

Cantwell_substitute (as modified)

AMENDMENT NO. _____

Calendar No. _____

Purpose: In the nature of a substitute.

IN THE SENATE OF THE UNITED STATES—117th Cong., 1st Sess.**S. 1260**

To establish a new Directorate for Technology and Innovation in the National Science Foundation, to establish a regional technology hub program, to require a strategy and report on economic security, science, research, innovation, manufacturing, and job creation, to establish a critical supply chain resiliency program, and for other purposes.

Referred to the Committee on _____ and
ordered to be printed

Ordered to lie on the table and to be printed

AMENDMENT IN THE NATURE OF A SUBSTITUTE intended
to be proposed by Ms. CANTWELL (for herself and Mr.
WICKER)

Viz:

1 Strike all after the enacting clause and insert the fol-

2 lowing:

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

4 (a) SHORT TITLE.—This Act may be cited as the

5 “Endless Frontier Act”.

6 (b) TABLE OF CONTENTS.—The table of contents of

7 this Act is as follows:

Sec. 1. Short title; table of contents.

Sec. 2. Definitions.

Sec. 3. Sense of Congress.

2

- Sec. 4. Interagency working group.
- Sec. 5. Key technology focus areas.

TITLE I—NSF TECHNOLOGY AND INNOVATION

- Sec. 101. Definitions.
- Sec. 102. Directorate establishment and purpose.
- Sec. 103. Personnel management.
- Sec. 104. Innovation centers.
- Sec. 105. Transition of NSF programs.
- Sec. 106. Providing scholarships, fellowships, and other student support.
- Sec. 107. Research and development.
- Sec. 108. Test beds.
- Sec. 109. Academic technology transfer.
- Sec. 110. Capacity-building program for developing universities.
- Sec. 111. Technical assistance.
- Sec. 112. Coordination of activities.
- Sec. 113. Reporting requirements.
- Sec. 114. Authorization of appropriations for the Foundation.

TITLE II—NSF RESEARCH, STEM, AND GEOGRAPHIC DIVERSITY INITIATIVES

- Sec. 201. Chief Diversity Officer of the NSF.
- Sec. 202. Programs to address the STEM workforce.
- Sec. 203. Emerging research institution pilot program.
- Sec. 204. Personnel management authorities for the Foundation.
- Sec. 205. Advanced Technological Manufacturing Act.
- Sec. 206. Intramural emerging institutions pilot program.
- Sec. 207. Public-private partnerships.
- Sec. 208. AI Scholarship-for-Service Act.
- Sec. 209. Geographic diversity.
- Sec. 210. Rural STEM Education Act.
- Sec. 211. Quantum Network Infrastructure and Workforce Development Act.
- Sec. 212. Supporting Early-Career Researchers Act.
- Sec. 213. Advancing Precision Agriculture Capabilities Act.
- Sec. 214. Critical minerals mining research.
- Sec. 215. Caregiver policies.
- Sec. 216. Presidential awards.
- Sec. 217. Bioeconomy Research and Development Act of 2021.

TITLE III—RESEARCH SECURITY

- Sec. 301. National science foundation research security.
- Sec. 302. Research security and integrity information sharing analysis organization.
- Sec. 303. Foreign government talent recruitment program prohibition.
- Sec. 304. Additional requirements for directorate research security.
- Sec. 305. Protecting research from cyber theft.
- Sec. 306. International standards development.
- Sec. 307. Research funds accounting.

TITLE IV—REGIONAL INNOVATION CAPACITY

- Sec. 401. Regional technology hubs.
- Sec. 402. Manufacturing USA Program.

- Sec. 403. Establishment of expansion awards program in Hollings Manufacturing Extension Partnership and authorization of appropriations for the Partnership.
- Sec. 404. National Manufacturing Advisory Council.

TITLE V—MISCELLANEOUS

- Sec. 501. Strategy and report on economic security, science, research, and innovation to support the national security strategy.
- Sec. 502. Person or entity of concern prohibition.
- Sec. 503. Study on emerging science and technology challenges faced by the United States and recommendations to address them.
- Sec. 504. Supply chain resiliency program.
- Sec. 505. Research investment to spark the Economy Act.
- Sec. 506. Office of manufacturing and industrial innovation policy.
- Sec. 507. Telecommunications Workforce Training Grant Program.

1 **SEC. 2. DEFINITIONS.**

2 Unless otherwise specified, in this Act:

3 (1) DIRECTOR.—The term “Director” means
4 the Director of the National Science Foundation.

5 (2) DIRECTORATE.—The term “Directorate”
6 means the Directorate for Technology and Innova-
7 tion established under section 102.

8 (3) EMERGING RESEARCH INSTITUTION.—The
9 term “emerging research institution” means an in-
10 stitution of higher education with an established un-
11 dergraduate or graduate program that has, on aver-
12 age for the 3 years prior to an application for an
13 award under this Act, received less than
14 \$50,000,000 in Federal research funding.

15 (4) EPSCoR.—The term “EPSCoR” means
16 the Established Program to Stimulate Competitive
17 Research under section 113 of the National Science

1 Foundation Authorization Act of 1988 (42 U.S.C.
2 1862g).

3 (5) FOUNDATION.—The term “Foundation”
4 means the National Science Foundation.

5 (6) HISTORICALLY BLACK COLLEGE OR UNI-
6 VERSITY.—The term “historically Black college or
7 university” has the meaning given the term “part B
8 institution” in section 322 of the Higher Education
9 Act of 1965 (20 U.S.C. 1061).

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

14 (8) KEY TECHNOLOGY FOCUS AREAS.—The
15 term “key technology focus areas” means the areas
16 included on the most recent list under section 5.

17 (9) MINORITY-SERVING INSTITUTION.—The
18 term “minority-serving institution” means an insti-
19 tution described in section 371(a) of the Higher
20 Education Act of 1965 (20 U.S.C. 1067q(a)).

21 (10) STEM.—The term “STEM” means the
22 academic and professional disciplines of science,
23 technology, engineering, and mathematics, including
24 computer science.

1 **SEC. 3. SENSE OF CONGRESS.**

2 It is the sense of Congress that—

3 (1) the National Science Foundation and other
4 key Federal agencies, such as the Department of
5 Energy, have carried out vital work supporting basic
6 and applied research to create knowledge that is a
7 key driver of the economy of the United States and
8 a critical component of national security;

9 (2) openness to diverse perspectives and a focus
10 on freedom from censorship and political bias will
11 continue to make educational and research institu-
12 tions in the United States beacons to thousands of
13 students from across the world;

14 (3) increasing research and technology transfer
15 investments, building regional capacity and reducing
16 geographic disparity, strengthening supply chains,
17 and increasing capabilities in key technology focus
18 areas will enhance the competitive advantage and
19 leadership of the United States in the global econ-
20 omy;

21 (4) the Federal Government must utilize the
22 full talent and potential of the entire Nation by
23 avoiding undue geographic concentration of research
24 and education funding, encouraging broader partici-
25 pation of populations underrepresented in STEM,
26 and collaborating with non-government partners to

1 ensure the leadership of the United States in techno-
2 logical innovation; and

3 (5) authorization and funding for the National
4 Science Foundation should be done on a bipartisan
5 basis.

6 **SEC. 4. INTERAGENCY WORKING GROUP.**

7 (a) ESTABLISHMENT.—The Director of the Office of
8 Science and Technology Policy, acting through the Na-
9 tional Science and Technology Council, shall establish or
10 designate an interagency working group to coordinate the
11 activities specified in subsection (c).

12 (b) COMPOSITION.—The interagency working group
13 shall be composed of the following members (or their des-
14 ignees), who may be organized into subcommittees, as ap-
15 propriate:

16 (1) The Secretary of Commerce.

17 (2) The Director of the National Science Foun-
18 dation.

19 (3) The Secretary of Energy.

20 (4) The Secretary of Defense.

21 (5) The Director of the National Economic
22 Council.

23 (6) The Director of the Office of Management
24 and Budget.

1 (7) The Secretary of Health and Human Serv-
2 ices.

3 (8) The Administrator of the National Aero-
4 nautics and Space Administration.

5 (9) The Secretary of Agriculture.

6 (10) The Director of National Intelligence.

7 (11) Such other Federal officials as the Direc-
8 tor of the Office of Science and Technology Policy
9 considers appropriate, including members of the Na-
10 tional Science and Technology Council Committee on
11 Technology.

12 (c) COORDINATION.—The interagency working group
13 shall ensure that the activities of different Federal agen-
14 cies enhance and complement, but, as appropriate, do not
15 duplicate, efforts being carried out by another Federal
16 agency, with a focus on—

17 (1) the National Science Foundation innovation
18 centers under section 104 and test beds under sec-
19 tion 108;

20 (2) the Department of Commerce regional tech-
21 nology hubs under section 28 of the Stevenson-
22 Wydler Act of 1980 (15 U.S.C. 13701 et seq.), as
23 added by section 401 of this Act;

24 (3) the Manufacturing USA Program estab-
25 lished under section 34(b)(1) of the National Insti-

1 tute of Standards and Technology Act (15 U.S.C.
2 278s(b)(1));

3 (4) national laboratories, as defined in section
4 2 of the Energy Policy Act of 2005 (42 U.S.C.
5 15801);

6 (5) Federal laboratories, as defined in section 4
7 of the Stevenson-Wydler Technology Innovation Act
8 of 1980 (15 U.S.C. 3703), and facilities and user fa-
9 cilities operated in partnership with such national
10 laboratories or the Department of Energy;

11 (6) Department of Energy research programs;

12 (7) the Hollings Manufacturing Extension Part-
13 nership; and

14 (8) any other program that the Director of the
15 Office of Science and Technology Policy determines
16 involves research and development in the key tech-
17 nology focus areas.

18 (d) ACTIVITIES.—The interagency working group—

19 (1) shall conduct a review of Federal programs
20 to identify potential areas of overlap between Fed-
21 eral programs, with respect to the key technology
22 focus areas identified pursuant to section 5, and as
23 appropriate—

24 (A) ensure that activities from different
25 Federal agencies enhance and complement, but

1 do not duplicate, efforts being carried out by
2 another agency; and

3 (B) identify potential cross-agency collabo-
4 rations and joint funding opportunities; and

5 (2) shall seek stakeholder input and rec-
6 ommendations in the course of such review.

7 (e) CONFLICTS.—If any conflicts between Federal
8 agencies arise while carrying out the activities under this
9 section, the President shall make the final decision regard-
10 ing resolution of the conflict.

11 **SEC. 5. KEY TECHNOLOGY FOCUS AREAS.**

12 (a) IN GENERAL.—

13 (1) INITIAL LIST.—The initial key technology
14 focus areas are:

15 (A) Artificial intelligence, machine learn-
16 ing, autonomy, and related advances.

17 (B) High performance computing, semi-
18 conductors, and advanced computer hardware
19 and software.

20 (C) Quantum information science and
21 technology.

22 (D) Robotics, automation, and advanced
23 manufacturing.

24 (E) Natural and anthropogenic disaster
25 prevention or mitigation.

1 (F) Advanced communications technology
2 and immersive technology.

3 (G) Biotechnology, medical technology,
4 genomics, and synthetic biology.

5 (H) Cybersecurity, data storage, data man-
6 agement, and distributed ledger technologies.

7 (I) Advanced energy, batteries, and indus-
8 trial efficiency, including advanced nuclear tech-
9 nologies for the purposes of electric generation
10 (consistent with section 15 of the National
11 Science Foundation Act of 1950 (42 U.S.C.
12 1874).

13 (J) Advanced materials science, including
14 composites and 2D materials.

15 (2) REVIEW AND UPDATES.—The Director of
16 the National Science Foundation, in coordination
17 with the interagency working group established
18 under section 4, and in consultation with the Direc-
19 tor of National Intelligence and the Director of the
20 Federal Bureau of Investigation, shall annually re-
21 view, and update as required, the list of key tech-
22 nology focus areas for purposes of this Act.

23 (b) ANNUAL REVIEW.—In annually reviewing and
24 updating (as necessary) the list of key technology focus
25 areas, the Director of the National Science Foundation,

1 in coordination with the interagency working group estab-
2 lished under section 4—

3 (1) shall coordinate with and consider input
4 from relevant industry leaders;

5 (2) may consider the challenges and rec-
6 ommendations identified in the report required by
7 section 503 and in other relevant reports, such as
8 technology and global trend reports from the defense
9 and intelligence communities;

10 (3) shall consider the potential impact of the
11 key technology focus areas on addressing national
12 needs, on competitive threats to the United States,
13 and on major industries, including agriculture; and

14 (4) subject to the limitation under subsection
15 (c), may add or delete key technology focus areas in
16 light of shifting national needs or competitive
17 threats to the United States (including for reasons
18 of the United States or other countries having ad-
19 vanced or fallen behind in a technological area).

20 (c) LIMIT ON KEY TECHNOLOGY FOCUS AREAS.—

21 Not more than 10 key technology focus areas shall be in-
22 cluded on the list of key technology focus areas at any
23 time. Engineering and exploration relevant to the other
24 key technology focus areas described in this section shall

1 be considered part of the relevant key technology focus
2 area.

3 (d) REPORTING.—The Director shall annually deliver
4 a report to Congress detailing—

5 (1) the key technology focus areas and rationale
6 for their selection;

7 (2) the role of the Foundation, and other Fed-
8 eral entities, as relevant, in advancing the key tech-
9 nology focus areas; and

10 (3) the impact, including to the academic re-
11 search community, of any changes to the key tech-
12 nology focus areas.

13 (e) NATIONAL ACADEMIES.—Not later than 5 years
14 after the date of enactment of this Act, the Director shall
15 contract with the National Academies of Sciences, Engi-
16 neering, and Medicine to conduct a review of the key tech-
17 nology focus areas.

18 **TITLE I—NSF TECHNOLOGY AND** 19 **INNOVATION**

20 **SEC. 101. DEFINITIONS.**

21 In this title:

22 (1) DESIGNATED COUNTRY.—The term “des-
23 ignated country” means a country that has been ap-
24 proved and designated in writing by the President
25 for purposes of this Act, after providing—

1 (A) not less than 30 days of advance noti-
2 fication and explanation to the relevant con-
3 gressional committees before the designation;
4 and

5 (B) in-person briefings to such committees,
6 if requested during the 30-day advance notifica-
7 tion period described in subparagraph (A).

8 (2) LABOR ORGANIZATION.—The term “labor
9 organization” has the meaning given the term in
10 section 2(5) of the National Labor Relations Act (29
11 U.S.C. 152(5)), except that such term shall also in-
12 clude—

13 (A) any organization composed of labor or-
14 ganizations, such as a labor union federation or
15 a State or municipal labor body; and

16 (B) any organization which would be in-
17 cluded in the definition for such term under
18 such section 2(5) but for the fact that the orga-
19 nization represents—

20 (i) individuals employed by the United
21 States, any wholly owned Government cor-
22 poration, any Federal Reserve Bank, or
23 any State or political subdivision thereof;

1 (ii) individuals employed by persons
2 subject to the Railway Labor Act (45
3 U.S.C. 151 et seq.); or

4 (iii) individuals employed as agricul-
5 tural laborers.

6 (3) NATIONAL LABORATORY.—The term “Na-
7 tional Laboratory” has the meaning given the term
8 in section 3 of the Energy Policy Act of 2005 (42
9 U.S.C. 15801).

10 (4) TRIBAL COLLEGE OR UNIVERSITY.—The
11 term “Tribal College or university” has the meaning
12 given the term in section 316(b)(3) of the Higher
13 Education Act of 1965 (20 U.S.C. 1059c(b)(3)).

14 **SEC. 102. DIRECTORATE ESTABLISHMENT AND PURPOSE.**

15 (a) ESTABLISHMENT OF DIRECTORATE FOR TECH-
16 NOLOGY AND INNOVATION.—Subject to the availability of
17 appropriations and not later than 180 days after the date
18 of enactment of this Act, the Director shall establish a
19 Directorate for Technology and Innovation in the Founda-
20 tion.

21 (b) PURPOSES.—The Directorate shall further the
22 following purposes:

23 (1) Strengthening the leadership of the United
24 States in critical technologies, including as relevant
25 to the critical national needs described in section

1 7018 of the America COMPETES Act (42 U.S.C.
2 1862o-5).

3 (2) Addressing and mitigating technology chal-
4 lenges integral to the geostrategic position of the
5 United States through the activities authorized by
6 this title.

7 (3) Enhancing the competitiveness of the
8 United States by improving education in the key
9 technology focus areas and attracting more students
10 to such areas at all levels of education.

11 (4) Accelerating the translation and develop-
12 ment of scientific advances in the key technology
13 focus areas into processes and products in the
14 United States.

15 (5) Utilizing the full potential of the United
16 States workforce by avoiding undue geographic con-
17 centration of research and development and edu-
18 cation funding across the United States, and encour-
19 aging broader participation in the key technology
20 focus areas by populations underrepresented in
21 STEM.

22 (6) Ensuring the programmatic work of the Di-
23 rectorate and Foundation incorporates a workforce
24 perspective from labor organizations and workforce
25 training organizations.

1 (c) ACTIVITIES.—The Directorate—

2 (1) shall support basic and applied research,
3 and technology development of such research, includ-
4 ing through awards to individual researchers, enti-
5 ties, or consortia and through diverse funding mech-
6 anisms and models;

7 (2) shall identify and develop opportunities to
8 coordinate and collaborate on research, development,
9 and commercialization—

10 (A) with other directorates and offices of
11 the Foundation;

12 (B) with stakeholders in academia, the pri-
13 vate sector, and nonprofit entities; and

14 (C) with other Federal research agencies,
15 as well as State and local governments;

16 (3) shall provide awards for research and devel-
17 opment projects designed to achieve specific tech-
18 nology metrics or objectives;

19 (4) may support research and technology devel-
20 opment infrastructure, including testbeds, to ad-
21 vance the development, operation, integration, and
22 deployment of innovation;

23 (5) shall identify and develop opportunities to
24 reduce barriers for technology transfer, including in-
25 tellectual property frameworks between academia

1 and industry, nonprofit entities, and the venture
2 capital communities;

3 (6) shall build capacity for research at institu-
4 tions of higher education across the United States;

5 (7) shall partner with other directorates and of-
6 fices of the Foundation for projects or research, in-
7 cluding—

8 (A) to pursue basic questions about nat-
9 ural, human, and physical phenomena that
10 could enable advances in the key technology
11 focus areas;

12 (B) to study questions that could affect
13 the design (including human interfaces), oper-
14 ation, deployment, or the social and ethical con-
15 sequences of technologies in the key technology
16 focus areas, including the development of tech-
17 nologies that complement or enhance the abili-
18 ties of workers and impact of specific innova-
19 tions on domestic jobs and equitable oppor-
20 tunity; and

21 (C) to further the creation of a domestic
22 workforce capable of advancing, using, and
23 adapting to key technology focus areas and un-
24 derstanding and improving the impact of key
25 technology focus areas on STEM teaching and

1 learning by advancing the key technology focus
2 areas, including engaging relevant partners in
3 research and innovation programs;

4 (8) may make awards under the SBIR and
5 STTR programs (as defined in section 9(e) of the
6 Small Business Act (15 U.S.C. 638(e)); and

7 (9) may enter into and perform such contracts,
8 make such financial assistance awards, carry out
9 such other transactions, or make such other ar-
10 rangements, or modifications thereof, as may be nec-
11 essary in the conduct of the work of the Directorate
12 and on such terms as the Director considers appro-
13 priate, in furtherance of the purposes of this title.

14 (d) ASSISTANT DIRECTOR.—

15 (1) APPOINTMENT.—The Director shall appoint
16 an Assistant Director for the Directorate, in the
17 same manner as other Assistant Directors of the
18 Foundation are appointed.

19 (2) QUALIFICATIONS.—Each Assistant Director
20 for the Directorate shall be an individual, who by
21 reason of professional background and experience, is
22 specially qualified to advise the Foundation on all
23 matters pertaining to research, development, and
24 commercialization at the Foundation, including part-

1 nerships with the private sector and other users of
2 Foundation funded research.

3 (e) CONSIDERATIONS.—After completion of the stud-
4 ies regarding emerging technologies conducted by the Sec-
5 retary of Commerce under title XV of division FF of the
6 Consolidated Appropriations Act, 2021 (Public Law 116-
7 260), the Director shall consider the results of such stud-
8 ies in carrying out the activities of the Directorate.

9 **SEC. 103. PERSONNEL MANAGEMENT.**

10 (a) PERSONNEL.—The Director shall establish and
11 maintain within the Directorate a staff with sufficient
12 qualifications and expertise to enable the Directorate to
13 carry out its responsibilities under this title.

14 (b) PROGRAM DIRECTORS.—

15 (1) DESIGNATION.—The Director may des-
16 ignate employees to serve as program directors for
17 the programs established within the Directorate pur-
18 suant to the responsibilities established under para-
19 graph (2). The Director shall ensure that program
20 directors—

21 (A) have expertise in the key technology
22 focus areas; and

23 (B) come from a variety of backgrounds,
24 including industry, and from a variety of insti-
25 tutions of higher education.

1 (2) RESPONSIBILITIES.—A program director of
2 a program of the Directorate shall be responsible
3 for—

4 (A) establishing research and development
5 goals for the program, including through the
6 convening of workshops and conferring with
7 outside experts and by publicizing the goals of
8 the program to the public and private sectors;

9 (B) soliciting proposals from entities to
10 conduct research in areas of particular promise
11 within key technology focus areas, especially
12 areas that the private sector or the Federal
13 Government are not likely to undertake alone;

14 (C) identifying areas for research and de-
15 velopment;

16 (D) building research collaborations for
17 carrying out the program;

18 (E) reviewing applications for projects to
19 be supported under the program, and consid-
20 ering—

21 (i) the novelty and scientific and tech-
22 nical merit of the proposed projects;

23 (ii) broader impacts criteria under
24 section 526 of the National Science Foun-

1 dation Authorization Act of 2010 (42
2 U.S.C. 1862p-14);

3 (iii) the demonstrated capabilities of
4 the applicants to successfully carry out the
5 proposed project;

6 (iv) the consideration by the applicant
7 of future commercial applications of the
8 project, including the feasibility of
9 partnering with 1 or more commercial enti-
10 ties; and

11 (v) such other criteria as are estab-
12 lished by the Director; and

13 (F) monitoring the progress of projects
14 supported under the program and recom-
15 mending program restructure or termination, as
16 needed.

17 (3) TERMS.—Program directors of the Direc-
18 torate may be appointed by the Director for a lim-
19 ited term, renewable at the discretion of the Direc-
20 tor.

21 (c) SELECTION CRITERIA AND REPORT.—

22 (1) PEER REVIEW.—The Directorate may use a
23 peer review process to inform the selection of award
24 recipients.

1 (2) REPORT.—Not later than 18 months after
2 the establishment of the Directorate, the Director
3 shall prepare and submit a report to Congress re-
4 garding the use of alternative methods for the selec-
5 tion of award recipients and the distribution of fund-
6 ing to recipients, as compared to the traditional peer
7 review process.

8 (d) RULE OF CONSTRUCTION.—Nothing in this sec-
9 tion shall be construed to modify the authority of the Di-
10 rector or the National Science Board with respect to the
11 selection of recipients for funding from the Foundation.

12 **SEC. 104. INNOVATION CENTERS.**

13 (a) UNIVERSITY TECHNOLOGY CENTER PROGRAM.—

14 (1) IN GENERAL.—From amounts made avail-
15 able to the Directorate, the Director shall establish
16 a program in the Directorate to make awards,
17 through a competitive selection process, to eligible
18 entities to establish university technology centers.

19 (2) PURPOSE.—The purpose of the university
20 technology centers shall be to—

21 (A) conduct multi-disciplinary, collabo-
22 rative basic and applied research, relevant to at
23 least one of the key technology focus areas;

1 (B) leverage the expertise of multi-discipli-
2 nary and multi-sector partners, including part-
3 ners from private industry;

4 (C) further the development, deployment,
5 and commercialization of innovations, including
6 inventions, in the key technology focus areas,
7 including those derived from the activities of
8 the university technology center; and

9 (D) support the development of scientific,
10 innovation, entrepreneurial, and educational ca-
11 pacity within the region of the university tech-
12 nology center.

13 (3) USE OF FUNDS.—University technology
14 centers established under this subsection may use
15 support provided—

16 (A) to carry out research to advance inno-
17 vation in the key technology focus areas;

18 (B) for technology development activities
19 such as proof-of-concept development, proto-
20 typing, design modification, experimental devel-
21 opment, and other actions to reduce the cost,
22 time, and risk of commercializing new tech-
23 nologies;

24 (C) for the costs of equipment and
25 cyberinfrastructure;

1 (D) for the costs associated with tech-
2 nology transfer and commercialization, includ-
3 ing patenting and licensing; or

4 (E) for operations and staff.

5 (4) SELECTION PROCESS.—In selecting recipi-
6 ents under this subsection, the Director shall con-
7 sider, in addition to the scientific and technical
8 merit of the proposal—

9 (A) maximizing regional and geographic di-
10 versity of the university technology centers;

11 (B) the extent to which the applicant's
12 proposal would broaden participation by popu-
13 lations underrepresented in STEM;

14 (C) the capacity of the applicant to engage
15 industry, labor, and other appropriate organiza-
16 tions and, where applicable, contribute to
17 growth in domestic manufacturing capacity and
18 job creation;

19 (D) in the case of a consortium, the extent
20 to which the proposal includes institutions listed
21 in paragraph (7)(C)(ii);

22 (E) the amount of funds from industry or-
23 ganizations described in paragraph (5)(A)(ii)
24 the applicant would use towards establishing
25 the university technology center;

1 (F) the plan and capability of the appli-
2 cant to take measures to prevent the inappro-
3 priate use of the research and technology of the
4 center, including research results, data, and in-
5 tellectual property, as appropriate and con-
6 sistent with the requirements of the relevant
7 award; and

8 (G) the plan and capability of the appli-
9 cant to support proof-of-concept development
10 and prototyping as well as technology transfer
11 and commercialization activities.

12 (5) REQUIREMENTS.—

13 (A) IN GENERAL.—The Director shall en-
14 sure that any eligible entity receiving an award
15 under this subsection has—

16 (i) the capacity or the ability to ac-
17 quire the capacity to advance the purposes
18 described in section 102(b); and

19 (ii) secured contributions for estab-
20 lishing the university technology center
21 under this subsection from industry or
22 other non-Federal organizations in an
23 amount not less than 10 percent of the
24 total amount of the award the eligible enti-
25 ty would receive under this subsection.

1 (B) CONSORTIUM ELIGIBILITY.—To be eli-
2 gible to receive an award for the establishment
3 and operation of a university technology center,
4 a consortium shall be composed of not fewer
5 than 2 entities as described in paragraph (7)(C)
6 and operate subject to a binding agreement, en-
7 tered into by each member of the consortium,
8 that documents—

9 (i) the proposed partnership agree-
10 ment, including the governance and man-
11 agement structure of the university tech-
12 nology center;

13 (ii) measures the consortium will un-
14 dertake to enable cost-effective implemen-
15 tation of activities under paragraph (3);

16 (iii) a proposed budget, including fi-
17 nancial contributions from non-Federal
18 sources; and

19 (iv) the plan for ownership and use of
20 any intellectual property developed by the
21 center.

22 (6) SUPPORT OF REGIONAL TECHNOLOGY
23 HUBS.—Each university technology center estab-
24 lished under this subsection may support and par-
25 ticipate in, as appropriate, the activities of any re-

1 regional technology hub designated under section 28 of
2 the Stevenson-Wydler Technology Innovation Act of
3 1980 (15 U.S.C. 3701 et seq.), as amended by sec-
4 tion 401 of this Act.

5 (7) ELIGIBLE ENTITY.—In this subsection, the
6 term “eligible entity” means—

7 (A) an individual institution of higher edu-
8 cation;

9 (B) a nonprofit entity; or

10 (C) a consortium that—

11 (i) shall include and be led by an in-
12 stitution of higher education or by a non-
13 profit entity, designed to support tech-
14 nology development;

15 (ii) shall include 1 or more institution
16 that is—

17 (I) a historically Black college or
18 university;

19 (II) a Tribal College or Univer-
20 sity;

21 (III) a minority-serving institu-
22 tion;

23 (IV) an institution that partici-
24 pates in the Established Program to
25 Stimulate Competitive Research under

1 section 113 of the National Science
2 Foundation Authorization Act of 1988
3 (42 U.S.C. 1862g);

4 (V) an emerging research institu-
5 tion; or

6 (VI) a community college; and

7 (iii) may include 1 or more—

8 (I) additional entities described
9 in subparagraph (A) or (B);

10 (II) industry entities, including
11 startups, small businesses, and public-
12 private partnerships;

13 (III) economic development orga-
14 nizations or venture development or-
15 ganizations, as such term are defined
16 in section 28(a) of the Stevenson-
17 Wydler Technology Innovation Act of
18 1980 (15 U.S.C. 13701 et seq.), as
19 amended by section 401 of this Act;

20 (IV) National Laboratories;

21 (V) Federal laboratories, as de-
22 fined in section 4 of the Stevenson-
23 Wydler Technology Innovation Act of
24 1980 (15 U.S.C. 3703);

25 (VI) Federal research facilities;

- 1 (VII) labor organizations;
- 2 (VIII) entities described in sub-
- 3 paragraph (A) or (B) from allied or
- 4 partner countries;
- 5 (IX) other entities if determined
- 6 by the Director to be vital to the suc-
- 7 cess of the program; and
- 8 (X) binational research and de-
- 9 velopment foundations and funds, ex-
- 10 cluding foreign entities of concern, as
- 11 defined in section 307.

12 (b) INNOVATION INSTITUTE.—

13 (1) IN GENERAL.—The Director shall establish

14 innovation institutes to further the research, devel-

15 opment, and commercialization of innovation in the

16 key technology focus areas.

17 (2) PARTNERSHIPS.—

18 (A) IN GENERAL.—Each innovation insti-

19 tute shall be comprised of a partnership includ-

20 ing 2 or more of the following entities:

- 21 (i) An institution of higher education.
- 22 (ii) A for-profit company.
- 23 (iii) A nonprofit organization.
- 24 (iv) A Federal agency.

1 (v) Another entity, if that entity is de-
2 termined by the Director to be vital to the
3 success of the program.

4 (B) CO-EQUAL.—Each entity comprising
5 the institute shall, to the extent practicable,
6 work as co-equal partners in terms of funding
7 and research efforts in support of the institute.

8 (C) INSTITUTIONAL OR ORGANIZATIONAL
9 LEVEL.—The Director shall work to ensure that
10 such partnerships exist at the institutional or
11 organization level, rather than solely at the
12 principal investigator level.

13 (3) COST SHARE.—To the extent practicable,
14 not less than half of the funding for an institute
15 shall be provided by non-Federal entities.

16 (c) NUMBER OF CENTERS AND INSTITUTES ESTAB-
17 LISHED.—The Director shall endeavor to establish a bal-
18 ance in the number of university technology centers and
19 innovation institutes.

20 **SEC. 105. TRANSITION OF NSF PROGRAMS.**

21 The Director may transition the management of ex-
22 isting programs of the National Science Foundation that
23 conduct activities in addition to basic research to the Di-
24 rectorate, including—

25 (1) Convergence Accelerator;

- 1 (2) Industry-University Cooperative Research
2 Centers;
- 3 (3) National AI Research Institutes;
- 4 (4) Innovation Corps (I-Corps), as described in
5 section 601 of the American Innovation and Com-
6 petitiveness Act (42 U.S.C. 1862s-8); and
- 7 (5) any other programs that the Director con-
8 siders appropriate.

9 **SEC. 106. PROVIDING SCHOLARSHIPS, FELLOWSHIPS, AND**
10 **OTHER STUDENT SUPPORT.**

11 (a) IN GENERAL.—The Director, acting through the
12 Directorate, shall fund undergraduate scholarships (in-
13 cluding at community colleges), graduate fellowships and
14 traineeships, and postdoctoral awards in the key tech-
15 nology focus areas.

16 (b) IMPLEMENTATION.—The Director may carry out
17 subsection (a) by making awards—

- 18 (1) directly to students; and
- 19 (2) to institutions of higher education or con-
20 sortia of institutions of higher education, including
21 those institutions or consortia involved in operating
22 university technology centers established under sec-
23 tion 104(a).

24 (c) BROADENING PARTICIPATION.—In carrying out
25 this section, the Director shall take steps to increase the

1 participation of populations that are underrepresented in
2 STEM, which may include—

3 (1) establishing or augmenting programs tar-
4 geted at populations that are underrepresented in
5 STEM;

6 (2) supporting traineeships or other relevant
7 programs at minority-serving institutions;

8 (3) addressing current and expected gaps in the
9 availability or skills of the STEM workforce, or ad-
10 dressing needs of the STEM workforce, including by
11 increasing educational capacity at institutions and
12 by prioritizing awards to United States citizens, per-
13 manent residents, and individuals that will grow the
14 domestic workforce; and

15 (4) addressing geographic diversity in the
16 STEM workforce.

17 (d) INNOVATION.—In carrying out this section, the
18 Director shall encourage innovation in graduate education,
19 including through encouraging institutions of higher edu-
20 cation to offer graduate students opportunities to gain ex-
21 perience in industry or Government as part of their grad-
22 uate training, and through support for students in profes-
23 sional masters programs related to the key technology
24 focus areas.

1 (e) AREAS OF FUNDING SUPPORT.—Subject to the
2 availability of funds to carry out this section, the Director
3 shall—

4 (1) issue—

5 (A) postdoctoral awards,

6 (B) graduate fellowships and traineeships,
7 inclusive of the NSF Research Traineeships
8 and fellowships awarded under the Graduate
9 Research Fellowship Program; and

10 (C) scholarships, including undergraduate
11 scholarships, research experiences, and intern-
12 ships, including—

13 (i) scholarships to attend community
14 colleges; and

15 (ii) research experiences and intern-
16 ships under sections 513, 514, and 515 of
17 the America COMPETES Reauthorization
18 Act of 2010 (42 U.S.C. 1862p-5; 1862p-
19 6; 1862p-7);

20 (2) ensure that not less than 10 percent of the
21 funds made available to carry out this section are
22 used to support additional awards that focus on
23 community college training, education, and teaching
24 programs that increase the participation of popu-
25 lations that are underrepresented in STEM, includ-

1 ing technical programs through programs such as
2 the Advanced Technological Education program;

3 (3) ensure that not less than 20 percent of the
4 funds made available to carry out this section are
5 used to support institutions of higher education, and
6 other institutions, located in jurisdictions that par-
7 ticipate in the program under section 113 of the Na-
8 tional Science Foundation Authorization Act of 1988
9 (42 U.S.C. 1862g); and

10 (4) if funds remain after carrying out para-
11 graphs (1), (2), and (3), make awards to institutions
12 of higher education to enable the institutions to fund
13 the development and establishment of new or spe-
14 cialized programs of study for graduate, under-
15 graduate, or technical college students and the eval-
16 uation of the effectiveness of those programs of
17 study.

18 (f) **EXISTING PROGRAMS.**—The Director may use or
19 augment existing STEM education programs of the Foun-
20 dation and leverage education or entrepreneurial partners
21 to carry out this section.

22 **SEC. 107. RESEARCH AND DEVELOPMENT.**

23 (a) **IN GENERAL.**—From amounts made available for
24 the Directorate, the Director shall make awards, on a

1 competitive basis, for research and technology develop-
2 ment within the key technology focus areas.

3 (b) PURPOSE.—The purpose of the awards under this
4 section shall be to demonstrate revolutionary technological
5 advances in the key technology focus areas, including ad-
6 vances that expedite short-term technology deployment.

7 (c) RECIPIENTS.—Recipients of funds under this sec-
8 tion may include institutions of higher education, research
9 institutions, nonprofit entities, private sector entities, con-
10 sortia, or other entities as defined by the Director.

11 (d) METRICS.—The Director may set metrics, includ-
12 ing goals and deadlines, for development of such tech-
13 nology as determined in the terms of the award, and may
14 use such metrics to determine whether an award recipient
15 shall be eligible for continued or follow-on funding.

16 (e) SELECTION CRITERIA.—In selecting recipients
17 for an award under this section, the Director shall con-
18 sider, at a minimum—

19 (1) the relevance of the project to the key tech-
20 nology focus areas;

21 (2) the current status of the technology, the
22 limits of current practice, and the likelihood of the
23 private sector to independently demonstrate a simi-
24 lar technological advance;

1 (3) the potential of the project to generate a
2 revolutionary technological advance, including ad-
3 vances that can expedite short-term technology de-
4 ployment;

5 (4) the potential impact of the project on the
6 economic security, national security, or technological
7 competitiveness of the United States;

8 (5) the likelihood of the project's success;

9 (6) the cost and time associated with the
10 project;

11 (7) the appropriateness of quantitative goals
12 and metrics for evaluating the project and a plan for
13 evaluating those metrics; and

14 (8) the path for developing and, as appropriate
15 commercializing, the technology.

16 **SEC. 108. TEST BEDS.**

17 (a) PROGRAM AUTHORIZED.—

18 (1) IN GENERAL.—From amounts made avail-
19 able for the Directorate, the Director, in coordina-
20 tion with the Director of the National Institute of
21 Standards and Technology and other Federal agen-
22 cies, as determined appropriate by the Director,
23 shall establish a program in the Directorate to make
24 awards, on a competitive basis, to institutions of
25 higher education, nonprofit organizations, or con-

1 sortia (as defined in section 104(a)(7)(C)) to estab-
2 lish and operate test beds, which may include fab-
3 rication facilities and cyberinfrastructure, to advance
4 the development, operation, integration, deployment,
5 and, as appropriate, demonstration of new, innova-
6 tive technologies in the key technology focus areas,
7 which may include hardware or software.

8 (2) COORDINATION.—In establishing new test
9 beds under this section, the Director shall ensure co-
10 ordination with other test beds supported by the
11 Foundation or other Federal agencies to avoid dupli-
12 cation and maximize the use of Federal resources.

13 (b) PROPOSALS.—An applicant for an award under
14 this section shall submit a proposal to the Director, at
15 such time, in such manner, and containing such informa-
16 tion as the Director may reasonably require. The proposal
17 shall, at a minimum, describe—

18 (1)(A) the technology or technologies that will
19 be the focus of the test bed; and

20 (B) the goals of the work to be done at the test
21 bed;

22 (2) how the applicant will assemble a workforce
23 with the skills needed to operate the test bed;

24 (3) how the applicant will ensure broad access
25 to the test bed;

1 (4) how the applicant will collaborate with firms
2 in the key technology focus areas, including through
3 coordinated research and development and funding,
4 to ensure that work in the test bed will contribute
5 to the commercial viability of any technologies and
6 will include collaboration from industry and labor or-
7 ganizations;

8 (5) how the applicant will encourage the partici-
9 pation of inventors and entrepreneurs and the devel-
10 opment of new businesses;

11 (6) how the applicant will increase participation
12 by populations that are underrepresented in STEM;

13 (7) how the applicant will demonstrate that the
14 commercial viability of any new technologies will
15 support the creation of high-quality domestic jobs;

16 (8) how the test bed will operate after Federal
17 funding has ended;

18 (9) how the test bed will disseminate lessons
19 and other technical information to United States en-
20 tities or allied or partner country entities in the
21 United States; and

22 (10) how the applicant plans to take measures
23 to prevent the inappropriate use of research results,
24 data, and intellectual property, as applicable and
25 consistent with the requirements of the award.

1 (c) AUTHORIZED USE OF FUNDS.—A recipient of an
2 award under this section may, in order to achieve the pur-
3 poses described in subsection (a), use the award for the
4 purchase of equipment and for the support of students,
5 faculty and staff, and postdoctoral researchers.

6 (d) PRIORITY.—In selecting award recipients under
7 this section, the Director shall give priority to applicants
8 with proposals that maximize the geographic diversity of
9 test beds.

10 (e) INTERAGENCY ANNUAL MEETINGS.—The Direc-
11 tor, the Secretary of Commerce, and the heads of other
12 Federal departments and agencies, or their designees, with
13 test bed related equities shall hold an annual meeting to
14 coordinate their respective test bed related investments,
15 future plans, and other appropriate matters, to avoid con-
16 flicts and duplication of efforts. Upon request by Con-
17 gress, Congress shall be briefed on the results of the meet-
18 ings.

19 **SEC. 109. ACADEMIC TECHNOLOGY TRANSFER.**

20 (a) IN GENERAL.—From amounts made available to
21 the Directorate, the Director, in coordination with the Di-
22 rector of the National Institute of Standards and Tech-
23 nology and other Federal agencies as determined appro-
24 priate by the Director, shall make awards, on a competi-
25 tive basis, to eligible entities to advance the development

1 and commercialization of technologies, particularly those
2 in the key technology focus areas.

3 (b) ELIGIBLE ENTITIES.—To be eligible to receive an
4 award under this section, an entity shall be—

5 (1) an institution of higher education, which
6 may be a community college;

7 (2) a nonprofit entity that is either affiliated
8 with an institution of higher education or designed
9 to support technology development or entrepreneur-
10 ship; or

11 (3) a consortium that includes—

12 (A) an entity described in paragraph (1) or

13 (2) as the lead award recipient; and

14 (B) one or more additional individuals or
15 entities, which shall be—

16 (i) an economic development organiza-
17 tion or similar entity that is focused pri-
18 marily on improving science, technology,
19 innovation, or entrepreneurship;

20 (ii) an industry organization or firm
21 in a relevant technology or innovation sec-
22 tor;

23 (iii) an industry-experienced executive
24 with entrepreneurship experience that is
25 focused primarily on de-risking tech-

1 nologies from both a scientific and a busi-
2 ness perspective; or

3 (iv) an individual or entity with
4 industry- and startup- experienced busi-
5 ness expertise, including a mentor network,
6 across relevant technology or innovation
7 sectors.

