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(Original Signature of Member)

117TH CONGRESS
2D SESSION

H. R. _____

To provide for a coordinated Federal initiative to accelerate unmanned aircraft systems civilian and advanced air mobility research and development for economic and national security, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

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

A BILL

To provide for a coordinated Federal initiative to accelerate unmanned aircraft systems civilian and advanced air mobility research and development for economic and national security, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE; TABLE OF CONTENTS.

(a) SHORT TITLE.—This Act may be cited as the ''National Drone and Advanced Air Mobility Initiative Act''.

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

SEC. 2. FINDINGS.

Congress finds the following:

(1) Unmanned aircraft systems have the potential to change and transform sectors of the United States economy.

(2) Current uses and applications of unmanned aircraft systems include agriculture, law enforcement, public safety, disaster evaluation and response, fire detection, border security, weather forecasting, construction, utility monitoring, and many other uses and applications.

(3) Research, development, demonstration, testing, and evaluation of counter-UAS systems activities are critical to fully understand the capabilities of and threats posed by unmanned aircraft systems.

(4) Unmanned aircraft systems are subject to safety, privacy, cybersecurity, and supply chain risks, particularly as most unmanned aircraft systems in the United States are manufactured or assembled from parts manufactured in foreign countries.

(5) National and homeland security threats posed by unmanned aircraft systems include criminal and terrorist use for espionage, surveillance, and intelligence gathering, smuggling drugs and contraband, and platforms to deliver explosives or chemicals, biological, radiological or nuclear weapons, and other firearms.

(6) The Federal Government has an important role in advancing research, development, voluntary consensus standards, and education activities in unmanned aircraft systems and counter-UAS systems technologies through coordination and collaboration between State, local, Federal, and Tribal governments, academia, and the private sector.

(7) There is a lack of voluntary consensus standards for unmanned aircraft systems for academia and the public and private sectors.

(8) The United States needs to invest in domestic manufacturing and secure supply chains of unmanned aircraft systems to meet the demand by the Government and the commercial sectors, to reduce reliance on foreign-made systems.

(9) Advanced air mobility aims to transform the way people and goods are transported through new capabilities and applications.

SEC. 3. DEFINITIONS.

In this Act, the following definitions apply:

(1) ADVANCED AIR MOBILITY.—The term ''advanced air mobility'' means air transportation systems that transport individuals and property between points in the United States using aircraft, such as remotely piloted, autonomous, or vertical take-off and landing aircraft, including those powered by electric or hybrid driven propulsions, in both controlled and uncontrolled airspace.

(2) ADVISORY COMMITTEE.—The term ''Advisory Committee'' means the National Drone and Advanced Air Mobility Initiative Advisory Committee established under section 104(a).

(3) COUNTER-UAS SYSTEM.—The term ''counter-UAS system'' has the meaning given such term in section 44801(5) of title 49, United States Code.

(4) INITIATIVE.—The term ''Initiative'' means the National Drone and Advanced Air Mobility Initiative established under section 101(a).

(5) INITIATIVE OFFICE.—The term ''Initiative Office'' means the National Drone and Advanced Air Mobility Initiative Office established under section 102(a).

(6) INSTITUTE.—The term ''Institute'' means a Drone and Advanced Air Mobility Research Institute described in section 201(b).

(7) INTERAGENCY COMMITTEE.—The terms ''Interagency Committee'' means the interagency committee established under section 103(a).

(8) NATIONAL LABORATORY.—The term ''National Laboratory'' has the meaning given such term in section 2 of the Energy Policy Act of 2005 (42 U.S.C. 15801).

(9) UNMANNED AIRCRAFT SYSTEM.—The term ''unmanned aircraft system'' has the meaning given such term in section 44801(12) of title 49, United States Code.

SEC. 4. PURPOSES.

The purpose of this Act is to ensure United States leadership in unmanned aircraft systems by—

(1) supporting research, development, demonstration, and testing of unmanned aircraft systems in order to—

(A) lead in secure and next generation unmanned aircraft systems, including counter-UAS systems;

(B) promote further development of facilities and centers available for unmanned aircraft systems research, testing, and education;

(C) stimulate research on and promote more rapid development of unmanned aircraft systems;

(D) promote domestic manufacturing of unmanned aircraft systems;

(E) mitigate supply chain risks;

(F) mitigate risks to public safety and national and homeland security;

(G) prepare the present and future United States workforce for the integration of unmanned aircraft systems across sectors of the economy;

(H) promote the development and adoption of curriculum and research opportunities for unmanned aircraft systems;

(I) enable the advanced air mobility systems ecosystem;

(J) enhance and accelerate the integration of unmanned aircraft systems into the National Airspace System;

(K) improve safety and sustainability of ground transportation;

(L) address basic research knowledge gaps;

(M) maximize the benefits of unmanned aircraft systems;

(N) increase and improve environmental observations and monitoring; and

(O) establish a robust data management strategy for scientific data collected by unmanned systems;

(2) improving the interagency planning and coordination of Federal research and development of unmanned aircraft systems and maximizing the effectiveness of the Federal Government's unmanned aircraft systems research and development programs;

(3) promoting research and development collaboration among State, local, Tribal, and Federal governments, National Laboratories, industry, and universities;

(4) promoting the development of voluntary consensus standards for unmanned aircraft systems; and

(5) supporting development of an advanced air mobility ecosystem in the United States.

TITLE I—NATIONAL DRONE AND ADVANCED AIR MOBILITY INITIATIVE

SEC. 101. NATIONAL DRONE AND ADVANCED AIR MOBILITY INITIATIVE.

(a) ESTABLISHMENT.—The President shall establish and implement an initiative to be known as the ''National Drone and Advanced Air Mobility Initiative''.

(b) INITIATIVE ACTIVITIES.—In carrying out the Initiative, the President shall, acting through the Initiative Office, the Interagency Committee, and agency heads as the President considers appropriate, carry out activities that include the following:

(1) Sustained, consistent, and coordinated support for next generation unmanned aircraft systems and counter-UAS systems research and development through grants, cooperative agreements, and testbeds.

(2) Support to enable advanced air mobility.

(3) Support for the development of voluntary consensus standards and best practices for the development and use of unmanned aircraft systems.

(4) Support for education and training activities at all levels to prepare the United States work-

force to use and interact with unmanned aircraft systems.

(5) Support partnerships to leverage knowledge and resources from industry, State, local, Tribal, and Federal governments, National Laboratories, Federal Aviation Administration-designated Unmanned Aircraft Systems Test Sites, academic institutions, and others education to advance activities under the Initiative.

(6) Interagency planning and coordination of Federal unmanned aircraft systems research, development, demonstration, standards engagement, and other activities under the Initiative.

(7) Leverage of existing Federal investments to advance the objectives of the Initiative.

(8) Promote hardware inoperability, open-source systems, and standards-driven hardware.

SEC. 102. NATIONAL DRONE AND ADVANCED AIR MOBILITY INITIATIVE OFFICE.

(a) IN GENERAL.—The Director of the Office of Science and Technology Policy shall establish or designate, and appoint a director of, an office to be known as the ''National Drone and Advanced Air Mobility Initiative Office'' to carry out the responsibilities described in subsection (b) with respect to the Initiative. The Initiative

Office shall have sufficient staff to carry out such responsibilities, including staff detailed from the Federal departments and agencies described in section 103(c).

(b) RESPONSIBILITIES.—The Director of the Initiative Office shall—

(1) provide technical and administrative support to—

(A) the Interagency Committee; and

(B) the Advisory Committee;

(2) serve as the point of contact on Federal civilian unmanned aircraft systems activities for Government organizations, academia, industry, professional societies, State, local, Tribal, and Federal governments, and other stakeholders to exchange technical and programmatic information;

(3) conduct public outreach, including dissemination of findings and recommendations of the Advisory Committee, as appropriate;

(4) promote access to and early application of technologies, innovations, and expertise derived from Initiative activities to agency missions and systems across the Federal Government, and to United States industry; and

(5) establish a robust data management strategy that ensures digital access and machine-read-

ability; that promotes findability, interoperability, analysis- and decision-readiness and reusability; and ensures applicable scientific data are managed for wide use by Federal, State, Tribal, and local governments, academia, and the public.

(c) FUNDING.—The Director of the Office of Science and Technology Policy shall develop an estimate of the funds necessary to carry out the activities of the Initiative, and submit such estimate to Congress not later than 90 days after the enactment of this Act. The Director shall update this estimate each fiscal year.

(d) COORDINATION.—In carrying out the Initiative Office, the Director shall coordinate with the National Artificial Intelligence Initiative Office and the Advanced Air Mobility Working Group to avoid duplication of research and other activities to ensure that the activities carried out by the Initiative Office are complementary to those being undertaken by other interagency efforts.

SEC. 103. COORDINATION BY INTERAGENCY COMMITTEE.

(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 Committee to coordinate Federal programs and activities in support of the Initiative.

