

118TH CONGRESS
1ST SESSION

H. R. 3560

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

IN THE HOUSE OF REPRESENTATIVES

MAY 22, 2023

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

A BILL

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

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

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

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

1 (b) TABLE OF CONTENTS.—The table of contents for
 2 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 program.

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. University unmanned aircraft systems and advance air mobility centers.
- Sec. 903. Allowance for the purposes of research and development.

Sec. 904. Authorization of appropriations.

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-
13 tion, border security, weather forecasting, construc-
14 tion, utility monitoring, and many other uses and
15 applications.

16 (3) Research, development, demonstration, test-
17 ing, and evaluation of counter-UAS systems and de-
18 tection systems activities are critical to fully under-
19 stand the capabilities of and threats posed by un-
20 manned aircraft systems.

21 (4) Unmanned aircraft systems and advanced
22 air mobility systems are subject to safety, privacy,
23 cybersecurity, and supply chain risks, particularly as

1 most unmanned aircraft systems in the United
2 States are manufactured or assembled from parts
3 manufactured in foreign countries.

4 (5) National and homeland security threats
5 posed by unmanned aircraft systems and advanced
6 air mobility systems include criminal and terrorist
7 use for espionage, surveillance, and intelligence gath-
8 ering, smuggling drugs and contraband, and plat-
9 forms to deliver explosives or chemicals, biological,
10 radiological or nuclear weapons, and other firearms.

11 (6) The Federal Government has an important
12 role in advancing research, development, voluntary
13 consensus technical standards, and education activi-
14 ties in advanced air mobility and unmanned aircraft
15 systems technologies through coordination and col-
16 laboration between State, local, Federal, and Tribal
17 governments, academia, and the private sector.

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

22 (8) The United States needs to invest in domes-
23 tic manufacturing and secure supply chains of un-
24 manned aircraft systems and advanced air mobility
25 systems to meet the demand by the Government and

1 the commercial sectors, to reduce reliance on for-
2 eign-made systems.

3 **SEC. 3. DEFINITIONS.**

4 In this Act:

5 (1) **ADVANCED AIR MOBILITY.**—The term “ad-
6 vanced air mobility” means a transportation system
7 that transports people and property by air between
8 two points in the United States using aircraft with
9 advanced technologies, including electric aircraft or
10 electric vertical take-off and landing aircraft, in both
11 controlled and uncontrolled airspace.

12 (2) **COUNTER-UAS SYSTEM.**—The term
13 “counter-UAS system” has the meaning given such
14 term in section 44801(5) of title 49, United States
15 Code.

16 (3) **INSTITUTE.**—The term “Institute” means a
17 Drone and Advanced Air Mobility Research Institute
18 described in section 201(b).

19 (4) **INTERAGENCY WORKING GROUP.**—The term
20 “Interagency Working Group” means the Advanced
21 Air Mobility and Unmanned Aircraft Systems Inter-
22 agency Working Group of the National Science and
23 Technology Council.

24 (5) **NATIONAL LABORATORY.**—The term “Na-
25 tional Laboratory” has the meaning given such term

1 in section 2 of the Energy Policy Act of 2005 (42
2 U.S.C. 15801).

3 (6) TRIBAL GOVERNMENT.—The term “Tribal
4 government” has the meaning given the term “tribal
5 government” in section 421 of the Congressional
6 Budget Act of 1974 (2 U.S.C. 658).

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

11 **SEC. 4. PURPOSES.**

12 The purpose of this Act is to ensure United States
13 leadership in advanced air mobility and unmanned aircraft
14 systems, and maximize benefits and mitigate risks of such
15 systems by—

16 (1) supporting research, development, dem-
17 onstration, testing, and transition to operations of
18 secure advanced air mobility systems and unmanned
19 aircraft systems, including research and development
20 to accelerate integration of such systems into the
21 National Airspace System;

22 (2) improving the interagency planning and co-
23 ordination of Federal research and development of
24 advanced air mobility and unmanned aircraft sys-
25 tems and maximizing the effectiveness of the Fed-

1 eral Government’s advanced air mobility and next
2 generation unmanned aircraft systems research and
3 development programs;

4 (3) promoting research and development col-
5 laboration among the Federal Government, State,
6 local, and Tribal governments, National Labora-
7 tories, industry, and academic institutions;

8 (4) promoting domestic manufacturing of un-
9 manned aircraft systems and mitigating supply
10 chain risks;

11 (5) supporting activities to mitigate risks to
12 public safety and national security and homeland se-
13 curity, including through response to disasters;

14 (6) preparing the present and future United
15 States workforce for the integration of advanced air
16 mobility and unmanned aircraft systems across sec-
17 tors of the economy, including through support for
18 curriculum development and research opportunities;

19 (7) supporting research, development, dem-
20 onstration, and testing of civilian applications of un-
21 manned aerial systems, including improved safety
22 and sustainability of ground transportation, environ-
23 mental monitoring, and disaster response;

24 (8) promoting research and development col-
25 laboration among the Federal Government, State,

1 local, and Tribal governments, National Labora-
2 tories, industry, and academic institutions;

3 (9) promoting the development of voluntary
4 consensus technical standards and best practices for
5 advanced air mobility and unmanned aircraft sys-
6 tems; and

7 (5) applying lessons learned from unmanned
8 aircraft systems research, development, demonstra-
9 tion, and testing to advanced air mobility systems.

10 **TITLE I —INTERAGENCY** 11 **ACTIVITIES**

12 **SEC. 101. INTERAGENCY WORKING GROUP.**

13 (a) DESIGNATION.—

14 (1) IN GENERAL.—The National Science and
15 Technology Council shall establish an interagency
16 working group on advanced air mobility and un-
17 manned aircraft systems to coordinate Federal re-
18 search, development, deployment, testing, and edu-
19 cation activities to enable the advancement of ad-
20 vanced air mobility and unmanned aircraft systems.

21 (2) MEMBERSHIP.—The interagency working
22 group shall be comprised of senior representatives
23 from the National Aeronautics and Space Adminis-
24 tration, the Department of Transportation, the Na-
25 tional Oceanic and Atmospheric Administration, the

1 National Science Foundation, the National Institute
2 of Standards and Technology, and such other Fed-
3 eral agencies as appropriate.

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

5 (1) develop a strategic research plan to guide
6 Federal research to enable advanced air mobility and
7 unmanned aircraft systems and oversee implementa-
8 tion of the plan;

9 (2) oversee the ongoing development of—

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

16 (B) strategies to strengthen and secure the
17 domestic supply chain for advanced air mobility
18 systems and unmanned aircraft systems.

19 (3) facilitate communication and outreach op-
20 portunities with academia, industry, professional so-
21 cieties, the Federal Government, State, local, and
22 Tribal governments, and other stakeholders;

23 (4) facilitate partnerships to leverage knowledge
24 and resources from industry, the Federal Govern-
25 ment, State, local, and Tribal governments, National

1 Laboratories, Unmanned Aircraft Systems Test
2 Sites, academic institutions, and others;

3 (5) coordinate with the Advanced Air Mobility
4 Working Group and heads of other Federal depart-
5 ments and agencies to avoid duplication of research
6 and other activities to ensure the activities carried
7 out by the interagency working group are com-
8 plementary to those being undertaken by other inter-
9 agency efforts; and

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

15 (c) REPORT TO CONGRESS.—

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

23 (A) includes a summary of federally fund-
24 ed advanced air mobility and unmanned aircraft
25 systems research, development, deployment, and

1 testing activities, including the budget for each
2 of these activities; and

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

5 (2) BIENNIAL REPORT.—Not later than two
6 years after the delivery of the initial report under
7 paragraph (1) and biennially thereafter until Decem-
8 ber 31, 2033, the interagency working group shall
9 transmit to the Committee on Science, Space, and
10 Technology of the House of Representatives and the
11 Committee on Commerce, Science, and Transpor-
12 tation of the Senate a report that includes—

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

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

23 (3) STRATEGIC RESEARCH PLAN.—Not later
24 than two years after the date of the enactment of
25 this Act, the interagency working group shall trans-

1 mit to the Committee on Science, Space, and Tech-
2 nology of the House of Representatives and the
3 Committee on Commerce, Science, and Transpor-
4 tation of the Senate the strategic research plan de-
5 veloped under section 102.

6 **SEC. 102. STRATEGIC RESEARCH PLAN.**

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

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

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

1 (2) establish, for the 10-year period beginning
2 in the year the plan is submitted, the goals and pri-
3 orities for Federal research, development, deploy-
4 ment, and testing which will—

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

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

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

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

23 (E) support education and training activi-
24 ties at all levels to prepare the United States
25 workforce to use and interact with advanced air

1 mobility systems and unmanned aircraft sys-
2 tems;

3 (F) support partnerships to leverage
4 knowledge and resources from industry, the
5 Federal Government, State, local, and Tribal
6 governments, National Laboratories, Unmanned
7 Aircraft Systems Test Ranges, academic insti-
8 tutions, and others to advance research activi-
9 ties;

10 (G) leverage existing Federal investments;
11 and

12 (H) promote hardware interoperability, open-
13 source systems, and standards-driven hardware;

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

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

24 (5) in consultation with the Council of Eco-
25 nomic Advisers, measure and track the contributions

1 of unmanned aircraft systems to United States eco-
2 nomic growth and other societal indicators;

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; and

7 (7) consider and utilize, as appropriate, reports
8 and studies conducted by Federal agencies, the Na-
9 tional Research Council, or other entities.

