

117TH CONGRESS
2D SESSION

H. R. 9376

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

IN THE HOUSE OF REPRESENTATIVES

DECEMBER 1, 2022

Mr. LUCAS (for himself, Mrs. BICE of Oklahoma, Mr. BABIN, Mrs. KIM of California, and Mr. ELLZEY) introduced the following bill; which was referred to the Committee on Science, Space, and Technology, and in addition to the Committees on Oversight and Reform, Transportation and Infrastructure, and Homeland Security, 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 a coordinated Federal initiative to accelerate unmanned aircraft systems civilian and advanced air mobility research and development for economic and national security, and for other purposes.

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 Initiative
6 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—NATIONAL DRONE AND ADVANCED AIR MOBILITY INITIATIVE

- Sec. 101. National Drone and Advanced Air Mobility Initiative.
 Sec. 102. National Drone and Advanced Air Mobility Initiative Office.
 Sec. 103. Coordination by Interagency Committee.
 Sec. 104. National Drone and Advanced Air Mobility Initiative Advisory Com-
 mittee.
 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 ac-
 tivities.

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 de-
 velopment.

TITLE IX—FEDERAL AVIATION ADMINISTRATION ACTIVITIES

- Sec. 901. Federal Aviation Administration research and development.
 Sec. 902. University unmanned aircraft systems centers.

Sec. 903. Allowance for the purposes of research and development.
Sec. 904. Authorization of appropriations.
Sec. 905. Definitions.

TITLE X—LIMITATION

Sec. 1001. Limitation.

1 **SEC. 2. FINDINGS.**

2 Congress finds the following:

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

6 (2) Current uses and applications of unmanned
7 aircraft systems include agriculture, law enforce-
8 ment, public safety, disaster evaluation and re-
9 sponse, fire detection, border security, weather fore-
10 casting, construction, utility monitoring, and many
11 other uses and applications.

12 (3) Research, development, demonstration, test-
13 ing, and evaluation of counter-UAS systems activi-
14 ties are critical to fully understand the capabilities
15 of and threats posed by unmanned aircraft systems.

16 (4) Unmanned aircraft systems are subject to
17 safety, privacy, cybersecurity, and supply chain
18 risks, particularly as most unmanned aircraft sys-
19 tems in the United States are manufactured or as-
20 sembled from parts manufactured in foreign coun-
21 tries.

1 (5) National and homeland security threats
2 posed by unmanned aircraft systems include crimi-
3 nal and terrorist use for espionage, surveillance, and
4 intelligence gathering, smuggling drugs and contra-
5 band, and platforms to deliver explosives or chemi-
6 cals, biological, radiological or nuclear weapons, and
7 other firearms.

8 (6) The Federal Government has an important
9 role in advancing research, development, voluntary
10 consensus standards, and education activities in un-
11 manned aircraft systems and counter-UAS systems
12 technologies through coordination and collaboration
13 between State, local, Federal, and Tribal govern-
14 ments, academia, and the private sector.

15 (7) There is a lack of voluntary consensus
16 standards for unmanned aircraft systems for aca-
17 demia and the public and private sectors.

18 (8) The United States needs to invest in domes-
19 tic manufacturing and secure supply chains of un-
20 manned aircraft systems to meet the demand by the
21 Government and the commercial sectors, to reduce
22 reliance on foreign-made systems.

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

1 **SEC. 3. DEFINITIONS.**

2 In this Act, the following definitions apply:

3 (1) **ADVANCED AIR MOBILITY.**—The term “ad-
4 vanced air mobility” means air transportation sys-
5 tems that transport individuals and property be-
6 tween points in the United States using aircraft,
7 such as remotely piloted, autonomous, or vertical
8 take-off and landing aircraft, including those pow-
9 ered by electric or hybrid driven propulsions, in both
10 controlled and uncontrolled airspace.

11 (2) **ADVISORY COMMITTEE.**—The term “Advi-
12 sory Committee” means the National Drone and Ad-
13 vanced Air Mobility Initiative Advisory Committee
14 established under section 104(a).

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

19 (4) **INITIATIVE.**—The term “Initiative” means
20 the National Drone and Advanced Air Mobility Ini-
21 tiative established under section 101(a).

22 (5) **INITIATIVE OFFICE.**—The term “Initiative
23 Office” means the National Drone and Advanced Air
24 Mobility Initiative Office established under section
25 102(a).

1 (6) INSTITUTE.—The term “Institute” means a
2 Drone and Advanced Air Mobility Research Institute
3 described in section 201(b).

4 (7) INTERAGENCY COMMITTEE.—The terms
5 “Interagency Committee” means the interagency
6 committee established under section 103(a).

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

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

15 **SEC. 4. PURPOSES.**

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

18 (1) supporting research, development, dem-
19 onstration, and testing of unmanned aircraft sys-
20 tems in order to—

21 (A) lead in secure and next generation un-
22 manned aircraft systems, including counter-
23 UAS systems;

1 (B) promote further development of facili-
2 ties and centers available for unmanned aircraft
3 systems research, testing, and education;

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

7 (D) promote domestic manufacturing of
8 unmanned aircraft systems;

9 (E) mitigate supply chain risks;

10 (F) mitigate risks to public safety and na-
11 tional and homeland security;

12 (G) prepare the present and future United
13 States workforce for the integration of un-
14 manned aircraft systems across sectors of the
15 economy;

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

19 (I) enable the advanced air mobility sys-
20 tems ecosystem;

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

24 (K) improve safety and sustainability of
25 ground transportation;

1 (L) address basic research knowledge gaps;

2 (M) maximize the benefits of unmanned
3 aircraft systems;

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

6 (O) establish a robust data management
7 strategy for scientific data collected by un-
8 manned systems;

9 (2) improving the interagency planning and co-
10 ordination of Federal research and development of
11 unmanned aircraft systems and maximizing the ef-
12 fectiveness of the Federal Government's unmanned
13 aircraft systems research and development pro-
14 grams;

15 (3) promoting research and development col-
16 laboration among State, local, Tribal, and Federal
17 Governments, National Laboratories, industry, and
18 universities;

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

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

1 **TITLE I—NATIONAL DRONE AND**
2 **ADVANCED AIR MOBILITY INI-**
3 **TIATIVE**

4 **SEC. 101. NATIONAL DRONE AND ADVANCED AIR MOBILITY**
5 **INITIATIVE.**

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

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

14 (1) Sustained, consistent, and coordinated sup-
15 port for next generation unmanned aircraft systems
16 and counter-UAS systems research and development
17 through grants, cooperative agreements, and
18 testbeds.

19 (2) Support to enable advanced air mobility.

20 (3) Support for the development of voluntary
21 consensus standards and best practices for the devel-
22 opment and use of unmanned aircraft systems.

23 (4) Support for education and training activi-
24 ties at all levels to prepare the United States work-

1 force to use and interact with unmanned aircraft
2 systems.

3 (5) Support partnerships to leverage knowledge
4 and resources from industry, State, local, Tribal,
5 and Federal Governments, National Laboratories,
6 Federal Aviation Administration-designated Un-
7 manned Aircraft Systems Test Sites, academic insti-
8 tutions, and others education to advance activities
9 under the Initiative.

10 (6) Interagency planning and coordination of
11 Federal unmanned aircraft systems research, devel-
12 opment, demonstration, standards engagement, and
13 other activities under the Initiative.

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

16 (8) Promote hardware interoperability, open-
17 source systems, and standards-driven hardware.

18 **SEC. 102. NATIONAL DRONE AND ADVANCED AIR MOBILITY**

19 **INITIATIVE OFFICE.**

20 (a) IN GENERAL.—The Director of the Office of
21 Science and Technology Policy shall establish or designate,
22 and appoint a director of, an office to be known as the
23 “National Drone and Advanced Air Mobility Initiative Of-
24 fice” to carry out the responsibilities described in sub-
25 section (b) with respect to the Initiative. The Initiative

1 Office shall have sufficient staff to carry out such respon-
2 sibilities, including staff detailed from the Federal depart-
3 ments and agencies described in section 103(c).

