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FEDERAL AVIATION RESEARCH AND DEVELOPMENT REAUTHORIZATION ACT OF 2007

SEPTEMBER 17, 2007.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

Mr. GORDON of Tennessee, from the Committee on Science and Technology, submitted the following

R E P O R T

[To accompany H.R. 2698]

[Including cost estimate of the Congressional Budget Office]

The Committee on Science and Technology, to whom was referred the bill (H.R. 2698) to authorize appropriations for the civil aviation research and development projects and activities of the Federal Aviation Administration, and for other purposes, having considered the same, report favorably thereon with an amendment and recommend that the bill as amended do pass.

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I. AMENDMENT

The amendment is as follows:
Strike all after the enacting clause and insert the following:

SECTION 1. SHORT TITLE.

This Act may be cited as the "Federal Aviation Research and Development Reauthorization Act of 2007".

SEC. 2. DEFINITIONS.

As used in this Act—

(1) the term "Administrator" means the Administrator of the Federal Aviation Administration;

(2) the term "Director" means the Director of the Joint Planning and Development Office;

(3) the term "FAA" means the Federal Aviation Administration;

(4) the term "NASA" means the National Aeronautics and Space Administration;

(5) the term "National Research Council" means the National Research Council of the National Academies of Science and Engineering;

(6) the term "NOAA" means the National Oceanic and Atmospheric Administration;

(7) the term "NSF" means the National Science Foundation;

(8) the term "Office" means the Next Generation Air Transportation System Joint Planning and Development Office; and

(9) the term "Secretary" means the Secretary of Transportation.

SEC. 3. AUTHORIZATION OF APPROPRIATIONS.

Section 48102(a) of title 49, United States Code, is amended—

(1) in paragraph (11)(L), by striking "and";

(2) in paragraph (12)(L), by striking the period and inserting a semicolon; and

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

"(13) for fiscal year 2008, $335,191,000, including—

"(A) $7,350,000 for fire research and safety;

"(B) $4,086,000 for propulsion and fuel systems;

"(C) $2,713,000 for advanced materials and structural safety;

"(D) $3,574,000 for atmospheric hazards and digital system safety;

"(E) $14,931,000 for aging aircraft;

"(F) $2,202,000 for aircraft catastrophic failure prevention research;

"(G) $14,651,000 for flightdeck maintenance, system integration, and human factors;

"(H) $9,517,000 for aviation safety risk analysis;

"(I) $15,254,000 for air traffic control, technical operations, and human factors;

"(J) $6,780,000 for aeromedical research;

"(K) $19,888,000 for weather programs;

"(L) $6,310,000 for unmanned aircraft systems research;

"(M) $18,100,000 for the Next Generation Air Transportation System Joint Planning and Development Office;

"(N) $13,755,000 for wake turbulence;

"(O) $20,469,000 for environment and energy;

"(P) $1,184,000 for system planning and resource management;

"(Q) $3,415,000 for the William J. Hughes Technical Center Laboratory Facility;

"(R) $74,200,000 for the Center for Advanced Aviation System Development;

"(S) $2,000,000 for the Airport Cooperative Research Program—capacity;

"(T) $3,000,000 for the Airport Cooperative Research Program—environment;

"(U) $5,000,000 for the Airport Cooperative Research Program—safety;

"(V) $3,600,000 for GPS civil requirements;

"(W) $5,000,000 for runway incursion reduction;

"(X) $6,500,000 for system capacity, planning, and improvement;

"(Y) $3,000,000 for operations concept validation;

"(Z) $1,000,000 for NAS weather requirements;
"(AA) $4,000,000 for the Airspace Management Lab;
"(BB) $5,000,000 for airspace redesign;
"(CC) $4,000,000 for wind profiling and weather research, Juneau;
"(DD) $1,000,000 for the Local Area Augmentation System (LAAS);
"(EE) $15,000,000 for Safe Flight 21, Alaska Capstone;
"(FF) $20,000,000 for NextGen demonstration;
"(GG) $8,907,000 for airports technology research—capacity;
"(HH) $9,805,000 for airports technology research—safety;