10 (c) NATIONAL ACADEMIES OF SCIENCE, ENGINEER-
11 ING, AND MEDICINE REVIEW.—The interagency working
12 group under section 101 shall enter into an agreement
13 with the National Academies of Sciences, Engineering,
14 and Medicine to review the plan.

15 (d) PUBLIC PARTICIPATION.—In developing the plan,
16 the interagency working group shall consult with rep-
17 resentatives of academic, State, industry, local, Tribal,
18 and other stakeholder groups. Not later than 90 days be-
19 fore the plan, or any revision thereof, is submitted to Con-
20 gress, the plan shall be published in the Federal Register
21 for a public comment period of not fewer than 60 days.

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

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

1 priate, a strategic plan for Federal research, development,
2 evaluation, and testing of counter-UAS systems, as con-
3 sistent with current counter-UAS systems legal authori-
4 ties.

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

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

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

14 (A) support the development of counter-
15 UAS technologies and the development of a
16 counter-UAS systems research, innovation, and
17 manufacturing ecosystem;

18 (B) provide sustained, consistent, and co-
19 ordinated support for counter-UAS systems re-
20 search, development, and evaluation, including
21 through grants, cooperative agreements,
22 testbeds, and testing facilities;

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

1 (D) support partnerships to leverage
2 knowledge and resources from industry, the
3 Federal Government, State, local, and Tribal
4 governments, National Laboratories, Counter-
5 UAS Test Ranges, academic institutions, and
6 others to advance research activities;

7 (E) leverage existing Federal investments;
8 and

9 (F) promote hardware interoperability, open-
10 source systems, and standards-driven hardware;

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

13 (4) in consultation with the Council of Eco-
14 nomic Advisers, measure and track the contributions
15 of counter-UAS systems to United States economic
16 growth and other societal indicators; and

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

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

22 (a) ESTABLISHMENT.—Subject to the availability of
23 appropriations for such purpose, the Secretary of Com-
24 merce, in collaboration with the Secretary of Defense, may
25 establish a national drone technology center to conduct re-

1 search and development of unmanned aircraft systems to
2 strengthen the economic competitiveness and security of
3 the domestic supply chain. Such center shall be operated
4 as a public-private sector consortium with participation
5 from the private sector and the National Institute of
6 Standards and Technology.

7 (b) FUNCTIONS.—The functions of the center estab-
8 lished under subsection (a) shall be to conduct research
9 and development related to unmanned aircraft systems
10 manufacturing, design and components, and prototyping
11 that strengthens the entire domestic ecosystem and places
12 emphasis on the following:

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

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

18 (3) Virtualization and automation of mainte-
19 nance of unmanned aircraft systems machinery.

20 (4) Metrology for security and supply chain
21 verification.

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

23 (a) STUDY.—The Comptroller General of the United
24 States shall conduct a study on the use of foreign-made

1 unmanned aircraft systems in the Federal Government
2 unmanned aircraft fleet.

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

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

11 (2) The operation of such systems across the
12 Federal Government.

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

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

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

21 (c) GAO REPORT.—Not later than one year after the
22 date of the enactment of this Act, the Comptroller General
23 of the United States shall report to Congress all findings
24 and determinations made in carrying out the study under
25 subsection (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 shall 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 consortia
21 thereof, as determined by an agency head, to estab-
22 lish and support an Institute.

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

1 is an unmanned aircraft systems research institute
2 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, and security impli-
10 cations relevant to the application of ad-
11 vanced air mobility and unmanned aircraft
12 systems in that sector; or

13 (ii) a cross-cutting challenge for re-
14 search, development, testing, or use of ad-
15 vanced air mobility and unmanned aircraft
16 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, and others (or consortia thereof);

23 (C) has the potential to create an innova-
24 tion ecosystem, or enhance existing ecosystems,
25 to translate Institute research into applications

1 and products, as appropriate to the topic of
2 each Institute;

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

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

17 (F) establishes a robust data management
18 strategy that ensures digital access and ma-
19 chine-readability; that promotes findability,
20 interoperability, analysis- and decision-readiness
21 and reusability; and ensures applicable scientific
22 data are managed for wide use by the Federal
23 Government, State, local, and Tribal govern-
24 ments, academia, 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 workforce development in ad-
6 vanced air mobility and unmanned aircraft sys-
7 tems related disciplines in the United States,
8 including broadening participation of underrep-
9 resented communities.

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

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

22 (B) developing and managing testbeds,
23 Unmanned Aircraft Systems Test Ranges, for
24 advanced air mobility or unmanned aircraft sys-
25 tems, including sector-specific test beds, de-

1 signed to enable users to evaluate advanced air
2 mobility systems and unmanned aircraft sys-
3 tems prior to deployment;

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

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

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

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

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

1 (H) engaging in outreach and engagement
2 to broaden participation in advanced air mobil-
3 ity and unmanned aircraft systems research,
4 development and workforce;

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

9 (J) such other activities that an agency
10 head whose agency's missions contribute to or
11 are affected by advanced air mobility and un-
12 manned aircraft systems determines is appro-
13 priate to fulfill the agency's missions.

14 (4) DURATION.—

15 (A) INITIAL PERIODS.—An award of finan-
16 cial assistance under paragraph (1) shall be for
17 an initial period of up to five years, subject to
18 Office of Management and Budget uniform
19 guidance for Federal assistance.

20 (B) EXTENSION.—An established Institute
21 may apply for, and the agency head may grant,
22 extended funding for periods of up to five years
23 on a merit-reviewed basis using the merit re-
24 view criteria of the sponsoring agency, subject

1 to Office of Management and Budget uniform
2 guidance for Federal assistance.

3 (5) APPLICATION FOR FINANCIAL ASSIST-
4 ANCE.—

5 (A) IN GENERAL.—An entity seeking fi-
6 nancial assistance under paragraph (1) shall
7 submit to an agency head an application at
8 such time, in such manner, and containing such
9 information as the agency head may require.

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

13 (i) A plan for the Institute, includ-
14 ing—

15 (I) the proposed goals and activi-
16 ties of the Institute;

17 (II) a description of how the In-
18 stitute will form partnerships with
19 other research institutions, industry,
20 nonprofits, academic institutions, and
21 others to leverage expertise in ad-
22 vanced air mobility and unmanned
23 aircraft systems and access to data;

24 (III) a description of how the in-
25 stitute will support long-term and

1 short-term education and workforce
2 development in advanced air mobility
3 and unmanned aircraft systems, in-
4 cluding broadening participation of
5 underrepresented communities; and

6 (IV) a description of how the In-
7 stitute will transition from planning
8 into operations.

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

13 (iii) A data management plan that ad-
14 dresses the collection, use, retention, pro-
15 tection, dissemination, and management of
16 data collected, consistent with the purposes
17 of this Act.

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

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

23 (A) use a competitive merit review process
24 that includes peer review by a diverse group of

1 individuals with relevant expertise from both
2 the private and public sectors; and

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

6 (7) COLLABORATION.—

7 (A) IN GENERAL.—In awarding financial
8 assistance under paragraph (1), an agency head
9 may collaborate with Federal departments and
10 agencies the missions of which contribute to or
11 are affected by advanced air mobility and un-
12 manned aircraft systems.

13 (B) NONDUPLICATION.—In carrying out
14 the program under this section, the Adminis-
15 trator of the National Aeronautics and Space
16 Administration shall coordinate with the heads
17 of other Federal departments and agencies to
18 avoid duplication of research and other activi-
19 ties to ensure that the activities carried out by
20 Institutes are complementary to those being un-
21 dertaken by other agencies.

22 (C) COORDINATING NETWORK.—The Ad-
23 ministrator of the National Aeronautics and
24 Space Administration shall establish a network
25 of Institutes receiving financial assistance under

1 this subsection, to be known as the “Drone
2 Leadership Network”, to coordinate cross-cut-
3 ting research and other activities carried out by
4 the Institutes.

5 (D) FUNDING.—The head of an agency
6 may request, accept, and provide funds from
7 other Federal departments and agencies, State,
8 United States territory, local, or Tribal govern-
9 ment agencies, private sector for-profit entities,
10 and nonprofit entities, to be available to the ex-
11 tent provided by appropriations Acts, to support
12 an Institute’s activities. The head of an agency
13 may not give any special consideration to any
14 agency or entity in return for a donation.

15 (e) AUTHORIZATION OF APPROPRIATIONS.—There is
16 authorized to be appropriated to the National Aeronautics
17 and Space Administration \$5,000,000 for each of fiscal
18 years 2024 through 2028 to carry out the activities au-
19 thorized in section 201(a).