4 (b) RESPONSIBILITIES.—The Director of the Initia-
5 tive Office shall—

6 (1) provide technical and administrative support
7 to—

8 (A) the Interagency Committee; and

9 (B) the Advisory Committee;

10 (2) serve as the point of contact on Federal ci-
11 vilian unmanned aircraft systems activities for Gov-
12 ernment organizations, academia, industry, profes-
13 sional societies, State, local, Tribal, and Federal
14 Governments, and other stakeholders to exchange
15 technical and programmatic information;

16 (3) conduct public outreach, including dissemi-
17 nation of findings and recommendations of the Advi-
18 sory Committee, as appropriate;

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

24 (5) establish a robust data management strat-
25 egy that ensures digital access and machine-read-

1 ability; that promotes findability, interoperability,
2 analysis- and decision-readiness and reusability; and
3 ensures applicable scientific data are managed for
4 wide use by Federal, State, Tribal, and local govern-
5 ments, academia, and the public.

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

12 (d) COORDINATION.—In carrying out the Initiative
13 Office, the Director shall coordinate with the National Ar-
14 tificial Intelligence Initiative Office and the Advanced Air
15 Mobility Working Group to avoid duplication of research
16 and other activities to ensure that the activities carried
17 out by the Initiative Office are complementary to those
18 being undertaken by other interagency efforts.

19 **SEC. 103. COORDINATION BY INTERAGENCY COMMITTEE.**

20 (a) ESTABLISHMENT.—The Director of the Office of
21 Science and Technology Policy, acting through the Na-
22 tional Science and Technology Council, shall establish or
23 designate an Interagency Committee to coordinate Federal
24 programs and activities in support of the Initiative.

1 (b) CO-CHAIRS.—The Interagency Committee shall
2 be co-chaired by the Director of the Office of Science and
3 Technology Policy and, on a rotating basis, a representa-
4 tive from the National Institute of Standards and Tech-
5 nology, the National Science Foundation, the Federal
6 Aviation Administration, the National Aeronautics and
7 Space Administration, or the National Oceanic and At-
8 mospheric Administration, as selected by the Director of
9 the Office of Science and Technology Policy.

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

12 (1) the National Institute of Standards and
13 Technology;

14 (2) the National Science Foundation;

15 (3) the National Aeronautics and Space Admin-
16 istration;

17 (4) the Department of Homeland Security;

18 (5) the National Oceanic and Atmospheric Ad-
19 ministration;

20 (6) the Department of Energy;

21 (7) the Federal Aviation Administration;

22 (8) the Department of Defense;

23 (9) the Office of Management and Budget;

24 (10) the Office of the Director of National In-
25 telligence;

1 (11) the Office of Science and Technology Pol-
2 icy;

3 (12) the General Services Administration;

4 (13) the Department of Justice;

5 (14) the Department of Agriculture;

6 (15) the Department of the Interior;

7 (16) the Federal Communications Commission;

8 and

9 (17) any other Federal agency considered ap-
10 propriate by the President.

11 (d) COORDINATION.—The Interagency Committee
12 shall coordinate with the National Security Council and
13 other authorized agency coordinating bodies on the assess-
14 ment of risks posed by the existing Federal unmanned air-
15 craft systems fleet and outlining potential steps to miti-
16 gate these risks.

17 (e) RESPONSIBILITIES.—The Interagency Committee
18 shall—

19 (1) provide for interagency coordination of Fed-
20 eral unmanned aircraft systems research, develop-
21 ment, and demonstration activities, development of
22 voluntary consensus standards and guidelines for re-
23 search, development, testing, and adoption of un-
24 manned aircraft systems, scientific data manage-
25 ment and education and training activities and pro-

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

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

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

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

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

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

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

1 economic, legal, workforce, and other ap-
2 propriate societal issues related unmanned
3 aircraft systems;

4 (iv) provide or facilitate access to the
5 necessary facilities, including existing Fed-
6 eral Aviation Administration-designated
7 Unmanned Aircraft Systems Test Sites,
8 for unmanned aircraft systems research,
9 development, testing, and demonstration;

10 (v) reduce barriers to transferring un-
11 manned aircraft systems from the labora-
12 tory into application for the benefit of soci-
13 ety and United States competitiveness;

14 (vi) support the development of an ad-
15 vanced air mobility ecosystem; and

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

21 (3) propose an annually coordinated interagency
22 budget for the Initiative to the Office of Manage-
23 ment and Budget that is intended to ensure that the
24 balance of funding across the Initiative is sufficient

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

3 (4) in carrying out this section, take into con-
4 sideration the recommendations of the Advisory
5 Committee, existing reports on related topics, and
6 the views of academic, State, industry, and other ap-
7 propriate groups.

8 (f) REPORT.—For each fiscal year beginning with fis-
9 cal year 2023, not later than 90 days after submission
10 of the President’s annual budget request for such fiscal
11 year, the Interagency Committee shall prepare and submit
12 to the Committee on Science, Space, and Technology of
13 the House of Representatives and the Committee on Com-
14 merce, Science, and Transportation of the Senate a report
15 that includes—

16 (1) a summarized budget in support of the Ini-
17 tiative for such fiscal year and the preceding fiscal
18 year, including a disaggregation of spending for each
19 Federal agency participating in the Initiative; and

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

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

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

6 (b) QUALIFICATIONS.—The Advisory Committee es-
7 tablished by the President under subsection (a) shall con-
8 sist of members from industry, academic institutions,
9 State and local governmental organizations, and Federal
10 laboratories, including representatives from underserved
11 communities. The President shall appoint members to the
12 Advisory Committee who are qualified to provide advice
13 and information on unmanned aircraft systems research,
14 development, demonstrations, education, technology trans-
15 fer, commercial application, or national security and eco-
16 nomic concerns.

17 (c) MEMBERSHIP CONSIDERATION.—In selecting Ad-
18 visory Committee members, the President may seek and
19 give consideration to recommendations from the Congress,
20 industry, the scientific community (including the National
21 Academies, scientific professional societies, and aca-
22 demia), the defense community, and other appropriate or-
23 ganizations.

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

1 (1) the current state of United States competi-
2 tiveness and leadership in unmanned aircraft sys-
3 tems, including the scope and scale of United States
4 investments in unmanned aircraft systems research
5 and development;

6 (2) trends and developments in unmanned air-
7 craft systems technology, including barriers to adop-
8 tion and use of unmanned aircraft systems;

9 (3) progress made in implementing the Initia-
10 tive;

11 (4) the management, coordination, and activi-
12 ties of the Initiative;

13 (5) whether the strategic plan developed or up-
14 dated by the Interagency Committee established
15 under section 103(e)(2) is helping to maintain
16 United States leadership in unmanned aircraft sys-
17 tems;

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

21 (7) whether national security, safety, societal,
22 economic, legal, and workforce concerns are ade-
23 quately addressed by the Initiative.

24 (e) REPORTS.—Not later than 1 year after the date
25 of the enactment of this Act, and not less frequently than

1 once every 3 years thereafter, the Advisory Committee
2 shall submit to the President, the Committee on Science,
3 Space, and Technology of the House of Representatives,
4 and the Committee on Commerce, Science, and Transpor-
5 tation of the Senate, a report on the Advisory Committee's
6 findings and recommendations under subsection (d).

7 (f) CONSULTATION.—The Advisory Committee shall
8 consult with the Federal Aviation Administration Ad-
9 vanced Aviation Advisory Committee to ensure consistency
10 and avoid duplication of effort.

11 (g) TRAVEL EXPENSES OF NON-FEDERAL MEM-
12 BERS.—Non-Federal members of the Advisory Committee,
13 while attending meetings of the Advisory Committee or
14 while otherwise serving at the request of the head of the
15 Advisory Committee away from their homes or regular
16 places of business, may be allowed travel expenses, includ-
17 ing per diem in lieu of subsistence, as authorized by sec-
18 tion 5703 of title 5, United States Code, for individuals
19 in the Government serving without pay. Nothing in this
20 subsection shall be construed to prohibit members of the
21 Advisory Committee who are officers or employees of the
22 United States from being allowed travel expenses, includ-
23 ing per diem in lieu of subsistence, in accordance with ex-
24 isting law.

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

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

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

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

10 (1) A review of policies and practices of the
11 Federal Government for the procurement and oper-
12 ation of unmanned aircraft systems manufactured,
13 assembled, use components manufactured in or soft-
14 ware developed by a covered foreign entity on the
15 list maintained pursuant to subsection (d).

