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.

IN THE SENATE OF THE UNITED STATES

APRIL 20, 2021

Mr. SCHUMER (for himself, Mr. YOUNG, Ms. HASSAN, Ms. COLLINS, Mr. COONS, Mr. PORTMAN, Ms. BALDWIN, Mr. GRAHAM, Mr. PETERS, Mr. BLUNT, Mr. DAINES, Mr. VAN HOLLEN, Mr. ROMNEY, and Mr. KELLY) introduced the following bill; which was read twice and referred to the Committee on Commerce, Science, and Transportation

MAY 13, 2021

Reported by Ms. CANTWELL, with an amendment

[Strike out all after the enacting clause and insert the part printed in italic]

A BILL

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

SECTION 1. SHORT TITLE.

This Act may be cited as the "Endless Frontier Act".

SEC. 2. FINDINGS.

Congress finds the following:

(1) For over 70 years, the United States has been the unequivocal global leader in scientific and technological innovation, and as a result the people of the United States have benefitted through good-paying jobs, economic prosperity, and a higher quality of life.

(A) Today, however, this leadership position is being eroded and challenged by foreign competitors, some of which are stealing intellectual property and trade secrets of the United States and aggressively investing in research and commercialization to dominate the key existing and future technology fields.

(B) While the United States once led the world in the share of our economy invested in research, our Nation now ranks 9th globally in total research and development and 12th in publicly financed research and development.
(C) While wages for American workers rose in parallel with growth in national productivity from the end of World War II through most of the 1970s, since then wage growth has been uneven and labor’s share in national income has declined.

(2) Without a significant increase in investment in research, education, technology transfer, intellectual property, manufacturing, and other core strengths of the United States innovation ecosystem, it is only a matter of time before the global competitors of the United States overtake the United States in terms of technological primacy. The country that wins the race in key technologies—such as artificial intelligence, quantum computing, advanced communications, and advanced manufacturing—and uses technological innovation to support high-quality jobs and incomes will be the superpower of the future.

(3) The Federal Government must catalyze United States innovation by boosting research investments focused on discovering, creating, commercializing, and demonstrating new technologies and manufacturing those technologies domestically throughout the country to ensure the leadership of the United States in the industries of the future.
(4) The distribution of innovation jobs and investment in the United States has become largely concentrated in just a few locations, while much of the Nation has been left out of growth in the innovation sector. More than 90 percent of the Nation’s innovation sector employment growth in the last 15 years was generated in just 5 major metropolitan areas. The Federal Government must address this imbalance in opportunity by—

(A) dramatically increasing funding for science and engineering research and expanding partnerships with the private sector to build new technology hubs across the country;

(B) spreading high-quality innovation sector jobs more broadly;

(C) increasing the participation of underrepresented populations, engaging workers, and collaborating with labor organizations in innovation efforts to tap the talent and potential of the entire Nation to ensure the United States leads the industries of the future; and

(D) building regional capacity in such critical areas as entrepreneurship, access to capital and other investment, and supply chain development.
(5) As President Franklin D. Roosevelt stated, “New frontiers of the mind are before us, and if they are pioneered with the same vision, boldness, and drive with which we have waged this war we can create a fuller and more fruitful employment and a fuller and more fruitful life.”

(6) As Vannevar Bush stated in his 1945 report entitled Science, The Endless Frontier, “New products, new industries, and more jobs require continuous additions to knowledge of the laws of nature, and the application of that knowledge to practical purposes. Similarly, our defense against aggression demands new knowledge so that we can develop new and improved weapons. This essential, new knowledge can be obtained only through basic scientific research.”

(7) Since their inception, the National Science Foundation and other key Federal agencies, like the Department of Energy, have carried out vital work supporting basic and applied research to create knowledge that is a key driver of the economy of the United States and enhances the Nation’s security.
SEC. 3. IMPROVING TECHNOLOGY AND INNOVATION RESEARCH AT THE NATIONAL SCIENCE FOUNDATION.

(a) Providing Authority To Disseminate Information.—Section 11 of the National Science Foundation Act of 1950 (42 U.S.C. 1870) is amended—

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

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

(3) by adding at the end the following:

“(l) provide for the widest practicable and appropriate dissemination of information within the United States concerning the Foundation’s activities and the results thereof.”;

(b) Establishment of Directorate for Technology and Innovation.—The National Science Foundation Act of 1950 (42 U.S.C. 1861 et seq.) is amended—

(1) in section 8 (42 U.S.C. 1866), by inserting at the end the following: “Such divisions shall include the Directorate for Technology and Innovation established under section 8A.”; and

(2) by inserting after section 8 the following:
SEC. 8A. IMPROVING RESEARCH AND ESTABLISHING DIRECTORATE FOR TECHNOLOGY AND INNOVATION.

(a) Definitions.—In this section:

(1) Community college.—The term ‘community college’ has the meaning given the term ‘junior or community college’ in section 312(f) of the Higher Education Act of 1965 (20 U.S.C. 1058(f)).

(2) Designated country.—The term ‘designated country’ means a country that has been approved and designated in writing by the President for purposes of this section, after providing—

(A) not less than 30 days of advance notification and explanation to the relevant congressional committees before the designation; and

(B) in-person briefings to such committees, if requested during the 30-day advance notification period described in subparagraph (A).

(3) Directorate.—The term ‘Directorate’ means the Directorate for Technology and Innovation established under subsection (b).

(4) Emerging research institution.—The term ‘emerging research institution’ means an institution of higher education with an established undergraduate student program that has, on average for
the 3 years prior to an application for an award under this section, received less than $35,000,000 in Federal research funding.

"(5) FEDERAL RESEARCH FACILITY.—The term 'Federal research facility' includes a research laboratory of the Department of Agriculture and any other federally funded research and development center.

"(6) HISTORICALLY BLACK COLLEGE OR UNIVERSITY.—The term 'historically Black college or university' has the meaning given the term 'part B institution' in section 322 of the Higher Education Act of 1965 (20 U.S.C. 1061).

"(7) INSTITUTION OF HIGHER EDUCATION.—The term 'institution of higher education' has the meaning given the term in section 101(a) of the Higher Education Act of 1965 (20 U.S.C. 1001(a)).

"(8) KEY TECHNOLOGY FOCUS AREAS.—The term 'key technology focus areas' means the areas included on the most recent list under subsection (d)(2).

"(9) LABOR ORGANIZATION.—The term 'labor organization' has the meaning given the term in section 2(5) of the National Labor Relations Act (29 U.S.C. 152(5)), except that such term shall also include—
"(A) any organization composed of labor organizations, such as a labor union federation or a State or municipal labor body; and

"(B) any organization which would be included in the definition for such term under such section 2(5) but for the fact that the organization represents—

"(i) individuals employed by the United States, any wholly owned Government corporation, any Federal Reserve Bank, or any State or political subdivision thereof;

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

"(iii) individuals employed as agricultural laborers.

"(10) MINORITY-SERVING INSTITUTION.—The term ‘minority-serving institution’ means an institution described in section 371(a) of the Higher Education Act of 1965 (20 U.S.C. 1067q(a)).

"(11) NATIONAL LABORATORY.—The term ‘National Laboratory’ has the meaning given the term in section 2 of the Energy Policy Act of 2005 (42 U.S.C. 15801).
"(12) Relevant congressional committees.—The term ‘relevant congressional committees’ means—

"(A) the Committee on Armed Services, the Committee on Commerce, Science, and Transportation, the Committee on Energy and Natural Resources, the Committee on Appropriations, the Committee on Foreign Relations, the Committee on Health, Education, Labor, and Pensions; and the Select Committee on Intelligence of the Senate; and

"(B) the Committee on Armed Services, the Committee on Science, Space, and Technology, the Committee on Appropriations, the Committee on Foreign Affairs, and the Permanent Select Committee on Intelligence of the House of Representatives.

"(13) STEM.—The term ‘STEM’ has the meaning given such term in section 2 of the America COMPETES Reauthorization Act of 2010 (Public Law 111–358; 42 U.S.C. 6621 note).

"(14) Tribal college or university.—The term ‘Tribal college or university’ has the meaning given the term in section 316(b)(3) of the Higher Education Act of 1965 (20 U.S.C. 1059c(b)(3)).
(15) UNDERREPRESENTED POPULATIONS.—
The term ‘underrepresented populations’ means women, minorities, veterans, tribal populations, persons with disabilities, and other populations that are underrepresented in STEM.

(b) ESTABLISHMENT OF DIRECTORATE FOR TECHNOLOGY AND INNOVATION.—

(1) In general.—Not later than 90 days after the date of enactment of the Endless Frontier Act, the Director shall establish in the Foundation a Directorate for Technology and Innovation. The Directorate shall carry out the duties and responsibilities described in this section, in order to further the following goals:

(A) Strengthening the leadership of the United States in critical technologies, as described as a critical national need in section 7018 of the America COMPETES Act (42 U.S.C. 1862o–5), through basic research in the key technology focus areas and the commercialization of those technologies to businesses in the United States.

(B) Addressing and mitigating technology challenges integral to the geostrategic position
of the United States through the activities au-
therized by this section.

"(C) Enhancing the competitiveness of the
United States in the key technology focus areas
by improving education in the key technology
focus areas and attracting more students to
such areas at all levels of education.

"(D) Consistent with the mission and oper-
ations of the Foundation, fostering the eco-

nomic and societal impact of federally funded
research and development through an acceler-
ated translation of basic advances in the key
technology focus areas into processes and prod-
ucts, known as technology transfer, that can
help achieve national goals related to economic
competitiveness, domestic manufacturing, na-
tional security, shared prosperity, energy and
the environment, health, education and work-
force development, and transportation.

"(E) Utilizing the full potential of the
United States workforce by encouraging broad-
er participation in key technology focus areas
by underrepresented populations.

"(F) Ensuring the programmatic work of
the Directorate and Foundation incorporates a
workforce perspective from labor organizations and workforce training organizations.

(2) Organization and Administrative Matters.—

(A) Program Managers.—The employees of the Directorate may include program managers for the key technology focus areas, who may perform a role similar to program managers employed by the Defense Advanced Research Projects Agency for the oversight and selection of programs supported by the Directorate.

(B) Selection of Recipients.—Recipients of support under the programs and activities of the Directorate shall be selected by program managers or other employees of the Directorate and the selection criteria for financial assistance awards shall include intellectual merit and broader impacts, including economic impacts on the advanced technology production system of the United States. The Directorate may use a peer review process or the authorities provided under subsection (c), or some combination of such process and authorities, to inform the selection of award recipients.
(C) Report.—Not later than 1 year after the date of enactment of the Endless Frontier Act, the Director shall prepare and submit a report to the relevant congressional committees regarding the use of alternative methods for the selection of recipients and the distribution of funding to recipients as compared to the traditional peer review process.

(D) Assistant Directors.—The Director shall appoint an Assistant Director for the Directorate, in the same manner as other Assistant Directors of the Foundation are appointed.

(E) Report.—Not later than 120 days after the date of enactment of the Endless Frontier Act, the Director shall prepare and submit a report to the relevant congressional committees regarding the establishment of the Directorate.

(e) Personnel Management Authorities for the Foundation.—In addition to the authorities and requirements of section 15, the Director shall have the following authorities:

(1) Experts in Science and Engineering.—The Director shall have the authority to carry out a program of personnel management authority
in the same manner, and subject to the same re-
requirements, as the program of personnel manage-
ment authority authorized for the Director of the
Defense Advanced Research Projects Agency under
section 1599h of title 10, United States Code, for
the Defense Advanced Research Projects Agency.

"(2) HIGHLY QUALIFIED EXPERTS IN NEEDED
OCCUPATIONS.—In addition to the authority pro-
vided under paragraph (1), the Director shall have
the authority to carry out a program of personnel
management authority in the same manner, and
subject to the same requirements, as the program to
attract highly qualified experts carried out by the
Secretary of Defense under section 9903 of title 5,
United States Code. Individuals hired by the Direc-
tor through such authority shall include individuals
with expertise in business creativity, innovation man-
agement, design thinking, entrepreneurship, venture
capital, and related fields.

"(3) ADDITIONAL HIRING AUTHORITY.—To the
extent needed to carry out the duties in paragraph
(1), the Director is authorized to utilize hiring au-
thorities under section 3372 of title 5, United States
Code, to staff the Directorate with employees from
other Federal agencies, State and local governments,
Indian Tribes and Tribal organizations, institutions of higher education, and other organizations, as described in that section, in the same manner and subject to the same conditions, that apply to such individuals utilized to accomplish other missions of the Foundation.

"(d) DUTIES AND FUNCTIONS OF THE DIRECTORATE—

"(1) DEVELOPMENT OF TECHNOLOGY FOCUS OF THE DIRECTORATE.—The Director shall—

"(A) through the Directorate, advance innovation in the key technology focus areas through basic and translational research and other activities described in this section;

"(B) develop and implement strategies to ensure that the activities of the Directorate are directed toward the key technology focus areas in order to accomplish the goals described in subsection (b)(1) consistent with the most recent report conducted under section 5(b) of the Endless Frontier Act; and

"(C) develop and focus on innovation methods, processes, and promising practices that can affect the speed and effectiveness of innovation processes at scale.
(2) Key technology focus areas.—

(A) Initial list.—The initial key technology focus areas are—

(i) artificial intelligence, machine learning, and other software advances;

(ii) high performance computing, semiconductors, and advanced computer hardware;

(iii) quantum computing and information systems;

(iv) robotics, automation, and advanced manufacturing;

(v) natural and anthropogenic disaster prevention or mitigation;

(vi) advanced communications technology;

(vii) biotechnology, medical technology, genomics, and synthetic biology;

(viii) cybersecurity, data storage, and data management technologies;

(ix) advanced energy, batteries, and industrial efficiency; and

(x) advanced materials science, engineering, and exploration relevant to the
other key technology focus areas described in this subparagraph.

(ii) Review of key technology focus areas and subsequent lists.—

(ii)(i) Adding or deleting key technology focus areas. Beginning on the date that is 3 years after the date of enactment of the Endless Frontier Act, and every 3 years thereafter, the Director, in coordination with the Director of the Office of Science and Technology Policy, the Director of National Institute of Standards and Technology, the Secretary of Energy, the Secretary of Defense, the Director of the National Institutes of Health, and, as appropriate, the heads of other departments and agencies—

(ii)(I) shall review the list of key technology focus areas;

(ii)(II) may consider the challenges and recommendations identified in the report required by section 14 of the Endless Frontier Act; and

(ii)(III) as part of that review, may add or delete key technology focus
areas if societal challenges or the competitive threats to the United States have shifted (whether because the United States or other nations have advanced or fallen behind in a technological area), subject to clause (ii).

(ii) LIMIT ON KEY TECHNOLOGY FOCUS AREAS.—Not more than 10 key technology focus areas shall be included on the list of key technology focus areas at any time:

(iii) UPDATING FOCUS AREAS AND DISTRIBUTION.—Prior to completion of each review under this subparagraph, the Director shall make the list of key technology focus areas readily available to the public and available for public comment, including, at a minimum, by publishing the list in the Federal Register even if no changes are expected to be made to the prior list.

(iv) EXTRAORDINARY CIRCUMSTANCE WAIVER.—In extraordinary circumstances, the Director of the Office of Science and Technology Policy may grant the Director
the ability to add or delete key technology focus areas without acting in coordination as described in clause (i). If such an ability is determined to be necessary by the Director of the Office of Science and Technology Policy, the Director and the Director of the Office of Science and Technology Policy shall not later than 15 days ahead of such a waiver being granted submit a detailed description and justification to the relevant congressional committees.

"(3) Activities.—

"(A) In general.—In carrying out the duties and functions of the Directorate, the Director—

"(i) may make awards in a technologically neutral manner for key technology focus areas to—

"(I) individual institutions of higher education for work at centers or by individual researchers or teams of researchers;

"(II) not-for-profit entities; and

"(III) consortia that—
(aa) shall include and be led by an institution of higher education, or by a not-for-profit entity designed to support technology development, and may include 1 or more additional institutions of higher education;

(bb) shall include at least one of the following:

(AA) a historically Black college or university;

(BB) a Tribal College or University;

(CC) another minority-serving institution;

(DD) an institution that participates in the Established Program to Stimulate Competitive Research under section 113 of the National Science Foundation Authorization Act of 1988 (42 U.S.C. 1862g);

(EE) an emerging research institution that is not
classified as a very high research activity by the Carnegie Classification of Institutions of Higher Education and that has an undergraduate enrollment with a majority of students who are from underrepresented populations; or

“(FF) a community college; and

“(ee) may include 1 or more—

“(AA) entities described in subclause (I) or (II) and industries, including startups, small businesses, and public-private partnerships;

“(BB) economic development organizations or venture development organizations, as such term is defined in section 28(a) of the Stevenson-Wydler Tech-
Innovation Act of 1980;

(C) National Laboratories;

(DD) Federal laboratories, as defined in section 4 of the Stevenson-Wynder Technology Innovation Act of 1980 (15 U.S.C. 3703);

(E) Federal research facilities;

(EE) labor organizations;

(G) entities described in subclause (I) or (II) from allied or partner countries;

(H) other entities if determined by the Director to be vital to the success of the program; and

(II) binational research and development foundations and funds; ex-
including foreign entities of concern;

(ii) may partner with other directorates of the Foundation for projects or research, including—

(I) to pursue basic questions about natural, human, and physical phenomena that could enable advances in the key technology focus areas;

(II) to study questions that could affect the design (including human interfaces), operation, deployment, or the social and ethical consequences of technologies in the key technology focus areas, including the development of technologies that complement or enhance the abilities of workers and impact of specific innovations on domestic jobs and equitable opportunity; and

(III) to further the creation of a domestic workforce capable of advancing, using, and adapting to key technology focus areas and understanding
and improving the impact of key technology focus areas on STEM teaching and learning advancing the key technology focus areas, including engaging relevant partners in research and innovation programs;

"(iii) may provide funds to any other Federal agencies for intramural or extramural work in the key technology focus areas through research, manufacturing, or other means;

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

"(v) may enter into and perform such contracts, other transactions, or other arrangements, or modifications thereof, as may be necessary in the conduct of the work of the Directorate and on such terms as the Director considers appropriate, in furtherance of the purposes of this Act.

"(B) REPORTS.—Not later than 180 days after the date of enactment of the Endless Frontier Act, the Director, in coordination with
the Secretary of State and the Director of the Office of Science and Technology Policy, shall prepare and submit to the relevant congressional committees—

"(i) a plan to seek out additional investments from—

"(I) certain designated countries; and

"(II) entities other than institutions of higher education; and


"(C) ANNUAL BRIEFING.—Each year, the Director shall formally request a briefing from the Secretary of Defense, the Secretary of Commerce, the Director of the Federal Bureau of Investigation, the Director of National Intelligence, and as appropriate other department or
agency heads regarding their efforts to preserve
the United States advantages generated by the
activity of the Directorate.

"(4) INTERAGENCY COOPERATION.—

"(A) IN GENERAL.—In carrying out this
section, the Director and other Federal research
agencies, in consultation with the United States
Patent and Trademark Office where appro-
priate, shall work cooperatively with each other
to further the goals of this section in the key
technology focus areas:

"(B) COORDINATION WITH NIST AND DE-
partment of Energy.—In making research
awards under this section, the Director shall, as
appropriate, work in coordination with the Di-
rector of the National Institute of Standards
and Technology and the Secretary of Energy.

"(C) COMPROLLER GENERAL REPORT.—
Each year, the Comptroller General of the
United States shall prepare and submit a report
to Congress, and shall simultaneously submit
the report to the Director and the Director of
the Office of Science and Technology Policy, de-
scribing the interagency cooperation that oc-
curred during the preceding year pursuant to
this paragraph, including a list of—

"(i) any funds provided under para-
graph (3)(A)(ii) to other divisions of the
Foundation; and

"(ii) any funds provided under para-
graph (3)(A)(iii) to other Federal research
agencies.

"(5) PROVIDING SCHOLARSHIPS, FELLOWSHIPS,
AND OTHER STUDENT SUPPORT.—

"(A) IN GENERAL.—The Director, acting
through the Directorate, shall fund under-
graduate scholarships (including at community
colleges), graduate fellowships and traineeships,
and postdoctoral awards in the key technology
focus areas.

"(B) IMPLEMENTATION.—The Director
may carry out subparagraph (A) by providing
funds—

"(i) for making awards—

"(I) directly to students; and

"(II) to institutions of higher
education or consortia of institutions
of higher education, including those
institutions or consortia involved in
operating university technology centers established under paragraph (6); and

"(ii) to programs in Federal research agencies that have experience awarding such scholarships, fellowships, traineeships, or postdoctoral awards.

"(C) Broadening Participation.—In carrying out this paragraph, the Director should work to increase the participation of underrepresented populations in fields related to the key technology focus areas. For that purpose, the Director may take such steps as establishing or augmenting programs targeted at underrepresented populations, and supporting traineeships or other relevant programs at institutions of higher education with high enrollments of underrepresented populations.

"(D) Innovation.—In carrying out this paragraph, the Director shall encourage innovation in graduate education, including through encouraging institutions of higher education to offer graduate students opportunities to gain experience in industry or government as part of their graduate training, and through support
for students in professional masters programs related to the key technology focus areas.

"(E) SUPPLEMENT, NOT SUPPLANT.—The Director shall ensure that funds made available under this paragraph shall be used to create additional support for postsecondary students and shall not displace funding for any other available support.

"(6) UNIVERSITY TECHNOLOGY CENTERS.—

"(A) IN GENERAL.—From amounts made available to the Directorate, the Director shall, through a competitive application and selection process, make awards to institutions of higher education or consortia described in paragraph (3)(A)(i)(III) to establish university technology centers.

"(B) USES OF FUNDS.—

"(i) IN GENERAL.—A center established under an award under subparagraph (A)—

"(I) shall use support provided under such subparagraph—

"(aa) to carry out basic and translational research to advance
innovation in the key technology focus areas; and

**(bb)** to further the development and commercialization of innovations, including inventions, in the key technology focus areas, including—

**(AA)** innovations derived from research carried out under item (aa), through such activities as translational research, proof-of-concept development, and prototyping, in order to reduce the cost, time, and risk of commercializing new technologies;

**(BB)** to promote patenting and commercialization of inventions derived from research carried out under item (aa); and

**(CC)** through the use of public-private partnerships; and
(II) may use support provided under such subparagraph—

(aa) for the costs of equipment;

(bb) for the costs associated with technology transfer and commercialization, including patenting and licensing; or

(cc) for other activities or costs necessary to accomplish the purposes of this section, including for operations and staff.

(ii) Support of regional technology hubs.—Each center established under subparagraph (A) may support and participate in, as appropriate, the activities of any regional technology hub designated under section 28(b)(1)(A) of the Stevenson-Wydler Technology Innovation Act of 1980.

(C) Selection process.—In selecting recipients under this paragraph, the Director shall consider—
"(i) the capacity of the applicant to pursue and advance basic and translational research;

"(ii) the extent to which the applicant's proposed research would be likely to advance American competitiveness in 1 or more key technology focus areas;

"(iii) the extent to which the applicant's proposal would broaden participation by underrepresented populations in those areas;

"(iv) the capacity of the applicant to engage industry, labor, and other appropriate organizations on any advances;

"(v) whether the applicant's proposed research will, where applicable, contribute to growth in domestic manufacturing capacity and job creation;

"(vi) the quality of plans for dissemination of research and technology results, in accordance with relevant export control laws;

"(vii) how the applicant will, where applicable, encourage the training and participation of entrepreneurs and the trans-
lation of research results to practice, including the development of new businesses;

“(viii) how the applicant will encourage the participation of inventors and entrepreneurs and the development of new businesses, where applicable;

“(ix) regional and geographic diversity;

“(x) in the case of a consortium, the extent to which the proposal includes institutions listed in paragraph (3)(A)(i)(III)(bb); and

“(xi) the amount of funds from industry organizations described in subparagraph (D)(ii) the applicant would use towards establishing the center under subparagraph (A).

“(D) REQUIREMENTS.—The Director shall ensure that any institution of higher education or consortium receiving an award under subparagraph (A) has—

“(i) the capacity or the ability to acquire the capacity to advance the goals described in subsection (b)(1); and
(ii) secured contributions for establishing the center under subparagraph (A) from industry organizations in an amount not less than 10 percent of the total amount of the award the institution or consortium would receive under subparagraph (A).

(7) MOVING TECHNOLOGY FROM LABORATORY TO MARKET.—

(A) Program Authorized.—

(ii) In general.—The Director, in coordination with the Director of the National Institute of Standards and Technology, shall establish a program in the Directorate to make awards, on a competitive basis, to institutions of higher education or consortia described in paragraph (3)(A)(i)(III)—

(I) to build capacity at an institution of higher education or within the consortium and facilitate collaboration with firms in the key technology focus areas to increase the likelihood that new technologies in the
key technology focus areas will succeed in the commercial market; and

**(II)** with the goal of promoting experiments with a range of models that institutions of higher education or consortia could use to—

**(aa)** enable new technologies and inventions to mature to the point where the technologies are more likely to succeed in the commercial market and promote the creation of high-quality jobs in the United States; and

**(bb)** reduce the risks to commercial success for new technologies and inventions earlier in their development.

***(ii) USE FOR TRAINING.***—An award under this subparagraph for a purpose described in subclause (I) or (II) of clause (i) may also enable the institution of higher education or consortium to provide training and support to scientists, engineers, and inventors who are interested in re-
search, technology transfer, and commercialization, including patenting and licensing, if the use is included in the proposal submitted under subparagraph (B).

"(B) PROPOSALS.—An institution of higher education or consortium desiring an award under this paragraph shall submit a proposal to the Director at such time, in such manner, and containing such information as the Director may require. The proposal shall include a description of—

"(i) the broader impact of the proposal;

"(ii) the steps the applicant is studying or will take to enable technology transfer to reduce the risks for commercialization for new technologies, including how the applicant will collaborate with firms in the key technology focus areas;

"(iii) why such steps are likely to be effective;

"(iv) how such steps differ from previous efforts to reduce the risks for commercialization for new technologies;
"(v) whether the commercial viability of any new technologies will promote the creation of high-quality jobs in the United States;

"(vi) how the applicant will, where applicable, encourage the participation of inventors and entrepreneurs and the development of new businesses; and

"(vii) how the applicant will, where applicable, encourage the training and participation of entrepreneurs and the translation of research results to practice, including the development of new businesses.

"(C) USE OF FUNDS.—A recipient of an award under this paragraph shall use award funds to reduce the risks for commercialization for new technologies, which may include—

"(i) creating and funding competitions to allow entrepreneurial ideas from institutions of higher education or consortia described in paragraph (3)(A)(i)(III) to illustrate their commercialization potential;

"(ii) facilitating relationships among local and national business leaders; includ-
ing investors, and potential entrepreneurs
to encourage successful commercialization;

"(iii) creating or supporting entities

that could enable researchers to further de-

develop new technology, through patient cap-

tal investment, advice, staff support, or

other means;

"(iv) providing facilities for start-up

companies where technology maturation
could occur;

"(v) covering legal and other fees as-

associated with technology transfer and com-

mercialization, including patenting and li-

censing; and

"(vi) revising institution policies, in-

cluding policies related to intellectual prop-

erty and faculty entrepreneurship, to ac-

complish the goals of this paragraph.

"(D) REPORTING ON COMMERCIALIZATION

BASED ON METRICS.—The Director shall estab-

lish—

"(i) metrics related to commercializa-

tion for an award under this paragraph;

and
“(ii) a reporting schedule for recipients of such awards that takes into account both short- and long-term goals of the program under this paragraph.

“(8) Test beds.—

“(A) Program authorized.—

“(i) In general.—The Director, in coordination with the Director of the National Institute of Standards and Technology, shall establish a program in the Directorate to make awards, on a competitive basis, to institutions of higher education or consortia described in paragraph (3)(A)(i)(III) to establish and operate test beds and fabrication facilities to advance the operation, integration, deployment, and, as appropriate, manufacturing of new, innovative technologies in the key technology focus areas, which may include hardware or software. The goal of such test beds and facilities shall be to accelerate the movement of innovative technologies into the commercial market through the private sector.
“(ii) COORDINATION.—In establishing the program under clause (i), the Director shall ensure coordination in establishing new test beds under this paragraph with other test beds supported by the Foundation or established under Manufacturing USA to avoid duplication and maximize the use of Federal resources.

“(B) PROPOSALS.—A proposal submitted under this paragraph shall, at a minimum, describe—

“(i)(I) the technology or technologies that will be the focus of the test bed or fabrication facility;

“(II) the goals of the work to be done at the test bed or facility; and

“(III) the expected schedule for completing that work;

“(ii) how the applicant will assemble a workforce with the skills needed to operate the test bed or facility;

“(iii) how the applicant will ensure broad access to the facility;

“(iv) how the applicant will collaborate with firms in the key technology focus
areas, including through coordinated research and development and funding, to ensure that work in the test bed or facility will contribute to the commercial viability of any technologies and will include collaboration from industry and labor organizations;

"(v) how the applicant will encourage the participation of inventors and entrepreneurs and the development of new businesses;

"(vi) how the applicant will increase participation by underrepresented populations;

"(vii) how the applicant will demonstrate that the commercial viability of any new technologies will support the creation of high-quality domestic jobs;

"(viii) how the test bed or facility will operate after Federal funding has ended; and

"(ix) how the test bed will disseminate lessons and other technical information to United States firms or allied or partner country firms in the United States.
“(C) AWARDS.—Awards made under this paragraph shall be for 7 years, with the possibility of 5-year extensions.

“(D) AUTHORIZED USE OF FUNDS.—An awardee under this paragraph may, in order to achieve the purposes described in subparagraph (A)(i), use the award for the purchase of equipment, the support of graduate students and postdoctoral researchers, and the salaries of staff.

“(E) RESULTS.—An awardee under this paragraph may publish and share with the public the results of the work conducted under this paragraph.

“(F) INTERAGENCY SEMI-ANNUAL MEETINGS.—The Director, the Director of the National Institute of Standards and Technology, and the heads of other departments and agencies, or their designees, with test bed related equities shall hold an annual meeting to coordinate their respective test bed related investments, future years plan, and other appropriate matters; to avoid conflicts and duplication of efforts. Upon request by Congress, Congress shall be briefed on the results of the meetings.
"(9) INAPPLICABILITY.—Section 5(e)(1) shall not apply to grants, contracts, awards, or other arrangements made under this section.

"(e) AREAS OF FUNDING SUPPORT.—Subject to the availability of funds to carry out this section, the Director shall endeavor, for each fiscal year, to use—

"(1) not less than 35 percent of funds provided to the Directorate for such year to carry out subsection (d)(6);

"(2) not less than 15 percent of such funds to carry out the purpose of subsection (d)(5)—

"(A) with the goal of awarding, across the key technology focus areas—

"(i) not fewer than 1,000 postdoctoral awards;

"(ii) not fewer than 2,000 graduate fellowships and traineeships; and

"(iii) not fewer than 1,000 undergraduate scholarships, including scholarships to attend community colleges;

"(B) of which not less than 10 percent of the funds designated under this paragraph shall be used to support additional awards to focus on community college training, education, and teaching programs that increase the participa-
tion of underrepresented populations in science, technology, engineering, and mathematics, including technical programs through programs such as the Advanced Technological Education program;

"(C) of which not less than 20 percent of the funds designated under this paragraph shall be used to support awards for post-doctorate fellowships, graduate fellowships and traineeships, and undergraduate scholarships through institutions of higher education, and other institutions, located in jurisdictions that participate in the Established Program to Stimulate Competitive Research under section 113 of the National Science Foundation Authorization Act of 1988 (42 U.S.C. 1862g); and

"(D) if funds remain after carrying out subparagraphs (A), (B), and (C), awards to institutions of higher education to enable the institutions to fund the development and establishment of new or specialized courses of education for graduate, undergraduate, or technical college students;

"(3) not less than 5 percent of such funds to carry out subsection (d)(7);
(4) not less than 10 percent of such funds to carry out subsection (d)(8);

(5) not less than 15 percent of such funds to carry out research and related activities pursuant to subclauses (I) and (II) of subsection (d)(3)(A)(ii); and

(6) not less than 20 percent of such funds to support research in the key technology focus areas through the Established Program to Stimulate Competitive Research under section 113 of the National Science Foundation Authorization Act of 1988 (42 U.S.C. 1862g).

(f) Technical Assistance for Award Recipients and Applicants.—The Director may—

(1) coordinate with other Federal agencies to establish interagency and multidisciplinary teams to provide technical assistance to recipients of, and prospective applicants for, awards under this section;

(2) by Federal interagency agreement and notwithstanding any other provision of law, transfer funds available to carry out this section to the head of another Federal agency to facilitate and support the provision of such technical assistance; and

(3) enter into contracts with third parties to provide such technical assistance.
"(g) Authorization of Appropriations and Limitations.—

"(1) Authorization for the Office of Inspector General.—From any amounts appropriated for the Foundation for a fiscal year, there is authorized to be appropriated for necessary expenses of the Office of Inspector General of the Foundation an amount of not less than $10,000,000 in any fiscal year appropriation for the Foundation, for oversight of the programs and activities established under this section in accordance with the Inspector General Act of 1978.

"(2) Supplement and not supplant.—The amounts authorized to be appropriated to carry out this section shall supplement, and not supplant, any other amounts already appropriated to the Foundation or Office of Inspector General of the Foundation, except with respect to transfers described in paragraph (3).

"(3) Transfer of Funds Authority.—For fiscal years 2022 through 2024, the Director shall transfer any funds appropriated to the Directorate to any other directorate or office of the Foundation for activities directly related to the key technology focus areas.
Sec. 8B. CHIEF DIVERSITY OFFICER.

(a) Chief Diversity Officer.—
"(1) APPOINTMENT.—The Director shall appoint a Chief Diversity Officer of the National Science Foundation.

"(2) QUALIFICATIONS.—The Chief Diversity Officer should have significant experience with diversity and inclusion, in particular within the Federal Government and science community.

"(2) OVERSIGHT.—The Chief Diversity Officer shall report directly to the Director in the performance of the duties of the Chief Diversity Officer under this section.

"(b) DUTIES.—The Chief Diversity Officer is responsible for providing advice on policy, oversight, guidance, and coordination with respect to matters of the National Science Foundation related to diversity and inclusion. Other duties may include—

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

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

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

"(B) actionable; and
(C) actively used to implement the strategy plan under paragraph (1);

(3) advising in the establishment of a strategic plan for diverse participation by institutions of higher education, including community colleges, historically Black colleges and universities, Tribal colleges or universities, and other minority-serving institutions (as such terms are defined in section 8A(a)); and individuals;

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

(5) performing such additional duties and exercise such powers as the Director may prescribe.”.

(d) ANNUAL REPORT ON UNFUNDED PRIORITIES.—

(1) ANNUAL REPORT.—Not later than 40 days after the date on which the budget of the President for a fiscal year is submitted to Congress pursuant to section 1105 of title 31, United States Code, the National Science Board shall submit to the President and to Congress a report on the unfunded priorities of the National Science Foundation.

(2) ELEMENTS.—Each report submitted under paragraph (1) shall provide—
(A) for each directorate of the National Science Foundation for the most recent, fully completed fiscal year—

(i) the proposal success rate;

(ii) the percentage and total funding of proposals that were not funded and that met the criteria for funding; and

(iii) the most promising research areas covered by proposals described in clause (ii); and

(B) a list, in order of priority, of the next activities approved by the National Science Board to be undertaken in the Major Research Equipment and Facilities Construction account.

(o) PILOT PROGRAM—

(1) IN GENERAL.—The Director, acting through the Directorate, shall establish a 5-year pilot program for awarding grants to eligible partnerships to build research and education capacity at emerging research institutions to enable such institutions to contribute to programs run by the Directorate.

(2) APPLICATIONS.—An eligible partnership seeking a grant under this subsection shall submit an application to the Director at such time, in such
manner, and containing such information as the Director may reasonably require, including a statement of how the partnership will use the funds awarded through the grant to achieve a lasting increase in the research and education capacity of each emerging research institution included in the eligible partnership.

(3) ACTIVITIES.—An eligible partnership receiving a grant under this subsection may use the funds awarded through such grant for—

(A) faculty salaries and training;

(B) research experiences for undergraduate and graduate students;

(C) maintenance and repair of research equipment and instrumentation; and

(D) any other activities the Director determines appropriate.

(4) DEFINITIONS.—In this subsection:

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

(B) DIRECTORATE; EMERGING RESEARCH INSTITUTION.—The terms “Directorate” and “emerging research institution” have the meanings given such terms in section 8A(a) of the
National Science Foundation Act of 1950, except that, with respect to the term "emerging research institution," the reference in paragraph (4) of such section to an award under section 8A of that Act shall be deemed a reference to a grant under this subsection.

(C) ELIGIBLE PARTNERSHIP.—The term "eligible partnership" means a partnership of—

(i) at least 1 emerging research institution; and

(ii) at least 1 institution classified as a very high research activity by the Carnegie Classification of Institutions of Higher Education.

SEC. 4. ENDLESS FRONTIER FUND.

(a) IN GENERAL.—There is authorized to be appropriated a total of $112,410,000,000 for fiscal years 2022 through 2026 for the implementation of this Act and the amendments made by this Act. Such funds shall be available for the implementation of this Act and the amendments made by this Act, and shall be administered by the Director of the Office of Science and Technology Policy (referred to in this section as the "Director").

(b) USE OF FUNDS.—
(1) Submission of annual allocation.—

Until the date on which all of the amounts in the Fund described in subsection (a) are expended, the Director shall annually submit to Congress, together with the annual budget of the United States, a list of allocations to agencies and departments to implement this Act and the amendments made by this Act that includes a detailed description of each program proposed to be funded, including the estimated expenditures from the Fund for the program for the applicable fiscal year.

(2) Alternate allocation.—

(A) In general.—The Commerce, Justice, Science, and Related Agencies Appropriations Act for the relevant fiscal year may provide for alternate allocation of amounts made available under this section.

(B) Allocation by President.—

(i) No alternate allocations.—If Congress has not enacted legislation establishing alternate allocations as described in subparagraph (A) by the date on which the Act making full-year appropriations for Commerce, Justice, Science, and Related Agencies for the applicable fiscal year is
enacted into law, amounts made available under this section shall be allocated by the Director:

(ii) INSUFFICIENT ALTERNATE ALLOCATION.—If Congress enacts legislation establishing alternate allocations for amounts made available under this section that are less than the full amount authorized to be appropriated to the Fund for that fiscal year under subsection (a), the difference between the amount authorized to be appropriated and the alternate allocation shall be allocated by the Director.

(e) LIMITATION.—No funds provided under this section shall be used for construction, except in the case of infrastructure projects described in section 28(b)(1)(B) of the Stevenson-Wydler Technology Innovation Act of 1980 (Public Law 96–480), as added by section 7(a) of this Act.

(d) SENSE OF CONGRESS.—It is the sense of Congress that, during the period of fiscal years 2022 through 2026, the Director shall make available, from amounts made available under subsection (a)—

(1) $9,425,000,000 to the regional technology hub program under section 28 of the Stevenson-
Wydyler Technology Innovation Act of 1980 (Public Law 96–480), as added by section 7 of this Act;

(2) $575,000,000 to the comprehensive regional technology strategy grant program under section 29 of the Stevenson-Wydler Technology Innovation Act of 1980 (Public Law 96–480), as added by section 8 of this Act, of which $100,000,000 shall be made available for each of fiscal years 2022 and 2023 and $125,000,000 shall be made available for each of fiscal years 2024 through 2026;

(3) $100,000,000,000 to the Directorate for Technology and Innovation of the National Science Foundation, of which $5,000,000,000 shall be made available for fiscal year 2022; $10,000,000,000 shall be made available for fiscal year 2023; $20,000,000,000 shall be made available for fiscal year 2024; $30,000,000,000 shall be made available for fiscal year 2025; and $35,000,000,000 shall be made available for fiscal year 2026; and

(4) $2,410,000,000 for the period of fiscal years 2022 through 2026 to the Manufacturing USA Program for activities described under section 9 of this Act.
SEC. 5. STRATEGY AND REPORT ON ECONOMIC SECURITY, SCIENCE, RESEARCH, AND INNOVATION TO SUPPORT THE NATIONAL SECURITY STRATEGY.

(a) DEFINITIONS.—In this section:

(1) APPROPRIATE COMMITTEES OF CONGRESS.—The term "appropriate committees of Congress" means—

(A) the Committee on Agriculture, Nutrition, and Forestry; the Committee on Appropriations; the Committee on Armed Services; the Committee on Banking, Housing, and Urban Affairs; the Committee on the Budget; the Committee on Commerce, Science, and Transportation; the Committee on Energy and Natural Resources; the Committee on Finance; the Committee on Foreign Relations; the Committee on Health, Education, Labor, and Pensions; the Committee on Homeland Security and Governmental Affairs; the Committee on the Judiciary; and the Select Committee on Intelligence of the Senate; and

(B) the Committee on Agriculture; the Committee on Appropriations; the Committee on Armed Services; the Committee on the Budget; the Committee on Education and
Labor, the Committee on Energy and Commerce, the Committee on Financial Services, the Committee on Foreign Affairs, the Committee on Homeland Security, the Committee on the Judiciary, the Committee on Oversight and Reform, the Committee on Science, Space, and Technology, the Committee on Ways and Means, and the Permanent Select Committee on Intelligence of the House of Representatives.

(2) KEY TECHNOLOGY FOCUS AREA.—The term "key technology focus area" means an area included on the most recent list under section 8A(d)(2) of the National Science Foundation Act of 1950.

(3) NATIONAL SECURITY STRATEGY.—The term "national security strategy" means the national security strategy required by section 108 of the National Security Act of 1947 (50 U.S.C. 3043).

(b) STRATEGY AND REPORT.—

(1) IN GENERAL.—In 2021 and in each year thereafter before the applicable date set forth under paragraph (2), the Director of the Office of Science and Technology Policy, in coordination with the Director of the National Economic Council, the Director of the National Science Foundation, the Secretary of Commerce, the Secretary of Energy, the
National Security Council, the United States Patent and Trademark Office, and the heads of other relevant Federal agencies and in consultation with relevant nongovernmental partners, shall—

(A) review such strategy, programs, and resources as the Director of the Office of Science and Technology Policy determines pertinent to United States national competitiveness in science, research, innovation, and technology transfer, including patenting and licensing, to support the national security strategy;

(B) develop or revise a strategy for the Federal Government to improve the national competitiveness of the United States in science, research, and innovation to support the national security strategy; and

(C) submit to the appropriate committees of Congress—

(i) a report on the findings of the Director with respect to the review conducted under subparagraph (A); and

(ii) the strategy developed or revised under subparagraph (B).
(2) APPLICABLE DATES.—In each year, the applicable date set forth under this paragraph is as follows:

(A) In 2021, December 31, 2021.

(B) In 2022 and every year thereafter—

(i) in any year in which a new President is inaugurated, October 1 of that year; and

(ii) in any other year, the date that is 90 days after the date of the transmission to Congress in that year of the national security strategy.

(c) ELEMENTS.—

(1) REPORT.—Each report submitted under subsection (b)(1)(C)(i) shall include the following:

(A) An assessment of public and private investment in civilian and military science and technology and its implications for the geostrategic position and national security of the United States.

(B) A description of the prioritized economic security interests and objectives, including domestic job creation, of the United States relating to science, research, and innovation and an assessment of how investment in civilian
and military science and technology can advance those objectives.

(C) An assessment of how regional efforts are contributing and could contribute to the innovation capacity of the United States, including—

(i) programs run by State and local governments; and

(ii) regional factors that are contributing or could contribute positively to innovation.

(D) An assessment of—

(i) workforce needs for competitiveness and national security in key technology areas; and

(ii) Federal support needed—

(I) to expand domestic and international student pathways into key technology areas; and

(II) to improve workforce development and employment systems, as well as programs and practices to upskill incumbent workers.

(E) An assessment of barriers to competitiveness in key technology focus areas and bar-
riers to the development and evolution of start-ups, small and mid-sized business entities, and industries in key technology focus areas:

(F) An assessment of the effectiveness of the Federal Government, federally funded research and development centers, and national labs in supporting and promoting technology commercialization and technology transfer, including an assessment of the adequacy of Federal research and development funding in promoting competitiveness and the development of new technologies.

(G) An assessment of manufacturing capacity, logistics, and supply chain dynamics of major export sectors, including access to a skilled workforce, physical infrastructure, and broadband network infrastructure.

(H) An assessment of how the Federal Government is increasing the participation of underrepresented populations in science, research, innovation, and manufacturing.

(I) An assessment of the effectiveness of the Federal Government, federally funded research and development centers, and national laboratories in transitioning technologies and
processes that emerge from federally funded re-
search to new domestic manufacturing growth
and job creation across sectors in the United
States.

(2) Strategy.—Each strategy submitted
under subsection (b)(1)(C)(ii) shall include the fol-
lowering.

(A) A plan to utilize available tools to ad-
dress or minimize the leading threats and chal-
lenges and to take advantage of the leading op-
portunities, particularly in regards to tech-
nology areas central to competition between the
United States and China, including the fol-
lowering:

(i) Specific objectives, tasks, metrics,
and milestones for each relevant Federal
agency.

(ii) Specific plans to support public
and private sector investment in research,
technology development, education and
workforce development, and domestic man-
ufacturing in key technology focus areas
supportive of the national economic com-
petitiveness of the United States and to
foster the prudent use of public-private partnerships.

(iii) Specific plans to promote environmental stewardship and fair competition for United States workers.

(iv) A description of—

(I) how the strategy submitted under subsection (b)(1)(C)(ii) supports the national security strategy; and

(II) how the strategy submitted under such subsection is integrated and coordinated with the most recent national defense strategy under section 113(g) of title 10, United States Code.

(v) A plan to encourage the governments of countries that are allies or partners of the United States to cooperate with the execution of the strategy submitted under subsection (b)(1)(C)(ii); where appropriate.

(vi) A plan to encourage certain international and multilateral organizations to
support the implementation of such strategy.

(vii) A plan for how the United States should develop local and regional capacity for building innovation ecosystems across the Nation by providing Federal support.

(viii) A plan for strengthening the industrial base of the United States.

(B) An identification of additional resources, administrative action, or legislative action recommended to assist with the implementation of such strategy.

(d) Form of Reports and Strategies.—Each report and strategy submitted under subsection (b)(1)(C) shall be submitted in unclassified form, but may include a classified annex.

SEC. 6. SUPPLY CHAIN RESILIENCY PROGRAM.

(a) Definitions.—In this section:

(1) Critical industry.—The term “critical industry” means—

(A) key technology focus areas, as defined in section 8A(a) of the National Science Foundation Act of 1950, as added by section 3(b) of this Act; and
areas identified by the report in subsection (f).

(2) Critical infrastructure.—The term "critical infrastructure" has the meaning given the term in the Critical Infrastructures Protection Act of 2001 (42 U.S.C. 5195c).

(3) Foreign entity.—The term "foreign entity"—

  (A) means—

    (i) the government of a foreign country;

    (ii) a foreign political party;

    (iii) an individual who is not a protected individual (as defined in section 274B(a)(3) of the Immigration and Nationality Act (8 U.S.C. 1324b(a)(3))); or

    (iv) a partnership, association, corporation, organization, or other combination of persons organized under the laws of, or having its principal place of business in, a foreign country; and

  (B) includes—

    (i) any person owned by, controlled by, or subject to the jurisdiction or direc-
tion of, a person described in subpara-

graph (A); 

(ii) any person, wherever located, that 

acts as an agent, representative, or em-

ployee of a person described in subpara-

graph (A); 

(iii) any person that acts in any other 
capacity at the order or request, or under 
the direction or control, of— 

(I) a person described in sub-
paragraph (A); or 

(II) a person, the activities of 

which are directly or indirectly super-
vised, directed, controlled, financed, or 

subsidized in whole or in majority 

part by a person described in subpara-

graph (A); 

(iv) any person that directly or indi-
rectly through any contract, arrangement, 
understanding, relationship, or otherwise 
owns not less than 25 percent of the equity 
interests of a person described in subpara-

graph (A);
(v) any person with significant responsibility to control, manage, or direct a person described in subparagraph (A);

(vi) any individual, wherever located, who is a citizen or resident of a country controlled by a person described in subparagraph (A); and

(vii) any corporation, partnership, association, or other organization organized under the laws of a country controlled by a person described in subparagraph (A);

(4) FOREIGN ENTITY OF CONCERN.—The term “foreign entity of concern” means a foreign entity that is—

(A) designated as a foreign terrorist organization by the Secretary of State under section 219(a) of the Immigration and Nationality Act (8 U.S.C. 1189(a));

(B) included on the list of specially designated nationals and blocked persons maintained by the Office of Foreign Assets Control of the Department of the Treasury (commonly known as the “SDN list”);

(C) owned by, controlled by, or subject to the jurisdiction or direction of a government of
a foreign country that is a covered nation (as defined in section 2533e(d) of title 10, United States Code);

(D) alleged by the Attorney General to have been involved in activities for which a conviction was obtained under—

(i) chapter 37 of title 18, United States Code (commonly known as the "Espionage Act");

(ii) section 951 or 1030 of title 18, United States Code;

(iii) chapter 90 of title 18, United States Code (commonly known as the "Economic Espionage Act of 1996");

(iv) the Arms Export Control Act (22 U.S.C. 2751 et seq.);

(v) section 224, 225, 226, 227, or 236 of the Atomic Energy Act of 1954 (42 U.S.C. 2274, 2275, 2276, 2277, and 2284);

(vi) the Export Control Reform Act of 2018 (50 U.S.C. 4801 et seq.); or

(vii) the International Emergency Economic Powers Act (50 U.S.C. 1701 et seq.); or
(E) determined by the Secretary, in consultation with the Secretary of Defense and the Director of National Intelligence, to be engaged in unauthorized conduct that is detrimental to the national security or foreign policy of the United States.

(5) LABOR ORGANIZATION.—The term "labor organization" has the meaning given such term in section 8A(a) of the National Science Foundation Act of 1950.

(6) PROGRAM.—The term "program" means the supply chain resiliency and crisis response program established under subsection (b).

(7) RELEVANT COMMITTEES OF CONGRESS.—The term "relevant committees of Congress" means—

(A) the Committee on Commerce, Science, and Transportation of the Senate;

(B) the Committee on Appropriations of the Senate;

(C) the Committee on Finance of the Senate;

(D) the Committee on Homeland Security and Governmental Affairs of the Senate;
(E) the Committee on Armed Services of the Senate;

(F) the Select Committee on Intelligence of the Senate;

(G) the Committee on Science, Space, and Technology of the House of Representatives;

(H) the Committee on Energy and Commerce of the House of Representatives;

(I) the Committee on Appropriations of the House of Representatives;

(J) the Committee on Ways and Means of the House of Representatives;

(K) the Committee on Homeland Security of the House of Representatives;

(L) the Committee on Armed Services of the House of Representatives; and

(M) the Permanent Select Committee on Intelligence of the House of Representatives.

(8) SECRETARY.—The term "Secretary" means the Secretary of Commerce.

(b) ESTABLISHMENT.—The Secretary shall establish in the Department of Commerce a supply chain resiliency and crisis response program to carry out the activities described in subsection (d).

(e) MISSION AND PRIORITIES.—
(1) Mission.—The mission of the program is to—

(A) ensure the leadership of the United States with respect to industries that are essential to mid-term and long-term national security and economic competitiveness;

(B) promote, in partnership with the private sector and other relevant stakeholders, the resiliency of supply chains of the United States and allied or partner countries; and

(C) encourage partnerships between the Federal Government and industry, labor organizations, and State, local, territorial, and Tribal governments in order to better respond to supply chain crises.

(2) Priorities.—The program shall—

(A) in partnership with the private sector, build resilient and secure supply chains (including through the mid-term and long-term diversification of key supply chains, which shall include the support of small- and medium-sized businesses) that can ensure the access of the United States to critical goods and services in the face of shocks, including pandemic and biological threats, cyberattacks, extreme weather
events, terrorist and geopolitical attacks, great power conflict, and other threats to national security; with key parts of such resilience being—

(i) the diversification of key supply chains with allies or key partners; and

(ii) working with allies or key partners through agreements and other commitments; and

(B) support collaboration with allies or key partners to collectively build and strengthen resilient global supply chains, including through identifying supply chain vulnerabilities, expanding productive capacity, and stockpiling essential goods.

(d) ACTIVITIES.—Under the program, the Secretary, acting through 1 or more bureaus or other divisions of the Department of Commerce as appropriate, shall carry out activities—

(1) to map and monitor key supply chains and to identify current and future key supply chain gaps and vulnerabilities in critical industries;

(2) to develop or identify opportunities to build domestic capacity, and cooperate with allies or key partners, to address supply chain gaps and vulnerabilities in critical industries;
(3) to consult and collaborate with the Director of the Office of Management and Budget, the Secretary of Defense, the Secretary of Homeland Security, the Secretary of the Treasury, the Secretary of Energy, the Secretary of Transportation, the Secretary of Agriculture, the Secretary of State, the Director of National Intelligence, the Director of the Office of Science and Technology Policy, and, as appropriate, the heads of other Federal departments and agencies to invest in urgent supply chain gaps;

(4) to encourage partnerships between the Federal Government and industry, labor organizations, and State, local, territorial, and Tribal governments to better respond to crises;

(5) to support the distribution of critical resources to areas that have the greatest needs during crises;

(6) to develop contingency plans to ensure a resilient supply chain response for potential crises;

(7) to ensure that allies and key partners have supply chains that are capable of supporting critical industries; and

(8) to enter into agreements and partnerships with allied or partner governments to promote diversified and resilient supply chains that ensure supply...
of critical goods to both the United States and allied companies.

(c) AUTHORITIES.—The Secretary may—

(1) establish a unified coordination group to serve as the primary method for coordinating between and among Federal departments and agencies in response to known supply chain risks as well as for integrating private sector partners into efforts, as appropriate, to—

(A) study technical, engineering, and operational data acquired on a voluntary basis from the private sector, in a manner that ensures any data provided by the private sector is kept confidential and as required under section 552 of title 5, United States Code (commonly known as the “Freedom of Information Act”);

(B) directly receive whistleblower complaints with appropriate protection, and

(C) identify key competitiveness challenges in critical industries;

(2) enter into agreements with allied or partner governments regarding supply chain security assurances;

(3) coordinate with other divisions of the Department of Commerce and other Federal depart-
ments and agencies to leverage existing authorities, as of the date of enactment of this Act, to strengthen supply chain resilience; and

(4) with the approval of the Committee on Appropriations of the Senate and the Committee on Appropriations of the House of Representatives, transfer funds to, or receive funds from, other departments and agencies to implement the program.

(f) Report on Supply Chain Resiliency and Domestic Manufacturing.—Not later than 180 days after the date of enactment of this Act, and not less frequently than every 2 years thereafter, the Secretary shall submit to the relevant committees of Congress a review, in coordination with other relevant Federal departments and agencies—

(1) identifying—

(A) technologies critical to economic competitiveness and national security; and

(B) supplies critical to the crisis preparedness of the United States, such as medical supplies, personal protective equipment, disaster response necessities, electrical generation technology, materials essential to critical infrastructure operation or repair and renovation; and other supplies identified by the Secretary;
(2) describing—

(A) the current domestic manufacturing base and supply chains for those technologies and supplies, including raw materials, production equipment, and other goods essential to the production of those technologies and supplies; and

(B) the ability of the United States to maintain readiness and to surge produce those technologies and supplies in response to an emergency;

(3) identifying defense, intelligence, homeland, economic, domestic labor supply, natural, geopolitical, or other contingencies that may disrupt, strain, compromise, or eliminate the supply chain for those technologies and supplies;

(4) assessing the resiliency and capacity of the domestic, allied, and partner manufacturing base, supply chains, and workforce to support the need for those technologies and supplies, including any single points of failure in those supply chains;

(5) assessing flexible manufacturing capacity available in the United States in cases of emergency;
(6) making specific recommendations to improve the security and resiliency of manufacturing capacity and supply chains by—

(A) developing long-term strategies;

(B) increasing visibility throughout multiple supplier tiers;

(C) identifying and mitigating risks, including the financial and operational risks of a supply chain, vulnerabilities to extreme weather events, cyberattacks, pandemic and biological threats, terrorist and geopolitical attacks, and other emergencies, and exposure to gaps in domestic sourcing and import exposure;

(D) identifying enterprise resource planning systems that are compatible across supply chain tiers and are affordable for small and medium-sized businesses;

(E) understanding the total cost of ownership, total value contribution, and other best practices that encourage strategic partnerships throughout the supply chain;

(F) understanding Federal procurement opportunities to increase resiliency of supply chains for goods and services and fill gaps in domestic purchasing;
(G) identifying policies to maximize domestic job retention and creation, including workforce development programs;

(H) identifying and mitigating risks associated with allied or key partner countries in building more resilient supply chains; and

(I) identifying such other services as the Secretary considers necessary;

(7) providing guidance on technologies and supplies to be prioritized for assistance and other activities under the Department of Commerce, the National Science Foundation, and other relevant Federal agencies;

(8) reviewing and, if appropriate, expanding the sourcing of goods associated with critical technology areas from allies or key partners, including recommendations for coordination with allies or key partners on sourcing critical products; and

(9) monitoring and strengthening the financial and operational health of small and medium enterprises in domestic, allied, and partner supply chains to mitigate risks and ensure diverse, competitive supplier markets that are less vulnerable to single points of failure.

(g) ADDITIONAL HIRING AUTHORITY—
(1) In general.—To the extent needed to carry out the program, the Secretary may—

(A) utilize hiring authorities under section 3372 of title 5, United States Code, to staff the program with employees from other Federal agencies, institutions of higher education, and other organizations as described in that section with relevant experience in supply chain management and investment in the same manner and subject to the same conditions that apply to such individuals utilized to accomplish other missions of the Department of Commerce;

(B) appoint and fix the compensation of such temporary personnel as may be necessary to implement the requirements of this section relating to the program, without regard to the provisions of title 5, United States Code, governing appointments in the competitive service; and

(C) appoint an individual appointed under subparagraph (B), after serving continuously for not less than 2 years, to a position in the Department of Commerce in the same manner that an employee serving in a position in the
competitive service may be transferred, reassigned, or promoted.

(2) NO REIMBURSEMENT.—Any assignment provided under paragraph (1)(A) shall be made without reimbursement.

(3) EFFECT OF APPOINTMENT.—An individual appointed as described in paragraph (1)(C) shall be considered to be appointed under a career-conditional appointment, unless the individual, as of the date on which the individual is appointed, has completed a sufficient amount of creditable service to attain a permanent career appointment.

(h) SEMICONDUCTOR INCENTIVES.—

(1) IN GENERAL.—The Secretary shall carry out the program established under section 9902 of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 (Public Law 116–283) as part of the program:

(2) TECHNICAL AND CONFORMING AMENDMENT.—Section 9902(a)(1) of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 (Public Law 116–283) is amended by striking “in the Department of Commerce” and inserting “as part of the program established under section 6 of the Endless Frontier Act”.
(i) Report to Congress.—Concurrent with the annual submission by the President of a budget under section 1105 of title 31, United States Code, the Secretary shall submit to the relevant committees of Congress a report that contains a summary of all activities carried out under this section for the year covered by the report.

(j) Coordination.—The Secretary of Commerce shall, as appropriate, coordinate with the heads of other Federal departments and agencies, including the Secretary of State and the United States Trade Representative, in the implementation of this program.

(k) Rule of Construction Regarding Private Entities.—Nothing in this section shall be construed to require any private entity—

(1) to request assistance from the Secretary; or

(2) that requested such assistance from the Secretary to implement any measure or recommendation suggested by the Secretary.

(l) Funding.—

(1) In General.—There are authorized to be appropriated to the Secretary such sums as may be necessary to carry out this section, which shall remain available until expended.

(2) Inspector General Funding.—Of the amounts made available in a fiscal year to carry out
this section, not more than 2 percent of those
amounts shall be available to the Inspector General
of the Department of Commerce to conduct over-
sight activities with respect to the program.

(3) TRANSFERS.—Of the amounts made avail-
able in a fiscal year to carry out this section, the
Secretary may transfer not more than 5 percent of
those amounts to the account under the heading
“Department of Commerce—Salaries and Expenses”
to provide for administration and oversight activities
relating to the program.

SEC. 7. REGIONAL TECHNOLOGY HUB PROGRAM.

(a) In General.—The Stevenson-Wydler Tech-
nology Innovation Act of 1980 (Public Law 96–480; 15
U.S.C. 3701 et seq.) is amended—

(1) by redesignating section 28 as section 30;

and

(2) by inserting after section 27 the following:

"SEC. 28. REGIONAL TECHNOLOGY HUB PROGRAM.

"(a) DEFINITIONS.—In this section:

"(1) APPROPRIATE COMMITTEES OF CON-
gress.—The term ‘appropriate committees of Con-
gress’ means—

"(A) the Committee on Commerce,

Science, and Transportation; the Committee on
Environment and Public Works, and the Committee on Appropriations of the Senate; and

(B) the Committee on Science, Space, and Technology, the Committee on Transportation and Infrastructure, and the Committee on Appropriations of the House of Representatives.

(2) COOPERATIVE EXTENSION.—The term 'cooperative extension' has the meaning given the term 'extension' in section 1404 of the Food and Agriculture Act of 1977 (7 U.S.C. 3103).

(3) KEY TECHNOLOGY FOCUS AREAS.—The term 'key technology focus areas' means the areas included on the most recent list under section 5A(d)(2) of the National Science Foundation Act of 1950.

(4) LABOR ORGANIZATION.—The term 'labor organization' has the meaning given such term in section 8A(a) of the National Science Foundation Act of 1950.

(5) LARGE METROPOLITAN COMMUNITIES.—The term 'large metropolitan community' means a metropolitan statistical area with a population of more than 500,000.
"(6) MANUFACTURING EXTENSION CENTER.—

The term ‘manufacturing extension center’ has the meaning given the term ‘Center’ in section 25(a) of the National Institute of Standards and Technology Act (15 U.S.C. 278k(a)).

"(7) MANUFACTURING USA INSTITUTE.—The term ‘Manufacturing USA institute’ means a Manufacturing USA institute described in section 34(d) of the National Institute of Standards and Technology Act (15 U.S.C. 278s(d)).

"(8) MID-SIZED METROPOLITAN COMMUNITIES.—The term ‘mid-sized metropolitan community’ means a metropolitan statistical area with a population of more than 200,000 and not more than 500,000.

"(9) OTHER TECHNOLOGY AND INNOVATION SECTORS CRITICAL TO NATIONAL AND ECONOMIC SECURITY.—The term ‘other technology and innovation sectors critical to national and economic security’ means other technology and innovation sectors that the Secretary determines are critical to national and economic security.

"(10) SMALL AND RURAL COMMUNITIES.—The term ‘small and rural community’ means a noncore area, a micropolitan area, or a small metropolitan
statistical area with a population of not more than
200,000.

**(H) Venture Development Organization.—The term 'venture development organization' means a State or nonprofit organization focused primarily toward strengthening regional economic development through innovation by—

**(A) accelerating the commercialization of research and technology;

**(B) strengthening the competitive position of startups and industry through the development, commercial adoption, or deployment of technology;

**(C) providing financial grants, loans, or direct investment to commercialize technology;

**(D) pairing direct financial assistance under subparagraph (C) with entrepreneurship, technological, or business assistance to maximize the likelihood of success for a venture and increased employment growth for the region or a sector; and

**(E) returning any proceeds gained from direct financial assistance made using organization funds to the organization for future rein-
investment, entrepreneurial assistance, and support of operations.

"(b) Regional Technology Hub Program.—

"(1) In general.—The Secretary shall carry out a program—

"(A) to designate eligible consortia as regional technology hubs that create the conditions, within a region, to facilitate activities that—

"(i) enable United States leadership in a key technology focus area, complementing the Federal research and development investments under section 8A of the National Science Foundation Act of 1950, or other technology and innovation sectors critical to national and economic security;

"(ii) support regional economic development that diffuses innovation around the United States, enabling better broad-based growth and competitiveness in key technology focus areas;

"(iii) support domestic job creation; and

"(iv) otherwise support the purposes set forth under paragraph (2);
(B) to support regional technology hubs designated under subparagraph (A); and

(C) to conduct ongoing research, evaluation, analysis, and dissemination of best practices for regional development and competitiveness in technology and innovation.

(2) PURPOSES.—The purposes of the program carried out under paragraph (1) are as follows:

(A) To designate eligible consortia as regional technology hubs throughout the United States that create the conditions within a region to facilitate activities that establish the global competitive edge of the United States in the 21st century across a range of technology and innovation sectors critical to national and economic security, including to encourage lower-cost but economically viable technology hubs in the United States to reduce technology offshoring.

(B) To encourage new and constructive collaboration among local, State, and Federal Government entities, academia, private industry, and labor organizations to mobilize investment, talent, entrepreneurship, and innovation for research, development, deployment, and
manufacturing in a range of technology and innovation sectors critical to national and economic security.

"(C) To assist regions across the United States, including small cities and rural areas—

"(i) to develop and implement strategies through technology-based economic development practices, including infrastructure and workforce development, entrepreneurship and commercialization support, increasing access to capital, and building networks and systems to help bring ideas and businesses to market, and other relevant activities;

"(ii) to improve domestic supply chains in technology and innovation sectors; and

"(iii) to enable broad-based economic growth, job creation and competitiveness in the United States.

"(3) ADMINISTRATION.—The Secretary shall carry out this section through the Assistant Secretary of Commerce for Economic Development, in coordination with the Under Secretary of Commerce for Standards and Technology.
"(c) ELIGIBLE CONSORTIA.—For purposes of this section, an eligible consortium is a consortium that—

"(1) includes 1 or more—

"(A) institutions of higher education;

"(B) local or Tribal governments or other political subdivisions of a State;

"(C) State governments represented by an agency designated by the governor of the State or States that is representative of the geographic area served by the consortia;

"(D) economic development organizations or similar entities that are focused primarily on improving science, technology, innovation, or entrepreneurship;

"(E) industry or firms in relevant technology or innovation sectors;

"(F) labor organizations; and

"(G) workforce training organizations, including State and local workforce development boards as established under section 101 of the Workforce Investment and Opportunity Act (29 U.S.C. 3111); and

"(2) may include 1 or more—

"(A) nonprofit economic development entities with relevant expertise, including a district
organization (as defined in section 300.3 of title 13, Code of Federal Regulations, or successor regulation);

``(B) for-profit entities with relevant expertise;

``(C) venture development organizations;

``(D) financial institutions and investment funds;

``(E) primary and secondary educational institutions, including career and technical education schools;

``(F) industry and industry associations;

``(G) National Laboratories (as defined in section 2 of the Energy Policy Act of 2005 (42 U.S.C. 15801));

``(H) Federal laboratories;

``(I) manufacturing extension centers;

``(J) Manufacturing USA institutes;

``(K) institutions receiving an award under paragraph (6) or (7) of section 8A(d) of the National Science Foundation Act of 1950; and

``(L) a cooperative extension.

``(d) DESIGNATION OF REGIONAL TECHNOLOGY HUBS—
(1) In general.—The Secretary shall use a competitive process for the designation of regional technology hubs under subsection (b)(1)(A).

(2) Number of regional technology hubs.—During the 5-year period beginning on the date of the enactment of the Endless Frontier Act, the Secretary shall designate not fewer than 10 and not more than 15 eligible consortia as regional technology hubs under subsection (b)(1)(A), if the Secretary has received a sufficient number of qualified applications and appropriations to carry out this section.

(3) Geographic distribution.—In conducting the competitive process under paragraph (1), the Secretary shall ensure geographic distribution in the designation of regional technology hubs by—

(A) aiming to designate regional technology hubs in as many regions of the United States as possible; and

(B) focusing on localities that have clear potential and relevant assets for developing a self-sustaining competitive position in a technology or innovation sector but have not yet become leading technology centers.
(4) Eligible consortia that serve small and rural communities.—Under subsection (b)(1)(A), the Secretary shall designate at least 3 eligible consortia that—

(A) serve small and rural communities;

and

(B) have received a grant under section 29.

(5) EPSCoR.—The Secretary shall ensure that, of the eligible consortia designated as regional technology hubs under subsection (b)(1)(A), not fewer than 5 of such consortia include at least 1 State that is eligible to receive funding from the Established Program to Stimulate Competitive Research of the National Science Foundation.

(6) Relation to certain grant awards.—The Secretary may not require an eligible consortium to receive a grant under section 29 in order to be designated as a regional technology hub under subsection (b)(1)(A) of this section.

c Grants and Cooperative Agreements.—

(1) In general.—The Secretary shall carry out subparagraph (B) of subsection (b)(1) through the award of grants or cooperative agreements to eli-
gible consortia designated under subparagraph (A) of such subsection.

****(2) TERM.—**

**(A) IN GENERAL.—**The term of a grant or cooperative agreement awarded under paragraph (1) shall be for such period as the Secretary considers appropriate.

**(B) RENEWAL.—**The Secretary may renew a grant or cooperative agreement awarded to an eligible consortium under paragraph (1) as the Secretary considers appropriate if the Secretary determines pursuant to subsection (i) that the performance of the eligible consortia is satisfactory.

****(3) MATCHING REQUIRED.—**

**(A) IN GENERAL.—**Except in the case of an eligible consortium described in subparagraph (B), the total Federal financial assistance awarded in a given year to an eligible consortium in support of the eligible consortium's operation as a regional technology hub under this section shall not exceed amounts as follows:

**(i) In first year of the grant or cooperative agreement, 90 percent of the total
operating and maintenance costs of the regional technology hub in that fiscal year.

"(ii) In second year of the grant or cooperative agreement, 85 percent of the total operating and maintenance costs of the regional technology hub in that fiscal year.

"(iii) In third year of the grant or cooperative agreement, 80 percent of the total operating and maintenance costs of the regional technology hub in that fiscal year.

"(iv) In fourth year of the grant or cooperative agreement and each year thereafter, 75 percent of the total operating and maintenance costs of the regional technology hub in that fiscal year.

"(B) SMALL AND RURAL COMMUNITIES AND INDIAN TRIBES.—

"(i) In general.—The total Federal financial assistance awarded in a given year to an eligible consortium in support of the eligible consortium’s operation as a regional technology hub under this section shall not exceed amounts as follows:
(I) In the case of an eligible consortium that represents a small and rural community, in a fiscal year, 90 percent of the total funding of the regional technology hub in that fiscal year.

(II) In the case of an eligible consortium that is led by a Tribal government, in a fiscal year, 100 percent of the total funding of the regional technology hub in that fiscal year.

(ii) Minimum threshold or rural representation.—The Secretary shall establish a minimum threshold of rural representation for purposes of clause (i)(I).

(C) In-kind contributions.—For purposes of this paragraph, in-kind contributions may be used for part of the non-Federal share of the total funding of a regional technology hub in a fiscal year.

