

AMENDMENT TO H.R. 3560
OFFERED BY M_{R.} Lucas

Strike all after the enacting clause and insert the following:

1 SECTION 1. SHORT TITLE; TABLE OF CONTENTS.

2 (a) SHORT TITLE.—This Act may be cited as the
3 “National Drone and Advanced Air Mobility Research and
4 Development Act”.

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

- Sec. 1. Short title; table of contents.
- Sec. 2. Findings.
- Sec. 3. Definitions.
- Sec. 4. Purposes.

TITLE I —INTERAGENCY ACTIVITIES

- Sec. 101. Interagency working group.
- Sec. 102. Strategic research plan.
- Sec. 103. Counter-UAS research plan.
- Sec. 104. National drone technology center.
- Sec. 105. GAO study on foreign drones.

TITLE II—NATIONAL DRONE AND ADVANCED AIR MOBILITY
RESEARCH INSTITUTES

- Sec. 201. National Drone and Advanced Air Mobility Research Institutes.

TITLE III—NATIONAL INSTITUTE OF STANDARDS AND
TECHNOLOGY ACTIVITIES

- Sec. 301. National Institute of Standards and Technology activities.
- Sec. 302. National Institute of Standards and Technology manufacturing activities.

TITLE IV—NATIONAL SCIENCE FOUNDATION ACTIVITIES

- Sec. 401. National Science Foundation activities.

TITLE V—NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
ACTIVITIES

- Sec. 501. National Aeronautics and Space Administration activities.
- Sec. 502. National student unmanned aircraft systems competition program.

TITLE VI—DEPARTMENT OF ENERGY ACTIVITIES

- Sec. 601. Department of Energy research activities.

TITLE VII—DEPARTMENT OF HOMELAND SECURITY ACTIVITIES

- Sec. 701. Department of Homeland Security activities.

TITLE VIII—NATIONAL OCEANIC AND ATMOSPHERIC
ADMINISTRATION ACTIVITIES

- Sec. 801. National Oceanic and Atmospheric Administration research and development.

TITLE IX—FEDERAL AVIATION ADMINISTRATION ACTIVITIES

- Sec. 901. Federal Aviation Administration research and development.
- Sec. 902. Partnerships for research, development, demonstration, and testing.
- Sec. 903. UAS test ranges and operations.
- Sec. 904. Authorization of appropriations.
- Sec. 905. Definitions.

TITLE X—LIMITATION

- Sec. 1001. Limitation.

1 **SEC. 2. FINDINGS.**

2 Congress finds the following:

3 (1) Unmanned aircraft systems have the poten-
4 tial to change and transform sectors of the United
5 States economy.

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

9 (3) Current uses and applications of unmanned
10 aircraft systems and advanced air mobility include
11 agriculture, transportation, law enforcement, public
12 safety, disaster evaluation and response, fire detec-

1 tion, border security, weather forecasting, construc-
2 tion, utility monitoring, and many other uses and
3 applications.

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

9 (5) Unmanned aircraft systems and advanced
10 air mobility systems are subject to safety, privacy,
11 cybersecurity, and supply chain risks, particularly as
12 most unmanned aircraft systems in the United
13 States are manufactured or assembled from parts
14 manufactured in foreign countries.

15 (6) National and homeland security threats
16 posed by unmanned aircraft systems and advanced
17 air mobility systems include criminal and terrorist
18 use for espionage, surveillance, and intelligence gath-
19 ering, smuggling drugs and contraband, and plat-
20 forms to deliver explosives or chemicals, biological,
21 radiological or nuclear weapons, and other firearms.

22 (7) The Federal Government has an important
23 role in advancing research, development, voluntary
24 consensus technical standards, and education activi-
25 ties in advanced air mobility and unmanned aircraft

1 systems technologies through coordination and col-
2 laboration between and among State, local, Federal,
3 and Tribal governments, academia, the private sec-
4 tor, and labor organizations.

5 (8) There is a lack of voluntary consensus tech-
6 nical standards for unmanned aircraft systems and
7 advanced air mobility for academia and the public
8 and private sectors.

9 (9) The United States needs to invest in domes-
10 tic manufacturing and secure supply chains of un-
11 manned aircraft systems and advanced air mobility
12 systems to meet the demand by the Government and
13 the commercial sectors, to ensure United States high
14 quality domestic manufacturing and supply chain
15 jobs, and to reduce reliance on foreign-made sys-
16 tems.

17 **SEC. 3. DEFINITIONS.**

18 In this Act, the following definitions apply:

19 (1) **ADVANCED AIR MOBILITY.**—The term “ad-
20 vanced air mobility” means a transportation system
21 that transports people and property by air between
22 two points in the United States using aircraft with
23 advanced technologies, including electric aircraft or
24 electric vertical take-off and landing aircraft, in both
25 controlled and uncontrolled airspace.

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

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

8 (4) INSTITUTE.—The term “Institute” means a
9 Drone and Advanced Air Mobility Research Institute
10 described in section 201(b).

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

15 (6) INTERAGENCY WORKING GROUP.—The term
16 “Interagency Working Group” means the Advanced
17 Air Mobility and Unmanned Aircraft Systems Inter-
18 agency Working Group of the National Science and
19 Technology Council established under section 101 of
20 title 1.

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

1 (A) any organization composed of labor or-
2 ganizations, such as a labor union federation or
3 a State or municipal labor body; and

4 (B) any organization which would be in-
5 cluded in the definition for such term under
6 such section 2(5) but for the fact that the orga-
7 nization represents—

8 (i) individuals employed by the United
9 States, any wholly owned Government cor-
10 poration, any Federal Reserve Bank, or
11 any State or political subdivision thereof;

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

15 (iii) individuals employed as agricul-
16 tural laborers.

17 (8) NATIONAL LABORATORY.—The term “Na-
18 tional Laboratory” has the meaning given such term
19 in section 2 of the Energy Policy Act of 2005 (42
20 U.S.C. 15801).

21 (9) TECHNICAL STANDARD.—The term “tech-
22 nical standard” has the meaning given such term in
23 section 12(d)(5) of the National Technology Trans-
24 fer and Advancement Act of 1995 (15 U.S.C. 272
25 note).

1 (10) UNMANNED AIRCRAFT SYSTEM.—The term
2 “unmanned aircraft system” has the meaning given
3 such term in section 44801(12) of title 49, United
4 States Code.

5 **SEC. 4. PURPOSES.**

6 The purpose of this Act is to ensure United States
7 leadership in advanced air mobility and unmanned aircraft
8 systems, and maximize benefits and mitigate risks of such
9 systems by—

10 (1) supporting research, development, dem-
11 onstration, testing, and transition to operations of
12 secure advanced air mobility systems and unmanned
13 aircraft systems, including research and development
14 to enable integration of such systems into the Na-
15 tional Airspace System;

16 (2) improving the interagency planning and co-
17 ordination of Federal research and development of
18 advanced air mobility and unmanned aircraft sys-
19 tems and maximizing the effectiveness of the Fed-
20 eral Government’s advanced air mobility and next
21 generation unmanned aircraft systems research and
22 development programs;

23 (3) promoting domestic manufacturing and do-
24 mestic supply chains for unmanned aircraft systems
25 and mitigating supply chain risks;

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

4 (5) preparing the present and future United
5 States workforce for the integration of advanced air
6 mobility and unmanned aircraft systems across sec-
7 tors of the economy, including through support for
8 curriculum development and research opportunities
9 and through partnerships that may include labor or-
10 ganizations and labor-management workforce train-
11 ing organizations;

12 (6) supporting research, development, dem-
13 onstration, and testing of civilian applications of un-
14 manned aerial systems, including improved safety
15 and sustainability of ground transportation, environ-
16 mental monitoring, and disaster response;

17 (7) promoting research and development col-
18 laboration among State, local, Tribal, and Federal
19 governments, National Laboratories, industry, labor
20 organizations, and academic institutions;

21 (8) promoting the development of voluntary
22 consensus technical standards and best practices for
23 advanced air mobility and unmanned aircraft sys-
24 tems; and

1 (9) applying lessons learned from unmanned
2 aircraft systems research, development, demonstra-
3 tion, and testing to advanced air mobility systems.

4 **TITLE I —INTERAGENCY**
5 **ACTIVITIES**

6 **SEC. 101. INTERAGENCY WORKING GROUP.**

7 (a) DESIGNATION.—

8 (1) IN GENERAL.—The National Science and
9 Technology Council shall establish or designate an
10 interagency working group on advanced air mobility
11 and unmanned aircraft systems to coordinate Fed-
12 eral research, development, deployment, testing, and
13 education activities to enable advanced air mobility
14 and unmanned aircraft systems.

15 (2) MEMBERSHIP.—The interagency working
16 group shall be comprised of senior representatives
17 from the National Aeronautics and Space Adminis-
18 tration, the Department of Transportation, the Na-
19 tional Oceanic and Atmospheric Administration, the
20 National Science Foundation, the National Institute
21 of Standards and Technology, Department of Home-
22 land Security, and such other Federal agencies as
23 appropriate.

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

1 (1) develop the strategic research plan to guide
2 Federal research to enable advanced air mobility and
3 unmanned aircraft systems and oversee implementa-
4 tion of the plan;

5 (2) oversee the development of—

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

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

15 (3) facilitate communication and outreach op-
16 portunities with academia, industry, professional so-
17 cieties, State, local, Tribal, and Federal govern-
18 ments, and other stakeholders;

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

24 (5) coordinate with the Advanced Air Mobility
25 Working Group established by Public Law 117–203

1 and heads of other Federal departments and agen-
2 cies to avoid duplication of research and other activi-
3 ties to ensure that the activities carried out by the
4 interagency working group are complementary to
5 those being undertaken by other interagency efforts;
6 and

7 (6) coordinate with the National Security Coun-
8 cil and other authorized agency coordinating bodies
9 on the assessment of risks posed by the existing
10 Federal unmanned aircraft systems fleet and out-
11 lining potential steps to mitigate these risks.

