To ensure that Federal research and development in support of civil aviation remains at the forefront of addressing challenges confronting the Nation’s air transportation system, and for other purposes

IN THE HOUSE OF REPRESENTATIVES

Ms. EDDIE BERNICE JOHNSON of Texas introduced the following bill; which was referred to the Committee on ______________________

A BILL

To ensure that Federal research and development in support of civil aviation remains at the forefront of addressing challenges confronting the Nation’s air transportation system, 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.
4 This Act may be cited as the “Federal Aviation Re-
5 search and Development Reauthorization Act of 2016”.
SEC. 2. AMENDMENTS TO TITLE 49, UNITED STATES CODE.

Except as otherwise expressly provided, whenever in this Act an amendment or repeal is expressed in terms of an amendment to, or a repeal of, a section or other provision, the reference shall be considered to be made to a section or other provision of title 49, United States Code.

SEC. 3. DEFINITIONS.

In this Act:

(1) Administrator.—The term “Administrator” means the Administrator of the Federal Aviation Administration.

(2) FAA.—The term “FAA” means the Federal Aviation Administration.

(3) NASA.—The term “NASA” means the National Aeronautics and Space Administration.

(4) NextGen.—The term “NextGen” means the Next Generation Air Transportation System.

(5) Secretary.—The term “Secretary” means the Secretary of Transportation.

TITLE I—AUTHORIZATION OF APPROPRIATIONS

SEC. 11. AUTHORIZATION OF APPROPRIATIONS.

Section 48102(a) is amended—

(1) by striking “and” at the end of paragraph (8);
(2) by striking paragraph (9); and

(3) by adding at the end the following new paragraphs: the following:

“(9) $428,050,000 for fiscal year 2016, of which—

“(A) $166,000,000 shall be for Research, Engineering, and Development;

“(B) $216,050,000 shall be for Facilities and Equipment; and

“(C) $46,000,000 shall be for Grants-in-Aid for Airports;

“(10) $490,200,000 for fiscal year 2017, of which—

“(A) $169,000,000 shall be for Research, Engineering, and Development;

“(B) $275,200,000 shall be for Facilities and Equipment; and

“(C) $46,000,000 shall be for Grants-in-Aid for Airports; and

“(11) $536,270,400 for fiscal year 2018, of which—

“(A) $173,346,000 shall be for Research, Engineering, and Development;

“(B) $316,832,400 shall be for Facilities and Equipment; and
“(C) $46,092,000 shall be for Grants-in-Aid for Airports.”

TITLE II—STRATEGIC DIRECTION FOR FAA RESEARCH

SEC. 21. DECADAL SURVEY ON FAA’S CIVIL AVIATION RESEARCH.

(a) IN GENERAL.—The Secretary shall enter into an arrangement with the National Academies for a comprehensive research survey and strategy for FAA’s civil aviation activities, including NextGen, over the next decade. The survey shall encompass research activities in FAA’s Research, Engineering, and Development, Facilities and Equipment, and Grants-in-Aid for Airports accounts, as well as any other research or emerging research areas that will enhance FAA’s civil aviation activities. The survey shall—

(1) prioritize FAA civil aviation research needs and align such research needs with the mission of FAA;

(2) examine the status of research methods and tools, including modeling and simulation, data analysis, and technology demonstration capabilities, that can contribute to FAA civil aviation research;

(3) examine the status of FAA-owned research facilities and equipment, the extent to which their
availability and accessibility is coordinated across FAA’s research programs, and their ability to support FAA civil aviation research over the next decade;

(4) identify workforce skills, workforce development, and training needed to support research priorities over the next decade;

(5) examine the process and issues related to translating research advances into operational use, including the process required for the certification, operational approval, and implementation of new technologies and resulting operations into the National Airspace System, and identify the best practices used by other United States or non-United States organizations in transitioning such research into operations;

(6) examine issues related to the dissemination of relevant research to the broader aviation community;

(7) consider the research contributions of FAA Centers of Excellence, NASA, and other United States Government or nongovernment entities to civil aviation; and

(8) make prioritized recommendations on the areas described in paragraphs (1) through (7).
(b) TRANSMITTAL.—Not later than 2 years after the date of enactment of this Act, the Secretary shall transmit the results of the National Academies decadal survey to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate.

