Union Calendar No. 527

118TH CONGRESS
2D SESSION

H. R. 3560

[Report No. 118–630, Part I]

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

IN THE HOUSE OF REPRESENTATIVES

MAY 22, 2023

Mr. LUCAS introduced the following bill; which was referred to the Committee on Science, Space, and Technology, and in addition to the Committees on Oversight and Accountability, Homeland Security, and Transportation and Infrastructure, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned

AUGUST 13, 2024

Reported from the Committee on Science, Space, and Technology with an amendment

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

AUGUST 13, 2024

Committees on Oversight and Accountability, Homeland Security, and Transportation and Infrastructure discharged; committed to the Committee of the Whole House on the State of the Union and ordered to be printed

[For text of introduced bill, see copy of bill as introduced on May 22, 2023]

A BILL

To provide for coordinated Federal efforts to accelerate civilian unmanned aircraft systems 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 Research and Development 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) Advanced air mobility aims to transform the way people and goods are transported through new capabilities and applications.

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

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

(5) Unmanned aircraft systems and advanced air mobility 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.

(6) National and homeland security threats posed by unmanned aircraft systems and advanced air mobility 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.

(7) The Federal Government has an important role in advancing research, development, voluntary consensus technical standards, and education activities in advanced air mobility and unmanned aircraft systems technologies through coordination and collaboration between and among State, local, Federal,

and Tribal governments, academia, the private sector, and labor organizations.

(8) There is a lack of voluntary consensus technical standards for unmanned aircraft systems and advanced air mobility for academia and the public and private sectors.

(9) The United States needs to invest in domestic manufacturing and secure supply chains of unmanned aircraft systems and advanced air mobility systems to meet the demand by the Government and the commercial sectors, to ensure United States high quality domestic manufacturing and supply chain jobs, and to reduce reliance on foreign-made systems.

SEC. 3. DEFINITIONS.

In this Act, the following definitions apply:

(1) ADVANCED AIR MOBILITY.—The term ''advanced air mobility'' means a transportation system that transports people and property by air between two points in the United States using aircraft with advanced technologies, including electric aircraft or electric vertical take-off and landing aircraft, in both controlled and uncontrolled airspace.

(2) AGENCY HEAD.—The term ''agency head'' means the head of any Executive agency (as defined in section 105 of title 5, United States Code).

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

(5) 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)

(6) INTERAGENCY WORKING GROUP.—The term "Interagency Working Group" means the Advanced Air Mobility and Unmanned Aircraft Systems Interagency Working Group of the National Science and Technology Council established under section 101 of title 1.

(7) 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.

(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) TECHNICAL STANDARD.—The term "technical standard" has the meaning given such term in section 12(d)(5) of the National Technology Transfer and Advancement Act of 1995 (15 U.S.C. 272 note).

(10) 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 advanced air mobility and unmanned aircraft systems, and maximize benefits and mitigate risks of such systems by—

(1) supporting research, development, demonstration, testing, and transition to operations of secure advanced air mobility systems and unmanned aircraft systems, including research and development to enable integration of such systems into the National Airspace System;

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

(3) promoting domestic manufacturing and domestic supply chains for unmanned aircraft systems and mitigating supply chain risks;

(4) supporting activities to mitigate risks to public safety and national and homeland security, including through response to disasters;

(5) preparing the present and future United States workforce for the integration of advanced air

mobility and unmanned aircraft systems across sectors of the economy, including through support for curriculum development and research opportunities and through partnerships that may include labor organizations and labor-management workforce training organizations;

(6) supporting research, development, demonstration, and testing of civilian applications of unmanned aerial systems, including improved safety and sustainability of ground transportation, environmental monitoring, and disaster response;

(7) promoting research and development collaboration among State, local, Tribal, and Federal governments, National Laboratories, industry, labor organizations, and academic institutions;

(8) promoting the development of voluntary consensus technical standards and best practices for advanced air mobility and unmanned aircraft systems; and

(9) applying lessons learned from unmanned aircraft systems research, development, demonstration, and testing to advanced air mobility systems.

TITLE I—INTERAGENCY ACTIVITIES

SEC. 101. INTERAGENCY WORKING GROUP.

(a) DESIGNATION.—

(1) IN GENERAL.—The National Science and Technology Council shall establish or designate an interagency working group on advanced air mobility and unmanned aircraft systems to coordinate Federal research, development, deployment, testing, and education activities to enable advanced air mobility and unmanned aircraft systems.

(2) MEMBERSHIP.—The interagency working group shall be comprised of senior representatives from the National Aeronautics and Space Administration, the Department of Transportation, the National Oceanic and Atmospheric Administration, the National Science Foundation, the National Institute of Standards and Technology, Department of Homeland Security, and such other Federal agencies as appropriate.