(4) Use of grant and cooperative agreement funds.—The recipient of a grant or cooperative agreement awarded under paragraph (1) shall use the grant or cooperative agreement for multiple
activities determined appropriate by the Secretary, including—

"(A) the permissible activities set forth under section 27(e)(2); and

"(B) activities in support of key technology focus areas and other technology and innovation sectors critical to national and economic security—

"(i) to develop regional strategies for infrastructure and site development in support of the regional technology hub’s plans and programs;

"(ii) to support business activity that makes domestic supply chain more resilient and encourages the growth of coordinated multiparty systems in the United States and creation and growth of business entities;

"(iii) to attract new private, public, and philanthropic investment in the region for developing innovation capacity, including establishing regional venture and loan funds; including through venture development organizations; for financing tech-
nology commercialization, new business formation, and business expansions;

(iv) to further the development, deployment, and domestic manufacturing of technologies in the key technology focus areas and other technology and innovation sectors critical to national and economic security, including innovations derived from research conducted at institutions of higher education or other research entities, including research conducted by federally funded research and development centers, National Laboratories, Federal laboratories, Manufacturing USA institutes, university technology centers established under paragraph (6) of section 8A(d) of the National Science Foundation Act of 1950, the program established under paragraph (7) of such section 8A(d), test beds established and operated under paragraph (8) of such section 8A(d); or other Federal research entities, through activities that may include—

(I) proof-of-concept development and prototyping;
technology transfer and commercialization, including patenting and licensing;

(III) public-private partnerships in order to reduce the cost, time, and risk of commercializing new technologies;

(IV) creating and funding competitions to allow entrepreneurial ideas to illustrate their commercialization and domestic job creation potential;

(V) facilitating relationships between local and national business leaders and potential entrepreneurs to encourage successful commercialization;

(VI) creating and funding not-for-profit entities that could enable researchers at institutions of higher education and other research entities to further develop new technology, through patient funding, advice, staff support, or other means;
providing facilities for start-up companies where technology maturation could occur; and

commercialization, deployment, and adoption of the technologies that lead to domestic manufacturing of such technologies;

to develop the region’s skilled workforce through the training and re-training of workers; partnerships with labor organizations; and skills-based education, including the alignment of career technical training and educational programs in the region’s elementary and secondary schools and institutions of higher education; and

to carry out such other activities as the Secretary considers appropriate to improve United States competitiveness and regional economic development to support a key technology focus area and that would further the purposes of this section.

GRANTS FOR INFRASTRUCTURE.—Any grant or cooperative agreement awarded under paragraph (1) to support the construction of physical in-
Infrastructure shall be awarded pursuant to section 204 of the Public Works and Economic Development Act of 1965 (42 U.S.C. 3141) and subject to the provisions of such Act, except that subsection (b) of such section and sections 204 and 301 of such Act (42 U.S.C. 3144, 3161) shall not apply.

"(f) APPLICATIONS.—An eligible consortium seeking designation as a regional technology hub under subparagraph (A) of subsection (b)(1) and support under subparagraph (B) of such subsection shall submit to the Secretary an application therefor at such time, in such manner, and containing such information as the Secretary may specify.

"(g) CONSIDERATIONS FOR DESIGNATION AND AWARD OF GRANTS AND COOPERATIVE AGREEMENTS.—

"(1) IN GENERAL.—In selecting an eligible consortium that submitted an application under subsection (f) for designation and support under subsection (b)(1), the Secretary shall consider, at a minimum, the following:

"(A) The potential of the eligible consortium to advance the research, development, deployment, and domestic manufacturing of technologies in a key technology focus area or other technology or innovation sector critical to national and economic security.
(B) The likelihood of positive regional economic effect, including increasing the number of high wage domestic jobs; and creating new economic opportunities for economically disadvantaged and underrepresented populations.

(C) How the eligible consortium plans to integrate with and leverage the resources of 1 or more federally funded research and development centers; National Laboratories; Federal laboratories; Manufacturing USA institutes; Hollings Manufacturing Extension Partnership centers; university technology centers established under paragraph (6) of section 8A(d) of the National Science Foundation Act of 1950, the program established under paragraph (7) of such section 8A(d), test beds established and operated under paragraph (8) of such section 8A(d), or other Federal research entities.

(D) How the eligible consortium will engage with the private sector, including small- and medium-sized businesses to commercialize new technologies and improve the resiliency of domestic supply chains in a key technology focus area or other technology or innovation
sector critical to national and economic security.

(E) How the eligible consortium will carry out workforce development and skills acquisition programming, including through partnerships with entities that include State and local workforce development boards, institutions of higher education, including community colleges; historically Black colleges and universities; Tribal colleges and universities; minority serving institutions; labor organizations; and workforce development programs; and other related activities authorized by the Secretary, to support the development of a key technology focus area or other technology or innovation sector critical to national and economic security.

(F) How the eligible consortium will improve science, technology, engineering, and mathematics education programs in the identified region in elementary and secondary school and higher education institutions located in the identified region to support the development of a key technology focus area or other technology
or innovation sector critical to national and economic security.

"(G) How the eligible consortium plans to develop partnerships with venture development organizations and sources of private investment in support of private sector activity, including launching new or expanding existing companies, in a key technology focus area or other technology or innovation sector critical to national and economic security.

"(H) How the eligible consortium plans to organize the activities of regional partners across sectors in support of the proposed regional technology hub, including the development of necessary infrastructure improvements and site preparation.

"(I) How the eligible consortium will ensure that growth in technology and innovation sectors produces broadly shared opportunity across the identified region, including for economic disadvantaged and underrepresented populations and rural areas.

"(J) The likelihood that the region served by the eligible consortium will be able to become
a self-sustaining globally leading technology hub once Federal support ends.

(2) FINDINGS BASED ON COMPREHENSIVE REGIONAL TECHNOLOGY STRATEGIES. The Secretary may use a comprehensive regional technology strategy supported by a grant under section 29 as the basis for making findings under paragraph (1) of this subsection.

(h) COORDINATION AND COLLABORATION.—

(1) COORDINATION WITH NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY PROGRAMS.—

(A) COORDINATION REQUIRED.—The Secretary shall coordinate the activities of regional technology hubs designated under this title, the Hollings Manufacturing Extension Partnership, and the Manufacturing USA Program with each other to the degree that doing so does not diminish the effectiveness of the ongoing activities of a manufacturing extension center or a Manufacturing USA institute.

(B) ELEMENTS.—Coordination by the Secretary under subparagraph (A) may include the following:
“(i) The alignment of activities of the Hollings Manufacturing Extension Partnership with the activities of regional technology hubs designated under this subsection, if applicable.

“(ii) The alignment of activities of the Manufacturing USA Program and the Manufacturing USA institutes with the activities of regional technology hubs designated under this subsection, if applicable.

“(2) COORDINATION WITH DEPARTMENT OF ENERGY PROGRAMS.—The Secretary shall, in coordination with the Secretary of Energy, coordinate the activities and selection of regional technology hubs designated under subsection (b)(1)(A) with activities at the Department of Energy and the National Laboratories that were in effect on the day before the date of the enactment of the Endless Frontier Act, to the degree that doing so does not diminish the effectiveness of the ongoing activities or mission of the Department of Energy and the National Laboratories.

“(3) INTERAGENCY COLLABORATION.—
"(A) IN GENERAL.—In selecting and assisting regional technology hubs designated under subsection (b)(1)(A), the Secretary—

"(i) shall collaborate, to the extent possible, with the interagency advisory committee established under subparagraph (B);

"(ii) shall collaborate with Federal departments and agencies whose missions contribute to the goals of the regional technology hub; and

"(iii) may accept funds from other Federal agencies to support grants and activities under this title.

"(B) INTERAGENCY COORDINATING COUNCIL.—

"(i) ESTABLISHMENT.—The Secretary shall establish an interagency coordinating council to coordinate with the Secretary in the designation of regional technology hubs under subparagraph (A) of subsection (b)(1) and in the selection of eligible consortia to receive support under subparagraph (B) of such subsection.
“(ii) Composition.—The interagency coordinating council established under clause (i) shall be composed of the following (or their designees):

“(I) The Secretary of Commerce.
“(II) The Secretary of Education.
“(III) The Administrator of the Small Business Administration.
“(IV) The Deputy Secretary for Housing and Urban Development.
“(V) The Director of the Community Development Financial Institution Fund.
“(VI) The Director of the National Science Foundation.
“(VII) The Director of the National Institute of Standards and Technology.
“(VIII) The Director of the National Economic Council.
“(IX) The Assistant Secretary of Commerce for Economic Development.
“(X) The Assistant Secretary for Employment and Training.
“(XII) The Under Secretary of Defense for Research and Engineering.

“(XIII) The Under Secretary of Defense for Acquisition and Sustainment.

“(XIV) The Under Secretary for Science of the Department of Energy.

“(XV) The Director of the National Institutes of Health.


“(XVII) The Administrator of the National Aeronautics and Space Administration.

“(XVIII) The Director of the Office of Management and Budget.

“(XIX) Such other Federal officials as the Secretary of Commerce considers appropriate.

“(iii) CHAIRPERSON.—The Secretary shall be the chairperson of the interagency
coordinating council established under clause (i).

"(4) Setting goals for federally funded regions served by research in regional technology hubs.—

"(A) In general.—The Director of the Office of Science and Technology Policy and the Director of the Office of Management and Budget shall coordinate with the each head of a Federal agency that conducts research to set goals for at least doubling the amount of federally funded research awarded, as in effect on the day before the date of the enactment of the Endless Frontier Act, to regions served by regional technology hubs designated under subsection (b)(1)(A).

"(B) Annual reports.—Not less frequently than once each year, the Director of the Office of Science and Technology Policy and the Director of the Office of Management and Budget shall submit to the appropriate committees of Congress an annual report on progress made relating to the goals set under subparagraph (A).
"(i) PERFORMANCE MEASUREMENT, TRANSPARENCY, AND ACCOUNTABILITY.—

"(1) METRICS, STANDARDS, AND ASSESSMENT.—For each grant and cooperative agreement awarded under subsection (c)(1) for a regional technology hub, the Secretary shall—

"(A) develop metrics to assess the effectiveness of the activities funded in making progress toward the purposes set forth under subsection (b)(2), which may include—

"(i) research supported in a key technology focus area;

"(ii) commercialization activities undertaken by each regional technology hub that is designated and supported under subsection (b)(1);

"(iii) educational and workforce development improvements undertaken by each regional technology hub that is designated and supported under subsection (b)(1);

"(iv) sources of matching funds for each regional technology hub that is designated and supported under subsection (b)(1); and
domestic job creation, patent awards, and business formation and expansion relating to the activities of the regional technology hub that is designated and supported under subsection (b)(1);

(B) establish standards for the performance of the regional technology hub that are based on the metrics developed under subparagraph (A); and

(C) 4 years after the initial award under subsection (e)(1) and every 2 years thereafter until Federal financial assistance under this section for the regional technology hub is discontinued, conduct an assessment of the regional technology hub to confirm whether the performance of the regional technology hub is meeting the standards for performance established under subparagraph (B) of this paragraph.

(2) Final reports by recipients of assistance.

(A) In general—The Secretary shall require each eligible consortium that receives a grant or cooperative agreement under subsection (e)(1) for support of a regional tech-
ology hub, as a condition of receipt of such
grant or cooperative agreement, submit to the
Secretary, not later than 90 days after the last
day of the term of the grant or cooperative
agreement, a report on the activities of the re-
6
gional technology hub supported by the grant or
7
cooperative agreement.

“(B) CONTENTS OF REPORT.—Each report
submitted by an eligible consortium under sub-
paragraph (A) shall include the following:

“(i) A detailed description of the ac-
tivities carried out by the eligible consor-
tium using the assistance described in sub-
paragraph (A), including the following:

“(I) A description of each project
the eligible consortium completed
using such assistance.

“(II) An explanation of how each
project described in subclause (I)
achieves a specific goal under this sec-
tion in the region of the regional tech-
ology hub of the eligible consortium
with respect to—

“(aa) the resiliency of a sup-
ply chain,
“(bb) research, development, and deployment of a critical technology; “
“(cc) workforce training and development; “
“(dd) domestic job creation; or “
“(ee) entrepreneurship. “
“(ii) A discussion of any obstacles encountered by the eligible consortium in the implementation of the regional technology hub and how the eligible entity overcame those obstacles. “
“(iii) An evaluation of the success of the projects supported by the eligible consortium to implement the regional technology hub using the performance standards and measures established under paragraph (1), including an evaluation of the planning process and how the project contributes to carrying out the comprehensive strategy for the regional technology hub if the regional technology hub has such a strategy.
“(iv) The effectiveness of the eligible consortium in ensuring that, in the region of the eligible consortium’s regional technology hub, growth in technology and innovation sectors produces broadly shared opportunity across the region, including for economic disadvantaged and underrepresented populations and rural areas.

“(v) Information regarding such other matters as the Secretary may require.

“(3) Interim reports by recipients of assistance.—In addition to requiring submittal of final reports under paragraph (2)(A), the Secretary may require an eligible consortium described in such paragraph to submit to the Secretary such interim reports as the Secretary considers appropriate.

“(4) Annual reports to Congress.—Not less frequently than once each year, the Secretary shall submit to the appropriate committees of Congress an annual report on the results of the assessments conducted by the Secretary under paragraph (1)(C) during the period covered by the report.

“(j) Authorization of Appropriations.—There is authorized to be appropriated to the Secretary to carry
out this section $9,425,000,000 for the period of fiscal years 2022 through 2026.”.

(b) Initial Designations and Awards.—

(1) Competition Required.—Not later than 180 days after the date of the enactment of this Act, the Secretary of Commerce shall commence a competition under subsection (d)(1) of section 28 of the Stevenson-Wydler Technology Innovation Act of 1980 (Public Law 96–480), as added by subsection (a):

(2) Designation and Award.—Not later than 1 year after the date of the enactment of this Act, if the Secretary has received at least 1 application under subsection (f) of such section from an eligible consortium whom the Secretary considers suitable for designation under subsection (b)(1)(A) of such section, the Secretary shall—

(A) designate at least 1 regional technology hub under subsection (b)(1)(A) of such section; and

(B) award a grant or cooperative agreement under subsection (e)(1) of such section to each regional technology hub designated pursuant to subparagraph (A) of this paragraph.
SEC. 8. COMPREHENSIVE REGIONAL TECHNOLOGY STRATEGY GRANT PROGRAM.

The Stevenson-Wydler Technology Innovation Act of 1980 (Public Law 96–480; 15 U.S.C. 3701 et seq.), as amended by section 7, is further amended, by inserting after section 28, as added by such section, the following:

"SEC. 29. COMPREHENSIVE REGIONAL TECHNOLOGY STRATEGY GRANT PROGRAM.

"(a) DEFINITIONS.—In this section:

"(1) LABOR ORGANIZATION.—The term ‘labor organization’ has the meaning given such term in section 8A(a) of the National Science Foundation Act of 1950.

"(2) REGIONAL TECHNOLOGY HUB.—The term ‘regional technology hub’ means a consortium designated as a regional technology hub under section 28(b)(1)(A).

"(3) SMALL AND RURAL COMMUNITIES; MID-SIZED METROPOLITAN COMMUNITIES; LARGE METROPOLITAN COMMUNITIES.—The terms ‘small and rural communities’, ‘mid-sized metropolitan communities’, and ‘large metropolitan communities’ have the meanings given such terms in section 28(a).

"(4) TECHNOLOGY AND INNOVATION SECTORS CRITICAL TO NATIONAL AND ECONOMIC SECURITY.—The term ‘technology and innovation sectors critical
to national and economic security' means technology
and innovation sectors that the Secretary determines
are critical to national and economic security.

"(b) GRANT PROGRAM REQUIRED.—The Secretary
shall establish a program to award grants to eligible con-
sortia to carry out projects—

"(1) to coordinate locally defined planning proc-
cesses, across jurisdictions and agencies, relating to
developing a comprehensive regional technology
strategy;

"(2) to identify regional partnerships for develop-
ing and implementing a comprehensive regional
technology strategy;

"(3) to conduct or update assessments to deter-
mine regional needs and promote economic and com-
munity development related to the resiliency of a do-
mestic supply chains, competitiveness of the region,
and domestic job creation in technology and innova-
tion sectors critical to national and economic secu-

"(4) to develop or update goals and strategies
to implement an existing comprehensive regional
plan related to enhancing the resiliency of domestic
supply chains, competitiveness of the region, and do-
mestic job creation in technology and innovation sectors critical to national and economic security; and

(5) to identify local zoning and other code changes necessary to implement a comprehensive regional technology strategy, including promoting sustainable development within the identified region.

(e) ELIGIBLE CONSORTIA.—For purposes of this section, an eligible consortium is any consortium described by section 28(e).

(d) GRANTS.—

(1) DIVERSITY OF RECIPIENTS.—In awarding grants under this section, the Secretary shall ensure geographic diversity among, and adequate representation from, each of the following:

(A) Small and rural communities.

(B) Mid-sized metropolitan communities.

(C) Large metropolitan communities.

(2) AWARDS TO SMALL AND RURAL COMMUNITIES.—

(A) IN GENERAL.—Except as provided in subparagraph (B), the Secretary shall—

(i) award not less than 25 percent of the funds under this section to eligible consortia that represent all or part of a small and rural community; and
“(ii) ensure diversity among the geographic regions and the size of the population of the communities served by recipients of grants that are eligible consortia that represent all or part of a small and rural community.

“(B) INSUFFICIENT APPLICATIONS.—If the Secretary determines that an insufficient number of sufficient quality applications for grants under this section have been submitted by eligible consortia that represent all or part of a small and rural community, the Secretary may reduce the percentage threshold set forth in subparagraph (A)(i).

“(3) FEDERAL SHARE.—

“(A) IN GENERAL.—Except as provided in subparagraph (B), the Federal share of the cost of a project carried out using a grant awarded under this section may not exceed 80 percent.

“(B) EXCEPTIONS.—

“(i) SMALL AND RURAL COMMUNITIES.—In the case of an eligible consortium that represents all or part of a small and rural community, the Federal share of the cost of a project carried out using a
grant awarded under this section may be
up to 90 percent of the total cost of the
project.

“(ii) INDIAN TRIBES.—In the case of
an eligible consortium that is led by a
Tribal government, the Federal share of
the cost of a project carried out using a
grant under the grant awarded under this
section may be up to 100 percent of the
total cost of the project.

“(C) NON-FEDERAL SHARE.—

“(i) IN-KIND CONTRIBUTIONS.—For the purposes of this paragraph, in-kind
contributions may be used for all or part
of the non-Federal share of the cost of a
project carried out using a grant awarded
under this section.

“(ii) OTHER FEDERAL FUNDING.—
Federal funding from sources other than a
grant awarded under this section may not
be used for the non-Federal share of the
cost of a project carried out using a grant
under this section.

“(4) AVAILABILITY AND OBLIGATION OF GRANT
AMOUNTS.—
``(A) In general.—An eligible consortium that receives a grant under this section shall, as a condition on receipt of grant amounts—

``(i) obligate any grant amounts received under this section not later than 1 year after the date on which the eligible consortium enters into an agreement under subsection (g); and

``(ii) expend any grant amounts received under this section not later than 2 years after the date on which the eligible consortium enters into an agreement under subsection (g).

``(B) Unobligated amounts.—After the date described in subparagraph (A)(i), any amounts awarded to an eligible consortium under this section that remain unobligated by the eligible consortium shall be returned to the Secretary and made available to the Secretary for the award of grants to other eligible consortia under this section.

``(e) Application.—

``(1) In general.—An eligible consortium seeking a grant under this section shall submit to
the Secretary an application therefor at such time and in such manner as the Secretary shall prescribe.

(2) CONTENTS.—Each application submitted under paragraph (1) shall include the following:

(A) A description of the boundaries of the region served by the eligible consortium.

(B) A description of the research, technology development, or manufacturing concentration of the eligible consortium.

(C) A general assessment of the local industrial ecosystem of the region described in subparagraph (A), which may include assessment of workforce and training, including partnerships with labor organizations, supplier network, research and innovation, infrastructure and site development, trade and international investment, operational improvements, and capital access components needed for manufacturing activities in such region.

(D) A description of how a grant under this section may assist in developing components of such local industrial ecosystem (selected by the consortium), including descriptions of—
“(i) investments to address gaps in such ecosystem; and

“(ii) how to make the research, technology development, and manufacturing of the region of the consortium uniquely competitive.

“(E) A description of the process by which a comprehensive regional technology strategy will be developed by the eligible consortium to address gaps in such local industrial ecosystem and to strengthen the resiliency of supply chains, competitiveness of the identified region, and domestic job creation in technology and innovation sectors critical to national and economic security.

“(F) A budget for the projects that the eligible consortium plans to carry out using grant amounts awarded under this section, including the anticipated Federal share of the cost of each project and a description of the sources of the non-Federal share.

“(G) The designation of a lead agency or organization, which may be the eligible consortium, to receive and manage any funds received by the eligible consortium under this section.
**(H)** A signed copy of a memorandum of understanding among members of the eligible consortium that demonstrates—

**(i)** the creation of an eligible consortium;

**(ii)** a description of the nature and extent of planned collaboration between members of the eligible consortium; and

**(iii)** a commitment to develop a comprehensive regional technology strategy.

**(I)** Such other matters as the Secretary considers appropriate.

**(3)** **EVALUATION OF APPLICATIONS.**—The Secretary shall evaluate each application received under paragraph (1) to determine whether the applicant demonstrates—

**(A)** a significant level of regional cooperation in their proposal;

**(B)** a focus on building a regional ecosystem to attract and build upon research investment to develop, deploy, and manufacture domestically critical technologies that improve the resiliency of supply chains, competitiveness of the identified region, and the creation of quality jobs;
(C) the extent to which the consortium has developed partnerships throughout an entire region, including, as appropriate, partnerships with federally funded research and development centers; National Laboratories; Federal laboratories; Manufacturing USA institutes described in section 34(d) of the National Institute of Standards and Technology Act (15 U.S.C. 278s(d)), university technology centers established under paragraph (6) of section 8A(d) of the National Science Foundation Act of 1950, the program established under paragraph (7) of such section 8A(d), test beds established and operated under paragraph (8) of such section 8A(d), or other Federal research entities;

(D) integration with local efforts in inclusive economic development and job creation;

(E) a plan for implementing a comprehensive regional technology strategy through regional infrastructure, workforce, and supply chain investment plans and local land use plans;

(F) diversity among the geographic regions and the size of the population of the com-
munities served by recipients of grants under this section;

"(G) a commitment to seeking substantial public input during the planning process and public participation in the development of the comprehensive regional plan;

"(H) a plan to support the creation and growth of new companies; and

"(I) such other qualities as the Secretary considers appropriate.

"(f) USE OF GRANT FUNDS.—An eligible consortium that receives a grant under this section shall use the amount of such grant to carry out a project that includes 1 or more of the following activities:

"(1) Coordinating locally defined planning processes across jurisdictions and agencies.

"(2) Identifying potential regional partnerships for developing and implementing a comprehensive regional technology strategy.

"(3) Conducting or updating assessments to determine regional needs, which may include—

"(A) workforce development;

"(B) supply chain development;

"(C) increasing innovation readiness, including expanding research and technology de-
velopment facilities and developing the local
science, technology, engineering, and mathe-
matics workforce;

"(D) site preparation;

"(E) community and economic develop-
ment to start new companies and to attract and
support workers and firms; and

"(F) and other such needs as determined
by the consortium.

"(4) Developing or updating—

"(A) a comprehensive regional plan; or

"(B) goals and strategies to implement an
existing comprehensive regional plan for the
purposes of strengthening domestic supply
chain resiliency, competitiveness, and job cre-
ation in critical technology and innovation sec-
tors for national and economic security.

"(5) Implementing local zoning and other code
changes necessary to implement a comprehensive re-
gional plan and promote sustainable development.

"(g) GRANT AGREEMENT.—Each eligible consortium
that receives a grant under this section shall, as a condi-
tion on receipt of grant amounts, agree to establish, in
coordination with the Secretary, performance measures;
reporting requirements, and such other requirements as
the Secretary determines are necessary, that must be met
at the end of each year in which the eligible consortium
receives funds under this section.

"(h) Reports by Recipients of Grants.—

"(1) Final reports.—Not later than 90 days
after the date on which a grant agreement into
which an eligible consortium entered under sub-
section (g) expires, the eligible consortium shall sub-
mit to the Secretary a final report on the project the
eligible consortium carried out under subsection (f)
using the amounts of the grant awarded to the eligi-
able consortium under this section.

"(2) Contents.—Each report submitted under
paragraph (1) shall include the following:

"(A) A detailed explanation of the activi-
ties undertaken using the grant, including an
explanation of how the comprehensive regional
technology strategy of the eligible consortium
may achieve specific improvements in domestic
supply chain resiliency, research, development,
and deployment of critical technologies, work-
force development, domestic job creation, and
entrepreneurship goals within the region served
by the eligible consortium.
"(B) A discussion of any obstacles encountered in the planning process of the eligible consortium and how the eligible consortium overcame the obstacles.

"(C) An evaluation of the success of the project using the performance standards and measures established under subsection (g), including an evaluation of the planning process and how the project contributes to carrying out the comprehensive regional technology strategy.

"(D) The progress of the region identified by the consortium toward becoming a regional technology hub.

"(E) The effectiveness of the region identified by the consortium in ensuring that growth in innovation sectors produces broadly shared opportunity in the region.

"(F) Such other information as the Secretary may require.

"(3) INTERIM REPORTS.—The Secretary may require, as a condition on receipt of a grant under this section, an eligible consortium to submit an interim report, before the date on which a project for which a grant is awarded under this section is completed.
"(i) Technical Assistance for Grant Recipients and Applicants.—The Secretary may—

"(1) coordinate with other Federal agencies to establish interagency and multidisciplinary teams to provide technical assistance to recipients of, and prospective applicants for, grants under this section;

"(2) by Federal interagency agreement, transfer funds to another Federal agency to facilitate and support the provision of such technical assistance; and

"(3) enter into contracts with third parties to provide technical assistance to grant recipients and prospective applicants for grants under this section.

"(j) Authorization of Appropriations.—

"(1) Authorization.—There are authorized to be appropriated to the Secretary for the award of grants under this section, to remain available until expended, amounts as follows:

"(A) $100,000,000 for each of fiscal years 2022 and 2023;

"(B) $125,000,000 for each of fiscal years 2024 through 2026.

"(2) Technical Assistance.—The Secretary may use not more than 5 percent of the amounts
made available under this subsection for a fiscal
year for technical assistance under subsection (i).”.

SEC. 9. MANUFACTURING USA PROGRAM.

(a) DEFINITIONS.—In this section:

(1) HISTORICALLY BLACK COLLEGE OR UNIVERSITY.—The term “historically Black college or university” has the meaning given the term “part B institution” in section 322 of the Higher Education Act of 1965 (20 U.S.C. 1061).

(2) LABOR ORGANIZATION.—The term “labor organization” has the meaning given such term in section 8A(a) of the National Science Foundation Act of 1950.

(3) MANUFACTURING USA CENTER.—The term “Manufacturing USA center” means an institute described in section 34(d)(3)(B) of the National Institute of Standards and Technology Act (15 U.S.C. 278s(d)(3)(B)) and recognized by the Secretary under such section for purposes of participation in the Manufacturing USA Network.

(4) MANUFACTURING USA INSTITUTE.—The term “Manufacturing USA institute” means an institute described in section 34(d) of the National Institute of Standards and Technology Act (15 U.S.C. 278s(d)) that is not a Manufacturing USA center.
(5) MANUFACTURING USA NETWORK.—The term "Manufacturing USA Network" means the network established under section 34(c) of the National Institute of Standards and Technology Act (15 U.S.C. 278s(c)).

(6) MANUFACTURING USA PROGRAM.—The term "Manufacturing USA Program" means the program established under section 34(b)(1) of the National Institute of Standards and Technology Act (15 U.S.C. 278s(b)(1)).

(7) MINORITY-SERVING INSTITUTION.—The term "minority-serving institution" means an eligible institution described in section 371(a) of the Higher Education Act of 1965 (20 U.S.C. 1067q(a)).

(8) NATIONAL PROGRAM OFFICE.—The term "National Program Office" means the National Program Office established under section 34(h)(1) of the National Institute of Standards and Technology Act (15 U.S.C. 278s(h)(1)).

(9) TRIBAL COLLEGE OR UNIVERSITY.—The term "Tribal college or university" has the meaning given the term in section 316(b)(3) of the Higher Education Act of 1965 (20 U.S.C. 1059c(b)(3)).
(b) Authorization of Appropriations To Enhance and Expand Manufacturing USA Program and Support Innovation and Growth in Domestic Manufacturing.—

(1) In general.—There is authorized to be appropriated $2,410,000,000 for the period of fiscal years 2022 through 2026 for the Secretary of Commerce, acting through the Director of the National Institute of Standards and Technology and in coordination with the Secretary of Energy, the Secretary of Defense, and the heads of such other Federal agencies as the Secretary of Commerce considers relevant, to carry out the Manufacturing USA Program and to expand such program to support innovation and growth in domestic manufacturing.

(2) Manufacturing USA Institutes.—

(A) In general.—Of the amounts appropriated pursuant to the authorization of appropriations in paragraph (1), $1,190,000,000 shall be available to support the establishment of new Manufacturing USA institutes during the period described in such paragraph.

(B) Financial assistance.—The Secretary shall support the establishment of Manufacturing USA institutes under subparagraph
(A) through the award of financial assistance under section 34(e) of the National Institute of Standards and Technology Act (15 U.S.C. 278s(e)).

(C) ASSIGNMENT OF MANUFACTURING USA INSTITUTES TO FEDERAL AGENCY SPONSORS.—
Following an open topic competition organized by the Director of the National Institute of Standards and Technology, the Secretary of Commerce, in consultation with the Secretary of Energy, the Secretary of Defense, and other relevant Federal agencies, may select an alternative Federal agency to sponsor a selected Manufacturing USA institute based on its technology and may transfer the appropriate funds to that alternative Federal agency for operation and programming of the selected Manufacturing USA institute.

(D) COORDINATION WITH EXISTING MANUFACTURING USA INSTITUTES.—

(i) COORDINATION REQUIRED.—In establishing new Manufacturing USA institutes under subparagraph (A), the Secretary of Commerce shall coordinate with the Secretary of Energy and the Secretary
of Defense to ensure there is no duplication of effort or technology focus between new Manufacturing USA institutes and Manufacturing USA institutes that were in effect before the establishment of the new Manufacturing USA institutes.

(ii) Consultation with existing Manufacturing USA institutes authorized.—In carrying out coordination under clause (i), the Secretary of Commerce may consult with Manufacturing USA institutes that were in effect before the establishment of new Manufacturing USA institutes under subparagraph (A) to inform the Department of Commerce of additional new Manufacturing USA institutes necessary to fill gaps in the support of innovation and growth in domestic manufacturing.

(iii) Involvement of existing Manufacturing USA institutes authorized.—In coordination with the Secretary of Energy and the Secretary of Defense, the Secretary of Commerce may involve Manufacturing USA institutes that were in
effect before the establishment of new Manufacturing USA institutes under sub-
paragraph (A) in the planning and execu-
tion of the new Manufacturing USA insti-
tutes.

(3) MANUFACTURING USA CENTERS AND PUB-
LIC SERVICE GRANTS.—Of the amounts appropriated
pursuant to the authorization of appropriations in
paragraph (1), $375,000,000 shall be available for
the period described in such paragraph—

(A) for the Secretary, acting through the
Director and in consultation with the Secretary
of Energy, the Secretary of Defense, and the
heads of such other Federal agencies as the
Secretary of Commerce considers relevant, to
recognize additional institutes as Manufacturing
USA institutes under section 34(d)(3)(B) of the
National Institute of Standards and Technology
Act (15 U.S.C. 278s(d)(3)(B)), giving par-
ticular consideration to partnerships and coordi-
nation with the Manufacturing USA institutes
that were already in effect, when practicable;
and

(B) to support the activities of Manufac-
turing USA institutes and Manufacturing USA
centers through the award of grants under section 34(f) of the National Institute of Standards and Technology Act (15 U.S.C. 278s(f)).

(4) COMMERCIALIZATION, WORKFORCE TRAINING, AND SUPPLY CHAIN INVESTMENT.—Of the amounts appropriated pursuant to the authorization of appropriations in paragraph (1), $100,000,000 shall be available for the period described in such paragraph to support such programming for commercialization, workforce training, and supply chain activities across the Manufacturing USA Network as the Secretary considers appropriate in consultation with the Secretary of Energy, the Secretary of Defense, and the heads of such other Federal agencies as the Secretary of Commerce considers relevant.

(5) ONGOING SUPPORT FOR EXISTING MANUFACTURING USA INSTITUTES.—

(A) IN GENERAL.—Of the amounts appropriated pursuant to the authorization of appropriations in paragraph (1), $725,000,000 shall be available for the period described in such paragraph to support Manufacturing USA institutes that were in effect on the day before the date of the enactment of this Act, of which $5,000,000 shall be available (without cost
share) to each such Manufacturing USA institute each year for such period for ongoing operation of the institutes, including operational overhead, workforce training, and supply chain activities.

(B) ADDITIONAL SUPPORT.—

(i) IN GENERAL.—Of the amounts specified in subparagraph (A), amounts shall be available for financial assistance awards to conduct projects as follows:

(I) $100,000,000 shall be available for Manufacturing USA institutes that were established under section 34(e) of the National Institute of Standards and Technology Act (15 U.S.C. 278s(e)) and that were in effect on the day before the date of the enactment of this Act.

(II) $10,000,000 shall be available each year for the period described in such paragraph for each Manufacturing USA institute that is not receiving Manufacturing USA Program funding from any other Federal agency.
(ii) Federal funds matching requirement.—A recipient of financial assistance for a project under clause (i) shall agree to make available to carry out the project an amount of non-Federal funds that is equal to or greater than 20 percent of the total cost of the project.

(C) Renewal requirements.—Receipt of ongoing support under subparagraph (A) shall be subject to the requirements of section 34(c)(2)(B) of the National Institute of Standards and Technology Act (15 U.S.C. 278a(c)(2)(B)).

(D) No cost share requirement.—The Secretary shall not impose any cost share or matching requirement on receipt of ongoing support under subparagraph (A).

(6) Management of interagency solicitations and ongoing management.—Of the amounts appropriated pursuant to the authorization of appropriations in paragraph (1), $20,000,000 shall be available annually for the period described in such paragraph for the National Program Office to coordinate the activities of the Manufacturing USA Network and manage interagency solicitations.
(e) Coordination Between Manufacturing USA Program and Hollings Manufacturing Extension Partnership.—The Secretary shall coordinate the activities of the Manufacturing USA Program and the activities of Hollings Manufacturing Extension Partnership with each other to the degree that doing so does not diminish the effectiveness of the ongoing activities of a Manufacturing USA institute or a Center (as the term is defined in section 25(a) of the National Institute of Standards and Technology Act (15 U.S.C. 278k(a))), including Manufacturing USA institutes entering into agreements with a Center (as so defined) that the Secretary considers appropriate to provide services relating to the mission of the Hollings Manufacturing Extension Partnership, including outreach, technical assistance, workforce development, and technology transfer and adoption assistance to small- and medium-sized manufacturers.

(d) Worker Advisory Council for Manufacturing USA Program.—

(1) Establishment.—

(A) In general.—The Secretary of Commerce shall, in coordination with the Secretary of Labor, the Secretary of Defense, the Secretary of Energy, and the Secretary of Education, establish an advisory council for the
Manufacturing USA Program on the development and dissemination of techniques, policies, and investments for high-road labor practices; worker adaptation and success with technological change; and increased worker participation across the Manufacturing USA Network.

(B) Membership.—The council established under subparagraph (A) shall be composed of not fewer than 15 members appointed by the Secretary of Commerce; of whom—

(i) four shall be from labor organizations;

(ii) four shall be from educational institutions;

(iii) four shall be from labor-management training, workforce development, and nonprofit organizations, including those that focus on workforce diversity and inclusion; and

(iv) three shall be from industry organizations or manufacturing firms, including small- and medium-sized manufacturers.

(C) Period of Appointment; Vacancies.—
(i) In general.—Each member of the council established under subparagraph (A) shall be appointed for a term of 3 years with the ability to renew the appointment for no more than 2 terms.

(ii) Vacancies.—Any member appointed to fill a vacancy occurring before the expiration of the term for which the member’s predecessor was appointed shall be appointed only for the remainder of that term. A member may serve after the expiration of that term until a successor has been appointed.

(D) Meetings.—

(i) Initial meeting.—Not later than 180 days after the date of enactment of this Act, the council established under subparagraph (A) shall hold the first meeting.

(ii) Additional meetings.—After the first meeting of the council, the council shall meet upon the call of the Secretary, and at least once every 180 days thereafter.

(iii) Quorum.—A majority of the members of the council shall constitute a
quorum, but a lesser number of members
may hold hearings.

(E) Chairperson and vice chair-
person.—The Secretary shall elect 1 member
of the council established under subparagraph
(A) to serve as the chairperson of the council
and 1 member of the council to serve as the
vice chairperson of the council:

(2) Duties of the council.—The council es-
established under paragraph (1)(A) shall provide ad-
vice and recommendations to the Secretary of Com-
merce on matters concerning investment in and sup-
port of the manufacturing workforce relating to the
following:

(A) Worker participation, including
through labor organizations, in the planning
and deployment of new technologies across an
industry and within workplaces.

(B) Policies to help workers adapt to tech-
nological change, including training and edu-
cation priorities for the Federal Government
and for employer investments in workers.

(C) Assessments of impact on workers of
development of new technologies and processes
by the Manufacturing USA institutes.
(D) Management practices that prioritize job quality, worker protection, worker participation and power in decision making, and investment in worker career success.

(E) Policies and procedures to prioritize diversity and inclusion in the manufacturing and technology workforce by expanding access to job, career advancement, and management opportunities for underrepresented populations.

(F) Assessments of technology improvements achieved by the Manufacturing USA institutes and the degree of domestic deployment of each new technology.

(G) Such other matters as the Secretary considers appropriate.

(3) REPORT.—

(A) APPROPRIATE COMMITTEES OF CONGRESS DEFINED.—In this paragraph, the term “appropriate committees of Congress” means—

(i) the Committee on Health, Education, Labor, and Pensions; the Committee on Commerce, Science, and Transportation; the Committee on Energy and Natural Resources; the Committee on
Armed Services, and the Committee on Appropriations of the Senate; and

(ii) the Committee on Education and Labor; the Committee on Science, Space, and Technology; the Committee on Energy and Commerce; the Committee on Armed Services; and the Committee on Appropriations of the House of Representatives.

(B) REPORT REQUIRED.—Not later than 180 days after the date on which the council established under paragraph (1)(A) holds its initial meeting under paragraph (1)(D)(i) and annually thereafter, the council shall submit to the appropriate committees of Congress a report containing a detailed statement of the advice and recommendations of the council pursuant to paragraph (2).

(4) COMPENSATION.—

(A) Prohibition of compensation.—

Members of the Council may not receive additional pay, allowances, or benefits by reason of their service on the Council.

(B) Travel expenses.—Each member shall receive travel expenses, including per diem in lieu of subsistence, in accordance with appli-
cable provisions under subchapter I of chapter 57 of title 5, United States Code.

(5) FACA APPLICABILITY.—

(A) IN GENERAL.—In discharging its duties under this subsection, the council established under paragraph (1)(A) shall function solely in an advisory capacity, in accordance with the Federal Advisory Committee Act (5 U.S.C. App.).

(B) EXCEPTION.—Section 14 of the Federal Advisory Committee Act shall not apply to the Council.

(e) PARTICIPATION OF MINORITY-SERVING INSTITUTIONS; HISTORICALLY BLACK COLLEGES AND UNIVERSITIES, AND TRIBAL COLLEGES AND UNIVERSITIES.—

(1) IN GENERAL.—The Secretary of Commerce, in coordination with the Secretary of Energy, the Secretary of Defense, and the heads of such other Federal agencies as the Secretary of Commerce considers relevant, shall coordinate with existing and new Manufacturing USA institutes to integrate covered entities as active members of the Manufacturing USA institutes, including through the development of preference criteria for proposals to create new Manufacturing USA institutes or renew existing
Manufacturing USA institutes that include meaningful participation from a covered entity or that are led by a covered entity.

(2) COVERED ENTITIES.—For purposes of this subsection, a covered entity is—

(A) a minority-serving institution;

(B) an historically Black college or university; or

(C) a Tribal college or university.

(f) DEPARTMENT OF COMMERCE POLICIES TO PROMOTE DOMESTIC PRODUCTION OF TECHNOLOGIES DEVELOPED UNDER MANUFACTURING USA PROGRAM.—

(1) DEFINITION OF DOMESTIC.—In this subsection, the term “domestic”, with respect to development or production means development or production by, or with respect to source means the source is, a person incorporated or formed in the United States—

(A) that is not under foreign ownership, control, or influence (FOCI) as defined in section 847 of the National Defense Authorization Act for Fiscal Year 2020 (Public Law 116–92);

(B) whose beneficial owners, as defined in section 847 of the National Defense Authoriza-
tion Act for Fiscal Year 2020 (Public Law 116–92), are United States persons;
(C) whose management are United States citizens;
(D) whose principal place of business is in the United States; and
(E) who is not—
(i) a foreign incorporated entity that is an inverted domestic corporation or any subsidiary of such entity; or
(ii) any joint venture if more than 10 percent of the joint venture (by vote or value) is held by a foreign incorporated entity that is an inverted domestic corporation or any subsidiary of such entity.
(2) Policies.—
(A) In general.—The Secretary of Commerce, in consultation with the Secretary of Energy, the Secretary of Defense, and the heads of such other Federal agencies as the Secretary of Commerce considers relevant, shall establish policies to promote the domestic production of technologies developed by the Manufacturing USA Network.
(B) ELEMENTS.—The policies developed under subparagraph (A) shall include the following:

(i) Measures to partner domestic developers of goods, services, or technologies by Manufacturing USA Network activities with domestic manufacturers and sources of financing.

(ii) Measures to develop and provide incentives to promote transfer of intellectual property and goods, services, or technologies developed by Manufacturing USA Network activities to domestic manufacturers.

(iii) Measures to assist with supplier scouting and other supply chain development, including the use of the Hollings Manufacturing Extension Partnership to carry out such measures.

(iv) A process to review and approve or deny membership in a Manufacturing USA institute by foreign-owned companies, especially from countries of concern, including the People’s Republic of China.
(v) Measures to prioritize Federal procurement of goods, services, or technologies developed by the Manufacturing USA Network activities from domestic sources, as appropriate.

(C) Processes for waivers.—The policies established under this paragraph shall include processes to permit waivers, on a case by case basis, for policies that promote domestic production based on cost, availability, severity of technical and mission requirements, emergency requirements, operational needs, other legal or international treaty obligations; or other factors deemed important to the success of the Manufacturing USA Program.

(3) Prohibition.—

(A) COMPANY DEFINED.—In this paragraph, the term “company” has the meaning given such term in section 847(a) of the National Defense Authorization Act for Fiscal Year 2020 (Public Law 116–92; 10 U.S.C. 2509 note).

(B) IN GENERAL.—A company of the People’s Republic of China may not participate in the Manufacturing USA Program or the Manu-
facturing USA Network without a waiver, as described in paragraph (2)(C).

SEC. 10. TECHNOLOGY COMMERCIALIZATION REVIEW.

(a) Key Technology Focus Areas Defined.—In this section, the term "key technology focus areas" means the areas included on the most recent list under section 8A(d)(2) of the National Science Foundation Act of 1950.

(b) Review and Recommendations Required.—Not later than 180 days after the date of the enactment of this Act, the Director of the Office of Science and Technology Policy, in consultation with the Director of the National Science Foundation and the Director of the National Institute of Standards and Technology, shall—

(1) review—

(A) the structure of current technology research and commercialization arrangements with regard to public-private partnerships; and

(B) the extent to which intellectual property developed with Federal funding—

(i) has been used by foreign business entities;

(ii) is being used to manufacture in the United States rather than in other countries; and
(iii) is being used by foreign business entities domiciled or by foreign business entities affiliated with or subsidiary to foreign business entities in the People’s Republic of China;

(2) develop recommendations for such legislative or administrative action as may be necessary—

(A) to further incentivize industry participation in public-private partnerships for the purposes of accelerating technology research and commercialization, including alternate ways of accounting for in-kind contributions and value of partially manufactured products;

(B) to ensure that intellectual property developed with Federal funding is commercialized in the United States; and

(C) to ensure that intellectual property developed with Federal funding is not being used by foreign business entities or by foreign business entities affiliated with or subsidiary to foreign business entities domiciled in the People’s Republic of China; and

(3) submit to the Secretary of Commerce and Congress—
(A) the findings of the Director of the Office of Science and Technology Policy with respect to the reviews conducted under paragraph (1); and

(B) the recommendations developed under paragraph (2).

SEC. 11. STUDY ON EMERGING SCIENCE AND TECHNOLOGY CHALLENGES FACED BY THE UNITED STATES AND RECOMMENDATIONS TO ADDRESS THEM.

(a) SHORT TITLE.—This section may be cited as the “National Strategy to Ensure American Leadership Act of 2021” or the “National SEAL Act of 2021”.

(b) STUDY.—

(1) IN GENERAL.—The Secretary of Commerce (referred to in this section as the “Secretary”) shall seek to enter into an agreement with the National Academies of Sciences, Engineering, and Medicine to conduct a study—

(A) to identify the 10 most critical emerging science and technology challenges facing the United States; and

(B) to develop recommendations for legislative or administrative action to ensure United
States leadership in matters relating to such challenges.

(2) ELEMENTS.—The study conducted under paragraph (1) shall include identification, review, and evaluation of the following:

(A) Matters pertinent to identification of the challenges described in paragraph (1)(A).

(B) Matters relating to the recommendations developed under paragraph (1)(B), including with respect to education and workforce development necessary to address each of the challenges identified under paragraph (1)(A).

(C) Matters related to the review of key technology areas by the Directorate for Technology and Innovation of the National Science Foundation under section 8A(d) of the National Science Foundation Act of 1950.

(D) An assessment of the current relative balance in leadership in addressing the challenges identified in paragraph (1)(A) between the United States, allies or key partners of the United States, and the People’s Republic of China.

(3) TIMEFRAME.—
(A) AGREEMENT.—The Secretary shall seek to enter into the agreement required by paragraph (1) on or before the date that is 60 days after the date of enactment of this Act.

(B) FINDINGS.—Under an agreement entered into under paragraph (1), the National Academies of Sciences, Engineering, and Medicine shall, not later than 1 year after the date on which the Secretary and the National Academies enter into such agreement, transmit to the Secretary the findings of the National Academies with respect to the study conducted pursuant to such agreement.

(c) REPORT.—

(1) IN GENERAL.—Not later than 30 days after the date on which the Secretary receives the findings of the National Academies of Sciences, Engineering, and Medicine with respect to the study conducted under subsection (b), the Secretary shall submit to Congress a “Strategy to Ensure American Leadership” report on such study.

(2) CONTENTS.—The report submitted under paragraph (1) shall include the following:

(A) The findings of the National Academies of Sciences, Engineering, and Medicine
with respect to the study conducted under subsection (b).

(B) The conclusions of the Secretary with respect to such findings.

(C) The recommendations developed under subsection (b)(1)(B).

(D) Such other recommendations for legislative or administrative action as the Secretary may have with respect to such findings and conclusions.

(3) CLASSIFIED ANNEX.—The report submitted under paragraph (1) shall be submitted in unclassified form, but may include a classified annex if the Secretary determines appropriate.

(d) INFORMATION FROM FEDERAL AGENCIES.—

(1) IN GENERAL.—The National Academies of Sciences, Engineering, and Medicine may secure directly from a Federal department or agency such information as the National Academies of Sciences, Engineering, and Medicine consider necessary to carry out the study under subsection (b).

(2) FURNISHING INFORMATION.—On request of the National Academies of Sciences, Engineering, and Medicine for information, the head of the department or agency shall furnish such information to
the National Academies of Sciences, Engineering, and Medicine.

(c) CONSULTATION.—The Secretary of Defense and the Director of National Intelligence shall provide support upon request from the Secretary of Commerce or the National Academies to carry out this section.

(f) NON-DUPLICATION OF EFFORT.—In carrying out subsection (b), the Secretary shall, to the degree practicable, coordinate with the steering committee established under section 236(a) of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 (Public Law 116–283).

SEC. 12. COORDINATION OF ACTIVITIES.

The Director of the Office of Science and Technology Policy, the Director of the National Economic Council, the Director of the Office of Management and Budget, the Director of the National Science Foundation, the Secretary of Commerce, and the Secretary of Energy shall, as applicable, coordinate with respect to activities of—

(1) the university technology centers established under section 8A(d)(6) of the National Science Foundation Act of 1950;

(2) the regional technology hubs under section 28 of the Stevenson-Wydler Technology Innovation Act of 1980, as added by section 7;
(3) the Manufacturing USA Program established under section 34(b)(1) of the National Institute of Standards and Technology Act (15 U.S.C. 278s(b)(1));

(4) federally funded research and development centers;

(5) National Laboratories, as defined in section 2 of the Energy Policy Act of 2005 (42 U.S.C. 15801); and


SEC. 13. PERSON OR ENTITY OF CONCERN PROHIBITION.

No person published on the list under section 1237(b) of the Strom Thurmond National Defense Authorization Act for Fiscal Year 1999 (Public Law 105–261; 50 U.S.C. 1701 note) or entity identified under section 1260H of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 (Public Law 116–283) may receive or participate in any grant, award, program, support, or other activity under—

(1) section 8A of the National Science Foundation Act of 1950 (Public Law 81–507), as added by section 3;

(2) the Endless Frontier Fund under section 4;
(3) the supply chain resiliency program under section 6;

(4) section 28(b)(1) of the Stevenson-Wydler Technology Innovation Act of 1980 (Public Law 96–480), as added by section 7(a);

(5) section 29 of the Stevenson-Wydler Technology Innovation Act of 1980 (Public Law 96–480), as added by section 8; or

(6) the Manufacturing USA Program, as improved and expanded under section 9.

SECTION 1. SHORT TITLE; TABLE OF CONTENTS.

(a) SHORT TITLE.—This Act may be cited as the “Endless Frontier Act”.

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

Sec. 1. Short title; table of contents.
Sec. 2. Definitions.
Sec. 3. Sense of Congress.
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.
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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. Hands-on learning program.
Sec. 115. Intellectual property protection.
Sec. 116. Authorization of appropriations for the Foundation.
Sec. 117. Authorization of appropriations for the Department of Energy.

**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. 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. 218. Microgravity Utilization Policy.

**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.
Sec. 308. Plan with respect to sensitive or controlled information and background screening.

**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.

**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. Report on global semiconductor shortage.
Sec. 505. Supply chain resiliency program.
Sec. 506. Semiconductor incentives.
Sec. 507. Research investment to spark the Economy Act.
Sec. 508. Office of manufacturing and industrial innovation policy.
Sec. 509. Telecommunications Workforce Training Grant Program.
Sec. 511. Country of origin labeling for king crab and tanner crab.
Sec. 512. Internet exchanges and submarine cables.
Sec. 513. Study of sister city partnerships operating within the United States involving foreign communities in countries with significant public sector corruption.
Sec. 514. Prohibition on transfer, assignment, or disposition of construction permits and station licenses to entities subject to undue influence by the Chinese Communist Party or the Government of the People’s Republic of China.
Sec. 515. Limitation on nuclear cooperation with the People’s Republic of China.
Sec. 516. Certification.
Sec. 517. Fairness and due process in standards-setting bodies.
Sec. 518. Shark fin sales elimination.
Sec. 519. Sense of Congress on forced labor.
Sec. 520. Open network architecture.
Sec. 521. Combating Sexual Harassment in Science.

TITLE VI—SPACE MATTERS

Subtitle A—SPACE Act

Sec. 601. Short title.
Sec. 602. Sense of Congress.
Sec. 603. Definitions.
Sec. 604. Space situational awareness data, information, and services: provision to non-United States Government entities.
Sec. 605. Centers of Excellence for Space Situational Awareness.

Subtitle B—National Aeronautics and Space Administration Authorization Act

Sec. 611. Short title.
Sec. 612. Definitions.

PART I—AUTHORIZATION OF APPROPRIATIONS

Sec. 613. Authorization of appropriations.

PART II—HUMAN SPACEFLIGHT AND EXPLORATION

Sec. 614. Competitiveness within the human landing system program.
Sec. 615. Space launch system configurations.
Sec. 616. Advanced spacesuits.
Sec. 617. Acquisition of domestic space transportation and logistics resupply services.
Sec. 618. Rocket engine test infrastructure.
Sec. 619. Pearl River maintenance.
Sec. 620. Value of International Space Station and capabilities in low-Earth orbit.
Sec. 621. Extension and modification relating to International Space Station.
Sec. 622. Department of Defense activities on International Space Station.
Sec. 623. Commercial development in low-Earth orbit.
Sec. 624. Maintaining a national laboratory in space.
Sec. 625. International Space Station national laboratory; property rights in inventions.
Sec. 626. Data first produced during non-NASA scientific use of the ISS national laboratory.
Sec. 627. Payments received for commercial space-enabled production on the ISS.
Sec. 628. Stepping stone approach to exploration.
Sec. 629. Technical amendments relating to Artemis missions.

PART III—SCIENCE

Sec. 631. Science priorities.
Sec. 632. Lunar discovery program.
Sec. 633. Search for life.
Sec. 634. James Webb Space Telescope.
Sec. 635. Wide-Field Infrared Survey Telescope.
Sec. 636. Study on satellite servicing for science missions.
Sec. 637. Earth science missions and programs.
Sec. 638. Life science and physical science research.
Sec. 639. Science missions to Mars.
Sec. 640. Planetary Defense Coordination Office.
Sec. 641. Suborbital science flights.
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PART IV—AERONAUTICS

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Sec. 647. Definitions.
Sec. 648. Experimental aircraft projects.
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Sec. 650. 21st Century Aeronautics Capabilities Initiative.
Sec. 651. Sense of Congress on on-demand air transportation.
Sec. 652. Sense of Congress on hypersonic technology research.

PART V—SPACE TECHNOLOGY

Sec. 653. Space Technology Mission Directorate.
Sec. 654. Flight opportunities program.
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PART VI—STEM ENGAGEMENT

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PART VII—WORKFORCE AND INDUSTRIAL BASE

Sec. 665. Appointment and compensation pilot program.
Sec. 666. Establishment of multi-institution consortia.
Sec. 667. Expedited access to technical talent and expertise.
Sec. 668. Report on industrial base for civil space missions and operations.
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PART VIII—MISCELLANEOUS PROVISIONS

Sec. 671. Contracting authority.
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Sec. 676. Cybersecurity.
Sec. 677. Limitation on cooperation with the People’s Republic of China.
Sec. 678. Consideration of issues related to contracting with entities receiving assistance from or affiliated with the People’s Republic of China.
Sec. 679. Small satellite launch services program.
Sec. 680. 21st century space launch infrastructure.
Sec. 681. Missions of national need.
Sec. 682. Drinking water well replacement for Chincoteague, Virginia.
Sec. 683. Passenger carrier use.
Sec. 684. Use of commercial near-space balloons.
Sec. 685. President’s Space Advisory Board.
Sec. 686. Initiative on technologies for noise and emissions reductions.
Sec. 687. Remediation of sites contaminated with trichloroethylene.
Sec. 688. Review on preference for domestic suppliers.
Sec. 689. Report on use of commercial spaceports licensed by the Federal Aviation Administration.
Sec. 690. Active orbital debris mitigation.
Sec. 691. Study on commercial communications services.

SEC. 2. DEFINITIONS.

Unless otherwise specified, in this Act:

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

(3) **DIRECTORATE.**—The term “Directorate” means the Directorate for Technology and Innovation established under section 102.

(4) **EMERGING RESEARCH INSTITUTION.**—The term “emerging research institution” means an institution of higher education with an established undergraduate or graduate program that has, on average for the 3 years prior to an application for an award under this Act, received less than $50,000,000 in Federal research funding.

(5) **EPSCoR.**—The term “EPSCoR” means the Established Program to Stimulate Competitive Research under section 113 of the National Science Foundation Authorization Act of 1988 (42 U.S.C. 1862g).

(6) **FOUNDATION.**—The term “Foundation” means the National Science Foundation.

(7) **HISTORICALLY BLACK COLLEGE OR UNIVERSITY.**—The term “historically Black college or university” has the meaning given the term “part B institution” in section 322 of the Higher Education Act of 1965 (20 U.S.C. 1061).
(8) **Institution of Higher Education.**—The term “institution of higher education” has the meaning given the term in section 101 of the Higher Education Act of 1965 (20 U.S.C. 1001).

(9) **Key Technology Focus Areas.**—The term “key technology focus areas” means the areas included on the most recent list under section 5.

(10) **Minority-Serving Institution.**—The term “minority-serving institution” means an institution described in section 371(a) of the Higher Education Act of 1965 (20 U.S.C. 1067q(a)).

(11) **STEM.**—The term “STEM” means the academic and professional disciplines of science, technology, engineering, and mathematics, including computer science.

**SEC. 3. Sense of Congress.**

It is the sense of Congress that—

(1) the National Science Foundation, the Department of Energy and its National Laboratories (as defined in section 2 of the Energy Policy Act of 2005 (42 U.S.C. 15801)), and other key Federal agencies have carried out vital work supporting basic and applied research to create knowledge that is a key driver of the economy of the United States and a critical component of national security;
(2) openness to diverse perspectives and a focus on freedom from censorship and political bias will continue to make educational and research institutions in the United States beacons to thousands of students from across the world;

(3) increasing research and technology transfer investments, building regional capacity and reducing geographic disparity, strengthening supply chains, and increasing capabilities in key technology focus areas will enhance the competitive advantage and leadership of the United States in the global economy;

(4) the Federal Government must utilize the full talent and potential of the entire Nation by avoiding undue geographic concentration of research and education funding, encouraging broader participation of populations underrepresented in STEM, and collaborating with non-government partners to ensure the leadership of the United States in technological innovation; and

(5) authorization and funding for investments in research, education, technology transfer, intellectual property, manufacturing, and other core strengths of the United States innovation ecosystem, including at the National Science Foundation and the Department of Energy, should be done on a bipartisan basis.
SEC. 4. INTERAGENCY WORKING GROUP.

(a) Establishment.—The Director of the Office of Science and Technology Policy, acting through the National Science and Technology Council, shall establish or designate an interagency working group to coordinate the activities specified in subsection (c).

(b) Composition.—The interagency working group shall be composed of the following members (or their designees), who may be organized into subcommittees, as appropriate:

(1) The Secretary of Commerce.
(2) The Director of the National Science Foundation.
(3) The Secretary of Energy.
(4) The Secretary of Defense.
(5) The Director of the National Economic Council.
(6) The Director of the Office of Management and Budget.
(7) The Secretary of Health and Human Services.
(8) The Administrator of the National Aeronautics and Space Administration.
(9) The Secretary of Agriculture.
(10) The Director of National Intelligence.
(11) The Director of the Federal Bureau of Investigation.

(12) Such other Federal officials as the Director of the Office of Science and Technology Policy considers appropriate, including members of the National Science and Technology Council Committee on Technology.

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

(1) the activities of the National Science Foundation Technology and Innovation Directorate in the key technology focus areas, such as within the innovation centers under section 104 and test beds under section 108 under this Act;

(2) the activities of the Department of Commerce under this Act, including regional technology hubs under section 28 of the Stevenson-Wydler Act of 1980 (15 U.S.C. 13701 et seq.), the Manufacturing USA Program established under section 34(b)(1) of the National Institute of Standards and Technology Act (15 U.S.C. 278s(b)(1)), and the Hollings Manufacturing Extension Partnership;
(3) the activities of the Department of Energy in
the key technology focus areas, including at the na-
tional laboratories, as defined in section 2 of the En-
ergy Policy Act of 2005 (42 U.S.C. 15801), and at
Federal laboratories, as defined in section 4 of the
Stevenson-Wydler Technology Innovation Act of 1980
(15 U.S.C. 3703), and facilities and user facilities op-
erated in partnership with such national laboratories
or the Department of Energy; and

(4) any other program that the Director of the
Office of Science and Technology Policy determines
involves research and development with respect to the
key technology focus areas.

(d) REPORT.—The interagency working group shall—
(1) by not later than 180 days after the date of
enactment of this Act—

(A) conduct an initial review of Federal
programs and resources with respect to the key
technology focus areas identified pursuant to sec-
tion 5(a), in order to—

(i) assess current level of efforts and
characterize existing research infrastructure,
as of the date of the review;
(ii) identify potential areas of overlap or duplication with respect to the key technology focus areas; and

(iii) identify potential cross-agency collaborations and joint funding opportunities; and

(B) review whether Federal investments in the key technology focus areas have resulted in new domestic manufacturing capacity and job creation;

(C) submit a report regarding the review described in subparagraph (A) to Congress; and

(D) seek stakeholder input and recommendations in the course of such review;

(2) shall carry out the annual reviews and updates required under section 5.

(e) DETAILED DESCRIPTION.—The National Science Foundation and the Department of Energy shall, in coordination with the Office of Management and Budget, submit as part of their annual budget requests to Congress, a detailed description of the activities to be funded under this Act, including an explanation of how the requested funding is complementary and not redundant of programs, efforts, and infrastructure undertaken or supported by other relevant Federal agencies.
(f) CONFLICTS.—If any conflicts between Federal agencies arise while carrying out the activities under this section, the President shall make the final decision regarding resolution of the conflict.

SEC. 5. KEY TECHNOLOGY FOCUS AREAS.

(a) IN GENERAL.—

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

(A) Artificial intelligence, machine learning, autonomy, and related advances.

(B) High performance computing, semiconductors, and advanced computer hardware and software.

(C) Quantum information science and technology.

(D) Robotics, automation, and advanced manufacturing.

(E) Natural and anthropogenic disaster prevention or mitigation.

(F) Advanced communications technology and immersive technology.

(G) Biotechnology, medical technology, genomics, and synthetic biology.
(H) Data storage, data management, distributed ledger technologies, and cybersecurity, including biometrics.

(I) Advanced energy, batteries, and industrial efficiency, including advanced nuclear technologies for the purposes of electric generation (consistent with section 15 of the National Science Foundation Act of 1950 (42 U.S.C. 1874).

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

(2) REVIEW AND UPDATES.—The Director and the Secretary of Energy, in coordination with the interagency working group established under section 4 and in consultation with the Director of National Intelligence and the Director of the Federal Bureau of Investigation, shall annually review, and update as required, the list of key technology focus areas for purposes of this Act.

(b) ANNUAL REVIEW.—In annually reviewing and updating (as necessary) the list of key technology focus areas, the Director of the National Science Foundation and the Secretary of Energy, in coordination with the interagency working group established under section 4—

(1) shall consider input from relevant industries;
(2) may consider the challenges and recommendations identified in the report required by section 503 and in other relevant reports, such as technology and global trend reports from the defense and intelligence communities;

(3) shall consider the potential impact of the key technology focus areas on addressing national challenges, including competitive and security threats to the United States and to United States industries, including agriculture; and

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

(c) Limit on Key Technology Focus Areas.—Not more than 10 key technology focus areas shall be included on the list of key technology focus areas at any time. Engineering and exploration relevant to the other key technology focus areas described in this section shall be considered part of the relevant key technology focus area.

(d) Reporting.—The Director and the Secretary of Energy shall annually deliver a report to Congress detailing—
(1) the key technology focus areas and rationale for their selection;
(2) the role of the Foundation, the Department of Energy, and other Federal entities, as relevant, in advancing the key technology focus areas; and
(3) the impact, including to the academic research community, of any changes to the key technology focus areas.

(e) NATIONAL ACADEMIES.—Not later than 5 years after the date of enactment of this Act, the Director shall contract with the National Academies of Sciences, Engineering, and Medicine to conduct a review of the key technology focus areas.

TITLE I—NSF TECHNOLOGY AND INNOVATION

SEC. 101. DEFINITIONS.

In this title:

(1) Designated country.—

(A) In general.—The term “designated country”—

(i) except as provided in clause (ii), means—

(I) Australia;

(II) Canada;

(III) New Zealand;
(IV) the United Kingdom;

(V) the State of Israel;

(VI) Taiwan; and

(VII) any other country that has been approved and designated in writing by the President for purposes of this Act, after providing—

(aa) not less than 30 days of advance notification and explanation to the relevant congressional committees before the designation; and

(bb) in-person briefings to such committees, if requested during the 30-day advance notification period described in item (aa); and

(ii) excludes any country that takes actions to boycott, divest from, or sanction Israel.

(B) ACTIONS TO BOYCOTT, DIVEST FROM, OR SANCTION ISRAEL.—For purposes of subparagraph (A)(ii), the term “actions to boycott, divest from, or sanction Israel” has the meaning given such term in section 102(b)(20)(B) of the Bipar-
artisan Congressional Trade Priorities and Accountability Act of 2015 (19 U.S.C. 4201(b)(20)(B)).

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

(A) any organization composed of labor organizations, such as a labor union federation or a State or municipal labor body; and

(B) any organization which would be included in the definition for such term under such section 2(5) but for the fact that the organization represents—

(i) individuals employed by the United States, any wholly owned Government corporation, any Federal Reserve Bank, or any State or political subdivision thereof;

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

(iii) individuals employed as agricultural laborers.
(3) National Laboratory.—The term “National Laboratory” has the meaning given the term in section 3 of the Energy Policy Act of 2005 (42 U.S.C. 15801).

(4) Tribal College or University.—The term “Tribal College or University” has the meaning given the term in section 316(b)(3) of the Higher Education Act of 1965 (20 U.S.C. 1059c(b)(3)).

SEC. 102. DIRECTORATE ESTABLISHMENT AND PURPOSE.

(a) Establishment of Directorate for Technology and Innovation.—Subject to the availability of appropriations and not later than 180 days after the date of enactment of this Act, the Director shall establish a Directorate for Technology and Innovation in the Foundation.

(b) Purposes.—The Directorate shall further the following purposes:

(1) Strengthening the leadership of the United States in critical technologies, including as relevant to the critical national needs described in section 7018 of the America COMPETES Act (42 U.S.C. 1862o–5).

(2) Addressing and mitigating technology challenges integral to the geostrategic position of the United States through the activities authorized by this title.
(3) Enhancing the competitiveness of the United States by improving education in the key technology focus areas and attracting more students to such areas at all levels of education.

(4) Accelerating the translation and development of scientific advances in the key technology focus areas into processes and products in the United States.

(5) Utilizing the full potential of the United States workforce by avoiding undue geographic concentration of research and development and education funding across the United States, and encouraging broader participation in the key technology focus areas by populations underrepresented in STEM.

(6) Ensuring the programmatic work of the Directorate and Foundation incorporates a workforce perspective from labor organizations and workforce training organizations.

(c) ACTIVITIES.—The Directorate—

(1) shall support basic and applied research, and technology development of such research, including through awards to individual researchers, entities, or consortia and through diverse funding mechanisms and models;
(2) shall identify and develop opportunities to coordinate and collaborate on research, development, and commercialization—

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

(B) with stakeholders in academia, the private sector, and nonprofit entities; and

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

(3) shall provide awards for research and development projects designed to achieve specific technology metrics or objectives;

(4) may support research and technology development infrastructure, including testbeds, to advance the development, operation, integration, and deployment of innovation;

(5) shall identify and develop opportunities to reduce barriers for technology transfer, including intellectual property frameworks between academia and industry, nonprofit entities, and the venture capital communities;

(6) shall build capacity for research at institutions of higher education across the United States;
(7) shall partner with other directorates and offices of the Foundation for projects or research, including—

(A) to pursue basic questions about natural, human, and physical phenomena that could enable advances in the key technology focus areas;

(B) to study questions that could affect the design (including human interfaces), safety, security, operation, deployment, or the social and ethical consequences of technologies in the key technology focus areas, including the development of technologies that complement or enhance the abilities of workers and impact of specific innovations on domestic jobs and equitable opportunity; and

(C) to further the creation of a domestic workforce capable of advancing, using, and adapting to key technology focus areas and understanding and improving the impact of key technology focus areas on STEM teaching and learning by advancing the key technology focus areas, including engaging relevant partners in research and innovation programs;
(8) may make awards under the SBIR and

STTR programs (as defined in section 9(e) of the

Small Business Act (15 U.S.C. 638(e)); and

(9) may enter into and perform such contracts,

make such financial assistance awards, carry out

such other transactions, or make such other arrange-
ments, or modifications thereof, as may be necessary

in the conduct of the work of the Directorate and on

such terms as the Director considers appropriate, in

furtherance of the purposes of this title.

(d) ASSISTANT DIRECTOR.—

(1) APPOINTMENT.—The Director shall appoint

an Assistant Director for the Directorate, in the same

manner as other Assistant Directors of the Founda-

tion are appointed.

(2) QUALIFICATIONS.—Each Assistant Director

for the Directorate shall be an individual, who by rea-

son of professional background and experience, is spe-

cially qualified to advise the Foundation on all mat-

ters pertaining to research, development, and commer-

cialization at the Foundation, including partnerships

with the private sector and other users of Foundation

funded research.

(e) CONSIDERATIONS.—After completion of the studies

regarding emerging technologies conducted by the Secretary
of Commerce under title XV of division FF of the Consolidated Appropriations Act, 2021 (Public Law 116-260), the Director shall consider the results of such studies in carrying out the activities of the Directorate.

SEC. 103. PERSONNEL MANAGEMENT.

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

(b) PROGRAM DIRECTORS.—

(1) DESIGNATION.—The Director may designate employees to serve as program directors for the programs established within the Directorate pursuant to the responsibilities established under paragraph (2). The Director shall ensure that program directors—

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

(B) come from a variety of backgrounds, including industry, and from a variety of institutions of higher education.

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

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

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

(C) identifying areas for research and development;

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

(E) reviewing applications for projects to be supported under the program, and considering—

(i) the novelty and scientific and technical merit of the proposed projects;

(ii) broader impacts criteria under section 526 of the National Science Foundation Authorization Act of 2010 (42 U.S.C. 1862p–14);

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

(iv) the consideration by the applicant of future commercial applications of the project, including the feasibility of
partnering with 1 or more commercial entities; and

(v) such other criteria as are established by the Director; and

(F) monitoring the progress of projects supported under the program and recommending program restructure or termination, as needed.

(3) TERMS.—Program directors of the Directorate may be appointed by the Director for a limited term, renewable at the discretion of the Director.

(c) SELECTION CRITERIA AND REPORT.—

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

(2) REPORT.—Not later than 18 months after the establishment of the Directorate, the Director shall prepare and submit a report to Congress regarding the use of alternative methods for the selection of award recipients and the distribution of funding to recipients, as compared to the traditional peer review process.

(d) RULE OF CONSTRUCTION.—Nothing in this section shall be construed to modify the authority of the Director or the National Science Board with respect to the selection of recipients for funding from the Foundation.
SEC. 104. INNOVATION CENTERS.

(a) University Technology Center Program.—

(1) In general.—From amounts made available to the Directorate, the Director shall establish a program in the Directorate to make awards, through a competitive selection process, to eligible entities to establish university technology centers.

(2) Purpose.—The purpose of the university technology centers shall be to—

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

(B) leverage the expertise of multi-disciplinary and multi-sector partners, including partners from private industry;

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

(D) support the development of scientific, innovation, entrepreneurial, and educational capacity within the region of the university technology center.
(3) **Use of Funds.**—University technology centers established under this subsection may use support provided—

(A) to carry out research to advance innovation in the key technology focus areas;

(B) for technology development activities such as proof-of-concept development, prototyping, design modification, experimental development, and other actions to reduce the cost, time, and risk of commercializing new technologies;

(C) for the costs of equipment and cyberinfrastructure;

(D) for the costs associated with technology transfer and commercialization, including patenting and licensing; or

(E) for operations and staff.