SEC. 22. 5-YEAR STRATEGIC AND INTEGRATED RESEARCH PLAN.

(a) PLAN.—Not later than 9 months after the date of transmittal of the decadal survey under section 21(b), the Secretary shall transmit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a Strategic and Integrated Research Plan that establishes a program of research and development activities that reflects the results of such decadal survey. The plan shall—

(1) describe how FAA’s research and development activities and associated projects, including those related to—

(A) NextGen-associated research;
(B) research, engineering, and development and facilities and equipment;
(C) grants-in-aid for airports research; and
(D) other research areas recommended in the decadal survey,
will be interlinked to address common themes and contribute to making progress on the priorities identified in the decadal survey transmitted under section 21(b);

(2) provide integrated research objectives, milestones, and timelines for achieving those priorities over the next 5 years; and

(3) describe research activities that will lead to procedures for the certification and operational approval of new technologies for their timely and cost-effective introduction into the National Airspace System.

(b) REVIEW.—Not later than 3 years after the transmittal of the Strategic and Integrated Research Plan under subsection (a), the Secretary shall enter into an arrangement with the National Academies to review FAA’s progress on implementing the Strategic and Integrated Research Plan.

(c) TRANSMITTAL OF REVIEW.—Not later than 12 months after the Secretary enters into the arrangement required under subsection (b), the Secretary shall transmit the results of the National Academies’ review to the Committee on Science, Space, and Technology of the House
of Representatives and the Committee on Commerce, Science, and Transportation of the Senate.

SEC. 23. CYBERSECURITY RESEARCH ACTION INITIATIVE.

(a) IN GENERAL.—The Secretary shall ensure that FAA’s research and development on cybersecurity and its application across FAA is dynamic and constantly updated to reflect the evolving nature of cyber risks and threats, and that cybersecurity research and development is approached in an integrated fashion consistent with the findings and analyses of both the Government Accountability Office and the National Academies report, “A Review of the Next Generation Air Transportation System: Implications and Importance of a System Architecture”, which states that “Cybersecurity requires a system-wide approach that is managed architecturally and cannot be addressed piecemeal by each contractor (or program) separately. Nor can security be added to the system later. Safety properties themselves are dependent on a resilient, trustworthy, secure system, so careful integration of cybersecurity models and processes into safety analyses will become increasingly important. Finally, cybersecurity itself is an ongoing challenge in many domains and the subject of ongoing research; it will be important to track and integrate relevant results as the field continues to evolve.”. Development of an agency-wide threat model will
facilitate FAA in taking an integrated approach to cybersecurity.

(b) Threat Model Development.—The Secretary shall develop an agencywide threat model to strengthen cybersecurity defense across FAA. The threat model shall—

(1) be continuously updated;

(2) be capable of describing the landscape of security risks to FAA’s operational systems, including those potentially caused by manned and unmanned aircraft operation in the National Airspace System; and

(3) enable FAA to—

(A) identify known threats, including insider threats;

(B) align cybersecurity efforts and responses commensurate with the identified threats; and

(C) implement any additional actions needed to respond to threats and security weaknesses that have not been addressed.

(c) Transmittal.—Not later than 6 months after the date of enactment of this Act, the Secretary shall transmit a classified threat model and an unclassified executive summary to the Committee on Science, Space, and
Technology and the Committee on Commerce, Science and Transportation of the Senate.

TITLE III—MAINTAINING SAFETY AND ENVIRONMENTAL RESPONSIBILITY IN A CHANGING AVIATION ENVIRONMENT

SEC. 31. REVIEW OF RESEARCH SYNERGY OF UNMANNED AIRCRAFT SYSTEMS TEST SITES AND CENTER OF EXCELLENCE.