(b) DUTIES.—The interagency working group shall—

(1) develop the strategic research plan to guide Federal research to enable advanced air mobility and unmanned aircraft systems and oversee implementation of the plan;

(2) oversee the development of—

(A) an assessment of the current state of United States competitiveness and leadership in advanced air mobility and unmanned aircraft systems, including the scope and scale of United States investments in relevant research and development; and

(B) strategies to strengthen and secure the domestic supply chain for advanced air mobility systems and unmanned aircraft systems;

(3) facilitate communication and outreach opportunities with academia, industry, professional societies, State, local, Tribal, and Federal governments, and other stakeholders;

(4) facilitate partnerships to leverage knowledge and resources from industry, State, local, Tribal, and Federal governments, National Laboratories, Unmanned Aircraft Systems Test Sites, academic institutions, and others;

(5) coordinate with the Advanced Air Mobility Working Group established by Public Law 117–203 and heads of other Federal departments and agencies to avoid duplication of research and other activities to ensure that the activities carried out by the inter-

agency working group are complementary to those being undertaken by other interagency efforts; and

(6) 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.

(c) REPORT TO CONGRESS.—

(1) INITIAL REPORT.—Not later than 1 year after the date of enactment of this Act, the interagency working group shall transmit 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 that—

(A) includes a summary of federally funded advanced air mobility and unmanned aircraft systems research, development, deployment, and testing activities, including the budget for each of these activities; and

(B) describes the progress in developing the plan required under section 102 of this Act.

(2) BIENNIAL REPORT.—Not later than 2 years after the delivery of the initial report under paragraph (1) and every 2 years thereafter until December

31, 2033, the interagency working group shall transmit 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 that includes—

(A) a summary of federally funded advanced air mobility and unmanned aircraft systems research, development, deployment, and testing activities, including the budget for each of these activities; and

(B) an analysis of the progress made towards achieving the goals and priorities for the interagency research plan developed by the interagency work group under sections 102 and 103.

(3) STRATEGIC RESEARCH PLAN.—Not later than 2 years after the date of enactment of this Act, the interagency working group shall transmit the strategic research plan developed under section 102 to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate.

SEC. 102. STRATEGIC RESEARCH PLAN.

(a) IN GENERAL.—Not later than 2 years after the date of enactment of this Act, the interagency working group shall develop and periodically update, as appro-

priate, a strategic plan for Federal research, development, deployment, and testing of advanced air mobility systems and unmanned aircraft systems. In developing the plan, the interagency working group shall consider and use information, reports, and studies on advanced air mobility and unmanned aircraft systems that have identified research, development, deployment, and testing needed, and recommendations made by the National Academies of Sciences, Engineering, and Medicine in the review of the plan under subsection (c).

(b) CONTENTS OF THE PLAN.—The plan shall—

(1) determine and prioritize areas of advanced air mobility and unmanned aircraft systems research, development, demonstration, and testing requiring Federal Government leadership and investment;

(2) establish, for the 10-year period beginning in the year the plan is submitted, the goals and priorities for Federal research, development, deployment, and testing which will—

(A) support the development of advanced air mobility technologies and the development of an advanced air mobility research, innovation, and manufacturing ecosystem;

(B) provide sustained, consistent, and coordinated support for advanced air mobility and

unmanned aircraft systems research, development, and demonstration, including through grants, cooperative agreements, testbeds, and testing facilities;

(C) apply lessons learned from unmanned aircraft systems research, development, demonstration, and testing to advanced air mobility systems;

(D) support the development of voluntary consensus technical standards and best practices for the development and use of advanced air mobility and unmanned aircraft systems;

(E) support education and training activities at all levels to prepare the United States workforce to use and interact with advanced air mobility systems and unmanned aircraft systems;

(F) support partnerships to leverage knowledge and resources from industry, State, local, Tribal, and Federal governments, National Laboratories, Unmanned Aircraft Systems Test Ranges, academic institutions, labor organizations, and others to advance research activities;

(G) leverage existing Federal investments; and

(H) promote hardware interoperability and open-source systems;

(3) support research and other activities on the impacts of advanced air mobility and unmanned aircraft systems on national security, safety, economic, legal, workforce, and other appropriate societal issues;

(4) reduce barriers to transferring research findings, capabilities, and new technologies related to advanced air mobility and unmanned aircraft systems into operation for the benefit of society and United States competitiveness;

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

(6) identify relevant programs and make recommendations for the coordination of relevant activities of the Federal agencies and set forth the role of each Federal agency in implementing the plan.

(c) NATIONAL ACADEMIES OF SCIENCES, ENGINEERING, AND MEDICINE EVALUATION.—The Administrator shall enter into an agreement with the National Academies of Sciences, Engineering, and Medicine to review the plan every 5 years.

(d) PUBLIC PARTICIPATION.—In developing the plan, the interagency working group shall consult with representatives of stakeholder groups, which may include academic, State, industry, and labor organizations. Not later than 90 days before the plan, or any revision thereof, is submitted to Congress, the plan shall be published in the Federal Register for a public comment period of not less than 60 days.

SEC. 103. COUNTER-UAS RESEARCH PLAN.

(a) IN GENERAL.—Not later than 1 year after the date of enactment of this Act, the interagency working group shall develop and periodically update, as appropriate, a strategic plan for Federal research, development, evaluation, and testing of counter-UAS systems and detection systems, as consistent with counter-UAS systems legal authorities.