(4) **Selection Process.**—In selecting recipients under this subsection, the Director shall consider, in addition to the scientific and technical merit of the proposal—

(A) maximizing regional and geographic diversity of the university technology centers, including by considering rural-serving institutions of higher education (as defined in section 861(b)
of the Higher Education Act of 1965 (20 U.S.C. 1161a(b));

(B) the extent to which the applicant’s proposal would broaden participation by populations underrepresented in STEM;

(C) the capacity of the applicant to engage industry, labor, and other appropriate organizations and, where applicable, contribute to growth in domestic manufacturing capacity and job creation;

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

(E) the amount of funds from industry organizations described in paragraph (5)(A)(ii) the applicant would use towards establishing the university technology center;

(F) the plan and capability of the applicant to take measures to prevent the inappropriate use of the research and technology of the center, including research results, data, and intellectual property, as appropriate and consistent with the requirements of the relevant award; and

(G) the plan and capability of the applicant to support proof-of-concept development and
prototyping as well as technology transfer and commercialization activities.

(5) REQUIREMENTS.—

(A) IN GENERAL.—The Director shall ensure that any eligible entity receiving an award under this subsection has—

(i) the capacity or the ability to acquire the capacity to advance the purposes described in section 102(b); and

(ii) secured contributions for establishing the university technology center under this subsection from industry or other non-Federal organizations in an amount not less than 10 percent of the total amount of the award the eligible entity would receive under this subsection.

(B) CONSORTIUM ELIGIBILITY.—To be eligible to receive an award for the establishment and operation of a university technology center, a consortium shall be composed of not fewer than 2 entities as described in paragraph (7)(C) and operate subject to a binding agreement, entered into by each member of the consortium, that documents—
(i) the proposed partnership agreement, including the governance and management structure of the university technology center;

(ii) measures the consortium will undertake to enable cost-effective implementation of activities under paragraph (3);

(iii) a proposed budget, including financial contributions from non-Federal sources; and

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

(6) SUPPORT OF REGIONAL TECHNOLOGY HUBS.—Each university technology center established under this subsection may support and participate in, as appropriate, the activities of any regional technology hub designated under section 28 of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3701 et seq.), as amended by section 401 of this Act.

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

(A) an individual institution of higher education;
(B) a nonprofit entity; or

(C) a consortium that—

(i) shall include and be led by an institution of higher education or by a nonprofit entity, designed to support technology development;

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

(I) a historically Black college or university;

(II) a Tribal College or University;

(III) a minority-serving institution (or an institution of higher education with an established STEM capacity building program focused on traditionally underrepresented populations in STEM, including Native Hawaiians, Alaska Natives, and other Indians);

(IV) an institution that participates in the Established Program to Stimulate Competitive Research under section 113 of the National Science

(42 U.S.C. 1862g);

(V) an emerging research institution; or

(VI) a community college; and

(iii) may include 1 or more—

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

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

(III) economic development organizations or venture development organizations, as such terms are defined in section 28(a) of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 13701 et seq.), as amended by section 401 of this Act;

(IV) National Laboratories;

(V) Federal laboratories, as defined in section 4 of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3703);

(VI) Federal research facilities;

(VII) labor organizations;
(VIII) entities described in subparagraph (A) or (B) from allied or partner countries;

(IX) other entities if determined by the Director to be vital to the success of the program; and

(X) binational research and development foundations and funds, excluding foreign entities of concern, as defined in section 307.

(b) INNOVATION INSTITUTE.—

(1) IN GENERAL.—The Director shall establish innovation institutes to further the research, development, and commercialization of innovation in the key technology focus areas.

(2) PARTNERSHIPS.—

(A) IN GENERAL.—Each innovation institute shall be comprised of a partnership including 2 or more of the following entities:

(i) An institution of higher education.

(ii) A for-profit company.

(iii) A nonprofit organization.

(iv) A Federal agency.
(v) Another entity, if that entity is determined by the Director to be vital to the success of the program.

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

(C) Institutional or organizational level.—The Director shall work to ensure that such partnerships exist at the institutional or organization level, rather than solely at the principal investigator level.

(3) Cost share.—To the extent practicable, not less than half of the funding for an institute shall be provided by non-Federal entities.

(c) Number of Centers and Institutes Established.—The Director shall endeavor to establish a balance in the number of university technology centers and innovation institutes.

SEC. 105. TRANSITION OF NSF PROGRAMS.

The Director may transition the management of existing programs of the National Science Foundation that conduct activities in addition to basic research to the Directorate, including—

(1) Convergence Accelerator;
(2) Industry-University Cooperative Research Centers;

(3) National AI Research Institutes;

(4) Innovation Corps (I-Corps), as described in section 601 of the American Innovation and Competitiveness Act (42 U.S.C. 1862s-8); and

(5) any other programs that the Director considers appropriate.

SEC. 106. PROVIDING SCHOLARSHIPS, FELLOWSHIPS, AND OTHER STUDENT SUPPORT.

(a) In General.—The Director, acting through the Directorate, shall fund undergraduate scholarships (including at community colleges), graduate fellowships and traineeships, and postdoctoral awards in the key technology focus areas.

(b) Implementation.—The Director may carry out subsection (a) by making awards—

(1) directly to students; and

(2) to institutions of higher education or consortia of institutions of higher education, including those institutions or consortia involved in operating university technology centers established under section 104(a).

(c) Broadening Participation.—In carrying out this section, the Director shall take steps to increase the par-
participation of populations that are underrepresented in STEM, which may include—

(1) establishing or augmenting programs targeted at populations that are underrepresented in STEM;

(2) supporting traineeships or other relevant programs at minority-serving institutions (or institutions of higher education with an established STEM capacity building program focused on traditionally underrepresented populations in STEM, including Native Hawaiians, Alaska Natives, and other Indians);

(3) addressing current and expected gaps in the availability or skills of the STEM workforce, or addressing needs of the STEM workforce, including by increasing educational capacity at institutions and by prioritizing awards to United States citizens, permanent residents, and individuals that will grow the domestic workforce; and

(4) addressing geographic diversity in the STEM workforce.

(d) INNOVATION.—In carrying out this section, the Director shall encourage innovation in graduate education, including through encouraging institutions of higher education to offer graduate students opportunities to gain expe-
rience in industry or Government as part of their graduate training, and through support for students in professional masters programs related to the key technology focus areas.

(e) Areas of Funding Support.—Subject to the availability of funds to carry out this section, the Director shall—

(1) issue—

(A) postdoctoral awards,

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

(C) scholarships, including undergraduate scholarships, research experiences, and internships, including—

(i) scholarships to attend community colleges; and

(ii) research experiences and internships under sections 513, 514, and 515 of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 1862p–5; 1862p–6; 1862p–7);

(2) ensure that not less than 10 percent of the funds made available to carry out this section are used to support additional awards that focus on com-
community college training, education, and teaching programs that increase the participation of populations that are underrepresented in STEM, including technical programs through programs such as the Advanced Technological Education program;

(3) ensure that not less than 20 percent of the funds made available to carry out this section are used to support institutions of higher education, and other institutions, located in jurisdictions that participate in the program under section 113 of the National Science Foundation Authorization Act of 1988 (42 U.S.C. 1862g); and

(4) if funds remain after carrying out paragraphs (1), (2), and (3), make awards to institutions of higher education to enable the institutions to fund the development and establishment of new or specialized programs of study for graduate, undergraduate, or technical college students and the evaluation of the effectiveness of those programs of study.

(f) Existing Programs.—The Director may use or augment existing STEM education programs of the Foundation and leverage education or entrepreneurial partners to carry out this section.
SEC. 107. RESEARCH AND DEVELOPMENT.

(a) IN GENERAL.—From amounts made available for the Directorate, the Director shall make awards, on a competitive basis, for research and technology development within the key technology focus areas.

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

(c) RECIPIENTS.—Recipients of funds under this section may include institutions of higher education, research institutions, nonprofit entities, private sector entities, consortia, or other entities as defined by the Director.

(d) METRICS.—The Director may set metrics, including goals and deadlines, for development of such technology as determined in the terms of the award, and may use such metrics to determine whether an award recipient shall be eligible for continued or follow-on funding. The Director shall ensure that the length of the grants for applicants seeking to demonstrate revolutionary technological advances to expedite short-term technology deployment last no longer than 24 months.

(e) SELECTION CRITERIA.—In selecting recipients for an award under this section, the Director shall consider, at a minimum—
(1) the relevance of the project to the key technology focus areas;

(2) the current status of the technology, the limits of current practice, and the likelihood of the private sector to independently demonstrate a similar technological advance;

(3) the potential of the project to generate a revolutionary technological advance, including advances that can expedite short-term technology deployment;

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

(5) the likelihood of the project’s success;

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

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

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

SEC. 108. TEST BEDS.

(a) Program Authorized.—

(1) In general.—From amounts made available for the Directorate, the Director, in coordination with the Director of the National Institute of Standards and Technology and other Federal agencies, as
determined appropriate by the Director, shall establish a program in the Directorate to make awards, on a competitive basis, to institutions of higher education, nonprofit organizations, or consortia (as defined in section 104(a)(7)(C)) to establish and operate test beds, which may include fabrication facilities and cyberinfrastructure, to advance the development, operation, integration, deployment, and, as appropriate, demonstration of new, innovative technologies in the key technology focus areas, which may include hardware or software.

(2) COORDINATION.—In establishing new test beds under this section, the Director shall ensure coordination with other test beds supported by the Foundation or other Federal agencies to avoid duplication and maximize the use of Federal resources.

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

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

(B) the goals of the work to be done at the test bed;
(2) how the applicant will assemble a workforce with the skills needed to operate the test bed;

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

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

(5) how the applicant will encourage the participation of inventors and entrepreneurs and the development of new businesses;

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

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

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

(9) how the test bed will disseminate lessons and other technical information to United States entities or allied or partner country entities in the United States; and
(10) how the applicant plans to take measures to
prevent the inappropriate use of research results,
data, and intellectual property, as applicable and
consistent with the requirements of the award.

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

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

(e) INTERAGENCY ANNUAL MEETINGS.—The Director,
the Secretary of Commerce, and the heads of other Federal
departments and agencies, or their designees, with test bed
related equities shall hold an annual meeting to coordinate
their respective test bed related investments, future plans,
and other appropriate matters, to avoid conflicts and dupli-
cation of efforts. Upon request by Congress, Congress shall
be briefed on the results of the meetings.

SEC. 109. ACADEMIC TECHNOLOGY TRANSFER.

(a) IN GENERAL.—From amounts made available to
the Directorate, the Director, in coordination with the Di-
rector of the National Institute of Standards and Tech-
nology and other Federal agencies as determined appropriate by the Director, shall make awards, on a competitive basis, to eligible entities to advance the development and commercialization of technologies, particularly those in the key technology focus areas.

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

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

(2) a nonprofit entity that is either affiliated with an institution of higher education or designed to support technology development or entrepreneurship; or

(3) a consortium that includes—

(A) an entity described in paragraph (1) or (2) as the lead award recipient; and

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

(i) an economic development organization or similar entity that is focused primarily on improving science, technology, innovation, or entrepreneurship;

(ii) an industry organization or firm in a relevant technology or innovation sector;
(iii) an industry-experienced executive with entrepreneurship experience that is focused primarily on de-risking technologies from both a scientific and a business perspective; or

(iv) an individual or entity with industry- and startup- experienced business expertise, including a mentor network, across relevant technology or innovation sectors.

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

(1) the steps the applicant will take to enable technology transfer and to reduce the risks for commercialization for new technologies and why such steps are likely to be effective;

(2) how the applicant will encourage the training and participation of students and potential entrepreneurs and the transition of research results to practice, including the development of new businesses;

(3) as relevant, potential steps to drive economic growth in a particular region, by collaborating with
industry, venture capital entities, nonprofit entities, and State and local governments within that region; and

(4) background information that the Director determines is relevant to demonstrate the success of the innovation and entrepreneurship support models proposed by the applicant to commercialize technologies.

(d) ACADEMIC TECHNOLOGY TRANSFER ENHANCEMENT PROGRAM.—

(1) IN GENERAL.—The Director, in coordination with the Director of the National Institute of Standards and Technology, shall make awards, on a competitive basis, to support eligible entities in building sustainable technology transfer capacity.

(2) USE OF FUNDS.—An eligible entity that receives an award under this subsection shall use award funds to carry out one or more of the following:

(A) Identifying academic research with the potential for technology transfer and commercialization, particularly as relevant to the key technology focus areas.

(B) Providing training and support to scientists, engineers, and inventors on technology transfer, commercialization, and research protection.
(C) Offsetting the costs of patenting and licensing research products, both domestically and internationally.

(D) Revising institution policies, including policies related to intellectual property and faculty entrepreneurship, and taking other necessary steps to implement relevant best practices for academic technology transfer.

(E) Ensuring the availability of staff, including technology transfer professionals, entrepreneurs in residence, and other mentors as required to accomplish the purpose of this subsection.

(F) Identifying and facilitating relationships among local and national business leaders, including investors, and potential entrepreneurs to encourage successful commercialization.

(G) Creating and funding competitions to allow entrepreneurial ideas to illustrate their commercialization potential, including through venture funds of institutions of higher education.

(H) Creating or supporting entities that could enable researchers to further develop new technology, through capital investment, advice, staff support, or other means.
(I) Building technology transfer capacity at institutions of higher education.

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

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

(B) in determining the duration of funding, endeavor to ensure the creation of sustainable technology transfer practices at the eligible entity; and

(C) ensure that grants under this subsection shall not support the development or operation of capital investment funds.

(e) COLLABORATIVE INNOVATION RESOURCE CENTER PROGRAM.—

(1) IN GENERAL.—The Director shall make awards under this subsection to eligible entities to establish collaborative innovation resource centers that promote regional technology transfer and technology development activities available to more than one institution of higher education and to other entities in a region.

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

(3) USE OF FUNDS.—An eligible entity that receives an award under this subsection shall use award funds to carry out one or more of the following activities, to the benefit of the region in which the center is located:

(A) Providing start-ups and small business concerns (as defined in section 3 of the Small Business Act (15 U.S.C. 632)) within the region with access to facilities, scientific infrastructure, personnel, and other assets as required for technology maturation.

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

(C) Providing engineering and entrepreneurial experiences and hands-on training for students enrolled in participating institutions of higher education.

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

(1) metrics related to commercialization for an award under this section; and
(2) a reporting schedule for recipients of such
awards that takes into account both short- and long-
term goals of the programs under this section.

(g) Geographic Diversity.—The Director shall en-
sure regional and geographic diversity in issuing awards
under this section.

(h) Supplement Not Supplant.—The Director shall
ensure that funds made available under this section shall
be used to create additional support for technology transfer
activities at eligible entities. For the duration of the
awards, recipients shall be required to maintain funding
for such activities at similar levels as the funding for those
activities for the 2 fiscal years preceding the award.

SEC. 110. CAPACITY-BUILDING PROGRAM FOR DEVELOPING
UNIVERSITIES.

(a) In General.—The Director shall establish a pro-
gram in the Directorate to make awards, on a competitive
basis, to eligible institutions described in subsection (b) to
support the mission of the Directorate and to build institu-
tional research capacity at eligible institutions.

(b) Eligible Institution.—

(1) In General.—To be eligible to receive an
award under this section, an institution—

(A) shall be—
(i) a historically Black college or university;

(ii) a minority-serving institution; or

(iii) an institution of higher education with an established STEM capacity building program focused on traditionally underrepresented populations in STEM, including Native Hawaiians, Alaska Natives, and other Indians; and

(B) shall have not more than $50,000,000 in annual federally-financed research and development expenditures for science and engineering as reported through the National Science Foundation Higher Education Research and Development Survey.

(2) PARTNERSHIPS.—An eligible institution receiving a grant under this section may carry out the activities of the grant through a partnership with other entities, including other eligible institutions.

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

(1) conduct an assessment of capacity-building and research infrastructure needs of an eligible institution;

(2) enhance institutional resources to provide administrative research development support to faculty at an eligible institution;

(3) bolster the institutional research competitiveness of an eligible institution to support grants awarded by the Directorate;

(4) support the acquisition of instrumentation necessary to build research capacity at an eligible institution in research areas directly associated with the Directorate;

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

(6) increase engagement with industry to execute research through the SBIR and STTR programs (as defined in section 9(e) of the Small Business Act (15 U.S.C. 638(e)) and direct contracts at an eligible institution;

(7) provide student engagement and research training opportunities at the undergraduate, graduate, and postdoctoral levels at an eligible institution;
(8) further faculty development initiatives and
strengthen institutional research training infrastruc-
ture, capacity, and competitiveness of an eligible in-
stitution; or

(9) address plans and prospects for long-term
sustainability of institutional enhancements at an eli-
gible institution resulting from the award including,
if applicable, how the award may be leveraged by an
eligible institution to build a broader base of support.

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

(e) FUNDING.—From the amounts made available to
carry out section 104 under section 116 for each of fiscal
years 2022 through 2026, the Director shall use
$150,000,000 for each such fiscal year to carry out this sec-
tion.

SEC. 111. TECHNICAL ASSISTANCE.

The Director may—

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

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

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

SEC. 112. COORDINATION OF ACTIVITIES.

(a) In general.—In carrying out the activities of the Directorate, the Director and the heads of other Federal research agencies, as appropriate, shall work cooperatively to further the goals of this title in the key technology focus areas.

(b) Coordination with NIST and Department of Energy.—The Director shall, as appropriate, work in coordination with the Director of the National Institute of Standards and Technology and the Secretary of Energy.

(c) Avoid duplication.—The Director shall ensure, to the greatest extent appropriate, that activities carried out by the Directorate are not duplicative of activities supported by other parts of the Foundation or other relevant Federal agencies. In carrying out the activities prescribed by this Act, the Director and heads of other Federal research agencies shall cooperate to avoid duplication of effort and to ensure the responsible stewardship of funds.

(d) Comptroller General report.—Not later than 3 years after the date of enactment of this Act, the Comp-
troller General of the United States shall prepare and sub-
mit a report to Congress, and shall simultaneously submit
the report to the Director and the Director of the Office of
Science and Technology Policy, describing the interagency
cooperation that occurred during the preceding years pursu-
ant to this section, including a list of—

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

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

**SEC. 113. REPORTING REQUIREMENTS.**

(a) **Reports.**—Not later than 1 year after the date
of enactment of this Act and annually thereafter, the Direc-
tor, in coordination with the heads of relevant Federal agen-
cies, shall prepare and submit to Congress—

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

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

(A) entities other than institutions of higher
education; and
(B) certain designated countries; and

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

(b) ANNUAL BRIEFING.—Each year, the Director shall
formally request a briefing from the Secretary of Defense,
the Secretary of Commerce, the Director of the Federal Bu-
reau of Investigation, the Director of National Intelligence,
and as appropriate the heads of other Federal agencies re-
garding their efforts to preserve the United States’ advan-
tages generated by the activity of the Directorate.

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

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

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

(3) by adding at the end the following:
“(l) to provide for the widest practicable and appropriate dissemination of information within the United States concerning the Foundation’s activities and the results of those activities.”.

SEC. 114. HANDS-ON LEARNING PROGRAM.

(a) FINDINGS.—Congress finds the following:

(1) Developing a robust, talented, and home-grown workforce, particularly in the fields of STEM, is critical to the success of the United States innovation economy.

(2) The United States educational system is not producing a sufficient number of workers with the necessary STEM expertise to meet the needs of the United States industry in STEM fields.

(3) Hands-on and experiential learning opportunities outside of the classroom are critical for student success in STEM subjects and careers, stimulating students’ interest, increasing confidence, and creating motivation to pursue a related career.

(4) Hands-on and experiential learning opportunities can be particularly successful in inspiring interest in students who traditionally have been under-represented in STEM fields, including girls, students of color, and students from disadvantaged backgrounds.
(5) An expansion of hands-on and experiential learning programs across the United States would expand the STEM workforce pipeline, developing and training students for careers in STEM fields.

(b) DEFINITIONS.—

(1) ESEA TERMS.—The terms “elementary school”, “high school”, “secondary school”, and “State” have the meanings given the terms in section 8101 of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 7801).

(2) ELIGIBLE NONPROFIT PROGRAM.—The term “eligible nonprofit program”—

(A) means a nonprofit program serving pre-kindergarten, elementary school, or secondary school students; and

(B) includes a program described in sub-paragraph (A) that covers the continuum of education from prekindergarten through high school and is available in every State.

(c) PURPOSES.—The purposes of this section are to—

(1) provide effective, compelling, and engaging means for teaching and reinforcing fundamental STEM concepts and inspiring the youth of the United States to pursue careers in STEM-related fields;
(2) expand the STEM workforce pipeline by developing and training students for careers in United States STEM fields; and

(3) broaden participation in the STEM workforce by underrepresented population groups.

(d) PROGRAM AUTHORIZED.—

(1) IN GENERAL.—Subject to the availability of appropriations for such purposes, the Director shall—

(A) provide grants to eligible nonprofit programs for supporting hands-on learning opportunities in STEM education, including via after-school activities and innovative learning opportunities such as robotics competitions; and

(B) evaluate the impact of such hands-on learning opportunities on STEM learning and disseminate the results of that evaluation.

(2) PRIORITY.—In awarding grants under the program, the Director shall give priority to eligible nonprofit programs serving students that attend elementary, secondary, or high schools that—

(A) are implementing comprehensive support and improvement activities or targeted support and improvement activities under paragraph (1) or (2) of section 1111(d) of the Ele-
mentary and Secondary Education Act of 1965 (20 U.S.C. 6311(d)); or

(B) serve high percentages of students who are eligible for a free or reduced price lunch under the Richard B. Russell National School Lunch Act (42 U.S.C. 1751 et seq.) (which, in the case of a high school, may be calculated using comparable data from the schools that feed into the high school).

(e) AUTHORIZATION OF APPROPRIATIONS.—From the amounts made available to carry out section 106 under section 116 for each of fiscal years 2022 through 2026, the Director shall use $25,000,000 for each such fiscal year to carry out this section.

SEC. 115. INTELLECTUAL PROPERTY PROTECTION.

Consistent with the requirements for the award, all intellectual property that is developed through the Foundation, or any program that has received funding through this Act (or an amendment made by this Act), shall not be transferred to—

(1) any foreign entity of concern, as defined in section 307(a);

(2) any United States subsidiary, division, or chapter of such a foreign entity of concern; or
(3) any for-profit, or nonprofit, partnership that includes such a foreign entity of concern in the partnership.

SEC. 116. AUTHORIZATION OF APPROPRIATIONS FOR THE FOUNDATION.

(a) Fiscal Year 2022.—

(1) Foundation.—There is authorized to be appropriated to the Foundation $10,800,000,000 for fiscal year 2022.

(2) Specific NSF allocations.—Of the amount authorized under paragraph (1)—

(A) $9,000,000,000 shall be made available to carry out the activities of the Foundation outside of the Directorate, of which $800,000,000 shall be for STEM education and related activities, including workforce activities under section 202; and

(B) $1,800,000,000 shall be made available to the Directorate, of which—

(i) $594,000,000 shall be for the innovation centers under section 104;

(ii) $324,000,000 shall be for scholarships, fellowships, and other activities under section 106;
(iii) $252,000,000 shall be for academic technology transfer under section 109;
(iv) $180,000,000 shall be for test beds under section 108;
(v) $270,000,000 shall be for research and development activities under section 107; and
(vi) an amount equal to 10 percent of the total made available to the Directorate under this subparagraph shall be transferred to the Foundation for collaboration with directorates and offices of the Foundation outside of the Directorate as described under section 102(c)(7).

(b) Fiscal Year 2023.—

(1) Foundation.—There is authorized to be appropriated to the Foundation $12,800,000,000 for fiscal year 2023.

(2) Specific NSF Allocations.—Of the amount authorized under paragraph (1)—

(A) $9,600,000,000 shall be made available to carry out the activities of the Foundation outside of the Directorate, of which $1,190,000,000 shall be for STEM education and related activi-
ties, including workforce activities under section
202; and

(B) $3,200,000,000 shall be made available
to the Directorate, of which—

(i) $1,056,000,000 shall be for the in-
novation centers under section 104;

(ii) $576,000,000 shall be for scholar-
ships, fellowships, and other activities under
section 106;

(iii) $448,000,000 shall be for aca-
demic technology transfer under section 109;

(iv) $320,000,000 shall be for test beds
under section 108;

(v) $480,000,000 shall be for research
and development activities under section
107; and

(vi) an amount equal to 10 percent of
the total made available to the Directorate
under this subparagraph shall be trans-
ferred to the Foundation for collaboration
with directorates and offices of the Founda-
tion outside of the Directorate as described
under section 102(c)(7).

(c) Fiscal Year 2024.—
(1) FOUNDATION.—There is authorized to be appropri-riated to the Foundation $16,600,000,000 for fiscal year 2024.

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

(A) $10,300,000,000 shall be made available to carry out the activities of the Foundation outside of the Directorate, of which $1,600,000,000 shall be for STEM education and related activities, including workforce activities under section 202; and

(B) $6,300,000,000 shall be made available to the Directorate, of which—

(i) $2,079,000,000 shall be for the innovation centers under section 104;

(ii) $1,134,000,000 shall be for scholarships, fellowships, and other activities under section 106;

(iii) $882,000,000 shall be for academic technology transfer under section 109;

(iv) $630,000,000 shall be for test beds under section 108;

(v) $945,000,000 shall be for research and development activities under section 107; and
(vi) an amount equal to 10 percent of
the total made available to the Directorate
under this subparagraph shall be trans-
ferred to the Foundation for collaboration
with directorates and offices of the Founda-
tion outside of the Directorate as described
under section 102(c)(7).

(d) Fiscal Year 2025.—

(1) Foundation.—There is authorized to be ap-
propriated to the Foundation $19,500,000,000 for fis-
cal year 2025.

(2) Specific NSF Allocations.—Of the amount
authorized under paragraph (1)—

(A) $11,100,000,000 shall be made available
to carry out the activities of the Foundation out-
side of the Directorate, of which $2,100,000,000
shall be for STEM education and related activi-
ties, including workforce activities under section
202; and

(B) $8,400,000,000 shall be made available
to the Directorate, of which—

(i) $2,772,000,000 shall be for the in-
novation centers under section 104;
(ii) $1,512,000,000 shall be for scholar-
ships, fellowships, and other activities under
section 106;

(iii) $1,176,000,000 shall be for aca-
demic technology transfer under section 109;

(iv) $840,000,000 shall be for test beds
under section 108;

(v) $1,260,000,000 shall be for research
and development activities under section
107; and

(vi) an amount equal to 10 percent of
the total made available to the Directorate
under this subparagraph shall be trans-
ferred to the Foundation for collaboration
with directorates and offices of the Founda-
tion outside of the Directorate as described
under section 102(c)(7).

(e) FISCAL YEAR 2026.—

(1) FOUNDATION.—There is authorized to be ap-
propriated to the Foundation $21,300,000,000 for fis-
cal year 2026.

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

(A) $12,000,000,000 shall be made available
to carry out the activities of the Foundation out-
side of the Directorate, of which $2,540,000,000 shall be for STEM education and related activities, including workforce activities under section 202; and

(B) $9,300,000,000 shall be made available to the Directorate, of which—

(i) $3,069,000,000 shall be for the innovation centers under section 104;

(ii) $1,674,000,000 shall be for scholarships, fellowships, and other activities under section 106;

(iii) $1,302,000,000 shall be for academic technology transfer under section 109;

(iv) $930,000,000 shall be for test beds under section 108;

(v) $1,395,000,000 shall be for research and development activities under section 107; and

(vi) an amount equal to 10 percent of the total made available to the Directorate under this subparagraph shall be transferred to the Foundation for collaboration with directorates and offices of the Foundation outside of the Directorate as described under section 102(c)(7).
Allocation and Limitations.—

(1) Allocation for the Office of Inspector General.—From any amounts appropriated for the Foundation for a fiscal year, the Director shall allocate for necessary expenses of the Office of Inspector General of the Foundation an amount of not less than $33,000,000 in any fiscal year for oversight of the programs and activities funded under this section in accordance with the Inspector General Act of 1978 (5 U.S.C. App.).

(2) Supplement and not supplant.—The amounts authorized to be appropriated under this section shall supplement, and not supplant, any other amounts previously appropriated to the Office of the Inspector General of the Foundation.

(3) No new awards.—The Director shall not make any new awards for the activities under the Directorate for any fiscal year in which the total amount appropriated to the Foundation (not including amounts appropriated for the Directorate) is less than the total amount appropriated to the Foundation (not including such amounts), adjusted by the rate of inflation, for the previous fiscal year.
(4) No funds for construction.—No funds provided to the Directorate under this section shall be used for construction.

SEC. 117. AUTHORIZATION OF APPROPRIATIONS FOR THE DEPARTMENT OF ENERGY.

(a) Authorization of Appropriations.—

(1) Fiscal Year 2022.—There is authorized to be appropriated to the Department of Energy $1,000,000,000 for fiscal year 2022 to carry out research and development in the key technology focus areas.

(2) Fiscal Year 2023.—There is authorized to be appropriated to the Department of Energy $1,800,000,000 for fiscal year 2023 to carry out research and development in the key technology focus areas.

(3) Fiscal Year 2024.—There is authorized to be appropriated to the Department of Energy $3,700,000,000 for fiscal year 2024 to carry out research and development in the key technology focus areas.

(4) Fiscal Year 2025.—There is authorized to be appropriated to the Department of Energy $4,900,000,000 for fiscal year 2025 to carry out re-
search and development in the key technology focus areas.

(5) **FISCAL YEAR 2026.**—There is authorized to be appropriated to the Department of Energy $5,500,000,000 for fiscal year 2026 to carry out research and development in the key technology focus areas.

(b) **SUPPLEMENT AND NOT SUPPLANT.**—The amounts authorized to be appropriated under this section shall supplement, and not supplant, any other amounts previously authorized to be appropriated to the Department of Energy.

(c) **NO FUNDS FOR CONSTRUCTION.**—No funds provided to the Department of Energy under this section shall be used for construction.

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

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

(a) **CHIEF DIVERSITY OFFICER.**—

(1) **APPOINTMENT.**—The President shall appoint, by and with the consent of the Senate, a Chief Diversity Officer of the Foundation.

(2) **QUALIFICATIONS.**—The Chief Diversity Officer shall have significant experience, within the Fed-
eral Government and the science community, with
diversity- and inclusion-related matters, including—

(A) civil rights compliance;
(B) harassment policy, reviews, and inves-
tigations;
(C) equal employment opportunity; and
(D) disability policy.

(3) OVERSIGHT.—The Chief Diversity Officer
shall direct the Office of Diversity and Inclusion of the Foundation and report directly to the Director in the performance of the duties of the Chief Diversity Officer under this section.

(b) DUTIES.—The Chief Diversity Officer is respon-
sible for providing advice on policy, oversight, guidance, and coordination with respect to matters of the Foundation related to diversity and inclusion, including ensuring the geographic diversity of the Foundation programs. Other du-
ties may include—

(1) establishing and maintaining a strategic plan that publicly states a diversity definition, vi-
sion, and goals for the Foundation;
(2) defining a set of strategic metrics that are—
(A) directly linked to key organizational priorities and goals;
(B) actionable; and
(C) actively used to implement the strategic plan under paragraph (1);

(3) advising in the establishment of a strategic plan for diverse participation by individuals and institutions of higher education, including community colleges, historically Black colleges and universities, Tribal colleges or universities, minority-serving institutions, institutions of higher education with an established STEM capacity building program focused on traditionally underrepresented populations in STEM, including Native Hawaiians, Alaska Natives, and other Indians, and institutions from jurisdictions eligible to participate under section 113 of the National Science Foundation Authorization Act of 1988 (42 U.S.C. 1862g);

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

(5) advising on the application of the Foundation’s broader impacts review criterion; and

(6) performing such additional duties and exercise such powers as the Director may prescribe.

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

SEC. 202. PROGRAMS TO ADDRESS THE STEM WORKFORCE.

(a) In General.—The Director shall issue undergraduate scholarships, including at community colleges, graduate fellowships and traineeships, postdoctoral awards, and, as appropriate, other awards.

(b) Implementation.—The Director may carry out subsection (a) by making awards—

(1) directly to students; or

(2) to institutions of higher education or consortia of institutions of higher education, including those institutions or consortia involved in operating university technology centers established under section 104(a).

(c) Broadening Participation.—In carrying out this section, the Director shall take steps to increase the participation of populations that are underrepresented in STEM, which may include—

(1) establishing or augmenting programs targeted at populations that are underrepresented in STEM;

(2) supporting traineeships or other relevant programs at minority-serving institutions (or institutions of higher education with an established STEM
capacity building program focused on traditionally underrepresented populations in STEM, including Native Hawaiians, Alaska Natives, and other Indians);

(3) addressing current and expected gaps in the availability and skills of the STEM workforce, or addressing the needs of the STEM workforce, including by prioritizing awards to United States citizens, permanent residents, and individuals that will grow the domestic workforce;

(4) addressing geographic diversity in the STEM workforce; and

(5) awarding grants to institutions of higher education to address STEM workforce gaps, including for programs that recruit, retain, and progress students to a bachelor’s degree in a STEM discipline concurrent with a secondary school diploma, such as through existing and new partnerships with State educational agencies.

(d) INNOVATION.—

(1) GRADUATE EDUCATION.—In carrying out this section, the Director shall encourage innovation in graduate education, and studying the impacts of such innovations, including through encouraging institutions of higher education to offer graduate stu-
dents opportunities to gain experience in industry or government as part of their graduate training, and through support for students in professional masters programs related to the key technology focus areas.

(2) POSTDOCTORAL PROFESSIONAL DEVELOPMENT.—In carrying out this section, the Director shall encourage innovation in postdoctoral professional development, support the development and diversity of the STEM workforce, and study the impacts of such innovation and support. To do so, the Director may use postdoctoral awards established under subsection (a) or leveraged under subsection (e)(1) for fellowships or other temporary rotational postings of not more than 2 years. Such fellowships or temporary rotational postings shall be awarded—

(A) to qualified individuals who have a doctoral degree and received such degree not earlier than 5 years before the date that the fellowship or temporary rotational posting begins; and

(B) to carry out research in the key technology focus areas at Federal, State, local, and Tribal government research facilities.

(3) DIRECT HIRE AUTHORITY.—

(A) IN GENERAL.—During fiscal year 2021 and any fiscal year thereafter, the head of any
Federal agency may appoint, without regard to the provisions of subchapter I of chapter 33 of title 5, United States Code, other than sections 3303 and 3328 of that title, a qualified candidate described in subparagraph (B) directly to a position in the competitive service with the Federal agency for which the candidate meets Office of Personnel Management qualification standards.

(B) Fellowship or temporary rotational posting.—Subparagraph (A) applies with respect to a former recipient of an award under this subsection who—

(i) earned a doctoral degree in a STEM field from an institution of higher education; and

(ii) successfully fulfilled the requirements of the fellowship or temporary rotational posting within a Federal agency.

(C) Limitation.—The direct hire authority under this paragraph shall be exercised with respect to a specific qualified candidate not later than 2 years after the date that the candidate completed the requirements related to the fellow-
ship or temporary rotational posting described under this subsection.

(e) Existing Programs.—In carrying out this section, the Director may leverage existing programs, including programs that issue—

(1) postdoctoral awards;

(2) graduate fellowships and traineeships, inclusive of the NSF Research Traineeships and fellowships awarded under the Graduate Research Fellowship Program; and

(3) scholarships, research experiences, and internships, including—

(A) scholarships to attend community colleges; and

(B) research experiences and internships under sections 513, 514, and 515 of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 1862p-5; 1862p-6; 42 U.S.C. 1862p-7);

and

(4) awards to institutions of higher education to enable the institutions to fund innovation in undergraduate and graduate education, increased educational capacity, and the development and establishment of new or specialized programs of study for graduate, undergraduate, or technical college students,
and the evaluation of the effectiveness of the programs
of study.

(f) SET ASIDE.—The Director shall ensure that not less
than 20 percent of the funds available to carry out this sec-
tion shall be used to support institutions of higher edu-
cation, and other institutions, located in jurisdictions that
participate in the program under section 113 of the Na-
tional Science Foundation Authorization Act of 1988 (42
U.S.C. 1862g).

SEC. 203. EMERGING RESEARCH INSTITUTION PILOT PRO-
GRAM.

(a) In General.—The Director shall establish a 5-
year pilot program for awarding grants to eligible partner-
ships, led by 1 or more emerging research institutions, to
build research and education capacity at emerging research
institutions to enable such institutions to contribute to pro-
grams run by the Directorate.

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

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

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

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

(3) maintenance and repair of research equipment and instrumentation.

(d) DEFINITION OF ELIGIBLE PARTNERSHIP.—In this section, the term “eligible partnership” means a partnership of—

(1) at least 1 emerging research institution; and

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

SEC. 204. PERSONNEL MANAGEMENT AUTHORITIES FOR THE FOUNDATION.

(a) EXPERTS IN SCIENCE AND ENGINEERING.—

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

(2) PERSONNEL MANAGEMENT AUTHORITY.— Under the program under paragraph (1), the Foundation may—

(A) without regard to any provision of title 5, United States Code, governing the appointment of employees in the civil service, appoint individuals to a total of not more than 140 positions in the Foundation, of which not more than 5 such positions may be positions of administration or management of the Foundation;

(B) notwithstanding any provision of title 5, United States Code, governing the rates of pay or classification of employees in the executive branch, prescribe the rates of basic pay for positions to which employees are appointed under subparagraph (A)—

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

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

(C) pay any employee appointed under subparagraph (A), other than an employee appointed to a position designated as described in subparagraph (B)(i), payments in addition to basic pay within the limit applicable to the employee under paragraph (4).

(3) LIMITATION ON TERM OF APPOINTMENT.—

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

(B) EXTENSION.—The Director may, in the case of a particular employee under the program under paragraph (1), extend the period to which
service is limited under subparagraph (A) by up to 2 years if the Director determines that such action is necessary to promote the efficiency of the Foundation, as applicable.

(4) **MAXIMUM AMOUNT OF ADDITIONAL PAYMENTS PAYABLE.**—Notwithstanding any other provision of this subsection or section 5307 of title 5, United States Code, no additional payments may be paid to an employee under paragraph (2)(C) in any calendar year if, or to the extent that, the employee’s total annual compensation in such calendar year will exceed the maximum amount of total annual compensation payable at the salary set in accordance with section 104 of title 3, United States Code.

(b) **HIGHLY QUALIFIED EXPERTS IN NEEDED OCCUPATIONS.**—

(1) **IN GENERAL.**—The Foundation may carry out a program using the authority provided in paragraph (2) in order to attract highly qualified experts in needed occupations, as determined by the Foundation. Individuals hired by the Director through such authority may include individuals with expertise in business creativity, innovation management, design thinking, entrepreneurship, venture capital, and related fields.
(2) AUTHORITY.—Under the program, the Foundation may—

(A) appoint personnel from outside the civil service and uniformed services (as such terms are defined in section 2101 of title 5, United States Code) to positions in the Foundation without regard to any provision of title 5, United States Code, governing the appointment of employees to positions in the Foundation;

(B) prescribe the rates of basic pay for positions to which employees are appointed under subparagraph (A) at rates not in excess of the maximum rate of basic pay authorized for senior-level positions under section 5376 of title 5, United States Code, as increased by locality-based comparability payments under section 5304 of such title, notwithstanding any provision of such title governing the rates of pay or classification of employees in the executive branch; and

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

(3) LIMITATION ON TERM OF APPOINTMENT.—
(A) In general.—Except as provided in subparagraph (B), the service of an employee under an appointment made pursuant to this subsection may not exceed 5 years.

(B) Extension.—The Foundation may, in the case of a particular employee, extend the period to which service is limited under subparagraph (A) by up to 1 additional year if the Foundation determines that such action is necessary to promote the Foundation’s national security missions.

(4) Limitations on additional payments.—

(A) Total amount.—

(i) In general.—The total amount of the additional payments paid to an employee under this subsection for any 12-month period may not exceed the lesser of the following amounts:

(I) $50,000 in fiscal year 2021, which may be adjusted annually thereafter by the Foundation, with a percentage increase equal to one-half of 1 percentage point less than the percentage by which the Employment Cost Index, published quarterly by the Bu-
reau of Labor Statistics, for the base quarter of the year before the preceding calendar year exceeds the Employment Cost Index for the base quarter of the second year before the preceding calendar year.

(II) The amount equal to 50 percent of the employee’s annual rate of basic pay.

(ii) Definition of Base Quarter.—

For purposes of this subparagraph, the term “base quarter” has the meaning given such term by section 5302(3) of title 5, United States Code.

(B) Eligibility for Payments.—An employee appointed under this subsection is not eligible for any bonus, monetary award, or other monetary incentive for service, except for payments authorized under this subsection.

(C) Additional Limitation.—Notwithstanding any other provision of this paragraph or of section 5307 of title 5, United States Code, no additional payments may be paid to an employee under this subsection in any calendar year if, or to the extent that, the employee’s total
annual compensation will exceed the maximum amount of total annual compensation payable at the salary set in accordance with section 104 of title 3, United States Code.

(5) LIMITATION ON NUMBER OF HIGHLY QUALIFIED EXPERTS.—The number of highly qualified experts appointed and retained by the Foundation under paragraph (2)(A) shall not exceed 140 at any time.

(6) SAVINGS PROVISIONS.—In the event that the Foundation terminates the program under this subsection, in the case of an employee who, on the day before the termination of the program, is serving in a position pursuant to an appointment under this subsection—

(A) the termination of the program does not terminate the employee’s employment in that position before the expiration of the lesser of—

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

(ii) the period to which the employee’s service is limited under paragraph (3), including any extension made under this subsection before the termination of the program; and
(B) the rate of basic pay prescribed for the position under this subsection may not be reduced as long as the employee continues to serve in the position without a break in service.

(c) ADDITIONAL HIRING AUTHORITY.—To the extent needed to carry out the duties under subsection (a)(1), the Director is authorized to utilize hiring authorities under section 3372 of title 5, United States Code, to staff the Foundation with employees from other Federal agencies, State and local governments, Indian Tribes and Tribal organizations, institutions of higher education, and other organizations, as described in that section, in the same manner and subject to the same conditions, that apply to such individuals utilized to accomplish other missions of the Foundation.

(d) NATIONAL ACADEMY OF PUBLIC ADMINISTRATION.—

(1) STUDY.—Not later than 30 days after the date of enactment of this Act, the Director shall contract with the National Academy of Public Administration to conduct a study on the organizational and management structure of the Foundation, to—

(A) evaluate and make recommendations to efficiently and effectively implement the Directorate for Technology and Innovation;
(B) evaluate and make recommendations to ensure coordination of the Directorate for Technology and Innovation with other directorates and offices of the Foundation and other Federal agencies; and

(C) make recommendations for the management of the Foundation’s business and personnel practices, including implementation of the new hiring authorities and program director authorities provided in this section and section 103.

(2) REVIEW.—Upon completion of the study under paragraph (1), the Foundation shall review the recommendations from the National Academy of Public Administration and provide a briefing to Congress on the plans of the Foundation to implement any such recommendations.

SEC. 205. ADVANCED TECHNOLOGICAL MANUFACTURING ACT.

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

(1) in subsection (a)—

(A) in paragraph (3), by striking “science, mathematics, and technology” and inserting
“science, technology, engineering, and mathematics or STEM”;

(B) in paragraph (4), by inserting “educated” and before “trained”; and

(C) in paragraph (5), by striking “scientific and technical education and training” and inserting “STEM education and training”; and

(2) in subsection (b)—

(A) in paragraph (2), by striking “mathematics and science” and inserting “STEM fields”; and

(B) in paragraph (4), by striking “mathematics and science instruction” and inserting “STEM instruction”.

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

(1) in the section heading, by striking “SCIENTIFIC AND TECHNICAL EDUCATION” and inserting “STEM EDUCATION”;

(2) in subsection (a)—

(A) in the subsection heading, by striking “SCIENTIFIC AND TECHNICAL EDUCATION” and inserting “STEM EDUCATION”;
(B) in the matter preceding paragraph

(1)—

(i) by inserting “and education to prepare the skilled technical workforce to meet workforce demands” before “, and to improve”;

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

(iii) by inserting “veterans and individuals engaged in” before “work in the home”; and

(iv) by inserting “and on building a pathway from secondary schools, to associate-degree-granting institutions, to careers that require technical training” before “, and shall be designed”; 

(C) in paragraph (1)—

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

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

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

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

(F) in paragraph (4), by striking “scientific and advanced-technology fields” and inserting “STEM and advanced-technology fields”; and 

(G) in paragraph (5), by striking “advanced scientific and technical education” and inserting “advanced STEM and advanced-technology”; 

(3) in subsection (b)—

(A) by striking the subsection heading and inserting the following: “CENTERS OF SCIENTIFIC AND TECHNICAL EDUCATION.—”; 

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

(C) in paragraph (2), by striking “education in mathematics and science” and inserting “STEM education”; and
(D) in the flush matter following paragraph (2), by striking “in the geographic region served by the center”;
(4) in subsection (c)—
(A) in paragraph (1)—
(i) in subparagraph (A)—
(I) in the matter preceding clause (i), by striking “to encourage” and all that follows through “such means as—” and inserting “to encourage the development of career and educational pathways with multiple entry and exit points leading to credentials and degrees, and to assist students pursuing pathways in STEM fields to transition from associate-degree-granting colleges to bachelor-degree-granting institutions, through such means as—”;
(II) in clause (i), by striking “to ensure” and inserting “to develop articulation agreements that ensure”; and
(III) in clause (ii), by striking “courses at the bachelor-degree-granting institution” and inserting “the ca-
reer and educational pathways sup-
ported by the articulation agreements”;

(ii) in subparagraph (B)—

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

(II) in clause (iii)—

(aa) by striking “bachelor’s-
dergree-granting institutions” and
inserting “institutions or work
sites”; and

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

(III) by striking the flush text fol-
lowing clause (iv); and

(iii) by striking subparagraph (C);

(B) in paragraph (2)—

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

(ii) by inserting “and, as appropriate,
elementary schools,” after “with secondary
schools”;
(iii) by striking “mathematics and science education” and inserting “STEM education”;

(iv) by striking “secondary school students” and inserting “students at these schools”;

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

(vi) by striking “agreements with local educational agencies” and inserting “articulation agreements or dual credit courses with local secondary schools, or other means as the Director determines appropriate,”; and

(C) in paragraph (3)—

(i) by striking subparagraph (B);

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

(iii) by striking “the fields of science, technology, engineering, and mathematics” and inserting “STEM fields”; and
(iv) by striking “; and” and inserting “, including jobs at Federal and academic laboratories.”;

(5) in subsection (d)(2)—

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

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

(C) by adding at the end the following:

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

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

(7) in subsection (h)(1)—

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

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

(C) in subparagraph (C)—

(i) by striking “up to $2,500,000” and inserting “not less than $3,000,000”; and
(ii) by striking “2022” and inserting “2026”; 

(8) in subsection (i)—

(A) by striking paragraph (3); and 

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

(9) in subsection (j)—

(A) by striking paragraph (1) and inserting the following:

“(1) the term advanced-technology includes technological fields such as advanced manufacturing, agricultural-, biological- and chemical-technologies, energy and environmental technologies, engineering technologies, information technologies, micro and nano-technologies, cybersecurity technologies, geospatial technologies, and new, emerging technology areas;”;

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

(C) by striking paragraph (7);

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

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

(i) by striking “mathematics, science, engineering, or technology” and inserting “science, technology, engineering, or mathematics”; and

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

(G) by adding at the end the following:

“(9) the term skilled technical workforce means workers—

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

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

(c) Authorization of Appropriations.—Section 5 of the Scientific and Advanced-Technology Act of 1992 (42 U.S.C. 1862j) is amended to read as follows:

“SEC. 5. AUTHORIZATION OF APPROPRIATIONS.

“There are authorized to be appropriated to the Director (from sums otherwise authorized to be appropriated for
the Foundation) for carrying out sections 2 through 4, $150,000,000 for fiscal years 2022 through 2026.”.

SEC. 206. INTRAMURAL EMERGING INSTITUTIONS PILOT PROGRAM.

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

(b) COMPONENTS.—Each pilot program described in subsection (a) shall include at least 1 of the following elements:

(1) A mentorship program.

(2) Grant writing technical assistance.

(3) Targeted outreach, including to a minority-serving institution (including a historically Black college or university, a Tribal college or university, or a Hispanic-serving institution or an institution of higher education with an established STEM capacity building program focused on traditionally underrepresented populations in STEM, including Native Hawaiians, Alaska Natives, and other Indians).
(4) Programmatic support or solutions for institutions or entities that do not have an experienced grant management office.

(5) An increase in the number of grant reviewers from institutions of higher education that have not traditionally received funds from the Foundation.

(6) An increase of the term and funding, for a period of 3 years or less, as appropriate, to a principal investigator that is a first-time grant awardee, when paired with regular mentoring on the administrative aspects of grant management.

(c) LIMITATION.—As appropriate, each pilot program described in subsection (a) shall work to reduce administrative burdens.

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

(1) review the results of the pilot programs described in subsection (a); and

(2) develop agency-wide best practices from the pilot programs for implementation across the Foundation, in order to fulfill the requirement under section 3(e) of the National Science Foundation Act of 1950 (42 U.S.C. 1862(e)).
SEC. 207. PUBLIC-PRIVATE PARTNERSHIPS.

(a) In General.—The Director shall pursue partnerships with private industry, private foundations, or other appropriate private entities to—

(1) enhance the impact of the Foundation’s investments and contributions to the United States economic competitiveness and security; and

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

(b) Merit Review.—Nothing in this section shall be construed as altering any intellectual or broader impacts criteria at the Foundation for evaluating grant applications.

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

(a) Definitions.—In this section:

(1) Artificial Intelligence.—The term “artificial intelligence” or “AI” has the meaning given the term “artificial intelligence” in section 238(g) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (10 U.S.C. 2358 note).

(2) Executive Agency.—The term “executive agency” has the meaning given the term “Executive agency” in section 105 of title 5, United States Code.

(3) Registered Internship.—The term “registered internship” means a Federal Registered In-
ternship Program coordinated through the Department of Labor.

(b) In General.—The Director, in coordination with the Director of the Office of Personnel Management, the Director of the National Institute of Standards and Technology, and the heads of other agencies with appropriate scientific knowledge, shall establish a Federal artificial intelligence scholarship-for-service program (referred to in this section as the Federal AI Scholarship-for-Service Program) to recruit and train artificial intelligence professionals to lead and support the application of artificial intelligence to the missions of Federal, State, local, and Tribal governments.

(c) Qualified Institution of Higher Education.—The Director, in coordination with the heads of other agencies with appropriate scientific knowledge, shall establish criteria to designate qualified institutions of higher education that shall be eligible to participate in the Federal AI Scholarship-for-Service program. Such criteria shall include—

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

(2) measures of the institution’s ability to attract and retain a diverse and non-traditional stu-
dent population in the fields of science, technology, engineering, and mathematics, which may include the ability to attract women, minorities, and individuals with disabilities.

(d) PROGRAM DESCRIPTION AND COMPONENTS.—The Federal AI Scholarship-for-Service Program shall—

(1) provide scholarships through qualified institutions of higher education to students who are enrolled in programs of study at institutions of higher education leading to degrees or concentrations in or related to the artificial intelligence field;

(2) provide the scholarship recipients with summer internship opportunities, registered internships, or other meaningful temporary appointments in the Federal workforce focusing on AI projects or research;

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

(4) identify opportunities to promote multi-disciplinary programs of study that integrate basic or advanced AI training with other fields of study, including those that address the social, economic, legal, and ethical implications of human interaction with AI systems; and

(5) support capacity-building education research programs that will enable postsecondary educational
institutions to expand their ability to train the next-
generation AI workforce, including AI researchers and
practitioners.

(e) SCHOLARSHIP AMOUNTS.—Each scholarship under
subsection (d) shall be in an amount that covers the stu-
dent’s tuition and fees at the institution for not more than
3 years and provides the student with an additional sti-
pend.

(f) POST-AWARD EMPLOYMENT OBLIGATIONS.—Each
scholarship recipient, as a condition of receiving a scholar-
ship under the program, shall enter into an agreement
under which the recipient agrees to work for a period equal
to the length of the scholarship, following receipt of the stu-
dent’s degree, in the AI mission of—

(1) an executive agency;

(2) Congress, including any agency, entity, of-
office, or commission established in the legislative
branch;

(3) an interstate agency;

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

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

(g) Hiring Authority.—

(1) Appointment in Excepted Service.—Notwithstanding any provision of chapter 33 of title 5, United States Code, governing appointments in the competitive service, an executive agency may appoint an individual who has completed the eligible degree program for which a scholarship was awarded to a position in the excepted service in the executive agency.

(2) Noncompetitive Conversion.—Except as provided in paragraph (4), upon fulfillment of the service term, an employee appointed under paragraph (1) may be converted noncompetitively to term, career-conditional, or career appointment.

(3) Timing of Conversion.—An executive agency may noncompetitively convert a term employee appointed under paragraph (2) to a career-conditional or career appointment before the term appointment expires.

(4) Authority to Decline Conversion.—An executive agency may decline to make the noncompetitive conversion or appointment under paragraph (2) for cause.
(h) **Eligibility.**—To be eligible to receive a scholarship under this section, an individual shall—

1. be a citizen or lawful permanent resident of the United States;
2. demonstrate a commitment to a career in advancing the field of AI;
3. be—
   1. a full-time student in an eligible degree program at a qualified institution of higher education, as determined by the Director;
   2. a student pursuing a degree on a less than full-time basis, but not less than half-time basis; or
   3. an AI faculty member on sabbatical to advance knowledge in the field; and
4. accept the terms of a scholarship under this section.

(i) **Conditions of support.**—

1. **In general.**—As a condition of receiving a scholarship under this section, a recipient shall agree to provide the qualified institution of higher education with annual verifiable documentation of post-award employment and up-to-date contact information.
(2) TERMS.—A scholarship recipient under this section shall be liable to the United States as provided in subsection (k) if the individual—

(A) fails to maintain an acceptable level of academic standing at the applicable institution of higher education, as determined by the Director;

(B) is dismissed from the applicable institution of higher education for disciplinary reasons;

(C) withdraws from the eligible degree program before completing the program;

(D) declares that the individual does not intend to fulfill the post-award employment obligation under this section; or

(E) fails to fulfill the post-award employment obligation of the individual under this section.

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

(1) enter into an agreement with the Director to monitor the compliance of scholarship recipients with respect to their post-award employment obligations; and
(2) provide to the Director, on an annual basis, the post-award employment documentation required under subsection (i) for scholarship recipients through the completion of their post-award employment obligations.

(h) AMOUNT OF REPAYMENT.—

(1) LESS THAN 1 YEAR OF SERVICE.—If a circumstance described in subsection (i)(2) occurs before the completion of 1 year of a post-award employment obligation under this section, the total amount of scholarship awards received by the individual under this section shall—

(A) be repaid; or

(B) be treated as a loan to be repaid in accordance with subsection (l).

(2) 1 OR MORE YEARS OF SERVICE.—If a circumstance described in subparagraph (D) or (E) of subsection (i)(2) occurs after the completion of 1 or more years of a post-award employment obligation under this section, the total amount of scholarship awards received by the individual under this section, reduced by the ratio of the number of years of service completed divided by the number of years of service required, shall—

(A) be repaid; or
(B) be treated as a loan to be repaid in accordance with subsection (l).

(l) Repayments.—A loan described in subsection (k) shall—

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

(2) be subject to repayment, together with interest thereon accruing from the date of the scholarship award, in accordance with terms and conditions specified by the Director (in consultation with the Secretary of Education).

(m) Collection of Repayment.—

(1) In General.—In the event that a scholarship recipient is required to repay the scholarship award under this section, the qualified institution of higher education providing the scholarship shall—

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

(B) collect the repayment amounts within a period of time as determined by the Director, or the repayment amounts shall be treated as a loan in accordance with subsection (l).
(2) RETURNED TO TREASURY.—Except as provided in paragraph (3), any repayment under this subsection shall be returned to the Treasury of the United States.

(3) RETAIN PERCENTAGE.—A qualified institution of higher education may retain a percentage of any repayment the institution collects under this subsection to defray administrative costs associated with the collection. The Director shall establish a fixed percentage that will apply to all eligible entities, and may update this percentage as needed, in the determination of the Director.

(n) EXCEPTIONS.—The Director may provide for the partial or total waiver or suspension of any service or payment obligation by an individual under this section whenever compliance by the individual with the obligation is impossible or would involve extreme hardship to the individual, or if enforcement of such obligation with respect to the individual would be unconscionable.

(o) PUBLIC INFORMATION.—

(1) EVALUATION.—The Director, in coordination with the Director of the Office of Personnel Management, shall annually evaluate and make public, in a manner that protects the personally identifiable information of scholarship recipients, information on the
success of recruiting individuals for scholarships
under this section and on hiring and retaining those
individuals in the public sector AI workforce, includ-
ing information on—

(A) placement rates;

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

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

(D) how long after graduation students are
placed;

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

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

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

(2) REPORTS.—The Director, in coordination
with the Office of Personnel Management, shall sub-
mit, not less frequently than once every 3 years, to the
Committee on Homeland Security and Governmental
Affairs of the Senate, the Committee on Commerce,
Science, and Transportation of the Senate, the Com-
mittee on Science, Space, and Technology of the
House of Representatives, and the Committee on
Oversight and Reform of the House of Representatives

a report, including the results of the evaluation under
paragraph (1) and any recent statistics regarding the
size, composition, and educational requirements of the
Federal AI workforce.

(3) RESOURCES.—The Director, in coordination
with the Director of the Office of Personnel Manage-
ment, shall provide consolidated and user-friendly on-
line resources for prospective scholarship recipients,
including, to the extent practicable—

(A) searchable, up-to-date, and accurate in-
formation about participating institutions of
higher education and job opportunities related to
the AI field; and

(B) a modernized description of AI careers.

(p) REFRESH.—Not less than once every 2 years, the
Director, in coordination with the Director of the Office of
Personnel Management, shall review and update the Fed-
eral AI Scholarship-for-Service Program to reflect advances
in technology.

SEC. 209. GEOGRAPHIC DIVERSITY.

(a) DIRECTORATE.—The Director shall use not less
than 20 percent of the funds provided to the Directorate,
for each fiscal year, to carry out the program under section
113 of the National Science Foundation Authorization Act

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

c) DEPARTMENT OF ENERGY.—The Secretary of Energy shall use not less than 20 percent of the funds provided to the Department of Energy under section 117 for each fiscal year to carry out the program under section 2203(b)(3) of the Energy Policy Act of 1992 (42 U.S.C. 13503(b)(3)).

d) CONSORTIA.—In the case of an award to a consortium under this Act, the Director may count the entire award toward meeting the funding requirements of this section if the lead entity of the consortium is located in a jurisdiction that is eligible to participate in the program under section 113 of the National Science Foundation Authorization Act of 1988 (42 U.S.C. 1862g). In the case of an award to a consortium under this Act, the Secretary may count the entire award toward meeting the funding requirements of this section if the lead entity of the consortium is located in a jurisdiction that is eligible to participate in the pro-
gram under section 2203(b)(3) of the Energy Policy Act of 1992 (42 U.S.C. 13503(b)(3)).

SEC. 210. RURAL STEM EDUCATION ACT.

(a) Definitions.—In this section:

(1) Federal laboratory.—The term “Federal laboratory” has the meaning given such term in section 4 of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3703).

(2) Institution of higher education.—The term “institution of higher education” has the meaning given such term in section 101(a) of the Higher Education Act of 1965 (20 U.S.C. 1001(a)).

(3) STEM.—The term “STEM” has the meaning given the term in section 2 of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 6621 note).

(4) STEM education.—The term “STEM education” has the meaning given the term in section 2 of the STEM Education Act of 2015 (42 U.S.C. 6621 note).

(b) National Science Foundation Rural STEM Activities.—

(1) Preparing rural STEM educators.—

(A) In general.—The Director shall provide grants on a merit-reviewed, competitive
basis to institutions of higher education or non-profit organizations (or a consortium thereof) for research and development to advance innovative approaches to support and sustain high-quality STEM teaching in rural schools.

(B) USE OF FUNDS.—

(i) In general.—Grants awarded under this paragraph shall be used for the research and development activities referred to in subparagraph (A), which may include—

(I) engaging rural educators of students in prekindergarten through grade 12 in professional learning opportunities to enhance STEM knowledge, including computer science, and develop best practices;

(II) supporting research on effective STEM teaching practices in rural settings, including the use of rubrics and mastery-based grading practices to assess student performance when employing the transdisciplinary teaching approach for STEM disciplines;
designing and developing pre-service and in-service training resources to assist such rural educators in adopting transdisciplinary teaching practices across STEM courses;

(IV) coordinating with local partners to adapt STEM teaching practices to leverage local, natural, and community assets in order to support in-place learning in rural areas;

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

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

(VII) designing and implementing professional development courses and experiences, including mentoring, for rural educators described in subclause (I) that combine face-to-face and online experiences; and
(VIII) any other activity the Director determines will accomplish the goals of this paragraph.

(ii) **Rural STEM Collaborative.**—

The Director shall establish a pilot program of regional cohorts in rural areas that will provide peer support, mentoring, and hands-on research experiences for rural STEM educators of students in prekindergarten through grade 12, in order to build an ecosystem of cooperation among educators, researchers, academia, and local industry.

(2) **Broadening Participation of Rural Students in STEM.**—

(A) **In General.**—The Director shall provide grants on a merit-reviewed, competitive basis to institutions of higher education or nonprofit organizations (or a consortium thereof) for—

(i) research and development of programming to identify the barriers rural students face in accessing high-quality STEM education; and
(ii) development of innovative solutions to improve the participation and advancement of rural students in prekindergarten through grade 12 in STEM studies.

(B) USE OF FUNDS.—

(i) In general.—Grants awarded under this paragraph shall be used for the research and development activities referred to in subparagraph (A), which may include—

(I) developing partnerships with community colleges to offer advanced STEM course work, including computer science, to rural high school students;

(II) supporting research on effective STEM practices in rural settings;

(III) implementing a school-wide STEM approach;

(IV) improving the Foundation’s Advanced Technology Education program’s coordination and engagement with rural communities;

(V) collaborating with existing community partners and networks,
such as the Cooperative Extension System services and extramural research programs of the Department of Agriculture and youth serving organizations like 4–H, after school STEM programs, and summer STEM programs, to leverage community resources and develop place-based programming;

(VI) connecting rural school districts and institutions of higher education, to improve precollegiate STEM education and engagement;

(VII) supporting partnerships that offer hands-on inquiry-based science activities, including coding, and access to lab resources for students studying STEM in prekindergarten through grade 12 in a rural area;

(VIII) evaluating the role of broadband connectivity and its associated impact on the STEM and technology literacy of rural students;

(IX) building capacity to support extracurricular STEM programs in rural schools, including mentor-led en-
gagement programs, STEM programs held during nonschool hours, STEM networks, makerspaces, coding activities, and competitions; and

(X) any other activity the Director determines will accomplish the goals of this paragraph.

(3) APPLICATION.—An applicant seeking a grant under paragraph (1) or (2) shall submit an application at such time, in such manner, and containing such information as the Director may require. The application may include the following:

(A) A description of the target population to be served by the research activity or activities for which such grant is sought.

(B) A description of the process for recruitment and selection of students, educators, or schools from rural areas to participate in such activity or activities.

(C) A description of how such activity or activities may inform efforts to promote the engagement and achievement of rural students in prekindergarten through grade 12 in STEM studies.
(D) In the case of a proposal consisting of
a partnership or partnerships with one or more
rural schools and one or more researchers, a plan
for establishing a sustained partnership that is
jointly developed and managed, draws from the
capacities of each partner, and is mutually bene-
ficial.

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

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

(B) encourage applicants which, for the
purpose of the activity or activities funded
through the grant, include or partner with a con-
sortium of rural schools or rural school districts.

(5) EVALUATIONS.—All proposals for grants
under paragraphs (1) and (2) shall include an eval-
uation plan that includes the use of outcome-oriented
measures to assess the impact and efficacy of the
grant. Each recipient of a grant under this subsection shall include results from these evaluative activities in annual and final projects.

(6) ACCOUNTABILITY AND DISSEMINATION.—

(A) EVALUATION REQUIRED.—The Director shall evaluate the portfolio of grants awarded under paragraphs (1) and (2). Such evaluation shall—

(i) assess the results of research conducted under such grants and identify best practices; and

(ii) to the extent practicable, integrate the findings of research resulting from the activity or activities funded through such grants with the findings of other research on rural students’ pursuit of degrees or careers in STEM.

(B) REPORT ON EVALUATIONS.—Not later than 180 days after the completion of the evaluation under subparagraph (A), the Director shall submit to Congress and make widely available to the public a report that includes—

(i) the results of the evaluation; and

(ii) any recommendations for administrative and legislative action that could op-
timize the effectiveness of the grants awarded under this subsection.

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

(A) a description of past and present policies and activities of the Foundation to encourage full participation of students in rural communities in science, mathematics, engineering, and computer science fields; and

(B) an assessment of the policies and activities of the Foundation, along with proposals for new strategies or the broadening of existing successful strategies towards facilitating the goal of increasing participation of rural students in prekindergarten through grade 12 in Foundation activities.

(8) COORDINATION.—In carrying out this subsection, the Director shall, for purposes of enhancing program effectiveness and avoiding duplication of ac-
tivities, consult, cooperate, and coordinate with the
programs and policies of other relevant Federal agen-
cies.

(c) OPPORTUNITIES FOR ONLINE EDUCATION.—

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

(2) RESEARCH AREAS.—The research areas eligi-
ble for funding under this subsection shall include—

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

(B) understanding how computer-based and
online professional development courses and
mentor experiences can be integrated to meet the
needs of educators of rural students in prekinder-
garten through grade 12;

(C) combining computer-based and online
STEM education and training with apprentice-
ships, mentoring, or other applied learning ar-
rangements;
(D) leveraging online programs to supplement STEM studies for rural students that need physical and academic accommodation; and

(E) any other activity the Director determines will accomplish the goals of this subsection.

(3) Evaluations.—All proposals for grants under this subsection shall include an evaluation plan that includes the use of outcome-oriented measures to assess the impact and efficacy of the grant. Each recipient of a grant under this subsection shall include results from these evaluative activities in annual and final projects.

(4) Accountability and Dissemination.—

(A) Evaluation Required.—The Director shall evaluate the portfolio of grants awarded under this subsection. Such evaluation shall—

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

(ii) to the extent practicable, integrate findings from activities carried out pursuant to research conducted under this subsection, with respect to the pursuit of ca-
reers and degrees in STEM, with those activities carried out pursuant to other research on serving rural students and communities.

(B) REPORT ON EVALUATIONS.—Not later than 180 days after the completion of the evaluation under subparagraph (A), the Director shall submit to Congress and make widely available to the public a report that includes—

(i) the results of the evaluation; and

(ii) any recommendations for administrative and legislative action that could optimize the effectiveness of the grants awarded under this subsection.

(5) COORDINATION.—In carrying out this subsection, the Director shall, for purposes of enhancing program effectiveness and avoiding duplication of activities, consult, cooperate, and coordinate with the programs and policies of other relevant Federal agencies.

(d) NATIONAL ACADEMIES OF SCIENCES, ENGINEERING, AND MEDICINE EVALUATION.—

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

(A) evaluates the quality and quantity of current Federal programming and research directed at examining STEM education for students in prekindergarten through grade 12 and workforce development in rural areas;

(B) in coordination with the Federal Communications Commission, assesses the impact that the scarcity of broadband connectivity in rural communities, and the affordability of broadband connectivity, have on STEM and technical literacy for students in prekindergarten through grade 12 in rural areas;

(C) assesses the core research and data needed to understand the challenges rural areas are facing in providing quality STEM education and workforce development;

(D) makes recommendations for action at the Federal, State, and local levels for improving STEM education, including online STEM education, for students in prekindergarten through grade 12 and workforce development in rural areas; and
(E) makes recommendations to inform the implementation of programs in subsections (a), (b), and (c).

(2) REPORT TO DIRECTOR.—The agreement entered into under paragraph (1) shall require the National Academies of Sciences, Engineering, and Medicine, not later than 24 months after the date of enactment of this Act, to submit to the Director a report on the study conducted under such paragraph, including the National Academies’ findings and recommendations.

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

(1) an assessment of how Federal STEM education programs are serving rural populations;

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

(3) an assessment of what is known about the impact and effectiveness of Federal investments in STEM education programs that are targeted to rural areas; and
(4) an assessment of challenges that State and Federal STEM education programs face in reaching rural population centers.

(f) CAPACITY BUILDING THROUGH EPSCoR.—Section 517(f)(2) of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 1862p–9(f)(2)) is amended—

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

(2) by adding at the end the following:

“(C) to increase the capacity of rural communities to provide quality STEM education and STEM workforce development programming to students and teachers; and”.

(g) NIST ENGAGEMENT WITH RURAL COMMUNITIES.—

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

(A) in subsection (c)—

(i) in paragraph (6), by striking “community colleges and area career and technical education schools” and inserting the following: “secondary schools (as defined in section 8101 of the Elementary and Secondary Education Act of 1965 (20 U.S.C.
7801)), community colleges, and area career
and technical education schools, including
those in underserved and rural commu-
nities,”; and

(ii) in paragraph (7)—

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

(II) by inserting “or other applied
learning opportunities” after “appren-
ticeships”; and

(B) in subsection (d)(3), by striking “, com-
munity colleges, and area career and technical
education schools,” and inserting the following:
“and local high schools, community colleges, and
area career and technical education schools, in-
cluding those in underserved and rural commu-
nities,”.

(2) RURAL CONNECTIVITY PRIZE COMPETI-
TION.—

(A) PRIZE COMPETITION.—Pursuant to sec-
tion 24 of the Stevenson-Wydler Technology In-
novation Act of 1980 (15 U.S.C. 3719), the Sec-
The Secretary of Commerce shall carry out a program to award prizes competitively to stimulate research and development of creative technologies to support the deployment of affordable and reliable broadband connectivity in rural communities, including unserved rural communities.

(B) Plan for Deployment in Rural Communities.—Each proposal submitted pursuant to subparagraph (A) shall include a proposed plan for deployment of the technology that is the subject of such proposal.

(C) Prize Amount.—In carrying out the program under subparagraph (A), the Secretary may award not more than a total of $5,000,000 to one or more winners of the prize competition.

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

(E) Consultation.—In carrying out the program under this paragraph, the Secretary shall consult with the Federal Communications
Commission and the heads of relevant departments and agencies of the Federal Government.

SEC. 211. QUANTUM NETWORK INFRASTRUCTURE AND WORKFORCE DEVELOPMENT ACT.

(a) DEFINITIONS.—In this section:

(1) ESEA DEFINITIONS.—The terms “elementary school”, “high school”, “local educational agency”, and “secondary school” have the meanings given those terms in section 8101 of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 7801).

(2) APPROPRIATE COMMITTEES OF CONGRESS.—The term “appropriate committees of Congress” has the meaning given such term in section 2 of the National Quantum Initiative Act (15 U.S.C. 8801).

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

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

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

(6) STEM.—The term “STEM” has the meaning given the term in section 2 of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 6621 note).

