion that such work is unique and not duplicative of work
2 by other Federal agencies. Not later than 3 months after
3 receiving the assessment required under subsection (c),
4 the Director shall cease those climate science-related ini-
5 tiatives identified in the assessment as overlapping or du-
6 plicative, unless the Director justifies that such work is
7 critical to achieving American energy security.

8 (e) LOW DOSE RADIATION RESEARCH PROGRAM.—

9 (1) IN GENERAL.—The Director of the Depart-
10 ment of Energy Office of Science shall carry out a
11 research program on low dose radiation. The pur-
12 pose of the program is to enhance the scientific un-
13 derstanding of and reduce uncertainties associated
14 with the effects of exposure to low dose radiation in
15 order to inform improved risk management methods.

16 (2) STUDY.—Not later than 60 days after the
17 date of enactment of this Act, the Director shall
18 enter into an agreement with the National Acad-
19 emies to conduct a study assessing the current sta-
20 tus and development of a long-term strategy for low
21 dose radiation research. Such study shall be com-
22 pleted not later than 18 months after the date of en-
23 actment of this Act. The study shall be conducted in
24 coordination with Federal agencies that perform ion-
25 izing radiation effects research and shall leverage

1 the most current studies in this field. Such study
2 shall—

3 (A) identify current scientific challenges
4 for understanding the long-term effects of ion-
5 izing radiation;

6 (B) assess the status of current low dose
7 radiation research in the United States and
8 internationally;

9 (C) formulate overall scientific goals for
10 the future of low-dose radiation research in the
11 United States;

12 (D) recommend a long-term strategic and
13 prioritized research agenda to address scientific
14 research goals for overcoming the identified sci-
15 entific challenges in coordination with other re-
16 search efforts;

17 (E) define the essential components of a
18 research program that would address this re-
19 search agenda within the universities and the
20 National Laboratories; and

21 (F) assess the cost-benefit effectiveness of
22 such a program.

23 (3) RESEARCH PLAN.—Not later than 90 days
24 after the completion of the study performed under
25 paragraph (2) the Secretary of Energy shall deliver

1 to the Committee on Science, Space, and Technology
2 of the House of Representatives and the Committee
3 on Energy and Natural Resources of the Senate a
4 5-year research plan that responds to the study's
5 findings and recommendations and identifies and
6 prioritizes research needs.

7 (4) DEFINITION.—In this subsection, the term
8 “low dose radiation” means a radiation dose of less
9 than 100 millisieverts.

10 (5) RULE OF CONSTRUCTION.—Nothing in this
11 subsection shall be construed to subject any research
12 carried out by the Director under the research pro-
13 gram under this subsection to any limitations de-
14 scribed in section 977(e) of the Energy Policy Act
15 of 2005 (42 U.S.C. 16317(e)).

16 **SEC. 506. FUSION ENERGY.**

17 (a) PROGRAM.—The Director shall carry out a fusion
18 energy sciences research program to expand the funda-
19 mental understanding of plasmas and matter at very high
20 temperatures and densities and to build the scientific
21 foundation necessary to enable fusion power.

22 (b) FUSION MATERIALS RESEARCH AND DEVELOP-
23 MENT.—As part of the activities authorized in section 978
24 of the Energy Policy Act of 2005 (42 U.S.C. 16318)—

1 (1) the Director, in coordination with the As-
2 sistant Secretary for Nuclear Energy of the Depart-
3 ment, shall carry out research and development ac-
4 tivities to identify, characterize, and demonstrate
5 materials that can endure the neutron, plasma, and
6 heat fluxes expected in a fusion power system; and

7 (2) the Secretary shall—

8 (A) provide an assessment of the need for
9 a facility or facilities that can examine and test
10 potential fusion and next generation fission ma-
11 terials and other enabling technologies relevant
12 to the development of fusion power; and

13 (B) provide an assessment of whether a
14 single new facility that substantially addresses
15 magnetic fusion and next generation fission ma-
16 terials research needs is feasible, in conjunction
17 with the expected capabilities of facilities oper-
18 ational as of the date of enactment of this Act.

19 (c) TOKAMAK RESEARCH AND DEVELOPMENT.—

20 (1) IN GENERAL.—As part of the program de-
21 scribed in subsection (a), the Director shall support
22 research and development activities and facility oper-
23 ations to optimize the tokamak approach to fusion
24 energy.

25 (2) ITER.—

1 (A) REPORT.—Not later than 1 year after
2 the date of enactment of this Act, the Secretary
3 shall submit to Congress a report providing an
4 assessment of—

5 (i) the most recent schedule for ITER
6 that has been approved by the ITER
7 Council; and

8 (ii) progress of the ITER Council and
9 the ITER Director General toward imple-
10 mentation of the recommendations of the
11 Third Biennial International Organization
12 Management Assessment Report.

13 (B) FAIRNESS IN COMPETITION FOR SO-
14 LICITATIONS FOR INTERNATIONAL PROJECT AC-
15 TIVITIES.—Section 33 of the Atomic Energy
16 Act of 1954 (42 U.S.C. 2053) is amended by
17 adding at the end the following: “For purposes
18 of this section, with respect to international re-
19 search projects, the term ‘private facilities or
20 laboratories’ shall refer to facilities or labora-
21 tories located in the United States.”.

22 (C) SENSE OF CONGRESS.—It is the sense
23 of Congress that the United States should sup-
24 port a robust, diverse fusion program. It is fur-
25 ther the sense of Congress that developing the

1 scientific basis for fusion, providing research re-
2 sults key to the success of ITER, and training
3 the next generation of fusion scientists are of
4 critical importance to the United States and
5 should in no way be diminished by participation
6 of the United States in the ITER project.

7 (d) INERTIAL FUSION ENERGY RESEARCH AND DE-
8 VELOPMENT PROGRAM.—The Secretary shall carry out a
9 program of research and technology development in iner-
10 tial fusion for energy applications, including ion beam,
11 laser, and pulsed power fusion systems.

12 (e) ALTERNATIVE AND ENABLING CONCEPTS.—

13 (1) IN GENERAL.—As part of the program de-
14 scribed in subsection (a), the Director shall support
15 research and development activities and facility oper-
16 ations at United States universities, national labora-
17 tories, and private facilities for a portfolio of alter-
18 native and enabling fusion energy concepts that may
19 provide solutions to significant challenges to the es-
20 tablishment of a commercial magnetic fusion power
21 plant, prioritized based on the ability of the United
22 States to play a leadership role in the international
23 fusion research community. Fusion energy concepts
24 and activities explored under this paragraph may in-
25 clude—

1 (A) high magnetic field approaches facilitated by high temperature superconductors;

2 (B) advanced stellarator concepts;

3 (C) non-tokamak confinement configurations operating at low magnetic fields;

4 (D) magnetized target fusion energy concepts;

5 (E) liquid metals to address issues associated with fusion plasma interactions with the inner wall of the encasing device;

6 (F) immersion blankets for heat management and fuel breeding;

7 (G) advanced scientific computing activities; and

8 (H) other promising fusion energy concepts identified by the Director.

9 (2) COORDINATION WITH ARPA-E.—The Under Secretary and the Director shall coordinate with the Director of the Advanced Research Projects Agency—Energy (in this paragraph referred to as “ARPA-E”) to—

10 (A) assess the potential for any fusion energy project supported by ARPA-E to represent a promising approach to a commercially viable fusion power plant;

1 (B) determine whether the results of any
2 fusion energy project supported by ARPA-E
3 merit the support of follow-on research activi-
4 ties carried out by the Office of Science; and

5 (C) avoid unintentional duplication of ac-
6 tivities.

7 (f) GENERAL PLASMA SCIENCE AND APPLICA-
8 TIONS.—Not later than 2 years after the date of enact-
9 ment of this Act, the Secretary shall provide to Congress
10 an assessment of opportunities in which the United States
11 can provide world-leading contributions to advancing plas-
12 ma science and non-fusion energy applications, and iden-
13 tify opportunities for partnering with other Federal agen-
14 cies both within and outside of the Department of Energy.

15 (g) IDENTIFICATION OF PRIORITIES.—

16 (1) REPORT.—Not later than 2 years after the
17 date of enactment of this Act, the Secretary shall
18 transmit to Congress a report on the Department’s
19 proposed fusion energy research and development
20 activities over the following 10 years under at least
21 3 realistic budget scenarios, including a scenario
22 based on 3 percent annual growth in the non-ITER
23 portion of the budget for fusion energy research and
24 development activities. The report shall—

1 (A) identify specific areas of fusion energy
2 research and enabling technology development
3 in which the United States can and should es-
4 tablish or solidify a lead in the global fusion en-
5 ergy development effort;

6 (B) identify priorities for initiation of facil-
7 ity construction and facility decommissioning
8 under each of those scenarios; and

9 (C) assess the ability of the United States
10 fusion workforce to carry out the activities iden-
11 tified in subparagraphs (A) and (B), including
12 the adequacy of college and university programs
13 to train the leaders and workers of the next
14 generation of fusion energy researchers.

15 (2) PROCESS.—In order to develop the report
16 required under paragraph (1), the Secretary shall le-
17 verage best practices and lessons learned from the
18 process used to develop the most recent report of the
19 Particle Physics Project Prioritization Panel of the
20 High Energy Physics Advisory Panel. No member of
21 the Fusion Energy Sciences Advisory Committee
22 shall be excluded from participating in developing or
23 voting on final approval of the report required under
24 paragraph (1).

1 **SEC. 507. NUCLEAR PHYSICS.**

2 (a) PROGRAM.—The Director shall carry out a pro-
3 gram of experimental and theoretical research, and sup-
4 port associated facilities, to discover, explore, and under-
5 stand all forms of nuclear matter.

6 (b) ISOTOPE DEVELOPMENT AND PRODUCTION FOR
7 RESEARCH APPLICATIONS.—The Director shall carry out
8 a program for the production of isotopes, including the
9 development of techniques to produce isotopes, that the
10 Secretary determines are needed for research, medical, in-
11 dustrial, or other purposes. In making this determination,
12 the Secretary shall—

13 (1) ensure that, as has been the policy of the
14 United States since the publication in 1965 of Fed-
15 eral Register notice 30 Fed. Reg. 3247, isotope pro-
16 duction activities do not compete with private indus-
17 try unless critical national interests necessitate the
18 Federal Government's involvement;

19 (2) ensure that activities undertaken pursuant
20 to this section, to the extent practicable, promote the
21 growth of a robust domestic isotope production in-
22 dustry; and

23 (3) consider any relevant recommendations
24 made by Federal advisory committees, the National
25 Academies, and interagency working groups in which
26 the Department participates.

1 **SEC. 508. SCIENCE LABORATORIES INFRASTRUCTURE PRO-**
2 **GRAM.**

3 (a) PROGRAM.—The Director shall carry out a pro-
4 gram to improve the safety, efficiency, and mission readi-
5 ness of infrastructure at Office of Science laboratories.

6 The program shall include projects to—

7 (1) renovate or replace space that does not
8 meet research needs;

9 (2) replace facilities that are no longer cost ef-
10 fective to renovate or operate;

11 (3) modernize utility systems to prevent failures
12 and ensure efficiency;

13 (4) remove excess facilities to allow safe and ef-
14 ficient operations; and

15 (5) construct modern facilities to conduct ad-
16 vanced research in controlled environmental condi-
17 tions.

18 (b) APPROACH.—In carrying out this section, the Di-
19 rector shall utilize all available approaches and mecha-
20 nisms, including capital line items, minor construction
21 projects, energy savings performance contracts, utility en-
22 ergy service contracts, alternative financing, and expense
23 funding, as appropriate.