12 (c) REPORT TO CONGRESS.—

13 (1) INITIAL REPORT.—Not later than 1 year
14 after the date of enactment of this Act, the inter-
15 agency working group shall transmit a report to the
16 Committee on Science, Space, and Technology of the
17 House of Representatives and the Committee on
18 Commerce, Science, and Transportation of the Sen-
19 ate that—

20 (A) includes a summary of federally fund-
21 ed advanced air mobility and unmanned aircraft
22 systems research, development, deployment, and
23 testing activities, including the budget for each
24 of these activities; and

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

3 (2) BIENNIAL REPORT.—Not later than 2 years
4 after the delivery of the initial report under para-
5 graph (1) and every 2 years thereafter until Decem-
6 ber 31, 2033, the interagency working group shall
7 transmit a report to the Committee on Science,
8 Space, and Technology of the House of Representa-
9 tives and the Committee on Commerce, Science, and
10 Transportation of the Senate that includes—

11 (A) a summary of federally funded ad-
12 vanced air mobility and unmanned aircraft sys-
13 tems research, development, deployment, and
14 testing activities, including the budget for each
15 of these activities; and

16 (B) an analysis of the progress made to-
17 wards achieving the goals and priorities for the
18 interagency research plan developed by the
19 interagency work group under sections 102 and
20 103.

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

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

4 **SEC. 102. STRATEGIC RESEARCH PLAN.**

5 (a) IN GENERAL.—Not later than 2 years after the
6 date of enactment of this Act, the interagency working
7 group shall develop and periodically update, as appro-
8 priate, a strategic plan for Federal research, development,
9 deployment, and testing of advanced air mobility systems
10 and unmanned aircraft systems. In developing the plan,
11 the interagency working group shall consider and use in-
12 formation, reports, and studies on advanced air mobility
13 and unmanned aircraft systems that have identified re-
14 search, development, deployment, and testing needed, and
15 recommendations made by the National Academies of
16 Sciences, Engineering, and Medicine in the review of the
17 plan under subsection (c).

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

19 (1) determine and prioritize areas of advanced
20 air mobility and unmanned aircraft systems re-
21 search, development, demonstration, and testing re-
22 quiring Federal Government leadership and invest-
23 ment;

24 (2) establish, for the 10-year period beginning
25 in the year the plan is submitted, the goals and pri-

1 orities for Federal research, development, deploy-
2 ment, and testing which will—

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

7 (B) provide sustained, consistent, and co-
8 ordinated support for advanced air mobility and
9 unmanned aircraft systems research, develop-
10 ment, and demonstration, including through
11 grants, cooperative agreements, testbeds, and
12 testing facilities;

13 (C) apply lessons learned from unmanned
14 aircraft systems research, development, dem-
15 onstration, and testing to advanced air mobility
16 systems;

17 (D) support the development of voluntary
18 consensus technical standards and best prac-
19 tices for the development and use of advanced
20 air mobility and unmanned aircraft systems;

21 (E) support education and training activi-
22 ties at all levels to prepare the United States
23 workforce to use and interact with advanced air
24 mobility systems and unmanned aircraft sys-
25 tems;

1 (F) support partnerships to leverage
2 knowledge and resources from industry, State,
3 local, Tribal, and Federal governments, Na-
4 tional Laboratories, Unmanned Aircraft Sys-
5 tems Test Ranges, academic institutions, labor
6 organizations, and others to advance research
7 activities;

8 (G) leverage existing Federal investments;
9 and

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

12 (3) support research and other activities on the
13 impacts of advanced air mobility and unmanned air-
14 craft systems on national security, safety, economic,
15 legal, workforce, and other appropriate societal
16 issues;

17 (4) reduce barriers to transferring research
18 findings, capabilities, and new technologies related
19 to advanced air mobility and unmanned aircraft sys-
20 tems into operation for the benefit of society and
21 United States competitiveness;

22 (5) in consultation with the Council of Eco-
23 nomic Advisers, measure and track the contributions
24 of unmanned aircraft systems and advanced air mo-

1 bility to United States economic growth and other
2 societal indicators; and

3 (6) identify relevant programs and make rec-
4 ommendations for the coordination of relevant activi-
5 ties of the Federal agencies and set forth the role of
6 each Federal agency in implementing the plan.

7 (c) NATIONAL ACADEMIES OF SCIENCES, ENGINEER-
8 ING, AND MEDICINE EVALUATION.—The Administrator
9 shall enter into an agreement with the National Academies
10 of Sciences, Engineering, and Medicine to review the plan
11 every 5 years.

12 (d) PUBLIC PARTICIPATION.—In developing the plan,
13 the interagency working group shall consult with rep-
14 resentatives of stakeholder groups, which may include aca-
15 demic, State, industry, and labor organizations. Not later
16 than 90 days before the plan, or any revision thereof, is
17 submitted to Congress, the plan shall be published in the
18 Federal Register for a public comment period of not less
19 than 60 days.

20 **SEC. 103. COUNTER-UAS RESEARCH PLAN.**

21 (a) IN GENERAL.—Not later than 1 year after the
22 date of enactment of this Act, the interagency working
23 group shall develop and periodically update, as appro-
24 priate, a strategic plan for Federal research, development,
25 evaluation, and testing of counter-UAS systems and detec-

1 tion systems, as consistent with counter-UAS systems
2 legal authorities.

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

4 (1) determine and prioritize areas of counter-
5 UAS systems and detection systems research, devel-
6 opment, evaluation, and testing requiring Federal
7 Government leadership and investment;

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

12 (A) support the development of counter-
13 UAS systems and detection systems and the de-
14 velopment of a counter-UAS research, innova-
15 tion, and manufacturing ecosystem;

16 (B) provide sustained, consistent, and co-
17 ordinated support for counter-UAS research,
18 development, evaluation, and testing, including
19 through grants, cooperative agreements,
20 testbeds, and testing facilities;

21 (D) support education and training activi-
22 ties to prepare the United States workforce to
23 use and interact with counter-UAS systems and
24 detection systems;

1 (E) support partnerships to leverage
2 knowledge and resources from industry, State,
3 local, Tribal, and Federal governments, Na-
4 tional Laboratories, Counter-UAS Test Ranges,
5 academic institutions, and others to advance re-
6 search activities; and

7 (F) leverage existing Federal investments;

8 (3) support research and other activities on the
9 impacts of counter-UAS systems and detection sys-
10 tems; and

11 (4) identify relevant programs and make rec-
12 ommendations for the coordination of relevant activi-
13 ties of the Federal agencies and set forth the role of
14 each Federal agency in implementing the plan.

15 **SEC. 104. NATIONAL DRONE TECHNOLOGY CENTER.**

16 (a) ESTABLISHMENT.—Subject to the availability of
17 appropriations for such purpose, the Secretary of Com-
18 merce, in collaboration with the Secretary of Defense, the
19 Secretary of Transportation, and the heads of other Fed-
20 eral agencies, as appropriate, may establish a national
21 drone technology center to conduct research and develop-
22 ment of unmanned aircraft systems to strengthen the eco-
23 nomic competitiveness and security of the domestic supply
24 chain. Such center shall be operated as a public-private
25 sector consortium with participation from the private sec-

1 tor, which may include employers and labor organizations,
2 and the National Institute of Standards and Technology.

3 (b) FUNCTIONS.—The functions of the center estab-
4 lished under subsection (a) shall be to conduct research
5 and development related to unmanned aircraft systems
6 manufacturing, design and components, and prototyping
7 that strengthens the entire domestic ecosystem and incor-
8 porates the upstream participation of workers, which may
9 include partnership with labor organizations. The center
10 shall place emphasis on the following:

11 (1) Unmanned aircraft systems advanced test-
12 ing and assembly capability in the domestic eco-
13 system.

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

16 (3) Virtualization and automation of mainte-
17 nance of unmanned aircraft systems machinery.

18 (4) Metrology for security and supply chain
19 verification.

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

1 **SEC. 105. GAO STUDY ON FOREIGN DRONES.**

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

5 (b) ELEMENTS.—The study under subsection (a)
6 shall include an assessment of the following:

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

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

14 (3) Policies and practices governing the pro-
15 curement of unmanned aircraft systems from cov-
16 ered foreign entities.

17 (4) The availability of unmanned aircraft sys-
18 tems from any domestic sources for government use.

19 (5) The risks associated with use of these sys-
20 tems by the Federal Government, including physical
21 safety, privacy, and cybersecurity.

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

1 **TITLE II—NATIONAL DRONE AND**
2 **ADVANCED AIR MOBILITY RE-**
3 **SEARCH INSTITUTES**

4 **SEC. 201. NATIONAL DRONE AND ADVANCED AIR MOBILITY**
5 **RESEARCH INSTITUTES.**

6 (a) IN GENERAL.—The Administrator of the Na-
7 tional Aeronautics and Space Administration may estab-
8 lish a program to award financial assistance for the plan-
9 ning, establishment, and support of a network of Insti-
10 tutes (as described in subsection (b)(2)) in accordance
11 with this section.

12 (b) FINANCIAL ASSISTANCE TO ESTABLISH AND
13 SUPPORT NATIONAL DRONE AND ADVANCED AIR MOBIL-
14 ITY RESEARCH INSTITUTES.—

15 (1) IN GENERAL.—The Director of the National
16 Institute of Standards and Technology, the Director
17 of the National Science Foundation, the Adminis-
18 trator of the National Aeronautics and Space Ad-
19 ministration, and any other agency head may award
20 financial assistance, to an eligible entity, or con-
21 sortia thereof, as determined by an agency head, to
22 establish and support one or more Institutes.