(b) CO-CHAIRS.—The Interagency Committee shall be co-chaired by the Director of the Office of Science and Technology Policy and, on a rotating basis, a representative from the National Institute of Standards and Technology, the National Science Foundation, the Federal Aviation Administration, the National Aeronautics and Space Administration, or the National Oceanic and Atmospheric Administration, as selected by the Director of the Office of Science and Technology Policy.

(c) AGENCY PARTICIPATION.—The Committee shall include—

(1) the National Institute of Standards and Technology;

(2) the National Science Foundation;

(3) the National Aeronautics and Space Administration;

(4) the Department of Homeland Security;

(5) the National Oceanic and Atmospheric Administration;

(6) the Department of Energy;

(7) the Federal Aviation Administration;

(8) the Department of Defense;

(9) the Office of Management and Budget;

(10) the Office of the Director of National Intelligence;

(11) the Office of Science and Technology Policy;

(12) the General Services Administration;

(13) the Department of Justice;

(14) the Department of Agriculture;

(15) the Department of Interior;

(16) the Federal Communications Commission; and

(17) any other Federal agency considered appropriate by the President.

(d) COORDINATION.—The Interagency Committee shall coordinate with the National Security Council and other authorized agency coordinating bodies on the assessment of risks posed by the existing Federal unmanned aircraft systems fleet and outlining potential steps to mitigate these risks.

(e) RESPONSIBILITIES.—The Interagency Committee shall—

(1) provide for interagency coordination of Federal unmanned aircraft systems research, development, and demonstration activities, development of voluntary consensus standards and guidelines for research, development, testing, and adoption of unmanned aircraft systems, scientific data management and education and training activities and pro-

grams of Federal departments and agencies undertaken pursuant to the Initiative;

(2) not later than 2 years after the date of the enactment of this Act, develop a strategic plan for unmanned aircraft systems (to be updated not less than every 3 years thereafter) that—

(A) establishes goals, priorities, and metrics for guiding and evaluating the Initiative's activities; and

(B) describes how the agencies carrying out the Initiative will—

(i) determine and prioritize areas of unmanned aircraft systems and counter-UAS systems research, development, and demonstration requiring Federal Government leadership and investment;

(ii) support long-term funding for unmanned aircraft systems research, development, demonstration, education and public outreach activities, and existing Federal Aviation Administration-designated Unmanned Aircraft Systems Test Site facilities;

(iii) support research and other activities on national security, safety, societal,

economic, legal, workforce, and other appropriate societal issues related unmanned aircraft systems;

(iv) provide or facilitate access to the necessary facilities, including existing Federal Aviation Administration-designated Unmanned Aircraft Systems Test Sites, for unmanned aircraft systems research, development, testing, and demonstration;

(v) reduce barriers to transferring unmanned aircraft systems from the laboratory into application for the benefit of society and United States competitiveness;

(vi) support the development of an advanced air mobility ecosystem; and

(vii) in consultation with the Council of Economic Advisers, measure and track the contributions of unmanned aircraft systems to United States economic growth and other societal indicators;

(3) propose an annually coordinated interagency budget for the Initiative to the Office of Management and Budget that is intended to ensure that the balance of funding across the Initiative is sufficient

to meet the goals and priorities established for the Initiative; and

(4) in carrying out this section, take into consideration the recommendations of the Advisory Committee, existing reports on related topics, and the views of academic, State, industry, and other appropriate groups.

(f) REPORT.—For each fiscal year beginning with fiscal year 2023, not later than 90 days after submission of the President's annual budget request for such fiscal year, 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—

(1) a summarized budget in support of the Initiative for such fiscal year and the preceding fiscal year, including a disaggregation of spending for each Federal agency participating in the Initiative; and

(2) an assessment of how Federal agencies are implementing the plan described in subsection (e)(2), and a description of those efforts.

SEC. 104. NATIONAL DRONE AND ADVANCED AIR MOBILITY INITIATIVE ADVISORY COMMITTEE.

(a) IN GENERAL.—The President shall establish or designate a National Drone and Advanced Air Mobility Initiative Advisory Committee.

(b) QUALIFICATIONS.—The Advisory Committee established by the President under subsection (a) shall consist of members from industry, academic institutions, State and local governmental organizations, and Federal laboratories, including representatives from underserved communities. The President shall appoint members to the Advisory Committee who are qualified to provide advice and information on unmanned aircraft systems research, development, demonstrations, education, technology transfer, commercial application, or national security and economic concerns.

(c) MEMBERSHIP CONSIDERATION.—In selecting Advisory Committee members, the President may seek and give consideration to recommendations from the Congress, industry, the scientific community (including the National Academies, scientific professional societies, and academia), the defense community, and other appropriate organizations.

(d) DUTIES.—The Advisory Committee shall advise the President and the Initiative Office on matters related to the Initiative, including recommendations related to—

(1) the current state of United States competitiveness and leadership in unmanned aircraft systems, including the scope and scale of United States investments in unmanned aircraft systems research and development;

(2) trends and developments in unmanned aircraft systems technology, including barriers to adoption and use of unmanned aircraft systems;

(3) progress made in implementing the Initiative;

(4) the management, coordination, and activities of the Initiative;

(5) whether the strategic plan developed or updated by the Interagency Committee established under section 103(e)(2) is helping to maintain United States leadership in unmanned aircraft systems;

(6) data management strategies to ensure wide use of the scientific data collected while protecting personally identifiable information; and

(7) whether national security, safety, societal, economic, legal, and workforce concerns are adequately addressed by the Initiative.

(e) REPORTS.—Not later than 1 year after the date of the 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 the Advisory Committee's findings and recommendations under subsection (d).

(f) CONSULTATION.—The Advisory Committee shall consult with the Federal Aviation Administration Advanced Aviation Advisory Committee to ensure consistency and avoid duplication of effort.

(g) TRAVEL EXPENSES OF NON-FEDERAL MEMBERS.—Non-Federal members of the Advisory Committee, while attending meetings of the Advisory Committee or while otherwise serving at the request of the head of the Advisory Committee away from their homes or regular places of business, may be allowed travel expenses, including per diem in lieu of subsistence, as authorized by section 5703 of title 5, United States Code, for individuals in the Government serving without pay. Nothing in this subsection shall be construed to prohibit members of the Advisory Committee who are officers or employees of the United States from being allowed travel expenses, including per diem in lieu of subsistence, in accordance with existing law.

(h) EXEMPTION.—The Advisory Committee shall be exempt from section 14 of the Federal Advisory Committee Act (5 U.S.C. App.).

SEC. 105. GAO STUDY ON FOREIGN DRONES.

(a) STUDY.—The Comptroller General shall conduct a study on the use of foreign-made unmanned aircraft systems in the Federal Government unmanned aircraft fleet.

(b) ELEMENTS.—The study under subsection (a) shall include the following:

(1) A review of policies and practices of the Federal Government for the procurement and operation of unmanned aircraft systems manufactured, assembled, use components manufactured in or software developed by a covered foreign entity on the list maintained pursuant to subsection (d).

(2) An assessment of the following:

(A) The physical safety, privacy, cybersecurity, and supply chain risks associated with these technologies.

(B) The operation of these technologies across the Federal Government.

(C) The trustworthiness and resilience of these technologies.

(D) The availability of unmanned aircraft systems from domestic sources for government use.

(c) GAO REPORT.—Not later than 1 year after the date of the enactment of this Act, the Comptroller General shall issue a report to Congress containing all findings and determinations made in carrying out the study required under subsection (a).

TITLE II—NATIONAL DRONE AND ADVANCED AIR MOBILITY RESEARCH INSTITUTES

SEC. 201. NATIONAL DRONE AND ADVANCED AIR MOBILITY RESEARCH INSTITUTES.

(a) IN GENERAL.—As part of the Initiative, the Administrator of the National Aeronautics and Space Administration shall establish a program to award financial assistance for the planning, establishment, and support of a network of Institutes (as described in subsection (b)(2)) in accordance with this section.

(b) FINANCIAL ASSISTANCE TO ESTABLISH AND SUPPORT NATIONAL DRONE AND ADVANCED AIR MOBILITY RESEARCH INSTITUTES.—

(1) IN GENERAL.—Under the Initiative, the Director of the National Institute of Standards and Technology, the Director of the National Science

Foundation, the Administrator of the National Aeronautics and Space Administration, and any other agency head may award financial assistance, including jointly with other agencies, to an eligible entity, or consortia thereof, as determined by an agency head, to establish and support an Institute.