(b) QUANTUM NETWORKING WORKING GROUP REPORT ON QUANTUM NETWORKING AND COMMUNICATIONS.—

(1) REPORT.—Not later than 3 years after the date of the enactment of this Act, the Quantum Networking Working Group within the Subcommittee on Quantum Information Science of the National Science and Technology Council shall submit to the appropriate committees of Congress a report detailing a plan for the advancement of quantum networking and communications technology in the United States, building on A Strategic Vision for America’s Quantum Networks and A Coordinated Approach for Quantum Networking Research.

(2) REQUIREMENTS.—The report under paragraph (1) shall include—

(A) a framework for interagency collaboration on the advancement of quantum networking and communications research;
(B) a plan for interagency collaboration on the development and drafting of international standards for quantum communications technology, including standards relating to—

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

(ii) network security;

(iii) quantum network infrastructure;

(iv) transmission of quantum information through optical fiber networks; and

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

(C) a proposal for the protection of national security interests relating to the advancement of quantum networking and communications technology;

(D) recommendations to Congress for legislative action relating to the framework, plan, and proposal set forth pursuant to subparagraphs (A), (B), and (C), respectively; and

(E) such other matters as the Working Group considers necessary to advance the security of communications and network infrastructure, remain at the forefront of scientific discovery in the quantum information science do-
main, and transition quantum information science research into the emerging quantum technology economy.

(c) QUANTUM NETWORKING AND COMMUNICATIONS RESEARCH.—

(1) RESEARCH.—The Under Secretary of Commerce for Standards and Technology shall carry out research to facilitate the development and standardization of quantum networking and communications technologies and applications, including research on the following:

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

(B) Quantum repeater technology.

(C) Quantum network traffic management.

(D) Quantum transduction.

(E) Long baseline entanglement and teleportation.

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

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

(3) Development of Standards.—For quantum technologies deemed by the Under Secretary to be at a readiness level sufficient for standardization, the Under Secretary shall provide technical review and assistance to such other Federal agencies as the Under Secretary considers appropriate for the development of quantum network infrastructure standards.

(4) Authorization of Appropriations.—

(A) In General.—There is authorized to be appropriated to the Scientific and Technical Research and Services account of the National Institute of Standards and Technology to carry out this subsection $10,000,000 for each of fiscal years 2022 through 2026.

(B) Supplement, Not Supplant.—The amounts authorized to be appropriated under subparagraph (A) shall supplement and not supplant amounts already appropriated to the account described in such subparagraph.

(d) Quantum Workforce Evaluation and Acceleration.—
(1) **Identification of Gaps.**—The Foundation shall enter into an agreement with the National Academies of Sciences, Engineering, and Medicine to conduct a study of ways to support the next generation of quantum leaders.

(2) **Scope of Study.**—In carrying out the study described in paragraph (1), the National Academies of Sciences, Engineering, and Medicine shall identify—

(A) education gaps, including foundational courses in STEM and areas in need of standardization, in elementary school, middle school, high school, and higher education curricula, that need to be rectified in order to prepare students to participate in the quantum workforce;

(B) the skills and workforce needs of industry, specifically identifying the cross-disciplinary academic degrees or academic courses necessary—

(i) to qualify students for multiple career pathways in quantum information sciences and related fields;

(ii) to ensure the United States is competitive in the field of quantum information
science while preserving national security;
and

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

(C) the resources and materials needed to train elementary, middle, and high school educators to effectively teach curricula relevant to the development of a quantum workforce.

(3) REPORTS.—

(A) EXECUTIVE SUMMARY.—Not later than 2 years after the date of enactment of this Act, the National Academies of Science, Engineering, and Medicine shall prepare and submit to the Foundation, and programs or projects funded by the Foundation, an executive summary of progress regarding the study conducted under paragraph (1) that outlines the findings of the Academies as of such date.

(B) REPORT.—Not later than 3 years after the date of enactment of this Act, the National Academies of Science, Engineering, and Medicine shall prepare and submit a report containing the results of the study conducted under paragraph (1) to Congress, the Foundation, and programs or projects funded by the Foundation.
that are relevant to the acceleration of a quantum workforce.

(e) INCORPORATING QISE INTO STEM CURRICULUM.—

(1) IN GENERAL.—The Foundation shall, through programs carried out or supported by the Foundation, prioritize the better integration of quantum information science and engineering (referred to in this subsection as QISE) into the STEM curriculum for each grade level from kindergarten through grade 12, and community colleges.

(2) REQUIREMENTS.—The curriculum integration under paragraph (1) shall include—

(A) methods to conceptualize QISE for elementary, middle, and high school curricula;

(B) methods for strengthening foundational mathematics and science curricula;

(C) age-appropriate materials that apply the principles of quantum information science in STEM fields;

(D) recommendations for the standardization of key concepts, definitions, and curriculum criteria across government, academia, and industry; and
materials that specifically address the findings and outcomes of the study conducted under subsection (d) and strategies to account for the skills and workforce needs identified through the study.

(3) COORDINATION.—In carrying out this subsection, the Foundation, including the STEM Education Advisory Panel and the Advancing Informal STEM Learning program and through the Foundation’s role in the National Q–12 Education Partnership and the programs such as the Q2Work Program, shall coordinate with the Office of Science and Technology Policy, EPSCoR eligible universities, and any Federal agencies or working groups determined necessary by the Foundation.

(4) REVIEW.—In implementing this subsection, the Foundation shall support the community expansion of the related report entitled Key Concepts for Future QIS Learners (May 2020).

(f) QUANTUM EDUCATION PILOT PROGRAM.—

(1) IN GENERAL.—The Foundation, through the Foundation’s role in the National Q–12 Education Partnership and programs such as Q2Work Program, and in coordination with the Directorate for Education and Human Resources, shall carry out a pilot
program, to be known as the Next Generation Quantum Leaders Pilot Program, to provide funding for the education and training of the next generation of students in the fundamental principles of quantum mechanics.

(2) REQUIREMENTS.—

(A) IN GENERAL.—In carrying out the pilot program required by paragraph (1), the Foundation shall—

(i) publish a call for applications through the National Q–12 Education Partnership website (or similar website) for participation in the pilot program from elementary schools, secondary schools, and State educational agencies as determined appropriate by the Foundation;

(ii) coordinate with educational service agencies, associations that support STEM educators or local educational agencies, and partnerships through the Q–12 Education Partnership, to encourage elementary schools, secondary schools, and State educational agencies to participate in the program as determined appropriate by the Foundation;
(iii) accept applications in advance of the academic year in which the program shall begin; and

(iv) select elementary schools, secondary schools, and State educational agencies to participate in the program, as determined appropriate by the Foundation, in accordance with qualifications determined by the QIS Workforce Working Group, in coordination with the National Q–12 Education Partnership.

(B) PRIORITIZATION.—In selecting program participants under subparagraph (A)(iv), the Director of the Foundation shall give priority to elementary schools, secondary schools, and local educational agencies located in jurisdictions eligible to participate in the Established Program to Stimulate Competitive Research (commonly known as EPSCoR), including Tribal and rural elementary, middle, and high schools in such jurisdictions.

(3) CONSULTATION.—The Foundation shall carry out this subsection in consultation with the QIS Workforce Working Group and the Advancing Informal STEM Learning Program.
(4) Reporting.—

(A) Report and selected participants.—Not later than 90 days following the closing of the application period under paragraph (2)(A)(iii), the Director of the Foundation shall submit to Congress a report on the educational institutions selected to participate in the pilot program required under paragraph (1), specifying the percentage from nontraditional geographies, including Tribal or rural school districts.

(B) Report on implementation of curriculum.—Not later than 2 years after the date of enactment of this Act, the Director of the Foundation shall submit to Congress a report on implementation of the curricula and materials under the pilot program, including the feasibility and advisability of expanding such pilot program to include additional educational institutions beyond those originally selected to participate in the pilot program.

(5) Authorization of Appropriations.—There is authorized to be appropriated such funds as may be necessary to carry out this subsection.
(6) **TERMINATION.**—This subsection shall cease to have effect on the date that is 3 years after the date of the enactment of this Act.

(g) **ENERGY SCIENCES NETWORK.**—

(1) **IN GENERAL.**—The Secretary of Energy (referred to in this subsection as the Secretary), in coordination with the National Science Foundation and the National Aeronautics and Space Administration, shall supplement the Energy Sciences Network User Facility (referred to in this subsection as the Network) with dedicated quantum network infrastructure to advance development of quantum networking and communications technology.

(2) **PURPOSE.**—The purpose of paragraph (1) is to utilize the Network to advance a broad range of testing and research, including relating to—

(A) the establishment of stable, long-baseline quantum entanglement and teleportation;

(B) quantum repeater technologies for long-baseline communication purposes;

(C) quantum transduction;

(D) the coexistence of quantum and classical information;
(E) multiplexing, forward error correction, wavelength routing algorithms, and other quantum networking infrastructure; and

(F) any other technologies or applications determined necessary by the Secretary.

(3) Authorization of Appropriations.—

There are authorized to be appropriated to the Secretary to carry out this subsection, $10,000,000 for each of fiscal years 2022 through 2026.

SEC. 212. SUPPORTING EARLY-CAREER RESEARCHERS ACT.

(a) Short Title.—This section may be cited as the “Supporting Early-Career Researchers Act”.

(b) In General.—The Director may establish a 2-year pilot program to award grants to highly qualified early-career investigators to carry out an independent research program at the institution of higher education or participating Federal research facility chosen by such investigator, to last for a period not greater than 2 years.

(c) Priority for Broadening Participation.—In awarding grants under this section, the Director shall give priority to—

(1) early-career investigators who are from groups that are underrepresented in science, technology, engineering, and mathematics research;
(2) early-career investigators who choose to carry out independent research at a minority-serving institution (or an institution of higher education with an established STEM capacity building program focused on traditionally underrepresented populations in STEM, including Native Hawaiians, Alaska Natives, and other Indians); and

(3) early-career investigators in a jurisdiction eligible to participate under section 113 of the National Science Foundation Authorization Act of 1988 (42 U.S.C. 1862g).

(d) Reports from Grantees.—Not later than 180 days after the end of the pilot program under this section, each early-career investigator who receives a grant under the pilot program shall submit a report to the Director that describes how the early-career investigator used the grant funds.

(e) Report to Congress.—Not later than 180 days after the deadline for the submission of the reports described in subsection (d), the Director shall submit a report to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science, Space, and Technology of the House of Representatives that contains a summary of the uses of grant funds under this section and the impact of the pilot program under this section.
SEC. 213. ADVANCING PRECISION AGRICULTURE CAPABILITIES ACT.

(a) SHORT TITLE.—This section may be cited as the “Advancing IoT for Precision Agriculture Act of 2021”.

(b) PURPOSE.—It is the purpose of this section to promote scientific research and development opportunities for connected technologies that advance precision agriculture capabilities.

(c) FOUNDATION DIRECTIVE ON AGRICULTURAL SENSOR RESEARCH.—In awarding grants under the sensor systems and networked systems programs of the Foundation, the Director shall include in consideration of portfolio balance research and development on sensor connectivity in environments of intermittent connectivity and intermittent computation—

(1) to improve the reliable use of advance sensing systems in rural and agricultural areas; and

(2) that considers—

(A) direct gateway access for locally stored data;

(B) attenuation of signal transmission;

(C) loss of signal transmission; and

(D) at-scale performance for wireless power.

(d) UPDATING CONSIDERATIONS FOR PRECISION AGRICULTURE TECHNOLOGY WITHIN THE NSF ADVANCED TECHNICAL EDUCATION PROGRAM.—Section 3 of the Sci-
entific and Advanced-Technology Act of 1992 (42 U.S.C. 1862i), as amended by section 205, is further amended—

(1) in subsection (d)(2), by adding at the end the following:

“(G) applications that incorporate distance learning tools and approaches.”; and

(2) in subsection (e)(3)—

(A) in subparagraph (C), by striking “and” after the semicolon;

(B) in subparagraph (D), by striking the period at the end and inserting “; and”; and

(C) by adding at the end the following:

“(E) applications that incorporate distance learning tools and approaches.”.

(e) GAO REVIEW.—Not later than 18 months after the date of enactment of this section, the Comptroller General of the United States shall provide—

(1) a technology assessment of precision agriculture technologies, such as the existing use of—

(A) sensors, scanners, radio-frequency identification, and related technologies that can monitor soil properties, irrigation conditions, and plant physiology;
(B) sensors, scanners, radio-frequency identification, and related technologies that can monitor livestock activity and health;

(C) network connectivity and wireless communications that can securely support digital agriculture technologies in rural and remote areas;

(D) aerial imagery generated by satellites or unmanned aerial vehicles;

(E) ground-based robotics;

(F) control systems design and connectivity, such as smart irrigation control systems; and

(G) data management software and advanced analytics that can assist decision making and improve agricultural outcomes; and

(2) a review of Federal programs that provide support for precision agriculture research, development, adoption, education, or training, in existence on the date of enactment of this section.

SEC. 214. CRITICAL MINERALS MINING RESEARCH.

(a) Critical Minerals Mining Research and Development at the Foundation.—

(1) In general.—In order to support supply chain resiliency, the Director shall issue awards, on a competitive basis, to institutions of higher edu-
cation or nonprofit organizations (or consortia of such institutions or organizations) to support basic research that will accelerate innovation to advance critical minerals mining strategies and technologies for the purpose of making better use of domestic resources and eliminating national reliance on minerals and mineral materials that are subject to supply disruptions.

(2) **USE OF FUNDS.**—Activities funded by an award under this section may include—

(A) advancing mining research and development activities to develop new mapping and mining technologies and techniques, including advanced critical mineral extraction and production, to improve existing or to develop new supply chains of critical minerals, and to yield more efficient, economical, and environmentally benign mining practices;

(B) advancing critical mineral processing research activities to improve separation, alloying, manufacturing, or recycling techniques and technologies that can decrease the energy intensity, waste, potential environmental impact, and costs of those activities;
(C) conducting long-term earth observation of reclaimed mine sites, including the study of the evolution of microbial diversity at such sites;

(D) examining the application of artificial intelligence for geological exploration of critical minerals, including what size and diversity of data sets would be required;

(E) examining the application of machine learning for detection and sorting of critical minerals, including what size and diversity of data sets would be required;

(F) conducting detailed isotope studies of critical minerals and the development of more refined geologic models; or

(G) providing training and research opportunities to undergraduate and graduate students to prepare the next generation of mining engineers and researchers.

(b) Critical Minerals Interagency Subcommittee.—

(1) In general.—In order to support supply chain resiliency, the Critical Minerals Subcommittee of the National Science and Technology Council (referred to in this subsection as the Subcommittee) shall coordinate Federal science and technology efforts to
ensure secure and reliable supplies of critical minerals to the United States.

(2) PURPOSES.—The purposes of the Subcommittee shall be—

(A) to advise and assist the Committee on Homeland and National Security and the National Science and Technology Council on United States policies, procedures, and plans as it relates to critical minerals, including—

(i) Federal research, development, and deployment efforts to optimize methods for extractions, concentration, separation, and purification of conventional, secondary, and unconventional sources of critical minerals;

(ii) efficient use and reuse of critical minerals;

(iii) the critical minerals workforce of the United States; and

(iv) United States private industry investments in innovation and technology transfer from federally funded science and technology;

(B) to identify emerging opportunities, stimulate international cooperation, and foster
the development of secure and reliable supply chains of critical minerals;

(C) to ensure the transparency of information and data related to critical minerals; and

(D) to provide recommendations on coordination and collaboration among the research, development, and deployment programs and activities of Federal agencies to promote a secure and reliable supply of critical minerals necessary to maintain national security, economic well-being, and industrial production.

(3) RESPONSIBILITIES.—In carrying out paragraphs (1) and (2), the Subcommittee may, taking into account the findings and recommendations of relevant advisory committees—

(A) provide recommendations on how Federal agencies may improve the topographic, geologic, and geophysical mapping of the United States and improve the discoverability, accessibility, and usability of the resulting and existing data, to the extent permitted by law and subject to appropriate limitation for purposes of privacy and security;

(B) assess the progress toward developing critical minerals recycling and reprocessing tech-
nologies, and technological alternatives to critical minerals;

(C) examine options for accessing and developing critical minerals through investment and trade with allies and partners of the United States and provide recommendations;

(D) evaluate and provide recommendations to incentivize the development and use of advances in science and technology in the private industry;

(E) assess the need for and make recommendations to address the challenges the United States critical minerals supply chain workforce faces, including—

(i) aging and retiring personnel and faculty;

(ii) public perceptions about the nature of mining and mineral processing; and

(iii) foreign competition for United States talent;

(F) develop, and update as necessary, a strategic plan to guide Federal programs and activities to enhance—

(i) scientific and technical capabilities across critical mineral supply chains, in-
including a roadmap that identifies key research and development needs and coordinates ongoing activities for source diversification, more efficient use, recycling, and substitution for critical minerals; and

(ii) cross-cutting mining science, data science techniques, materials science, manufacturing science and engineering, computational modeling, and environmental health and safety research and development; and

(G) report to the appropriate committees of Congress on activities and findings under this subsection.

(4) MANDATORY RESPONSIBILITIES.—In carrying out paragraphs (1) and (2), the Subcommittee shall, taking into account the findings and recommendations of the relevant advisory committees, identify and evaluate Federal policies and regulations that restrict the mining of critical minerals.

(c) GRANT PROGRAM FOR DEVELOPMENT OF CRITICAL MINERALS AND METALS.—

(1) ESTABLISHMENT.—The Secretary of Commerce, in consultation with the Director and the Secretary of the Interior, shall establish a grant program
to finance pilot projects for the development of critical minerals and metals in the United States.

(2) LIMITATION ON GRANT AWARDS.—A grant awarded under paragraph (1) may not exceed $10,000,000.

(3) ECONOMIC VIABILITY.—In awarding grants under paragraph (1), the Secretary of Commerce shall give priority to projects that the Secretary of Commerce determines are likely to be economically viable over the long term.

(4) SECONDARY RECOVERY.—In awarding grants under paragraph (1), the Secretary of Commerce shall seek to award not less than 30 percent of the total amount of grants awarded during the fiscal year for projects relating to secondary recovery of critical minerals and metals.

(5) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated to the Secretary of Commerce $100,000,000 for each of fiscal years 2021 through 2024 to carry out the grant program established under paragraph (1).

(d) DEFINITIONS.—In this section:

(1) CRITICAL MINERAL; CRITICAL MINERAL OR METAL.—The terms “critical mineral” and “critical mineral or metal” include any host mineral of a crit-
ical mineral (within the meaning of those terms in section 7002 of title VII of division Z of the Consolidated Appropriations Act, 2021 (Public Law 116–260)).

(2) SECONDARY RECOVERY.—The term “secondary recovery” means the recovery of critical minerals and metals from discarded end-use products or from waste products produced during the metal refining and manufacturing process, including from mine waste piles, acid mine drainage sludge, or byproducts produced through legacy mining and metallurgy activities.

SEC. 215. CAREGIVER POLICIES.

(a) OSTP GUIDANCE.—Not later than 6 months after the date of enactment of this Act, the Director of the Office of Science and Technology Policy, in consultation with relevant agencies, shall provide guidance to each Federal science agency to establish policies that—

(1) apply to all—

(A) research awards granted by such agency; and

(B) principal investigators of such research who have caregiving responsibilities, including care for a newborn or newly adopted child and
care for an immediate family member with a serious health condition; and

(2) offer, to the extent feasible—

(A) flexibility in timing for the initiation of approved research awards granted by such agency;

(B) no-cost extensions of such research awards; and

(C) grant supplements, as appropriate, to research awards to sustain research activities conducted under such awards.

(b) Uniformity of Guidance.—In providing guidance under subsection (a), the Director of the Office of Science and Technology Policy shall encourage, to the extent practicable, uniformity and consistency in the policies established pursuant to such guidance across all Federal science agencies.

(c) Establishment of Policies.—To the extent practicable and consistent with guidance issued under subsection (a), Federal science agencies shall—

(1) maintain or develop and implement policies for individuals described in paragraph (1)(B) of such subsection; and

(2) broadly disseminate such policies to current and potential awardees.
(d) **DATA ON USAGE.**—Federal science agencies shall consider—

(1) collecting data on the usage of the policies under subsection (c), at both institutions of higher education and Federal laboratories; and

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

(e) **SAVINGS.**—

(1) **PRIVACY.**—This section shall be carried out in accordance with all relevant privacy laws.

(2) **INSTITUTIONS.**—This section shall not affect the grantee institution’s institutional policies.

(f) **DEFINITION OF FEDERAL SCIENCE AGENCY.**—In this section, the term “Federal science agency” means any Federal agency with an annual extramural research expenditure of over $100,000,000.

SEC. 216. PRESIDENTIAL AWARDS.

(a) **IN GENERAL.**—The President is authorized to make Presidential Awards for Excellence in Technology and Science Research to researchers in underrepresented populations, including women and underrepresented minorities, who have demonstrated outstanding achievements in technology or science research.
(b) Number and Distribution of Award Recipients.—If the President elects to make Presidential Awards for Excellence in Technology and Science Research under subsection (a), the President shall make no fewer than 104 Awards. In selecting researchers for the Awards, the President shall select at least 2 researchers—

(1) from each of the States;

(2) from the District of Columbia; and

(3) from the Commonwealth of Puerto Rico.

(c) Selection Procedures.—The President shall carry out this section, including the establishment of the selection procedures, after consultation with the Director of the Office of Science and Technology Policy and other appropriate officials of Federal agencies.

SEC. 217. BIOECONOMY RESEARCH AND DEVELOPMENT ACT OF 2021.

(a) Short Title.—This section may be cited as the “Bioeconomy Research and Development Act of 2021”.

(b) Findings.—The Congress makes the following findings:

(1) Cellular and molecular processes may be used, mimicked, or redesigned to develop new products, processes, and systems that improve societal well-being, strengthen national security, and contribute to the economy.
(2) Engineering biology relies on a workforce with a diverse and unique set of skills combining the biological, physical, chemical, and information sciences and engineering.

(3) Long-term research and development is necessary to create breakthroughs in engineering biology. Such research and development requires government investment, as many of the benefits are too distant or uncertain for industry to support alone.

(4) Research is necessary to inform evidence-based governance of engineering biology and to support the growth of the engineering biology industry.

(5) The Federal Government has an obligation to ensure that ethical, legal, environmental, safety, security, and societal implications of its science and technology research and investment follows policies of responsible innovation and fosters public transparency.

(6) The Federal Government can play an important role by facilitating the development of tools and technologies to further advance engineering biology, including user facilities, by facilitating public-private partnerships, by supporting risk research, and by facilitating the commercial application in the United States of research funded by the Federal Government.
(7) The United States led the development of the science and engineering techniques that created the field of engineering biology, but due to increasing international competition, the United States is at risk of losing its competitive advantage if it does not strategically invest the necessary resources.

(8) A National Engineering Biology Initiative can serve to establish new research directions and technology goals, improve interagency coordination and planning processes, drive technology transfer to the private sector, and help ensure optimal returns on the Federal investment.

(c) DEFINITIONS.—In this section:

(1) BIOMANUFACTURING.—The term “biomanufacturing” means the utilization of biological systems to develop new and advance existing products, tools, and processes at commercial scale.

(2) ENGINEERING BIOLOGY.—The term “engineering biology” means the application of engineering design principles and practices to biological systems, including molecular and cellular systems, to advance fundamental understanding of complex natural systems and to enable novel or optimize functions and capabilities.
(3) INITIATIVE.—The term “Initiative” means the National Engineering Biology Research and Development Initiative established under subsection (d).

(4) OMICS.—The term “omics” refers to the collective technologies used to explore the roles, relationships, and actions of the various types of molecules that make up the cells of an organism.

(d) NATIONAL ENGINEERING BIOLOGY RESEARCH AND DEVELOPMENT INITIATIVE.—

(1) IN GENERAL.—The President, acting through the Office of Science and Technology Policy, shall implement a National Engineering Biology Research and Development Initiative to advance societal well-being, national security, sustainability, and economic productivity and competitiveness through—

(A) advancing areas of research at the intersection of the biological, physical, chemical, data, and computational sciences and engineering to accelerate scientific understanding and technological innovation in engineering biology;

(B) advancing areas of biomanufacturing research to optimize, standardize, scale, and deliver new products and solutions;

(C) supporting social and behavioral sciences and economics research that advances
the field of engineering biology and contributes
to the development and public understanding of
new products, processes, and technologies;

(D) improving the understanding of engi-
eering biology of the scientific and lay public
and supporting greater evidence-based public
discourse about its benefits and risks;

(E) supporting research relating to the risks
and benefits of engineering biology, including
under paragraph (4);

(F) supporting the development of novel
tools and technologies to accelerate scientific un-
derstanding and technological innovation in en-
geineering biology;

(G) expanding the number of researchers,
educators, and students and a retooled workforce
with engineering biology training, including
from traditionally underrepresented and under-
served populations;

(H) accelerating the translation and com-
mercialization of engineering biology research
and development by the private sector; and

(I) improving the interagency planning and
coordination of Federal Government activities
related to engineering biology.
(2) INITIATIVE ACTIVITIES.—The activities of the Initiative shall include—

(A) sustained support for engineering biology research and development through—

(i) grants to fund the work of individual investigators and teams of investigators, including interdisciplinary teams;

(ii) projects funded under joint solicitations by a collaboration of no fewer than two agencies participating in the Initiative; and

(iii) interdisciplinary research centers that are organized to investigate basic research questions, carry out technology development and demonstration activities, and increase understanding of how to scale up engineering biology processes, including biomanufacturing;

(B) sustained support for databases and related tools, including—

(i) support for curated genomics, epigenomics, and other relevant omics databases, including plant and microbial databases, that are available to researchers to carry out engineering biology research in a
manner that does not compromise national security or the privacy or security of information within such databases;

(ii) development of standards for such databases, including for curation, interoperability, and protection of privacy and security;

(iii) support for the development of computational tools, including artificial intelligence tools, that can accelerate research and innovation using such databases; and

(iv) an inventory and assessment of all Federal government omics databases to identify opportunities to improve the utility of such databases, as appropriate and in a manner that does not compromise national security or the privacy and security of information within such databases, and inform investment in such databases as critical infrastructure for the engineering biology research enterprise;

(C) sustained support for the development, optimization, and validation of novel tools and technologies to enable the dynamic study of molecular processes in situ, including through—
(i) research conducted at Federal laboratories;

(ii) grants to fund the work of investigators at institutions of higher education and other nonprofit research institutions;

(iii) incentivized development of retooled industrial sites across the country that foster a pivot to modernized engineering biology initiatives; and

(iv) awards under the Small Business Innovation Research Program and the Small Business Technology Transfer Program, as described in section 9 of the Small Business Act (15 U.S.C. 638);

(D) support for education and training of undergraduate and graduate students in engineering biology, biomanufacturing, bioprocess engineering, and computational science applied to engineering biology and in the related ethical, legal, environmental, safety, security, and other societal domains;

(E) activities to develop robust mechanisms for documenting and quantifying the outputs and economic benefits of engineering biology; and
(F) activities to accelerate the translation and commercialization of new products, processes, and technologies by—

(i) identifying precompetitive research opportunities;

(ii) facilitating public-private partnerships in engineering biology research and development;

(iii) connecting researchers, graduate students, and postdoctoral fellows with entrepreneurship education and training opportunities; and

(iv) supporting proof of concept activities and the formation of startup companies including through programs such as the Small Business Innovation Research Program and the Small Business Technology Transfer Program.

(3) EXPANDING PARTICIPATION.—The Initiative shall include, to the maximum extent practicable, outreach to primarily undergraduate and minority-serving institutions (and institutions of higher education with an established STEM capacity building program focused on traditionally underrepresented populations in STEM, including Native Hawaiians, Alaska Na-
tives, and other Indians) about Initiative opportuni-
ties, and shall encourage the development of research
collaborations between research-intensive universities
and primarily undergraduate and minority-serving
institutions (and institutions of higher education
with an established STEM capacity building program
focused on traditionally underrepresented populations
in STEM, including Native Hawaiians, Alaska Na-
tives, and other Indians).

(4) Ethical, Legal, Environmental, Safety,
security, and Societal Issues.—Initiative activi-
ties shall take into account ethical, legal, environ-
mental, safety, security, and other appropriate soci-
etal issues by—

(A) supporting research, including in the
social sciences, and other activities addressing
ethical, legal, environmental, and other appro-
priate societal issues related to engineering biol-
ology, including integrating research on such top-
ics with the research and development in engi-
neering biology, and encouraging the dissemina-
tion of the results of such research, including
through interdisciplinary engineering biology re-
search centers described in paragraph (2)(A)(iii);
(B) supporting research and other activities related to the safety and security implications of engineering biology, including outreach to increase awareness among Federal researchers and Federally-funded researchers at institutions of higher education about potential safety and security implications of engineering biology research, as appropriate;

(C) ensuring that input from Federal and non-Federal experts on the ethical, legal, environmental, safety, security, and other appropriate societal issues related to engineering biology is integrated into the Initiative;

(D) ensuring, through the agencies and departments that participate in the Initiative, that public input and outreach are integrated into the Initiative by the convening of regular and ongoing public discussions through mechanisms such as workshops, consensus conferences, and educational events, as appropriate; and

(E) complying with all applicable provisions of Federal law.

(e) INITIATIVE COORDINATION.—

(1) INTERAGENCY COMMITTEE.—The President, acting through the Office of Science and Technology
Policy, shall designate an interagency committee to coordinate activities of the Initiative as appropriate, which shall be co-chaired by the Office of Science and Technology Policy, and include representatives from the Foundation, the Department of Energy, the Department of Defense, the National Aeronautics and Space Administration, the National Oceanic and Atmospheric Administration, the National Institute of Standards and Technology, the Environmental Protection Agency, the Department of Agriculture, the Department of Health and Human Services, the Bureau of Economic Analysis, and any other agency that the President considers appropriate (in this section referred to as the Interagency Committee). The Director of the Office of Science and Technology Policy shall select an additional co-chairperson from among the members of the Interagency Committee. The Interagency Committee shall oversee the planning, management, and coordination of the Initiative.

The Interagency Committee shall—

(A) provide for interagency coordination of Federal engineering biology research, development, and other activities undertaken pursuant to the Initiative;
(B) establish and periodically update goals and priorities for the Initiative;

(C) develop, not later than 12 months after the date of the enactment of this Act, and update every 3 years thereafter, a strategic plan submitted to the Committee on Science, Space, and Technology and the Committee on Energy and Commerce of the House of Representatives and the Committee on Commerce, Science, and Transportation and the Committee on Health, Education, Labor, and Pensions of the Senate that—

(i) guides the activities of the Initiative for purposes of meeting the goals and priorities established under (and updated pursuant to) subparagraph (B); and

(ii) describes—

(I) the Initiative’s support for long-term funding for interdisciplinary engineering biology research and development;

(II) the Initiative’s support for education and public outreach activities;
(III) the Initiative’s support for research and other activities on ethical, legal, environmental, safety, security, and other appropriate societal issues related to engineering biology including—

(aa) an applied biorisk management research plan;

(bb) recommendations for integrating security into biological data access and international reciprocity agreements;

(cc) recommendations for manufacturing restructuring to support engineering biology research, development, and scaling-up initiatives; and

(dd) an evaluation of existing biosecurity governance policies, guidance, and directives for the purposes of creating an adaptable, evidence-based framework to respond to emerging biosecurity challenges created by advances in engineering biology;
(IV) how the Initiative will contribute to moving results out of the laboratory and into application for the benefit of society and United States competitiveness; and

(V) how the Initiative will measure and track the contributions of engineering biology to United States economic growth and other societal indicators;

(D) develop a national genomic sequencing strategy to ensure engineering biology research fully leverages plant, animal, and microbe biodiversity, as appropriate and in a manner that does not compromise national security or the privacy or security of human genetic information, to enhance long-term innovation and competitiveness in engineering biology in the United States;

(E) develop a plan to utilize Federal programs, such as the Small Business Innovation Research Program and the Small Business Technology Transfer Program as described in section 9 of the Small Business Act (15 U.S.C. 638), in
support of the activities described in subsection (d)(2)(C); and

(F) in carrying out this subsection, take into consideration the recommendations of the advisory committee established under subsection (f), the results of the workshop convened under subsection (d)(4)(D), existing reports on related topics, and the views of academic, State, industry, and other appropriate groups.

(2) TRIENNIAL REPORT.—Beginning with fiscal year 2022 and ending in fiscal year 2028, not later than 90 days after submission of the President’s annual budget request and every third fiscal year thereafter, the Interagency Committee shall prepare and submit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report that includes—

(A) a summarized agency budget in support of the Initiative for the fiscal year to which such budget request applies, for the following 2 fiscal years, for the then current fiscal year, including a breakout of spending for each agency participating in the Program, and for the development
and acquisition of any research facilities and instrumenta-

(B) an assessment of how Federal agencies are implementing the plan described in para-

graph (1)(C), including—

(i) a description of the amount and number of awards made under the Small Business Innovation Research Program and the Small Business Technology Transfer Program (as described in section 9 of the Small Business Act (15 U.S.C. 638)) in support of the Initiative;

(ii) a description of the amount and number of projects funded under joint solicitation by a collaboration of no fewer than 2 agencies participating in the Initiative; and

(iii) a description of the effect of the newly funded projects by the Initiative.

(3) INITIATIVE OFFICE.—

(A) IN GENERAL.—The President shall es-
establish an Initiative Coordination Office, with a Director and full-time staff, which shall—

(i) provide technical and administra-
tive support to the interagency committee
and the advisory committee established under subsection (f);

(ii) serve as the point of contact on Federal engineering biology activities for government organizations, academia, industry, professional societies, State governments, interested citizen groups, and others to exchange technical and programmatic information;

(iii) oversee interagency coordination of the Initiative, including by encouraging and supporting joint agency solicitation and selection of applications for funding of activities under the Initiative, as appropriate;

(iv) conduct public outreach, including dissemination of findings and recommendations of the advisory committee established under subsection (f), as appropriate;

(v) serve as the coordinator of ethical, legal, environmental, safety, security, and other appropriate societal input; and

(vi) promote access to, and early application of, the technologies, innovations, and expertise derived from Initiative activities.
to agency missions and systems across the Federal Government, and to United States industry, including startup companies.

(B) FUNDING.—The Director of the Office of Science and Technology Policy, in coordination with each participating Federal department and agency, as appropriate, shall develop and annually update an estimate of the funds necessary to carry out the activities of the Initiative Coordination Office and submit such estimate with an agreed summary of contributions from each agency to Congress as part of the President’s annual budget request to Congress.

(C) TERMINATION.—The Initiative Coordination Office established under this paragraph shall terminate on the date that is 10 years after the date of the enactment of this Act.

(4) RULE OF CONSTRUCTION.—Nothing in this subsection shall be construed to alter the policies, processes, or practices of individual Federal agencies in effect on the day before the date of the enactment of this Act relating to the conduct of biomedical research and advanced development, including the solicitation and review of extramural research proposals.

(f) ADVISORY COMMITTEE.—
(1) **IN GENERAL.**—The agency co-chair of the interagency committee established in subsection (e) shall, in consultation with the Office of Science and Technology Policy, designate or establish an advisory committee on engineering biology research and development (in this subsection referred to as the advisory committee) to be composed of not fewer than 12 members, including representatives of research and academic institutions, industry, and nongovernmental entities, who are qualified to provide advice on the Initiative.

(2) **ASSESSMENT.**—The advisory committee shall assess—

(A) the current state of United States competitiveness in engineering biology, including the scope and scale of United States investments in engineering biology research and development in the international context;

(B) current market barriers to commercialization of engineering biology products, processes, and tools in the United States;

(C) progress made in implementing the Initiative;

(D) the need to revise the Initiative;
(E) the balance of activities and funding across the Initiative;

(F) whether the strategic plan developed or updated by the interagency committee established under subsection (e) is helping to maintain United States leadership in engineering biology;

(G) the management, coordination, implementation, and activities of the Initiative; and

(H) whether ethical, legal, environmental, safety, security, and other appropriate societal issues are adequately addressed by the Initiative.

(3) REPORTS.—Beginning not later than 2 years after the date of enactment of this Act, and not less frequently than once every 3 years thereafter, the advisory committee shall submit to the President, the Committee on Science, Space, and Technology of the House of Representatives, and the Committee on Commerce, Science, and Transportation of the Senate, a report on—

(A) the findings of the advisory committee’s assessment under paragraph (2); and

(B) the advisory committee’s recommendations for ways to improve the Initiative.

(4) APPLICATION OF FEDERAL ADVISORY COMMITTEE ACT.—Section 14 of the Federal Advisory
Committee Act (5 U.S.C. App.) shall not apply to the advisory committee.

(5) TERMINATION.—The advisory committee established under paragraph (1) shall terminate on the date that is 10 years after the date of the enactment of this Act.

(g) EXTERNAL REVIEW OF ETHICAL, LEGAL, ENVIRONMENTAL, SAFETY, SECURITY, AND SOCIETAL ISSUES.—

(1) IN GENERAL.—Not later than 6 months after the date of enactment of this Act, the Director shall seek to enter into an agreement with the National Academies of Sciences, Engineering, and Medicine to conduct a review, and make recommendations with respect to, the ethical, legal, environmental, safety, security, and other appropriate societal issues related to engineering biology research and development. The review shall include—

(A) an assessment of the current research on such issues;

(B) a description of the research gaps relating to such issues;

(C) recommendations on how the Initiative can address the research needs identified pursuant to subparagraph (B); and
(D) recommendations on how researchers engaged in engineering biology can best incorporate considerations of ethical, legal, environmental, safety, security, and other societal issues into the development of research proposals and the conduct of research.

(2) REPORT TO CONGRESS.—The agreement entered into under paragraph (1) shall require the National Academies of Sciences, Engineering, and Medicine to, not later than 2 years after the date of the enactment of this Act—

(A) submit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report containing the findings and recommendations of the review conducted under paragraph (1); and

(B) make a copy of such report available on a publicly accessible website.

(h) AGENCY ACTIVITIES.—

(1) NATIONAL SCIENCE FOUNDATION.—As part of the Initiative, the Foundation shall—

(A) support basic research in engineering biology through individual grants, collaborative
grants, and through interdisciplinary research centers;

(B) support research on the environmental, legal, ethical, and social implications of engineering biology;

(C) provide support for research instrumentation for engineering biology disciplines, including support for research, development, optimization and validation of novel technologies to enable the dynamic study of molecular processes in situ;

(D) support curriculum development and research experiences for secondary, undergraduate, and graduate students in engineering biology and biomanufacturing; and

(E) award grants, on a competitive basis, to enable institutions to support graduate students and postdoctoral fellows who perform some of their engineering biology research in an industry setting.

(2) DEPARTMENT OF COMMERCE.—

(A) NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY.—As part of the Initiative, the Director of the National Institute of Standards and Technology shall—
(i) establish a bioscience research program to advance the development of standard reference materials and measurements and to create new data tools, techniques, and processes necessary to advance engineering biology and biomanufacturing;

(ii) provide access to user facilities with advanced or unique equipment, services, materials, and other resources to industry, institutions of higher education, nonprofit organizations, and government agencies to perform research and testing;

and

(iii) provide technical expertise to inform the potential development of guidelines or safeguards for new products, processes, and systems of engineering biology.

(B) NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION.—As part of the initiative, the Administrator of the National Oceanic and Atmospheric Administration shall—

(i) establish a program to conduct and support omics research and associated bioinformatic sciences to increase efficiency and promote a sustainable bioeconomy (blue
economy) to develop the next generation of

tools and products to improve ecosystem

stewardship, monitoring, management, as-

sessments, and forecasts; and

(ii) collaborate with other agencies to

understand potential environmental threats

and safeguards relating to engineering biol-

ogy.

(3) DEPARTMENT OF ENERGY.—As part of the

Initiative, the Secretary of Energy shall—

(A) conduct and support research, develop-

ment, demonstration, and commercial applica-

tion activities in engineering biology, including

in the areas of synthetic biology, advanced

biofuel development, biobased materials, and en-

vironmental remediation;

(B) support the development, optimization

and validation of novel, scalable tools and tech-

nologies to enable the dynamic study of molec-

ular processes in situ; and

(C) provide access to user facilities with ad-

vanced or unique equipment, services, materials,

and other resources, including secure access to

high-performance computing, as appropriate, to

industry, institutions of higher education, non-
profit organizations, and government agencies to perform research and testing.

(4) DEPARTMENT OF DEFENSE.—As part of the Initiative, the Secretary of Defense shall—

(A) conduct and support research and development in engineering biology and associated data and information sciences;

(B) support curriculum development and research experiences in engineering biology and associated data and information sciences across the military education system, to include service academies, professional military education, and military graduate education; and

(C) assess risks of potential national security and economic security threats relating to engineering biology.

(5) NATIONAL AERONAUTICS AND SPACE ADMINISTRATION.—As part of the Initiative, the National Aeronautics and Space Administration shall—

(A) conduct and support basic and applied research in engineering biology, including in synthetic biology, and related to Earth and space sciences, aeronautics, space technology, and space exploration and experimentation, consistent with
the priorities established in the National Academies’ decadal surveys; and

(B) award grants, on a competitive basis, that enable institutions to support graduate students and postdoctoral fellows who perform some of their engineering biology research in an industry setting.

(6) DEPARTMENT OF AGRICULTURE.—As part of the Initiative, the Secretary of Agriculture shall—

(A) support research and development in engineering biology, including in synthetic biology and biomaterials;

(B) award grants through the National Institute of Food and Agriculture; and

(C) support development conducted by the Agricultural Research Service.

(7) ENVIRONMENTAL PROTECTION AGENCY.—As part of the Initiative, the Environmental Protection Agency shall support research on how products, processes, and systems of engineering biology will affect or can protect the environment.

(8) DEPARTMENT OF HEALTH AND HUMAN SERVICES.—As part of the Initiative, the Secretary of Health and Human Services, as appropriate and consistent with activities of the Department of Health
and Human Services in effect on the day before the date of the enactment of this Act, shall—

(A) support research and development to advance the understanding and application of engineering biology for human health;

(B) support relevant interdisciplinary research and coordination; and

(C) support activities necessary to facilitate oversight of relevant emerging biotechnologies.

(i) RULE OF CONSTRUCTION.—Nothing in this section shall be construed to require public disclosure of information that is exempt from mandatory disclosure under section 552 of title 5, United States Code.

SEC. 218. MICROGRAVITY UTILIZATION POLICY.

(a) SENSE OF CONGRESS.—It is the sense of Congress that space technology and the utilization of the microgravity environment for science, engineering, and technology development is critical to long-term competitiveness with near-peer competitors, including China.

(b) POLICY.—To the greatest extent appropriate, the Foundation shall facilitate access to the microgravity environment for awardees of funding from the Foundation, including in private sector platforms, for the development of science, engineering, and technology.
(c) Report.—Not later than 180 days after the date of enactment of this Act, the Director shall provide to the appropriate committees of Congress a report on the Foundation’s plan for facilitating awardee access to the micro-gravity environment.

TITLE III—RESEARCH SECURITY

SEC. 301. NATIONAL SCIENCE FOUNDATION RESEARCH SECURITY.

(a) Research Security and Policy Office.—The Director shall establish and maintain a research security and policy office within the Office of the Director. The functions of the research security and policy office shall be to coordinate all research security policy issues across the Foundation, including by—

(1) serving as a resource at the Foundation for all policy issues related to the security and integrity of the conduct of research supported by the Foundation;

(2) conducting outreach and education activities for awardees on research policies and potential security risks;

(3) educating Foundation program managers and other staff on evaluating Foundation awards and awardees for potential security risks;
(4) communicating reporting and disclosure requirements to awardees and applicants for funding;

(5) consulting and coordinating with the Foundation Office of Inspector General and with other Federal science agencies, as appropriate, and through the National Science and Technology Council in accordance with the authority provided under section 1746 of the National Defense Authorization Act for Fiscal Year 2020 (Public Law 116–92; 42 U.S.C. 6601 note), to identify and address potential security risks that threaten research integrity and other risks to the research enterprise and to develop research security policy and best practices;

(6) performing risk assessments, in consultation, as appropriate, with other Federal agencies, of Foundation proposals and awards using analytical tools to assess nondisclosures of required information that could indicate breaches of research integrity or potentially fraudulent activity that would be referred to the Foundation Office of Inspector General;

(7) establishing policies and procedures for safeguarding sensitive research information and technology, working in consultation, as appropriate, with other Federal agencies, to ensure compliance with National Security Presidential Memorandum–33 (relat-
ing to strengthening protections of United States Gov-
ernment-supported research and development against
foreign government interference and exploitation) or a
successor policy document; and

(8) in accordance with relevant policies of the
agency, conducting due diligence with regard to ap-
licants for grant funding from the Foundation prior
to awarding such funding.

(b) CHIEF OF RESEARCH SECURITY.—The Director
shall appoint a senior agency official within the Office of
the Director as a Chief of Research Security, whose primary
responsibility is to manage the office established in sub-
section (a).

(c) REPORT TO CONGRESS.—Not later than 180 days
after the date of enactment of this Act, the Director shall
provide a report on the resources and the number of full-
time employees needed to carry out the functions of the of-
fice established in subsection (a) to the Committee on Com-
merce, Science, and Transportation of the Senate, the Com-
mittee on Appropriations of the Senate, the Committee on
Science, Space, and Technology of the House of Representa-
tives, and the Committee on Appropriations of the House
of Representatives.

(d) ONLINE RESOURCE.—The Director shall develop
an online resource hosted on the Foundation’s publicly ac-
cessible website containing up-to-date information, tailored for institutions of higher education and individual researchers, including—

(1) an explanation of Foundation research security policies;

(2) unclassified guidance on potential security risks that threaten research integrity and other risks to the research enterprise;

(3) examples of beneficial international collaborations and how such collaborations differ from foreign government interference efforts that threaten research integrity;

(4) best practices for mitigating security risks that threaten research integrity; and

(5) additional reference materials, including tools that assist organizations seeking Foundation funding and awardees in information disclosure to the Foundation.

(e) RESEARCH GRANTS.—The Director shall continue to award grants, on a competitive basis, to institutions of higher education or nonprofit organizations (or consortia of such institutions or organizations) to support research on the conduct of research and the research environment, including research on research misconduct, breaches of research integrity, and detrimental research practices.
(f) Responsible Conduct in Research Training.—Section 7009 of the America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science Act (42 U.S.C. 1862o–1) is amended—

(1) by striking “and postdoctoral researchers” and inserting “postdoctoral researchers, faculty, and other senior personnel”; and

(2) by inserting before the period at the end the following: “, including training and mentorship to raise awareness of potential security threats and of Federal export control, disclosure, and reporting requirements”.

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

SEC. 302. Research Security and Integrity Information Sharing Analysis Organization.

(a) Establishment.—The Director of the Office of Science and Technology Policy shall enter into an agreement with a qualified independent organization to establish a research security and integrity information sharing analysis organization (referred to in this section as the RSI-ISAO), which shall include members described in subsection (d) and carry out the duties described in subsection (b).
(b) DUTIES.—The RSI-ISAO shall—

(1) serve as a clearinghouse for information to help enable the members and other entities in the research community to understand the context of their research and identify improper or illegal efforts by foreign entities to obtain research results, know how, materials, and intellectual property;

(2) develop a set of standard risk assessment frameworks and best practices, relevant to the research community, to assess research security risks in different contexts;

(3) share information concerning security threats and lessons learned from protection and response efforts through forums and other forms of communication;

(4) provide timely reports on research security risks to provide situational awareness tailored to the research and education community;

(5) provide training and support, including through webinars, for relevant faculty and staff employed by institutions of higher education on topics relevant to research security risks and response;

(6) enable standardized information gathering and data compilation, storage, and analysis for compiled incident reports;
(7) support analysis of patterns of risk and identification of bad actors and enhance the ability of members to prevent and respond to research security risks; and

(8) take other appropriate steps to enhance research security.

(c) FUNDING.—The Foundation may provide initial funds toward the RSI-ISAO, but shall seek to have the fees authorized in subsection (d)(2) cover the costs of operations at the earliest practicable time.

(d) MEMBERSHIP.—

(1) IN GENERAL.—The RSI-ISAO shall serve and include members representing institutions of higher education, nonprofit research institutions, and small and medium-sized businesses.

(2) FEES.—As soon as practicable, members of the RS-ISAO shall be charged an annual rate to enable the RSI-ISAO to cover its costs. Rates shall be set on a sliding scale based on research and development spent to ensure that membership is accessible to a diverse community of stakeholders and ensure broad participation. The RS-ISAO shall develop a plan to sustain the RS-ISAO without Federal funding, as practicable.
(e) Board of Directors.—The RSI-ISAO may establish a board of directors to provide guidance for policies, legal issues, and plans and strategies of the entity’s operations. The board shall include a diverse group of stakeholders representing the research community, including academia, industry, and experienced research security administrators.

(f) Definition of Institution of Higher Education.—The term “institution of higher education” has the meaning given the term in section 101(a) of the Higher Education Act of 1965 (20 U.S.C. 1001(a)).

SEC. 303. FOREIGN GOVERNMENT TALENT RECRUITMENT PROGRAM PROHIBITION.

(a) Guidance.—Not later than 180 days after the date of enactment of this Act, the Director of the Office of Science and Technology Policy shall, in coordination with the interagency working group established under section 1746 of the National Defense Authorization Act for Fiscal Year 2020 (Public Law 116–92; 42 U.S.C. 6601 note), publish and widely distribute a uniform set of policy guidelines for Federal science agencies regarding foreign government talent recruitment programs. These policy guidelines shall—

(1) prohibit all personnel of each Federal science agency, including Federal employees, contract employees, independent contractors, individuals serving
under the Intergovernmental Personnel Act of 1970 (42 U.S.C. 4701 et seq.), Visiting Scientist Engineer and Educator appointments, and special government employees, from participating in a foreign government talent recruitment program;

(2) prohibit awards from being made for any proposal in which the principal investigator, any individual listed on the application for the award with direct involvement in the proposal, or co-principal investigator is participating in a foreign government talent recruitment program of the People’s Republic of China, the Democratic People’s Republic of Korea, the Russian Federation, or the Islamic Republic of Iran; and

(3) to the extent practicable, require institutions receiving funding to prohibit awards from being used by any individuals participating in a foreign government talent recruitment program of the People’s Republic of China, the Democratic People’s Republic of Korea, the Russian Federation, or the Islamic Republic of Iran.

(b) PROHIBITION.—Not later than 1 year after the date of enactment of this Act, each Federal science agency shall issue a policy, utilizing the policy guidelines developed under subsection (a).
(c) **EXEMPTION.**—The policy developed under subsection (b) may include an exemption for participation in international conferences or other international exchanges, partnerships, or programs, as sanctioned or approved by the Federal science agency. When such participation is authorized, the Federal science agency shall ensure training is provided to the participant on how to respond to overtures from individuals associated with foreign government talent recruitment programs.

(d) **REPORT.**—Not later than 2 years after the date of enactment of this Act, each Federal science agency shall report to Congress on the steps it has taken to implement this section.

(e) **FOREIGN GOVERNMENT TALENT RECRUITMENT PROGRAMS.**—In addition to existing authorities for preventing waste, fraud, abuse, and mismanagement of Federal funds, each Federal science agency shall require, as a condition of an award, that the senior personnel designated by the United States institution applying for Federal funding submit foreign government talent recruitment program contracts to the agency if the principal investigator or a co-principal investigator discloses membership in a foreign government talent recruitment program other than a program of the People’s Republic of China, the Democratic People’s Republic of Korea, the Russian Federation, or the Is-
Islamic Republic of Iran. The United States institution, as
the award applicant, shall ensure, to the maximum extent
practicable, that the contract conforms with the Federal
science agency’s guidance on conflicts of interest, including
those contained in relevant contract proposal and award
policies and procedures. Each Federal science agency shall
review the contract and may prohibit funding to the award-
ee if the obligations in the contract interfere with the capac-
ity for activities receiving support to be carried out, or cre-
ate duplication with Federally supported activities.

(f) CONSISTENCY.—The Director of the Office of
Science and Technology Policy shall ensure that the policies
issued by Federal science agencies under subsection (b) are
consistent to the greatest extent practicable.

(g) DEFINITION.—For purposes of this section and sec-
tion 304, the term “foreign government talent recruitment
program” has the meaning given the term “foreign govern-
ment-sponsored talent recruitment program” in National
Security Presidential Memorandum–33 (relating to
strengthening protections of United States Government-sup-
ported research and development against foreign govern-
ment interference and exploitation) or a successor policy
document.
SEC. 304. ADDITIONAL REQUIREMENTS FOR DIRECTORATE RESEARCH SECURITY.

(a) INITIATIVE REQUIRED.—The Director shall, in consultation with other appropriate Federal agencies, establish an initiative to work with institutions of higher education that perform research and technology development activities under the Directorate—

(1) to support protection of intellectual property, consistent with the controls relevant to the grant or award, key personnel, and information about critical technologies relevant to national security;

(2) to limit undue influence, including through foreign government talent recruitment programs, by countries to exploit United States technology within the Foundation research, science and technology, and innovation enterprise, including research funded by the Directorate; and

(3) to support efforts toward development of domestic talent in relevant scientific and engineering fields.

(b) COORDINATION.—The initiative established under subsection (a) shall be developed and executed to the maximum extent practicable with academic research institutions and other educational and research organizations.

(c) REQUIREMENTS.—The initiative established under subsection (a) shall include development of the following:
(1) Training developed and delivered in consultation with institutions of higher education and appropriate Federal agencies, and other support to institutions of higher education, to promote security of controlled information, as appropriate, including best practices for protection of controlled information.

(2) The capacity of institutions of higher education to assess whether individuals affiliated with Directorate programs have participated in or are currently participating in foreign government talent recruitment program programs.

(3) Opportunities to collaborate with Directorate awardees to promote protection of controlled information as appropriate and strengthen defense against foreign intelligence services.

(4) As appropriate, regulations and procedures—

(A) for government and academic organizations and personnel to support the goals of the initiative; and

(B) that are consistent with policies that protect open and scientific exchange in fundamental research.

(5) Policies to limit or prohibit funding provided by the Foundation for individual researchers who
knowingly violate regulations developed under the ini-
tiative, including policies relating to foreign govern-
ment talent recruitment programs.

(6) Policies to limit or prohibit funding provided
by the Foundation for institutions that knowingly
violate regulations developed under the initiative, in-
cluding policies relating to foreign government talent
recruitment programs.

(d) DEPARTMENT OF DEFENSE EFFORTS.—In car-
rying out this section, the Foundation shall consider the
efforts undertaken by the Department of Defense to secure
defense research, including as provided under section 1286
of the John S. McCain National Defense Authorization Act

(e) ANNUAL REPORT.—

(1) IN GENERAL.—Not later than 1 year after
date of enactment of this Act, and annually there-
after, the Director, shall submit to Congress a report
on the activities carried out under the initiative es-
tablished under subsection (a).

(2) CONTENTS.—The report required by para-
graph (1) shall include the following:

(A) A description of the activities conducted
and the progress made under the initiative.
(B) The findings of the Director with respect to the initiative.

(C) Such recommendations as the Director may have for legislative or administrative action relating to the matters described in subsection (a).

(D) Identification and discussion of the gaps in legal authorities that need to be improved to enhance the security of research institutions of higher education performing Directorate research.

(E) Information on Foundation Inspector General cases, as appropriate, relating to undue influence to security threats to academic research activities funded by the Foundation, including theft of property or intellectual property relating to a project funded by the Department at an institution of higher education.

(3) FORM.—The report submitted under paragraph (1) shall be submitted in both unclassified and classified formats, as appropriate.

SEC. 305. PROTECTING RESEARCH FROM CYBER THEFT.

(a) IMPROVING CYBERSECURITY OF INSTITUTIONS OF HIGHER EDUCATION.—Section 2(e)(1)(A) of the National
Institute of Standards and Technology Act (15 U.S.C. 272(e)(1)(A)) is amended—

(1) in clause (viii), by striking “and” after the semicolon;

(2) by redesignating clause (ix) as clause (x);

and

(3) by inserting after clause (viii) the following:

“(ix) consider institutions of higher education (as defined in section 101 of the Higher Education Act of 1965 (20 U.S.C. 1001)); and”.

(b) Dissemination of Resources for Research Institutions.—

(1) In General.—Not later than 90 days after the date of enactment of this Act, the Director shall, using the authorities of the Director under subsection (e)(1)(A)(ix) of section 2 of the National Institute of Standards and Technology Act (15 U.S.C. 272), as amended by subsection (a), disseminate and make publicly available resources to help research institutions and institutions of higher education identify, protect the institution involved from, detect, respond to, and recover to manage the cybersecurity risk of the institution involved related to conducting research.
(2) **REQUIREMENTS.**—The Director shall ensure that the resources disseminated pursuant to paragraph (1)—

(A) are generally applicable and usable by a wide range of research institutions and institutions of higher education;

(B) vary with the nature and size of the implementing research institutions or institutions of higher education, and the nature and sensitivity of the data collected or stored on the information systems or devices of the implementing research institutions or institutions of higher education;

(C) include elements that promote awareness of simple, basic controls, a workplace cybersecurity culture, and third-party stakeholder relationships, to assist research institutions or institutions of higher education in mitigating common cybersecurity risks;

(D) include case studies of practical application;

(E) are technology-neutral and can be implemented using technologies that are commercial and off-the-shelf; and
(F) to the extent practicable, are based on international standards.

(3) NATIONAL CYBERSECURITY AWARENESS AND EDUCATION PROGRAM.—The Director shall ensure that the resources disseminated under paragraph (1) are consistent with the efforts of the Director under section 303 of the Cybersecurity Enhancement Act of 2014 (15 U.S.C. 7443).

(4) UPDATES.—The Director shall review periodically and update the resources under paragraph (1) as the Director determines appropriate.

(5) VOLUNTARY RESOURCES.—The use of the resources disseminated under paragraph (1) shall be considered voluntary.

(6) OTHER FEDERAL CYBERSECURITY REQUIREMENTS.—Nothing in this section may be construed to supersede, alter, or otherwise affect any cybersecurity requirements applicable to Federal agencies.

(c) DEFINITIONS.—In this section:

(1) DIRECTOR.—The term “Director” means the Director of the National Institute of Standards and Technology.

(2) RESOURCES.—The term “resources” means guidelines, tools, best practices, standards, methodologies, and other ways of providing information.
(3) RESEARCH INSTITUTION.—The term “research institution”—

(A) means a nonprofit institution (as defined in section 4(3) of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3703(3))); and

(B) includes Federally funded research and development centers, as identified by the National Science Foundation in accordance with the Federal Acquisition Regulation issued in accordance with section 1303(a)(1) of title 41 (or any successor regulation).

SEC. 306. INTERNATIONAL STANDARDS DEVELOPMENT.

(a) FINDINGS.—Congress finds the following:

(1) Widespread use of standards facilitates technology advancement by defining and establishing common foundations for interoperability, product differentiation, technological innovation, and other value-added services.

(2) Standards also promote an expanded, more interoperable, and efficient marketplace.

(3) Global cooperation and coordination on standards for emerging technologies will be critical for having a consistent set of approaches to enable market
competition, preclude barriers to trade, and allow in-
novation to flourish.

(4) The People’s Republic of China’s Standard-
ization Reform Plan and Five-Year Plan for Stand-
ardization highlight its high-level goals to establish
China as a standards power by 2020, participate in
at least half of all standards drafting and revision ef-
forts in recognized international standards setting or-
ganizations, and strengthen China’s participation in
the governance of international standards setting or-
ganizations.

(5) As emerging technologies develop for global
deployment, it is critical that the United States and
its allies continue to participate in the development
of standards that underpin the technologies them-
selves, and the future international governance of
these technologies.

(6) The United States position on standardiza-
tion in emerging technologies will be critical to
United States economic competitiveness.

(7) The National Institute of Standards and
Technology is in a unique position to strengthen
United States leadership in standards development,
particularly for emerging technologies, to ensure con-
continuing United States economic competitiveness and national security.

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

(1) the principles of openness, transparency, due process, and consensus in the development of international standards are critical;

(2) voluntary consensus standards, developed through an industry-led process, serve as the cornerstone of the United States standardization system and have become the basis of a sound national economy and the key to global market access;

(3) strengthening the unique United States public-private partnerships approach to standards development is critical to United States economic competitiveness; and

(4) the United States Government should ensure cooperation and coordination across Federal agencies to partner with and support private sector stakeholders to continue to shape international dialogues in regard to standards development for emerging technologies.

(c) ACTIVITIES AND ENGAGEMENT.—The Secretary of Commerce, acting through the Director, shall—
(1) build capacity and training opportunities to help create a pipeline of talent and leadership in key standards development positions;

(2) partner with private sector entities to support strategic engagement and leadership in the development of international standards for digital economy technologies, including partnering with industry to assist private sector partners to develop standards strategies and support engagement and participation in the relevant standards activities; and

(3) prioritize efforts on standards development for emerging technologies, identify an organization to develop these standards, identify leadership positions of interest to the United States, and identify key contributors for technical and leadership expertise in these areas.

SEC. 307. RESEARCH FUNDS ACCOUNTING.

(a) Definitions.—In this section:

(1) Foreign entity of concern.—The term “foreign entity of concern” means a foreign entity that is—

(A) designated as a foreign terrorist organization by the Secretary of State under section 219(a) of the Immigration and Nationality Act (8 U.S.C. 1189(a));
(B) included on the list of specially designated nationals and blocked persons maintained by the Office of Foreign Assets Control of the Department of the Treasury (commonly known as the SDN list);

(C) owned by, controlled by, or subject to the jurisdiction or direction of a government of a foreign country that is a covered nation (as defined in section 2533c(d) of title 10, United States Code);

(D) alleged by the Attorney General to have been involved in activities for which a conviction was obtained under—

   (i) chapter 37 of title 18, United States Code (commonly known as the Espionage Act);

   (ii) section 951 or 1030 of title 18, United States Code;

   (iii) chapter 90 of title 18, United States Code (commonly known as the Economic Espionage Act of 1996);

   (iv) the Arms Export Control Act (22 U.S.C. 2751 et seq.);
(v) section 224, 225, 226, 227, or 236 of the Atomic Energy Act of 1954 (42 U.S.C. 2274, 2275, 2276, 2277, and 2284);

(vi) the Export Control Reform Act of 2018 (50 U.S.C. 4801 et seq.); or

(vii) the International Emergency Economic Powers Act (50 U.S.C. 1701 et seq.); or

(E) determined by the Secretary of Commerce, in consultation with the Secretary of Defense and the Director of National Intelligence, to be engaged in unauthorized conduct that is detrimental to the national security or foreign policy of the United States.

(2) STUDY PERIOD.—The term “study period” means the 5-year period ending on the date of enactment of this Act.

(b) STUDY.—The Comptroller General of the United States shall conduct a study on Federal funding made available, to foreign entities of concern for research, during the study period.

(c) MATTERS TO BE INCLUDED.—The study conducted under subsection (b) shall include, to the extent practicable with respect to the study period, an assessment of—
(1) the total amount of Federal funding made available to foreign entities of concern for research;

(2) the total number and types of foreign entities of concern to whom such funding was made available;

(3) the requirements relating to the awarding, tracking, and monitoring of such funding;

(4) any other data available with respect to Federal funding made available to foreign entities of concern for research; and

(5) such other matters as the Comptroller General determines appropriate.

(d) Briefing on Available Data.—Not later than 120 days after the date of the enactment of this Act, the Comptroller General shall brief the Committee on Commerce, Science, and Transportation and the Committee on Foreign Relations of the Senate and the Committee on Science, Space, and Technology and the Committee on Foreign Affairs of the House of Representatives on the study conducted under subsection (b) and on the data that is available with respect to Federal funding made available to foreign entities of concern for research.

(e) Report.—The Comptroller General shall submit to the congressional committees specified in subsection (d), by a date agreed upon by the Comptroller General and the
committees on the date of the briefing, a report on the findings of the study conducted under subsection (b).

SEC. 308. PLAN WITH RESPECT TO SENSITIVE OR CONTROLLED INFORMATION AND BACKGROUND SCREENING.

Not later than 180 days after the enactment of this Act, the Director, in consultation with the Director of National Intelligence and, as appropriate, other Federal agencies, shall develop a plan to—

(1) identify research areas that may include sensitive or controlled information, including in the key technology focus areas; and

(2) provide for background screening, as appropriate, for individuals working in such research areas who are employees of the Foundation or recipients of funding from the Foundation.

TITLE IV—REGIONAL INNOVATION CAPACITY

SEC. 401. REGIONAL TECHNOLOGY HUBS.

(a) In General.—The Stevenson-Wydler Technology Innovation Act of 1980 (Public Law 96–480; 15 U.S.C. 3701 et seq.) is amended—

(1) by redesignating section 28 as section 29;

and

(2) by inserting after section 27 the following: }
“SEC. 28. REGIONAL TECHNOLOGY HUB PROGRAM.

“(a) DEFINITIONS.—In this section:

“(1) APPROPRIATE COMMITTEES OF CONGRESS.—The term ‘appropriate committees of Congress’ means—

“(A) the Committee on Commerce, Science, and Transportation, the Committee on Environment and Public Works, and the Committee on Appropriations of the Senate; and

“(B) the Committee on Science, Space, and Technology, the Committee on Transportation and Infrastructure, and the Committee on Appropriations of the House of Representatives.

“(2) COOPERATIVE EXTENSION.—The term ‘cooperative extension’ has the meaning given the term ‘extension’ in section 1404 of the Food and Agriculture Act of 1977 (7 U.S.C. 3103).

“(3) KEY TECHNOLOGY FOCUS AREAS.—The term ‘key technology focus areas’ means the areas included on the most recent list under section 5 of the Endless Frontier Act.

“(4) LABOR ORGANIZATION.—The term ‘labor organization’ has the meaning given such term in section 101 of the Endless Frontier Act.

“(5) LOW POPULATION STATE.—The term ‘low population State’ means a State without an urban-
ized area with a population greater than 200,000 as reported in the 2010 decennial census.

“(6) MANUFACTURING EXTENSION CENTER.—The term ‘manufacturing extension center’ has the meaning given the term ‘Center’ in section 25(a) of the National Institute of Standards and Technology Act (15 U.S.C. 278k(a)).

“(7) MANUFACTURING USA INSTITUTE.—The term ‘Manufacturing USA institute’ means an Manufacturing USA institute described in section 34(d) of the National Institute of Standards and Technology Act (15 U.S.C. 278s(d)).

“(8) SITE CONNECTIVITY INFRASTRUCTURE.—The term ‘site connectivity infrastructure’ means localized driveways and access roads to a facility as well as hookups to the new facility for drinking water, waste water, broadband, and other basic infrastructure services already present in the area.

“(9) SMALL AND RURAL COMMUNITIES.—The term ‘small and rural community’ means a noncore area, a micropolitan area, or a small metropolitan statistical area with a population of not more than 200,000.

“(10) VENTURE DEVELOPMENT ORGANIZATION.—The term ‘venture development organization’ has the
meaning given such term in section 27(a) of the Stevenson-Wydler Act of 1980 (15 U.S.C. 3722(a)).

“(b) REGIONAL TECHNOLOGY HUB PROGRAM.—

“(1) IN GENERAL.—Subject to the availability of appropriations, the Secretary shall carry out a program—

“(A) to encourage new and constructive collaboration among local, State, and Federal government entities, academia, the private sector, economic development organizations, and labor organizations;

“(B) to support eligible consortia in the creation of regional innovation strategies;

“(C) to designate eligible consortia as regional technology hubs and facilitate activities by consortia designated as regional technology hubs in implementing their regional innovation strategies, in order—

“(i) to enable United States leadership in technology and innovation sectors critical to national and economic security;

“(ii) to support regional economic development, including in small cities and rural areas, and diffuse innovation around the United States; and
“(iii) to support domestic job creation and broad-based economic growth; and

“(D) to ensure that the regional technology hubs address the intersection of emerging technologies and either local and regional challenges or national challenges; and

“(E) to conduct ongoing research, evaluation, analysis, and dissemination of best practices for regional development and competitiveness in technology and innovation.

“(2) AWARDS.—The Secretary shall carry out the program required by paragraph (1) through the award of the following:

“(A) Strategy development grants or cooperative agreements to eligible consortia under subsection (e).

“(B) Strategy implementation grants or cooperative agreements to regional technology hubs under subsection (f).

“(3) ADMINISTRATION.—The Secretary shall carry out this section through the Assistant Secretary of Commerce for Economic Development in coordination with the Under Secretary of Commerce for Standards and Technology.
“(c) **ELIGIBLE CONSORTIA.**—For purposes of this section, an eligible consortium is a consortium that—

“(1) includes 1 or more—

“(A) institutions of higher education;

“(B) local or Tribal governments or other political subdivisions of a State;

“(C) State governments represented by an agency designated by the governor of the State or States that is representative of the geographic area served by the consortia;

“(D) economic development organizations or similar entities that are focused primarily on improving science, technology, innovation, or entrepreneurship;

“(E) industry or firms in relevant technology or innovation sectors;

“(F) labor organizations or workforce training organizations, including State and local workforce development boards as established under section 101 and 107 of the Workforce Investment and Opportunity Act (29 U.S.C. 3111; 3122); and

“(2) may include 1 or more—

“(A) nonprofit economic development entities with relevant expertise, including a district
organization (as defined in section 300.3 of title 13, Code of Federal Regulations, or successor regulation);

“(B) venture development organizations;

“(C) financial institutions and investment funds;

“(D) primary and secondary educational institutions, including career and technical education schools;


“(F) Federal laboratories;

“(G) Manufacturing extension centers;

“(H) Manufacturing USA institutes;

“(I) institutions receiving an award under section 104 of the Endless Frontier Act; and

“(J) a cooperative extension.

“(d) Designation of Regional Technology Hubs.—

“(1) In general.—In carrying out subsection (b)(1)(C), the Secretary shall use a competitive process to designate eligible consortia as regional technology hubs.
“(2) Geographic distribution.—In conducting the competitive process under paragraph (1), the Secretary shall ensure geographic distribution in the designation of regional technology hubs by—

“(A) seeking to designate at least three technology hubs in each region covered by a regional office of the Economic Development Administration;

“(B) focusing on localities that are not leading technology centers;

“(C) ensuring that not fewer than one-third of eligible consortia designated as regional technology hubs significantly benefit a small and rural community, which may include a State described in subparagraph (D);

“(D) ensuring that not fewer than one-third of eligible consortia designated as regional technology hubs include as a member of the eligible consortia at least 1 member that is a State that is eligible to receive funding from the Established Program to Stimulate Competitive Research of the National Science Foundation; and

“(E) ensuring that at least one eligible consortium designated as a regional technology hub is headquartered in a low population State that
is eligible to receive funding from the Established
Program to Stimulate Competitive Research of
the National Science Foundation.

“(3) RELATION TO CERTAIN GRANT AWARDS.—
The Secretary shall not require an eligible consortium
to receive a grant or cooperative agreement under
subsection (e) in order to be designated as a regional
technology hub under paragraph (1) of this sub-
section.

“(e) STRATEGY DEVELOPMENT GRANTS AND COOPER-
ATIVE AGREEMENTS.—

“(1) IN GENERAL.—The Secretary shall use a
competitive process to award grants or cooperative
agreements to eligible consortia for the development of
regional innovation strategies.