16 (2) An assessment of the following:

17 (A) The physical safety, privacy, cyberse-
18 curity, and supply chain risks associated with
19 these technologies.

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

22 (C) The trustworthiness and resilience of
23 these technologies.

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

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

9 **TITLE II—NATIONAL DRONE AND**
10 **ADVANCED AIR MOBILITY RE-**
11 **SEARCH INSTITUTES**

12 **SEC. 201. NATIONAL DRONE AND ADVANCED AIR MOBILITY**
13 **RESEARCH INSTITUTES.**

14 (a) IN GENERAL.—As part of the Initiative, the Ad-
15 ministrator of the National Aeronautics and Space Admin-
16 istration shall establish a program to award financial as-
17 sistance for the planning, establishment, and support of
18 a network of Institutes (as described in subsection (b)(2))
19 in accordance with this section.

20 (b) FINANCIAL ASSISTANCE TO ESTABLISH AND
21 SUPPORT NATIONAL DRONE AND ADVANCED AIR MOBIL-
22 ITY RESEARCH INSTITUTES.—

23 (1) IN GENERAL.—Under the Initiative, the Di-
24 rector of the National Institute of Standards and
25 Technology, the Director of the National Science

1 Foundation, the Administrator of the National Aero-
2 nautics and Space Administration, and any other
3 agency head may award financial assistance, includ-
4 ing jointly with other agencies, to an eligible entity,
5 or consortia thereof, as determined by an agency
6 head, to establish and support an Institute.

7 (2) DRONE AND ADVANCED AIR MOBILITY IN-
8 STITUTES.—An Institute described in this subsection
9 is an unmanned aircraft systems research institute
10 that—

11 (A) may focus on—

12 (i) a particular economic or social sec-
13 tor, including education, manufacturing,
14 agriculture, security, energy, environment,
15 and public safety, and includes a compo-
16 nent that addresses the ethical, societal,
17 safety, and security implications relevant
18 to the application of unmanned aircraft
19 systems in that sector; or

20 (ii) a cross-cutting challenge for re-
21 search, development, testing, or use of un-
22 manned aircraft systems;

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

1 profit research organizations, Federal labora-
2 tories, State, local, and Tribal governments, in-
3 dustry and others (or consortia thereof);

4 (C) has the potential to create an innova-
5 tion ecosystem, or enhance existing ecosystems,
6 to translate Institute research into applications
7 and products, as appropriate to the topic of
8 each Institute;

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

17 (E) supports interdisciplinary education
18 activities at all levels, including curriculum de-
19 velopment, research experiences, and faculty
20 professional development across two-year, un-
21 dergraduates, masters, and doctoral level pro-
22 grams;

23 (F) establishes a robust data management
24 strategy that ensures digital access and ma-
25 chine-readability; that promotes findability,

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

6 (G) supports workforce development in un-
7 manned aircraft systems related disciplines in
8 the United States, including broadening partici-
9 pation of underrepresented 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 unmanned aircraft systems
18 and for research and development using un-
19 manned aircraft systems;

20 (B) developing and managing testbeds, in-
21 cluding Federal Aviation Administration-des-
22 ignated Unmanned Aircraft Systems Test Sites,
23 for unmanned aircraft systems, including sec-
24 tor-specific test beds, designed to enable users

1 to evaluate unmanned aircraft systems prior to
2 deployment;

3 (C) conducting research and education ac-
4 tivities involving unmanned aircraft systems to
5 solve challenges with economic, scientific, and
6 national security implications;

7 (D) conducting research and development
8 on unmanned aircraft systems platform devel-
9 opment and innovation;

10 (E) providing or brokering access to com-
11 puting resources, networking, and data facilities
12 for unmanned aircraft systems research and de-
13 velopment relevant to the Institute's research
14 goals;

15 (F) providing technical assistance to users,
16 including software engineering support, for un-
17 manned aircraft systems research and develop-
18 ment relevant to the Institute's research goals;

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

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

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

4 (J) such other activities that an agency
5 head whose agency's missions contribute to or
6 are affected by unmanned aircraft systems de-
7 termines is appropriate to fulfill the agency's
8 missions.

9 (4) DURATION.—

10 (A) INITIAL PERIODS.—An award of finan-
11 cial assistance under paragraph (1) shall be for
12 an initial period of up to 5 years, subject to Of-
13 fice of Management and Budget uniform guid-
14 ance for Federal assistance.

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

22 (5) APPLICATION FOR FINANCIAL ASSIST-
23 ANCE.—

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

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

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

(i) A plan for the Institute to include—

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

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

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

1 (IV) a description of how the In-
2 stitute will transition from planning
3 into operations.

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

8 (iii) A data management plan that ad-
9 dresses the collection, use, retention, pro-
10 tection, dissemination, and management of
11 data collected, consistent with the purposes
12 of this Act.

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

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

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

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

25 (7) COLLABORATION.—

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

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

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

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

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

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

11 (a) IN GENERAL.—As part of the Initiative, the Di-
 12 rector shall—

13 (1) support measurement research and develop-
 14 ment of best practices and voluntary consensus
 15 standards for unmanned aircraft systems, including
 16 for—

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

19 (B) safety of unmanned aircraft systems;

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

22 (D) data management and techniques to
 23 increase the usability of data for unmanned air-
 24 craft systems;

1 (E) supply chain risks for unmanned air-
2 craft systems; and

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

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

9 (3) produce curated, standardized, representa-
10 tive, secure, and privacy protected data sets for un-
11 manned aircraft systems research, development, and
12 use, prioritizing data for high-value, high-risk re-
13 search;

14 (4) support and strategically engage in the de-
15 velopment of voluntary consensus standards, includ-
16 ing international standards, through open, trans-
17 parent, 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; and

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

4 (b) DATA SHARING BEST PRACTICES.—Not later
5 than 1 year after the date of enactment of this Act, the
6 Director shall, in collaboration with other public and pri-
7 vate sector organizations, develop guidance to facilitate
8 the creation of voluntary data sharing arrangements be-
9 tween industry, federally funded research centers, and
10 Federal agencies for the purpose of advancing unmanned
11 aircraft systems research and technologies, including op-
12 tions for partnership models between government entities,
13 industry, universities, and nonprofits that incentivize each
14 party to share the data they collected. The Director shall
15 also ensure that data are archived in a manner to in order
16 to promote findability, interoperability, analysis- and deci-
17 sion-readiness and reusability of historical and near real
18 time data across Federal, State, Tribal, local users, includ-
19 ing ensuring digital access and machine-readability.

20 (c) SOLICITATION OF INPUT.—In carrying out the ac-
21 tivities under this subsection, the Director shall—

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

1 ments, civil society groups, and other relevant stake-
2 holders; and

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

6 (d) DRONE RESEARCH CHALLENGES.—

7 (1) PRIZE COMPETITION.—Pursuant to section
8 24 of the Stevenson-Wydler Technology Innovation
9 Act of 1980 (15 U.S.C. 3719), the Director shall,
10 subject to appropriations, carry out a program to
11 award prizes competitively to stimulate research and
12 development of innovative unmanned aircraft sys-
13 tems technologies in order to expand upon and im-
14 prove emergency response operations.

15 (2) PLAN FOR EMERGENCY RESPONSE OPER-
16 ATIONS.—Each prize competition entry submitted
17 pursuant to paragraph (1) shall include a plan for
18 unmanned aircraft systems implementation in emer-
19 gency response operations.

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

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

1 competition, the Director shall submit to the rel-
2 evant committees of Congress a report that describes
3 the winning entry of the prize competition.

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

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

11 (1) \$20,000,000 for fiscal year 2023;

12 (2) \$21,000,000 for fiscal year 2024;

13 (3) \$22,050,000 for fiscal year 2025;

14 (4) \$23,152,500 for fiscal year 2026; and

15 (5) \$24,310,125 for fiscal year 2027.

16 **SEC. 302. NATIONAL INSTITUTE OF STANDARDS AND TECH-**
17 **NOLOGY MANUFACTURING ACTIVITIES.**

18 (a) PURPOSE.—The purpose of this section is to se-
19 cure the United States international leadership in un-
20 manned aircraft systems by strengthening its industrial
21 base through the bolstering of domestic supply chains and
22 the development and adoption of innovative manufacturing
23 processes.