8 (c) PROPOSALS.—An eligible entity desiring an award
9 under this section shall submit a proposal to the Director
10 at such time, in such manner, and containing such infor-
11 mation as the Director may require. The proposal shall
12 include, at a minimum, a description of—

13 (1) the steps the applicant will take to enable
14 technology transfer and to reduce the risks for com-
15 mercialization for new technologies and why such
16 steps are likely to be effective;

17 (2) how the applicant will encourage the train-
18 ing and participation of students and potential en-
19 trepreneurs and the transition of research results to
20 practice, including the development of new busi-
21 nesses;

22 (3) as relevant, potential steps to drive eco-
23 nomic growth in a particular region, by collaborating
24 with industry, venture capital entities, nonprofit en-

1 tities, and State and local governments within that
2 region; and

3 (4) background information that the Director
4 determines is relevant to demonstrate the success of
5 the innovation and entrepreneurship support models
6 proposed by the applicant to commercialize tech-
7 nologies.

8 (d) ACADEMIC TECHNOLOGY TRANSFER ENHANCE-
9 MENT PROGRAM.—

10 (1) IN GENERAL.—The Director, in coordina-
11 tion with the Director of the National Institute of
12 Standards and Technology, shall make awards, on a
13 competitive basis, to support eligible entities in
14 building sustainable technology transfer capacity.

15 (2) USE OF FUNDS.—An eligible entity that re-
16 ceives an award under this subsection shall use
17 award funds to carry out one or more of the fol-
18 lowing:

19 (A) Identifying academic research with the
20 potential for technology transfer and commer-
21 cialization, particularly as relevant to the key
22 technology focus areas.

23 (B) Providing training and support to sci-
24 entists, engineers, and inventors on technology

1 transfer, commercialization, and research pro-
2 tection.

3 (C) Offsetting the costs of patenting and
4 licensing research products, both domestically
5 and internationally.

6 (D) Revising institution policies, including
7 policies related to intellectual property and fac-
8 ulty entrepreneurship, and taking other nec-
9 essary steps to implement relevant best prac-
10 tices for academic technology transfer.

11 (E) Ensuring the availability of staff, in-
12 cluding technology transfer professionals, entre-
13 preneurs in residence, and other mentors as re-
14 quired to accomplish the purpose of this sub-
15 section.

16 (F) Identifying and facilitating relation-
17 ships among local and national business lead-
18 ers, including investors, and potential entre-
19 preneurs to encourage successful commercializa-
20 tion.

21 (G) Creating and funding competitions to
22 allow entrepreneurial ideas to illustrate their
23 commercialization potential, including through
24 venture funds of institutions of higher edu-
25 cation.

1 (H) Creating or supporting entities that
2 could enable researchers to further develop new
3 technology, through capital investment, advice,
4 staff support, or other means.

5 (I) Building technology transfer capacity
6 at institutions of higher education.

7 (3) LIMITATIONS ON FUNDING.—In awarding
8 funding under this subsection, the Director shall—

9 (A) award not more than \$1,000,000 per
10 fiscal year to an eligible entity;

11 (B) in determining the duration of fund-
12 ing, endeavor to ensure the creation of sustain-
13 able technology transfer practices at the eligible
14 entity; and

15 (C) ensure that grants under this sub-
16 section shall not support the development or op-
17 eration of capital investment funds.

18 (e) COLLABORATIVE INNOVATION RESOURCE CEN-
19 TER PROGRAM.—

20 (1) IN GENERAL.—The Director shall make
21 awards under this subsection to eligible entities to
22 establish collaborative innovation resource centers
23 that promote regional technology transfer and tech-
24 nology development activities available to more than

1 one institution of higher education and to other enti-
2 ties in a region.

3 (2) COLLABORATION PRIORITY.—In making
4 awards under this subsection, the Director shall give
5 priority to eligible entities that are consortia de-
6 scribed in subsection (b)(3) and that have a cost
7 share, which may include an in-kind cost share, from
8 members of a consortium, at levels as required by
9 the Director.

10 (3) USE OF FUNDS.—An eligible entity that re-
11 ceives an award under this subsection shall use
12 award funds to carry out one or more of the fol-
13 lowing activities, to the benefit of the region in
14 which the center is located:

15 (A) Providing start-ups and small business
16 concerns (as defined in section 3 of the Small
17 Business Act (15 U.S.C. 632)) within the re-
18 gion with access to facilities, scientific infra-
19 structure, personnel, and other assets as re-
20 quired for technology maturation.

21 (B) Supporting entrepreneurial training
22 for start-up and small business personnel.

23 (C) Providing engineering and entrepre-
24 neurial experiences and hands-on training for

1 students enrolled in participating institutions of
2 higher education.

3 (f) REPORTING ON COMMERCIALIZATION BASED ON
4 METRICS.—The Director shall establish—

5 (1) metrics related to commercialization for an
6 award under this section; and

7 (2) a reporting schedule for recipients of such
8 awards that takes into account both short- and long-
9 term goals of the programs under this section.

10 (g) GEOGRAPHIC DIVERSITY.—The Director shall en-
11 sure regional and geographic diversity in issuing awards
12 under this section.

13 (h) SUPPLEMENT NOT SUPPLANT.—The Director
14 shall ensure that funds made available under this section
15 shall be used to create additional support for technology
16 transfer activities at eligible entities. For the duration of
17 the awards, recipients shall be required to maintain fund-
18 ing for such activities at similar levels as the funding for
19 those activities for the 2 fiscal years preceding the award.

20 **SEC. 110. CAPACITY-BUILDING PROGRAM FOR DEVEL-**
21 **OPING UNIVERSITIES.**

22 (a) IN GENERAL.—The Director shall establish a pro-
23 gram in the Directorate to make awards, on a competitive
24 basis, to eligible institutions described in subsection (b)

1 to support the mission of the Directorate and to build in-
2 stitutional research capacity at eligible institutions.

3 (b) ELIGIBLE INSTITUTION.—

4 (1) IN GENERAL.—To be eligible to receive an
5 award under this section, an institution shall be
6 both—

7 (A) a historically Black college or univer-
8 sity or a minority-serving institution; and

9 (B) an emerging research institution.

10 (2) PARTNERSHIPS.—An eligible institution re-
11 ceiving a grant under this section may carry out the
12 activities of the grant through a partnership with
13 other entities, including other eligible institutions.

14 (c) PROPOSALS.—To receive an award under this sec-
15 tion, an eligible institution shall submit an application to
16 the Director at such time, in such manner, and containing
17 such information as the Director may require, including
18 a plan that describes how the eligible institution will estab-
19 lish or expand research office capacity and how such
20 award would be used to—

21 (1) conduct an assessment of capacity-building
22 and research infrastructure needs of an eligible insti-
23 tution;

1 (2) enhance institutional resources to provide
2 administrative research development support to fac-
3 ulty at an eligible institution;

4 (3) bolster the institutional research competi-
5 tiveness of an eligible institution to support grants
6 awarded by the Directorate;

7 (4) support the acquisition of instrumentation
8 necessary to build research capacity at an eligible in-
9 stitution in research areas directly associated with
10 the Directorate;

11 (5) increase capability of an eligible institution
12 to move technology into the marketplace;

13 (6) increase engagement with industry to exe-
14 cute research through the SBIR and STTR pro-
15 grams (as defined in section 9(e) of the Small Busi-
16 ness Act (15 U.S.C. 638(e)) and direct contracts at
17 an eligible institution;

18 (7) provide student engagement and research
19 training opportunities at the undergraduate, grad-
20 uate, and postdoctoral levels at an eligible institu-
21 tion;

22 (8) further faculty development initiatives and
23 strengthen institutional research training infrastruc-
24 ture, capacity, and competitiveness of an eligible in-
25 stitution; or

1 (9) address plans and prospects for long-term
2 sustainability of institutional enhancements at an el-
3 igible institution resulting from the award including,
4 if applicable, how the award may be leveraged by an
5 eligible institution to build a broader base of sup-
6 port.

7 (d) AWARDS.—Awards made under this section shall
8 be for periods of 3 years, and may be extended for periods
9 of not more than 5 years.

10 (e) FUNDING.—From the amounts made available to
11 carry out section 104 under section 114 for each of fiscal
12 years 2022 through 2026, the Director shall use
13 \$150,000,000 for each such fiscal year to carry out this
14 section.

15 **SEC. 111. TECHNICAL ASSISTANCE.**

16 The Director may—

17 (1) coordinate with other Federal agencies to
18 establish interagency and multidisciplinary teams to
19 provide technical assistance to recipients of, and pro-
20 spective applicants for, awards under this title;

21 (2) by Federal interagency agreement and not-
22 withstanding any other provision of law, transfer
23 funds available to carry out this title to the head of
24 another Federal agency to facilitate and support the
25 provision of such technical assistance; and

1 (3) enter into contracts with third parties to
2 provide such technical assistance.

3 **SEC. 112. COORDINATION OF ACTIVITIES.**

4 (a) IN GENERAL.—In carrying out the activities of
5 the Directorate, the Director and the heads of other Fed-
6 eral research agencies, as appropriate, shall work coopera-
7 tively to further the goals of this title in the key technology
8 focus areas.

9 (b) COORDINATION WITH NIST AND DEPARTMENT
10 OF ENERGY.—The Director shall, as appropriate, work in
11 coordination with the Director of the National Institute
12 of Standards and Technology and the Secretary of En-
13 ergy.

14 (c) AVOID DUPLICATION.—The Director shall ensure,
15 to the greatest extent appropriate, that activities carried
16 out by the Directorate are not duplicative of activities sup-
17 ported by other parts of the Foundation or other relevant
18 Federal agencies. In carrying out the activities prescribed
19 by this Act, the Director and heads of other Federal re-
20 search agencies shall cooperate to avoid duplication of ef-
21 fort and to ensure the responsible stewardship of funds.

22 (d) COMPTROLLER GENERAL REPORT.—Not later
23 than 3 years after the date of enactment of this Act, the
24 Comptroller General of the United States shall prepare
25 and submit a report to Congress, and shall simultaneously

1 submit the report to the Director and the Director of the
2 Office of Science and Technology Policy, describing the
3 interagency cooperation that occurred during the pre-
4 ceding years pursuant to this section, including a list of—

5 (1) any funds provided from the Directorate to
6 other directorates and offices of the Foundation; and

7 (2) any instances in which unnecessary duplica-
8 tion of effort may have occurred.

9 **SEC. 113. REPORTING REQUIREMENTS.**

10 (a) REPORTS.—Not later than 1 year after the date
11 of enactment of this Act and annually thereafter, the Di-
12 rector, in coordination with the heads of relevant Federal
13 agencies, shall prepare and submit to Congress—

14 (1) a strategic vision and spending plan for the
15 next 5 years for the Directorate, including a descrip-
16 tion of how the Foundation will increase funding for
17 research and education for populations underrep-
18 resented in STEM and geographic areas;

19 (2) in coordination with the Secretary of State,
20 a description of any funds the Foundation may plan
21 to receive from—

22 (A) entities other than institutions of high-
23 er education; and

24 (B) certain designated countries; and

1 (3) a description of the planned activities of the
2 Directorate to secure federally funded science and
3 technology pursuant to section 1746 of the National
4 Defense Authorization Act for Fiscal Year 2020
5 (Public Law 116–92; 42 U.S.C. 6601 note) and sec-
6 tion 223 of William M. (Mac) Thornberry National
7 Defense Authorization Act for Fiscal Year 2021
8 (Public Law 116–283) and the requirements under
9 title III.

10 (b) ANNUAL BRIEFING.—Each year, the Director
11 shall formally request a briefing from the Secretary of De-
12 fense, the Secretary of Commerce, the Director of the Fed-
13 eral Bureau of Investigation, the Director of National In-
14 telligence, and as appropriate the heads of other Federal
15 agencies regarding their efforts to preserve the United
16 States’ advantages generated by the activity of the Direc-
17 torate.

18 (c) PROVIDING AUTHORITY TO DISSEMINATE INFOR-
19 MATION.—Section 11 of the National Science Foundation
20 Act of 1950 (42 U.S.C. 1870) is amended—

21 (1) in subsection (j), by striking “and” after
22 the semicolon;

23 (2) in subsection (k), by striking the period at
24 the end and inserting “; and”; and

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

1 “(l) to provide for the widest practicable and
2 appropriate dissemination of information within the
3 United States concerning the Foundation’s activities
4 and the results of those activities.”.

5 **SEC. 114. AUTHORIZATION OF APPROPRIATIONS FOR THE**
6 **FOUNDATION.**

7 (a) FISCAL YEAR 2022.—

8 (1) IN GENERAL.—There is authorized to be
9 appropriated to the Foundation \$11,410,000,000 for
10 fiscal year 2022.

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

13 (A) \$8,910,000,000 shall be made avail-
14 able to carry out the activities of the Founda-
15 tion outside of the Directorate, of which
16 \$1,030,000,000 shall be for STEM education
17 and related activities, including workforce ac-
18 tivities under section 202; and

19 (B) \$2,500,000,000 shall be made avail-
20 able to the Directorate, of which—

21 (i) \$800,000,000 shall be for the in-
22 novation centers under section 104;

23 (ii) \$500,000,000 shall be for scholar-
24 ships, fellowships, and other activities
25 under section 106;

1 (iii) \$400,000,000 shall be for aca-
2 demic technology transfer under section
3 109;

4 (iv) \$300,000,000 shall be for test
5 beds under section 108;

6 (v) \$300,000,000 shall be for research
7 and development activities under section
8 107; and

9 (vi) \$200,000,000 shall be transferred
10 to the Foundation for collaboration with
11 directorates and offices of the Foundation
12 outside of the Directorate as described
13 under section 102(c)(7).

14 (b) FISCAL YEAR 2023.—

15 (1) IN GENERAL.—There is authorized to be
16 appropriated to the Foundation \$14,310,000,000 for
17 fiscal year 2023.

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

20 (A) \$9,410,000,000 shall be made avail-
21 able to carry out the activities of the Founda-
22 tion outside of the Directorate, of which
23 \$1,490,000,000 shall be for STEM education
24 and related activities, including workforce ac-
25 tivities under section 202; and

1 (B) \$4,900,000,000 shall be made avail-
2 able to the Directorate, of which—

3 (i) \$1,600,000,000 shall be for the in-
4 novation centers under section 104;

5 (ii) \$900,000,000 shall be for scholar-
6 ships, fellowships, and other activities
7 under section 106;

8 (iii) \$700,000,000 shall be for aca-
9 demic technology transfer under section
10 109;

11 (iv) \$500,000,000 shall be for test
12 beds under section 108;

13 (v) \$700,000,000 shall be for research
14 and development activities under section
15 107; and

16 (vi) \$500,000,000 shall be transferred
17 to the Foundation for collaboration with
18 directorates and offices of the Foundation
19 outside of the Directorate as described
20 under section 102(c)(7).

21 (c) FISCAL YEAR 2024.—

22 (1) IN GENERAL.—There is authorized to be
23 appropriated to the Foundation \$19,700,000,000 for
24 fiscal year 2024.

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

3 (A) \$9,900,000,000 shall be made avail-
4 able to carry out the activities of the Founda-
5 tion outside of the Directorate, of which
6 \$2,010,000,000 shall be for STEM education
7 and related activities, including workforce ac-
8 tivities under section 202; and

9 (B) \$9,800,000,000 shall be made avail-
10 able to the Directorate, of which—

11 (i) \$3,300,000,000 shall be for the in-
12 novation centers under section 104;

13 (ii) \$1,700,000,000 shall be for schol-
14 arships, fellowships, and other activities
15 under section 106;

16 (iii) \$1,300,000,000 shall be for aca-
17 demic technology transfer under section
18 109;

19 (iv) \$1,000,000,000 shall be for test
20 beds under section 108;

21 (v) \$1,500,000,000 shall be for re-
22 search and development activities under
23 section 107; and

24 (vi) \$1,000,000,000 shall be trans-
25 ferred to the Foundation for collaboration

1 with directorates and offices of the Foun-
2 dation outside of the Directorate as de-
3 scribed under section 102(c)(7).

4 (d) FISCAL YEAR 2025.—

5 (1) IN GENERAL.—There is authorized to be
6 appropriated to the Foundation \$23,590,000,000 for
7 fiscal year 2025.

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

10 (A) \$10,490,000,000 shall be made avail-
11 able to carry out the activities of the Founda-
12 tion outside of the Directorate, of which
13 \$2,570,000,000 shall be for STEM education
14 and related activities, including workforce ac-
15 tivities under section 202; and

16 (B) \$13,100,000,000 shall be made avail-
17 able to the Directorate, of which—

18 (i) \$4,300,000,000 shall be for the in-
19 novation centers under section 104;

20 (ii) \$2,300,000,000 shall be for schol-
21 arships, fellowships, and other activities
22 under section 106;

23 (iii) \$1,700,000,000 shall be for aca-
24 demic technology transfer under section
25 109;

1 (iv) \$1,300,000,000 shall be for test
2 beds under section 108;

3 (v) \$2,000,000,000 shall be for re-
4 search and development activities under
5 section 107; and

6 (vi) \$1,500,000,000 shall be trans-
7 ferred to the Foundation for collaboration
8 with directorates and offices of the Foun-
9 dation outside of the Directorate as de-
10 scribed under section 102(c)(7).

11 (e) FISCAL YEAR 2026.—

12 (1) IN GENERAL.—There is authorized to be
13 appropriated to the Foundation \$25,990,000,000 for
14 fiscal year 2026.

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

17 (A) \$11,090,000,000 shall be made avail-
18 able to carry out the activities of the Founda-
19 tion outside of the Directorate, of which
20 \$3,190,000,000 shall be for STEM education
21 and related activities, including workforce ac-
22 tivities under section 202; and

23 (B) \$14,900,000,000 shall be made avail-
24 able to the Directorate, of which—

1 (i) \$4,700,000,000 shall be for the in-
2 novation centers under section 104;

3 (ii) \$2,600,000,000 shall be for schol-
4 arships, fellowships, and other activities
5 under section 106;

6 (iii) \$1,900,000,000 shall be for aca-
7 demic technology transfer under section
8 109;

9 (iv) \$1,400,000,000 shall be for test
10 beds under section 108;

11 (v) \$2,200,000,000 shall be for re-
12 search and development activities under
13 section 107; and

14 (vi) \$2,100,000,000 shall be trans-
15 ferred to the Foundation for collaboration
16 with directorates and offices of the Foun-
17 dation outside of the Directorate as de-
18 scribed under section 102(c)(7).

19 (f) ALLOCATION AND LIMITATIONS.—

20 (1) ALLOCATION FOR THE OFFICE OF INSPEC-
21 TOR GENERAL.—From any amounts appropriated
22 for the Foundation for a fiscal year, the Director
23 shall allocate for necessary expenses of the Office of
24 Inspector General of the Foundation an amount of
25 not less than \$33,000,000 in any fiscal year for

1 oversight of the programs and activities funded
2 under this section in accordance with the Inspector
3 General Act of 1978 (5 U.S.C. App.).

4 (2) SUPPLEMENT AND NOT SUPPLANT.—The
5 amounts authorized to be appropriated under this
6 section shall supplement, and not supplant, any
7 other amounts previously appropriated to the Foun-
8 dation or Office of Inspector General of the Founda-
9 tion.

10 (3) NO NEW AWARDS.—The Director shall not
11 make any new awards for the activities under the
12 Directorate for any fiscal year in which the total
13 amount appropriated to the Foundation (not includ-
14 ing amounts appropriated for the Directorate) is less
15 than the total amount appropriated to the Founda-
16 tion (not including such amounts), adjusted by the
17 rate of inflation, for the previous fiscal year.

18 (4) NO FUNDS FOR CONSTRUCTION.—No funds
19 provided to the Directorate under this section shall
20 be used for construction.

21 **TITLE II—NSF RESEARCH, STEM,**
22 **AND GEOGRAPHIC DIVERSITY**
23 **INITIATIVES**

24 **SEC. 201. CHIEF DIVERSITY OFFICER OF THE NSF.**

25 (a) CHIEF DIVERSITY OFFICER.—

1 (1) APPOINTMENT.—The President shall ap-
2 point, by and with the consent of the Senate, a Chief
3 Diversity Officer of the Foundation.

4 (2) QUALIFICATIONS.—The Chief Diversity Of-
5 ficer shall have significant experience, within the
6 Federal Government and the science community,
7 with diversity- and inclusion-related matters, includ-
8 ing—

9 (A) civil rights compliance;

10 (B) harassment policy, reviews, and inves-
11 tigations;

12 (C) equal employment opportunity; and

13 (D) disability policy.

14 (3) OVERSIGHT.—The Chief Diversity Officer
15 shall direct the Office of Diversity and Inclusion of
16 the Foundation and report directly to the Director
17 in the performance of the duties of the Chief Diver-
18 sity Officer under this section.

19 (b) DUTIES.—The Chief Diversity Officer is respon-
20 sible for providing advice on policy, oversight, guidance,
21 and coordination with respect to matters of the Founda-
22 tion related to diversity and inclusion, including ensuring
23 the geographic diversity of the Foundation programs.
24 Other duties may include—

1 (1) establishing and maintaining a strategic
2 plan that publicly states a diversity definition, vision,
3 and goals for the Foundation;

4 (2) defining a set of strategic metrics that
5 are—

6 (A) directly linked to key organizational
7 priorities and goals;

8 (B) actionable; and

9 (C) actively used to implement the stra-
10 tegic plan under paragraph (1);

11 (3) advising in the establishment of a strategic
12 plan for diverse participation by individuals and in-
13 stitutions of higher education, including community
14 colleges, historically Black colleges and universities,
15 Tribal colleges or universities, other minority-serving
16 institutions, and institutions from jurisdictions eligi-
17 ble to participate under section 113 of the National
18 Science Foundation Authorization Act of 1988 (42
19 U.S.C. 1862g);

20 (4) advising in the establishment of a strategic
21 plan for outreach to, and recruiting from, untapped
22 locations and underrepresented populations;

23 (5) advising on the application of the Founda-
24 tion's broader impacts review criterion; and

1 (6) performing such additional duties and exer-
2 cise such powers as the Director may prescribe.

3 (c) FUNDING.—From any amounts appropriated for
4 the Foundation for each of fiscal years 2022 through
5 2026, the Director shall allocate \$5,000,000 to carry out
6 this section for each such year.

7 **SEC. 202. PROGRAMS TO ADDRESS THE STEM WORKFORCE.**

8 (a) IN GENERAL.—The Director shall issue under-
9 graduate scholarships, including at community colleges,
10 graduate fellowships and traineeships, postdoctoral
11 awards, and, as appropriate, other awards.

12 (b) IMPLEMENTATION.—The Director may carry out
13 subsection (a) by making awards—

14 (1) directly to students; or

15 (2) to institutions of higher education or con-
16 sortia of institutions of higher education, including
17 those institutions or consortia involved in operating
18 university technology centers established under sec-
19 tion 104(a).

20 (c) BROADENING PARTICIPATION.—In carrying out
21 this section, the Director shall take steps to increase the
22 participation of populations that are underrepresented in
23 STEM, which may provide—

1 (1) establishing or augmenting programs tar-
2 geted at populations that are underrepresented in
3 STEM;

4 (2) supporting traineeships or other relevant
5 programs at minority-serving institutions;

6 (3) addressing current and expected gaps in the
7 availability and skills of the STEM workforce, or ad-
8 dressing the needs of the STEM workforce, includ-
9 ing by prioritizing awards to United States citizens,
10 permanent residents, and individuals that will grow
11 the domestic workforce; and

12 (4) addressing geographic diversity in the
13 STEM workforce.

14 (d) INNOVATION.—In carrying out this section, the
15 Director shall encourage innovation in graduate education,
16 including through encouraging institutions of higher edu-
17 cation to offer graduate students opportunities to gain ex-
18 perience in industry or government as part of their grad-
19 uate training, and through support for students in profes-
20 sional masters programs related to the key technology
21 focus areas.

22 (e) EXISTING PROGRAMS.—In carrying out this sec-
23 tion, the Director may leverage existing programs, includ-
24 ing programs that issue—

25 (1) postdoctoral awards;

1 (2) graduate fellowships and traineeships, inclu-
2 sive of the NSF Research Traineeships and fellow-
3 ships awarded under the Graduate Research Fellow-
4 ship Program; and

5 (3) scholarships, research experiences, and in-
6 ternships, including—

7 (A) scholarships to attend community col-
8 leges; and

9 (B) research experiences and internships
10 under sections 513, 514, and 515 of the Amer-
11 ica COMPETES Reauthorization Act of 2010
12 (42 U.S.C. 1862p-5; 1862p-6; 42 U.S.C.
13 1862p-7); and

14 (4) awards to institutions of higher education to
15 enable the institutions to fund innovation in under-
16 graduate and graduate education, increased edu-
17 cational capacity, and the development and estab-
18 lishment of new or specialized programs of study for
19 graduate, undergraduate, or technical college stu-
20 dents, and the evaluation of the effectiveness of the
21 programs of study.

22 (f) SET ASIDE.—The Director shall ensure that not
23 less than 20 percent of the funds available to carry out
24 this section shall be used to support institutions of higher
25 education, and other institutions, located in jurisdictions

1 that participate in the program under section 113 of the
2 National Science Foundation Authorization Act of 1988
3 (42 U.S.C. 1862g).

4 **SEC. 203. EMERGING RESEARCH INSTITUTION PILOT PRO-**
5 **GRAM.**

6 (a) IN GENERAL.—The Director shall establish a 5-
7 year pilot program for awarding grants to eligible partner-
8 ships, led by 1 or more emerging research institutions, to
9 build research and education capacity at emerging re-
10 search institutions to enable such institutions to con-
11 tribute to programs run by the Directorate.

12 (b) APPLICATIONS.—An eligible partnership seeking
13 a grant under this section shall submit an application to
14 the Director at such time, in such manner, and containing
15 such information as the Director may reasonably require,
16 including a statement of how the partnership will use the
17 funds awarded through the grant to achieve a lasting, sus-
18 tainable increase in the research and education capacity
19 of each emerging research institution included in the eligi-
20 ble partnership.

21 (c) ACTIVITIES.—An eligible partnership receiving a
22 grant under this section may use the funds awarded
23 through such grant for increasing research, education, and
24 innovation capacity, including for—

1 (1) faculty training and resources, including
2 joint resources;

3 (2) research experiences for undergraduate and
4 graduate students; and

5 (3) maintenance and repair of research equip-
6 ment and instrumentation.

7 (d) DEFINITION OF ELIGIBLE PARTNERSHIP.—In
8 this section, the term “eligible partnership” means a part-
9 nership of—

10 (1) at least 1 emerging research institution; and

11 (2) at least 1 institution that, on average for
12 the 3 years prior to an application for an award
13 under this section, received more than \$100,000,000
14 in Federal research funding.

15 **SEC. 204. PERSONNEL MANAGEMENT AUTHORITIES FOR**
16 **THE FOUNDATION.**

17 (a) EXPERTS IN SCIENCE AND ENGINEERING.—

18 (1) PROGRAM AUTHORIZED.—The Foundation
19 may carry out a program of personnel management
20 authority provided under paragraph (2) in order to
21 facilitate recruitment of eminent experts in science
22 or engineering for research and development projects
23 and to enhance the administration and management
24 of the Foundation.

1 (2) PERSONNEL MANAGEMENT AUTHORITY.—

2 Under the program under paragraph (1), the Foun-
3 dation may—

4 (A) without regard to any provision of title
5 5, United States Code, governing the appoint-
6 ment of employees in the civil service, appoint
7 individuals to a total of not more than 140 po-
8 sitions in the Foundation, of which not more
9 than 5 such positions may be positions of ad-
10 ministration or management of the Foundation;

11 (B) notwithstanding any provision of title
12 5, United States Code, governing the rates of
13 pay or classification of employees in the execu-
14 tive branch, prescribe the rates of basic pay for
15 positions to which employees are appointed
16 under subparagraph (A)—

17 (i) in the case of employees appointed
18 pursuant to subparagraph (A) to any of 5
19 positions designated by the Foundation for
20 purposes of this clause, at rates not in ex-
21 cess of a rate equal to 150 percent of the
22 maximum rate of basic pay authorized for
23 positions at level I of the Executive Sched-
24 ule under section 5312 of title 5, United
25 States Code; and

1 (ii) in the case of any other employee
2 appointed pursuant to subparagraph (A),
3 at rates not in excess of the maximum rate
4 of basic pay authorized for senior-level po-
5 sitions under section 5376 of title 5,
6 United States Code; and

7 (C) pay any employee appointed under
8 subparagraph (A), other than an employee ap-
9 pointed to a position designated as described in
10 subparagraph (B)(i), payments in addition to
11 basic pay within the limit applicable to the em-
12 ployee under paragraph (4).

13 (3) LIMITATION ON TERM OF APPOINTMENT.—

14 (A) IN GENERAL.—Except as provided in
15 subparagraph (B), the service of an employee
16 under an appointment under paragraph (2)(A)
17 may not exceed 4 years.

18 (B) EXTENSION.—The Director may, in
19 the case of a particular employee under the pro-
20 gram under paragraph (1), extend the period to
21 which service is limited under subparagraph (A)
22 by up to 2 years if the Director determines that
23 such action is necessary to promote the effi-
24 ciency of the Foundation, as applicable.

1 (4) MAXIMUM AMOUNT OF ADDITIONAL PAY-
2 MENTS PAYABLE.—Notwithstanding any other provi-
3 sion of this subsection or section 5307 of title 5,
4 United States Code, no additional payments may be
5 paid to an employee under paragraph (2)(C) in any
6 calendar year if, or to the extent that, the employ-
7 ee’s total annual compensation in such calendar year
8 will exceed the maximum amount of total annual
9 compensation payable at the salary set in accordance
10 with section 104 of title 3, United States Code.

11 (b) HIGHLY QUALIFIED EXPERTS IN NEEDED OCCU-
12 PATIONS.—

13 (1) IN GENERAL.—The Foundation may carry
14 out a program using the authority provided in para-
15 graph (2) in order to attract highly qualified experts
16 in needed occupations, as determined by the Foun-
17 dation. Individuals hired by the Director through
18 such authority may include individuals with exper-
19 tise in business creativity, innovation management,
20 design thinking, entrepreneurship, venture capital,
21 and related fields.

22 (2) AUTHORITY.—Under the program, the
23 Foundation may—

24 (A) appoint personnel from outside the
25 civil service and uniformed services (as such

1 terms are defined in section 2101 of title 5,
2 United States Code) to positions in the Foun-
3 dation without regard to any provision of title
4 5, United States Code, governing the appoint-
5 ment of employees to positions in the Founda-
6 tion;

7 (B) prescribe the rates of basic pay for po-
8 sitions to which employees are appointed under
9 subparagraph (A) at rates not in excess of the
10 maximum rate of basic pay authorized for sen-
11 ior-level positions under section 5376 of title 5,
12 United States Code, as increased by locality-
13 based comparability payments under section
14 5304 of such title, notwithstanding any provi-
15 sion of such title governing the rates of pay or
16 classification of employees in the executive
17 branch; and

18 (C) pay any employee appointed under
19 subparagraph (A) payments in addition to basic
20 pay within the limits applicable to the employee
21 under paragraph (4).

22 (3) LIMITATION ON TERM OF APPOINTMENT.—

23 (A) IN GENERAL.—Except as provided in
24 subparagraph (B), the service of an employee

1 under an appointment made pursuant to this
2 subsection may not exceed 5 years.

3 (B) EXTENSION.—The Foundation may, in
4 the case of a particular employee, extend the
5 period to which service is limited under sub-
6 paragraph (A) by up to 1 additional year if the
7 Foundation determines that such action is nec-
8 essary to promote the Foundation’s national se-
9 curity missions.

10 (4) LIMITATIONS ON ADDITIONAL PAYMENTS.—

11 (A) TOTAL AMOUNT.—

12 (i) IN GENERAL.—The total amount
13 of the additional payments paid to an em-
14 ployee under this subsection for any 12-
15 month period may not exceed the lesser of
16 the following amounts:

17 (I) \$50,000 in fiscal year 2021,
18 which may be adjusted annually there-
19 after by the Foundation, with a per-
20 centage increase equal to one-half of 1
21 percentage point less than the per-
22 centage by which the Employment
23 Cost Index, published quarterly by the
24 Bureau of Labor Statistics, for the
25 base quarter of the year before the

1 preceding calendar year exceeds the
2 Employment Cost Index for the base
3 quarter of the second year before the
4 preceding calendar year.

5 (II) The amount equal to 50 per-
6 cent of the employee's annual rate of
7 basic pay.

8 (ii) DEFINITION OF BASE QUARTER.—
9 For purposes of this subparagraph, the
10 term “base quarter” has the meaning
11 given such term by section 5302(3) of title
12 5, United States Code.

13 (B) ELIGIBILITY FOR PAYMENTS.—An em-
14 ployee appointed under this subsection is not el-
15 igible for any bonus, monetary award, or other
16 monetary incentive for service, except for pay-
17 ments authorized under this subsection.

18 (C) ADDITIONAL LIMITATION.—Notwith-
19 standing any other provision of this paragraph
20 or of section 5307 of title 5, United States
21 Code, no additional payments may be paid to
22 an employee under this subsection in any cal-
23 endar year if, or to the extent that, the employ-
24 ee's total annual compensation will exceed the
25 maximum amount of total annual compensation

1 payable at the salary set in accordance with
2 section 104 of title 3, United States Code.

3 (5) LIMITATION ON NUMBER OF HIGHLY QUALI-
4 FIED EXPERTS.—The number of highly qualified ex-
5 perts appointed and retained by the Foundation
6 under paragraph (2)(A) shall not exceed 140 at any
7 time.

8 (6) SAVINGS PROVISIONS.—In the event that
9 the Foundation terminates the program under this
10 subsection, in the case of an employee who, on the
11 day before the termination of the program, is serv-
12 ing in a position pursuant to an appointment under
13 this subsection—

14 (A) the termination of the program does
15 not terminate the employee's employment in
16 that position before the expiration of the lesser
17 of—

18 (i) the period for which the employee
19 was appointed; or

20 (ii) the period to which the employee's
21 service is limited under paragraph (3), in-
22 cluding any extension made under this
23 subsection before the termination of the
24 program; and

1 (B) the rate of basic pay prescribed for the
2 position under this subsection may not be re-
3 duced as long as the employee continues to
4 serve in the position without a break in service.

5 (c) **ADDITIONAL HIRING AUTHORITY.**—To the extent
6 needed to carry out the duties under subsection (a)(1),
7 the Director is authorized to utilize hiring authorities
8 under section 3372 of title 5, United States Code, to staff
9 the Foundation with employees from other Federal agen-
10 cies, State and local governments, Indian Tribes and Trib-
11 al organizations, institutions of higher education, and
12 other organizations, as described in that section, in the
13 same manner and subject to the same conditions, that
14 apply to such individuals utilized to accomplish other mis-
15 sions of the Foundation.

16 (d) **NATIONAL ACADEMY OF PUBLIC ADMINISTRA-**
17 **TION.**—

18 (1) **STUDY.**—Not later than 30 days after the
19 date of enactment of this Act, the Director shall
20 contract with the National Academy of Public Ad-
21 ministration to conduct a study on the organiza-
22 tional and management structure of the Foundation,
23 to—

1 (A) evaluate and make recommendations to
2 efficiently and effectively implement the Direc-
3 torate for Technology and Innovation;

4 (B) evaluate and make recommendations
5 to ensure coordination of the Directorate for
6 Technology and Innovation with other direc-
7 torates and offices of the Foundation and other
8 Federal agencies; and

9 (C) make recommendations for the man-
10 agement of the Foundation's business and per-
11 sonnel practices, including implementation of
12 the new hiring authorities and program director
13 authorities provided in this section and section
14 103.

15 (2) REVIEW.—Upon completion of the study
16 under paragraph (1), the Foundation shall review
17 the recommendations from the National Academy of
18 Public Administration and provide a briefing to Con-
19 gress on the plans of the Foundation to implement
20 any such recommendations.

21 **SEC. 205. ADVANCED TECHNOLOGICAL MANUFACTURING**

22 **ACT.**

23 (a) FINDINGS AND PURPOSE.—Section 2 of the Sci-
24 entific and Advanced-Technology Act of 1992 (42 U.S.C.
25 1862h) is amended—

1 (1) in subsection (a)—

2 (A) in paragraph (3), by striking “science,
3 mathematics, and technology” and inserting
4 “science, technology, engineering, and mathe-
5 matics or STEM”;

6 (B) in paragraph (4), by inserting “edu-
7 cated and” before “trained”; and

8 (C) in paragraph (5), by striking “sci-
9 entific and technical education and training”
10 and inserting “STEM education and training”;
11 and

12 (2) in subsection (b)—

13 (A) in paragraph (2), by striking “mathe-
14 matics and science” and inserting “STEM
15 fields”; and

16 (B) in paragraph (4), by striking “mathe-
17 matics and science instruction” and inserting
18 “STEM instruction”.

19 (b) MODERNIZING REFERENCES TO STEM.—Section
20 3 of the Scientific and Advanced-Technology Act of 1992
21 (42 U.S.C. 1862i) is amended—

22 (1) in the section heading, by striking “**SCI-**
23 **ENTIFIC AND TECHNICAL EDUCATION**” and in-
24 serting “**STEM EDUCATION**”;

25 (2) in subsection (a)—

1 (A) in the subsection heading, by striking
2 “SCIENTIFIC AND TECHNICAL EDUCATION”
3 and inserting “STEM EDUCATION”;

4 (B) in the matter preceding paragraph
5 (1)—

6 (i) by inserting “and education to pre-
7 pare the skilled technical workforce to
8 meet workforce demands” before “, and to
9 improve”;

10 (ii) by striking “core education
11 courses in science and mathematics” and
12 inserting “core education courses in STEM
13 fields”;

14 (iii) by inserting “veterans and indi-
15 viduals engaged in” before “work in the
16 home”; and

17 (iv) by inserting “and on building a
18 pathway from secondary schools, to asso-
19 ciate-degree-granting institutions, to ca-
20 reers that require technical training” be-
21 fore “, and shall be designed”;

22 (C) in paragraph (1)—

23 (i) by inserting “and study” after
24 “development”; and

1 (ii) by striking “core science and
2 mathematics courses” and inserting “core
3 STEM courses”;

4 (D) in paragraph (2), by striking “science,
5 mathematics, and advanced-technology fields”
6 and inserting “STEM and advanced-technology
7 fields”;

8 (E) in paragraph (3)(A), by inserting “to
9 support the advanced-technology industries that
10 drive the competitiveness of the United States
11 in the global economy” before the semicolon at
12 the end;

13 (F) in paragraph (4), by striking “sci-
14 entific and advanced-technology fields” and in-
15 serting “STEM and advanced-technology
16 fields”; and

17 (G) in paragraph (5), by striking “ad-
18 vanced scientific and technical education” and
19 inserting “advanced STEM and advanced-tech-
20 nology”;

21 (3) in subsection (b)—

22 (A) by striking the subsection heading and
23 inserting the following: “CENTERS OF SCI-
24 ENTIFIC AND TECHNICAL EDUCATION.—”;

1 (B) in the matter preceding paragraph (1),
2 by striking “not to exceed 12 in number” and
3 inserting “in advanced-technology fields”;

4 (C) in paragraph (2), by striking “edu-
5 cation in mathematics and science” and insert-
6 ing “STEM education”; and

7 (D) in the flush matter following para-
8 graph (2), by striking “in the geographic region
9 served by the center”;

10 (4) in subsection (c)—

11 (A) in paragraph (1)—

12 (i) in subparagraph (A)—

13 (I) in the matter preceding clause
14 (i), by striking “to encourage” and all
15 that follows through “such means
16 as—” and inserting “to encourage the
17 development of career and educational
18 pathways with multiple entry and exit
19 points leading to credentials and de-
20 grees, and to assist students pursuing
21 pathways in STEM fields to transition
22 from associate-degree-granting col-
23 leges to bachelor-degree-granting in-
24 stitutions, through such means as—”;

1 (II) in clause (i), by striking “to
2 ensure” and inserting “to develop ar-
3 ticipation agreements that ensure”;
4 and

5 (III) in clause (ii), by striking
6 “courses at the bachelor-degree-grant-
7 ing institution” and inserting “the ca-
8 reer and educational pathways sup-
9 ported by the articulation agree-
10 ments”;

11 (ii) in subparagraph (B)—

12 (I) in clause (i), by inserting
13 “veterans and individuals engaged in”
14 before “work in the home”;

15 (II) in clause (iii)—

16 (aa) by striking “bachelor’s-
17 degree-granting institutions” and
18 inserting “institutions or work
19 sites”; and

20 (bb) by inserting “or indus-
21 try internships” after “summer
22 programs”; and

23 (III) by striking the flush text
24 following clause (iv); and

25 (iii) by striking subparagraph (C);

1 (B) in paragraph (2)—

2 (i) by striking “mathematics and
3 science programs” and inserting “STEM
4 programs”;

5 (ii) by inserting “and, as appropriate,
6 elementary schools,” after “with secondary
7 schools”;

8 (iii) by striking “mathematics and
9 science education” and inserting “STEM
10 education”;

11 (iv) by striking “secondary school stu-
12 dents” and inserting “students at these
13 schools”;

14 (v) by striking “science and advanced-
15 technology fields” and inserting “STEM
16 and advanced-technology fields”; and

17 (vi) by striking “agreements with local
18 educational agencies” and inserting “ar-
19 ticulation agreements or dual credit
20 courses with local secondary schools, or
21 other means as the Director determines
22 appropriate,”; and

23 (C) in paragraph (3)—

24 (i) by striking subparagraph (B);

1 (ii) by striking “shall—” and all that
2 follows through “establish a” and inserting
3 “shall establish a”;

4 (iii) by striking “the fields of science,
5 technology, engineering, and mathematics”
6 and inserting “STEM fields”; and

7 (iv) by striking “; and” and inserting
8 “, including jobs at Federal and academic
9 laboratories.”;

10 (5) in subsection (d)(2)—

11 (A) in subparagraph (D), by striking
12 “and” after the semicolon;

13 (B) in subparagraph (E), by striking the
14 period at the end and inserting a semicolon;
15 and

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

17 “(F) as appropriate, applications that
18 apply the best practices for STEM education
19 and technical skills education through distance
20 learning or in a simulated work environment, as
21 determined by research described in subsection
22 (f); and”;

23 (6) in subsection (g), by striking the second
24 sentence;

25 (7) in subsection (h)(1)—

1 (A) in subparagraph (A), by striking
2 “2022” and inserting “2026”;

3 (B) in subparagraph (B), by striking
4 “2022” and inserting “2026”; and

5 (C) in subparagraph (C)—

6 (i) by striking “up to \$2,500,000”
7 and inserting “not less than \$3,000,000”;

8 and

9 (ii) by striking “2022” and inserting
10 “2026”;

11 (8) in subsection (i)—

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

13 (B) by redesignating paragraphs (4) and
14 (5) as paragraphs (3) and (4), respectively; and

15 (9) in subsection (j)—

16 (A) by striking paragraph (1) and insert-
17 ing the following:

18 “(1) the term ‘advanced-technology’ includes
19 technological fields such as advanced manufacturing,
20 agricultural-, biological- and chemical-technologies,
21 energy and environmental technologies, engineering
22 technologies, information technologies, micro and
23 nano-technologies, cybersecurity technologies,
24 geospatial technologies, and new, emerging tech-
25 nology areas;”;

1 (B) in paragraph (4), by striking “separate
2 bachelor-degree-granting institutions” and in-
3 serting “other entities”;

4 (C) by striking paragraph (7);

5 (D) by redesignating paragraphs (8) and
6 (9) as paragraphs (7) and (8), respectively;

7 (E) in paragraph (7), as redesignated by
8 subparagraph (D), by striking “and” after the
9 semicolon;

10 (F) in paragraph (8), as redesignated by
11 subparagraph (D)—

12 (i) by striking “mathematics, science,
13 engineering, or technology” and inserting
14 “science, technology, engineering, or math-
15 ematics”; and

16 (ii) by striking the period at the end
17 and inserting “; and”; and

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

19 “(9) the term ‘skilled technical workforce’
20 means workers—

21 “(A) in occupations that use significant
22 levels of science and engineering expertise and
23 technical knowledge; and

24 “(B) whose level of educational attainment
25 is less than a bachelor degree.”.