“(2) NUMBER OF RECIPIENTS.—The Secretary
shall award a grant or cooperative agreement under
paragraph (1) to not fewer than 20 eligible consortia.

“(3) GEOGRAPHIC DIVERSITY AND REPRESENTA-
TION.—

“(A) IN GENERAL.—The Secretary shall
carry out paragraph (1) in a manner that en-
sures geographic diversity and representation
from communities of differing populations.
“(B) AWARDS TO SMALL AND RURAL COMMUNITIES.—In carrying out paragraph (1), the Secretary shall—

“(i) award not fewer than one-third of the grants and cooperative agreements under such paragraph to eligible consortia that significantly benefit a small and rural community, which may include a State described in clause (ii); and

“(ii) award not fewer than one-third of the grants and cooperative agreements under such paragraph to eligible consortia that include as a member of the eligible consortia at least 1 member that is a State that is eligible to receive funding from the Established Program to Stimulate Competitive Research of the National Science Foundation.

“(4) USE OF FUNDS.—The amount of a grant or cooperative agreement awarded under paragraph (1) shall be as follows:

“(A) To coordinate locally defined planning processes, across jurisdictions and agencies, relating to developing a comprehensive regional technology strategy.
“(B) To identify regional partnerships for developing and implementing a comprehensive regional technology strategy.

“(C) To conduct or update assessments to determine regional needs.

“(D) To develop or update goals and strategies to implement an existing comprehensive regional plan.

“(E) To identify or implement local zoning and other code changes necessary to implement a comprehensive regional technology strategy.

“(5) FEDERAL SHARE.—The Federal share of the cost of an effort carried out using a grant or cooperative agreement awarded under this subsection may not exceed 80 percent—

“(A) where in-kind contributions may be used for all or part of the non-Federal share, but Federal funding from other Government sources may not count towards the non-Federal share;

“(B) except in the case of an eligible consortium that represents all or part of a small and rural community, the Federal share may be up to 90 percent of the total cost, subject to subparagraph (A); and
“(C) except in the case of an eligible consortium that is led by a Tribal government, the Federal share may be up to 100 percent of the total cost of the project.

“(f) Strategy Implementation Grants and Cooperative Agreements.—

“(1) In General.—The Secretary shall use a competitive process to award grants or cooperative agreements to regional technology hubs for the implementation of regional innovation strategies, including regional strategies for infrastructure and site development, in support of the regional technology hub’s plans and programs.

“(2) Use of Funds.—The amount of a grant or cooperative agreement awarded under subparagraph (A) to a regional technology hub may be used by the regional technology hub to support any of the following activities, consistent with the most current regional innovation strategy of the regional technology hub:

“(A) Workforce Development Activities.—Workforce development activities, including activities relating to the following:

“(i) The creation of partnerships between industry, workforce, and academic
groups, which may include community colleges, to create and align technical training and educational programs.

“(ii) The design, development, and updating of educational and training curriculum.

“(iii) The procurement of facilities and equipment, as required to train a technical workforce.

“(iv) The development and execution of programs to rapidly award certificates or credentials recognized by regional industry groups.

“(v) The matching of regional employers with a potential new entrant, underemployed, or incumbent workforce.

“(vi) The expansion of successful training programs at a scale required by the region served by the regional technology hub, including through the use of online education.

“(B) BUSINESS AND ENTREPRENEUR DEVELOPMENT ACTIVITIES.—Business and entrepreneur development activities, including activities relating to the following:
“(i) The development and growth of regional businesses and the training of entrepreneurs.

“(ii) The support of technology commercialization, including funding for activities relevant to the protection of intellectual property.

“(iii) The development of networks for business and entrepreneur mentorship.

“(C) TECHNOLOGY MATURATION ACTIVITIES.—Technology maturation activities, including activities relating to the following:

“(i) The development and deployment of technologies in sectors critical to the region served by the regional technology hub or to national and economic security, including proof of concept, prototype development, and testing.

“(ii) The provision of facilities for technology maturation, including incubators for collaborative development of technologies by private sector, academic, and other entities.

“(iii) Activities to ensure access to capital for new business formation and busi-
ness expansion, including by attracting new
private, public, and philanthropic investment and by establishing regional venture
and loan funds.

“(iv) Activities determined appropriate
by the Secretary under section 27(c)(2) of
this Act.

“(D) INFRASTRUCTURE-RELATED ACTIVI-
TIES.—The building of facilities and site
connectivity infrastructure necessary to carry
out activities described in subparagraphs (A),
(B), and (C), including activities relating to the
following:

“(i) Establishing a workforce training
center with required tools and instrumenta-
tion.

“(ii) Establishing a facility for tech-
nology development, demonstration, and
testing.

“(iii) Establishing collaborative incu-
bators to support technology commercializa-
tion and entrepreneur training.

“(3) LIMITATION ON AMOUNT OF AWARDS.—The
Secretary shall ensure that no single regional tech-
nology hub receives more than 10 percent of the aggre-
gate amount of the grants and cooperative agreements awarded under this subsection.

“(4) **TERM.**—

“(A) **IN GENERAL.**—The term of a grant or cooperative agreement awarded under this subsection shall be for such period as the Secretary considers appropriate.

“(B) **RENEWAL.**—The Secretary may renew a grant or cooperative agreement awarded to a regional technology hub under this subsection as the Secretary considers appropriate if the Secretary determines that the performance of the regional technology hub is satisfactory.

“(5) **MATCHING REQUIRED.**—

“(A) **IN GENERAL.**—Except in the case of a regional technology hub described in subparagraph (B), the total amount of all grants awarded to a regional technology hub under this subsection in a given year shall not exceed amounts as follows:

“(i) In the first year of the grant or cooperative agreement, 90 percent of the total operating costs of the regional technology hub in that year.
“(ii) In the second year of the grant or cooperative agreement, 85 percent of the total operating costs of the regional technology hub in that year.

“(iii) In the third year of the grant or cooperative agreement, 80 percent of the total operating costs of the regional technology hub in that year.

“(iv) In the fourth year of the grant or cooperative agreement and each year thereafter, 75 percent of the total operating costs of the regional technology hub in that year.

“(B) SMALL AND RURAL COMMUNITIES AND INDIAN TRIBES.—

“(i) IN GENERAL.—The total Federal financial assistance awarded in a given year to a regional technology hub under this subsection shall not exceed amounts as follows:

“(I) In the case of a regional technology hub that represents a small and rural community, in a fiscal year, 90 percent of the total funding of the regional technology hub in that fiscal year.
“(II) In the case of a regional technology hub that is led by a Tribal government, in a fiscal year, 100 percent of the total funding of the regional technology hub in that fiscal year.

“(ii) Minimum threshold of rural representation.—For purposes of clause (i)(I), the Secretary shall establish a minimum threshold of rural representation in the regional technology hub.

“(C) In-kind contributions.—For purposes of this paragraph, in-kind contributions may be used for part of the non-Federal share of the total funding of a regional technology hub in a fiscal year.

“(6) Grants for infrastructure.—Any grant or cooperative agreement awarded under this subsection to support the construction of facilities and site connectivity infrastructure shall be awarded pursuant to section 201 of the Public Works and Economic Development Act of 1965 (42 U.S.C. 3141) and subject to the provisions of such Act, except that subsection (b) of such section and sections 204 and 301 of such Act (42 U.S.C. 3144, 3161) shall not apply.
“(7) Relation to certain grant awards.—

The Secretary shall not require a regional technology hub to receive a grant or cooperative agreement under subsection (e) in order to receive a grant or cooperative agreement under this subsection.

“(g) Applications.—An eligible consortium seeking designation as a regional technology hub under subsection (d) or a grant or cooperative agreement under subsection (e) or (f) shall submit to the Secretary an application therefor at such time, in such manner, and containing such information as the Secretary may specify.

“(h) Considerations for designation and award of strategy development grants and cooperative agreements.—In selecting an eligible consortium that submitted an application under subsection (g) for designation under subsection (d) or for a grant or cooperative agreement under subsection (f), the Secretary shall consider, at a minimum, the following:

“(1) The potential of the eligible consortium to advance the research, development, deployment, and domestic manufacturing of technologies in a key technology focus area or other technology or innovation sector critical to national and economic security.

“(2) The likelihood of positive regional economic effect, including increasing the number of high wage
domestic jobs, and creating new economic opportunities for economically disadvantaged and underrepresented populations.

“(3) How the eligible consortium plans to integrate with and leverage the resources of 1 or more federally funded research and development centers, National Laboratories, Federal laboratories, Manufacturing USA institutes, Hollings Manufacturing Extension Partnership centers, university technology centers established under section 104 of the Endless Frontier Act, the program established under section 107 of the such Act, test beds established and operated under section 108 of such Act, or other Federal research entities.

“(4) How the eligible consortium will engage with the private sector, including small- and medium-sized businesses to commercialize new technologies and improve the resiliency of domestic supply chains in a key technology focus area or other technology or innovation sector critical to national and economic security.

“(5) How the eligible consortium will carry out workforce development and skills acquisition programming, including through partnerships with entities that include State and local workforce develop-
moment boards, institutions of higher education, including community colleges, historically Black colleges and universities, Tribal colleges and universities, and minority serving institutions, labor organizations, and workforce development programs, and other related activities authorized by the Secretary, to support the development of a key technology focus area or other technology or innovation sector critical to national and economic security.

“(6) How the eligible consortium will improve science, technology, engineering, and mathematics education programs in the identified region in elementary and secondary school and higher education institutions located in the identified region to support the development of a key technology focus area or other technology or innovation sector critical to national and economic security.

“(7) How the eligible consortium plans to develop partnerships with venture development organizations and sources of private investment in support of private sector activity, including launching new or expanding existing companies, in a key technology focus area or other technology or innovation sector critical to national and economic security.
“(8) How the eligible consortium plans to organize the activities of regional partners across sectors in support of a regional technology hub.

“(9) How the eligible consortium will ensure that growth in technology and innovation sectors produces broadly shared opportunity across the identified region, including for economic disadvantaged and underrepresented populations and rural areas.

“(10) The likelihood efforts served by the consortium will be sustained once Federal support ends.

“(11) How the eligible consortium will—

“(A) enhance the economic, environmental, and energy security of the United States by promoting domestic development, manufacture, and deployment of innovative clean technologies and advanced manufacturing practices; and

“(B) support translational research, technology development, manufacturing innovation, and commercialization activities relating to clean technology.

“(i) COORDINATION AND COLLABORATION.—

“(1) COORDINATION WITH REGIONAL INNOVATION PROGRAM.—The Secretary shall work to ensure the activities under this section do not duplicate activi-
ties or efforts under section 27, as the Secretary considers appropriate.

“(2) Coordination with programs of the National Institute of Standards and Technology.—The Secretary shall coordinate the activities of regional technology hubs designated under this section, the Hollings Manufacturing Extension Partnership, and the Manufacturing USA Program, as the Secretary considers appropriate, to maintain the effectiveness of a manufacturing extension center or a Manufacturing USA institute.

“(3) Coordination with Department of Energy programs.—The Secretary shall, in collaboration with the Secretary of Energy, coordinate the activities and selection of regional technology hubs designated under this section, as the Secretaries consider appropriate, to maintain the effectiveness of activities at the Department of Energy and the National Laboratories.

“(4) Interagency collaboration.—In designating regional technology hubs under subsection (d) and awarding grants or cooperative agreements under subsection (f), the Secretary—
“(A) shall collaborate, to the extent possible, with the interagency working group established under section 4 of the Endless Frontier Act;

“(B) shall collaborate with Federal departments and agencies whose missions contribute to the goals of the regional technology hub;

“(C) shall consult with the Director of the National Science Foundation for the purpose of ensuring that the regional technology hubs are aligned with relevant science, technology, and engineering expertise; and

“(D) may accept funds from other Federal agencies to support grants, cooperative agreements, and activities under this section.

“(j) PERFORMANCE MEASUREMENT, TRANSPARENCY, AND ACCOUNTABILITY.—

“(1) METRICS, STANDARDS, AND ASSESSMENT.—

For each grant and cooperative agreement awarded under subsection (f) for a regional technology hub, the Secretary shall—

“(A) develop metrics, which may include metrics relating to domestic job creation, patent awards, and business formation and expansion, to assess the effectiveness of the activities funded
in making progress toward the purposes set forth under subsection (b)(1);

“(B) establish standards for the performance of the regional technology hub that are based on the metrics developed under subparagraph (A); and

“(C) 4 years after the initial award under subsection (f) and every 2 years thereafter until Federal financial assistance under this section for the regional technology hub is discontinued, conduct an assessment of the regional technology hub to confirm whether the performance of the regional technology hub is meeting the standards for performance established under subparagraph (B) of this paragraph.

“(2) Final reports by recipients of strategy implementation grants and cooperative agreements.—

“(A) In general.—The Secretary shall require each eligible consortium that receives a grant or cooperative agreement under subsection (f) for activities of a regional technology hub, as a condition of receipt of such grant or cooperative agreement, to submit to the Secretary, not later than 120 days after the last day of the term
of the grant or cooperative agreement, a report on the activities of the regional technology hub supported by the grant or cooperative agreement.

“(B) CONTENTS OF REPORT.—Each report submitted by an eligible consortium under subparagraph (A) shall include the following:

“(i) A detailed description of the activities carried out by the regional technology hub using the grant or cooperative agreement described in subparagraph (A), including the following:

“(I) A description of each project the regional technology hub completed using such grant or cooperative agreement.

“(II) An explanation of how each project described in subclause (I) achieves a specific goal under this section in the region of the regional technology hub with respect to—

“(aa) the resiliency of a supply chain;

“(bb) research, development, and deployment of a critical technology;
“(cc) workforce training and
development;
“(dd) domestic job creation;
or
“(ee) entrepreneurship.
“(ii) A discussion of any obstacles en-
countered by the regional technology hub in
the implementation of the regional tech-
nology hub and how the regional technology
hub overcame those obstacles.
“(iii) An evaluation of the success of
the projects of the regional technology hub
using the performance standards and meas-
ures established under paragraph (1), in-
cluding an evaluation of the planning proc-
 ess and how the project contributes to car-
ying out the regional innovation strategy
of the regional technology hub.
“(iv) The effectiveness of the regional
technology hub in ensuring that, in the re-
 gion of the regional technology hub, growth
in technology and innovation sectors pro-
duces broadly shared opportunity across the
region, including for economic disadvan-
taged and underrepresented populations
and rural areas.

“(v) Information regarding such other
matters as the Secretary may require.

“(3) INTERIM REPORTS BY RECIPIENTS OF
GRANTS AND COOPERATIVE AGREEMENTS.—In addi-
tion to requiring submittal of final reports under
paragraph (2)(A), the Secretary may require a re-
gional technology hub described in such paragraph to
submit to the Secretary such interim reports as the
Secretary considers appropriate.

“(4) ANNUAL REPORTS TO CONGRESS.—Not less
frequently than once each year, the Secretary shall
submit to the appropriate committees of Congress an
annual report on the results of the assessments con-
ducted by the Secretary under paragraph (1)(C) dur-
ing the period covered by the report.

“(k) AUTHORIZATION OF APPROPRIATIONS.—There is
authorized to be appropriated to the Secretary, for the pe-
riod of fiscal years 2022 through 2026—

“(1) $7,540,000,000 to award grants and coopera-
тив agreements under subsection (f); and

“(2) $460,000,000 to award grants and coopera-
tive agreements under subsection (e).”.

(b) INITIAL DESIGNATIONS AND AWARDS.—
(1) Competition required.—Not later than 180 days after the date of the enactment of this Act, the Secretary of Commerce shall commence a competition under subsection (d)(1) of section 28 of the Stevenson-Wydler Technology Innovation Act of 1980 (Public Law 96–480), as added by subsection (a).

(2) Designation and award.—Not later than 1 year after the date of the enactment of this Act, if the Secretary has received at least 1 application under subsection (g) of such section from an eligible consortium whom the Secretary considers suitable for designation under subsection (d)(1) of such section, the Secretary shall—

(A) designate at least 1 regional technology hub under subsection (d)(1) of such section; and

(B) award a grant or cooperative agreement under subsection (f)(1) of such section to each regional technology hub designated pursuant to subparagraph (A) of this paragraph.

SEC. 402. MANUFACTURING USA PROGRAM.

(a) Definitions.—In this section:

(1) Historically Black college or university.—The term “historically Black college or university” has the meaning given the term “part B institu-
tion’’ in section 322 of the Higher Education Act of 1965 (20 U.S.C. 1061)).

(2) MANUFACTURING USA INSTITUTE.—The term “Manufacturing USA institute” means an institute described in section 34(d) of the National Institute of Standards and Technology Act (15 U.S.C. 278s(d)).

(3) MANUFACTURING USA NETWORK.—The term “Manufacturing USA Network” means the network established under section 34(c) of the National Institute of Standards and Technology Act (15 U.S.C. 278s(c)).

(4) MANUFACTURING USA PROGRAM.—The term “Manufacturing USA Program” means the program established under section 34(b)(1) of the National Institute of Standards and Technology Act (15 U.S.C. 278s(b)(1)).

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

(6) NATIONAL PROGRAM OFFICE.—The term “National Program Office” means the National Program Office established under section 34(h)(1) of the National Institute of Standards and Technology Act (15 U.S.C. 278s(h)(1)).
(7) Tribal college or university.—The term “Tribal college or university” has the meaning given the term in section 316(b)(3) of the Higher Education Act of 1965 (20 U.S.C. 1059c(b)(3)).

(b) Authorization of Appropriations to Enhance and Expand Manufacturing USA Program and Support Innovation and Growth in Domestic Manufacturing.—There is authorized to be appropriated $1,200,000,000 for the period of fiscal years 2022 through 2026 for the Secretary of Commerce, acting through the Director of the National Institute of Standards and Technology and in consultation with the Secretary of Energy, the Secretary of Defense, and the heads of such other Federal agencies as the Secretary of Commerce considers relevant—

(1) to carry out the Manufacturing USA Program, including by awarding financial assistance under section 34(e) of the National Institute of Standards and Technology Act (15 U.S.C. 278s(e)) for Manufacturing USA institutes that were in effect on the day before the date of the enactment of this Act; and

(2) to expand such program to support innovation and growth in domestic manufacturing.

(c) Diversity Preferences.—Section 34(e) of the National Institute of Standards and Technology Act (15
U.S.C. 278s(e)) is amended by adding at the end the following:

“(8) DIVERSITY PREFERENCES.—In awarding financial assistance under paragraph (1) for planning or establishing a Manufacturing USA institute, an agency head shall prioritize Manufacturing USA institutes that—

“(A) contribute to the geographical diversity of the Manufacturing USA Program;

“(B) are located in an area with a low per capita income; and

“(C) are located in an area with a high proportion of socially disadvantaged residents.”.

(d) COORDINATION BETWEEN MANUFACTURING USA PROGRAM AND HOLLINGS MANUFACTURING EXTENSION PARTNERSHIP.—The Secretary shall facilitate the coordination of the activities of the Manufacturing USA Program and the activities of Hollings Manufacturing Extension Partnership with each other to the degree that doing so does not diminish the effectiveness of the ongoing activities of a Manufacturing USA institute or a Center (as the term is defined in section 25(a) of the National Institute of Standards and Technology Act (15 U.S.C. 278k(a)), including Manufacturing USA institutes entering into agreements with a Center (as so defined) that the Secretary considers
appropriate to provide services relating to the mission of
the Hollings Manufacturing Extension Partnership, includ-
ing outreach, technical assistance, workforce development,
and technology transfer and adoption assistance to small- and medium-sized manufacturers.

(e) Advice From the National Manufacturing Advisory Council.—The Secretary shall seek advice from
the National Manufacturing Advisory Council on matters concerning investment in and support of the manufacturing
workforce within the Manufacturing USA Program, including those matters covered under section 404(d)(7).

(f) Participation of Minority-serving Institutions, Historically Black Colleges and Universities, and Tribal Colleges and Universities.—

(1) In general.—The Secretary of Commerce,
in consultation with the Secretary of Energy, the Sec-
cretary of Defense, and the heads of such other Federal
agencies as the Secretary of Commerce considers rel-
evant, shall coordinate with existing and new Manu-
ufacturing USA institutes to integrate covered entities
as active members of the Manufacturing USA insti-
tutes, including through the development of pref-
ferences in selection criteria for proposals to create
new Manufacturing USA institutes or renew existing

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Manufacturing USA institutes that are led by a covered entity.

(2) COVERED ENTITIES.—For purposes of this subsection, a covered entity is—

(A) a minority-serving institution;

(B) an historically Black college or university;

(C) a Tribal college or university; or

(D) a minority business enterprise (as defined in section 1400.2 of title 15, Code of Federal Regulations, or successor regulation).

(g) DEPARTMENT OF COMMERCE POLICIES TO PROMOTE DOMESTIC PRODUCTION OF TECHNOLOGIES DEVELOPED UNDER MANUFACTURING USA PROGRAM.—

(1) POLICIES.—

(A) IN GENERAL.—Each agency head (as defined in section 34(a) of the National Institute of Standards and Technology Act (15 U.S.C. 278s(a))) and the Secretary of Defense shall, in consultation with the Secretary of Commerce, establish policies to promote the domestic production of technologies developed by the Manufacturing USA Network.
(B) ELEMENTS.—The policies developed under subparagraph (A) shall include the following:

(i) Measures to partner domestic developers of goods, services, or technologies by Manufacturing USA Network activities with domestic manufacturers and sources of financing.

(ii) Measures to develop and provide incentives to promote transfer of intellectual property and goods, services, or technologies developed by Manufacturing USA Network activities to domestic manufacturers.

(iii) Measures to assist with supplier scouting and other supply chain development, including the use of the Hollings Manufacturing Extension Partnership to carry out such measures.

(iv) A process to review and approve or deny membership in a Manufacturing USA institute by foreign-owned companies, especially from countries of concern, including the People’s Republic of China.

(v) Measures to prioritize Federal procurement of goods, services, or technologies
developed by the Manufacturing USA Network activities from domestic sources, as appropriate.

(C) PROCESSES FOR WAIVERS.—The policies established under this paragraph shall include processes to permit waivers, on a case by case basis, for policies that promote domestic production based on cost, availability, severity of technical and mission requirements, emergency requirements, operational needs, other legal or international treaty obligations, or other factors deemed important to the success of the Manufacturing USA Program.

(2) PROHIBITION.—

(A) COMPANY DEFINED.—In this paragraph, the term “company” has the meaning given such term in section 847(a) of the National Defense Authorization Act for Fiscal Year 2020 (Public Law 116–92; 10 U.S.C. 2509 note).

(B) IN GENERAL.—A company of the People’s Republic of China may not participate in the Manufacturing USA Program or the Manufacturing USA Network without a waiver, as described in paragraph (1)(C).
(h) Coordination of Manufacturing USA Institutes.—

(1) In General.—Section 34(h) of the National Institute of Standards and Technology Act (15 U.S.C. 278s(h)) is amended by adding at the end the following:

“(7) Council for Coordination of Institutes.—

“(A) Council.—The National Program Office shall establish or designate a council of heads of any Manufacturing USA institute receiving Federal funding at any given time to foster collaboration between Manufacturing USA institutes.

“(B) Meetings.—The council established or designated under subparagraph (A) shall meet not less frequently than twice each year.

“(C) Duties of the Council.—The council established under subparagraph (A) shall assist the National Program Office in carrying out the functions of the National Program Office under paragraph (2).”.

(2) Report Required.—Not later than 180 days after the date on which the council is established under section 34(h)(7)(A) of the National Institute of
Standards and Technology Act, as added by paragraph (1), the council shall submit to the National Program Office a report containing recommendations for improving inter-network collaboration.

(3) **Submittal to Congress.**—Not later than 30 days after the date on which the report required by paragraph (2) is submitted to the National Program Office, the Director of the National Institute of Standards and Technology shall submit such report to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science, Space, and Technology of the House of Representatives.

(i) **Requirement for National Program Office to Develop Strategies for Retaining Domestic Public Benefit After Cease of Federal Funding.**—Section 34(h)(2)(C) of the National Institute of Standards and Technology Act (15 U.S.C. 278s(h)(2)(C)) is amended by inserting “, including a strategy for retaining domestic public benefits from Manufacturing USA institutes once Federal funding has been discontinued” after “Program”.

(j) **Modification of Functions of National Program Office to Include Development of Industry Credentials.**—Section 34(h)(2)(J) of the National Institute of Standards and Technology Act (15 U.S.C.
278s(h)(2)(J)) is amended by inserting “, including the de-
velopment of industry credentials” after “activities”.

SEC. 403. ESTABLISHMENT OF EXPANSION AWARDS PRO-
GRAM IN HOLLINGS MANUFACTURING EXTEN-
SION PARTNERSHIP AND AUTHORIZATION OF
APPROPRIATIONS FOR THE PARTNERSHIP.

(a) Establishment of Expansion Awards Pro-
gram.—The National Institute of Standards and Tech-
nology Act (15 U.S.C. 271 et seq.) is amended by inserting
after section 25A (15 U.S.C. 278k–1) the following:

“SEC. 25B. EXPANSION AWARDS PROGRAM.

“(a) Definitions.—The terms used in this section
have the meanings given the terms in section 25.

“(b) Establishment.—The Director shall establish,
subject to the availability of appropriations, within the
Hollings Manufacturing Extension Partnership under sec-
tions 25 and 26 a program of expansion awards among
participants described in subsection (c) of this section for
the purposes described in subsection (d) of this section.

“(c) Participants.—Participants receiving awards
under this section shall be Centers, or a consortium of Cen-
ters.

“(d) Purpose of Awards.—An award under this sec-
tion shall be made for one or more of the following purposes:
“(1) To provide worker education, training, development, and entrepreneurship training and to connect individuals or business with such services offered in their community, which may include employee ownership and workforce training, connecting manufacturers with career and technical education entities, institutions of higher education (including community colleges), workforce development boards, State government programs for advanced manufacturing, entities (such as public-private partnerships) or a collection of entities and individuals carrying out an advanced manufacturing forum that would serve educationally underrepresented individuals (such as underrepresented racial and ethnic minorities), labor organizations, and nonprofit job training providers to develop and support training and job placement services, apprenticeship and online learning platforms, for new and incumbent workers, programming to prevent job losses when adopting new technologies and processes, and development of employee ownership practices.

“(2) To mitigate vulnerabilities to cyberattacks, including helping to offset the cost of cybersecurity projects for small manufacturers.
“(3) To expand advanced technology services to small- and medium-sized manufacturers, which may include—

“(A) developing technology demonstration laboratories;

“(B) services for the adoption of advanced technologies, including smart manufacturing technologies and practices; and

“(C) establishing partnerships, for the development, demonstration, and deployment of advanced technologies, with—

“(i) national laboratories (as defined in section 2 of the Energy Policy Act of 2005 (42 U.S.C. 15801));

“(ii) Federal laboratories;

“(iii) Manufacturing USA institutes (as described in section 402); and

“(iv) institutions of higher education.

“(4) To build capabilities across the Hollings Manufacturing Extension Partnership for domestic supply chain resiliency and optimization, including—

“(A) assessment of domestic manufacturing capabilities, expanded capacity for researching and deploying information on supply chain risk,
hidden costs of reliance on offshore suppliers, and other relevant topics; and

“(B) expanded services to provide industry-wide support that assists United States manufacturers with reshoring manufacturing to strengthen the resiliency of domestic supply chains, including in critical technology areas and foundational manufacturing capabilities that are key to domestic manufacturing competitiveness and resiliency, including forming, casting, machining, joining, surface treatment, tooling, and metal or chemical refining.

“(e) Reimbursement.—The Director may reimburse Centers for costs incurred by the Centers under this section.

“(f) Program Contribution.—Recipients of awards under this section shall not be required to provide a matching contribution.”.

(b) Authorization of Appropriations.—

(1) In general.—There is authorized to be appropriated to carry out the Hollings Manufacturing Extension Partnership program under sections 25, 25A, and 26 of the National Institute of Standards and Technology Act (15 U.S.C. 278k, 278k-1, and 278l), and section 25B of such Act, as added by sub-
section (a), $480,000,000 for each of fiscal years 2022 through fiscal year 2026.

(2) BASE FUNDING.—Of the amounts appropriated pursuant to the authorization in paragraph (1), $216,000,000 shall be available in each fiscal year to carry out the Hollings Manufacturing Extension Partnership under sections 25 and 25A of such Act (15 U.S.C. 278k and 278k-1), of which $40,000,000 shall not be subject to cost share requirements under subsection (e)(2) of such section: Provided, That the authority made available pursuant to this section shall be elective for any Manufacturing Extension Partnership Center that also receives funding from a State that is conditioned upon the application of a Federal cost sharing requirement.

(3) EXPANSION AWARD PROGRAM.—Of the amounts appropriated pursuant to the authorization in paragraph (1), $264,000,000 shall be available each fiscal year to carry out section 25B of such Act, as added by subsection (a).

SEC. 404. NATIONAL MANUFACTURING ADVISORY COUNCIL.

(a) DEFINITIONS.—In this section:

(1) ADVISORY COUNCIL.—The term “Advisory Council” means the National Manufacturing Advisory Council established under subsection (b)(1).
(2) APPROPRIATE COMMITTEES OF CONGRESS.—

The term “appropriate committees of Congress” means—

(A) the Committee on Health, Education, Labor, and Pensions, the Committee on Commerce, Science, and Transportation, the Committee on Energy and Natural Resources, the Committee on Armed Services, and the Committee on Appropriations of the Senate; and

(B) the Committee on Education and Labor, the Committee on Science, Space, and Technology, the Committee on Energy and Commerce, the Committee on Armed Services, and the Committee on Appropriations of the House of Representatives.

(3) SECRETARY.—The term “Secretary” means the Secretary of Commerce.

(b) ESTABLISHMENT.—

(1) IN GENERAL.—The Secretary, in consultation with the Secretary of Labor, the Secretary of Defense, the Secretary of Energy, and the Secretary of Education, shall establish within the Department of Commerce the National Manufacturing Advisory Council.

(2) PURPOSE.—The purpose of the Advisory Council shall be to—
(A) provide worker education, training, development, and entrepreneurship training;

(B) connect individuals and business with the services described in subparagraph (A) that are offered in the community of the individuals or businesses;

(C) coordinate services relating to employee engagement, including employee ownership and workforce training;

(D) connect manufacturers with career and technical education entities, institutions of higher education, community colleges, workforce development boards, labor organizations, and non-profit job training providers to develop and support training and job placement services and apprenticeship and online learning platforms for new and incumbent workers;

(E) develop programming to prevent job losses as entities adopt new technologies and processes; and

(F) develop best practices for employee ownership.

(c) MISSION.—The mission of the Advisory Council shall be to—
(1) ensure regular communication between the Federal Government and the manufacturing sector in the United States;

(2) advise the Federal Government regarding policies and programs of the Federal Government that affect manufacturing in the United States;

(3) provide a forum for discussing and proposing solutions to problems relating to the manufacturing industry in the United States; and

(4) ensure that the United States remains the preeminent destination throughout the world for investment in manufacturing.

(d) DUTIES.—The duties of the Advisory Council shall include—

(1) meeting not less frequently than every 180 days to provide independent advice and recommendations to the Secretary regarding issues involving manufacturing in the United States;

(2) completing specific tasks requested by the Secretary;

(3) conveying input from key industry, labor, academic, defense, governmental, and other stakeholders to aid in the development of a national strategic plan for manufacturing in the United States;
(4) monitoring the status of technological developments, critical production capacity, skill availability, investment patterns, emerging defense needs, and other key indicators of manufacturing competitiveness to provide foresight for periodic updates to the national strategic plan for manufacturing developed under paragraph (3);

(5) soliciting input from the public and private sectors and academia relating to emerging trends in manufacturing, the responsiveness of Federal programming with respect to manufacturing, and suggestions for areas of increased Federal attention with respect to manufacturing;

(6) monitoring global manufacturing trends and global threats to manufacturing sectors in the United States;

(7) providing advice and recommendations to the Federal Government on matters relating to investment in and support of the manufacturing workforce relating to—

(A) worker participation, including through labor organizations and through other methods determined by the Advisory Council, in the planning for deployment of new technologies across an industry and within workplaces;
(B) training and education priorities for the Federal Government and for employers to assist workers in adapting the skills and experiences of those workers to fit the demands of the 21st century economy;

(C) innovative suggestions from workers on the development of new technologies and processes and, as appropriate, assessing the impact of those technologies and processes on the workforce and economy of the United States;

(D) management practices that lead to worker employment, job quality, worker protection, worker participation and power in decision making, and investment in worker career success;

(E) policies and procedures to prioritize diversity and inclusion in the manufacturing and technology workforce by expanding access to job, career advancement, and management opportunities for underrepresented populations; and

(F) advice on how to improve access to demand-driven education, training, and re-training for workers, including community and technical colleges, higher education, apprenticeships and work-based learning opportunities;
(8) with respect to the manufacturing.gov website, or any successor thereto, providing input and improvements in order to—

(A) make that website more user-friendly to enhance the ability of that website to—

(i) provide information to manufacturers; and

(ii) receive feedback from manufacturers;

(B) assist that website in becoming the principal place of interaction between manufacturers in the United States and Federal programs relating to manufacturing; and

(C) enable that website to provide assistance to manufacturers relating to—

(i) international trade and investment matters;

(ii) research and technology development opportunities;

(iii) workforce development and training programs and opportunities;

(iv) small and medium manufacturer needs; and

(v) industrial commons and supply chain needs.
(e) **MEMBERSHIP.**—

(1) **IN GENERAL.**—The Advisory Council shall—

(A) consist of individuals appointed by the Secretary with a balance of backgrounds, experiences, and viewpoints; and

(B) include an equal proportion of individuals with manufacturing experience who represent private industry, academia, and labor organizations.

(2) **PUBLIC PARTICIPATION.**—The Secretary shall, to the maximum extent practicable, accept recommendations from the public regarding the appointment of individuals under paragraph (1).

(3) **PERIOD OF APPOINTMENT; VACANCIES.**—

(A) **IN GENERAL.**—Each member of the Advisory Council shall be appointed by the Secretary for a term of 3 years.

(B) **RENEWAL.**—The Secretary may renew an appointment made under subparagraph (A) not more than 2 additional terms

(C) **STAGGER TERMS.**—The Secretary may stagger the terms of the members of the Advisory Council to ensure that the terms of the members expire during different years.
(D) VACANCIES.—Any member appointed to fill a vacancy on the Advisory Council occurring before the expiration of the term for which the member’s predecessor was appointed shall be appointed only for the remainder of that term. A member may serve after the expiration of that term until a successor has been appointed.

(f) TRANSFER OF FUNCTIONS.—

(1) IN GENERAL.—All functions of the United States Manufacturing Council of the International Trade Administration of the Department of Commerce, including the personnel, assets, and obligations of the United States Manufacturing Council of the International Trade Administration of the Department of Commerce, as in existence on the day before the date of enactment of this Act, shall be transferred to the Advisory Council.

(2) DEEMING OF NAME.—Any reference in law, regulation, document, paper, or other record of the United States to the United States Manufacturing Council of the International Trade Administration of the Department of Commerce shall be deemed a reference to the Advisory Council.

(3) UNEXPENDED BALANCES.—Unexpended balances of appropriations, authorization, allocations, or
other funds related to the United States Manufacturing Council of the International Trade Administration of the Department of Commerce shall be available for use by the Advisory Council for the purpose for which the appropriations, authorizations, allocations, or other funds were originally made available.

(g) REPORT.—Not later than 180 days after the date on which the Advisory Council holds the initial meeting of the Advisory Council and annually thereafter, the Advisory Council shall submit to the appropriate committees of Congress a report containing a detailed statement of the advice and recommendations of the Advisory Council required under subsection (d)(7).

TITLE V—MISCELLANEOUS

SEC. 501. STRATEGY AND REPORT ON ECONOMIC SECURITY, SCIENCE, RESEARCH, AND INNOVATION TO SUPPORT THE NATIONAL SECURITY STRATEGY.

(a) NATIONAL SECURITY STRATEGY DEFINED.—In this section, the term “national security strategy” means the national security strategy required by section 108 of the National Security Act of 1947 (50 U.S.C. 3043).

(b) STRATEGY AND REPORT.—

(1) IN GENERAL.—Not later than 90 days after the transmission of each national security strategy
under section 108(a) of the National Security Act of 1947 (50 U.S.C. 3043(a)), the Director of the Office of Science and Technology Policy shall, in coordina-
tion with the National Science and Technology Coun-
cil, the Director of the National Economic Council, and the heads of such other relevant Federal agencies as the Director of the Office of Science and Technol-
ogy Policy considers appropriate and in consulta-
tion with such nongovernmental partners as the Di-
rector of the Office of Science and Technology Policy considers appropriate—

(A) review such strategy, programs, and re-

sources as the Director of the Office of Science and Technology Policy determines pertain to United States national competitiveness in science, research, innovation, and technology transfer, including patenting and licensing, to support the national security strategy;

(B) develop or revise a national strategy to improve the national competitiveness of the United States in science, research, and innova-
tion to support the national security strategy;

and

(C) submit to Congress——
(i) a report on the findings of the Director with respect to the review conducted under subparagraph (A); and

(ii) the strategy developed or revised under subparagraph (B).

(2) TERMINATION.—The requirement of paragraph (1) shall terminate on the date that is 5 years after the date of the enactment of this Act.

c) ELEMENTS.—

(1) REPORT.—Each report submitted under subsection (b)(1)(C)(i) shall include the following:

(A) An assessment of public and private investment in civilian and military science and technology and its implications for the geostrategic position of the United States.

(B) A description of the prioritized economic security interests and objectives, including domestic job creation, of the United States relating to science, research, and innovation and an assessment of how investment in civilian and military science and technology can advance those objectives.

(C) An assessment of global trends in science and technology, including potential
threats to the leadership of the United States in science and technology.

(D) An assessment of the national debt and its implications for the economic and national security of the United States.

(E) An assessment of how regional efforts are contributing and could contribute to the innovation capacity of the United States, including programs run by State and local governments.

(F) An assessment of—

(i) workforce needs for competitiveness in key technology focus areas; and

(ii) any efforts needed—

(I) to expand pathways into key technology focus areas; and

(II) to improve workforce development and employment systems, as well as programs and practices to upskill incumbent workers.

(G) An assessment of barriers to competitiveness and barriers to the development and evolution of start-ups, small and mid-sized business entities, and industries.
(H) An assessment of the effectiveness of the Federal Government, federally funded research and development centers, and national labs in supporting and promoting technology commercialization and technology transfer, including an assessment of the adequacy of Federal research and development funding in creating new domestic manufacturing growth and job creation across sectors and promoting competitiveness and the development of new technologies.

(I) An assessment of manufacturing capacity, logistics, and supply chain dynamics of major export sectors, including access to a skilled workforce, physical infrastructure, and broadband network infrastructure.

(J) An assessment of how the Federal Government is increasing the participation of underrepresented populations in science, research, innovation, and manufacturing.

(K) An assessment of public-private partnerships in technology commercialization, including—

(i) the structure of current technology research and commercialization arrange-
ments with regard to public-private partnerships; and

(ii) the extent to which intellectual property developed with Federal funding—

(I) is being used to manufacture in the United States rather than in other countries; and

(II) is being used by foreign business entities that are majority owned or controlled (as defined in section 800.208 of title 31, Code of Federal Regulations, or a successor regulation), or minority owned greater than 25 percent by—

(aa) any governmental organization of the People’s Republic of China; or

(bb) any other entity that is—

(AA) known to be owned or controlled by any governmental organization of the People’s Republic of China; or
(BB) organized under, or otherwise subject to, the laws of the People’s Republic of China.

(2) STRATEGY.—Each strategy submitted under subsection (b)(1)(C)(ii) shall include the following:

(A) A plan to utilize available tools to address or minimize the leading threats and challenges and to take advantage of the leading opportunities, particularly in regards to key technology focus areas central to international competition, including the following:

(i) Specific objectives, tasks, metrics, and milestones for each relevant Federal agency.

(ii) Strategic objectives and priorities necessary to maintain the leadership of the United States in science and technology, including near-term, medium-term, and long-term research priorities.

(iii) Specific plans to safeguard research and technology funded, as appropriate, in whole or in part, by the Federal Government, including in the key tech-
nology focus areas, from theft or exfiltration by foreign entities of concern.

(iv) Specific plans to support public and private sector investment in research, technology development, education and workforce development, and domestic manufacturing supportive of the national economic competitiveness of the United States and to foster the use of public-private partnerships.

(v) Specific plans to promote sustainability practices and strategies for increasing jobs in the United States.

(vi) A description of—

(I) how the strategy submitted under subsection (b)(1)(C)(ii) supports the national security strategy; and

(II) how the strategy submitted under such subsection is integrated and coordinated with the most recent national defense strategy under section 113(g) of title 10, United States Code.

(vii) A plan to encourage the governments of countries that are allies or partners of the United States to cooperate with
the execution of the strategy submitted
under subsection (b)(1)(C)(ii), where appro-
appropriate.

(viii) A plan for how the United States
should develop local and regional capacity
for building innovation ecosystems across
the Nation by providing Federal support.

(ix) A plan for strengthening the in-
dustrial base of the United States.

(x) A plan to remove or update overly
burdensome or outdated Federal regulations
as appropriate.

(xi) A plan—

(I) to further incentivize industry
participation in public-private part-
nerships for the purposes of accel-
'erating technology research and com-
mercialization, including alternate
ways of accounting for in-kind con-
tributions and value of partially man-
ufactured products;

(II) to ensure that intellectual
property developed with Federal fund-
ing is commercialized in the United
States; and
to ensure, to the maximum appropriate extent, that intellectual property developed with Federal funding is not being used by foreign business entities that are majority owned or controlled (as defined in section 800.208 of title 31, Code of Federal Regulations, or a successor regulation), or minority owned greater than 25 percent by—

(aa) any governmental organization of the People’s Republic of China; or

(bb) any other entity that is—

(AA) known to be owned or controlled by any governmental organization of the People’s Republic of China; or

(BB) organized under, or otherwise subject to, the laws of the People’s Republic of China.
(xii) An identification of additional resources, administrative action, or legislative action recommended to assist with the implementation of such strategy.

(d) Research and Development Funding.—The Director of the Office of Science and Technology Policy shall, as the Director considers necessary, consult with the Director of the Office of Management and Budget and with the heads of such other elements of the Executive Office of the President as the Director of the Office of Science and Technology Policy considers appropriate to ensure that the recommendations and priorities with respect to research and development funding as expressed in the most recent report and strategy submitted under subsection (b)(1)(C) are incorporated into the development of annual budget requests for Federal research agencies.

(e) Publication.—The Director of the Office of Science and Technology Policy shall, consistent with the protection of national security and other sensitive matters and otherwise to the maximum extent practicable, make each report submitted under subsection (b)(1)(C)(i) publicly available on an internet website of the Office of Science and Technology Policy. The report may include a classified annex if the working group determines appropriate.
SEC. 502. PERSON OR ENTITY OF CONCERN PROHIBITION.

No person published on the list under section 1237(b) of the Strom Thurmond National Defense Authorization Act for Fiscal Year 1999 (Public Law 105–261; 50 U.S.C. 1701 note) or entity identified under section 1260H of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 (Public Law 116–283) may receive or participate in any grant, award, program, support, or other activity under—

(1) the Directorate established in section 102;

(2) the supply chain resiliency program under section 504;

(3) section 28(b)(1) of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3701 et seq.), as added by section 401(a); or

(4) the Manufacturing USA Program, as improved and expanded under section 402.

SEC. 503. STUDY ON EMERGING SCIENCE AND TECHNOLOGY CHALLENGES FACED BY THE UNITED STATES AND RECOMMENDATIONS TO ADDRESS THEM.

(a) SHORT TITLE.—This section may be cited as the “National Strategy to Ensure American Leadership Act of 2021” or the “National SEAL Act of 2021”.

(b) STUDY.—
(1) **IN GENERAL.**—The Secretary of Commerce shall seek to enter into an agreement with the National Academies of Sciences, Engineering, and Medicine to conduct a study—

(A) to identify the 10 most critical emerging science and technology challenges facing the United States; and

(B) to develop recommendations for legislative or administrative action to ensure United States leadership in matters relating to such challenges.

(2) **ELEMENTS.**—The study conducted under paragraph (1) shall include identification, review, and evaluation of the following:

(A) Matters pertinent to identification of the challenges described in paragraph (1)(A).

(B) Matters relating to the recommendations developed under paragraph (1)(B), including with respect to education and workforce development necessary to address each of the challenges identified under paragraph (1)(A).

(C) Matters related to the review of key technology focus areas by the Director of the National Science Foundation under section 5.
(D) An assessment of the current relative balance in leadership in addressing the challenges identified in paragraph (1)(A) between the United States, allies or key partners of the United States, and the People’s Republic of China.

(3) Timeframe.—

(A) Agreement.—The Secretary of Commerce shall seek to enter into the agreement required by paragraph (1) on or before the date that is 60 days after the date of enactment of this Act.

(B) Findings.—Under an agreement entered into under paragraph (1), the National Academies of Sciences, Engineering, and Medicine shall, not later than 1 year after the date on which the Secretary of Commerce and the National Academies enter into such agreement, transmit to the Secretary of Commerce the findings of the National Academies with respect to the study conducted pursuant to such agreement.

(c) Report.—

(1) In general.—Not later than 30 days after the date on which the Secretary of Commerce receives the findings of the National Academies of Sciences,
Engineering, and Medicine with respect to the study conducted under subsection (b), the Secretary of Commerce shall submit to Congress a “Strategy to Ensure American Leadership” report on such study.

(2) CONTENTS.—The report submitted under paragraph (1) shall include the following:

(A) The findings of the National Academies of Sciences, Engineering, and Medicine with respect to the study conducted under subsection (b).

(B) The conclusions of the Secretary of Commerce with respect to such findings.

(C) The recommendations developed under subsection (b)(1)(B).

(D) Such other recommendations for legislative or administrative action as the Secretary of Commerce may have with respect to such findings and conclusions.

(3) CLASSIFIED ANNEX.—The report submitted under paragraph (1) shall be submitted in unclassified form, but may include a classified annex if the Secretary of Commerce determines appropriate.

(d) INFORMATION FROM FEDERAL AGENCIES.—

(1) IN GENERAL.—The National Academies of Sciences, Engineering, and Medicine may secure directly from a Federal department or agency such in-
formation as the National Academies of Sciences, Engineering, and Medicine consider necessary to carry out the study under subsection (b).

(2) Furnishing Information.—On request of the National Academies of Sciences, Engineering, and Medicine for information, the head of the department or agency shall furnish such information to the National Academies of Sciences, Engineering, and Medicine.

(e) Consultation.—The Secretary of Defense and the Director of National Intelligence shall provide support upon request from the Secretary of Commerce or the National Academies to carry out this section.

(f) Non-Duplication of Effort.—In carrying out subsection (b), the Secretary of Commerce shall, to the degree practicable, coordinate with the steering committee established under section 236(a) of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 (Public Law 116–283).

SEC. 504. REPORT ON GLOBAL SEMICONDUCTOR SHORTAGE.

Not later than 1 year after the date of enactment of this Act, the Comptroller General of the United States shall submit to Congress a report on the global semiconductor
supply shortage and the impact of that shortage on manufacturing in the United States.

SEC. 505. SUPPLY CHAIN RESILIENCY PROGRAM.

(a) Definitions.—In this section:

(1) Critical industry.—The term “critical industry” means an industry identified under subsection (f)(1)(A)(i).

(2) Critical infrastructure.—The term “critical infrastructure” has the meaning given the term in the Critical Infrastructures Protection Act of 2001 (42 U.S.C. 5195c).

(3) Labor organization.—The term “labor organization” has the meaning given the term in section 101.

(4) Program.—The term “program” means the supply chain resiliency and crisis response program established under subsection (b).

(5) Resilient supply chain.—The term “resilient supply chain” means a supply chain that—

(A) ensures that the United States can sustain critical industry production, supply chains, services, and access to critical goods and services during supply chain shocks, including pandemic and biological threats, cyberattacks, extreme weather events, terrorist and geopolitical attacks,
great power conflicts, and other threats to the national security of the United States; and

(B) has key components of resilience that include—

(i) effective private sector risk management and mitigation planning to sustain critical supply chains and supplier networks during a supply chain shock;

(ii) minimized or managed exposure to supply chain shocks; and

(iii) the financial and operational capacity to—

(I) sustain critical industry supply chains during shocks; and

(II) recover from supply chain shocks.

(6) RELEVANT COMMITTEES OF CONGRESS.—The term “relevant committees of Congress” means—

(A) the Committee on Commerce, Science, and Transportation of the Senate;

(B) the Committee on Appropriations of the Senate;

(C) the Committee on Finance of the Senate;
(D) the Committee on Homeland Security and Governmental Affairs of the Senate;

(E) the Committee on Armed Services of the Senate;

(F) the Select Committee on Intelligence of the Senate;

(G) the Committee on Science, Space, and Technology of the House of Representatives;

(H) the Committee on Energy and Commerce of the House of Representatives;

(I) the Committee on Appropriations of the House of Representatives;

(J) the Committee on Ways and Means of the House of Representatives;

(K) the Committee on Homeland Security of the House of Representatives;

(L) the Committee on Armed Services of the House of Representatives; and

(M) the Permanent Select Committee on Intelligence of the House of Representatives.

(7) SECRETARY.—The term “Secretary” means the Secretary of Commerce.

(8) SUPPLY CHAIN INFORMATION.—The term “supply chain information” means information that
is not customarily in the public domain and relating to—

(A) sustaining and adapting supply chains during a supply chain shock, including pandemic and biological threats, cyberattacks, extreme weather events, terrorist and geopolitical attacks, great power conflict, and other threats to national security;

(B) the development of supply chain risk mitigation and recovery planning with respect to a supply chain shock, including any planned or past assessment, projection, or estimate of a vulnerability within the supply chain, including testing, supplier network assessments, production flexibility, risk evaluations thereto, risk management planning, or risk audits; or

(C) operational best practices, planning, and supplier partnerships that enable enhanced supply chain resilience during a supply chain shock, including response, repair, recovery, reconstruction, insurance, or continuity.

(b) Establishment.—The Secretary shall establish in the Department of Commerce a supply chain resiliency and crisis response program to carry out the activities described in subsection (d).
(c) MISSION.—The mission of the program shall be
to—

(1) help to promote the leadership of the United
States with respect to critical industries that are es-
sential to the mid-term and long-term national secu-
ritv of the United States; and

(2) encourage partnerships between the Federal
Government and industry, labor organizations, and
State, local, territorial, and Tribal governments in
order to—

(A) promote resilient supply chains; and

(B) respond to critical industry supply
chain shocks.

(d) ACTIVITIES.—Under the program, the Secretary,
acting through 1 or more bureaus or other divisions of the
Department of Commerce as appropriate, shall carry out
activities—

(1) in coordination with the private sector, to—

(A) map and monitor critical industry sup-
ply chains; and

(B) identify high priority supply chain
gaps and vulnerabilities in critical industries
that—

(i) exist as of the date of enactment of
this Act; or
(ii) are anticipated in the future;

(2) in coordination with the private sector and
State, local, territorial, and Tribal governments, and
as appropriate, in cooperation with the governments
of countries that are allies or key international part-
ners of the United States, to—

(A) identify opportunities to reduce supply
chain gaps and vulnerabilities in critical indus-
tries;

(B) encourage partnerships between the
Federal Government and industry, labor organi-
zations, and State, local, territorial, and Tribal
governments to better respond to supply chain
shocks to critical industries and coordinate re-
response efforts;

(C) develop or identify opportunities to
build the capacity of the United States, or coun-
tries that are allies of the United States, in crit-
ical industries; and

(D) develop contingency plans and coordi-
nation mechanisms to improve critical industry
supply chain response to supply chain shocks;
and

(3) acting within existing authorities of the De-
partment of Commerce and in coordination with the
Secretary of State and the United States Trade Representative, to—

(A) work with governments of countries that are allies or partners of the United States to promote diversified and resilient supply chains that ensure the supply of critical goods to both the United States and companies of countries that are allies of the United States; and

(B) coordinate with other divisions of the Department of Commerce and other Federal agencies to leverage existing authorities, as of the date of enactment of this Act, to encourage resilient supply chains.

(e) COORDINATION GROUP.—In carrying out the activities under subsection (d), the Secretary may—

(1) establish a unified coordination group, which may include private sector partners, as appropriate, to serve as the primary method for coordinating between and among Federal agencies to plan for supply chain shocks;

(2) establish subgroups of the unified coordination group established under paragraph (1) led by the head of an appropriate Federal agency;

(3) through the unified coordination group established under paragraph (1)—
(A) acquire on a voluntary basis technical, engineering, and operational supply chain information from the private sector, in a manner that ensures any supply chain information provided by the private sector is kept confidential and as required under section 552 of title 5, United States Code (commonly known as the “Freedom of Information Act”);

(B) study the supply chain information acquired under subparagraph (A) to assess critical industry supply chain resilience and inform planning;

(C) convene with relevant private sector entities to share best practices, planning, and capabilities to response to potential supply chain shocks; and

(D) develop contingency plans and coordination mechanisms to ensure an effective and coordinated response to potential supply chain shocks; and

(4) enter into agreements with governments of countries that are allies or partners of the United States relating to enhancing critical industry supply chain security and resilience in response to supply chain shocks.
(f) Report on Supply Chain Resiliency and Domestic Manufacturing.—

(1) In General.—Not later than 1 year after the date of enactment of this Act, and from time to time thereafter, the Secretary, in coordination with relevant Federal agencies and relevant private sector entities, labor organizations, and State, local, territorial, and Tribal governments, shall submit to the relevant committees of Congress a review that—

(A) identifies—

(i) industries that are critical for the national security of the United States, considering the key technology focus areas under this Act and critical infrastructure; and

(ii) supplies that are critical to the crisis preparedness of the United States;

(B) describes—

(i) the manufacturing base and supply chains for critical industries in the United States as of the date of enactment of this Act, including the manufacturing base and supply chains for—

(I) raw materials; and

(II) production equipment; and
(III) other goods, including semiconductors, that are essential to the production of technologies and supplies for critical industries; and

(ii) the ability of the United States to—

(I) maintain readiness; and

(II) in response to a supply chain shock—

(aa) surge production in critical industries; and

(bb) maintain access to critical goods and services;

(C) identifies defense, intelligence, homeland, economic, domestic labor supply, natural, geopolitical, or other contingencies that may disrupt, strain, compromise, or eliminate the supply chain for those critical industries;

(D) assesses—

(i) the resiliency and capacity of the manufacturing base, supply chains, and workforce of the United States, the allies of the United States, and the partners of the United States that can sustain critical industries through a supply chain shock; and
(ii) any single points of failure in the supply chains described in clause (i);

(E) assesses the flexible manufacturing capacity and capabilities available in the United States in the case of an emergency;

(F) makes specific recommendations to improve the security and resiliency of manufacturing capacity and supply chains for critical industries by—

(i) developing long-term strategies;

(ii) increasing visibility into the networks and capabilities of suppliers;

(iii) identifying industry best practices;

(iv) evaluating how diverse supplier networks, multi-platform and multi-region production capabilities and sources, and integrated global and regional supply chains can enhance the resilience of—

(I) critical industries in the United States;

(II) jobs in the United States;

(III) capabilities of the United States; and
(IV) the support access of the United States to needed goods and services during a supply chain shock;

(v) identifying and mitigating risks, including—

(I) the financial and operational risks of a supply chain after a supply chain shock;

(II) significant vulnerabilities to extreme weather events, cyberattacks, pandemic and biological threats, terrorist and geopolitical attacks, and other emergencies; and

(III) exposure to gaps and vulnerabilities in—

(aa) domestic capacity or capabilities; and

(bb) sources of imports needed to sustain critical industries;

(vi) identifying enterprise resource planning systems that are—

(I) compatible across supply chain tiers; and

(II) affordable for small and medium-sized businesses;
(vii) understanding the total cost of ownership, total value contribution, and other best practices that encourage strategic partnerships throughout supply chains;

(viii) understanding Federal procurement opportunities to increase resiliency of supply chains for goods and services and fill gaps in domestic purchasing;

(ix) identifying policies that maximize job retention and creation in the United States, including workforce development programs;

(x) identifying opportunities to work with allies or key partners of the United States in building more resilient critical industry supply chains and mitigating risks;

(xi) identifying areas requiring further investment in research and development or workforce education; and

(xii) identifying such other services as the Secretary determines necessary;

(G) provides guidance to the Department of Commerce, the National Science Foundation, and other relevant Federal agencies with respect
to technologies and supplies that should be prioritized;

(II) with respect to countries that are allies or key partners of the United States—

(i) reviews and, if appropriate, provides recommendations for expanding the sourcing of goods associated with critical industries from those countries; and

(ii) recommends coordination with those countries on—

(I) sourcing critical raw materials, inputs, and products; and

(II) sustaining production and availability of critical supplies during a supply chain shock;

(I) monitors and makes recommendations for strengthening the financial and operational health of small and medium-sized businesses in supply chains of the United States and countries that are allies or partners of the United States to mitigate risks and ensure diverse and competitive supplier markets that are less vulnerable to single points of failure; and

(J) assessment of policies, rules, and regulations that impact domestic manufacturing oper-
ating costs and inhibit the ability for domestic manufacturing to compete with global competitors.

(2) Prohibition.—The report submitted under paragraph (1) may not include—

(A) supply chain information that is not aggregated; or

(B) confidential business information of a private sector entity.

(g) Semiconductor Incentives.—

(1) In general.—The Secretary shall carry out the program established under section 9902 of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 (Public Law 116–283) as part of the program.

(2) Technical and conforming amendment.—Section 9902(a)(1) of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 (Public Law 116–283) is amended by striking “in the Department of Commerce” and inserting “as part of the program established under section 504 of the Endless Frontier Act”.

(h) Report to Congress.—Concurrent with the annual submission by the President of the budget under section 1105 of title 31, United States Code, the Secretary shall
submit to the relevant committees of Congress a report that contains a summary of every activity carried out under this section during the year covered by the report.

(i) Coordination.—

(1) In General.—In implementing the program, the Secretary shall, as appropriate coordinate with—

(A) the heads of Federal agencies, including—

(i) the Secretary of State; and

(ii) the United States Trade Representative; and

(B) the Attorney General and the Federal Trade Commission with respect to—

(i) advice on the design and activities of the unified coordination group described in subsection (e)(1); and

(ii) ensuring compliance with Federal antitrust law.

(2) Specific Coordination.—In implementing the program, with respect to supply chains involving specific sectors, the Secretary shall, as appropriate, coordinate with—

(A) the Secretary of Defense;

(B) the Secretary of Homeland Security;
(C) the Secretary of the Treasury;

(D) the Secretary of Energy;

(E) the Secretary of Transportation;

(F) the Secretary of Agriculture;

(G) the Director of National Intelligence;

and

(H) the heads of other relevant agencies.

(j) RULE OF CONSTRUCTION.—Nothing in this section shall be construed to require any private entity—

(1) to share information with the Secretary;

(2) to request assistance from the Secretary; or

(3) that requests assistance from the Secretary to implement any measure or recommendation suggested by the Secretary.

(k) PROTECTIONS.—

(1) IN GENERAL.—

(A) PROTECTIONS.—Subsections (a)(1), (b), (c), and (d) of section 2224 of the Homeland Security Act of 2002 (6 U.S.C. 673) shall apply to the voluntary submission of supply chain information by a private entity under this section in the same manner as those provisions apply to critical infrastructure information voluntarily submitted to a covered agency for an other informational purpose under that subsection if the
voluntary submission is accompanied by an express statement described in paragraph (2) of this subsection; and

(B) REFERENCES.—For the purpose of this subsection, with respect to section 2224 of the Homeland Security Act of 2002 (6 U.S.C. 673)—

(i) the express statement described in subsection (a)(1) of that section shall be deemed to refer to the express statement described in paragraph (2) of this subsection;

(ii) references in the subsections described in subparagraph (A) to “this subtitle” shall be deemed to refer to this section;

(iii) the reference to “protecting critical infrastructure or protected systems” in subsection (a)(1)(E)(iii) of that section shall be deemed to refer to carrying out this section; and

(iv) the reference to “critical infrastructure information” in subsections (b) and (c) of that section shall be deemed to refer to supply chain information.
(2) **Express Statement.**—The express statement described in this paragraph, with respect to information or records, is—

(A) in the case of written information or records, a written marking on the information or records substantially similar to the following:

“This information is voluntarily submitted to the Federal Government in expectation of protection from disclosure as provided by the provisions of section 504 of the Endless Frontier Act.”; or

(B) in the case of oral information, a written statement similar to the statement described in subparagraph (A) submitted within a reasonable period following the oral communication.

(3) **Inapplicability to Semiconductor Incentive Program.**—This subsection shall not apply to the voluntary submission of supply chain information by a private entity in an application for Federal financial assistance under section 9902 of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 (Public Law 116–283).

(l) **Determination Related to Optical Transmission Equipment.**—
(1) PROCEEDING.—Not later than 45 days after the date of enactment of this Act, the Secretary of Commerce shall commence a process to make a determination for purposes of section 2 of the Secure and Trusted Communications Networks Act of 2019 (47 U.S.C. 1601) whether optical transmission equipment manufactured, produced, or distributed by an entity owned, controlled, or supported by the People’s Republic of China poses an unacceptable risk to the national security of the United States or the security and safety of United States persons.

(2) COMMUNICATION OF DETERMINATION.—If the Secretary determines pursuant to paragraph (1) that such optical transmission equipment poses an unacceptable risk consistent with that paragraph, the Secretary shall immediately transmit that determination to the Federal Communications Commission consistent with section 2 of the Secure and Trusted Communications Networks Act of 2019 (47 U.S.C. 1601).

SEC. 506. SEMICONDUCTOR INCENTIVES.

(a) DEFINITIONS.—Section 9901 of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 (Public Law 116–283) is amended—
(1) by redesignating paragraphs (4), (5), (6), (7), (8), and (9) as paragraphs (5), (6), (7), (8), (10), and (11), respectively;

(2) by inserting after paragraph (3) the following:

“(4) The term ‘critical manufacturing industry’—

“(A) means an industry—

“(i) that is assigned a North American Industry Classification System code beginning with 31, 32, or 33; and

“(ii) for which the industry components that are assigned a North American Industry Classification System code beginning with the same 4 digits as the industry—

“(I) manufacture primary products and parts, the sum of which account for not less than 5 percent of the manufacturing value added by industry gross domestic product of the United States; and

“(II) employ individuals for primary products and parts manufacturing activities that, combined, ac-
count for not less than 5 percent of manufacturing employment in the United States; and

“(B) may include any other manufacturing industry designated by the Secretary based on the relevance of the manufacturing industry to the national and economic security of the United States, including the impacts of job losses.”;

(3) by inserting after paragraph (8), as so redesignated, the following:

“(9) The term ‘mature technology node’ has the meaning given the term by the Secretary.”.

(b) SEMICONDUCTOR PROGRAM.—Section 9902 of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 (Public Law 116–283) is amended—

(1) in subsection (a)(2)—

(A) in subparagraph (B)(i)—

(i) in subclause (III), by striking “and” at the end;

(ii) in subclause (IV), by striking the period at the end and inserting “and”; and

(iii) by adding at the end the following:

“(V) determined—
“(aa) the type of semiconductor technology the covered entity will produce at the facility described in clause (i); and

“(bb) the customers to which the covered entity plans to sell the semiconductor technology described in item (aa).”;

(B) in subparagraph (C)—

(i) in clause (i)—

(I) in subclause (II), by striking “is in the interest of the United States” and inserting “is in the economic and national security interests of the United States”; and

(II) in subclause (III), by striking “and” at the end;

(ii) in clause (ii)(IV), by striking “and” at the end;

(iii) by redesignating clause (iii) as clause (iv); and

(iv) by inserting after clause (ii) the following:

“(iii) the Secretary shall consider the type of semiconductor technology produced
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by the covered entity and whether that semi-
conductor technology advances the economic
and national security interests of the
United States; and’’;

(C) by redesigning subparagraph (D) as
subparagraph (E); and

(D) by inserting after subparagraph (C) the
following:

“(D) PRIORITY.—In awarding Federal fi-
nancial assistance to covered entities under sub-
section (a), the Secretary shall give priority to
ensuring that a covered entity receiving finan-
cial assistance will—

“(i) manufacture semiconductors nec-
cessary to address gaps and vulnerabilities
in the domestic supply chain across a di-
verse range of technology and process nodes;
and

“(ii) provide a secure supply of semi-
conductors necessary for the national secu-
rity, manufacturing, critical infrastructure,
and technology leadership of the United
States and other essential elements of the
economy of the United States.”; and

(2) by adding at the end the following:
“(d) SENSE OF CONGRESS.—It is the sense of Congress that, in carrying out subsection (a), the Secretary should allocate funds in a manner that—

“(1) strengthens the security and resilience of the semiconductor supply chain, including by mitigating gaps and vulnerabilities;

“(2) provides a supply of secure semiconductors relevant for national security;

“(3) strengthens the leadership of the United States in semiconductor technology;

“(4) grows the economy of the United States and supports job creation in the United States; and

“(5) improves the resiliency of the semiconductor supply chains of critical manufacturing industries.

“(e) ADDITIONAL ASSISTANCE FOR MATURE TECHNOLOGY NODES.—

“(1) IN GENERAL.—The Secretary shall establish within the program established under subsection (a) an additional program that provides Federal financial assistance to covered entities to incentivize investment in facilities and equipment in the United States for the fabrication, assembly, testing, or advanced packaging of semiconductors at mature technology nodes.
“(2) Eligibility and Requirements.—In order for an entity to qualify to receive Federal financial assistance under this subsection, the covered entity shall—

“(A) submit an application under subsection (a)(2)(A);

“(B) meet the eligibility requirements under subsection (a)(2)(B);

“(C)(i) provide equipment or materials for the fabrication, assembly, testing, or advanced packaging of semiconductors at mature technology nodes in the United States; or

“(ii) fabricate, assemble using advanced packaging, or test semiconductors at mature technology nodes in the United States;

“(D) commit to using any Federal financial assistance received under this section to increase the production of semiconductors at mature technology nodes; and

“(E) be subject to the considerations described in subsection (a)(2)(C).

“(3) Procedures.—In granting Federal financial assistance to covered entities under this subsection, the Secretary may use the procedures established under subsection (a).
“(4) CONSIDERATIONS.—In addition to the considerations described in subsection (a)(2)(C), in granting Federal financial assistance under this section, the Secretary may consider whether a covered entity produces or supplies equipment or materials used in the fabrication, assembly, testing, or advanced packaging of semiconductors at mature technology nodes that are necessary to support a critical manufacturing industry.

“(5) PRIORITY.—In awarding Federal financial assistance to covered entities under this subsection, the Secretary shall give priority to covered entities that support the resiliency of semiconductor supply chains for critical manufacturing industries in the United States.

“(6) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Secretary to carry out this subsection $2,000,000,000, which shall remain available until expended.

“(f) CONSTRUCTION PROJECTS.—Section 602 of the Public Works and Economic Development Act of 1965 (42 U.S.C. 3212) shall apply to a construction project that receives financial assistance from the Secretary under this section.”.
(c) ADVANCED MICROELECTRONICS RESEARCH AND DEVELOPMENT.—Section 9906 of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 (Public Law 116–283) is amended by adding at the end the following:

“(h) INFRASTRUCTURE GRANTS.—Section 602 of the Public Works and Economic Development Act of 1965 (42 U.S.C. 3212) shall apply to a construction project that receives financial assistance from the Secretary under this section.”.

SEC. 507. RESEARCH INVESTMENT TO SPARK THE ECONOMY ACT.

(a) DEFINITIONS.—In this section:

(1) AWARD.—The term “award” includes a grant, cooperative agreement, or other financial assistance.

(2) COVID–19 PUBLIC HEALTH EMERGENCY.—The term “COVID–19 public health emergency” means the public health emergency declared by the Secretary of Health and Human Services under section 319 of the Public Health Service Act (42 U.S.C. 247d) on January 31, 2020, with respect to the Coronavirus Disease 2019 (COVID–19).

(3) RESEARCH INSTITUTION.—The term “research institution” means the following:
(A) An institution of higher education (as defined in section 101(a) of the Higher Education Act of 1965 (20 U.S.C. 1001(a))).

(B) A Tribal College or University (as defined in section 316 of the Higher Education Act of 1965 (20 U.S.C. 1059c)).

(C) A nonprofit entity that conducts Federally funded research.

(4) Research Laboratory.—The term “Research Laboratory” means the following:

(A) A National Laboratory (as defined in section 2 of the Energy Policy Act of 2005 (42 U.S.C. 15801)).

(B) A Federally Funded Research and Development Center for purposes of section 35.017 of title 48, Code of Federal Regulations, or a successor regulation.

(b) Award and Modification of Grants, Cooperative Agreements and Other Financial Assistance for Institutions of Higher Education, Research Laboratories, and Other Research Institutions to Address Matters Relating to Disruption Caused by Covid–19.—
(1) In general.—Each officer specified in paragraph (2) may exercise the authorities described in paragraph (3).

(2) Officers.—The officers specified in this paragraph are as follows:

(A) The Secretary of Commerce, acting through the Administrator of the National Oceanic and Atmospheric Administration and the Director of the National Institute of Standards and Technology.

(B) The Secretary of Agriculture.

(C) The Secretary of Defense.

(D) The Secretary of Education.

(E) The Secretary of Energy, acting for the Department of Energy (with respect to Energy Efficiency and Renewable Energy, Nuclear Energy, and Fossil Research and Development) and through the Office of Science, the Advanced Research Projects Agency–Energy (ARPA–E), and the Office of Electricity.

(F) The Secretary of Interior, acting through the Director of the United States Geological Survey.
(G) The Secretary of Health and Human Services, acting through the Director of the National Institutes of Health.

(H) The Secretary of Transportation.

(I) The Administrator of the National Aeronautics and Space Administration.

(J) The Administrator of the Environmental Protection Agency.

(K) The Director of the National Science Foundation.

(3) AUTHORITIES.—The officers specified in paragraph (2) may—

(A) provide supplemental funding to extend the duration of an award disrupted because of the COVID–19 public health emergency to a research institution, Research Laboratory, or individual that was awarded before the date of the enactment of this Act, or to expand the purposes of such an award, in order to—

(i) enable a postsecondary student or post-doctoral researcher to complete work;

(ii) enable research scientists, technical staff, research associates, and principal investigators to complete work;
(iii) extend the training of a postsecondary student, or the employment of a post-doctoral researcher, on an ongoing research project for up to 2 years because of the disruption of the job market;

(iv) create research opportunities for up to 2 years for graduate students and post-doctoral researchers;

(v) replace, refurbish, or otherwise make usable laboratory animals, reagents, equipment, or other items required for research;

(vi) facilitate other research (including field work), training, and ongoing construction activities, including at institutions that are disproportionately affected by the COVID–19 public health emergency (such as minority-serving institutions and 2-year institutions of higher education);

(vii) enable experimental field campaigns and maintenance of field infrastructure, including through replacement of disrupted experimental data to enable completion of impacted research; and
(viii) support training in online course delivery and virtual research experiences that will improve quality and access needed to continue undergraduate, graduate, and post-doctoral training;

(B) issue awards to research institutions, Research Laboratories, or other individuals to conduct research on the effects of the Coronavirus Disease 2019 and future potential pandemics, on the effects and effectiveness of responses to such diseases, and on improving the prediction of the possible courses of such pandemics; and

(C) provide flexibility on an award for funds made available to an agency, by any prior or subsequent Act, by modifying the terms and conditions of the award with a research institution, Research Laboratory, or individual due to facility closures or other limitations during the COVID–19 public health emergency.