(b) CONTENTS OF THE PLAN.—The plan shall—

(1) determine and prioritize areas of counter-UAS systems and detection systems research, development, evaluation, and testing requiring Federal Government leadership and investment;

(2) establish, for the 10-year period beginning in the year the plan is submitted, the goals and priorities for Federal research, development, evaluation, and testing which will—

(A) support the development of counter-UAS systems and detection systems and the development of a counter-UAS research, innovation, and manufacturing ecosystem;

(B) provide sustained, consistent, and coordinated support for counter-UAS research, development, evaluation, and testing, including through grants, cooperative agreements, testbeds, and testing facilities;

(D) support education and training activities to prepare the United States workforce to use and interact with counter-UAS systems and detection systems;

(E) support partnerships to leverage knowledge and resources from industry, State, local, Tribal, and Federal governments, National Laboratories, Counter-UAS Test Ranges, academic institutions, and others to advance research activities; and

(F) leverage existing Federal investments;

(3) support research and other activities on the impacts of counter-UAS systems and detection systems; and

(4) identify relevant programs and make recommendations for the coordination of relevant activi-

ties of the Federal agencies and set forth the role of each Federal agency in implementing the plan.

SEC. 104. NATIONAL DRONE TECHNOLOGY CENTER.

(a) ESTABLISHMENT.—Subject to the availability of appropriations for such purpose, the Secretary of Commerce, in collaboration with the Secretary of Defense, the Secretary of Transportation, and the heads of other Federal agencies, as appropriate, may establish a national drone technology center to conduct research and development of unmanned aircraft systems to strengthen the economic competitiveness and security of the domestic supply chain. Such center shall be operated as a public-private sector consortium with participation from the private sector, which may include employers and labor organizations, and the National Institute of Standards and Technology.

(b) FUNCTIONS.—The functions of the center established under subsection (a) shall be to conduct research and development related to unmanned aircraft systems manufacturing, design and components, and prototyping that strengthens the entire domestic ecosystem and incorporates the upstream participation of workers, which may include partnership with labor organizations. The center shall place emphasis on the following:

(1) Unmanned aircraft systems advanced testing and assembly capability in the domestic ecosystem.

(2) Materials characterization, instrumentation and testing for unmanned aircraft systems.

(3) Virtualization and automation of maintenance of unmanned aircraft systems machinery.

(4) Metrology for security and supply chain verification.

(5) strategies for domestic transportation and supply chain job creation, skills development, and workforce training for high-quality jobs.

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 an assessment of the following:

(1) The size of the Federal unmanned aircraft fleet and the extent to which any unmanned aircraft systems have been procured from a covered foreign entity on the list maintained in Supplement No. 4 to part 744 of title 15, Code of Federal Regulations.

(2) The operation of these systems across the Federal Government.

(3) Policies and practices governing the procurement of unmanned aircraft systems from covered foreign entities.

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

(5) The risks associated with use of these systems by the Federal Government, including physical safety, privacy, and cybersecurity.

(c) GAO REPORT.—Not later than 1 year after the date of the enactment of this Act, the Comptroller General shall report to Congress 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.—The Administrator of the National Aeronautics and Space Administration may 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.—The Director of the National Institute of Standards and Technology, the Director of the National Science Foundation, the Adminis-

trator of the National Aeronautics and Space Administration, and any other agency head may award financial assistance, to an eligible entity, or consortia thereof, as determined by an agency head, to establish and support one or more Institutes.

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

(A) may focus on—

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

(ii) a cross-cutting challenge for research, development, testing, manufacturing, or use of advanced air mobility and 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, labor organizations, 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;

(G) applies lessons learned from unmanned aircraft systems research, development, demonstration, and testing to advanced air mobility systems; and

(H) supports high quality workforce development in advanced air mobility and unmanned aircraft systems related disciplines in the United States, including increasing the participation of groups historically underrepresented in STEM, among other goals.

(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 advanced air mobility systems and unmanned aircraft systems and for re-

search and development using advanced air mobility systems and unmanned aircraft systems;

(B) developing and managing testbeds, Unmanned Aircraft Systems Test Ranges, for advanced air mobility or unmanned aircraft systems, including sector-specific test beds, designed to enable users to evaluate advanced air mobility systems and unmanned aircraft systems prior to deployment;

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

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

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

(F) providing technical assistance to users, including software engineering support, for ad-

vanced air mobility systems and unmanned aircraft systems research and development relevant to the Institute's research goals;

(G) supporting the purchase of advanced air mobility and unmanned aircraft systems software;

(H) engaging in outreach to broaden participation by groups historically underrepresented in STEM in advanced air mobility and unmanned aircraft systems research, development and workforce, including through partnership with labor organizations and other entities;

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

(J) such other activities that an agency head whose agency's missions contribute to or are affected by advanced air mobility and 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 Of-

fice 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 up to 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 paragraph (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, as ap-

propriate, with other research institutions, industry, labor organizations, nonprofits, academic institutions, and others to leverage expertise in advanced air mobility and 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 advanced air mobility and unmanned aircraft systems, including how the institute will broaden the participation of groups historically underrepresented in STEM, among other goals; 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 advanced air mobility and unmanned aircraft systems, including the agencies outlined in section 103(c).

(B) NONDUPLICATION.—In carrying out the program under this section, the Administrator 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 by Institutes are complementary to those being undertaken by other agencies.

(C) COORDINATING NETWORK.—The Administrator of the National Aeronautics and Space Administration may 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.

(D) FUNDING.—The head of an agency may request and accept funds from, and provide funds to, 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 2024 through 2028 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.—The Director, consistent with the research plan in section 102—

(1) shall support measurement science research and development in support of best practices and voluntary consensus technical standards for advanced air mobility and unmanned aircraft systems, including for—

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

(B) safety and operational performance of advanced air mobility and unmanned aircraft systems;

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

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

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

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

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

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

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

(5) shall apply lessons learned from unmanned aircraft systems research, development, demonstration, and testing to advanced air mobility systems; and

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

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

(1) solicit input from university researchers, private sector experts, relevant Federal agencies, Federal laboratories, State, local, and Tribal governments, civil society groups, labor organizations, and other relevant stakeholders; and

(2) provide opportunity for public comment on guidelines and best practices, as appropriate.

(c) 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 the availability of appropriations, continue carrying out a program to award prizes competitively to stimulate research and development of innovative advanced air mobility and unmanned aircraft sys-

tems technologies in order to expand upon and improve 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.

(d) 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 2024;

(2) $21,000,000 for fiscal year 2025;

(3) $22,050,000 for fiscal year 2026;

(4) $23,152,500 for fiscal year 2027; and

(5) $24,310,125 for fiscal year 2028.

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 advanced air mobility and 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) LEVERAGING EXPANSION AWARDS FOR CRITICAL TECHNOLOGIES.—Section 25B of the National Institute of Standards and Technology Act (15 U.S.C. 278k–2) is amended—

(1) in subsection (e), by inserting the following after paragraph (5):

"(6) to support the domestic manufacturing of critical and emerging technologies and reduce the supply chain risk of these technologies;"; and

(2) by inserting the following after subsection (e) and redesignating accordingly:

"(f) TOPIC SELECTION.—The Director may select topics for awards made under paragraph (e)(6) in accordance with the following:

"(1) The Director shall select unmanned aircraft systems as an initial topic for the pilot program.

"(2) The Director may select additional topics that the Director determines are—

"(A) rapidly evolving; and

"(B) of high importance to the economy and security of the United States.".

(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 support robust advanced air mobility and unmanned aircraft systems industries and create high quality jobs 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 advanced air mobility and unmanned aircraft systems, including components, software, sensors, or other technology associated with advanced air mobility systems and unmanned aircraft systems.

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

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

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

(E) A description of supply chain and technological challenges that small and mid-sized manufacturers face in building up advanced air mobility and unmanned aircraft systems capacity, and the prevalence of these challenges.

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

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

(3) SUPPLY CHAIN DATABASE.—The Director shall carry out this survey in accordance with requirements under section 10253 of the Research and Development, Competition, and Innovation Act (enacted as division B of Public Law 117–167; 42 U.S.C. 18961).

(4) 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 UPDATE.—Subparagraph (B) of section 34(d)(1) of the National Institute of Standards and Technology Act (15 U.S.C. 278s(d)(1)) is amended by inserting ", including unmanned aircraft systems" after "aeronautics and advanced materials".

(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.—Consistent with the research plan in section 102, the Director shall support research and STEM education and related activities in advanced air mobility and 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—

(1) shall support fundamental research on the underlying technologies for advanced air mobility and 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 decision-making;

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

(D) improving or developing materials for advanced air mobility and unmanned aircraft systems;

(E) understanding safety and sustainability of advanced air mobility and unmanned aircraft systems as a part of a transportation system, including the impacts of advanced air mobility and 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) shall support research and development of advanced air mobility and 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) shall support research on data modeling and validation of the use of advanced air mobility and unmanned aircraft systems;

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

(5) shall support research on the ethical use of advanced air mobility and unmanned aircraft systems, including protection of individual privacy;

(6) shall support research on workforce impacts and opportunities associated with advanced air mobility and unmanned aircraft systems;

(7) shall support age-appropriate middle school and high school level STEM education research and related activities related to advanced air mobility and unmanned aircraft systems and related technologies, which may include—

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

(B) utilizing advanced air mobility and unmanned aircraft systems technologies to advance the engagement of students, including students from groups historically underrepresented in STEM, in STEM through providing before school, after-school, out-of-school, or summer activities;

(C) developing professional development resources for STEM educators in utilizing advanced air mobility and unmanned aircraft systems technologies and applications in their curriculum and in formal and informal education settings, including through distance-delivered courses;

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

(E) designing advanced air mobility and 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;

(8) shall support undergraduate and graduate education and workforce development research and related activities related to advanced air mobility, unmanned aircraft systems, and related technologies, which may include—