(2) DRONE AND ADVANCED AIR MOBILITY INSTITUTES.—An Institute described in this subsection is an unmanned aircraft systems research institute that—

(A) may focus on—

(i) a particular economic or social sector, including education, manufacturing, agriculture, security, energy, environment, and public safety, and includes a component that addresses the ethical, societal, safety, and security implications relevant to the application of unmanned aircraft systems in that sector; or

(ii) a cross-cutting challenge for research, development, testing, or use of unmanned aircraft systems;

(B) requires partnership among public and private organizations, including, as appropriate, Federal agencies, academic institutions, non-

profit research organizations, Federal laboratories, State, local, and Tribal governments, industry and others (or consortia thereof);

(C) has the potential to create an innovation ecosystem, or enhance existing ecosystems, to translate Institute research into applications and products, as appropriate to the topic of each Institute;

(D) supports and coordinates interdisciplinary research and development across multiple institutions and organizations involved in unmanned aircraft systems research and related disciplines, which may include physics, engineering, mathematical sciences, computer and information science, robotics, material science, cybersecurity, and technology ethics;

(E) supports interdisciplinary education activities at all levels, including curriculum development, research experiences, and faculty professional development across two-year, undergraduates, masters, and doctoral level programs;

(F) establishes a robust data management strategy that ensures digital access and machine-readability; that promotes findability,

interoperability, analysis- and decision-readiness and reusability; and ensures applicable scientific data are managed for wide use by Federal, State, Tribal, and local governments, academia and the public; and

(G) supports workforce development in unmanned aircraft systems related disciplines in the United States, including broadening participation of underrepresented communities.

(3) USE OF FUNDS.—Financial assistance awarded under paragraph (1) may be used by an Institute for—

(A) managing and making available to researchers accessible, curated, standardized, secure, and privacy protected data sets from the public and private sectors for the purposes of training and testing unmanned aircraft systems and for research and development using unmanned aircraft systems;

(B) developing and managing testbeds, including Federal Aviation Administration-designated Unmanned Aircraft Systems Test Sites, for unmanned aircraft systems, including sector-specific test beds, designed to enable users

to evaluate unmanned aircraft systems prior to deployment;

(C) conducting research and education activities involving unmanned aircraft systems to solve challenges with economic, scientific, and national security implications;

(D) conducting research and development on unmanned aircraft systems platform development and innovation;

(E) providing or brokering access to computing resources, networking, and data facilities for unmanned aircraft systems research and development relevant to the Institute's research goals;

(F) providing technical assistance to users, including software engineering support, for unmanned aircraft systems research and development relevant to the Institute's research goals;

(G) supporting the purchase of unmanned aircraft systems software;

(H) engaging in outreach and engagement to broaden participation in unmanned aircraft systems research, development and workforce;

(I) supporting artificial intelligence and machine learning research related to unmanned aircraft systems; and

(J) such other activities that an agency head whose agency's missions contribute to or are affected by unmanned aircraft systems determines is appropriate to fulfill the agency's missions.

(4) DURATION.—

(A) INITIAL PERIODS.—An award of financial assistance under paragraph (1) shall be for an initial period of up to 5 years, subject to Office of Management and Budget uniform guidance for Federal assistance.

(B) EXTENSION.—An established Institute may apply for, and the agency head may grant, extended funding for periods of 5 years on a merit-reviewed basis using the merit review criteria of the sponsoring agency, subject to Office of Management and Budget uniform guidance for Federal assistance.

(5) APPLICATION FOR FINANCIAL ASSISTANCE.—

(A) IN GENERAL.—A person or group of persons seeking financial assistance under para-

graph (1) shall submit to an agency head an application at such time, in such manner, and containing such information as the agency head may require.

(B) REQUIREMENTS.—An application submitted under subparagraph (A) for an Institute shall, at a minimum, include the following:

(i) A plan for the Institute to include—

(I) the proposed goals and activities of the Institute;

(II) a description of how the Institute will form partnerships with other research institutions, industry, nonprofits, academic institutions, and others to leverage expertise in unmanned aircraft systems and access to data;

(III) a description of how the institute will support long-term and short-term education and workforce development in unmanned aircraft systems, including broadening participation of underrepresented communities; and

(IV) a description of how the Institute will transition from planning into operations.

(ii) A description of the anticipated sources and nature of any non-Federal contributions or other Federal agency funding.

(iii) A data management plan that addresses the collection, use, retention, protection, dissemination, and management of data collected, consistent with the purposes of this Act.

(iv) A description of the anticipated long-term impact of such Institute.

(6) COMPETITIVE MERIT REVIEW.—In awarding financial assistance under paragraph (1), the agency shall—

(A) use a competitive merit review process that includes peer review by a diverse group of individuals with relevant expertise from both the private and public sectors; and

(B) ensure the focus areas of the Institute do not substantially duplicate the efforts of any other Institute.

(7) COLLABORATION.—

(A) IN GENERAL.—In awarding financial assistance under paragraph (1), an agency head may collaborate with Federal departments and agencies whose missions contribute to or are affected by unmanned aircraft systems, including the agencies outlined in section 103(c).

(B) COORDINATING NETWORK.—The Administrator of the National Aeronautics and Space Administration shall establish a network of Institutes receiving financial assistance under this subsection, to be known as the ''Drone Leadership Network'', to coordinate cross-cutting research and other activities carried out by the Institutes.

(C) FUNDING.—The head of an agency may request, accept, and provide funds from other Federal departments and agencies, State, United States territory, local, or Tribal government agencies, private sector for-profit entities, and nonprofit entities, to be available to the extent provided by appropriations Acts, to support an Institute's activities. The head of an agency may not give any special consideration to any agency or entity in return for a donation.

(c) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated to the National Aeronautics and Space Administration $5,000,000 in each of fiscal years 2023 through 2027 to carry out the activities authorized in section 201(a).

TITLE III—NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY ACTIVITIES

SEC. 301. NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY ACTIVITIES.

(a) IN GENERAL.—As part of the Initiative, the Director shall—

(1) support measurement research and development of best practices and voluntary consensus standards for unmanned aircraft systems, including for—

(A) privacy, security, and cybersecurity of unmanned aircraft systems;

(B) safety of unmanned aircraft systems;

(C) hardware and components designed for unmanned aircraft systems;

(D) data management and techniques to increase the usability of data for unmanned aircraft systems;

(E) supply chain risks for unmanned aircraft systems; and

(F) all other areas deemed by the Director to be critical to the development and deployment of unmanned aircraft systems;

(2) support one or more Institutes as described in section 201(a) of this Act for the purpose of advancing unmanned aircraft systems;

(3) produce curated, standardized, representative, secure, and privacy protected data sets for unmanned aircraft systems research, development, and use, prioritizing data for high-value, high-risk research;

(4) support and strategically engage in the development of voluntary consensus standards, including international standards, through open, transparent, and consensus-based processes;

(5) enter into and perform such contracts, including cooperative research and development arrangements and grants and cooperative agreements or other transactions, as may be necessary in the conduct of the work of the National Institute of Standards and Technology and on such terms as the Director considers appropriate, in furtherance of the purposes of this Act; and

(6) coordinate the development of voluntary and consensus standards and best practices with other Federal agencies as appropriate.

(b) DATA SHARING BEST PRACTICES.—Not later than 1 year after the date of enactment of this Act, the Director shall, in collaboration with other public and private sector organizations, develop guidance to facilitate the creation of voluntary data sharing arrangements between industry, federally funded research centers, and Federal agencies for the purpose of advancing unmanned aircraft systems research and technologies, including options for partnership models between government entities, industry, universities, and nonprofits that incentivize each party to share the data they collected. The Director shall also ensure that data are archived in a manner to in order to promote findability, interoperability, analysis- and decision-readiness and reusability of historical and near real time data across Federal, State, Tribal, local users, including ensuring digital access and machine-readability.

(c) SOLICITATION OF INPUT.—In carrying out the activities under this subsection, the Director shall—

(1) solicit input from university researchers, private sector experts, relevant Federal agencies, Federal laboratories, State, local, and Tribal govern-

ments, civil society groups, and other relevant stakeholders; and

(2) provide opportunity for public comment on guidelines and best practices developed as part of the Initiative, as appropriate.

(d) DRONE RESEARCH CHALLENGES.—

(1) PRIZE COMPETITION.—Pursuant to section 24 of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3719), the Director shall, subject to appropriations, carry out a program to award prizes competitively to stimulate research and development of innovative unmanned aircraft systems technologies in order to expand upon and improve emergency response operations.

(2) PLAN FOR EMERGENCY RESPONSE OPERATIONS.—Each prize competition entry submitted pursuant to paragraph (1) shall include a plan for unmanned aircraft systems implementation in emergency response operations.

(3) PRIZE AMOUNT.—In carrying out the program under paragraph (1), the Director may award not more than a total of $2,250,000 to one or more winners of the prize competition.

(4) REPORT.—Not later than 60 days after the date on which a prize is awarded under the prize

competition, the Director shall submit to the relevant committees of Congress a report that describes the winning entry of the prize competition.

(5) CONSULTATION.—In carrying out the program under subsection (a), the Director may consult with the heads of relevant departments and agencies of the Federal Government.

(e) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the National Institute of Standards and Technology to carry out this section—

(1) $20,000,000 for fiscal year 2023;

(2) $21,000,000 for fiscal year 2024;

(3) $22,050,000 for fiscal year 2025;

(4) $23,152,500 for fiscal year 2026; and

(5) $24,310,125 for fiscal year 2027.

SEC. 302. NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY MANUFACTURING ACTIVITIES.

(a) PURPOSE.—The purpose of this section is to secure the United States' international leadership in unmanned aircraft systems by strengthening its industrial base through the bolstering of domestic supply chains and the development and adoption of innovative manufacturing processes.

