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118TH CONGRESS
2^D SESSION

H. R. 3560

[Report No. 118–630, Part I]

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

IN THE HOUSE OF REPRESENTATIVES

MAY 22, 2023

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

AUGUST 13, 2024

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

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

AUGUST 13, 2024

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

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

A BILL

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

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 “Na-*
 5 *tional Drone and Advanced Air Mobility Research and De-*
 6 *velopment Act”.*

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

Sec. 1. Short title; table of contents.

Sec. 2. Findings.

Sec. 3. Definitions.

Sec. 4. Purposes.

TITLE I—INTERAGENCY ACTIVITIES

Sec. 101. Interagency working group.

Sec. 102. Strategic research plan.

Sec. 103. Counter-UAS research plan.

Sec. 104. National drone technology center.

Sec. 105. GAO study on foreign drones.

**TITLE II—NATIONAL DRONE AND ADVANCED AIR MOBILITY
RESEARCH INSTITUTES**

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

**TITLE III—NATIONAL INSTITUTE OF STANDARDS AND
TECHNOLOGY ACTIVITIES**

Sec. 301. National Institute of Standards and Technology activities.

Sec. 302. National Institute of Standards and Technology manufacturing activi-
ties.

TITLE IV—NATIONAL SCIENCE FOUNDATION ACTIVITIES

Sec. 401. National Science Foundation activities.

**TITLE V—NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
ACTIVITIES**

Sec. 501. National Aeronautics and Space Administration activities.

Sec. 502. National student unmanned aircraft systems competition program.

TITLE VI—DEPARTMENT OF ENERGY ACTIVITIES

Sec. 601. Department of Energy research activities.

*TITLE VII—DEPARTMENT OF HOMELAND SECURITY ACTIVITIES**Sec. 701. Department of Homeland Security activities.**TITLE VIII—NATIONAL OCEANIC AND ATMOSPHERIC
ADMINISTRATION ACTIVITIES**Sec. 801. National Oceanic and Atmospheric Administration research and development.**TITLE IX—FEDERAL AVIATION ADMINISTRATION ACTIVITIES**Sec. 901. Federal Aviation Administration research and development.**Sec. 902. Partnerships for research, development, demonstration, and testing.**Sec. 903. UAS test ranges and operations.**Sec. 904. Authorization of appropriations.**Sec. 905. Definitions.**TITLE X—LIMITATION**Sec. 1001. Limitation.***1 SEC. 2. FINDINGS.****2 Congress finds the following:****3 (1) Unmanned aircraft systems have the poten-**
4 tial to change and transform sectors of the United
5 States economy.**6 (2) Advanced air mobility aims to transform the**
7 way people and goods are transported through new
8 capabilities and applications.**9 (3) Current uses and applications of unmanned**
10 aircraft systems and advanced air mobility include
11 agriculture, transportation, law enforcement, public
12 safety, disaster evaluation and response, fire detec-
13 tion, border security, weather forecasting, construc-
14 tion, utility monitoring, and many other uses and
15 applications.

1 (4) *Research on and development, demonstration,*
2 *testing, and evaluation of counter-UAS systems and*
3 *detection systems activities are critical to fully under-*
4 *stand the capabilities of and threats posed by un-*
5 *manned aircraft systems.*

6 (5) *Unmanned aircraft systems and advanced*
7 *air mobility systems are subject to safety, privacy, cy-*
8 *bersecurity, and supply chain risks, particularly as*
9 *most unmanned aircraft systems in the United States*
10 *are manufactured or assembled from parts manufac-*
11 *tured in foreign countries.*

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

19 (7) *The Federal Government has an important*
20 *role in advancing research, development, voluntary*
21 *consensus technical standards, and education activi-*
22 *ties in advanced air mobility and unmanned aircraft*
23 *systems technologies through coordination and col-*
24 *laboration between and among State, local, Federal,*

1 *and Tribal governments, academia, the private sector,*
2 *and labor organizations.*

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

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

14 **SEC. 3. DEFINITIONS.**

15 *In this Act, the following definitions apply:*

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

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

1 (3) *COUNTER-UAS SYSTEM.*—The term “counter-
2 *UAS system*” has the meaning given such term in sec-
3 *tion 44801(5) of title 49, United States Code.*

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

7 (5) *INSTITUTION OF HIGHER EDUCATION.*—The
8 *term “institution of higher education” has the mean-*
9 *ing given the term in section 101 of the Higher Edu-*
10 *cation Act of 1965 (20 U.S.C. 1001)*

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

17 (7) *LABOR ORGANIZATION.*—The term “labor or-
18 *ganization” has the meaning given the term in sec-*
19 *tion 2(5) of the National Labor Relations Act (29*
20 *U.S.C. 152(5)), except that such term shall also in-*
21 *clude—*

22 (A) *any organization composed of labor or-*
23 *ganizations, such as a labor union federation or*
24 *a State or municipal labor body; and*

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

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

9 (ii) individuals employed by persons
10 subject to the Railway Labor Act (45 U.S.C.
11 151 et seq.); or

12 (iii) individuals employed as agricul-
13 tural laborers.

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

18 (9) TECHNICAL STANDARD.—The term “technical
19 standard” has the meaning given such term in section
20 12(d)(5) of the National Technology Transfer and Ad-
21 vancement Act of 1995 (15 U.S.C. 272 note).

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

1 **SEC. 4. PURPOSES.**

2 *The purpose of this Act is to ensure United States lead-*
3 *ership in advanced air mobility and unmanned aircraft*
4 *systems, and maximize benefits and mitigate risks of such*
5 *systems by—*

6 (1) *supporting research, development, demonstra-*
7 *tion, testing, and transition to operations of secure*
8 *advanced air mobility systems and unmanned air-*
9 *craft systems, including research and development to*
10 *enable integration of such systems into the National*
11 *Airspace System;*

12 (2) *improving the interagency planning and co-*
13 *ordination of Federal research and development of ad-*
14 *vanced air mobility and unmanned aircraft systems*
15 *and maximizing the effectiveness of the Federal Gov-*
16 *ernment's advanced air mobility and next generation*
17 *unmanned aircraft systems research and development*
18 *programs;*

19 (3) *promoting domestic manufacturing and do-*
20 *mestic supply chains for unmanned aircraft systems*
21 *and mitigating supply chain risks;*

22 (4) *supporting activities to mitigate risks to*
23 *public safety and national and homeland security, in-*
24 *cluding through response to disasters;*

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

1 *mobility and unmanned aircraft systems across sec-*
2 *tors of the economy, including through support for*
3 *curriculum development and research opportunities*
4 *and through partnerships that may include labor or-*
5 *ganizations and labor-management workforce train-*
6 *ing organizations;*

7 *(6) supporting research, development, demonstra-*
8 *tion, and testing of civilian applications of un-*
9 *manned aerial systems, including improved safety*
10 *and sustainability of ground transportation, environ-*
11 *mental monitoring, and disaster response;*

12 *(7) promoting research and development collabo-*
13 *ration among State, local, Tribal, and Federal gov-*
14 *ernments, National Laboratories, industry, labor or-*
15 *ganizations, and academic institutions;*

16 *(8) promoting the development of voluntary con-*
17 *sensus technical standards and best practices for ad-*
18 *vanced air mobility and unmanned aircraft systems;*
19 *and*

20 *(9) applying lessons learned from unmanned*
21 *aircraft systems research, development, demonstra-*
22 *tion, and testing to advanced air mobility systems.*