23 (2) DRONE AND ADVANCED AIR MOBILITY IN-
24 STITUTES.—An Institute described in this subsection

1 is an unmanned aircraft systems and advanced air
2 mobility research institute that—

3 (A) may focus on—

4 (i) a particular economic or social sec-
5 tor, including education, manufacturing,
6 transportation, agriculture, security, en-
7 ergy, environment, and public safety, and
8 includes a component that addresses the
9 ethical, societal, safety, workforce, and se-
10 curity implications relevant to the applica-
11 tion of advanced air mobility and un-
12 manned aircraft systems in that sector; or

13 (ii) a cross-cutting challenge for re-
14 search, development, testing, manufac-
15 turing, or use of advanced air mobility and
16 unmanned aircraft systems;

17 (B) requires partnership among public and
18 private organizations, including, as appropriate,
19 Federal agencies, academic institutions, non-
20 profit research organizations, Federal labora-
21 tories, State, local, and Tribal governments, in-
22 dustry, labor organizations, and others (or con-
23 sortia thereof);

24 (C) has the potential to create an innova-
25 tion ecosystem, or enhance existing ecosystems,

1 to translate Institute research into applications
2 and products, as appropriate to the topic of
3 each Institute;

4 (D) supports and coordinates interdiscipli-
5 nary research and development across multiple
6 institutions and organizations involved in un-
7 manned aircraft systems research and related
8 disciplines, which may include physics, engi-
9 neering, mathematical sciences, computer and
10 information science, robotics, material science,
11 cybersecurity, and technology ethics;

12 (E) supports interdisciplinary education
13 activities at all levels, including curriculum de-
14 velopment, research experiences, and faculty
15 professional development across two-year, un-
16 dergraduates, masters, and doctoral level pro-
17 grams;

18 (F) establishes a robust data management
19 strategy that ensures digital access and ma-
20 chine-readability; that promotes findability,
21 interoperability, analysis- and decision-readiness
22 and reusability; and ensures applicable scientific
23 data are managed for wide use by Federal,
24 State, Tribal, and local governments, academia,
25 and the public;

1 (G) applies lessons learned from unmanned
2 aircraft systems research, development, dem-
3 onstration, and testing to advanced air mobility
4 systems; and

5 (H) supports high quality workforce devel-
6 opment in advanced air mobility and unmanned
7 aircraft systems related disciplines in the
8 United States, including increasing the partici-
9 pation of groups historically underrepresented
10 in STEM, among other goals.

11 (3) USE OF FUNDS.—Financial assistance
12 awarded under paragraph (1) may be used by an In-
13 stitute for—

14 (A) managing and making available to re-
15 searchers accessible, curated, standardized, se-
16 cure, and privacy protected data sets from the
17 public and private sectors for the purposes of
18 training and testing advanced air mobility sys-
19 tems and unmanned aircraft systems and for
20 research and development using advanced air
21 mobility systems and unmanned aircraft sys-
22 tems;

23 (B) developing and managing testbeds,
24 Unmanned Aircraft Systems Test Ranges, for
25 advanced air mobility or unmanned aircraft sys-

1 tems, including sector-specific test beds, de-
2 signed to enable users to evaluate advanced air
3 mobility systems and unmanned aircraft sys-
4 tems prior to deployment;

5 (C) conducting research and education ac-
6 tivities involving advanced air mobility and un-
7 manned aircraft systems to solve challenges
8 with economic, scientific, and national security
9 implications;

10 (D) conducting research and development
11 on advanced air mobility and unmanned air-
12 craft systems platform development and innova-
13 tion;

14 (E) providing or brokering access to com-
15 puting resources, networking, and data facilities
16 for advanced air mobility and unmanned air-
17 craft systems research and development rel-
18 evant to the Institute's research goals;

19 (F) providing technical assistance to users,
20 including software engineering support, for ad-
21 vanced air mobility systems and unmanned air-
22 craft systems research and development rel-
23 evant to the Institute's research goals;

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

4 (H) engaging in outreach to broaden par-
5 ticipation by groups historically underrep-
6 resented in STEM in advanced air mobility and
7 unmanned aircraft systems research, develop-
8 ment and workforce, including through partner-
9 ship with labor organizations and other entities;

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

14 (J) such other activities that an agency
15 head whose agency's missions contribute to or
16 are affected by advanced air mobility and un-
17 manned aircraft systems determines is appro-
18 priate to fulfill the agency's missions.

19 (4) DURATION.—

20 (A) INITIAL PERIODS.—An award of finan-
21 cial assistance under paragraph (1) shall be for
22 an initial period of up to 5 years, subject to Of-
23 fice of Management and Budget uniform guid-
24 ance for Federal assistance.

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

8 (5) APPLICATION FOR FINANCIAL ASSIST-
9 ANCE.—

10 (A) IN GENERAL.—A person or group of
11 persons seeking financial assistance under para-
12 graph (1) shall submit to an agency head an
13 application at such time, in such manner, and
14 containing such information as the agency head
15 may require.

16 (B) REQUIREMENTS.—An application sub-
17 mitted under subparagraph (A) for an Institute
18 shall, at a minimum, include the following:

19 (i) A plan for the Institute to in-
20 clude—

21 (I) the proposed goals and activi-
22 ties of the Institute;

23 (II) a description of how the In-
24 stitute will form partnerships, as ap-
25 propriate, with other research institu-

1 tions, industry, labor organizations,
2 nonprofits, academic institutions, and
3 others to leverage expertise in ad-
4 vanced air mobility and unmanned
5 aircraft systems and access to data;

6 (III) a description of how the in-
7 stitute will support long-term and
8 short-term education and workforce
9 development in advanced air mobility
10 and unmanned aircraft systems, in-
11 cluding how the institute will broaden
12 the participation of groups historically
13 underrepresented in STEM, among
14 other goals; and

15 (IV) a description of how the In-
16 stitute will transition from planning
17 into operations.

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

22 (iii) A data management plan that ad-
23 dresses the collection, use, retention, pro-
24 tection, dissemination, and management of

1 data collected, consistent with the purposes
2 of this Act.

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

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

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

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

15 (7) COLLABORATION.—

16 (A) IN GENERAL.—In awarding financial
17 assistance under paragraph (1), an agency head
18 may collaborate with Federal departments and
19 agencies whose missions contribute to or are af-
20 fected by advanced air mobility and unmanned
21 aircraft systems, including the agencies outlined
22 in section 103(c).

23 (B) NONDUPLICATION.—In carrying out
24 the program under this section, the Adminis-
25 trator shall coordinate with the heads of other

1 Federal departments and agencies to avoid du-
2 plication of research and other activities to en-
3 sure that the activities carried out by Institutes
4 are complementary to those being undertaken
5 by other agencies.

6 (C) COORDINATING NETWORK.—The Ad-
7 ministrator of the National Aeronautics and
8 Space Administration may establish a network
9 of Institutes receiving financial assistance under
10 this subsection, to be known as the “Drone
11 Leadership Network”, to coordinate cross-cut-
12 ting research and other activities carried out by
13 the Institutes.

14 (D) FUNDING.—The head of an agency
15 may request and accept funds from, and pro-
16 vide funds to, other Federal departments and
17 agencies, State, United States territory, local,
18 or Tribal government agencies, private sector
19 for-profit entities, and nonprofit entities, to be
20 available to the extent provided by appropria-
21 tions Acts, to support an Institute’s activities.
22 The head of an agency may not give any special
23 consideration to any agency or entity in return
24 for a donation.

1 (c) AUTHORIZATION OF APPROPRIATIONS.—There is
2 authorized to be appropriated to the National Aeronautics
3 and Space Administration \$5,000,000 in each of fiscal
4 years 2024 through 2028 to carry out the activities au-
5 thORIZED in section 201(a).

6 **TITLE III—NATIONAL INSTITUTE**
7 **OF STANDARDS AND TECH-**
8 **NOLOGY ACTIVITIES**

9 **SEC. 301. NATIONAL INSTITUTE OF STANDARDS AND TECH-**
10 **NOLOGY ACTIVITIES.**

11 (a) IN GENERAL.—The Director, consistent with the
12 research plan in section 102—

13 (1) shall support measurement science research
14 and development in support of best practices and
15 voluntary consensus technical standards for ad-
16 vanced air mobility and unmanned aircraft systems,
17 including for—

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

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

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

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

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

9 (F) all other areas deemed by the Director
10 to be critical to the development and deploy-
11 ment of advanced air mobility and unmanned
12 aircraft systems;

13 (2) may support one or more Institutes as de-
14 scribed in section 201(a) of this Act for the purpose
15 of advancing advanced air mobility and unmanned
16 aircraft systems;

17 (3) may produce curated, standardized, rep-
18 resentative, secure, and privacy protected data sets
19 for advanced air mobility and unmanned aircraft
20 systems research, development, and use, prioritizing
21 data for high-value, high-risk research;

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

1 (5) shall apply lessons learned from unmanned
2 aircraft systems research, development, demonstra-
3 tion, and testing to advanced air mobility systems;
4 and

5 (6) shall coordinate the development of vol-
6 untary and consensus technical standards and best
7 practices with other Federal agencies as appropriate.

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

10 (1) solicit input from university researchers,
11 private sector experts, relevant Federal agencies,
12 Federal laboratories, State, local, and Tribal govern-
13 ments, civil society groups, labor organizations, and
14 other relevant stakeholders; and

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

17 (c) DRONE RESEARCH CHALLENGES.—

18 (1) PRIZE COMPETITION.—Pursuant to section
19 24 of the Stevenson-Wydler Technology Innovation
20 Act of 1980 (15 U.S.C. 3719), the Director shall,
21 subject to the availability of appropriations, continue
22 carrying out a program to award prizes competi-
23 tively to stimulate research and development of inno-
24 vative advanced air mobility and unmanned aircraft

1 systems technologies in order to expand upon and
2 improve emergency response operations.