24 (b) ESTABLISHMENT OF UNMANNED AIRCRAFT SYS-
25 TEMS PILOT PROGRAM AS A PART OF THE MANUFAC-

1 TURING EXTENSION PARTNERSHIP.—The National Insti-
2 tute of Standards and Technology Act (15 U.S.C. 271 et
3 seq.) is amended by inserting after section 25B the fol-
4 lowing:

5 **“SEC. 25C. EXPANSION AWARDS FOR UNMANNED AIRCRAFT**
6 **SYSTEMS PILOT PROGRAM.**

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

9 “(b) ESTABLISHMENT.—The Director shall establish
10 as a part of the Hollings Manufacturing Extension Part-
11 nership a pilot program of expansion awards among par-
12 ticipants described in subsection (c) of this section for the
13 purposes described in subsection (e) of this section.

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

17 “(d) AWARD AMOUNTS.—Subject to the availability
18 of appropriations, an award for a recipient under this sec-
19 tion shall be in an amount equal to the sum of the fol-
20 lowing:

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

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

4 “(3) Such supplemental amounts as the Direc-
5 tor considers appropriate.

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

9 “(1) To provide coordinating services on—

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

13 “(B) the review and optimization of cur-
14 rent unmanned aircraft systems designs and
15 components, including industrial engineering
16 and manufacturing design upgrades;

17 “(C) rapid unmanned aircraft systems
18 prototyping services, including three-dimen-
19 sional modeling;

20 “(D) software development for unmanned
21 aircraft systems application;

22 “(E) commercialization of new products
23 and technology to improve performance of un-
24 manned aircraft systems; and

1 “(F) supporting existing unmanned air-
2 craft systems and components manufacturing
3 operations and the development of unmanned
4 aircraft systems and components manufacturing
5 operations.

6 “(2) To provide services to improve the resil-
7 iency of domestic unmanned aircraft system supply
8 chains.

9 “(3) To expand unmanned aircraft systems
10 technology services to small and medium-sized man-
11 ufacturers and software developers, which may in-
12 clude—

13 “(A) facilitating the adoption of tech-
14 nologies, including smart manufacturing tech-
15 nologies and practices; and

16 “(B) establishing partnerships, for the de-
17 velopment, demonstration, and deployment of
18 unmanned aircraft systems technologies, with—

19 “(i) National Laboratories (as defined
20 in section 2 of the Energy Policy Act of
21 2005 (42 U.S.C. 15801));

22 “(ii) Federal laboratories;

23 “(iii) Manufacturing USA institutes;

24 “(iv) Unmanned Aircraft Systems In-
25 dustry; and

1 “(v) institutions of higher education.

2 “(f) APPLICATIONS.—Applications for awards under
3 this section shall be submitted in such manner, at such
4 time, and containing such information as the Director
5 shall require in consultation with the Manufacturing Ex-
6 tension Partnership Advisory Board.

7 “(g) SELECTION.—

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

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

14 “(3) CRITERIA.—The Director shall select ap-
15 plications consistent with the purposes identified
16 pursuant to subsection (e) to receive awards that the
17 Director determines will achieve one or more of the
18 following:

19 “(A) Improvement of the competitiveness
20 of domestic unmanned aircraft systems indus-
21 tries in the region in which the Center or Cen-
22 ters are located.

23 “(B) Creation of jobs or training of newly
24 hired employees.

1 “(C) Promotion of the transfer and com-
2 mercialization of research and technology from
3 institutions of higher education, national lab-
4 oratories, or other federally funded research
5 programs, and nonprofit research institutes.

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

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

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

21 “(j) REPORT.—After the completion of the pilot pro-
22 gram under subsection (b) and not later than October 1,
23 2025, the Director shall submit to Congress a report that
24 includes—

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

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

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

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

14 “(k) AUTHORIZATION OF APPROPRIATIONS.—There
15 is authorized to be appropriated to carry out the pilot pro-
16 gram under this section \$10,000,000 for each of fiscal
17 years 2023 through 2025.”.

18 (c) MANUFACTURING EXTENSION PARTNERSHIP
19 SURVEY.—

20 (1) SURVEY.—Not later than 1 year after the
21 date of the enactment of this Act, the Director shall
22 carry out a survey of the Manufacturing Extension
23 Partnership Centers (referred to in this section as
24 the “Centers”) to understand the manufacturing ca-
25 pabilities of the United States manufacturers to sup-

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

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

6 (A) Familiarity and current manufacturing
7 work by small and mid-sized manufacturers on
8 unmanned aircraft systems, including compo-
9 nents, software, sensors, or other technology as-
10 sociated with unmanned aircraft systems.

11 (B) A list of the basic manufacturing pro-
12 cedures that can be easily converted to conduct
13 the manufacturing of unmanned aircraft sys-
14 tems projects.

15 (C) Potential for small and mid-sized man-
16 ufacturing to work with industry and academia
17 to support the manufacturers of unmanned air-
18 craft systems prototypes.

19 (D) Potential for commercialization of on-
20 going manufacturing development research re-
21 lated to unmanned aircraft systems projects.

22 (E) A description of supply chain and tech-
23 nological challenges that small and mid-sized
24 manufacturers face in building up unmanned

1 aircraft systems capacity, and the prevalence of
2 these challenges.

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

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

10 (H) Any other information that the Direc-
11 tor or the Board determine is appropriate.

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

20 (d) MANUFACTURING USA PROGRAM.—The Direc-
21 tor, through the Manufacturing USA Program, shall
22 prioritize research, development, and demonstration activi-
23 ties to enhance and grow the domestic manufacturing ca-
24 pacity of unmanned aircraft systems and components.
25 Such activities may include—

1 (1) rapid-prototyping and reproduction of un-
2 manned aircraft systems structures;

3 (2) additive manufacturing to improve capabili-
4 ties to produce large tools, dies, and molds for un-
5 manned aircraft systems and components;

6 (3) testing innovative manufacturing processes
7 and manufactured components to improve safety, en-
8 durance, and quality of unmanned aircraft systems;

9 (4) development of software to streamline fab-
10 rication and integration of manufacturing compo-
11 nents, such as sensors for use in unmanned aircraft
12 systems; and

13 (5) any other activities that the Director con-
14 siders appropriate.

15 (e) DEFINITION.—In this title, the term “Director”
16 means the Director of the National Institute of Standards
17 and Technology.

18 **TITLE IV—NATIONAL SCIENCE** 19 **FOUNDATION ACTIVITIES**

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

21 (a) IN GENERAL.—As part of the Initiative, the Di-
22 rector shall support research and STEM education and
23 related activities in unmanned aircraft systems, compo-
24 nents, and related technologies, including competitive

1 awards or grants to institutions of higher education or eli-
2 gible nonprofit organizations (or consortia thereof).

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

5 (1) support fundamental research on the under-
6 lying technologies for unmanned aircraft systems,
7 components and related technologies, which may in-
8 clude—

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

11 (B) developing and improving autonomous
12 control systems, including real-time control and
13 autonomous decision making;

14 (C) incorporating the use of artificial intel-
15 ligence into systems;

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

18 (E) understanding safety and sustain-
19 ability of unmanned aircraft systems as a part
20 of a transportation system, including the im-
21 pacts of unmanned aircraft systems on ground
22 transportation;

23 (F) developing and improving communica-
24 tions systems, including multivehicle coordina-
25 tion and task and path planning; and

1 (G) understanding the human-drone inter-
2 face;

3 (2) support research and development of un-
4 manned aircraft system enabled uses, which may in-
5 clude—

6 (A) creating new sensing tools to improve
7 understanding, prediction, and detection of se-
8 vere weather and natural hazards, including
9 wildfires;

10 (B) enabling advanced air mobility;

11 (C) monitoring and surveying infrastruc-
12 ture;

13 (D) disaster reconnaissance, including the
14 collection of data to model and simulate disas-
15 ters and assist responders; and

16 (E) improving the reliable use of advanced
17 sensing systems in rural and agricultural set-
18 tings;

19 (3) support research on data modeling and vali-
20 dation of the use of unmanned aircraft systems;