(b) ESTABLISHMENT OF UNMANNED AIRCRAFT SYSTEMS PILOT PROGRAM AS A PART OF THE MANUFAC-

TURING EXTENSION PARTNERSHIP.—The National Institute of Standards and Technology Act (15 U.S.C. 271 et seq.) is amended by inserting after section 25B the following:

"SEC. 25C. EXPANSION AWARDS FOR UNMANNED AIRCRAFT SYSTEMS PILOT PROGRAM.

"(a) DEFINITIONS.—The terms used in this section have the meanings given the terms in section 25.

"(b) ESTABLISHMENT.—The Director shall establish as a part of the Hollings Manufacturing Extension Partnership a pilot program of expansion awards among participants described in subsection (c) of this section for the purposes described in subsection (e) of this section.

"(c) PARTICIPANTS.—Participants receiving awards under this section shall be Centers, or a consortium of Centers.

"(d) AWARD AMOUNTS.—Subject to the availability of appropriations, an award for a recipient under this section shall be in an amount equal to the sum of the following:

"(1) Such amount as the Director considers appropriate as a minimum base funding level for each award under this section.

''(2) Such additional amount as the Director considers in proportion to the manufacturing density of the region of the recipient.

''(3) Such supplemental amounts as the Director considers appropriate.

''(e) PURPOSE OF AWARDS.—An award under this section shall be made for one or more of the following purposes:

''(1) To provide coordinating services on—

''(A) the development of working concepts for new unmanned aircraft systems products, including review and design analysis;

''(B) the review and optimization of current unmanned aircraft systems designs and components, including industrial engineering and manufacturing design upgrades;

''(C) rapid unmanned aircraft systems prototyping services, including three-dimensional modeling;

''(D) software development for unmanned aircraft systems application;

''(E) commercialization of new products and technology to improve performance of unmanned aircraft systems; and

''(F) supporting existing unmanned aircraft systems and components manufacturing operations and the development of unmanned aircraft systems and components manufacturing operations.

''(2) To provide services to improve the resiliency of domestic unmanned aircraft system supply chains.

''(3) To expand unmanned aircraft systems technology services to small and medium-sized manufacturers and software developers, which may include—

''(A) facilitating the adoption of technologies, including smart manufacturing technologies and practices; and

''(B) establishing partnerships, for the development, demonstration, and deployment of unmanned aircraft systems 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;

''(iv) Unmanned Aircraft Systems Industry; and

"(v) institutions of higher education.

"(f) APPLICATIONS.—Applications for awards under this section shall be submitted in such manner, at such time, and containing such information as the Director shall require in consultation with the Manufacturing Extension Partnership Advisory Board.

"(g) SELECTION.—

"(1) REVIEWED AND MERIT-BASED.—The Director shall ensure that awards under this section are reviewed and merit-based.

"(2) GEOGRAPHIC DIVERSITY.—The Director shall endeavor to have broad geographic diversity among selected proposals.

"(3) CRITERIA.—The Director shall select applications consistent with the purposes identified pursuant to subsection (e) to receive awards that the Director determines will achieve one or more of the following:

"(A) Improvement of the competitiveness of domestic unmanned aircraft systems industries in the region in which the Center or Centers are located.

"(B) Creation of jobs or training of newly hired employees.

''(C) Promotion of the transfer and commercialization of research and technology from institutions of higher education, national laboratories, or other federally funded research programs, and nonprofit research institutes.

''(D) Any other result the Director determines will advance the objective set forth in section 25(c) or 26.

''(h) GLOBAL MARKETPLACE PROJECTS.—In making an award under this section, the Director, in consultation with the Manufacturing Extension Partnership Advisory Board and the Secretary, may take into consideration whether an application has significant potential for enhancing the competitiveness of small and medium-sized United States manufacturers in the global marketplace for unmanned aircraft systems technologies.

''(i) DURATION.—The Director shall ensure that the duration of an award under this section is aligned and consistent with a Center's cooperative agreement established in section 25(e).

''(j) REPORT.—After the completion of the pilot program under subsection (b) and not later than October 1, 2025, the Director shall submit to Congress a report that includes—

''(1) a summary description of what activities were funded and the measurable outcomes of such activities;

''(2) a description of which types of activities under paragraph (1) could be integrated into, and supported under, the program under section 25;

''(3) a description of which types of activities under paragraph (1) could be integrated into, and supported under, the competitive awards program under section 25A; and

''(4) a recommendation, supported by a clear explanation, as to whether the pilot program should be continued.

''(k) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated to carry out the pilot program under this section $10,000,000 for each of fiscal years 2023 through 2025.''.

(c) MANUFACTURING EXTENSION PARTNERSHIP SURVEY.—

(1) SURVEY.—Not later than 1 year after the date of the enactment of this Act, the Director shall carry out a survey of the Manufacturing Extension Partnership Centers (referred to in this section as the ''Centers'') to understand the manufacturing capabilities of the United States manufacturers to sup-

port a robust unmanned aircraft systems industry in the United States.

(2) CONTENTS.—In conducting the survey required under subsection (a), the Director shall solicit feedback on the following:

(A) Familiarity and current manufacturing work by small and mid-sized manufacturers on unmanned aircraft systems, including components, software, sensors, or other technology associated with unmanned aircraft systems.

(B) A list of the basic manufacturing procedures that can be easily converted to conduct the manufacturing of unmanned aircraft systems projects.

(C) Potential for small-and mid-sized manufacturing to work with industry and academia to support the manufacturers of unmanned aircraft systems prototypes.

(D) Potential for commercialization of ongoing manufacturing development research related to unmanned aircraft systems projects.

(E) A description of supply chain and technological challenges that small and mid-sized manufacturers face in building up unmanned

aircraft systems capacity, and the prevalence of these challenges.

(F) Regulatory and legal barriers faced by small and mid-sized manufacturers and developers.

(G) Any challenges that small and mid-sized manufacturers experience in recruiting skilled workers familiar with unmanned aircraft systems manufacturing.

(H) Any other information that the Director or the Board determine is appropriate.

(3) REPORT.—Not later than 60 days after completing the survey required under subsection (a), the Director, in consultation with the Board, shall provide a report summarizing the results of the survey to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate.

(d) MANUFACTURING USA PROGRAM.—The Director, through the Manufacturing USA Program, shall prioritize research, development, and demonstration activities to enhance and grow the domestic manufacturing capacity of unmanned aircraft systems and components. Such activities may include—

(1) rapid-prototyping and reproduction of unmanned aircraft systems structures;

(2) additive manufacturing to improve capabilities to produce large tools, dies, and molds for unmanned aircraft systems and components;

(3) testing innovative manufacturing processes and manufactured components to improve safety, endurance, and quality of unmanned aircraft systems;

(4) development of software to streamline fabrication and integration of manufacturing components, such as sensors for use in unmanned aircraft systems; and

(5) any other activities that the Director considers appropriate.

(e) DEFINITION.—In this title, the term ''Director'' means the Director of the National Institute of Standards and Technology.

TITLE IV—NATIONAL SCIENCE FOUNDATION ACTIVITIES

SEC. 401. NATIONAL SCIENCE FOUNDATION ACTIVITIES.

(a) IN GENERAL.—As part of the Initiative, the Director shall support research and STEM education and related activities in unmanned aircraft systems, components, and related technologies, including competitive

awards or grants to institutions of higher education or eligible nonprofit organizations (or consortia thereof).

(b) USE OF FUNDS.—In carrying out the activities under subsection (a), the Director shall—

(1) support fundamental research on the underlying technologies for unmanned aircraft systems, components and related technologies, which may include—

(A) improving the safety and reliability of operation systems;

(B) developing and improving autonomous control systems, including real-time control and autonomous decisionmaking;

(C) incorporating the use of artificial intelligence into systems;

(D) improving or developing materials for unmanned aircraft systems;

(E) understanding safety and sustainability of unmanned aircraft systems as a part of a transportation system, including the impacts of unmanned aircraft systems on ground transportation;

(F) developing and improving communications systems, including multivehicle coordination and task and path planning; and

(G) understanding the human-drone interface;

(2) support research and development of unmanned aircraft system enabled uses, which may include—

(A) creating new sensing tools to improve understanding, prediction, and detection of severe weather and natural hazards, including wildfires;

(B) enabling advanced air mobility;

(C) monitoring and surveying infrastructure;

(D) disaster reconnaissance, including the collection of data to model and simulate disasters and assist responders; and

(E) improving the reliable use of advanced sensing systems in rural and agricultural settings;

(3) support research on data modeling and validation of the use of unmanned aircraft systems;

(4) support research and development on security, including the cybersecurity, of unmanned aerial aircraft systems;

(5) support research on the ethical use of unmanned aircraft systems, including protection of individual privacy;

(6) support middle school and high school level STEM education research and related activities related to unmanned aircraft systems and related technologies, which may include—

(A) supporting curriculum development relating to unmanned aircraft system applications, including developing place-based learning curriculum, particularly for students in poor, rural, and Tribal communities;