1 (c) AUTHORIZATION OF APPROPRIATIONS.—Section
2 5 of the Scientific and Advanced-Technology Act of 1992
3 (42 U.S.C. 1862j) is amended to read as follows:

4 **“SEC. 5. AUTHORIZATION OF APPROPRIATIONS.**

5 “There are authorized to be appropriated to the Di-
6 rector (from sums otherwise authorized to be appropriated
7 for the Foundation) for carrying out sections 2 through
8 4, \$150,000,000 for fiscal years 2022 through 2026.”.

9 **SEC. 206. INTRAMURAL EMERGING INSTITUTIONS PILOT**
10 **PROGRAM.**

11 (a) ESTABLISHMENT.—The Director shall conduct
12 multiple pilot programs within the Foundation to expand
13 the number of institutions of higher education (including
14 such institutions that are community colleges), and other
15 eligible entities that the Director determines appropriate,
16 that are able to successfully compete for Foundation
17 grants.

18 (b) COMPONENTS.—Each pilot program described in
19 subsection (a) shall include at least 1 of the following ele-
20 ments:

21 (1) A mentorship program.

22 (2) Grant writing technical assistance.

23 (3) Targeted outreach, including to a minority-
24 serving institution (including a historically Black col-

1 lege or university, a Tribal college or university, or
2 a Hispanic-serving institution).

3 (4) Programmatic support or solutions for insti-
4 tutions or entities that do not have an experienced
5 grant management office.

6 (5) An increase in the number of grant review-
7 ers from institutions of higher education that have
8 not traditionally received funds from the Founda-
9 tion.

10 (6) An increase of the term and funding, for a
11 period of 3 years or less, as appropriate, to a prin-
12 cipal investigator that is a first-time grant awardee,
13 when paired with regular mentoring on the adminis-
14 trative aspects of grant management.

15 (c) LIMITATION.—As appropriate, each pilot program
16 described in subsection (a) shall work to reduce adminis-
17 trative burdens.

18 (d) AGENCY-WIDE PROGRAMS.—Not later than 5
19 years after the date of enactment of this Act, the Director
20 shall—

21 (1) review the results of the pilot programs de-
22 scribed in subsection (a); and

23 (2) develop agency-wide best practices from the
24 pilot programs for implementation across the Foun-
25 dation, in order to fulfill the requirement under sec-

1 tion 3(e) of the National Science Foundation Act of
2 1950 (42 U.S.C. 1862(e)).

3 **SEC. 207. PUBLIC-PRIVATE PARTNERSHIPS.**

4 (a) IN GENERAL.—The Director shall pursue part-
5 nerships with private industry, private foundations, or
6 other appropriate private entities to—

7 (1) enhance the impact of the Foundation’s in-
8 vestments and contributions to the United States
9 economic competitiveness and security; and

10 (2) make available infrastructure, expertise, and
11 financial resources to the United States scientific
12 and engineering research and education enterprise.

13 (b) MERIT REVIEW.—Nothing in this section shall be
14 construed as altering any intellectual or broader impacts
15 criteria at the Foundation for evaluating grant applica-
16 tions.

17 **SEC. 208. AI SCHOLARSHIP-FOR-SERVICE ACT.**

18 (a) DEFINITIONS.—In this section:

19 (1) ARTIFICIAL INTELLIGENCE.—The term “ar-
20 tificial intelligence” or “AI” has the meaning given
21 the term “artificial intelligence” in section 238(g) of
22 the John S. McCain National Defense Authorization
23 Act for Fiscal Year 2019 (10 U.S.C. 2358 note).

24 (2) EXECUTIVE AGENCY.—The term “executive
25 agency” has the meaning given the term “Executive

1 agency” in section 105 of title 5, United States
2 Code.

3 (3) REGISTERED INTERNSHIP.—The term “reg-
4 istered internship” means a Federal Registered In-
5 ternship Program coordinated through the Depart-
6 ment of Labor.

7 (b) IN GENERAL.—The Director, in coordination
8 with the Director of the Office of Personnel Management,
9 the Director of the National Institute of Standards and
10 Technology, and the heads of other agencies with appro-
11 priate scientific knowledge, shall establish a Federal artifi-
12 cial intelligence scholarship-for-service program (referred
13 to in this section as the “Federal AI Scholarship-for-Serv-
14 ice Program”) to recruit and train artificial intelligence
15 professionals to lead and support the application of artifi-
16 cial intelligence to the missions of Federal, State, local,
17 and Tribal governments.

18 (c) QUALIFIED INSTITUTION OF HIGHER EDU-
19 CATION.—The Director, in coordination with the heads of
20 other agencies with appropriate scientific knowledge, shall
21 establish criteria to designate qualified institutions of
22 higher education that shall be eligible to participate in the
23 Federal AI Scholarship-for-Service program. Such criteria
24 shall include—

1 (1) measures of the institution’s demonstrated
2 excellence in the education of students in the field
3 of artificial intelligence; and

4 (2) measures of the institution’s ability to at-
5 tract and retain a diverse and non-traditional stu-
6 dent population in the fields of science, technology,
7 engineering, and mathematics, which may include
8 the ability to attract women, minorities, and individ-
9 uals with disabilities.

10 (d) PROGRAM DESCRIPTION AND COMPONENTS.—

11 The Federal AI Scholarship-for-Service Program shall—

12 (1) provide scholarships through qualified insti-
13 tutions of higher education to students who are en-
14 rolled in programs of study at institutions of higher
15 education leading to degrees or concentrations in or
16 related to the artificial intelligence field;

17 (2) provide the scholarship recipients with sum-
18 mer internship opportunities, registered internships,
19 or other meaningful temporary appointments in the
20 Federal workforce focusing on AI projects or re-
21 search;

22 (3) prioritize the employment placement of
23 scholarship recipients in executive agencies;

24 (4) identify opportunities to promote multi-dis-
25 ciplinary programs of study that integrate basic or

1 advanced AI training with other fields of study, in-
2 cluding those that address the social, economic,
3 legal, and ethical implications of human interaction
4 with AI systems; and

5 (5) support capacity-building education re-
6 search programs that will enable postsecondary edu-
7 cational institutions to expand their ability to train
8 the next-generation AI workforce, including AI re-
9 searchers and practitioners.

10 (e) SCHOLARSHIP AMOUNTS.—Each scholarship
11 under subsection (d) shall be in an amount that covers
12 the student’s tuition and fees at the institution for not
13 more than 3 years and provides the student with an addi-
14 tional stipend.

15 (f) POST-AWARD EMPLOYMENT OBLIGATIONS.—
16 Each scholarship recipient, as a condition of receiving a
17 scholarship under the program, shall enter into an agree-
18 ment under which the recipient agrees to work for a period
19 equal to the length of the scholarship, following receipt
20 of the student’s degree, in the AI mission of—

21 (1) an executive agency;

22 (2) Congress, including any agency, entity, of-
23 fice, or commission established in the legislative
24 branch;

25 (3) an interstate agency;

1 (4) a State, local, or Tribal government, which
2 may include instruction in AI-related skill sets in a
3 public school system; or

4 (5) a State, local, or Tribal government-affili-
5 ated nonprofit entity that is considered to be critical
6 infrastructure (as defined in section 1016(e) of the
7 USA Patriot Act (42 U.S.C. 5195c(e))).

8 (g) HIRING AUTHORITY.—

9 (1) APPOINTMENT IN EXCEPTED SERVICE.—

10 Notwithstanding any provision of chapter 33 of title
11 5, United States Code, governing appointments in
12 the competitive service, an executive agency may ap-
13 point an individual who has completed the eligible
14 degree program for which a scholarship was awarded
15 to a position in the excepted service in the executive
16 agency.

17 (2) NONCOMPETITIVE CONVERSION.—Except as
18 provided in paragraph (4), upon fulfillment of the
19 service term, an employee appointed under para-
20 graph (1) may be converted noncompetitively to
21 term, career-conditional, or career appointment.

22 (3) TIMING OF CONVERSION.—An executive
23 agency may noncompetitively convert a term em-
24 ployee appointed under paragraph (2) to a career-

1 conditional or career appointment before the term
2 appointment expires.

3 (4) AUTHORITY TO DECLINE CONVERSION.—An
4 executive agency may decline to make the non-
5 competitive conversion or appointment under para-
6 graph (2) for cause.

7 (h) ELIGIBILITY.—To be eligible to receive a scholar-
8 ship under this section, an individual shall—

9 (1) be a citizen or lawful permanent resident of
10 the United States;

11 (2) demonstrate a commitment to a career in
12 advancing the field of AI;

13 (3) be—

14 (A) a full-time student in an eligible degree
15 program at a qualified institution of higher
16 education, as determined by the Director;

17 (B) a student pursuing a degree on a less
18 than full-time basis, but not less than half-time
19 basis; or

20 (C) an AI faculty member on sabbatical to
21 advance knowledge in the field; and

22 (4) accept the terms of a scholarship under this
23 section.

24 (i) CONDITIONS OF SUPPORT.—

1 (1) IN GENERAL.—As a condition of receiving a
2 scholarship under this section, a recipient shall agree
3 to provide the qualified institution of higher edu-
4 cation with annual verifiable documentation of post-
5 award employment and up-to-date contact informa-
6 tion.

7 (2) TERMS.—A scholarship recipient under this
8 section shall be liable to the United States as pro-
9 vided in subsection (k) if the individual—

10 (A) fails to maintain an acceptable level of
11 academic standing at the applicable institution
12 of higher education, as determined by the Di-
13 rector;

14 (B) is dismissed from the applicable insti-
15 tution of higher education for disciplinary rea-
16 sons;

17 (C) withdraws from the eligible degree pro-
18 gram before completing the program;

19 (D) declares that the individual does not
20 intend to fulfill the post-award employment ob-
21 ligation under this section; or

22 (E) fails to fulfill the post-award employ-
23 ment obligation of the individual under this sec-
24 tion.

1 (j) MONITORING COMPLIANCE.—As a condition of
2 participating in the program, a qualified institution of
3 higher education shall—

4 (1) enter into an agreement with the Director
5 to monitor the compliance of scholarship recipients
6 with respect to their post-award employment obliga-
7 tions; and

8 (2) provide to the Director, on an annual basis,
9 the post-award employment documentation required
10 under subsection (i) for scholarship recipients
11 through the completion of their post-award employ-
12 ment obligations.

13 (k) AMOUNT OF REPAYMENT.—

14 (1) LESS THAN 1 YEAR OF SERVICE.—If a cir-
15 cumstance described in subsection (i)(2) occurs be-
16 fore the completion of 1 year of a post-award em-
17 ployment obligation under this section, the total
18 amount of scholarship awards received by the indi-
19 vidual under this section shall—

20 (A) be repaid; or

21 (B) be treated as a loan to be repaid in ac-
22 cordance with subsection (l).

23 (2) 1 OR MORE YEARS OF SERVICE.—If a cir-
24 cumstance described in subparagraph (D) or (E) of
25 subsection (i)(2) occurs after the completion of 1 or

1 more years of a post-award employment obligation
2 under this section, the total amount of scholarship
3 awards received by the individual under this section,
4 reduced by the ratio of the number of years of serv-
5 ice completed divided by the number of years of
6 service required, shall—

7 (A) be repaid; or

8 (B) be treated as a loan to be repaid in ac-
9 cordance with subsection (l).

10 (l) REPAYMENTS.—A loan described in subsection (k)
11 shall—

12 (1) be treated as a Federal Direct Unsubsidized
13 Stafford Loan under part D of title IV of the High-
14 er Education Act of 1965 (20 U.S.C. 1087a et seq.);
15 and

16 (2) be subject to repayment, together with in-
17 terest thereon accruing from the date of the scholar-
18 ship award, in accordance with terms and conditions
19 specified by the Director (in consultation with the
20 Secretary of Education).

21 (m) COLLECTION OF REPAYMENT.—

22 (1) IN GENERAL.—In the event that a scholar-
23 ship recipient is required to repay the scholarship
24 award under this section, the qualified institution of
25 higher education providing the scholarship shall—

1 (A) determine the repayment amounts and
2 notify the recipient and the Director of the
3 amounts owed; and

4 (B) collect the repayment amounts within
5 a period of time as determined by the Director,
6 or the repayment amounts shall be treated as a
7 loan in accordance with subsection (l).

8 (2) RETURNED TO TREASURY.—Except as pro-
9 vided in paragraph (3), any repayment under this
10 subsection shall be returned to the Treasury of the
11 United States.

12 (3) RETAIN PERCENTAGE.—A qualified institu-
13 tion of higher education may retain a percentage of
14 any repayment the institution collects under this
15 subsection to defray administrative costs associated
16 with the collection. The Director shall establish a
17 fixed percentage that will apply to all eligible enti-
18 ties, and may update this percentage as needed, in
19 the determination of the Director.

20 (n) EXCEPTIONS.—The Director may provide for the
21 partial or total waiver or suspension of any service or pay-
22 ment obligation by an individual under this section when-
23 ever compliance by the individual with the obligation is
24 impossible or would involve extreme hardship to the indi-

1 vidual, or if enforcement of such obligation with respect
2 to the individual would be unconscionable.

3 (o) PUBLIC INFORMATION.—

4 (1) EVALUATION.—The Director, in coordina-
5 tion with the Director of the Office of Personnel
6 Management, shall annually evaluate and make pub-
7 lic, in a manner that protects the personally identifi-
8 able information of scholarship recipients, informa-
9 tion on the success of recruiting individuals for
10 scholarships under this section and on hiring and re-
11 taining those individuals in the public sector AI
12 workforce, including information on—

13 (A) placement rates;

14 (B) where students are placed, including
15 job titles and descriptions;

16 (C) salary ranges for students not released
17 from obligations under this section;

18 (D) how long after graduation students are
19 placed;

20 (E) how long students stay in the positions
21 they enter upon graduation;

22 (F) how many students are released from
23 obligations; and

24 (G) what, if any, remedial training is re-
25 quired.

1 (2) REPORTS.—The Director, in coordination
2 with the Office of Personnel Management, shall sub-
3 mit, not less frequently than once every 3 years, to
4 the Committee on Homeland Security and Govern-
5 mental Affairs of the Senate, the Committee on
6 Commerce, Science, and Transportation of the Sen-
7 ate, the Committee on Science, Space, and Tech-
8 nology of the House of Representatives, and the
9 Committee on Oversight and Reform of the House
10 of Representatives a report, including the results of
11 the evaluation under paragraph (1) and any recent
12 statistics regarding the size, composition, and edu-
13 cational requirements of the Federal AI workforce.

14 (3) RESOURCES.—The Director, in coordination
15 with the Director of the Office of Personnel Manage-
16 ment, shall provide consolidated and user-friendly
17 online resources for prospective scholarship recipi-
18 ents, including, to the extent practicable—

19 (A) searchable, up-to-date, and accurate
20 information about participating institutions of
21 higher education and job opportunities related
22 to the AI field; and

23 (B) a modernized description of AI ca-
24 reers.

1 (p) REFRESH.—Not less than once every 2 years, the
2 Director, in coordination with the Director of the Office
3 of Personnel Management, shall review and update the
4 Federal AI Scholarship-for-Service Program to reflect ad-
5 vances in technology.

6 **SEC. 209. GEOGRAPHIC DIVERSITY.**

7 (a) DIRECTORATE.—The Director shall use not less
8 than 20 percent of the funds provided to the Directorate,
9 for each fiscal year, to carry out the program under sec-
10 tion 113 of the National Science Foundation Authoriza-
11 tion Act of 1988 (42 U.S.C. 1862g) for the purposes of
12 carrying out sections 104, 106, 107, 108, and 109 of this
13 Act.

14 (b) NATIONAL SCIENCE FOUNDATION.—The Direc-
15 tor shall use not less than 20 percent of the funds provided
16 to the Foundation, for each fiscal year, to carry out the
17 program under section 113 of the National Science Foun-
18 dation Authorization Act of 1988 (42 U.S.C. 1862g).

19 (c) CONSORTIA.—In the case of an award to a consor-
20 tium under this Act, the Director may count the entire
21 award toward meeting the funding requirements of this
22 section if the lead entity of the consortium is located in
23 a jurisdiction that is eligible to participate in the program
24 under section 113 of the National Science Foundation Au-
25 thorization Act of 1988 (42 U.S.C. 1862g).

1 **SEC. 210. RURAL STEM EDUCATION ACT.**

2 (a) DEFINITIONS.—In this section:

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

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

11 (3) STEM.—The term “STEM” has the mean-
12 ing given the term in section 2 of the America COM-
13 PETES Reauthorization Act of 2010 (42 U.S.C.
14 6621 note).

15 (4) STEM EDUCATION.—The term “STEM
16 education” has the meaning given the term in sec-
17 tion 2 of the STEM Education Act of 2015 (42
18 U.S.C. 6621 note).

19 (b) NATIONAL SCIENCE FOUNDATION RURAL STEM
20 ACTIVITIES.—

21 (1) PREPARING RURAL STEM EDUCATORS.—

22 (A) IN GENERAL.—The Director shall pro-
23 vide grants on a merit-reviewed, competitive
24 basis to institutions of higher education or non-
25 profit organizations (or a consortium thereof)
26 for research and development to advance inno-

1 vative approaches to support and sustain high-
2 quality STEM teaching in rural schools.

3 (B) USE OF FUNDS.—

4 (i) IN GENERAL.—Grants awarded
5 under this paragraph shall be used for the
6 research and development activities re-
7 ferred to in subparagraph (A), which may
8 include—

9 (I) engaging rural educators of
10 students in prekindergarten through
11 grade 12 in professional learning op-
12 portunities to enhance STEM knowl-
13 edge, including computer science, and
14 develop best practices;

15 (II) supporting research on effec-
16 tive STEM teaching practices in rural
17 settings, including the use of rubrics
18 and mastery-based grading practices
19 to assess student performance when
20 employing the transdisciplinary teach-
21 ing approach for STEM disciplines;

22 (III) designing and developing
23 pre-service and in-service training re-
24 sources to assist such rural educators

1 in adopting transdisciplinary teaching
2 practices across STEM courses;

3 (IV) coordinating with local part-
4 ners to adapt STEM teaching prac-
5 tices to leverage local natural and
6 community assets in order to support
7 in-place learning in rural areas;

8 (V) providing hands-on training
9 and research opportunities for rural
10 educators described in subclause (I) at
11 Federal laboratories or institutions of
12 higher education, or in industry;

13 (VI) developing training and best
14 practices for educators who teach
15 multiple grade levels within a STEM
16 discipline;

17 (VII) designing and imple-
18 menting professional development
19 courses and experiences, including
20 mentoring, for rural educators de-
21 scribed in subclause (I) that combine
22 face-to-face and online experiences;
23 and

1 (VIII) any other activity the Di-
2 rector determines will accomplish the
3 goals of this paragraph.

4 (ii) RURAL STEM COLLABORATIVE.—

5 The Director shall establish a pilot pro-
6 gram of regional cohorts in rural areas
7 that will provide peer support, mentoring,
8 and hands-on research experiences for
9 rural STEM educators of students in pre-
10 kindergarten through grade 12, in order to
11 build an ecosystem of cooperation among
12 educators, researchers, academia, and local
13 industry.

14 (2) BROADENING PARTICIPATION OF RURAL
15 STUDENTS IN STEM.—

16 (A) IN GENERAL.—The Director shall pro-
17 vide grants on a merit-reviewed, competitive
18 basis to institutions of higher education or non-
19 profit organizations (or a consortium thereof)
20 for—

21 (i) research and development of pro-
22 gramming to identify the barriers rural
23 students face in accessing high-quality
24 STEM education; and

1 (ii) development of innovative solu-
2 tions to improve the participation and ad-
3 vancement of rural students in prekindergarten
4 through grade 12 in STEM studies.

5 (B) USE OF FUNDS.—

6 (i) IN GENERAL.—Grants awarded
7 under this paragraph shall be used for the
8 research and development activities re-
9 ferred to in subparagraph (A), which may
10 include—

11 (I) developing partnerships with
12 community colleges to offer advanced
13 STEM course work, including com-
14 puter science, to rural high school stu-
15 dents;

16 (II) supporting research on effec-
17 tive STEM practices in rural settings;

18 (III) implementing a school-wide
19 STEM approach;

20 (IV) improving the Foundation's
21 Advanced Technology Education pro-
22 gram's coordination and engagement
23 with rural communities;

24 (V) collaborating with existing
25 community partners and networks,

1 such as the Cooperative Extension
2 System services and extramural re-
3 search programs of the Department of
4 Agriculture and youth serving organi-
5 zations like 4-H, after school STEM
6 programs, and summer STEM pro-
7 grams, to leverage community re-
8 sources and develop place-based pro-
9 gramming;

10 (VI) connecting rural school dis-
11 tricts and institutions of higher edu-
12 cation, to improve precollegiate STEM
13 education and engagement;

14 (VII) supporting partnerships
15 that offer hands-on inquiry-based
16 science activities, including coding,
17 and access to lab resources for stu-
18 dents studying STEM in prekind-
19 garten through grade 12 in a rural
20 area;

21 (VIII) evaluating the role of
22 broadband connectivity and its associ-
23 ated impact on the STEM and tech-
24 nology literacy of rural students;

1 (IX) building capacity to support
2 extracurricular STEM programs in
3 rural schools, including mentor-led en-
4 gagement programs, STEM programs
5 held during nonschool hours, STEM
6 networks, makerspaces, coding activi-
7 ties, and competitions; and

8 (X) any other activity the Direc-
9 tor determines will accomplish the
10 goals of this paragraph.

11 (3) APPLICATION.—An applicant seeking a
12 grant under paragraph (1) or (2) shall submit an
13 application at such time, in such manner, and con-
14 taining such information as the Director may re-
15 quire. The application may include the following:

16 (A) A description of the target population
17 to be served by the research activity or activi-
18 ties for which such grant is sought.

19 (B) A description of the process for re-
20 cruitment and selection of students, educators,
21 or schools from rural areas to participate in
22 such activity or activities.

23 (C) A description of how such activity or
24 activities may inform efforts to promote the en-
25 gagement and achievement of rural students in

1 prekindergarten through grade 12 in STEM
2 studies.

3 (D) In the case of a proposal consisting of
4 a partnership or partnerships with one or more
5 rural schools and one or more researchers, a
6 plan for establishing a sustained partnership
7 that is jointly developed and managed, draws
8 from the capacities of each partner, and is mu-
9 tually beneficial.

10 (4) PARTNERSHIPS.—In awarding grants under
11 paragraph (1) or (2), the Director shall—

12 (A) encourage applicants which, for the
13 purpose of the activity or activities funded
14 through the grant, include or partner with a
15 nonprofit organization or an institution of high-
16 er education (or a consortium thereof) that has
17 extensive experience and expertise in increasing
18 the participation of rural students in prekinde-
19 garten through grade 12 in STEM; and

20 (B) encourage applicants which, for the
21 purpose of the activity or activities funded
22 through the grant, include or partner with a
23 consortium of rural schools or rural school dis-
24 tricts.

1 (5) EVALUATIONS.—All proposals for grants
2 under paragraphs (1) and (2) shall include an eval-
3 uation plan that includes the use of outcome-ori-
4 ented measures to assess the impact and efficacy of
5 the grant. Each recipient of a grant under this sub-
6 section shall include results from these evaluative ac-
7 tivities in annual and final projects.

8 (6) ACCOUNTABILITY AND DISSEMINATION.—

9 (A) EVALUATION REQUIRED.—The Direc-
10 tor shall evaluate the portfolio of grants award-
11 ed under paragraphs (1) and (2). Such evalua-
12 tion shall—

13 (i) assess the results of research con-
14 ducted under such grants and identify best
15 practices; and

16 (ii) to the extent practicable, integrate
17 the findings of research resulting from the
18 activity or activities funded through such
19 grants with the findings of other research
20 on rural students' pursuit of degrees or ca-
21 reers in STEM.

22 (B) REPORT ON EVALUATIONS.—Not later
23 than 180 days after the completion of the eval-
24 uation under subparagraph (A), the Director

1 shall submit to Congress and make widely avail-
2 able to the public a report that includes—

3 (i) the results of the evaluation; and

4 (ii) any recommendations for adminis-
5 trative and legislative action that could op-
6 timize the effectiveness of the grants
7 awarded under this subsection.

8 (7) REPORT BY COMMITTEE ON EQUAL OPPOR-
9 TUNITIES IN SCIENCE AND ENGINEERING.—As part
10 of the first report required by section 36(e) of the
11 Science and Engineering Equal Opportunities Act
12 (42 U.S.C. 1885c(e)) transmitted to Congress after
13 the date of enactment of this Act, the Committee on
14 Equal Opportunities in Science and Engineering
15 shall include—

16 (A) a description of past and present poli-
17 cies and activities of the Foundation to encour-
18 age full participation of students in rural com-
19 munities in science, mathematics, engineering,
20 and computer science fields; and

21 (B) an assessment of the policies and ac-
22 tivities of the Foundation, along with proposals
23 for new strategies or the broadening of existing
24 successful strategies towards facilitating the
25 goal of increasing participation of rural stu-

1 dents in prekindergarten through grade 12 in
2 Foundation activities.

3 (8) COORDINATION.—In carrying out this sub-
4 section, the Director shall, for purposes of enhancing
5 program effectiveness and avoiding duplication of ac-
6 tivities, consult, cooperate, and coordinate with the
7 programs and policies of other relevant Federal
8 agencies.

9 (c) OPPORTUNITIES FOR ONLINE EDUCATION.—

10 (1) IN GENERAL.—The Director shall award
11 competitive grants to institutions of higher education
12 or nonprofit organizations (or a consortium thereof,
13 which may include a private sector partner) to con-
14 duct research on online STEM education courses for
15 rural communities.

16 (2) RESEARCH AREAS.—The research areas eli-
17 gible for funding under this subsection shall in-
18 clude—

19 (A) evaluating the learning and achieve-
20 ment of rural students in prekindergarten
21 through grade 12 in STEM subjects;

22 (B) understanding how computer-based
23 and online professional development courses
24 and mentor experiences can be integrated to

1 meet the needs of educators of rural students in
2 prekindergarten through grade 12;

3 (C) combining computer-based and online
4 STEM education and training with apprentice-
5 ships, mentoring, or other applied learning ar-
6 rangements;

7 (D) leveraging online programs to supple-
8 ment STEM studies for rural students that
9 need physical and academic accommodation;
10 and

11 (E) any other activity the Director deter-
12 mines will accomplish the goals of this sub-
13 section.

14 (3) EVALUATIONS.—All proposals for grants
15 under this subsection shall include an evaluation
16 plan that includes the use of outcome-oriented meas-
17 ures to assess the impact and efficacy of the grant.
18 Each recipient of a grant under this subsection shall
19 include results from these evaluative activities in an-
20 nual and final projects.

21 (4) ACCOUNTABILITY AND DISSEMINATION.—

22 (A) EVALUATION REQUIRED.—The Direc-
23 tor shall evaluate the portfolio of grants award-
24 ed under this subsection. Such evaluation
25 shall—

1 (i) use a common set of benchmarks
2 and tools to assess the results of research
3 conducted under such grants and identify
4 best practices; and

5 (ii) to the extent practicable, integrate
6 findings from activities carried out pursu-
7 ant to research conducted under this sub-
8 section, with respect to the pursuit of ca-
9 reers and degrees in STEM, with those ac-
10 tivities carried out pursuant to other re-
11 search on serving rural students and com-
12 munities.

13 (B) REPORT ON EVALUATIONS.—Not later
14 than 180 days after the completion of the eval-
15 uation under subparagraph (A), the Director
16 shall submit to Congress and make widely avail-
17 able to the public a report that includes—

18 (i) the results of the evaluation; and
19 (ii) any recommendations for adminis-
20 trative and legislative action that could op-
21 timize the effectiveness of the grants
22 awarded under this subsection.

23 (5) COORDINATION.—In carrying out this sub-
24 section, the Director shall, for purposes of enhancing
25 program effectiveness and avoiding duplication of ac-

1 activities, consult, cooperate, and coordinate with the
2 programs and policies of other relevant Federal
3 agencies.

4 (d) NATIONAL ACADEMIES OF SCIENCES, ENGINEER-
5 ING, AND MEDICINE EVALUATION.—

6 (1) STUDY.—Not later than 12 months after
7 the date of enactment of this Act, the Director shall
8 enter into an agreement with the National Acad-
9 emies of Sciences, Engineering, and Medicine under
10 which the National Academies agree to conduct an
11 evaluation and assessment that—

12 (A) evaluates the quality and quantity of
13 current Federal programming and research di-
14 rected at examining STEM education for stu-
15 dents in prekindergarten through grade 12 and
16 workforce development in rural areas;

17 (B) in coordination with the Federal Com-
18 munications Commission, assesses the impact
19 that the scarcity of broadband connectivity in
20 rural communities, and the affordability of
21 broadband connectivity, have on STEM and
22 technical literacy for students in prekind-
23 garten through grade 12 in rural areas;

24 (C) assesses the core research and data
25 needed to understand the challenges rural areas

1 are facing in providing quality STEM education
2 and workforce development;

3 (D) makes recommendations for action at
4 the Federal, State, and local levels for improv-
5 ing STEM education, including online STEM
6 education, for students in prekindergarten
7 through grade 12 and workforce development in
8 rural areas; and

9 (E) makes recommendations to inform the
10 implementation of programs in subsections (a),
11 (b), and (c).

12 (2) REPORT TO DIRECTOR.—The agreement en-
13 tered into under paragraph (1) shall require the Na-
14 tional Academies of Sciences, Engineering, and Med-
15 icine, not later than 24 months after the date of en-
16 actment of this Act, to submit to the Director a re-
17 port on the study conducted under such paragraph,
18 including the National Academies' findings and rec-
19 ommendations.

20 (e) GAO REVIEW.—Not later than 3 years after the
21 date of enactment of this Act, the Comptroller General
22 of the United States shall conduct a study on the engage-
23 ment of rural populations in Federal STEM programs and
24 submit to Congress a report that includes—

1 (1) an assessment of how Federal STEM edu-
2 cation programs are serving rural populations;

3 (2) a description of initiatives carried out by
4 Federal agencies that are targeted at supporting
5 STEM education in rural areas;

6 (3) an assessment of what is known about the
7 impact and effectiveness of Federal investments in
8 STEM education programs that are targeted to
9 rural areas; and

10 (4) an assessment of challenges that State and
11 Federal STEM education programs face in reaching
12 rural population centers.

13 (f) CAPACITY BUILDING THROUGH EPSCoR.—Sec-
14 tion 517(f)(2) of the America COMPETES Reauthoriza-
15 tion Act of 2010 (42 U.S.C. 1862p-9(f)(2)) is amended—

16 (1) in subparagraph (A), by striking “and” at
17 the end; and

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

19 “(C) to increase the capacity of rural com-
20 munities to provide quality STEM education
21 and STEM workforce development program-
22 ming to students and teachers; and”.

23 (g) NIST ENGAGEMENT WITH RURAL COMMU-
24 NITIES.—

1 (1) MEP OUTREACH.—Section 25 of the Na-
2 tional Institute of Standards and Technology Act
3 (15 U.S.C. 278k) is amended—

4 (A) in subsection (c)—

5 (i) in paragraph (6), by striking
6 “community colleges and area career and
7 technical education schools” and inserting
8 the following: “secondary schools (as de-
9 fined in section 8101 of the Elementary
10 and Secondary Education Act of 1965 (20
11 U.S.C. 7801)), community colleges, and
12 area career and technical education
13 schools, including those in underserved and
14 rural communities,”; and

15 (ii) in paragraph (7)—

16 (I) by striking “and local col-
17 leges” and inserting the following:
18 “local high schools and local colleges,
19 including those in underserved and
20 rural communities,”; and

21 (II) by inserting “or other ap-
22 plied learning opportunities” after
23 “apprenticeships”; and

24 (B) in subsection (d)(3), by striking “,
25 community colleges, and area career and tech-

1 nical education schools,” and inserting the fol-
2 lowing: “and local high schools, community col-
3 leges, and area career and technical education
4 schools, including those in underserved and
5 rural communities,”.

6 (2) RURAL CONNECTIVITY PRIZE COMPETI-
7 TION.—

8 (A) PRIZE COMPETITION.—Pursuant to
9 section 24 of the Stevenson-Wydler Technology
10 Innovation Act of 1980 (15 U.S.C. 3719), the
11 Secretary of Commerce shall carry out a pro-
12 gram to award prizes competitively to stimulate
13 research and development of creative tech-
14 nologies to support the deployment of afford-
15 able and reliable broadband connectivity in
16 rural communities, including unserved rural
17 communities.

18 (B) PLAN FOR DEPLOYMENT IN RURAL
19 COMMUNITIES.—Each proposal submitted pur-
20 suant to subparagraph (A) shall include a pro-
21 posed plan for deployment of the technology
22 that is the subject of such proposal.

23 (C) PRIZE AMOUNT.—In carrying out the
24 program under subparagraph (A), the Secretary

1 may award not more than a total of \$5,000,000
2 to one or more winners of the prize competition.

3 (D) REPORT.—Not later than 60 days
4 after the date on which a prize is awarded
5 under the prize competition, the Secretary shall
6 submit to the relevant committees of Congress
7 a report that describes the winning proposal of
8 the prize competition.

9 (E) CONSULTATION.—In carrying out the
10 program under this paragraph, the Secretary
11 shall consult with the Federal Communications
12 Commission and the heads of relevant depart-
13 ments and agencies of the Federal Government.

14 **SEC. 211. QUANTUM NETWORK INFRASTRUCTURE AND**
15 **WORKFORCE DEVELOPMENT ACT.**

16 (a) DEFINITIONS.—In this section:

17 (1) ESEA DEFINITIONS.—The terms “elemen-
18 tary school”, “high school”, “local educational agen-
19 cy”, and “secondary school” have the meanings
20 given those terms in section 8101 of the Elementary
21 and Secondary Education Act of 1965 (20 U.S.C.
22 7801).

23 (2) APPROPRIATE COMMITTEES OF CON-
24 GRESS.—The term “appropriate committees of Con-
25 gress” has the meaning given such term in section

1 2 of the National Quantum Initiative Act (15 U.S.C.
2 8801).

3 (3) INTERAGENCY WORKING GROUP.—The term
4 “Interagency Working Group” means the QIS
5 Workforce Working Group under the Subcommittee
6 on Quantum Information Science of the National
7 Science and Technology Council.

8 (4) Q2WORK PROGRAM.—The term “Q2Work
9 Program” means the Q2Work Program supported
10 by the Foundation.

11 (5) QUANTUM INFORMATION SCIENCE.—The
12 term “quantum information science” has the mean-
13 ing given such term in section 2 of the National
14 Quantum Initiative Act (15 U.S.C. 8801).

15 (6) STEM.—The term “STEM” has the mean-
16 ing given the term in section 2 of the America COM-
17 PETES Reauthorization Act of 2010 (42 U.S.C.
18 6621 note).

19 (b) QUANTUM NETWORKING WORKING GROUP RE-
20 PORT ON QUANTUM NETWORKING AND COMMUNICA-
21 TIONS.—

22 (1) REPORT.—Not later than 3 years after the
23 date of the enactment of this Act, the Quantum Net-
24 working Working Group within the Subcommittee on
25 Quantum Information Science of the National

1 Science and Technology Council shall submit to the
2 appropriate committees of Congress a report detail-
3 ing a plan for the advancement of quantum net-
4 working and communications technology in the
5 United States, building on “A Strategic Vision for
6 America’s Quantum Networks” and “A Coordinated
7 Approach for Quantum Networking Research”.

8 (2) REQUIREMENTS.—The report under para-
9 graph (1) shall include—

10 (A) a framework for interagency collabora-
11 tion on the advancement of quantum net-
12 working and communications research;

13 (B) a plan for interagency collaboration on
14 the development and drafting of international
15 standards for quantum communications tech-
16 nology, including standards relating to—

17 (i) quantum cryptography and post-
18 quantum classical cryptography;

19 (ii) network security;

20 (iii) quantum network infrastructure;

21 (iv) transmission of quantum informa-
22 tion through optical fiber networks; and

23 (v) any other technologies considered
24 appropriate by the Working Group;

1 (C) a proposal for the protection of na-
2 tional security interests relating to the advance-
3 ment of quantum networking and communica-
4 tions technology;

5 (D) recommendations to Congress for leg-
6 islative action relating to the framework, plan,
7 and proposal set forth pursuant to subpara-
8 graphs (A), (B), and (C), respectively; and

9 (E) such other matters as the Working
10 Group considers necessary to advance the secu-
11 rity of communications and network infrastruc-
12 ture, remain at the forefront of scientific dis-
13 covery in the quantum information science do-
14 main, and transition quantum information
15 science research into the emerging quantum
16 technology economy.

17 (c) QUANTUM NETWORKING AND COMMUNICATIONS
18 RESEARCH.—

19 (1) RESEARCH.—The Under Secretary of Com-
20 merce for Standards and Technology shall carry out
21 research to facilitate the development and standard-
22 ization of quantum networking and communications
23 technologies and applications, including research on
24 the following:

1 (A) Quantum cryptography and post-quantum
2 classical cryptography.

3 (B) Quantum repeater technology.

4 (C) Quantum network traffic management.

5 (D) Quantum transduction.

6 (E) Long baseline entanglement and
7 teleportation.

8 (F) Such other technologies, processes, or
9 applications as the Under Secretary considers
10 appropriate.

11 (2) IMPLEMENTATION.—The Under Secretary
12 shall carry out the research required by paragraph
13 (1) through such divisions, laboratories, offices and
14 programs of the National Institute of Standards and
15 Technology as the Under Secretary considers appropriate and actively engaged in activities relating to
16 quantum information science.
17

18 (3) DEVELOPMENT OF STANDARDS.—For quantum
19 technologies deemed by the Under Secretary to
20 be at a readiness level sufficient for standardization,
21 the Under Secretary shall provide technical review
22 and assistance to such other Federal agencies as the
23 Under Secretary considers appropriate for the development of quantum network infrastructure standards.
24
25

1 (4) AUTHORIZATION OF APPROPRIATIONS.—

2 (A) IN GENERAL.—There is authorized to
3 be appropriated to the Scientific and Technical
4 Research and Services account of the National
5 Institute of Standards and Technology to carry
6 out this subsection \$10,000,000 for each of fis-
7 cal years 2022 through 2026.

8 (B) SUPPLEMENT, NOT SUPPLANT.—The
9 amounts authorized to be appropriated under
10 subparagraph (A) shall supplement and not
11 supplant amounts already appropriated to the
12 account described in such subparagraph.

13 (d) QUANTUM WORKFORCE EVALUATION AND AC-
14 CELERATION.—

15 (1) IDENTIFICATION OF GAPS.—The Founda-
16 tion shall enter into an agreement with the National
17 Academies of Sciences, Engineering, and Medicine to
18 conduct a study of ways to support the next genera-
19 tion of quantum leaders.

20 (2) SCOPE OF STUDY.—In carrying out the
21 study described in paragraph (1), the National
22 Academies of Sciences, Engineering, and Medicine
23 shall identify—

24 (A) education gaps, including foundational
25 courses in STEM and areas in need of stand-

1 ardization, in elementary school, middle school,
2 high school, and higher education curricula,
3 that need to be rectified in order to prepare
4 students to participate in the quantum work-
5 force;

6 (B) the skills and workforce needs of in-
7 dustry, specifically identifying the cross-discipli-
8 nary academic degrees or academic courses nec-
9 essary—

10 (i) to qualify students for multiple ca-
11 reer pathways in quantum information
12 sciences and related fields;

13 (ii) to ensure the United States is
14 competitive in the field of quantum infor-
15 mation science while preserving national
16 security; and

17 (iii) to support the development of
18 quantum applications; and

19 (C) the resources and materials needed to
20 train elementary, middle, and high school edu-
21 cators to effectively teach curricula relevant to
22 the development of a quantum workforce.