(a) REVIEW.—Not later than 3 months after the date of enactment of this Act, the Comptroller General shall initiate a review of the effectiveness of the 6 FAA unmanned aircraft system test sites and the opportunities for coordinating and integrating the research conducted at the test sites with that conducted by the Center of Excellence on Unmanned Aircraft Systems. The review shall include input from stakeholders and users of the test sites and participants of the Center of Excellence.

(b) ISSUES.—The review shall address—

(1) FAA’s plans for the utilization of research carried out at the test sites and the Center of Excellence on Unmanned Aircraft Systems and any relationship of such research to the plan required under section 22(a);
(2) the coordination of the research carried out at the test sites and the Center of Excellence; and

(3) the mechanism by which FAA will exchange information and communications with both the test sites and the Center of Excellence on potential opportunities for them to address FAA’s research and development needs and on potential opportunities for FAA to facilitate potential partnerships within and among the test sites, the Center of Excellence, and other relevant entities to help address FAA’s research and development needs.

(c) TRANSMITTAL.—The Comptroller General shall transmit the review under this section to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate not later than 12 months after the date of enactment of this Act.

SEC. 32. RESEARCH AND DEVELOPMENT STRATEGY IN SUPPORT OF THE SAFE INTEGRATION OF UNMANNED AIRCRAFT SYSTEMS INTO THE NATIONAL AIRSPACE SYSTEM.

(a) IN GENERAL.—The Secretary shall develop a research and development strategy to provide the research basis for informing any potential regulatory action regard-
1 ing the safe integration of evolving unmanned aircraft sys-
2 tems into the National Airspace System.
3 (b) STRATEGY.—Not later than 9 months after the
date of enactment of this Act, the Secretary shall transmit
a research and development strategy for the integration
of unmanned aircraft systems into the National Airspace
System.
4 (c) ISSUES.—The strategy shall address the research
needed to ensure—
5 (1) the safe integration of unmanned aircraft
systems of all sizes and categories, operating alti-
tudes, and degree of autonomy of operation; and
6 (2) the utilization of other relevant Federal and
federally sponsored research and development activi-
ties on the safe integration of unmanned aircraft
systems into the National Airspace System.

SEC. 33. GENERAL AVIATION SAFETY.

(a) WORKSHOPS.—The Secretary shall hold at least
one workshop to discuss the status of research and devel-
opment focused on enhancing general aviation safety. The
workshop or workshops shall—
(1) identify research and development that has
had a measurable impact on enhancing general aviation
safety, and the extent to which those research
results are disseminated to the general aviation com-

munity;

(2) identify what further research is needed to

address factors affecting general aviation safety; and

(3) include a broad range of experts from the

Federal Government, the National Transportation

Safety Board, not for profit organizations, industry,

academia, and the general aviation user community.

(b) PLAN.—Using the results of the workshop or

workshops held under subsection (a), the Secretary shall
develop a plan that includes future research goals and ob-
jectives and a roadmap for achieving them.

(c) TRANSMITTAL.—Not later than 18 months after

the date of enactment of this Act, the Secretary shall
transmit the plan required under subsection (b) to the
Committee on Science, Space, and Technology of the
House of Representatives and the Committee on Com-
merce, Science, and Transportation of the Senate.

SEC. 34. REVIEW OF AIRCRAFT NOISE RESEARCH AND ITS

USE IN SUPPORTING STANDARDS.

(a) IN GENERAL.—The Comptroller General shall
carry out a review of Federal Government research pro-
grams on aircraft noise levels and the use of such research
to inform the Department of Transportation’s noise eval-
uation processes, adjustments to noise metrics, and devel-
opment of noise abatement procedures. The review shall
include the research and development activities of other
Federal agencies and international bodies and shall iden-
tify any barriers to the application of the research to up-
dating noise evaluation processes and metrics.

(b) TRANSMITTAL.—Not later than 1 year after the
date of enactment of this Act, the Comptroller General
shall transmit the review required under subsection (a) to
the Committee on Science, Space, and Technology of the
House of Representatives and the Committee on Com-
merce, Science, and Transportation of the Senate.