(B) utilizing unmanned aircraft systems technologies to advance the engagement of students, including students in poor, rural, and Tribal communities students, in STEM through providing before school, after-school, out-of-school, or summer activities;

(C) developing professional development resources for STEM educators in utilizing unmanned aircraft systems technologies and applications in their curriculum and classrooms, including through distance-delivered courses;

(D) connecting relevant STEM curriculum to the design, construction and demonstration of unmanned aircraft systems; and

(E) designing unmanned aircraft system related activities designed to help students make real-world connections to STEM content and educate students on the relevance and significance of STEM careers;

(7) support undergraduate and graduate education and workforce development research and related activities related to unmanned aircraft systems and related technologies, which may include—

(A) supporting curriculum development relating to unmanned aircraft systems applications and technologies;

(B) supporting hands-on research opportunities at institutions of higher education, research institutions, including National Labs, and industry for undergraduate and graduate students relating to unmanned aircraft systems applications and technologies;

(C) facilitating participation in collegiate level unmanned systems robotic competitions; and

(D) ensuring that students pursuing master's degrees and doctoral degrees in fields relating to unmanned aircraft systems are considered as applicants for scholarships and graduate fellowships under the Graduate Research Fellowship Program under section 10 of the National Science Foundation Act of 1950 (42 U.S.C. 1869);

(8) support activities to develop a skilled technical workforce for supporting and operating unmanned aircraft systems, which may include establishing national centers focused on educating and training the skilled technical workforce in unmanned aircraft system applications and technologies through the Advanced Scientific and Technical Education Program as authorized by the Scientific and Advanced-Technology Act of 1992 (42 U.S.C. 1862i), including by—

(A) expanding educational resources to address current workforce demands in unmanned aircraft system applications and technologies;

(B) developing curriculum for community and technical colleges to train and upskill the skilled technical workforce in unmanned aircraft system applications and technologies;

(C) engaging the skilled technical workforce community in STEM and unmanned aircraft system applications and technologies; and

(D) in partnership with industry, employing activities to increase the visibility and utility of careers in unmanned aircraft applications and technologies;

(9) engage veterans and departing members of the Armed Services in activities mentioned in paragraphs (7) and (8);

(10) support one or more Institutes as described in section 201(a) for the purpose of advancing the field of unmanned aircraft systems;

(11) support prize competitions pursuant to section 24 of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3719);

(12) establish a robust data management strategy that ensures digital access and machine-readability; that promotes findability, interoperability, analysis- and decision-readiness and reusability; and ensures applicable scientific data are managed for wide use by Federal, State, Tribal, and local governments, academia and the public; and

(13) any other activities the Director finds necessary to meet the goals laid out in subsection (a).

(c) PUBLIC-PRIVATE PARTNERSHIPS.—As part of the activities under subsection (a), the Director shall support public-private partnerships to support domestic development of unmanned aircraft systems in the United States and address pre-competitive industry challenges.

(d) INTERAGENCY COORDINATION.—In carrying out the program under this section, the Director shall coordinate with the heads of other Federal departments and agencies to avoid duplication of research and other activities to ensure that the activities carried out under this section are complementary to those being undertaken by other agencies.

(e) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the National Science Foundation to carry out this section—

(1) $50,000,000 for fiscal year 2023;

(2) $52,500,000 for fiscal year 2024;

(3) $55,125,000 for fiscal year 2025;

(4) $57,881,775 for fiscal year 2026; and

(5) $60,775,863 for fiscal year 2027.

(f) DEFINITION.—In this title, the term ''Director'' means the Director of the National Science Foundation.

TITLE V—NATIONAL AERONAUTICS AND SPACE ADMINISTRATION ACTIVITIES

SEC. 501. NATIONAL AERONAUTICS AND SPACE ADMINISTRATION ACTIVITIES.

(a) IN GENERAL.—The Administrator, in consultation with the Administrator of the Federal Aviation Administration and other Federal agencies, shall direct research and technological development to facilitate the safe integration of unmanned aircraft systems into the National Airspace System, including—

(1) positioning and navigation systems;

(2) sense and avoid capabilities;

(3) secure data and communication links;

(4) flight recovery systems; and

(5) human systems integration.

(b) COOPERATIVE UNMANNED AIRCRAFT SYSTEM ACTIVITIES.—Section 31504 of title 51, United States Code, is amended by inserting at the end the following: ''Operational flight data derived from these cooperative agreements shall be made available, in appropriate and usable formats, to the Administration and the Federal Aviation Administration for the development of regulatory standards.''.

(c) POLICY.—It is the policy of the United States Government that the Administration shall work with industry, the Federal Aviation Administration, the Department of Defense, the Department of Homeland Security, and academia to mature and help operationalize unmanned aircraft system traffic management related concepts, architecture, services, and strategic as well as tactical deconfliction to ensure safe integration of unmanned aircraft systems in airspace in presence of other aircraft. As part of those activities, the Administration shall consider commercial and public good use cases, such as wildfire and disaster monitoring and mitigation, with a primary focus on enabling many simultaneous drone operations beyond visual line of sight.

(d) COORDINATION.—The Administrator shall coordinate with the Administrator of the Federal Aviation Administration, the Director of the National Institutes of Standards and Technology, State, local and Tribal government, and industry on the development of voluntary consensus-based standards to facilitate the incorporation of unmanned aircraft systems into the National Airspace System and decrease the need for regulations.

SEC. 502. NATIONAL STUDENT UNMANNED AIRCRAFT SYSTEMS COMPETITION PROGRAM.

(a) IN GENERAL.—The Administrator shall establish a national program to carry out unmanned aircraft and advanced air mobility systems technology competitions for students at the high school and undergraduate level (in this section referred to as ''competitions'') in which students shall compete to design, create, and demonstrate an unmanned aircraft system.

(b) COMPETITION ADMINISTRATION.—The Administrator shall select, on a merit-reviewed, competitive basis, an institution of higher education to administer the competitions (in this section referred to as the ''competition administrator'').

(c) CONSIDERATIONS FOR SELECTING COMPETITION ADMINISTRATOR.—In selecting an institution of higher education to administer the competition, the Administrator shall consider—

(1) the institution of higher education's prior experience in administering such competitions;

(2) the institution of higher education's prior experience in administering national STEM engagement programs;

(3) the institution of higher education's prior experience in engaging eligible institutions from di-

verse geographic areas, including poor, rural, and Tribal communities; and

(4) the institution of higher education's prior experience in connecting STEM activities to Administration missions and centers.

(d) COMPETITION ADMINISTRATOR RESPONSIBILITIES.—The competition administrator shall be responsible for—

(1) awarding grants to institutions of higher education or nonprofit organizations (or a consortium of such institutions or organization) on a merit-reviewed, competitive basis to host individual competitions;

(2) developing STEM curriculum to be utilized by the competition awardees to help students make the connection to the design, construction, and demonstration of the unmanned aircraft or advanced air mobility systems;

(3) developing curriculum to assist students in making real-world connections to STEM content and educate students on the relevance and significance of STEM careers;

(4) ensuring awardees are supporting the activities laid out in subsection (f);

(5) conducting performance evaluations of competitions, including data collection on—

(A) the number of students engaged;

(B) geographic and institutional diversity of participating schools and institutions of higher education; and

(6) any other activities the Administrator finds necessary to ensure the competitions are successful.

(e) ADDITIONAL CONSIDERATIONS.—In awarding grants authorized in subsection (d), the competition administrator shall give priority to applications that include a partnership with that State's space grant program under chapter 403 of title 51, United States Code.

(f) PERMITTED ACTIVITIES.—In carrying out the competitions authorized in subsection (a), the competition administrator shall ensure competitions occurring at both the high school and undergraduate levels—

(1) allow students to design, construct, and demonstrate an unmanned aircraft or advanced air mobility system;

(2) allow students to compete with other teams in the performance of the constructed unmanned aircraft or advanced air mobility system;

(3) connect to relevant missions and Center activities of the Administration;

(4) connect relevant STEM curriculum to the design, construction, and demonstration of unmanned aircraft and/or advanced air mobility systems;

(5) support activities designed to help students make real-world connections to STEM content and educate students on the relevance and significance of STEM careers; and

(6) are geographically dispersed in order to serve a broad student population, including those in rural and underserved communities.

(g) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated to the Administrator $6,000,000 in each of fiscal years 2023 through 2027 to carry out the activities authorized in this section. Of the funds authorized—

(1) $1,000,000 per year shall be for the competition administrator as authorized in subsection (b); and

(2) $5,000,000 per year shall be awarded for grants to carry out competitions as authorized by subsection (d).

(h) DEFINITIONS.—In this title:

(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.

TITLE VI—DEPARTMENT OF ENERGY ACTIVITIES

SEC. 601. DEPARTMENT OF ENERGY RESEARCH PROGRAM.