"(14) for fiscal year 2009, $481,554,000, including—
"(A) $8,457,000 for fire research and safety;
"(B) $4,050,000 for propulsion and fuel systems;
"(C) $2,686,000 for advanced materials and structural safety;
"(D) $3,568,000 for atmospheric hazards and digital system safety;
"(E) $14,683,000 for aging aircraft;
"(F) $2,158,000 for aircraft catastrophic failure prevention research;
"(G) $37,499,000 for flightdeck maintenance, system integration, and human factors;
"(H) $8,349,000 for aviation safety risk analysis;
"(I) $15,323,000 for air traffic control, technical operations, and human factors;
"(J) $6,932,000 for aeromedical research;
"(K) $22,336,000 for weather program;
"(L) $6,738,000 for unmanned aircraft systems research;
"(M) $18,100,000 for the Next Generation Air Transportation System Joint Planning and Development Office;
"(N) $11,560,000 for wake turbulence;
"(O) $35,039,000 for environment and energy;
"(P) $1,847,000 for system planning and resource management;
"(Q) $3,548,000 for the William J. Hughes Technical Center Laboratory Facility;
"(R) $85,000,000 for Center for Advanced Aviation System Development;
"(S) $5,000,000 for the Airport Cooperative Research Program—capacity;
"(T) $5,000,000 for the Airport Cooperative Research Program—environment;
"(U) $5,000,000 for the Airport Cooperative Research Program—safety;
"(V) $3,469,000 for GPS civil requirements;
"(W) $5,000,000 for runway incursion reduction;
"(X) $6,500,000 for system capacity, planning and improvement;
"(Y) $3,000,000 for Operations Concept Validation;
"(Z) $1,000,000 for NAS weather requirements;
"(AA) $4,000,000 for the Airspace Management Lab;
"(BB) $3,000,000 for airspace redesign;
"(CC) $20,000,000 for Safe Flight 21, Alaska Capstone;
"(DD) $12,000,000 for NextGen demonstration;
"(EE) $102,000,000 for NextGen system development;
"(FF) $8,907,000 for airports technology research—capacity;
"(GG) $9,805,000 for airports technology research—safety;

"(15) for fiscal year 2010, $486,502,000, including—
"(A) $8,546,000 for fire research and safety;
"(B) $4,075,000 for propulsion and fuel systems;
"(C) $2,700,000 for advanced materials and structural safety;
"(D) $3,608,000 for atmospheric hazards and digital system safety;
"(E) $14,688,000 for aging aircraft;
"(F) $2,153,000 for aircraft catastrophic failure prevention research;
"(G) $36,967,000 for flightdeck maintenance, system integration, and human factors;
"(H) $8,334,000 for aviation safety risk analysis;
"(I) $15,471,000 for air traffic control, technical operations, and human factors;
"(J) $7,149,000 for aeromedical research;
"(K) $23,286,000 for weather program;
"(L) $6,236,000 for unmanned aircraft systems research;
"(M) $18,100,000 for the Next Generation Air Transportation System Joint Planning and Development Office;
"(N) $11,412,000 for wake turbulence;
"(O) $34,678,000 for environment and energy;
"(P) $1,827,000 for system planning and resource management;

"(Q) $3,644,000 for William J. Hughes Technical Center Laboratory Facility;
"(R) $90,000,000 for the Center for Advanced Aviation System Development;
"(S) $5,000,000 for the Airport Cooperative Research Program—capacity;
"(T) $5,000,000 for the Airport Cooperative Research Program—environment;
"(U) $5,000,000 for the Airport Cooperative Research Program—safety;
"(V) $3,416,000 for GPS civil requirements;
"(W) $5,000,000 for runway incursion reduction;
"(X) $6,500,000 for system capacity, planning and improvement;
"(Y) $3,000,000 for operations concept validation;
"(Z) $1,000,000 for NAS weather requirements;
"(AA) $4,000,000 for the Airspace Management Lab;
"(BB) $3,000,000 for airspace redesign;
"(CC) $20,000,000 for Safe Flight 21, Alaska Capstone;
"(DD) $12,000,000 for NextGen demonstration;
"(EE) $102,000,000 for NextGen system development;
"(FF) $8,907,000 for airports technology research—capacity;
"(GG) $9,805,000 for airports technology research—safety; and