24 **SEC. 509. DOMESTIC MANUFACTURING.**

25 Not later than 1 year after the date of enactment
26 of this Act, the Secretary shall transmit to the Committee

1 on Science, Space, and Technology of the House of Rep-
2 resentatives and the Committee on Energy and Natural
3 Resources of the Senate a report on the current ability
4 of domestic manufacturers to meet the procurement re-
5 quirements for major ongoing projects funded by the Of-
6 fice of Science of the Department, including a calculation
7 of the percentage of equipment acquired from domestic
8 manufacturers for this purpose.

9 **SEC. 510. AUTHORIZATION OF APPROPRIATIONS.**

10 (a) FISCAL YEAR 2016.—There are authorized to be
11 appropriated to the Secretary for the Office of Science for
12 fiscal year 2016 \$5,339,800,000, of which—

13 (1) \$1,850,000,000 shall be for Basic Energy
14 Science;

15 (2) \$788,000,000 shall be for High Energy
16 Physics;

17 (3) \$550,000,000 shall be for Biological and
18 Environmental Research;

19 (4) \$624,700,000 shall be for Nuclear Physics;

20 (5) \$621,000,000 shall be for Advanced Sci-
21 entific Computing Research;

22 (6) \$488,000,000 shall be for Fusion Energy
23 Sciences;

24 (7) \$113,600,000 shall be for Science Labora-
25 tories Infrastructure;

1 (8) \$181,000,000 shall be for Science Program
2 Direction;

3 (9) \$103,000,000 shall be for Safeguards and
4 Security; and

5 (10) \$20,500,000 shall be for Workforce Devel-
6 opment for Teachers and Scientists.

7 (b) FISCAL YEAR 2017.—There are authorized to be
8 appropriated to the Secretary for the Office of Science for
9 fiscal year 2017 \$5,339,800,000, of which—

10 (1) \$1,850,000,000 shall be for Basic Energy
11 Science;

12 (2) \$788,000,000 shall be for High Energy
13 Physics;

14 (3) \$550,000,000 shall be for Biological and
15 Environmental Research;

16 (4) \$624,700,000 shall be for Nuclear Physics;

17 (5) \$621,000,000 shall be for Advanced Sci-
18 entific Computing Research;

19 (6) \$488,000,000 shall be for Fusion Energy
20 Sciences;

21 (7) \$113,600,000 shall be for Science Labora-
22 tories Infrastructure;

23 (8) \$181,000,000 shall be for Science Program
24 Direction;

1 (9) \$103,000,000 shall be for Safeguards and
2 Security; and

3 (10) \$20,500,000 shall be for Workforce Devel-
4 opment for Teachers and Scientists.

5 **SEC. 511. DEFINITIONS.**

6 In this title—

7 (1) the term “Department” means the Depart-
8 ment of Energy;

9 (2) the term “Director” means the Director of
10 the Office of Science of the Department; and

11 (3) the term “Secretary” means the Secretary
12 of Energy.

13 **TITLE VI—DEPARTMENT OF EN-**
14 **ERGY APPLIED RESEARCH**
15 **AND DEVELOPMENT**

16 **Subtitle A—Crosscutting Research**
17 **and Development**

18 **SEC. 601. CROSSCUTTING RESEARCH AND DEVELOPMENT.**

19 (a) CROSSCUTTING RESEARCH AND DEVELOP-
20 MENT.—The Secretary shall, through the Under Secretary
21 for Science and Energy, utilize the capabilities of the De-
22 partment to identify strategic opportunities for collabo-
23 rative research, development, demonstration, and commer-
24 cial application of innovative science and technologies
25 for—

1 (1) advancing the understanding of the energy-
2 water-land use nexus;

3 (2) modernizing the electric grid by improving
4 energy transmission and distribution systems secu-
5 rity and resiliency;

6 (3) utilizing supercritical carbon dioxide in elec-
7 tric power generation;

8 (4) subsurface technology and engineering;

9 (5) high performance computing;

10 (6) cybersecurity; and

11 (7) critical challenges identified through com-
12 prehensive energy studies, evaluations, and reviews.

13 (b) CROSSCUTTING APPROACHES.—To the maximum
14 extent practicable, the Secretary shall seek to leverage ex-
15 isting programs, and consolidate and coordinate activities,
16 throughout the Department to promote collaboration and
17 crosscutting approaches within programs.

18 (c) ADDITIONAL ACTIONS.—The Secretary shall—

19 (1) prioritize activities that promote the utiliza-
20 tion of all affordable domestic resources;

21 (2) develop a rigorous and realistic planning,
22 evaluation, and technical assessment framework for
23 setting objective, long-term strategic goals and eval-
24 uating progress that ensures the integrity and inde-

1 pendence to insulate planning from political influ-
2 ence and the flexibility to adapt to market dynamics;

3 (3) ensure that activities shall be undertaken in
4 a manner that does not duplicate other activities
5 within the Department or other Federal Government
6 activities; and

7 (4) identify programs that may be more effec-
8 tively left to the States, industry, nongovernmental
9 organizations, institutions of higher education, or
10 other stakeholders.

11 **SEC. 602. STRATEGIC RESEARCH PORTFOLIO ANALYSIS**
12 **AND COORDINATION PLAN.**

13 Section 994 of Energy Policy Act of 2005 (42 U.S.C.
14 16358) is amended to read as follows:

15 **“SEC. 994. STRATEGIC RESEARCH PORTFOLIO ANALYSIS**
16 **AND COORDINATION PLAN.**

17 “(a) IN GENERAL.—The Secretary shall periodically
18 review all of the science and technology activities of the
19 Department in a strategic framework that takes into ac-
20 count the frontiers of science to which the Department
21 can contribute, the national needs relevant to the Depart-
22 ment’s statutory missions, and global energy dynamics.

23 “(b) COORDINATION ANALYSIS AND PLAN.—As part
24 of the review under subsection (a), the Secretary shall de-
25 velop a plan to improve coordination and collaboration in

1 research, development, demonstration, and commercial ap-
2 plication activities across Department organizational
3 boundaries.

4 “(c) PLAN CONTENTS.—The plan shall describe—

5 “(1) crosscutting scientific and technical issues
6 and research questions that span more than one pro-
7 gram or major office of the Department;

8 “(2) how the applied technology programs of
9 the Department are coordinating their activities, and
10 addressing those questions;

11 “(3) ways in which the technical interchange
12 within the Department, particularly between the Of-
13 fice of Science and the applied technology programs,
14 can be enhanced, including limited ways in which the
15 research agendas of the Office of Science and the
16 applied programs can better interact and assist each
17 other;

18 “(4) a description of how the Secretary will en-
19 sure that the Department’s overall research agenda
20 include, in addition to fundamental, curiosity-driven
21 research, fundamental research related to topics of
22 concern to the applied programs, and applications in
23 Departmental technology programs of research re-
24 sults generated by fundamental, curiosity-driven re-
25 search;

1 “(5) critical assessments of any ongoing pro-
2 grams that have experienced sub-par performance or
3 cost over-runs of 10 percent or more over 1 or more
4 years;

5 “(6) activities that may be more effectively left
6 to the States, industry, nongovernmental organiza-
7 tions, institutions of higher education, or other
8 stakeholders; and

9 “(7) detailed proposals for innovation hubs, in-
10 stitutes, and research centers prior to establishment
11 or renewal by the Department, including—

12 “(A) certification that all hubs, institutes,
13 and research centers will advance the mission of
14 the Department, and prioritize research, devel-
15 opment, and demonstration;

16 “(B) certification that the establishment or
17 renewal of hubs, institutes, or research centers
18 will not diminish funds available for basic re-
19 search and development within the Office of
20 Science; and

21 “(C) certification that all hubs, institutes,
22 and research centers established or renewed
23 within the Office of Science are consistent with
24 the mission of the Office of Science as described

1 in section 209(c) of the Department of Energy
2 Organization Act (42 U.S.C. 7139(c)).

3 “(d) PLAN TRANSMITTAL.—Not later than 1 year
4 after the date of enactment of the America COMPETES
5 Reauthorization Act of 2015, and every 4 years thereafter,
6 the Secretary shall transmit to the Committee on Science,
7 Space, and Technology of the House of Representatives
8 and the Committee on Energy and Natural Resources of
9 the Senate the results of the review under subsection (a)
10 and the coordination plan under subsection (b).”.

11 **SEC. 603. STRATEGY FOR FACILITIES AND INFRASTRUC-**
12 **TURE.**

13 (a) AMENDMENTS.—Section 993 of the Energy Pol-
14 icy Act of 2005 (42 U.S.C. 16357) is amended—

15 (1) by amending the section heading to read as
16 follows: “**STRATEGY FOR FACILITIES AND IN-**
17 **FRASTRUCTURE**”; and

18 (2) in subsection (b)(1), by striking “2008”
19 and inserting “2018”.

20 (b) TABLE OF CONTENTS AMENDMENT.—The item
21 relating to section 993 in the table of contents of the En-
22 ergy Policy Act of 2005 is amended to read as follows:
“Sec. 993. Strategy for facilities and infrastructure.”.

23 **SEC. 604. ENERGY INNOVATION HUBS.**

24 (a) AUTHORIZATION OF PROGRAM.—

1 (1) IN GENERAL.—The Secretary of Energy
2 shall carry out a program to enhance the Nation’s
3 economic, environmental, and energy security by
4 making awards to consortia for establishing and op-
5 erating Energy Innovation Hubs to conduct and
6 support, whenever practicable at one centralized lo-
7 cation, multidisciplinary, collaborative research, de-
8 velopment, and demonstration of advanced energy
9 technologies.

10 (2) TECHNOLOGY DEVELOPMENT FOCUS.—The
11 Secretary shall designate for each Hub a unique ad-
12 vanced energy technology focus.

13 (3) COORDINATION.—The Secretary shall en-
14 sure the coordination of, and avoid unnecessary du-
15 plication of, the activities of Hubs with those of
16 other Department of Energy research entities, in-
17 cluding the National Laboratories, the Advanced Re-
18 search Projects Agency-Energy, Energy Frontier Re-
19 search Centers, and within industry.

20 (b) CONSORTIA.—

21 (1) ELIGIBILITY.—To be eligible to receive an
22 award under this section for the establishment and
23 operation of a Hub, a consortium shall—

24 (A) be composed of no fewer than two
25 qualifying entities; and

1 (B) operate subject to an agreement en-
2 tered into by its members that documents—

3 (i) the proposed partnership agree-
4 ment, including the governance and man-
5 agement structure of the Hub;

6 (ii) measures to enable cost-effective
7 implementation of the program under this
8 section;

9 (iii) a proposed budget, including fi-
10 nancial contributions from non-Federal
11 sources;

12 (iv) a plan for managing intellectual
13 property rights; and

14 (v) an accounting structure that en-
15 ables the Secretary to ensure that the con-
16 sortium has complied with the require-
17 ments of this section.

18 (2) APPLICATION.—A consortium seeking to es-
19 tablish and operate a Hub under this section, acting
20 through a prime applicant, shall transmit to the Sec-
21 retary an application at such time, in such form,
22 and accompanied by such information as the Sec-
23 retary shall require, including a detailed description
24 of the elements of the consortium agreement re-
25 quired under paragraph (1)(B). If the consortium

1 members will not be located at one centralized loca-
2 tion, such application shall include a communica-
3 tions plan that ensures close coordination and inte-
4 gration of the Hub's activities.