1 **TITLE III—NATIONAL INSTITUTE**
2 **OF STANDARDS AND TECH-**
3 **NOLOGY ACTIVITIES**

4 **SEC. 301. NATIONAL INSTITUTE OF STANDARDS AND TECH-**
5 **NOLOGY ACTIVITIES.**

6 (a) IN GENERAL.—The Director of the National In-
7 stitute of Standards and Technology shall—

8 (1) support measurement research and develop-
9 ment of best practices and voluntary consensus tech-
10 nical standards for advanced air mobility and un-
11 manned aircraft systems, including for—

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

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

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

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

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

1 (F) all other areas deemed by the Director
2 to be critical to the development and deploy-
3 ment of advanced air mobility and unmanned
4 aircraft systems;

5 (2) support one or more Institutes as described
6 in section 201(a) of this Act for the purpose of ad-
7 vancing advanced air mobility and unmanned air-
8 craft systems;

9 (3) produce curated, standardized, representa-
10 tive, secure, and privacy-protected data sets for ad-
11 vanced air mobility and unmanned aircraft systems
12 research, development, and use, prioritizing data for
13 high-value, high-risk research;

14 (4) support and strategically engage in the de-
15 velopment of voluntary consensus technical stand-
16 ards, including international standards, through
17 open, transparent, and consensus-based processes;

18 (5) enter into and perform such contracts, in-
19 cluding cooperative research and development ar-
20 rangements and grants and cooperative agreements
21 or other transactions, as may be necessary in the
22 conduct of the work of the National Institute of
23 Standards and Technology and on such terms as the
24 Director considers appropriate, in furtherance of the
25 purposes of this Act;

1 (6) applies lessons learned from unmanned air-
2 craft systems research, development, demonstration,
3 and testing to advanced air mobility systems; and

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

7 (b) SOLICITATION OF INPUT.—In carrying out the
8 activities under subsection (a), the Director of the Na-
9 tional Institute of Standards and Technology 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, and other relevant stake-
14 holders; 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 of the
21 National Institute of Standards and Technology
22 shall carry 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 to expand upon and improve
2 emergency response operations.

3 (2) PLAN FOR EMERGENCY RESPONSE OPER-
4 ATIONS.—Each prize competition entry submitted
5 pursuant to paragraph (1) shall include a plan for
6 advanced air mobility and unmanned aircraft sys-
7 tems implementation in emergency response oper-
8 ations.

9 (3) PRIZE AMOUNT.—In carrying out the pro-
10 gram under paragraph (1), the Director of the Na-
11 tional Institute of Standards and Technology may
12 award not more than a total of \$2,250,000 to one
13 or more winners of the prize competition.

14 (4) REPORT.—Not later than 60 days after the
15 date on which a prize is awarded under the prize
16 competition, the Director of the National Institute of
17 Standards and Technology shall submit to the Com-
18 mittee on Science, Space, and Technology of the
19 House of Representatives and the Committee on
20 Commerce, Science, and Transportation of the Sen-
21 ate a report that describes the winning entry of the
22 prize competition.

23 (5) CONSULTATION.—In carrying out the pro-
24 gram under paragraph (1), the Director of the Na-
25 tional Institute of Standards and Technology may

1 consult with the heads of relevant departments and
2 agencies of the Federal Government.

3 (d) AUTHORIZATION OF APPROPRIATIONS.—There
4 are authorized to be appropriated to the National Institute
5 of Standards and Technology to carry out this section—
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 **SEC. 302. NATIONAL INSTITUTE OF STANDARDS AND TECH-**
12 **NOLOGY MANUFACTURING ACTIVITIES.**

13 (a) ESTABLISHMENT OF ADVANCED AIR MOBILITY
14 AND UNMANNED AIRCRAFT SYSTEMS PILOT PROGRAM AS
15 A PART OF THE MANUFACTURING EXTENSION PARTNER-
16 SHIP.—The National Institute of Standards and Tech-
17 nology Act is amended by inserting after section 25B (15
18 U.S.C. 278k–2) the following new section:

19 **“SEC. 25C. EXPANSION AWARDS FOR UNMANNED AIRCRAFT**
20 **SYSTEMS PILOT PROGRAM.**

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

23 “(b) ESTABLISHMENT.—The Director shall establish
24 as a part of the Hollings Manufacturing Extension Part-
25 nership a pilot program of expansion awards among par-

1 ticipants referred to in subsection (c) for the purposes de-
2 scribed in subsection (e).

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

6 “(d) AWARD AMOUNTS.—An award for a recipient
7 under this section shall be in an amount equal to the sum
8 of the following:

9 “(1) Such amount as the Director considers ap-
10 propriate as a minimum base funding level for each
11 award under this section.

12 “(2) Such additional amount as the Director
13 considers in proportion to the manufacturing density
14 of the region of the recipient.

15 “(3) Such supplemental amounts as the Direc-
16 tor considers appropriate.

17 “(e) PURPOSE OF AWARDS.—An award under this
18 section shall be made for one or more of the following pur-
19 poses:

20 “(1) To provide coordinating services on—

21 “(A) the development of working concepts
22 for new advanced air mobility and unmanned
23 aircraft systems products, including review and
24 design analysis;

1 “(B) the review and optimization of cur-
2 rent advanced air mobility and unmanned air-
3 craft systems designs and components, includ-
4 ing industrial engineering and manufacturing
5 design upgrades;

6 “(C) rapid advanced air mobility and un-
7 manned aircraft systems prototyping services,
8 including three-dimensional modeling;

9 “(D) software development for advanced
10 air mobility and unmanned aircraft systems ap-
11 plication;

12 “(E) commercialization of new products
13 and technology to improve performance of ad-
14 vanced air mobility and unmanned aircraft sys-
15 tems; and

16 “(F) supporting existing advanced air mo-
17 bility and unmanned aircraft systems and com-
18 ponents manufacturing operations and the de-
19 velopment of unmanned aircraft systems and
20 components manufacturing operations.

21 “(2) To provide services to improve the resil-
22 iency of domestic advanced air mobility and un-
23 manned aircraft system supply chains.

24 “(3) To expand advanced air mobility and un-
25 manned aircraft systems technology services to small

1 and medium-sized manufacturers and software de-
2 velopers, which may include—

3 “(A) facilitating the adoption of tech-
4 nologies, including smart manufacturing tech-
5 nologies and practices; and

6 “(B) establishing partnerships, for the de-
7 velopment, demonstration, and deployment of
8 unmanned aircraft systems technologies, with—

9 “(i) National Laboratories (as defined
10 in section 2 of the Energy Policy Act of
11 2005 (42 U.S.C. 15801));

12 “(ii) Federal laboratories;

13 “(iii) Manufacturing USA institutes;

14 “(iv) Unmanned Aircraft Systems In-
15 dustry; and

16 “(v) institutions of higher education.

17 “(f) APPLICATIONS.—Applications for awards under
18 this section shall be submitted in such manner, at such
19 time, and containing such information as the Director
20 shall require in consultation with the Manufacturing Ex-
21 tension Partnership Advisory Board.

22 “(g) SELECTION.—

23 “(1) REVIEWED AND MERIT-BASED.—The Di-
24 rector shall ensure that awards under this section
25 are reviewed and merit-based.

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

4 “(3) CRITERIA.—The Director shall select ap-
5 plications consistent with the purposes identified
6 pursuant to subsection (e) to receive awards the Di-
7 rector determines will achieve one or more of the fol-
8 lowing:

9 “(A) Improvement of the competitiveness
10 of domestic advanced air mobility and un-
11 manned aircraft systems industries in the re-
12 gion in which the Center or Centers are located.

13 “(B) Creation of jobs or training of newly
14 hired employees.

15 “(C) Promotion of the transfer and com-
16 mercialization of research and technology from
17 institutions of higher education, national lab-
18 oratories, or other federally funded research
19 programs, and nonprofit research institutes.

20 “(D) Any other result the Director deter-
21 mines will advance the objective set forth in
22 section 25(c) or 26.

23 “(h) GLOBAL MARKETPLACE PROJECTS.—In making
24 an award under this section, the Director, in consultation
25 with the Manufacturing Extension Partnership Advisory

1 Board and the Secretary, may take into consideration
2 whether an application has significant potential for en-
3 hancing the competitiveness of small and medium-sized
4 United States manufacturers in the global marketplace for
5 advanced air mobility and unmanned aircraft systems
6 technologies.

7 “(i) DURATION.—The Director shall ensure that the
8 duration of an award under this section is aligned and
9 consistent with a Center’s cooperative agreement estab-
10 lished in section 25(e).

11 “(j) REPORT.—After the completion of the pilot pro-
12 gram under subsection (b) and not later than October 1,
13 2025, the Director shall submit to the Committee on
14 Science, Space, and Technology of the House of Rep-
15 resentatives and the Committee on Commerce, Science,
16 and Transportation of the Senate a report that includes—

17 “(1) a summary description of what activities
18 were funded and the measurable outcomes of such
19 activities;

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

23 “(3) a description of which types of activities
24 under paragraph (1) could be integrated into, and

1 supported under, the competitive awards program
2 under section 25A; and

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

6 “(k) AUTHORIZATION OF APPROPRIATIONS.—There
7 is authorized to be appropriated to carry out the pilot pro-
8 gram under this section \$10,000,000 for each of fiscal
9 years 2024 through 2026.”.

10 (b) MANUFACTURING EXTENSION PARTNERSHIP
11 SURVEY.—

12 (1) SURVEY.—Not later than one year after the
13 date of the enactment of this Act, the Director of
14 the National Institute of Standards and Technology
15 shall carry out a survey of the Manufacturing Ex-
16 tension Partnership Centers (referred to in this sec-
17 tion as the “Centers”) to understand the manufac-
18 turing capabilities of the United States manufactur-
19 ers to support robust advanced air mobility and un-
20 manned aircraft systems industries in the United
21 States.