SEC. 35. RESEARCH TO ENHANCE AIRPORT SAFETY-RE-
LATED DESIGN STANDARDS.

(a) PLAN AND PROCESS.—The Secretary shall de-
velop a plan for research on safety risk assessment meth-
ods related to the development of airport design stand-
ards. The plan shall also establish a process for applying
risk assessment methods to the development of standards.

(b) REVIEW.—The Secretary shall enter into an ar-
rangement with the Transportation Research Board of the
National Academies to carry out a review of the plan.

(c) TRANSMITTAL.—Not later than 18 months after
the date of enactment of the Act, the Secretary shall
transmit the results of the National Academies’ review to
the Committee on Science, Space, and Technology and the
Committee on Commerce, Science, and Transportation of the Senate.

SEC. 36. RESEARCH COORDINATION TO INFORM POTENTIAL AVIATION REGULATIONS ON GREENHOUSE GAS EMISSIONS.

(a) RESEARCH COORDINATION.—The Director of the Office of Science and Technology Policy, in cooperation with the Secretary and other relevant Federal agencies, shall coordinate research that can inform the development of potential regulations on limiting greenhouse gas emissions from aircraft.

(b) RESEARCH TO INFORM POTENTIAL REGULATIONS.—The Director shall ensure that the research coordinated under subsection (a) is provided to the relevant Federal agencies and international bodies to help inform the development of international standards and potential United States regulations that would seek to reduce greenhouse gas emissions from aircraft.

SEC. 37. RESEARCH TO INFORM THE ESTABLISHMENT OF CONTAMINANT STANDARDS FOR AIRCRAFT CABIN AIR CONTAMINANTS.

(a) IN GENERAL.—Taking into consideration the recommendations from the report to Congress submitted under section 917 of the FAA Modernization and Reform
Act of 2012 (42 U.S.C. 44504 note), the Secretary shall, in collaboration with relevant stakeholders—

(1) develop a plan, and timeline for any necessary research and development leading to the implementation of contaminant standards for aircraft cabin air contaminants; and

(2) facilitate commercial development and implementation of advanced contaminant detection and cleaning technologies.

(b) Plan.—Not later than 6 months after the date of enactment of this Act, the Secretary shall transmit a copy of the plan and timeline developed under subsection (a)(1) to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate.

SEC. 38. REVIEW OF THE RESEARCH, ENGINEERING, AND DEVELOPMENT ADVISORY COMMITTEE.

(a) Review.—The Comptroller General shall carry out a review of—

(1) the role of FAA’s Research, Engineering, and Development Advisory Committee in advising FAA on the effectiveness of the organization, management, and budgetary structure of research and development programs across FAA and on both near-term budget planning and long-term strategic
planning for the comprehensive FAA research and
development portfolio, including research included in
the Research, Engineering, and Development; Facili-
ties and Equipment; and Grants-in-Aid for Airports
budget accounts; and

(2) FAA’s implementation of the advice and
recommendations provided by the Research, Engi-
neering, and Development Advisory Committee.

(b) BEST PRACTICES.—The review shall consider
best practices of Federal agency research and development
advisory committees and make any recommendations that
would strengthen the Research, Engineering, and Develop-
ment Advisory Committee in its advisory role to FAA.

(e) TRANSMITTAL.—Not later than 1 year after the
date of enactment of this Act, the Comptroller General
shall transmit the review, including recommendations, to
the Committee on Science, Space, and Technology of the
House of Representatives and the Committee on Com-
merce, Science, and Transportation of the Senate.

SEC. 39. RESEARCH ON NONGOVERNMENT AIR TRAFFIC
CONTROL OPERATIONS.

(a) INDEPENDENT STUDY.—The Secretary shall
enter into an arrangement for an independent external
study to identify the implications that a potential non-
government United States air traffic control system could
have on FAA’s research and development activities as well as what organizational changes would be required under a nongovernmental air traffic control system for overseeing such research and development activities.

(b) REPORT.—Not later than 12 months after the date of enactment of this Act, the Secretary shall transmit the results of the study to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate.