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(Original Signature of Member)

117TH CONGRESS
2D SESSION

H. R. _____

To amend title 51, United States Code, to direct the Administrator of the National Aeronautics and Space Administration to establish an initiative to conduct research, development, and demonstration on technologies capable of reducing both greenhouse gas emissions and noise emissions from aircraft, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

Mr. BEYER introduced the following bill; which was referred to the Committee
on _____

A BILL

To amend title 51, United States Code, to direct the Administrator of the National Aeronautics and Space Administration to establish an initiative to conduct research, development, and demonstration on technologies capable of reducing both greenhouse gas emissions and noise emissions from aircraft, 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,*

1 **SECTION 1. SHORT TITLE.**

2 This Act may be cited as the “Cleaner, Quieter Air-
3 planes Act”.

4 **SEC. 2. FINDINGS.**

5 Congress makes the following findings:

6 (1) Air travel currently contributes approxi-
7 mately 3 percent to global carbon emissions, but
8 emissions from this sector are expected to triple by
9 2050.

10 (2) A healthy, thriving aviation sector contrib-
11 utes to the quality of life and economic well-being of
12 the United States. In 2016, the Federal Aviation
13 Administration found that civil aviation accounted
14 for 5.2 percent of the United States gross domestic
15 product, generated \$1.8 trillion, and supported
16 10,900,000 jobs.

17 (3) Existing aircraft technologies contribute to
18 noise pollution that has adverse impacts on the qual-
19 ity of life in affected communities. As air traffic vol-
20 umes increase and the adoption of performance-
21 based navigation technology proceeds, the problem of
22 noise pollution is becoming more severe in some
23 areas.

24 (4) The United States has adopted a goal of
25 net-zero greenhouse gas emissions from the United
26 States aviation sector by 2050.

1 (5) Research on technologies to lessen the envi-
2 ronmental and noise impacts of aviation is ongoing,
3 but should accelerate, and should include work on
4 the further maturation and integration of multiple
5 enabling technologies on production aircraft, includ-
6 ing novel integrated systems at the aircraft level.

7 **SEC. 3. NATIONAL AERONAUTICS AND SPACE ADMINISTRA-**
8 **TION INITIATIVE ON REDUCTION OF GREEN-**
9 **HOUSE GAS AND NOISE EMISSIONS FROM**
10 **AIRCRAFT.**

11 (a) INITIATIVE REQUIRED.—Section 40112 of title
12 51, United States Code, is amended—

13 (1) by redesignating subsections (b) through (f)
14 as subsections (c) through (g), respectively; and

15 (2) by inserting after subsection (a) the fol-
16 lowing:

17 “(b) RESEARCH AND DEVELOPMENT INITIATIVE ON
18 REDUCTION OF GREENHOUSE GAS AND NOISE EMIS-
19 SIONS FROM AIRCRAFT.—

20 “(1) IN GENERAL.—The Administrator shall es-
21 tablish an initiative to research, develop, and dem-
22 onstrate new technologies and concepts for the pur-
23 poses of reducing greenhouse gas emissions from
24 aviation, including carbon dioxide, (CO₂), nitrogen
25 oxides (NO_x), other greenhouse gases, water vapor,

1 black carbon and sulfate aerosols, increased cloudi-
2 ness due to contrail formation, noise emissions from
3 aircraft, and to enable associated aircraft perform-
4 ance characteristics.

5 “(2) GOALS.—The goals of the initiative shall
6 be to—

7 “(A) ensure United States leadership in re-
8 search and technology innovation leading to
9 substantial reductions in aviation noise and
10 greenhouse gas emissions;

11 “(B) enhance and expand basic research,
12 and the translation of basic research into appli-
13 cations, that may lead to transformational ad-
14 vances in reducing aviation noise and green-
15 house gas emissions;

16 “(C) accelerate research and development
17 that contributes to maturing new technologies
18 for reducing aircraft noise and greenhouse gas
19 emissions; and

20 “(D) obtain and disseminate associated
21 testing and performance data that facilitates
22 the incorporation of new technologies into com-
23 mercial aircraft development as soon as prac-
24 ticable.

1 “(3) OBJECTIVES.—The objectives of the initia-
2 tive and goals in paragraph (1) shall include—

3 “(A) as soon as practicable, a reduction of
4 greenhouse gas emissions from new aircraft by
5 at least 50 percent compared to the highest-per-
6 forming aircraft technologies in service as of
7 December 31, 2021;

8 “(B) noise levels from aircraft throughout
9 all phases of flight that do not exceed ambient
10 noise levels in the absence of flight operations
11 in the vicinity of the flight route;

12 “(C) net-zero greenhouse gas emissions
13 from aircraft by 2050; and

14 “(D) demonstrating new technologies de-
15 veloped pursuant to the initiative established
16 under paragraph (1) on regional aircraft in-
17 tended to enter into service by 2030 and single-
18 aisle aircraft designed to accommodate more
19 than 125 passengers intended to enter into
20 service by 2040.”.