23 (3) REPORTS.—

24 (A) EXECUTIVE SUMMARY.—Not later
25 than 2 years after the date of enactment of this

1 Act, the National Academies of Science, Engi-
2 neering, and Medicine shall prepare and submit
3 to the Foundation, and programs or projects
4 funded by the Foundation, an executive sum-
5 mary of progress regarding the study conducted
6 under paragraph (1) that outlines the findings
7 of the Academies as of such date.

8 (B) REPORT.—Not later than 3 years after
9 the date of enactment of this Act, the National
10 Academies of Science, Engineering, and Medi-
11 cine shall prepare and submit a report con-
12 taining the results of the study conducted under
13 paragraph (1) to Congress, the Foundation,
14 and programs or projects funded by the Foun-
15 dation that are relevant to the acceleration of a
16 quantum workforce.

17 (e) INCORPORATING QISE INTO STEM CUR-
18 RICULUM.—

19 (1) IN GENERAL.—The Foundation shall,
20 through programs carried out or supported by the
21 Foundation, prioritize the better integration of
22 quantum information science and engineering (re-
23 ferred to in this subsection as “QISE”) into the
24 STEM curriculum for each grade level from kinder-
25 garten through grade 12, and community colleges.

1 (2) REQUIREMENTS.—The curriculum integra-
2 tion under paragraph (1) shall include—

3 (A) methods to conceptualize QISE for ele-
4 mentary, middle, and high school curricula;

5 (B) methods for strengthening
6 foundational mathematics and science curricula;

7 (C) age-appropriate materials that apply
8 the principles of quantum information science
9 in STEM fields;

10 (D) recommendations for the standardiza-
11 tion of key concepts, definitions, and curriculum
12 criteria across government, academia, and in-
13 dustry; and

14 (E) materials that specifically address the
15 findings and outcomes of the study conducted
16 under subsection (d) and strategies to account
17 for the skills and workforce needs identified
18 through the study.

19 (3) COORDINATION.—In carrying out this sub-
20 section, the Foundation, including the STEM Edu-
21 cation Advisory Panel and the Advancing Informal
22 STEM Learning program and through the Founda-
23 tion’s role in the National Q–12 Education Partner-
24 ship and the programs such as the Q2Work Pro-
25 gram, shall coordinate with the Office of Science and

1 Technology Policy, EPSCoR eligible universities, and
2 any Federal agencies or working groups determined
3 necessary by the Foundation.

4 (4) REVIEW.—In implementing this subsection,
5 the Foundation shall support the community expansion
6 of the related report entitled “Key Concepts for
7 Future QIS Learners” (May 2020).

8 (f) QUANTUM EDUCATION PILOT PROGRAM.—

9 (1) IN GENERAL.—The Foundation, through
10 the Foundation’s role in the National Q–12 Edu-
11 cation Partnership and programs such as Q2Work
12 Program, and in coordination with the Directorate
13 for Education and Human Resources, shall carry
14 out a pilot program, to be known as the “Next Gen-
15 eration Quantum Leaders Pilot Program”, to pro-
16 vide funding for the education and training of the
17 next generation of students in the fundamental prin-
18 ciples of quantum mechanics.

19 (2) REQUIREMENTS.—

20 (A) IN GENERAL.—In carrying out the
21 pilot program required by paragraph (1), the
22 Foundation shall—

23 (i) publish a call for applications
24 through the National Q–12 Education
25 Partnership website (or similar website)

1 for participation in the pilot program from
2 elementary schools, secondary schools, and
3 State educational agencies as determined
4 appropriate by the Foundation;

5 (ii) coordinate with educational service
6 agencies, associations that support STEM
7 educators or local educational agencies,
8 and partnerships through the Q-12 Edu-
9 cation Partnership, to encourage elemen-
10 tary schools, secondary schools, and State
11 educational agencies to participate in the
12 program as determined appropriate by the
13 Foundation;

14 (iii) accept applications in advance of
15 the academic year in which the program
16 shall begin; and

17 (iv) select elementary schools, sec-
18 ondary schools, and State educational
19 agencies to participate in the program, as
20 determined appropriate by the Foundation,
21 in accordance with qualifications deter-
22 mined by the QIS Workforce Working
23 Group, in coordination with the National
24 Q-12 Education Partnership.

1 (B) PRIORITIZATION.—In selecting pro-
2 gram participants under subparagraph (A)(iv),
3 the Director of the Foundation shall give pri-
4 ority to elementary schools, secondary schools,
5 and local educational agencies located in juris-
6 dictions eligible to participate in the Estab-
7 lished Program to Stimulate Competitive Re-
8 search (commonly known as “EPSCoR”), in-
9 cluding Tribal and rural elementary, middle,
10 and high schools in such jurisdictions.

11 (3) CONSULTATION.—The Foundation shall
12 carry out this subsection in consultation with the
13 QIS Workforce Working Group and the Advancing
14 Informal STEM Learning Program.

15 (4) REPORTING.—

16 (A) REPORT AND SELECTED PARTICI-
17 PANTS.—Not later than 90 days following the
18 closing of the application period under para-
19 graph (2)(A)(iii), the Director of the Founda-
20 tion shall submit to Congress a report on the
21 educational institutions selected to participate
22 in the pilot program required under paragraph
23 (1), specifying the percentage from nontradi-
24 tional geographies, including Tribal or rural
25 school districts.

1 (B) REPORT ON IMPLEMENTATION OF
2 CURRICULUM.—Not later than 2 years after the
3 date of enactment of this Act, the Director of
4 the Foundation shall submit to Congress a re-
5 port on implementation of the curricula and
6 materials under the pilot program, including
7 the feasibility and advisability of expanding
8 such pilot program to include additional edu-
9 cational institutions beyond those originally se-
10 lected to participate in the pilot program.

11 (5) AUTHORIZATION OF APPROPRIATIONS.—
12 There is authorized to be appropriated such funds as
13 may be necessary to carry out this subsection.

14 (6) TERMINATION.—This subsection shall cease
15 to have effect on the date that is 3 years after the
16 date of the enactment of this Act.

17 **SEC. 212. SUPPORTING EARLY-CAREER RESEARCHERS ACT.**

18 (a) SHORT TITLE.—This section may be cited as the
19 “Supporting Early-Career Researchers Act”.

20 (b) IN GENERAL.—The Director may establish a 2-
21 year pilot program to award grants to highly qualified
22 early-career investigators to carry out an independent re-
23 search program at the institution of higher education or
24 participating Federal research facility chosen by such in-
25 vestigator, to last for a period not greater than 2 years.

1 (c) PRIORITY FOR BROADENING PARTICIPATION.—In
2 awarding grants under this section, the Director shall give
3 priority to—

4 (1) early-career investigators who are from
5 groups that are underrepresented in science, tech-
6 nology, engineering, and mathematics research;

7 (2) early-career investigators who choose to
8 carry out independent research at a minority-serving
9 institution; and

10 (3) early-career investigators in a jurisdiction
11 eligible to participate under section 113 of the Na-
12 tional Science Foundation Authorization Act of 1988
13 (42 U.S.C. 1862g).

14 (d) REPORTS FROM GRANTEES.—Not later than 180
15 days after the end of the pilot program under this section,
16 each early-career investigator who receives a grant under
17 the pilot program shall submit a report to the Director
18 that describes how the early-career investigator used the
19 grant funds.

20 (e) REPORT TO CONGRESS.—Not later than 180 days
21 after the deadline for the submission of the reports de-
22 scribed in subsection (d), the Director shall submit a re-
23 port to the Committee on Commerce, Science, and Trans-
24 portation of the Senate and the Committee on Science,
25 Space, and Technology of the House of Representatives

1 that contains a summary of the uses of grant funds under
2 this section and the impact of the pilot program under
3 this section.

4 **SEC. 213. ADVANCING PRECISION AGRICULTURE CAPABILI-**
5 **TIES ACT.**

6 (a) **SHORT TITLE.**—This section may be cited as the
7 “Advancing IoT for Precision Agriculture Act of 2021”.

8 (b) **PURPOSE.**—It is the purpose of this section to
9 promote scientific research and development opportunities
10 for connected technologies that advance precision agri-
11 culture capabilities.

12 (c) **FOUNDATION DIRECTIVE ON AGRICULTURAL**
13 **SENSOR RESEARCH.**—In awarding grants under the sen-
14 sor systems and networked systems programs of the Foun-
15 dation, the Director shall include in consideration of port-
16 folio balance research and development on sensor
17 connectivity in environments of intermittent connectivity
18 and intermittent computation—

19 (1) to improve the reliable use of advance sens-
20 ing systems in rural and agricultural areas; and

21 (2) that considers—

22 (A) direct gateway access for locally stored
23 data;

24 (B) attenuation of signal transmission;

25 (C) loss of signal transmission; and

1 (D) at-scale performance for wireless
2 power.

3 (d) UPDATING CONSIDERATIONS FOR PRECISION AG-
4 RICULTURE TECHNOLOGY WITHIN THE NSF ADVANCED
5 TECHNICAL EDUCATION PROGRAM.—Section 3 of the Sci-
6 entific and Advanced-Technology Act of 1992 (42 U.S.C.
7 1862i), as amended by section 205, is further amended—

8 (1) in subsection (d)(2), by adding at the end
9 the following:

10 “(G) applications that incorporate distance
11 learning tools and approaches.”; and

12 (2) in subsection (e)(3)—

13 (A) in subparagraph (C), by striking
14 “and” after the semicolon;

15 (B) in subparagraph (D), by striking the
16 period at the end and inserting “; and”; and

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

18 “(E) applications that incorporate distance
19 learning tools and approaches.”.

20 (e) GAO REVIEW.—Not later than 18 months after
21 the date of enactment of this section, the Comptroller
22 General of the United States shall provide—

23 (1) a technology assessment of precision agri-
24 culture technologies, such as the existing use of—

1 (A) sensors, scanners, radio-frequency
2 identification, and related technologies that can
3 monitor soil properties, irrigation conditions,
4 and plant physiology;

5 (B) sensors, scanners, radio-frequency
6 identification, and related technologies that can
7 monitor livestock activity and health;

8 (C) network connectivity and wireless com-
9 munications that can securely support digital
10 agriculture technologies in rural and remote
11 areas;

12 (D) aerial imagery generated by satellites
13 or unmanned aerial vehicles;

14 (E) ground-based robotics;

15 (F) control systems design and
16 connectivity, such as smart irrigation control
17 systems; and

18 (G) data management software and ad-
19 vanced analytics that can assist decision mak-
20 ing and improve agricultural outcomes; and

21 (2) a review of Federal programs that provide
22 support for precision agriculture research, develop-
23 ment, adoption, education, or training, in existence
24 on the date of enactment of this section.

1 **SEC. 214. CRITICAL MINERALS MINING RESEARCH.**

2 (a) CRITICAL MINERALS MINING RESEARCH AND
3 DEVELOPMENT AT THE FOUNDATION.—

4 (1) IN GENERAL.—In order to support supply
5 chain resiliency, the Director shall issue awards, on
6 a competitive basis, to institutions of higher edu-
7 cation or nonprofit organizations (or consortia of
8 such institutions or organizations) to support basic
9 research that will accelerate innovation to advance
10 critical minerals mining strategies and technologies
11 for the purpose of making better use of domestic re-
12 sources and eliminating national reliance on min-
13 erals and mineral materials that are subject to sup-
14 ply disruptions.

15 (2) USE OF FUNDS.—Activities funded by an
16 award under this section may include—

17 (A) advancing mining research and devel-
18 opment activities to develop new mapping and
19 mining technologies and techniques, including
20 advanced critical mineral extraction and pro-
21 duction, to improve existing or to develop new
22 supply chains of critical minerals, and to yield
23 more efficient, economical, and environmentally
24 benign mining practices;

25 (B) advancing critical mineral processing
26 research activities to improve separation,

1 alloying, manufacturing, or recycling techniques
2 and technologies that can decrease the energy
3 intensity, waste, potential environmental im-
4 pact, and costs of those activities;

5 (C) conducting long-term earth observation
6 of reclaimed mine sites, including the study of
7 the evolution of microbial diversity at such
8 sites;

9 (D) examining the application of artificial
10 intelligence for geological exploration of critical
11 minerals, including what size and diversity of
12 data sets would be required;

13 (E) examining the application of machine
14 learning for detection and sorting of critical
15 minerals, including what size and diversity of
16 data sets would be required;

17 (F) conducting detailed isotope studies of
18 critical minerals and the development of more
19 refined geologic models; or

20 (G) providing training and research oppor-
21 tunities to undergraduate and graduate stu-
22 dents to prepare the next generation of mining
23 engineers and researchers.

24 (b) CRITICAL MINERALS INTERAGENCY SUB-
25 COMMITTEE.—

1 (1) IN GENERAL.—In order to support supply
2 chain resiliency, the Critical Minerals Subcommittee
3 of the National Science and Technology Council (re-
4 ferred to in this subsection as the “Subcommittee”)
5 shall coordinate Federal science and technology ef-
6 forts to ensure secure and reliable supplies of critical
7 minerals to the United States.

8 (2) PURPOSES.—The purposes of the Sub-
9 committee shall be—

10 (A) to advise and assist the Committee on
11 Homeland and National Security and the Na-
12 tional Science and Technology Council on
13 United States policies, procedures, and plans as
14 it relates to critical minerals, including—

15 (i) Federal research, development, and
16 deployment efforts to optimize methods for
17 extractions, concentration, separation, and
18 purification of conventional, secondary,
19 and unconventional sources of critical min-
20 erals;

21 (ii) efficient use and reuse of critical
22 minerals;

23 (iii) the critical minerals workforce of
24 the United States; and

1 (iv) United States private industry in-
2 vestments in innovation and technology
3 transfer from federally funded science and
4 technology;

5 (B) to identify emerging opportunities,
6 stimulate international cooperation, and foster
7 the development of secure and reliable supply
8 chains of critical minerals;

9 (C) to ensure the transparency of informa-
10 tion and data related to critical minerals; and

11 (D) to provide recommendations on coordi-
12 nation and collaboration among the research,
13 development, and deployment programs and ac-
14 tivities of Federal agencies to promote a secure
15 and reliable supply of critical minerals nec-
16 essary to maintain national security, economic
17 well-being, and industrial production.

18 (3) RESPONSIBILITIES.—In carrying out para-
19 graphs (1) and (2), the Subcommittee may, taking
20 into account the findings and recommendations of
21 relevant advisory committees—

22 (A) provide recommendations on how Fed-
23 eral agencies may improve the topographic, geo-
24 logic, and geophysical mapping of the United
25 States and improve the discoverability, accessi-

1 bility, and usability of the resulting and existing
2 data, to the extent permitted by law and subject
3 to appropriate limitation for purposes of privacy
4 and security;

5 (B) assess the progress toward developing
6 critical minerals recycling and reprocessing
7 technologies, and technological alternatives to
8 critical minerals;

9 (C) examine options for accessing and de-
10 veloping critical minerals through investment
11 and trade with allies and partners of the United
12 States and provide recommendations;

13 (D) evaluate and provide recommendations
14 to incentivize the development and use of ad-
15 vances in science and technology in the private
16 industry;

17 (E) assess the need for and make rec-
18 ommendations to address the challenges the
19 United States critical minerals supply chain
20 workforce faces, including—

21 (i) aging and retiring personnel and
22 faculty;

23 (ii) public perceptions about the na-
24 ture of mining and mineral processing; and

1 (iii) foreign competition for United
2 States talent;

3 (F) develop, and update as necessary, a
4 strategic plan to guide Federal programs and
5 activities to enhance—

6 (i) scientific and technical capabilities
7 across critical mineral supply chains, in-
8 cluding a roadmap that identifies key re-
9 search and development needs and coordi-
10 nates ongoing activities for source diver-
11 sification, more efficient use, recycling, and
12 substitution for critical minerals; and

13 (ii) cross-cutting mining science, data
14 science techniques, materials science, man-
15 ufacturing science and engineering, com-
16 putational modeling, and environmental
17 health and safety research and develop-
18 ment; and

19 (G) report to the appropriate committees
20 of Congress on activities and findings under
21 this subsection.

22 (c) DEFINITION OF CRITICAL MINERAL.—In this sec-
23 tion, the term “critical mineral” includes any host mineral
24 of such critical mineral (within the meaning of those terms

1 in section 7002 of title VII of division Z of the Consoli-
2 dated Appropriations Act, 2021 (Public Law 116-260).

3 **SEC. 215. CAREGIVER POLICIES.**

4 (a) OSTP GUIDANCE.—Not later than 6 months
5 after the date of enactment of this Act, the Director of
6 the Office of Science and Technology Policy, in consulta-
7 tion with relevant agencies, shall provide guidance to each
8 Federal science agency to establish policies that—

9 (1) apply to all—

10 (A) research awards granted by such agen-
11 cy; and

12 (B) principal investigators of such research
13 who have caregiving responsibilities, including
14 care for a newborn or newly adopted child and
15 care for an immediate family member with a se-
16 rious health condition; and

17 (2) offer, to the extent feasible—

18 (A) flexibility in timing for the initiation of
19 approved research awards granted by such
20 agency;

21 (B) no-cost extensions of such research
22 awards; and

23 (C) grant supplements, as appropriate, to
24 research awards to sustain research activities
25 conducted under such awards.

1 (b) UNIFORMITY OF GUIDANCE.—In providing guid-
2 ance under subsection (a), the Director of the Office of
3 Science and Technology Policy shall encourage, to the ex-
4 tent practicable, uniformity and consistency in the policies
5 established pursuant to such guidance across all Federal
6 science agencies.

7 (c) ESTABLISHMENT OF POLICIES.—To the extent
8 practicable and consistent with guidance issued under sub-
9 section (a), Federal science agencies shall—

10 (1) maintain or develop and implement policies
11 for individuals described in paragraph (1)(B) of
12 such subsection; and

13 (2) broadly disseminate such policies to current
14 and potential awardees.

15 (d) DATA ON USAGE.—Federal science agencies shall
16 consider—

17 (1) collecting data on the usage of the policies
18 under subsection (c), at both institutions of higher
19 education and Federal laboratories; and

20 (2) reporting such data on an annual basis to
21 the Director of the Office of Science and Technology
22 Policy in such form as required by the Director of
23 the Office of Science and Technology Policy.

24 (e) SAVINGS.—

1 (1) PRIVACY.—This section shall be carried out
2 in accordance with all relevant privacy laws.

3 (2) INSTITUTIONS.—This section shall not af-
4 fect the grantee institution’s institutional policies.

5 (f) DEFINITION OF FEDERAL SCIENCE AGENCY.—In
6 this section, the term “Federal science agency” means any
7 Federal agency with an annual extramural research ex-
8 penditure of over \$100,000,000.

9 **SEC. 216. PRESIDENTIAL AWARDS.**

10 (a) IN GENERAL.—The President is authorized to
11 make Presidential Awards for Excellence in Technology
12 and Science Research to researchers in underrepresented
13 populations, including women and underrepresented mi-
14 norities, who have demonstrated outstanding achievements
15 in technology or science research.

16 (b) NUMBER AND DISTRIBUTION OF AWARD RECIPI-
17 ENTS.—If the President elects to make Presidential
18 Awards for Excellence in Technology and Science Re-
19 search under subsection (a), the President shall make no
20 fewer than 104 Awards. In selecting researchers for the
21 Awards, the President shall select at least 2 researchers—

22 (1) from each of the States;

23 (2) from the District of Columbia; and

24 (3) from the Commonwealth of Puerto Rico.

1 (c) SELECTION PROCEDURES.—The President shall
2 carry out this section, including the establishment of the
3 selection procedures, after consultation with the Director
4 of the Office of Science and Technology Policy and other
5 appropriate officials of Federal agencies.

6 **SEC. 217. BIOECONOMY RESEARCH AND DEVELOPMENT**
7 **ACT OF 2021.**

8 (a) SHORT TITLE.—This section may be cited as the
9 “Bioeconomy Research and Development Act of 2021”.

10 (b) FINDINGS.—The Congress makes the following
11 findings:

12 (1) Cellular and molecular processes may be
13 used, mimicked, or redesigned to develop new prod-
14 ucts, processes, and systems that improve societal
15 well-being, strengthen national security, and con-
16 tribute to the economy.

17 (2) Engineering biology relies on a workforce
18 with a diverse and unique set of skills combining the
19 biological, physical, chemical, and information
20 sciences and engineering.

21 (3) Long-term research and development is nec-
22 essary to create breakthroughs in engineering biol-
23 ogy. Such research and development requires govern-
24 ment investment, as many of the benefits are too
25 distant or uncertain for industry to support alone.

1 (4) Research is necessary to inform evidence-
2 based governance of engineering biology and to sup-
3 port the growth of the engineering biology industry.

4 (5) The Federal Government has an obligation
5 to ensure that ethical, legal, environmental, safety,
6 security, and societal implications of its science and
7 technology research and investment follows policies
8 of responsible innovation and fosters public trans-
9 parency.

10 (6) The Federal Government can play an im-
11 portant role by facilitating the development of tools
12 and technologies to further advance engineering biol-
13 ogy, including user facilities, by facilitating public-
14 private partnerships, by supporting risk research,
15 and by facilitating the commercial application in the
16 United States of research funded by the Federal
17 Government.

18 (7) The United States led the development of
19 the science and engineering techniques that created
20 the field of engineering biology, but due to increas-
21 ing international competition, the United States is
22 at risk of losing its competitive advantage if it does
23 not strategically invest the necessary resources.

24 (8) A National Engineering Biology Initiative
25 can serve to establish new research directions and

1 technology goals, improve interagency coordination
2 and planning processes, drive technology transfer to
3 the private sector, and help ensure optimal returns
4 on the Federal investment.

5 (c) DEFINITIONS.—In this section:

6 (1) BIOMANUFACTURING.—The term “bio-
7 manufacturing” means the utilization of biological
8 systems to develop new and advance existing prod-
9 ucts, tools, and processes at commercial scale.

10 (2) ENGINEERING BIOLOGY.—The term “engi-
11 neering biology” means the application of engineer-
12 ing design principles and practices to biological sys-
13 tems, including molecular and cellular systems, to
14 advance fundamental understanding of complex nat-
15 ural systems and to enable novel or optimize func-
16 tions and capabilities.

17 (3) INITIATIVE.—The term “Initiative” means
18 the National Engineering Biology Research and De-
19 velopment Initiative established under subsection
20 (d).

21 (4) OMICS.—The term “omics” refers to the
22 collective technologies used to explore the roles, rela-
23 tionships, and actions of the various types of mol-
24 ecules that make up the cells of an organism.

1 (d) NATIONAL ENGINEERING BIOLOGY RESEARCH
2 AND DEVELOPMENT INITIATIVE.—

3 (1) IN GENERAL.—The President, acting
4 through the Office of Science and Technology Policy,
5 shall implement a National Engineering Biology Re-
6 search and Development Initiative to advance soci-
7 etal well-being, national security, sustainability, and
8 economic productivity and competitiveness
9 through—

10 (A) advancing areas of research at the
11 intersection of the biological, physical, chemical,
12 data, and computational sciences and engineer-
13 ing to accelerate scientific understanding and
14 technological innovation in engineering biology;

15 (B) advancing areas of biomanufacturing
16 research to optimize, standardize, scale, and de-
17 liver new products and solutions;

18 (C) supporting social and behavioral
19 sciences and economics research that advances
20 the field of engineering biology and contributes
21 to the development and public understanding of
22 new products, processes, and technologies;

23 (D) improving the understanding of engi-
24 neering biology of the scientific and lay public

1 and supporting greater evidence-based public
2 discourse about its benefits and risks;

3 (E) supporting research relating to the
4 risks and benefits of engineering biology, in-
5 cluding under paragraph (4);

6 (F) supporting the development of novel
7 tools and technologies to accelerate scientific
8 understanding and technological innovation in
9 engineering biology;

10 (G) expanding the number of researchers,
11 educators, and students and a retooled work-
12 force with engineering biology training, includ-
13 ing from traditionally underrepresented and un-
14 derserved populations;

15 (H) accelerating the translation and com-
16 mercialization of engineering biology research
17 and development by the private sector; and

18 (I) improving the interagency planning and
19 coordination of Federal Government activities
20 related to engineering biology.

21 (2) INITIATIVE ACTIVITIES.—The activities of
22 the Initiative shall include—

23 (A) sustained support for engineering biol-
24 ogy research and development through—

1 (i) grants to fund the work of indi-
2 vidual investigators and teams of investiga-
3 tors, including interdisciplinary teams;

4 (ii) projects funded under joint solici-
5 tations by a collaboration of no fewer than
6 two agencies participating in the Initiative;
7 and

8 (iii) interdisciplinary research centers
9 that are organized to investigate basic re-
10 search questions, carry out technology de-
11 velopment and demonstration activities,
12 and increase understanding of how to scale
13 up engineering biology processes, including
14 biomanufacturing;

15 (B) sustained support for databases and
16 related tools, including—

17 (i) support for curated genomics,
18 epigenomics, and other relevant omics
19 databases, including plant and microbial
20 databases, that are available to researchers
21 to carry out engineering biology research
22 in a manner that does not compromise na-
23 tional security or the privacy or security of
24 information within such databases;

1 (ii) development of standards for such
2 databases, including for curation, inter-
3 operability, and protection of privacy and
4 security;

5 (iii) support for the development of
6 computational tools, including artificial in-
7 telligence tools, that can accelerate re-
8 search and innovation using such data-
9 bases; and

10 (iv) an inventory and assessment of
11 all Federal government omics databases to
12 identify opportunities to improve the utility
13 of such databases, as appropriate and in a
14 manner that does not compromise national
15 security or the privacy and security of in-
16 formation within such databases, and in-
17 form investment in such databases as crit-
18 ical infrastructure for the engineering biol-
19 ogy research enterprise;

20 (C) sustained support for the development,
21 optimization, and validation of novel tools and
22 technologies to enable the dynamic study of mo-
23 lecular processes in situ, including through—

24 (i) research conducted at Federal lab-
25 oratories;

1 (ii) grants to fund the work of inves-
2 tigators at institutions of higher education
3 and other nonprofit research institutions;

4 (iii) incentivized development of re-
5 tooled industrial sites across the country
6 that foster a pivot to modernized engineer-
7 ing biology initiatives; and

8 (iv) awards under the Small Business
9 Innovation Research Program and the
10 Small Business Technology Transfer Pro-
11 gram, as described in section 9 of the
12 Small Business Act (15 U.S.C. 638);

13 (D) support for education and training of
14 undergraduate and graduate students in engi-
15 neering biology, biomanufacturing, bioprocess
16 engineering, and computational science applied
17 to engineering biology and in the related eth-
18 ical, legal, environmental, safety, security, and
19 other societal domains;

20 (E) activities to develop robust mecha-
21 nisms for documenting and quantifying the out-
22 puts and economic benefits of engineering biol-
23 ogy; and

1 (F) activities to accelerate the translation
2 and commercialization of new products, proc-
3 esses, and technologies by—

4 (i) identifying precompetitive research
5 opportunities;

6 (ii) facilitating public-private partner-
7 ships in engineering biology research and
8 development;

9 (iii) connecting researchers, graduate
10 students, and postdoctoral fellows with en-
11 trepreneurship education and training op-
12 portunities; and

13 (iv) supporting proof of concept activi-
14 ties and the formation of startup compa-
15 nies including through programs such as
16 the Small Business Innovation Research
17 Program and the Small Business Tech-
18 nology Transfer Program.

19 (3) EXPANDING PARTICIPATION.—The Initia-
20 tive shall include, to the maximum extent prac-
21 ticable, outreach to primarily undergraduate and mi-
22 nority-serving institutions about Initiative opportuni-
23 ties, and shall encourage the development of re-
24 search collaborations between research-intensive uni-

1 versities and primarily undergraduate and minority-
2 serving institutions.

3 (4) ETHICAL, LEGAL, ENVIRONMENTAL, SAFE-
4 TY, SECURITY, AND SOCIETAL ISSUES.—Initiative ac-
5 tivities shall take into account ethical, legal, environ-
6 mental, safety, security, and other appropriate soci-
7 etal issues by—

8 (A) supporting research, including in the
9 social sciences, and other activities addressing
10 ethical, legal, environmental, and other appro-
11 priate societal issues related to engineering biol-
12 ogy, including integrating research on such top-
13 ics with the research and development in engi-
14 neering biology, and encouraging the dissemina-
15 tion of the results of such research, including
16 through interdisciplinary engineering biology re-
17 search centers described in paragraph
18 (2)(A)(iii);

19 (B) supporting research and other activi-
20 ties related to the safety and security implica-
21 tions of engineering biology, including outreach
22 to increase awareness among Federal research-
23 ers and Federally-funded researchers at institu-
24 tions of higher education about potential safety

1 and security implications of engineering biology
2 research, as appropriate;

3 (C) ensuring that input from Federal and
4 non-Federal experts on the ethical, legal, envi-
5 ronmental, safety, security, and other appro-
6 priate societal issues related to engineering biol-
7 ogy is integrated into the Initiative;

8 (D) ensuring, through the agencies and de-
9 partments that participate in the Initiative, that
10 public input and outreach are integrated into
11 the Initiative by the convening of regular and
12 ongoing public discussions through mechanisms
13 such as workshops, consensus conferences, and
14 educational events, as appropriate; and

15 (E) complying with all applicable provi-
16 sions of Federal law.

17 (e) INITIATIVE COORDINATION.—

18 (1) INTERAGENCY COMMITTEE.—The Presi-
19 dent, acting through the Office of Science and Tech-
20 nology Policy, shall designate an interagency com-
21 mittee to coordinate activities of the Initiative as ap-
22 propriate, which shall be co-chaired by the Office of
23 Science and Technology Policy, and include rep-
24 resentatives from the Foundation, the Department
25 of Energy, the Department of Defense, the National

1 Aeronautics and Space Administration, the National
2 Institute of Standards and Technology, the Environ-
3 mental Protection Agency, the Department of Agri-
4 culture, the Department of Health and Human
5 Services, the Bureau of Economic Analysis, and any
6 other agency that the President considers appro-
7 priate (in this section referred to as the “Inter-
8 agency Committee”). The Director of the Office of
9 Science and Technology Policy shall select an addi-
10 tional co-chairperson from among the members of
11 the Interagency Committee. The Interagency Com-
12 mittee shall oversee the planning, management, and
13 coordination of the Initiative. The Interagency Com-
14 mittee shall—

15 (A) provide for interagency coordination of
16 Federal engineering biology research, develop-
17 ment, and other activities undertaken pursuant
18 to the Initiative;

19 (B) establish and periodically update goals
20 and priorities for the Initiative;

21 (C) develop, not later than 12 months
22 after the date of the enactment of this Act, and
23 update every 3 years thereafter, a strategic plan
24 submitted to the Committee on Science, Space,
25 and Technology and the Committee on Energy

1 and Commerce of the House of Representatives
2 and the Committee on Commerce, Science, and
3 Transportation and the Committee on Health,
4 Education, Labor, and Pensions of the Senate
5 that—

6 (i) guides the activities of the Initia-
7 tive for purposes of meeting the goals and
8 priorities established under (and updated
9 pursuant to) subparagraph (B); and

10 (ii) describes—

11 (I) the Initiative's support for
12 long-term funding for interdisciplinary
13 engineering biology research and de-
14 velopment;

15 (II) the Initiative's support for
16 education and public outreach activi-
17 ties;

18 (III) the Initiative's support for
19 research and other activities on eth-
20 ical, legal, environmental, safety, secu-
21 rity, and other appropriate societal
22 issues related to engineering biology
23 including—

24 (aa) an applied biorisk man-
25 agement research plan;

1 (bb) recommendations for
2 integrating security into biologi-
3 cal data access and international
4 reciprocity agreements;

5 (cc) recommendations for
6 manufacturing restructuring to
7 support engineering biology re-
8 search, development, and scaling-
9 up initiatives; and

10 (dd) an evaluation of exist-
11 ing biosecurity governance poli-
12 cies, guidance, and directives for
13 the purposes of creating an
14 adaptable, evidence-based frame-
15 work to respond to emerging bio-
16 security challenges created by ad-
17 vances in engineering biology;

18 (IV) how the Initiative will con-
19 tribute to moving results out of the
20 laboratory and into application for the
21 benefit of society and United States
22 competitiveness; and

23 (V) how the Initiative will meas-
24 ure and track the contributions of en-
25 gineering biology to United States

1 economic growth and other societal in-
2 dicators;

3 (D) develop a national genomic sequencing
4 strategy to ensure engineering biology research
5 fully leverages plant, animal, and microbe bio-
6 diversity, as appropriate and in a manner that
7 does not compromise national security or the
8 privacy or security of human genetic informa-
9 tion, to enhance long-term innovation and com-
10 petitiveness in engineering biology in the United
11 States;

12 (E) develop a plan to utilize Federal pro-
13 grams, such as the Small Business Innovation
14 Research Program and the Small Business
15 Technology Transfer Program as described in
16 section 9 of the Small Business Act (15 U.S.C.
17 638), in support of the activities described in
18 subsection (d)(2)(C); and

19 (F) in carrying out this subsection, take
20 into consideration the recommendations of the
21 advisory committee established under subsection
22 (f), the results of the workshop convened under
23 subsection (d)(4)(D), existing reports on related
24 topics, and the views of academic, State, indus-
25 try, and other appropriate groups.

1 (2) TRIENNIAL REPORT.—Beginning with fiscal
2 year 2022 and ending in fiscal year 2028, not later
3 than 90 days after submission of the President’s an-
4 nual budget request and every third fiscal year
5 thereafter, the Interagency Committee shall prepare
6 and submit to the Committee on Science, Space, and
7 Technology of the House of Representatives and the
8 Committee on Commerce, Science, and Transpor-
9 tation of the Senate a report that includes—

10 (A) a summarized agency budget in sup-
11 port of the Initiative for the fiscal year to which
12 such budget request applies, for the following 2
13 fiscal years, for the then current fiscal year, in-
14 cluding a breakout of spending for each agency
15 participating in the Program, and for the devel-
16 opment and acquisition of any research facili-
17 ties and instrumentation; and

18 (B) an assessment of how Federal agencies
19 are implementing the plan described in para-
20 graph (1)(C), including—

21 (i) a description of the amount and
22 number of awards made under the Small
23 Business Innovation Research Program
24 and the Small Business Technology Trans-
25 fer Program (as described in section 9 of

1 the Small Business Act (15 U.S.C. 638))
2 in support of the Initiative;

3 (ii) a description of the amount and
4 number of projects funded under joint so-
5 licitations by a collaboration of no fewer
6 than 2 agencies participating in the Initia-
7 tive; and

8 (iii) a description of the effect of the
9 newly funded projects by the Initiative.

10 (3) INITIATIVE OFFICE.—

11 (A) IN GENERAL.—The President shall es-
12 tablish an Initiative Coordination Office, with a
13 Director and full-time staff, which shall—

14 (i) provide technical and administra-
15 tive support to the interagency committee
16 and the advisory committee established
17 under subsection (f);

18 (ii) serve as the point of contact on
19 Federal engineering biology activities for
20 government organizations, academia, in-
21 dustry, professional societies, State govern-
22 ments, interested citizen groups, and oth-
23 ers to exchange technical and pro-
24 grammatic information;

1 (iii) oversee interagency coordination
2 of the Initiative, including by encouraging
3 and supporting joint agency solicitation
4 and selection of applications for funding of
5 activities under the Initiative, as appro-
6 priate;

7 (iv) conduct public outreach, including
8 dissemination of findings and recommenda-
9 tions of the advisory committee established
10 under subsection (f), as appropriate;

11 (v) serve as the coordinator of ethical,
12 legal, environmental, safety, security, and
13 other appropriate societal input; and

14 (vi) promote access to, and early ap-
15 plication of, the technologies, innovations,
16 and expertise derived from Initiative activi-
17 ties to agency missions and systems across
18 the Federal Government, and to United
19 States industry, including startup compa-
20 nies.

21 (B) FUNDING.—The Director of the Office
22 of Science and Technology Policy, in coordina-
23 tion with each participating Federal department
24 and agency, as appropriate, shall develop and
25 annually update an estimate of the funds nec-

1 essary to carry out the activities of the Initia-
2 tive Coordination Office and submit such esti-
3 mate with an agreed summary of contributions
4 from each agency to Congress as part of the
5 President’s annual budget request to Congress.

6 (C) TERMINATION.—The Initiative Coordi-
7 nation Office established under this paragraph
8 shall terminate on the date that is 10 years
9 after the date of the enactment of this Act.

10 (4) RULE OF CONSTRUCTION.—Nothing in this
11 subsection shall be construed to alter the policies,
12 processes, or practices of individual Federal agencies
13 in effect on the day before the date of the enactment
14 of this Act relating to the conduct of biomedical re-
15 search and advanced development, including the so-
16 licitation and review of extramural research pro-
17 posals.

18 (f) ADVISORY COMMITTEE.—

19 (1) IN GENERAL.—The agency co-chair of the
20 interagency committee established in subsection (e)
21 shall, in consultation with the Office of Science and
22 Technology Policy, designate or establish an advisory
23 committee on engineering biology research and de-
24 velopment (in this subsection referred to as the “ad-
25 visory committee”) to be composed of not fewer than

1 12 members, including representatives of research
2 and academic institutions, industry, and nongovern-
3 mental entities, who are qualified to provide advice
4 on the Initiative.

5 (2) ASSESSMENT.—The advisory committee
6 shall assess—

7 (A) the current state of United States
8 competitiveness in engineering biology, includ-
9 ing the scope and scale of United States invest-
10 ments in engineering biology research and de-
11 velopment in the international context;

12 (B) current market barriers to commer-
13 cialization of engineering biology products,
14 processes, and tools in the United States;

15 (C) progress made in implementing the
16 Initiative;

17 (D) the need to revise the Initiative;

18 (E) the balance of activities and funding
19 across the Initiative;

20 (F) whether the strategic plan developed or
21 updated by the interagency committee estab-
22 lished under subsection (e) is helping to main-
23 tain United States leadership in engineering bi-
24 ology;

1 (G) the management, coordination, imple-
2 mentation, and activities of the Initiative; and

3 (H) whether ethical, legal, environmental,
4 safety, security, and other appropriate societal
5 issues are adequately addressed by the Initia-
6 tive.

7 (3) REPORTS.—Beginning not later than 2
8 years after the date of enactment of this Act, and
9 not less frequently than once every 3 years there-
10 after, the advisory committee shall submit to the
11 President, the Committee on Science, Space, and
12 Technology of the House of Representatives, and the
13 Committee on Commerce, Science, and Transpor-
14 tation of the Senate, a report on—

15 (A) the findings of the advisory commit-
16 tee’s assessment under paragraph (2); and

17 (B) the advisory committee’s recommenda-
18 tions for ways to improve the Initiative.

19 (4) APPLICATION OF FEDERAL ADVISORY COM-
20 MITTEE ACT.—Section 14 of the Federal Advisory
21 Committee Act (5 U.S.C. App.) shall not apply to
22 the advisory committee.

23 (5) TERMINATION.—The advisory committee es-
24 tablished under paragraph (1) shall terminate on the

1 date that is 10 years after the date of the enactment
2 of this Act.

3 (g) EXTERNAL REVIEW OF ETHICAL, LEGAL, ENVI-
4 RONMENTAL, SAFETY, SECURITY, AND SOCIETAL
5 ISSUES.—

6 (1) IN GENERAL.—Not later than 6 months
7 after the date of enactment of this Act, the Director
8 shall seek to enter into an agreement with the Na-
9 tional Academies of Sciences, Engineering, and Med-
10 icine to conduct a review, and make recommenda-
11 tions with respect to, the ethical, legal, environ-
12 mental, safety, security, and other appropriate soci-
13 etal issues related to engineering biology research
14 and development. The review shall include—

15 (A) an assessment of the current research
16 on such issues;

17 (B) a description of the research gaps re-
18 lating to such issues;

19 (C) recommendations on how the Initiative
20 can address the research needs identified pursu-
21 ant to subparagraph (B); and

22 (D) recommendations on how researchers
23 engaged in engineering biology can best incor-
24 porate considerations of ethical, legal, environ-
25 mental, safety, security, and other societal

1 issues into the development of research pro-
2 posals and the conduct of research.

3 (2) REPORT TO CONGRESS.—The agreement en-
4 tered into under paragraph (1) shall require the Na-
5 tional Academies of Sciences, Engineering, and Med-
6 icine to, not later than 2 years after the date of the
7 enactment of this Act—

8 (A) submit to the Committee on Science,
9 Space, and Technology of the House of Rep-
10 resentatives and the Committee on Commerce,
11 Science, and Transportation of the Senate a re-
12 port containing the findings and recommenda-
13 tions of the review conducted under paragraph
14 (1); and

15 (B) make a copy of such report available
16 on a publicly accessible website.

17 (h) AGENCY ACTIVITIES.—

18 (1) NATIONAL SCIENCE FOUNDATION.—As part
19 of the Initiative, the Foundation shall—

20 (A) support basic research in engineering
21 biology through individual grants, collaborative
22 grants, and through interdisciplinary research
23 centers;

1 (B) support research on the environmental,
2 legal, ethical, and social implications of engi-
3 neering biology;

4 (C) provide support for research instru-
5 mentation for engineering biology disciplines,
6 including support for research, development, op-
7 timization and validation of novel technologies
8 to enable the dynamic study of molecular proc-
9 esses in situ;

10 (D) support curriculum development and
11 research experiences for secondary, under-
12 graduate, and graduate students in engineering
13 biology and biomanufacturing; and

14 (E) award grants, on a competitive basis,
15 to enable institutions to support graduate stu-
16 dents and postdoctoral fellows who perform
17 some of their engineering biology research in an
18 industry setting.

19 (2) DEPARTMENT OF COMMERCE.—As part of
20 the Initiative, the Director of the National Institute
21 of Standards and Technology shall—

22 (A) establish a bioscience research pro-
23 gram to advance the development of standard
24 reference materials and measurements and to
25 create new data tools, techniques, and processes

1 necessary to advance engineering biology and
2 biomanufacturing;

3 (B) provide access to user facilities with
4 advanced or unique equipment, services, mate-
5 rials, and other resources to industry, institu-
6 tions of higher education, nonprofit organiza-
7 tions, and government agencies to perform re-
8 search and testing; and

9 (C) provide technical expertise to inform
10 the potential development of guidelines or safe-
11 guards for new products, processes, and sys-
12 tems of engineering biology.