1 **TITLE I—INTERAGENCY**
2 **ACTIVITIES**

3 **SEC. 101. INTERAGENCY WORKING GROUP.**

4 (a) *DESIGNATION.*—

5 (1) *IN GENERAL.*—*The National Science and*
6 *Technology Council shall establish or designate an*
7 *interagency working group on advanced air mobility*
8 *and unmanned aircraft systems to coordinate Federal*
9 *research, development, deployment, testing, and edu-*
10 *cation activities to enable advanced air mobility and*
11 *unmanned aircraft systems.*

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

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

22 (1) *develop the strategic research plan to guide*
23 *Federal research to enable advanced air mobility and*
24 *unmanned aircraft systems and oversee implementa-*
25 *tion of the plan;*

1 (2) oversee the development of—

2 (A) an assessment of the current state of
3 United States competitiveness and leadership in
4 advanced air mobility and unmanned aircraft
5 systems, including the scope and scale of United
6 States investments in relevant research and de-
7 velopment; and

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

11 (3) facilitate communication and outreach op-
12 portunities with academia, industry, professional so-
13 cieties, State, local, Tribal, and Federal governments,
14 and other stakeholders;

15 (4) facilitate partnerships to leverage knowledge
16 and resources from industry, State, local, Tribal, and
17 Federal governments, National Laboratories, Un-
18 manned Aircraft Systems Test Sites, academic insti-
19 tutions, and others;

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

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

3 *(6) coordinate with the National Security Coun-*
4 *cil and other authorized agency coordinating bodies*
5 *on the assessment of risks posed by the existing Fed-*
6 *eral unmanned aircraft systems fleet and outlining*
7 *potential steps to mitigate these risks.*

8 *(c) REPORT TO CONGRESS.—*

9 *(1) INITIAL REPORT.—Not later than 1 year*
10 *after the date of enactment of this Act, the inter-*
11 *agency working group shall transmit a report to the*
12 *Committee on Science, Space, and Technology of the*
13 *House of Representatives and the Committee on Com-*
14 *merce, Science, and Transportation of the Senate*
15 *that—*

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

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

23 *(2) BIENNIAL REPORT.—Not later than 2 years*
24 *after the delivery of the initial report under para-*
25 *graph (1) and every 2 years thereafter until December*

1 31, 2033, the interagency working group shall trans-
2 mit a report to the Committee on Science, Space, and
3 Technology of the House of Representatives and the
4 Committee on Commerce, Science, and Transpor-
5 tation of the Senate that includes—

6 (A) a summary of federally funded ad-
7 vanced air mobility and unmanned aircraft sys-
8 tems research, development, deployment, and
9 testing activities, including the budget for each of
10 these activities; and

11 (B) an analysis of the progress made to-
12 wards achieving the goals and priorities for the
13 interagency research plan developed by the inter-
14 agency work group under sections 102 and 103.

15 (3) *STRATEGIC RESEARCH PLAN.*—Not later than
16 2 years after the date of enactment of this Act, the
17 interagency working group shall transmit the stra-
18 tegic research plan developed under section 102 to the
19 Committee on Science, Space, and Technology of the
20 House of Representatives and the Committee on Com-
21 merce, Science, and Transportation of the Senate.

22 **SEC. 102. STRATEGIC RESEARCH PLAN.**

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

1 *priate, a strategic plan for Federal research, development,*
2 *deployment, and testing of advanced air mobility systems*
3 *and unmanned aircraft systems. In developing the plan, the*
4 *interagency working group shall consider and use informa-*
5 *tion, reports, and studies on advanced air mobility and un-*
6 *manned aircraft systems that have identified research, de-*
7 *velopment, deployment, and testing needed, and rec-*
8 *ommendations made by the National Academies of Sciences,*
9 *Engineering, and Medicine in the review of the plan under*
10 *subsection (c).*

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

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

16 *(2) establish, for the 10-year period beginning in*
17 *the year the plan is submitted, the goals and prior-*
18 *ities for Federal research, development, deployment,*
19 *and testing which will—*

20 *(A) support the development of advanced*
21 *air mobility technologies and the development of*
22 *an advanced air mobility research, innovation,*
23 *and manufacturing ecosystem;*

24 *(B) provide sustained, consistent, and co-*
25 *ordinated support for advanced air mobility and*

1 *unmanned aircraft systems research, develop-*
2 *ment, and demonstration, including through*
3 *grants, cooperative agreements, testbeds, and test-*
4 *ing facilities;*

5 *(C) apply lessons learned from unmanned*
6 *aircraft systems research, development, dem-*
7 *onstration, and testing to advanced air mobility*
8 *systems;*

9 *(D) support the development of voluntary*
10 *consensus technical standards and best practices*
11 *for the development and use of advanced air mo-*
12 *bility and unmanned aircraft systems;*

13 *(E) support education and training activi-*
14 *ties at all levels to prepare the United States*
15 *workforce to use and interact with advanced air*
16 *mobility systems and unmanned aircraft sys-*
17 *tems;*

18 *(F) support partnerships to leverage knowl-*
19 *edge and resources from industry, State, local,*
20 *Tribal, and Federal governments, National Lab-*
21 *oratories, Unmanned Aircraft Systems Test*
22 *Ranges, academic institutions, labor organiza-*
23 *tions, and others to advance research activities;*

24 *(G) leverage existing Federal investments;*
25 *and*

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

3 (3) support research and other activities on the
4 impacts of advanced air mobility and unmanned air-
5 craft systems on national security, safety, economic,
6 legal, workforce, and other appropriate societal issues;
7 (4) reduce barriers to transferring research find-
8 ings, capabilities, and new technologies related to ad-
9 vanced air mobility and unmanned aircraft systems
10 into operation for the benefit of society and United
11 States competitiveness;

12 (5) in consultation with the Council of Economic
13 Advisers, measure and track the contributions of un-
14 manned aircraft systems and advanced air mobility
15 to United States economic growth and other societal
16 indicators; and

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

21 (c) NATIONAL ACADEMIES OF SCIENCES, ENGINEER-
22 ING, AND MEDICINE EVALUATION.—The Administrator
23 shall enter into an agreement with the National Academies
24 of Sciences, Engineering, and Medicine to review the plan
25 every 5 years.

1 (d) *PUBLIC PARTICIPATION.*—*In developing the plan,*
2 *the interagency working group shall consult with represent-*
3 *atives of stakeholder groups, which may include academic,*
4 *State, industry, and labor organizations. Not later than 90*
5 *days before the plan, or any revision thereof, is submitted*
6 *to Congress, the plan shall be published in the Federal Reg-*
7 *ister for a public comment period of not less than 60 days.*

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

9 (a) *IN GENERAL.*—*Not later than 1 year after the date*
10 *of enactment of this Act, the interagency working group*
11 *shall develop and periodically update, as appropriate, a*
12 *strategic plan for Federal research, development, evalua-*
13 *tion, and testing of counter-UAS systems and detection sys-*
14 *tems, as consistent with counter-UAS systems legal authori-*
15 *ties.*

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

17 (1) *determine and prioritize areas of counter-*
18 *UAS systems and detection systems research, develop-*
19 *ment, evaluation, and testing requiring Federal Gov-*
20 *ernment leadership and investment;*

21 (2) *establish, for the 10-year period beginning in*
22 *the year the plan is submitted, the goals and prior-*
23 *ities for Federal research, development, evaluation,*
24 *and testing which will—*

1 (A) support the development of counter-UAS
2 systems and detection systems and the develop-
3 ment of a counter-UAS research, innovation, and
4 manufacturing ecosystem;

5 (B) provide sustained, consistent, and co-
6 ordinated support for counter-UAS research, de-
7 velopment, evaluation, and testing, including
8 through grants, cooperative agreements, testbeds,
9 and testing facilities;