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

(C) facilitating participation in collegiate level advanced air mobility and unmanned aircraft systems robotic competitions; and

(D) ensuring that students pursuing master's degrees and doctoral degrees in fields relat-

ing to advanced air mobility and 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);

(9) shall support activities to develop a skilled technical workforce for supporting and operating advanced air mobility and unmanned aircraft systems, which may include supporting national centers focused on educating and training the skilled technical workforce in advanced air mobility and 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 advanced air mobility and unmanned aircraft system applications and technologies;

(B) developing curriculum for community and technical colleges to train and upskill the skilled technical workforce in advanced air mo-

bility and unmanned aircraft system applications and technologies;

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

(D) in partnership and consultation with industry and labor organizations, employing activities to increase the visibility and utility of careers in advanced air mobility and unmanned aircraft applications and technologies;

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

(11) may support one or more Institutes as described in section 201(a) for the purpose of advancing the field of advanced air mobility and unmanned aircraft systems;

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

(13) shall ensure all activities under this section are subject to the data management policies of the Foundation;

(14) shall apply lessons learned from unmanned aircraft systems research, development, demonstration, and testing to advanced air mobility systems; and

(15) may conduct 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 advanced air mobility and unmanned aircraft systems in the United States and address pre-competitive industry challenges.

(d) 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 2024;

(2) $52,500,000 for fiscal year 2025;

(3) $55,125,000 for fiscal year 2026;

(4) $57,881,775 for fiscal year 2027; and

(5) $60,775,863 for fiscal year 2028.

(e) 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.—Consistent with the research plan in section 102, the Administrator, in consultation with the Administrator of the Federal Aviation Administration and other Federal agencies, shall, subject to the availability of appropriations, carry out research and development to facilitate the safe integration of advanced air mobility and unmanned aircraft systems into the National Airspace System. Research topics may include—

(1) sense and avoid capabilities;

(2) the transition of unmanned aircraft system traffic management into operational use in the National Airspace System;

(3) safety related to autonomy, autonomous unmanned aircraft systems, and remotely-piloted unmanned aircraft systems;

(4) human systems integration; and

(5) hazardous weather condition avoidance.

(b) COOPERATIVE UNMANNED AIRCRAFT SYSTEM ACTIVITIES.—Section 31504 of title 51, United States Code, is amended by inserting at the end the following: "Oper-

ational 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) CONSIDERATIONS.—In carrying out the research and development under subsection (a), the Administrator shall continue to coordinate and partner with the Federal Aviation Administration, the Department of Defense, the Department of Homeland Security, industry, academia, and labor organizations to mature and help implement unmanned aircraft system traffic management related concepts, architectures, services, and strategic as well as tactical deconfliction to advance the safe integration of drones into the National Airspace System. As an interim step, the Administrator shall leverage commercial and public good unmanned aircraft system applications, such as wildfire and disaster monitoring and mitigation, to demonstrate and help validate concepts, architectures, and other measures toward the safe integration of unmanned aircraft systems into the National Airspace System. In addition, the Administrator shall carry out research and development on protocols for enabling the safe integration of many simultaneous drone operations beyond visual line of sight.

(d) LESSONS LEARNED.—The Administrator shall apply lessons learned from unmanned aircraft systems research, development, demonstration, and testing to advanced air mobility systems.

(e) COORDINATION.—The Administrator shall contribute to, as appropriate, efforts to inform the development of voluntary consensus-based technical standards, as led by standards development organizations, to facilitate the incorporation of advanced air mobility and unmanned aircraft systems into the National Airspace System and shall coordinate with other relevant government agencies and nongovernmental entities, including industry and labor organizations, in its contributions to standards development activities.

(f) ASSESSMENT.—The Administrator shall coordinate with the Administrator of the Federal Aviation Administration to conduct an assessment to identify metrics, estimated milestone dates, and performance measures necessary to safely integrate unmanned aircraft systems and advanced air mobility systems into the National Airspace System.

(g) REPORT.—Not later than 120 days after the completion of the assessment in subsection (f), the Administrator shall submit a report on the progress towards meeting the metrics, milestone dates, and performance measures to the Committee on Science, Space, and Technology of the

House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate.

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

(a) IN GENERAL.—The Administrator shall lead a national pilot program to carry out unmanned aircraft 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 award, on a merit-reviewed, competitive basis, a grant to a nonprofit organization, an institution of higher education, or a consortium thereof, to administer the pilot program (in this section referred to as the ''competition administrator'').

(c) AWARD CRITERIA.—The Administrator shall ensure that the award decision made under subsection (b) take into account the extent to which the eligible entity—

(1) identifies a plan for engaging eligible institutions from diverse geographic areas, including poor, rural, and Tribal communities; and

(2) identifies a plan for connecting STEM activities to Administration missions and centers.

(d) COMPETITION ADMINISTRATOR RESPONSIBILITIES.—In carrying out the pilot program, 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 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 in subsection (d), the competition administrator shall consider 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 pilot program 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 system;

(2) allow students to compete with other teams in the performance of the constructed unmanned aircraft 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 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;

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

(7) encourage, to the greatest extent practicable, the participation of students from groups historically underrepresented in STEM.