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

7 (4) REPORT.—Not later than 60 days after the
8 date on which a prize is awarded under the prize
9 competition, the Director shall submit to the rel-
10 evant committees of Congress a report that describes
11 the winning entry of the prize competition.

12 (5) CONSULTATION.—In carrying out the pro-
13 gram under subsection (a), the Director may consult
14 with the heads of relevant departments and agencies
15 of the Federal Government.

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

19 (1) \$20,000,000 for fiscal year 2024;

20 (2) \$21,000,000 for fiscal year 2025;

21 (3) \$22,050,000 for fiscal year 2026;

22 (4) \$23,152,500 for fiscal year 2027; and

23 (5) \$24,310,125 for fiscal year 2028.

1 **SEC. 302. NATIONAL INSTITUTE OF STANDARDS AND TECH-**
2 **NOLOGY MANUFACTURING ACTIVITIES.**

3 (a) PURPOSE.—The purpose of this section is to se-
4 cure the United States international leadership in ad-
5 vanced air mobility and unmanned aircraft systems by
6 strengthening its industrial base through the bolstering of
7 domestic supply chains and the development and adoption
8 of innovative manufacturing processes.

9 (b) LEVERAGING EXPANSION AWARDS FOR CRITICAL
10 TECHNOLOGIES.—Section 25B of the National Institute
11 of Standards and Technology Act (15 U.S.C. 278k–2) is
12 amended—

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

15 “(6) to support the domestic manufacturing of
16 critical and emerging technologies and reduce the
17 supply chain risk of these technologies;” and

18 (2) by inserting the following after subsection
19 (e) and renumbering accordingly:

20 “(f) TOPIC SELECTION.—The Director may select
21 topics for awards made under paragraph (e)(6) in accord-
22 ance with the following:

23 “(1) The Director shall select unmanned air-
24 craft systems as an initial topic for the pilot pro-
25 gram.

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

3 “(A) rapidly evolving; and

4 “(B) of high importance to the economy
5 and security of the United States.”.

6 (c) MANUFACTURING EXTENSION PARTNERSHIP
7 SURVEY.—

8 (1) SURVEY.—Not later than 1 year after the
9 date of the enactment of this Act, the Director shall
10 carry out a survey of the Manufacturing Extension
11 Partnership Centers (referred to in this section as
12 the “Centers”) to understand the manufacturing ca-
13 pabilities of the United States manufacturers to sup-
14 port robust advanced air mobility and unmanned
15 aircraft systems industries and create high quality
16 jobs in the United States.

17 (2) CONTENTS.—In conducting the survey re-
18 quired under subsection (a), the Director shall solicit
19 feedback on the following:

20 (A) Familiarity and current manufacturing
21 work by small and mid-sized manufacturers on
22 advanced air mobility and unmanned aircraft
23 systems, including components, software, sen-
24 sors, or other technology associated with ad-

1 vanced air mobility systems and unmanned air-
2 craft systems.

3 (B) A list of the basic manufacturing pro-
4 cedures that can be easily converted to conduct
5 the manufacturing of advanced air mobility sys-
6 tems and unmanned aircraft systems projects.

7 (C) Potential for small-and mid-sized man-
8 ufacturing to work with industry and academia
9 to support the manufacturers of advanced air
10 mobility systems and unmanned aircraft sys-
11 tems prototypes.

12 (D) Potential for commercialization of on-
13 going manufacturing development research re-
14 lated to advanced air mobility and unmanned
15 aircraft systems projects.

16 (E) A description of supply chain and tech-
17 nological challenges that small and mid-sized
18 manufacturers face in building up advanced air
19 mobility and unmanned aircraft systems capac-
20 ity, and the prevalence of these challenges.

21 (F) Any challenges that small and mid-
22 sized manufacturers experience in recruiting
23 skilled workers familiar with advanced air mo-
24 bility and unmanned aircraft systems manufac-
25 turing.

1 (G) Any other information that the Direc-
2 tor or the Board determine is appropriate.

3 (3) SUPPLY CHAIN DATABASE.—The Director
4 shall carry out this survey in accordance with re-
5 quirements under section 10253 of the Research and
6 Development, Competition, and Innovation Act (en-
7 acted as division B of Public Law 117–167; 42
8 U.S.C. 18961).

9 (4) REPORT.—Not later than 60 days after
10 completing the survey required under subsection (a),
11 the Director, in consultation with the Board, shall
12 provide a report summarizing the results of the sur-
13 vey to the Committee on Science, Space, and Tech-
14 nology of the House of Representatives and the
15 Committee on Commerce, Science, and Transpor-
16 tation of the Senate.

17 (d) MANUFACTURING USA PROGRAM UPDATE.—Sub-
18 paragraph (B) of section 34(d)(1) of the National Insti-
19 tute of Standards and Technology Act (15 U.S.C.
20 278s(d)(1)) is amended by inserting “, including un-
21 manned aircraft systems” after “aeronautics and ad-
22 vanced materials”.

23 (e) DEFINITION.—In this title, the term “Director”
24 means the Director of the National Institute of Standards
25 and Technology.

1 **TITLE IV—NATIONAL SCIENCE**
2 **FOUNDATION ACTIVITIES**

3 **SEC. 401. NATIONAL SCIENCE FOUNDATION ACTIVITIES.**

4 (a) IN GENERAL.—Consistent with the research plan
5 in section 102, the Director shall support research and
6 STEM education and related activities in advanced air
7 mobility and unmanned aircraft systems, components, and
8 related technologies, including competitive awards or
9 grants to institutions of higher education or eligible non-
10 profit organizations (or consortia thereof).

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

13 (1) shall support fundamental research on the
14 underlying technologies for advanced air mobility
15 and unmanned aircraft systems, components, and re-
16 lated technologies, which may include—

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

19 (B) developing and improving autonomous
20 control systems, including real-time control and
21 autonomous decision-making;

22 (C) incorporating the use of artificial intel-
23 ligence into systems;

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

4 (E) understanding safety and sustain-
5 ability of advanced air mobility and unmanned
6 aircraft systems as a part of a transportation
7 system, including the impacts of advanced air
8 mobility and unmanned aircraft systems on
9 ground transportation;

10 (F) developing and improving communica-
11 tions systems, including multivehicle coordina-
12 tion and task and path planning; and

13 (G) understanding the human-drone inter-
14 face;

15 (2) shall support research and development of
16 advanced air mobility and unmanned aircraft system
17 enabled uses, which may include—

18 (A) creating new sensing tools to improve
19 understanding, prediction, and detection of se-
20 vere weather and natural hazards, including
21 wildfires;

22 (B) enabling advanced air mobility;

23 (C) monitoring and surveying infrastruc-
24 ture;

1 (D) disaster reconnaissance, including the
2 collection of data to model and simulate disas-
3 ters and assist responders; and

4 (E) improving the reliable use of advanced
5 sensing systems in rural and agricultural set-
6 tings;

7 (3) shall support research on data modeling and
8 validation of the use of advanced air mobility and
9 unmanned aircraft systems;

10 (4) shall support research and development on
11 security, including the cybersecurity, of advanced air
12 mobility systems and unmanned aerial aircraft sys-
13 tems;

14 (5) shall support research on the ethical use of
15 advanced air mobility and unmanned aircraft sys-
16 tems, including protection of individual privacy;

17 (6) shall support research on workforce impacts
18 and opportunities associated with advanced air mo-
19 bility and unmanned aircraft systems;

20 (7) shall support age-appropriate middle school
21 and high school level STEM education research and
22 related activities related to advanced air mobility
23 and unmanned aircraft systems and related tech-
24 nologies, which may include—

1 (A) supporting curriculum development re-
2 lating to advanced air mobility and unmanned
3 aircraft system applications, including devel-
4 oping place-based learning curriculum, particu-
5 larly for students in poor, rural, and Tribal
6 communities;

7 (B) utilizing advanced air mobility and un-
8 manned aircraft systems technologies to ad-
9 vance the engagement of students, including
10 students from groups historically underrep-
11 resented in STEM, in STEM through providing
12 before school, after-school, out-of-school, or
13 summer activities;

14 (C) developing professional development re-
15 sources for STEM educators in utilizing ad-
16 vanced air mobility and unmanned aircraft sys-
17 tems technologies and applications in their cur-
18 riculum and in formal and informal education
19 settings, including through distance-delivered
20 courses;

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

1 (E) designing advanced air mobility and
2 unmanned aircraft system related activities de-
3 signed to help students make real-world connec-
4 tions to STEM content and educate students on
5 the relevance and significance of STEM ca-
6 reers;

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

12 (A) supporting curriculum development re-
13 lating to advanced air mobility and unmanned
14 aircraft systems applications and technologies;

15 (B) supporting hands-on research opportu-
16 nities at institutions of higher education, re-
17 search institutions, including National Labs,
18 and industry for undergraduate and graduate
19 students relating to advanced air mobility and
20 unmanned aircraft systems applications and
21 technologies;

22 (C) facilitating participation in collegiate
23 level advanced air mobility and unmanned air-
24 craft systems robotic competitions; and

1 (D) ensuring that students pursuing mas-
2 ter's degrees and doctoral degrees in fields re-
3 lating to advanced air mobility and unmanned
4 aircraft systems are considered as applicants
5 for scholarships and graduate fellowships under
6 the Graduate Research Fellowship Program
7 under section 10 of the National Science Foun-
8 dation Act of 1950 (42 U.S.C. 1869);

9 (9) shall support activities to develop a skilled
10 technical workforce for supporting and operating ad-
11 vanced air mobility and unmanned aircraft systems,
12 which may include supporting national centers fo-
13 cused on educating and training the skilled technical
14 workforce in advanced air mobility and unmanned
15 aircraft system applications and technologies
16 through the Advanced Scientific and Technical Edu-
17 cation Program as authorized by the Scientific and
18 Advanced-Technology Act of 1992 (42 U.S.C.
19 1862i), including by—

20 (A) expanding educational resources to ad-
21 dress current workforce demands in advanced
22 air mobility and unmanned aircraft system ap-
23 plications and technologies;

24 (B) developing curriculum for community
25 and technical colleges to train and upskill the

1 skilled technical workforce in advanced air mo-
2 bility and unmanned aircraft system applica-
3 tions and technologies;

4 (C) engaging the skilled technical work-
5 force community in advanced air mobility and
6 unmanned aircraft system applications and
7 technologies; and

8 (D) in partnership and consultation with
9 industry and labor organizations, employing ac-
10 tivities to increase the visibility and utility of
11 careers in advanced air mobility and unmanned
12 aircraft applications and technologies;

13 (10) shall engage veterans and departing mem-
14 bers of the Armed Services in activities mentioned in
15 paragraphs (7) and (8);

16 (11) may support one or more Institutes as de-
17 scribed in section 201(a) for the purpose of advanc-
18 ing the field of advanced air mobility and unmanned
19 aircraft systems;

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

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

1 (14) shall apply lessons learned from unmanned
2 aircraft systems research, development, demonstra-
3 tion, and testing to advanced air mobility systems;
4 and

5 (15) may conduct any other activities the Direc-
6 tor finds necessary to meet the goals laid out in sub-
7 section (a).