10 (D) support education and training activi-
11 ties to prepare the United States workforce to use
12 and interact with counter-UAS systems and de-
13 tection systems;

14 (E) support partnerships to leverage knowl-
15 edge and resources from industry, State, local,
16 Tribal, and Federal governments, National Lab-
17 oratories, Counter-UAS Test Ranges, academic
18 institutions, and others to advance research ac-
19 tivities; and

20 (F) leverage existing Federal investments;

21 (3) support research and other activities on the
22 impacts of counter-UAS systems and detection sys-
23 tems; and

24 (4) identify relevant programs and make rec-
25 ommendations for the coordination of relevant activi-

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

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

4 *(a) ESTABLISHMENT.—Subject to the availability of*
5 *appropriations for such purpose, the Secretary of Com-*
6 *merce, in collaboration with the Secretary of Defense, the*
7 *Secretary of Transportation, and the heads of other Federal*
8 *agencies, as appropriate, may establish a national drone*
9 *technology center to conduct research and development of*
10 *unmanned aircraft systems to strengthen the economic com-*
11 *petitiveness and security of the domestic supply chain. Such*
12 *center shall be operated as a public-private sector consor-*
13 *tium with participation from the private sector, which may*
14 *include employers and labor organizations, and the Na-*
15 *tional Institute of Standards and Technology.*

16 *(b) FUNCTIONS.—The functions of the center estab-*
17 *lished under subsection (a) shall be to conduct research and*
18 *development related to unmanned aircraft systems manu-*
19 *facturing, design and components, and prototyping that*
20 *strengthens the entire domestic ecosystem and incorporates*
21 *the upstream participation of workers, which may include*
22 *partnership with labor organizations. The center shall place*
23 *emphasis on the following:*

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

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

3 (3) *Virtualization and automation of mainte-*
4 *nance of unmanned aircraft systems machinery.*

5 (4) *Metrology for security and supply chain*
6 *verification.*

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

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

11 (a) *STUDY.*—*The Comptroller General shall conduct a*
12 *study on the use of foreign-made unmanned aircraft sys-*
13 *tems in the Federal Government unmanned aircraft fleet.*

14 (b) *ELEMENTS.*—*The study under subsection (a) shall*
15 *include an assessment of the following:*

16 (1) *The size of the Federal unmanned aircraft*
17 *fleet and the extent to which any unmanned aircraft*
18 *systems have been procured from a covered foreign en-*
19 *tity on the list maintained in Supplement No. 4 to*
20 *part 744 of title 15, Code of Federal Regulations.*

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

23 (3) *Policies and practices governing the procure-*
24 *ment of unmanned aircraft systems from covered for-*
25 *oreign entities.*

1 (4) *The availability of unmanned aircraft sys-*
2 *tems from any domestic sources for government use.*

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

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

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

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

15 (a) *IN GENERAL.—The Administrator of the National*
16 *Aeronautics and Space Administration may establish a*
17 *program to award financial assistance for the planning, es-*
18 *tablishment, and support of a network of Institutes (as de-*
19 *scribed in subsection (b)(2)) in accordance with this section.*

20 (b) *FINANCIAL ASSISTANCE TO ESTABLISH AND SUP-*
21 *PORT NATIONAL DRONE AND ADVANCED AIR MOBILITY RE-*
22 *SEARCH INSTITUTES.—*

23 (1) *IN GENERAL.—The Director of the National*
24 *Institute of Standards and Technology, the Director*
25 *of the National Science Foundation, the Adminis-*

1 *trator of the National Aeronautics and Space Admin-*
2 *istration, and any other agency head may award fi-*
3 *nancial assistance, to an eligible entity, or consortia*
4 *thereof, as determined by an agency head, to establish*
5 *and support one or more Institutes.*

6 (2) *DRONE AND ADVANCED AIR MOBILITY INSTI-*
7 *TUTES.—An Institute described in this subsection is*
8 *an unmanned aircraft systems and advanced air mo-*
9 *bility research institute that—*

10 (A) *may focus on—*

11 (i) *a particular economic or social sec-*
12 *tor, including education, manufacturing,*
13 *transportation, agriculture, security, en-*
14 *ergy, environment, and public safety, and*
15 *includes a component that addresses the eth-*
16 *ical, societal, safety, workforce, and security*
17 *implications relevant to the application of*
18 *advanced air mobility and unmanned air-*
19 *craft systems in that sector; or*

20 (ii) *a cross-cutting challenge for re-*
21 *search, development, testing, manufacturing,*
22 *or use of advanced air mobility and un-*
23 *manned aircraft systems;*

24 (B) *requires partnership among public and*
25 *private organizations, including, as appropriate,*

1 *Federal agencies, academic institutions, non-*
2 *profit research organizations, Federal labora-*
3 *tories, State, local, and Tribal governments, in-*
4 *dustry, labor organizations, and others (or con-*
5 *sortia thereof);*

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

11 *(D) supports and coordinates interdiscipli-*
12 *nary research and development across multiple*
13 *institutions and organizations involved in un-*
14 *manned aircraft systems research and related*
15 *disciplines, which may include physics, engineer-*
16 *ing, mathematical sciences, computer and infor-*
17 *mation science, robotics, material science, cyber-*
18 *security, and technology ethics;*

19 *(E) supports interdisciplinary education*
20 *activities at all levels, including curriculum de-*
21 *velopment, research experiences, and faculty pro-*
22 *fessional development across two-year, under-*
23 *graduates, masters, and doctoral level programs;*

24 *(F) establishes a robust data management*
25 *strategy that ensures digital access and machine-*

1 *readability; that promotes findability, interoper-*
2 *ability, analysis- and decision-readiness and*
3 *reusability; and ensures applicable scientific*
4 *data are managed for wide use by Federal,*
5 *State, Tribal, and local governments, academia,*
6 *and the public;*

7 *(G) applies lessons learned from unmanned*
8 *aircraft systems research, development, dem-*
9 *onstration, and testing to advanced air mobility*
10 *systems; and*

11 *(H) supports high quality workforce devel-*
12 *opment in advanced air mobility and unmanned*
13 *aircraft systems related disciplines in the United*
14 *States, including increasing the participation of*
15 *groups historically underrepresented in STEM,*
16 *among other goals.*

17 *(3) USE OF FUNDS.—Financial assistance*
18 *awarded under paragraph (1) may be used by an In-*
19 *stitute for—*

20 *(A) managing and making available to re-*
21 *searchers accessible, curated, standardized, se-*
22 *ecure, and privacy protected data sets from the*
23 *public and private sectors for the purposes of*
24 *training and testing advanced air mobility sys-*
25 *tems and unmanned aircraft systems and for re-*

1 *search and development using advanced air mo-*
2 *bility systems and unmanned aircraft systems;*

3 *(B) developing and managing testbeds, Un-*
4 *manned Aircraft Systems Test Ranges, for ad-*
5 *vanced air mobility or unmanned aircraft sys-*
6 *tems, including sector-specific test beds, designed*
7 *to enable users to evaluate advanced air mobility*
8 *systems and unmanned aircraft systems prior to*
9 *deployment;*

10 *(C) conducting research and education ac-*
11 *tivities involving advanced air mobility and un-*
12 *manned aircraft systems to solve challenges with*
13 *economic, scientific, and national security impli-*
14 *cations;*

15 *(D) conducting research and development*
16 *on advanced air mobility and unmanned air-*
17 *craft systems platform development and innova-*
18 *tion;*