(g) REPORT TO CONGRESS.—No later than 6 months following the end of the pilot program, the Administrator shall transmit to the Committee on Science, Space, and Technology and the Committee on Commerce, Science, and Transportation of the Senate, a report describing the accomplishments, lessons learned, any challenges in the implementation of the pilot program, and recommendations for whether to continue the pilot program.

(h) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated to the Administrator $6,000,000 in each of fiscal years 2024 through 2028 to carry out the pilot program in this section. Of the funds authorized—

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

(2) $5,000,000 per year shall be awarded for grants to carry out competitions under the pilot program in subsection (d).

(i) 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 ACTIVITIES.

(a) IN GENERAL.—Consistent with the research plan in section 102, the Secretary shall carry out cross-cutting research, development, and demonstration activities to advance unmanned aircraft system technologies, capabilities, and workforce needs and to improve the reliability of the use of unmanned aircraft systems in ways relevant to the mission of the Department. In carrying out these activities, 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) RESEARCH ACTIVITIES.—In carrying out subsection (a), the Secretary—

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

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

(3) shall provide research experiences and training for undergraduate and graduate students in unmanned aircraft 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) shall ensure all activities under this section are subject to the data management policies of the Department; and

(5) may 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 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, applied science, and advanced technology areas, which may include—

(A) advanced sensor technologies and innovative sensor materials, devices, 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 and infrasonic capabilities;

(iv) micro and nano technology;

(v) collection, processing, and storage of uniquely identifiable signatures; and

(vi) 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 materials and materials with robust performance under extreme conditions;

(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, industrial control systems, 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, fuel cells, and other storage systems;

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

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

(L) approaches to allow for use of advanced artificial intelligence and advanced computation for improved aircraft structural and aerodynamic design;

(M) relevant microelectronics technologies, including novel devices, systems, and architectures; and

(N) strategies and technologies for energy efficient manufacturing of specialized components;

(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, bioenergy feedstock resources, and critical minerals resources;

(B) real time asset management, infrastructure inspection, monitoring, fault prediction and detection, and field testing of electric grid and energy infrastructure 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 cyberattacks and other human-caused destruction and other 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 resource extraction and energy production and delivery, 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 and computational tools;

(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;

(J) data collection of building envelope features and characteristics for rapid energy modeling purposes; and

(L) improving efficiency of manufacturing processes.

(d) TECHNOLOGY TRANSFER.—In carrying out subsection (a), and in coordination with the Office of Tech-

nology Transitions, the Secretary shall support technology transfer of unmanned aircraft systems research.

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

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

(1) $50,000,000 for fiscal year 2024;

(2) $52,500,000 for fiscal year 2025;

(3) $55,125,000 for fiscal year 2026;

(4) $57,881,775 for fiscal year 2027; and

(5) $60,775,863 for fiscal year 2028.

(g) 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.—Consistent with the research plan in section 102 and in coordination with the Administrator of the Federal Aviation Administration and the heads of other relevant Federal agencies, as appropriate, the Secretary, acting through the Under Secretary for Science and Technology—

(1) shall support research, development, evaluation, and testing for advanced air mobility, unmanned aircraft systems, counter-UAS systems and detection systems capabilities, including for—

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

(B) privacy, security, and cybersecurity of advanced air mobility systems, unmanned air-

craft systems, and counter-UAS systems and detection systems capabilities;

(C) safe operations of counter-UAS systems and detection systems in the National Airspace System; and

(D) testing and evaluation of unmanned aircraft systems and counter-UAS systems and detection systems capabilities, performance systems engineering, operational analysis and human systems integration, including factors that impact performance of end-users in the operation and maintenance of advanced air mobility and unmanned aircraft systems;

(E) leveraging and preparing for adversarial use of artificial intelligence against advanced air mobility, unmanned aircraft systems, and counter-UAS systems and detection systems; and

(F) maritime detection and monitoring of hazards to navigation, potential and actual pollution incidents, vessel discharge and vessel air emissions monitoring and enforcement, and pollution response operations;

(2) shall coordinate with all relevant offices and programs at the Department, including the Cyberse-

curity and Infrastructure Security Agency, U.S. Customs and Border Protection, the Federal Emergency Management Agency, the Federal Protective Service, the Transportation Security Administration, the United States Coast Guard, the United States Secret Service, the Office of Strategy, Policy and Plans, and the Department of Homeland Security Special Events Program;

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

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

(5) shall 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.—Subject to the availability of appropriations for the purpose, the Secretary may, in consultation with the Federal Aviation Administration and the heads of other relevant Federal agencies, as appropriate, establish a center of excellence to carry out research and development that advances counter-UAS systems and detection 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—

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

(ii) give preference to applicants geographically collocated within 100 miles of

Federal departments or agencies that currently possess or operate extant counter-UAS systems and detection systems facilities:

(iii) give preference to applicants having proven abilities and strong research enterprises in systems engineering, radio frequency directed energy, radar and antenna research and development, atmospheric monitoring that can support of chemical, biological, radiological and nuclear detection to include trace gases and particular matter, target tracking, remote sensing and the ability to leverage artificial intelligence and machine learning to support the required data analytics;

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

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

(2) USE OF FUNDS.—Notwithstanding section 46502 of title 49, United States Code, or sections 32, 1030, 1367 and chapters 119 and 206 of title 18, 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 and detection 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 2024.—There is authorized to be appropriated to the Secretary $10,000,000 for fiscal year 2024 for making awards under this subsection.

(B) FISCAL YEARS 2025 THROUGH 2028.—There are authorized to be appropriated to the Secretary $5,000,000 in each of fiscal years 2025

through 2028 for making awards under this subsection.

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

(1) $30,000,000 for fiscal year 2024;

(2) $31,500,000 for fiscal year 2025;

(3) $33,075,000 for fiscal year 2026;

(4) $34,728,750 for fiscal year 2027; and

(5) $36,465,187 for fiscal year 2028.

(d) 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, consistent with the research plan in section 102, shall carry out and support research, development, and demonstration activities to advance unmanned aircraft systems technologies, and capabilities, and to enhance the deployment of, and data col-

lected by, unmanned aircraft systems relevant to the mission of the Administration, incorporate such data into operations, and ensure data are managed, stewarded and archived appropriately. In carrying out these activities, 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) RESEARCH ACTIVITIES.—In carrying out subsection (a), the Administrator—

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

(2) may 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) enable the transition of unmanned aircraft systems capabilities from research to operations and other uses and facilitate new un-

manned aircraft systems applications within the Administration;

(B) evaluate current observation strategies and identify critical data gaps best suited for advanced unmanned aircraft 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) shall provide and support research experiences and training for undergraduate and graduate students in unmanned aircraft 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) may 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) shall support and conduct leading-edge research and development of innovative unmanned aircraft systems technologies and concepts to advance research areas in subsection (c).

(c) RESEARCH AREAS.—In carrying out subsection (a), the Administrator shall award financial assistance to eligible entities to carry out projects on the use of unmanned aircraft 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 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

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

(e) TECHNOLOGY TRANSFER.—In carrying out subsection (a) the Administrator shall support technology transfer of unmanned aircraft 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 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.

(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 2024;

(2) $15,750,000 for fiscal year 2025;

(3) $16,537,500 for fiscal year 2026;

(4) $17,364,375 for fiscal year 2027; and

(5) $18,232,593 for fiscal year 2028.

(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.

TITLE IX—FEDERAL AVIATION ADMINISTRATION ACTIVITIES

SEC. 901. FEDERAL AVIATION ADMINISTRATION RESEARCH AND DEVELOPMENT.

(a) IN GENERAL.—Consistent with the research plan in section 102, the Administrator, in coordination with the Administrator of the National Aeronautics and Space Ad-

ministration and other Federal agencies, shall carry out and support research, development, testing, demonstration, technology transfer, and implementation activities to enable advanced air mobility and unmanned aircraft systems and to facilitate the safe integration of advanced air mobility and unmanned aircraft systems into the national airspace system, in areas including—

(1) beyond visual-line-of-sight operations;

(2) command and control link technologies;

(3) development and integration of unmanned aircraft system traffic management into the national airspace system;

(4) noise and other societal and environmental impacts;

(5) development of an industry consensus vehicle-to-vehicle standard;

(6) safety, including collisions between advanced air mobility and unmanned aircraft systems of various sizes, traveling at various speeds, and various other crewed aircraft or various parts of other crewed aircraft of various sizes and traveling at various speeds; and

(7) detect and avoid capabilities.

(b) LESSONS LEARNED.—The Administrator shall apply lessons learned from unmanned aircraft systems re-

search, development, demonstration, and testing to advanced air mobility systems.

(c) RESEARCH ON APPROACHES TO EVALUATING RISK.—The Administrator shall conduct research on approaches to evaluating risk in emerging vehicles, technologies, and operations for unmanned aircraft systems and advanced air mobility systems. Such research shall include—

(1) defining quantitative metrics, including those needed for the Secretary of Transportation to make determinations and establish requirements for the operations of certain unmanned aircraft systems, as described under section 44807 of title 49, United States Code, as amended by this title;

(2) developing risk-based processes and criteria to inform the development of regulations and certification of complex operations, to include autonomous beyond-visual-line-of-sight operations, of unmanned aircraft systems of various sizes and weights, and advanced air mobility systems; and

(3) considering the utility of performance standards to make determinations under section 44807 of title 49, United States Code, as amended by this title.

(d) 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 a report on the actions taken by the Administrator to implement provisions under this section that includes—

(1) a summary of the costs and results of research under subsection (a)(6);

(2) a description of plans for and progress toward the implementation of research and development under subsection (c);

(3) a description of the Administration's progress using research and development to inform the development of certification guidance and regulations of—

(A) large unmanned aircraft systems, including those weighing more than 55 pounds; and

(B) extended autonomous and remotely piloted operations beyond visual line of sight in controlled and uncontrolled airspace; and

(4) a current Plan for Full Operational Capability of Unmanned Aircraft Systems Traffic Management, as described in section 376 of Public Law 115–254, the FAA Reauthorization Act of 2018.