22 (2) CONTENTS.—In conducting the survey re-
23 quired under subsection (a), the Director of the Na-
24 tional Institute of Standards and Technology shall
25 solicit feedback regarding the following:

1 (A) Familiarity and current manufacturing
2 work by small and mid-sized manufacturers on
3 advanced air mobility and unmanned aircraft
4 systems, including components, software, sen-
5 sors, or other technology associated with ad-
6 vanced air mobility systems and unmanned air-
7 craft systems.

8 (B) A list of the basic manufacturing pro-
9 cedures that can be easily converted to conduct
10 the manufacturing of advanced air mobility sys-
11 tems and unmanned aircraft systems projects.

12 (C) Potential for small-and mid-sized man-
13 ufacturing to work with industry and academia
14 to support the manufacturers of advanced air
15 mobility systems and unmanned aircraft sys-
16 tems prototypes.

17 (D) Potential for commercialization of on-
18 going manufacturing development research re-
19 lated to advanced air mobility and unmanned
20 aircraft systems projects.

21 (E) A description of supply chain and tech-
22 nological challenges that small and mid-sized
23 manufacturers face in building up advanced air
24 mobility and unmanned aircraft systems capac-
25 ity, and the prevalence of such challenges.

1 (F) Regulatory and legal barriers faced by
2 small and mid-sized manufacturers and devel-
3 opers.

4 (G) Any challenges that small and mid-
5 sized manufacturers experience in recruiting
6 skilled workers familiar with advanced air mo-
7 bility and unmanned aircraft systems manufac-
8 turing.

9 (H) Any other information that the Direc-
10 tor or the Manufacturing Extension Partner-
11 ship Advisory Board determine is appropriate.

12 (3) REPORT.—Not later than 60 days after
13 completing the survey required under paragraph (1),
14 the Director of the National Institute of Standards
15 and Technology, in consultation with the Manufac-
16 turing Extension Partnership Advisory Board, shall
17 provide to the Committee on Science, Space, and
18 Technology of the House of Representatives and the
19 Committee on Commerce, Science, and Transpor-
20 tation of the Senate a report summarizing the re-
21 sults of the survey.

22 (c) MANUFACTURING USA PROGRAM.—The Director
23 of the National Institute of Standards and Technology,
24 acting through the Manufacturing USA Program, shall
25 prioritize research, development, and demonstration activi-

1 ties to enhance and grow the domestic manufacturing ca-
2 pacity of advanced air mobility systems and unmanned
3 aircraft systems and components. Such activities may in-
4 clude—

5 (1) rapid-prototyping and reproduction of ad-
6 vanced air mobility and unmanned aircraft systems
7 structures;

8 (2) additive manufacturing to improve capabili-
9 ties to produce large tools, dies, and molds for ad-
10 vanced air mobility systems and unmanned aircraft
11 systems and components;

12 (3) testing innovative manufacturing processes
13 and manufactured components to improve safety, en-
14 durance, and quality of advanced air mobility sys-
15 tems and unmanned aircraft systems;

16 (4) development of software to streamline fab-
17 rication and integration of manufacturing compo-
18 nents, such as sensors for use in advanced air mobil-
19 ity systems and unmanned aircraft systems; and

20 (5) any other activities that the Director con-
21 siders appropriate.

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

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

4 (a) IN GENERAL.—The Director of the National
5 Science Foundation shall support research and STEM
6 education and related activities in advanced air mobility
7 and unmanned aircraft systems, components, and related
8 technologies, including competitive awards or grants to in-
9 stitutions of higher education or eligible nonprofit organi-
10 zations (or consortia thereof).

11 (b) USE OF FUNDS.—In carrying out the activities
12 under subsection (a), the Director of the National Science
13 Foundation shall—

14 (1) support fundamental research on the under-
15 lying technologies for advanced air mobility and un-
16 manned aircraft systems, components, and related
17 technologies, which may include—

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

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

23 (C) incorporating the use of artificial intel-
24 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) support research and development of ad-
16 vanced 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) support research on data modeling and vali-
8 dation of the use of advanced air mobility and un-
9 manned aircraft systems;

10 (4) support research and development on secu-
11 rity, including the cybersecurity, of advanced air mo-
12 bility systems and unmanned aerial aircraft systems;

13 (5) support research on the ethical use of ad-
14 vanced air mobility and unmanned aircraft systems,
15 including protection of individual privacy;

16 (6) support middle school and high school level
17 STEM education research and related activities re-
18 lated to advanced air mobility and unmanned air-
19 craft systems and related technologies, which may
20 include—

21 (A) supporting curriculum development re-
22 lating to advanced air mobility and unmanned
23 aircraft system applications, including devel-
24 oping place-based learning curriculum, particu-

1 larly for students in poor, rural, or Tribal com-
2 munities;

3 (B) utilizing advanced air mobility and un-
4 manned aircraft systems technologies to ad-
5 vance the engagement of students, including
6 students in poor, rural, or Tribal communities,
7 in STEM through providing before school,
8 after-school, out-of-school, or summer activities;

9 (C) developing professional development re-
10 sources for STEM educators in utilizing ad-
11 vanced air mobility and unmanned aircraft sys-
12 tems technologies and applications in their cur-
13 riculum and classrooms, including through dis-
14 tance-delivered courses;

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

19 (E) designing advanced air mobility and
20 unmanned aircraft system related activities de-
21 signed to help students make real-world connec-
22 tions to STEM content and educate students on
23 the relevance and significance of STEM ca-
24 reers;

1 (7) support undergraduate and graduate edu-
2 cation and workforce development research and re-
3 lated activities related to advanced air mobility and
4 unmanned aircraft systems and related technologies,
5 which may include—

6 (A) supporting curriculum development re-
7 lating to advanced air mobility and unmanned
8 aircraft systems applications and technologies;

9 (B) supporting hands-on research opportu-
10 nities at institutions of higher education, re-
11 search institutions, including National Labs,
12 and industry for undergraduate and graduate
13 students relating to advanced air mobility and
14 unmanned aircraft systems applications and
15 technologies;

16 (C) facilitating participation in collegiate
17 level advanced air mobility and unmanned sys-
18 tems robotic competitions; and

19 (D) ensuring that students pursuing mas-
20 ter's degrees and doctoral degrees in fields re-
21 lating to advanced air mobility and unmanned
22 aircraft systems are considered as applicants
23 for scholarships and graduate fellowships under
24 the Graduate Research Fellowship Program

1 under section 10 of the National Science Foun-
2 dation Act of 1950 (42 U.S.C. 1869);

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

14 (A) expanding educational resources to ad-
15 dress current workforce demands in advanced
16 air mobility and unmanned aircraft system ap-
17 plications and technologies;

18 (B) developing curriculum for community
19 and technical colleges to train and upskill the
20 skilled technical workforce in advanced air mo-
21 bility and unmanned aircraft system applica-
22 tions and technologies;

23 (C) engaging the skilled technical work-
24 force community in STEM, advanced air mobil-

1 ity and unmanned aircraft system applications
2 and technologies; and

3 (D) in partnership with industry, employ-
4 ing activities to increase the visibility and utility
5 of careers in advanced air mobility and un-
6 manned aircraft applications and technologies;

7 (9) engage veterans and departing members of
8 the Armed Forces in activities specified in para-
9 graphs (7) and (8);

10 (10) support one or more Institutes as de-
11 scribed in section 201(a) for the purpose of advanc-
12 ing the field of advanced air mobility and unmanned
13 aircraft systems;

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

17 (12) establish a robust data management strat-
18 egy that ensures digital access and machine-read-
19 ability; that promotes findability, interoperability,
20 analysis- and decision-readiness and reusability; and
21 ensures applicable scientific data are managed for
22 wide use by the Federal Government, State, local
23 and Tribal governments, academia, and the public;

24 (13) applies lessons learned from unmanned
25 aircraft systems research, development, demonstra-

1 tion, and testing to advanced air mobility systems;
2 and

3 (14) any other activities the Director deter-
4 mines necessary to meet the goals specified in sub-
5 section (a).

6 (c) PUBLIC-PRIVATE PARTNERSHIPS.—As part of
7 the activities under subsection (a), the Director of the Na-
8 tional Science Foundation shall support public-private
9 partnerships to support domestic development of advanced
10 air mobility and unmanned aircraft systems in the United
11 States and address pre-competitive industry challenges.

12 (d) INTERAGENCY COORDINATION.—In carrying out
13 the program under this section, the Director of the Na-
14 tional Science Foundation shall coordinate with the heads
15 of other Federal departments and agencies to avoid dupli-
16 cation of research and other activities to ensure that the
17 activities carried out under this section are complementary
18 to those being undertaken by such other agencies.

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

22 (1) \$50,000,000 for fiscal year 2024;

23 (2) \$52,500,000 for fiscal year 2025;

24 (3) \$55,125,000 for fiscal year 2026;

25 (4) \$57,881,775 for fiscal year 2027; and

1 (5) \$60,775,863 for fiscal year 2028.