19 *(E) providing or brokering access to com-*
20 *puting resources, networking, and data facilities*
21 *for advanced air mobility and unmanned air-*
22 *craft systems research and development relevant*
23 *to the Institute's research goals;*

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

1 *vanced air mobility systems and unmanned air-*
2 *craft systems research and development relevant*
3 *to the Institute's research goals;*

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

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

13 *(I) supporting artificial intelligence and*
14 *machine learning research related to advanced*
15 *air mobility and unmanned aircraft systems;*
16 *and*

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

22 *(4) DURATION.—*

23 *(A) INITIAL PERIODS.—An award of finan-*
24 *cial assistance under paragraph (1) shall be for*
25 *an initial period of up to 5 years, subject to Of-*

1 *Office of Management and Budget uniform guid-*
2 *ance for Federal assistance.*

3 (B) *EXTENSION.*—*An established Institute*
4 *may apply for, and the agency head may grant,*
5 *extended funding for periods of up to 5 years on*
6 *a merit-reviewed basis using the merit review*
7 *criteria of the sponsoring agency, subject to Of-*
8 *ice of Management and Budget uniform guid-*
9 *ance for Federal assistance.*

10 (5) *APPLICATION FOR FINANCIAL ASSISTANCE.*—

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

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

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

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

24 (II) *a description of how the In-*
25 *stitute will form partnerships, as ap-*

1 *appropriate, with other research institu-*
2 *tions, industry, labor organizations,*
3 *nonprofits, academic institutions, and*
4 *others to leverage expertise in advanced*
5 *air mobility and unmanned aircraft*
6 *systems and access to data;*

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

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

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

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

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

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

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

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

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

15 (7) *COLLABORATION.*—

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

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

1 *departments and agencies to avoid duplication of*
2 *research and other activities to ensure that the*
3 *activities carried out by Institutes are com-*
4 *plementary to those being undertaken by other*
5 *agencies.*

6 (C) *COORDINATING NETWORK.*—*The Admin-*
7 *istrator of the National Aeronautics and Space*
8 *Administration may establish a network of Insti-*
9 *tutes receiving financial assistance under this*
10 *subsection, to be known as the “Drone Leader-*
11 *ship Network”, to coordinate cross-cutting re-*
12 *search and other activities carried out by the In-*
13 *stitutes.*

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

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

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

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

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

13 (1) *shall support measurement science research*
14 *and development in support of best practices and vol-*
15 *untary consensus technical standards for advanced*
16 *air mobility and unmanned aircraft systems, includ-*
17 *ing for—*

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

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

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

4 (D) data management and techniques to in-
5 crease the usability of data for advanced air mo-
6 bility and unmanned aircraft systems;

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

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

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

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

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

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

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

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

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

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

17 (c) DRONE RESEARCH CHALLENGES.—

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

1 *tems technologies in order to expand upon and im-*
2 *prove emergency response operations.*

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

23 “(1) *The Director shall select unmanned aircraft*
24 *systems as an initial topic for the pilot program.*

25 “(2) *The Director may select additional topics*
26 *that the Director determines are—*

1 “(A) rapidly evolving; and
2 “(B) of high importance to the economy and
3 security of the United States.”.

4 (c) *MANUFACTURING EXTENSION PARTNERSHIP SUR-*
5 *VEY.—*

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

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

18 (A) *Familiarity and current manufacturing*
19 *work by small and mid-sized manufacturers on*
20 *advanced air mobility and unmanned aircraft*
21 *systems, including components, software, sensors,*
22 *or other technology associated with advanced air*
23 *mobility systems and unmanned aircraft sys-*
24 *tems.*

1 (B) *A list of the basic manufacturing proce-*
2 *dures that can be easily converted to conduct the*
3 *manufacturing of advanced air mobility systems*
4 *and unmanned aircraft systems projects.*

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

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

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

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

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

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

7 (4) *REPORT.*—*Not later than 60 days after com-*
8 *pleting the survey required under subsection (a), the*
9 *Director, in consultation with the Board, shall pro-*
10 *vide a report summarizing the results of the survey*
11 *to the Committee on Science, Space, and Technology*
12 *of the House of Representatives and the Committee on*
13 *Commerce, Science, and Transportation of the Senate.*

14 (d) *MANUFACTURING USA PROGRAM UPDATE.*—*Sub-*
15 *paragraph (B) of section 34(d)(1) of the National Institute*
16 *of Standards and Technology Act (15 U.S.C. 278s(d)(1))*
17 *is amended by inserting “, including unmanned aircraft*
18 *systems” after “aeronautics and advanced materials”.*

19 (e) *DEFINITION.*—*In this title, the term “Director”*
20 *means the Director of the National Institute of Standards*
21 *and Technology.*

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

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

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

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

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

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

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

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

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

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

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

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

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

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

22 (B) enabling advanced air mobility;

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

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

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

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

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

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

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

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

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

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

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

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

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

6 (8) shall support undergraduate and graduate
7 education and workforce development research and re-
8 lated activities related to advanced air mobility, un-
9 manned aircraft systems, and related technologies,
10 which may include—

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

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

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

24 (D) ensuring that students pursuing mas-
25 ter's degrees and doctoral degrees in fields relat-

1 *ing to advanced air mobility and unmanned air-*
2 *craft systems are considered as applicants for*
3 *scholarships and graduate fellowships under the*
4 *Graduate Research Fellowship Program under*
5 *section 10 of the National Science Foundation*
6 *Act of 1950 (42 U.S.C. 1869);*

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

18 *(A) expanding educational resources to ad-*
19 *dress current workforce demands in advanced air*
20 *mobility and unmanned aircraft system applica-*
21 *tions and technologies;*

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

1 *bility and unmanned aircraft system applica-*
2 *tions and technologies;*

3 (C) *engaging the skilled technical workforce*
4 *community in advanced air mobility and un-*
5 *manned aircraft system applications and tech-*
6 *nologies; and*

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

14 (1) *sense and avoid capabilities;*

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

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

21 (4) *human systems integration; and*

22 (5) *hazardous weather condition avoidance.*

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

1 ational flight data derived from these cooperative agree-
2 ments shall be made available, in appropriate and usable
3 formats, to the Administration and the Federal Aviation
4 Administration for the development of regulatory stand-
5 ards.”.

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

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

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

15 (f) *ASSESSMENT.*—*The Administrator shall coordinate*
16 *with the Administrator of the Federal Aviation Administra-*
17 *tion to conduct an assessment to identify metrics, estimated*
18 *milestone dates, and performance measures necessary to*
19 *safely integrate unmanned aircraft systems and advanced*
20 *air mobility systems into the National Airspace System.*

21 (g) *REPORT.*—*Not later than 120 days after the com-*
22 *pletion of the assessment in subsection (f), the Adminis-*
23 *trator shall submit a report on the progress towards meeting*
24 *the metrics, milestone dates, and performance measures to*
25 *the Committee on Science, Space, and Technology of the*

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

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

5 (a) *IN GENERAL.*—*The Administrator shall lead a na-*
6 *tional pilot program to carry out unmanned aircraft sys-*
7 *tems technology competitions for students at the high school*
8 *and undergraduate level (in this section referred to as “com-*
9 *petitions”)* in which students shall compete to design, cre-
10 ate, and demonstrate an unmanned aircraft system.