8 (c) PUBLIC-PRIVATE PARTNERSHIPS.—As part of the
9 activities under subsection (a), the Director shall support
10 public-private partnerships to support domestic develop-
11 ment of advanced air mobility and unmanned aircraft sys-
12 tems in the United States and address pre-competitive in-
13 dustry challenges.

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

17 (1) \$50,000,000 for fiscal year 2024;

18 (2) \$52,500,000 for fiscal year 2025;

19 (3) \$55,125,000 for fiscal year 2026;

20 (4) \$57,881,775 for fiscal year 2027; and

21 (5) \$60,775,863 for fiscal year 2028.

22 (e) DEFINITION.—In this title, the term “Director”
23 means the Director of the National Science Foundation.

1 **TITLE V—NATIONAL AERO-**
2 **NAUTICS AND SPACE ADMIN-**
3 **ISTRATION ACTIVITIES**

4 **SEC. 501. NATIONAL AERONAUTICS AND SPACE ADMINIS-**
5 **TRATION ACTIVITIES.**

6 (a) IN GENERAL.—Consistent with the research plan
7 in section 102, the Administrator, in consultation with the
8 Administrator of the Federal Aviation Administration and
9 other Federal agencies, shall, subject to the availability of
10 appropriations, carry out research and development to fa-
11 cilitate the safe integration of advanced air mobility and
12 unmanned aircraft systems into the National Airspace
13 System. Research topics may include—

14 (1) sense and avoid capabilities;

15 (2) the transition of unmanned aircraft system
16 traffic management into operational use in the Na-
17 tional Airspace System;

18 (3) safety related to autonomy, autonomous un-
19 manned aircraft systems, and remotely-piloted un-
20 manned aircraft systems;

21 (4) human systems integration; and

22 (5) hazardous weather condition avoidance.

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

1 “Operational flight data derived from these cooperative
2 agreements shall be made available, in appropriate and us-
3 able formats, to the Administration and the Federal Avia-
4 tion Administration for the development of regulatory
5 standards.”.

6 (c) CONSIDERATIONS.—In carrying out the research
7 and development under subsection (a), the Administrator
8 shall continue to coordinate and partner with the Federal
9 Aviation Administration, the Department of Defense, the
10 Department of Homeland Security, industry, academia,
11 and labor organizations to mature and help implement un-
12 manned aircraft system traffic management related con-
13 cepts, architectures, services, and strategic as well as tac-
14 tical deconfliction to advance the safe integration of
15 drones into the National Airspace System. As an interim
16 step, the Administrator shall leverage commercial and
17 public good unmanned aircraft system applications, such
18 as wildfire and disaster monitoring and mitigation, to
19 demonstrate and help validate concepts, architectures, and
20 other measures toward the safe integration of unmanned
21 aircraft systems into the National Airspace System. In ad-
22 dition, the Administrator shall carry out research and de-
23 velopment on protocols for enabling the safe integration
24 of many simultaneous drone operations beyond visual line
25 of sight.

1 (d) LESSONS LEARNED.—The Administrator shall
2 apply lessons learned from unmanned aircraft systems re-
3 search, development, demonstration, and testing to ad-
4 vanced air mobility systems.

5 (e) COORDINATION.—The Administrator shall con-
6 tribute to, as appropriate, efforts to inform the develop-
7 ment of voluntary consensus-based technical standards, as
8 led by standards development organizations, to facilitate
9 the incorporation of advanced air mobility and unmanned
10 aircraft systems into the National Airspace System and
11 shall coordinate with other relevant government agencies
12 and nongovernmental entities, including industry and
13 labor organizations, in its contributions to standards de-
14 velopment activities.

15 (f) ASSESSMENT.—The Administrator shall coordi-
16 nate with the Administrator of the Federal Aviation Ad-
17 ministration to conduct an assessment to identify metrics,
18 estimated milestone dates, and performance measures nec-
19 essary to safely integrate unmanned aircraft systems and
20 advanced air mobility systems into the National Airspace
21 System.

22 (g) REPORT.—Not later than 120 days after the com-
23 pletion of the assessment in subsection (f), the Adminis-
24 trator shall submit a report on the progress towards meet-
25 ing the metrics, milestone dates, and performance meas-

1 ures to the Committee on Science, Space, and Technology
2 of the House of Representatives and the Committee on
3 Commerce, Science, and Transportation of the Senate.

4 **SEC. 502. NATIONAL STUDENT UNMANNED AIRCRAFT SYS-**
5 **TEMS COMPETITION PROGRAM.**

6 (a) IN GENERAL.—The Administrator shall lead a
7 national pilot program to carry out unmanned aircraft sys-
8 tems technology competitions for students at the high
9 school and undergraduate level (in this section referred to
10 as “competitions”) in which students shall compete to de-
11 sign, create, and demonstrate an unmanned aircraft sys-
12 tem.

13 (b) COMPETITION ADMINISTRATION.—The Adminis-
14 trator shall award, on a merit-reviewed, competitive basis,
15 a grant to a nonprofit organization, an institution of high-
16 er education, or a consortium thereof, to administer the
17 pilot program (in this section referred to as the “competi-
18 tion administrator”).

19 (c) AWARD CRITERIA.—The Administrator shall en-
20 sure that the award decision made under subsection (b)
21 take into account the extent to which the eligible entity—

22 (1) identifies a plan for engaging eligible insti-
23 tutions from diverse geographic areas, including
24 poor, rural, and Tribal communities; and

1 (2) identifies a plan for connecting STEM ac-
2 tivities to Administration missions and centers.

3 (d) COMPETITION ADMINISTRATOR RESPONSIBIL-
4 ITIES.—In carrying out the pilot program, the competition
5 administrator shall be responsible for—

6 (1) awarding grants to institutions of higher
7 education or nonprofit organizations (or a consor-
8 tium of such institutions or organization) on a
9 merit-reviewed, competitive basis to host individual
10 competitions;

11 (2) developing STEM curriculum to be utilized
12 by the competition awardees to help students make
13 the connection to the design, construction, and dem-
14 onstration of the unmanned aircraft systems;

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

19 (4) ensuring awardees are supporting the activi-
20 ties laid out in subsection (f);

21 (5) conducting performance evaluations of com-
22 petitions, including data collection on—

23 (A) the number of students engaged;

1 (B) geographic and institutional diversity
2 of participating schools and institutions of high-
3 er education; and

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

6 (e) ADDITIONAL CONSIDERATIONS.—In awarding
7 grants in subsection (d), the competition administrator
8 shall consider applications that include a partnership with
9 that State’s space grant program under chapter 403 of
10 title 51, United States Code.

11 (f) PERMITTED ACTIVITIES.—In carrying out the
12 pilot program in subsection (a), the competition adminis-
13 trator shall ensure competitions occurring at both the high
14 school and undergraduate levels—

15 (1) allow students to design, construct, and
16 demonstrate an unmanned aircraft system;

17 (2) allow students to compete with other teams
18 in the performance of the constructed unmanned air-
19 craft system;

20 (3) connect to relevant missions and Center ac-
21 tivities of the Administration;

22 (4) connect relevant STEM curriculum to the
23 design, construction, and demonstration of un-
24 manned aircraft systems;

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

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

8 (7) encourage, to the greatest extent prac-
9 ticable, the participation of students from groups
10 historically underrepresented in STEM.

11 (g) REPORT TO CONGRESS.—No later than 6 months
12 following the end of the pilot program, the Administrator
13 shall transmit to the Committee on Science, Space, and
14 Technology and the Committee on Commerce, Science,
15 and Transportation of the Senate, a report describing the
16 accomplishments, lessons learned, any challenges in the
17 implementation of the pilot program, and recommenda-
18 tions for whether to continue the pilot program.

19 (h) AUTHORIZATION OF APPROPRIATIONS.—There is
20 authorized to be appropriated to the Administrator
21 \$6,000,000 in each of fiscal years 2024 through 2028 to
22 carry out the pilot program in this section. Of the funds
23 authorized—

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

4 (2) \$5,000,000 per year shall be awarded for
5 grants to carry out competitions under the pilot pro-
6 gram in subsection (d).

7 (i) DEFINITIONS.—In this title:

8 (1) ADMINISTRATION.—The term “Administra-
9 tion” means the National Aeronautics and Space
10 Administration.

11 (2) ADMINISTRATOR.—The term “Adminis-
12 trator” means the Administrator of the National
13 Aeronautics and Space Administration.

14 **TITLE VI—DEPARTMENT OF**
15 **ENERGY ACTIVITIES**

16 **SEC. 601. DEPARTMENT OF ENERGY RESEARCH ACTIVI-**
17 **TIES.**

18 (a) IN GENERAL.—Consistent with the research plan
19 in section 102, the Secretary shall carry out cross-cutting
20 research, development, and demonstration activities to ad-
21 vance unmanned aircraft system technologies, capabilities,
22 and workforce needs and to improve the reliability of the
23 use of unmanned aircraft systems in ways relevant to the
24 mission of the Department. In carrying out these activi-
25 ties, the Secretary shall coordinate across all relevant of-

1 fices and activities at the Department, including the Office
2 of Science, the Office of Energy Efficiency and Renewable
3 Energy, the Office of Nuclear Energy, the Office of Fossil
4 Energy, the Office of Electricity, the Office of Cybersecu-
5 rity, Energy Security, and Emergency Response, the Ad-
6 vanced Research Projects Agency—Energy, the Office of
7 Environmental Management, the Office of Environment,
8 Health, Safety and Security, the National Nuclear Secu-
9 rity Administration, the Artificial Intelligence Technology
10 Office, the UAS Research and Engineering Center, and
11 any other relevant office or activity as determined by the
12 Secretary.

13 (b) RESEARCH ACTIVITIES.—In carrying out sub-
14 section (a), the Secretary—

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

19 (2) shall leverage the collective body of knowl-
20 edge from existing unmanned aircraft systems re-
21 search and development activities, including the
22 work underway by the Unmanned Aircraft Systems
23 Research and Engineering Center;

24 (3) shall provide research experiences and train-
25 ing for undergraduate and graduate students in un-

1 manned aircraft systems research and development,
2 including in the fields of—

3 (A) artificial intelligence and machine
4 learning;

5 (B) applied mathematics and algorithm de-
6 velopment;

7 (C) advanced imaging, sensing, and detec-
8 tion technologies;

9 (D) materials science and engineering; and

10 (E) advanced energy technologies and pro-
11 pulsion approaches;

12 (4) shall ensure all activities under this section
13 are subject to the data management policies of the
14 Department; and

15 (5) may support one or more Institutes as de-
16 scribed in section 201(a) of this Act for the purpose
17 of advancing the fields of unmanned aircraft systems
18 and the mission of the Department.

19 (c) RESEARCH AREAS.—In carrying out subsection
20 (a), the Secretary shall award financial assistance to eligi-
21 ble entities to carry out research, development, and dem-
22 onstration projects over a range of subject areas includ-
23 ing—

24 (1) fundamental science, applied science, and
25 advanced technology areas, which may include—

1 (A) advanced sensor technologies and inno-
2 vative sensor materials, devices, and processes,
3 including—

4 (i) optical capabilities, including Light
5 Detection and Ranging, hyperspectral,
6 thermographic, and visible imaging capa-
7 bilities;

8 (ii) nonoptical electromagnetic capa-
9 bilities, including radar and radiofrequency
10 capabilities;

11 (iii) acoustic capabilities, including ul-
12 trasonic and infrasonic capabilities;

13 (iv) micro and nano technology;

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

16 (vi) radiation detection, gravimetric,
17 hyperspectral or other measurement mo-
18 dalities;

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

22 (C) advanced technologies for secure au-
23 tonomous operation, including edge computing
24 and artificial intelligence;

1 (D) power electronics and wireless charg-
2 ing systems;

3 (E) novel materials, including lightweight
4 materials and materials with robust perform-
5 ance under extreme conditions;

6 (F) scalability of unmanned aircraft sys-
7 tems for increased payload capacity;

8 (G) technologies and processes to improve
9 secure interoperability practices, including with
10 existing satellites, constellation networks, indus-
11 trial control systems, and surface-based facili-
12 ties;

13 (H) strategies and technologies for inte-
14 grated cybersecurity considerations;

15 (I) strategies and technologies for im-
16 proved endurance, including lightweight long
17 duration fuels, batteries, fuel cells, and other
18 storage systems;

19 (J) open architectures and advanced algo-
20 rithms to enable multi-sensor fusion and track-
21 ing of unmanned aircraft systems;

22 (K) swarm and cooperative drone data col-
23 lection and operation, and integration of drone
24 control systems with dynamic sampling and
25 real-time digital twin simulations;

1 (L) approaches to allow for use of ad-
2 vanced artificial intelligence and advanced com-
3 putation for improved aircraft structural and
4 aerodynamic design;

5 (M) relevant microelectronics technologies,
6 including novel devices, systems, and architec-
7 tures; and

8 (N) strategies and technologies for energy
9 efficient manufacturing of specialized compo-
10 nents;

11 (2) approaches for leveraging unmanned air-
12 craft systems for diverse applications, which may in-
13 clude—

14 (A) advanced assessment, characterization,
15 mapping, and recovery of energy resources,
16 such as geothermal energy, bioenergy feedstock
17 resources, and critical minerals resources;

18 (B) real time asset management, infra-
19 structure inspection, monitoring, fault pre-
20 diction and detection, and field testing of elec-
21 tric grid and energy infrastructure systems,
22 such as onshore and offshore wind energy, fossil
23 energy, solar energy, marine energy, nuclear en-
24 ergy, and hydropower systems;

1 (C) damage assessment of the electric grid
2 and energy infrastructure following
3 cyberattacks and other human-caused destruc-
4 tion and other physical events such as wildland
5 fires, including prescribed burns containment
6 and emissions measurements, potential health
7 and safety effects from contaminant releases
8 and dispersals, and real-time analysis of im-
9 pacted assets;

10 (D) leak detection of greenhouse gases re-
11 lated to resource extraction and energy produc-
12 tion and delivery, including methane leak detec-
13 tion;

14 (E) agriculture and aquaculture applica-
15 tions;

16 (F) integrated data collection to inform
17 and enhance Department modeling capabilities,
18 including the development of climate and earth
19 systems models and computational tools;

20 (G) assistance in environmental manage-
21 ment and cleanup activities;

22 (H) assistance in Department infrastruc-
23 ture management at National Laboratories and
24 other relevant Department sites;

1 (I) intrusion detection and facility moni-
2 toring for physical security applications;

3 (J) data collection of building envelope fea-
4 tures and characteristics for rapid energy mod-
5 eling purposes; and

6 (L) improving efficiency of manufacturing
7 processes.

8 (d) TECHNOLOGY TRANSFER.—In carrying out sub-
9 section (a), and in coordination with the Office of Tech-
10 nology Transitions, the Secretary shall support technology
11 transfer of unmanned aircraft systems research.

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

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

19 (1) \$50,000,000 for fiscal year 2024;

20 (2) \$52,500,000 for fiscal year 2025;

21 (3) \$55,125,000 for fiscal year 2026;

22 (4) \$57,881,775 for fiscal year 2027; and

23 (5) \$60,775,863 for fiscal year 2028.

24 (g) DEFINITIONS.—In this title:

1 (1) DEPARTMENT.—The term “Department”
2 means the Department of Energy.

3 (2) ELIGIBLE ENTITIES.—The term “eligible
4 entity” means—

5 (A) an institution of higher education;

6 (B) a National Laboratory;

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

9 (D) a nonprofit research organization;

10 (E) a private sector entity; or

11 (F) a consortium of 2 or more entities de-
12 scribed in any of subparagraphs (A) through
13 (E).

14 (3) SECRETARY.—The term “Secretary” means
15 the Secretary of Energy.

16 **TITLE VII—DEPARTMENT OF**
17 **HOMELAND SECURITY AC-**
18 **TIVITIES**

19 **SEC. 701. DEPARTMENT OF HOMELAND SECURITY ACTIVI-**
20 **TIES.**

21 (a) IN GENERAL.—Consistent with the research plan
22 in section 102 and in coordination with the Administrator
23 of the Federal Aviation Administration and the heads of
24 other relevant Federal agencies, as appropriate, the Sec-

1 retary, acting through the Under Secretary for Science
2 and Technology—

3 (1) shall support research, development, evalua-
4 tion, and testing for advanced air mobility, un-
5 manned aircraft systems, counter-UAS systems and
6 detection systems capabilities, including for—

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

10 (B) privacy, security, and cybersecurity of
11 advanced air mobility systems, unmanned air-
12 craft systems, and counter-UAS systems and
13 detection systems capabilities;

14 (C) safe operations of counter-UAS sys-
15 tems and detection systems in the National Air-
16 space System; and

17 (D) testing and evaluation of unmanned
18 aircraft systems and counter-UAS systems and
19 detection systems capabilities, performance sys-
20 tems engineering, operational analysis and
21 human systems integration, including factors
22 that impact performance of end-users in the op-
23 eration and maintenance of advanced air mobil-
24 ity and unmanned aircraft systems;

1 (E) leveraging and preparing for adver-
2 sarial use of artificial intelligence against ad-
3 vanced air mobility, unmanned aircraft systems,
4 and counter-UAS systems and detection sys-
5 tems; and

6 (F) maritime detection and monitoring of
7 hazards to navigation, potential and actual pol-
8 lution incidents, vessel discharge and vessel air
9 emissions monitoring and enforcement, and pol-
10 lution response operations;

11 (2) shall coordinate with all relevant offices and
12 programs at the Department, including the Cyberse-
13 curity and Infrastructure Security Agency, U.S.
14 Customs and Border Protection, the Federal Emer-
15 gency Management Agency, the Federal Protective
16 Service, the Transportation Security Administration,
17 the United States Coast Guard, the United States
18 Secret Service, the Office of Strategy, Policy and
19 Plans, and the Department of Homeland Security
20 Special Events Program;

21 (3) may produce curated, standardized, rep-
22 resentative, secure, and privacy protected data sets
23 for advanced air mobility systems, unmanned air-
24 craft systems, and counter-UAS systems and detec-
25 tion systems, including detection systems, develop-

1 ment, archiving, and use, prioritizing data for high-
2 value, high-risk research;

3 (4) may support one or more institutes as de-
4 scribed in section 201(a) for the purpose of advanc-
5 ing the field of advanced air mobility, unmanned air-
6 craft systems, and counter-UAS systems and detec-
7 tion systems capabilities; and

8 (5) shall enter into and perform such contracts,
9 including cooperative research and development ar-
10 rangements and grants and cooperative agreements
11 or other transactions, as may be necessary in the
12 conduct of the work of the Department and on such
13 terms as the Secretary considers appropriate, in fur-
14 therance of the purposes of this Act.

15 (b) COUNTER-UAS CENTER OF EXCELLENCE.—Sub-
16 ject to the availability of appropriations for the purpose,
17 the Secretary may, in consultation with the Federal Avia-
18 tion Administration and the heads of other relevant Fed-
19 eral agencies, as appropriate, establish a center of excel-
20 lence to carry out research and development that advances
21 counter-UAS systems and detection systems capabilities.

22 (1) SELECTION OF HOST INSTITUTION.—

23 (A) IN GENERAL.—The Secretary shall se-
24 lect an institution of higher education, or a con-
25 sortium of institutions of higher education, to

1 host and maintain the center of excellence es-
2 tablished under this subsection.

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

6 (i) give preference to applicants with
7 strong past performance related to
8 counter-UAS systems and detection sys-
9 tems research, education, and workforce
10 development activities;

11 (ii) give preference to applicants geo-
12 graphically collocated within 100 miles of
13 Federal departments or agencies that cur-
14 rently possess or operate extant counter-
15 UAS systems and detection systems facili-
16 ties:

17 (iii) give preference to applicants hav-
18 ing proven abilities and strong research en-
19 terprises in systems engineering, radio fre-
20 quency directed energy, radar and antenna
21 research and development, atmospheric
22 monitoring that can support of chemical,
23 biological, radiological and nuclear detec-
24 tion to include trace gases and particular
25 matter, target tracking, remote sensing

1 and the ability to leverage artificial intel-
2 ligence and machine learning to support
3 the required data analytics;

4 (iv) consider the extent to which the
5 applicant would involve the public and pri-
6 vate sectors; and

7 (v) consider the regional and national
8 impacts of the applicant's proposed re-
9 search and development activities.

10 (2) USE OF FUNDS.—Notwithstanding section
11 46502 of title 49, United States Code, or sections
12 32, 1030, 1367 and chapters 119 and 206 of title
13 18, the institution of higher education or consortium
14 may use funds provided under this subsection to
15 carry out fundamental research, evaluation, edu-
16 cation, workforce development, and training efforts
17 related to counter-UAS systems and detection sys-
18 tems subject areas, including safety, privacy, secu-
19 rity, cybersecurity, detecting, identifying, moni-
20 toring, tracking, disrupting and seizing control, con-
21 fiscating, disabling, damaging, destruction, remote
22 sensing, forensics, testing and evaluation of systems
23 capabilities, performance, systems engineering, oper-
24 ational analysis, and advanced technologies.

1 (3) FEDERAL SHARE.—The Department share
2 of a grant under this subsection shall not exceed 75
3 percent of the costs of establishing and operating
4 the center of excellence and related research activi-
5 ties carried out by the grant recipient.

6 (4) AUTHORIZATION OF APPROPRIATIONS.—

7 (A) FISCAL YEAR 2024.—There is author-
8 ized to be appropriated to the Secretary
9 \$10,000,000 for fiscal year 2024 for making
10 awards under this subsection.

11 (B) FISCAL YEARS 2025 THROUGH 2028.—
12 There are authorized to be appropriated to the
13 Secretary \$5,000,000 in each of fiscal years
14 2025 through 2028 for making awards under
15 this subsection.

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

19 (1) \$30,000,000 for fiscal year 2024;

20 (2) \$31,500,000 for fiscal year 2025;

21 (3) \$33,075,000 for fiscal year 2026;

22 (4) \$34,728,750 for fiscal year 2027; and

23 (5) \$36,465,187 for fiscal year 2028.

24 (d) DEFINITIONS.—In this title:

1 (1) DEPARTMENT.—The term “Department”
2 means the Department of Homeland Security.

3 (2) SECRETARY.—The term “Secretary” means
4 the Secretary of Homeland Security.

5 **TITLE VIII—NATIONAL OCEANIC**
6 **AND ATMOSPHERIC ADMINIS-**
7 **TRATION ACTIVITIES**

8 **SEC. 801. NATIONAL OCEANIC AND ATMOSPHERIC ADMIN-**
9 **ISTRATION RESEARCH AND DEVELOPMENT.**

10 (a) IN GENERAL.—The Administrator, consistent
11 with the research plan in section 102, shall carry out and
12 support research, development, and demonstration activi-
13 ties to advance unmanned aircraft systems technologies,
14 and capabilities, and to enhance the deployment of, and
15 data collected by, unmanned aircraft systems relevant to
16 the mission of the Administration, incorporate such data
17 into operations, and ensure data are managed, stewarded
18 and archived appropriately. In carrying out these activi-
19 ties, the Administrator shall coordinate across all relevant
20 offices and programs at the Administration, including the
21 Office of Oceanic and Atmospheric Research, National
22 Environmental Satellite, Data, and Information Service,
23 National Marine Fisheries Service, National Ocean Serv-
24 ice, National Weather Service, and the Office of Marine
25 and Aviation Operations.

1 (b) RESEARCH ACTIVITIES.—In carrying out sub-
2 section (a), the Administrator—

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

6 (2) may support Administration activities and
7 Cooperative Institute projects, and support and en-
8 courage Federal and State agencies, academic insti-
9 tutions, nongovernmental organizations, industry
10 representatives, and others to—

11 (A) enable the transition of unmanned air-
12 craft systems capabilities from research to oper-
13 ations and other uses and facilitate new un-
14 manned aircraft systems applications within the
15 Administration;

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

19 (C) prioritize activities that collect or ac-
20 quire routine observations which feed forecasts
21 and models;

22 (D) test, develop, and evaluate safe sys-
23 tems capable of safely operating beyond visual
24 line of sight;

1 (E) collect or acquire measurements of at-
2 mospheric and oceanic parameters; and

3 (F) ensure the archiving, stewardship, util-
4 ity, and preservation of and public accessibility
5 to the observations collected are shared with the
6 Administration;

7 (3) shall provide and support research experi-
8 ences and training for undergraduate and graduate
9 students in unmanned aircraft systems research, de-
10 velopment, and operations relevant to the mission of
11 the Administration, and other education and train-
12 ing opportunities consistent with the purpose of this
13 Act;

14 (4) may contribute to and supplement field
15 campaigns at the Department of Energy's Atmos-
16 pheric Radiation Measurement user facility in order
17 to incorporate unmanned aircraft systems and re-
18 sulting data into the development of combined obser-
19 vational and modeling elements; and

20 (5) shall support and conduct leading-edge re-
21 search and development of innovative unmanned air-
22 craft systems technologies and concepts to advance
23 research areas in subsection (c).

24 (c) RESEARCH AREAS.—In carrying out subsection
25 (a), the Administrator shall award financial assistance to

1 eligible entities to carry out projects on the use of un-
2 manned aircraft systems to collect environmental data and
3 monitor climate impacts, including—

4 (1) severe weather forecasts and damage assess-
5 ments;

6 (2) rapid flood mapping;

7 (3) real-time hurricane data, including close-to-
8 surface and low altitude meteorological measure-
9 ments;

10 (4) enhanced atmospheric monitoring and sam-
11 pling, including physical and chemical measurements
12 in the atmospheric boundary layer;

13 (5) marine mammal detection and monitoring;

14 (6) near-real time harmful algal bloom meas-
15 urements for rapid response efforts;

16 (7) coastal restoration and habitation moni-
17 toring, including detection and monitoring of marine
18 debris, oil spill, and hazardous materials;

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

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

23 (10) other areas related to science and steward-
24 ship of the climate, weather, oceans, coasts, and
25 Great Lakes; and

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

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

10 (1) enter into contracts with one or more enti-
11 ties in the commercial data sector to acquire data
12 collected by unmanned aircraft systems; and

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

16 (e) TECHNOLOGY TRANSFER.—In carrying out sub-
17 section (a) the Administrator shall support technology
18 transfer of unmanned aircraft systems research by
19 partnering with Federal agencies and industry.

20 (f) COORDINATION.—The Administrator shall coordi-
21 nate the activities authorized in this section with the ac-
22 tivities authorized in section 3 of the Commercial Engage-
23 ment Through Ocean Technology Act of 2018 (33 U.S.C.
24 4102) and engage with other Federal departments and
25 agencies, research communities, nongovernmental organi-

1 zations, and industry stakeholders through the inter-
2 agency committee established by section 103.

3 (g) SUPPORT OF INSTITUTES.—For the purposes of
4 subsection (a), the Administrator may support relevant ac-
5 tivities at one or more Institutes as described in section
6 201(a) of this Act for the purpose of advancing the field
7 of unmanned aircraft systems.

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

11 (1) \$15,000,000 for fiscal year 2024;

12 (2) \$15,750,000 for fiscal year 2025;

13 (3) \$16,537,500 for fiscal year 2026;

14 (4) \$17,364,375 for fiscal year 2027; and

15 (5) \$18,232,593 for fiscal year 2028.

16 (i) DEFINITIONS.—In this title:

17 (1) ADMINISTRATION.—The term “Administra-
18 tion” means the National Oceanic and Atmospheric
19 Administration.