SEC. 902. PARTNERSHIPS FOR RESEARCH, DEVELOPMENT, DEMONSTRATION, AND TESTING.

(a) STUDY.—The Administrator shall enter into an arrangement with the National Academy of Public Administration to examine Administration research, development, demonstration, and testing partnerships to advance unmanned aircraft systems and advanced air mobility and to facilitate the safe integration of unmanned aircraft systems into the national airspace system.

(b) CONSIDERATIONS.—The study in subsection (a) shall—

(1) identify existing Administration partnerships with external entities, including academia and Centers of Excellence, industry, and nonprofit organizations, and the types of such partnership arrangements;

(2) examine the partnerships in paragraph (1), including the scope and areas of research, development, demonstration, and testing carried out, and associated arrangements for performing research and development activities;

(3) review the extent to which the Administration uses the results and outcomes of each partnership to advance the research and development in unmanned aircraft systems;

(4) identify additional research and development areas, if any, that may benefit from partnership arrangements, and whether such research and development would require new partnerships;

(5) identify any duplication of ongoing or planned research, development, demonstration, or testing activities;

(6) identify effective and appropriate means for publication and dissemination of the results and sharing with the public, commercial, and research communities related data from such research, development, demonstration, and testing conducted under such partnerships;

(7) identify effective mechanisms, either new or already existing, to facilitate coordination, evaluation, and information-sharing among and between such partnerships;

(8) identify effective and appropriate means for facilitating technology transfer activities within such partnerships;

(9) identify the extent to which such partnerships broaden participation from groups historically underrepresented in STEM and include participation by industry, workforce, and labor organizations; and

(10) review options for funding models best suited for such partnerships, which may include cost-sharing and public-private partnership models with industry.

(c) TRANSMITTAL.—The Administrator shall transmit the study directed in subsection (a) to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate not later than 12 months after the date of enactment of this Act.

SEC. 903. UAS TEST RANGES AND OPERATIONS.

(a) EXTENSION.—Title 49, United States Code, is amended—

(1) in section 44803, in subsection (h), by striking "2023" and inserting "2028"; and

(2) in section 44807, in subsection (d), by striking "2023" and inserting "2028".

(b) EXPANSION.—Title 49, United States Code, is amended—

(1) in section 44803, in paragraph (b)(7), by inserting after subparagraph (E)—

"(F) implementing unmanned aircraft systems traffic management services for commercial unmanned aircraft systems in uncontrolled airspace;

"(G) advanced air mobility concepts in controlled airspace, including communication, navigation, and surveillance standards;

"(H) the verification and validation of the autonomy of unmanned aircraft systems; and

"(I) improving the cybersecurity of unmanned aircraft systems."; and

(2) in section 44807, in subsection (c), after "proprietary systems", by inserting ", unmanned aircraft systems traffic management systems, and advanced air mobility systems".

(c) WORKFORCE DEVELOPMENT.—Subsection (b) of section 44803 of title 49, United States Code, is amended—

(1) by redesignating paragraphs (5) through (11) as paragraphs (6) through (12), respectively; and

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

"(5) support, to the extent practicable, opportunities for apprenticeships and internships in the research and development activities and uses of test ranges to prepare, enhance, and expand workforce skills;".

(d) REPORT.—Not later than 180 days after the date of enactment of this Act, the Secretary of Transportation shall submit to the Committee on Science, Space, and Tech-

nology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report that includes the following:

(1) The number of waivers granted under subsection (c) of section 44803 of title 49, United States Code, with respect to unmanned aircraft system test ranges and operations conducted under such section;

(2) Measures taken to further implement subsection (c) of section 44803 of title 49, United States Code;

(3) Measures taken to implement section 44807 of title 49, United States Code; and

(4) Strategies to communicate broadly to industry regarding the safest, most efficient, and effective path toward testing goals.

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 2024;

(2) $21,000,000 for fiscal year 2025;

(3) $22,050,000 for fiscal year 2026;

(4) $23,152,500 for fiscal year 2027; and

(5) $24,310,125 for fiscal year 2028.

(b) PARTNERSHIPS FOR RESEARCH, DEVELOPMENT, DEMONSTRATION, AND TESTING.—There is authorized to be appropriated to the Administration $1,000,000 to carry out section 902.

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, research, development, or operation of advanced air mobility and 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 advanced air mobility and unmanned aircraft systems for the purposes of research and development for improving the United States counter-UAS systems and detection 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)(2) of title 10 United States Code); or

(2) any other 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.

Union Calendar No. 527

118TH CONGRESS
2D SESSION

H. R. 3560

[Report No. 118–630, Part I]

A BILL

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

AUGUST 13, 2024

Reported from the Committee on Science, Space, and Technology with an amendment

AUGUST 13, 2024

Committees on Oversight and Accountability, Homeland Security, and Transportation and Infrastructure discharged; committed to the Committee of the Whole House on the State of the Union and ordered to be printed