5 (c) SELECTION AND SCHEDULE.—The Secretary
6 shall select consortia for awards for the establishment and
7 operation of Hubs through competitive selection processes.
8 In selecting consortia, the Secretary shall consider the in-
9 formation a consortium must disclose according to sub-
10 section (b), as well as any existing facilities a consortium
11 will provide for Hub activities. Awards made to a Hub
12 shall be for a period not to exceed 5 years, subject to the
13 availability of appropriations, after which the award may
14 be renewed, subject to a rigorous merit review. A Hub al-
15 ready in existence on the date of enactment of this Act
16 may continue to receive support for a period of 5 years,
17 subject to the availability of appropriations, beginning on
18 the date of establishment of that Hub.

19 (d) HUB OPERATIONS.—

20 (1) IN GENERAL.—Each Hub shall conduct or
21 provide for multidisciplinary, collaborative research,
22 development, and demonstration of advanced energy
23 technologies within the technology development focus
24 designated under subsection (a)(2). Each Hub
25 shall—

1 (A) encourage collaboration and commu-
2 nication among the member qualifying entities
3 of the consortium and awardees by conducting
4 activities whenever practicable at one central-
5 ized location;

6 (B) develop and publish on the Depart-
7 ment of Energy's website proposed plans and
8 programs;

9 (C) submit an annual report to the Sec-
10 retary summarizing the Hub's activities, includ-
11 ing detailing organizational expenditures, and
12 describing each project undertaken by the Hub;
13 and

14 (D) monitor project implementation and
15 coordination.

16 (2) CONFLICTS OF INTEREST.—

17 (A) PROCEDURES.—Hubs shall maintain
18 conflict of interest procedures, consistent with
19 those of the Department of Energy, to ensure
20 that employees and consortia designees for Hub
21 activities who are in decisionmaking capacities
22 disclose all material conflicts of interest, and
23 avoid such conflicts.

24 (B) DISQUALIFICATION AND REVOCA-
25 TION.—The Secretary may disqualify an appli-

1 cation or revoke funds distributed to a Hub if
2 the Secretary discovers a failure to comply with
3 conflict of interest procedures established under
4 subparagraph (A).

5 (3) PROHIBITION ON CONSTRUCTION.—

6 (A) IN GENERAL.—No funds provided pur-
7 suant to this section may be used for construc-
8 tion of new buildings or facilities for Hubs.
9 Construction of new buildings or facilities shall
10 not be considered as part of the non-Federal
11 share of a Hub cost-sharing agreement.

12 (B) TEST BED AND RENOVATION EXCEP-
13 TION.—Nothing in this subsection shall prohibit
14 the use of funds provided pursuant to this sec-
15 tion, or non-Federal cost share funds, for re-
16 search or for the construction of a test bed or
17 renovations to existing buildings or facilities for
18 the purposes of research if the Secretary deter-
19 mines that the test bed or renovations are lim-
20 ited to a scope and scale necessary for the re-
21 search to be conducted.

22 (e) TERMINATION.—Consistent with the existing au-
23 thorities of the Department, the Secretary may terminate
24 an underperforming Hub for cause during the perform-
25 ance period.

1 (f) DEFINITIONS.—For purposes of this section:

2 (1) ADVANCED ENERGY TECHNOLOGY.—The
3 term “advanced energy technology” means—

4 (A) an innovative technology—

5 (i) that produces energy from solar,
6 wind, geothermal, biomass, tidal, wave,
7 ocean, or other renewable energy resources;

8 (ii) that produces nuclear energy;

9 (iii) for carbon capture and sequestra-
10 tion;

11 (iv) that enables advanced vehicles,
12 vehicle components, and related tech-
13 nologies that result in significant energy
14 savings;

15 (v) that generates, transmits, distrib-
16 utes, utilizes, or stores energy more effi-
17 ciently than conventional technologies, in-
18 cluding through Smart Grid technologies;
19 or

20 (vi) that enhances the energy inde-
21 pendence and security of the United States
22 by enabling improved or expanded supply
23 and production of domestic energy re-
24 sources, including coal, oil, and natural
25 gas;

1 (B) research, development, and demonstra-
2 tion activities necessary to ensure the long-
3 term, secure, and sustainable supply of energy
4 critical elements; or

5 (C) another innovative energy technology
6 area identified by the Secretary.

7 (2) HUB.—The term “Hub” means an Energy
8 Innovation Hub established or operating in accord-
9 ance with this section, including any Energy Innova-
10 tion Hub existing as of the date of enactment of this
11 Act.

12 (3) QUALIFYING ENTITY.—The term “quali-
13 fying entity” means—

14 (A) an institution of higher education;

15 (B) an appropriate State or Federal entity,
16 including the Department of Energy Federally
17 Funded Research and Development Centers;

18 (C) a nongovernmental organization with
19 expertise in advanced energy technology re-
20 search, development, demonstration, or com-
21 mercial application; or

22 (D) any other relevant entity the Secretary
23 considers appropriate.

1 **Subtitle B—Electricity Delivery**
2 **and Energy Reliability Research**
3 **and Development**

4 **SEC. 611. DISTRIBUTED ENERGY AND ELECTRIC ENERGY**
5 **SYSTEMS.**

6 Section 921 of the Energy Policy Act of 2005 (42
7 U.S.C. 16211) is amended to read as follows:

8 **“SEC. 921. DISTRIBUTED ENERGY AND ELECTRIC ENERGY**
9 **SYSTEMS.**

10 “(a) **IN GENERAL.**—The Secretary shall carry out
11 programs of research, development, demonstration, and
12 commercial application on distributed energy resources
13 and systems reliability and efficiency, to improve the reli-
14 ability and efficiency of distributed energy resources and
15 systems, integrating advanced energy technologies with
16 grid connectivity, including activities described in this sub-
17 title. The programs shall address advanced energy tech-
18 nologies and systems and advanced grid security, resil-
19 iency, and reliability technologies.

20 “(b) **OBJECTIVES.**—To the maximum extent prac-
21 ticable, the Secretary shall seek to—

22 “(1) leverage existing programs;

23 “(2) consolidate and coordinate activities
24 throughout the Department to promote collaboration
25 and crosscutting approaches;

1 “(3) ensure activities are undertaken in a man-
2 ner that does not duplicate other activities within
3 the Department or other Federal Government activi-
4 ties; and

5 “(4) identify programs that may be more effec-
6 tively left to the States, industry, nongovernmental
7 organizations, institutions of higher education, or
8 other stakeholders.”.

9 **SEC. 612. ELECTRIC TRANSMISSION AND DISTRIBUTION RE-**
10 **SEARCH AND DEVELOPMENT.**

11 (a) AMENDMENTS.—Section 925 of the Energy Pol-
12 icy Act of 2005 (42 U.S.C. 16215) is amended—

13 (1) by amending the section heading to read as
14 follows: “**ELECTRIC TRANSMISSION AND DIS-**
15 **TRIBUTION RESEARCH AND DEVELOPMENT**”;

16 (2) by amending subsection (a) to read as fol-
17 lows:

18 “(a) PROGRAM.—The Secretary shall establish a
19 comprehensive research, development, and demonstration
20 program to ensure the reliability, efficiency, and environ-
21 mental integrity of electrical transmission and distribution
22 systems, which shall include innovations for—

23 “(1) advanced energy delivery technologies, en-
24 ergy storage technologies, materials, and systems;

1 “(2) advanced grid reliability and efficiency
2 technology development;

3 “(3) technologies contributing to significant
4 load reductions;

5 “(4) advanced metering, load management, and
6 control technologies;

7 “(5) technologies to enhance existing grid com-
8 ponents;

9 “(6) the development and use of high-tempera-
10 ture superconductors to—

11 “(A) enhance the reliability, operational
12 flexibility, or power-carrying capability of elec-
13 tric transmission or distribution systems; or

14 “(B) increase the efficiency of electric en-
15 ergy generation, transmission, distribution, or
16 storage systems;

17 “(7) integration of power systems, including
18 systems to deliver high-quality electric power, elec-
19 tric power reliability, and combined heat and power;

20 “(8) supply of electricity to the power grid by
21 small scale, distributed, and residential-based power
22 generators;

23 “(9) the development and use of advanced grid
24 design, operation, and planning tools;

1 “(10) technologies to enhance security for elec-
2 trical transmission and distributions systems; and

3 “(11) any other infrastructure technologies, as
4 appropriate.”; and

5 (3) by amending subsection (c) to read as fol-
6 lows:

7 “(c) IMPLEMENTATION.—

8 “(1) CONSORTIUM.—The Secretary shall con-
9 sider implementing the program under this section
10 using a consortium of participants from industry, in-
11 stitutions of higher education, and National Labora-
12 tories.

13 “(2) OBJECTIVES.—To the maximum extent
14 practicable the Secretary shall seek to—

15 “(A) leverage existing programs;

16 “(B) consolidate and coordinate activities,
17 throughout the Department to promote collabo-
18 ration and crosscutting approaches;

19 “(C) ensure activities are undertaken in a
20 manner that does not duplicate other activities
21 within the Department or other Federal Gov-
22 ernment activities; and

23 “(D) identify programs that may be more
24 effectively left to the States, industry, non-

1 governmental organizations, institutions of
2 higher education, or other stakeholders.”.

3 (b) TABLE OF CONTENTS AMENDMENT.—The item
4 relating to section 925 in the table of contents of the En-
5 ergy Policy Act of 2005 is amended to read as follows:
“Sec. 925. Electric transmission and distribution research and development.”.

6 **Subtitle C—Nuclear Energy**
7 **Research and Development**

8 **SEC. 621. OBJECTIVES.**

9 Section 951 of the Energy Policy Act of 2005 (42
10 U.S.C. 16271) is amended—

11 (1) by amending subsection (a) to read as fol-
12 lows:

13 “(a) IN GENERAL.—The Secretary shall conduct pro-
14 grams of civilian nuclear energy research, development,
15 demonstration, and commercial application, including ac-
16 tivities described in this subtitle. Such programs shall take
17 into consideration the following objectives:

18 “(1) Enhancing nuclear power’s viability as
19 part of the United States energy portfolio.

20 “(2) Reducing used nuclear fuel and nuclear
21 waste products generated by civilian nuclear energy.

22 “(3) Supporting technological advances in areas
23 that industry by itself is not likely to undertake be-
24 cause of technical and financial uncertainty.

1 “(4) Providing the technical means to reduce
2 the likelihood of nuclear proliferation.

3 “(5) Maintaining a cadre of nuclear scientists
4 and engineers.

5 “(6) Maintaining National Laboratory and uni-
6 versity nuclear programs, including their infrastruc-
7 ture.

8 “(7) Supporting both individual researchers and
9 multidisciplinary teams of researchers to pioneer
10 new approaches in nuclear energy, science, and tech-
11 nology.

12 “(8) Developing, planning, constructing, acquir-
13 ing, and operating special equipment and facilities
14 for the use of researchers.

15 “(9) Supporting technology transfer and other
16 appropriate activities to assist the nuclear energy in-
17 dustry, and other users of nuclear science and engi-
18 neering, including activities addressing reliability,
19 availability, productivity, component aging, safety,
20 and security of nuclear power plants.

21 “(10) Reducing the environmental impact of
22 nuclear energy-related activities.

23 “(11) Researching and developing technologies
24 and processes to meet Federal and State require-
25 ments and standards for nuclear power systems.”;

1 (2) by striking subsections (b) through (d); and
2 (3) by redesignating subsection (e) as sub-
3 section (b).