13 (3) DEPARTMENT OF ENERGY.—As part of the
14 Initiative, the Secretary of Energy shall—

15 (A) conduct and support research, develop-
16 ment, demonstration, and commercial applica-
17 tion activities in engineering biology, including
18 in the areas of synthetic biology, advanced
19 biofuel development, biobased materials, and
20 environmental remediation;

21 (B) support the development, optimization
22 and validation of novel, scalable tools and tech-
23 nologies to enable the dynamic study of molec-
24 ular processes in situ; and

1 (C) provide access to user facilities with
2 advanced or unique equipment, services, mate-
3 rials, and other resources, including secure ac-
4 cess to high-performance computing, as appro-
5 priate, to industry, institutions of higher edu-
6 cation, nonprofit organizations, and government
7 agencies to perform research and testing.

8 (4) DEPARTMENT OF DEFENSE.—As part of
9 the Initiative, the Secretary of Defense shall—

10 (A) conduct and support research and de-
11 velopment in engineering biology and associated
12 data and information sciences;

13 (B) support curriculum development and
14 research experiences in engineering biology and
15 associated data and information sciences across
16 the military education system, to include service
17 academies, professional military education, and
18 military graduate education; and

19 (C) assess risks of potential national secu-
20 rity and economic security threats relating to
21 engineering biology.

22 (5) NATIONAL AERONAUTICS AND SPACE AD-
23 MINISTRATION.—As part of the Initiative, the Na-
24 tional Aeronautics and Space Administration shall—

1 (A) conduct and support basic and applied
2 research in engineering biology, including in
3 synthetic biology, and related to Earth and
4 space sciences, aeronautics, space technology,
5 and space exploration and experimentation, con-
6 sistent with the priorities established in the Na-
7 tional Academies' decadal surveys; and

8 (B) award grants, on a competitive basis,
9 that enable institutions to support graduate
10 students and postdoctoral fellows who perform
11 some of their engineering biology research in an
12 industry setting.

13 (6) DEPARTMENT OF AGRICULTURE.—As part
14 of the Initiative, the Secretary of Agriculture shall—

15 (A) support research and development in
16 engineering biology, including in synthetic biol-
17 ogy and biomaterials;

18 (B) award grants through the National In-
19 stitute of Food and Agriculture; and

20 (C) support development conducted by the
21 Agricultural Research Service.

22 (7) ENVIRONMENTAL PROTECTION AGENCY.—
23 As part of the Initiative, the Environmental Protec-
24 tion Agency shall support research on how products,

1 processes, and systems of engineering biology will af-
2 fect or can protect the environment.

3 (8) DEPARTMENT OF HEALTH AND HUMAN
4 SERVICES.—As part of the Initiative, the Secretary
5 of Health and Human Services, as appropriate and
6 consistent with activities of the Department of
7 Health and Human Services in effect on the day be-
8 fore the date of the enactment of this Act, shall—

9 (A) support research and development to
10 advance the understanding and application of
11 engineering biology for human health;

12 (B) support relevant interdisciplinary re-
13 search and coordination; and

14 (C) support activities necessary to facili-
15 tate oversight of relevant emerging biotech-
16 nologies.

17 (i) RULE OF CONSTRUCTION.—Nothing in this sec-
18 tion shall be construed to require public disclosure of in-
19 formation that is exempt from mandatory disclosure under
20 section 552 of title 5, United States Code.

21 **TITLE III—RESEARCH SECURITY**

22 **SEC. 301. NATIONAL SCIENCE FOUNDATION RESEARCH SE-** 23 **CURITY.**

24 (a) RESEARCH SECURITY AND POLICY OFFICE.—
25 The Director shall establish and maintain a research secu-

1 rity and policy office within the Office of the Director. The
2 functions of the research security and policy office shall
3 be to coordinate all research security policy issues across
4 the Foundation, including by—

5 (1) serving as a resource at the Foundation for
6 all policy issues related to the security and integrity
7 of the conduct of research supported by the Founda-
8 tion;

9 (2) conducting outreach and education activities
10 for awardees on research policies and potential secu-
11 rity risks;

12 (3) educating Foundation program managers
13 and other staff on evaluating Foundation awards
14 and awardees for potential security risks;

15 (4) communicating reporting and disclosure re-
16 quirements to awardees and applicants for funding;

17 (5) consulting and coordinating with the Foun-
18 dation Office of Inspector General and with other
19 Federal science agencies, as appropriate, and
20 through the National Science and Technology Coun-
21 cil in accordance with the authority provided under
22 section 1746 of the National Defense Authorization
23 Act for Fiscal Year 2020 (Public Law 116–92; 42
24 U.S.C. 6601 note), to identify and address potential
25 security risks that threaten research integrity and

1 other risks to the research enterprise and to develop
2 research security policy and best practices; and

3 (6) performing risk assessments, in consulta-
4 tion, as appropriate, with other Federal agencies, of
5 Foundation proposals and awards using analytical
6 tools to assess nondisclosures of required informa-
7 tion that could indicate breaches of research integ-
8 rity or potentially fraudulent activity that would be
9 referred to the Foundation Office of Inspector Gen-
10 eral.

11 (b) CHIEF OF RESEARCH SECURITY.—The Director
12 shall appoint a senior agency official within the Office of
13 the Director as a Chief of Research Security, whose pri-
14 mary responsibility is to manage the office established in
15 subsection (a).

16 (c) REPORT TO CONGRESS.—Not later than 180 days
17 after the date of enactment of this Act, the Director shall
18 provide a report on the resources and the number of full-
19 time employees needed to carry out the functions of the
20 office established in subsection (a) to the Committee on
21 Commerce, Science, and Transportation of the Senate, the
22 Committee on Appropriations of the Senate, the Com-
23 mittee on Science, Space, and Technology of the House
24 of Representatives, and the Committee on Appropriations
25 of the House of Representatives.

1 (d) ONLINE RESOURCE.—The Director shall develop
2 an online resource hosted on the Foundation’s publicly ac-
3 cessible website containing up-to-date information, tai-
4 lored for institutions of higher education and individual
5 researchers, including—

6 (1) an explanation of Foundation research secu-
7 rity policies;

8 (2) unclassified guidance on potential security
9 risks that threaten research integrity and other risks
10 to the research enterprise;

11 (3) examples of beneficial international collabo-
12 rations and how such collaborations differ from for-
13 eign government interference efforts that threaten
14 research integrity;

15 (4) best practices for mitigating security risks
16 that threaten research integrity; and

17 (5) additional reference materials, including
18 tools that assist organizations seeking Foundation
19 funding and awardees in information disclosure to
20 the Foundation.

21 (e) RESEARCH GRANTS.—The Director shall con-
22 tinue to award grants, on a competitive basis, to institu-
23 tions of higher education or nonprofit organizations (or
24 consortia of such institutions or organizations) to support
25 research on the conduct of research and the research envi-

1 ronment, including research on research misconduct,
2 breaches of research integrity, and detrimental research
3 practices.

4 (f) RESPONSIBLE CONDUCT IN RESEARCH TRAIN-
5 ING.—Section 7009 of the America Creating Opportuni-
6 ties to Meaningfully Promote Excellence in Technology,
7 Education, and Science Act (42 U.S.C. 1862o–1) is
8 amended—

9 (1) by striking “and postdoctoral researchers”
10 and inserting “postdoctoral researchers, faculty, and
11 other senior personnel”; and

12 (2) by inserting before the period at the end the
13 following: “, including training and mentorship to
14 raise awareness of potential security threats and of
15 Federal export control, disclosure, and reporting re-
16 quirements”.

17 (g) FUNDING.—From any amounts appropriated for
18 the Foundation for each of fiscal years 2022 through
19 2026, the Director shall allocate \$5,000,000 to carry out
20 this section for each such year.

21 **SEC. 302. RESEARCH SECURITY AND INTEGRITY INFORMA-**
22 **TION SHARING ANALYSIS ORGANIZATION.**

23 (a) ESTABLISHMENT.—The Director of the Office of
24 Science and Technology Policy shall enter into an agree-
25 ment with a qualified independent organization to estab-

1 lish a research security and integrity information sharing
2 analysis organization (referred to in this section as the
3 “RSI-ISAO”), which shall include members described in
4 subsection (d) and carry out the duties described in sub-
5 section (b).

6 (b) DUTIES.—The RSI-ISAO shall—

7 (1) serve as a clearinghouse for information to
8 help enable the members and other entities in the
9 research community to understand the context of
10 their research and identify improper or illegal efforts
11 by foreign entities to obtain research results, know
12 how, materials, and intellectual property;

13 (2) develop a set of standard risk assessment
14 frameworks and best practices, relevant to the re-
15 search community, to assess research security risks
16 in different contexts;

17 (3) share information concerning security
18 threats and lessons learned from protection and re-
19 sponse efforts through forums and other forms of
20 communication;

21 (4) provide timely reports on research security
22 risks to provide situational awareness tailored to the
23 research and education community;

24 (5) provide training and support, including
25 through webinars, for relevant faculty and staff em-

1 ployed by institutions of higher education on topics
2 relevant to research security risks and response;

3 (6) enable standardized information gathering
4 and data compilation, storage, and analysis for com-
5 piled incident reports;

6 (7) support analysis of patterns of risk and
7 identification of bad actors and enhance the ability
8 of members to prevent and respond to research secu-
9 rity risks; and

10 (8) take other appropriate steps to enhance re-
11 search security.

12 (c) FUNDING.—The Foundation may provide initial
13 funds toward the RSI-ISAO, but shall seek to have the
14 fees authorized in subsection (d)(2) cover the costs of op-
15 erations at the earliest practicable time.

16 (d) MEMBERSHIP.—

17 (1) IN GENERAL.—The RSI-ISAO shall serve
18 and include members representing institutions of
19 higher education, nonprofit research institutions,
20 and small and medium-sized businesses.

21 (2) FEES.—As soon as practicable, members of
22 the RS-ISAO shall be charged an annual rate to en-
23 able the RSI-ISAO to cover its costs. Rates shall be
24 set on a sliding scale based on research and develop-
25 ment spent to ensure that membership is accessible

1 to a diverse community of stakeholders and ensure
2 broad participation. The RS-ISAO shall develop a
3 plan to sustain the RS-ISAO without Federal fund-
4 ing, as practicable.

5 (e) BOARD OF DIRECTORS.—The RSI-ISAO may es-
6 tablish a board of directors to provide guidance for poli-
7 cies, legal issues, and plans and strategies of the entity’s
8 operations. The board shall include a diverse group of
9 stakeholders representing the research community, includ-
10 ing academia, industry, and experienced research security
11 administrators.

12 (f) DEFINITION OF INSTITUTION OF HIGHER EDU-
13 CATION.—The term “institution of higher education” has
14 the meaning given the term in section 101(a) of the High-
15 er Education Act of 1965 (20 U.S.C. 1001(a)).

16 **SEC. 303. FOREIGN GOVERNMENT TALENT RECRUITMENT**
17 **PROGRAM PROHIBITION.**

18 (a) GUIDANCE.—Not later than 180 days after the
19 date of enactment of this Act, the Director of the Office
20 of Science and Technology Policy shall, in coordination
21 with the interagency working group established under sec-
22 tion 1746 of the National Defense Authorization Act for
23 Fiscal Year 2020 (Public Law 116–92; 42 U.S.C. 6601
24 note), publish and widely distribute a uniform set of policy
25 guidelines for Federal science agencies regarding foreign

1 government talent recruitment programs. These policy
2 guidelines shall—

3 (1) prohibit all personnel of each agency, in-
4 cluding Federal employees, contract employees, inde-
5 pendent contractors, individuals serving under the
6 Intergovernmental Personnel Act of 1970 (42 U.S.C.
7 4701 et seq.), Visiting Scientist Engineer and Edu-
8 cator appointments, and special government employ-
9 ees, from participating in a foreign government tal-
10 ent recruitment program;

11 (2) prohibit awards from being made for any
12 proposal in which the principal investigator or co-
13 principal investigator is participating in a foreign
14 government talent recruitment program of the Peo-
15 ple’s Republic of China, the Democratic People’s Re-
16 public of Korea, the Russian Federation, or the Is-
17 lamic Republic of Iran; and

18 (3) to the extent practicable, require institu-
19 tions receiving funding to prohibit awards from
20 being used by any individuals participating in a for-
21 eign government talent recruitment program of the
22 People’s Republic of China, the Democratic People’s
23 Republic of Korea, the Russian Federation, or the
24 Islamic Republic of Iran.

1 (b) PROHIBITION.—Not later than 1 year after the
2 date of enactment of this Act, each Federal agency shall
3 issue a policy, utilizing the policy guidelines developed
4 under subsection (a).

5 (c) EXEMPTION.—The policy developed under sub-
6 section (b) may include an exemption for participation in
7 international conferences or other international exchanges,
8 partnerships, or programs, as sanctioned or approved by
9 the Federal agency. When such participation is author-
10 ized, the Federal agency shall ensure training is provided
11 to the participant on how to respond to overtures from
12 individuals associated with foreign government talent re-
13 cruitment programs.

14 (d) REPORT.—Not later than 2 years after the date
15 of enactment of this Act, each Federal agency shall report
16 to Congress on the steps it has taken to implement this
17 section.

18 (e) FOREIGN GOVERNMENT TALENT RECRUITMENT
19 PROGRAMS.—In addition to existing authorities for pre-
20 venting waste, fraud, abuse, and mismanagement of Fed-
21 eral funds, each Federal agency shall require, as a condi-
22 tion of an award, that the senior personnel designated by
23 the United States institution applying for Federal funding
24 submit foreign government talent recruitment program
25 contracts to the agency if the principal investigator or a

1 co-principal investigator discloses membership in a foreign
2 government talent recruitment program other than a pro-
3 gram of the People’s Republic of China, the Democratic
4 People’s Republic of Korea, the Russian Federation, or
5 the Islamic Republic of Iran. The United States institu-
6 tion, as the award applicant, shall ensure, to the maximum
7 extent practicable, that the contract conforms with the
8 Federal agency’s guidance on conflicts of interest, includ-
9 ing those contained in relevant contract proposal and
10 award policies and procedures. Each Federal agency shall
11 review the contract and may prohibit funding to the
12 awardee if the obligations in the contract interfere with
13 the capacity for activities receiving support to be carried
14 out, or create duplication with Federally supported activi-
15 ties.

16 (f) CONSISTENCY.—The Director of the Office of
17 Science and Technology Policy shall ensure that the poli-
18 cies issued by Federal agencies under subsection (b) are
19 consistent to the greatest extent practicable.

20 (g) DEFINITION.—For purposes of this section and
21 section 304, the term “foreign government talent recruit-
22 ment program” has the meaning given the term “foreign
23 government-sponsored talent recruitment program” in
24 National Security Presidential memorandum–33 (relating
25 to strengthening protections of United States Govern-

1 ment-supported research and development against foreign
2 government interference and exploitation) or a successor
3 policy document.

4 **SEC. 304. ADDITIONAL REQUIREMENTS FOR DIRECTORATE**
5 **RESEARCH SECURITY.**

6 (a) INITIATIVE REQUIRED.—The Director shall, in
7 consultation with other appropriate Federal agencies, es-
8 tablish an initiative to work with institutions of higher
9 education that perform research and technology develop-
10 ment activities under the Directorate—

11 (1) to support protection of intellectual prop-
12 erty, consistent with the controls relevant to the
13 grant or award, key personnel, and information
14 about critical technologies relevant to national secu-
15 rity;

16 (2) to limit undue influence, including through
17 foreign government talent recruitment programs, by
18 countries to exploit United States technology within
19 the Foundation research, science and technology,
20 and innovation enterprise, including research funded
21 by the Directorate; and

22 (3) to support efforts toward development of
23 domestic talent in relevant scientific and engineering
24 fields.

1 (b) COORDINATION.—The initiative established under
2 subsection (a) shall be developed and executed to the max-
3 imum extent practicable with academic research institu-
4 tions and other educational and research organizations.

5 (c) REQUIREMENTS.—The initiative established
6 under subsection (a) shall include development of the fol-
7 lowing:

8 (1) Training developed and delivered in con-
9 sultation with institutions of higher education and
10 appropriate Federal agencies, and other support to
11 institutions of higher education, to promote security
12 of controlled information, as appropriate, including
13 best practices for protection of controlled informa-
14 tion.

15 (2) The capacity of institutions of higher edu-
16 cation to assess whether individuals affiliated with
17 Directorate programs have participated in or are
18 currently participating in foreign government talent
19 recruitment program programs.

20 (3) Opportunities to collaborate with Direc-
21 torate awardees to promote protection of controlled
22 information as appropriate and strengthen defense
23 against foreign intelligence services.

24 (4) As appropriate, regulations and proce-
25 dures—

1 (A) for government and academic organi-
2 zations and personnel to support the goals of
3 the initiative; and

4 (B) that are consistent with policies that
5 protect open and scientific exchange in funda-
6 mental research.

7 (5) Policies to limit or prohibit funding pro-
8 vided by the Foundation for individual researchers
9 who knowingly violate regulations developed under
10 the initiative, including policies relating to foreign
11 government talent recruitment programs.

12 (6) Policies to limit or prohibit funding pro-
13 vided by the Foundation for institutions that know-
14 ingly violate regulations developed under the initia-
15 tive, including policies relating to foreign govern-
16 ment talent recruitment programs.

17 (d) DEPARTMENT OF DEFENSE EFFORTS.—In car-
18 rying out this section, the Foundation shall consider the
19 efforts undertaken by the Department of Defense to se-
20 cure defense research, including as provided under section
21 1286 of the John S. McCain National Defense Authoriza-
22 tion Act for Fiscal Year 2019 (10 U.S.C. 2358 note).

23 (e) ANNUAL REPORT.—

24 (1) IN GENERAL.—Not later than 1 year after
25 date of enactment of this Act, and annually there-

1 after, the Director, shall submit to Congress a re-
2 port on the activities carried out under the initiative
3 established under subsection (a).

4 (2) CONTENTS.—The report required by para-
5 graph (1) shall include the following:

6 (A) A description of the activities con-
7 ducted and the progress made under the initia-
8 tive.

9 (B) The findings of the Director with re-
10 spect to the initiative.

11 (C) Such recommendations as the Director
12 may have for legislative or administrative action
13 relating to the matters described in subsection
14 (a).

15 (D) Identification and discussion of the
16 gaps in legal authorities that need to be im-
17 proved to enhance the security of research insti-
18 tutions of higher education performing Direc-
19 torate research.

20 (E) Information on Foundation Inspector
21 General cases, as appropriate, relating to undue
22 influence to security threats to academic re-
23 search activities funded by the Foundation, in-
24 cluding theft of property or intellectual property

1 relating to a project funded by the Department
2 at an institution of higher education.

3 (3) FORM.—The report submitted under para-
4 graph (1) shall be submitted in both unclassified and
5 classified formats, as appropriate.

6 **SEC. 305. PROTECTING RESEARCH FROM CYBER THEFT.**

7 (a) IMPROVING CYBERSECURITY OF INSTITUTIONS
8 OF HIGHER EDUCATION.—Section 2(e)(1)(A) of the Na-
9 tional Institute of Standards and Technology Act (15
10 U.S.C. 272(e)(1)(A)) is amended—

11 (1) in clause (viii), by striking “and” after the
12 semicolon;

13 (2) by redesignating clause (ix) as clause (x);
14 and

15 (3) by inserting after clause (viii) the following:

16 “(ix) consider institutions of higher
17 education (as defined in section 101 of the
18 Higher Education Act of 1965 (20 U.S.C.
19 1001)); and”.

20 (b) DISSEMINATION OF RESOURCES FOR RESEARCH
21 INSTITUTIONS.—

22 (1) IN GENERAL.—Not later than 90 days after
23 the date of enactment of this Act, the Director shall,
24 using the authorities of the Director under sub-
25 section (e)(1)(A)(ix) of section 2 of the National In-

1 stitute of Standards and Technology Act (15 U.S.C.
2 272), as amended by subsection (a), disseminate and
3 make publicly available resources to help research
4 institutions and institutions of higher education
5 identify, protect the institution involved from, detect,
6 respond to, and recover to manage the cybersecurity
7 risk of the institution involved related to conducting
8 research.

9 (2) REQUIREMENTS.—The Director shall en-
10 sure that the resources disseminated pursuant to
11 paragraph (1)—

12 (A) are generally applicable and usable by
13 a wide range of research institutions and insti-
14 tutions of higher education;

15 (B) vary with the nature and size of the
16 implementing research institutions or institu-
17 tions of higher education, and the nature and
18 sensitivity of the data collected or stored on the
19 information systems or devices of the imple-
20 menting research institutions or institutions of
21 higher education;

22 (C) include elements that promote aware-
23 ness of simple, basic controls, a workplace cy-
24 bersecurity culture, and third-party stakeholder
25 relationships, to assist research institutions or

1 institutions of higher education in mitigating
2 common cybersecurity risks;

3 (D) include case studies of practical appli-
4 cation;

5 (E) are technology-neutral and can be im-
6 plemented using technologies that are commer-
7 cial and off-the-shelf; and

8 (F) to the extent practicable, are based on
9 international standards.

10 (3) NATIONAL CYBERSECURITY AWARENESS
11 AND EDUCATION PROGRAM.—The Director shall en-
12 sure that the resources disseminated under para-
13 graph (1) are consistent with the efforts of the Di-
14 rector under section 303 of the Cybersecurity En-
15 hancement Act of 2014 (15 U.S.C. 7443).

16 (4) UPDATES.—The Director shall review peri-
17 odically and update the resources under paragraph
18 (1) as the Director determines appropriate.

19 (5) VOLUNTARY RESOURCES.—The use of the
20 resources disseminated under paragraph (1) shall be
21 considered voluntary.

22 (6) OTHER FEDERAL CYBERSECURITY RE-
23 QUIREMENTS.—Nothing in this section may be con-
24 strued to supersede, alter, or otherwise affect any

1 cybersecurity requirements applicable to Federal
2 agencies.

3 (c) DEFINITIONS.—In this section:

4 (1) DIRECTOR.—The term “Director” means
5 the Director of the National Institute of Standards
6 and Technology.

7 (2) RESOURCES.—The term “resources” means
8 guidelines, tools, best practices, standards, meth-
9 odologies, and other ways of providing information.

10 (3) RESEARCH INSTITUTION.—The term “re-
11 search institution”—

12 (A) means a nonprofit institution (as de-
13 fined in section 4(3) of the Stevenson-Wydler
14 Technology Innovation Act of 1980 (15 U.S.C.
15 3703(3))); and

16 (B) includes Federally funded research and
17 development centers, as identified by the Na-
18 tional Science Foundation in accordance with
19 the Federal Acquisition Regulation issued in ac-
20 cordance with section 1303(a)(1) of title 41 (or
21 any successor regulation).

22 **SEC. 306. INTERNATIONAL STANDARDS DEVELOPMENT.**

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

24 (1) Widespread use of standards facilitates
25 technology advancement by defining and establishing

1 common foundations for interoperability, product
2 differentiation, technological innovation, and other
3 value-added services.

4 (2) Standards also promote an expanded, more
5 interoperable, and efficient marketplace.

6 (3) Global cooperation and coordination on
7 standards for emerging technologies will be critical
8 for having a consistent set of approaches to enable
9 market competition, preclude barriers to trade, and
10 allow innovation to flourish.

11 (4) The People's Republic of China's "Stand-
12 ardization Reform Plan" and "Five-Year Plan for
13 Standardization" highlight its high-level goals to es-
14 tablish China as a "standards power" by 2020, par-
15 ticipate in at least half of all standards drafting and
16 revision efforts in recognized international standards
17 setting organizations, and strengthen China's par-
18 ticipation in the governance of international stand-
19 ards setting organizations.

20 (5) As emerging technologies develop for global
21 deployment, it is critical that the United States and
22 its allies continue to participate in the development
23 of standards that underpin the technologies them-
24 selves, and the future international governance of
25 these technologies.

1 (6) The United States position on standardiza-
2 tion in emerging technologies will be critical to
3 United States economic competitiveness.

4 (7) The National Institute of Standards and
5 Technology is in a unique position to strengthen
6 United States leadership in standards development,
7 particularly for emerging technologies, to ensure
8 continuing United States economic competitiveness
9 and national security.

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

12 (1) the principles of openness, transparency,
13 due process, and consensus in the development of
14 international standards are critical;

15 (2) voluntary consensus standards, developed
16 through an industry-led process, serve as the corner-
17 stone of the United States standardization system
18 and have become the basis of a sound national econ-
19 omy and the key to global market access;

20 (3) strengthening the unique United States
21 public-private partnerships approach to standards
22 development is critical to United States economic
23 competitiveness; and

24 (4) the United States Government should en-
25 sure cooperation and coordination across Federal

1 agencies to partner with and support private sector
2 stakeholders to continue to shape international dia-
3 logues in regard to standards development for
4 emerging technologies.

5 (c) ACTIVITIES AND ENGAGEMENT.—The Secretary
6 of Commerce, acting through the Director, shall—

7 (1) build capacity and training opportunities to
8 help create a pipeline of talent and leadership in key
9 standards development positions;

10 (2) partner with private sector entities to sup-
11 port strategic engagement and leadership in the de-
12 velopment of international standards for digital
13 economy technologies, including partnering with in-
14 dustry to assist private sector partners to develop
15 standards strategies and support engagement and
16 participation in the relevant standards activities; and

17 (3) prioritize efforts on standards development
18 for emerging technologies, identify an organization
19 in which to develop these standards, identify leader-
20 ship positions of interest to the United States, and
21 identify key contributors for technical and leadership
22 expertise in these areas.

23 **SEC. 307. RESEARCH FUNDS ACCOUNTING.**

24 (a) DEFINITIONS.—In this section:

1 (1) FOREIGN ENTITY OF CONCERN.—The term
2 “foreign entity of concern” means a foreign entity
3 that is—

4 (A) designated as a foreign terrorist orga-
5 nization by the Secretary of State under section
6 219(a) of the Immigration and Nationality Act
7 (8 U.S.C. 1189(a));

8 (B) included on the list of specially des-
9 ignated nationals and blocked persons main-
10 tained by the Office of Foreign Assets Control
11 of the Department of the Treasury (commonly
12 known as the “SDN list”);

13 (C) owned by, controlled by, or subject to
14 the jurisdiction or direction of a government of
15 a foreign country that is a covered nation (as
16 defined in section 2533c(d) of title 10, United
17 States Code);

18 (D) alleged by the Attorney General to
19 have been involved in activities for which a con-
20 viction was obtained under—

21 (i) chapter 37 of title 18, United
22 States Code (commonly known as the “Es-
23 pionage Act”);

24 (ii) section 951 or 1030 of title 18,
25 United States Code;

1 (iii) chapter 90 of title 18, United
2 States Code (commonly known as the
3 “Economic Espionage Act of 1996”);

4 (iv) the Arms Export Control Act (22
5 U.S.C. 2751 et seq.);

6 (v) section 224, 225, 226, 227, or 236
7 of the Atomic Energy Act of 1954 (42
8 U.S.C. 2274, 2275, 2276, 2277, and
9 2284);

10 (vi) the Export Control Reform Act of
11 2018 (50 U.S.C. 4801 et seq.); or

12 (vii) the International Emergency
13 Economic Powers Act (50 U.S.C. 1701 et
14 seq.); or

15 (E) determined by the Secretary of Com-
16 merce, in consultation with the Secretary of De-
17 fense and the Director of National Intelligence,
18 to be engaged in unauthorized conduct that is
19 detrimental to the national security or foreign
20 policy of the United States.

21 (2) STUDY PERIOD.—The term “study period”
22 means the 5-year period ending on the date of enact-
23 ment of this Act.

24 (b) STUDY.—The Comptroller General of the United
25 States shall conduct a study on Federal funding made

1 available, to foreign entities of concern for research, dur-
2 ing the study period.

3 (c) MATTERS TO BE INCLUDED.—The study con-
4 ducted under subsection (b) shall include, to the extent
5 practicable with respect to the study period, an assessment
6 of—

7 (1) the total amount of Federal funding made
8 available to foreign entities of concern for research;

9 (2) the total number and types of foreign enti-
10 ties of concern to whom such funding was made
11 available;

12 (3) the requirements relating to the awarding,
13 tracking, and monitoring of such funding;

14 (4) any other data available with respect to
15 Federal funding made available to foreign entities of
16 concern for research; and

17 (5) such other matters as the Comptroller Gen-
18 eral determines appropriate.

19 (d) BRIEFING ON AVAILABLE DATA.—Not later than
20 120 days after the date of the enactment of this Act, the
21 Comptroller General shall brief the Committee on Com-
22 merce, Science, and Transportation and the Committee on
23 Foreign Relations of the Senate and the Committee on
24 Science, Space, and Technology and the Committee on
25 Foreign Affairs of the House of Representatives on the

1 study conducted under subsection (b) and on the data that
2 is available with respect to Federal funding made available
3 to foreign entities of concern for research.

4 (e) REPORT.—The Comptroller General shall submit
5 to the congressional committees specified in subsection
6 (d), by a date agreed upon by the Comptroller General
7 and the committees on the date of the briefing, a report
8 on the findings of the study conducted under subsection
9 (b).

10 **TITLE IV—REGIONAL** 11 **INNOVATION CAPACITY**

12 **SEC. 401. REGIONAL TECHNOLOGY HUBS.**

13 (a) IN GENERAL.—The Stevenson-Wydler Tech-
14 nology Innovation Act of 1980 (Public Law 96–480; 15
15 U.S.C. 3701 et seq.) is amended—

16 (1) by redesignating section 28 as section 29;
17 and

18 (2) by inserting after section 27 the following:

19 **“SEC. 28. REGIONAL TECHNOLOGY HUB PROGRAM.**

20 “(a) DEFINITIONS.—In this section:

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

24 “(A) the Committee on Commerce,
25 Science, and Transportation, the Committee on

1 Environment and Public Works, and the Com-
2 mittee on Appropriations of the Senate; and

3 “(B) the Committee on Science, Space,
4 and Technology, the Committee on Transpor-
5 tation and Infrastructure, and the Committee
6 on Appropriations of the House of Representa-
7 tives.

8 “(2) COOPERATIVE EXTENSION.—The term ‘co-
9 operative extension’ has the meaning given the term
10 ‘extension’ in section 1404 of the Food and Agri-
11 culture Act of 1977 (7 U.S.C. 3103).

12 “(3) KEY TECHNOLOGY FOCUS AREAS.—The
13 term ‘key technology focus areas’ means the areas
14 included on the most recent list under section 5 of
15 the Endless Frontier Act.

16 “(4) LABOR ORGANIZATION.—The term ‘labor
17 organization’ has the meaning given such term in
18 section 101 of the Endless Frontier Act.

19 “(5) MANUFACTURING EXTENSION CENTER.—
20 The term ‘manufacturing extension center’ has the
21 meaning given the term ‘Center’ in section 25(a) of
22 the National Institute of Standards and Technology
23 Act (15 U.S.C. 278k(a)).

24 “(6) MANUFACTURING USA INSTITUTE.—The
25 term ‘Manufacturing USA institute’ means an Man-

1 ufacturing USA institute described in section 34(d)
2 of the National Institute of Standards and Tech-
3 nology Act (15 U.S.C. 278s(d)).

4 “(7) SITE CONNECTIVITY INFRASTRUCTURE.—
5 The term ‘site connectivity infrastructure’ means lo-
6 calized driveways and access roads to a facility as
7 well as hookups to the new facility for drinking
8 water, waste water, broadband, and other basic in-
9 frastructure services already present in the area.

10 “(8) SMALL AND RURAL COMMUNITIES.—The
11 term ‘small and rural community’ means a noncore
12 area, a micropolitan area, or a small metropolitan
13 statistical area with a population of not more than
14 200,000.

15 “(9) VENTURE DEVELOPMENT ORGANIZA-
16 TION.—The term ‘venture development organization’
17 has the meaning given such term in section 27(a) of
18 the Stevenson-Wydler Act of 1980 (15 U.S.C.
19 3722(a)).

20 “(b) REGIONAL TECHNOLOGY HUB PROGRAM.—

21 “(1) IN GENERAL.—Subject to the availability
22 of appropriations, the Secretary shall carry out a
23 program—

24 “(A) to encourage new and constructive
25 collaboration among local, State, and Federal

1 government entities, academia, the private sec-
2 tor, economic development organizations, and
3 labor organizations;

4 “(B) to support eligible consortia in the
5 creation of regional innovation strategies;

6 “(C) to designate eligible consortia as re-
7 gional technology hubs and facilitate activities
8 by consortia designated as regional technology
9 hubs in implementing their regional innovation
10 strategies, in order—

11 “(i) to enable United States leader-
12 ship in technology and innovation sectors
13 critical to national and economic security;

14 “(ii) to support regional economic de-
15 velopment, including in small cities and
16 rural areas, and diffuse innovation around
17 the United States; and

18 “(iii) to support domestic job creation
19 and broad-based economic growth; and

20 “(D) to ensure that the regional tech-
21 nology hubs address the intersection of emerg-
22 ing technologies and either local and regional
23 challenges or national challenges; and

24 “(E) to conduct ongoing research, evalua-
25 tion, analysis, and dissemination of best prac-

1 tices for regional development and competitive-
2 ness in technology and innovation.

3 “(2) AWARDS.—The Secretary shall carry out
4 the program required by paragraph (1) through the
5 award of the following:

6 “(A) Strategy development grants or coop-
7 erative agreements to eligible consortia under
8 subsection (e).

9 “(B) Strategy implementation grants or
10 cooperative agreements to regional technology
11 hubs under subsection (f).

12 “(3) ADMINISTRATION.—The Secretary shall
13 carry out this section through the Assistant Sec-
14 retary of Commerce for Economic Development in
15 coordination with the Under Secretary of Commerce
16 for Standards and Technology.

17 “(c) ELIGIBLE CONSORTIA.—For purposes of this
18 section, an eligible consortium is a consortium that—

19 “(1) includes 1 or more—

20 “(A) institutions of higher education;

21 “(B) local or Tribal governments or other
22 political subdivisions of a State;

23 “(C) State governments represented by an
24 agency designated by the governor of the State

1 or States that is representative of the geo-
2 graphic area served by the consortia;

3 “(D) economic development organizations
4 or similar entities that are focused primarily on
5 improving science, technology, innovation, or
6 entrepreneurship;

7 “(E) industry or firms in relevant tech-
8 nology or innovation sectors;

9 “(F) labor organizations or workforce
10 training organizations, including State and local
11 workforce development boards as established
12 under section 101 and 107 of the Workforce In-
13 vestment and Opportunity Act (29 U.S.C.
14 3111; 3122); and

15 “(2) may include 1 or more—

16 “(A) nonprofit economic development enti-
17 ties with relevant expertise, including a district
18 organization (as defined in section 300.3 of title
19 13, Code of Federal Regulations, or successor
20 regulation);

21 “(B) venture development organizations;

22 “(C) financial institutions and investment
23 funds;

1 “(D) primary and secondary educational
2 institutions, including career and technical edu-
3 cation schools;

4 “(E) National Laboratories (as defined in
5 section 2 of the Energy Policy Act of 2005 (42
6 U.S.C. 15801));

7 “(F) Federal laboratories;

8 “(G) Manufacturing extension centers;

9 “(H) Manufacturing USA institutes;

10 “(I) institutions receiving an award under
11 section 104 of the Endless Frontier Act; and

12 “(J) a cooperative extension.

13 “(d) DESIGNATION OF REGIONAL TECHNOLOGY
14 HUBS.—

15 “(1) IN GENERAL.—In carrying out subsection
16 (b)(1)(C), the Secretary shall use a competitive proc-
17 ess to designate eligible consortia as regional tech-
18 nology hubs.

19 “(2) GEOGRAPHIC DISTRIBUTION.—In con-
20 ducting the competitive process under paragraph
21 (1), the Secretary shall ensure geographic distribu-
22 tion in the designation of regional technology hubs
23 by—

24 “(A) seeking to designate at least three
25 technology hubs in each region covered by a re-

1 regional office of the Economic Development Ad-
2 ministration;

3 “(B) focusing on localities that are not
4 leading technology centers;

5 “(C) ensuring that not fewer than one-
6 third of eligible consortia designated as regional
7 technology hubs significantly benefit a small
8 and rural community, which may include a
9 State described in subparagraph (D); and

10 “(D) ensuring that not fewer than one-
11 third of eligible consortia designated as regional
12 technology hubs include as a member of the eli-
13 gible consortia at least 1 member that is a
14 State that is eligible to receive funding from the
15 Established Program to Stimulate Competitive
16 Research of the National Science Foundation.

17 “(3) RELATION TO CERTAIN GRANT AWARDS.—
18 The Secretary shall not require an eligible consor-
19 tium to receive a grant or cooperative agreement
20 under subsection (e) in order to be designated as a
21 regional technology hub under paragraph (1) of this
22 subsection.

23 “(e) STRATEGY DEVELOPMENT GRANTS AND COOP-
24 ERATIVE AGREEMENTS.—

1 “(1) IN GENERAL.—The Secretary shall use a
2 competitive process to award grants or cooperative
3 agreements to eligible consortia for the development
4 of regional innovation strategies.

5 “(2) NUMBER OF RECIPIENTS.—The Secretary
6 shall award a grant or cooperative agreement under
7 paragraph (1) to not fewer than 20 eligible con-
8 sortia.

9 “(3) GEOGRAPHIC DIVERSITY AND REPRESENTATION.—
10

11 “(A) IN GENERAL.—The Secretary shall
12 carry out paragraph (1) in a manner that en-
13 sures geographic diversity and representation
14 from communities of differing populations.

15 “(B) AWARDS TO SMALL AND RURAL COMMUNITIES.—In carrying out paragraph (1), the
16 Secretary shall—
17

18 “(i) award not fewer than one-third of
19 the grants and cooperative agreements
20 under such paragraph to eligible consortia
21 that significantly benefit a small and rural
22 community, which may include a State de-
23 scribed in clause (ii); and

24 “(ii) award not fewer than one-third
25 of the grants and cooperative agreements

1 under such paragraph to eligible consortia
2 that include as a member of the eligible
3 consortia at least 1 member that is a State
4 that is eligible to receive funding from the
5 Established Program to Stimulate Com-
6 petitive Research of the National Science
7 Foundation.

8 “(4) USE OF FUNDS.—The amount of a grant
9 or cooperative agreement awarded under paragraph
10 (1) shall be as follows:

11 “(A) To coordinate locally defined planning
12 processes, across jurisdictions and agencies, re-
13 lating to developing a comprehensive regional
14 technology strategy.

15 “(B) To identify regional partnerships for
16 developing and implementing a comprehensive
17 regional technology strategy.

18 “(C) To conduct or update assessments to
19 determine regional needs.

20 “(D) To develop or update goals and strat-
21 egies to implement an existing comprehensive
22 regional plan.

23 “(E) To identify or implement local zoning
24 and other code changes necessary to implement
25 a comprehensive regional technology strategy.

1 “(5) FEDERAL SHARE.—The Federal share of
2 the cost of an effort carried out using a grant or co-
3 operative agreement awarded under this subsection
4 may not exceed 80 percent—

5 “(A) where in-kind contributions may be
6 used for all or part of the non-Federal share,
7 but Federal funding from other Government
8 sources may not count towards the non-Federal
9 share;

10 “(B) except in the case of an eligible con-
11 sortium that represents all or part of a small
12 and rural community, the Federal share may be
13 up to 90 percent of the total cost, subject to
14 subparagraph (A); and

15 “(C) except in the case of an eligible con-
16 sortium that is led by a Tribal government, the
17 Federal share may be up to 100 percent of the
18 total cost of the project.

19 “(f) STRATEGY IMPLEMENTATION GRANTS AND CO-
20 OPERATIVE AGREEMENTS.—

21 “(1) IN GENERAL.—The Secretary shall use a
22 competitive process to award grants or cooperative
23 agreements to regional technology hubs for the im-
24 plementation of regional innovation strategies, in-
25 cluding regional strategies for infrastructure and

1 site development, in support of the regional tech-
2 nology hub's plans and programs.

3 “(2) USE OF FUNDS.—The amount of a grant
4 or cooperative agreement awarded under subpara-
5 graph (A) to a regional technology hub may be used
6 by the regional technology hub to support any of the
7 following activities, consistent with the most current
8 regional innovation strategy of the regional tech-
9 nology hub:

10 “(A) WORKFORCE DEVELOPMENT ACTIVI-
11 TIES.—Workforce development activities, in-
12 cluding activities relating to the following:

13 “(i) The creation of partnerships be-
14 tween industry, workforce, and academic
15 groups, which may include community col-
16 leges, to create and align technical training
17 and educational programs.

18 “(ii) The design, development, and
19 updating of educational and training cur-
20 riculum.

21 “(iii) The procurement of facilities
22 and equipment, as required to train a tech-
23 nical workforce.

24 “(iv) The development and execution
25 of programs to rapidly award certificates

1 or credentials recognized by regional indus-
2 try groups.

3 “(v) The matching of regional employ-
4 ers with a potential new entrant, under-
5 employed, or incumbent workforce.

6 “(vi) The expansion of successful
7 training programs at a scale required by
8 the region served by the regional tech-
9 nology hub, including through the use of
10 online education.

11 “(B) BUSINESS AND ENTREPRENEUR DE-
12 VELOPMENT ACTIVITIES.—Business and entre-
13 preneur development activities, including activi-
14 ties relating to the following:

15 “(i) The development and growth of
16 regional businesses and the training of en-
17 trepreneurs.

18 “(ii) The support of technology com-
19 mercialization, including funding for activi-
20 ties relevant to the protection of intellec-
21 tual property.

22 “(iii) The development of networks for
23 business and entrepreneur mentorship.

1 “(C) TECHNOLOGY MATURATION ACTIVI-
2 TIES.—Technology maturation activities, includ-
3 ing activities relating to the following:

4 “(i) The development and deployment
5 of technologies in sectors critical to the re-
6 gion served by the regional technology hub
7 or to national and economic security, in-
8 cluding proof of concept, prototype devel-
9 opment, and testing.