21 (4) support research and development on secu-
22 rity, including the cybersecurity, of unmanned aerial
23 aircraft systems;

1 (5) support research on the ethical use of un-
2 manned aircraft systems, including protection of in-
3 dividual privacy;

4 (6) support middle school and high school level
5 STEM education research and related activities re-
6 lated to unmanned aircraft systems and related tech-
7 nologies, which may include—

8 (A) supporting curriculum development re-
9 lating to unmanned aircraft system applica-
10 tions, including developing place-based learning
11 curriculum, particularly for students in poor,
12 rural, and Tribal communities;

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

19 (C) developing professional development re-
20 sources for STEM educators in utilizing un-
21 manned aircraft systems technologies and appli-
22 cations in their curriculum and classrooms, in-
23 cluding through distance-delivered courses;

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

4 (E) designing unmanned aircraft system
5 related activities designed to help students
6 make real-world connections to STEM content
7 and educate students on the relevance and sig-
8 nificance of STEM careers;

9 (7) support undergraduate and graduate edu-
10 cation and workforce development research and re-
11 lated activities related to unmanned aircraft systems
12 and related technologies, which may include—

13 (A) supporting curriculum development re-
14 lating to unmanned aircraft systems applica-
15 tions and technologies;

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

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

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

9 (8) support activities to develop a skilled tech-
10 nical workforce for supporting and operating un-
11 manned aircraft systems, which may include estab-
12 lishing national centers focused on educating and
13 training the skilled technical workforce in unmanned
14 aircraft system applications and technologies
15 through the Advanced Scientific and Technical Edu-
16 cation Program as authorized by the Scientific and
17 Advanced-Technology Act of 1992 (42 U.S.C.
18 1862i), including by—

19 (A) expanding educational resources to ad-
20 dress current workforce demands in unmanned
21 aircraft system applications and technologies;

22 (B) developing curriculum for community
23 and technical colleges to train and upskill the
24 skilled technical workforce in unmanned air-
25 craft system applications and technologies;

1 (C) engaging the skilled technical work-
2 force community in STEM and unmanned air-
3 craft system applications and technologies; and

4 (D) in partnership with industry, employ-
5 ing activities to increase the visibility and utility
6 of careers in unmanned aircraft applications
7 and technologies;

8 (9) engage veterans and departing members of
9 the Armed Services in activities mentioned in para-
10 graphs (7) and (8);

11 (10) support one or more Institutes as de-
12 scribed in section 201(a) for the purpose of advanc-
13 ing the field of unmanned 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 Federal, State, Tribal, and local govern-
23 ments, academia and the public; and

24 (13) any other activities the Director finds nec-
25 essary to meet the goals laid out in subsection (a).

1 (c) PUBLIC-PRIVATE PARTNERSHIPS.—As part of
2 the activities under subsection (a), the Director shall sup-
3 port public-private partnerships to support domestic devel-
4 opment of unmanned aircraft systems in the United States
5 and address pre-competitive industry challenges.

6 (d) INTERAGENCY COORDINATION.—In carrying out
7 the program under this section, the Director shall coordi-
8 nate with the heads of other Federal departments and
9 agencies to avoid duplication of research and other activi-
10 ties to ensure that the activities carried out under this
11 section are complementary to those being undertaken by
12 other agencies.

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

- 16 (1) \$50,000,000 for fiscal year 2023;
17 (2) \$52,500,000 for fiscal year 2024;
18 (3) \$55,125,000 for fiscal year 2025;
19 (4) \$57,881,775 for fiscal year 2026; and
20 (5) \$60,775,863 for fiscal year 2027.

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

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

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

6 (a) IN GENERAL.—The Administrator, in consulta-
7 tion with the Administrator of the Federal Aviation Ad-
8 ministration and other Federal agencies, shall direct re-
9 search and technological development to facilitate the safe
10 integration of unmanned aircraft systems into the Na-
11 tional Airspace System, including—

- 12 (1) positioning and navigation systems;
- 13 (2) sense and avoid capabilities;
- 14 (3) secure data and communication links;
- 15 (4) flight recovery systems; and
- 16 (5) human systems integration.

17 (b) COOPERATIVE UNMANNED AIRCRAFT SYSTEM
18 ACTIVITIES.—Section 31504 of title 51, United States
19 Code, is amended by inserting at the end the following:
20 “Operational flight data derived from these cooperative
21 agreements shall be made available, in appropriate and us-
22 able formats, to the Administration and the Federal Avia-
23 tion Administration for the development of regulatory
24 standards.”.

1 (c) POLICY.—It is the policy of the United States
2 Government that the Administration shall work with in-
3 dustry, the Federal Aviation Administration, the Depart-
4 ment of Defense, the Department of Homeland Security,
5 and academia to mature and help operationalize un-
6 manned aircraft system traffic management related con-
7 cepts, architecture, services, and strategic as well as tac-
8 tical deconfliction to ensure safe integration of unmanned
9 aircraft systems in airspace in presence of other aircraft.
10 As part of those activities, the Administration shall con-
11 sider commercial and public good use cases, such as wild-
12 fire and disaster monitoring and mitigation, with a pri-
13 mary focus on enabling many simultaneous drone oper-
14 ations beyond visual line of sight.

15 (d) COORDINATION.—The Administrator shall coordi-
16 nate with the Administrator of the Federal Aviation Ad-
17 ministration, the Director of the National Institutes of
18 Standards and Technology, State, local and Tribal govern-
19 ment, and industry on the development of voluntary con-
20 sensus-based standards to facilitate the incorporation of
21 unmanned aircraft systems into the National Airspace
22 System and decrease the need for regulations.

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

3 (a) IN GENERAL.—The Administrator shall establish
4 a national program to carry out unmanned aircraft and
5 advanced air mobility systems technology competitions for
6 students at the high school and undergraduate level (in
7 this section referred to as “competitions”) in which stu-
8 dents shall compete to design, create, and demonstrate an
9 unmanned aircraft system.

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

15 (c) CONSIDERATIONS FOR SELECTING COMPETITION
16 ADMINISTRATOR.—In selecting an institution of higher
17 education to administer the competition, the Adminis-
18 trator shall consider—

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

21 (2) the institution of higher education’s prior
22 experience in administering national STEM engage-
23 ment programs;

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

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

3 (4) the institution of higher education's prior
4 experience in connecting STEM activities to Admin-
5 istration 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 organization) 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 or advanced air
18 mobility systems;

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

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

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

3 (A) the number of students engaged; and

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

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

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

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

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

21 (2) allow students to compete with other teams
22 in the performance of the constructed unmanned air-
23 craft or advanced air mobility system;

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

1 (4) connect relevant STEM curriculum to the
2 design, construction, and demonstration of un-
3 manned aircraft and/or advanced air mobility sys-
4 tems;

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

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

12 (g) AUTHORIZATION OF APPROPRIATIONS.—There is
13 authorized to be appropriated to the Administrator
14 \$6,000,000 in each of fiscal years 2023 through 2027 to
15 carry out the activities authorized in this section. Of the
16 funds authorized—

17 (1) \$1,000,000 per year shall be for the com-
18 petition administrator as authorized in subsection
19 (b); and

20 (2) \$5,000,000 per year shall be awarded for
21 grants to carry out competitions as authorized by
22 subsection (d).

23 (h) DEFINITIONS.—In this title:

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

4 (2) ADMINISTRATOR.—The term “Adminis-
 5 trator” means the Administrator of the National
 6 Aeronautics and Space Administration.

7 **TITLE VI—DEPARTMENT OF** 8 **ENERGY ACTIVITIES**

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

10 (a) IN GENERAL.—As part of the Initiative, the Sec-
 11 retary shall carry out a cross-cutting research, develop-
 12 ment, and demonstration program to advance unmanned
 13 and counter-UAS system technologies, capabilities, and
 14 workforce needs and to improve the reliability of un-
 15 manned and counter-UAS systems implementation meth-
 16 ods relevant to the mission of the Department. In carrying
 17 out this program, the Secretary shall coordinate across all
 18 relevant offices and activities at the Department, including
 19 the Office of Science, the Office of Energy Efficiency and
 20 Renewable Energy, the Office of Nuclear Energy, the Of-
 21 fice of Fossil Energy, the Office of Electricity, the Office
 22 of Cybersecurity, Energy Security, and Emergency Re-
 23 sponse, the Advanced Research Projects Agency—Energy,
 24 the Office of Environmental Management, the Office of
 25 Environment, Health, Safety and Security, the National

1 Nuclear Security Administration, the Artificial Intel-
2 ligence Technology Office, the UAS Research and Engi-
3 neering Center, and any other relevant office or activity
4 as determined by the Secretary.