4 **SEC. 622. PROGRAM OBJECTIVES STUDY.**

5 Section 951 of the Energy Policy Act of 2005 (42
6 U.S.C. 16271) is further amended by adding at the end
7 the following new subsection:

8 “(c) PROGRAM OBJECTIVES STUDY.—In furtherance
9 of the program objectives listed in subsection (a) of this
10 section, the Government Accountability Office shall, within
11 1 year after the date of enactment of this subsection,
12 transmit to the Congress a report on the results of a study
13 on the scientific and technical merit of major Federal and
14 State requirements and standards, including moratoria,
15 that delay or impede the further development and com-
16 mercialization of nuclear power, and how the Department
17 can assist in overcoming such delays or impediments.”.

18 **SEC. 623. NUCLEAR ENERGY RESEARCH AND DEVELOP-**
19 **MENT PROGRAMS.**

20 Section 952 of the Energy Policy Act of 2005 (42
21 U.S.C. 16272) is amended by striking subsections (c)
22 through (e) and inserting the following:

23 “(c) REACTOR CONCEPTS.—

24 “(1) IN GENERAL.—The Secretary shall carry
25 out a program of research, development, demonstra-

1 tion, and commercial application to advance nuclear
2 power systems as well as technologies to sustain cur-
3 rently deployed systems.

4 “(2) DESIGNS AND TECHNOLOGIES.—In con-
5 ducting the program under this subsection, the Sec-
6 retary shall examine advanced reactor designs and
7 nuclear technologies, including those that—

8 “(A) have higher efficiency, lower cost, and
9 improved safety compared to reactors in oper-
10 ation as of the date of enactment of the Amer-
11 ica COMPETES Reauthorization Act of 2015;

12 “(B) utilize passive safety features;

13 “(C) minimize proliferation risks;

14 “(D) substantially reduce production of
15 high-level waste per unit of output;

16 “(E) increase the life and sustainability of
17 reactor systems currently deployed;

18 “(F) use improved instrumentation;

19 “(G) are capable of producing large-scale
20 quantities of hydrogen or process heat;

21 “(H) minimize water usage or use alter-
22 natives to water as a cooling mechanism; or

23 “(I) use nuclear energy as part of an inte-
24 grated energy system.

1 “(3) INTERNATIONAL COOPERATION.—In car-
2 rying out the program under this subsection, the
3 Secretary shall seek opportunities to enhance the
4 progress of the program through international co-
5 operation through such organizations as the Genera-
6 tion IV International Forum or any other inter-
7 national collaboration the Secretary considers appro-
8 priate.

9 “(4) EXCEPTIONS.—No funds authorized to be
10 appropriated to carry out the activities described in
11 this subsection shall be used to fund the activities
12 authorized under sections 641 through 645.”.

13 **SEC. 624. SMALL MODULAR REACTOR PROGRAM.**

14 Section 952 of the Energy Policy Act of 2005 (42
15 U.S.C. 16272) is further amended by adding at the end
16 the following new subsection:

17 “(d) SMALL MODULAR REACTOR PROGRAM.—

18 “(1) IN GENERAL.—The Secretary shall carry
19 out a small modular reactor program to promote re-
20 search, development, demonstration, and commercial
21 application of small modular reactors, including
22 through cost-shared projects for commercial applica-
23 tion of reactor systems designs.

24 “(2) CONSULTATION.—The Secretary shall con-
25 sult with and utilize the expertise of the Secretary

1 of the Navy in establishing and carrying out such
2 program.

3 “(3) ADDITIONAL ACTIVITIES.—Activities may
4 also include development of advanced computer mod-
5 eling and simulation tools, by Federal and non-Fed-
6 eral entities, which demonstrate and validate new de-
7 sign capabilities of innovative small modular reactor
8 designs.

9 “(4) DEFINITION.—For the purposes of this
10 subsection, the term ‘small modular reactor’ means
11 a nuclear reactor meeting generally accepted indus-
12 try standards—

13 “(A) with a rated capacity of less than 300
14 electrical megawatts;

15 “(B) with respect to which most parts can
16 be factory assembled and shipped as modules to
17 a reactor plant site for assembly; and

18 “(C) that can be constructed and operated
19 in combination with similar reactors at a single
20 site.”.

21 **SEC. 625. FUEL CYCLE RESEARCH AND DEVELOPMENT.**

22 (a) AMENDMENTS.—Section 953 of the Energy Pol-
23 icy Act of 2005 (42 U.S.C. 16273) is amended—

1 (1) in the section heading by striking “**AD-**
2 **VANCED FUEL CYCLE INITIATIVE**” and inserting
3 “**FUEL CYCLE RESEARCH AND DEVELOPMENT**”;

4 (2) by striking subsection (a);

5 (3) by redesignating subsections (b) through (d)
6 as subsections (d) through (f), respectively; and

7 (4) by inserting before subsection (d), as so re-
8 designated by paragraph (3) of this subsection, the
9 following new subsections:

10 “(a) **IN GENERAL.**—The Secretary shall conduct a
11 fuel cycle research, development, demonstration, and com-
12 mercial application program (referred to in this section as
13 the ‘program’) on fuel cycle options that improve uranium
14 resource utilization, maximize energy generation, minimize
15 nuclear waste creation, improve safety, mitigate risk of
16 proliferation, and improve waste management in support
17 of a national strategy for spent nuclear fuel and the reac-
18 tor concepts research, development, demonstration, and
19 commercial application program under section 952(c).

20 “(b) **FUEL CYCLE OPTIONS.**—Under this section the
21 Secretary may consider implementing the following initia-
22 tives:

23 “(1) **OPEN CYCLE.**—Developing fuels, including
24 the use of nonuranium materials and alternate
25 claddings, for use in reactors that increase energy

1 generation, improve safety performance and mar-
2 gins, and minimize the amount of nuclear waste pro-
3 duced in an open fuel cycle.

4 “(2) RECYCLE.—Developing advanced recycling
5 technologies, including advanced reactor concepts to
6 improve resource utilization, reduce proliferation
7 risks, and minimize radiotoxicity, decay heat, and
8 mass and volume of nuclear waste to the greatest
9 extent possible.

10 “(3) ADVANCED STORAGE METHODS.—Devel-
11 oping advanced storage technologies for both onsite
12 and long-term storage that substantially prolong the
13 effective life of current storage devices or that sub-
14 stantially improve upon existing nuclear waste stor-
15 age technologies and methods, including repositories.

16 “(4) FAST TEST REACTOR.—Investigating the
17 potential research benefits of a fast test reactor user
18 facility to conduct experiments on fuels and mate-
19 rials related to fuel forms and fuel cycles that will
20 increase fuel utilization, reduce proliferation risks,
21 and reduce nuclear waste products.

22 “(5) ADVANCED REACTOR INNOVATION.—De-
23 veloping an advanced reactor innovation testbed
24 where national laboratories, universities, and indus-
25 try can address advanced reactor design challenges

1 to enable construction and operation of privately
2 funded reactor prototypes to resolve technical uncer-
3 tainty for United States-based designs for future do-
4 mestic and international markets.

5 “(6) OTHER TECHNOLOGIES.—Developing any
6 other technology or initiative that the Secretary de-
7 termines is likely to advance the objectives of the
8 program.

9 “(c) ADDITIONAL ADVANCED RECYCLING AND
10 CROSSCUTTING ACTIVITIES.—In addition to and in sup-
11 port of the specific initiatives described in paragraphs (1)
12 through (5) of subsection (b), the Secretary may support
13 the following activities:

14 “(1) Development and testing of integrated
15 process flow sheets for advanced nuclear fuel recy-
16 cling processes.

17 “(2) Research to characterize the byproducts
18 and waste streams resulting from fuel recycling
19 processes.

20 “(3) Research and development on reactor con-
21 cepts or transmutation technologies that improve re-
22 source utilization or reduce the radiotoxicity of waste
23 streams.

24 “(4) Research and development on waste treat-
25 ment processes and separations technologies, ad-

1 vanced waste forms, and quantification of prolifera-
2 tion risks.

3 “(5) Identification and evaluation of test and
4 experimental facilities necessary to successfully im-
5 plement the advanced fuel cycle initiative.

6 “(6) Advancement of fuel cycle-related modeling
7 and simulation capabilities.

8 “(7) Research to understand the behavior of
9 high-burnup fuels.”.

10 (b) CONFORMING AMENDMENT.—The item relating
11 to section 953 in the table of contents of the Energy Policy
12 Act of 2005 is amended to read as follows:

“Sec. 953. Fuel cycle research and development.”.

13 **SEC. 626. NUCLEAR ENERGY ENABLING TECHNOLOGIES**
14 **PROGRAM.**

15 (a) AMENDMENT.—Subtitle E of title IX of the En-
16 ergy Policy Act of 2005 (42 U.S.C. 16271 et seq.) is
17 amended by adding at the end the following new section:

18 **“SEC. 958. NUCLEAR ENERGY ENABLING TECHNOLOGIES.**

19 “(a) IN GENERAL.—The Secretary shall conduct a
20 program to support the integration of activities under-
21 taken through the reactor concepts research, development,
22 demonstration, and commercial application program under
23 section 952(c) and the fuel cycle research and development
24 program under section 953, and support crosscutting nu-
25 clear energy concepts. Activities commenced under this

1 section shall be concentrated on broadly applicable re-
2 search and development focus areas.

3 “(b) ACTIVITIES.—Activities conducted under this
4 section may include research involving—

5 “(1) advanced reactor materials;

6 “(2) advanced radiation mitigation methods;

7 “(3) advanced proliferation and security risk
8 assessment methods;

9 “(4) advanced sensors and instrumentation;

10 “(5) high performance computation modeling,
11 including multiphysics, multidimensional modeling
12 simulation for nuclear energy systems, and contin-
13 ued development of advanced modeling simulation
14 capabilities through national laboratory, industry,
15 and university partnerships for operations and safety
16 performance improvements of light water reactors
17 for currently deployed and near-term reactors and
18 advanced reactors and for the development of small
19 modular reactors; and

20 “(6) any crosscutting technology or trans-
21 formative concept aimed at establishing substantial
22 and revolutionary enhancements in the performance
23 of future nuclear energy systems that the Secretary
24 considers relevant and appropriate to the purpose of
25 this section.

1 “(c) REPORT.—The Secretary shall submit, as part
2 of the annual budget submission of the Department, a re-
3 port on the activities of the program conducted under this
4 section, which shall include a brief evaluation of each ac-
5 tivity’s progress.”.

6 (b) CONFORMING AMENDMENT.—The table of con-
7 tents of the Energy Policy Act of 2005 is amended by
8 adding at the end of the items for subtitle E of title IX
9 the following new item:

“Sec. 958. Nuclear energy enabling technologies.”.

10 **SEC. 627. TECHNICAL STANDARDS COLLABORATION.**

11 (a) IN GENERAL.—The Director of the National In-
12 stitute of Standards and Technology shall establish a nu-
13 clear energy standards committee (in this section referred
14 to as the “technical standards committee”) to facilitate
15 and support, consistent with the National Technology
16 Transfer and Advancement Act of 1995, the development
17 or revision of technical standards for new and existing nu-
18 clear power plants and advanced nuclear technologies.

19 (b) MEMBERSHIP.—

20 (1) IN GENERAL.—The technical standards
21 committee shall include representatives from appro-
22 priate Federal agencies and the private sector, and
23 be open to materially affected organizations involved
24 in the development or application of nuclear energy-
25 related standards.

1 (2) CO-CHAIRS.—The technical standards com-
2 mittee shall be co-chaired by a representative from
3 the National Institute of Standards and Technology
4 and a representative from a private sector standards
5 organization.