(a) IN GENERAL.—As part of the Initiative, the Secretary shall carry out a cross-cutting research, development, and demonstration program to advance unmanned and counter-UAS system technologies, capabilities, and workforce needs and to improve the reliability of unmanned and counter-UAS systems implementation methods relevant to the mission of the Department. In carrying out this program, the Secretary shall coordinate across all relevant offices and activities at the Department, including the Office of Science, the Office of Energy Efficiency and Renewable Energy, the Office of Nuclear Energy, the Office of Fossil Energy, the Office of Electricity, the Office of Cybersecurity, Energy Security, and Emergency Response, the Advanced Research Projects Agency—Energy, the Office of Environmental Management, the Office of Environment, Health, Safety and Security, the National

Nuclear Security Administration, the Artificial Intelligence Technology Office, the UAS Research and Engineering Center, and any other relevant office or activity as determined by the Secretary.

(b) PROGRAM COMPONENTS.—In carrying out the program under subsection (a), the Secretary shall—

(1) formulate goals for unmanned and counter-UAS systems research activities to be supported by the Department, including in the research areas under section (c);

(2) leverage the collective body of knowledge from existing unmanned and counter-UAS systems research and development activities, including the work underway by the Unmanned Aircraft Systems Research and Engineering Center;

(3) provide research experiences and training for undergraduate and graduate students in unmanned and counter-UAS systems research and development, including in the fields of—

(A) artificial intelligence and machine learning;

(B) applied mathematics and algorithm development;

(C) advanced imaging, sensing, and detection technologies;

(D) materials science and engineering; and

(E) advanced energy technologies and propulsion approaches;

(4) establish a robust data management strategy that ensures digital access and machine-readability; that promotes findability, interoperability, analysis- and decision-readiness and reusability; and ensures applicable scientific data are managed for wide use by Federal, State, Tribal, and local governments, academia and the public; and

(5) support one or more Institutes as described in section 201(a) of this Act for the purpose of advancing the fields of unmanned aircraft systems and the mission of the Department.

(c) RESEARCH AREAS.—In carrying out the program under subsection (a), the Secretary shall award financial assistance to eligible entities to carry out research, development, and demonstration projects over a range of subject areas including—

(1) fundamental science and technology areas, which may include—

(A) advanced sensor technologies and processes, including—

(i) optical capabilities, including Light Detection and Ranging, hyperspectral,

thermographic, and visible imaging capabilities;

(ii) nonoptical electromagnetic capabilities, including radar and radiofrequency capabilities;

(iii) acoustic capabilities, including ultrasonic capabilities; and

(iv) radiation detection, gravimetric, hyperspectral or other measurement modalities;

(B) advanced technologies and methods for remote handling, precision positioning, and navigation control;

(C) advanced technologies for secure autonomous operation, including edge computing and artificial intelligence;

(D) power electronics and wireless charging systems;

(E) novel materials, including lightweight and radiation-resistant materials;

(F) scalability of unmanned aircraft systems for increased payload capacity;

(G) technologies and processes to improve secure interoperability practices, including with

existing satellites, constellation networks, and surface-based facilities;

(H) strategies and technologies for integrated cybersecurity considerations;

(I) strategies and technologies for improved endurance, including lightweight long duration fuels, batteries, and fuel cells;

(J) open architectures and advanced algorithms to enable multi-sensor fusion and tracking of unmanned aircraft systems; and

(K) swarm and cooperative drone data collection and operation, and integration of drone control systems with dynamic sampling and real-time digital twin simulations;

(2) approaches for leveraging unmanned aircraft systems for diverse applications, which may include—

(A) advanced assessment, characterization, mapping, and recovery of energy resources, such as geothermal energy, biofuels, and critical minerals resources;

(B) field testing and monitoring of energy systems, such as onshore and offshore wind energy, fossil energy, solar energy, marine energy, nuclear energy, and hydropower systems;

(C) damage assessment of the electric grid and energy infrastructure following physical events such as wildland fires, including prescribed burns containment and emissions measurements, potential health and safety effects from contaminant releases and dispersals, and real-time analysis of impacted assets;

(D) leak detection of greenhouse gases related to energy production, including methane leak detection;

(E) agriculture and aquaculture applications;

(F) integrated data collection to inform and enhance Department modeling capabilities, including the development of climate and earth systems models;

(G) assistance in environmental management and cleanup activities;

(H) assistance in Department infrastructure management at National Laboratories and other relevant Department sites;

(I) intrusion detection and facility monitoring for physical security applications; and

(K) asset extraction of building envelope features and characteristics for rapid energy modeling purposes.

(d) TECHNOLOGY TRANSFER.—In carrying out the program under subsection (a), and in coordination with the Office of Technology Transitions, the Secretary shall support technology transfer of unmanned vehicle systems research by partnering with industry.

(e) FACILITY USE.—In carrying out the program under subsection (a), the Secretary shall make available high-performance computing infrastructure and other relevant research facilities and test beds at the National Laboratories.

(f) INTERAGENCY COORDINATION AND NONDUPLICATION.—In carrying out the program under subsection (a), the Secretary shall coordinate with the heads of other Federal departments and agencies to avoid duplication of research and other activities and to ensure that the activities carried out under this program are complementary to those currently being undertaken by other agencies.

(g) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Department to carry out this section—

(1) $50,000,000 for fiscal year 2023;

(2) $52,500,000 for fiscal year 2024;

(3) $55,125,000 for fiscal year 2025;

(4) $57,881,775 for fiscal year 2026; and

(5) $60,775,863 for fiscal year 2027.

(h) DEFINITIONS.—In this title:

(1) DEPARTMENT.—The term ''Department'' means the Department of Energy.

(2) ELIGIBLE ENTITIES.—The term ''eligible entity'' means—

(A) an institution of higher education;

(B) a National Laboratory;

(C) a State, local, territorial, or Tribal government research agency;

(D) a nonprofit research organization;

(E) a private sector entity; or

(F) a consortium of 2 or more entities described in any of subparagraphs (A) through (E).

(3) SECRETARY.—The term ''Secretary'' means the Secretary of Energy.

TITLE VII—DEPARTMENT OF HOMELAND SECURITY ACTIVITIES

SEC. 701. DEPARTMENT OF HOMELAND SECURITY ACTIVITIES.

(a) IN GENERAL.—As part of the Initiative, the Secretary, acting through the Under Secretary for Science and Technology, shall—

(1) support research, development, and testing for unmanned aircraft systems and counter-UAS systems capabilities, including for—

(A) air domain awareness and unmanned aircraft systems traffic monitoring;

(B) privacy, security, and cybersecurity of unmanned aircraft systems and counter-UAS systems capabilities;

(C) safety of unmanned aircraft systems; and

(D) testing and evaluation of unmanned aircraft systems and counter-UAS systems capabilities, performance systems engineering, and operational analysis;

(2) coordinate with all relevant offices and programs at the Department, including the Cybersecurity and Infrastructure Security Agency, U.S. Cus-

toms and Border Protection, the Federal Emergency Management Agency, the Federal Protective Service, the Transportation Security Administration, the United States Coast Guard, and the United States Secret Service;

(3) produce curated, standardized, representative, secure, and privacy protected data sets for unmanned aircraft systems and counter-UAS systems research, development, archiving, and use, prioritizing data for high-value, high-risk research;

(4) support one or more institutes as described in section 201(a) for the purpose of advancing the field of unmanned aircraft systems and counter-UAS systems capabilities; and

(5) enter into and perform such contracts, including cooperative research and development arrangements and grants and cooperative agreements or other transactions, as may be necessary in the conduct of the work of the Department and on such terms as the Secretary considers appropriate, in furtherance of the purposes of this Act.

(b) COUNTER–UAS CENTER OF EXCELLENCE.—The Secretary shall establish a center of excellence to carry out research and development that advances counter-UAS systems capabilities.

(1) SELECTION OF HOST INSTITUTION.—

(A) IN GENERAL.—The Secretary shall select an institution of higher education, or a consortium of institutions of higher education, to host and maintain the center of excellence established under this subsection.

(B) SELECTION CRITERIA.—In selecting a such an institution or consortium, the Secretary shall—

(v) give preference to applicants with strong past performance related to counter-UAS systems research, education, and workforce development activities;

(vi) give preference to applicants geographically collocated within 100 miles of Federal departments or agencies that currently possess or operate extant counter-UAS system facilities:

(vii) give preference to applicants having proven abilities and strong research enterprises in systems engineering, radio frequency (RF) directed energy, radar and antenna research and development, atmospheric monitoring that can support of chemical, biological, radiological and nu-

clear detection to include trace gases and particular matter (PM), target tracking, remote sensing and the ability to leverage artificial intelligence and machine learning to support the required data analytics;

(viii) consider the extent to which the applicant would involve the public and private sectors; and

(ix) consider the regional and national impacts of the applicant's proposed research and development activities.

(2) USE OF FUNDS.—The institution of higher education or consortium may use funds provided under this subsection to carry out fundamental research, evaluation, education, workforce development, and training efforts related to counter-UAS systems subject areas, including safety, privacy, security, cybersecurity, detecting, identifying, monitoring, tracking, disrupting and seizing control, confiscating, disabling, damaging, destruction, remote sensing, forensics, testing and evaluation of systems capabilities, performance, systems engineering, operational analysis, and advanced technologies.