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

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

20 (1) *identifies a plan for engaging eligible institu-*
21 *tions from diverse geographic areas, including poor,*
22 *rural, and Tribal communities; and*

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

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

4 (1) *awarding grants to institutions of higher*
5 *education or nonprofit organizations (or a consortium*
6 *of such institutions or organization) on a merit-re-*
7 *viewed, competitive basis to host individual competi-*
8 *tions;*

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

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

17 (4) *ensuring awardees are supporting the activi-*
18 *ties laid out in subsection (f);*

19 (5) *conducting performance evaluations of com-*
20 *petitions, including data collection on—*

21 (A) *the number of students engaged;*

22 (B) *geographic and institutional diversity*
23 *of participating schools and institutions of high-*
24 *er education; and*

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

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

8 (f) *PERMITTED ACTIVITIES.—In carrying out the pilot*
9 *program in subsection (a), the competition administrator*
10 *shall ensure competitions occurring at both the high school*
11 *and undergraduate levels—*

12 (1) *allow students to design, construct, and dem-*
13 *onstrate an unmanned aircraft system;*

14 (2) *allow students to compete with other teams*
15 *in the performance of the constructed unmanned air-*
16 *craft system;*

17 (3) *connect to relevant missions and Center ac-*
18 *tivities of the Administration;*

19 (4) *connect relevant STEM curriculum to the de-*
20 *sign, construction, and demonstration of unmanned*
21 *aircraft systems;*

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

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

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

7 (g) *REPORT TO CONGRESS.*—No later than 6 months
8 following the end of the pilot program, the Administrator
9 shall transmit to the Committee on Science, Space, and
10 Technology and the Committee on Commerce, Science, and
11 Transportation of the Senate, a report describing the ac-
12 complishments, lessons learned, any challenges in the imple-
13 mentation of the pilot program, and recommendations for
14 whether to continue the pilot program.

15 (h) *AUTHORIZATION OF APPROPRIATIONS.*—There is
16 authorized to be appropriated to the Administrator
17 \$6,000,000 in each of fiscal years 2024 through 2028 to
18 carry out the pilot program in this section. Of the funds
19 authorized—

20 (1) \$1,000,000 per year shall be for the pilot pro-
21 gram competition administrator in subsection (b);
22 and

23 (2) \$5,000,000 per year shall be awarded for
24 grants to carry out competitions under the pilot pro-
25 gram in subsection (d).

1 (i) *DEFINITIONS.*—*In this title:*

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

5 (2) *ADMINISTRATOR.*—*The term “Adminis-*
6 *trator” means the Administrator of the National Aer-*
7 *onautics and Space Administration.*

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

10 **SEC. 601. DEPARTMENT OF ENERGY RESEARCH ACTIVITIES.**

11 (a) *IN GENERAL.*—*Consistent with the research plan*
12 *in section 102, the Secretary shall carry out cross-cutting*
13 *research, development, and demonstration activities to ad-*
14 *vance unmanned aircraft system technologies, capabilities,*
15 *and workforce needs and to improve the reliability of the*
16 *use of unmanned aircraft systems in ways relevant to the*
17 *mission of the Department. In carrying out these activities,*
18 *the Secretary shall coordinate across all relevant offices and*
19 *activities at the Department, including the Office of*
20 *Science, the Office of Energy Efficiency and Renewable En-*
21 *ergy, the Office of Nuclear Energy, the Office of Fossil En-*
22 *ergy, the Office of Electricity, the Office of Cybersecurity,*
23 *Energy Security, and Emergency Response, the Advanced*
24 *Research Projects Agency—Energy, the Office of Environ-*
25 *mental Management, the Office of Environment, Health,*

1 *Safety and Security, the National Nuclear Security Admin-*
2 *istration, the Artificial Intelligence Technology Office, the*
3 *UAS Research and Engineering Center, and any other rel-*
4 *evant office or activity as determined by the Secretary.*

5 (b) *RESEARCH ACTIVITIES.—In carrying out sub-*
6 *section (a), the Secretary—*

7 (1) *shall formulate goals for unmanned aircraft*
8 *systems research activities to be supported by the De-*
9 *partment, including in the research areas under sec-*
10 *tion (c);*

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

16 (3) *shall provide research experiences and train-*
17 *ing for undergraduate and graduate students in un-*
18 *manned aircraft systems research and development,*
19 *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) shall ensure all activities under this section

5 are subject to the data management policies of the De-

6 partment; and

7 (5) may support one or more Institutes as de-

8 scribed in section 201(a) of this Act for the purpose

9 of advancing the fields of unmanned aircraft systems

10 and the mission of the Department.

11 (c) *RESEARCH AREAS.*—In carrying out subsection

12 (a), the Secretary shall award financial assistance to eligi-

13 ble entities to carry out research, development, and dem-

14 onstration projects over a range of subject areas including—

15 (1) fundamental science, applied science, and ad-

16 vanced technology areas, which may include—

17 (A) advanced sensor technologies and inno-

18 vative sensor materials, devices, and processes,

19 including—

20 (i) optical capabilities, including Light

21 Detection and Ranging, hyperspectral, ther-

22 mographic, and visible imaging capabili-

23 ties;

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

4 (iii) acoustic capabilities, including ul-
5 trasonic and infrasonic capabilities;

6 (iv) micro and nano technology;

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

9 (vi) radiation detection, gravimetric,
10 hyperspectral or other measurement modali-
11 ties;

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

15 (C) advanced technologies for secure autono-
16 mous operation, including edge computing and
17 artificial intelligence;

18 (D) power electronics and wireless charging
19 systems;

20 (E) novel materials, including lightweight
21 materials and materials with robust performance
22 under extreme conditions;

23 (F) scalability of unmanned aircraft sys-
24 tems for increased payload capacity;

1 (G) technologies and processes to improve
2 secure interoperability practices, including with
3 existing satellites, constellation networks, indus-
4 trial control systems, and surface-based facilities;

5 (H) strategies and technologies for inte-
6 grated cybersecurity considerations;

7 (I) strategies and technologies for improved
8 endurance, including lightweight long duration
9 fuels, batteries, fuel cells, and other storage sys-
10 tems;

11 (J) open architectures and advanced algo-
12 rithms to enable multi-sensor fusion and track-
13 ing of unmanned aircraft systems;

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

18 (L) approaches to allow for use of advanced
19 artificial intelligence and advanced computation
20 for improved aircraft structural and aero-
21 dynamic design;

22 (M) relevant microelectronics technologies,
23 including novel devices, systems, and architec-
24 tures; and

1 (N) strategies and technologies for energy ef-
2 ficient manufacturing of specialized components;

3 (2) approaches for leveraging unmanned aircraft
4 systems for diverse applications, which may in-
5 clude—

6 (A) advanced assessment, characterization,
7 mapping, and recovery of energy resources, such
8 as geothermal energy, bioenergy feedstock re-
9 sources, and critical minerals resources;

10 (B) real time asset management, infrastruc-
11 ture inspection, monitoring, fault prediction and
12 detection, and field testing of electric grid and
13 energy infrastructure systems, such as onshore
14 and offshore wind energy, fossil energy, solar en-
15 ergy, marine energy, nuclear energy, and hydro-
16 power systems;

17 (C) damage assessment of the electric grid
18 and energy infrastructure following cyberattacks
19 and other human-caused destruction and other
20 physical events such as wildland fires, including
21 prescribed burns containment and emissions
22 measurements, potential health and safety effects
23 from contaminant releases and dispersals, and
24 real-time analysis of impacted assets;

1 (D) leak detection of greenhouse gases re-
2 lated to resource extraction and energy produc-
3 tion and delivery, including methane leak detec-
4 tion;

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

7 (F) integrated data collection to inform and
8 enhance Department modeling capabilities, in-
9 cluding the development of climate and earth
10 systems models and computational tools;

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

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

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

18 (J) data collection of building envelope fea-
19 tures and characteristics for rapid energy mod-
20 eling purposes; and

21 (L) improving efficiency of manufacturing
22 processes.

