114TH CONGRESS 1ST SESSION

# H.R. 1806

### 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-
  - ${\it 2\ tives\ of\ the\ United\ States\ of\ America\ in\ Congress\ assembled},$

### 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 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. Novce 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.

	5
	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

10 neering, and Mathematics Education established

under section 101 of the America COMPETES Re-

authorization Act of 2010 (42 U.S.C. 6621). 12

### TITLE I—NATIONAL SCIENCE **FOUNDATION**

#### SEC. 101. AUTHORIZATION OF APPROPRIATIONS. 15

- 16 (a) FISCAL YEAR 2016.—
- (1) IN GENERAL.—There are authorized to be 17 18 appropriated to the Foundation \$7,597,140,000 for

11

13

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.
18	(2) Specific allocations.—Of the amount
19	authorized by paragraph (1)—
20	(A) \$6,186,300,000 shall be made avail-
21	able to carry out research and related activities,
22	including—
23	(i) \$823,000,000 for the Biological
24	Science Directorate:

1	(ii) \$1,038,000,000 for the Computer
2	and Information Science and Engineering
3	Directorate;
4	(iii) \$1,010,000,000 for the Engineer-
5	ing Directorate;
6	(iv) \$1,200,000,000 for the Geo-
7	sciences Directorate;
8	(v) \$1,500,000,000 for the Mathe-
9	matical and Physical Science Directorate;
10	(vi) \$150,000,000 for the Social, Be-
11	havioral, and Economics Directorate, of
12	which \$50,000,000 shall be for the Na-
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14	Statistics;
15	(vii) \$38,520,000 for the Office of
16	International Science and Engineering;
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18	Activities; and
19	(ix) \$1,480,000 for the United States
20	Arctic Commission;
21	(B) \$866,000,000 shall be made available
22	for education and human resources;
23	(C) \$200,310,000 shall be made available
24	for major research equipment and facilities con-
25	struction;

1	(D) $\$325,000,000$ shall be made available
2	for agency operations and award management;
3	(E) \$4,370,000 shall be made available for
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

- for funding of fundamental scientific and engineer ing research.
  - (6) Other nations are increasing their public investments in basic research in the physical sciences in order to boost long-term economic growth.
    - (7) Longstanding United States leadership in supercomputing, genomics, nanoscience, photonics, quantum physics, and other key technological areas is jeopardized if United States investments in basic research in the natural sciences do not keep pace.
    - (8) Redundant regulations and reporting requirements imposed by Federal agencies on research institutions and researchers increase costs by tens of millions of dollars annually.
    - (9) The Foundation carries out important functions by supporting basic research in all science and engineering disciplines and in supporting STEM education at all levels.
    - (10) The research and education activities of the Foundation promote the discovery, integration, dissemination, and application of new knowledge in service to society and prepare future generations of scientists, mathematicians, and engineers who will be necessary to ensure America's leadership in the 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

role in sustaining the competitive advantage of the

United States through superior research capabilities.

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### 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 /	(1) Board.—The term "Board" means the Na-
18	(1) Board.—The term "Board" means the National Science Board.
18	tional Science Board.
18 19	tional Science Board.  (2) DIRECTOR.—The term "Director" means
18 19 20	tional Science Board.  (2) DIRECTOR.—The term "Director" means the Director of the Foundation.
18 19 20 21	tional Science Board.  (2) DIRECTOR.—The term "Director" means the Director of the Foundation.  (3) FOUNDATION.—The term "Foundation"

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

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-
13 14	SEC. 108. MANAGEMENT AND OVERSIGHT OF LARGE FA-
14	CILITIES.
14 15	cilities.  (a) Large Facilities Office.—The Director shall
14 15 16 17	CILITIES.  (a) Large Facilities Office within the Office of the
14 15 16 17	cilities.  (a) Large Facilities Office.—The Director shall maintain a Large Facilities Office within the Office of the Director. The functions of the Large Facilities Office shall
14 15 16 17 18	cilities.  (a) Large Facilities Office.—The Director shall maintain a Large Facilities Office within the Office of the Director. The functions of the Large Facilities Office shall be to support the research directorates in the development,
14 15 16 17 18	cilities.  (a) Large Facilities Office.—The Director shall maintain a Large Facilities Office within the Office of the Director. The functions of the Large Facilities Office shall be to support the research directorates in the development, implementation, and assessment of major multi-user re-
14 15 16 17 18 19 20	cilities.  (a) Large Facilities Office.—The Director shall maintain a Large Facilities Office within the Office of the Director. The functions of the Large Facilities Office shall be to support the research directorates in the development, implementation, and assessment of major multi-user research facilities, including by—
14 15 16 17 18 19 20 21	cilities.  (a) Large Facilities Office within the Office of the Director. The functions of the Large Facilities Office shall be to support the research directorates in the development, implementation, and assessment of major multi-user research facilities, including by—  (1) serving as the Foundation's primary re-

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

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) periodically reviewing and updating as necessary Foundation policies and guidelines for the development and construction of major multi-user research facilities.