10 “(ii) The provision of facilities for
11 technology maturation, including incuba-
12 tors for collaborative development of tech-
13 nologies by private sector, academic, and
14 other entities.

15 “(iii) Activities to ensure access to
16 capital for new business formation and
17 business expansion, including by attracting
18 new private, public, and philanthropic in-
19 vestment and by establishing regional ven-
20 ture and loan funds.

21 “(iv) Activities determined appro-
22 priate by the Secretary under section
23 27(c)(2) of this Act.

24 “(D) INFRASTRUCTURE-RELATED ACTIVI-
25 TIES.—The building of facilities and site

1 connectivity infrastructure necessary to carry
2 out activities described in subparagraphs (A),
3 (B), and (C), including activities relating to the
4 following:

5 “(i) Establishing a workforce training
6 center with required tools and instrumen-
7 tation.

8 “(ii) Establishing a facility for tech-
9 nology development, demonstration, and
10 testing.

11 “(iii) Establishing collaborative incu-
12 bators to support technology commer-
13 cialization and entrepreneur training.

14 “(3) LIMITATION ON AMOUNT OF AWARDS.—
15 The Secretary shall ensure that no single regional
16 technology hub receives more than 10 percent of the
17 aggregate amount of the grants and cooperative
18 agreements awarded under this subsection.

19 “(4) TERM.—

20 “(A) IN GENERAL.—The term of a grant
21 or cooperative agreement awarded under this
22 subsection shall be for such period as the Sec-
23 retary considers appropriate.

24 “(B) RENEWAL.—The Secretary may
25 renew a grant or cooperative agreement award-

1 ed to a regional technology hub under this sub-
2 section as the Secretary considers appropriate if
3 the Secretary determines that the performance
4 of the regional technology hub is satisfactory.

5 “(5) MATCHING REQUIRED.—

6 “(A) IN GENERAL.—Except in the case of
7 a regional technology hub described in subpara-
8 graph (B), the total amount of all grants
9 awarded to a regional technology hub under
10 this subsection in a given year shall not exceed
11 amounts as follows:

12 “(i) In the first year of the grant or
13 cooperative agreement, 90 percent of the
14 total operating costs of the regional tech-
15 nology hub in that year.

16 “(ii) In the second year of the grant
17 or cooperative agreement, 85 percent of
18 the total operating costs of the regional
19 technology hub in that year.

20 “(iii) In the third year of the grant or
21 cooperative agreement, 80 percent of the
22 total operating costs of the regional tech-
23 nology hub in that year.

24 “(iv) In the fourth year of the grant
25 or cooperative agreement and each year

1 thereafter, 75 percent of the total oper-
2 ating costs of the regional technology hub
3 in that year.

4 “(B) SMALL AND RURAL COMMUNITIES
5 AND INDIAN TRIBES.—

6 “(i) IN GENERAL.—The total Federal
7 financial assistance awarded in a given
8 year to a regional technology hub under
9 this subsection shall not exceed amounts as
10 follows:

11 “(I) In the case of a regional
12 technology hub that represents a
13 small and rural community, in a fiscal
14 year, 90 percent of the total funding
15 of the regional technology hub in that
16 fiscal year.

17 “(II) In the case of an regional
18 technology hub that is led by a Tribal
19 government, in a fiscal year, 100 per-
20 cent of the total funding of the re-
21 gional technology hub in that fiscal
22 year.

23 “(ii) MINIMUM THRESHOLD OF RURAL
24 REPRESENTATION.—For purposes of
25 clause (i)(I), the Secretary shall establish a

1 minimum threshold of rural representation
2 in the regional technology hub.

3 “(C) IN-KIND CONTRIBUTIONS.—For pur-
4 poses of this paragraph, in-kind contributions
5 may be used for part of the non-Federal share
6 of the total funding of a regional technology
7 hub in a fiscal year.

8 “(6) GRANTS FOR INFRASTRUCTURE.—Any
9 grant or cooperative agreement awarded under this
10 subsection to support the construction of facilities
11 and site connectivity infrastructure shall be awarded
12 pursuant to section 201 of the Public Works and
13 Economic Development Act of 1965 (42 U.S.C.
14 3141) and subject to the provisions of such Act, ex-
15 cept that subsection (b) of such section and sections
16 204 and 301 of such Act (42 U.S.C. 3144, 3161)
17 shall not apply.

18 “(7) RELATION TO CERTAIN GRANT AWARDS.—
19 The Secretary shall not require a regional tech-
20 nology hub to receive a grant or cooperative agree-
21 ment under subsection (e) in order to receive a grant
22 or cooperative agreement under this subsection.

23 “(g) APPLICATIONS.—An eligible consortium seeking
24 designation as a regional technology hub under subsection
25 (d) or a grant or cooperative agreement under subsection

1 (e) or (f) shall submit to the Secretary an application
2 therefor at such time, in such manner, and containing
3 such information as the Secretary may specify.

4 “(h) CONSIDERATIONS FOR DESIGNATION AND
5 AWARD OF STRATEGY DEVELOPMENT GRANTS AND CO-
6 OPERATIVE AGREEMENTS.—In selecting an eligible con-
7 sortium that submitted an application under subsection
8 (g) for designation under subsection (d) or for a grant
9 or cooperative agreement under subsection (f), the Sec-
10 retary shall consider, at a minimum, the following:

11 “(1) The potential of the eligible consortium to
12 advance the research, development, deployment, and
13 domestic manufacturing of technologies in a key
14 technology focus area or other technology or innova-
15 tion sector critical to national and economic security.

16 “(2) The likelihood of positive regional eco-
17 nomic effect, including increasing the number of
18 high wage domestic jobs, and creating new economic
19 opportunities for economically disadvantaged and
20 underrepresented populations.

21 “(3) How the eligible consortium plans to inte-
22 grate with and leverage the resources of 1 or more
23 federally funded research and development centers,
24 National Laboratories, Federal laboratories, Manu-
25 facturing USA institutes, Hollings Manufacturing

1 Extension Partnership centers, university technology
2 centers established under section 104 of the Endless
3 Frontier Act, the program established under section
4 107 of the such Act, test beds established and oper-
5 ated under section 108 of such Act, or other Federal
6 research entities.

7 “(4) How the eligible consortium will engage
8 with the private sector, including small- and me-
9 dium-sized businesses to commercialize new tech-
10 nologies and improve the resiliency of domestic sup-
11 ply chains in a key technology focus area or other
12 technology or innovation sector critical to national
13 and economic security.

14 “(5) How the eligible consortium will carry out
15 workforce development and skills acquisition pro-
16 gramming, including through partnerships with enti-
17 ties that include State and local workforce develop-
18 ment boards, institutions of higher education, in-
19 cluding community colleges, historically Black col-
20 leges and universities, Tribal colleges and univer-
21 sities, and minority serving institutions, labor orga-
22 nizations, and workforce development programs, and
23 other related activities authorized by the Secretary,
24 to support the development of a key technology focus

1 area or other technology or innovation sector critical
2 to national and economic security.

3 “(6) How the eligible consortium will improve
4 science, technology, engineering, and mathematics
5 education programs in the identified region in ele-
6 mentary and secondary school and higher education
7 institutions located in the identified region to sup-
8 port the development of a key technology focus area
9 or other technology or innovation sector critical to
10 national and economic security.

11 “(7) How the eligible consortium plans to de-
12 velop partnerships with venture development organi-
13 zations and sources of private investment in support
14 of private sector activity, including launching new or
15 expanding existing companies, in a key technology
16 focus area or other technology or innovation sector
17 critical to national and economic security.

18 “(8) How the eligible consortium plans to orga-
19 nize the activities of regional partners across sectors
20 in support of a regional technology hub.

21 “(9) How the eligible consortium will ensure
22 that growth in technology and innovation sectors
23 produces broadly shared opportunity across the iden-
24 tified region, including for economic disadvantaged
25 and underrepresented populations and rural areas.

1 “(10) The likelihood efforts served by the con-
2 sortium will be sustained once Federal support ends.

3 “(i) COORDINATION AND COLLABORATION.—

4 “(1) COORDINATION WITH REGIONAL INNOVA-
5 TION PROGRAM.—The Secretary shall work to en-
6 sure the activities under this section do not duplicate
7 activities or efforts under section 27, as the Sec-
8 retary considers appropriate.

9 “(2) COORDINATION WITH PROGRAMS OF THE
10 NATIONAL INSTITUTE OF STANDARDS AND TECH-
11 NOLOGY.—The Secretary shall coordinate the activi-
12 ties of regional technology hubs designated under
13 this section, the Hollings Manufacturing Extension
14 Partnership, and the Manufacturing USA Program,
15 as the Secretary considers appropriate, to maintain
16 the effectiveness of a manufacturing extension center
17 or a Manufacturing USA institute.

18 “(3) COORDINATION WITH DEPARTMENT OF
19 ENERGY PROGRAMS.—The Secretary shall, in col-
20 laboration with the Secretary of Energy, coordinate
21 the activities and selection of regional technology
22 hubs designated under this section, as the Secre-
23 taries consider appropriate, to maintain the effec-
24 tiveness of activities at the Department of Energy
25 and the National Laboratories.

1 “(4) INTERAGENCY COLLABORATION.—In des-
2 ignating regional technology hubs under subsection
3 (d) and awarding grants or cooperative agreements
4 under subsection (f), the Secretary—

5 “(A) shall collaborate, to the extent pos-
6 sible, with the interagency working group estab-
7 lished under section 4 of the Endless Frontier
8 Act;

9 “(B) shall collaborate with Federal depart-
10 ments and agencies whose missions contribute
11 to the goals of the regional technology hub;

12 “(C) shall consult with the Director of the
13 National Science Foundation for the purpose of
14 ensuring that the regional technology hubs are
15 aligned with relevant science, technology, and
16 engineering expertise; and

17 “(D) may accept funds from other Federal
18 agencies to support grants, cooperative agree-
19 ments, and activities under this section.

20 “(j) PERFORMANCE MEASUREMENT, TRANS-
21 PARENCY, AND ACCOUNTABILITY.—

22 “(1) METRICS, STANDARDS, AND ASSESS-
23 MENT.—For each grant and cooperative agreement
24 awarded under subsection (f) for a regional tech-
25 nology hub, the Secretary shall—

1 “(A) develop metrics, which may include
2 metrics relating to domestic job creation, patent
3 awards, and business formation and expansion,
4 to assess the effectiveness of the activities fund-
5 ed in making progress toward the purposes set
6 forth under subsection (b)(1);

7 “(B) establish standards for the perform-
8 ance of the regional technology hub that are
9 based on the metrics developed under subpara-
10 graph (A); and

11 “(C) 4 years after the initial award under
12 subsection (f) and every 2 years thereafter until
13 Federal financial assistance under this section
14 for the regional technology hub is discontinued,
15 conduct an assessment of the regional tech-
16 nology hub to confirm whether the performance
17 of the regional technology hub is meeting the
18 standards for performance established under
19 subparagraph (B) of this paragraph.

20 “(2) FINAL REPORTS BY RECIPIENTS OF
21 STRATEGY IMPLEMENTATION GRANTS AND COOPER-
22 ATIVE AGREEMENTS.—

23 “(A) IN GENERAL.—The Secretary shall
24 require each eligible consortium that receives a
25 grant or cooperative agreement under sub-

1 section (f) for activities of a regional technology
2 hub, as a condition of receipt of such grant or
3 cooperative agreement, to submit to the Sec-
4 retary, not later than 120 days after the last
5 day of the term of the grant or cooperative
6 agreement, a report on the activities of the re-
7 gional technology hub supported by the grant or
8 cooperative agreement.

9 “(B) CONTENTS OF REPORT.—Each report
10 submitted by an eligible consortium under sub-
11 paragraph (A) shall include the following:

12 “(i) A detailed description of the ac-
13 tivities carried out by the regional tech-
14 nology hub using the grant or cooperative
15 agreement described in subparagraph (A),
16 including the following:

17 “(I) A description of each project
18 the regional technology hub completed
19 using such grant or cooperative agree-
20 ment.

21 “(II) An explanation of how each
22 project described in subclause (I)
23 achieves a specific goal under this sec-
24 tion in the region of the regional tech-
25 nology hub with respect to—

1 “(aa) the resiliency of a sup-
2 ply chain;

3 “(bb) research, development,
4 and deployment of a critical tech-
5 nology;

6 “(cc) workforce training and
7 development;

8 “(dd) domestic job creation;
9 or

10 “(ee) entrepreneurship.

11 “(ii) A discussion of any obstacles en-
12 countered by the regional technology hub
13 in the implementation of the regional tech-
14 nology hub and how the regional tech-
15 nology hub overcame those obstacles.

16 “(iii) An evaluation of the success of
17 the projects of the regional technology hub
18 using the performance standards and
19 measures established under paragraph (1),
20 including an evaluation of the planning
21 process and how the project contributes to
22 carrying out the regional innovation strat-
23 egy of the regional technology hub.

24 “(iv) The effectiveness of the regional
25 technology hub in ensuring that, in the re-

1 gion of the regional technology hub, growth
2 in technology and innovation sectors pro-
3 duces broadly shared opportunity across
4 the region, including for economic dis-
5 advantaged and underrepresented popu-
6 lations and rural areas.

7 “(v) Information regarding such other
8 matters as the Secretary may require.

9 “(3) INTERIM REPORTS BY RECIPIENTS OF
10 GRANTS AND COOPERATIVE AGREEMENTS.—In addi-
11 tion to requiring submittal of final reports under
12 paragraph (2)(A), the Secretary may require a re-
13 gional technology hub described in such paragraph
14 to submit to the Secretary such interim reports as
15 the Secretary considers appropriate.

16 “(4) ANNUAL REPORTS TO CONGRESS.—Not
17 less frequently than once each year, the Secretary
18 shall submit to the appropriate committees of Con-
19 gress an annual report on the results of the assess-
20 ments conducted by the Secretary under paragraph
21 (1)(C) during the period covered by the report.

22 “(k) AUTHORIZATION OF APPROPRIATIONS.—There
23 is authorized to be appropriated to the Secretary, for the
24 period of fiscal years 2022 through 2026—

1 “(1) \$9,425,000,000 to award grants and coop-
2 erative agreements under subsection (f); and

3 “(2) \$575,000,000 to award grants and cooper-
4 ative agreements under subsection (e).”.

5 (b) INITIAL DESIGNATIONS AND AWARDS.—

6 (1) COMPETITION REQUIRED.—Not later than
7 180 days after the date of the enactment of this Act,
8 the Secretary of Commerce shall commence a com-
9 petition under subsection (d)(1) of section 28 of the
10 Stevenson-Wydler Technology Innovation Act of
11 1980 (Public Law 96–480), as added by subsection
12 (a).

13 (2) DESIGNATION AND AWARD.—Not later than
14 1 year after the date of the enactment of this Act,
15 if the Secretary has received at least 1 application
16 under subsection (g) of such section from an eligible
17 consortium whom the Secretary considers suitable
18 for designation under subsection (d)(1) of such sec-
19 tion, the Secretary shall—

20 (A) designate at least 1 regional tech-
21 nology hub under subsection (d)(1) of such sec-
22 tion; and

23 (B) award a grant or cooperative agree-
24 ment under subsection (f)(1) of such section to

1 each regional technology hub designated pursu-
2 ant to subparagraph (A) of this paragraph.

3 **SEC. 402. MANUFACTURING USA PROGRAM.**

4 (a) DEFINITIONS.—In this section:

5 (1) HISTORICALLY BLACK COLLEGE OR UNI-
6 VERSITY.—The term “historically Black college or
7 university” has the meaning given the term “part B
8 institution” in section 322 of the Higher Education
9 Act of 1965 (20 U.S.C. 1061)).

10 (2) MANUFACTURING USA INSTITUTE.—The
11 term “Manufacturing USA institute” means an in-
12 stitute described in section 34(d) of the National In-
13 stitute of Standards and Technology Act (15 U.S.C.
14 278s(d)).

15 (3) MANUFACTURING USA NETWORK.—The
16 term “Manufacturing USA Network” means the
17 network established under section 34(c) of the Na-
18 tional Institute of Standards and Technology Act
19 (15 U.S.C. 278s(e)).

20 (4) MANUFACTURING USA PROGRAM.—The
21 term “Manufacturing USA Program” means the
22 program established under section 34(b)(1) of the
23 National Institute of Standards and Technology Act
24 (15 U.S.C. 278s(b)(1)).

1 (5) MINORITY-SERVING INSTITUTION.—The
2 term “minority-serving institution” means an eligi-
3 ble institution described in section 371(a) of the
4 Higher Education Act of 1965 (20 U.S.C.
5 1067q(a)).

6 (6) NATIONAL PROGRAM OFFICE.—The term
7 “National Program Office” means the National Pro-
8 gram Office established under section 34(h)(1) of
9 the National Institute of Standards and Technology
10 Act (15 U.S.C. 278s(h)(1)).

11 (7) TRIBAL COLLEGE OR UNIVERSITY.—The
12 term “Tribal college or university” has the meaning
13 given the term in section 316(b)(3) of the Higher
14 Education Act of 1965 (20 U.S.C. 1059c(b)(3)).

15 (b) AUTHORIZATION OF APPROPRIATIONS TO EN-
16 HANCE AND EXPAND MANUFACTURING USA PROGRAM
17 AND SUPPORT INNOVATION AND GROWTH IN DOMESTIC
18 MANUFACTURING.—There is authorized to be appro-
19 priated \$1,500,000,000 for the period of fiscal years 2022
20 through 2026 for the Secretary of Commerce, acting
21 through the Director of the National Institute of Stand-
22 ards and Technology and in consultation with the Sec-
23 retary of Energy, the Secretary of Defense, and the heads
24 of such other Federal agencies as the Secretary of Com-
25 merce considers relevant—

1 (1) to carry out the Manufacturing USA Pro-
2 gram, including by awarding financial assistance
3 under section 34(e) of the National Institute of
4 Standards and Technology Act (15 U.S.C. 278s(e))
5 for Manufacturing USA institutes that were in effect
6 on the day before the date of the enactment of this
7 Act; and

8 (2) to expand such program to support innova-
9 tion and growth in domestic manufacturing.

10 (c) DIVERSITY PREFERENCES.—Section 34(e) of the
11 National Institute of Standards and Technology Act (15
12 U.S.C. 278s(e)) is amended by adding at the end the fol-
13 lowing:

14 “(8) DIVERSITY PREFERENCES.—In awarding
15 financial assistance under paragraph (1) for plan-
16 ning or establishing a Manufacturing USA institute,
17 an agency head shall prioritize Manufacturing USA
18 institutes that—

19 “(A) contribute to the geographical diver-
20 sity of the Manufacturing USA Program;

21 “(B) are located in an area with a low per
22 capita income; and

23 “(C) are located in an area with a high
24 proportion of socially disadvantaged residents.”.

1 (d) COORDINATION BETWEEN MANUFACTURING
2 USA PROGRAM AND HOLLINGS MANUFACTURING EXTEN-
3 SION PARTNERSHIP.—The Secretary shall facilitate the
4 coordination of the activities of the Manufacturing USA
5 Program and the activities of Hollings Manufacturing Ex-
6 tension Partnership with each other to the degree that
7 doing so does not diminish the effectiveness of the ongoing
8 activities of a Manufacturing USA institute or a Center
9 (as the term is defined in section 25(a) of the National
10 Institute of Standards and Technology Act (15 U.S.C.
11 278k(a)), including Manufacturing USA institutes enter-
12 ing into agreements with a Center (as so defined) that
13 the Secretary considers appropriate to provide services re-
14 lating to the mission of the Hollings Manufacturing Ex-
15 tension Partnership, including outreach, technical assist-
16 ance, workforce development, and technology transfer and
17 adoption assistance to small- and medium-sized manufac-
18 turers.

19 (e) ADVICE FROM THE NATIONAL MANUFACTURING
20 ADVISORY COUNCIL.—The Secretary shall seek advice
21 from the National Manufacturing Advisory Council on
22 matters concerning investment in and support of the man-
23 ufacturing workforce within the Manufacturing USA Pro-
24 gram, including those matters covered under section
25 404(d)(7).

1 (f) PARTICIPATION OF MINORITY-SERVING INSTITU-
2 TIONS, HISTORICALLY BLACK COLLEGES AND UNIVER-
3 SITIES, AND TRIBAL COLLEGES AND UNIVERSITIES.—

4 (1) IN GENERAL.—The Secretary of Commerce,
5 in consultation with the Secretary of Energy, the
6 Secretary of Defense, and the heads of such other
7 Federal agencies as the Secretary of Commerce con-
8 siders relevant, shall coordinate with existing and
9 new Manufacturing USA institutes to integrate cov-
10 ered entities as active members of the Manufac-
11 turing USA institutes, including through the devel-
12 opment of preferences in selection criteria for pro-
13 posals to create new Manufacturing USA institutes
14 or renew existing Manufacturing USA institutes that
15 are led by a covered entity.

16 (2) COVERED ENTITIES.—For purposes of this
17 subsection, a covered entity is—

18 (A) a minority-serving institution;

19 (B) an historically Black college or univer-
20 sity;

21 (C) a Tribal college or university; or

22 (D) a minority business enterprise (as de-
23 fined in section 1400.2 of title 15, Code of Fed-
24 eral Regulations, or successor regulation).

1 (g) DEPARTMENT OF COMMERCE POLICIES TO PRO-
2 MOTE DOMESTIC PRODUCTION OF TECHNOLOGIES DE-
3 VELOPED UNDER MANUFACTURING USA PROGRAM.—

4 (1) POLICIES.—

5 (A) IN GENERAL.—Each agency head (as
6 defined in section 34(a) of the National Insti-
7 tute of Standards and Technology Act (15
8 U.S.C. 278s(a))) and the Secretary of Defense
9 shall, in consultation with the Secretary of
10 Commerce, establish policies to promote the do-
11 mestic production of technologies developed by
12 the Manufacturing USA Network.

13 (B) ELEMENTS.—The policies developed
14 under subparagraph (A) shall include the fol-
15 lowing:

16 (i) Measures to partner domestic de-
17 velopers of goods, services, or technologies
18 by Manufacturing USA Network activities
19 with domestic manufacturers and sources
20 of financing.

21 (ii) Measures to develop and provide
22 incentives to promote transfer of intellec-
23 tual property and goods, services, or tech-
24 nologies developed by Manufacturing USA

1 Network activities to domestic manufactur-
2 ers.

3 (iii) Measures to assist with supplier
4 scouting and other supply chain develop-
5 ment, including the use of the Hollings
6 Manufacturing Extension Partnership to
7 carry out such measures.

8 (iv) A process to review and approve
9 or deny membership in a Manufacturing
10 USA institute by foreign-owned companies,
11 especially from countries of concern, in-
12 cluding the People's Republic of China.

13 (v) Measures to prioritize Federal pro-
14 curement of goods, services, or technologies
15 developed by the Manufacturing USA Net-
16 work activities from domestic sources, as
17 appropriate.

18 (C) PROCESSES FOR WAIVERS.—The poli-
19 cies established under this paragraph shall in-
20 clude processes to permit waivers, on a case by
21 case basis, for policies that promote domestic
22 production based on cost, availability, severity
23 of technical and mission requirements, emer-
24 gency requirements, operational needs, other
25 legal or international treaty obligations, or

1 other factors deemed important to the success
2 of the Manufacturing USA Program.

3 (2) PROHIBITION.—

4 (A) COMPANY DEFINED.—In this para-
5 graph, the term “company” has the meaning
6 given such term in section 847(a) of the Na-
7 tional Defense Authorization Act for Fiscal
8 Year 2020 (Public Law 116–92; 10 U.S.C.
9 2509 note).

10 (B) IN GENERAL.—A company of the Peo-
11 ple’s Republic of China may not participate in
12 the Manufacturing USA Program or the Manu-
13 facturing USA Network without a waiver, as
14 described in paragraph (1)(C).

15 (h) COORDINATION OF MANUFACTURING USA INSTI-
16 TUTES.—

17 (1) IN GENERAL.—Section 34(h) of the Na-
18 tional Institute of Standards and Technology Act
19 (15 U.S.C. 278s(h)) is amended by adding at the
20 end the following:

21 “(7) COUNCIL FOR COORDINATION OF INSTI-
22 TUTES.—

23 “(A) COUNCIL.—The National Program
24 Office shall establish or designate a council of
25 heads of any Manufacturing USA institute re-

1 ceiving Federal funding at any given time to
2 foster collaboration between Manufacturing
3 USA institutes.

4 “(B) MEETINGS.—The council established
5 or designated under subparagraph (A) shall
6 meet not less frequently than twice each year.

7 “(C) DUTIES OF THE COUNCIL.—The
8 council established under subparagraph (A)
9 shall assist the National Program Office in car-
10 rying out the functions of the National Pro-
11 gram Office under paragraph (2).”.

12 (2) REPORT REQUIRED.—Not later than 180
13 days after the date on which the council is estab-
14 lished under section 34(h)(7)(A) of the National In-
15 stitute of Standards and Technology Act, as added
16 by paragraph (1), the council shall submit to the
17 National Program Office a report containing rec-
18 ommendations for improving inter-network collabo-
19 ration.

20 (3) SUBMITTAL TO CONGRESS.—Not later than
21 30 days after the date on which the report required
22 by paragraph (2) is submitted to the National Pro-
23 gram Office, the Director of the National Institute
24 of Standards and Technology shall submit such re-
25 port to the Committee on Commerce, Science, and

1 Transportation of the Senate and the Committee on
2 Science, Space, and Technology of the House of
3 Representatives.

4 (i) REQUIREMENT FOR NATIONAL PROGRAM OFFICE
5 TO DEVELOP STRATEGIES FOR RETAINING DOMESTIC
6 PUBLIC BENEFIT AFTER CEASE OF FEDERAL FUND-
7 ING.—Section 34(h)(2)(C) of the National Institute of
8 Standards and Technology Act (15 U.S.C. 278s(h)(2)(C))
9 is amended by inserting “, including a strategy for retain-
10 ing domestic public benefits from Manufacturing USA in-
11 stitutes once Federal funding has been discontinued” after
12 “Program”.

13 (j) MODIFICATION OF FUNCTIONS OF NATIONAL
14 PROGRAM OFFICE TO INCLUDE DEVELOPMENT OF IN-
15 DUSTRY CREDENTIALS.—Section 34(h)(2)(J) of the Na-
16 tional Institute of Standards and Technology Act (15
17 U.S.C. 278s(h)(2)(J)) is amended by inserting “, includ-
18 ing the development of industry credentials” after “activi-
19 ties”.

1 **SEC. 403. ESTABLISHMENT OF EXPANSION AWARDS PRO-**
2 **GRAM IN HOLLINGS MANUFACTURING EX-**
3 **TENSION PARTNERSHIP AND AUTHORIZA-**
4 **TION OF APPROPRIATIONS FOR THE PART-**
5 **NERSHIP.**

6 (a) ESTABLISHMENT OF EXPANSION AWARDS PRO-
7 GRAM.—The National Institute of Standards and Tech-
8 nology Act (15 U.S.C. 271 et seq.) is amended by insert-
9 ing after section 25A (15 U.S.C. 278k–1) the following:

10 **“SEC. 25B. EXPANSION AWARDS PROGRAM.**

11 “(a) DEFINITIONS.—The terms used in this section
12 have the meanings given the terms in section 25.

13 “(b) ESTABLISHMENT.—The Director shall establish,
14 subject to the availability of appropriations, within the
15 Hollings Manufacturing Extension Partnership under sec-
16 tions 25 and 26 a program of expansion awards among
17 participants described in subsection (c) of this section for
18 the purposes described in subsection (d) of this section.

19 “(c) PARTICIPANTS.—Participants receiving awards
20 under this section shall be Centers, or a consortium of
21 Centers.

22 “(d) PURPOSE OF AWARDS.—An award under this
23 section shall be made for one or more of the following pur-
24 poses:

25 “(1) To provide worker education, training, de-
26 velopment, and entrepreneurship training and to

1 connect individuals or business with such services of-
2 fered in their community, which may include em-
3 ployee ownership and workforce training, connecting
4 manufacturers with career and technical education
5 entities, institutions of higher education (including
6 community colleges), workforce development boards,
7 labor organizations, and nonprofit job training pro-
8 viders to develop and support training and job place-
9 ment services, apprenticeship and online learning
10 platforms, for new and incumbent workers, program-
11 ming to prevent job losses when adopting new tech-
12 nologies and processes, and development of employee
13 ownership practices.

14 “(2) To mitigate vulnerabilities to cyberattacks,
15 including helping to offset the cost of cybersecurity
16 projects for small manufacturers.

17 “(3) To expand advanced technology services to
18 small- and medium-sized manufacturers, which may
19 include—

20 “(A) developing technology demonstration
21 laboratories;

22 “(B) services for the adoption of advanced
23 technologies, including smart manufacturing
24 technologies and practices; and

1 “(C) establishing partnerships, for the de-
2 velopment, demonstration, and deployment of
3 advanced technologies, with—

4 “(i) national laboratories (as defined
5 in section 2 of the Energy Policy Act of
6 2005 (42 U.S.C. 15801));

7 “(ii) Federal laboratories;

8 “(iii) Manufacturing USA institutes
9 (as described in section 402); and

10 “(iv) institutions of higher education.

11 “(4) To build capabilities across the Hollings
12 Manufacturing Extension Partnership for domestic
13 supply chain resiliency and optimization, including—

14 “(A) assessment of domestic manufac-
15 turing capabilities, expanded capacity for re-
16 searching and deploying information on supply
17 chain risk, hidden costs of reliance on offshore
18 suppliers, and other relevant topics; and

19 “(B) expanded services to provide indus-
20 try-wide support that assists United States
21 manufacturers with reshoring manufacturing to
22 strengthen the resiliency of domestic supply
23 chains, including in critical technology areas
24 and foundational manufacturing capabilities
25 that are key to domestic manufacturing com-

1 petitiveness and resiliency, including forming,
2 casting, machining, joining, surface treatment,
3 and tooling.

4 “(e) REIMBURSEMENT.—The Director may reim-
5 burse Centers for costs incurred by the Centers under this
6 section.

7 “(f) PROGRAM CONTRIBUTION.—Recipients of
8 awards under this section shall not be required to provide
9 a matching contribution.”.

10 (b) AUTHORIZATION OF APPROPRIATIONS.—

11 (1) IN GENERAL.—There is authorized to be
12 appropriated to carry out the Hollings Manufac-
13 turing Extension Partnership program under sec-
14 tions 25, 25A, and 26 of the National Institute of
15 Standards and Technology Act (15 U.S.C. 278k,
16 278k-1, and 278l), and section 25B of such Act, as
17 added by subsection (a), \$600,000,000 for each of
18 fiscal years 2022 through fiscal year 2026.

19 (2) BASE FUNDING.—Of the amounts appro-
20 priated pursuant to the authorization in paragraph
21 (1), \$270,000,000 shall be available in each fiscal
22 year to carry out the Hollings Manufacturing Exten-
23 sion Partnership under sections 25 and 25A of such
24 Act (15 U.S.C. 278k and 278k-1), of which
25 \$50,000,000 shall not be subject to cost share re-

1 requirements under subsection (e)(2) of such section:
2 Provided, That the authority made available pursu-
3 ant to this section shall be elective for any Manufac-
4 turing Extension Partnership Center that also re-
5 ceives funding from a State that is conditioned upon
6 the application of a Federal cost sharing require-
7 ment.

8 (3) EXPANSION AWARD PROGRAM.—Of the
9 amounts appropriated pursuant to the authorization
10 in paragraph (1), \$330,000,000 shall be available
11 each fiscal year to carry out section 25B of such
12 Act, as added by subsection (a).

13 **SEC. 404. NATIONAL MANUFACTURING ADVISORY COUNCIL.**

14 (a) DEFINITIONS.—In this section:

15 (1) ADVISORY COUNCIL.—The term “Advisory
16 Council” means the National Manufacturing Advi-
17 sory Council established under subsection (b)(1).

18 (2) APPROPRIATE COMMITTEES OF CON-
19 GRESS.—The term “appropriate committees of Con-
20 gress” means—

21 (A) the Committee on Health, Education,
22 Labor, and Pensions, the Committee on Com-
23 merce, Science, and Transportation, the Com-
24 mittee on Energy and Natural Resources, the

1 Committee on Armed Services, and the Com-
2 mittee on Appropriations of the Senate; and

3 (B) the Committee on Education and
4 Labor, the Committee on Science, Space, and
5 Technology, the Committee on Energy and
6 Commerce, the Committee on Armed Services,
7 and the Committee on Appropriations of the
8 House of Representatives.

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

11 (b) ESTABLISHMENT.—

12 (1) IN GENERAL.—The Secretary, in consulta-
13 tion with the Secretary of Labor, the Secretary of
14 Defense, the Secretary of Energy, and the Secretary
15 of Education, shall establish within the Department
16 of Commerce the National Manufacturing Advisory
17 Council.

18 (2) PURPOSE.—The purpose of the Advisory
19 Council shall be to—

20 (A) provide worker education, training, de-
21 velopment, and entrepreneurship training;

22 (B) connect individuals and business with
23 the services described in subparagraph (A) that
24 are offered in the community of the individuals
25 or businesses;

1 (C) coordinate services relating to em-
2 ployee engagement, including employee owner-
3 ship and workforce training;

4 (D) connect manufacturers with career and
5 technical education entities, institutions of high-
6 er education, community colleges, workforce de-
7 velopment boards, labor organizations, and non-
8 profit job training providers to develop and sup-
9 port training and job placement services and
10 apprenticeship and online learning platforms for
11 new and incumbent workers;

12 (E) develop programming to prevent job
13 losses as entities adopt new technologies and
14 processes; and

15 (F) develop best practices for employee
16 ownership.

17 (c) MISSION.—The mission of the Advisory Council
18 shall be to—

19 (1) ensure regular communication between the
20 Federal Government and the manufacturing sector
21 in the United States;

22 (2) advise the Federal Government regarding
23 policies and programs of the Federal Government
24 that affect manufacturing in the United States;

1 (3) provide a forum for discussing and pro-
2 posing solutions to problems relating to the manu-
3 facturing industry in the United States; and

4 (4) ensure that the United States remains the
5 preeminent destination throughout the world for in-
6 vestment in manufacturing.

7 (d) DUTIES.—The duties of the Advisory Council
8 shall include—

9 (1) meeting not less frequently than every 180
10 days to provide independent advice and rec-
11 ommendations to the Secretary regarding issues in-
12 volving manufacturing in the United States;

13 (2) completing specific tasks requested by the
14 Secretary;

15 (3) conveying input from key industry, labor,
16 academic, defense, governmental, and other stake-
17 holders to aid in the development of a national stra-
18 tegic plan for manufacturing in the United States;

19 (4) monitoring the status of technological devel-
20 opments, critical production capacity, skill avail-
21 ability, investment patterns, emerging defense needs,
22 and other key indicators of manufacturing competi-
23 tiveness to provide foresight for periodic updates to
24 the national strategic plan for manufacturing devel-
25 oped under paragraph (3);

1 (5) soliciting input from the public and private
2 sectors and academia relating to emerging trends in
3 manufacturing, the responsiveness of Federal pro-
4 gramming with respect to manufacturing, and sug-
5 gestions for areas of increased Federal attention
6 with respect to manufacturing;

7 (6) monitoring global manufacturing trends and
8 global threats to manufacturing sectors in the
9 United States;

10 (7) providing advice and recommendations to
11 the Federal Government on matters relating to in-
12 vestment in and support of the manufacturing work-
13 force relating to—

14 (A) worker participation, including through
15 labor organizations and through other methods
16 determined by the Advisory Council, in the
17 planning for deployment of new technologies
18 across an industry and within workplaces;

19 (B) training and education priorities for
20 the Federal Government and for employers to
21 assist workers in adapting the skills and experi-
22 ences of those workers to fit the demands of the
23 21st century economy;

24 (C) innovative suggestions from workers on
25 the development of new technologies and proc-

1 esses and, as appropriate, assessing the impact
2 of those technologies and processes on the
3 workforce and economy of the United States;

4 (D) management practices that lead to
5 worker employment, job quality, worker protec-
6 tion, worker participation and power in decision
7 making, and investment in worker career suc-
8 cess;

9 (E) policies and procedures to prioritize di-
10 versity and inclusion in the manufacturing and
11 technology workforce by expanding access to
12 job, career advancement, and management op-
13 portunities for underrepresented populations;
14 and

15 (F) advice on how to improve access to de-
16 mand-driven education, training, and re-train-
17 ing for workers, including community and tech-
18 nical colleges, higher education, apprenticeships
19 and work-based learning opportunities;

20 (8) with respect to the manufacturing.gov
21 website, or any successor thereto, providing input
22 and improvements in order to—

23 (A) make that website more user-friendly
24 to enhance the ability of that website to—

1 (i) provide information to manufactur-
2 ers; and

3 (ii) receive feedback from manufactur-
4 ers;

5 (B) assist that website in becoming the
6 principal place of interaction between manufac-
7 turers in the United States and Federal pro-
8 grams relating to manufacturing; and

9 (C) enable that website to provide assist-
10 ance to manufacturers relating to—

11 (i) international trade and investment
12 matters;

13 (ii) research and technology develop-
14 ment opportunities;

15 (iii) workforce development and train-
16 ing programs and opportunities;

17 (iv) small and medium manufacturer
18 needs; and

19 (v) industrial commons and supply
20 chain needs.

21 (e) MEMBERSHIP.—

22 (1) IN GENERAL.—The Advisory Council
23 shall—

1 (A) consist of individuals appointed by the
2 Secretary with a balance of backgrounds, expe-
3 riences, and viewpoints; and

4 (B) include an equal proportion of individ-
5 uals with manufacturing experience who rep-
6 resent private industry, academia, and labor or-
7 ganizations.

8 (2) PUBLIC PARTICIPATION.—The Secretary
9 shall, to the maximum extent practicable, accept rec-
10 ommendations from the public regarding the ap-
11 pointment of individuals under paragraph (1).

12 (3) PERIOD OF APPOINTMENT; VACANCIES.—

13 (A) IN GENERAL.—Each member of the
14 Advisory Council shall be appointed by the Sec-
15 retary for a term of 3 years.

16 (B) RENEWAL.—The Secretary may renew
17 an appointment made under subparagraph (A)
18 not more than 2 additional terms

19 (C) STAGGER TERMS.—The Secretary may
20 stagger the terms of the members of the Advi-
21 sory Council to ensure that the terms of the
22 members expire during different years.

23 (D) VACANCIES.—Any member appointed
24 to fill a vacancy on the Advisory Council occur-
25 ring before the expiration of the term for which

1 the member's predecessor was appointed shall
2 be appointed only for the remainder of that
3 term. A member may serve after the expiration
4 of that term until a successor has been ap-
5 pointed.

6 (f) TRANSFER OF FUNCTIONS.—

7 (1) IN GENERAL.—All functions of the United
8 States Manufacturing Council of the International
9 Trade Administration of the Department of Com-
10 merce, including the personnel, assets, and obliga-
11 tions of the United States Manufacturing Council of
12 the International Trade Administration of the De-
13 partment of Commerce, as in existence on the day
14 before the date of enactment of this Act, shall be
15 transferred to the Advisory Council.

16 (2) DEEMING OF NAME.—Any reference in law,
17 regulation, document, paper, or other record of the
18 United States to the United States Manufacturing
19 Council of the International Trade Administration of
20 the Department of Commerce shall be deemed a ref-
21 erence to the Advisory Council.

22 (3) UNEXPENDED BALANCES.—Unexpended
23 balances of appropriations, authorization, alloca-
24 tions, or other funds related to the United States
25 Manufacturing Council of the International Trade

1 Administration of the Department of Commerce
2 shall be available for use by the Advisory Council for
3 the purpose for which the appropriations, authoriza-
4 tions, allocations, or other funds were originally
5 made available.

6 (g) REPORT.—Not later than 180 days after the date
7 on which the Advisory Council holds the initial meeting
8 of the Advisory Council and annually thereafter, the Advi-
9 sory Council shall submit to the appropriate committees
10 of Congress a report containing a detailed statement of
11 the advice and recommendations of the Advisory Council
12 required under subsection (d)(7).

13 **TITLE V—MISCELLANEOUS**

14 **SEC. 501. STRATEGY AND REPORT ON ECONOMIC SECU-** 15 **RITY, SCIENCE, RESEARCH, AND INNOVATION** 16 **TO SUPPORT THE NATIONAL SECURITY** 17 **STRATEGY.**

18 (a) NATIONAL SECURITY STRATEGY DEFINED.—In
19 this section, the term “national security strategy” means
20 the national security strategy required by section 108 of
21 the National Security Act of 1947 (50 U.S.C. 3043).

22 (b) STRATEGY AND REPORT.—

23 (1) IN GENERAL.—Not later than 90 days after
24 the transmission of each national security strategy
25 under section 108(a) of the National Security Act of

1 1947 (50 U.S.C. 3043(a)), the Director of the Office
2 of Science and Technology Policy shall, in coordina-
3 tion with the National Science and Technology
4 Council, the Director of the National Economic
5 Council, and the heads of such other relevant Fed-
6 eral agencies as the Director of the Office of Science
7 and Technology Policy considers appropriate and in
8 consultation with such nongovernmental partners as
9 the Director of the Office of Science and Technology
10 Policy considers appropriate—

11 (A) review such strategy, programs, and
12 resources as the Director of the Office of
13 Science and Technology Policy determines per-
14 tain to United States national competitiveness
15 in science, research, innovation, and technology
16 transfer, including patenting and licensing, to
17 support the national security strategy;

18 (B) develop or revise a national strategy to
19 improve the national competitiveness of the
20 United States in science, research, and innova-
21 tion to support the national security strategy;
22 and

23 (C) submit to Congress—

1 (i) a report on the findings of the Di-
2 rector with respect to the review conducted
3 under subparagraph (A); and

4 (ii) the strategy developed or revised
5 under subparagraph (B).

6 (2) TERMINATION.—The requirement of para-
7 graph (1) shall terminate on the date that is 5 years
8 after the date of the enactment of this Act.

9 (c) ELEMENTS.—

10 (1) REPORT.—Each report submitted under
11 subsection (b)(1)(C)(i) shall include the following:

12 (A) An assessment of public and private
13 investment in civilian and military science and
14 technology and its implications for the
15 geostrategic position of the United States.

16 (B) A description of the prioritized eco-
17 nomic security interests and objectives, includ-
18 ing domestic job creation, of the United States
19 relating to science, research, and innovation
20 and an assessment of how investment in civilian
21 and military science and technology can ad-
22 vance those objectives.

23 (C) An assessment of global trends in
24 science and technology, including potential

1 threats to the leadership of the United States
2 in science and technology.

3 (D) An assessment of the national debt
4 and its implications for the economic and na-
5 tional security of the United States.

6 (E) An assessment of how regional efforts
7 are contributing and could contribute to the in-
8 novation capacity of the United States, includ-
9 ing programs run by State and local govern-
10 ments.

11 (F) An assessment of—

12 (i) workforce needs for competitive-
13 ness in key technology focus areas; and

14 (ii) any efforts needed—

15 (I) to expand pathways into key
16 technology focus areas; and

17 (II) to improve workforce devel-
18 opment and employment systems, as
19 well as programs and practices to
20 upskill incumbent workers.

21 (G) An assessment of barriers to competi-
22 tiveness and barriers to the development and
23 evolution of start-ups, small and mid-sized busi-
24 ness entities, and industries.

1 (H) An assessment of the effectiveness of
2 the Federal Government, federally funded re-
3 search and development centers, and national
4 labs in supporting and promoting technology
5 commercialization and technology transfer, in-
6 cluding an assessment of the adequacy of Fed-
7 eral research and development funding in cre-
8 ating new domestic manufacturing growth and
9 job creation across sectors and promoting com-
10 petitiveness and the development of new tech-
11 nologies.

12 (I) An assessment of manufacturing capac-
13 ity, logistics, and supply chain dynamics of
14 major export sectors, including access to a
15 skilled workforce, physical infrastructure, and
16 broadband network infrastructure.

17 (J) An assessment of how the Federal
18 Government is increasing the participation of
19 underrepresented populations in science, re-
20 search, innovation, and manufacturing.

21 (K) An assessment of public-private part-
22 nerships in technology commercialization, in-
23 cluding—

24 (i) the structure of current technology
25 research and commercialization arrange-

1 ments with regard to public-private part-
2 nerships; and

3 (ii) the extent to which intellectual
4 property developed with Federal funding—

5 (I) is being used to manufacture
6 in the United States rather than in
7 other countries; and

8 (II) is being used by foreign busi-
9 ness entities that are majority owned
10 or controlled (as defined in section
11 800.208 of title 31, Code of Federal
12 Regulations, or a successor regula-
13 tion), or minority owned greater than
14 25 percent by—

15 (aa) any governmental orga-
16 nization of the People's Republic
17 of China; or

18 (bb) any other entity that
19 is—

20 (AA) known to be
21 owned or controlled by any
22 governmental organization
23 of the People's Republic of
24 China; or

1 (BB) organized under,
2 or otherwise subject to, the
3 laws of the People's Repub-
4 lic of China.

5 (2) STRATEGY.—Each strategy submitted
6 under subsection (b)(1)(C)(ii) shall include the fol-
7 lowing:

8 (A) A plan to utilize available tools to ad-
9 dress or minimize the leading threats and chal-
10 lenges and to take advantage of the leading op-
11 portunities, particularly in regards to key tech-
12 nology focus areas central to international com-
13 petition, including the following:

14 (i) Specific objectives, tasks, metrics,
15 and milestones for each relevant Federal
16 agency.

17 (ii) Strategic objectives and priorities
18 necessary to maintain the leadership of the
19 United States in science and technology,
20 including near-term, medium-term, and
21 long-term research priorities.

22 (iii) Specific plans to safeguard re-
23 search and technology funded, as appro-
24 priate, in whole or in part, by the Federal
25 Government, including in the key tech-

1 nology focus areas, from theft or
2 exfiltration by foreign entities of concern.

3 (iv) Specific plans to support public
4 and private sector investment in research,
5 technology development, education and
6 workforce development, and domestic man-
7 ufacturing supportive of the national eco-
8 nomic competitiveness of the United States
9 and to foster the use of public-private part-
10 nerships.

11 (v) Specific plans to promote sustain-
12 ability practices and strategies for increas-
13 ing jobs in the United States.

14 (vi) A description of—

15 (I) how the strategy submitted
16 under subsection (b)(1)(C)(ii) sup-
17 ports the national security strategy;
18 and

19 (II) how the strategy submitted
20 under such subsection is integrated
21 and coordinated with the most recent
22 national defense strategy under sec-
23 tion 113(g) of title 10, United States
24 Code.

1 (vii) A plan to encourage the govern-
2 ments of countries that are allies or part-
3 ners of the United States to cooperate with
4 the execution of the strategy submitted
5 under subsection (b)(1)(C)(ii), where ap-
6 propriate.

7 (viii) A plan for how the United
8 States should develop local and regional
9 capacity for building innovation ecosystems
10 across the Nation by providing Federal
11 support.

12 (ix) A plan for strengthening the in-
13 dustrial base of the United States.

14 (x) A plan to remove or update overly
15 burdensome or outdated Federal regula-
16 tions as appropriate.

17 (xi) A plan—

18 (I) to further incentivize industry
19 participation in public-private partner-
20 ships for the purposes of accelerating
21 technology research and commer-
22 cialization, including alternate ways of
23 accounting for in-kind contributions
24 and value of partially manufactured
25 products;

1 (II) to ensure that intellectual
2 property developed with Federal fund-
3 ing is commercialized in the United
4 States; and

5 (III) to ensure, to the maximum
6 appropriate extent, that intellectual
7 property developed with Federal fund-
8 ing is not being used by foreign busi-
9 ness entities that are majority owned
10 or controlled (as defined in section
11 800.208 of title 31, Code of Federal
12 Regulations, or a successor regula-
13 tion), or minority owned greater than
14 25 percent by—

15 (aa) any governmental orga-
16 nization of the People's Republic
17 of China; or

18 (bb) any other entity that
19 is—

20 (AA) known to be
21 owned or controlled by any
22 governmental organization
23 of the People's Republic of
24 China; or

1 (BB) organized under,
2 or otherwise subject to, the
3 laws of the People's Repub-
4 lic of China.

5 (xii) An identification of additional re-
6 sources, administrative action, or legisla-
7 tive action recommended to assist with the
8 implementation of such strategy.

9 (d) RESEARCH AND DEVELOPMENT FUNDING.—The
10 Director of the Office of Science and Technology Policy
11 shall, as the Director considers necessary, consult with the
12 Director of the Office of Management and Budget and
13 with the heads of such other elements of the Executive
14 Office of the President as the Director of the Office of
15 Science and Technology Policy considers appropriate to
16 ensure that the recommendations and priorities with re-
17 spect to research and development funding as expressed
18 in the most recent report and strategy submitted under
19 subsection (b)(1)(C) are incorporated into the develop-
20 ment of annual budget requests for Federal research agen-
21 cies.

22 (e) PUBLICATION.—The Director of the Office of
23 Science and Technology Policy shall, consistent with the
24 protection of national security and other sensitive matters
25 and otherwise to the maximum extent practicable, make

1 each report submitted under subsection (b)(1)(C)(i) pub-
2 licly available on an internet website of the Office of
3 Science and Technology Policy. The report may include
4 a classified annex if the working group determines appro-
5 priate.

6 **SEC. 502. PERSON OR ENTITY OF CONCERN PROHIBITION.**

7 No person published on the list under section 1237(b)
8 of the Strom Thurmond National Defense Authorization
9 Act for Fiscal Year 1999 (Public Law 105–261; 50 U.S.C.
10 1701 note) or entity identified under section 1260H of
11 the William M. (Mac) Thornberry National Defense Au-
12 thorization Act for Fiscal Year 2021 (Public Law 116–
13 283) may receive or participate in any grant, award, pro-
14 gram, support, or other activity under—

15 (1) the Directorate established in section 102;

16 (2) the supply chain resiliency program under
17 section 504;

18 (3) section 28(b)(1) of the Stevenson-Wydler
19 Technology Innovation Act of 1980 (15 U.S.C. 3701
20 et seq.), as added by section 401(a); or

21 (4) the Manufacturing USA Program, as im-
22 proved and expanded under section 402.

1 **SEC. 503. STUDY ON EMERGING SCIENCE AND TECH-**
2 **NOLOGY CHALLENGES FACED BY THE**
3 **UNITED STATES AND RECOMMENDATIONS TO**
4 **ADDRESS THEM.**

5 (a) **SHORT TITLE.**—This section may be cited as the
6 “National Strategy to Ensure American Leadership Act
7 of 2021” or the “National SEAL Act of 2021”.

8 (b) **STUDY.**—

9 (1) **IN GENERAL.**—The Secretary of Commerce
10 shall seek to enter into an agreement with the Na-
11 tional Academies of Sciences, Engineering, and Med-
12 icine to conduct a study—

13 (A) to identify the 10 most critical emerg-
14 ing science and technology challenges facing the
15 United States; and

16 (B) to develop recommendations for legis-
17 lative or administrative action to ensure United
18 States leadership in matters relating to such
19 challenges.

20 (2) **ELEMENTS.**—The study conducted under
21 paragraph (1) shall include identification, review,
22 and evaluation of the following:

23 (A) Matters pertinent to identification of
24 the challenges described in paragraph (1)(A).

25 (B) Matters relating to the recommenda-
26 tions developed under paragraph (1)(B), includ-

1 ing with respect to education and workforce de-
2 velopment necessary to address each of the
3 challenges identified under paragraph (1)(A).

4 (C) Matters related to the review of key
5 technology focus areas by the Director of the
6 National Science Foundation under section 5.

7 (D) An assessment of the current relative
8 balance in leadership in addressing the chal-
9 lenges identified in paragraph (1)(A) between
10 the United States, allies or key partners of the
11 United States, and the People's Republic of
12 China.

13 (3) TIMEFRAME.—

14 (A) AGREEMENT.—The Secretary of Com-
15 merce shall seek to enter into the agreement re-
16 quired by paragraph (1) on or before the date
17 that is 60 days after the date of enactment of
18 this Act.

19 (B) FINDINGS.—Under an agreement en-
20 tered into under paragraph (1), the National
21 Academies of Sciences, Engineering, and Medi-
22 cine shall, not later than 1 year after the date
23 on which the Secretary of Commerce and the
24 National Academies enter into such agreement,
25 transmit to the Secretary of Commerce the

1 findings of the National Academies with respect
2 to the study conducted pursuant to such agree-
3 ment.

4 (c) REPORT.—

5 (1) IN GENERAL.—Not later than 30 days after
6 the date on which the Secretary of Commerce re-
7 ceives the findings of the National Academies of
8 Sciences, Engineering, and Medicine with respect to
9 the study conducted under subsection (b), the Sec-
10 retary of Commerce shall submit to Congress a
11 “Strategy to Ensure American Leadership” report
12 on such study.

13 (2) CONTENTS.—The report submitted under
14 paragraph (1) shall include the following:

15 (A) The findings of the National Acad-
16 emies of Sciences, Engineering, and Medicine
17 with respect to the study conducted under sub-
18 section (b).

19 (B) The conclusions of the Secretary of
20 Commerce with respect to such findings.

21 (C) The recommendations developed under
22 subsection (b)(1)(B).

23 (D) Such other recommendations for legis-
24 lative or administrative action as the Secretary

1 of Commerce may have with respect to such
2 findings and conclusions.

3 (3) CLASSIFIED ANNEX.—The report submitted
4 under paragraph (1) shall be submitted in unclassi-
5 fied form, but may include a classified annex if the
6 Secretary of Commerce determines appropriate.

7 (d) INFORMATION FROM FEDERAL AGENCIES.—

8 (1) IN GENERAL.—The National Academies of
9 Sciences, Engineering, and Medicine may secure di-
10 rectly from a Federal department or agency such in-
11 formation as the National Academies of Sciences,
12 Engineering, and Medicine consider necessary to
13 carry out the study under subsection (b).

14 (2) FURNISHING INFORMATION.—On request of
15 the National Academies of Sciences, Engineering,
16 and Medicine for information, the head of the de-
17 partment or agency shall furnish such information to
18 the National Academies of Sciences, Engineering,
19 and Medicine.

20 (e) CONSULTATION.—The Secretary of Defense and
21 the Director of National Intelligence shall provide support
22 upon request from the Secretary of Commerce or the Na-
23 tional Academies to carry out this section.

24 (f) NON-DUPLICATION OF EFFORT.—In carrying out
25 subsection (b), the Secretary of Commerce shall, to the

1 degree practicable, coordinate with the steering committee
2 established under section 236(a) of the William M. (Mac)
3 Thornberry National Defense Authorization Act for Fiscal
4 Year 2021 (Public Law 116–283).

5 **SEC. 504. SUPPLY CHAIN RESILIENCY PROGRAM.**

6 (a) DEFINITIONS.—In this section:

7 (1) CRITICAL INDUSTRY.—The term “critical
8 industry” means an industry identified under sub-
9 section (f)(1)(A)(i).

10 (2) CRITICAL INFRASTRUCTURE.—The term
11 “critical infrastructure” has the meaning given the
12 term in the Critical Infrastructures Protection Act
13 of 2001 (42 U.S.C. 5195c).

14 (3) LABOR ORGANIZATION.—The term “labor
15 organization” has the meaning given the term in
16 section 101.

17 (4) PROGRAM.—The term “program” means
18 the supply chain resiliency and crisis response pro-
19 gram established under subsection (b).

20 (5) RESILIENT SUPPLY CHAIN.—The term “re-
21 silient supply chain” means a supply chain that—

22 (A) ensures that the United States can
23 sustain critical industry production, supply
24 chains, services, and access to critical goods and
25 services during supply chain shocks, including

1 pandemic and biological threats, cyberattacks,
2 extreme weather events, terrorist and geo-
3 political attacks, great power conflicts, and
4 other threats to the national security of the
5 United States; and

6 (B) has key components of resilience that
7 include—

8 (i) effective private sector risk man-
9 agement and mitigation planning to sus-
10 tain critical supply chains and supplier
11 networks during a supply chain shock;

12 (ii) minimized or managed exposure to
13 supply chain shocks; and

14 (iii) the financial and operational ca-
15 pacity to—

16 (I) sustain critical industry sup-
17 ply chains during shocks; and

18 (II) recover from supply chain
19 shocks.

20 (6) RELEVANT COMMITTEES OF CONGRESS.—

21 The term “relevant committees of Congress”
22 means—

23 (A) the Committee on Commerce, Science,
24 and Transportation of the Senate;

1 (B) the Committee on Appropriations of
2 the Senate;

3 (C) the Committee on Finance of the Sen-
4 ate;

5 (D) the Committee on Homeland Security
6 and Governmental Affairs of the Senate;

7 (E) the Committee on Armed Services of
8 the Senate;

9 (F) the Select Committee on Intelligence of
10 the Senate;

11 (G) the Committee on Science, Space, and
12 Technology of the House of Representatives;

13 (H) the Committee on Energy and Com-
14 merce of the House of Representatives;

15 (I) the Committee on Appropriations of the
16 House of Representatives;

17 (J) the Committee on Ways and Means of
18 the House of Representatives;

19 (K) the Committee on Homeland Security
20 of the House of Representatives;

21 (L) the Committee on Armed Services of
22 the House of Representatives; and

23 (M) the Permanent Select Committee on
24 Intelligence of the House of Representatives.

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

3 (8) SUPPLY CHAIN INFORMATION.—The term
4 “supply chain information” means information that
5 is not customarily in the public domain and relating
6 to—

7 (A) sustaining and adapting supply chains
8 during a supply chain shock, including pan-
9 demic and biological threats, cyberattacks, ex-
10 treme weather events, terrorist and geopolitical
11 attacks, great power conflict, and other threats
12 to national security;

13 (B) the development of supply chain risk
14 mitigation and recovery planning with respect
15 to a supply chain shock, including any planned
16 or past assessment, projection, or estimate of a
17 vulnerability within the supply chain, including
18 testing, supplier network assessments, produc-
19 tion flexibility, risk evaluations thereto, risk
20 management planning, or risk audits; or

21 (C) operational best practices, planning,
22 and supplier partnerships that enable enhanced
23 supply chain resilience during a supply chain
24 shock, including response, repair, recovery, re-
25 construction, insurance, or continuity.

1 (b) ESTABLISHMENT.—The Secretary shall establish
2 in the Department of Commerce a supply chain resiliency
3 and crisis response program to carry out the activities de-
4 scribed in subsection (d).

5 (c) MISSION.—The mission of the program shall be
6 to—

7 (1) help to promote the leadership of the
8 United States with respect to critical industries that
9 are essential to the mid-term and long-term national
10 security of the United States; and

11 (2) encourage partnerships between the Federal
12 Government and industry, labor organizations, and
13 State, local, territorial, and Tribal governments in
14 order to—

15 (A) promote resilient supply chains; and

16 (B) respond to critical industry supply
17 chain shocks.

18 (d) ACTIVITIES.—Under the program, the Secretary,
19 acting through 1 or more bureaus or other divisions of
20 the Department of Commerce as appropriate, shall carry
21 out activities—

22 (1) in coordination with the private sector, to—

23 (A) map and monitor critical industry sup-
24 ply chains; and

1 (B) identify high priority supply chain
2 gaps and vulnerabilities in critical industries
3 that—

4 (i) exist as of the date of enactment
5 of this Act; or

6 (ii) are anticipated in the future;

7 (2) in coordination with the private sector and
8 State, local, territorial, and Tribal governments, and
9 as appropriate, in cooperation with the governments
10 of countries that are allies or key international part-
11 ners of the United States, to—

12 (A) identify opportunities to reduce supply
13 chain gaps and vulnerabilities in critical indus-
14 tries;

15 (B) encourage partnerships between the
16 Federal Government and industry, labor organi-
17 zations, and State, local, territorial, and Tribal
18 governments to better respond to supply chain
19 shocks to critical industries and coordinate re-
20 sponse efforts; and

21 (C) develop contingency plans and coordi-
22 nation mechanisms to improve critical industry
23 supply chain response to supply chain shocks;
24 and

1 (3) acting within existing authorities of the De-
2 partment of Commerce and in coordination with the
3 Secretary of State and the United States Trade
4 Representative, to—

5 (A) work with governments of countries
6 that are allies or partners of the United States
7 to promote diversified and resilient supply
8 chains that ensure the supply of critical goods
9 to both the United States and companies of
10 countries that are allies of the United States;
11 and

12 (B) coordinate with other divisions of the
13 Department of Commerce and other Federal
14 agencies to leverage existing authorities, as of
15 the date of enactment of this Act, to encourage
16 resilient supply chains.

17 (e) COORDINATION GROUP.—In carrying out the ac-
18 tivities under subsection (d), the Secretary may—

19 (1) establish a unified coordination group,
20 which may include private sector partners, as appro-
21 priate, to serve as the primary method for coordi-
22 nating between and among Federal agencies to plan
23 for supply chain shocks;

1 (2) establish subgroups of the unified coordina-
2 tion group established under paragraph (1) led by
3 the head of an appropriate Federal agency;

4 (3) through the unified coordination group es-
5 tablished under paragraph (1)—

6 (A) acquire on a voluntary basis technical,
7 engineering, and operational supply chain infor-
8 mation from the private sector, in a manner
9 that ensures any supply chain information pro-
10 vided by the private sector is kept confidential
11 and as required under section 552 of title 5,
12 United States Code (commonly known as the
13 “Freedom of Information Act”);

14 (B) study the supply chain information ac-
15 quired under subparagraph (A) to assess crit-
16 ical industry supply chain resilience and inform
17 planning;

18 (C) convene with relevant private sector
19 entities to share best practices, planning, and
20 capabilities to response to potential supply
21 chain shocks; and

22 (D) develop contingency plans and coordi-
23 nation mechanisms to ensure an effective and
24 coordinated response to potential supply chain
25 shocks; and

1 (4) enter into agreements with governments of
2 countries that are allies or partners of the United
3 States relating to enhancing critical industry supply
4 chain security and resilience in response to supply
5 chain shocks.

6 (f) REPORT ON SUPPLY CHAIN RESILIENCY AND DO-
7 MESTIC MANUFACTURING.—

8 (1) IN GENERAL.—Not later than 1 year after
9 the date of enactment of this Act, and from time to
10 time thereafter, the Secretary, in coordination with
11 relevant Federal agencies and relevant private sector
12 entities, labor organizations, and State, local, terri-
13 torial, and Tribal governments, shall submit to the
14 relevant committees of Congress a review that—

15 (A) identifies—

16 (i) industries that are critical for the
17 national security of the United States, con-
18 sidering the key technology focus areas
19 under this Act and critical infrastructure;
20 and

21 (ii) supplies that are critical to the
22 crisis preparedness of the United States;

23 (B) describes—

24 (i) the manufacturing base and supply
25 chains for critical industries in the United

1 States as of the date of enactment of this
2 Act, including the manufacturing base and
3 supply chains for—

4 (I) raw materials;

5 (II) production equipment; and

6 (III) other goods that are essen-
7 tial to the production of technologies
8 and supplies for critical industries;
9 and

10 (ii) the ability of the United States
11 to—

12 (I) maintain readiness; and

13 (II) in response to a supply chain
14 shock—

15 (aa) surge production in
16 critical industries; and

17 (bb) maintain access to crit-
18 ical goods and services;

19 (C) identifies defense, intelligence, home-
20 land, economic, domestic labor supply, natural,
21 geopolitical, or other contingencies that may
22 disrupt, strain, compromise, or eliminate the
23 supply chain for those critical industries;

24 (D) assesses—

1 (i) the resiliency and capacity of the
2 manufacturing base, supply chains, and
3 workforce of the United States, the allies
4 of the United States, and the partners of
5 the United States that can sustain critical
6 industries through a supply chain shock;
7 and

8 (ii) any single points of failure in the
9 supply chains described in clause (i);

10 (E) assesses the flexible manufacturing ca-
11 pacity and capabilities available in the United
12 States in the case of an emergency;

13 (F) makes specific recommendations to im-
14 prove the security and resiliency of manufac-
15 turing capacity and supply chains for critical
16 industries by—

17 (i) developing long-term strategies;

18 (ii) increasing visibility into the net-
19 works and capabilities of suppliers;

20 (iii) identifying industry best prac-
21 tices;

22 (iv) evaluating how diverse supplier
23 networks, multi-platform and multi-region
24 production capabilities and sources, and in-

1 tegrated global and regional supply chains
2 can enhance the resilience of—

3 (I) critical industries in the
4 United States;

5 (II) jobs in the United States;

6 (III) capabilities of the United
7 States; and

8 (IV) the support access of the
9 United States to needed goods and
10 services during a supply chain shock;

11 (v) identifying and mitigating risks,
12 including—

13 (I) the financial and operational
14 risks of a supply chain after a supply
15 chain shock;

16 (II) significant vulnerabilities to
17 extreme weather events, cyberattacks,
18 pandemic and biological threats, ter-
19 rorist and geopolitical attacks, and
20 other emergencies; and

21 (III) exposure to gaps and
22 vulnerabilities in—

23 (aa) domestic capacity or ca-
24 pabilities; and

1 (bb) sources of imports
2 needed to sustain critical indus-
3 tries;

4 (vi) identifying enterprise resource
5 planning systems that are—

6 (I) compatible across supply
7 chain tiers; and

8 (II) affordable for small and me-
9 dium-sized businesses;

10 (vii) understanding the total cost of
11 ownership, total value contribution, and
12 other best practices that encourage stra-
13 tegic partnerships throughout supply
14 chains;

15 (viii) understanding Federal procure-
16 ment opportunities to increase resiliency of
17 supply chains for goods and services and
18 fill gaps in domestic purchasing;

19 (ix) identifying policies that maximize
20 job retention and creation in the United
21 States, including workforce development
22 programs;

23 (x) identifying opportunities to work
24 with allies or key partners of the United

1 States in building more resilient critical in-
2 dustry supply chains and mitigating risks;

3 (xi) identifying areas requiring further
4 investment in research and development or
5 workforce education; and

6 (xii) identifying such other services as
7 the Secretary determines necessary;

8 (G) provides guidance to the Department
9 of Commerce, the National Science Foundation,
10 and other relevant Federal agencies with re-
11 spect to technologies and supplies that should
12 be prioritized;

13 (H) with respect to countries that are al-
14 lies or key partners of the United States—

15 (i) reviews and, if appropriate, pro-
16 vides recommendations for expanding the
17 sourcing of goods associated with critical
18 industries from those countries; and

19 (ii) recommends coordination with
20 those countries on—

21 (I) sourcing critical raw mate-
22 rials, inputs, and products; and

23 (II) sustaining production and
24 availability of critical supplies during
25 a supply chain shock; and

1 (I) monitors and makes recommendations
2 for strengthening the financial and operational
3 health of small and medium-sized businesses in
4 supply chains of the United States and coun-
5 tries that are allies or partners of the United
6 States to mitigate risks and ensure diverse and
7 competitive supplier markets that are less vul-
8 nerable to single points of failure.

9 (2) PROHIBITION.—The report submitted under
10 paragraph (1) may not include—

11 (A) supply chain information that is not
12 aggregated; or

13 (B) confidential business information of a
14 private sector entity.

15 (g) SEMICONDUCTOR INCENTIVES.—

16 (1) IN GENERAL.—The Secretary shall carry
17 out the program established under section 9902 of
18 the William M. (Mac) Thornberry National Defense
19 Authorization Act for Fiscal Year 2021 (Public Law
20 116–283) as part of the program.

21 (2) TECHNICAL AND CONFORMING AMEND-
22 MENT.—Section 9902(a)(1) of the William M. (Mac)
23 Thornberry National Defense Authorization Act for
24 Fiscal Year 2021 (Public Law 116–283) is amended
25 by striking “in the Department of Commerce” and

1 inserting “as part of the program established under
2 section 504 of the Endless Frontier Act”.

3 (h) REPORT TO CONGRESS.—Concurrent with the an-
4 nual submission by the President of the budget under sec-
5 tion 1105 of title 31, United States Code, the Secretary
6 shall submit to the relevant committees of Congress a re-
7 port that contains a summary of every activity carried out
8 under this section during the year covered by the report.

9 (i) COORDINATION.—

10 (1) IN GENERAL.—In implementing the pro-
11 gram, the Secretary shall, as appropriate coordinate
12 with—

13 (A) the heads of Federal agencies, includ-
14 ing—

15 (i) the Secretary of State; and

16 (ii) the United States Trade Rep-
17 resentative; and

18 (B) the Attorney General and the Federal
19 Trade Commission with respect to—

20 (i) advice on the design and activities
21 of the unified coordination group described
22 in subsection (e)(1); and

23 (ii) ensuring compliance with Federal
24 antitrust law.

1 (2) SPECIFIC COORDINATION.—In implementing
2 the program, with respect to supply chains involving
3 specific sectors, the Secretary shall, as appropriate,
4 coordinate with—

5 (A) the Secretary of Defense;

6 (B) the Secretary of Homeland Security;

7 (C) the Secretary of the Treasury;

8 (D) the Secretary of Energy;

9 (E) the Secretary of Transportation;

10 (F) the Secretary of Agriculture;

11 (G) the Director of National Intelligence;

12 and

13 (H) the heads of other relevant agencies.

14 (j) RULE OF CONSTRUCTION.—Nothing in this sec-
15 tion shall be construed to require any private entity—

16 (1) to share information with the Secretary;

17 (2) to request assistance from the Secretary; or

18 (3) that requests assistance from the Secretary

19 to implement any measure or recommendation sug-
20 gested by the Secretary.

21 (k) PROTECTIONS.—

22 (1) IN GENERAL.—

23 (A) PROTECTIONS.—Subsections (a)(1),

24 (b), (c), and (d) of section 2224 of the Home-

25 land Security Act of 2002 (6 U.S.C. 673) shall

1 apply to the voluntary submission of supply
2 chain information by a private entity under this
3 section in the same manner as those provisions
4 apply to critical infrastructure information vol-
5 untarily submitted to a covered agency for an
6 other informational purpose under that sub-
7 section if the voluntary submission is accom-
8 panied by an express statement described in
9 paragraph (2) of this subsection; and

10 (B) REFERENCES.—For the purpose of
11 this subsection, with respect to section 2224 of
12 the Homeland Security Act of 2002 (6 U.S.C.
13 673)——

14 (i) the express statement described in
15 subsection (a)(1) of that section shall be
16 deemed to refer to the express statement
17 described in paragraph (2) of this sub-
18 section;

19 (ii) references in the subsections de-
20 scribed in subparagraph (A) to “this sub-
21 title” shall be deemed to refer to this sec-
22 tion;

23 (iii) the reference to “protecting crit-
24 ical infrastructure or protected systems” in
25 subsection (a)(1)(E)(iii) of that section

1 shall be deemed to refer to carrying out
2 this section; and

3 (iv) the reference to “critical infra-
4 structure information” in subsections (b)
5 and (c) of that section shall be deemed to
6 refer to supply chain information.

7 (2) EXPRESS STATEMENT.—The express state-
8 ment described in this paragraph, with respect to in-
9 formation or records, is—

10 (A) in the case of written information or
11 records, a written marking on the information
12 or records substantially similar to the following:
13 “This information is voluntarily submitted to
14 the Federal Government in expectation of pro-
15 tection from disclosure as provided by the provi-
16 sions of section 504 of the Endless Frontier
17 Act.”; or

18 (B) in the case of oral information, a writ-
19 ten statement similar to the statement de-
20 scribed in subparagraph (A) submitted within a
21 reasonable period following the oral communica-
22 tion.

23 (3) INAPPLICABILITY TO SEMICONDUCTOR IN-
24 CENTIVE PROGRAM.—This subsection shall not apply
25 to the voluntary submission of supply chain informa-

1 (B) A Tribal College or University (as de-
2 fined in section 316 of the Higher Education
3 Act of 1965 (20 U.S.C. 1059e)).

4 (C) A nonprofit entity that conducts Fed-
5 erally funded research.

6 (4) RESEARCH LABORATORY.—The term “Re-
7 search Laboratory” means the following:

8 (A) A National Laboratory (as defined in
9 section 2 of the Energy Policy Act of 2005 (42
10 U.S.C. 15801)).

11 (B) A Federally Funded Research and De-
12 velopment Center for purposes of section
13 35.017 of title 48, Code of Federal Regulations,
14 or a successor regulation.

15 (b) AWARD AND MODIFICATION OF GRANTS, COOP-
16 ERATIVE AGREEMENTS AND OTHER FINANCIAL ASSIST-
17 ANCE FOR INSTITUTIONS OF HIGHER EDUCATION, RE-
18 SEARCH LABORATORIES, AND OTHER RESEARCH INSTI-
19 TUTIONS TO ADDRESS MATTERS RELATING TO DISRUP-
20 TION CAUSED BY COVID-19.—

21 (1) IN GENERAL.—Each officer specified in
22 paragraph (2) may exercise the authorities described
23 in paragraph (3).

24 (2) OFFICERS.—The officers specified in this
25 paragraph are as follows:

1 (A) The Secretary of Commerce, acting
2 through the Administrator of the National Ocea-
3 nic and Atmospheric Administration and the
4 Director of the National Institute of Standards
5 and Technology.

6 (B) The Secretary of Agriculture.

7 (C) The Secretary of Defense.

8 (D) The Secretary of Education.

9 (E) The Secretary of Energy, acting for
10 the Department of Energy (with respect to En-
11 ergy Efficiency and Renewable Energy, Nuclear
12 Energy, and Fossil Research and Development)
13 and through the Office of Science, the Ad-
14 vanced Research Projects Agency–Energy
15 (ARPA–E), and the Office of Electricity.

16 (F) The Secretary of Interior, acting
17 through the Director of the United States Geo-
18 logical Survey.

19 (G) The Secretary of Health and Human
20 Services, acting through the Director of the Na-
21 tional Institutes of Health.

22 (H) The Secretary of Transportation.

23 (I) The Administrator of the National Aer-
24 onautics and Space Administration.

1 (J) The Administrator of the Environ-
2 mental Protection Agency.

3 (K) The Director of the National Science
4 Foundation.

5 (3) AUTHORITIES.—The officers specified in
6 paragraph (2) may—

7 (A) provide supplemental funding to ex-
8 tend the duration of an award disrupted be-
9 cause of the COVID–19 public health emer-
10 gency to a research institution, Research Lab-
11 oratory, or individual that was awarded before
12 the date of the enactment of this Act, or to ex-
13 pand the purposes of such an award, in order
14 to—

15 (i) enable a postsecondary student or
16 post-doctoral researcher to complete work;

17 (ii) enable research scientists, tech-
18 nical staff, research associates, and prin-
19 cipal investigators to complete work;

20 (iii) extend the training of a postsec-
21 ondary student, or the employment of a
22 post-doctoral researcher, on an ongoing re-
23 search project for up to 2 years because of
24 the disruption of the job market;

1 (iv) create research opportunities for
2 up to 2 years for graduate students and
3 post-doctoral researchers;

4 (v) replace, refurbish, or otherwise
5 make usable laboratory animals, reagents,
6 equipment, or other items required for re-
7 search;

8 (vi) facilitate other research (including
9 field work), training, and ongoing con-
10 struction activities, including at institu-
11 tions that are disproportionately affected
12 by the COVID–19 public health emergency
13 (such as minority-serving institutions and
14 2-year institutions of higher education);

15 (vii) enable experimental field cam-
16 paigns and maintenance of field infrastruc-
17 ture, including through replacement of dis-
18 rupted experimental data to enable comple-
19 tion of impacted research; and

20 (viii) support training in online course
21 delivery and virtual research experiences
22 that will improve quality and access needed
23 to continue undergraduate, graduate, and
24 post-doctoral training;

1 (B) issue awards to research institutions,
2 Research Laboratories, or other individuals to
3 conduct research on the effects of the
4 Coronavirus Disease 2019 and future potential
5 pandemics, on the effects and effectiveness of
6 responses to such diseases, and on improving
7 the prediction of the possible courses of such
8 pandemics; and

9 (C) provide flexibility on an award for
10 funds made available to an agency, by any prior
11 or subsequent Act, by modifying the terms and
12 conditions of the award with a research institu-
13 tion, Research Laboratory, or individual due to
14 facility closures or other limitations during the
15 COVID-19 public health emergency.

16 (4) MODIFICATIONS.—The modifications au-
17 thorized by paragraph (3)(C) include, but are not
18 limited to—

19 (A) the provision of supplemental funding
20 to extend the duration of the award concerned;
21 and

22 (B) flexibility on the allowable expenses
23 under such award.

1 (c) PROCEDURES.—The officers specified in sub-
2 section (b)(2) shall each establish procedures to carry out
3 subsection (b).

4 (d) EXPEDITED AWARDS.—Awards under subsection
5 (b) shall be issued as expeditiously as possible.

6 **SEC. 506. OFFICE OF MANUFACTURING AND INDUSTRIAL**
7 **INNOVATION POLICY.**

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

9 (1) The general welfare, security, and economic
10 health and stability of the United States require a
11 long-term, substantial, coordinated, and multidisci-
12 plinary strategy and implementation of cohesive ob-
13 jectives to remain at the forefront of industrial inno-
14 vation.

15 (2) The large and complex innovative and tech-
16 nological capabilities of global supply chains and
17 manufacturing economies, which influence the course
18 of national and international manufacturing and in-
19 novative relevance, require appropriate attention, in-
20 cluding long-range inclusive planning and more im-
21 mediate program development, to encourage and
22 support private manufacturing growth in the United
23 States and participation in the public decision-mak-
24 ing process.

1 (3) The innovative and manufacturing capabili-
2 ties of business in the United States, when properly
3 fostered, applied, and supported, can effectively as-
4 sist in improving the quality of life for people in the
5 United States, in anticipating and addressing emerg-
6 ing international, national, and local problems, and
7 strengthening the international economic engage-
8 ment and pioneering leadership of the United States.

9 (4) Just as Federal funding for science and
10 technology represents an investment in the future,
11 strategically addressing gaps in the innovation pipe-
12 line of the United States would—

13 (A) contribute to converting research and
14 development investments into high-value, qual-
15 ity job-creating product production and capture
16 domestic and global markets; and

17 (B) strengthen the economic posture of the
18 United States.

19 (5) The capabilities of the United States at
20 both the Federal and State levels need enhanced
21 strategic planning and influence over policy formula-
22 tion for industrial innovation and technology devel-
23 opment, as well as a means to ensure an adequate
24 workforce.

25 (b) SENSE OF CONGRESS.—

1 (1) PRIORITY GOALS.—It is the sense of Con-
2 gress that manufacturing and industrial innovation
3 should include contributing to the following priority
4 goals:

5 (A) Taking concrete national action to re-
6 build, restore, and expand domestic manufac-
7 turing capabilities, skills, and production capac-
8 ity, including world-class infrastructure.

9 (B) Rebuilding the industrial innovation
10 commons, including common resources, tech-
11 nical knowledge, and entrepreneurial opportuni-
12 ties associated with technical concepts.

13 (C) Supporting domestic supply chains.

14 (D) Expanding production capabilities, co-
15 operation, and knowledge.

16 (E) Revitalizing communities harmed by
17 historical and poorly conceived, implemented,
18 and enforced regulatory and trade policies.

19 (F) Developing a strategy for innovation
20 and establishment of manufacturing industries
21 of the future, including adoption and produc-
22 tion of Industry 4.0 technology to support do-
23 mestic economic expansion, particularly manu-
24 facturers with fewer than 800 employees, and
25 in traditionally underserved communities.

1 (G) Contributing to national health and se-
2 curity and emergency readiness and resilience,
3 including addressing environmental concerns.

4 (H) Strengthening the economy of the
5 United States and promoting full employment
6 in high-quality, high-wage jobs through useful
7 industrial and technological innovation.

8 (I) Cultivating, utilizing, and enhancing
9 academic and industrial thought-leadership with
10 practical workforce development and training to
11 the fullest extent possible.

12 (J) Implementing a national strategy that
13 identifies and prioritizes high growth, high
14 value-added industries, products, and compo-
15 nents of national importance to the long-term
16 economic, environmental, national security, and
17 public health of the United States.

18 (2) NATIONAL POLICY.—In view of the findings
19 under subsection (a), it is the sense of Congress that
20 the Federal Government and public and private in-
21 stitutions in the United States should pursue a na-
22 tional policy of manufacturing and industrial innova-
23 tion that includes the following principles:

24 (A) Ensuring global leadership in advanced
25 manufacturing technologies critical to the long-

1 term economic, environmental, and public
2 health of the United States, and to the long-
3 term national security of the United States.

4 (B) Restoring and strengthening the in-
5 dustrial commons of the United States, includ-
6 ing—

7 (i) essential engineering and produc-
8 tion skills;

9 (ii) infrastructure for research and de-
10 velopment, standardization, and metrology;

11 (iii) process innovations and manufac-
12 turing know-how;

13 (iv) equipment; and

14 (v) suppliers that provide the founda-
15 tion for the innovativeness and competi-
16 tiveness of all manufacturers in the United
17 States.

18 (C) Strengthening the technical, financial,
19 and educational commons and assets necessary
20 to ensure that the United States is the best po-
21 sitioned nation for the creation and production
22 of advanced technologies and products emerging
23 from national research and development invest-
24 ments.

1 (D) Capitalizing on the scientific and tech-
2 nological advances produced by researchers and
3 innovators in the United States by developing
4 capable and responsive institutions focused on
5 advancing the technology and manufacturing
6 readiness levels of those advances.

7 (E) Supporting the discovery, invention,
8 start-up, ramp-up, scale-up, and transition of
9 new products and manufacturing technologies
10 to full-scale production in the United States.

11 (F) Addressing the evolving needs of man-
12 ufacturers for a diverse set of workers with the
13 necessary skills, training, and expertise as man-
14 ufacturers in the United States increase high-
15 quality, high-wage employment opportunities.

16 (G) Improving and expanding manufac-
17 turing engineering and technology offerings
18 within institutions of higher education, includ-
19 ing 4-year engineering technology programs at
20 polytechnic institutes and secondary schools, to
21 be more closely aligned with the needs of manu-
22 facturers in the United States and the goal of
23 strengthening the long-term competitiveness of
24 such manufacturing.

1 (H) Working collaboratively with Federal
2 agencies, State and local governments, Tribal
3 governments, regional authorities, institutions
4 of higher education, economic development or-
5 ganizations, and labor organizations that pri-
6 marily represent workers in manufacturing to
7 leverage their knowledge, resources, applied re-
8 search, experimental development, and pro-
9 grams to foster manufacturing in the United
10 States so as to anticipate and prepare for emer-
11 gencies and global, national, and regional sup-
12 ply chain disruptions, including disruptions
13 brought on and exacerbated by changing envi-
14 ronmental and other circumstances.

15 (I) Recognizing that, as changing cir-
16 cumstances require the periodic revision and
17 adaptation of this section, Congress is respon-
18 sible for—

19 (i) identifying and interpreting the
20 changes in those circumstances as they
21 occur; and

22 (ii) affecting subsequent changes to
23 this section, as appropriate.