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

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

7 (a) IN GENERAL.—The Administrator of the Na-
8 tional Aeronautics and Space Administration, in consulta-
9 tion with the Administrator of the Federal Aviation Ad-
10 ministration and other relevant Federal agencies, shall di-
11 rect research and technological development to facilitate
12 the safe integration of advanced air mobility and un-
13 manned aircraft systems into the National Airspace Sys-
14 tem, including—

- 15 (1) positioning and navigation systems;
16 (2) sense and avoid capabilities;
17 (3) secure data and communication links;
18 (4) flight recovery systems;
19 (5) human systems integration; and
20 (6) hazardous weather condition avoidance.

21 (b) COOPERATIVE UNMANNED AIRCRAFT SYSTEM
22 ACTIVITIES.—Section 31504 of title 51, United States
23 Code, is amended by adding at the end the following new
24 sentence: “Operational flight data derived from these co-
25 operative agreements shall be made available, in appro-

1 piate and usable formats, to the Administration and the
2 Federal Aviation Administration for the development of
3 regulatory standards.”.

4 (c) POLICY.—The Administrator of the National Aer-
5 onautics and Space Administration shall work with indus-
6 try, the Federal Aviation Administration, the Department
7 of Defense, the Department of Homeland Security, and
8 academia to mature and help operationalize advanced air
9 mobility and unmanned aircraft system traffic manage-
10 ment related concepts, architecture, services, and strategic
11 as well as tactical deconfliction to ensure safe integration
12 of advanced air mobility and unmanned aircraft systems
13 in airspace in presence of other aircraft. As part of such
14 activities, the National Aeronautics and Space Adminis-
15 tration shall consider commercial and public good use
16 cases, such as wildfire and disaster monitoring and mitiga-
17 tion, with a primary focus on enabling many simultaneous
18 drone operations beyond visual line of sight.

19 (d) LESSONS LEARNED.—The Administrator of the
20 National Aeronautics and Space Administration shall
21 apply lessons learned from unmanned aircraft systems re-
22 search, development, demonstration, and testing to ad-
23 vanced air mobility systems.

24 (e) COORDINATION.—The Administrator of the Na-
25 tional Aeronautics and Space Administration shall coordi-

1 nate with the Administrator of the Federal Aviation Ad-
2 ministration, the Director of the National Institutes of
3 Standards and Technology, State, local and Tribal govern-
4 ments, and industry to inform the development of vol-
5 untary consensus-based technical standards to facilitate
6 the incorporation of advanced air mobility and unmanned
7 aircraft systems into the National Airspace System and
8 decrease the need for regulations.

9 (f) ASSESSMENT.—The Administrator of the Na-
10 tional Aeronautics and Space Administration shall coordi-
11 nate with the Administrator of the Federal Aviation Ad-
12 ministration to conduct an assessment to identify metrics
13 and performance measures necessary to safely integrate
14 unmanned aircraft systems and advanced air mobility sys-
15 tems into the National Airspace System.

16 (g) REPORT.—Not later than 60 days after the com-
17 pletion of the assessment under subsection (f), the Admin-
18 istrator of the National Aeronautics and Space Adminis-
19 tration shall submit to the Committee on Science, Space,
20 and Technology of the House of Representatives and the
21 Committee on Commerce, Science, and Transportation of
22 the Senate a report on the progress toward meeting metric
23 and performance measures referred to in such subsection.

1 **SEC. 502. NATIONAL STUDENT UNMANNED AIRCRAFT SYS-**
2 **TEMS COMPETITION PROGRAM.**

3 (a) IN GENERAL.—The Administrator of the Na-
4 tional Aeronautics and Space Administration shall estab-
5 lish a national program to carry out unmanned aircraft
6 systems technology competitions for students at the high
7 school and undergraduate level (in this section referred to
8 as “competitions”) in which students shall compete to de-
9 sign, create, and demonstrate an unmanned aircraft sys-
10 tem.

11 (b) COMPETITION ADMINISTRATION.—The Adminis-
12 trator of the National Aeronautics and Space Administra-
13 tion shall select, on a merit-reviewed, competitive basis,
14 an institution of higher education to administer the com-
15 petitions (in this section referred to as the “competition
16 administrator”).

17 (c) CONSIDERATIONS FOR SELECTING COMPETITION
18 ADMINISTRATOR.—In selecting an institution of higher
19 education to administer the competition, the Adminis-
20 trator of the National Aeronautics and Space Administra-
21 tion shall consider the institution of higher education’s
22 prior experience in—

23 (1) administering such competitions;

24 (2) administering national STEM engagement
25 programs;

1 (3) engaging eligible institutions from diverse
2 geographic areas, including poor, rural, and Tribal
3 communities; and

4 (4) connecting STEM activities to Administra-
5 tion missions and centers.

6 (d) COMPETITION ADMINISTRATOR RESPONSIBIL-
7 ITIES.—The competition administrator shall be respon-
8 sible for—

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

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

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

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

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

1 (A) the number of students engaged;

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

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

7 (e) ADDITIONAL CONSIDERATIONS.—In awarding
8 grants authorized in subsection (d), the competition ad-
9 ministrator shall give priority to applications that include
10 a partnership with that State’s space grant program under
11 chapter 403 of title 51, United States Code.

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

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

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

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

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

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

8 (g) AUTHORIZATION OF APPROPRIATIONS.—There is
9 authorized to be appropriated to the Administrator of the
10 National Aeronautics and Space Administration
11 \$6,000,000 for each of fiscal years 2024 through 2028
12 to carry out this section. Of the funds authorized for each
13 such fiscal year—

14 (1) \$1,000,000 shall be for the competition ad-
15 ministrator as authorized in subsection (b); and

16 (2) \$5,000,000 shall be awarded for grants to
17 carry out competitions as authorized by subsection
18 (d).

19 **TITLE VI—DEPARTMENT OF** 20 **ENERGY ACTIVITIES**

21 **SEC. 601. DEPARTMENT OF ENERGY RESEARCH PROGRAM.**

22 (a) IN GENERAL.—The Secretary of Energy shall
23 carry out a cross-cutting research, development, and dem-
24 onstration program to advance unmanned aircraft system
25 technologies, capabilities, and workforce needs and to im-

1 prove the reliability of unmanned aircraft systems imple-
2 mentation methods relevant to the mission of the Depart-
3 ment of Energy. In carrying out such program, the Sec-
4 retary shall coordinate across all relevant offices and ac-
5 tivities at the Department, including the Office of Science,
6 the Office of Energy Efficiency and Renewable Energy,
7 the Office of Nuclear Energy, the Office of Fossil Energy,
8 the Office of Electricity, the Office of Cybersecurity, En-
9 ergy Security, and Emergency Response, the Advanced
10 Research Projects Agency–Energy, the Office of Environ-
11 mental Management, the Office of Environment, Health,
12 Safety and Security, the National Nuclear Security Ad-
13 ministration, the Artificial Intelligence Technology Office,
14 the UAS Research and Engineering Center, and any other
15 relevant office or activity as determined appropriate by the
16 Secretary.

17 (b) PROGRAM COMPONENTS.—In carrying out the
18 program under subsection (a), the Secretary of Energy
19 shall—

20 (1) formulate goals for unmanned aircraft sys-
21 tems research activities to be supported by the De-
22 partment of Energy, including in the research areas
23 under subsection (c);

24 (2) leverage the collective body of knowledge
25 from existing unmanned aircraft systems research

1 and development activities, including the work un-
2 derway by the Unmanned Aircraft Systems Research
3 and Engineering Center;

4 (3) provide research experiences and training
5 for undergraduate and graduate students in un-
6 manned aircraft systems research and development,
7 including in the fields of—

8 (A) artificial intelligence and machine
9 learning;

10 (B) applied mathematics and algorithm de-
11 velopment;

12 (C) advanced imaging, sensing, and detec-
13 tion technologies;

14 (D) materials science and engineering; and

15 (E) advanced energy technologies and pro-
16 pulsion approaches;

17 (4) establish a robust data management strat-
18 egy that—

19 (A) ensures digital access and machine-
20 readability;

21 (B) promotes findability, interoperability,
22 analysis- and decision-readiness and reusability;
23 and

24 (C) ensures applicable scientific data are
25 managed for wide use by the Federal Govern-

1 ment, State, local, and Tribal governments, aca-
2 demia, and the public; and

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

7 (c) RESEARCH AREAS.—In carrying out the program
8 under subsection (a), the Secretary of Energy shall award
9 financial assistance to eligible entities to carry out re-
10 search, development, and demonstration projects over a
11 range of subject areas including—

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

14 (A) advanced sensor technologies and proc-
15 esses, including—

16 (i) optical capabilities, including Light
17 Detection and Ranging, hyperspectral,
18 thermographic, and visible imaging capa-
19 bilities;

20 (ii) nonoptical electromagnetic capa-
21 bilities, including radar and radiofrequency
22 capabilities;

23 (iii) acoustic capabilities, including ul-
24 trasonic capabilities; and

1 (iv) radiation detection, gravimetric,
2 hyperspectral or other measurement mo-
3 dalities;

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

7 (C) advanced technologies for secure au-
8 tonomous operation, including edge computing
9 and artificial intelligence;

10 (D) power electronics and wireless charg-
11 ing systems;

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

14 (F) scalability of unmanned aircraft sys-
15 tems for increased payload capacity;

16 (G) technologies and processes to improve
17 secure interoperability practices, including with
18 existing satellites, constellation networks, and
19 surface-based facilities;

20 (H) strategies and technologies for inte-
21 grated cybersecurity considerations;