### (c) Policies for Large Facility Costs.—

- (1) In General.—The Director shall ensure that the Foundation's policies for developing and managing major multi-user research facility construction costs are consistent with the best practices described in the March 2009 Government Accountability Office Report GAO-09-3SP, or any successor report thereto.
- (2) Report.—Not later than 12 months after the date of enactment of this Act, the Director shall submit to Congress the results of a study and a report reforming the Foundation's policies on financial management of major multi-user research facilities, including a description of any aspects of the policies that diverge from the best practices recommended in Government Accountability Office Report GAO-09-3SP and the Uniform Guidance in 2 CFR Part 200.
- (3) Management fees.—

- (A) DEFINITION.—In this paragraph, the term "management fee" means a portion of an award made by the Foundation for the purpose of covering ordinary and necessary business expenses necessary to maintain operational sta-bility which are not otherwise allowable under Cost Principles Uniform Guidance in 2 CFR part 200, Subpart E, or any successor regula-tion thereto.
  - (B) LIMITATION.—The Foundation may provide management fees under an award only if the awardee has demonstrated that it has limited or no other financial resources available for covering the expenses for which the management fees are sought.
  - (C) Financial information.—The Foundation shall require award applicants to provide income and financial information covering a period of no less than 3 prior years (or in the case of an entity established less than 3 years prior to the entity's application date, the period beginning on the date of establishment and ending on the application date), including cash on hand and net asset information, in support of a request for management fees. The

Foundation shall also require awardees seeking subsequent management fees to report to the Foundation, prior to the consideration of such a request, any sources of non-Federal funds received in excess of \$100,000. This reporting shall apply to the period following any initial management fee award and for the consideration of any subsequent fee.

- (D) EXPENSE REPORTING.—The Foundation shall require awardees to track and report to the Foundation annually all expenses reimbursed or otherwise paid for with management fee funds, in accordance with Federal accounting practices as established in Government Accountability Office Report GAO–12–331G, or any successor report thereto.
- (E) Review.—The Inspector General of the Foundation may audit or review any Foundation award for compliance with this subsection.
- (F) Prohibited uses.—An awardee may not use management fees for—
  - (i) costs allowable under Cost Principles 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-
- 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

- complex research problems of significant scientific 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.
- (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,
- including programs and models at the Foundation,
- 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	tachnical and nontachnical audianeas.

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

assisting students and preparing students for such competitions, if such activities fall outside the regular duties and responsibilities of such teachers and instructional leaders; and (2) to broaden underrepresented secondary school students' access to, and interest in, careers

7 that require academic preparation in STEM sub-

8 jects.

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#### 9 SEC. 112. EXPANDING STEM OPPORTUNITIES.

10 (a) IN GENERAL.—Within the Directorate for Edu11 cation and Human Resources (or any successor thereto),
12 under existing programs targeting broadening participa13 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.

### (b) Use of Funds.—

(1) In General.—Grants awarded under this section shall be used for research to advance the engagement of underrepresented students in grades kindergarten through 8 in STEM through the development and implementation of innovative beforeschool, after-school, out-of-school, or summer activities, including programs (if applicable to the target 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

- by institutions of higher education, businesses, and local public and private educational agencies to establish collaborative efforts to provide K-12 students residing in areas with unemployment rates that exceed the national average by 1 percent or more.
- (c) APPLICATION.—An applicant seeking funding 13 14 under the section shall submit an application at such time, 15 in such manner, and containing such information as may be required. The application shall include, at a minimum, 17 the following:
  - (1) A description of the target audience to be served by the program.
- 20 (2) A description of the process for recruitment 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.

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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-
- 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 liely 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

- replicability issues in interdisciplinary research and to make recommendations on how to improve rigor and transparency in scientific research; and
- (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.

- The Foundation shall establish procedures to ensure that—
  - (1) a research grant awarded by the Foundation to a principal investigator supports a scope of work not otherwise being directly funded by grants provided by other Federal agencies;
    - (2) a principal investigator includes in any application for a research grant awarded by the Foundation a list of all Federal research funding received by the principal investigator, as well as any funding that is being requested as of that time;

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- 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) principal investigators who receive Foundation research grant funding under more than one grant at the same time have sufficient resources to conduct the proposed research under each of those grants appropriately under the terms of the grant; 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.

- Not later than 1 year after the date of enactment of this Act, the Comptroller General shall transmit to the Congress a report detailing the results of a study on the use of scientific computing resources funded by the Foundation at institutions of higher education. Such study shall 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

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- be shared with other practitioners in the scientific
  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.

- 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 Di3 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 Exec7 utive Service Performance Appraisal System;
  - (2) the Foundation shall provide to Congress a written justification and waiver by the Director in instances in which such an individual is to be paid at a rate that exceeds the annual salary rate of the Vice President of the United States; and
  - (3) the Foundation shall provide an annual report to Congress on the costs to the Foundation of employing such individuals, including—
    - (A) the timeliness and completeness of Foundation actions in response to recommendations and findings from the Office of Inspector General related to the employment of such individuals;
    - (B) actions taken by the Foundation to reduce the cost to the Foundation of the employment of such individuals at pay levels that exceed 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	education, training, and mentoring, ultimately lead- ing to the practical deployment of technologies,

- Nation's competitiveness, promote economic growth,
  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.