(4) MODIFICATIONS.—The modifications authorized by paragraph (3)(C) include, but are not limited to—

(A) the provision of supplemental funding to extend the duration of the award concerned; and
(B) flexibility on the allowable expenses under such award.

(c) PROCEDURES.—The officers specified in subsection (b)(2) shall each establish procedures to carry out subsection (b).

(d) EXPEDITED AWARDS.—Awards under subsection (b) shall be issued as expeditiously as possible.

SEC. 508. OFFICE OF MANUFACTURING AND INDUSTRIAL INNOVATION POLICY.

(a) FINDINGS.—Congress finds the following:

(1) The general welfare, security, and economic health and stability of the United States require a long-term, substantial, coordinated, and multidisciplinary strategy and implementation of cohesive objectives to remain at the forefront of industrial innovation.

(2) The large and complex innovative and technological capabilities of global supply chains and manufacturing economies, which influence the course of national and international manufacturing and innovative relevance, require appropriate attention, including long-range inclusive planning and more immediate program development, to encourage and support private manufacturing growth in the United
States and participation in the public decision-making process.

(3) The innovative and manufacturing capabilities of business in the United States, when properly fostered, applied, and supported, can effectively assist in improving the quality of life for people in the United States, in anticipating and addressing emerging international, national, and local problems, and strengthening the international economic engagement and pioneering leadership of the United States.

(4) Just as Federal funding for science and technology represents an investment in the future, strategically addressing gaps in the innovation pipeline of the United States would—

(A) contribute to converting research and development investments into high-value, quality job-creating product production and capture domestic and global markets; and

(B) strengthen the economic posture of the United States.

(5) The capabilities of the United States at both the Federal and State levels need enhanced strategic planning and influence over policy formulation for industrial innovation and technology development, as well as a means to ensure an adequate workforce.
(b) Sense of Congress.—

(1) Priority Goals.—It is the sense of Congress that manufacturing and industrial innovation should include contributing to the following priority goals:

(A) Taking concrete national action to rebuild, restore, and expand domestic manufacturing capabilities, skills, and production capacity, including world-class infrastructure.

(B) Rebuilding the industrial innovation commons, including common resources, technical knowledge, and entrepreneurial opportunities associated with technical concepts.

(C) Supporting domestic supply chains.

(D) Expanding production capabilities, cooperation, and knowledge.

(E) Revitalizing communities harmed by historical and poorly conceived, implemented, and enforced regulatory and trade policies.

(F) Developing a strategy for innovation and establishment of manufacturing industries of the future, including adoption and production of Industry 4.0 technology to support domestic economic expansion, particularly manufacturers with fewer than 800 employees, and in traditionally underserved communities.
(G) Contributing to national health and security and emergency readiness and resilience, including addressing environmental concerns.

(H) Strengthening the economy of the United States and promoting full employment in high-quality, high-wage jobs through useful industrial and technological innovation.

(I) Cultivating, utilizing, and enhancing academic and industrial thought-leadership with practical workforce development and training to the fullest extent possible.

(J) Implementing a national strategy that identifies and prioritizes high growth, high value-added industries, products, and components of national importance to the long-term economic, environmental, national security, and public health of the United States.

(2) NATIONAL POLICY.—In view of the findings under subsection (a), it is the sense of Congress that the Federal Government and public and private institutions in the United States should pursue a national policy of manufacturing and industrial innovation that includes the following principles:

(A) Ensuring global leadership in advanced manufacturing technologies critical to the long-
term economic, environmental, and public health
of the United States, and to the long-term na-
tional security of the United States.

(B) Restoring and strengthening the indus-
trial commons of the United States, including—

(i) essential engineering and produc-
tion skills;

(ii) infrastructure for research and de-
velopment, standardization, and metrology;

(iii) process innovations and manufac-
turing know-how;

(iv) equipment; and

(v) suppliers that provide the founda-
tion for the innovativeness and competitiv-
ness of all manufacturers in the United
States.

(C) Strengthening the technical, financial,
and educational commons and assets necessary
to ensure that the United States is the best posi-
tioned nation for the creation and production of
advanced technologies and products emerging
from national research and development invest-
ments.

(D) Capitalizing on the scientific and tech-
nological advances produced by researchers and
innovators in the United States by developing capable and responsive institutions focused on advancing the technology and manufacturing readiness levels of those advances.

(E) Supporting the discovery, invention, start-up, ramp-up, scale-up, and transition of new products and manufacturing technologies to full-scale production in the United States.

(F) Addressing the evolving needs of manufacturers for a diverse set of workers with the necessary skills, training, and expertise as manufacturers in the United States increase high-quality, high-wage employment opportunities.

(G) Improving and expanding manufacturing engineering and technology offerings within institutions of higher education, including 4-year engineering technology programs at polytechnic institutes and secondary schools, to be more closely aligned with the needs of manufacturers in the United States and the goal of strengthening the long-term competitiveness of such manufacturing.

(H) Working collaboratively with Federal agencies, State and local governments, Tribal governments, regional authorities, institutions of
higher education, economic development organizations, and labor organizations that primarily represent workers in manufacturing to leverage their knowledge, resources, applied research, experimental development, and programs to foster manufacturing in the United States so as to anticipate and prepare for emergencies and global, national, and regional supply chain disruptions, including disruptions brought on and exacerbated by changing environmental and other circumstances.

(I) Recognizing that, as changing circumstances require the periodic revision and adaptation of this section, Congress is responsible for—

(i) identifying and interpreting the changes in those circumstances as they occur; and

(ii) affecting subsequent changes to this section, as appropriate.

(J) Reforming rules, regulations, and policy, which negatively impact domestic manufacturing.

(3) PROCEDURES.—It is the sense of Congress that, in order to expedite and facilitate the implemen-
station of the national policy described in paragraph
(2)—

(A) Federal procurement policy should—

(i) prioritize and encourage domestic manufacturing and robust domestic supply chains;

(ii) support means of expanding domestic manufacturing job creation;

(iii) enhance manufacturing workforce preparedness;

(iv) prioritize the development of means to support diversity and inclusion throughout the manufacturing and industrial sector;

(v) promote the consideration of, and support to, minority-owned and women-owned manufacturing contractors of the Federal Government; and

(vi) support the ingenuity and entrepreneurship of the United States by providing enhanced attention to manufacturing startups and small businesses in the United States;

(B) Federal trade and monetary policies should—
(i) ensure that global competition in manufacturing is free, open, and fair;

(ii) prioritize policies and investments that support domestic manufacturing growth and innovation; and

(iii) not be utilized to offshore poor manufacturing working conditions or destructive manufacturing environmental practices;

(C) Federal policies and practices should reasonably prioritize competitiveness for manufacturing and industrial innovation efforts in the United States, but should not sacrifice the quality of employment opportunities, including the health and safety of workers, pay, and benefits;

(D) Federal manufacturing and industrial innovation policies, practices, and priorities should reasonably improve environmental sustainability within the manufacturing industry, while minimizing economic impact;

(E) Federal patent policies should be developed, based on uniform principles, which have as their objective to preserve incentives for industrial technological innovation and the applica-
tion of procedures that will continue to assure
the full use of beneficial technology to serve the
public;

(F) Federal efforts should promote and sup-
port a strong system of intellectual property
rights to include trade secrets, through both pro-
tection of intellectual property rights and en-
forcement against intellectual property theft, and
broad engagement to limit foreign efforts to ille-
gally or inappropriately utilize compromised in-
tellectual property;

(G) closer relationships should be encour-
aged among practitioners of scientific and tech-
nological research and development and those
who apply those foundations to domestic com-
mercial manufacturing;

(H) the full use of the contributions of man-
ufacturing and industrial innovation to support
State and local government goals should be en-
couraged;

(I) formal recognition should be accorded to
those persons, the manufacturing and industrial
innovation achievements of which contributed
significantly to the national welfare; and
(J) departments, agencies, and instrumentalities of the Federal Government should establish procedures to ensure among them the systematic interchange of data, efforts, and findings developed under their programs.

(K) policies, rules, and regulations that negatively impact domestic manufacturing should be reformed.

(4) IMPLEMENTATION.—To implement the national policy described in paragraph (2), it is the sense of Congress—

(A) that—

(i) the Federal Government should maintain integrated policy planning elements in the executive branch that assist agencies in such branch in—

(II) identifying problems and objectives that could be addressed or enhanced by public policy;

(II) mobilizing industrial and innovative manufacturing resources for national security and emergency response purposes;

(III) securing appropriate funding for programs so identified by the
President or the Chief Manufacturing Officer;

(IV) anticipating future concerns to which industrial and innovative manufacturing can contribute and devise industrial strategies for such purposes;

(V) reviewing systematically the manufacturing and industrial innovation policy and programs of the Federal Government and recommending legislative amendments to those policies and programs when needed; and

(VI) reforming policies, rules, and regulations that harm domestic manufacturing and inhibit domestic manufacturing from competing with global competitors; and

(ii) the elements described in clause (i) should include a data collection, analysis, and advisory mechanism within the Executive Office of the President to provide the President with independent, expert judgment and assessments of the complex manu-
facturing and industrial features involved; and

(B) that it is the responsibility of the Federal Government to—

(i) promote prompt, effective, reliable, and systematic dissemination of manufacturing and industrial information—

(I) by such methods as may be appropriate; and

(II) through efforts conducted by nongovernmental organizations, including industrial groups, technical societies, and educational entities;

(ii) coordinate and develop a manufacturing industrial strategy and facilitate the close coupling of this manufacturing strategy with commercial manufacturing application; and

(iii) enhance domestic development and utilization of such industrial information by prioritization of efforts with manufacturers, the production of which takes place in the United States.

(c) Establishment.—
(1) **IN GENERAL.**—The President shall appoint, by and with the advice and consent of the Senate, a Chief Manufacturing Officer to serve within the Executive Office of the President.

(2) **OFFICE.**—

(A) **IN GENERAL.**—There is established in the Executive Office of the President an Office of Manufacturing and Industrial Innovation Policy (referred to in this section as the “Office”).

(B) **CMO.**—The Chief Manufacturing Officer shall—

(i) head the Office; and

(ii) serve as a source of manufacturing and industrial innovation analysis and judgment for the President and the Director of the National Economic Council with respect to the major policies, plans, and programs of the Federal Government relating to manufacturing and industrial innovation.

(d) **CHIEF MANUFACTURING OFFICER; ASSOCIATE MANUFACTURING OFFICERS.**—

(1) **CHIEF MANUFACTURING OFFICER.**—

(A) **FUNCTIONS.**—
(i) **PRIMARY FUNCTION.**—To the extent consistent with law, the Chief Manufacturing Officer shall report to the President, and such agencies within the Executive Office of the President and the Director of the National Economic Council, as may be appropriate, on issues regarding and impacting manufacturing and industrial innovation efforts of the Federal Government, or of the private sector, that require attention at the highest levels of the Federal Government.

(ii) **OTHER FUNCTIONS.**—The Chief Manufacturing Officer shall—

(I) advise the President on manufacturing and industrial innovation considerations relating to areas of national concern, including—

(aa) the economy of the United States;

(bb) national security;

(cc) public health;

(dd) the workforce of the United States;

(ee) education;


(ff) foreign relations (including trade and supply chain issues);

(gg) the environment; and

(hh) technological innovation in the United States;

(II) convene stakeholders, including key industry stakeholders, academic stakeholders, defense stakeholders, governmental stakeholders, and stakeholders from nonprofit organizations and labor organizations that primarily represent workers in manufacturing, to develop the national strategic plan required under subsection (f);

(III) evaluate the scale, quality, and effectiveness of the effort of the Federal Government to support manufacturing and industrial innovation by the Federal Government or by the private sector, and advise on appropriate actions;

(IV) to the extent consistent with law, report to the President, the Direc-
tor of the National Economic Council, the Director of the Office of Management Budget, and such agencies within the Executive Office of the President as may be appropriate, advise the President on the budgets, regulations, and regulatory reforms of agencies of the executive branch of the Federal Government with respect to issues concerning manufacturing and industrial innovation;

(V) to the extent consistent with law, assist the President and the Director of the National Economic Council in providing general leadership and coordination of activities and policies of the Federal Government relating to and impacting manufacturing and industrial innovation; and

(VI) perform such other functions, duties, and activities as the President and the Director of the National Economic Council may assign.
(B) AUTHORITIES.—In carrying out the duties and functions under this section, the Chief Manufacturing Officer may—

(i) appoint such officers and employees as may be determined necessary to perform the functions vested in the position and to prescribe the duties of such officers and employees;

(ii) obtain services as authorized under section 3109 of title 5, United States Code, at rates not to exceed the rate prescribed for grade GS–15 of the General Schedule under section 5332 of title 5, United States Code; and

(iii) enter into contracts and other arrangements for studies, analysis, and other services with public agencies and with private persons, organizations, or institutions, and make such payments as determined necessary to carry out the provisions of this section without legal consideration, without performance bonds, and without regard to section 6101 of title 41, United States Code.

(2) ASSOCIATE DIRECTORS.—
(A) In general.—The Chief Manufacturing Officer may appoint not more than 5 Associate Directors, to be known as Associate Manufacturing Officers to carry out such functions as may be prescribed by the Chief Manufacturing Officer.

(B) Compensation.—Each Associate Manufacturing Officer shall be compensated at a rate not to exceed that provided for level III of the Executive Schedule under section 5314 title 5, United States Code.

(e) Policy Planning, Analysis, and Advice.—

(1) In general.—In carrying out the provisions of this section, the Chief Manufacturing Officer shall—

(A) monitor the status of technological developments, critical production capacity, skill availability, investment patterns, emerging defense needs, and other key indicators of manufacturing competitiveness to—

(i) provide foresight for periodic updates to the national strategic plan required under subsection (f); and

(ii) guide investment decisions;
(B) convene interagency and public-private working groups to align Federal policies that drive implementation of the national strategic plan required under subsection (f);

(C) initiate and support translation research in engineering and manufacturing by entering into contracts or making other arrangements (including grants, awards, cooperative agreements, loans, and other forms of assistance) to study that research and to assess the impact of that research on the economic well-being, climate and environmental impact, public health, and national security of the United States;

(D) report to the President and the Director of the National Economic Council on the extent to which the various programs, policies, and activities of the Federal Government are likely to affect the achievement of priority goals of the United States described in subsection (b)(1);

(E) annually survey the nature and needs of the policies relating to national manufacturing and industrial innovation and make recommendations to the President and the Director of the National Economic Council, for review and submission to Congress, for the timely and
appropriate revision of the manufacturing and industrial innovation policies of the Federal Government, including the reform of policies, rules, and regulations that harm domestic manufacturing and inhibit the ability for domestic manufacturing to compete with global competitors;

(F) perform such other duties and functions and make and furnish such studies and reports thereon, and recommendations with respect to matters of policy and legislation as the President and the Director of the National Economic Council may request; and

(G) coordinate, as appropriate, Federal permitting with respect to manufacturing and industrial innovation.

(2) INTERGOVERNMENTAL MANUFACTURING AND INDUSTRIAL INNOVATION PANEL.—

(A) ESTABLISHMENT.—The Chief Manufacturing Officer shall establish an Intergovernmental Manufacturing and Industrial Innovation Panel (referred to in this section as the “Panel”) within the Office, the purpose of which shall be to—
(i) identify instances in which the policies of the Federal Government—

(I) with respect to manufacturing and industrial innovation can help address problems at the State and local levels; and

(II) unnecessarily impede manufacturing and industrial innovation;

(ii) make recommendations for addressing the problems described in clause (i); and

(iii) advise and assist the Chief Manufacturing Officer in identifying and fostering policies to facilitate the application to and incorporation of federally funded research and development into manufacturing and industrial innovation in the United States, so as to maximize the application of such research.

(B) COMPOSITION.—The Panel shall be composed of—

(i) the Chief Manufacturing Officer, or a representative of the Chief Manufacturing Officer;
(ii) not fewer than 10 members representing the interests of the States, appointed by the Chief Manufacturing Officer after consultation with State officials;

(iii) the Director of the National Institute of Standards and Technology;

(iv) the Deputy Assistant Secretary of Defense for Manufacturing and Industrial Base Policy;

(v) the Assistant Secretary of Labor for Employment and Training;

(vi) the Administrator of the Small Business Administration; and

(vii) the Assistant Secretary of Energy for Energy Efficiency and Renewable Energy.

(C) CHAIR.—The Chief Manufacturing Officer, or the representative of the Chief Manufacturing Officer, shall serve as Chair of the Panel.

(D) MEETINGS.—The Panel shall meet at the call of the Chair.

(E) COMPENSATION.—

(i) IN GENERAL.—Each member of the Panel shall be entitled to receive compensation at a rate not to exceed the daily rate
prescribed for GS–15 of the General Schedule under section 5332 of title 5, United States Code, for each day (including travel time) during which the member is engaged in the performance of the duties of the Panel.

(ii) Travel Expenses.—Each member of the Panel who is serving away from the home or regular place of business of the member in the performance of the duties of the Panel shall be allowed travel expenses, including per diem in lieu of subsistence, in the same manner as the expenses authorized by section 5703(b) of title 5, United States Code, for persons in government service employed intermittently.

(f) National Strategic Plan for Manufacturing and Industrial Innovation.—

(1) Strategic Plan.—

(A) In General.—Not later than 1 year after the date of enactment of this Act, the Chief Manufacturing Officer, in coordination with the Director of the National Economic Council, shall, to the extent practicable, in accordance with subsection (d)(1)(A)(ii) and in consultation
with other agencies and private individuals as the Chief Manufacturing Officer determines necessary, establish a national strategic plan for manufacturing and industrial innovation that identifies—

(i) short-term, medium-term, and long-term needs critical to the economy, national security, public health, workforce readiness, environmental concerns, and priorities of the United States manufacturing sector, including emergency readiness and resilience; and

(ii) situations and conditions that warrant special attention by the Federal Government relating to—

(I) any problems, constraints, or opportunities of manufacturing and industrial innovation that—

(aa) are of national significance;

(bb) will occur or may emerge during the 4-year period beginning on the date on which the national strategic plan is established; and
(cc) are identified through basic research;

(II) an evaluation of activities and accomplishments of all agencies in the executive branch of the Federal Government that are related to carrying out such plan;

(III) opportunities for, and constraints on, manufacturing and industrial innovation that can make a significant contribution to—

(aa) the resolution of problems identified under this paragraph; or

(bb) the achievement of Federal program objectives or priority goals, including those described in subsection (b)(1); and

(IV) recommendations for proposals to carry out such plan.

(B) REVISIONS.—Not later than 4 years after the date on which the national strategic plan is established under subparagraph (A), and every 4 years thereafter, the Chief Manufacturing Officer, in coordination with the Director of the
National Economic Council, shall revise that
plan so that the plan takes account of near- and
long-term problems, constraints, and opportuni-
ties and changing national goals and cir-
cumstances.

(2) Consultation with other agencies.—
The Chief Manufacturing Officer shall consult, as nec-
essary, with officials of agencies in the executive
branch of the Federal Government that administer
programs or have responsibilities relating to the prob-
lems, constraints, and opportunities identified in the
national strategic plan under paragraph (1) in order to—

(A) identify and evaluate actions that
might be taken by the Federal Government,
State, and local governments, or the private sec-
tor to deal with such problems, constraints, or
opportunities; and

(B) ensure to the extent possible that actions
identified under subparagraph (A) are consid-
ered by each agency of the executive branch of the
Federal Government in formulating proposals of
each such agency.

(3) Consultation with manufacturing
stakeholders.—The Chief Manufacturing Officer
shall consult broadly with representatives from stake-
holder constituencies, including from technology
fields, engineering fields, manufacturing fields, aca-
demic fields, worker training or credentialing pro-
grams, industrial sectors, business sectors, consumer
sectors, defense sector, public interest sectors, and
labor organizations which primarily represent work-
ers in manufacturing to ensure information and per-
spectives from such consultations are incorporated
within the problems, constraints, opportunities, and
actions identified in the national strategic plan under
paragraph (1).

(4) Consultation with OMB.—The Chief Man-
ufacturing Officer shall consult as necessary with offi-
cials of the Office of Management and Budget and
other appropriate elements of the Executive Office of
the President to ensure that the problems, constraints,
opportunities, and actions identified under para-
graph (1) are fully considered in the development of
legislative proposals and the President’s budget.

(g) Additional Functions of the Chief Manufac-
turing Officer; Administrative Provisions.—

(1) In general.—The Chief Manufacturing Of-
ficer, in addition to the other duties and functions
under this section, shall serve—
(A) on the Federal Strategy and Coordinating Council on Manufacturing and Industrial Innovation established under subsection (j); and

(B) as a member of the Domestic Policy Council, the National Economic Council, and the Office of Science and Technology Policy Council.

(2) Advice to National Security Council.—For the purpose of ensuring the optimal contribution of manufacturing and industrial innovation to the national security of the United States, the Chief Manufacturing Officer, at the request of the President, shall advise the National Security Council in such matters concerning manufacturing and industrial innovation as may be related to national security.

(3) Coordination with Other Organizations.—

(A) In general.—In exercising the functions under this section, the Chief Manufacturing Officer—

(i) shall—

(I) work in close consultation and cooperation with the Director of the Domestic Policy Council, the National Security Advisor, the Assistant to the
President for Economic Policy and Director of the National Economic Council, the Director of the Office of Science and Technology Policy, the Director of the Office of Management and Budget, and the heads of other agencies in the executive branch of the Federal Government;

(II) utilize the services of consultants, establish such advisory panels, and, to the extent practicable, consult with—

(aa) State and local government agencies;

(bb) appropriate professional groups;

(cc) representatives of industry, universities, consumers, labor organizations that primarily represent workers in manufacturing; and

(dd) such other public interest groups, organizations, and individuals as may be necessary;
(III) hold such hearings in various parts of the United States as necessary to determine the views of the agencies, groups, and organizations described in subparagraph (B), and of the general public, concerning national needs and trends in manufacturing and industrial innovation; and

(IV) utilize, with the heads of public and private agencies and organizations, to the fullest extent possible the services, personnel, equipment, facilities, and information (including statistical information) of public and private agencies and organizations, and individuals, in order to avoid the duplication of efforts and expenses; and

(ii) may transfer funds made available pursuant to this section to other agencies in the executive branch of the Federal Government as reimbursement for the utilization of such personnel, services, facilities, equipment, and information.

(B) FURNISHMENT OF INFORMATION.—

Each department, agency, and instrumentality
of the executive branch of the Federal Government, including any independent agency, shall furnish the Chief Manufacturing Officer such information as necessary to carry out this section.

(h) MANUFACTURING AND INDUSTRIAL INNOVATION REPORT.—

(1) REPORT.—Not later than 3 years after the date of enactment of this Act, and every 4 years thereafter, the Chief Manufacturing Officer, in consultation with the Director of the National Economic Council, shall submit to Congress a Manufacturing and Industrial Innovation Report (referred to in this section as the “report”) with appropriate assistance from agencies in the executive branch of the Federal Government and such consultants and contractors as the Chief Manufacturing Officer determines necessary.

(2) CONTENTS OF REPORT.—Each report required under paragraph (1) shall draw upon the most recent national strategic plan established under subsection (f) and shall include, to the extent practicable and within the limitations of available knowledge and resources—

(A) a review of developments of national significance in manufacturing and industrial innovation;
(B) the significant effects of trends at the
time of the submission of the report and pro-
jected trends in manufacturing and industrial
innovation on the economy, workforce, and envi-
ronmental, health and national security, and
other requirements of the United States;

(C) a review and appraisal of selected man-
ufacturing and industrial innovation related
programs, policies, and activities of the Federal
Government, including procurement;

(D) an inventory and forecast of critical
and emerging national problems, the resolution
of which might be substantially assisted by man-
ufacturing and industrial innovation in the
United States;

(E) the identification and assessment of
manufacturing and industrial innovation meas-
ures that can contribute to the resolution of the
problems described in subparagraph (D) in light
of the related economic, workforce, environ-
mental, public health, and national security con-
siderations;

(F) at the time of the submission of the re-
port, and as projected, the manufacturing and
industrial resources, including specialized man-
power, that could contribute to the resolution of the problems described in subparagraph (D); and

(G) recommendations for legislation and regulatory changes on manufacturing and industrial innovation-related programs and policies that will contribute to the resolution of the problems described in subparagraph (D).

(3) PREPARATION OF REPORT.—In preparing each report required under paragraph (1), the Chief Manufacturing Officer shall make maximum use of relevant data available from agencies in the executive branch of the Federal Government.

(4) PUBLIC AVAILABILITY OF REPORT.—The Chief Manufacturing Officer shall ensure that the report is made available to the public.

(i) COMPTROLLER GENERAL REPORT.—Not later than 3 years after the date of enactment of this Act, the Comptroller General of the United States shall submit to the Committee on Commerce, Science, and Transportation of the Senate, the Committee on Appropriations of the Senate, the Committee on Science, Space, and Technology of the House of Representatives, the Committee on Energy and Commerce of the House of Representatives, and the Committee on Appropriations of the House of Representatives, and make available to the public, a report—
(1) containing an assessment of the efforts of the
Office to implement or advance the priority goals de-
scribed in subsection (b)(1); and

(2) providing recommendations on how to im-
prove the efforts described in paragraph (1).

(j) FEDERAL STRATEGY AND COORDINATING COUNCIL
ON MANUFACTURING AND INDUSTRIAL INNOVATION.—There
is established in the executive branch of the Federal Govern-
ment the Federal Strategy and Coordinating Council on
Manufacturing and Industrial Innovation (referred to in
this section as the “Council”).

(1) MEMBERSHIP.—

(A) IN GENERAL.—The Council shall be
composed of the following:

(i) The President, who shall serve as
Chair of the Council.

(ii) The Vice President.

(iii) The Secretary of Commerce.

(iv) The Secretary of Defense.

(v) The Secretary of Education.

(vi) The Secretary of Energy.

(vii) The Secretary of Health and
Human Services.

(viii) The Secretary of Housing and
Urban Development.
(ix) The Secretary of Labor.

(x) The Secretary of State.

(xi) The Secretary of Transportation.

(xii) The Secretary of the Treasury.

(xiii) The Secretary of Veterans Affairs.

(xiv) The Administrator of the Environmental Protection Agency.

(xv) The Administrator of the National Aeronautics and Space Administration.

(xvi) The Administrator of the Small Business Administration.

(xvii) The Director of the National Science Foundation.

(xviii) The Director of the Office of Management and Budget.

(xix) The Assistant to the President for Science and Technology.

(xx) The United States Trade Representative.

(xxi) The National Security Advisor.

(xxii) The Assistant to the President for Economic Policy.

(xxiii) The Director of the Domestic Policy Council.
(xxiv) The Chair of the Council of Economic Advisers.

(xxv) The Chief Manufacturing Officer.

(B) ADDITIONAL PARTICIPANTS.—The President may, from time to time and as necessary, appoint officials in the executive branch of the Federal Government to serve as members of the Council.

(2) MEETINGS OF THE COUNCIL.—

(A) IN GENERAL.—The President or the Chief Manufacturing Officer may convene meetings of the Council.

(B) PRESIDING OFFICER.—

(i) IN GENERAL.—Subject to clause (ii), the President shall preside over the meetings of the Council.

(ii) EXCEPTION.—If the President is not present at a meeting of the Council, the Vice President (and if the Vice President is not present at a meeting of the Council, the Chief Manufacturing Officer) shall preside and be considered the chair of the Council.

(k) COUNCIL ON MANUFACTURING AND INDUSTRIAL INNOVATION FUNCTIONS.—

(1) IN GENERAL.—The Council shall—
(A) consider problems and developments, including concerns relating to the workforce of the United States, in manufacturing and industrial innovation and related activities of more than 1 agency in the executive branch of the Federal Government;

(B) coordinate the manufacturing and industrial innovation policy-making process;

(C) harmonize the Federal permitting process relating to manufacturing and industrial innovation, as appropriate;

(D) ensure manufacturing and industrial innovation policy decisions and programs are consistent with the priority goals described in subsection (b)(1);

(E) help implement the priority goals described in subsection (b)(1) across the Federal Government;

(F) ensure manufacturing and industrial innovation are considered in the development and implementation of Federal policies and programs;

(G) achieve more effective use of foundational aspects of manufacturing and industrial innovation, particularly scientific, engi-
neering, and technological resources and facilities of agencies in the executive branch of the Federal Government, including the elimination of efforts that have been unwarrantedly duplicated;

(H) identify—

(i) threats to, and vulnerabilities of, supply chains;

(ii) workforce skills;

(iii) aspects of supply chains and workforce skills requiring additional emphasis; and

(iv) for reform policies, rules, and regulations that harm domestic manufacturing and inhibit the ability for domestic manufacturing to compete with global competitors; and

(I) further international cooperation on manufacturing and industrial innovation policies that enhance the policies of the United States and internationally agreed upon policies.

(2) CHIEF MANUFACTURING OFFICER.—The Chief Manufacturing Officer may take such actions as may be necessary or appropriate to implement the functions described in paragraph (1).
(l) COORDINATION.—The head of each agency in the executive branch of the Federal Government, without regard to whether the head of the agency is a member of the Council, shall coordinate manufacturing and industrial innovation policy with the Council.

(m) ADMINISTRATION.—

(1) COORDINATION WITH NATIONAL SCIENCE AND TECHNOLOGY COUNCIL.—In carrying out the duties of the Council, the Council shall consult with the National Science and Technology Council, as necessary.

(2) AD COMMITTEES; TASK FORCES, INTERAGENCY GROUPS.—The Council may function through established or ad hoc committees, task forces, or interagency groups.

(3) REQUIREMENT TO CooperATE.—Each agency in the executive branch of the Federal Government shall—

(A) cooperate with the Council; and

(B) provide assistance, information, and advice to the Council, as the Council may request, to the extent permitted by law.

(4) ASSISTANCE TO COUNCIL.—For the purpose of carrying out the provisions of this section, the head of each agency that is a member of the Council shall
furnish necessary assistance and resources to the Council, which may include—

(A) detailing employees of the agency to the Council to perform such functions, consistent with the purposes of this section, as the Chair of the Council may assign to those detailees;

(B) providing office support and printing, as requested by the Chair of the Council; and

(C) upon the request of the Chair of the Council, undertake special studies for the Council that come within the functions of the Council described in subsection (k).

(n) **NATIONAL MEDAL OF MANUFACTURING AND INDUSTRIAL INNOVATION.—**

(1) **RECOMMENDATIONS.**—The President shall from time to time award a medal, to be known as the “National Medal of Manufacturing and Industrial Innovation”, on the basis of recommendations received from the National Academies of Sciences, the Chief Manufacturing Officer, or on the basis of such other information and evidence as the President determines appropriate, to individuals who in the judgment of the President are deserving of special recognition by reason of outstanding contributions to knowledge in manufacturing and industrial innovation.
(2) NUMBER.—Not more than 20 individuals may be awarded a medal under this section in any one calendar year.

(3) CITIZENSHIP.—An individual may not be awarded a medal under this section unless at the time such award is made the individual—

(A) is a citizen or other national of the United States; or

(B) is an individual lawfully admitted to the United States for permanent residence who—

(i) has filed an application for petition for naturalization in the manner prescribed by section 334(b) of the Immigration and Nationality Act (8 U.S.C. 1445(b)); and

(ii) is not permanently ineligible to become a citizen of the United States.

(4) CEREMONIES.—The presentation of the award shall be made by the President with such ceremonies as determined proper, including attendance by appropriate Members of Congress.

(o) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated for each of fiscal years 2022 through 2026—

(1) $5,000,000, for the purpose of carrying out subsections (c) through (i); and
(2) $5,000,000, for the purpose of carrying out subsections (j) through (m).

SEC. 509. TELECOMMUNICATIONS WORKFORCE TRAINING GRANT PROGRAM.

(a) SHORT TITLE.—This section may be cited as the “Improving Minority Participation And Careers in Telecommunications Act” or the “IMPACT Act”.

(b) DEFINITIONS.—In this section:

(1) ASSISTANT SECRETARY.—The term “Assistant Secretary” means the Assistant Secretary of Commerce for Communications and Information.

(2) COVERED GRANT.—The term “covered grant” means a grant awarded under subsection (c).

(3) ELIGIBLE ENTITY.—The term “eligible entity” means a historically Black college or university, Tribal College or University, or minority-serving institution, or a consortium of such entities, that forms a partnership with 1 or more of the following entities to carry out a training program:

(A) A member of the telecommunications industry, such as a company or industry association.

(B) A labor or labor-management organization with experience working in the telecommunications industry or a similar industry.
(C) The Telecommunications Industry Registered Apprenticeship Program.

(D) A nonprofit organization dedicated to helping individuals gain employment in the telecommunications industry.

(E) A community or technical college with experience in providing workforce development for individuals seeking employment in the telecommunications industry or a similar industry.

(F) A Federal agency laboratory specializing in telecommunications technology.

(4) Fund.—The term “Fund” means the Telecommunications Workforce Training Grant Program Fund established under subsection (d)(1).

(5) Grant Program.—The term “Grant Program” means the Telecommunications Workforce Training Grant Program established under subsection (c).

(6) Historically Black College or University.—The term “historically Black college or university” has the meaning given the term “part B institution” in section 322 of the Higher Education Act of 1965 (20 U.S.C. 1061).

(7) Industry Field Activities.—The term “industry field activities” means activities at active tele-
communications, cable, and broadband network work-
sites, such as towers, construction sites, and network
management hubs.

(8) Industry Partner.—The term “industry
partner” means an entity described in subparagraphs
(A) through (F) of paragraph (3) with which an eligi-
ble entity forms a partnership to carry out a training
program.

(9) Minority-Serving Institution.—The term
“minority-serving institution” means an institution
described in section 371(a) of the Higher Education
Act of 1965 (20 U.S.C. 1067q(a)).

(10) Training Program.—The term “training
program” means a credit or non-credit program de-
developed by an eligible entity, in partnership with an
industry partner, that—

(A) is designed to educate and train stu-
dents to participate in the telecommunications
workforce; and

(B) includes a curriculum and apprentice-
ship or internship opportunities that can also be
paired with—

(i) a degree program; or

(ii) stacked credentialing toward a de-
gree.
(11) TRIBAL COLLEGE OR UNIVERSITY.—The term “Tribal College or University” has the meaning given the term in section 316(b)(3) of the Higher Education Act of 1965 (20 U.S.C. 1059c(b)(3)).

(c) PROGRAM.—The Assistant Secretary, acting through the Office of Minority Broadband Initiatives established under section 902(b)(1) of division N of the Consolidated Appropriations Act, 2021 (Public Law 116–260), shall establish a program, to be known as the “Telecommunications Workforce Training Grant Program”, under which the Assistant Secretary awards grants to eligible entities to develop training programs.

(d) FUND.—

(1) ESTABLISHMENT.—There is established in the Treasury of the United States a fund to be known as the “Telecommunications Workforce Training Grant Program Fund”.

(2) AVAILABILITY.—Amounts in the Fund shall be available to the Assistant Secretary to carry out the Grant Program.

(e) APPLICATION.—

(1) IN GENERAL.—An eligible entity desiring a covered grant shall submit an application to the Assistant Secretary at such time, in such manner, and
containing such information as the Assistant Secretary may require.

(2) CONTENTS.—An eligible entity shall include in an application under paragraph (1)—

(A) a commitment from the industry partner of the eligible entity to collaborate with the eligible entity to develop a training program, including curricula and internships or apprenticeships;

(B) a description of how the eligible entity plans to use the covered grant, including the type of training program the eligible entity plans to develop;

(C) a plan for recruitment of students and potential students to participate in the training program;

(D) a plan to increase female student participation in the training program of the eligible entity; and

(E) a description of potential jobs to be secured through the training program, including jobs in the communities surrounding the eligible entity.
(f) Use of Funds.—An eligible entity may use a covered grant, with respect to the training program of the eligible entity, to—

(1) hire faculty members to teach courses in the training program;

(2) train faculty members to prepare students for employment in jobs related to the deployment of next-generation wired and wireless communications networks, including 5G networks, hybrid fiber-coaxial networks, and fiber infrastructure, particularly in—

(A) broadband and wireless network engineering;

(B) network deployment, operation, and maintenance;

(C) industry field activities; and

(D) cloud networks, data centers, and cybersecurity;

(3) design and develop curricula and other components necessary for degrees, courses, or programs of study, including certificate programs and credentialing programs, that comprise the training program;

(4) pay for costs associated with instruction under the training program, including the costs of equipment, telecommunications training towers, lab-
oratory space, classroom space, and instructional field activities;

(5) fund scholarships, student internships, apprenticeships, and pre-apprenticeship opportunities;

(6) recruit students for the training program; and

(7) support the enrollment in the training program of individuals working in the telecommunications industry in order to advance professionally in the industry.

(g) GRANT AWARDS.—

(1) DEADLINE.—Not later than 2 years after the date on which amounts are appropriated to the Fund pursuant to subsection (m), the Assistant Secretary shall award all covered grants.

(2) MINIMUM ALLOCATION TO CERTAIN ENTITIES.—The Assistant Secretary shall award not less than—

(A) 30 percent of covered grant amounts to historically Black colleges or universities; and

(B) 30 percent of covered grant amounts to Tribal Colleges or Universities.

(3) EVALUATION CRITERIA.—As part of the final rules issued under subsection (h), the Assistant Sec-
Secretary shall develop criteria for evaluating applications for covered grants.

(4) **COORDINATION.**—The Assistant Secretary shall ensure that grant amounts awarded under paragraph (2) are coordinated with, and do not duplicate the specific use of, grant amounts provided under section 902 of division N of the Consolidated Appropriations Act, 2021 (Public Law 116–260).

(5) **CONSTRUCTION.**—In awarding grants under this section for training or education relating to construction, the Assistant Secretary may prioritize applicants that partner with apprenticeship programs, pre-apprenticeship programs, or public two-year community or technical colleges that have a written agreement with one or more apprenticeship programs.

(h) **RULES.**—Not later than 180 days after the date of enactment of this Act, after providing public notice and an opportunity to comment, the Assistant Secretary, in consultation with the Secretary of Labor and the Secretary of Education, shall issue final rules governing the Grant Program.

(i) **TERM.**—The Assistant Secretary shall establish the term of a covered grant, which may not be less than 5 years.

(j) **GRANTEE REPORTS.**—During the term of a covered grant received by an eligible entity, the eligible entity shall
submit to the Assistant Secretary a semiannual report that,

with respect to the preceding 6-month period—

(1) describes how the eligible entity used the covered grant amounts;

(2) describes the progress the eligible entity made in developing and executing the training program of the eligible entity;

(3) describes the number of faculty and students participating in the training program of the eligible entity;

(4) describes the partnership with the industry partner of the eligible entity, including—

(A) the commitments and in-kind contributions made by the industry partner; and

(B) the role of the industry partner in curriculum development, the degree program, and internships and apprenticeships; and

(5) includes data on internship, apprenticeship, and employment opportunities and placements.

(k) OVERSIGHT.—

(1) AUDITS.—The Inspector General of the Department of Commerce shall audit the Grant Program in order to—

(A) ensure that eligible entities use covered grant amounts in accordance with—
(i) the requirements of this section; and

(ii) the overall purpose of the Grant Program, as described in subsection (c); and

(B) prevent waste, fraud, and abuse in the operation of the Grant Program.

(2) REVOCATION OF FUNDS.—The Assistant Secretary shall revoke a grant awarded to an eligible entity that is not in compliance with the requirements of this section or the overall purpose of the Grant Program, as described in subsection (c).

(l) ANNUAL REPORT TO CONGRESS.—Each year, until all covered grants have expired, the Assistant Secretary shall submit to Congress a report that—

(1) identifies each eligible entity that received a covered grant and the amount of the covered grant;

(2) describes the progress each eligible entity described in paragraph (1) has made toward accomplishing the overall purpose of the Grant Program, as described in subsection (c);

(3) summarizes the job placement status or apprenticeship opportunities of students who have participated in the training program of the eligible entity; and

(4) includes the findings of any audits conducted by the Inspector General of the Department of Com-
merce under subsection (k)(1) that were not included in the previous report submitted under this subsection.

(m) AUTHORIZATION OF APPROPRIATIONS.—

(1) IN GENERAL.—There is authorized to be appropriated to the Fund a total of $100,000,000 for fiscal years 2022 through 2027, to remain available until expended.

(2) ADMINISTRATION.—The Assistant Secretary may use not more than 2 percent of the amounts appropriated to the Fund for the administration of the Grant Program.

SEC. 510. COUNTRY OF ORIGIN LABELING ONLINE ACT.

(a) MANDATORY ORIGIN AND LOCATION DISCLOSURE FOR PRODUCTS OFFERED FOR SALE ON THE INTERNET.—

(1) IN GENERAL.—It shall be unlawful for a product that is required to be marked under section 304 of the Tariff Act of 1930 (19 U.S.C. 1304) or its implementing regulations to be introduced, sold, advertised, or offered for sale in commerce on an internet website unless the internet website description of the product—

(A)(i) indicates in a conspicuous place the country of origin of the product, in a manner consistent with the regulations prescribed under
section 304 of the Tariff Act of 1930 (19 U.S.C. 1304) and the country of origin marking regulations administered by U.S. Customs and Border Protection; and

(ii) includes, in the case of—

(I) a new passenger motor vehicle (as defined in section 32304 of title 49, United States Code), the disclosure required by such section;

(II) a textile fiber product (as defined in section 2 of the Textile Fiber Products Identification Act (15 U.S.C. 70b)), the disclosure required by such Act;

(III) a wool product (as defined in section 2 of the Wool Products Labeling Act of 1939 (15 U.S.C. 68)), the disclosure required by such Act;

(IV) a fur product (as defined in section 2 of the Fur Products Labeling Act (15 U.S.C. 69)), the disclosure required by such Act;

(V) a covered commodity (as defined in section 281 of the Agricultural Marketing Act of 1946 (7 U.S.C. 1638)), the country of
origin information required by section 282 of such Act (7 U.S.C. 1638a); and

(VI) a pharmaceutical product subject to the jurisdiction of the Food and Drug Administration, the disclosure required by section 502 of the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 352); and

(B) indicates in a conspicuous place the country in which the seller of the product is located (and, if applicable, the country in which any parent corporation of such seller is located).

(2) LIMITATION.—The disclosure of a product’s country of origin required pursuant to paragraph (1)(A) shall not be made in such a manner as to represent to a consumer that the product is in whole, or part, of United States origin, unless such disclosure is consistent with section 5 of the Federal Trade Commission Act (15 U.S.C. 45(a)), provided that no other Federal statute applies.

(b) PROHIBITION ON FALSE AND MISLEADING REPRESENTATION OF UNITED STATES ORIGIN ON PRODUCTS.—

(1) UNLAWFUL ACTIVITY.—Notwithstanding any other provision of law, it shall be unlawful to make any false or deceptive representation that a product
or its parts or processing are of United States origin
in any labeling, advertising, or other promotional
materials, or any other form of marketing, including
marketing through digital or electronic means in the
United States.

(2) Deceptive representation.—For pur-
poses of paragraph (1), a representation that a prod-
uct is in whole, or in part, of United States origin
is deceptive if, at the time the representation is made,
such claim is not consistent with section 5 of the Fed-
eral Trade Commission Act (15 U.S.C. 45(a)), pro-
vided that no other Federal statute applies.

(c) Enforcement by Commission.—

(1) Unfair or deceptive acts or prac-
tices.—A violation of subsection (a) or (b) shall be
treated as a violation of a rule under section
18(a)(1)(B) of the Federal Trade Commission Act (15
U.S.C. 57(a)(1)(B)).

(2) Powers of the Commission.—

(A) In general.—The Commission shall
enforce this section in the same manner, by the
same means, and with the same jurisdiction,
powers, and duties as though all applicable
terms and provisions of the Federal Trade Com-
mission Act (15 U.S.C. 41 et seq.) were incor-
porated into and made a part of this section.

(B) PRIVILEGES AND IMMUNITIES.—Any
person that violates subsection (a) or (b) shall be
subject to the penalties and entitled to the privi-
leges and immunities provided in the Federal
Trade Commission Act (15 U.S.C. 41 et seq.) as
though all applicable terms and provisions of
that Act were incorporated and made part of
this section.

(C) AUTHORITY PRESERVED.—Nothing in
this section may be construed to limit the au-
thority of the Commission under any other pro-
vision of law.

(3) INTERAGENCY AGREEMENT.—Not later than
6 months after the date of enactment of this Act, the
Commission and U.S. Customs and Border Protection
shall—

(A) enter into a Memorandum of Under-
standing or other appropriate agreement for the
purpose of providing consistent implementation
of this section; and

(B) publish such agreement to provide pub-
lic guidance.
(4) DEFINITION OF COMMISSION.—In this sub-
section, the term “Commission” means the Federal
Trade Commission.

(d) EFFECTIVE DATE.—This section shall take effect
9 months after the date of enactment of this Act.

SEC. 511. COUNTRY OF ORIGIN LABELING FOR KING CRAB
AND TANNER CRAB.

Section 281(7)(B) of the Agricultural Marketing Act
of 1946 (7 U.S.C. 1638(7)(B)) is amended—

(1) by striking “includes a fillet” and inserting
“includes—
“(i) a fillet”;
(2) by striking the period at the end and insert-
ing “; and”; and
(3) by adding at the end the following:
“(ii) whole cooked king crab and tan-
ner crab and cooked king crab and tanner
crab sections.”.

SEC. 512. INTERNET EXCHANGES AND SUBMARINE CABLES.

(a) DEFINITIONS.—In this section:

(1) ASSISTANT SECRETARY.—The term “Assist-
ant Secretary” means the Assistant Secretary of Com-
merce for Communications and Information.

(2) CORE BASED STATISTICAL AREA.—The term
“core based statistical area” has the meaning given
the term by the Office of Management and Budget in
the Notice of Decision entitled “2010 Standards for
Delineating Metropolitan and Micropolitan Statis-
tical Areas”, published in the Federal Register on
June 28, 2010 (75 Fed. Reg. 37246), or any successor
to that Notice.

(3) COVERED GRANT.—The term “covered grant”
means a grant awarded under subsection (b)(1).

(4) INDIAN TRIBE.—The term “Indian Tribe”—

(A) has the meaning given the term in sec-
tion 4 of the Indian Self-Determination and
Education Assistance Act (25 U.S.C. 5304); and

(B) includes a Native Hawaiian organiza-
tion, as that term is defined in section 6207 of
the Native Hawaiian Education Act (20 U.S.C.
7517).

(5) INTERNET EXCHANGE FACILITY.—The term
“internet exchange facility” means physical infra-
structure through which internet service providers
and content delivery networks exchange internet traf-
fic between their networks.

(6) STATE.—The term “State” has the meaning
given the term in section 3 of the Communications
(7) **Submarine cable landing station.**—The term “submarine cable landing station” means a cable landing station, as that term is used in section 1.767(a)(5) of title 47, Code of Federal Regulations (or any successor regulation), that can be utilized to land a submarine cable by an entity that has obtained a license under the first section of the Act entitled “An Act relating to the landing and operation of submarine cables in the United States”, approved May 27, 1921 (47 U.S.C. 34) (commonly known as the “Cable Landing Licensing Act”).

(b) **Internet Exchange Facility Grants.**—

(1) **Grants.**—Not later than 1 year after the date on which amounts are made available under subsection (e), the Assistant Secretary shall award grants to entities to acquire real property and necessary equipment to—

(A) establish a new internet exchange facility in a core based statistical area in which, at the time the grant is awarded, there are no existing internet exchange facilities; or

(B) expand operations at an existing internet exchange facility in a core based statistical area in which, at the time the grant is awarded, there is only 1 internet exchange facility.
(2) ELIGIBILITY.—To be eligible to receive a covered grant, an entity shall—

(A) have sufficient interest from third party entities that will use the internet exchange facility to be funded by the grant once the facility is established or operations are expanded, as applicable;

(B) have sovereign control over the land or building in which the internet exchange facility is to be housed;

(C) provide evidence of direct conduit, duct, and manhole access to public rights-of-way;

(D) have a plan to establish security protocols for the internet exchange facility to prevent physical or electronic intrusion from unauthorized users; and

(E) provide other information required by the Assistant Secretary to protect against waste, fraud, or abuse.

(3) FEDERAL SHARE.—The Federal share of the total cost of the establishment of, or expansion of operations at, an internet exchange facility for which a covered grant is awarded may not exceed 50 percent.

(4) GRANT AMOUNT.—The amount of a covered grant may not exceed $3,000,000.
(5) APPLICATIONS.—

(A) RULES AND TIMELINES.—Not later than 1 year after the date of enactment of this Act, the Assistant Secretary shall establish rules and timelines for applications for—

(i) covered grants; and

(ii) grants under subsection (c).

(B) THIRD PARTY REVIEW.—To prevent fraud in the covered grant program, the Assistant Secretary shall enter into a contract with an independent third party under which the third party reviews an application for a covered grant not later than 60 days after the date on which the application is submitted to ensure that only an entity that is eligible for a covered grant receives a covered grant.

(6) RULE OF CONSTRUCTION.—Nothing in this subsection shall be construed to authorize the Assistant Secretary to regulate, issue guidance for, or otherwise interfere with the activities at an internet exchange facility.

(c) SUBMARINE CABLE LANDING STATION GRANTS.—Not later than 1 year after the date on which amounts are made available under subsection (e), and in accordance with the rules and timelines established under subsection
(b)(5)(A), the Assistant Secretary shall award grants to States and Indian Tribes to build infrastructure and acquire necessary equipment to establish or expand an open-access, carrier-neutral submarine cable landing station that serves a military facility.

(d) REPORT.—Not later than 5 years after the date of enactment of this Act, and annually thereafter for 5 years, the Assistant Secretary shall submit a report on outcomes of grants awarded under this section to—

(1) the Committee on Commerce, Science, and Transportation of the Senate; and
(2) the Committee on Energy and Commerce of the House of Representatives.

(e) AUTHORIZATION OF APPROPRIATIONS.—

(1) IN GENERAL.—There is authorized to be appropriated $35,000,000 to carry out subsections (b) and (c).

(2) LIMITATION.—The Assistant Secretary may not use more than 10 percent of the amounts made available under paragraph (1) to administer and report on the outcomes of grants awarded under this section.

(f) RETURN OF CERTAIN GRANT AMOUNTS.—The Assistant Secretary may require a recipient of a grant awarded under subsection (b) or (c) to return all or a portion
of the grant amount if there is evidence of waste, fraud, or abuse of grant funds by the recipient.

SEC. 513. STUDY OF SISTER CITY PARTNERSHIPS OPERATING WITHIN THE UNITED STATES INVOLVING FOREIGN COMMUNITIES IN COUNTRIES WITH SIGNIFICANT PUBLIC SECTOR CORRUPTION.

(a) SHORT TITLE.—This section may be cited as the “Sister City Transparency Act”.

(b) DEFINITIONS.—In this section:

(1) APPROPRIATE CONGRESSIONAL COMMITTEES.—The term “appropriate congressional committees” means—

(A) the Committee on Foreign Relations of the Senate;

(B) the Committee on Health, Education, Labor, and Pensions of the Senate;

(C) the Committee on Armed Services of the Senate;

(D) the Committee on Foreign Affairs of the House of Representatives;

(E) the Committee on Education and Labor of the House of Representatives; and

(F) the Committee on Armed Services of the House of Representatives.
(2) FOREIGN COMMUNITY.—The term “foreign community” means any subnational unit of government outside of the United States.

(3) SISTER CITY PARTNERSHIP.—The term “sister city partnership” means a formal agreement between a United States community and a foreign community that—

(A) is recognized by Sister Cities International; and

(B) is operating within the United States.

(4) UNITED STATES COMMUNITY.—The term “United States community” means a State, county, city, or other unit of local government in the United States.

(c) STUDY OF SISTER CITY PARTNERSHIPS OPERATING WITHIN THE UNITED STATES INVOLVING FOREIGN COMMUNITIES IN COUNTRIES WITH SIGNIFICANT PUBLIC SECTOR CORRUPTION.—

(1) IN GENERAL.—The Comptroller General of the United States shall conduct a study of the activities of sister city partnerships involving foreign communities in countries receiving a score of 45 or less on Transparency International’s 2019 Corruption Perceptions Index.
(2) ELEMENTS OF THE STUDY.—The study conducted under paragraph (1) shall—

(A) identify—

(i) the criteria by which foreign communities identify United States communities as candidates for sister city partnerships, including themes with respect to the prominent economic activities and demographics of such United States communities;

(ii) the activities conducted within sister city partnerships;

(iii) the economic and educational outcomes of such activities;

(iv) the types of information that sister city partnerships make publicly available, including information relating to contracts and activities;

(v) the means by which United States communities safeguard freedom of expression within sister city partnerships; and

(vi) the oversight practices that United States communities implement to mitigate the risks of foreign espionage and economic coercion within sister city partnerships;
(B) assess—

(i) the extent to which United States communities ensure transparency regarding sister city partnership contracts and activities;

(ii) the extent to which sister city partnerships involve economic arrangements that make United States communities vulnerable to malign market practices;

(iii) the extent to which sister city partnerships involve educational arrangements that diminish the freedom of expression;

(iv) the extent to which sister city partnerships allow foreign nationals to access local commercial, educational, and political institutions;

(v) the extent to which foreign communities could use sister city partnerships to realize strategic objectives that do not conducive to the economic and national security interests of the United States;

(vi) the extent to which sister city partnerships could enable or otherwise contribute to foreign communities' malign ac-
tivities globally, including activities relating to human rights abuses and academic and industrial espionage; and

(vii) the extent to which United States communities seek to mitigate foreign nationals’ potentially inappropriate use of visa programs to participate in activities relating to sister city partnerships; and

(C) review—

(i) the range of activities conducted within sister city partnerships, including activities relating to cultural exchange and economic development;

(ii) how such activities differ between sister city partnerships; and

(iii) best practices to ensure transparency regarding sister city partnerships’ agreements, activities, and employees.

(3) REPORT.—

(A) In general.—Not later than 6 months after initiating the study required under paragraph (1), the Comptroller General shall submit a report to the appropriate congressional committees that contains the results of such study,
including the findings, conclusions, and recommendations (if any) of the study.

(B) Form.—The report required under subparagraph (A) may include a classified annex, if necessary.

SEC. 514. PROHIBITION ON TRANSFER, ASSIGNMENT, OR DISPOSITION OF CONSTRUCTION PERMITS AND STATION LICENSES TO ENTITIES SUBJECT TO UNDUE INFLUENCE BY THE CHINESE COMMUNIST PARTY OR THE GOVERNMENT OF THE PEOPLE’S REPUBLIC OF CHINA.

The Federal Communications Commission shall, pursuant to section 310 of the Communications Act of 1934 (47 U.S.C. 310), prohibit the transfer, assignment, or disposition of construction permits and station licenses to an entity that is subject to undue influence by the Chinese Communist Party or the Government of the People’s Republic of China.

SEC. 515. LIMITATION ON NUCLEAR COOPERATION WITH THE PEOPLE’S REPUBLIC OF CHINA.

(a) In General.—The President shall not—

(1) develop, design, plan, promulgate, implement, or execute a bilateral policy, program, order, or contract of any kind to participate in, collaborate on, or coordinate bilaterally in any manner with respect
to nuclear cooperation activities, or otherwise engage
in nuclear cooperation, with—

(A) the Government of the People’s Republic
of China; or

(B) any company—

(i) owned by the Government of the
People’s Republic of China; or

(ii) incorporated under the laws of the
People’s Republic of China; or

(2) allow any agency of the United States Gov-
ernment to host official visitors at a facility belonging
to the agency if those visitors are—

(A) officials, corporate officers, or principal
shareholders of any entity described in subpara-
graph (A) or (B) of paragraph (1); or

(B) individuals subject to undue influence
by the individuals described in subparagraph
(A).

(b) Review of Prior Nuclear Cooperation and
Associated Impacts.—

(1) Agreement.—Not later than 60 days after
the date of enactment of this Act, the Secretary of
State shall seek to enter into an agreement with the
National Academy of Public Administration (referred
to in this section as the “National Academy”) to
carry out the review and assessment described in paragraph (2) and submit the report described in paragraph (3).

(2) REVIEW AND ASSESSMENT.—

(A) IN GENERAL.—Under the agreement described in paragraph (1), the National Academy shall—

(i) conduct a review of nuclear cooperation during the 25-year period ending on the date of enactment of this Act between the United States Government and the People’s Republic of China, including the role of the Department of State in facilitating such cooperation; and

(ii) perform an assessment of the implications of the cooperation described in clause (i) on the national security of the United States.

(B) ELEMENTS.—In conducting the review and assessment under subparagraph (A), the National Academy shall examine all cooperative activities relating to nuclear cooperation between the United States Government and the People’s Republic of China during the 25-year period
ending on the date of enactment of this Act, including—

(i) all trips relating to nuclear co-operation taken by officials of the Department of State to the People’s Republic of China;

(ii) all exchanges of goods, services, data, or information between officials of the United States Government and an entity described in subparagraph (A) or (B) of subsection (a)(1); and

(C) all instances in which officials of the United States Government hosted officials from, or significantly tied to, an entity described in subparagraph (A) or (B) of subsection (a)(1).

(3) DEADLINE AND REPORT.—Not later than 1 year after the date on which the Secretary and the National Academy enter into an agreement described in paragraph (1), the National Academy shall—

(A) complete the review and assessment described in paragraph (2); and

(B) submit a report containing the results of the review and assessment, which shall be unclassified but, if necessary, may contain a classified annex, to—
(i) the Secretary; and

(ii) the appropriate congressional com-
mittees.

(4) PUBLICATION.—Not later than 60 days after
the date on which the National Academy submits the
report under paragraph (3), the Secretary shall make
the report publically available in an easily accessible
electronic format, with appropriate redactions for in-
formation that, in the determination of the Secretary,
would be damaging to the national security of the
United States if disclosed.

(c) WAIVERS.—

(1) WAIVER FOR COUNTERTERRORISM; NON-
PROLIFERATION ACTIVITIES; AND THE NATIONAL IN-
TEREST.—The President may waive the limitation
under subsection (a)—

(A) to continue ongoing activities with the
People’s Republic of China relating to nuclear
and radiological counterterrorism, nuclear and
radiological counterproliferation, and nuclear
and radiological nonproliferation; or

(B) if the President determines that such
waiver is in the national interests of the United
States, provided the Federal Bureau of Investiga-
tion certifies prior to such waiver that the persons covered under such waiver—

(i) are not subject to undue influence by the Government of the People’s Republic of China or the Chinese Communist Party, or by officials of the People’s Republic of China or the Chinese Communist Party; and

(ii) are not engaged in human rights abuses.

(2) Waiver to Address Emergencies.—Subject to receiving appropriate licenses and other authorizations, the President may waive the limitation under subsection (a) to allow transfers of technology and equipment to address a nuclear or radiological emergency.

(3) Notification Requirement.—The President shall notify Congress of any waiver issued under paragraph (1) or (2).

(d) Definitions.—In this section:

(1) Nuclear Cooperation.—The term “nuclear cooperation” means cooperation with respect to nuclear activities, including the development, use, or control of atomic energy, including any activities involving the processing or utilization of source materia-
rial, byproduct material, or special nuclear material
(as those terms are defined in section 11 of the Atomic
Energy Act of 1954 (42 U.S.C. 2014)).

(2) Nuclear cooperation activities.—The
term “nuclear cooperation activities” means activities relating to nuclear cooperation.

(e) Rule of construction.—Nothing in this Act shall be construed to prohibit—

(1) United States commercial activities, provided such activities are consistent with the laws and regulations of the United States; and

(2) limited diplomatic engagement or dialogue—

(A) including regarding protection of the intellectual property and trade secrets of American persons; and

(B) except for any diplomatic engagement or dialogue relating to or aimed at facilitating the transfer of nuclear technology.

SEC. 516. CERTIFICATION.

Section 1260I(a) of the National Defense Authorization Act for Fiscal Year 2020 (Public Law 116–92; 113 Stat. 1687) is amended—

(1) by inserting “and” at the end of paragraph (2); and
(2) by striking paragraphs (3) and (4) and inserting the following:

“(3) Huawei does not pose an ongoing threat to the critical infrastructure of the United States or its allies.”.

SEC. 517. FAIRNESS AND DUE PROCESS IN STANDARDS-SETTING BODIES.

(a) DEFINITIONS.—In this section:

(1) APPROPRIATE COMMITTEES OF CONGRESS.—The term “appropriate committees of Congress” means—

(A) the Committee on Commerce, Science, and Transportation of the Senate;

(B) the Committee on Armed Services of the Senate;

(C) the Select Committee on Intelligence of the Senate;

(D) the Committee on Foreign Relations of the Senate;

(E) the Committee on Science, Space, and Technology of the House of Representatives;

(F) the Committee on Armed Services of the House of Representatives;

(G) the Permanent Select Committee on Intelligence of the House of Representatives; and
(H) the Committee on Foreign Affairs of the House of Representatives.

(2) ASSISTANT SECRETARY.—The term “Assistant Secretary” means the Assistant Secretary of Commerce for Communications and Information.

(b) STUDY.—

(1) IN GENERAL.—Not later than 270 days after the date of enactment of this Act, the Secretary of Commerce, acting through the Assistant Secretary, shall submit to the appropriate committees of Congress the results of a study identifying opportunities for improved participation by United States Government experts in the standardization activities of the Telecommunication Standardization Sector of the International Telecommunication Union.

(2) CONSULTATIONS REQUIRED.—In conducting the study required under paragraph (1), the Assistant Secretary shall—

(A) consult with—

(i) the Under Secretary of State for Economic Growth, Energy, and the Environment; and

(ii) the Chairman of the Federal Communications Commission;
(B) engage with the International Digital Economy and Telecommunication Advisory Committee; and

(C) provide opportunities for all relevant stakeholders in the United States to provide meaningful input with respect to the conduct of the study.

(3) CONTENTS.—The study required under paragraph (1) shall include—

(A) the identification and assessment of factors that serve as a barrier to the participation of United States Government experts in the standards development activities of the Telecommunication Standardization Sector of the International Telecommunication Union, including—

(i) budgetary constraints;

(ii) lack of awareness regarding the strategic importance of, and support for, participation in those activities;

(iii) limited knowledge about opportunities for, and means of, participation with respect to those activities;

(iv) the extent to which there are opportunities for cooperation with government
experts from like-minded foreign allies with respect to those activities; and

(v) any other barriers to effective participation in, and representation with respect to, those activities; and

(B) recommendations regarding how the barriers to increased and effective participation, as identified under subparagraph (A), could be addressed, which may include—

(i) strategies and tactics to ensure long-term participation;

(ii) means for improved information sharing and coordination—

(I) among Federal Government participants;

(II) between the public and private sectors; and

(III) between the Federal Government and like-minded foreign allies;

(iii) identification of suitable leadership opportunities for Federal Government participants; and

(iv) any other recommendation that the Assistant Secretary determines to be appropriate.
SEC. 518. SHARK FIN SALES ELIMINATION.

(a) SHORT TITLE.—This section may be cited as the “Shark Fin Sales Elimination Act of 2021”.

(b) PROHIBITION ON SALE OF SHARK FINS.—

(1) PROHIBITION.—Except as provided in subsection (c), no person shall possess, transport, offer for sale, sell, or purchase shark fins or products containing shark fins.

(2) PENALTY.—A violation of paragraph (1) shall be treated as an act prohibited by section 307 of the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1857) and shall be penalized pursuant to section 308(a) of that Act (16 U.S.C. 1858(a)), except that the maximum civil penalty for each violation shall be $100,000, or the fair market value of the shark fins involved, whichever is greater.

(c) EXCEPTIONS.—A person may possess a shark fin that was taken lawfully under a State, territorial, or Federal license or permit to take or land sharks, if the shark fin is separated from the shark in a manner consistent with the license or permit and is—

(1) destroyed or discarded upon separation;

(2) used for noncommercial subsistence purposes in accordance with State or territorial law;
(3) used solely for display or research purposes by a museum, college, or university, or other person under a State or Federal permit to conduct non-commercial scientific research; or

(4) retained by the license or permit holder for a noncommercial purpose.

(d) DOGFISH.—

(1) IN GENERAL.—It shall not be a violation of subsection (c) for any person to possess, transport, offer for sale, sell, or purchase any fresh or frozen raw fin or tail from any stock of the species Mustelus canis (smooth dogfish) or Squalus acantbias (spiny dogfish).

(2) REPORT.—By not later than January 1, 2027, the Secretary of Commerce shall review the exemption contained in paragraph (1) and shall prepare and submit to Congress a report that includes a recommendation on whether the exemption contained in paragraph (1) should continue or be terminated. In preparing such report and making such recommendation, the Secretary shall analyze factors including—

(A) the economic viability of dogfish fisheries with and without the continuation of the exemption;
(B) the impact to ocean ecosystems of continuing or terminating the exemption;

(C) the impact on enforcement of the ban contained in subsection (b) caused by the exemption; and

(D) the impact of the exemption on shark conservation.

(e) DEFINITION OF SHARK FIN.—In this section, the term "shark fin" means—

(1) the raw or dried or otherwise processed detached fin of a shark; or

(2) the raw or dried or otherwise processed detached tail of a shark.

(f) STATE AUTHORITY.—Nothing in this section may be construed to preclude, deny, or limit any right of a State or territory to adopt or enforce any regulation or standard that is more stringent than a regulation or standard in effect under this section.

(g) SEVERABILITY.—If any provision of this section or its application to any person or circumstance is held invalid, the invalidity does not affect other provisions or applications of this section which can be given effect without the invalid provision or application, and to this end the provisions of this section are severable.
SEC. 519. SENSE OF CONGRESS ON FORCED LABOR.

It is the sense of Congress that the Federal Government shall not engage in research, partnerships, contracts, or other agreements with any entity (including any country or institution of higher education) that has any affiliation with a country that engages in forced labor.

SEC. 520. OPEN NETWORK ARCHITECTURE.

(a) Open Network Architecture Testbed.—

(1) Definitions.—In this subsection—

(A) the term “Applied Research Open-RAN testbed” means the testbed established under paragraph (2);

(B) the term “Assistant Secretary” means the Assistant Secretary of Commerce for Communications and Information; and

(C) the term “NTIA” means the National Telecommunications and Information Administration.

(2) Establishment.—The Assistant Secretary shall establish an applied research open network architecture testbed at the Institute for Telecommunication Sciences of the NTIA to develop and demonstrate network architectures and applications, equipment integration and interoperability at scale, including—
(A) Open Radio Access Network (commonly known as “Open-RAN”) technology;

(B) Virtualized Radio Access Network (commonly known as “vRAN”) technology; and

(C) cloud native technologies that replicate telecommunications hardware as software-based virtual network elements and functions.

(3) Focus; Considerations.—In establishing the Applied Research Open-RAN testbed pursuant to this section, the Assistant Secretary shall ensure that such testbed evaluates issues related to deployment and operation of open network architectures in rural areas.

(4) Cooperative Research and Development Agreements.—The Assistant Secretary shall enter into cooperative research and development agreements as appropriate to obtain equipment, devices, and expertise for the Applied Research Open-RAN testbed, in accordance with section 12 of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3710a).

(5) Private Sector Contributions.—The Assistant Secretary may accept private contributions to the Applied Research Open-RAN testbed in the form of network equipment or devices for testing purposes.
(6) PARTNERSHIP WITH GOVERNMENT ENTITIES.—

(A) ESTABLISHMENT.—In establishing the Applied Research Open-RAN testbed, the Assistant Secretary shall—

(i) consult with the Federal Communications Commission, including with respect to ongoing work by the Commission to develop other testbeds, including private sector testbeds, related to Open-RAN technologies; and

(ii) ensure that the work on the testbed is coordinated with the responsibilities of the Assistant Secretary under any relevant memorandum of understanding with the Federal Communications Commission and the National Science Foundation related to spectrum.

(B) OPERATIONS.—In operating the Applied Research Open-RAN testbed, the Assistant Secretary shall, in consultation with the Federal Communications Commission, partner with—

(i) the First Responder Network Authority of the NTIA (also known as “FirstNet”) and the Public Safety Commu-
nations Research Division of the National Institute of Standards and Technology to examine use cases and applications for Open-RAN technologies in a public safety network;

(ii) other Federal agencies, as appropriate to examine use cases and applications for Open-RAN technologies in other areas of interest to such agencies; and

(iii) international partners, as appropriate.

(7) STAKEHOLDER INPUT.—The Assistant Secretary shall seek input from stakeholders regarding the establishment and operation of the Applied Research Open-RAN testbed.

(8) IMPLEMENTATION DEADLINE.—Not later than 180 days after the date of enactment of this Act, the Assistant Secretary shall—

(A) define metrics and parameters for the Applied Research Open-RAN testbed, including functionality, project configuration and capacity, performance, security requirements, and quality assurance;
(B) adopt any rules as necessary, in consultation with the Federal Communications Commission; and

(C) begin the development of the Applied Research Open-RAN testbed, including seeking stakeholder input as required by paragraph (7).

(9) REPORT.—Not later than 1 year after the date of enactment of this Act, the Assistant Secretary shall submit to the Committee on Commerce, Science and Transportation of the Senate and the Committee on Energy and Commerce of the House of Representatives a report on the findings of the testbed and any recommendations for additional legislative or regulatory actions relating to the work of the testbed.

(10) AUTHORIZATION OF APPROPRIATIONS.—

(A) IN GENERAL.—There are authorized to be appropriated for the administration of the Applied Research Open-RAN testbed $20,000,000 for fiscal year 2022, to remain available until expended.

(B) RULE OF CONSTRUCTION.—Nothing in paragraph (6) shall be construed to obligate FirstNet or any other Federal entity to pay for the cost of the Applied Research Open-RAN testbed created under this section in the absence
of the appropriation of amounts under this paragraph.

(C) AUTHORIZATION FOR VOLUNTARY SUPPORT.—A Federal entity, including FirstNet, may voluntarily enter into an agreement with NTIA to provide monetary or nonmonetary support for the Applied Research Open-RAN testbed.

(b) PARTICIPATION IN STANDARDS-SETTING BODIES.—

(1) DEFINITIONS.—In this section—

(A) the term “Assistant Secretary” means the Assistant Secretary of Commerce for Communications and Information;

(B) the term “eligible standards-setting body”—

(i) means a standards-setting body, participation in which may be funded by a grant awarded under paragraph (2), as determined by the Assistant Secretary; and

(ii) includes—

(I) the 3rd Generation Partnership Project (commonly known as “3GPP”);
(II) the Alliance for Telecommunications Industry Solutions (commonly known as “ATIS”);

(III) the International Telecommunications Union (commonly known as “ITU”);

(IV) the Institute for Electrical and Electronics Engineers (commonly known as “IEEE”);

(V) the World Radiocommunications Conferences (commonly known as the “WRC”) of the ITU;

(VI) the Internet Engineering Task Force (commonly known as the “IETF”);

(VII) the International Organization for Standardization (commonly known as the “ISO”) and the International Electrotechnical Commission (commonly known as the “IEC”);

(VIII) the O-RAN Alliance;

(IX) the Telecommunications Industry Association (commonly known as “TIA”); and
(X) any other standards-setting body identified under paragraph (4); 

(C) the term “Secretary” means the Secretary of Commerce; and 

(D) the term “standards-setting body” means an international body that develops the standards for open network architecture technologies.