22 (I) strategies and technologies for im-
23 proved endurance, including lightweight long
24 duration fuels, batteries, and fuel cells;

1 (J) open architectures and advanced algo-
2 rithms to enable multi-sensor fusion and track-
3 ing of unmanned aircraft systems; and

4 (K) swarm and cooperative drone data col-
5 lection and operation, and integration of drone
6 control systems with dynamic sampling and
7 real-time digital twin simulations; and

8 (2) approaches for leveraging unmanned air-
9 craft systems for diverse applications, which may in-
10 clude—

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

15 (B) field testing and monitoring of energy
16 systems, such as onshore and offshore wind en-
17 ergy, fossil energy, solar energy, marine energy,
18 nuclear energy, and hydropower systems;

19 (C) damage assessment of the electric grid
20 and energy infrastructure following physical
21 events such as wildland fires, including pre-
22 scribed burns containment and emissions meas-
23 urements, potential health and safety effects
24 from contaminant releases and dispersals, and
25 real-time analysis of impacted assets;

1 (D) leak detection of greenhouse gases re-
2 lated to energy production, including methane
3 leak detection;

4 (E) agriculture and aquaculture applica-
5 tions;

6 (F) integrated data collection to inform
7 and enhance Department of Energy modeling
8 capabilities, including the development of cli-
9 mate and earth systems models;

10 (G) assistance in environmental manage-
11 ment and cleanup activities;

12 (H) assistance in Department infrastruc-
13 ture management at National Laboratories and
14 other relevant Department sites;

15 (I) intrusion detection and facility moni-
16 toring for physical security applications; and

17 (J) asset extraction of building envelope
18 features and characteristics for rapid energy
19 modeling purposes.

20 (d) TECHNOLOGY TRANSFER.—In carrying out the
21 program under subsection (a), and in coordination with
22 the Office of Technology Transitions, the Secretary of En-
23 ergy shall support technology transfer of unmanned air-
24 craft systems research by partnering with industry.

1 (e) FACILITY USE.—In carrying out the program
2 under subsection (a), the Secretary of Energy shall make
3 available high-performance computing infrastructure and
4 other relevant research facilities and test beds at the Na-
5 tional Laboratories.

6 (f) INTERAGENCY COORDINATION AND NONDUPLICA-
7 TION.—In carrying out the program under subsection (a),
8 the Secretary of Energy shall coordinate with the heads
9 of other Federal departments and agencies to avoid dupli-
10 cation of research and other activities and to ensure that
11 the activities carried out under such program are com-
12 plementary to those currently being undertaken by such
13 other departments and agencies.

14 (g) AUTHORIZATION OF APPROPRIATIONS.—There
15 are authorized to be appropriated to the Department of
16 Energy 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 (h) ELIGIBLE ENTITIES DEFINED.—In this title, the
23 term “eligible entity” means—

- 24 (1) an institution of higher education;
- 25 (2) a National Laboratory;

1 craft systems, and counter-UAS systems capa-
2 bilities;

3 (C) safety of advanced air mobility and un-
4 manned aircraft systems;

5 (D) safety of operations in the National
6 Airspace System; and

7 (E) testing and evaluation of unmanned
8 aircraft systems and counter-UAS systems ca-
9 pabilities, performance systems engineering,
10 and operational analysis;

11 (2) coordinate with all relevant offices and pro-
12 grams of the Department of Homeland Security, in-
13 cluding the Cybersecurity and Infrastructure Secu-
14 rity Agency, U.S. Customs and Border Protection,
15 the Federal Emergency Management Agency, the
16 Federal Protective Service, the Transportation Secu-
17 rity Administration, the United States Coast Guard,
18 and the United States Secret Service;

19 (3) produce curated, standardized, representa-
20 tive, secure, and privacy protected data sets for ad-
21 vanced air mobility systems, unmanned aircraft sys-
22 tems, and counter-UAS systems, including detection
23 systems, development, archiving, and use,
24 prioritizing data for high-value, high-risk research;

1 (4) support one or more Institutes as described
2 in section 201(a) for the purpose of advancing the
3 field of advanced air mobility, unmanned aircraft
4 systems, and counter-UAS systems, including detec-
5 tion systems capabilities;

6 (5) apply lessons learned from unmanned air-
7 craft systems research, development, evaluation, and
8 testing to advanced air mobility systems; and

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

16 (b) COUNTER-UAS CENTER OF EXCELLENCE.—

17 (1) IN GENERAL.—The Secretary of Homeland
18 Security shall establish in the Department of Home-
19 land Security a center of excellence to carry out re-
20 search and development that advances counter-UAS
21 systems capabilities.

22 (2) SELECTION OF HOST INSTITUTION.—

23 (A) IN GENERAL.—The Secretary of
24 Homeland Security shall make a grant to one
25 institution of higher education, or a consortium

1 of institutions of higher education, to host and
2 maintain the center of excellence established
3 under this subsection.

4 (B) SELECTION CRITERIA.—In selecting
5 such an institution or consortium, the Secretary
6 of Homeland Security shall—

7 (i) give preference to applicants with
8 strong past performance related to
9 counter-UAS systems research, education,
10 and workforce 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 system facilities;

16 (iii) give preference to applicants hav-
17 ing proven abilities and strong research en-
18 terprises in systems engineering, radio fre-
19 quency (RF) directed energy, radar and
20 antenna research and development, atmos-
21 pheric monitoring that can support chem-
22 ical, biological, radiological and nuclear de-
23 tection to include trace gases and par-
24 ticular matter (PM), target tracking, re-
25 mote sensing, and the ability to leverage

1 artificial intelligence and machine learning
2 to support the required data analytics;

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

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

9 (3) USE OF FUNDS.—The institution of higher
10 education or consortium may use funds provided
11 under this subsection to carry out fundamental re-
12 search, evaluation, education, workforce develop-
13 ment, and training efforts related to counter-UAS
14 systems subject areas, including safety, privacy, se-
15 curity, cybersecurity, detecting, identifying, moni-
16 toring, tracking, disrupting and seizing control, con-
17 fiscating, disabling, damaging, destruction, remote
18 sensing, forensics, testing and evaluation of systems
19 capabilities, performance, systems engineering, oper-
20 ational analysis, and advanced technologies.

21 (4) FEDERAL SHARE.—The Department of
22 Homeland Security share of a grant under this sub-
23 section shall not exceed 75 percent of the costs of
24 establishing and operating the center of excellence

1 and related research activities carried out by the
2 grant recipient.

3 (5) AUTHORIZATION OF APPROPRIATIONS.—

4 (A) FISCAL YEAR 2024.—There is author-
5 ized to be appropriated to the Secretary of
6 Homeland Security \$10,000,000 for fiscal year
7 2024 for making grants under this subsection.

8 (B) FISCAL YEARS 2025 THROUGH 2028.—
9 There are authorized to be appropriated to the
10 Secretary of Homeland Security \$5,000,000 in
11 each of fiscal years 2025 through 2028 for
12 making grants under this subsection.

13 (6) INSTITUTION OF HIGHER EDUCATION.—In
14 this subsection, the term “institution of higher edu-
15 cation” has the meaning given the term in section
16 101 of the Higher Education Act of 1965 (20
17 U.S.C. 1001).

18 (c) INTERAGENCY COORDINATION.—In carrying out
19 the activities under subsection (a), the Secretary of Home-
20 land Security shall coordinate with the heads of other Fed-
21 eral departments and agencies to avoid duplication of re-
22 search and other activities and to ensure such activities
23 are complimentary to those currently being undertaken by
24 such other departments and agencies.

1 (d) AUTHORIZATION OF APPROPRIATIONS.—There
2 are authorized to be appropriated to the Secretary of
3 Homeland Security to carry out this section—

4 (1) \$30,000,000 for fiscal year 2024;

5 (2) \$31,500,000 for fiscal year 2025;

6 (3) \$33,075,000 for fiscal year 2026;

7 (4) \$34,728,750 for fiscal year 2027; and

8 (5) \$36,465,187 for fiscal year 2028.

9 **TITLE VIII—NATIONAL OCEANIC**
10 **AND ATMOSPHERIC ADMINIS-**
11 **TRATION ACTIVITIES**

12 **SEC. 801. NATIONAL OCEANIC AND ATMOSPHERIC ADMIN-**
13 **ISTRATION RESEARCH AND DEVELOPMENT.**

14 (a) IN GENERAL.—The Administrator of the Na-
15 tional Oceanic and Atmospheric Administration shall
16 carry out and support research, development, and dem-
17 onstration activities to advance unmanned aircraft sys-
18 tems technologies, and capabilities, and to enhance the de-
19 ployment of, and data collected by, unmanned aircraft sys-
20 tems relevant to the mission of the Administration, incor-
21 porate such data into operations, and ensure data are
22 managed, stewarded, and archived appropriately. In car-
23 rying out such activities, the Administrator shall coordi-
24 nate across all relevant offices and programs of the Ad-
25 ministration, including the Office of Oceanic and Atmos-

1 pheric Research, National Environmental Satellite, Data,
2 and Information Service, National Marine Fisheries Serv-
3 ice, National Ocean Service, National Weather Service,
4 and the Office of Marine and Aviation Operations.