(3) FEDERAL SHARE.—The Department share of a grant under this subsection shall not exceed 75

percent of the costs of establishing and operating the center of excellence and related research activities carried out by the grant recipient.

(4) AUTHORIZATION OF APPROPRIATIONS.—

(A) FISCAL YEAR 2023.—There is authorized to be appropriated to the Secretary $10,000,000 for fiscal year 2023 for making awards under this subsection.

(B) FISCAL YEARS 2024 THROUGH 2027.—There are authorized to be appropriated to the Secretary $5,000,000 in each of fiscal years 2024 through 2027 for making awards under this subsection.

(5) INSTITUTION OF HIGHER EDUCATION.—In this subsection, 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).

(c) INTERAGENCY COORDINATION.—In carrying out the activities under subsection (a), the Secretary shall coordinate with the heads of other Federal departments and agencies to avoid duplication of research and other activities and to ensure that the activities carried out under this program are complimentary to those currently being undertaken by other agencies.

(d) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Secretary to carry out this section—

(1) $30,000,000 for fiscal year 2023;

(2) $31,500,000 for fiscal year 2024;

(3) $33,075,000 for fiscal year 2025;

(4) $34,728,750 for fiscal year 2026; and

(5) $36,465,187 for fiscal year 2027.

(e) DEFINITIONS.—In this title:

(1) DEPARTMENT.—The term ''Department'' means the Department of Homeland Security.

(2) SECRETARY.—The term ''Secretary'' means the Secretary of Homeland Security.

TITLE VIII—NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION ACTIVITIES

SEC. 801. NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION RESEARCH AND DEVELOPMENT.

(a) IN GENERAL.—The Administrator shall carry out and support research, development, and demonstration activities to advance unmanned aircraft systems and unmanned maritime systems, technologies, and capabilities, and to enhance the deployment of, and data collected by, unmanned aircraft systems and unmanned maritime systems relevant to the mission of the Administration, incor-

porate such data into operations, and ensure data are managed, stewarded and archived appropriately. In carrying out this program, the Administrator shall coordinate across all relevant offices and programs at the Administration, including the Office of Oceanic and Atmospheric Research, National Environmental Satellite, Data, and Information Service, National Marine Fisheries Service, National Ocean Service, National Weather Service, and the Office of Marine and Aviation Operations.

(b) PROGRAM COMPONENTS.—In carrying out the program under subsection (a), the Administrator shall—

(1) test, evaluate, and demonstrate the utility of unmanned aircraft systems and unmanned maritime systems technologies for the Administration.

(2) support Administration activities and Cooperative Institute projects, and support and encourage Federal and State agencies, academic institutions, nongovernmental organizations, industry representatives, and others to—

(A) accelerate the transition of unmanned systems capabilities from research to operations and other uses and facilitate new unmanned aircraft systems and unmanned maritime systems applications within the Administration;

(B) evaluate current observation strategies and identify critical data gaps best suited for advanced unmanned aircraft systems and unmanned maritime systems;

(C) prioritize activities that collect or acquire routine observations which feed forecasts and models;

(D) test, develop, and evaluate safe systems capable of safely operating beyond visual line of sight;

(E) collect or acquire measurements of atmospheric and oceanic parameters; and

(F) ensure the archiving, stewardship, utility, and preservation of and public accessibility to the observations collected are shared with the Administration;

(3) provide and support research experiences and training for undergraduate and graduate students in unmanned aircraft systems and unmanned maritime systems research, development, and operations relevant to the mission of the Administration, and other education and training opportunities consistent with the purpose of this Act;

(4) contribute to and supplement field campaigns at the Department of Energy's Atmospheric

Radiation Measurement user facility in order to incorporate unmanned aircraft systems and resulting data into the development of combined observational and modeling elements; and

(5) support and conduct leading-edge research and development of innovative unmanned aircraft and maritime technologies and concepts to advance research areas in subsection (c).

(c) RESEARCH AREAS.—In carrying out the program under subsection (a), the Administrator shall award financial assistance to eligible entities to carry out projects on the use of unmanned aircraft systems and unmanned maritime systems to collect environmental data and monitor climate impacts, including—

(1) severe weather forecasts and damage assessments;

(2) rapid flood mapping;

(3) real-time hurricane data, including close-to-surface and low altitude meteorological measurements;

(4) enhanced atmospheric monitoring and sampling, including physical and chemical measurements in the atmospheric boundary layer;

(5) marine mammal detection and monitoring;

(6) near-real time harmful algal bloom measurements for rapid response efforts;

(7) coastal restoration and habitation monitoring, including detection and monitoring of marine debris, oil spill, and hazardous materials;

(8) mapping, charting, and geodesy applications to support safety of navigation;

(9) wildfire observations and data to improve fire weather modeling;

(10) other areas related to science and stewardship of the climate, weather, oceans, coasts, and Great Lakes; and

(11) any other areas the Administrator deems necessary and appropriate.

(d) PRIORITY.—In carrying out the research areas in subsection (c), the Administrator shall, to the maximum extent practicable, prioritize activities that increase the Administration's operational use of unmanned aircraft systems and unmanned maritime systems by extending the range of times, location, and conditions in which observations can be made at lower cost. As part of these activities, the Administrator may—

(1) enter into contracts with one or more entities in the commercial data sector to acquire data

collected by unmanned aircraft systems and unmanned maritime systems; and

(2) leverage existing facilities, instruments, and tools, including the Administration's satellites, fleet of ships, and crewed aircraft.

(e) TECHNOLOGY TRANSFER.—In carrying out the program under subsection (a), and in coordination with the Small Business Innovation Research program, the Administrator shall support technology transfer of unmanned aircraft systems and unmanned maritime systems research by partnering with Federal agencies and industry.

(f) COORDINATION.—The Administrator shall coordinate the activities authorized in this section with the activities authorized in section 3 of the Commercial Engagement Through Ocean Technology Act of 2018 (33 U.S.C. 4102) and engage with other Federal departments and agencies, research communities, nongovernmental organizations, and industry stakeholders through the interagency committee established by section 103.

(g) SUPPORT OF INSTITUTES.—For the purposes of the program in subsection (a), the Administrator may support relevant activities at one or more Institutes as described in section 201(a) of this Act for the purpose of advancing the field of unmanned aircraft systems or unmanned maritime systems.

(h) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Administration to carry out this section—

(1) $15,000,000 for fiscal year 2023;

(2) $15,750,000 for fiscal year 2024;

(3) $16,537,500 for fiscal year 2025;

(4) $17,364,375 for fiscal year 2026; and

(5) $18,232,593 for fiscal year 2027.

(i) DEFINITIONS.—In this title:

(1) ADMINISTRATION.—The term ''Administration'' means the National Oceanic and Atmospheric Administration.

(2) ELIGIBLE ENTITIES.—The term ''eligible entities'' means—

(A) an institution of higher education;

(B) a National Laboratory;

(C) a NOAA Cooperative Institute;

(D) a State, local, territorial, or Tribal government agency

(E) a nonprofit organization;

(F) a private sector entity; or

(G) a consortium of 2 or more entities described in subparagraphs (A) through (F).

(3) ADMINISTRATOR.—The term ''Administrator'' means the Administrator of the National Oceanic and Atmospheric Administration.

(4) UNMANNED MARITIME SYSTEMS.—The term ''unmanned maritime systems'' has the meaning given in section 2 of the Commercial Engagement Through Ocean Technology Act of 2018 (33 U.S.C. 4101).

TITLE IX—FEDERAL AVIATION ADMINISTRATION ACTIVITIES

SEC. 901. FEDERAL AVIATION ADMINISTRATION RESEARCH AND DEVELOPMENT.

(a) IN GENERAL.—As part of the Initiative, the Administrator, in coordination with the Administrator of the National Aeronautics and Space Administration and other Federal agencies, shall carry out and support research, development, testing, and demonstration activities to advance unmanned aircraft systems and to facilitate the safe integration of unmanned aircraft systems into the national airspace system.

(b) UNMANNED AIRCRAFT SYSTEMS-MANNED AIRCRAFT SAFETY RESEARCH.—As part of the activities under subsection (a), the Administrator shall conduct comprehensive research and testing for unmanned aircraft systems safety, including—

(1) collisions between unmanned aircraft systems of various sizes, traveling at various speeds, and commercial jet airliners of various sizes, traveling at various speeds;

(2) collisions between unmanned aircraft systems of various sizes, traveling at various speeds, and propeller planes of various sizes, traveling at various speeds;

(3) collisions between unmanned aircraft systems of various sizes, traveling at various speeds, and blimps of various sizes, traveling at various speeds;

(4) collisions between unmanned aircraft systems of various sizes, traveling at various speeds, and rotorcraft of various sizes, traveling at various speeds; and

(5) collisions between unmanned aircraft systems and various parts of the aforementioned aircraft, including—

(A) windshields;

(B) noses;

(C) engines;

(D) radomes;

(E) propellers; and

(F) wings.

(c) REPORT.—Not later than 1 year after the date of enactment of this Act, the Administrator shall 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 summarizing the costs and results of research under subsection (b).