23 (d) *TECHNOLOGY TRANSFER*.—In carrying out sub-
24 section (a), and in coordination with the Office of Tech-

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

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

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

10 *(1) \$50,000,000 for fiscal year 2024;*

11 *(2) \$52,500,000 for fiscal year 2025;*

12 *(3) \$55,125,000 for fiscal year 2026;*

13 *(4) \$57,881,775 for fiscal year 2027; and*

14 *(5) \$60,775,863 for fiscal year 2028.*

15 *(g) DEFINITIONS.—In this title:*

16 *(1) DEPARTMENT.—The term “Department”*
17 *means the Department of Energy.*

18 *(2) ELIGIBLE ENTITIES.—The term “eligible en-*
19 *tity” means—*

20 *(A) an institution of higher education;*

21 *(B) a National Laboratory;*

22 *(C) a State, local, territorial, or Tribal gov-*
23 *ernment research agency;*

24 *(D) a nonprofit research organization;*

25 *(E) a private sector entity; or*

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

4 (3) *SECRETARY*.—The term “Secretary” means
5 the Secretary of Energy.

6 **TITLE VII—DEPARTMENT OF**
7 **HOMELAND SECURITY ACTIVI-**
8 **TIES**

9 **SEC. 701. DEPARTMENT OF HOMELAND SECURITY ACTIVI-**
10 **TIES.**

11 (a) *IN GENERAL*.—Consistent with the research plan
12 in section 102 and in coordination with the Administrator
13 of the Federal Aviation Administration and the heads of
14 other relevant Federal agencies, as appropriate, the Sec-
15 retary, acting through the Under Secretary for Science and
16 Technology—

17 (1) shall support research, development, evalua-
18 tion, and testing for advanced air mobility, un-
19 manned aircraft systems, counter-UAS systems and
20 detection systems capabilities, including for—

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

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

1 *craft systems, and counter-UAS systems and de-*
2 *tection systems capabilities;*

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

6 *(D) testing and evaluation of unmanned*
7 *aircraft systems and counter-UAS systems and*
8 *detection systems capabilities, performance sys-*
9 *tems engineering, operational analysis and*
10 *human systems integration, including factors*
11 *that impact performance of end-users in the op-*
12 *eration and maintenance of advanced air mobil-*
13 *ity and unmanned aircraft systems;*

14 *(E) leveraging and preparing for adver-*
15 *sarial use of artificial intelligence against ad-*
16 *vanced air mobility, unmanned aircraft systems,*
17 *and counter-UAS systems and detection systems;*
18 *and*

19 *(F) maritime detection and monitoring of*
20 *hazards to navigation, potential and actual pol-*
21 *lution incidents, vessel discharge and vessel air*
22 *emissions monitoring and enforcement, and pol-*
23 *lution response operations;*

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

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

8
9 (3) *may produce curated, standardized, representative, secure, and privacy protected data sets for*
10 *advanced air mobility systems, unmanned aircraft*
11 *systems, and counter-UAS systems and detection systems, including detection systems, development,*
12 *archiving, and use, prioritizing data for high-value,*
13 *high-risk research;*

14
15
16 (4) *may support one or more institutes as described in section 201(a) for the purpose of advancing*
17 *the field of advanced air mobility, unmanned aircraft*
18 *systems, and counter-UAS systems and detection systems capabilities; and*

19
20
21 (5) *shall enter into and perform such contracts,*
22 *including cooperative research and development arrangements and grants and cooperative agreements or*
23 *other transactions, as may be necessary in the conduct of the work of the Department and on such terms*
24
25

1 *as the Secretary considers appropriate, in furtherance*
2 *of the purposes of this Act.*

3 **(b) COUNTER-UAS CENTER OF EXCELLENCE.**—*Subject*
4 *to the availability of appropriations for the purpose, the*
5 *Secretary may, in consultation with the Federal Aviation*
6 *Administration and the heads of other relevant Federal*
7 *agencies, as appropriate, establish a center of excellence to*
8 *carry out research and development that advances counter-*
9 *UAS systems and detection systems capabilities.*

10 **(1) SELECTION OF HOST INSTITUTION.**—

11 **(A) IN GENERAL.**—*The Secretary shall se-*
12 *lect an institution of higher education, or a con-*
13 *sortium of institutions of higher education, to*
14 *host and maintain the center of excellence estab-*
15 *lished under this subsection.*

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

19 *(i) give preference to applicants with*
20 *strong past performance related to counter-*
21 *UAS systems and detection systems re-*
22 *search, education, and workforce develop-*
23 *ment activities;*

24 *(ii) give preference to applicants geo-*
25 *graphically collocated within 100 miles of*

1 *Federal departments or agencies that cur-*
2 *rently possess or operate extant counter-*
3 *UAS systems and detection systems facili-*
4 *ties:*

5 *(iii) give preference to applicants hav-*
6 *ing proven abilities and strong research en-*
7 *terprises in systems engineering, radio fre-*
8 *quency directed energy, radar and antenna*
9 *research and development, atmospheric*
10 *monitoring that can support of chemical,*
11 *biological, radiological and nuclear detec-*
12 *tion to include trace gases and particular*
13 *matter, target tracking, remote sensing and*
14 *the ability to leverage artificial intelligence*
15 *and machine learning to support the re-*
16 *quired data analytics;*

17 *(iv) consider the extent to which the*
18 *applicant would involve the public and pri-*
19 *vate sectors; and*

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

23 *(2) USE OF FUNDS.—Notwithstanding section*
24 *46502 of title 49, United States Code, or sections 32,*
25 *1030, 1367 and chapters 119 and 206 of title 18, the*

1 *institution of higher education or consortium may use*
2 *funds provided under this subsection to carry out fun-*
3 *damental research, evaluation, education, workforce*
4 *development, and training efforts related to counter-*
5 *UAS systems and detection systems subject areas, in-*
6 *cluding safety, privacy, security, cybersecurity, detect-*
7 *ing, identifying, monitoring, tracking, disrupting and*
8 *seizing control, confiscating, disabling, damaging, de-*
9 *struction, remote sensing, forensics, testing and eval-*
10 *uation of systems capabilities, performance, systems*
11 *engineering, operational analysis, and advanced tech-*
12 *nologies.*

13 (3) *FEDERAL SHARE.—The Department share of*
14 *a grant under this subsection shall not exceed 75 per-*
15 *cent of the costs of establishing and operating the cen-*
16 *ter of excellence and related research activities carried*
17 *out by the grant recipient.*

18 (4) *AUTHORIZATION OF APPROPRIATIONS.—*

19 (A) *FISCAL YEAR 2024.—There is authorized*
20 *to be appropriated to the Secretary \$10,000,000*
21 *for fiscal year 2024 for making awards under*
22 *this subsection.*

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

1 *through 2028 for making awards under this sub-*
2 *section.*

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

6 (1) *\$30,000,000 for fiscal year 2024;*

7 (2) *\$31,500,000 for fiscal year 2025;*

8 (3) *\$33,075,000 for fiscal year 2026;*

9 (4) *\$34,728,750 for fiscal year 2027; and*

10 (5) *\$36,465,187 for fiscal year 2028.*

11 (d) *DEFINITIONS.—In this title:*

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

14 (2) *SECRETARY.—The term “Secretary” means*
15 *the Secretary of Homeland Security.*

16 ***TITLE VIII—NATIONAL OCEANIC***
17 ***AND ATMOSPHERIC ADMINIS-***
18 ***TRATION ACTIVITIES***

19 ***SEC. 801. NATIONAL OCEANIC AND ATMOSPHERIC ADMINIS-***
20 ***TRATION RESEARCH AND DEVELOPMENT.***

21 (a) *IN GENERAL.—The Administrator, consistent with*
22 *the research plan in section 102, shall carry out and sup-*
23 *port research, development, and demonstration activities to*
24 *advance unmanned aircraft systems technologies, and capa-*
25 *bilities, and to enhance the deployment of, and data col-*

1 lected by, unmanned aircraft systems relevant to the mis-
2 sion of the Administration, incorporate such data into oper-
3 ations, and ensure data are managed, stewarded and
4 archived appropriately. In carrying out these activities, the
5 Administrator shall coordinate across all relevant offices
6 and programs at the Administration, including the Office
7 of Oceanic and Atmospheric Research, National Environ-
8 mental Satellite, Data, and Information Service, National
9 Marine Fisheries Service, National Ocean Service, National
10 Weather Service, and the Office of Marine and Aviation Op-
11 erations.

12 (b) *RESEARCH ACTIVITIES.*—In carrying out sub-
13 section (a), the Administrator—

14 (1) shall test, evaluate, and demonstrate the util-
15 ity of unmanned aircraft systems technologies for the
16 Administration.

17 (2) may support Administration activities and
18 Cooperative Institute projects, and support and en-
19 courage Federal and State agencies, academic institu-
20 tions, nongovernmental organizations, industry rep-
21 resentatives, and others to—

22 (A) enable the transition of unmanned air-
23 craft systems capabilities from research to oper-
24 ations and other uses and facilitate new un-

1 *manned aircraft systems applications within the*
2 *Administration;*

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

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

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

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

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

18 *(3) shall provide and support research experi-*
19 *ences and training for undergraduate and graduate*
20 *students in unmanned aircraft systems research, de-*
21 *velopment, and operations relevant to the mission of*
22 *the Administration, and other education and training*
23 *opportunities consistent with the purpose of this Act;*

24 *(4) may 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) shall support and conduct leading-edge re-*
6 *search and development of innovative unmanned air-*
7 *craft systems technologies and concepts to advance re-*
8 *search areas in subsection (c).*

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

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

16 *(2) rapid flood mapping;*

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

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

22 *(5) marine mammal detection and monitoring;*

23 *(6) near-real time harmful algal bloom measure-*
24 *ments for rapid response efforts;*

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

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

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

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

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

13 (d) *PRIORITY.—In carrying out the research areas in*
14 *subsection (c), the Administrator shall, to the maximum ex-*
15 *tent practicable, prioritize activities that increase the Ad-*
16 *ministration’s operational use of unmanned aircraft sys-*
17 *tems by extending the range of times, location, and condi-*
18 *tions in which observations can be made at lower cost. As*
19 *part of these activities, the Administrator may—*

20 (1) *enter into contracts with one or more entities*
21 *in the commercial data sector to acquire data col-*
22 *lected by unmanned aircraft systems; and*

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

1 (e) *TECHNOLOGY TRANSFER.*—*In carrying out sub-*
2 *section (a) the Administrator shall support technology*
3 *transfer of unmanned aircraft systems research by*
4 *partnering with Federal agencies and industry.*

5 (f) *COORDINATION.*—*The Administrator shall coordi-*
6 *nate the activities authorized in this section with the activi-*
7 *ties authorized in section 3 of the Commercial Engagement*
8 *Through Ocean Technology Act of 2018 (33 U.S.C. 4102)*
9 *and engage with other Federal departments and agencies,*
10 *research communities, nongovernmental organizations, and*
11 *industry stakeholders through the interagency committee es-*
12 *tablished by section 103.*

13 (g) *SUPPORT OF INSTITUTES.*—*For the purposes of*
14 *subsection (a), the Administrator may support relevant ac-*
15 *tivities at one or more Institutes as described in section*
16 *201(a) of this Act for the purpose of advancing the field*
17 *of unmanned aircraft systems.*

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

21 (1) *\$15,000,000 for fiscal year 2024;*

22 (2) *\$15,750,000 for fiscal year 2025;*

23 (3) *\$16,537,500 for fiscal year 2026;*

24 (4) *\$17,364,375 for fiscal year 2027; and*

25 (5) *\$18,232,593 for fiscal year 2028.*

1 (i) *DEFINITIONS.*—*In this title:*

2 (1) *ADMINISTRATION.*—*The term “Administra-*
3 *tion” means the National Oceanic and Atmospheric*
4 *Administration.*

5 (2) *ELIGIBLE ENTITIES.*—*The term “eligible en-*
6 *tities” means—*

7 (A) *an institution of higher education;*

8 (B) *a National Laboratory;*

9 (C) *a NOAA Cooperative Institute;*

10 (D) *a State, local, territorial, or Tribal gov-*
11 *ernment agency;*

12 (E) *a nonprofit organization;*

13 (F) *a private sector entity; or*

14 (G) *a consortium of 2 or more entities de-*
15 *scribed in subparagraphs (A) through (F).*

16 (3) *ADMINISTRATOR.*—*The term “Adminis-*
17 *trator” means the Administrator of the National Oce-*
18 *anic and Atmospheric Administration.*

19 ***TITLE IX—FEDERAL AVIATION***
20 ***ADMINISTRATION ACTIVITIES***

21 ***SEC. 901. FEDERAL AVIATION ADMINISTRATION RESEARCH***
22 ***AND DEVELOPMENT.***

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

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

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

9 *(2) command and control link technologies;*

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

13 *(4) noise and other societal and environmental*
14 *impacts;*

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

17 *(6) safety, including collisions between advanced*
18 *air mobility and unmanned aircraft systems of var-*
19 *ious sizes, traveling at various speeds, and various*
20 *other crewed aircraft or various parts of other crewed*
21 *aircraft of various sizes and traveling at various*
22 *speeds; and*

23 *(7) detect and avoid capabilities.*

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

1 search, development, demonstration, and testing to ad-
2 vanced air mobility systems.

3 (c) *RESEARCH ON APPROACHES TO EVALUATING*
4 *RISK.*—*The Administrator shall conduct research on ap-*
5 *proaches to evaluating risk in emerging vehicles, tech-*
6 *nologies, and operations for unmanned aircraft systems and*
7 *advanced air mobility systems. Such research shall in-*
8 *clude—*

9 (1) *defining quantitative metrics, including those*
10 *needed for the Secretary of Transportation to make*
11 *determinations and establish requirements for the op-*
12 *erations of certain unmanned aircraft systems, as de-*
13 *scribed under section 44807 of title 49, United States*
14 *Code, as amended by this title;*

15 (2) *developing risk-based processes and criteria*
16 *to inform the development of regulations and certifi-*
17 *cation of complex operations, to include autonomous*
18 *beyond-visual-line-of-sight operations, of unmanned*
19 *aircraft systems of various sizes and weights, and ad-*
20 *vanced air mobility systems; and*

21 (3) *considering the utility of performance stand-*
22 *ards to make determinations under section 44807 of*
23 *title 49, United States Code, as amended by this title.*

24 (d) *REPORT.*—*Not later than 9 months after the date*
25 *of enactment of this Act, the Administrator shall submit*

1 *to the Committee on Science, Space, and Technology of the*
2 *House of Representatives and the Committee on Commerce,*
3 *Science, and Transportation of the Senate a report on the*
4 *actions taken by the Administrator to implement provisions*
5 *under this section that includes—*

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

8 (2) *a description of plans for and progress to-*
9 *ward the implementation of research and development*
10 *under subsection (c);*

11 (3) *a description of the Administration's*
12 *progress using research and development to inform*
13 *the development of certification guidance and regula-*
14 *tions of—*

15 (A) *large unmanned aircraft systems, in-*
16 *cluding those weighing more than 55 pounds;*
17 *and*

18 (B) *extended autonomous and remotely pi-*
19 *loted operations beyond visual line of sight in*
20 *controlled and uncontrolled airspace; and*

21 (4) *a current Plan for Full Operational Capa-*
22 *bility of Unmanned Aircraft Systems Traffic Manage-*
23 *ment, as described in section 376 of Public Law 115-*
24 *254, the FAA Reauthorization Act of 2018.*

1 **SEC. 902. PARTNERSHIPS FOR RESEARCH, DEVELOPMENT,**
2 **DEMONSTRATION, AND TESTING.**

3 (a) *STUDY.*—*The Administrator shall enter into an ar-*
4 *rangement with the National Academy of Public Adminis-*
5 *tration to examine Administration research, development,*
6 *demonstration, and testing partnerships to advance un-*
7 *manned aircraft systems and advanced air mobility and*
8 *to facilitate the safe integration of unmanned aircraft sys-*
9 *tems into the national airspace system.*

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

12 (1) *identify existing Administration partner-*
13 *ships with external entities, including academia and*
14 *Centers of Excellence, industry, and nonprofit organi-*
15 *zations, and the types of such partnership arrange-*
16 *ments;*

17 (2) *examine the partnerships in paragraph (1),*
18 *including the scope and areas of research, develop-*
19 *ment, demonstration, and testing carried out, and as-*
20 *sociated arrangements for performing research and*
21 *development activities;*

22 (3) *review the extent to which the Administra-*
23 *tion uses the results and outcomes of each partnership*
24 *to advance the research and development in un-*
25 *manned aircraft systems;*

1 (4) *identify additional research and development*
2 *areas, if any, that may benefit from partnership ar-*
3 *rangements, and whether such research and develop-*
4 *ment would require new partnerships;*

5 (5) *identify any duplication of ongoing or*
6 *planned research, development, demonstration, or test-*
7 *ing activities;*

8 (6) *identify effective and appropriate means for*
9 *publication and dissemination of the results and*
10 *sharing with the public, commercial, and research*
11 *communities related data from such research, develop-*
12 *ment, demonstration, and testing conducted under*
13 *such partnerships;*

14 (7) *identify effective mechanisms, either new or*
15 *already existing, to facilitate coordination, evalua-*
16 *tion, and information-sharing among and between*
17 *such partnerships;*

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

21 (9) *identify the extent to which such partner-*
22 *ships broaden participation from groups historically*
23 *underrepresented in STEM and include participation*
24 *by industry, workforce, and labor organizations; and*

1 (10) review options for funding models best suit-
2 ed for such partnerships, which may include cost-
3 sharing and public-private partnership models with
4 industry.

5 (c) *TRANSMITTAL.*—*The Administrator shall transmit*
6 *the study directed in subsection (a) to the Committee on*
7 *Science, Space, and Technology of the House of Representa-*
8 *tives and the Committee on Commerce, Science, and Trans-*
9 *portation of the Senate not later than 12 months after the*
10 *date of enactment of this Act.*

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

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

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

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

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

20 (1) *in section 44803, in paragraph (b)(7), by in-*
21 *serting after subparagraph (E)—*

22 *“(F) implementing unmanned aircraft sys-*
23 *tems traffic management services for commercial*
24 *unmanned aircraft systems in uncontrolled air-*
25 *space;*

1 “(G) advanced air mobility concepts in con-
2 trolled airspace, including communication, navi-
3 gation, and surveillance standards;

4 “(H) the verification and validation of the
5 autonomy of unmanned aircraft systems; and

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

8 (2) in section 44807, in subsection (c), after
9 “proprietary systems”, by inserting “, unmanned air-
10 craft systems traffic management systems, and ad-
11 vanced air mobility systems”.

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

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

16 (2) by inserting after paragraph (4) the fol-
17 lowing new paragraph:

18 “(5) support, to the extent practicable, opportu-
19 nities for apprenticeships and internships in the re-
20 search and development activities and uses of test
21 ranges to prepare, enhance, and expand workforce
22 skills;”.

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

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

4 (1) *The number of waivers granted under sub-*
5 *section (c) of section 44803 of title 49, United States*
6 *Code, with respect to unmanned aircraft system test*
7 *ranges and operations conducted under such section;*

8 (2) *Measures taken to further implement sub-*
9 *section (c) of section 44803 of title 49, United States*
10 *Code;*

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

13 (4) *Strategies to communicate broadly to indus-*
14 *try regarding the safest, most efficient, and effective*
15 *path toward testing goals.*

16 **SEC. 904. AUTHORIZATION OF APPROPRIATIONS.**

17 (a) **FEDERAL AVIATION ADMINISTRATION RESEARCH**
18 **AND DEVELOPMENT FUNDING.**—*There are authorized to be*
19 *appropriated to the Administration to carry out section*
20 *901—*

21 (1) *\$20,000,000 for fiscal year 2024;*

22 (2) *\$21,000,000 for fiscal year 2025;*

23 (3) *\$22,050,000 for fiscal year 2026;*

24 (4) *\$23,152,500 for fiscal year 2027; and*

25 (5) *\$24,310,125 for fiscal year 2028.*

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

5 **SEC. 905. DEFINITIONS.**

6 *In this title:*

7 (1) *ADMINISTRATOR.*—*The term “Adminis-*
8 *trator” means the Administrator of the Federal Avia-*
9 *tion Administration.*

10 (2) *ADMINISTRATION.*—*The term “Administra-*
11 *tion” means the Federal Aviation Administration.*

12 **TITLE X—LIMITATION**

13 **SEC. 1001. LIMITATION.**

14 (a) *IN GENERAL.*—*Except as otherwise provided in*
15 *this section, none of the funds authorized to be appropriated*
16 *by this Act may be used for the purchase, acquisition, re-*
17 *search, development, or operation of advanced air mobility*
18 *and unmanned aircraft systems—*

19 (1) *produced or assembled in, or containing com-*
20 *ponents produced or assembled in, a foreign country*
21 *of concern; or*

22 (2) *produced or assembled by entities owned,*
23 *controlled by, or subject to the jurisdiction or direc-*
24 *tion of the government of, a foreign country of con-*
25 *cern.*

1 (b) *EXCEPTION.*—*The limitation in subsection (a)*
2 *shall not apply to the acquisition of advanced air mobility*
3 *and unmanned aircraft systems for the purposes of research*
4 *and development for improving the United States counter-*
5 *UAS systems and detection systems capabilities.*

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

11 (d) *REPORT TO CONGRESS.*—*The Secretary of Com-*
12 *merce shall report the issuance of such a waiver to the rel-*
13 *evant committees of jurisdiction of Congress not later than*
14 *30 days after issuing such waiver.*

15 (e) *DEFINITION.*—*In this section, the term “foreign*
16 *country of concern” means—*

17 (1) *a country that is a covered nation (as de-*
18 *finied in section 4872(d)(2) of title 10 United States*
19 *Code); or*

20 (2) *any other country that the Secretary of Com-*
21 *merce, in consultation with the Secretary of Defense*
22 *and the Director of National Intelligence, determines*
23 *to be engaged in conduct that is detrimental to the*
24 *national security or foreign policy of the United*
25 *States.*

Union Calendar No. 527

118TH CONGRESS
2^D SESSION

H. R. 3560

[Report No. 118-630, Part I]

A BILL

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

AUGUST 13, 2024

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

AUGUST 13, 2024

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