(2) Grant Program.—

(A) In General.—The Secretary, in collaboration with the Assistant Secretary, shall award grants to private sector entities based in the United States to participate in eligible standards-setting bodies.

(B) Prioritization.—The Secretary shall prioritize grants awarded under this section to private sector entities that would not otherwise be able to participate in eligible standards-setting bodies without the grant.

(3) Grant Criteria.—Not later than 180 days after the date on which amounts are appropriated under paragraph (5), the Secretary, in collaboration with the Assistant Secretary, shall establish criteria for the grants awarded under paragraph (2).
(4) Consultation with Federal Communications Commission.—The Secretary shall consult with the Federal Communications Commission in—

(A) determining criteria for the grants awarded under paragraph (2); and

(B) determining which standards-setting bodies, if any, in addition to the standards-setting bodies listed in paragraph (1)(C)(ii) are eligible standards-setting bodies.

(5) Authorization of Appropriations.—

(A) In general.—There are authorized to be appropriated for grants under paragraph (2) $30,000,000 in total for fiscals years 2022 through 2025, to remain available until expended.

(B) Administrative costs.—The Secretary may use not more than 2 percent of any funds appropriated under this paragraph for the administration of the grant program established under this subsection.

SEC. 521. COMBATTING SEXUAL HARASSMENT IN SCIENCE.

(a) Definitions.—This section may be cited as the “Combating Sexual Harassment in Science Act of 2021”.

(b) Definitions.—In this section:
(1) **DIRECTOR.**—The term “Director” means the Director of the National Science Foundation.

(2) **FEDERAL SCIENCE AGENCY.**—The term “Federal science agency” means any Federal agency with an annual extramural research expenditure of over $100,000,000.

(3) **GRANT PERSONNEL.**—The term “grant personnel” means principal investigators and co-principal investigators supported by a grant award under Federal law and their trainees.

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

(5) **NATIONAL ACADEMIES.**—The term “National Academies” means the National Academies of Sciences, Engineering, and Medicine.

(6) **RECIPIENT.**—The term “recipient” means an entity, usually a non-Federal entity, that receives a Federal award directly from a Federal awarding agency. The term “recipient” does not include entities that receive subgrants or individuals that are the beneficiaries of the award.

(7) **SEXUAL HARASSMENT.**—The term “sexual harassment” has the meaning given such term in sec-
tion 1604.11 of title 29, Code of Federal Regulations (or any successor regulations).

(c) RESEARCH GRANTS.—

(1) IN GENERAL.—The Director shall award grants, on a competitive basis, to institutions of higher education or nonprofit organizations (or consortia of such institutions or organizations)—

(A) to expand research efforts to better understand the factors contributing to, and consequences of, sexual harassment affecting individuals in the scientific, technical, engineering, and mathematics workforce, including students and trainees; and

(B) to examine best practices to reduce the incidence and negative consequences of such harassment.

(2) USE OF FUNDS.—Activities funded by a grant under this subsection may include—

(A) research on the sexual harassment experiences of individuals in underrepresented or vulnerable groups, including communities of color, disabled individuals, foreign nationals, sexual- and gender-minority individuals, and others;
(B) development and assessment of policies, procedures, trainings, and interventions, with respect to sexual harassment, conflict management, and ways to foster respectful and inclusive climates;

(C) research on approaches for remediating the negative impacts and outcomes of such harassment on individuals experiencing such harassment;

(D) support for institutions of higher education or nonprofit organizations to develop, adapt, implement, and assess the impact of innovative, evidence-based strategies, policies, and approaches to policy implementation to prevent and address sexual harassment;

(E) research on alternatives to the power dynamics and hierarchical and dependent relationships in academia that have been shown to create higher levels of risk for and lower levels of reporting of sexual harassment; and

(F) research related to the ongoing compilation, management, and analysis of organizational climate survey data.

(d) **DATA COLLECTION.**—Not later than 180 days after the date of enactment of this Act, the Director, through the
National Center for Science and Engineering Statistics and with guidance from the Office of Management and Budget given their oversight of the Federal statistical agencies, shall convene a working group composed of representatives of Federal statistical agencies—

(1) to develop questions on sexual harassment in science, technology, engineering, and mathematics departments to gather national data on the prevalence, nature, and implications of sexual harassment in institutions of higher education that builds on the work conducted by the National Center for Science and Engineering Statistics in response to recommendations from the National Academies to develop questions on harassment; and

(2) to include such questions as appropriate, with sufficient protections of the privacy of respondents, in relevant surveys conducted by the National Center for Science and Engineering Statistics and other relevant entities.

(e) RESPONSIBLE CONDUCT GUIDE.—

(1) IN GENERAL.—Not later than 180 days after the date of enactment of this Act, the Director shall enter into an agreement with the National Academies to update the report entitled “On Being a Scientist: A Guide to Responsible Conduct in Research” issued
by the National Academies. The report, as so updated, shall include—

(A) updated professional standards of conduct in research;

(B) standards of treatment individuals can expect to receive under such updated standards of conduct;

(C) evidence-based practices for fostering a climate intolerant of sexual harassment;

(D) methods, including bystander intervention, for identifying and addressing incidents of sexual harassment;

(E) professional standards for mentorship and teaching with an emphasis on power diffusion mechanisms and preventing sexual harassment;

(F) recommended vetting and hiring practices scientific research entities are urged to implement to eliminate serial harassers; and

(G) other topics as the National Academies determines appropriate.

(2) RECOMMENDATIONS.—In updating the report under paragraph (1), the National Academies shall take into account recommendations made in the report issued by the National Academies in 2018 enti-
tled “Sexual Harassment of Women: Climate, Culture, and Consequences in Academic Sciences, Engineering, and Medicine” and other relevant studies and evidence.

(3) REPORT.—Not later than 18 months after the effective date of the agreement under paragraph (1), the National Academies, as part of such agreement, shall submit to the Director and the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate the report referred to in such subsection, as updated pursuant to such subsection.

(f) POLICY GUIDELINES.—

(1) RESPONSIBILITIES OF OSTP.—The Director of the Office of Science and Technology Policy, in coordination with the working group on inclusion in STEM fields established under section 308 of the American Innovation and Competitiveness Act (42 U.S.C. 6626) and the Safe Inclusive Research Environments Subcommittee of the National Science and Technology Council, and in consultation with representatives from each Federal science agency, the Department of Education, and the Equal Employment Opportunity Commission, shall—
(A) not later than 90 days after the date of
the enactment of this Act, submit to the Com-
mittee on Science, Space, and Technology of the
House of Representatives and the Committee on
Commerce, Science, and Transportation of the
Senate an inventory of Federal science agency
policies, procedures, and resources dedicated to
preventing and responding to reports of sexual
harassment;

(B) not later than 6 months after the date
on which the inventory is submitted under sub-
paragraph (A)—

(i) in consultation with outside stake-
holders, develop a set of policy guidelines for
Federal science agencies; and

(ii) submit a report to the committees
referred to in subparagraph (A) containing
such guidelines;

(C) encourage Federal science agencies to
develop or maintain and implement policies
based on the guidelines developed under subpara-
graph (B);

(D) not later than 1 year after the date on
which the inventory under subparagraph (A) is
submitted, and every 5 years thereafter, the Di-
rector of the Office of Science and Technology Policy shall report to Congress on the implementation by Federal science agencies of the policy guidelines developed under subparagraph (B); and

(E) update such policy guidelines as needed.

(2) REQUIREMENTS.—

(A) IN GENERAL.—In developing policy guidelines under paragraph (1)(B), the Director of the Office of Science and Technology Policy shall consider guidelines that require, to the extent practicable—

(i) recipients to submit to the Federal science agency or agencies from which the recipients receive funding reports relating to—

(I) any decision made to launch a formal investigation of sexual harassment by, or of, grant personnel; and

(II) findings or determinations of sexual harassment by, or of, grant personnel, including the final disposition of a matter involving a violation of organizational policies and processes, to include the exhaustion of permissible
appeals, or a conviction of a sexual offense in a criminal court of law;

(ii) the updating and sharing of reports of sexual harassment submitted under clause (i) with relevant Federal science agencies by agency request; and

(iii) consistency among relevant Federal agencies with regards to the policies and procedures for receiving reports submitted pursuant to clause (i).

(B) FERPA.—The Director of the Office of Science and Technology Policy shall ensure that such guidelines and requirements are consistent with the requirements of section 444 of the General Education Provisions Act (20 U.S.C. 1232g) (commonly referred to as the “Family Educational Rights and Privacy Act of 1974”).

(C) PRIVACY PROTECTIONS.—The Director of the Office of Science and Technology Policy shall ensure that such guidelines and requirements—

(i) do not infringe upon the privacy rights of individuals associated with reports submitted to Federal science agencies; and
(ii) do not require recipients to provide interim reports to Federal science agencies.

(3) CONSIDERATIONS.—In developing policy guidelines under paragraph (1)(B), the Director of the Office of Science and Technology Policy shall consider protocols that require or incent—

(A) recipients that receive funds from Federal science agencies to periodically assess their organizational climate, which may include the use of climate surveys, focus groups, or exit interviews;

(B) recipients that receive funds from Federal science agencies to publish on a publicly available internet website the results of assessments conducted pursuant to paragraph (1), disaggregated by gender and, if possible, race, ethnicity, disability status, and sexual orientation, and in a manner that does not include personally identifiable information;

(C) recipients that receive funds from Federal science agencies to make public on an annual basis the number of determinations of sexual harassment at that institution or organization;
(D) recipients that receive funds from Federal science agencies to regularly assess and improve policies, procedures, and interventions to reduce the prevalence of and improve the reporting of sexual harassment;

(E) each entity applying for Federal assistance awards from a Federal science agency to have a code of conduct for maintaining a healthy and welcoming workplace for grant personnel posted on their public website;

(F) each recipient that receives funds from Federal science agencies to have in place mechanisms for the re-integration of individuals who have experienced sexual harassment; and

(G) recipients that receive funds from Federal science agencies to work to create a climate intolerant of sexual harassment and that values and promotes diversity and inclusion.

(4) Federal science agency implementation.—Each Federal science agency shall—

(A) develop or maintain and implement policies with respect to sexual harassment that are consistent with policy guidelines under paragraph (1)(B) and that protect the privacy of all
parties involved in any report and investigation
of sexual harassment; and

(B) broadly disseminate such policies to
current and potential recipients of research
grants awarded by such agency.

(g) NATIONAL ACADEMIES ASSESSMENT.—Not later
than 3 years after the date of enactment of this Act, the
Director shall enter into an agreement with the National
Academies to undertake a study and issue a report on the
influence of sexual harassment in institutions of higher edu-
cation on the career advancement of individuals in the sci-
entific, engineering, technical, and mathematics workforce.
The study shall assess—

(1) the state of research on sexual harassment in
such workforce;

(2) whether research demonstrates a decrease in
the prevalence of sexual harassment in such workforce;

(3) the progress made with respect to imple-
menting recommendations promulgated in the Na-
tional Academies consensus study report entitled
“Sexual Harassment of Women: Climate, Culture,
and Consequences in Academic Sciences, Engineering,
and Medicine”;
(4) where to focus future efforts with respect to decreasing sexual harassment in such institutions, including specific recommendations; and

(5) other recommendations and issues, as the National Academies determines appropriate.

(h) GOVERNMENT ACCOUNTABILITY OFFICE STUDY.—Not later than 3 years after the date of enactment of this Act, the Comptroller General of the United States shall—

(1) complete a study that assesses the degree to which Federal science agencies have implemented the policy guidelines developed under subsection (f)(1)(B) and the effectiveness of that implementation; and

(2) submit a report to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate on the results of such study, including recommendations on potential changes to practices and policies to improve those guidelines and that implementation.

(i) HARASSMENT ON THE BASIS OF PREGNANCY STATUS.—The Director of the Office of Science and Technology Policy, in consultation with the Equal Employment Opportunity Commission, shall develop a definition of “harassment on the basis of pregnancy status” for the purposes of carrying out this section.
TITLE VI—SPACE MATTERS
Subtitle A—SPACE Act

SEC. 601. SHORT TITLE.
This subtitle may be cited as the “Space Preservation and Conjunction Emergency Act of 2021” or the “SPACE Act”.

SEC. 602. SENSE OF CONGRESS.
It is the sense of Congress that—

(1) the increasingly congested nature of the space environment requires immediate action to address the threat of collisions between spacecraft and orbital debris;

(2) such collisions threaten the billions of dollars of existing United States and allied spacecraft, including the International Space Station, and endanger the future usability of space;

(3) the provision of accurate and timely notice to commercial satellite operators with respect to potential conjunctions enhances safety;

(4) a 2020 National Academies for Public Administration study identified the Department of Commerce as the preferred Federal agency to manage, process, and disseminate space situational awareness data to commercial satellite operators; and
(5) given the growing space economy, elevating the Office of Space Commerce within the Department of Commerce may enhance the ability of the Office of Space Commerce—

(A) to promote space safety through future space situational awareness and space traffic management efforts; and

(B) to coordinate with other Federal agencies and foreign entities.

SEC. 603. DEFINITIONS.

In this subtitle:

(1) CENTER.—The term “Center” means a Center of Excellence for Space Situational Awareness established under section 605.

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

(3) ORBITAL DEBRIS.—The term “orbital debris” means any space object that—

(A) remains in orbit; and

(B) no longer serves any useful function or purpose.

(4) SECRETARY.—The term “Secretary” means the Secretary of Commerce.
(5) **SPACE OBJECT.**—The term “space object” means any object launched into space or created in space by humans.

(6) **SPACE SITUATIONAL AWARENESS.**—The term “space situational awareness” means—

(A) the identification and characterization of space objects and orbital debris; and

(B) the understanding of the manner in which space objects and orbital debris behave in space.

**SEC. 604. SPACE SITUATIONAL AWARENESS DATA, INFORMATION, AND SERVICES: PROVISION TO NON-UNITED STATES GOVERNMENT ENTITIES.**

(a) **IN GENERAL.**—Chapter 507 of title 51, United States Code, is amended by adding at the end the following: 

“§50704. Space situational awareness data, information, and services: provision to non-United States Government entities

“(a) **SPACE SITUATIONAL AWARENESS PROGRAM.**—

“(1) **REQUIREMENT.**—Pursuant to the authority provided in section 50702, the Director of Space Commerce, in coordination with appropriate entities within the Department of Commerce and the heads of other relevant Federal agencies—
“(A) shall carry out a program to improve the collection, processing, and dissemination of space situational awareness data, information, and services;

“(B) subject to paragraph (2), may provide such data, information, and services to 1 or more eligible entities described in subsection (b);

“(C) may obtain such data, information, and services from 1 or more such eligible entities; and

“(D) not later than 180 days after the date of the enactment of this section, shall obtain data or services from 1 or more United States commercial entities, to be stored in an open-architecture data repository that uses commercially available cloud-based computing platforms and other analytic or visualization capabilities.

“(2) Type of information provided.—

“(A) In general.—Data and information provided to eligible entities under paragraph (1)(B) shall be safety-related and unclassified.

“(B) National security.—The Secretary of Commerce, in consultation with the Secretary of Defense and the heads of other relevant Federal agencies, shall develop a policy to determine
the type of information that may be provided
under paragraph (1) without compromising the
national security interests of the United States.

“(b) ELIGIBLE ENTITY DESCRIBED.—An eligible enti-
ty described in this subsection is any non-United States
Government entity, including—

“(1) a State;
“(2) a political subdivision of a State;
“(3) a United States commercial entity;
“(4) the government of a foreign country; and
“(5) a foreign commercial entity.

“(c) PUBLIC SERVICES,—

“(1) IN GENERAL.—The Secretary of Commerce
shall designate a basic level of space situational
awareness data, information, and services to be pro-
vided at no charge to 1 or more eligible entities de-
scribed in subsection (b), which shall include public
services, free of charge, such as—

“(A) a public catalog of tracked space ob-
jects;
“(B) emergency conjunction notifications;
and
“(C) any other data or services the Director
of Space Commerce considers appropriate.
“(2) LIMITATION.—The Secretary of Commerce may only provide data or services under paragraph (1)(C) that compete with products offered by United States commercial entities if the provision of such data or services is required to address a threat to space safety.

“(d) ADVANCED SERVICES.—The Secretary of Commerce may undertake activities to promote the development of advanced space situational awareness data, information, and services to foster the growth of a global space safety industry.

“(e) PROCEDURES.—The Secretary of Commerce shall establish procedures by which the authority under this section shall be carried out.

“(f) IMMUNITY.—The United States, any agency or instrumentality thereof, and any individual, firm, corporation, or other person acting for the United States shall be immune from any suit in any court for any cause of action arising from the provision or receipt of space situational awareness data, information, or services, whether or not provided in accordance with this section, or any related action or omission.
“§ 50705. Authorization of appropriations

“There is authorized to be appropriated to the Secretary of Commerce to carry out this chapter $15,000,000 for fiscal year 2021.”.

(b) TECHNICAL AND CONFORMING AMENDMENT.—The table of sections for chapter 507 of title 51, United States Code, is amended by inserting after the item relating to section 50703 the following:

“50704. Space situational awareness data, information, and services: provision to non-United States Government entities.

“50705. Authorization of appropriations.”.

SEC. 605. CENTERS OF EXCELLENCE FOR SPACE SITUATIONAL AWARENESS.

(a) IN GENERAL.—Subject to appropriations, the Secretary shall award grants to eligible entities to establish 1 or more Centers of Excellence for Space Situational Awareness to advance scientific, technological, transdisciplinary, and policy research in space situational awareness.

(b) PURPOSES.—Each Center shall—

(1) conduct transdisciplinary research, development, and demonstration projects related to detecting, tracking, identifying, characterizing, modeling, and minimizing space safety, security, and sustainability risks to improve—

(A) space situational awareness and the development of open-architecture resources for improved space safety, security, and sustainability;
(B) the unique identification, tracking, classification, prediction, and modeling of orbital debris and space objects;

(C) the monitoring, quantification, assessment, modeling, and prediction of space operations and environmental threats and hazards, including in space collisions;

(D) peer exchange and documentation of evidence-based practices, policies, laws, and regulations related to orbital debris mitigation and remediation; and

(E) sharing, modeling, and curation of data related to orbital debris, space objects, and the environment of orbital debris and space objects;

(2) conduct policy research related to space safety, security, and sustainability so as to improve sharing of common data and legal standards related to orbital debris;

(3) leverage non-Federal sources of support to improve space situational awareness and minimize space safety, security, and sustainability risks; and

(4) draw on commercial capabilities and data, as appropriate.

(c) ELIGIBLE ENTITIES.—
(1) **IN GENERAL.**—To be eligible for a grant under this section, an entity shall be a consortium led by—

(A) an institution of higher education; or

(B) a nonprofit organization.

(2) **MEMBERSHIP OF CONSORTIUM.**—The consortium referred to in paragraph (1) may include 1 or more—

(A) commercial entities;

(B) Federal laboratories, including Department of Defense research laboratories; and

(C) other institutions of higher education or nonprofit organizations.

(d) **CONSIDERATIONS.**—In awarding grants under this section, the Secretary shall consider, at a minimum—

(1) the potential of a proposed Center—

(A) to improve the science and technology of space situational awareness; and

(B) to reduce the amount of space safety, security, and sustainability risks; and

(2) the commitment of financial support, advice, participation, and other contributions from non-Federal sources.

(e) **GRANT PERIOD.**—A grant awarded under this section shall be awarded for a period of 5 years.
(f) Authorization of Appropriations.—There is authorized to be appropriated to carry out this section $20,000,000.

Subtitle B—National Aeronautics and Space Administration Authorization Act

SEC. 611. SHORT TITLE.

This subtitle may be cited as the “National Aeronautics and Space Administration Authorization Act of 2021”.

SEC. 612. DEFINITIONS.

In this subtitle:

(1) Administration.—The term “Administration” means the National Aeronautics and Space Administration.

(2) Administrator.—The term “Administrator” means the Administrator of the National Aeronautics and Space Administration.

(3) Appropriate Committees of Congress.—Except as otherwise expressly provided, the term “appropriate committees of Congress” means—

(A) the Committee on Commerce, Science, and Transportation of the Senate; and

(B) the Committee on Science, Space, and Technology of the House of Representatives.
4. **Cislunar space.**—The term “cislunar space” means the region of space beyond low-Earth orbit out to and including the region around the surface of the Moon.

5. **Deep space.**—The term “deep space” means the region of space beyond low-Earth orbit, including cislunar space.

6. **Development cost.**—The term “development cost” has the meaning given the term in section 30104 of title 51, United States Code.

7. **ISS.**—The term “ISS” means the International Space Station.

8. **ISS management entity.**—The term “ISS management entity” means the organization with which the Administrator has entered into a cooperative agreement under section 504(a) of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18354(a)).

9. **NASA.**—The term “NASA” means the National Aeronautics and Space Administration.

(11) OSTP.—The term “OSTP” means the Office of Science and Technology Policy.

(12) Space Launch System.—The term “Space Launch System” means the Space Launch System authorized under section 302 of the National Aeronautics and Space Administration Act of 2010 (42 U.S.C. 18322).

PART I—AUTHORIZATION OF APPROPRIATIONS

SEC. 613. AUTHORIZATION OF APPROPRIATIONS.

There are authorized to be appropriated to the Administration for fiscal year 2021 $23,495,000,000 as follows:

(1) For Exploration, $6,706,400,000.

(2) For Space Operations, $3,988,200,000.

(3) For Science, $7,274,700,000.

(4) For Aeronautics, $828,700,000.

(5) For Space Technology, $1,206,000,000.

(6) For Science, Technology, Engineering, and Mathematics Engagement, $120,000,000.

(7) For Safety, Security, and Mission Services, $2,936,500,000.

(8) For Construction and Environmental Compliance and Restoration, $390,300,000.

(9) For Inspector General, $44,200,000.
PART II—HUMAN SPACEFLIGHT AND EXPLORATION

SEC. 614. COMPETITIVENESS WITHIN THE HUMAN LANDING SYSTEM PROGRAM.

(a) SENSE OF CONGRESS.—It is the sense of Congress that—

(1) advances in space technology and space exploration capabilities ensure the long-term technological preeminence, economic competitiveness, STEM workforce development, and national security of the United States;

(2) the development of technologies that enable human exploration of the lunar surface and other celestial bodies is critical to the space industrial base of the United States;

(3) commercial entities in the United States have made significant investment and progress toward the development of human-class lunar landers;

(4) NASA developed the Artemis program—

(A) to fulfill the goal of landing United States astronauts, including the first woman and the next man, on the Moon; and

(B) to collaborate with commercial and international partners to establish sustainable lunar exploration by 2028;
(5) in carrying out the Artemis program, the Administrator should ensure that the entire Artemis program is inclusive and representative of all people of the United States, including women and minorities; and

(6) maintaining multiple technically-credible providers within NASA commercial programs is a best practice that reduces programmatic risk.

(b) STATEMENT OF POLICY.—It shall be the policy of the United States—

(1) to bolster the domestic space technology industrial base, using existing tools and authorities, particularly in areas central to competition between the United States and the People’s Republic of China; and

(2) to mitigate threats and minimize challenges to the superiority of the United States in space technology, including lunar infrastructure and lander capabilities.

(c) HUMAN LANDING SYSTEM PROGRAM.—

(1) IN GENERAL.—Not later than 30 days after the date of the enactment of this Act, the Administrator shall maintain competitiveness within the human landing system program by funding design,
development, testing, and evaluation for not fewer than 2 entities.

(2) REQUIREMENTS.—In carrying out the human landing system program referred to in paragraph (1), the Administrator shall, to the extent practicable—

(A) encourage reusability and sustainability of systems developed;

(B) offer existing capabilities and assets of NASA centers to support such partnerships; and

(C) seek to foster a robust and diverse space technology industrial base.

(3) BRIEFING.—Not later than 60 days after the date of the enactment of this Act, the Administrator shall provide to the appropriate committees of Congress a briefing on the implementation of paragraph (1).

(4) AUTHORIZATION OF APPROPRIATIONS.—In addition to amounts otherwise appropriated for the Artemis program, for fiscal years 2021 through 2026, there is authorized to be appropriated not less than $10,032,000,000 to NASA to carry out the human landing system program.
(d) Appropriately Committees of Congress Defined.—In this section, the term “appropriate committees of Congress” means—

(1) the Committee on Commerce, Science, and Transportation and the Committee on Appropriations of the Senate; and

(2) the Committee on Science, Space, and Technology and the Committee on Appropriations of the House of Representatives.

SEC. 615. SPACE LAUNCH SYSTEM CONFIGURATIONS.

(a) Mobile Launch Platform.—The Administrator is authorized to maintain 2 operational mobile launch platforms to enable the launch of multiple configurations of the Space Launch System.

(b) Exploration Upper Stage.—To meet the capability requirements under section 302(c)(2) of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18322(c)(2)), the Administrator shall continue development of the Exploration Upper Stage for the Space Launch System with a scheduled availability sufficient for use on the third launch of the Space Launch System.

(c) Briefing.—Not later than 90 days after the date of the enactment of this Act, the Administrator shall brief the appropriate committees of Congress on the development
and scheduled availability of the Exploration Upper Stage
for the third launch of the Space Launch System.

(d) MAIN PROPULSION TEST ARTICLE.—To meet the
requirements under section 302(c)(3) of the National Aeronautics and Space Administration Authorization Act of
2010 (42 U.S.C. 18322(c)(3)), the Administrator shall—

(1) immediately on completion of the first full-
duration integrated core stage test of the Space
Launch System, initiate development of a main pro-
pulsion test article for the integrated core stage pro-
pulsion elements of the Space Launch System, con-
sistent with cost and schedule constraints, particu-
larly for long-lead propulsion hardware needed for
flight;

(2) not later than 180 days after the date of the
enactment of this Act, submit to the appropriate com-
mittees of Congress a detailed plan for the develop-
ment and operation of such main propulsion test ar-
ticle; and

(3) use existing capabilities of NASA centers for
the design, manufacture, and operation of the main
propulsion test article.

SEC. 616. ADVANCED SPACESUITS.

(a) SENSE OF CONGRESS.—It is the sense of Congress
that next-generation advanced spacesuits are a critical tech-
technology for human space exploration and use of low-Earth orbit, cislunar space, the surface of the Moon, and Mars.

(b) Development Plan.—The Administrator shall establish a detailed plan for the development and manufacture of advanced spacesuits, consistent with the deep space exploration goals and timetables of NASA.

(c) Diverse Astronaut Corps.—The Administrator shall ensure that spacesuits developed and manufactured after the date of the enactment of this Act are capable of accommodating a wide range of sizes of astronauts so as to meet the needs of the diverse NASA astronaut corps.

(d) ISS Use.—Throughout the operational life of the ISS, the Administrator should fully use the ISS for testing advanced spacesuits.

(e) Prior Investments.—

(1) In General.—In developing an advanced spacesuit, the Administrator shall, to the maximum extent practicable, partner with industry-proven spacesuit design, development, and manufacturing suppliers and leverage prior and existing investments in advanced spacesuit technologies and existing capabilities at NASA centers to maximize the benefits of such investments and technologies.

(2) Agreements with Private Entities.—In carrying out this subsection, the Administrator may
enter into 1 or more agreements with 1 or more private entities for the manufacture of advanced spacesuits, as the Administrator considers appropriate.

(f) BRIEFING.—Not later than 180 days after the date of the enactment of this Act, and semiannually thereafter until NASA procures advanced spacesuits under this section, the Administrator shall brief the appropriate committees of Congress on the development plan in subsection (b).

SEC. 617. ACQUISITION OF DOMESTIC SPACE TRANSPORTATION AND LOGISTICS RESUPPLY SERVICES.

(a) In General.—Except as provided in subsection (b), the Administrator shall not enter into any contract with a person or entity that proposes to use, or will use, a foreign launch provider for a commercial service to provide space transportation or logistics resupply for—

(1) the ISS; or

(2) any Government-owned or Government-funded platform in Earth orbit or cislunar space, on the lunar surface, or elsewhere in space.

(b) Exception.—The Administrator may enter into a contract with a person or an entity that proposes to use, or will use, a foreign launch provider for a commercial service to carry out an activity described in subsection (a) if—
(1) a domestic vehicle or service is unavailable;

or

(2) the launch vehicle or service is a contribution by a partner to an international no-exchange-of-funds collaborative effort.

(c) RULE OF CONSTRUCTION.—Nothing in this section shall be construed to prohibit the Administrator from entering into 1 or more no-exchange-of-funds collaborative agreements with an international partner in support of the deep space exploration plan of NASA.

SEC. 618. ROCKET ENGINE TEST INFRASTRUCTURE.

(a) In General.—The Administrator shall continue to carry out a program to modernize rocket propulsion test infrastructure at NASA facilities—

(1) to increase capabilities;

(2) to enhance safety;

(3) to support propulsion development and testing; and

(4) to foster the improvement of Government and commercial space transportation and exploration.

(b) Projects.—Projects funded under the program described in subsection (a) may include—

(1) infrastructure and other facilities and systems relating to rocket propulsion test stands and rocket propulsion testing;
(2) enhancements to test facility capacity and flexibility; and

(3) such other projects as the Administrator considers appropriate to meet the goals described in that subsection.

(c) REQUIREMENTS.—In carrying out the program under subsection (a), the Administrator shall—

(1) prioritize investments in projects that enhance test and flight certification capabilities for large thrust-level atmospheric and altitude engines and engine systems, and multi-engine integrated test capabilities;

(2) continue to make underutilized test facilities available for commercial use on a reimbursable basis; and

(3) ensure that no project carried out under this program adversely impacts, delays, or defers testing or other activities associated with facilities used for Government programs, including—

(A) the Space Launch System and the Exploration Upper Stage of the Space Launch System;

(B) in-space propulsion to support exploration missions; or

(C) nuclear propulsion testing.
(d) RULE OF CONSTRUCTION.—Nothing in this section shall preclude a NASA program, including the Space Launch System and the Exploration Upper Stage of the Space Launch System, from using the modernized test infrastructure developed under this section.

(e) WORKING CAPITAL FUND STUDY.—

(1) In general.—Not later than 180 days after the date of the enactment of this Act, the Administrator shall submit to the appropriate committees of Congress a report on the use of the authority under section 30102 of title 51, United States Code, to promote increased use of NASA rocket propulsion test infrastructure for research, development, testing, and evaluation activities by other Federal agencies, firms, associations, corporations, and educational institutions.

(2) Matters to be included.—The report required by paragraph (1) shall include the following:

(A) An assessment of prior use, if any, of the authority under section 30102 of title 51, United States Code, to improve testing infrastructure.

(B) An analysis of any barrier to implementation of such authority for the purpose of
promoting increased use of NASA rocket propulsion test infrastructure.

SEC. 619. PEARL RIVER MAINTENANCE.

(a) IN GENERAL.—The Administrator shall coordinate with the Chief of the Army Corps of Engineers to ensure the continued navigability of the Pearl River and Little Lake channels sufficient to support NASA barge operations surrounding Stennis Space Center and the Michoud Assembly Facility.

(b) REPORT TO CONGRESS.—Not later than 180 days after the date of the enactment of this Act, the Administrator shall submit to the appropriate committees of Congress a report on efforts under subsection (a).

(c) APPROPRIATE COMMITTEES OF CONGRESS DEFINED.—In this section, the term “appropriate committees of Congress” means—

(1) the Committee on Commerce, Science, and Transportation, the Committee on Environment and Public Works, and the Committee on Appropriations of the Senate; and

(2) the Committee on Science, Space, and Technology, the Committee on Transportation and Infrastructure, and the Committee on Appropriations of the House of Representatives.
SEC. 620. VALUE OF INTERNATIONAL SPACE STATION AND CAPABILITIES IN LOW-EARTH ORBIT.

(a) Sense of Congress.—It is the sense of Congress that—

(1) it is in the national and economic security interests of the United States to maintain a continuous human presence in low-Earth orbit;

(2) low-Earth orbit should be used as a test bed to advance human space exploration and scientific discoveries; and

(3) the ISS is a critical component of economic, commercial, and industrial development in low-Earth orbit.

(b) Human Presence Requirement.—The United States shall continuously maintain the capability for a continuous human presence in low-Earth orbit through and beyond the useful life of the ISS.

SEC. 621. EXTENSION AND MODIFICATION RELATING TO INTERNATIONAL SPACE STATION.

(a) Policy.—Section 501(a) of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18351(a)) is amended by striking “2024” and inserting “2030”.

(b) Maintenance of United States Segment and Assurance of Continued Operations.—Section 503(a) of the National Aeronautics and Space Administration Au-
authorization Act of 2010 (42 U.S.C. 18353(a)) is amended
by striking “September 30, 2024” and inserting “September
30, 2030”.

(c) Research Capacity Allocation and Integration of Research Payloads.—Section 504(d) of the Na-
tional Aeronautics and Space Administration Authoriza-
tion Act of 2010 (42 U.S.C. 18354(d)) is amended—

(1) in paragraph (1), in the first sentence—

(A) by striking “As soon as practicable”
and all that follows through “2011,” and insert-
ing “The”; and

(B) by striking “September 30, 2024” and
inserting “September 30, 2030”; and

(2) in paragraph (2), in the third sentence, by
striking “September 30, 2024” and inserting “Sep-
tember 30, 2030”.

(d) Maintenance of Use.—Section 70907 of title 51,
United States Code, is amended—

(1) in the section heading, by striking “2024”
and inserting “2030”;

(2) in subsection (a), by striking “September 30,
2024” and inserting “September 30, 2030”; and

(3) in subsection (b)(3), by striking “September
30, 2024” and inserting “September 30, 2030”.

S 1260 RS
(e) Transition Plan Reports.—Section 50111(c)(2) of title 51, United States Code is amended—

(1) in the matter preceding subparagraph (A), by striking “2023” and inserting “2028”; and

(2) in subparagraph (J), by striking “2028” and inserting “2030”.

(f) Elimination of International Space Station National Laboratory Advisory Committee.—Section 70906 of title 51, United States Code, is repealed.

(g) Conforming Amendments.—Chapter 709 of title 51, United States Code, is amended—

(1) by redesignating section 70907 as section 70906; and

(2) in the table of sections for the chapter, by striking the items relating to sections 70906 and 70907 and inserting the following:

"70906. Maintaining use through at least 2030."

Sec. 622. Department of Defense Activities on International Space Station.

(a) In General.—Not later than 180 days after the date of the enactment of this Act, the Secretary of Defense shall—

(1) identify and review each activity, program, and project of the Department of Defense completed, being carried out, or planned to be carried out on the ISS as of the date of the review; and

"S 1260 RS"
(2) provide to the appropriate committees of Congress a briefing that describes the results of the review.

(b) APPROPRIATE COMMITTEES OF CONGRESS DEFINED.—In this section, the term “appropriate committees of Congress” means—

(1) the Committee on Armed Services, the Committee on Appropriations, and the Committee on Commerce, Science, and Transportation of the Senate; and

(2) the Committee on Armed Services, the Committee on Appropriations, and the Committee on Science, Space, and Technology of the House of Representatives.

SEC. 623. COMMERCIAL DEVELOPMENT IN LOW-EARTH ORBIT.

(a) STATEMENT OF POLICY.—It is the policy of the United States to encourage the development of a thriving and robust United States commercial sector in low-Earth orbit.

(b) PREFERENCE FOR UNITED STATES COMMERCIAL PRODUCTS AND SERVICES.—The Administrator shall continue to increase the use of assets, products, and services of private entities in the United States to fulfill the low-Earth orbit requirements of the Administration.
(c) NONCOMPETITION.—

(1) IN GENERAL.—Except as provided in paragraph (2), the Administrator may not offer to a foreign person or a foreign government a spaceflight product or service relating to the ISS, if a comparable spaceflight product or service, as applicable, is offered by a private entity in the United States.

(2) EXCEPTION.—The Administrator may offer a spaceflight product or service relating to the ISS to the government of a country that is a signatory to the Agreement Among the Government of Canada, Governments of Member States of the European Space Agency, the Government of Japan, the Government of the Russian Federation, and the Government of the United States of America Concerning Cooperation on the Civil International Space Station, signed at Washington January 29, 1998, and entered into force on March 27, 2001 (TIAS 12927), including an international partner astronaut (as defined in section 50902 of title 51, United States Code) that is sponsored by the government of such a country.

(d) SHORT-DURATION COMMERCIAL MISSIONS.—To provide opportunities for additional transport of astronauts to the ISS and help establish a commercial market in low-Earth orbit, the Administrator may permit short-duration
missions to the ISS for commercial passengers on a fully or partially reimbursable basis.

(e) PROGRAM AUTHORIZATION.—

(1) Establishment.—The Administrator shall establish a low-Earth orbit commercial development program to encourage the fullest commercial use and development of space by private entities in the United States.

(2) Elements.—The program established under paragraph (1) shall, to the maximum extent practicable, include activities—

(A) to stimulate demand for—

(i) space-based commercial research, development, and manufacturing;

(ii) spaceflight products and services;

and

(iii) human spaceflight products and services in low-Earth orbit;

(B) to improve the capability of the ISS to accommodate commercial users; and

(C) subject to paragraph (3), to foster the development of commercial space stations and habitats.

(3) Commercial space stations and habitats.—
(A) PRIORITY.—With respect to an activity to develop a commercial space station or habitat, the Administrator shall give priority to an activity for which a private entity provides a significant share of the cost to develop and operate the activity.

(B) REPORT.—Not later than 30 days after the date that an award or agreement is made to carry out an activity to develop a commercial space station or habitat, the Administrator shall submit to the appropriate committees of Congress a report on the development of the commercial space station or habitat, as applicable, that includes—

(i) a business plan that describes the manner in which the project will—

(I) meet the future requirements of NASA for low-Earth orbit human space-flight services; and

(II) fulfill the cost-share funding prioritization under subparagraph (A); and

(ii) a review of the viability of the operational business case, including—
(I) the level of expected Government participation;

(II) a list of anticipated nongovernmental international customers and associated contributions; and

(III) an assessment of long-term sustainability for the nongovernmental customers, including an independent assessment of the viability of the market for such commercial services or products.

SEC. 624. MAINTAINING A NATIONAL LABORATORY IN SPACE.

(a) Sense of Congress.—It is the sense of Congress that—

(1) the United States segment of the International Space Station (as defined in section 70905 of title 51, United States Code), which is designated as a national laboratory under section 70905(b) of title 51, United States Code—

(A) benefits the scientific community and promotes commerce in space;
(B) fosters stronger relationships among NASA and other Federal agencies, the private sector, and research groups and universities;

(C) advances science, technology, engineering, and mathematics education through use of the unique microgravity environment; and

(D) advances human knowledge and international cooperation;

(2) after the ISS is decommissioned, the United States should maintain a national microgravity laboratory in space;

(3) in maintaining a national microgravity laboratory in space, the United States should make appropriate accommodations for different types of ownership and operation arrangements for the ISS and future space stations;

(4) to the maximum extent practicable, a national microgravity laboratory in space should be maintained in cooperation with international space partners; and

(5) NASA should continue to support fundamental science research on future platforms in low-Earth orbit and cislunar space, orbital and suborbital flights, drop towers, and other microgravity testing environments.
(b) REPORT.—The Administrator, in coordination with the National Space Council and other Federal agencies as the Administrator considers appropriate, shall issue a report detailing the feasibility of establishing a micro-gravity national laboratory federally funded research and development center to carry out activities relating to the study and use of in-space conditions.

SEC. 625. INTERNATIONAL SPACE STATION NATIONAL LABORATORY; PROPERTY RIGHTS IN INVENTIONS.

(a) In General.—Subchapter III of chapter 201 of title 51, United States Code, is amended by adding at the end the following:

“§ 20150. Property rights in designated inventions

“(a) Exclusive Property Rights.—Notwithstanding section 3710a of title 15, chapter 18 of title 35, section 20135, or any other provision of law, a designated invention shall be the exclusive property of a user, and shall not be subject to a Government-purpose license, if—

“(1)(A) the Administration is reimbursed under the terms of the contract for the full cost of a contribution by the Federal Government of the use of Federal facilities, equipment, materials, proprietary information of the Federal Government, or services of a Federal employee during working hours, including
the cost for the Administration to carry out its responsibilities under paragraphs (1) and (4) of section 504(d) of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18354(d));

“(B) Federal funds are not transferred to the user under the contract; and

“(C) the designated invention was made (as defined in section 20135(a))—

“(i) solely by the user; or

“(ii)(I) by the user with the services of a Federal employee under the terms of the contract; and

“(II) the Administration is reimbursed for such services under subparagraph (B); or

“(2) the Administrator determines that the relevant field of commercial endeavor is sufficiently immature that granting exclusive property rights to the user is necessary to help bolster demand for products and services produced on crewed or crew-tended space stations.

“(b) NOTIFICATION TO CONGRESS.—On completion of a determination made under paragraph (2), the Administrator shall submit to the appropriate committees of Con-
gress a notification of the determination that includes a written justification.

“(c) PUBLIC AVAILABILITY.—A determination or part of such determination under paragraph (1) shall be made available to the public on request, as required under section 552 of title 5, United States Code (commonly referred to as the ‘Freedom of Information Act’).

“(d) RULE OF CONSTRUCTION.—Nothing in this section may be construed to affect the rights of the Federal Government, including property rights in inventions, under any contract, except in the case of a written contract with the Administration or the ISS management entity for the performance of a designated activity.

“(e) DEFINITIONS.—In this section—

“(1) CONTRACT.—The term ‘contract’ has the meaning giving the term in section 20135(a).

“(2) DESIGNATED ACTIVITY.—The term ‘designated activity’ means any non-NASA scientific use of the ISS national laboratory as described in section 504 of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18354).

“(3) DESIGNATED INVENTION.—The term ‘designated invention’ means any invention, product, or service conceived or first reduced to practice by any person in the performance of a designated activity.
under a written contract with the Administration or the ISS management entity.

“(4) Full cost.—The term ‘full cost’ means the cost of transporting materials or passengers to and from the ISS, including any power needs, the disposal of mass, crew member time, stowage, power on the ISS, data downlink, crew consumables, and life support.

“(5) Government-purpose license.—The term ‘Government-purpose license’ means the reservation by the Federal Government of an irrevocable, nonexclusive, nontransferable, royalty-free license for the use of an invention throughout the world by or on behalf of the United States or any foreign government pursuant to a treaty or agreement with the United States.

“(6) ISS management entity.—The term ‘ISS management entity’ means the organization with which the Administrator enters into a cooperative agreement under section 504(a) of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18354(a)).

“(7) User.—The term ‘user’ means a person, including a nonprofit organization or small business firm (as such terms are defined in section 201 of title
35), or class of persons that enters into a written con-
tract with the Administration or the ISS manage-
ment entity for the performance of designated activi-
ties.”.

(b) Conforming Amendment.—The table of sections
for chapter 201 of title 51, United States Code, is amended
by inserting after the item relating to section 20149 the fol-
lowing:

“20150. Property rights in designated inventions.”.

SEC. 626. DATA FIRST PRODUCED DURING NON-NASA SCI-
ENTIFIC USE OF THE ISS NATIONAL LABORA-
TORY.

(a) Data Rights.—Subchapter III of chapter 201 of
title 51, United States Code, as amended by section 626,
is further amended by adding at the end the following:

“§ 20151. Data rights

“(a) Non-NASA Scientific Use of the ISS Na-
tional Laboratory.—The Federal Government may not
use or reproduce, or disclose outside of the Government, any
data first produced in the performance of a designated ac-
tivity under a written contract with the Administration or
the ISS management entity, unless—

“(1) otherwise agreed under the terms of the con-
tact with the Administration or the ISS manage-
ment entity, as applicable;
“(2) the designated activity is carried out with Federal funds;

“(3) disclosure is required by law;

“(4) the Federal Government has rights in the data under another Federal contract, grant, cooperative agreement, or other transaction; or

“(5) the data is—

“(A) otherwise lawfully acquired or independently developed by the Federal Government;

“(B) related to the health and safety of personnel on the ISS; or

“(C) essential to the performance of work by the ISS management entity or NASA personnel.

“(b) DEFINITIONS.—In this section:

“(1) CONTRACT.—The term ‘contract’ has the meaning given the term under section 20135(a).

“(2) DATA.—

“(A) IN GENERAL.—The term ‘data’ means recorded information, regardless of form or the media on which it may be recorded.

“(B) INCLUSIONS.—The term ‘data’ includes technical data and computer software.

“(C) EXCLUSIONS.—The term ‘data’ does not include information incidental to contract administration, such as financial, administra-
tive, cost or pricing, or management information.

“(3) DESIGNATED ACTIVITY.—The term ‘designated activity’ has the meaning given the term in section 20150.

“(4) ISS MANAGEMENT ENTITY.—The term ‘ISS management entity’ has the meaning given the term in section 20150.”.

(b) SPECIAL HANDLING OF TRADE SecRETS OR CONFIDENTIAL INFORMATION.—Section 20131(b)(2) of title 51, United States Code, is amended to read as follows:

“(2) INFORMATION DESCRIBED.—

“(A) ACTIVITIES UNDER AGREEMENT.—Information referred to in paragraph (1) is information that—

“(i) results from activities conducted under an agreement entered into under subsections (e) and (f) of section 20113; and

“(ii) would be a trade secret or commercial or financial information that is privileged or confidential within the meaning of section 552(b)(4) of title 5 if the information had been obtained from a non-Federal party participating in such an agreement.
“(B) CERTAIN DATA.—Information referred to in paragraph (1) includes data (as defined in section 20151) that—

“(i) was first produced by the Administration in the performance of any designated activity (as defined in section 20150); and

“(ii) would be a trade secret or commercial or financial information that is privileged or confidential within the meaning of section 552(b)(4) of title 5 if the data had been obtained from a non-Federal party.”.

(c) CONFORMING AMENDMENT.—The table of sections for chapter 201 of title 51, United States Code, as amended by section 626, is further amended by inserting after the item relating to section 20150 the following:

“20151. Data rights.”.

SEC. 627. PAYMENTS RECEIVED FOR COMMERCIAL SPACE-ENABLED PRODUCTION ON THE ISS.

(a) SENSE OF CONGRESS.—It is the sense of Congress that—

(1) the Administrator should determine a threshold for NASA to recover the costs of supporting the commercial development of products or services aboard the ISS, through the negotiation of agree-
ments, similar to agreements made by other Federal agencies that support private sector innovation; and

(2) the amount of such costs that to be recovered or profits collected through such agreements should be applied by the Administrator through a tiered process, taking into consideration the relative maturity and profitability of the applicable product or service.

(b) In general.—Subchapter III of chapter 201 of title 51, United States Code, as amended by section 627, is further amended by adding at the end the following:

“§20152. Payments received for commercial space-enable production

“(a) Annual Review.—

“(1) In general.—Not later than one year after the date of the enactment of this section, and annually thereafter, the Administrator shall review the profitability of any partnership with a private entity under a contract in which the Administrator—

“(A) permits the use of the ISS by such private entities to produce a commercial product or service; and

“(B) provides the total unreimbursed cost of a contribution by the Federal Government for the use of Federal facilities, equipment, materials, proprietary information of the Federal Govern-
ment, or services of a Federal employee during working hours, including the cost for the Administration to carry out its responsibilities under paragraphs (1) and (4) of section 504(d) of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18354(d)).

“(2) NEGOTIATION OF REIMBURSEMENTS.—Subject to the review described in paragraph (1), the Administrator shall seek to enter into an agreement to negotiate reimbursements for payments received, or portions of profits created, by any mature, profitable private entity described in that paragraph, as appropriate, through a tiered process that reflects the profitability of the relevant product or service.

“(3) USE OF FUNDS.—Amounts received by the Administrator in accordance with an agreement under paragraph (2) shall be used by the Administrator in the following order of priority:

“(A) To defray the operating cost of the ISS.

“(B) To develop, implement, or operate future low-Earth orbit platforms or capabilities.

“(C) To develop, implement, or operate future human deep space platforms or capabilities.
“(D) Any other costs the Administrator considers appropriate.

“(4) REPORT.—On completion of the first annual review under paragraph (1), and annually thereafter, the Administrator shall submit to the appropriate committees of Congress a report that includes a description of the results of the annual review, any agreement entered into under this section, and the amounts recouped or obtained under any such agreement.

“(b) LICENSING AND ASSIGNMENT OF INVENTIONS.—

Notwithstanding sections 3710a and 3710c of title 15 and any other provision of law, after payment in accordance with subsection (A)(i) of such section 3710c(a)(1)(A)(i) to the inventors who have directly assigned to the Federal Government their interests in an invention under a written contract with the Administration or the ISS management entity for the performance of a designated activity, the balance of any royalty or other payment received by the Administrator or the ISS management entity from licensing and assignment of such invention shall be paid by the Administrator or the ISS management entity, as applicable, to the Space Exploration Fund.

“(c) SPACE EXPLORATION FUND.—
“(1) Establishment.—There is established in the Treasury of the United States a fund, to be known as the ‘Space Exploration Fund’ (referred to in this subsection as the ‘Fund’), to be administered by the Administrator.

“(2) Use of Fund.—The Fund shall be available to carry out activities described in subsection (a)(3).

“(3) Deposits.—There shall be deposited in the Fund—

“(A) amounts appropriated to the Fund;

“(B) fees and royalties collected by the Administrator or the ISS management entity under subsections (a) and (b); and

“(C) donations or contributions designated to support authorized activities.

“(4) Rule of Construction.—Amounts available to the Administrator under this subsection shall be—

“(A) in addition to amounts otherwise made available for the purpose described in paragraph (2); and

“(B) available for a period of 5 years, to the extent and in the amounts provided in annual appropriation Acts.
“(d) Definitions.—

“(1) In general.—In this section, any term used in this section that is also used in section 20150 shall have the meaning given the term in that section.

“(2) Appropriate committees of Congress.—The term ‘appropriate committees of Congress’ means—

“(A) the Committee on Commerce, Science, and Transportation and the Committee on Appropriations of the Senate; and

“(B) the Committee on Science, Space, and Technology and the Committee on Appropriations of the House of Representatives.”.

(c) Conforming Amendment.—The table of sections for chapter 201 of title 51, United States Code, as amended by section and 626, is further amended by inserting after the item relating to section 20151 the following:

“20152. Payments received for commercial space-enabled production.”.

SEC. 628. STEPPING STONE APPROACH TO EXPLORATION.

(a) In General.—Section 70504 of title 51, United States Code, is amended to read as follows:

“§ 70504. Stepping stone approach to exploration

“(a) In general.—The Administrator, in sustainable steps, may conduct missions to intermediate destinations, such as the Moon, in accordance with section 20302(b), and on a timetable determined by the availability of funding,
in order to achieve the objective of human exploration of Mars specified in section 202(b)(5) of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18312(b)(5)), if the Administrator—

“(1) determines that each such mission demonstrates or advances a technology or operational concept that will enable human missions to Mars; and

“(2) incorporates each such mission into the human exploration roadmap under section 432 of the National Aeronautics and Space Administration Transition Authorization Act of 2017 (Public Law 115–10; 51 U.S.C. 20302 note).

“(b) Cislunar Space Exploration Activities.—In conducting a mission under subsection (a), the Administrator shall—

“(1) use a combination of launches of the Space Launch System and space transportation services from United States commercial providers, as appropriate, for the mission;

“(2) plan for not fewer than 1 Space Launch System launch annually beginning after the first successful crewed launch of Orion on the Space Launch System; and

“(3) establish an outpost in orbit around the Moon that—
“(A) demonstrates technologies, systems, and operational concepts directly applicable to the space vehicle that will be used to transport humans to Mars;

“(B) has the capability for periodic human habitation; and

“(C) can function as a point of departure, return, or staging for Administration or non-governmental or international partner missions to multiple locations on the lunar surface or other destinations.

“(c) Cost-Effectiveness.—To maximize the cost-effectiveness of the long-term space exploration and utilization activities of the United States, the Administrator shall take all necessary steps, including engaging nongovernmental and international partners, to ensure that activities in the Administration’s human space exploration program are balanced in order to help meet the requirements of future exploration and utilization activities leading to human habitation on the surface of Mars.

“(d) Completion.—Within budgetary considerations, once an exploration-related project enters its development phase, the Administrator shall seek, to the maximum extent practicable, to complete that project without undue delay.
“(e) INTERNATIONAL PARTICIPATION.—To achieve the goal of successfully conducting a crewed mission to the surface of Mars, the Administrator shall invite the partners in the ISS program and other nations, as appropriate, to participate in an international initiative under the leadership of the United States.”.

(b) DEFINITION OF CISLUNAR SPACE.—Section 10101 of title 51, United States Code, is amended by adding at the end the following:

“(3) CISLUNAR SPACE.—The term ‘cislunar space’ means the region of space beyond low-Earth orbit out to and including the region around the surface of the Moon.”.

(c) TECHNICAL AND CONFORMING AMENDMENTS.—Section 3 of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18302) is amended by striking paragraphs (2) and (3) and inserting the following:

“(2) APPROPRIATE COMMITTEES OF CONGRESS.—The term ‘appropriate committees of Congress’ means—

“(A) the Committee on Commerce, Science, and Transportation of the Senate; and

“(B) the Committee on Science, Space, and Technology of the House of Representatives.
“(3) CISLUNAR SPACE.—The term ‘cislunar space’ means the region of space beyond low-Earth orbit out to and including the region around the surface of the Moon.”.

SEC. 629. TECHNICAL AMENDMENTS RELATING TO ARTEMIS MISSIONS.

(a) Section 421 of the National Aeronautics and Space Administration Authorization Act of 2017 (Public Law 115–10; 51 U.S.C. 20301 note) is amended—

(1) in subsection (c)(3)—

(A) by striking “EM–1” and inserting “Artemis I”;

(B) by striking “EM–2” and inserting “Artemis II”; and

(C) by striking “EM–3” and inserting “Artemis III”; and

(2) in subsection (f)(3), by striking “EM–3” and inserting “Artemis III”.

(b) Section 432(b) of the National Aeronautics and Space Administration Authorization Act of 2017 (Public Law 115–10; 51 U.S.C. 20302 note) is amended—

(1) in paragraph (3)(D)—

(A) by striking “EM–1” and inserting “Artemis I”; and
(B) by striking “EM–2” and inserting “Artemis II”; and

(2) in paragraph (4)(C), by striking “EM–3” and inserting “Artemis III”.

**PART III—SCIENCE**

**SEC. 631. SCIENCE PRIORITIES.**

(a) Sense of Congress on Science Portfolio.—Congress reaffirms the sense of Congress that—

(1) a balanced and adequately funded set of activities, consisting of research and analysis grant programs, technology development, suborbital research activities, and small, medium, and large space missions, contributes to a robust and productive science program and serves as a catalyst for innovation and discovery; and

(2) the Administrator should set science priorities by following the guidance provided by the scientific community through the decadal surveys of the National Academies of Sciences, Engineering, and Medicine.

(b) National Academies Decadal Surveys.—Section 20305(c) of title 51, United States Code, is amended—

(1) by striking “The Administrator shall” and inserting the following:
“(1) Reexamination of Priorities by National Academies.—The Administrator shall”; and
(2) by adding at the end the following:
“(2) Reexamination of Priorities by Administrator.—If the Administrator decides to reexamine the applicability of the priorities of the decadal surveys to the missions and activities of the Administration due to scientific discoveries or external factors, the Administrator shall consult with the relevant committees of the National Academies.”.

SEC. 632. LUNAR DISCOVERY PROGRAM.

(a) In General.—The Administrator may carry out a program to conduct lunar science research, including missions to the surface of the Moon, that materially contributes to the objective described in section 20102(d)(1) of title 51, United States Code.

(b) Commercial Landers.—In carrying out the program under subsection (a), the Administrator shall procure the services of commercial landers developed primarily by United States industry to land science payloads of all classes on the lunar surface.

(c) Lunar Science Research.—The Administrator shall ensure that lunar science research carried out under subsection (a) is consistent with recommendations made by
the National Academies of Sciences, Engineering, and Medicine.

(d) LUNAR POLAR VOLATILES.—In carrying out the program under subsection (a), the Administrator shall, at the earliest opportunity, consider mission proposals to evaluate the potential of lunar polar volatiles to contribute to sustainable lunar exploration.

SEC. 633. SEARCH FOR LIFE.

(a) SENSE OF CONGRESS.—It is the sense of Congress that—

(1) the report entitled “An Astrobiology Strategy for the Search for Life in the Universe” published by the National Academies of Sciences, Engineering, and Medicine outlines the key scientific questions and methods for fulfilling the objective of NASA to search for the origin, evolution, distribution, and future of life in the universe; and

(2) the interaction of lifeforms with their environment, a central focus of astrobiology research, is a topic of broad significance to life sciences research in space and on Earth.

(b) PROGRAM CONTINUATION.—

(1) IN GENERAL.—The Administrator shall continue to implement a collaborative, multidisciplinary science and technology development program to search
for proof of the existence or historical existence of life beyond Earth in support of the objective described in section 20102(d)(10) of title 51, United States Code.

(2) **ELEMENT.**—The program under paragraph (1) shall include activities relating to astronomy, biology, geology, and planetary science.

(3) **COORDINATION WITH LIFE SCIENCES PROGRAM.**—In carrying out the program under paragraph (1), the Administrator shall coordinate efforts with the life sciences program of the Administration.

(4) **TECHNOSIGNATURES.**—In carrying out the program under paragraph (1), the Administrator shall support activities to search for and analyze technosignatures.

(5) **INSTRUMENTATION AND SENSOR TECHNOLOGY.**—In carrying out the program under paragraph (1), the Administrator may strategically invest in the development of new instrumentation and sensor technology.

**SEC. 634. JAMES WEBB SPACE TELESCOPE.**

(a) **SENSE OF CONGRESS.**—It is the sense of Congress that—

(1) the James Webb Space Telescope will be the next premier observatory in space and has great po-
tential to further scientific study and assist scientists
in making new discoveries in the field of astronomy;

(2) the James Webb Space Telescope was devel-
oped as an ambitious project with a scope that was
not fully defined at inception and with risk that was
not fully known or understood;

(3) despite the major technology development and
innovation that was needed to construct the James
Webb Space Telescope, major negative impacts to the
cost and schedule of the James Webb Space Telescope
resulted from poor program management and poor
contractor performance;

(4) the Administrator should take into account
the lessons learned from the cost and schedule issues
relating to the development of the James Webb Space
Telescope in making decisions regarding the scope of
and the technologies needed for future scientific mis-
sions; and

(5) in selecting future scientific missions, the Ad-
ministrator should take into account the impact that
large programs that overrun cost and schedule esti-
mates may have on other NASA programs in earlier
phases of development.

(b) PROJECT CONTINUATION.—The Administrator
shall continue—
(1) to closely track the cost and schedule performance of the James Webb Space Telescope project; and

(2) to improve the reliability of cost estimates and contractor performance data throughout the remaining development of the James Webb Space Telescope.

(c) REVISED ESTIMATE.—Due to delays to the James Webb Space Telescope project resulting from the COVID–19 pandemic, the Administrator shall provide to Congress—

(1) an estimate of any increase to program development costs, if such costs are anticipated to exceed $8,802,700,000; and

(2) an estimate for a revised launch date.

SEC. 635. WIDE-FIELD INFRARED SURVEY TELESCOPE.

(a) SENSE OF CONGRESS.—It is the sense of Congress that—

(1) major growth in the cost of astrophysics flagship-class missions has impacted the overall portfolio balance of the Science Mission Directorate; and

(2) the Administrator should continue to develop the Wide-Field Infrared Survey Telescope with a development cost of not more than $3,200,000,000.
(b) Project Continuation.—The Administrator shall continue to develop the Wide-Field Infrared Survey Telescope to meet the objectives outlined in the 2010 decadal survey on astronomy and astrophysics of the National Academies of Sciences, Engineering, and Medicine in a manner that maximizes scientific productivity based on the resources invested.

SEC. 636. STUDY ON SATELLITE SERVICING FOR SCIENCE MISSIONS.

(a) In General.—The Administrator shall conduct a study on the feasibility of using in-space robotic refueling, repair, or refurbishment capabilities to extend the useful life of telescopes and other science missions that are operational or in development as of the date of the enactment of this Act.

(b) Elements.—The study conducted under subsection (a) shall include the following:

(1) An identification of the technologies and in-space testing required to demonstrate the in-space robotic refueling, repair, or refurbishment capabilities described in that subsection.

(2) The projected cost of using such capabilities, including the cost of extended operations for science missions described in that subsection.
(c) **BRIEFING.**—Not later than 1 year after the date of the enactment of this Act, the Administrator shall provide to the appropriate committees of Congress a briefing on the results of the study conducted under subsection (a).

(d) **PUBLIC AVAILABILITY.**—Not later than 30 days after the Administrator provides the briefing under subsection (c), the Administrator shall make the study conducted under subsection (a) available to the public.

SEC. 637. EARTH SCIENCE MISSIONS AND PROGRAMS.

(a) **SENSE OF CONGRESS.**—It is the sense of Congress that the Earth Science Division of NASA plays an important role in national efforts—

(1) to collect and use Earth observations in service to society; and

(2) to understand global change.

(b) **EARTH SCIENCE MISSIONS AND PROGRAMS.**—With respect to the missions and programs of the Earth Science Division, the Administrator shall, to the maximum extent practicable, follow the recommendations and guidance provided by the scientific community through the decadal survey for Earth science and applications from space of the National Academies of Sciences, Engineering, and Medicine, including—

(1) the science priorities described in such survey;
(2) the execution of the series of existing or previously planned observations (commonly known as the “program of record’’); and

(3) the development of a range of missions of all classes, including opportunities for principal investigator-led, competitively selected missions.

SEC. 638. LIFE SCIENCE AND PHYSICAL SCIENCE RESEARCH.

(a) SENSE OF CONGRESS.—It is the sense of Congress that—

(1) the 2011 decadal survey on biological and physical sciences in space identifies—

(A) many areas in which fundamental scientific research is needed to efficiently advance the range of human activities in space, from the first stages of exploration to eventual economic development; and

(B) many areas of basic and applied scientific research that could use the microgravity, radiation, and other aspects of the spaceflight environment to answer fundamental scientific questions;

(2) given the central role of life science and physical science research in developing the future of space exploration, NASA should continue to invest strate-
cally in such research to maintain United States
leadership in space exploration; and

(3) such research remains important to the objec-
tives of NASA with respect to long-duration deep
space human exploration to the Moon and Mars.

(b) PROGRAM CONTINUATION.—

(1) IN GENERAL.—In support of the goals de-
scribed in section 20302 of title 51, United States
Code, the Administrator shall continue to implement
a collaborative, multidisciplinary life science and
physical science fundamental research program—

(A) to build a scientific foundation for the
exploration and development of space;

(B) to investigate the mechanisms of
changes to biological systems and physical sys-
tems, and the environments of those systems in
space, including the effects of long-duration expo-
sure to deep space-related environmental factors
on those systems;

(C) to understand the effects of combined
deep space radiation and altered gravity levels
on biological systems so as to inform the develop-
ment and testing of potential countermeasures;

(D) to understand physical phenomena in
reduced gravity that affect design and perform-
ance of enabling technologies necessary for the
space exploration program;

(E) to provide scientific opportunities to
educate, train, and develop the next generation of
researchers and engineers; and

(F) to provide state-of-the-art data repositories and curation of large multi-data sets to
enable comparative research analyses.

(2) ELEMENTS.—The program under paragraph
(1) shall—

(A) include fundamental research relating
to life science, space bioscience, and physical
science; and

(B) maximize intra-agency and interagency
partnerships to advance space exploration, sci-
entific knowledge, and benefits to Earth.

(3) USE OF FACILITIES.—In carrying out the
program under paragraph (1), the Administrator
may use ground-based, air-based, and space-based fa-
cilities in low-Earth orbit and beyond low-Earth
orbit.

SEC. 639. SCIENCE MISSIONS TO MARS.

(a) IN GENERAL.—The Administrator shall conduct 1
or more science missions to Mars to enable the selection of
1 or more sites for human landing.
(b) **SAMPLE PROGRAM.**—The Administrator may carry out a program—

1. to collect samples from the surface of Mars;
   and
2. to return such samples to Earth for scientific analysis.

(c) **USE OF EXISTING CAPABILITIES AND ASSETS.**—

In carrying out this section, the Administrator shall, to the maximum extent practicable, use existing capabilities and assets of NASA centers.

**SEC. 640. PLANETARY DEFENSE COORDINATION OFFICE.**

(a) **FINDINGS.**—Congress makes the following findings:

1. Near-Earth objects remain a threat to the United States.

2. Section 321(d)(1) of the National Aeronautics and Space Administration Authorization Act of 2005 (Public Law 109–155; 119 Stat. 2922; 51 U.S.C. 71101 note prec.) established a requirement that the Administrator plan, develop, and implement a Near-Earth Object Survey program to detect, track, catalogue, and characterize the physical characteristics of near-Earth objects equal to or greater than 140 meters in diameter in order to assess the threat of such near-Earth objects to the Earth, with the goal of
90-percent completion of the catalogue of such near-
Earth objects by December 30, 2020.

(3) The current planetary defense strategy of
NASA acknowledges that such goal will not be met.

(4) The report of the National Academies of
Sciences, Engineering, and Medicine entitled “Find-
ing Hazardous Asteroids Using Infrared and Visible
Wavelength Telescopes” issued in 2019 states that—

(A) NASA cannot accomplish such goal
with currently available assets;

(B) NASA should develop and launch a
dedicated space-based infrared survey telescope to
meet the requirements of section 321(d)(1) of the
National Aeronautics and Space Administration
119 Stat. 2922; 51 U.S.C. 71101 note prec.); and

(C) the early detection of potentially haz-
ardous near-Earth objects enabled by a space-
based infrared survey telescope is important to
enable deflection of a dangerous asteroid.

(b) Establishment of Planetary Defense Co-
ordination Office.—

(1) In general.—Not later than 90 days after
the date of the enactment of this Act, the Adminis-
trator shall establish an office within the Planetary
Science Division of the Science Mission Directorate, to be known as the “Planetary Defense Coordination Office”, to plan, develop, and implement a program to survey threats posed by near-Earth objects equal to or greater than 140 meters in diameter, as required by section 321(d)(1) of the National Aeronautics and Space Administration Authorization Act of 2005 (Public Law 109–155; 119 Stat. 2922; 51 U.S.C. 71101 note prec.).

(2) ACTIVITIES.—The Administrator shall—

(A) develop and, not later than September 30, 2025, launch a space-based infrared survey telescope that is capable of detecting near-Earth objects equal to or greater than 140 meters in diameter, with preference given to planetary missions selected by the Administrator as of the date of the enactment of this Act to pursue concept design studies relating to the development of a space-based infrared survey telescope;

(B) identify, track, and characterize potentially hazardous near-Earth objects and issue warnings of the effects of potential impacts of such objects; and
(C) assist in coordinating Government planning for response to a potential impact of a near-Earth object.

(c) ANNUAL REPORT.—Section 321(f) of the National Aeronautics and Space Administration Authorization Act of 2005 (Public Law 109-155; 119 Stat. 2922; 51 U.S.C. 71101 note prec.) is amended to read as follows:

“(f) ANNUAL REPORT.—Not later than 180 days after the date of the enactment of the National Aeronautics and Space Administration Authorization Act of 2021, and annually thereafter through 90-percent completion of the catalogue required by subsection (d)(1), the Administrator shall submit to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science, Space, and Technology of the House of Representatives a report that includes the following:

“(1) A summary of all activities carried out by the Planetary Defense Coordination Office established under section 640(b)(1) of the National Aeronautics and Space Administration Authorization Act of 2021 since the date of enactment of that Act.

“(2) A description of the progress with respect to the design, development, and launch of the space-based infrared survey telescope required by section

“(3) An assessment of the progress toward meeting the requirements of subsection (d)(1).

“(4) A description of the status of efforts to coordinate planetary defense activities in response to a threat posed by a near-Earth object with other Federal agencies since the date of enactment of the National Aeronautics and Space Administration Authorization Act of 2021.

“(5) A description of the status of efforts to coordinate and cooperate with other countries to discover hazardous asteroids and comets, plan a mitigation strategy, and implement that strategy in the event of the discovery of an object on a likely collision course with Earth.

“(6) A summary of expenditures for all activities carried out by the Planetary Defense Coordination Office since the date of enactment of the National Aeronautics and Space Administration Authorization Act of 2021.”.

(d) LIMITATION ON USE OF FUNDS.—None of the amounts authorized to be appropriated by this subtitle for a fiscal year may be obligated or expended for the Office of the Administrator during the last 3 months of that fiscal
year unless the Administrator submits the report for that
fiscal year required by section 321(f) of the National Aeronautics and Space Administration Authorization Act of
71101 note prec.).

(e) Near-Earth Object Defined.—In this section, the term “near-Earth object” means an asteroid or comet
with a perihelion distance of less than 1.3 Astronomical
Units from the Sun.

SEC. 641. SUBORBITAL SCIENCE FLIGHTS.

(a) Sense of Congress.—It is the sense of Congress
that commercially available suborbital flight platforms en-
able low-cost access to a microgravity environment to ad-
advance science and train scientists and engineers under the
Suborbital Research Program established under section
802(c) of the National Aeronautics and Space Administra-
tion Authorization Act of 2010 (42 U.S.C. 18382(c)).

(b) Report.—

(1) In general.—Not later than 270 days after
the date of the enactment of this Act, the Adminis-
trator shall submit to the appropriate committees of
Congress a report evaluating the manner in which
suborbital flight platforms can contribute to meeting
the science objectives of NASA for the Science Mission
Directorate and the Human Exploration and Operations Mission Directorate.

(2) CONTENTS.—The report required by paragraph (1) shall include the following:

(A) An assessment of the advantages of suborbital flight platforms to meet science objectives.

(B) An evaluation of the challenges to greater use of commercial suborbital flight platforms for science purposes.

(C) An analysis of whether commercial suborbital flight platforms can provide low-cost flight opportunities to test lunar and Mars science payloads.

SEC. 642. EARTH SCIENCE DATA AND OBSERVATIONS.

(a) IN GENERAL.—The Administrator shall to the maximum extent practicable, make available to the public in an easily accessible electronic database all data (including metadata, documentation, models, data processing methods, images, and research results) of the missions and programs of the Earth Science Division of the Administration, or any successor division.

(b) OPEN DATA PROGRAM.—In carrying out subsection (a), the Administrator shall establish and continue to operate an open data program that—
(1) is consistent with the greatest degree of interactivity, interoperability, and accessibility; and

(2) enables outside communities, including the research and applications community, private industry, academia, and the general public, to effectively collaborate in areas important to—

(A) studying the Earth system and improving the prediction of Earth system change; and

(B) improving model development, data assimilation techniques, systems architecture integration, and computational efficiencies; and

(3) meets basic end-user requirements for running on public computers and networks located outside of secure Administration information and technology systems.

(c) HOSTING.—The program under subsection (b) shall use, as appropriate and cost-effective, innovative strategies and methods for hosting and management of part or all of the program, including cloud-based computing capabilities.

(d) RULE OF CONSTRUCTION.—Nothing in this section shall be interpreted to require the Administrator to release classified, proprietary, or otherwise restricted information that would be harmful to the national security of the United States.
SEC. 643. SENSE OF CONGRESS ON SMALL SATELLITE SCIENCE.