5 (b) PROGRAM COMPONENTS.—In carrying out sub-
6 section (a), the Administrator of the National Oceanic and
7 Atmospheric Administration shall—

8 (1) test, evaluate, and demonstrate the utility
9 of unmanned aircraft systems technologies for the
10 Administration;

11 (2) support Administration activities and Coop-
12 erative Institute referred to in subsection (i)(3)
13 projects, and support and encourage Federal and
14 State agencies, academic institutions, nongovern-
15 mental organizations, industry representatives, and
16 others to—

17 (A) accelerate the transition of unmanned
18 aircraft systems capabilities from research to
19 operations and other uses and facilitate new un-
20 manned aircraft systems applications within the
21 Administration;

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

1 (C) prioritize activities that collect or ac-
2 quire routine observations which feed forecasts
3 and models;

4 (D) test, develop, and evaluate safe sys-
5 tems capable of safely operating beyond visual
6 line of sight;

7 (E) collect or acquire measurements of at-
8 mospheric and oceanic parameters; and

9 (F) ensure the archiving, stewardship, util-
10 ity, and preservation of and public accessibility
11 to the observations collected are shared with the
12 Administration;

13 (3) provide and support research experiences
14 and training for undergraduate and graduate stu-
15 dents in unmanned aircraft systems research, devel-
16 opment, and operations relevant to the mission of
17 the Administration, and other education and train-
18 ing opportunities consistent with the purpose of this
19 section;

20 (4) contribute to and supplement field cam-
21 paigns at the Department of Energy's Atmospheric
22 Radiation Measurement user facility in order to in-
23 corporate unmanned aircraft systems and resulting
24 data into the development of combined observational
25 and modeling elements; and

1 (5) support and conduct leading-edge research
2 and development of innovative unmanned aircraft
3 systems technologies and concepts to advance re-
4 search areas in subsection (c).

5 (c) RESEARCH AREAS.—In carrying out subsection
6 (a), the Administrator of the National Oceanic and Atmos-
7 pheric Administration shall award financial assistance to
8 eligible entities to carry out projects on the use of un-
9 manned aircraft systems to collect environmental data and
10 monitor climate impacts, including—

11 (1) severe weather forecasts and damage assess-
12 ments;

13 (2) rapid flood mapping;

14 (3) real-time hurricane data, including close-to-
15 surface and low altitude meteorological measure-
16 ments;

17 (4) enhanced atmospheric monitoring and sam-
18 pling, including physical and chemical measurements
19 in the atmospheric boundary layer;

20 (5) marine mammal detection and monitoring;

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

23 (7) coastal restoration and habitation moni-
24 toring, including detection and monitoring of marine
25 debris, oil spill, and hazardous materials;

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

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

5 (10) other areas related to science and steward-
6 ship of the climate, weather, oceans, coasts, and
7 Great Lakes; and

8 (11) any other areas the Administrator deter-
9 mines necessary and appropriate.

10 (d) PRIORITY.—In carrying out the research areas in
11 subsection (c), the Administrator of the National Oceanic
12 and Atmospheric Administration shall, to the maximum
13 extent practicable, prioritize activities that increase the
14 Administration’s operational use of unmanned aircraft
15 systems by extending the range of times, location, and
16 conditions in which observations can be made at lower
17 cost. As part of such activities, the Administrator may—

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

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

24 (e) TECHNOLOGY TRANSFER.—In carrying out sub-
25 section (a), and in coordination with the Small Business

1 Innovation Research program of the National Oceanic and
2 Atmospheric Administration, the Administrator of the Ad-
3 ministration shall support technology transfer of un-
4 manned aircraft systems research by partnering with Fed-
5 eral agencies and industry.

6 (f) COORDINATION.—The Administrator of the Na-
7 tional Oceanic and Atmospheric Administration shall co-
8 ordinate the activities authorized under this section with
9 the activities authorized in section 3 of the Commercial
10 Engagement Through Ocean Technology Act of 2018 (33
11 U.S.C. 4102) and engage with other Federal departments
12 and agencies, research communities, nongovernmental or-
13 ganizations, and industry stakeholders through the inter-
14 agency working group under section 101.

15 (g) SUPPORT OF INSTITUTES.—For the purposes of
16 subsection (a), the Administrator of the National Oceanic
17 and Atmospheric Administration may support relevant ac-
18 tivities at one or more Institutes under section 201(a) for
19 the purpose of advancing the field of unmanned aircraft
20 systems.

21 (h) AUTHORIZATION OF APPROPRIATIONS.—There
22 are authorized to be appropriated to the Administrator of
23 the National Oceanic and Atmospheric Administration to
24 carry out this section—

25 (1) \$15,000,000 for fiscal year 2024;

- 1 (2) \$15,750,000 for fiscal year 2025;
- 2 (3) \$16,537,500 for fiscal year 2026;
- 3 (4) \$17,364,375 for fiscal year 2027; and
- 4 (5) \$18,232,593 for fiscal year 2028.

5 (i) ELIGIBLE ENTITIES.—In this title, the term “eli-
6 gible entities” means—

- 7 (1) an institution of higher education;
- 8 (2) a National Laboratory;
- 9 (3) a NOAA Cooperative Institute;
- 10 (4) a State, local, territorial, or Tribal govern-
11 ment agency;
- 12 (5) a nonprofit organization;
- 13 (6) a private sector entity; or
- 14 (7) a consortium of 2 or more entities described
15 in subparagraphs (A) through (F).

16 **TITLE IX—FEDERAL AVIATION** 17 **ADMINISTRATION ACTIVITIES**

18 **SEC. 901. FEDERAL AVIATION ADMINISTRATION RESEARCH** 19 **AND DEVELOPMENT.**

20 (a) IN GENERAL.—The Administrator of the Federal
21 Aviation Administration, in coordination with the Admin-
22 istrator of the National Aeronautics and Space Adminis-
23 tration and the heads of other Federal agencies, shall
24 carry out and support research, development, testing, and
25 demonstration activities to—

1 (1) advance advanced air mobility and un-
2 manned aircraft systems; and

3 (2) facilitate the safe integration of advanced
4 air mobility and unmanned aircraft systems into the
5 national airspace system.

6 (b) LESSONS LEARNED.—The Administrator of the
7 Federal Aviation Administration shall apply lessons
8 learned from unmanned aircraft systems research, devel-
9 opment, demonstration, and testing to advanced air mobil-
10 ity systems.

11 (c) UNMANNED AND MANNED AIRCRAFT SAFETY
12 RESEARCH.—As part of the activities under subsection
13 (a), the Administrator of the Federal Aviation Administra-
14 tion shall conduct comprehensive research and testing for
15 advanced air mobility and unmanned aircraft systems
16 safety, including—

17 (1) collisions between advanced air mobility and
18 unmanned aircraft systems of various sizes, traveling
19 at various speeds, and commercial jet airliners of
20 various sizes, traveling at various speeds;

21 (2) collisions between advanced air mobility and
22 unmanned aircraft systems of various sizes, traveling
23 at various speeds, and propeller planes of various
24 sizes, traveling at various speeds;

1 (3) collisions between advanced air mobility and
2 unmanned aircraft systems of various sizes, traveling
3 at various speeds, and blimps of various sizes, trav-
4 eling at various speeds;

5 (4) collisions between advanced air mobility and
6 unmanned aircraft systems of various sizes, traveling
7 at various speeds, and rotorcraft of various sizes,
8 traveling at various speeds; and

9 (5) collisions between advanced air mobility and
10 unmanned aircraft systems and various parts of the
11 aircraft specified in paragraph (1) through (4), in-
12 cluding—

13 (A) windshields;

14 (B) noses;

15 (C) engines;

16 (D) radomes;

17 (E) propellers; and

18 (F) wings.

19 (d) REPORT.—Not later than one year after the date
20 of the enactment of this Act, the Administrator of the
21 Federal Aviation Administration shall submit to the Com-
22 mittee on Science, Space, and Technology of the House
23 of Representatives and the Committee on Commerce,
24 Science, and Transportation of the Senate a report sum-

1 marizing the costs and results of research under sub-
2 section (c).

3 (e) STUDY.—Not later than 30 days after the date
4 of the enactment of this Act, the Administrator of the
5 Federal Aviation Administration shall commission an
6 independent study to—

7 (1) develop parameters to conduct research and
8 development for probabilistic metrics to enable the
9 identification of hazards and the assessment of risks
10 as necessary to make determinations under section
11 44807 of title 49, United States Code, that certain
12 advanced air mobility and unmanned aircraft sys-
13 tems may operate safely in the national airspace sys-
14 tem; and

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

18 In developing parameters for probabilistic metrics, the
19 study conducted pursuant to this subsection shall take
20 into account the utility of performance standards to make
21 determinations under section 44809 of title 49, United
22 States Code. The Administrator shall consider the results
23 of the study when making a determination under such sec-
24 tion 44809.

1 (f) STUDY SUBMISSION.—Not later than nine months
2 after the date of the enactment of this Act, the Adminis-
3 trator of the Federal Aviation Administration shall submit
4 to the Committee on Science, Space, and Technology of
5 the House of Representatives and the Committee on Com-
6 merce, Science, and Transportation of the Senate the re-
7 sults of the study conducted under subsection (e).

8 (g) PROBABILISTIC ASSESSMENT OF RISKS.—The
9 Administrator of the Federal Aviation Administration
10 shall conduct research and development to enable a prob-
11 abilistic assessment of risks to inform requirements for
12 standards for operational certification of public advanced
13 air mobility systems and unmanned aircraft systems in the
14 national airspace.