24 (3) PROCEDURES.—It is the sense of Congress
25 that, in order to expedite and facilitate the imple-

1 mentation of the national policy described in para-
2 graph (2)—

3 (A) Federal procurement policy should—

4 (i) prioritize and encourage domestic
5 manufacturing and robust domestic supply
6 chains;

7 (ii) support means of expanding do-
8 mestic manufacturing job creation;

9 (iii) enhance manufacturing workforce
10 preparedness;

11 (iv) prioritize the development of
12 means to support diversity and inclusion
13 throughout the manufacturing and indus-
14 trial sector;

15 (v) promote the consideration of, and
16 support to, minority-owned and women-
17 owned manufacturing contractors of the
18 Federal Government; and

19 (vi) support the ingenuity and entre-
20 preneurship of the United States by pro-
21 viding enhanced attention to manufac-
22 turing startups and small businesses in the
23 United States;

24 (B) Federal trade and monetary policies
25 should—

1 (i) ensure that global competition in
2 manufacturing is free, open, and fair;

3 (ii) prioritize policies and investments
4 that support domestic manufacturing
5 growth and innovation; and

6 (iii) not be utilized to offshore poor
7 manufacturing working conditions or de-
8 structive manufacturing environmental
9 practices;

10 (C) Federal policies and practices should
11 reasonably prioritize competitiveness for manu-
12 facturing and industrial innovation efforts in
13 the United States, but should not sacrifice the
14 quality of employment opportunities, including
15 the health and safety of workers, pay, and ben-
16 efits;

17 (D) Federal manufacturing and industrial
18 innovation policies, practices, and priorities
19 should reasonably improve environmental sus-
20 tainability within the manufacturing industry,
21 while minimizing economic impact;

22 (E) Federal patent policies should be de-
23 veloped, based on uniform principles, which
24 have as their objective to preserve incentives for
25 industrial technological innovation and the ap-

1 plication of procedures that will continue to as-
2 sure the full use of beneficial technology to
3 serve the public;

4 (F) Federal efforts should promote and
5 support a strong system of intellectual property
6 rights to include trade secrets, through both
7 protection of intellectual property rights and
8 enforcement against intellectual property theft,
9 and broad engagement to limit foreign efforts
10 to illegally or inappropriately utilize com-
11 promised intellectual property;

12 (G) closer relationships should be encour-
13 aged among practitioners of scientific and tech-
14 nological research and development and those
15 who apply those foundations to domestic com-
16 mercial manufacturing;

17 (H) the full use of the contributions of
18 manufacturing and industrial innovation to sup-
19 port State and local government goals should be
20 encouraged;

21 (I) formal recognition should be accorded
22 to those persons, the manufacturing and indus-
23 trial innovation achievements of which contrib-
24 uted significantly to the national welfare; and

1 (J) departments, agencies, and instrumen-
2 talities of the Federal Government should es-
3 tablish procedures to ensure among them the
4 systematic interchange of data, efforts, and
5 findings developed under their programs.

6 (4) IMPLEMENTATION.—To implement the na-
7 tional policy described in paragraph (2), it is the
8 sense of Congress—

9 (A) that—

10 (i) the Federal Government should
11 maintain integrated policy planning ele-
12 ments in the executive branch that assist
13 agencies in such branch in—

14 (I) identifying problems and ob-
15 jectives that could be addressed or en-
16 hanced by public policy;

17 (II) mobilizing industrial and in-
18 novative manufacturing resources for
19 national security and emergency re-
20 sponse purposes;

21 (III) securing appropriate fund-
22 ing for programs so identified by the
23 President or the Chief Manufacturing
24 Officer;

1 (IV) anticipating future concerns
2 to which industrial and innovative
3 manufacturing can contribute and de-
4 vise industrial strategies for such pur-
5 poses; and

6 (V) reviewing systematically the
7 manufacturing and industrial innova-
8 tion policy and programs of the Fed-
9 eral Government and recommending
10 legislative amendments to those poli-
11 cies and programs when needed; and

12 (ii) the elements described in clause
13 (i) should include a data collection, anal-
14 ysis, and advisory mechanism within the
15 Executive Office of the President to pro-
16 vide the President with independent, expert
17 judgment and assessments of the complex
18 manufacturing and industrial features in-
19 volved; and

20 (B) that it is the responsibility of the Fed-
21 eral Government to—

22 (i) promote prompt, effective, reliable,
23 and systematic dissemination of manufac-
24 turing and industrial information—

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1 (I) by such methods as may be
2 appropriate; and

3 (II) through efforts conducted by
4 nongovernmental organizations, in-
5 cluding industrial groups, technical
6 societies, and educational entities;

7 (ii) coordinate and develop a manufac-
8 turing industrial strategy and facilitate the
9 close coupling of this manufacturing strat-
10 egy with commercial manufacturing appli-
11 cation; and

12 (iii) enhance domestic development
13 and utilization of such industrial informa-
14 tion by prioritization of efforts with manu-
15 facturers, the production of which takes
16 place in the United States.

17 (c) ESTABLISHMENT.—

18 (1) IN GENERAL.—The President shall appoint,
19 by and with the advice and consent of the Senate,
20 a Chief Manufacturing Officer to serve within the
21 Executive Office of the President.

22 (2) OFFICE.—

23 (A) IN GENERAL.—There is established in
24 the Executive Office of the President an Office
25 of Manufacturing and Industrial Innovation

1 Policy (referred to in this section as the “Of-
2 fice”).

3 (B) CMO.—The Chief Manufacturing Offi-
4 cer shall—

5 (i) head the Office; and

6 (ii) serve as a source of manufac-
7 turing and industrial innovation analysis
8 and judgment for the President and the
9 Director of the National Economic Council
10 with respect to the major policies, plans,
11 and programs of the Federal Government
12 relating to manufacturing and industrial
13 innovation.

14 (d) CHIEF MANUFACTURING OFFICER; ASSOCIATE
15 MANUFACTURING OFFICERS.—

16 (1) CHIEF MANUFACTURING OFFICER.—

17 (A) FUNCTIONS.—

18 (i) PRIMARY FUNCTION.—To the ex-
19 tent consistent with law, the Chief Manu-
20 facturing Officer shall report to the Presi-
21 dent, and such agencies within the Execu-
22 tive Office of the President and the Direc-
23 tor of the National Economic Council, as
24 may be appropriate, on issues regarding
25 and impacting manufacturing and indus-

1 trial innovation efforts of the Federal Gov-
2 ernment, or of the private sector, that re-
3 quire attention at the highest levels of the
4 Federal Government.

5 (ii) OTHER FUNCTIONS.—The Chief
6 Manufacturing Officer shall—

7 (I) advise the President on man-
8 ufacturing and industrial innovation
9 considerations relating to areas of na-
10 tional concern, including—

11 (aa) the economy of the
12 United States;

13 (bb) national security;

14 (cc) public health;

15 (dd) the workforce of the
16 United States;

17 (ee) education;

18 (ff) foreign relations (includ-
19 ing trade and supply chain
20 issues);

21 (gg) the environment; and

22 (hh) technological innovation
23 in the United States;

24 (II) convene stakeholders, includ-
25 ing key industry stakeholders, aca-

1 demic stakeholders, defense stake-
2 holders, governmental stakeholders,
3 and stakeholders from nonprofit orga-
4 nizations and labor organizations that
5 primarily represent workers in manu-
6 facturing, to develop the national stra-
7 tegic plan required under subsection
8 (f);

9 (III) evaluate the scale, quality,
10 and effectiveness of the effort of the
11 Federal Government to support manu-
12 facturing and industrial innovation by
13 the Federal Government or by the pri-
14 vate sector, and advise on appropriate
15 actions;

16 (IV) to the extent consistent with
17 law, report to the President, the Di-
18 rector of the National Economic
19 Council, the Director of the Office of
20 Management Budget, and such agen-
21 cies within the Executive Office of the
22 President as may be appropriate, ad-
23 vise the President on the budgets, reg-
24 ulations, and regulatory reforms of
25 agencies of the executive branch of

1 the Federal Government with respect
2 to issues concerning manufacturing
3 and industrial innovation;

4 (V) to the extent consistent with
5 law, assist the President and the Di-
6 rector of the National Economic
7 Council in providing general leader-
8 ship and coordination of activities and
9 policies of the Federal Government re-
10 lating to and impacting manufac-
11 turing and industrial innovation; and

12 (VI) perform such other func-
13 tions, duties, and activities as the
14 President and the Director of the Na-
15 tional Economic Council may assign.

16 (B) AUTHORITIES.—In carrying out the
17 duties and functions under this section, the
18 Chief Manufacturing Officer may—

19 (i) appoint such officers and employ-
20 ees as may be determined necessary to per-
21 form the functions vested in the position
22 and to prescribe the duties of such officers
23 and employees;

24 (ii) obtain services as authorized
25 under section 3109 of title 5, United

1 States Code, at rates not to exceed the
2 rate prescribed for grade GS-15 of the
3 General Schedule under section 5332 of
4 title 5, United States Code; and

5 (iii) enter into contracts and other ar-
6 rangements for studies, analysis, and other
7 services with public agencies and with pri-
8 vate persons, organizations, or institutions,
9 and make such payments as determined
10 necessary to carry out the provisions of
11 this section without legal consideration,
12 without performance bonds, and without
13 regard to section 6101 of title 41, United
14 States Code.

15 (2) ASSOCIATE DIRECTORS.—

16 (A) IN GENERAL.—The Chief Manufac-
17 turing Officer may appoint not more than 5 As-
18 sociate Directors, to be known as Associate
19 Manufacturing Officers to carry out such func-
20 tions as may be prescribed by the Chief Manu-
21 facturing Officer.

22 (B) COMPENSATION.—Each Associate
23 Manufacturing Officer shall be compensated at
24 a rate not to exceed that provided for level III

1 of the Executive Schedule under section 5314
2 title 5, United States Code.

3 (e) POLICY PLANNING, ANALYSIS, AND ADVICE.—

4 (1) IN GENERAL.—In carrying out the provi-
5 sions of this section, the Chief Manufacturing Offi-
6 cer shall—

7 (A) monitor the status of technological de-
8 velopments, critical production capacity, skill
9 availability, investment patterns, emerging de-
10 fense needs, and other key indicators of manu-
11 facturing competitiveness to—

12 (i) provide foresight for periodic up-
13 dates to the national strategic plan re-
14 quired under subsection (f); and

15 (ii) guide investment decisions;

16 (B) convene interagency and public-private
17 working groups to align Federal policies that
18 drive implementation of the national strategic
19 plan required under subsection (f);

20 (C) initiate and support translation re-
21 search in engineering and manufacturing by en-
22 tering into contracts or making other arrange-
23 ments (including grants, awards, cooperative
24 agreements, loans, and other forms of assist-
25 ance) to study that research and to assess the

1 impact of that research on the economic well-
2 being, climate and environmental impact, public
3 health, and national security of the United
4 States;

5 (D) report to the President and the Direc-
6 tor of the National Economic Council on the ex-
7 tent to which the various programs, policies,
8 and activities of the Federal Government are
9 likely to affect the achievement of priority goals
10 of the United States described in subsection
11 (b)(1);

12 (E) periodically survey the nature and
13 needs of the policies relating to national manu-
14 facturing and industrial innovation and make
15 recommendations to the President and the Di-
16 rector of the National Economic Council, for re-
17 view and submission to Congress, for the timely
18 and appropriate revision of the manufacturing
19 and industrial innovation policies of the Federal
20 Government;

21 (F) perform such other duties and func-
22 tions and make and furnish such studies and
23 reports thereon, and recommendations with re-
24 spect to matters of policy and legislation as the

1 President and the Director of the National Eco-
2 nomic Council may request; and

3 (G) coordinate, as appropriate, Federal
4 permitting with respect to manufacturing and
5 industrial innovation.

6 (2) INTERGOVERNMENTAL MANUFACTURING
7 AND INDUSTRIAL INNOVATION PANEL.—

8 (A) ESTABLISHMENT.—The Chief Manu-
9 facturing Officer shall establish an Intergovern-
10 mental Manufacturing and Industrial Innova-
11 tion Panel (referred to in this section as the
12 “Panel”) within the Office, the purpose of
13 which shall be to—

14 (i) identify instances in which the
15 policies of the Federal Government—

16 (I) with respect to manufacturing
17 and industrial innovation can help ad-
18 dress problems at the State and local
19 levels; and

20 (II) unnecessarily impede manu-
21 facturing and industrial innovation;

22 (ii) make recommendations for ad-
23 dressing the problems described in clause
24 (i); and

1 (iii) advise and assist the Chief Manu-
2 facturing Officer in identifying and fos-
3 tering policies to facilitate the application
4 to and incorporation of federally funded re-
5 search and development into manufac-
6 turing and industrial innovation in the
7 United States, so as to maximize the appli-
8 cation of such research.

9 (B) COMPOSITION.—The Panel shall be
10 composed of—

11 (i) the Chief Manufacturing Officer,
12 or a representative of the Chief Manufac-
13 turing Officer;

14 (ii) not fewer than 10 members rep-
15 resenting the interests of the States, ap-
16 pointed by the Chief Manufacturing Officer
17 after consultation with State officials;

18 (iii) the Director of the National In-
19 stitute of Standards and Technology;

20 (iv) the Deputy Assistant Secretary of
21 Defense for Manufacturing and Industrial
22 Base Policy;

23 (v) the Assistant Secretary of Labor
24 for Employment and Training;

1 (vi) the Administrator of the Small
2 Business Administration; and

3 (vii) the Assistant Secretary of En-
4 ergy for Energy Efficiency and Renewable
5 Energy.

6 (C) CHAIR.—The Chief Manufacturing Of-
7 ficer, or the representative of the Chief Manu-
8 facturing Officer, shall serve as Chair of the
9 Panel.

10 (D) MEETINGS.—The Panel shall meet at
11 the call of the Chair.

12 (E) COMPENSATION.—

13 (i) IN GENERAL.—Each member of
14 the Panel shall be entitled to receive com-
15 pensation at a rate not to exceed the daily
16 rate prescribed for GS-15 of the General
17 Schedule under section 5332 of title 5,
18 United States Code, for each day (includ-
19 ing travel time) during which the member
20 is engaged in the performance of the duties
21 of the Panel.

22 (ii) TRAVEL EXPENSES.—Each mem-
23 ber of the Panel who is serving away from
24 the home or regular place of business of
25 the member in the performance of the du-

1 ties of the Panel shall be allowed travel ex-
2 penses, including per diem in lieu of sub-
3 sistence, in the same manner as the ex-
4 penses authorized by section 5703(b) of
5 title 5, United States Code, for persons in
6 government service employed intermit-
7 tently.

8 (f) NATIONAL STRATEGIC PLAN FOR MANUFAC-
9 TURING AND INDUSTRIAL INNOVATION.—

10 (1) STRATEGIC PLAN.—

11 (A) IN GENERAL.—Not later than 1 year
12 after the date of enactment of this Act, the
13 Chief Manufacturing Officer, in coordination
14 with the Director of the National Economic
15 Council, shall, to the extent practicable, in ac-
16 cordance with subsection (d)(1)(A)(ii) and in
17 consultation with other agencies and private in-
18 dividuals as the Chief Manufacturing Officer
19 determines necessary, establish a national stra-
20 tegic plan for manufacturing and industrial in-
21 novation that identifies—

22 (i) short-term, medium-term, and
23 long-term needs critical to the economy,
24 national security, public health, workforce
25 readiness, environmental concerns, and pri-

1 orities of the United States manufacturing
2 sector, including emergency readiness and
3 resilience; and

4 (ii) situations and conditions that
5 warrant special attention by the Federal
6 Government relating to—

7 (I) any problems, constraints, or
8 opportunities of manufacturing and
9 industrial innovation that—

10 (aa) are of national signifi-
11 cance;

12 (bb) will occur or may
13 emerge during the 4-year period
14 beginning on the date on which
15 the national strategic plan is es-
16 tablished; and

17 (cc) are identified through
18 basic research;

19 (II) an evaluation of activities
20 and accomplishments of all agencies
21 in the executive branch of the Federal
22 Government that are related to car-
23 rying out such plan;

24 (III) opportunities for, and con-
25 straints on, manufacturing and indus-

1 trial innovation that can make a sig-
2 nificant contribution to—

3 (aa) the resolution of prob-
4 lems identified under this para-
5 graph; or

6 (bb) the achievement of Fed-
7 eral program objectives or pri-
8 ority goals, including those de-
9 scribed in subsection (b)(1); and

10 (IV) recommendations for pro-
11 posals to carry out such plan.

12 (B) REVISIONS.—Not later than 4 years
13 after the date on which the national strategic
14 plan is established under subparagraph (A),
15 and every 4 years thereafter, the Chief Manu-
16 facturing Officer, in coordination with the Di-
17 rector of the National Economic Council, shall
18 revise that plan so that the plan takes account
19 of near- and long-term problems, constraints,
20 and opportunities and changing national goals
21 and circumstances.

22 (2) CONSULTATION WITH OTHER AGENCIES.—
23 The Chief Manufacturing Officer shall consult, as
24 necessary, with officials of agencies in the executive
25 branch of the Federal Government that administer

1 programs or have responsibilities relating to the
2 problems, constraints, and opportunities identified in
3 the national strategic plan under paragraph (1) in
4 order to—

5 (A) identify and evaluate actions that
6 might be taken by the Federal Government,
7 State, and local governments, or the private
8 sector to deal with such problems, constraints,
9 or opportunities; and

10 (B) ensure to the extent possible that ac-
11 tions identified under subparagraph (A) are
12 considered by each agency of the executive
13 branch of the Federal Government in formu-
14 lating proposals of each such agency.

15 (3) CONSULTATION WITH MANUFACTURING
16 STAKEHOLDERS.—The Chief Manufacturing Officer
17 shall consult broadly with representatives from
18 stakeholder constituencies, including from technology
19 fields, engineering fields, manufacturing fields, aca-
20 demic fields, worker training or credentialing pro-
21 grams, industrial sectors, business sectors, consumer
22 sectors, defense sector, public interest sectors, and
23 labor organizations which primarily represent work-
24 ers in manufacturing to ensure information and per-
25 spectives from such consultations are incorporated

1 within the problems, constraints, opportunities, and
2 actions identified in the national strategic plan
3 under paragraph (1).

4 (4) CONSULTATION WITH OMB.—The Chief
5 Manufacturing Officer shall consult as necessary
6 with officials of the Office of Management and
7 Budget and other appropriate elements of the Exec-
8 utive Office of the President to ensure that the prob-
9 lems, constraints, opportunities, and actions identi-
10 fied under paragraph (1) are fully considered in the
11 development of legislative proposals and the Presi-
12 dent’s budget.

13 (g) ADDITIONAL FUNCTIONS OF THE CHIEF MANU-
14 FACTURING OFFICER; ADMINISTRATIVE PROVISIONS.—

15 (1) IN GENERAL.—The Chief Manufacturing
16 Officer, in addition to the other duties and functions
17 under this section, shall serve—

18 (A) on the Federal Strategy and Coordi-
19 nating Council on Manufacturing and Indus-
20 trial Innovation established under subsection
21 (j); and

22 (B) as a member of the Domestic Policy
23 Council, the National Economic Council, and
24 the Office of Science and Technology Policy
25 Council.

1 agencies in the executive branch of
2 the Federal Government;

3 (II) utilize the services of con-
4 sultants, establish such advisory pan-
5 els, and, to the extent practicable,
6 consult with—

7 (aa) State and local govern-
8 ment agencies;

9 (bb) appropriate professional
10 groups;

11 (cc) representatives of indus-
12 try, universities, consumers, labor
13 organizations that primarily rep-
14 resent workers in manufacturing;
15 and

16 (dd) such other public inter-
17 est groups, organizations, and in-
18 dividuals as may be necessary;

19 (III) hold such hearings in var-
20 ious parts of the United States as
21 necessary to determine the views of
22 the agencies, groups, and organiza-
23 tions described in subparagraph (B),
24 and of the general public, concerning

1 national needs and trends in manufac-
2 turing and industrial innovation; and
3 (IV) utilize, with the heads of
4 public and private agencies and orga-
5 nizes, to the fullest extent possible the
6 services, personnel, equipment, facili-
7 ties, and information (including statis-
8 tical information) of public and pri-
9 vate agencies and organizations, and
10 individuals, in order to avoid the du-
11 plication of efforts and expenses; and
12 (ii) may transfer funds made available
13 pursuant to this section to other agencies
14 in the executive branch of the Federal Gov-
15 ernment as reimbursement for the utiliza-
16 tion of such personnel, services, facilities,
17 equipment, and information.

18 (B) FURNISHMENT OF INFORMATION.—
19 Each department, agency, and instrumentality
20 of the executive branch of the Federal Govern-
21 ment, including any independent agency, shall
22 furnish the Chief Manufacturing Officer such
23 information as necessary to carry out this sec-
24 tion.

1 (h) MANUFACTURING AND INDUSTRIAL INNOVATION
2 REPORT.—

3 (1) REPORT.—Not later than 3 years after the
4 date of enactment of this Act, and every 4 years
5 thereafter, the Chief Manufacturing Officer, in con-
6 sultation with the Director of the National Economic
7 Council, shall submit to Congress a Manufacturing
8 and Industrial Innovation Report (referred to in this
9 section as the “report”) with appropriate assistance
10 from agencies in the executive branch of the Federal
11 Government and such consultants and contractors as
12 the Chief Manufacturing Officer determines nec-
13 essary.

14 (2) CONTENTS OF REPORT.—Each report re-
15 quired under paragraph (1) shall draw upon the
16 most recent national strategic plan established under
17 subsection (f) and shall include, to the extent prac-
18 ticable and within the limitations of available knowl-
19 edge and resources—

20 (A) a review of developments of national
21 significance in manufacturing and industrial in-
22 novation;

23 (B) the significant effects of trends at the
24 time of the submission of the report and pro-
25 jected trends in manufacturing and industrial

1 innovation on the economy, workforce, and envi-
2 ronmental, health and national security, and
3 other requirements of the United States;

4 (C) a review and appraisal of selected
5 manufacturing and industrial innovation related
6 programs, policies, and activities of the Federal
7 Government, including procurement;

8 (D) an inventory and forecast of critical
9 and emerging national problems, the resolution
10 of which might be substantially assisted by
11 manufacturing and industrial innovation in the
12 United States;

13 (E) the identification and assessment of
14 manufacturing and industrial innovation meas-
15 ures that can contribute to the resolution of the
16 problems described in subparagraph (D) in
17 light of the related economic, workforce, envi-
18 ronmental, public health, and national security
19 considerations;

20 (F) at the time of the submission of the re-
21 port, and as projected, the manufacturing and
22 industrial resources, including specialized man-
23 power, that could contribute to the resolution of
24 the problems described in subparagraph (D);
25 and

1 (G) recommendations for legislation and
2 regulatory changes on manufacturing and in-
3 dustrial innovation-related programs and poli-
4 cies that will contribute to the resolution of the
5 problems described in subparagraph (D).

6 (3) PREPARATION OF REPORT.—In preparing
7 each report required under paragraph (1), the Chief
8 Manufacturing Officer shall make maximum use of
9 relevant data available from agencies in the execu-
10 tive branch of the Federal Government.

11 (4) PUBLIC AVAILABILITY OF REPORT.—The
12 Chief Manufacturing Officer shall ensure that the
13 report is made available to the public.

14 (i) COMPTROLLER GENERAL REPORT.—Not later
15 than 3 years after the date of enactment of this Act, the
16 Comptroller General of the United States shall submit to
17 the Committee on Commerce, Science, and Transportation
18 of the Senate, the Committee on Appropriations of the
19 Senate, the Committee on Science, Space, and Technology
20 of the House of Representatives, the Committee on En-
21 ergy and Commerce of the House of Representatives, and
22 the Committee on Appropriations of the House of Rep-
23 resentatives, and make available to the public, a report—

1 (1) containing an assessment of the efforts of
2 the Office to implement or advance the priority goals
3 described in subsection (b)(1); and

4 (2) providing recommendations on how to im-
5 prove the efforts described in paragraph (1).

6 (j) FEDERAL STRATEGY AND COORDINATING COUN-
7 CIL ON MANUFACTURING AND INDUSTRIAL INNOVA-
8 TION.—There is established in the executive branch of the
9 Federal Government the Federal Strategy and Coordi-
10 nating Council on Manufacturing and Industrial Innova-
11 tion (referred to in this section as the “Council”).

12 (1) MEMBERSHIP.—

13 (A) IN GENERAL.—The Council shall be
14 composed of the following:

15 (i) The President, who shall serve as
16 Chair of the Council.

17 (ii) The Vice President.

18 (iii) The Secretary of Commerce.

19 (iv) The Secretary of Defense.

20 (v) The Secretary of Education.

21 (vi) The Secretary of Energy.

22 (vii) The Secretary of Health and
23 Human Services.

24 (viii) The Secretary of Housing and
25 Urban Development.

- 1 (ix) The Secretary of Labor.
- 2 (x) The Secretary of State.
- 3 (xi) The Secretary of Transportation.
- 4 (xii) The Secretary of the Treasury.
- 5 (xiii) The Secretary of Veterans Af-
- 6 fairs.
- 7 (xiv) The Administrator of the Envi-
- 8 ronmental Protection Agency.
- 9 (xv) The Administrator of the Na-
- 10 tional Aeronautics and Space Administra-
- 11 tion.
- 12 (xvi) The Administrator of the Small
- 13 Business Administration.
- 14 (xvii) The Director of the National
- 15 Science Foundation.
- 16 (xviii) The Director of the Office of
- 17 Management and Budget.
- 18 (xix) The Assistant to the President
- 19 for Science and Technology.
- 20 (xx) The United States Trade Rep-
- 21 resentative.
- 22 (xxi) The National Security Advisor.
- 23 (xxii) The Assistant to the President
- 24 for Economic Policy.

1 (xxiii) The Director of the Domestic
2 Policy Council.

3 (xxiv) The Chair of the Council of
4 Economic Advisers.

5 (xxv) The Chief Manufacturing Offi-
6 cer.

7 (B) ADDITIONAL PARTICIPANTS.—The
8 President may, from time to time and as nec-
9 essary, appoint officials in the executive branch
10 of the Federal Government to serve as members
11 of the Council.

12 (2) MEETINGS OF THE COUNCIL.—

13 (A) IN GENERAL.—The President or the
14 Chief Manufacturing Officer may convene meet-
15 ings of the Council.

16 (B) PRESIDING OFFICER.—

17 (i) IN GENERAL.—Subject to clause
18 (ii), the President shall preside over the
19 meetings of the Council.

20 (ii) EXCEPTION.—If the President is
21 not present at a meeting of the Council,
22 the Vice President (and if the Vice Presi-
23 dent is not present at a meeting of the
24 Council, the Chief Manufacturing Officer)

1 shall preside and be considered the chair of
2 the Council.

3 (k) COUNCIL ON MANUFACTURING AND INDUSTRIAL
4 INNOVATION FUNCTIONS.—

5 (1) IN GENERAL.—The Council shall—

6 (A) consider problems and developments,
7 including concerns relating to the workforce of
8 the United States, in manufacturing and indus-
9 trial innovation and related activities of more
10 than 1 agency in the executive branch of the
11 Federal Government;

12 (B) coordinate the manufacturing and in-
13 dustrial innovation policy-making process;

14 (C) harmonize the Federal permitting
15 process relating to manufacturing and indus-
16 trial innovation, as appropriate;

17 (D) ensure manufacturing and industrial
18 innovation policy decisions and programs are
19 consistent with the priority goals described in
20 subsection (b)(1);

21 (E) help implement the priority goals de-
22 scribed in subsection (b)(1) across the Federal
23 Government;

24 (F) ensure manufacturing and industrial
25 innovation are considered in the development

1 and implementation of Federal policies and pro-
2 grams;

3 (G) achieve more effective use of
4 foundational aspects of manufacturing and in-
5 dustrial innovation, particularly scientific, engi-
6 neering, and technological resources and facili-
7 ties of agencies in the executive branch of the
8 Federal Government, including the elimination
9 of efforts that have been unwarrantedly dupli-
10 cated;

11 (H) identify—

12 (i) threats to, and vulnerabilities of,
13 supply chains;

14 (ii) workforce skills; and

15 (iii) aspects of supply chains and
16 workforce skills requiring additional em-
17 phasis; and

18 (I) further international cooperation on
19 manufacturing and industrial innovation poli-
20 cies that enhance the policies of the United
21 States and internationally agreed upon policies.

22 (2) CHIEF MANUFACTURING OFFICER.—The
23 Chief Manufacturing Officer may take such actions
24 as may be necessary or appropriate to implement the
25 functions described in paragraph (1).

1 (l) COORDINATION.—The head of each agency in the
2 executive branch of the Federal Government, without re-
3 gard to whether the head of the agency is a member of
4 the Council, shall coordinate manufacturing and industrial
5 innovation policy with the Council.

6 (m) ADMINISTRATION.—

7 (1) COORDINATION WITH NATIONAL SCIENCE
8 AND TECHNOLOGY COUNCIL.—In carrying out the
9 duties of the Council, the Council shall consult with
10 the National Science and Technology Council, as
11 necessary.

12 (2) AD COMMITTEES; TASKS FORCES, INTER-
13 AGENCY GROUPS.—The Council may function
14 through established or ad hoc committees, task
15 forces, or interagency groups.

16 (3) REQUIREMENT TO COOPERATE.—Each
17 agency in the executive branch of the Federal Gov-
18 ernment shall—

19 (A) cooperate with the Council; and

20 (B) provide assistance, information, and
21 advice to the Council, as the Council may re-
22 quest, to the extent permitted by law.

23 (4) ASSISTANCE TO COUNCIL.—For the purpose
24 of carrying out the provisions of this section, the
25 head of each agency that is a member of the Council

1 shall furnish necessary assistance and resources to
2 the Council, which may include—

3 (A) detailing employees of the agency to
4 the Council to perform such functions, con-
5 sistent with the purposes of this section, as the
6 Chair of the Council may assign to those
7 detailees;

8 (B) providing office support and printing,
9 as requested by the Chair of the Council; and

10 (C) upon the request of the Chair of the
11 Council, undertake special studies for the Coun-
12 cil that come within the functions of the Coun-
13 cil described in subsection (k).

14 (n) NATIONAL MEDAL OF MANUFACTURING AND IN-
15 DUSTRIAL INNOVATION.—

16 (1) RECOMMENDATIONS.—The President shall
17 from time to time award a medal, to be known as
18 the “National Medal of Manufacturing and Indus-
19 trial Innovation”, on the basis of recommendations
20 received from the National Academies of Sciences,
21 the Chief Manufacturing Officer, or on the basis of
22 such other information and evidence as the Presi-
23 dent determines appropriate, to individuals who in
24 the judgment of the President are deserving of spe-
25 cial recognition by reason of outstanding contribu-

1 tions to knowledge in manufacturing and industrial
2 innovation.

3 (2) NUMBER.—Not more than 20 individuals
4 may be awarded a medal under this section in any
5 one calendar year.

6 (3) CITIZENSHIP.—An individual may not be
7 awarded a medal under this section unless at the
8 time such award is made the individual—

9 (A) is a citizen or other national of the
10 United States; or

11 (B) is an individual lawfully admitted to
12 the United States for permanent residence
13 who—

14 (i) has filed an application for petition
15 for naturalization in the manner prescribed
16 by section 334(b) of the Immigration and
17 Nationality Act (8 U.S.C. 1445(b)); and

18 (ii) is not permanently ineligible to be-
19 come a citizen of the United States.

20 (4) CEREMONIES.—The presentation of the
21 award shall be made by the President with such
22 ceremonies as determined proper, including attend-
23 ance by appropriate Members of Congress.

1 (o) AUTHORIZATION OF APPROPRIATIONS.—There
2 are authorized to be appropriated for each of fiscal years
3 2022 through 2026—

4 (1) \$5,000,000, for the purpose of carrying out
5 subsections (c) through (i); and

6 (2) \$5,000,000, for the purpose of carrying out
7 subsections (j) through (m).

8 **SEC. 507. TELECOMMUNICATIONS WORKFORCE TRAINING**
9 **GRANT PROGRAM.**

10 (a) SHORT TITLE.—This section may be cited as the
11 “Improving Minority Participation And Careers in Tele-
12 communications Act” or the “IMPACT Act”.

13 (b) DEFINITIONS.—In this section:

14 (1) ASSISTANT SECRETARY.—The term “Assist-
15 ant Secretary” means the Assistant Secretary of
16 Commerce for Communications and Information.

17 (2) COVERED GRANT.—The term “covered
18 grant” means a grant awarded under subsection (c).

19 (3) ELIGIBLE ENTITY.—The term “eligible enti-
20 ty” means a historically Black college or university,
21 Tribal College or University, or minority-serving in-
22 stitution, or a consortium of such entities, that
23 forms a partnership with 1 or more of the following
24 entities to carry out a training program:

1 (A) A member of the telecommunications
2 industry, such as a company or industry asso-
3 ciation.

4 (B) A labor or labor-management organi-
5 zation with experience working in the tele-
6 communications industry or a similar industry.

7 (C) The Telecommunications Industry
8 Registered Apprenticeship Program.

9 (D) A nonprofit organization dedicated to
10 helping individuals gain employment in the tele-
11 communications industry.

12 (E) A community or technical college with
13 experience in providing workforce development
14 for individuals seeking employment in the tele-
15 communications industry or a similar industry.

16 (F) A Federal agency laboratory special-
17 izing in telecommunications technology.

18 (4) FUND.—The term “Fund” means the Tele-
19 communications Workforce Training Grant Program
20 Fund established under subsection (d)(1).

21 (5) GRANT PROGRAM.—The term “Grant Pro-
22 gram” means the Telecommunications Workforce
23 Training Grant Program established under sub-
24 section (c).

1 (6) HISTORICALLY BLACK COLLEGE OR UNI-
2 VERSITY.—The term “historically Black college or
3 university” has the meaning given the term “part B
4 institution” in section 322 of the Higher Education
5 Act of 1965 (20 U.S.C. 1061).

6 (7) INDUSTRY FIELD ACTIVITIES.—The term
7 “industry field activities” means activities at active
8 telecommunications, cable, and broadband network
9 worksites, such as towers, construction sites, and
10 network management hubs.

11 (8) INDUSTRY PARTNER.—The term “industry
12 partner” means an entity described in subpara-
13 graphs (A) through (F) of paragraph (3) with which
14 an eligible entity forms a partnership to carry out a
15 training program.

16 (9) MINORITY-SERVING INSTITUTION.—The
17 term “minority-serving institution” means an insti-
18 tution described in section 371(a) of the Higher
19 Education Act of 1965 (20 U.S.C. 1067q(a)).

20 (10) TRAINING PROGRAM.—The term “training
21 program” means a credit or non-credit program de-
22 veloped by an eligible entity, in partnership with an
23 industry partner, that—

1 (A) is designed to educate and train stu-
2 dents to participate in the telecommunications
3 workforce; and

4 (B) includes a curriculum and apprentice-
5 ship or internship opportunities that can also be
6 paired with—

7 (i) a degree program; or

8 (ii) stacked credentialing toward a de-
9 gree.

10 (11) TRIBAL COLLEGE OR UNIVERSITY.—The
11 term “Tribal College or University” has the meaning
12 given the term in section 316(b)(3) of the Higher
13 Education Act of 1965 (20 U.S.C. 1059c(b)(3)).

14 (c) PROGRAM.—The Assistant Secretary, acting
15 through the Office of Minority Broadband Initiatives es-
16 tablished under section 902(b)(1) of division N of the Con-
17 solidated Appropriations Act, 2021 (Public Law 116–
18 260), shall establish a program, to be known as the “Tele-
19 communications Workforce Training Grant Program”,
20 under which the Assistant Secretary awards grants to eli-
21 gible entities to develop training programs.

22 (d) FUND.—

23 (1) ESTABLISHMENT.—There is established in
24 the Treasury of the United States a fund to be

1 known as the “Telecommunications Workforce
2 Training Grant Program Fund”.

3 (2) AVAILABILITY.—Amounts in the Fund shall
4 be available to the Assistant Secretary to carry out
5 the Grant Program.

6 (e) APPLICATION.—

7 (1) IN GENERAL.—An eligible entity desiring a
8 covered grant shall submit an application to the As-
9 sistant Secretary at such time, in such manner, and
10 containing such information as the Assistant Sec-
11 retary may require.

12 (2) CONTENTS.—An eligible entity shall include
13 in an application under paragraph (1)—

14 (A) a commitment from the industry part-
15 ner of the eligible entity to collaborate with the
16 eligible entity to develop a training program, in-
17 cluding curricula and internships or apprentice-
18 ships;

19 (B) a description of how the eligible entity
20 plans to use the covered grant, including the
21 type of training program the eligible entity
22 plans to develop;

23 (C) a plan for recruitment of students and
24 potential students to participate in the training
25 program;

1 (D) a plan to increase female student par-
2 ticipation in the training program of the eligible
3 entity; and

4 (E) a description of potential jobs to be se-
5 cured through the training program, including
6 jobs in the communities surrounding the eligible
7 entity.

8 (f) USE OF FUNDS.—An eligible entity may use a
9 covered grant, with respect to the training program of the
10 eligible entity, to—

11 (1) hire faculty members to teach courses in the
12 training program;

13 (2) train faculty members to prepare students
14 for employment in jobs related to the deployment of
15 next-generation wired and wireless communications
16 networks, including 5G networks, hybrid fiber-co-
17 axial networks, and fiber infrastructure, particularly
18 in—

19 (A) broadband and wireless network engi-
20 neering;

21 (B) network deployment and maintenance;

22 (C) industry field activities; and

23 (D) cybersecurity;

24 (3) design and develop curricula and other com-
25 ponents necessary for degrees, courses, or programs

1 of study, including certificate programs and
2 credentialing programs, that comprise the training
3 program;

4 (4) pay for costs associated with instruction
5 under the training program, including the costs of
6 equipment, telecommunications training towers, lab-
7 oratory space, classroom space, and instructional
8 field activities;

9 (5) fund scholarships, student internships, ap-
10 prenticeships, and pre-apprenticeship opportunities;

11 (6) recruit students for the training program;
12 and

13 (7) support the enrollment in the training pro-
14 gram of individuals working in the telecommuni-
15 cations industry in order to advance professionally in
16 the industry.

17 (g) GRANT AWARDS.—

18 (1) DEADLINE.—Not later than 2 years after
19 the date on which amounts are appropriated to the
20 Fund pursuant to subsection (m), the Assistant Sec-
21 retary shall award all covered grants.

22 (2) MINIMUM ALLOCATION TO CERTAIN ENTI-
23 TIES.—The Assistant Secretary shall award not less
24 than—

1 (A) 30 percent of covered grant amounts
2 to historically Black colleges or universities; and

3 (B) 30 percent of covered grant amounts
4 to Tribal Colleges or Universities.

5 (3) EVALUATION CRITERIA.—As part of the
6 final rules issued under subsection (h), the Assistant
7 Secretary shall develop criteria for evaluating appli-
8 cations for covered grants.

9 (4) COORDINATION.—The Assistant Secretary
10 shall ensure that grant amounts awarded under
11 paragraph (2) are coordinated with grant amounts
12 provided under section 902 of division N of the Con-
13 solidated Appropriations Act, 2021 (Public Law
14 116–260).

15 (5) CONSTRUCTION.—In awarding grants under
16 this section for training or education relating to con-
17 struction, the Assistant Secretary may prioritize ap-
18 plicants that partner with apprenticeship programs,
19 pre-apprenticeship programs, or public two-year
20 community or technical colleges that have a written
21 agreement with one or more apprenticeship pro-
22 grams.

23 (h) RULES.—Not later than 180 days after the date
24 of enactment of this Act, after providing public notice and
25 an opportunity to comment, the Assistant Secretary, in

1 consultation with the Secretary of Labor and the Sec-
2 retary of Education, shall issue final rules governing the
3 Grant Program.

4 (i) TERM.—The Assistant Secretary shall establish
5 the term of a covered grant, which may not be less than
6 5 years.

7 (j) GRANTEE REPORTS.—During the term of a cov-
8 ered grant received by an eligible entity, the eligible entity
9 shall submit to the Assistant Secretary a semiannual re-
10 port that, with respect to the preceding 6-month period—

11 (1) describes how the eligible entity used the
12 covered grant amounts;

13 (2) describes the progress the eligible entity
14 made in developing and executing the training pro-
15 gram of the eligible entity;

16 (3) describes the number of faculty and stu-
17 dents participating in the training program of the el-
18 igible entity;

19 (4) describes the partnership with the industry
20 partner of the eligible entity, including—

21 (A) the commitments and in-kind contribu-
22 tions made by the industry partner; and

23 (B) the role of the industry partner in cur-
24 riculum development, the degree program, and
25 internships and apprenticeships; and

1 (5) includes data on internship, apprenticeship,
2 and employment opportunities and placements.

3 (k) OVERSIGHT.—

4 (1) AUDITS.—The Inspector General of the De-
5 partment of Commerce shall audit the Grant Pro-
6 gram in order to—

7 (A) ensure that eligible entities use covered
8 grant amounts in accordance with—

9 (i) the requirements of this section;

10 and

11 (ii) the overall purpose of the Grant
12 Program, as described in subsection (c);

13 and

14 (B) prevent waste, fraud, and abuse in the
15 operation of the Grant Program.

16 (2) REVOCATION OF FUNDS.—The Assistant
17 Secretary shall revoke a grant awarded to an eligible
18 entity that is not in compliance with the require-
19 ments of this section or the overall purpose of the
20 Grant Program, as described in subsection (c).

21 (l) ANNUAL REPORT TO CONGRESS.—Each year,
22 until all covered grants have expired, the Assistant Sec-
23 retary shall submit to Congress a report that—

24 (1) identifies each eligible entity that received a
25 covered grant and the amount of the covered grant;

1 (2) describes the progress each eligible entity
2 described in paragraph (1) has made toward accom-
3 plishing the overall purpose of the Grant Program,
4 as described in subsection (c);

5 (3) summarizes the job placement status or ap-
6 prenticeship opportunities of students who have par-
7 ticipated in the training program of the eligible enti-
8 ty; and

9 (4) includes the findings of any audits con-
10 ducted by the Inspector General of the Department
11 of Commerce under subsection (k)(1) that were not
12 included in the previous report submitted under this
13 subsection.

14 (m) AUTHORIZATION OF APPROPRIATIONS.—

15 (1) IN GENERAL.—There is authorized to be
16 appropriated to the Fund a total of \$100,000,000
17 for fiscal years 2022 through 2027, to remain avail-
18 able until expended.

19 (2) ADMINISTRATION.—The Assistant Secretary
20 may use not more than 2 percent of the amounts ap-
21 propriated to the Fund for the administration of the
22 Grant Program.