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

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

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

16 (3) provide research experiences and training
17 for undergraduate and graduate students in un-
18 manned and counter-UAS systems research and de-
19 velopment, including in the fields of—

20 (A) artificial intelligence and machine
21 learning;

22 (B) applied mathematics and algorithm de-
23 velopment;

24 (C) advanced imaging, sensing, and detec-
25 tion technologies;

1 (D) materials science and engineering; and

2 (E) advanced energy technologies and pro-
3 pulsion approaches;

4 (4) establish a robust data management strat-
5 egy that ensures digital access and machine-read-
6 ability; that promotes findability, interoperability,
7 analysis- and decision-readiness and reusability; and
8 ensures applicable scientific data are managed for
9 wide use by Federal, State, Tribal, and local govern-
10 ments, academia and the public; and

11 (5) support one or more Institutes as described
12 in section 201(a) of this Act for the purpose of ad-
13 vancing the fields of unmanned aircraft systems and
14 the mission of the Department.

15 (c) RESEARCH AREAS.—In carrying out the program
16 under subsection (a), the Secretary shall award financial
17 assistance to eligible entities to carry out research, devel-
18 opment, and demonstration projects over a range of sub-
19 ject areas including—

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

22 (A) advanced sensor technologies and proc-
23 esses, including—

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

1 thermographic, and visible imaging capa-
2 bilities;

3 (ii) nonoptical electromagnetic capa-
4 bilities, including radar and radiofrequency
5 capabilities;

6 (iii) acoustic capabilities, including ul-
7 trasonic capabilities; and

8 (iv) radiation detection, gravimetric,
9 hyperspectral or other measurement mo-
10 dalities;

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

14 (C) advanced technologies for secure au-
15 tonomous operation, including edge computing
16 and artificial intelligence;

17 (D) power electronics and wireless charg-
18 ing systems;

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

21 (F) scalability of unmanned aircraft sys-
22 tems for increased payload capacity;

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

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

3 (H) strategies and technologies for inte-
4 grated cybersecurity considerations;

5 (I) strategies and technologies for im-
6 proved endurance, including lightweight long
7 duration fuels, batteries, and fuel cells;

8 (J) open architectures and advanced algo-
9 rithms to enable multi-sensor fusion and track-
10 ing of unmanned aircraft systems; and

11 (K) swarm and cooperative drone data col-
12 lection and operation, and integration of drone
13 control systems with dynamic sampling and
14 real-time digital twin simulations; and

15 (2) approaches for leveraging unmanned air-
16 craft systems for diverse applications, which may in-
17 clude—

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

22 (B) field testing and monitoring of energy
23 systems, such as onshore and offshore wind en-
24 ergy, fossil energy, solar energy, marine energy,
25 nuclear energy, and hydropower systems;

1 (C) damage assessment of the electric grid
2 and energy infrastructure following physical
3 events such as wildland fires, including pre-
4 scribed burns containment and emissions meas-
5 urements, potential health and safety effects
6 from contaminant releases and dispersals, and
7 real-time analysis of impacted assets;

8 (D) leak detection of greenhouse gases re-
9 lated to energy production, including methane
10 leak detection;

11 (E) agriculture and aquaculture applica-
12 tions;

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

17 (G) assistance in environmental manage-
18 ment and cleanup activities;

19 (H) assistance in Department infrastruc-
20 ture management at National Laboratories and
21 other relevant Department sites;

22 (I) intrusion detection and facility moni-
23 toring for physical security applications; and

1 (J) asset extraction of building envelope
2 features and characteristics for rapid energy
3 modeling purposes.

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

9 (e) FACILITY USE.—In carrying out the program
10 under subsection (a), the Secretary shall make available
11 high-performance computing infrastructure and other rel-
12 evant research facilities and test beds at the National Lab-
13 oratories.

14 (f) INTERAGENCY COORDINATION AND NONDUPLICA-
15 TION.—In carrying out the program under subsection (a),
16 the Secretary shall coordinate with the heads of other Fed-
17 eral departments and agencies to avoid duplication of re-
18 search and other activities and to ensure that the activities
19 carried out under this program are complementary to
20 those currently being undertaken by other agencies.

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

24 (1) \$50,000,000 for fiscal year 2023;

25 (2) \$52,500,000 for fiscal year 2024;

1 (3) \$55,125,000 for fiscal year 2025;

2 (4) \$57,881,775 for fiscal year 2026; and

3 (5) \$60,775,863 for fiscal year 2027.

4 (h) DEFINITIONS.—In this title:

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

7 (2) ELIGIBLE ENTITIES.—The term “eligible
8 entity” means—

9 (A) an institution of higher education;

10 (B) a National Laboratory;

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

13 (D) a nonprofit research organization;

14 (E) a private sector entity; or

15 (F) a consortium of 2 or more entities de-
16 scribed in any of subparagraphs (A) through
17 (E).

18 (3) SECRETARY.—The term “Secretary” means
19 the Secretary of Energy.

1 **TITLE VII—DEPARTMENT OF**
2 **HOMELAND SECURITY AC-**
3 **TIVITIES**

4 **SEC. 701. DEPARTMENT OF HOMELAND SECURITY ACTIVI-**
5 **TIES.**

6 (a) IN GENERAL.—As part of the Initiative, the Sec-
7 retary, acting through the Under Secretary for Science
8 and Technology, shall—

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

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

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

17 (C) safety of unmanned aircraft systems;
18 and

19 (D) testing and evaluation of unmanned
20 aircraft systems and counter-UAS systems ca-
21 pabilities, performance systems engineering,
22 and operational analysis;

23 (2) coordinate with all relevant offices and pro-
24 grams at the Department, including the Cybersecu-
25 rity and Infrastructure Security Agency, U.S. Cus-

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

6 (3) produce curated, standardized, representa-
7 tive, secure, and privacy protected data sets for un-
8 manned aircraft systems and counter-UAS systems
9 research, development, archiving, and use,
10 prioritizing data for high-value, high-risk research;

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

15 (5) enter into and perform such contracts, in-
16 cluding cooperative research and development ar-
17 rangements and grants and cooperative agreements
18 or other transactions, as may be necessary in the
19 conduct of the work of the Department and on such
20 terms as the Secretary considers appropriate, in fur-
21 therance of the purposes of this Act.

22 (b) COUNTER-UAS CENTER OF EXCELLENCE.—The
23 Secretary shall establish a center of excellence to carry out
24 research and development that advances counter-UAS sys-
25 tems capabilities.

(1) SELECTION OF HOST INSTITUTION.—

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

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

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

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

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

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

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

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

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

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

1 percent of the costs of establishing and operating
2 the center of excellence and related research activi-
3 ties carried out by the grant recipient.

4 (4) AUTHORIZATION OF APPROPRIATIONS.—

5 (A) FISCAL YEAR 2023.—There is author-
6 ized to be appropriated to the Secretary
7 \$10,000,000 for fiscal year 2023 for making
8 awards under this subsection.

9 (B) FISCAL YEARS 2024 THROUGH 2027.—

10 There are authorized to be appropriated to the
11 Secretary \$5,000,000 in each of fiscal years
12 2024 through 2027 for making awards under
13 this subsection.

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

19 (c) INTERAGENCY COORDINATION.—In carrying out
20 the activities under subsection (a), the Secretary shall co-
21 ordinate with the heads of other Federal departments and
22 agencies to avoid duplication of research and other activi-
23 ties and to ensure that the activities carried out under this
24 program are complimentary to those currently being un-
25 dertaken by other agencies.

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

4 (1) \$30,000,000 for fiscal year 2023;

5 (2) \$31,500,000 for fiscal year 2024;

6 (3) \$33,075,000 for fiscal year 2025;

7 (4) \$34,728,750 for fiscal year 2026; and

8 (5) \$36,465,187 for fiscal year 2027.