6 (c) DUTIES.—The technical standards committee
7 shall, in cooperation with appropriate Federal agencies—

8 (1) perform a needs assessment to identify and
9 evaluate the technical standards that are needed to
10 support nuclear energy, including those needed to
11 support new and existing nuclear power plants and
12 advanced nuclear technologies, including developing
13 the technical basis for regulatory frameworks for ad-
14 vanced reactors;

15 (2) formulate, coordinate, and recommend pri-
16 orities for the development of new technical stand-
17 ards and the revision of existing technical standards
18 to address the needs identified under paragraph (1);

19 (3) facilitate and support collaboration and co-
20 operation among standards developers to address the
21 needs and priorities identified under paragraphs (1)
22 and (2);

23 (4) as appropriate, coordinate with other na-
24 tional, regional, or international efforts on nuclear
25 energy-related technical standards in order to avoid

1 conflict and duplication and to ensure global com-
2 patibility; and

3 (5) promote the establishment and maintenance
4 of a database of nuclear energy-related technical
5 standards.

6 (d) AUTHORIZATION OF APPROPRIATIONS.—To the
7 extent provided for in advance by appropriations Acts, the
8 Secretary may transfer to the Director of the National In-
9 stitute of Standards and Technology not to exceed
10 \$1,000,000 for fiscal year 2016 for the Secretary of Com-
11 merce to carry out this section from amounts appropriated
12 for nuclear energy research and development within the
13 Nuclear Energy Enabling Technologies account for the
14 Department.

15 **SEC. 628. AVAILABLE FACILITIES DATABASE.**

16 The Secretary shall prepare a database of non-Fed-
17 eral user facilities receiving Federal funds that may be
18 used for unclassified nuclear energy research. The Sec-
19 retary shall make this database accessible on the Depart-
20 ment's website.

1 **Subtitle D—Energy Efficiency and**
2 **Renewable Energy Research**
3 **and Development**

4 **SEC. 641. ENERGY EFFICIENCY.**

5 Section 911 of the Energy Policy Act of 2005 (42
6 U.S.C. 16191) is amended to read as follows:

7 **“SEC. 911. ENERGY EFFICIENCY.**

8 “(a) **OBJECTIVES.**—The Secretary shall conduct pro-
9 grams of energy efficiency research, development, dem-
10 onstration, and commercial application, including activi-
11 ties described in this subtitle. Such programs shall
12 prioritize activities that industry by itself is not likely to
13 undertake because of technical challenges or regulatory
14 uncertainty, and take into consideration the following ob-
15 jectives:

16 “(1) Increasing energy efficiency.

17 “(2) Reducing the cost of energy.

18 “(3) Reducing the environmental impact of en-
19 ergy-related activities.

20 “(b) **PROGRAMS.**—Programs under this subtitle shall
21 include research, development, demonstration, and com-
22 mercial application of—

23 “(1) innovative, affordable technologies to im-
24 prove the energy efficiency and environmental per-
25 formance of vehicles, including weight and drag re-

1 duction technologies, technologies, modeling, and
2 simulation for increasing vehicle connectivity and au-
3 tomation, and whole-vehicle design optimization;

4 “(2) cost-effective technologies, for new con-
5 struction and retrofit, to improve the energy effi-
6 ciency and environmental performance of buildings,
7 using a whole-buildings approach;

8 “(3) advanced technologies to improve the en-
9 ergy efficiency, environmental performance, and
10 process efficiency of energy-intensive and waste-in-
11 tensive industries;

12 “(4) technologies to improve the energy effi-
13 ciency of appliances and mechanical systems for
14 buildings in extreme climates, including cogenera-
15 tion, trigeneration, and polygeneration units;

16 “(5) advanced battery technologies; and

17 “(6) fuel cell and hydrogen technologies.”.

18 **SEC. 642. NEXT GENERATION LIGHTING INITIATIVE.**

19 Section 912 of the Energy Policy Act of 2005 (42
20 U.S.C. 16192) and the item relating thereto in the table
21 of contents of that Act are repealed.

22 **SEC. 643. BUILDING STANDARDS.**

23 Section 914 of the Energy Policy Act of 2005 (42
24 U.S.C. 16194) is amended by striking subsection (c).

1 **SEC. 644. SECONDARY ELECTRIC VEHICLE BATTERY USE**
2 **PROGRAM.**

3 Section 915 of the Energy Policy Act of 2005 (42
4 U.S.C. 16195) and the item relating thereto in the table
5 of contents of that Act are repealed.

6 **SEC. 645. NETWORK FOR MANUFACTURING INNOVATION**
7 **PROGRAM.**

8 To the extent provided for in advance by appropria-
9 tions Acts, the Secretary may transfer to the National In-
10 stitute of Standards and Technology up to \$150,000,000
11 for the period encompassing fiscal years 2015 through
12 2017 from amounts appropriated for advanced manufac-
13 turing research and development under this subtitle (and
14 the amendments made by this subtitle) for the Secretary
15 of Commerce to carry out the Network for Manufacturing
16 Innovation Program authorized under section 34 of the
17 National Institute of Standards and Technology Act (15
18 U.S.C. 278s).

19 **SEC. 646. ADVANCED ENERGY TECHNOLOGY TRANSFER**
20 **CENTERS.**

21 Section 917 of the Energy Policy Act of 2005 (42
22 U.S.C. 16197) is amended—

23 (1) in subsection (a)—

24 (A) by inserting “and” at the end of para-
25 graph (2)(B);

1 (B) by striking “; and” at the end of para-
2 graph (3) and inserting a period; and

3 (C) by striking paragraph (4);

4 (2) in subsection (b)—

5 (A) by striking paragraph (1);

6 (B) by redesignating paragraphs (2)
7 through (5) as paragraphs (1) through (4), re-
8 spectively; and

9 (C) by striking paragraph (6);

10 (3) by amending subsection (g) to read as fol-
11 lows:

12 “(g) PROHIBITION.—None of the funds awarded
13 under this section may be used for the construction of fa-
14 cilities or the deployment of commercially available tech-
15 nologies.”; and

16 (4) by striking subsection (i).

17 **SEC. 647. RENEWABLE ENERGY.**

18 Section 931 of the Energy Policy Act of 2005 (42
19 U.S.C. 16231) is amended to read as follows:

20 **“SEC. 931. RENEWABLE ENERGY.**

21 **“(a) IN GENERAL.—**

22 **“(1) OBJECTIVES.—**The Secretary shall con-
23 duct programs of renewable energy research, devel-
24 opment, demonstration, and commercial application,
25 including activities described in this subtitle. Such

1 programs shall prioritize discovery research and de-
2 velopment and take into consideration the following
3 objectives:

4 “(A) Increasing the conversion efficiency of
5 all forms of renewable energy through improved
6 technologies.

7 “(B) Decreasing the cost of renewable en-
8 ergy generation and delivery.

9 “(C) Promoting the diversity of the energy
10 supply.

11 “(D) Decreasing the dependence of the
12 United States on foreign mineral resources.

13 “(E) Decreasing the environmental impact
14 of renewable energy-related activities.

15 “(F) Increasing the export of renewable
16 generation technologies from the United States.

17 “(2) PROGRAMS.—

18 “(A) SOLAR ENERGY.—The Secretary shall
19 conduct a program of research, development,
20 demonstration, and commercial application for
21 solar energy, including innovations in—

22 “(i) photovoltaics;

23 “(ii) solar heating;

24 “(iii) concentrating solar power;

1 “(iv) lighting systems that integrate
2 sunlight and electrical lighting in com-
3 plement to each other; and

4 “(v) development of technologies that
5 can be easily integrated into new and exist-
6 ing buildings.

7 “(B) WIND ENERGY.—The Secretary shall
8 conduct a program of research, development,
9 demonstration, and commercial application for
10 wind energy, including innovations in—

11 “(i) low speed wind energy;

12 “(ii) testing and verification tech-
13 nologies;

14 “(iii) distributed wind energy genera-
15 tion; and

16 “(iv) transformational technologies for
17 harnessing wind energy.

18 “(C) GEOTHERMAL.—The Secretary shall
19 conduct a program of research, development,
20 demonstration, and commercial application for
21 geothermal energy, including technologies for—

22 “(i) improving detection of geothermal
23 resources;

24 “(ii) decreasing drilling costs;

1 “(iii) decreasing maintenance costs
2 through improved materials;

3 “(iv) increasing the potential for other
4 revenue sources, such as mineral produc-
5 tion; and

6 “(v) increasing the understanding of
7 reservoir life cycle and management.

8 “(D) HYDROPOWER.—The Secretary shall
9 conduct a program of research, development,
10 demonstration, and commercial application for
11 technologies that enable the development of new
12 and incremental hydropower capacity, including:

13 “(i) Advanced technologies to enhance
14 environmental performance and yield
15 greater energy efficiencies.

16 “(ii) Ocean energy, including wave en-
17 ergy.

18 “(E) MISCELLANEOUS PROJECTS.—The
19 Secretary shall conduct research, development,
20 demonstration, and commercial application pro-
21 grams for—

22 “(i) the combined use of renewable
23 energy technologies with one another and
24 with other energy technologies, including

1 the combined use of renewable power and
2 fossil technologies;

3 “(ii) renewable energy technologies for
4 cogeneration of hydrogen and electricity;
5 and

6 “(iii) kinetic hydro turbines.

7 “(b) RURAL DEMONSTRATION PROJECTS.—In car-
8 rying out this section, the Secretary, in consultation with
9 the Secretary of Agriculture, shall give priority to dem-
10 onstrations that assist in delivering electricity to rural and
11 remote locations including—

12 “(1) advanced renewable power technology, in-
13 cluding combined use with fossil technologies;

14 “(2) biomass; and

15 “(3) geothermal energy systems.

16 “(c) ANALYSIS AND EVALUATION.—

17 “(1) IN GENERAL.—The Secretary shall con-
18 duct analysis and evaluation in support of the re-
19 newable energy programs under this subtitle. These
20 activities shall be used to guide budget and program
21 decisions, and shall include—

22 “(A) economic and technical analysis of re-
23 newable energy potential, including resource as-
24 sessment;

1 “(B) analysis of past program perform-
2 ance, both in terms of technical advances and
3 in market introduction of renewable energy;

4 “(C) assessment of domestic and inter-
5 national market drivers, including the impacts
6 of any Federal, State, or local grants, loans,
7 loan guarantees, tax incentives, statutory or
8 regulatory requirements, or other government
9 initiatives; and

10 “(D) any other analysis or evaluation that
11 the Secretary considers appropriate.

12 “(2) FUNDING.—The Secretary may designate
13 up to 1 percent of the funds appropriated for car-
14 rying out this subtitle for analysis and evaluation ac-
15 tivities under this subsection.

16 “(3) SUBMITTAL TO CONGRESS.—This analysis
17 and evaluation shall be submitted to the Committee
18 on Science, Space, and Technology of the House of
19 Representatives and the Committee on Energy and
20 Natural Resources of the Senate at least 30 days be-
21 fore each annual budget request is submitted to
22 Congress.”.

23 **SEC. 648. BIOENERGY PROGRAM.**

24 Section 932 of the Energy Policy Act of 2005 (42
25 U.S.C. 16232) is amended to read as follows:

1 **“SEC. 932. BIOENERGY PROGRAM.**

2 “(a) PROGRAM.—The Secretary shall conduct a pro-
3 gram of research, development, demonstration, and com-
4 mercial application for bioenergy, including innovations
5 in—

6 “(1) biopower energy systems;

7 “(2) biofuels;

8 “(3) bioproducts;

9 “(4) integrated biorefineries that may produce
10 biopower, biofuels, and bioproducts; and

11 “(5) crosscutting research and development in
12 feedstocks.