15 (h) SUPPORT FOR INSTITUTES.—The Administrator
16 of the Federal Aviation Administration may support one
17 or more institutes described in section 201(a) for the pur-
18 pose of advancing the field of unmanned aircraft systems
19 and supporting the mission of the Administration.

20 **SEC. 902. UNIVERSITY UNMANNED AIRCRAFT SYSTEMS AND**
21 **ADVANCE AIR MOBILITY CENTERS.**

22 (a) GRANTS FOR ESTABLISHMENT AND OPER-
23 ATION.—The Administrator of the Federal Aviation Ad-
24 ministration shall make grants to one or more institutions
25 of higher education to establish and operate one regional

1 university advanced air mobility and unmanned aircraft
2 system center in each of the ten Federal regions which
3 comprise the Standards Federal Regions established by
4 the Office of Management and Budget in the document
5 entitled “Standard Federal Regions” and dated April
6 1974 (circular A-105).

7 (b) RESPONSIBILITIES.—The responsibilities of the
8 unmanned aircraft systems and advanced air mobility cen-
9 ter established under this section shall include the conduct
10 of advanced air mobility research and research concerning
11 safely integrating unmanned aircraft systems into the na-
12 tional airspace system and the interpretation, publication,
13 and dissemination of the results of such research. The re-
14 sponsibility of one such center may include research on
15 detection and avoidance capabilities.

16 (c) APPLICATION.—An institution of higher edu-
17 cation interested in receiving a grant under this section
18 shall submit to the Administrator of the Federal Aviation
19 Administration an application in such form and containing
20 such information as the Administrator may require.

21 (d) SELECTION CRITERIA.—The Administrator of the
22 Federal Aviation Administration shall select recipients of
23 grants under this section on the basis of the following cri-
24 teria:

1 (1) The grant recipient shall have demonstrated
2 research and extension resources available for car-
3 rying out this subsection.

4 (2) The grant recipient shall have demonstrated
5 its capability to provide leadership in making na-
6 tional and regional contributions for addressing
7 long-range and immediate advanced air mobility and
8 unmanned aircraft systems issues.

9 (3) The grant recipient shall have an estab-
10 lished advanced air mobility and unmanned aircraft
11 systems or related research program.

12 (4) The grant recipient shall have a dem-
13 onstrated commitment to supporting ongoing ad-
14 vanced air mobility and unmanned aircraft systems
15 research programs.

16 (5) The grant recipient shall have demonstrated
17 ability to disseminate results of advanced air mobil-
18 ity and unmanned aircraft systems research and
19 educational programs through a statewide or region-
20 wide continuing education program.

21 (e) CONSIDERATION.—In making a selection of a
22 grant recipient, the Administrator shall consider the
23 projects which the grant recipient proposes to carry out
24 under the grant.

1 (f) LOCATION.—The unmanned aircraft system and
2 advanced air mobility center shall be located in a State
3 which is representative of the needs of the Federal region
4 for improved advanced air mobility and unmanned aircraft
5 systems test facilities.

6 (g) FEDERAL SHARE.—The Federal share of a grant
7 under this section shall be 75 percent of the costs of estab-
8 lishing and operating the regional center and related re-
9 search activities carried out by the grant recipient.

10 (h) NATIONAL ADVISORY COUNCIL.—

11 (1) ESTABLISHMENT; FUNCTIONS.—The Ad-
12 ministrator of the Federal Aviation Administration
13 shall establish in the Administration a national advi-
14 sory council to—

15 (A) coordinate the research and training to
16 be carried out by grant recipients;

17 (B) disseminate the results of such re-
18 search;

19 (C) act as a clearing house between such
20 centers and the advanced air mobility and un-
21 manned aircraft systems industry; and

22 (D) review and evaluate programs carried
23 out by such centers.

24 (2) MEMBERS.—The national advisory council
25 established under this subsection shall be composed

1 of the directors of the advanced air mobility and un-
2 manned aircraft systems centers and 19 other mem-
3 bers appointed by the Administrator of the Federal
4 Aviation Administration as follows:

5 (A) Six officers of the Federal Aviation
6 Administration, of whom—

7 (i) one represents the Office of the
8 Administrator;

9 (ii) one represents the Unmanned Air-
10 craft Systems Integration Office;

11 (iii) one represents the Office of
12 NextGen;

13 (iv) one represents the Office of Avia-
14 tion Safety;

15 (v) one represents the Office of Air
16 Traffic Organization; and

17 (vi) one represents the Mike
18 Monroney Aeronautical Center.

19 (B) Five representatives of State, local,
20 Tribal, or territorial governments.

21 (C) Eight representatives of the unmanned
22 aircraft systems industry, including private in-
23 dustry.

24 (3) TERM OF OFFICE; PAY; CHAIRMAN.—Each
25 of the members appointed by the Administrator of

1 the Federal Aviation Administration shall serve
2 without pay. The chairman of the national advisory
3 council shall be designated by the Administrator.

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

7 (5) AGENCY INFORMATION.—Subject to sub-
8 chapter II of chapter 5 of title 5, United States
9 Code, the national advisory council may secure di-
10 rectly from any department or agency of the United
11 States information necessary to enable it to carry
12 out this subsection. Upon request from the chairman
13 of the council, the head of such department or agen-
14 cy shall furnish such information to the council.

15 (6) TERMINATION DATE INAPPLICABLE.—Sec-
16 tion 14 of the Federal Advisory Committee Act shall
17 not apply to the council.

18 (i) ALLOCATION OF FUNDS.—The Administrator of
19 the Federal Aviation Administration shall allocate funds
20 made available to carry out this section equitably among
21 Federal regions.

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

1 **SEC. 903. ALLOWANCE FOR THE PURPOSES OF RESEARCH**
2 **AND DEVELOPMENT.**

3 Except as necessary to support enforcement action
4 under applicable provisions of law against persons oper-
5 ating an advanced air mobility system or unmanned air-
6 craft in a manner that endangers the safety of the Na-
7 tional Airspace System, and notwithstanding any other
8 provision of law relating to the incorporation of advanced
9 air mobility and unmanned aircraft systems into Federal
10 Aviation Administration plans and policies, the Adminis-
11 trator of the Federal Aviation Administration may not
12 promulgate any rule or regulation regarding the operation
13 of an unmanned aircraft system—

14 (1) that is flown strictly for research and devel-
15 opment use;

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

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

21 (4) with respect to which, in any case in which
22 the unmanned aircraft system is flown within five
23 miles of an airport, the operator of the aircraft pro-
24 vides the airport operator and the airport air traffic
25 control tower (when an air traffic facility is located
26 at the airport) with prior notice of such operation,

1 including by establishing a mutually agreed upon op-
2 erating procedure in cases with respect to which
3 such unmanned aircraft system is flown from a per-
4 manent location within five miles of an airport.

5 **SEC. 904. AUTHORIZATION OF APPROPRIATIONS.**

6 (a) FEDERAL AVIATION ADMINISTRATION RESEARCH
7 AND DEVELOPMENT FUNDING.—There are authorized to
8 be appropriated to the Administrator of the Federal Avia-
9 tion Administration to carry out section 901—

10 (1) \$20,000,000 for fiscal year 2024;

11 (2) \$21,000,000 for fiscal year 2025;

12 (3) \$22,050,000 for fiscal year 2026;

13 (4) \$23,152,500 for fiscal year 2027; and

14 (5) \$24,310,125 for fiscal year 2028.

15 (b) UNIVERSITY UNMANNED AIRCRAFT SYSTEMS
16 CENTER FUNDING.—There are authorized to be appro-
17 priated to the Administrator of the Federal Aviation Ad-
18 ministration to carry out section 902—

19 (1) \$100,000,000 for fiscal year 2024;

20 (2) \$105,000,000 for fiscal year 2025;

21 (3) \$110,250,000 for fiscal year 2026;

22 (4) \$115,762,500 for fiscal year 2027; and

23 (5) \$121,550,625 for fiscal year 2028.

TITLE X—LIMITATION

2 SEC. 1001. LIMITATION.

3 (a) IN GENERAL.—Except as otherwise provided in
4 this section, none of the funds authorized to be appro-
5 priated by this Act may be used for the purchase, acquisi-
6 tion, or operation of advanced air mobility and unmanned
7 aircraft systems—

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

11 (2) produced or assembled by entities owned,
12 controlled by, or subject to the jurisdiction or direc-
13 tion of the government of, a foreign country of con-
14 cern.

15 (b) EXCEPTION.—The limitation in subsection (a)
16 shall not apply to the acquisition of advanced air mobility
17 and unmanned aircraft systems for the purposes of re-
18 search and development for improving the United States
19 counter-unmanned aircraft systems capabilities.

20 (c) WAIVER.—The Secretary of Commerce may waive
21 the limitation in subsection (a) if the Secretary deter-
22 mines, in consultation with the Director of National Intel-
23 ligence, that such waiver is in the national security inter-
24 est of the United States.

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

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

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

10 (2) any country that the Secretary of Com-
11 merce, in consultation with the Secretary of Defense
12 and the Director of National Intelligence, determines
13 to be engaged in conduct that is detrimental to the
14 national security or foreign policy of the United
15 States.

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