(d) STUDY.—Not later than 30 days after the enactment of this Act, the Administrator shall commission an independent study to—

(1) develop parameters to conduct research and development for probabilistic metrics to enable the identification of hazards and the assessment of risks as necessary to make determinations under chapter 44807 of title 51, United States Code, that certain unmanned aircraft systems may operate safely in the national airspace system; and

(2) identify additional research needed to more effectively develop and use such metrics and make such determinations.

In developing parameters for probabilistic metrics, the study conducted pursuant to this subsection shall take into account the utility of performance standards to make determinations under section 333(a) of the FAA Modernization and Reform Act of 2012.

(e) CONSIDERATION OF RESULTS.—The Administrator shall consider the results of the study conducted under subsection (d) when making a determination described in subsection (d)(1).

(f) STUDY REPORT.—Not later than 9 months after the date of enactment of this Act, the Administrator shall 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 the results of the study conducted under subsection (d).

(g) PROBABILISTIC ASSESSMENT OF RISKS.—The Administrator shall conduct research and development to enable a probabilistic assessment of risks to inform requirements for standards for operational certification of public unmanned aircraft systems in the national airspace.

(h) SUPPORT FOR INSTITUTES.—The Administrator may support 1 or more institutes described in section 201(a) for the purpose of advancing the field of unmanned aircraft systems and supporting the mission of the Administration.

SEC. 902. UNIVERSITY UNMANNED AIRCRAFT SYSTEMS CENTERS.

(a) GRANTS FOR ESTABLISHMENT AND OPERATION.—The Administrator shall make grants to 1 or more institutions of higher education to establish and op-

erate 1 regional university unmanned aircraft system center in each of the 10 Federal regions which compromise the Standards Federal Regional Boundary System.

(b) RESPONSIBILITIES.—The responsibilities of each unmanned aircraft systems center established under this section shall include the conduct of advanced air mobility research and research concerning safely integrating unmanned aircraft systems into the national airspace system and the interpretation, publication, and dissemination of the results of such research. The responsibility of one such center may include research on detect and avoid capabilities.

(c) APPLICATION.—Any institution of higher education interested in receiving a grant under this section shall submit to the Administrator an application in such form and containing such information as the Administrator may require.

(d) SELECTION CRITERIA.—The Administrator shall select recipients of grants under this section on the basis of the following criteria:

(1) The regional unmanned aircraft system center shall be located in a State which is representative of the needs of the Federal region for improved unmanned aircraft systems test facilities.

(2) The grant recipient shall have demonstrated research and extension resources available for carrying out this subsection.

(3) The grant recipient shall have demonstrated its capability to provide leadership in making national and regional contributions for addressing long-range and immediate unmanned aircraft systems issues.

(4) The grant recipient should have an established unmanned aircraft systems or related research program.

(5) The grant recipient shall have a demonstrated commitment to supporting ongoing unmanned aircraft systems research programs.

(6) The grant recipient shall have demonstrated ability to disseminate results of unmanned aircraft systems research and educational programs through a statewide or regionwide continuing education program.

(7) The Administrator shall consider the projects which the grant recipient proposes to carry out under the grant.

(e) FEDERAL SHARE.—The Federal share of a grant under this section shall be 50 percent of the costs of estab-

lishing and operating the regional center and related research activities carried out by the grant recipient.

(f) NATIONAL ADVISORY COUNCIL.—

(1) ESTABLISHMENT; FUNCTIONS.—The Administrator shall establish in the Administration a national advisory council to coordinate the research and training to be carried out by the grant recipients, to disseminate the results of such research, to act as a clearing house between such centers and the unmanned aircraft systems industry, and to review and evaluate programs carried out by such centers.

(2) MEMBERS.—The national advisory council established under this subsection shall be composed of the directors of the unmanned aircraft systems centers and 19 other members appointed by the Administrator as follows:

(A) 6 officers of the Federal Aviation Administration, one of whom represents the Office of the Administrator, one of whom represents the Unmanned Aircraft Systems Integration Office, one of whom represents the Office of NextGen, one of whom represents the Office of Aviation Safety, one of whom represents the Office of Air Traffic Organization, and one of

whom represents the Mike Monroney Aeronautical Center.

(B) 5 representatives of State, local, territorial or tribal governments.

(C) 8 representatives of the unmanned aircraft systems industry, including private industry.

(3) TERM OF OFFICE; PAY; CHAIRMAN.—Each of the members appointed by the Administrator shall serve without pay. The chairman of the council shall be designated by the Administrator.

(4) MEETINGS.—The council shall meet at least annually and at such other times as the chairman may designate.

(5) AGENCY INFORMATION.—Subject to subchapter II of chapter 5 of title 5, United States Code, the council may secure directly from any department or agency of the United States information necessary to enable it to carry out this subsection. Upon request from the chairman of the council, the head of such department or agency shall furnish such information to the council.

(6) TERMINATION DATE INAPPLICABLE.—Section 14 of the Federal Advisory Committee Act shall not apply to the council.

(g) ADMINISTRATION THROUGH OFFICE OF THE ADMINISTRATOR.—Administrative responsibility for carrying out this section shall be in the Office of the Administrator.

(h) ALLOCATION OF FUNDS.—The Administrator shall allocate funds made available to carry out this section equitably among Federal regions.

(i) TECHNOLOGY TRANSFER SET-ASIDE.—Not less than 5 percent of the funds made available to carry out this section for any fiscal year shall be available to carry out technology transfer activities.

SEC. 903. ALLOWANCE FOR THE PURPOSES OF RESEARCH AND DEVELOPMENT.

Except as necessary to support enforcement action under applicable provisions of law against persons operating unmanned aircraft in a manner that endangers the safety of the national airspace system, and notwithstanding any other provision of law relating to the incorporation of unmanned aircraft systems into Administration plans and policies, the Administrator may not promulgate any rule or regulation regarding the operation of an unmanned aircraft system—

(1) that is flown strictly for research and development use;

(2) that is operated less than 400 feet above the ground and in Class G airspace;

(3) that is operated in a manner that does not interfere with and gives way to any manned aircraft; and

(4) with respect to which, in any case in which the unmanned aircraft system is flown within 5 miles of an airport, the operator of the aircraft provides the airport operator and the airport air traffic control tower (when an air traffic facility is located at the airport) with prior notice of the operation, including by establishing a mutually agreed upon operating procedure in cases where such unmanned aircraft system is flown from a permanent location within 5 miles of an airport.

SEC. 904. AUTHORIZATION OF APPROPRIATIONS.

(a) FEDERAL AVIATION ADMINISTRATION RESEARCH AND DEVELOPMENT FUNDING.—There are authorized to be appropriated to the Administration to carry out section 901—

(1) $20,000,000 for fiscal year 2023;

(2) $21,000,000 for fiscal year 2024;

(3) $22,050,000 for fiscal year 2025;

(4) $23,152,500 for fiscal year 2026; and

(5) $24,310,125 for fiscal year 2027.

(b) UNIVERSITY UNMANNED AIRCRAFT SYSTEMS CENTER FUNDING.—There are authorized to be appropriated to the Administration to carry out section 902—

(1) $100,000,000 for fiscal year 2023;

(2) $105,000,000 for fiscal year 2024;

(3) $110,250,000 for fiscal year 2025;

(4) $115,762,500 for fiscal year 2026; and

(5) $121,550,625 for fiscal year 2027.

SEC. 905. DEFINITIONS.

In this title:

(1) ADMINISTRATOR.—The term ''Administrator'' means the Administrator of the Federal Aviation Administration.

(2) ADMINISTRATION.—The term ''Administration'' means the Federal Aviation Administration.

TITLE X—LIMITATION

SEC. 1001. LIMITATION.

(a) IN GENERAL.—Except as otherwise provided in this section, none of the funds authorized to be appropriated by this Act may be used for the purchase, acquisition, or operation of unmanned aircraft systems—

(1) produced or assembled in, or containing components produced or assembled in, a foreign country of concern; or

(2) produced or assembled by entities owned, controlled by, or subject to the jurisdiction or direction of the government of, a foreign country of concern.

(b) EXCEPTION.—The limitation in subsection (a) shall not apply to the acquisition of unmanned aircraft systems for the purposes of research and development for improving the United States counter-unmanned aircraft systems capabilities.

(c) WAIVER.—The Secretary of Commerce may waive the limitation in subsection (a) if the Secretary determines, in consultation with the Director of National Intelligence, that such waiver is in the national security interest of the United States.

(d) REPORT TO CONGRESS.—The Secretary of Commerce shall report the issuance of such a waiver to the relevant committees of jurisdiction of Congress not later than 30 days after issuing such waiver.

(e) DEFINITION.—In this section, the term ''foreign country of concern'' means—

(1) a country that is a covered nation (as defined in section 4872(d) of title 10 United States Code); and

(2) any country that the Secretary of Commerce, in consultation with the Secretary of Defense

and the Director of National Intelligence, determines to be engaged in conduct that is detrimental to the national security or foreign policy of the United States.