13 “(b) BIOFUELS AND BIOPRODUCTS.—The goals of
14 the biofuels and bioproducts programs shall be to develop,
15 in partnership with industry and institutions of higher
16 education—

17 “(1) advanced biochemical and thermochemical
18 conversion technologies capable of making fuels from
19 lignocellulosic feedstocks that are price-competitive
20 with fossil-based fuels and fully compatible with ei-
21 ther internal combustion engines or fuel cell-powered
22 vehicles;

23 “(2) advanced conversion of biomass to biofuels
24 and bioproducts as part of integrated biorefineries
25 based on either biochemical processes,

1 thermochemical processes, or hybrids of these pro-
2 cesses; and

3 “(3) other advanced processes that will enable
4 the development of cost-effective bioproducts, includ-
5 ing biofuels.

6 “(c) RETROFIT TECHNOLOGIES FOR THE DEVELOP-
7 MENT OF ETHANOL FROM CELLULOSIC MATERIALS.—
8 The Secretary shall establish a program of research, devel-
9 opment, demonstration, and commercial application for
10 technologies and processes to enable biorefineries that ex-
11 clusively use corn grain or corn starch as a feedstock to
12 produce ethanol to be retrofitted to accept a range of bio-
13 mass, including lignocellulosic feedstocks.

14 “(d) LIMITATIONS.—None of the funds authorized
15 for carrying out this section may be used to fund commer-
16 cial biofuels production for defense purposes.

17 “(e) DEFINITIONS.—In this section:

18 “(1) BIOMASS.—The term ‘biomass’ means—

19 “(A) any organic material grown for the
20 purpose of being converted to energy;

21 “(B) any organic byproduct of agriculture
22 (including wastes from food production and
23 processing) that can be converted into energy;

24 or

1 “(C) any waste material that can be con-
2 verted to energy, is segregated from other waste
3 materials, and is derived from—

4 “(i) any of the following forest-related
5 resources: mill residues, precommercial
6 thinnings, slash, brush, or otherwise non-
7 merchantable material;

8 “(ii) wood waste materials, including
9 waste pallets, crates, dunnage, manufac-
10 turing and construction wood wastes (other
11 than pressure-treated, chemically treated,
12 or painted wood wastes), and landscape or
13 right-of-way tree trimmings, but not in-
14 cluding municipal solid waste, gas derived
15 from the biodegradation of municipal solid
16 waste, or paper that is commonly recycled;
17 or

18 “(iii) solids derived from waste water
19 treatment processes.

20 “(2) LIGNOCELLULOSIC FEEDSTOCK.—The
21 term ‘lignocellulosic feedstock’ means any portion of
22 a plant or coproduct from conversion, including
23 crops, trees, forest residues, grasses, and agricul-
24 tural residues not specifically grown for food, includ-
25 ing from barley grain, grapeseed, rice bran, rice

1 hulls, rice straw, soybean matter, cornstover, and
2 sugarcane bagasse.”.

3 **SEC. 649. CONCENTRATING SOLAR POWER RESEARCH PRO-**
4 **GRAM.**

5 Section 934 of the Energy Policy Act of 2005 (42
6 U.S.C. 16234) and the item relating thereto in the table
7 of contents of that Act are repealed.

8 **SEC. 650. RENEWABLE ENERGY IN PUBLIC BUILDINGS.**

9 Section 935 of the Energy Policy Act of 2005 (42
10 U.S.C. 16235) and the item relating thereto in the table
11 of contents of that Act are repealed.

12 **Subtitle E—Fossil Energy Research**
13 **and Development**

14 **SEC. 661. FOSSIL ENERGY.**

15 Section 961 of Energy Policy Act of 2005 (42 U.S.C.
16 16291) is amended to read as follows:

17 **“SEC. 961. FOSSIL ENERGY.**

18 **“(a) IN GENERAL.—**The Secretary shall carry out re-
19 search, development, demonstration, and commercial ap-
20 plication programs in fossil energy, including activities
21 under this subtitle, with the goal of improving the effi-
22 ciency, effectiveness, and environmental performance of
23 fossil energy production, upgrading, conversion, and con-
24 sumption. Such programs shall take into consideration the
25 following objectives:

1 “(1) Increasing the energy conversion efficiency
2 of all forms of fossil energy through improved tech-
3 nologies.

4 “(2) Decreasing the cost of all fossil energy
5 production, generation, and delivery.

6 “(3) Promoting diversity of energy supply.

7 “(4) Decreasing the dependence of the United
8 States on foreign energy supplies.

9 “(5) Decreasing the environmental impact of
10 energy-related activities.

11 “(6) Increasing the export of fossil energy-re-
12 lated equipment, technology, and services from the
13 United States.

14 “(b) OBJECTIVES.—To the maximum extent prac-
15 ticable, the Secretary shall seek to—

16 “(1) leverage existing programs;

17 “(2) consolidate and coordinate activities
18 throughout the Department to promote collaboration
19 and crosscutting approaches;

20 “(3) ensure activities are undertaken in a man-
21 ner that does not duplicate other activities within
22 the Department or other Federal Government activi-
23 ties; and

24 “(4) identify programs that may be more effec-
25 tively left to the States, industry, nongovernmental

1 organizations, institutions of higher education, or
2 other stakeholders.

3 “(c) LIMITATIONS.—

4 “(1) USES.—None of the funds authorized for
5 carrying out this section may be used for Fossil En-
6 ergy Environmental Restoration.

7 “(2) INSTITUTIONS OF HIGHER EDUCATION.—

8 Not less than 20 percent of the funds appropriated
9 for carrying out section 964 of this Act for each fis-
10 cal year shall be dedicated to research and develop-
11 ment carried out at institutions of higher education.

12 “(3) USE FOR REGULATORY ASSESSMENTS OR

13 DETERMINATIONS.—The results of any research, de-
14 velopment, demonstration, or commercial application
15 projects or activities of the Department authorized
16 under this subtitle may not be used for regulatory
17 assessments or determinations by Federal regulatory
18 authorities.

19 “(d) ASSESSMENTS.—

20 “(1) CONSTRAINTS AGAINST BRINGING RE-

21 SOURCES TO MARKET.—Not later than 1 year after
22 the date of enactment of the America COMPETES
23 Reauthorization Act of 2015, the Secretary shall
24 transmit to Congress an assessment of the technical,

1 institutional, policy, and regulatory constraints to
2 bringing new domestic fossil resources to market.

3 “(2) TECHNOLOGY CAPABILITIES.—Not later
4 than 2 years after the date of enactment of the
5 America COMPETES Reauthorization Act of 2015,
6 the Secretary shall transmit to Congress a long-term
7 assessment of existing and projected technological
8 capabilities for expanded production from domestic
9 unconventional oil, gas, and methane reserves.”.

10 **SEC. 662. COAL RESEARCH, DEVELOPMENT, DEMONSTRATION,**
11 **AND COMMERCIAL APPLICATION PRO-**
12 **GRAMS.**

13 (a) IN GENERAL.—Section 962 of the Energy Policy
14 Act of 2005 (42 U.S.C. 16292) is amended—

15 (1) in subsection (a)—

16 (A) in paragraph (10), by striking “and”
17 at the end;

18 (B) in paragraph (11), by striking the pe-
19 riod at the end and inserting a semicolon; and

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

21 “(12) specific additional programs to address
22 water use and reuse;

23 “(13) the testing, including the construction of
24 testing facilities, of high temperature materials for

1 use in advanced systems for combustion or use of
2 coal; and

3 “(14) innovations to application of existing coal
4 conversion systems designed to increase efficiency of
5 conversion, flexibility of operation, and other modi-
6 fications to address existing usage requirements.”;

7 (2) by redesignating subsections (b) through (d)
8 as subsections (c) through (e), respectively;

9 (3) by inserting after subsection (a) the fol-
10 lowing:

11 “(b) TRANSFORMATIONAL COAL TECHNOLOGY PRO-
12 GRAM.—

13 “(1) IN GENERAL.—As part of the program es-
14 tablished under subsection (a), the Secretary may
15 carry out a program designed to undertake research,
16 development, demonstration, and commercial appli-
17 cation of technologies, including the accelerated de-
18 velopment of—

19 “(A) chemical looping technology;

20 “(B) supercritical carbon dioxide power
21 generation cycles;

22 “(C) pressurized oxycombustion, including
23 new and retrofit technologies; and

24 “(D) other technologies that are character-
25 ized by the use of—

- 1 “(i) alternative energy cycles;
- 2 “(ii) thermionic devices using waste
- 3 heat;
- 4 “(iii) fuel cells;
- 5 “(iv) replacement of chemical proc-
- 6 esses with biotechnology;
- 7 “(v) nanotechnology;
- 8 “(vi) new materials in applications
- 9 (other than extending cycles to higher tem-
- 10 perature and pressure), such as mem-
- 11 branes or ceramics;
- 12 “(vii) carbon utilization, such as in
- 13 construction materials, using low quality
- 14 energy to reconvert back to a fuel, or man-
- 15 ufactured food;
- 16 “(viii) advanced gas separation con-
- 17 cepts; and
- 18 “(ix) other technologies, including—
- 19 “(I) modular, manufactured com-
- 20 ponents; and
- 21 “(II) innovative production or re-
- 22 search techniques, such as using 3-D
- 23 printer systems, for the production of
- 24 early research and development proto-
- 25 types.

1 “(2) COST SHARE.—In carrying out the pro-
2 gram described in paragraph (1), the Secretary shall
3 enter into partnerships with private entities to share
4 the costs of carrying out the program. The Secretary
5 may reduce the non-Federal cost share requirement
6 if the Secretary determines that the reduction is nec-
7 essary and appropriate considering the technological
8 risks involved in the project.”; and

9 (4) in subsection (c) (as so redesignated) by
10 striking paragraph (1) and inserting the following:

11 “(1) IN GENERAL.—In carrying out programs
12 authorized by this section, the Secretary shall iden-
13 tify cost and performance goals for coal-based tech-
14 nologies that would permit the continued cost-com-
15 petitive use of coal for the production of electricity,
16 chemical feedstocks, transportation fuels, and other
17 marketable products.”.

18 (b) ADVISORY COMMITTEE; AUTHORIZATION OF AP-
19 PROPRIATIONS.—Section 963 of the Energy Policy Act of
20 2005 (42 U.S.C. 16293) is amended—

21 (1) by amending paragraph (6) of subsection
22 (c) to read as follows:

23 “(6) ADVISORY COMMITTEE.—

24 “(A) IN GENERAL.—Subject to subpara-
25 graph (B), the Secretary shall establish an advi-

1 sory committee to undertake, not less fre-
2 quently than once every 3 years, a review and
3 prepare a report on the progress being made by
4 the Department of Energy to achieve the goals
5 described in subsections (a) and (b) of section
6 962 and subsection (b) of this section.

7 “(B) MEMBERSHIP REQUIREMENTS.—

8 Members of the advisory committee established
9 under subparagraph (A) shall be appointed by
10 the Secretary, except that three members shall
11 be appointed by the Speaker of the House of
12 Representatives and two members shall be ap-
13 pointed by the Majority Leader of the Senate.

14 The total number of members of the advisory
15 committee shall be 15.”; and

16 (2) by amending subsection (d) to read as fol-
17 lows:

18 “(d) STUDY OF CARBON DIOXIDE PIPELINES.—Not
19 later than 1 year after the date of enactment of the Amer-
20 ica COMPETES Reauthorization Act of 2015, the Sec-
21 retary shall transmit to Congress the results of a study
22 to assess the cost and feasibility of engineering, permit-
23 ting, building, maintaining, regulating, and insuring a na-
24 tional system of carbon dioxide pipelines.”.