9 (e) DEFINITIONS.—In this title:

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

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

14 **TITLE VIII—NATIONAL OCEANIC**
15 **AND ATMOSPHERIC ADMINIS-**
16 **TRATION ACTIVITIES**

17 **SEC. 801. NATIONAL OCEANIC AND ATMOSPHERIC ADMIN-**
18 **ISTRATION RESEARCH AND DEVELOPMENT.**

19 (a) IN GENERAL.—The Administrator shall carry out
20 and support research, development, and demonstration ac-
21 tivities to advance unmanned aircraft systems and un-
22 manned maritime systems, technologies, and capabilities,
23 and to enhance the deployment of, and data collected by,
24 unmanned aircraft systems and unmanned maritime sys-
25 tems relevant to the mission of the Administration, incor-

1 porate such data into operations, and ensure data are
2 managed, stewarded and archived appropriately. In car-
3 rying out this program, the Administrator shall coordinate
4 across all relevant offices and programs at the Administra-
5 tion, including the Office of Oceanic and Atmospheric Re-
6 search, National Environmental Satellite, Data, and Infor-
7 mation Service, National Marine Fisheries Service, Na-
8 tional Ocean Service, National Weather Service, and the
9 Office of Marine and Aviation Operations.

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

12 (1) test, evaluate, and demonstrate the utility
13 of unmanned aircraft systems and unmanned mari-
14 time systems technologies for the Administration;

15 (2) support Administration activities and Coop-
16 erative Institute projects, and support and encour-
17 age Federal and State agencies, academic institu-
18 tions, nongovernmental organizations, industry rep-
19 resentatives, and others to—

20 (A) accelerate the transition of unmanned
21 systems capabilities from research to operations
22 and other uses and facilitate new unmanned
23 aircraft systems and unmanned maritime sys-
24 tems applications within the Administration;

1 (B) evaluate current observation strategies
2 and identify critical data gaps best suited for
3 advanced unmanned aircraft systems and un-
4 manned maritime systems;

5 (C) prioritize activities that collect or ac-
6 quire routine observations which feed forecasts
7 and models;

8 (D) test, develop, and evaluate safe sys-
9 tems capable of safely operating beyond visual
10 line of sight;

11 (E) collect or acquire measurements of at-
12 mospheric and oceanic parameters; and

13 (F) ensure the archiving, stewardship, util-
14 ity, and preservation of and public accessibility
15 to the observations collected are shared with the
16 Administration;

17 (3) provide and support research experiences
18 and training for undergraduate and graduate stu-
19 dents in unmanned aircraft systems and unmanned
20 maritime systems research, development, and oper-
21 ations relevant to the mission of the Administration,
22 and other education and training opportunities con-
23 sistent with the purpose of this Act;

24 (4) contribute to and supplement field cam-
25 paigns at the Department of Energy's Atmospheric

1 Radiation Measurement user facility in order to in-
2 corporate unmanned aircraft systems and resulting
3 data into the development of combined observational
4 and modeling elements; and

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

9 (c) RESEARCH AREAS.—In carrying out the program
10 under subsection (a), the Administrator shall award finan-
11 cial assistance to eligible entities to carry out projects on
12 the use of unmanned aircraft systems and unmanned mar-
13 itime systems to collect environmental data and monitor
14 climate impacts, including—

15 (1) severe weather forecasts and damage assess-
16 ments;

17 (2) rapid flood mapping;

18 (3) real-time hurricane data, including close-to-
19 surface and low altitude meteorological measure-
20 ments;

21 (4) enhanced atmospheric monitoring and sam-
22 pling, including physical and chemical measurements
23 in the atmospheric boundary layer;

24 (5) marine mammal detection and monitoring;

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

3 (7) coastal restoration and habitation moni-
4 toring, including detection and monitoring of marine
5 debris, oil spill, and hazardous materials;

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

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

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

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

15 (d) PRIORITY.—In carrying out the research areas in
16 subsection (c), the Administrator shall, to the maximum
17 extent practicable, prioritize activities that increase the
18 Administration’s operational use of unmanned aircraft
19 systems and unmanned maritime systems by extending the
20 range of times, location, and conditions in which observa-
21 tions can be made at lower cost. As part of these activities,
22 the Administrator may—

23 (1) enter into contracts with one or more enti-
24 ties in the commercial data sector to acquire data

1 collected by unmanned aircraft systems and un-
2 manned maritime systems; and

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

6 (e) TECHNOLOGY TRANSFER.—In carrying out the
7 program under subsection (a), and in coordination with
8 the Small Business Innovation Research program, the Ad-
9 ministrator shall support technology transfer of unmanned
10 aircraft systems and unmanned maritime systems re-
11 search by partnering with Federal agencies and industry.

12 (f) COORDINATION.—The Administrator shall coordi-
13 nate the activities authorized in this section with the ac-
14 tivities authorized in section 3 of the Commercial Engage-
15 ment Through Ocean Technology Act of 2018 (33 U.S.C.
16 4102) and engage with other Federal departments and
17 agencies, research communities, nongovernmental organi-
18 zations, and industry stakeholders through the inter-
19 agency committee established by section 103.

20 (g) SUPPORT OF INSTITUTES.—For the purposes of
21 the program in subsection (a), the Administrator may sup-
22 port relevant activities at one or more Institutes as de-
23 scribed in section 201(a) of this Act for the purpose of
24 advancing the field of unmanned aircraft systems or un-
25 manned maritime systems.

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

- 4 (1) \$15,000,000 for fiscal year 2023;
5 (2) \$15,750,000 for fiscal year 2024;
6 (3) \$16,537,500 for fiscal year 2025;
7 (4) \$17,364,375 for fiscal year 2026; and
8 (5) \$18,232,593 for fiscal year 2027.

9 (i) DEFINITIONS.—In this title:

10 (1) ADMINISTRATION.—The term “Administra-
11 tion” means the National Oceanic and Atmospheric
12 Administration.

13 (2) ELIGIBLE ENTITIES.—The term “eligible
14 entities” means—

- 15 (A) an institution of higher education;
16 (B) a National Laboratory;
17 (C) a NOAA Cooperative Institute;
18 (D) a State, local, territorial, or Tribal
19 government agency;
20 (E) a nonprofit organization;
21 (F) a private sector entity; or
22 (G) a consortium of 2 or more entities de-
23 scribed in subparagraphs (A) through (F).

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

4 (4) UNMANNED MARITIME SYSTEMS.—The term
5 “unmanned maritime systems” has the meaning
6 given in section 2 of the Commercial Engagement
7 Through Ocean Technology Act of 2018 (33 U.S.C.
8 4101).

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

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

13 (a) IN GENERAL.—As part of the Initiative, the Ad-
14 ministrator, in coordination with the Administrator of the
15 National Aeronautics and Space Administration and other
16 Federal agencies, shall carry out and support research, de-
17 velopment, testing, and demonstration activities to ad-
18 vance unmanned aircraft systems and to facilitate the safe
19 integration of unmanned aircraft systems into the national
20 airspace system.

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

1 (1) collisions between unmanned aircraft sys-
2 tems of various sizes, traveling at various speeds,
3 and commercial jet airliners of various sizes, trav-
4 eling at various speeds;

5 (2) collisions between unmanned aircraft sys-
6 tems of various sizes, traveling at various speeds,
7 and propeller planes of various sizes, traveling at
8 various speeds;

9 (3) collisions between unmanned aircraft sys-
10 tems of various sizes, traveling at various speeds,
11 and blimps of various sizes, traveling at various
12 speeds;

13 (4) collisions between unmanned aircraft sys-
14 tems of various sizes, traveling at various speeds,
15 and rotorcraft of various sizes, traveling at various
16 speeds; and

17 (5) collisions between unmanned aircraft sys-
18 tems and various parts of the aforementioned air-
19 craft, including—

20 (A) windshields;

21 (B) noses;

22 (C) engines;

23 (D) radomes;

24 (E) propellers; and

25 (F) wings.

1 (c) REPORT.—Not later than 1 year after the date
2 of enactment of this Act, the Administrator shall submit
3 to the Committee on Science, Space, and Technology of
4 the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report
5 summarizing the costs and results of research under sub-
6 section (b).

8 (d) STUDY.—Not later than 30 days after the enact-
9 ment of this Act, the Administrator shall commission an
10 independent study to—

11 (1) develop parameters to conduct research and
12 development for probabilistic metrics to enable the
13 identification of hazards and the assessment of risks
14 as necessary to make determinations under chapter
15 44807 of title 51, United States Code, that certain
16 unmanned aircraft systems may operate safely in the
17 national airspace system; and

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

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

1 (e) CONSIDERATION OF RESULTS.—The Adminis-
 2 trator shall consider the results of the study conducted
 3 under subsection (d) when making a determination de-
 4 scribed in subsection (d)(1).

5 (f) STUDY REPORT.—Not later than 9 months after
 6 the date of enactment of this Act, the Administrator shall
 7 submit to the Committee on Science, Space, and Tech-
 8 nology of the House of Representatives and the Committee
 9 on Commerce, Science, and Transportation of the Senate
 10 the results of the study conducted under subsection (d).

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

16 (h) SUPPORT FOR INSTITUTES.—The Administrator
 17 may support 1 or more institutes described in section
 18 201(a) for the purpose of advancing the field of unmanned
 19 aircraft systems and supporting the mission of the Admin-
 20 istration.

21 **SEC. 902. UNIVERSITY UNMANNED AIRCRAFT SYSTEMS**
 22 **CENTERS.**

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

1 erate 1 regional university unmanned aircraft system cen-
2 ter in each of the 10 Federal regions which compromise
3 the Standards Federal Regional Boundary System.

4 (b) RESPONSIBILITIES.—The responsibilities of each
5 unmanned aircraft systems center established under this
6 section shall include the conduct of advanced air mobility
7 research and research concerning safely integrating un-
8 manned aircraft systems into the national airspace system
9 and the interpretation, publication, and dissemination of
10 the results of such research. The responsibility of one such
11 center may include research on detect and avoid capabili-
12 ties.

13 (c) APPLICATION.—Any institution of higher edu-
14 cation interested in receiving a grant under this section
15 shall submit to the Administrator an application in such
16 form and containing such information as the Adminis-
17 trator may require.

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

21 (1) The regional unmanned aircraft system cen-
22 ter shall be located in a State which is representative
23 of the needs of the Federal region for improved un-
24 manned aircraft systems test facilities.

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

4 (3) 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 unmanned aircraft sys-
8 tems issues.

9 (4) The grant recipient should have an estab-
10 lished unmanned aircraft systems or related research
11 program.

12 (5) The grant recipient shall have a dem-
13 onstrated commitment to supporting ongoing un-
14 manned aircraft systems research programs.

15 (6) The grant recipient shall have demonstrated
16 ability to disseminate results of unmanned aircraft
17 systems research and educational programs through
18 a statewide or regionwide continuing education pro-
19 gram.

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

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

1 lishing and operating the regional center and related re-
2 search activities carried out by the grant recipient.

3 (f) NATIONAL ADVISORY COUNCIL.—

4 (1) ESTABLISHMENT; FUNCTIONS.—The Ad-
5 ministrator shall establish in the Administration a
6 national advisory council to coordinate the research
7 and training to be carried out by the grant recipi-
8 ents, to disseminate the results of such research, to
9 act as a clearing house between such centers and the
10 unmanned aircraft systems industry, and to review
11 and evaluate programs carried out by such centers.

12 (2) MEMBERS.—The national advisory council
13 established under this subsection shall be composed
14 of the directors of the unmanned aircraft systems
15 centers and 19 other members appointed by the Ad-
16 ministrator as follows:

17 (A) 6 officers of the Federal Aviation Ad-
18 ministration, one of whom represents the Office
19 of the Administrator, one of whom represents
20 the Unmanned Aircraft Systems Integration
21 Office, one of whom represents the Office of
22 NextGen, one of whom represents the Office of
23 Aviation Safety, one of whom represents the Of-
24 fice of Air Traffic Organization, and one of

1 whom represents the Mike Monroney Aero-
2 nautical Center.

3 (B) 5 representatives of State, local, terri-
4 torial or Tribal governments.

5 (C) 8 representatives of the unmanned air-
6 craft systems industry, including private indus-
7 try.

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

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

15 (5) AGENCY INFORMATION.—Subject to sub-
16 chapter II of chapter 5 of title 5, United States
17 Code, the council may secure directly from any de-
18 partment or agency of the United States information
19 necessary to enable it to carry out this subsection.
20 Upon request from the chairman of the council, the
21 head of such department or agency shall furnish
22 such information to the council.

23 (6) TERMINATION DATE INAPPLICABLE.—Sec-
24 tion 14 of the Federal Advisory Committee Act shall
25 not apply to the council.

1 (g) ADMINISTRATION THROUGH OFFICE OF THE AD-
2 MINISTRATOR.—Administrative responsibility for carrying
3 out this section shall be in the Office of the Administrator.

4 (h) ALLOCATION OF FUNDS.—The Administrator
5 shall allocate funds made available to carry out this sec-
6 tion equitably among Federal regions.

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

11 **SEC. 903. ALLOWANCE FOR THE PURPOSES OF RESEARCH**
12 **AND DEVELOPMENT.**

13 Except as necessary to support enforcement action
14 under applicable provisions of law against persons oper-
15 ating unmanned aircraft in a manner that endangers the
16 safety of the national airspace system, and notwith-
17 standing any other provision of law relating to the incorpo-
18 ration of unmanned aircraft systems into Administration
19 plans and policies, the Administrator may not promulgate
20 any rule or regulation regarding the operation of an un-
21 manned aircraft system—

22 (1) that is flown strictly for research and devel-
23 opment use;

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

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

4 (4) with respect to which, in any case in which
5 the unmanned aircraft system is flown within 5
6 miles of an airport, the operator of the aircraft pro-
7 vides the airport operator and the airport air traffic
8 control tower (when an air traffic facility is located
9 at the airport) with prior notice of the operation, in-
10 cluding by establishing a mutually agreed upon oper-
11 ating procedure in cases where such unmanned air-
12 craft system is flown from a permanent location
13 within 5 miles of an airport.

14 **SEC. 904. AUTHORIZATION OF APPROPRIATIONS.**

15 (a) FEDERAL AVIATION ADMINISTRATION RESEARCH
16 AND DEVELOPMENT FUNDING.—There are authorized to
17 be appropriated to the Administration to carry out section
18 901—

- 19 (1) \$20,000,000 for fiscal year 2023;
20 (2) \$21,000,000 for fiscal year 2024;
21 (3) \$22,050,000 for fiscal year 2025;
22 (4) \$23,152,500 for fiscal year 2026; and
23 (5) \$24,310,125 for fiscal year 2027.

1 (b) UNIVERSITY UNMANNED AIRCRAFT SYSTEMS
 2 CENTER FUNDING.—There are authorized to be appro-
 3 priated to the Administration to carry out section 902—

4 (1) \$100,000,000 for fiscal year 2023;

5 (2) \$105,000,000 for fiscal year 2024;

6 (3) \$110,250,000 for fiscal year 2025;

7 (4) \$115,762,500 for fiscal year 2026; and

8 (5) \$121,550,625 for fiscal year 2027.

9 **SEC. 905. DEFINITIONS.**

10 In this title:

11 (1) ADMINISTRATOR.—The term “Adminis-
 12 trator” means the Administrator of the Federal
 13 Aviation Administration.

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

16 **TITLE X—LIMITATION**

17 **SEC. 1001. LIMITATION.**

18 (a) IN GENERAL.—Except as otherwise provided in
 19 this section, none of the funds authorized to be appro-
 20 priated by this Act may be used for the purchase, acquisi-
 21 tion, or operation of unmanned aircraft systems—

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

1 (2) produced or assembled by entities owned,
2 controlled by, or subject to the jurisdiction or direc-
3 tion of the government of, a foreign country of con-
4 cern.

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

10 (c) WAIVER.—The Secretary of Commerce may waive
11 the limitation in subsection (a) if the Secretary deter-
12 mines, in consultation with the Director of National Intel-
13 ligence, that such waiver is in the national security inter-
14 est of the United States.

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

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

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

24 (2) any country that the Secretary of Com-
25 merce, in consultation with the Secretary of Defense

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

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