It is the sense of Congress that—

(1) small satellites—

(A) are increasingly robust, effective, and affordable platforms for carrying out space science missions;

(B) can work in tandem with or augment larger NASA spacecraft to support high-priority science missions of NASA; and

(C) are cost effective solutions that may allow NASA to continue collecting legacy observations while developing next-generation science missions; and

(2) NASA should continue to support small satellite research, development, technologies, and programs, including technologies for compact and lightweight instrumentation for small satellites.

SEC. 644. SENSE OF CONGRESS ON COMMERCIAL SPACE SERVICES.

It is the sense of Congress that—

(1) the Administration should explore partnerships with the commercial space industry for space science missions in and beyond Earth orbit, including partnerships relating to payload and instrument hosting and commercially available datasets; and
(2) such partnerships could result in increased mission cadence, technology advancement, and cost savings for the Administration.

SEC. 645. PROCEDURES FOR IDENTIFYING AND ADDRESSING ALLEGED VIOLATIONS OF SCIENTIFIC INTEGRITY POLICY.

Not later than 180 days after the date of the enactment of this Act, the Administrator shall develop and document procedures for identifying and addressing alleged violations of the scientific integrity policy of NASA.

PART IV—AERONAUTICS

SEC. 646. SHORT TITLE.

This part may be cited as the “Aeronautics Innovation Act”.

SEC. 647. DEFINITIONS.

In this part:

(1) AERONAUTICS STRATEGIC IMPLEMENTATION PLAN.—The term “Aeronautics Strategic Implementation Plan” means the Aeronautics Strategic Implementation Plan issued by the Aeronautics Research Mission Directorate.

(2) UMNANNED AIRCRAFT; UMNANNED AIRCRAFT SYSTEM.—The terms “unmanned aircraft” and “unmanned aircraft system” have the meanings given
those terms in section 44801 of title 49, United States Code.

(3) X-PLANE.—The term “X-plane” means an experimental aircraft that is—

(A) used to test and evaluate a new technology or aerodynamic concept; and

(B) operated by NASA or the Department of Defense.

SEC. 648. EXPERIMENTAL AIRCRAFT PROJECTS.

(a) SENSE OF CONGRESS.—It is the sense of Congress that—

(1) developing high-risk, precompetitive aerospace technologies for which there is not yet a profit rationale is a fundamental role of NASA;

(2) large-scale piloted flight test experimentation and validation are necessary for—

(A) transitioning new technologies and materials, including associated manufacturing processes, for general aviation, commercial aviation, and military aeronautics use; and

(B) capturing the full extent of benefits from investments made by the Aeronautics Research Mission Directorate in priority programs called for in—
(i) the National Aeronautics Research and Development Plan issued by the National Science and Technology Council in February 2010;

(ii) the NASA 2014 Strategic Plan;

(iii) the Aeronautics Strategic Implementation Plan; and

(iv) any updates to the programs called for in the plans described in clauses (i) through (iii);

(3) a level of funding that adequately supports large-scale piloted flight test experimentation and validation, including related infrastructure, should be ensured over a sustained period of time to restore the capacity of NASA—

(A) to see legacy priority programs through to completion; and

(B) to achieve national economic and security objectives; and

(4) NASA should not be directly involved in the Type Certification of aircraft for current and future scheduled commercial air service under part 121 or 135 of title 14, Code of Federal Regulations, that would result in reductions in crew augmentation or single pilot or autonomously operated aircraft.
(b) **STATEMENT OF POLICY.**—It is the policy of the United States—

(1) to maintain world leadership in—

(A) military and civilian aeronautical science and technology;

(B) global air power projection; and

(C) aerospace industrialization; and

(2) to maintain as a fundamental objective of NASA aeronautics research the steady progression and expansion of flight research and capabilities, including the science and technology of critical underlying disciplines and competencies, such as—

(A) computational-based analytical and predictive tools and methodologies;

(B) aerothermodynamics;

(C) propulsion;

(D) advanced materials and manufacturing processes;

(E) high-temperature structures and materials; and

(F) guidance, navigation, and flight controls.

(c) **ESTABLISHMENT AND CONTINUATION OF X-PLANE PROJECTS.**—
(1) **IN GENERAL.**—The Administrator shall es-
establish or continue to implement, in a manner that
is consistent with the roadmap for supersonic aero-
nautics research and development required by section
604(b) of the National Aeronautics and Space Admin-
istration Transition Authorization Act of 2017 (Pub-
lic Law 115–10; 131 Stat. 55), the following projects:

(A) A low-boom supersonic aircraft project
to demonstrate supersonic aircraft designs and
technologies that—

(i) reduce sonic boom noise; and

(ii) assist the Administrator of the

Federal Aviation Administration in ena-
bling—

(I) the safe commercial deploy-
ment of civil supersonic aircraft tech-
nology; and

(II) the safe and efficient oper-
ation of civil supersonic aircraft.

(B) A subsonic flight demonstrator aircraft
project to advance high-aspect-ratio, thin-wing
aircraft designs and to integrate propulsion,
composites, and other technologies that enable
significant increases in energy efficiency and re-
duced life-cycle emissions in the aviation system
while reducing noise and emissions.

(C) A series of large-scale X-plane demonstrators that are—

(i) developed sequentially or in parallel; and

(ii) each based on a set of new configuration concepts or technologies determined by the Administrator to demonstrate—

(I) aircraft and propulsion concepts and technologies and related advances in alternative propulsion and energy; and

(II) flight propulsion concepts and technologies.

(2) ELEMENTS.—For each project under paragraph (1), the Administrator shall—

(A) include the development of X-planes and all necessary supporting flight test assets;

(B) pursue a robust technology maturation and flight test validation effort;

(C) improve necessary facilities, flight testing capabilities, and computational tools to support the project;
(D) award any primary contracts for design, procurement, and manufacturing to United States persons, consistent with international obligations and commitments;

(E) coordinate research and flight test demonstration activities with other Federal agencies and the United States aviation community, as the Administrator considers appropriate; and

(F) ensure that the project is aligned with the Aeronautics Strategic Implementation Plan and any updates to the Aeronautics Strategic Implementation Plan.

(3) UNITED STATES PERSON DEFINED.—In this subsection, the term “United States person” means—

(A) a United States citizen or an alien lawfully admitted for permanent residence to the United States; or

(B) an entity organized under the laws of the United States or of any jurisdiction within the United States, including a foreign branch of such an entity.

(d) ADVANCED MATERIALS AND MANUFACTURING TECHNOLOGY PROGRAM.—
(1) IN GENERAL.—The Administrator may establish an advanced materials and manufacturing technology program—

(A) to develop—

(i) new materials, including composite and high-temperature materials, from base material formulation through full-scale structural validation and manufacture;

(ii) advanced materials and manufacturing processes, including additive manufacturing, to reduce the cost of manufacturing scale-up and certification for use in general aviation, commercial aviation, and military aeronautics; and

(iii) noninvasive or nondestructive techniques for testing or evaluating aviation and aeronautics structures, including for materials and manufacturing processes;

(B) to reduce the time it takes to design, industrialize, and certify advanced materials and manufacturing processes;

(C) to provide education and training opportunities for the aerospace workforce; and

(D) to address global cost and human capital competitiveness for United States aero-
nautical industries and technological leadership
in advanced materials and manufacturing technology.

(2) ELEMENTS.—In carrying out a program
under paragraph (1), the Administrator shall—

(A) build on work that was carried out by
the Advanced Composites Project of NASA;

(B) partner with the private and academic
sectors, such as members of the Advanced Com-
posites Consortium of NASA, the Joint Advanced
Materials and Structures Center of Excellence of
the Federal Aviation Administration, the Manu-
facturing USA institutes of the Department of
Commerce, and national laboratories, as the Ad-
ministrator considers appropriate;

(C) provide a structure for managing intel-
lectual property generated by the program based
on or consistent with the structure established for
the Advanced Composites Consortium of NASA;

(D) ensure adequate Federal cost share for
applicable research; and

(E) coordinate with advanced manufac-
turing and composites initiatives in other mis-
sion directorates of NASA, as the Administrator
considers appropriate.
(e) Research Partnerships.—In carrying out the projects under subsection (c) and a program under subsection (d), the Administrator may engage in cooperative research programs with—

(1) academia; and

(2) commercial aviation and aerospace manufacturers.


(a) Unmanned Aircraft Systems Operation Program.—The Administrator shall—

(1) research and test capabilities and concepts, including unmanned aircraft systems communications, for integrating unmanned aircraft systems into the national airspace system;

(2) leverage the partnership NASA has with industry focused on the advancement of technologies for future air traffic management systems for unmanned aircraft systems; and

(3) continue to align the research and testing portfolio of NASA to inform the integration of unmanned aircraft systems into the national airspace system, consistent with public safety and national security objectives.
(b) Sense of Congress on Coordination with Federal Aviation Administration.—It is the sense of Congress that—

(1) NASA should continue—

(A) to coordinate with the Federal Aviation Administration on research on air traffic management systems for unmanned aircraft systems; and

(B) to assist the Federal Aviation Administration in the integration of air traffic management systems for unmanned aircraft systems into the national airspace system; and

(2) the test ranges (as defined in section 44801 of title 49, United States Code) should continue to be leveraged for research on—

(A) air traffic management systems for unmanned aircraft systems; and

(B) the integration of such systems into the national airspace system.

SEC. 650. 21ST CENTURY AERONAUTICS CAPABILITIES INITIATIVE.

(a) In General.—The Administrator may establish an initiative, to be known as the “21st Century Aeronautics Capabilities Initiative”, within the Construction and Environmental Compliance and Restoration Account, to ensure
that NASA possesses the infrastructure and capabilities necessary to conduct proposed flight demonstration projects across the range of NASA aeronautics interests.

(b) ACTIVITIES.—In carrying out the 21st Century Aeronautics Capabilities Initiative, the Administrator may carry out the following activities:

(1) Any investments the Administrator considers necessary to upgrade and create facilities for civil and national security aeronautics research to support advancements in—

(A) long-term foundational science and technology;

(B) advanced aircraft systems;

(C) air traffic management systems;

(D) fuel efficiency;

(E) electric propulsion technologies;

(F) system-wide safety assurance;

(G) autonomous aviation; and

(H) supersonic and hypersonic aircraft design and development.

(2) Any measures the Administrator considers necessary to support flight testing activities, including—

(A) continuous refinement and development of free-flight test techniques and methodologies;
(B) upgrades and improvements to real-time tracking and data acquisition; and

(C) such other measures relating to aeronautics research support and modernization as the Administrator considers appropriate to carry out the scientific study of the problems of flight, with a view to practical solutions for such problems.

SEC. 651. SENSE OF CONGRESS ON ON-DEMAND AIR TRANSPORTATION.

It is the sense of Congress that—

(1) greater use of high-speed air transportation, small airports, helipads, vertical flight infrastructure, and other aviation-related infrastructure can alleviate surface transportation congestion and support economic growth within cities;

(2) with respect to urban air mobility and related concepts, NASA should continue—

(A) to conduct research focused on concepts, technologies, and design tools; and

(B) to support the evaluation of advanced technologies and operational concepts that can be leveraged by—

(i) industry to develop future vehicles and systems; and
(ii) the Federal Aviation Administration to support vehicle safety and operational certification; and

(3) NASA should leverage ongoing efforts to develop advanced technologies to actively support the research needed for on-demand air transportation.

SEC. 652. SENSE OF CONGRESS ON HYPERSONIC TECHNOLOGY RESEARCH.

It is the sense of Congress that—

(1) hypersonic technology is critical to the development of advanced high-speed aerospace vehicles for both civilian and national security purposes;

(2) for hypersonic vehicles to be realized, research is needed to overcome technical challenges, including in propulsion, advanced materials, and flight performance in a severe environment;

(3) NASA plays a critical role in supporting fundamental hypersonic research focused on system design, analysis and validation, and propulsion technologies;

(4) NASA research efforts in hypersonic technology should complement research supported by the Department of Defense to the maximum extent practicable, since contributions from both agencies work-
ing in partnership with universities and industry are
necessary to overcome key technical challenges;

(5) previous coordinated research programs be-
tween NASA and the Department of Defense enabled
important progress on hypersonic technology;

(6) the commercial sector could provide flight
platforms and other capabilities that are able to host
and support NASA hypersonic technology research
projects; and

(7) in carrying out hypersonic technology re-
search projects, the Administrator should—

(A) focus research and development efforts
on high-speed propulsion systems, reusable vehi-

cle technologies, high-temperature materials, and

systems analysis;

(B) coordinate with the Department of De-
fense to prevent duplication of efforts and of in-

vestments;

(C) include partnerships with universities
and industry to accomplish research goals; and

(D) maximize public-private use of commer-
cially available platforms for hosting research
and development flight projects.
PART V—SPACE TECHNOLOGY

SEC. 653. SPACE TECHNOLOGY MISSION DIRECTORATE.

(a) Sense of Congress.—It is the sense of Congress that an independent Space Technology Mission Directorate is critical to ensuring continued investments in the development of technologies for missions across the portfolio of NASA, including science, aeronautics, and human exploration.


SEC. 654. FLIGHT OPPORTUNITIES PROGRAM.

(a) Sense of Congress.—It is the sense of Congress that the Administrator should provide flight opportunities for payloads to microgravity environments and suborbital altitudes as required by section 907(c) of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18405(c)), as amended by subsection (b).

(b) Establishment.—Section 907(c) of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18405(c)) is amended to read as follows:

“(c) Establishment.—

“(1) In general.—The Administrator shall establish a Commercial Reusable Suborbital Research
Program within the Space Technology Mission Directorate to fund—

“(A) the development of payloads for scientific research, technology development, and education;

“(B) flight opportunities for those payloads to microgravity environments and suborbital altitudes; and

“(C) transition of those payloads to orbital opportunities.

“(2) Commercial Reusable Vehicle Flights.—In carrying out the Commercial Reusable Suborbital Research Program, the Administrator may fund engineering and integration demonstrations, proofs of concept, and educational experiments for flights of commercial reusable vehicles.

“(3) Commercial Suborbital Launch Vehicles.—In carrying out the Commercial Reusable Suborbital Research Program, the Administrator may not fund the development of new commercial suborbital launch vehicles.

“(4) Working with Mission Directorates.—In carrying out the Commercial Reusable Suborbital Research Program, the Administrator shall work with
the mission directorates of NASA to achieve the research, technology, and education goals of NASA.”).

(c) CONFORMING AMENDMENT.—Section 907(b) of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18405(b)) is amended, in the first sentence, by striking “Commercial Reusable Suborbital Research Program in” and inserting “Commercial Reusable Suborbital Research Program established under subsection (c)(1) within”.

SEC. 655. SMALL SPACECRAFT TECHNOLOGY PROGRAM.

(a) SENSE OF CONGRESS.—It is the sense of Congress that the Small Spacecraft Technology Program is important for conducting science and technology validation for—

(1) short- and long-duration missions in low-Earth orbit;

(2) deep space missions; and

(3) deorbiting capabilities designed specifically for smaller spacecraft.

(b) ACCOMMODATION OF CERTAIN PAYLOADS.—In carrying out the Small Spacecraft Technology Program, the Administrator shall, as the mission risk posture and technology development objectives allow, accommodate science payloads that further the goal of long-term human exploration to the Moon and Mars.
SEC. 656. NUCLEAR PROPULSION TECHNOLOGY.

(a) Sense of Congress.—It is the sense of Congress that nuclear propulsion is critical to the development of advanced spacecraft for civilian and national defense purposes.

(b) Development; Studies.—The Administrator shall, in coordination with the Secretary of Energy and the Secretary of Defense—

(1) continue to develop the fuel element design for NASA nuclear propulsion technology;

(2) undertake the systems feasibility studies for such technology; and

(3) partner with members of commercial industry to conduct studies on such technology.

(c) Nuclear Propulsion Technology Demonstration.—

(1) Determination; Report.—Not later than December 31, 2022, the Administrator shall—

(A) determine the correct approach for conducting a flight demonstration of nuclear propulsion technology; and

(B) submit to Congress a report on a plan for such a demonstration.

(2) Demonstration.—Not later than December 31, 2026, the Administrator shall conduct the flight demonstration described in paragraph (1).
SEC. 657. MARS-FORWARD TECHNOLOGIES.

(a) Sense of Congress.—It is the sense of Congress that the Administrator should pursue multiple technical paths for entry, descent, and landing for Mars, including competitively selected technology demonstration missions.

(b) Prioritization of Long-lead Technologies and Systems.—The Administrator shall prioritize, within the Space Technology Mission Directorate, research, testing, and development of long-lead technologies and systems for Mars, including technologies and systems relating to—

(1) entry, descent, and landing; and

(2) in-space propulsion, including nuclear propulsion, cryogenic fluid management, in-situ large-scale additive manufacturing, and electric propulsion (including solar electric propulsion leveraging lessons learned from the power and propulsion element of the lunar outpost) options.

(c) Technology Demonstration.—The Administrator may use low-Earth orbit and cis-lunar missions, including missions to the lunar surface, to demonstrate technologies for Mars.

SEC. 658. PRIORITIZATION OF LOW-ENRICHED URANIUM TECHNOLOGY.

(a) Sense of Congress.—It is the sense of Congress that—
(1) space technology, including nuclear propulsion technology and space surface power reactors, should be developed in a manner consistent with broader United States foreign policy, national defense, and space exploration and commercialization priorities;

(2) highly enriched uranium presents security and nuclear nonproliferation concerns;

(3) since 1977, based on the concerns associated with highly enriched uranium, the United States has promoted the use of low-enriched uranium over highly enriched uranium in nonmilitary contexts, including research and commercial applications;

(4) as part of United States efforts to limit international use of highly enriched uranium, the United States has actively pursued—

(A) since 1978, the conversion of domestic and foreign research reactors that use highly enriched uranium fuel to low-enriched uranium fuel and the avoidance of any new research reactors that use highly enriched uranium fuel; and

(B) since 1994, the elimination of international commerce in highly enriched uranium for civilian purposes; and
(5) the use of low-enriched uranium in place of highly enriched uranium has security, nonproliferation, and economic benefits, including for the national space program.

(b) Prioritization of Low-Enriched Uranium Technology.—The Administrator shall—

(1) establish, within the Space Technology Mission Directorate, a program for the research, testing, and development of in-space reactor designs, including a surface power reactor, that uses low-enriched uranium fuel; and

(2) prioritize the research, demonstration, and deployment of such designs over designs using highly enriched uranium fuel.

(c) Report on Nuclear Technology Prioritization.—Not later than 120 days after the date of the enactment of this Act, the Administrator shall submit to the appropriate committees of Congress a report that—

(1) details the actions taken to implement subsection (b); and

(2) identifies a plan and timeline under which such subsection will be implemented.

(d) Definitions.—In this section:

(1) Highly Enriched Uranium.—The term “highly enriched uranium” means uranium having
an assay of 20 percent or greater of the uranium-235 isotope.

(2) **Low-enriched uranium.**—The term “low-enriched uranium” means uranium having an assay greater than the assay for natural uranium but less than 20 percent of the uranium-235 isotope.

**SEC. 659. SENSE OF CONGRESS ON NEXT-GENERATION COMMUNICATIONS TECHNOLOGY.**

*It is the sense of Congress that—*

(1) optical communications technologies—

(A) will be critical to the development of next-generation space-based communications networks;

(B) have the potential to allow NASA to expand the volume of data transmissions in low-Earth orbit and deep space; and

(C) may provide more secure and cost-effective solutions than current radio frequency communications systems;

(2) quantum encryption technology has promising implications for the security of the satellite and terrestrial communications networks of the United States, including optical communications networks, and further research and development by NASA with respect to quantum encryption is essential to main-
taining the security of the United States and United
States leadership in space; and

(3) in order to provide NASA with more secure
and reliable space-based communications, the Space
Communications and Navigation program office of
NASA should continue—

(A) to support research on and development
of optical communications; and

(B) to develop quantum encryption capa-
bilities, especially as those capabilities apply to
optical communications networks.

SEC. 660. LUNAR SURFACE TECHNOLOGIES.

(a) SENSE OF CONGRESS.—It is the sense of Congress
that the Administrator should—

(1) identify and develop the technologies needed
to live on and explore the lunar surface and prepare
for future operations on Mars;

(2) convene teams of experts from academia, in-
dustry, and government to shape the technology devel-
opment priorities of the Administration for lunar
surface exploration and habitation; and

(3) establish partnerships with researchers, uni-
versities, and the private sector to rapidly develop
and deploy technologies required for successful lunar
surface exploration.
(b) DEVELOPMENT AND DEMONSTRATION.—The Administrator shall carry out a program, within the Space Technology Mission Directorate, to conduct technology development and demonstrations to enable human and robotic exploration on the lunar surface.

(c) RESEARCH CONSORTIUM.—The Administrator shall establish a consortium consisting of experts from academia, industry, and government—

(1) to assist the Administrator in developing a cohesive, executable strategy for the development and deployment of technologies required for successful lunar surface exploration; and

(2) to identify specific technologies relating to lunar surface exploration that—

(A) should be developed to facilitate such exploration; or

(B) require future research and development.

(d) RESEARCH AWARDS.—

(1) IN GENERAL.—The Administrator may task any member of the research consortium established under subsection (c) with conducting research and development with respect to a technology identified under paragraph (2) of that subsection.

(2) STANDARD PROCESS FOR ARRANGEMENTS.—
(A) In general.—The Administrator shall develop a standard process by which a consortium member tasked with research and development under paragraph (1) may enter into a formal arrangement with the Administrator to carry out such research and development, such as an arrangement under section 666 or 667.

(B) Report.—Not later than 120 days after the date of the enactment of this Act, the Administrator shall submit to the appropriate committees of Congress a report on the one or more types of arrangement the Administrator intends to enter into under this subsection.

PART VI—STEM ENGAGEMENT

SEC. 661. SENSE OF CONGRESS.

It is the sense of Congress that—

(1) NASA serves as a source of inspiration to the people of the United States; and

(2) NASA is uniquely positioned to help increase student interest in science, technology, engineering, and math;

(3) engaging students, and providing hands-on experience at an early age, in science, technology, engineering, and math are important aspects of ensur-
ing and promoting United States leadership in innovation; and

(4) NASA should strive to leverage its unique position—

(A) to increase kindergarten through grade 12 involvement in NASA projects;

(B) to enhance higher education in STEM fields in the United States;

(C) to support individuals who are underrepresented in science, technology, engineering, and math fields, such as women, minorities, and individuals in rural areas; and

(D) to provide flight opportunities for student experiments and investigations.

SEC. 662. STEM EDUCATION ENGAGEMENT ACTIVITIES.

(a) IN GENERAL.—The Administrator shall continue to provide opportunities for formal and informal STEM education engagement activities within the Office of NASA STEM Engagement and other NASA directorates, including—

(1) the Established Program to Stimulate Competitive Research;

(2) the Minority University Research and Education Project; and
(3) the National Space Grant College and Fellowship Program.

(b) LEVERAGING NASA NATIONAL PROGRAMS TO PROMOTE STEM EDUCATION.—The Administrator, in partnership with museums, nonprofit organizations, and commercial entities, shall, to the maximum extent practicable, leverage human spaceflight missions, Deep Space Exploration Systems (including the Space Launch System, Orion, and Exploration Ground Systems), and NASA science programs to engage students at the kindergarten through grade 12 and higher education levels to pursue learning and career opportunities in STEM fields.

(c) BRIEFING.—Not later than 1 year after the date of the enactment of this Act, the Administrator shall brief the appropriate committees of Congress on—

(1) the status of the programs described in subsection (a); and

(2) the manner by which each NASA STEM education engagement activity is organized and funded.

(d) STEM EDUCATION DEFINED.—In this section, the term “STEM education” has the meaning given the term in section 2 of the STEM Education Act of 2015 (Public Law 114–59; 42 U.S.C. 6621 note).
SEC. 663. SKILLED TECHNICAL EDUCATION OUTREACH PROGRAM.

(a) Establishment.—The Administrator shall establish a program to conduct outreach to secondary school students—

(1) to expose students to careers that require career and technical education; and

(2) to encourage students to pursue careers that require career and technical education.

(b) Outreach Plan.—Not later than 180 days after the date of the enactment of this Act, the Administrator shall submit to the appropriate committees of Congress a report on the outreach program under subsection (a) that includes—

(1) an implementation plan;

(2) a description of the resources needed to carry out the program; and

(3) any recommendations on expanding outreach to secondary school students interested in skilled technical occupations.

(c) Systems Observation.—

(1) In general.—The Administrator shall develop a program and associated policies to allow students from accredited educational institutions to view the manufacturing, assembly, and testing of NASA-
funded space and aeronautical systems, as the Administrator considers appropriate.

(2) CONSIDERATIONS.—In developing the program and policies under paragraph (1), the Administrator shall take into consideration factors such as workplace safety, mission needs, and the protection of sensitive and proprietary technologies.

SEC. 664. NATIONAL SPACE GRANT COLLEGE AND FELLOWSHIP PROGRAM.

(a) PURPOSES.—Section 40301 of title 51, United States Code, is amended—

(1) in paragraph (3)—

(A) in subparagraph (B), by striking “and” at the end;

(B) in subparagraph (C), by adding “and” after the semicolon at the end; and

(C) by adding at the end the following:

“(D) promote equally the State and regional STEM interests of each space grant consortium;”; and

(2) in paragraph (4), by striking “made up of university and industry members, in order to advance” and inserting “comprised of members of universities in each State and other entities, such as 2-
year colleges, industries, science learning centers, museums, and government entities, to advance”.

(b) DEFINITIONS.—Section 40302 of title 51, United States Code, is amended—

(1) by striking paragraph (3);

(2) by inserting after paragraph (2) the following:

“(3) LEAD INSTITUTION.—The term ‘lead institution’ means an entity in a State that—

“(A) was designated by the Administrator under section 40306, as in effect on the day before the date of the enactment of the National Aeronautics and Space Administration Authorization Act of 2021; or

“(B) is designated by the Administrator under section 40303(d)(3).”;

(3) in paragraph (4), by striking “space grant college, space grant regional consortium, institution of higher education,” and inserting “lead institution, space grant consortium,”;

(4) by striking paragraphs (6), (7), and (8);

(5) by inserting after paragraph (5) the following:

“(6) SPACE GRANT CONSORTIUM.—The term ‘space grant consortium’ means a State-wide group,
led by a lead institution, that has established partnerships with other academic institutions, industries, science learning centers, museums, and government entities to promote a strong educational base in the space and aeronautical sciences.”;

(6) by redesignating paragraph (9) as paragraph (7);

(7) in paragraph (7)(B), as so redesignated, by inserting “and aeronautics” after “space”;

(8) by striking paragraph (10); and

(9) by adding at the end the following:

“(8) STEM.—The term ‘STEM’ means science, technology, engineering, and mathematics.”.

(c) PROGRAM OBJECTIVE.—Section 40303 of title 51, United States Code, is amended—

(1) by striking subsections (d) and (e);

(2) by redesignating subsection (c) as subsection (e); and

(3) by striking subsection (b) and inserting the following:

“(b) PROGRAM OBJECTIVE.—

“(1) IN GENERAL.—The Administrator shall carry out the national space grant college and fellowship program with the objective of providing hands-on research, training, and education programs with
measurable outcomes in each State, including pro-
grams to provide—

“(A) internships, fellowships, and scholar-
ships;

“(B) interdisciplinary hands-on mission
programs and design projects;

“(C) student internships with industry or
university researchers or at centers of the Ad-
ministration;

“(D) faculty and curriculum development
initiatives;

“(E) university-based research initiatives
relating to the Administration and the STEM
workforce needs of each State; or

“(F) STEM engagement programs for kin-
dergarten through grade 12 teachers and stu-
dents.

“(2) PROGRAM PRIORITIES.—In carrying out the
objective described in paragraph (1), the Adminis-
trator shall ensure that each program carried out by
a space grant consortium under the national space
grant college and fellowship program balances the fol-
lowing priorities:
“(A) The space and aeronautics research needs of the Administration, including the mission directorates.

“(B) The need to develop a national STEM workforce.

“(C) The STEM workforce needs of the State.

“(c) Program Administered Through Space Grant Consortia.—The Administrator shall carry out the national space grant college and fellowship program through the space grant consortia.

“(d) Suspension; Termination; New Competition.—

“(1) Suspension.—The Administrator may, for cause and after an opportunity for hearing, suspend a lead institution that was designated by the Administrator under section 40306, as in effect on the day before the date of the enactment of the National Aeronautics and Space Administration Authorization Act of 2021.

“(2) Termination.—If the issue resulting in a suspension under paragraph (1) is not resolved within a period determined by the Administrator, the Administrator may terminate the designation of the entity as a lead institution.
“(3) NEW COMPETITION.—If the Administrator terminates the designation of an entity as a lead institution, the Administrator may initiate a new competition in the applicable State for the designation of a lead institution.”.

(d) GRANTS.—Section 40304 of title 51, United States Code, is amended to read as follows:

“§ 40304. Grants

“(a) ELIGIBLE SPACE GRANT CONSORTIUM DEFINED.—In this section, the term ‘eligible space grant consortium’ means a space grant consortium that the Administrator has determined—

“(1) has the capability and objective to carry out not fewer than 3 of the 6 programs under section 40303(b)(1);

“(2) will carry out programs that balance the priorities described in section 40303(b)(2); and

“(3) is engaged in research, training, and education relating to space and aeronautics.

“(b) GRANTS.—

“(1) IN GENERAL.—The Administrator shall award grants to the lead institutions of eligible space grant consortia to carry out the programs under section 40303(b)(1).

“(2) REQUEST FOR PROPOSALS.—
“(A) IN GENERAL.—On the expiration of existing cooperative agreements between the Administration and the space grant consortia, the Administrator shall issue a request for proposals from space grant consortia for the award of grants under this section.

“(B) APPLICATIONS.—A lead institution of a space grant consortium that seeks a grant under this section shall submit, on behalf of such space grant consortium, an application to the Administrator at such time, in such manner, and accompanied by such information as the Administrator may require.

“(3) GRANT AWARDS.—The Administrator shall award 1 or more 5-year grants, disbursed in annual installments, to the lead institution of the eligible space grant consortium of—

“(A) each State;

“(B) the District of Columbia; and

“(C) the Commonwealth of Puerto Rico.

“(4) USE OF FUNDS.—A grant awarded under this section shall be used by an eligible space grant consortium to carry out not fewer than 3 of the 6 programs under section 40303(b)(1).

“(c) ALLOCATION OF FUNDING.—
“(1) PROGRAM IMPLEMENTATION.—

“(A) IN GENERAL.—To carry out the objective described in section 40303(b)(1), of the funds made available each fiscal year for the national space grant college and fellowship program, the Administrator shall allocate not less than 85 percent as follows:

“(i) The 52 eligible space grant consortia shall each receive an equal share.

“(ii) The territories of Guam and the United States Virgin Islands shall each receive funds equal to approximately 1⁄5 of the share for each eligible space grant consortia.

“(B) MATCHING REQUIREMENT.—Each eligible space grant consortium shall match the funds allocated under subparagraph (A)(i) on a basis of not less than 1 non-Federal dollar for every 1 Federal dollar, except that any program funded under paragraph (3) or any program to carry out 1 or more internships or fellowships shall not be subject to that matching requirement.

“(2) PROGRAM ADMINISTRATION.—

“(A) IN GENERAL.—Of the funds made available each fiscal year for the national space
grant college and fellowship program, the Administrator shall allocate not more than 10 percent for the administration of the program.

“(B) COSTS COVERED.—The funds allocated under subparagraph (A) shall cover all costs of the Administration associated with the administration of the national space grant college and fellowship program, including—

“(i) direct costs of the program, including costs relating to support services and civil service salaries and benefits;

“(ii) indirect general and administrative costs of centers and facilities of the Administration; and

“(iii) indirect general and administrative costs of the Administration headquarters.

“(3) SPECIAL PROGRAMS.—Of the funds made available each fiscal year for the national space grant college and fellowship program, the Administrator shall allocate not more than 5 percent to the lead institutions of space grant consortia established as of the date of the enactment of the National Aeronautics and Space Administration Authorization Act of 2021 for grants to carry out innovative approaches and
programs to further science and education relating to the missions of the Administration and STEM disciplines.

“(d) TERMS AND CONDITIONS.—

“(1) LIMITATIONS.—Amounts made available through a grant under this section may not be applied to—

“(A) the purchase of land;

“(B) the purchase, construction, preservation, or repair of a building; or

“(C) the purchase or construction of a launch facility or launch vehicle.

“(2) LEASES.—Notwithstanding paragraph (1), land, buildings, launch facilities, and launch vehicles may be leased under a grant on written approval by the Administrator.

“(3) RECORDS.—

“(A) IN GENERAL.—Any person that receives or uses the proceeds of a grant under this section shall keep such records as the Administrator shall by regulation prescribe as being necessary and appropriate to facilitate effective audit and evaluation, including records that fully disclose the amount and disposition by a recipient of such proceeds, the total cost of the...
program or project in connection with which such proceeds were used, and the amount, if any, of such cost that was provided through other sources.

“(B) MAINTENANCE OF RECORDS.—Records under subparagraph (A) shall be maintained for not less than 3 years after the date of completion of such a program or project.

“(C) ACCESS.—For the purpose of audit and evaluation, the Administrator and the Comptroller General of the United States shall have access to any books, documents, papers, and records of receipts relating to a grant under this section, as determined by the Administrator or Comptroller General.”.

(e) PROGRAM STREAMLINING.—Title 51, United States Code, is amended—

(1) by striking sections 40305 through 40308, 40310, and 40311; and

(2) by redesignating section 40309 as section 40305.

(f) CONFORMING AMENDMENT.—The table of sections at the beginning of chapter 403 of title 51, United States Code, is amended by striking the items relating to sections 40304 through 40311 and inserting the following:
PART VII—WORKFORCE AND INDUSTRIAL BASE

SEC. 665. APPOINTMENT AND COMPENSATION PILOT PROGRAM.

(a) DEFINITION OF COVERED PROVISIONS.—In this section, the term “covered provisions” means the provisions of title 5, United States Code, other than—

(1) section 2301 of that title;

(2) section 2302 of that title;

(3) chapter 71 of that title;

(4) section 7204 of that title; and

(5) chapter 73 of that title.

(b) ESTABLISHMENT.—There is established a 3-year pilot program under which, notwithstanding section 20113 of title 51, United States Code, the Administrator may, with respect to not more than 3,000 designated personnel—

(1) appoint and manage such designated personnel of the Administration, without regard to the covered provisions; and

(2) fix the compensation of such designated personnel of the Administration, without regard to chapter 51 and subchapter III of chapter 53 of title 5, United States Code, at a rate that does not exceed the per annum rate of salary of the Vice President of the
United States under section 104 of title 3, United States Code.

(c) ADMINISTRATOR RESPONSIBILITIES.—In carrying out the pilot program established under subsection (b), the Administrator shall ensure that the pilot program—

(1) uses—

(A) state-of-the-art recruitment techniques;

(B) simplified classification methods with respect to personnel of the Administration; and

(C) broad banding; and

(2) offers—

(A) competitive compensation; and

(B) the opportunity for career mobility.

SEC. 666. ESTABLISHMENT OF MULTI-INSTITUTION CONSORTIA.

(a) In General.—The Administrator, pursuant to section 2304(c)(3)(B) of title 10, United States Code, may—

(1) establish one or more multi-institution consortia to facilitate access to essential engineering, research, and development capabilities in support of NASA missions;

(2) use such a consortium to fund technical analyses and other engineering support to address the ac-
quisition, technical, and operational needs of NASA centers; and

(3) ensure such a consortium—

(A) is held accountable for the technical quality of the work product developed under this section; and

(B) convenes disparate groups to facilitate public-private partnerships.

(b) POLICIES AND PROCEDURES.—The Administrator shall develop and implement policies and procedures to govern, with respect to the establishment of a consortium under subsection (a)—

(1) the selection of participants;

(2) the award of cooperative agreements or other contracts;

(3) the appropriate use of competitive awards and sole source awards; and

(4) technical capabilities required.

(c) ELIGIBILITY.—The following entities shall be eligible to participate in a consortium established under subsection (a):

(1) An institution of higher education (as defined in section 102 of the Higher Education Act of 1965 (20 U.S.C. 1002)).
(2) An operator of a federally funded research and development center.

(3) A nonprofit or not-for-profit research institution.

(4) A consortium composed of—

(A) an entity described in paragraph (1), (2), or (3); and

(B) one or more for-profit entities.

SEC. 667. EXPEDITED ACCESS TO TECHNICAL TALENT AND EXPERTISE.

(a) IN GENERAL.—The Administrator may—

(1) establish one or more multi-institution task order contracts, consortia, cooperative agreements, or other arrangements to facilitate expedited access to eligible entities in support of NASA missions; and

(2) use such a multi-institution task order contract, consortium, cooperative agreement, or other arrangement to fund technical analyses and other engineering support to address the acquisition, technical, and operational needs of NASA centers.

(b) CONSULTATION WITH OTHER NASA-AFFILIATED ENTITIES.—To ensure access to technical expertise and reduce costs and duplicative efforts, a multi-institution task order contract, consortium, cooperative agreement, or any other arrangement established under subsection (a)(1) shall,
to the maximum extent practicable, be carried out in consultation with other NASA-affiliated entities, including federally funded research and development centers, university-affiliated research centers, and NASA laboratories and test centers.

(c) **Policies and Procedures.**—The Administrator shall develop and implement policies and procedures to govern, with respect to the establishment of a multi-institution task order contract, consortium, cooperative agreement, or any other arrangement under subsection (a)(1)—

(1) the selection of participants;

(2) the award of task orders;

(3) the maximum award size for a task;

(4) the appropriate use of competitive awards and sole source awards; and

(5) technical capabilities required.

(d) **Eligible Entity Defined.**—In this section, the term “eligible entity” means—

(1) an institution of higher education (as defined in section 102 of the Higher Education Act of 1965 (20 U.S.C. 1002));

(2) an operator of a federally funded research and development center;

(3) a nonprofit or not-for-profit research institution; and
SEC. 668. REPORT ON INDUSTRIAL BASE FOR CIVIL SPACE MISSIONS AND OPERATIONS.

(a) IN GENERAL.—Not later than 1 year after the date of the enactment of this Act, and from time to time thereafter, the Administrator shall submit to the appropriate committees of Congress a report on the United States industrial base for NASA civil space missions and operations.

(b) ELEMENTS.—The report required by subsection (a) shall include the following:

(1) A comprehensive description of the current status of the United States industrial base for NASA civil space missions and operations.

(2) A description and assessment of the weaknesses in the supply chain, skills, manufacturing capacity, raw materials, key components, and other areas of the United States industrial base for NASA civil space missions and operations that could adversely impact such missions and operations if unavailable.
(3) A description and assessment of various mechanisms to address and mitigate the weaknesses described pursuant to paragraph (2).

(4) A comprehensive list of the collaborative efforts, including future and proposed collaborative efforts, between NASA and the Manufacturing USA institutes of the Department of Commerce.

(5) An assessment of—

(A) the defense and aerospace manufacturing supply chains relevant to NASA in each region of the United States; and

(B) the feasibility and benefits of establishing a supply chain center of excellence in a State in which NASA does not, as of the date of the enactment of this Act, have a research center or test facility.

(6) Such other matters relating to the United States industrial base for NASA civil space missions and operations as the Administrator considers appropriate.

SEC. 669. SEPARATIONS AND RETIREMENT INCENTIVES.

Section 20113 of title 51, United States Code, is amended by adding at the end the following:

“(o) Provisions Related to Separation and Retirement Incentives.—

...
“(1) DEFINITION.—In this subsection, the term ‘employee’—

“(A) means an employee of the Administration serving under an appointment without time limitation; and

“(B) does not include—

“(i) a reemployed annuitant under subchapter III of chapter 83 or chapter 84 of title 5 or any other retirement system for employees of the Federal Government;

“(ii) an employee having a disability on the basis of which such employee is or would be eligible for disability retirement under any of the retirement systems referred to in clause (i); or

“(iii) for purposes of eligibility for separation incentives under this subsection, an employee who is in receipt of a decision notice of involuntary separation for misconduct or unacceptable performance.

“(2) AUTHORITY.—The Administrator may establish a program under which employees may be eligible for early retirement, offered separation incentive pay to separate from service voluntarily, or both. This authority may be used to reduce the number of per-
sonnel employed or to restructure the workforce to meet mission objectives without reducing the overall number of personnel. This authority is in addition to, and notwithstanding, any other authorities established by law or regulation for such programs.

“(3) EARLY RETIREMENT.—An employee who is at least 50 years of age and has completed 20 years of service, or has at least 25 years of service, may, pursuant to regulations promulgated under this subsection, apply and be retired from the Administration and receive benefits in accordance with subchapter III of chapter 83 or 84 of title 5 if the employee has been employed continuously within the Administration for more than 30 days before the date on which the determination to conduct a reduction or restructuring within 1 or more Administration centers is approved.

“(4) SEPARATION PAY.—

“(A) IN GENERAL.—Separation pay shall be paid in a lump sum or in installments and shall be equal to the lesser of—

“(i) an amount equal to the amount the employee would be entitled to receive under section 5595(c) of title 5, if the employee were entitled to payment under such section; or
"(ii) $40,000.

"(B) LIMITATIONS.—Separation pay shall not be a basis for payment, and shall not be included in the computation, of any other type of Government benefit. Separation pay shall not be taken into account for the purpose of determining the amount of any severance pay to which an individual may be entitled under section 5595 of title 5, based on any other separation.

"(C) INSTALLMENTS.—Separation pay, if paid in installments, shall cease to be paid upon the recipient’s acceptance of employment by the Federal Government, or commencement of work under a personal services contract as described in paragraph (5).

"(5) LIMITATIONS ON REEMPLOYMENT.—

"(A) An employee who receives separation pay under such program may not be reemployed by the Administration for a 12-month period beginning on the effective date of the employee’s separation, unless this prohibition is waived by the Administrator on a case-by-case basis.

"(B) An employee who receives separation pay under this section on the basis of a separa-
tion and accepts employment with the Government of the United States, or who commences work through a personal services contract with the United States within 5 years after the date of the separation on which payment of the separation pay is based, shall be required to repay the entire amount of the separation pay to the Administration. If the employment is with an Executive agency (as defined by section 105 of title 5) other than the Administration, the Administrator may, at the request of the head of that agency, waive the repayment if the individual involved possesses unique abilities and is the only qualified applicant available for the position. If the employment is within the Administration, the Administrator may waive the repayment if the individual involved is the only qualified applicant available for the position. If the employment is with an entity in the legislative branch, the head of the entity or the appointing official may waive the repayment if the individual involved possesses unique abilities and is the only qualified applicant available for the position. If the employment is with the judicial branch, the Director of the Administrative Office
of the United States Courts may waive the repayment if the individual involved possesses unique abilities and is the only qualified applicant available for the position.

“(6) Regulations.—Under the program established under paragraph (2), early retirement and separation pay may be offered only pursuant to regulations established by the Administrator, subject to such limitations or conditions as the Administrator may require.

“(7) Use of Existing Funds.—The Administrator shall carry out this subsection using amounts otherwise made available to the Administrator and no additional funds are authorized to be appropriated to carry out this subsection.”.

SEC. 670. CONFIDENTIALITY OF MEDICAL QUALITY ASSURANCE RECORDS.

(a) In General.—Chapter 313 of title 51, United States Code, is amended by adding at the end the following:

“§ 31303. Confidentiality of medical quality assurance records

“(a) In General.—Except as provided in subsection (b)(1)—

“(1) a medical quality assurance record, or any part of a medical quality assurance record, may not
be subject to discovery or admitted into evidence in a judicial or administrative proceeding; and

“(2) an individual who reviews or creates a medical quality assurance record for the Administration, or participates in any proceeding that reviews or creates a medical quality assurance record, may not testify in a judicial or administrative proceeding with respect to—

“(A) the medical quality assurance record; or

“(B) any finding, recommendation, evaluation, opinion, or action taken by such individual or in accordance with such proceeding with respect to the medical quality assurance record.

“(b) DISCLOSURE OF RECORDS.—

“(1) IN GENERAL.—Notwithstanding subsection (a), a medical quality assurance record may be disclosed to—

“(A) a Federal agency or private entity, if the medical quality assurance record is necessary for the Federal agency or private entity to carry out—

“(i) licensing or accreditation functions relating to Administration healthcare facilities; or
“(ii) monitoring of Administration healthcare facilities required by law;

“(B) a Federal agency or healthcare provider, if the medical quality assurance record is required by the Federal agency or healthcare provider to enable Administration participation in a healthcare program of the Federal agency or healthcare provider;

“(C) a criminal or civil law enforcement agency, or an instrumentality authorized by law to protect the public health or safety, on written request by a qualified representative of such agency or instrumentality submitted to the Administrator that includes a description of the lawful purpose for which the medical quality assurance record is requested;

“(D) an officer, an employee, or a contractor of the Administration who requires the medical quality assurance record to carry out an official duty associated with healthcare;

“(E) healthcare personnel, to the extent necessary to address a medical emergency affecting the health or safety of an individual; and

“(F) any committee, panel, or board convened by the Administration to review the
healthcare-related policies and practices of the
Administration.

“(2) SUBSEQUENT DISCLOSURE PROHIBITED.—
An individual or entity to whom a medical quality
assurance record has been disclosed under paragraph
(1) may not make a subsequent disclosure of the med-
ical quality assurance record.

“(c) PERSONALLY IDENTIFIABLE INFORMATION.—

“(1) IN GENERAL.—Except as provided in para-
graph (2), the personally identifiable information
contained in a medical quality assurance record of a
patient or an employee of the Administration, or any
other individual associated with the Administration
for purposes of a medical quality assurance program,
shall be removed before the disclosure of the medical
quality assurance record to an entity other than the
Administration.

“(2) EXCEPTION.— Personally identifiable infor-
mation described in paragraph (1) may be released to
an entity other than the Administration if the Ad-
ministrator makes a determination that the release of
such personally identifiable information—

“(A) is in the best interests of the Adminis-
tration; and
“(B) does not constitute an unwarranted invasion of personal privacy.

“(d) EXCLUSION FROM FOIA.—A medical quality assurance record may not be made available to any person under section 552 of title 5, United States Code (commonly referred to as the ‘Freedom of Information Act’), and this section shall be considered a statute described in subsection (b)(3)(B) of such section 522.

“(e) REGULATIONS.—Not later than one year after the date of the enactment of this section, the Administrator shall promulgate regulations to implement this section.

“(f) RULES OF CONSTRUCTION.—Nothing in this section shall be construed—

“(1) to withhold a medical quality assurance record from a committee of the Senate or House of Representatives or a joint committee of Congress if the medical quality assurance record relates to a matter within the jurisdiction of such committee or joint committee; or

“(2) to limit the use of a medical quality assurance record within the Administration, including the use by a contractor or consultant of the Administration.

“(g) DEFINITIONS.—In this section:
“(1) MEDICAL QUALITY ASSURANCE RECORD.—

The term ‘medical quality assurance record’ means any proceeding, discussion, record, finding, recommendation, evaluation, opinion, minutes, report, or other document or action that results from a quality assurance committee, quality assurance program, or quality assurance program activity.

“(2) QUALITY ASSURANCE PROGRAM.—

“(A) IN GENERAL.—The term ‘quality assurance program’ means a comprehensive program of the Administration—

“(i) to systematically review and improve the quality of medical and behavioral health services provided by the Administration to ensure the safety and security of individuals receiving such health services; and

“(ii) to evaluate and improve the efficiency, effectiveness, and use of staff and resources in the delivery of such health services.

“(B) INCLUSION.—The term ‘quality assurance program’ includes any activity carried out by or for the Administration to assess the quality of medical care provided by the Administration.”.
(b) **TECHNICAL AND CONFORMING AMENDMENT.**—The table of sections for chapter 313 of title 51, United States Code, is amended by adding at the end the following:

"31303. Confidentiality of medical quality assurance records."

PART VIII—MISCELLANEOUS PROVISIONS

SEC. 671. CONTRACTING AUTHORITY.

Section 20113 of title 51, United States Code, is amended by adding at the end the following:

"(o) **CONTRACTING AUTHORITY.**—The Administration—

"(1) may enter into an agreement with a private, commercial, or State government entity to provide the entity with supplies, support, and services related to private, commercial, or State government space activities carried out at a property owned or operated by the Administration; and

"(2) upon the request of such an entity, may include such supplies, support, and services in the requirements of the Administration if—

"(A) the Administrator determines that the inclusion of such supplies, support, or services in such requirements—

"(i) is in the best interest of the Federal Government;

"(ii) does not interfere with the requirements of the Administration; and
“(iii) does not compete with the commercial space activities of other such entities; and

“(B) the Administration has full reimbursable funding from the entity that requested supplies, support, and services prior to making any obligation for the delivery of such supplies, support, or services under an Administration procurement contract or any other agreement.”.

SEC. 672. AUTHORITY FOR TRANSACTION PROTOTYPE PROJECTS AND FOLLOW-ON PRODUCTION CONTRACTS.

Section 20113 of title 51, United States Code, as amended by section 671, is further amended by adding at the end the following:

“(p) TRANSACTION PROTOTYPE PROJECTS AND FOLLOW-ON PRODUCTION CONTRACTS.—

“(1) IN GENERAL.—The Administration may enter into a transaction (other than a contract, cooperative agreement, or grant) to carry out a prototype project that is directly relevant to enhancing the mission effectiveness of the Administration.

“(2) SUBSEQUENT AWARD OF FOLLOW-ON PRODUCTION CONTRACT.—A transaction entered into under this subsection for a prototype project may pro-

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vide for the subsequent award of a follow-on production contract to participants in the transaction.

“(3) INCLUSION.—A transaction under this subsection includes a project awarded to an individual participant and to all individual projects awarded to a consortium of United States industry and academic institutions.

“(4) DETERMINATION.—The authority of this section may be exercised for a transaction for a prototype project and any follow-on production contract, upon a determination by the head of the contracting activity, in accordance with Administration policies, that—

“(A) circumstances justify use of a transaction to provide an innovative business arrangement that would not be feasible or appropriate under a contract; and

“(B) the use of the authority of this section is essential to promoting the success of the prototype project.

“(5) COMPETITIVE PROCEDURE.—

“(A) IN GENERAL.—To the maximum extent practicable, the Administrator shall use competitive procedures with respect to entering
into a transaction to carry out a prototype project.

“(B) EXCEPTION.—Notwithstanding section 2304 of title 10, United States Code, a follow-on production contract may be awarded to the participants in the prototype transaction without the use of competitive procedures, if—

“(i) competitive procedures were used for the selection of parties for participation in the prototype transaction; and

“(ii) the participants in the transaction successfully completed the prototype project provided for in the transaction.

“(6) COST SHARE.—A transaction to carry out a prototype project and a follow-on production contract may require that part of the total cost of the transaction or contract be paid by the participant or contractor from a source other than the Federal Government.

“(7) PROCUREMENT ETHICS.—A transaction under this authority shall be considered an agency procurement for purposes of chapter 21 of title 41, United States Code, with regard to procurement ethics.”.
SEC. 673. PROTECTION OF DATA AND INFORMATION FROM PUBLIC DISCLOSURE.

(a) Certain Technical Data.—Section 20131 of title 51, United States Code, is amended—

(1) by redesignating subsection (c) as subsection (d);

(2) in subsection (a)(3), by striking “subsection (b)” and inserting “subsection (b) or (c)”;

(3) by inserting after subsection (b) the following:

“(c) Special Handling of Certain Technical Data.—

“(1) In General.—The Administrator may provide appropriate protections against the public dissemination of certain technical data, including exemption from subchapter II of chapter 5 of title 5.

“(2) Definitions.—In this subsection:

“(A) Certain Technical Data.—The term ‘certain technical data’ means technical data that may not be exported lawfully outside the United States without approval, authorization, or license under—

“(i) the Export Control Reform Act of 2018 (Public Law 115–232; 132 Stat. 2208); or

“(B) TECHNICAL DATA.—The term ‘technical data’ means any blueprint, drawing, photograph, plan, instruction, computer software, or documentation, or any other technical information.”;

(4) in subsection (d), as so redesignated, by inserting “, including any data,” after “information”;

and

(5) by adding at the end the following:

“(e) EXCLUSION FROM FOIA.—This shall be considered a statute described in subsection (b)(3)(B) of title 5 (commonly referred to as the ‘Freedom of Information Act’).”.

(b) CERTAIN VOLUNTARILY PROVIDED SAFETY-RELATED INFORMATION.—

(1) IN GENERAL.—The Administrator shall provide appropriate safeguards against the public dissemination of safety-related information collected as part of a mishap investigation carried out under the NASA safety reporting system or in conjunction with an organizational safety assessment, if the Adminis-
trator makes a written determination, including a justification of the determination, that—

(A)(i) disclosure of the information would inhibit individuals from voluntarily providing safety-related information; and

(ii) the ability of NASA to collect such information improves the safety of NASA programs and research relating to aeronautics and space; or

(B) withholding such information from public disclosure improves the safety of such NASA programs and research.

(2) OTHER FEDERAL AGENCIES.—Notwithstanding any other provision of law, if the Administrator provides to the head of another Federal agency safety-related information with respect to which the Administrator has made a determination under paragraph (1), the head of the Federal agency shall withhold the information from public disclosure.

(3) PUBLIC AVAILABILITY.—A determination or part of a determination under paragraph (1) shall be made available to the public on request, as required under 552 of title 5, United States Code (commonly referred to as the “Freedom of Information Act”).
(4) Exclusion from FOIA.—This subsection shall be considered a statute described in subsection (b)(3)(B) of section 552 of title 5, United States Code.

SEC. 674. PHYSICAL SECURITY MODERNIZATION.

Chapter 201 of title 51, United States Code, is amended—

(1) in section 20133(2), by striking “property” and all that follows through “to the United States,” and inserting “Administration personnel or of property owned or leased by, or under the control of, the United States”; and

(2) in section 20134, in the second sentence—

(A) by inserting “Administration personnel or any” after “protecting”; and

(B) by striking “, at facilities owned or contracted to the Administration”.

SEC. 675. LEASE OF NON-EXCESS PROPERTY.

Section 20145 of title 51, United States Code, is amended—

(1) in subsection (b)(1)(B), by striking “entered into for the purpose of developing renewable energy production facilities”; and

(2) in subsection (g), in the first sentence, by striking “December 31, 2021” and inserting “December 31, 2025”.
SEC. 676. CYBERSECURITY.

(a) In General.—Section 20301 of title 51, United States Code, is amended by adding at the end the following:

“(c) Cybersecurity.—The Administrator shall update and improve the cybersecurity of NASA space assets and supporting infrastructure.”.

(b) Security Operations Center.—

(1) Establishment.—The Administrator shall maintain a Security Operations Center, to identify and respond to cybersecurity threats to NASA information technology systems, including institutional systems and mission systems.

(2) Inspector General Recommendations.—


(c) Cyber Threat Hunt.—

(1) In General.—The Administrator, in coordination with the Secretary of Homeland Security and the heads of other relevant Federal agencies, may implement a cyber threat hunt capability to proactively search NASA information systems for advanced cyber threats that otherwise evade existing security tools.
(2) Threat-hunting Process.—In carrying out paragraph (1), the Administrator shall develop and document a threat-hunting process, including the roles and responsibilities of individuals conducting a cyber threat hunt.

(d) GAO Priority Recommendations.—The Administrator shall implement, to the maximum extent practicable, the recommendations for NASA contained in the report of the Comptroller General of the United States entitled “Information Security: Agencies Need to Improve Controls over Selected High-Impact Systems”, issued May 18, 2016, including—

(1) re-evaluating security control assessments; and

(2) specifying metrics for the continuous monitoring strategy of the Administration.

SEC. 677. LIMITATION ON COOPERATION WITH THE PEOPLE’S REPUBLIC OF CHINA.

(a) In General.—Except as provided by subsection (b), the Administrator, the Director of the OSTP, and the Chair of the National Space Council, shall not—

(1) develop, design, plan, promulgate, implement, or execute a bilateral policy, program, order, or contract of any kind to participate, collaborate, or coordinate bilaterally in any manner with—
(A) the Government of the People’s Republic of China; or

(B) any company—

(i) owned by the Government of the People’s Republic of China; or

(ii) incorporated under the laws of the People’s Republic of China; and

(2) host official visitors from the People’s Republic of China at a facility belonging to or used by NASA.

(b) WAIVER.—

(1) IN GENERAL.—The Administrator, the Director, or the Chair may waive the limitation under subsection (a) with respect to an activity described in that subsection only if the Administrator, the Director, or the Chair, as applicable, makes a determination that the activity—

(A) does not pose a risk of a transfer of technology, data, or other information with national security or economic security implications to an entity described in paragraph (1) of such subsection; and

(B) does not involve knowing interactions with officials who have been determined by the
United States to have direct involvement with violations of human rights.

(2) Certification to Congress.—Not later than 30 days after the date on which a waiver is granted under paragraph (1), the Administrator, the Director, or the Chair, as applicable, shall submit to the Committee on Commerce, Science, and Transportation and the Committee on Appropriations of the Senate and the Committee on Science, Space, and Technology and the Committee on Appropriations of the House of Representatives a written certification that the activity complies with the requirements in subparagraphs (A) and (B) of that paragraph.

(c) GAO Review.—

(1) In general.—The Comptroller General of the United States shall conduct a review of NASA contracts that may subject the Administration to unacceptable transfers of intellectual property or technology to any entity—

(A) owned or controlled (in whole or in part) by, or otherwise affiliated with, the Government of the People’s Republic of China; or

(B) organized under, or otherwise subject to, the laws of the People’s Republic of China.
(2) ELEMENTS.—The review required under paragraph (1) shall assess—

(A) whether the Administrator is aware—

(i) of any NASA contractor that benefits from significant financial assistance from—

(I) the Government of the People’s Republic of China;

(II) any entity controlled by the Government of the People’s Republic of China; or

(III) any other governmental entity of the People’s Republic of China; and

(ii) that the Government of the People’s Republic of China, or an entity controlled by the Government of the People’s Republic of China, may be—

(I) leveraging United States companies that share ownership with NASA contractors; or

(II) obtaining intellectual property or technology illicitly or by other unacceptable means; and
(B) the steps the Administrator is taking to ensure that—

(i) NASA contractors are not being leveraged (directly or indirectly) by the Government of the People’s Republic of China or by an entity controlled by the Government of the People’s Republic of China;

(ii) the intellectual property and technology of NASA contractors are adequately protected; and

(iii) NASA flight-critical components are not sourced from the People’s Republic of China through any entity benefitting from Chinese investments, loans, or other assistance.

(3) RECOMMENDATIONS.—The Comptroller General shall provide to the Administrator recommendations for future NASA contracting based on the results of the review.

(4) PLAN.—Not later than 180 days after the date on which the Comptroller General completes the review, the Administrator shall—

(A) develop a plan to implement the recommendations of the Comptroller General; and
(B) submit the plan to the appropriate committees of Congress.

(d) TERMINATION.—The limitation under subsection (a) shall cease to have effect on the date that is 10 years after the date of the enactment of this Act.

SEC. 678. CONSIDERATION OF ISSUES RELATED TO CONTRACTING WITH ENTITIES RECEIVING ASSISTANCE FROM OR AFFILIATED WITH THE PEOPLE'S REPUBLIC OF CHINA.

(a) IN GENERAL.—With respect to a matter in response to a request for proposal or a broad area announcement by the Administrator, or award of any contract, agreement, or other transaction with the Administrator, a commercial or noncommercial entity shall certify that it is not majority owned or controlled (as defined in section 800.208 of title 31, Code of Federal Regulations), or minority owned greater than 25 percent, by—

(1) any governmental organization of the People’s Republic of China; or

(2) any other entity that is—

(A) known to be owned or controlled by any governmental organization of the People’s Republic of China; or

(B) organized under, or otherwise subject to, the laws of the People’s Republic of China.
(b) False Statements.—

(1) in General.—A false statement contained in a certification under subsection (a) constitutes a false or fraudulent claim for purposes of chapter 47 of title 18, United States Code.

(2) Action under Federal Acquisition Regulation.—Any party convicted for making a false statement with respect to a certification under subsection (a) shall be subject to debarment from contracting with the Administrator for a period of not less than 1 year, as determined by the Administrator, in addition to other appropriate action in accordance with the Federal Acquisition Regulation maintained under section 1303(a)(1) of title 41, United States Code.

(c) Annual Report.—The Administrator shall submit to the appropriate committees of Congress an annual report detailing any violation of this section.

SEC. 679. SMALL SATELLITE LAUNCH SERVICES PROGRAM.

(a) In General.—The Administrator shall continue to procure dedicated launch services, including from small and venture class launch providers, for small satellites, including CubeSats, for the purpose of conducting science and technology missions that further the goals of NASA.
(b) REQUIREMENTS.—In carrying out the program under subsection (a), the Administrator shall engage with the academic community to maximize awareness and use of dedicated small satellite launch opportunities.

(c) RULE OF CONSTRUCTION.—Nothing in this section shall prevent the Administrator from continuing to use a secondary payload of procured launch services for CubeSats.

SEC. 680. 21ST CENTURY SPACE LAUNCH INFRASTRUCTURE.

(a) IN GENERAL.—The Administrator shall carry out a program to modernize multi-user launch infrastructure at NASA facilities—

(1) to enhance safety; and

(2) to advance Government and commercial space transportation and exploration.

(b) PROJECTS.—Projects funded under the program under subsection (a) may include—

(1) infrastructure relating to commodities;

(2) standard interfaces to meet customer needs for multiple payload processing and launch vehicle processing;

(3) enhancements to range capacity and flexibility; and

(4) such other projects as the Administrator considers appropriate to meet the goals described in subsection (a).
(c) REQUIREMENTS.—In carrying out the program under subsection (a), the Administrator shall—

(1) identify and prioritize investments in projects that can be used by multiple users and launch vehicles, including non-NASA users and launch vehicles; and

(2) limit investments to projects that would not otherwise be funded by a NASA program, such as an institutional or programmatic infrastructure program.

(d) RULE OF CONSTRUCTION.—Nothing in this section shall preclude a NASA program, including the Space Launch System and Orion, from using the launch infrastructure modernized under this section.

SEC. 681. MISSIONS OF NATIONAL NEED.

(a) SENSE OF CONGRESS.—It is the Sense of Congress that—

(1) while certain space missions, such as asteroid detection or space debris mitigation or removal missions, may not provide the highest-value science, as determined by the National Academies of Science, Engineering, and Medicine decadal surveys, such missions provide tremendous value to the United States and the world; and
(2) the current organizational and funding structure of NASA has not prioritized the funding of missions of national need.

(b) STUDY.—

(1) IN GENERAL.—The Director of the OSTP shall conduct a study on the manner in which NASA funds missions of national need.

(2) MATTERS TO BE INCLUDED.—The study conducted under paragraph (1) shall include the following:

(A) An identification and assessment of the types of missions or technology development programs that constitute missions of national need.

(B) An assessment of the manner in which such missions are currently funded and managed by NASA.

(C) An analysis of the options for funding missions of national need, including—

(i) structural changes required to allow NASA to fund such missions; and

(ii) an assessment of the capacity of other Federal agencies to make funds available for such missions.

(c) REPORT TO CONGRESS.—Not later than 1 year after the date of the enactment of this Act, the Director of
the OSTP shall submit to the appropriate committees of Congress a report on the results of the study conducted under subsection (b), including recommendations for funding missions of national need.

SEC. 682. DRINKING WATER WELL REPLACEMENT FOR CHINCOTEAGUE, VIRGINIA.

Notwithstanding any other provision of law, during the 5-year period beginning on the date of the enactment of this Act, the Administrator may enter into 1 or more agreements with the town of Chincoteague, Virginia, to reimburse the town for costs that are directly associated with—

(1) the removal of drinking water wells located on property administered by the Administration; and

(2) the relocation of such wells to property under the administrative control, through lease, ownership, or easement, of the town.

SEC. 683. PASSENGER CARRIER USE.

Section 1344(a)(2) of title 31, United States Code, is amended—

(1) in subparagraph (A), by striking “or” at the end;

(2) in subparagraph (B), by inserting “or” after the comma at the end; and
(3) by inserting after subparagraph (B) the following:

“(C) necessary for post-flight transportation of United States Government astronauts, and other astronauts subject to reimbursable arrangements, returning from space for the performance of medical research, monitoring, diagnosis, or treatment, or other official duties, prior to receiving post-flight medical clearance to operate a motor vehicle,”.

SEC. 684. USE OF COMMERCIAL NEAR-SPACE BALLOONS.

(a) SENSE OF CONGRESS.—It is the sense of Congress that the use of an array of capabilities, including the use of commercially available near-space balloon assets, is in the best interest of the United States.

(b) USE OF COMMERCIAL NEAR-SPACE BALLOONS.—The Administrator shall use commercially available balloon assets operating at near-space altitudes, to the maximum extent practicable, as part of a diverse set of capabilities to effectively and efficiently meet the goals of the Administration.

SEC. 685. PRESIDENT’S SPACE ADVISORY BOARD.

Section 121 of the National Aeronautics and Space Administration Authorization Act, Fiscal Year 1991 (Public Law 101–611; 51 U.S.C. 20111 note) is amended—
(1) in the section heading, by striking “USERS’ ADVISORY GROUP” and inserting “PRESIDENT’S SPACE ADVISORY BOARD”; and

(2) by striking “Users’ Advisory Group” each place it appears and inserting “President’s Space Advisory Board.”

SEC. 686. INITIATIVE ON TECHNOLOGIES FOR NOISE AND EMISSIONS REDUCTIONS.

(a) INITIATIVE REQUIRED.—Section 40112 of title 51, United States Code, is amended—

(1) by redesignating subsections (b) through (f) as subsections (c) through (g), respectively; and

(2) by inserting after subsection (a) the following new subsection (b):

“(b) TECHNOLOGIES FOR NOISE AND EMISSIONS REDUCTION.—

“(1) INITIATIVE REQUIRED.—The Administrator shall establish an initiative to build upon and accelerate previous or ongoing work to develop and demonstrate new technologies, including systems architecture, components, or integration of systems and airframe structures, in electric aircraft propulsion concepts that are capable of substantially reducing both emissions and noise from aircraft.
“(2) APPROACH.—In carrying out the initiative, the Administrator shall do the following:

“(A) Continue and expand work of the Administration on research, development, and demonstration of electric aircraft concepts, and the integration of such concepts.

“(B) To the extent practicable, work with multiple partners, including small businesses and new entrants, on research and development activities related to transport category aircraft.

“(C) Provide guidance to the Federal Aviation Administration on technologies developed and tested pursuant to the initiative.”.

(b) REPORTS.—Not later than 180 days after the date of the enactment of this Act, and annually thereafter as a part of the Administration’s budget submission, the Administrator shall submit a report to the appropriate committee of Congress on the progress of the work under the initiative required by subsection (b) of section 40112 of title 51, United States Code (as amended by subsection (a) of this section), including an updated, anticipated timeframe for aircraft entering into service that produce 50 percent less noise and emissions than the highest performing aircraft in service as of December 31, 2019.
SEC. 687. REMEDIATION OF SITES CONTAMINATED WITH TRICHLOROETHYLENE.

(a) IDENTIFICATION OF SITES.—Not later than 180 days after the date of the enactment of this Act, the Administrator shall identify sites of the Administration contaminated with trichloroethylene.

(b) REPORT REQUIRED.—Not later than 1 year after the date of the enactment of this Act, the Administrator shall submit to the appropriate committees of Congress a report that includes—

(1) the recommendations of the Administrator for remediating the sites identified under subsection (a) during the 5-year period beginning on the date of the report; and

(2) an estimate of the financial resources necessary to implement those recommendations.

SEC. 688. REVIEW ON PREFERENCE FOR DOMESTIC SUPPLIERS.

(a) SENSE OF CONGRESS.—It is the Sense of Congress that the Administration should, to the maximum extent practicable and with due consideration of foreign policy goals and obligations under Federal law—

(1) use domestic suppliers of goods and services; and
(2) ensure compliance with the Federal acquisition regulations, including subcontract flow-down provisions.

(b) Review.—

(1) In general.—Not later than 180 days after the date of the enactment of this Act, the Administrator shall undertake a comprehensive review of the domestic supplier preferences of the Administration and the obligations of the Administration under the Federal acquisition regulations to ensure compliance, particularly with respect to Federal acquisition regulations provisions that apply to foreign-based subcontractors.

(2) Elements.—The review under paragraph (1) shall include—

(A) an assessment as to whether the Administration has provided funding for infrastructure of a foreign-owned company or State-sponsored entity in recent years; and

(B) a review of any impact such funding has had on domestic service providers.

(c) Report.—The Administrator shall submit to the appropriate committees of Congress a report on the results of the review.
SEC. 689. REPORT ON USE OF COMMERCIAL SPACEPORTS LICENSED BY THE FEDERAL AVIATION ADMINISTRATION.

(a) IN GENERAL.—Not later than 1 year after the date of the enactment of this Act, the Administrator shall submit to the appropriate committees of Congress a report on the benefits of increased use of commercial spaceports licensed by the Federal Aviation Administration for NASA civil space missions and operations.

(b) ELEMENTS.—The report required by subsection (a) shall include the following:

(1) A description and assessment of current use of commercial spaceports licensed by the Federal Aviation Administration for NASA civil space missions and operations.

(2) A description and assessment of the benefits of increased use of such spaceports for such missions and operations.

(3) A description and assessment of the steps necessary to achieve increased use of such spaceports for such missions and operations.

SEC. 690. ACTIVE ORBITAL DEBRIS MITIGATION.

(a) SENSE OF CONGRESS.—It is the sense of Congress that—
(1) orbital debris, particularly in low-Earth orbit, poses a hazard to NASA missions, particularly human spaceflight; and

(2) progress has been made on the development of guidelines for long-term space sustainability through the United Nations Committee on the Peaceful Uses of Outer Space.

(b) REQUIREMENTS.—The Administrator should—

(1) ensure the policies and standard practices of NASA meet or exceed international guidelines for spaceflight safety; and

(2) support the development of orbital debris mitigation technologies through continued research and development of concepts.

(c) REPORT TO CONGRESS.—Not later than 90 days after the date of the enactment of this Act, the Administrator shall submit to the appropriate committees of Congress a report on the status of implementing subsection (b).

SEC. 691. STUDY ON COMMERCIAL COMMUNICATIONS SERVICES.

(a) SENSE OF CONGRESS.—It is the sense of Congress that—

(1) enhancing the ability of researchers to conduct and interact with experiments while in flight would make huge advancements in the overall profit-
ability of conducting research on suborbit and low-Earth orbit payloads; and

(2) current NASA communications do not allow for real-time data collection, observation, or transmission of information.

(b) STUDY.—The Administrator shall conduct a study on the feasibility, impact, and cost of using commercial communications programs services for suborbital flight programs and low-Earth orbit research.

(c) REPORT.—Not later than 18 months after the date of the enactment of this Act, the Administrator shall submit to Congress and make publicly available a report that describes the results of the study conducted under subsection (b).
A BILL

S. 1260

117th CONGRESS

Calendar No. 58

Reported with an amendment

MAY 13, 2021

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 plan for a critical technology and industrial base, to require a strategy and plan for a critical supply chain resiliency program, and for other purposes.