The Foundation shall support research activities related to the Brain Research through Advancing Innovative Neurotechnologies Initiative. The Foundation is encouraged to work in conjunction with the Interagency Working Group on Neuroscience (IWGN) to determine how to use the data infrastructure of the Foundation and other applicable agencies to help neuroscientists collect, standardize, manage, and analyze the large amounts of data that will

result from research attempting to understand how the

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 (e)—
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.
- 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)).

# 48 TITLE II—SCIENCE, TECH-1 NOLOGY, ENGINEERING, AND 2 **MATHEMATICS** 3 SEC. 201. FINDINGS; SENSE OF CONGRESS. 4 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

students and undergraduate and graduate students

in STEM fields.

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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-

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
- 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
- stakeholders must be engaged and outcome-based
- evaluation metrics should be considered in the co-
- 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.
- (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 opportuni5 ties to update the strategic plan;
  - (2) the management, coordination, and implementation of STEM education programs and activities across the Federal Government;
  - (3) the appropriateness of criteria used by Federal agencies to evaluate the effectiveness of Federal STEM education programs and activities;
  - (4) ways to leverage private and nonprofit STEM investments and encourage public-private partnerships to strengthen STEM education and help build the STEM workforce pipeline;
  - (5) ways to incorporate workforce needs into Federal STEM education programs, particularly for specific fields of national interest and areas experiencing high unemployment rates;
  - (6) ways to better vertically and horizontally integrate Federal STEM programs and activities from pre-K through graduate study and the workforce, and from in-school to out-of-school in order to improve transitions for students moving through the STEM 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-

- ticularly in the higher education sector where most federally sponsored research is performed, are eroding funds available to carry out basic scientific research;
  - (2) progress has been made over the last decade in streamlining the pre-award grant application process through Grants.gov, the Federal Government's website portal;
  - (3) post-award administrative costs have grown as Federal research agencies have continued to impose agency-unique compliance and reporting requirements on researchers and research institutions;
  - (4) facilities and administration costs at research universities can exceed 50 percent of the total value of Federal research grants, and it is estimated that nearly 30 percent of the funds invested annually in federally funded research is consumed by paperwork and other administrative processes required by Federal agencies; and
  - (5) it is a matter of critical importance to American competitiveness that administrative costs of federally funded research be streamlined so that a higher proportion of taxpayer dollars flow into direct research activities.

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- 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-
- ability for Federal tax dollars; and
- 16 (3) identify and update specific regulations to
- 17 refocus on performance-based goals rather than on
- 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—

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- 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;
  - (2) establish Federal priorities and policies for aligning, as appropriate, international science and technology cooperative research and training activities and partnerships supported or managed by Federal agencies with the foreign policy goals of the United States;
  - (3) identify opportunities for new international science and technology cooperative research and training partnerships that advance both the science and technology and the foreign policy priorities of the United States;
- 24 (4) in carrying out paragraph (3), solicit input 25 and recommendations from non-Federal science and

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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;
- (3) the means by which stakeholder input was
  received, as well as summary views of stakeholder
  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-Federal entity regarding the design, administration, and fund-11 ing of the program.

# (c) Prize Competition Judges.—

- (1) Requirements.—Judges for a prize competition carried out under this section shall not be required to be Federal employees. An individual who serves as a judge for a prize competition carried out under this section who is not a Federal employee shall be required to sign an agreement, developed by the Office of Science and Technology Policy, with respect to nondisclosure, conflict of interest, and judging code of conduct requirements.
  - (2) DISCLOSURE OF PERSONAL FINANCIAL INTERESTS.—A judge for a prize competition with a total purse of \$10,000 or more, or for an aggregate of prize competitions with a total purse of \$50,000

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- or more, shall be required to disclose all personal financial 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-
- 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 $(0)(1)$ , 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

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 Standards and Technology Act (15 U.S.C. 278s). 3 (b) FISCAL YEAR 2017.— 4 (1) In General.—There are authorized to be 6 to the Secretary of Commerce appropriated 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).

# 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,".

## SEC. 404. POLICE AND SECURITY AUTHORITY.

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- 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-
- ates, visitors, or other persons located therein or as-
- sociated therewith, notwithstanding any other provi-
- 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;
- (2) examine the strengths and weaknesses of
- the 2010 laboratory reorganization on the Institute's
- 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-
- NERSHIP.
- 25 "(a) Establishment and Purpose.—

"(1) IN GENERAL.—The Secretary, through the 1 2 Director and, if appropriate, through other officials, 3 shall provide assistance for the creation and support 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-

- "(2) AFFILIATIONS.—Such Centers shall be affiliated with any United States-based public or nonprofit institution or organization, or group thereof, that applies for and is awarded financial assistance under this section.
- "(3) Objective.—The objective of the Centers is to enhance competitiveness, productivity, and technological performance in United States manufacturing through—
  - "(A) the transfer of manufacturing technology and techniques developed at the Institute to Centers and, through them, to manufacturing companies throughout the United States;
- "(B) the participation of individuals from industry, institutions of higher education, State

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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, or
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) the establishment of automated manufacturing systems and other advanced production technologies, based on Institute-supported research, for the purpose of demonstrations and technology transfer;
  - "(2) the active transfer and dissemination of research findings and Center expertise to a wide range of companies and enterprises, particularly small and medium-sized manufacturers; and
  - "(3) the facilitation of collaborations and partnerships between small and medium-sized manufacturing companies and community colleges and area
    career and technical education schools to help such
    colleges and schools better understand the specific
    needs of manufacturers and to help manufacturers
    better understand the skill sets that students learn
    in the programs offered by such colleges and schools.