20 (2) ELIGIBLE ENTITIES.—The term “eligible
21 entities” means—

22 (A) an institution of higher education;

23 (B) a National Laboratory;

24 (C) a NOAA Cooperative Institute;

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

3 (E) a nonprofit organization;

4 (F) a private sector entity; or

5 (G) a consortium of 2 or more entities de-
6 scribed in subparagraphs (A) through (F).

7 (3) ADMINISTRATOR.—The term “Adminis-
8 trator” means the Administrator of the National
9 Oceanic and Atmospheric Administration.

10 **TITLE IX—FEDERAL AVIATION** 11 **ADMINISTRATION ACTIVITIES**

12 **SEC. 901. FEDERAL AVIATION ADMINISTRATION RESEARCH** 13 **AND DEVELOPMENT.**

14 (a) IN GENERAL.—Consistent with the research plan
15 in section 102, the Administrator, in coordination with the
16 Administrator of the National Aeronautics and Space Ad-
17 ministration and other Federal agencies, shall carry out
18 and support research, development, testing, demonstra-
19 tion, technology transfer, and implementation activities to
20 enable advanced air mobility and unmanned aircraft sys-
21 tems and to facilitate the safe integration of advanced air
22 mobility and unmanned aircraft systems into the national
23 airspace system, in areas including—

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

25 (2) command and control link technologies;

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

4 (4) noise and other societal and environmental
5 impacts;

6 (5) development of an industry consensus vehi-
7 cle-to-vehicle standard;

8 (6) safety, including collisions between ad-
9 vanced air mobility and unmanned aircraft systems
10 of various sizes, traveling at various speeds, and var-
11 ious other crewed aircraft or various parts of other
12 crewed aircraft of various sizes and traveling at var-
13 ious speeds; and

14 (7) detect and avoid capabilities.

15 (b) LESSONS LEARNED.—The Administrator shall
16 apply lessons learned from unmanned aircraft systems re-
17 search, development, demonstration, and testing to ad-
18 vanced air mobility systems.

19 (c) RESEARCH ON APPROACHES TO EVALUATING
20 RISK.—The Administrator shall conduct research on ap-
21 proaches to evaluating risk in emerging vehicles, tech-
22 nologies, and operations for unmanned aircraft systems
23 and advanced air mobility systems. Such research shall in-
24 clude—

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

7 (2) developing risk-based processes and criteria
8 to inform the development of regulations and certifi-
9 cation of complex operations, to include autonomous
10 beyond-visual-line-of-sight operations, of unmanned
11 aircraft systems of various sizes and weights, and
12 advanced air mobility systems; and

13 (3) considering the utility of performance
14 standards to make determinations under section
15 44807 of title 49, United States Code, as amended
16 by this title.

17 (d) REPORT.—Not later than 9 months after the date
18 of enactment of this Act, the Administrator shall submit
19 to the Committee on Science, Space, and Technology of
20 the House of Representatives and the Committee on Com-
21 merce, Science, and Transportation of the Senate a report
22 on the actions taken by the Administrator to implement
23 provisions under this section that includes—

24 (1) a summary of the costs and results of re-
25 search under subsection (a)(6);

1 (2) a description of plans for and progress to-
2 ward the implementation of research and develop-
3 ment under subsection (c);

4 (3) a description of the Administration's
5 progress using research and development to inform
6 the development of certification guidance and regula-
7 tions of—

8 (A) large unmanned aircraft systems, in-
9 cluding those weighing more than 55 pounds;
10 and

11 (B) extended autonomous and remotely pi-
12 loted operations beyond visual line of sight in
13 controlled and uncontrolled airspace; and

14 (4) a current Plan for Full Operational Capa-
15 bility of Unmanned Aircraft Systems Traffic Man-
16 agement, as described in section 376 of Public Law
17 115–254, the FAA Reauthorization Act of 2018.

18 **SEC. 902. PARTNERSHIPS FOR RESEARCH, DEVELOPMENT,**
19 **DEMONSTRATION, AND TESTING.**

20 (a) STUDY.—The Administrator shall enter into an
21 arrangement with the National Academy of Public Admin-
22 istration to examine Administration research, develop-
23 ment, demonstration, and testing partnerships to advance
24 unmanned aircraft systems and advanced air mobility and

1 to facilitate the safe integration of unmanned aircraft sys-
2 tems into the national airspace system.

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

5 (1) identify existing Administration partner-
6 ships with external entities, including academia and
7 Centers of Excellence, industry, and nonprofit orga-
8 nizations, and the types of such partnership ar-
9 rangements;

10 (2) examine the partnerships in paragraph (1),
11 including the scope and areas of research, develop-
12 ment, demonstration, and testing carried out, and
13 associated arrangements for performing research
14 and development activities;

15 (3) review the extent to which the Administra-
16 tion uses the results and outcomes of each partner-
17 ship to advance the research and development in un-
18 manned aircraft systems;

19 (4) identify additional research and develop-
20 ment areas, if any, that may benefit from partner-
21 ship arrangements, and whether such research and
22 development would require new partnerships;

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

1 (6) identify effective and appropriate means for
2 publication and dissemination of the results and
3 sharing with the public, commercial, and research
4 communities related data from such research, devel-
5 opment, demonstration, and testing conducted under
6 such partnerships;

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

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

14 (9) identify the extent to which such partner-
15 ships broaden participation from groups historically
16 underrepresented in STEM and include participation
17 by industry, workforce, and labor organizations; and

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

22 (c) TRANSMITTAL.—The Administrator shall trans-
23 mit the study directed in subsection (a) to the Committee
24 on Science, Space, and Technology of the House of Rep-
25 resentatives and the Committee on Commerce, Science,

1 and Transportation of the Senate not later than 12
2 months after the date of enactment of this Act.

3 **SEC. 903. UAS TEST RANGES AND OPERATIONS.**

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

6 (1) in section 44803, in subsection (h), by strik-
7 ing “2023” and inserting “2028”; and

8 (2) in section 44807, in subsection (d), by strik-
9 ing “2023” and inserting “2028”.

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

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

14 “(F) implementing unmanned aircraft sys-
15 tems traffic management services for commer-
16 cial unmanned aircraft systems in uncontrolled
17 airspace;

18 “(G) advanced air mobility concepts in
19 controlled airspace, including communication,
20 navigation, and surveillance standards;

21 “(H) the verification and validation of the
22 autonomy of unmanned aircraft systems; and

23 “(I) improving the cybersecurity of un-
24 manned aircraft systems.”; and

1 (2) in section 44807, in subsection (c), after
2 “proprietary systems”, by inserting “, unmanned
3 aircraft systems traffic management systems, and
4 advanced air mobility systems”.

5 (c) REPORT.—Not later than 180 days after the date
6 of enactment of this Act, the Secretary of Transportation
7 shall submit to the Committee on Science, Space, and
8 Technology of the House of Representatives and the Com-
9 mittee on Commerce, Science, and Transportation of the
10 Senate a report that includes the following:

11 (1) The number of waivers granted under sub-
12 section (c) of section 44803 of title 49, United
13 States Code, with respect to unmanned aircraft sys-
14 tem test ranges and operations conducted under
15 such section;

16 (2) Measures taken to further implement sub-
17 section (c) of section 44803 of title 49, United
18 States Code;

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

21 (4) Strategies to communicate broadly to indus-
22 try regarding the safest, most efficient, and effective
23 path toward testing goals.

1 **SEC. 904. AUTHORIZATION OF APPROPRIATIONS.**

2 (a) FEDERAL AVIATION ADMINISTRATION RESEARCH
3 AND DEVELOPMENT FUNDING.—There are authorized to
4 be appropriated to the Administration to carry out section
5 901—

6 (1) \$20,000,000 for fiscal year 2024;

7 (2) \$21,000,000 for fiscal year 2025;

8 (3) \$22,050,000 for fiscal year 2026;

9 (4) \$23,152,500 for fiscal year 2027; and

10 (5) \$24,310,125 for fiscal year 2028.

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

15 **SEC. 905. DEFINITIONS.**

16 In this title:

17 (1) ADMINISTRATOR.—The term “Adminis-
18 trator” means the Administrator of the Federal
19 Aviation Administration.

20 (2) ADMINISTRATION.—The term “Administra-
21 tion” means the Federal Aviation Administration.

22 **TITLE X—LIMITATION**

23 **SEC. 1001. LIMITATION.**

24 (a) IN GENERAL.—Except as otherwise provided in
25 this section, none of the funds authorized to be appro-
26 priated by this Act may be used for the purchase, acquisi-

1 tion, or operation of advanced air mobility and unmanned
2 aircraft systems—

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

6 (2) produced or assembled by entities owned,
7 controlled by, or subject to the jurisdiction or direc-
8 tion of the government of, a foreign country of con-
9 cern.

10 (b) EXCEPTION.—The limitation in subsection (a)
11 shall not apply to the acquisition of advanced air mobility
12 and unmanned aircraft systems for the purposes of re-
13 search and development for improving the United States
14 counter-UAS systems and detection systems capabilities.

15 (c) WAIVER.—The Secretary of Commerce may waive
16 the limitation in subsection (a) if the Secretary deter-
17 mines, in consultation with the Director of National Intel-
18 ligence, that such waiver is in the national security inter-
19 est of the United States.

20 (d) REPORT TO CONGRESS.—The Secretary of Com-
21 merce shall report the issuance of such a waiver to the
22 relevant committees of jurisdiction of Congress not later
23 than 30 days after issuing such waiver.

24 (e) DEFINITION.—In this section, the term “foreign
25 country of concern” means—

1 (1) a country that is a covered nation (as de-
2 fined in section 4872(d) of title 10 United States
3 Code); and

4 (2) any country that the Secretary of Com-
5 merce, in consultation with the Secretary of Defense
6 and the Director of National Intelligence, determines
7 to be engaged in conduct that is detrimental to the
8 national security or foreign policy of the United
9 States.