1 **SEC. 663. HIGH EFFICIENCY GAS TURBINES RESEARCH AND**
2 **DEVELOPMENT.**

3 (a) IN GENERAL.—The Secretary, through the Office
4 of Fossil Energy, shall carry out a multiyear, multiphase
5 program of research, development, demonstration, and
6 commercial application to innovate technologies to maxi-
7 mize the efficiency of gas turbines used in power genera-
8 tion systems.

9 (b) PROGRAM ELEMENTS.—The program under this
10 section shall—

11 (1) support innovative engineering and detailed
12 gas turbine design for megawatt-scale and utility-
13 scale electric power generation, including—

14 (A) high temperature materials, including
15 superalloys, coatings, and ceramics;

16 (B) improved heat transfer capability;

17 (C) manufacturing technology required to
18 construct complex three-dimensional geometry
19 parts with improved aerodynamic capability;

20 (D) combustion technology to produce
21 higher firing temperature while lowering nitro-
22 gen oxide and carbon monoxide emissions per
23 unit of output;

24 (E) advanced controls and systems integra-
25 tion;

1 (F) advanced high performance compressor
2 technology; and

3 (G) validation facilities for the testing of
4 components and subsystems;

5 (2) include technology demonstration through
6 component testing, subscale testing, and full scale
7 testing in existing fleets;

8 (3) include field demonstrations of the devel-
9 oped technology elements so as to demonstrate tech-
10 nical and economic feasibility; and

11 (4) assess overall combined cycle and simple
12 cycle system performance.

13 (c) PROGRAM GOALS.—The goals of the multiphase
14 program established under subsection (a) shall be—

15 (1) in phase I—

16 (A) to develop the conceptual design of ad-
17 vanced high efficiency gas turbines that can
18 achieve at least 62 percent combined cycle effi-
19 ciency or 47 percent simple cycle efficiency on
20 a lower heating value basis; and

21 (B) to develop and demonstrate the tech-
22 nology required for advanced high efficiency gas
23 turbines that can achieve at least 62 percent
24 combined cycle efficiency or 47 percent simple

1 cycle efficiency on a lower heating value basis;
2 and

3 (2) in phase II, to develop the conceptual de-
4 sign for advanced high efficiency gas turbines that
5 can achieve at least 65 percent combined cycle effi-
6 ciency or 50 percent simple cycle efficiency on a
7 lower heating value basis.

8 (d) PROPOSALS.—Within 180 days after the date of
9 enactment of this Act, the Secretary shall solicit grant and
10 contract proposals from industry, small businesses, univer-
11 sities, and other appropriate parties for conducting activi-
12 ties under this section. In selecting proposals, the Sec-
13 retary shall emphasize—

14 (1) the extent to which the proposal will stimu-
15 late the creation or increased retention of jobs in the
16 United States; and

17 (2) the extent to which the proposal will pro-
18 mote and enhance United States technology leader-
19 ship.

20 (e) COMPETITIVE AWARDS.—The provision of fund-
21 ing under this section shall be on a competitive basis with
22 an emphasis on technical merit.

23 (f) COST SHARING.—Section 988 of the Energy Pol-
24 icy Act of 2005 (42 U.S.C. 16352) shall apply to an award
25 of financial assistance made under this section.

1 **Subtitle F—Advanced Research**
2 **Projects Agency—Energy**

3 **SEC. 671. ARPA-E AMENDMENTS.**

4 Section 5012 of the America COMPETES Act (42
5 U.S.C. 16538) is amended—

6 (1) by amending paragraph (1) of subsection
7 (c) to read as follows:

8 “(1) IN GENERAL.—The goals of ARPA–E
9 shall be to enhance the economic and energy security
10 of the United States and to ensure that the United
11 States maintains a technological lead through the
12 development of advanced energy technologies.”;

13 (2) in subsection (i)(1), by inserting “ARPA–E
14 shall not provide funding for a project unless the
15 prospective grantee demonstrates sufficient attempts
16 to secure private financing or indicates that the
17 project is not independently commercially viable.”
18 after “relevant research agencies.”;

19 (3) in subsection (l)(1), by inserting “and once
20 every 6 years thereafter,” after “operation for 6
21 years,”; and

22 (4) by redesignating subsection (n) as sub-
23 section (o) and inserting after subsection (m) the
24 following new subsection:

1 “(n) PROTECTION OF PROPRIETARY INFORMA-
2 TION.—

3 “(1) IN GENERAL.—The following categories of
4 information collected by the Advanced Research
5 Projects Agency—Energy from recipients of financial
6 assistance awards shall be considered privileged and
7 confidential and not subject to disclosure pursuant
8 to section 552 of title 5, United States Code:

9 “(A) Plans for commercialization of tech-
10 nologies developed under the award, including
11 business plans, technology to market plans,
12 market studies, and cost and performance mod-
13 els.

14 “(B) Investments provided to an awardee
15 from third parties, such as venture capital,
16 hedge fund, or private equity firms, including
17 amounts and percentage of ownership of the
18 awardee provided in return for such invest-
19 ments.

20 “(C) Additional financial support that the
21 awardee plans to invest or has invested into the
22 technology developed under the award, or that
23 the awardee is seeking from third parties.

1 “(D) Revenue from the licensing or sale of
2 new products or services resulting from the re-
3 search conducted under the award.

4 “(2) EFFECT OF SUBSECTION.—Nothing in this
5 subsection affects—

6 “(A) the authority of the Secretary to use
7 information without publicly disclosing such in-
8 formation; or

9 “(B) the responsibility of the Secretary to
10 transmit information to Congress as required
11 by law.”.

12 **Subtitle G—Authorization of** 13 **Appropriations**

14 **SEC. 681. AUTHORIZATION OF APPROPRIATIONS.**

15 (a) ELECTRICITY DELIVERY AND ENERGY RELI-
16 ABILITY RESEARCH AND DEVELOPMENT.—There are au-
17 thorized to be appropriated to the Secretary for research,
18 development, demonstration, and commercial application
19 for electrical delivery and energy reliability technology ac-
20 tivities within the Office of Electricity \$113,000,000 for
21 each of fiscal years 2016 and 2017.

22 (b) NUCLEAR ENERGY.—

23 (1) IN GENERAL.—There are authorized to be
24 appropriated to the Secretary for research, develop-
25 ment, demonstration, and commercial application for

1 nuclear energy technology activities within the Office
2 of Nuclear Energy \$504,600,000 for each of fiscal
3 years 2016 and 2017.

4 (2) LIMITATION.—Any amounts made available
5 pursuant to the authorization of appropriations
6 under paragraph (1) shall not be derived from the
7 Nuclear Waste Fund established under section
8 302(c) of the Nuclear Waste Policy Act of 1982 (42
9 U.S.C. 10222(c)).

10 (c) ENERGY EFFICIENCY AND RENEWABLE EN-
11 ERGY.—There are authorized to be appropriated to the
12 Secretary for research, development, demonstration, and
13 commercial application for energy efficiency and renewable
14 energy technology activities within the Office of Energy
15 Efficiency and Renewable Energy \$1,193,500,000 for
16 each of fiscal years 2016 and 2017.

17 (d) FOSSIL ENERGY.—There are authorized to be ap-
18 propriated to the Secretary for research, development,
19 demonstration, and commercial application for fossil en-
20 ergy technology activities within the Office of Fossil En-
21 ergy \$605,000,000 for each of fiscal years 2016 and 2017.

22 (e) ARPA-E.—There are authorized to be appro-
23 priated to the Secretary for the Advanced Research
24 Projects Agency–Energy \$140,000,000 for each of fiscal
25 years 2016 and 2017.

1 **Subtitle H—Definitions**

2 **SEC. 691. DEFINITIONS.**

3 In this title—

4 (1) the term “Department” means the Depart-
5 ment of Energy; and

6 (2) the term “Secretary” means the Secretary
7 of Energy.

8 **TITLE VII—DEPARTMENT OF EN-**
9 **ERGY TECHNOLOGY TRANS-**
10 **FER**

11 **Subtitle A—In General**

12 **SEC. 701. DEFINITIONS.**

13 In this title:

14 (1) DEPARTMENT.—The term “Department”
15 means the Department of Energy.

16 (2) NATIONAL LABORATORY.—The term “Na-
17 tional Laboratory” means a Department of Energy
18 nonmilitary national laboratory, including—

19 (A) Ames Laboratory;

20 (B) Argonne National Laboratory;

21 (C) Brookhaven National Laboratory;

22 (D) Fermi National Accelerator Labora-
23 tory;

24 (E) Idaho National Laboratory;

1 (F) Lawrence Berkeley National Labora-
2 tory;

3 (G) National Energy Technology Labora-
4 tory;

5 (H) National Renewable Energy Labora-
6 tory;

7 (I) Oak Ridge National Laboratory;

8 (J) Pacific Northwest National Labora-
9 tory;

10 (K) Princeton Plasma Physics Laboratory;

11 (L) Savannah River National Laboratory;

12 (M) Stanford Linear Accelerator Center;

13 (N) Thomas Jefferson National Accel-
14 erator Facility; and

15 (O) any laboratory operated by the Na-
16 tional Nuclear Security Administration, but
17 only with respect to the civilian energy activities
18 thereof.

19 (3) SECRETARY.—The term “Secretary” means
20 the Secretary of Energy.

21 **SEC. 702. SAVINGS CLAUSE.**

22 Nothing in this title or an amendment made by this
23 title abrogates or otherwise affects the primary respon-
24 sibilities of any National Laboratory to the Department.

1 **Subtitle B—Innovation Manage-**
2 **ment at Department of Energy**

3 **SEC. 712. TECHNOLOGY TRANSFER AND TRANSITIONS AS-**
4 **SESSMENT.**

5 Not later than 1 year after the date of enactment
6 of this Act, and annually thereafter, the Secretary shall
7 transmit to the Committee on Science, Space, and Tech-
8 nology of the House of Representatives and the Committee
9 on Energy and Natural Resources of the Senate a report
10 which shall include—

11 (1) an assessment of the Department’s current
12 ability to carry out the goals of section 1001 of the
13 Energy Policy Act of 2005 (42 U.S.C. 16391), in-
14 cluding an assessment of the role and effectiveness
15 of the Director of the Office of Technology Transi-
16 tions; and

17 (2) recommended departmental policy changes
18 and legislative changes to section 1001 of the En-
19 ergy Policy Act of 2005 (42 U.S.C. 16391) to im-
20 prove the Department’s ability to successfully trans-
21 fer new energy technologies to the private sector.

22 **SEC. 713. SENSE OF CONGRESS.**

23 It is the sense of the Congress that the Secretary
24 should encourage the National Laboratories and federally
25 funded research and development centers to inform small

1 businesses of the opportunities and resources that exist
2 pursuant to this title.

3 **SEC. 714. NUCLEAR ENERGY INNOVATION.**

4 Not later than 180 days after the date of enactment
5 of this Act, the Secretary, in consultation with the Na-
6 tional Laboratories, relevant Federal agencies, and other
7 stakeholders, shall transmit to the Committee on Science,
8 Space, and Technology of the House of Representatives
9 and the Committee on Energy and Natural Resources of
10 the Senate a report assessing the Department's capabili-
11 ties to authorize, host, and oversee privately funded fusion
12 and non-light water reactor prototypes and related dem-
13 onstration facilities at Department-owned sites. For pur-
14 poses of this report, the Secretary shall consider the De-
15 partment's capabilities to facilitate privately-funded proto-
16 types up to 20 megawatts thermal output. The report shall
17 address the following:

18 (1) The Department's safety review and over-
19 sight capabilities.

20 (2) Potential sites capable of hosting research,
21 development, and demonstration of prototype reac-
22 tors and related facilities for the purpose of reducing
23 technical risk.