21 (b) TECHNOLOGY FOCUS AREAS.—In carrying out
22 the research and development initiative established under
23 subsection (b) of section 40112 of title 51, United States
24 Code, the Administrator of the National Aeronautics and
25 Space Administration shall advance research, develop-

1 ment, and demonstration projects on promising tech-
2 nologies such as—

3 (1) advanced subsonic propulsion technology,
4 design, and integration;

5 (2) electric and hybrid-electric propulsion, in-
6 cluding battery electric and hydrogen fuel cell elec-
7 tric systems;

8 (3) airframe concepts and configurations;

9 (4) analysis of technology options, including
10 cost-benefit analysis of greenhouse gas and noise
11 emissions reduction technologies;

12 (5) analytical tools for system- and system-of-
13 systems-level modeling and integration;

14 (6) airspace operations improvements;

15 (7) noise emission reduction; and

16 (8) other efforts, as determined by the Adminis-
17 tration, that contribute to a sustainable future for
18 aviation.

19 (c) IMPLEMENTATION.—In implementing the initia-
20 tive established under subsection (b) of section 40112 of
21 title 51, United States Code, the Administrator of the Na-
22 tional Aeronautics and Space Administration shall, to the
23 extent practicable—

24 (1) ensure that testing and performance data
25 integrates the results of community acceptance sur-

1 veys conducted by the Federal Aviation Administra-
2 tion and other relevant studies, including studies on
3 the impacts of new noise effects from novel propul-
4 sion systems and from airspace operations changes;

5 (2) provide testing and performance data on the
6 technologies described in subsection (b) to the Ad-
7 ministrator of the Federal Aviation Administration
8 to facilitate the work of the Federal Aviation Admin-
9 istration in identifying new requirements for policy,
10 infrastructure, and administrative capacity necessary
11 to enable the safe integration of such technologies on
12 aircraft;

13 (3) pursue partnerships with organizations, cur-
14 rent commercial production aircraft providers, aca-
15 demic institutions, small businesses and new en-
16 trants, including partnerships to advance research
17 and development activities related to both regional
18 aircraft and aircraft designed to accommodate more
19 than 125 passengers;

20 (4) include universities, academic institutions,
21 and other research organizations in the partnerships
22 under paragraph (3);

23 (5) expand basic research;

1 (6) ensure equity in research sponsorship and
2 partnership opportunities with underrepresented stu-
3 dents, faculty, and minority-serving-institutions;

4 (7) continue to coordinate with the Department
5 of Energy on battery technology research;

6 (8) make available the research and develop-
7 ment carried out under the initiative established
8 under subsection (b) of section 40112 of title 51,
9 United States Code, to help enable an industry-wide
10 shift toward aircraft concepts that reduce green-
11 house gas emissions and aircraft noise to achieve the
12 goals and objectives under paragraphs (2) and (3) of
13 such subsection; and

14 (9) continue to support research, development,
15 and demonstration of aircraft concepts, including
16 systems architecture, materials and components, in-
17 tegration of systems and airframe structures, human
18 factors, airspace planning and operations, and the
19 integration of related advanced technologies and con-
20 cepts, with the goal of carrying out test flights with
21 integrated subsystems by 2025.

22 (d) ANNUAL REPORT.—Not later than 1 year after
23 the date of the enactment of this Act, and annually there-
24 after, the Administrator of the National Aeronautics and
25 Space Administration shall submit a report to the Com-

1 mittee on Science, Space, and Technology of the House
2 of Representatives and the Committee on Commerce,
3 Science, and Transportation of the Senate on the progress
4 of the work under the initiative established under sub-
5 section (b) of section 40112 of title 51, United States
6 Code, including—

7 (1) the status of progress on the initiative
8 under such subsection;

9 (2) an updated, anticipated timeframe for read-
10 iness of technologies and aircraft to be adopted by
11 industry with the emissions reduction levels directed
12 under such subsection; and

13 (3) an identification of fundamental aeronautics
14 research activities contributing to achieving the ini-
15 tiative under such subsection, as well as a descrip-
16 tion of any obstacles to achieving such goals and ob-
17 jectives under paragraphs (2) and (3) of such sub-
18 section.