    "(c) Operations.—

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

"(2) Regulations.—The Secretary shall implement, review, and update the sections of the Code of Federal Regulations related to this section at least once every 3 years.

## "(3) APPLICATION.—

"(A) IN GENERAL.—Any nonprofit institution, or consortium thereof, or State or local government, may submit to the Secretary an application for financial support under this section, in accordance with the procedures established by the Secretary.

"(B) Cost sharing.—In order to receive assistance under this section, an applicant for financial assistance under subparagraph (A) shall provide adequate assurances that non-Federal assets obtained from the applicant and the applicant's partnering organizations will be used as a funding source to meet not less than 50 percent of the costs incurred. For purposes of the preceding sentence, the costs incurred means the costs incurred in connection with the activities undertaken to improve the competitiveness, management, productivity, and technological performance of small and medium-sized manufacturing companies.

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

- "(D) Legal Rights.—Each applicant under subparagraph (A) shall also submit a proposal for the allocation of the legal rights associated with any invention which may result from the proposed Center's activities.
- "(4) MERIT REVIEW.—The Secretary shall subject each such application to merit review. In making a decision whether to approve such application and provide financial support under this section, the Secretary shall consider, at a minimum, the following:
  - "(A) The merits of the application, particularly those portions of the application regarding technology transfer, training and education, 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 evaluation is positive, the Secretary may provide continued funding through the sixth year.
  - "(F) Probation.—The Secretary shall not provide funding unless the Center has received a positive evaluation. A Center that has not received a positive evaluation by the evaluation panel shall be notified by the panel of the deficiencies in its performance and shall be placed on probation for 1 year, after which time the panel shall reevaluate the Center. If the Center has not addressed the deficiencies identified by the panel, or shown a significant improvement in its performance, the Director shall conduct a new competition to select an operator for the Center or may close the Center.
  - "(G) ADDITIONAL FINANCIAL SUPPORT.—
    After the sixth year, a Center may receive additional financial support under this section if it has received a positive evaluation through an independent review, under procedures established by the Institute.
  - "(H) Eight-year review.—A Center shall undergo an independent review in the eighth year of operation. Each evaluation panel

shall measure the Center's performance against the objectives specified in this section. A Center that has not received a positive evaluation as a result of an independent review shall be notified by the Program of the deficiencies in its performance and shall be placed on probation for 1 year, after which time the Program shall reevaluate the Center. If the Center has not addressed the deficiencies identified by the review, or shown a significant improvement in its performance, the Director shall conduct a new competition to select an operator for the Center or may close the Center.

"(I) RECOMPETITION.—If a recipient of a Center award has received financial assistance for 10 consecutive years, the Director shall conduct a new competition to select an operator for the Center consistent with the plan required in this Act. Incumbent Center operators in good standing shall be eligible to compete for the new award.

# "(J) Reports.—

"(i) Plan.—Not later than 180 days after the date of enactment of the America COMPETES Reauthorization Act of 2015,

the Director shall transmit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a plan as to how the Institute will conduct reviews, assessments, and reapplication competitions under this paragraph.

"(ii) Independent assessment.—
The Director shall contract with an independent organization to perform an assessment of the implementation of the reapplication competition process under this paragraph within 3 years after the transmittal of the report under clause (i). The organization conducting the assessment under this clause may consult with the MEP Advisory Board.

"(iii) Comparison of centers.—
Not later than 2 years after the date of enactment of the America Competers Reauthorization Act of 2015, the Director shall transmit to the Committee on Science, Space, and Technology of the House of Representatives and the Com-

mittee on Commerce, Science, and Transportation of the Senate a report providing information on the first and second years of operations for centers operating from new competitions or recompetition as compared to longstanding centers. The report shall provide detail on the engagement in services provided by Centers and the characteristics of services provided, including volume and type of services, so that the Committees can evaluate whether the cost-sharing ratio has an effect on the services provided at Centers.

"(6) Patent rights.—The provisions of chapter 18 of title 35, United States Code, shall apply, to the extent not inconsistent with this section, to the promotion of technology from research by Centers under this section except for contracts for such specific technology extension or transfer services as may be specified by statute or by the Director.

"(7) PROTECTION OF CENTER CLIENT CON-FIDENTIAL INFORMATION.—Section 552 of title 5, United States Code, shall apply to the following information obtained by the Federal Government on a confidential basis in connection with the activities of any participant involved in the Hollings Manufacturing Extension Partnership:

"(A) Information on the business operation of any participant in a Hollings Manufacturing Extension Partnership program or of a client of a Center.

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

"(8) Advisory Boards.—Each Center's advisory boards shall institute a conflict of interest policy, approved by the Director, that ensures the Board represents local small and medium-sized manufacturers in the Center's region. Board Members may not serve as a vendor or provide services to the Center, nor may they serve on more than one Center's oversight board simultaneously.

# "(d) Acceptance of Funds.—

"(1) In GENERAL.—In addition to such sums as may be appropriated to the Secretary and Director to operate the Hollings Manufacturing Extension Partnership, the Secretary and Director also may accept funds from other Federal departments and agencies and, under section 2(c)(7), from the private sector, to be available to the extent provided by ap-

1	propriations 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

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

- "(B) TERM.—Except as provided in subparagraph (C) or (D), the term of office of each member of the MEP Advisory Board shall be 3 years.
- "(C) VACANCIES.—Any member appointed to fill a vacancy occurring prior to the expiration of the term for which his predecessor was appointed shall be appointed for the remainder of such term.
- "(D) SERVING CONSECUTIVE TERMS.—
  Any person who has completed two consecutive full terms of service on the MEP Advisory Board shall thereafter be ineligible for appointment during the 1-year period following the expiration 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

submission to Congress of the President's annual budget request in each year. Such report shall address the status of the program established pursuant to this section and comment on the relevant sections of the programmatic planning document and updates thereto transmitted to Congress by the Director under subsections (c) and (d) of section 23.

# "(f) Competitive Grant Program.—

- "(1) ESTABLISHMENT.—The Director shall establish, within the Hollings Manufacturing Extension Partnership, under this section and section 26, a program of competitive awards among participants described in paragraph (2) for the purposes described in paragraph (3).
- "(2) Participants.—Participants receiving awards under this subsection shall be the Centers, or a consortium of such Centers.
- "(3) Purpose.—The purpose of the program under this subsection is to add capabilities to the Hollings Manufacturing Extension Partnership, including the development of projects to solve new or emerging manufacturing problems as determined by the Director, in consultation with the Director of the Hollings Manufacturing Extension Partnership program, 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 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 initiative. 15
- 16 (4) Proposed budget.—The Director shall
  17 transmit annually to Congress a proposed budget
  18 corresponding to the activities identified in the strat19 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

awardee may reapply for selection for a second

- period of 5 years on a competitive, merit-reviewed 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 facili10 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' mean
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' mean
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

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:

- "(3) partner with universities, National Laboratories, and industry to ensure the broadest possible application of the technology developed in this program to other challenges in science, engineering, medicine, and industry.";
  - (2) in subsection (b)(2), by striking "vector" and all that follows through "architectures" and inserting "computer technologies that show promise of substantial reductions in power requirements and substantial gains in parallelism of multicore processors, concurrency, memory and storage, bandwidth, and reliability"; and
  - (3) by striking subsection (d) and inserting the following:
  - "(d) Exascale Computing Program.—
  - "(1) In general.—The Secretary shall conduct a coordinated research program to develop exascale computing systems to advance the missions of the Department.
    - "(2) EXECUTION.—The Secretary shall, through competitive merit review, establish two or more National Laboratory-industry-university partnerships to conduct integrated research, development, and engineering of multiple exascale architectures, 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 MANAGEMENT PLAN.—The Secretary GRAM 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 the budget submission of the Department for each fiscal year, the Secretary shall submit a

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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.—
  - (1) In General.—The Director of the Department of Energy Office of Science shall carry out a research program on low dose radiation. The purpose of the program is to enhance the scientific understanding of and reduce uncertainties associated with the effects of exposure to low dose radiation in

order to inform improved risk management methods.

(2) STUDY.—Not later than 60 days after the date of enactment of this Act, the Director shall enter into an agreement with the National Academies to conduct a study assessing the current status and development of a long-term strategy for low dose radiation research. Such study shall be completed not later than 18 months after the date of enactment of this Act. The study shall be conducted in coordination with Federal agencies that perform ionizing radiation effects research and shall leverage

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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
- 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
- subsection shall be construed to subject any research
- carried out by the Director under the research pro-
- gram under this subsection to any limitations de-
- scribed in section 977(e) of the Energy Policy Act
- 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

scientific basis for fusion, providing research results key to the success of ITER, and training
the next generation of fusion scientists are of
critical importance to the United States and
should in no way be diminished by participation
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.

### (e) ALTERNATIVE AND ENABLING CONCEPTS.—

(1) In General.—As part of the program described in subsection (a), the Director shall support research and development activities and facility operations at United States universities, national laboratories, and private facilities for a portfolio of alternative and enabling fusion energy concepts that may provide solutions to significant challenges to the establishment of a commercial magnetic fusion power plant, prioritized based on the ability of the United States to play a leadership role in the international fusion research community. Fusion energy concepts and activities explored under this paragraph may include—

1	(A) high magnetic field approaches facili-
2	tated by high temperature superconductors;
3	(B) advanced stellarator concepts;
4	(C) non-tokamak confinement configura-
5	tions operating at low magnetic fields;
6	(D) magnetized target fusion energy con-
7	cepts;
8	(E) liquid metals to address issues associ-
9	ated with fusion plasma interactions with the
10	inner wall of the encasing device;
11	(F) immersion blankets for heat manage-
12	ment and fuel breeding;
13	(G) advanced scientific computing activi-
14	ties; and
15	(H) other promising fusion energy con-
16	cepts identified by the Director.
17	(2) COORDINATION WITH ARPA-E.—The Under
18	Secretary and the Director shall coordinate with the
19	Director of the Advanced Research Projects Agency-
20	Energy (in this paragraph referred to as "ARPA-
21	E'') to—
22	(A) assess the potential for any fusion en-
23	ergy project supported by ARPA–E to rep-
24	resent a promising approach to a commercially
25	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 es4 tablish or solidify a lead in the global fusion energy development effort;
  - (B) identify priorities for initiation of facility construction and facility decommissioning under each of those scenarios; and
  - (C) assess the ability of the United States fusion workforce to carry out the activities identified in subparagraphs (A) and (B), including the adequacy of college and university programs to train the leaders and workers of the next generation of fusion energy researchers.
  - (2) Process.—In order to develop the report required under paragraph (1), the Secretary shall leverage best practices and lessons learned from the process used to develop the most recent report of the Particle Physics Project Prioritization Panel of the High Energy Physics Advisory Panel. No member of the Fusion Energy Sciences Advisory Committee shall be excluded from participating in developing or voting on final approval of the report required under 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 Natura
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-
15	TITLE VI—DELARIMENT OF EN-
14	ERGY APPLIED RESEARCH
14	ERGY APPLIED RESEARCH
14 15	ERGY APPLIED RESEARCH AND DEVELOPMENT
14 15 16 17	ERGY APPLIED RESEARCH AND DEVELOPMENT Subtitle A—Crosscutting Research
14 15 16 17	ERGY APPLIED RESEARCH AND DEVELOPMENT Subtitle A—Crosscutting Research and Development
14 15 16 17	ERGY APPLIED RESEARCH AND DEVELOPMENT Subtitle A—Crosscutting Research and Development SEC. 601. CROSSCUTTING RESEARCH AND DEVELOPMENT.
114 115 116 117 118	ERGY APPLIED RESEARCH AND DEVELOPMENT Subtitle A—Crosscutting Research and Development  SEC. 601. CROSSCUTTING RESEARCH AND DEVELOPMENT.  (a) CROSSCUTTING RESEARCH AND DEVELOP-
14 15 16 17 18 19 20	ERGY APPLIED RESEARCH AND DEVELOPMENT  Subtitle A—Crosscutting Research and Development  SEC. 601. CROSSCUTTING RESEARCH AND DEVELOPMENT.  (a) CROSSCUTTING RESEARCH AND DEVELOPMENT.  The Secretary shall, through the Under Secretary
114 115 116 117 118 119 220 221	ERGY APPLIED RESEARCH AND DEVELOPMENT Subtitle A—Crosscutting Research and Development  SEC. 601. CROSSCUTTING RESEARCH AND DEVELOPMENT.  (a) CROSSCUTTING RESEARCH AND DEVELOPMENT.  The Secretary shall, through the Under Secretary for Science and Energy, utilize the capabilities of the De-
14 15 16 17 18 19 20 21 22 23	ERGY APPLIED RESEARCH AND DEVELOPMENT Subtitle A—Crosscutting Research and Development  SEC. 601. CROSSCUTTING RESEARCH AND DEVELOPMENT.  (a) CROSSCUTTING RESEARCH AND DEVELOPMENT.—The Secretary shall, through the Under Secretary for Science and Energy, utilize the capabilities of the Department to identify strategic opportunities for collabo-

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	nating 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.
13 14	Section 994 of Energy Policy Act of 2005 (42 U.S.C. 16358) is amended to read as follows:
14	16358) is amended to read as follows:
14 15	16358) is amended to read as follows:  "SEC. 994. STRATEGIC RESEARCH PORTFOLIO ANALYSIS
<ul><li>14</li><li>15</li><li>16</li></ul>	16358) is amended to read as follows:  "SEC. 994. STRATEGIC RESEARCH PORTFOLIO ANALYSIS  AND COORDINATION PLAN.
<ul><li>14</li><li>15</li><li>16</li><li>17</li></ul>	16358) is amended to read as follows:  "SEC. 994. STRATEGIC RESEARCH PORTFOLIO ANALYSIS  AND COORDINATION PLAN.  "(a) IN GENERAL.—The Secretary shall periodically
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<ul><li>14</li><li>15</li><li>16</li><li>17</li><li>18</li><li>19</li><li>20</li><li>21</li></ul>	16358) is amended to read as follows:  "SEC. 994. STRATEGIC RESEARCH PORTFOLIO ANALYSIS  AND COORDINATION PLAN.  "(a) IN GENERAL.—The Secretary shall periodically review all of the science and technology activities of the Department in a strategic framework that takes into account the frontiers of science to which the Department can contribute, the national needs relevant to the Department
14 15 16 17 18 19 20 21 22	"SEC. 994. STRATEGIC RESEARCH PORTFOLIO ANALYSIS  AND COORDINATION PLAN.  "(a) In General.—The Secretary shall periodically review all of the science and technology activities of the Department in a strategic framework that takes into account the frontiers of science to which the Department can contribute, the national needs relevant to the Department's statutory missions, and global energy dynamics.

- research, development, demonstration, and commercial ap plication activities across Department organizational
- 4 "(c) Plan Contents.—The plan shall describe—

boundaries.

- 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;
  - "(2) how the applied technology programs of the Department are coordinating their activities, and addressing those questions;
    - "(3) ways in which the technical interchange within the Department, particularly between the Office of Science and the applied technology programs, can be enhanced, including limited ways in which the research agendas of the Office of Science and the applied programs can better interact and assist each other;
    - "(4) a description of how the Secretary will ensure that the Department's overall research agenda include, in addition to fundamental, curiosity-driven research, fundamental research related to topics of concern to the applied programs, and applications in Departmental technology programs of research results generated by fundamental, curiosity-driven research;

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 economic, environmental, and energy security by 3 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.
  - (2) TECHNOLOGY DEVELOPMENT FOCUS.—The Secretary shall designate for each Hub a unique advanced energy technology focus.
  - (3) COORDINATION.—The Secretary shall ensure the coordination of, and avoid unnecessary duplication of, the activities of Hubs with those of other Department of Energy research entities, including the National Laboratories, the Advanced Research Projects Agency-Energy, Energy Frontier Research Centers, and within industry.

## 20 (b) Consortia.—

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- (1) Eligibility.—To be eligible to receive an award under this section for the establishment and 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,
- development, and demonstration of advanced energy
- technologies within the technology development focus
- designated under subsection (a)(2). Each Hub
- 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-

cation or revoke funds distributed to a Hub if
the Secretary discovers a failure to comply with
conflict of interest procedures established under
subparagraph (A).

### (3) Prohibition on construction.—

- (A) IN GENERAL.—No funds provided pursuant to this section may be used for construction of new buildings or facilities for Hubs. Construction of new buildings or facilities shall not be considered as part of the non-Federal share of a Hub cost-sharing agreement.
- (B) Test bed and renovation exception.—Nothing in this subsection shall prohibit the use of funds provided pursuant to this section, or non-Federal cost share funds, for research or for the construction of a test bed or renovations to existing buildings or facilities for the purposes of research if the Secretary determines that the test bed or renovations are limited to a scope and scale necessary for the research 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-

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.

- "(3) International cooperation.—In car-1 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 the following new subsection: 16 17 "(d) SMALL MODULAR REACTOR PROGRAM.— 18 "(1) IN GENERAL.—The Secretary shall carry
- "(1) In General.—The Secretary shall carry out a small modular reactor program to promote research, development, demonstration, and commercial application of small modular reactors, including through cost-shared projects for commercial application 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

- generation, improve safety performance and margins, and minimize the amount of nuclear waste produced in an open fuel cycle.
  - "(2) Recycle.—Developing advanced recycling technologies, including advanced reactor concepts to improve resource utilization, reduce proliferation risks, and minimize radiotoxicity, decay heat, and mass and volume of nuclear waste to the greatest extent possible.
    - "(3) Advanced storage technologies for both onsite and long-term storage that substantially prolong the effective life of current storage devices or that substantially improve upon existing nuclear waste storage technologies and methods, including repositories.
    - "(4) Fast test reactor.—Investigating the potential research benefits of a fast test reactor user facility to conduct experiments on fuels and materials related to fuel forms and fuel cycles that will increase fuel utilization, reduce proliferation risks, and reduce nuclear waste products.
    - "(5) Advanced reactor innovation.—Developing an advanced reactor innovation testbed where national laboratories, universities, and industry 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-

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,

demonstration, and commercial application program under

section 952(c) and the fuel cycle research and development

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;
- "(5) high performance computation modeling, 10 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
  - "(6) any crosscutting technology or transformative concept aimed at establishing substantial and revolutionary enhancements in the performance of future nuclear energy systems that the Secretary considers relevant and appropriate to the purpose of this section.

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- 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.
- (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
- be open to materially affected organizations involved
- 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);

(4) as appropriate, coordinate with other national, regional, or international efforts on nuclear 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.

# 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-
- prove the energy efficiency and environmental per-
- 25 formance of vehicles, including weight and drag re-

- duction technologies, technologies, modeling, and simulation for increasing vehicle connectivity and automation, and whole-vehicle design optimization;

  "(2) cost-effective technologies for new con-
- "(2) cost-effective technologies, for new construction and retrofit, to improve the energy efficiency and environmental performance of buildings, 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;
- "(4) technologies to improve the energy efficiency of appliances and mechanical systems for buildings in extreme climates, including cogeneration, trigeneration, and polygeneration units;
- 16 "(5) advanced battery technologies; and
- "(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.
- 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	oranh $(2)(B)$ .

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 proc-
2	esses; 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

- 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.— "(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 DETERMINATIONS.—The results of any research, de-13 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-

"(1) Constraints against bringing resources to market.—Not later than 1 year after the date of enactment of the America COMPETES Reauthorization Act of 2015, the Secretary shall transmit to Congress an assessment of the technical,

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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, DEMONSTRA-
11	TION, AND COMMERCIAL APPLICATION PRO-
12	GRAMS.
13	(a) In General.—Section 962 of the Energy Policy
13 14	(a) IN GENERAL.—Section 962 of the Energy Policy Act of 2005 (42 U.S.C. 16292) is amended—
14	Act of 2005 (42 U.S.C. 16292) is amended—
14 15	Act of 2005 (42 U.S.C. 16292) is amended— (1) in subsection (a)—
14 15 16	Act of 2005 (42 U.S.C. 16292) is amended—  (1) in subsection (a)—  (A) in paragraph (10), by striking "and"
14 15 16 17	Act of 2005 (42 U.S.C. 16292) is amended—  (1) in subsection (a)—  (A) in paragraph (10), by striking "and" at the end;
14 15 16 17 18	Act of 2005 (42 U.S.C. 16292) is amended—  (1) in subsection (a)—  (A) in paragraph (10), by striking "and" at the end;  (B) in paragraph (11), by striking the per-
14 15 16 17 18	Act of 2005 (42 U.S.C. 16292) is amended—  (1) in subsection (a)—  (A) in paragraph (10), by striking "and" at the end;  (B) in paragraph (11), by striking the period at the end and inserting a semicolon; and
14 15 16 17 18 19 20	Act of 2005 (42 U.S.C. 16292) is amended—  (1) in subsection (a)—  (A) in paragraph (10), by striking "and" at the end;  (B) in paragraph (11), by striking the period at the end and inserting a semicolon; and (C) by adding at the end the following:
14 15 16 17 18 19 20 21	Act of 2005 (42 U.S.C. 16292) is amended—  (1) in subsection (a)—  (A) in paragraph (10), by striking "and" at the end;  (B) in paragraph (11), by striking the period at the end and inserting a semicolon; and (C) by adding at the end the following:  "(12) specific additional programs to address

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 (e) (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	(e) to read as follows:
23	"(6) Advisory committee.—
24	"(A) In general.—Subject to subpara-
25	graph (B), the Secretary shall establish an advi-

sory committee to undertake, not less frequently than once every 3 years, a review and prepare a report on the progress being made by the Department of Energy to achieve the goals described in subsections (a) and (b) of section 962 and subsection (b) of this section.

- "(B) Membership requirements.—
  Members of the advisory committee established under subparagraph (A) shall be appointed by the Secretary, except that three members shall be appointed by the Speaker of the House of Representatives and two members shall be appointed by the Majority Leader of the Senate.

  The total number of members of the advisory 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.".

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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.

## Subtitle F—Advanced Research 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.
- (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-
- sight capabilities.
- 20 (2) Potential sites capable of hosting research,
- 21 development, and demonstration of prototype reac-
- tors and related facilities for the purpose of reducing
- 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 Lab4 oratory, to the maximum extent determined to be appro5 priate by the Secretary, increased authority to negotiate
  6 contract terms, such as intellectual property rights, pay7 ment structures, performance guarantees, and multiparty
  8 collaborations.
  - (c) Eligibility.—

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- (1) In general.—Any director of a National Laboratory may enter into an agreement pursuant to the pilot program referred to in subsection (a).
  - (2) AGREEMENTS WITH NON-FEDERAL ENTI-TIES.—To carry out paragraph (1) and subject to paragraph (3), the Secretary shall permit the directors of the National Laboratories to execute agreements with a non-Federal entity, including a non-Federal entity already receiving Federal funding that will be used to support activities under agreements executed pursuant to paragraph (1), provided that such funding is solely used to carry out the purposes of the Federal award.
    - (3) Restriction.—The requirements of chapter 18 of title 35, United States Code (commonly 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 af2 fected National Laboratory and the affected con3 tractor shall carry out an agreement under this sec4 tion in accordance with applicable policies of the De5 partment, including by ensuring that the agreement
  6 does not compromise any national security, eco7 nomic, or environmental interest of the United
  8 States.
  - (2) CERTIFICATION.—The director of the affected National Laboratory and the affected contractor shall certify that each activity carried out under a project for which an agreement is entered into under this section does not present, or minimizes, any apparent conflict of interest, and avoids or neutralizes any actual conflict of interest, as a result of the agreement under this section.
  - (3) AVAILABILITY OF RECORDS.—On entering an agreement under this section, the director of a National Laboratory shall submit to the Secretary for monitoring and review all records of the National Laboratory relating to the agreement.
  - (4) Rates.—The director of a National Laboratory may charge higher rates for services performed under a partnership agreement entered into 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:

Clerk.

## 114TH CONGRESS H. R. 1806

## 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.