1 (3) The Department's and National Labora-
2 tories' existing physical and technical capabilities
3 relevant to research, development, and oversight.

4 (4) The efficacy of the Department's available
5 contractual mechanisms, including cooperative re-
6 search and development agreements, work for others
7 agreements, and agreements for commercializing
8 technology.

9 (5) Potential cost structures related to physical
10 security, decommissioning, liability, and other long-
11 term project costs.

12 (6) Other challenges or considerations identified
13 by the Secretary, including issues related to poten-
14 tial cases of demonstration reactors up to 2
15 gigawatts of thermal output.

16 **Subtitle C—Cross-Sector Partner-**
17 **ships and Grant Competitive-**
18 **ness**

19 **SEC. 721. AGREEMENTS FOR COMMERCIALIZING TECH-**
20 **NOLOGY PILOT PROGRAM.**

21 (a) IN GENERAL.—The Secretary shall carry out the
22 Agreements for Commercializing Technology pilot pro-
23 gram of the Department, as announced by the Secretary
24 on December 8, 2011, in accordance with this section.

1 (b) TERMS.—Each agreement entered into pursuant
2 to the pilot program referred to in subsection (a) shall
3 provide to the contractor of the applicable National Lab-
4 oratory, to the maximum extent determined to be appro-
5 priate by the Secretary, increased authority to negotiate
6 contract terms, such as intellectual property rights, pay-
7 ment structures, performance guarantees, and multiparty
8 collaborations.

9 (c) ELIGIBILITY.—

10 (1) IN GENERAL.—Any director of a National
11 Laboratory may enter into an agreement pursuant
12 to the pilot program referred to in subsection (a).

13 (2) AGREEMENTS WITH NON-FEDERAL ENTI-
14 TIES.—To carry out paragraph (1) and subject to
15 paragraph (3), the Secretary shall permit the direc-
16 tors of the National Laboratories to execute agree-
17 ments with a non-Federal entity, including a non-
18 Federal entity already receiving Federal funding
19 that will be used to support activities under agree-
20 ments executed pursuant to paragraph (1), provided
21 that such funding is solely used to carry out the
22 purposes of the Federal award.

23 (3) RESTRICTION.—The requirements of chap-
24 ter 18 of title 35, United States Code (commonly
25 known as the “Bayh-Dole Act”) shall apply if—

1 (A) the agreement is a funding agreement
2 (as that term is defined in section 201 of that
3 title); and

4 (B) at least one of the parties to the fund-
5 ing agreement is eligible to receive rights under
6 that chapter.

7 (d) SUBMISSION TO SECRETARY.—Each affected di-
8 rector of a National Laboratory shall submit to the Sec-
9 retary, with respect to each agreement entered into under
10 this section—

11 (1) a summary of information relating to the
12 relevant project;

13 (2) the total estimated costs of the project;

14 (3) estimated commencement and completion
15 dates of the project; and

16 (4) other documentation determined to be ap-
17 propriate by the Secretary.

18 (e) CERTIFICATION.—The Secretary shall require the
19 contractor of the affected National Laboratory to certify
20 that each activity carried out under a project for which
21 an agreement is entered into under this section—

22 (1) is not in direct competition with the private
23 sector; and

24 (2) does not present, or minimizes, any appar-
25 ent conflict of interest, and avoids or neutralizes any

1 actual conflict of interest, as a result of the agree-
2 ment under this section.

3 (f) EXTENSION.—The pilot program referred to in
4 subsection (a) shall be extended until October 31, 2017.

5 (g) REPORTS.—

6 (1) OVERALL ASSESSMENT.—Not later than 60
7 days after the date described in subsection (f), the
8 Secretary, in coordination with directors of the Na-
9 tional Laboratories, shall submit to the Committee
10 on Science, Space, and Technology of the House of
11 Representatives and the Committee on Energy and
12 Natural Resources of the Senate a report that—

13 (A) assesses the overall effectiveness of the
14 pilot program referred to in subsection (a);

15 (B) identifies opportunities to improve the
16 effectiveness of the pilot program;

17 (C) assesses the potential for program ac-
18 tivities to interfere with the responsibilities of
19 the National Laboratories to the Department;
20 and

21 (D) provides a recommendation regarding
22 the future of the pilot program.

23 (2) TRANSPARENCY.—The Secretary, in coordi-
24 nation with directors of the National Laboratories,
25 shall submit to the Committee on Science, Space,

1 and Technology of the House of Representatives and
2 the Committee on Energy and Natural Resources of
3 the Senate an annual report that accounts for all
4 incidences of, and provides a justification for, non-
5 Federal entities using funds derived from a Federal
6 contract or award to carry out agreements pursuant
7 to this section.

8 **SEC. 722. PUBLIC-PRIVATE PARTNERSHIPS FOR COMMER-**
9 **CIALIZATION.**

10 (a) IN GENERAL.—Subject to subsections (b) and (c),
11 the Secretary shall delegate to directors of the National
12 Laboratories signature authority with respect to any
13 agreement described in subsection (b) the total cost of
14 which (including the National Laboratory contributions
15 and project recipient cost share) is less than \$1 million.

16 (b) AGREEMENTS.—Subsection (a) applies to—

17 (1) a cooperative research and development
18 agreement;

19 (2) a non-Federal work-for-others agreement;
20 and

21 (3) any other agreement determined to be ap-
22 propriate by the Secretary, in collaboration with the
23 directors of the National Laboratories.

24 (c) ADMINISTRATION.—

1 (1) ACCOUNTABILITY.—The director of the af-
2 fected National Laboratory and the affected con-
3 tractor shall carry out an agreement under this sec-
4 tion in accordance with applicable policies of the De-
5 partment, including by ensuring that the agreement
6 does not compromise any national security, eco-
7 nomic, or environmental interest of the United
8 States.

9 (2) CERTIFICATION.—The director of the af-
10 fected National Laboratory and the affected con-
11 tractor shall certify that each activity carried out
12 under a project for which an agreement is entered
13 into under this section does not present, or mini-
14 mizes, any apparent conflict of interest, and avoids
15 or neutralizes any actual conflict of interest, as a re-
16 sult of the agreement under this section.

17 (3) AVAILABILITY OF RECORDS.—On entering
18 an agreement under this section, the director of a
19 National Laboratory shall submit to the Secretary
20 for monitoring and review all records of the National
21 Laboratory relating to the agreement.

22 (4) RATES.—The director of a National Lab-
23 oratory may charge higher rates for services per-
24 formed under a partnership agreement entered into
25 pursuant to this section, regardless of the full cost

1 of recovery, if such funds are used exclusively to
2 support further research and development activities
3 at the respective National Laboratory.

4 (d) EXCEPTION.—This section does not apply to any
5 agreement with a majority foreign-owned company.

6 (e) CONFORMING AMENDMENT.—Section 12 of the
7 Stevenson-Wydler Technology Innovation Act of 1980 (15
8 U.S.C. 3710a) is amended—

9 (1) in subsection (a)—

10 (A) by redesignating paragraphs (1) and
11 (2) as subparagraphs (A) and (B), respectively,
12 and indenting the subparagraphs appropriately;

13 (B) by striking “Each Federal agency”
14 and inserting the following:

15 “(1) IN GENERAL.—Except as provided in para-
16 graph (2), each Federal agency”; and

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

18 “(2) EXCEPTION.—Notwithstanding paragraph
19 (1), in accordance with section 722(a) of the Amer-
20 ica COMPETES Reauthorization Act of 2015, ap-
21 proval by the Secretary of Energy shall not be re-
22 quired for any technology transfer agreement pro-
23 posed to be entered into by a National Laboratory
24 of the Department of Energy, the total cost of which
25 (including the National Laboratory contributions

1 and project recipient cost share) is less than \$1 mil-
2 lion.”; and

3 (2) in subsection (b), by striking “subsection
4 (a)(1)” each place it appears and inserting “sub-
5 section (a)(1)(A)”.

6 **SEC. 723. INCLUSION OF EARLY-STAGE TECHNOLOGY DEM-**
7 **ONSTRATION IN AUTHORIZED TECHNOLOGY**
8 **TRANSFER ACTIVITIES.**

9 Section 1001 of the Energy Policy Act of 2005 (42
10 U.S.C. 16391) is amended by—

11 (1) redesignating subsection (g) as subsection
12 (h); and

13 (2) inserting after subsection (f) the following:

14 “(g) EARLY-STAGE TECHNOLOGY DEMONSTRA-
15 TION.—The Secretary shall permit the directors of the Na-
16 tional Laboratories to use funds authorized to support
17 technology transfer within the Department to carry out
18 early-stage and pre-commercial technology demonstration
19 activities to remove technology barriers that limit private
20 sector interest and demonstrate potential commercial ap-
21 plications of any research and technologies arising from
22 National Laboratory activities.”.

1 **SEC. 724. FUNDING COMPETITIVENESS FOR INSTITUTIONS**
2 **OF HIGHER EDUCATION AND OTHER NON-**
3 **PROFIT INSTITUTIONS.**

4 Section 988(b) of the Energy Policy Act of 2005 (42
5 U.S.C. 16352(b)) is amended—

6 (1) in paragraph (1), by striking “Except as
7 provided in paragraphs (2) and (3)” and inserting
8 “Except as provided in paragraphs (2), (3), and
9 (4)”; and

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

11 “(4) EXEMPTION FOR INSTITUTIONS OF HIGH-
12 ER EDUCATION AND OTHER NONPROFIT INSTITU-
13 TIONS.—

14 “(A) IN GENERAL.—Paragraph (1) shall
15 not apply to a research or development activity
16 performed by an institution of higher education
17 or nonprofit institution (as defined in section 4
18 of the Stevenson-Wydler Technology Innovation
19 Act of 1980 (15 U.S.C. 3703)).

20 “(B) TERMINATION DATE.—The exemp-
21 tion under subparagraph (A) shall apply during
22 the 6-year period beginning on the date of en-
23 actment of this paragraph.”.

1 **SEC. 725. PARTICIPATION IN THE INNOVATION CORPS PRO-**
2 **GRAM.**

3 The Secretary may enter into an agreement with the
4 Director of the National Science Foundation to enable re-
5 searchers funded by the Department to participate in the
6 National Science Foundation Innovation Corps program.

7 **Subtitle D—Assessment of Impact**

8 **SEC. 731. REPORT BY GOVERNMENT ACCOUNTABILITY OF-**
9 **FICE.**

10 Not later than 3 years after the date of enactment
11 of this Act, the Comptroller General of the United States
12 shall submit to Congress a report—

13 (1) describing the results of the projects devel-
14 oped under sections 721, 722, and 723, including in-
15 formation regarding—

16 (A) partnerships initiated as a result of
17 those projects and the potential linkages pre-
18 sented by those partnerships with respect to na-
19 tional priorities and other taxpayer-funded re-
20 search; and

21 (B) whether the activities carried out
22 under those projects result in—

23 (i) fiscal savings;

24 (ii) expansion of National Laboratory
25 capabilities;

1 (iii) increased efficiency of technology
2 transfers; or

3 (iv) an increase in general efficiency
4 of the National Laboratory system; and

5 (2) assess the scale, scope, efficacy, and impact
6 of the Department's efforts to promote technology
7 transfer and private sector engagement at the Na-
8 tional Laboratories, and make recommendations on
9 how the Department can improve these activities.

10 **TITLE VIII—SENSE OF**
11 **CONGRESS**

12 **SEC. 801. SENSE OF CONGRESS.**

13 It is the sense of Congress that climate change is real.
Passed the House of Representatives May 20, 2015.

Attest:

KAREN L. HAAS,

Clerk.