"(16) for fiscal year 2011, $514,832,000, including—
"(A) $8,815,000 for fire research and safety;
"(B) $4,150,000 for propulsion and fuel systems;
"(C) $2,747,000 for advanced materials and structural safety;
"(D) $3,687,000 for atmospheric hazards and digital system safety;
"(E) $14,903,000 for aging aircraft;
"(F) $2,181,000 for aircraft catastrophic failure prevention research;
"(G) $39,245,000 for flightdeck maintenance, system integration and human factors;
"(H) $8,446,000 for aviation safety risk analysis;
"(I) $15,715,000 for air traffic control, technical operations, and human factors;
"(J) $7,390,000 for aeromedical research;
"(K) $23,638,000 for weather program;
"(L) $6,295,000 for unmanned aircraft systems research;
"(M) $18,100,000 for the Next Generation Air Transportation System Joint Planning and Development Office;
"(N) $11,471,000 for wake turbulence;
"(O) $34,811,000 for environment and energy;
"(P) $1,836,000 for system planning and resource management;
"(Q) $3,758,000 for William J. Hughes Technical Center Laboratory Facility;
"(R) $114,000,000 for Center for Advanced Aviation System Development;
"(S) $5,000,000 for the Airport Cooperative Research Program—capacity;
"(T) $5,000,000 for the Airport Cooperative Research Program—environment;
"(U) $5,000,000 for the Airport Cooperative Research Program—safety;
"(V) $3,432,000 for GPS civil requirements;
"(W) $2,000,000 for runway incursion reduction;
"(X) $6,500,000 for system capacity, planning and improvement;
"(Y) $3,000,000 for operations concept validation;
"(Z) $1,000,000 for NAS weather requirements;
"(AA) $4,000,000 for the Airspace Management Lab;
"(BB) $3,000,000 for airspace redesign;
"(CC) $20,000,000 for Safe Flight 21, Alaska Capstone;
"(DD) $12,000,000 for NextGen demonstration;
"(EE) $105,000,000 for NextGen system development;
"(FF) $8,907,000 for airports technology research—capacity;
"(GG) $9,805,000 for airports technology research—safety.".

SEC. 4. NEXT GENERATION AIR TRANSPORTATION SYSTEM JOINT PLANNING AND DEVELOPMENT OFFICE.

(a) STATUS OF DIRECTOR AND RESPONSIBILITIES OF OFFICE.—Section 709 of the Vision 100—Century of Aviation Reauthorization Act (49 U.S.C. 40101 note) is amended—

(1) in subsection (a)—

(A) in paragraph (1), by adding at the end the following: "The head of the Office shall be the Director. The Director shall report to the Administrator of the Federal Aviation Administration and shall serve as Associate Admin-

istrator for the Next Generation Air Transportation System, and shall be a voting member and co-chair of the Joint Resources Council.";

(B) by amending paragraph (2)(C) to read as follows:

"(C) creating a transition plan for the implementation of that system that includes date-specific milestones for the implementation of new capabilities into the national airspace system;";

(C) in paragraph (2)(G), by striking "; and" and inserting a semicolon;

(D) in paragraph (2)(H), by striking the period at the end and inserting "; and";

(E) by adding at the end of paragraph (2) the following:

"(I) establishing specific quantitative goals for the safety, capacity, efficiency, performance, and environmental impacts of each phase of Next Generation Air Transportation System implementation activities and measuring actual operational experience against those goals, taking into account noise pollution reduction concerns of affected communities to the greatest extent practicable in establishing the environmental goals;

"(J) working to ensure global interoperability of the Next Generation Air Transportation System;

"(K) integrating aviation weather information and space weather information into the Next Generation Air Transportation System as soon as possible;

"(L) overseeing, with the Administrator, the selection of products or outcomes of research and development activities that would be moved to the next stage of a demonstration project through the Joint Resources Council;

"(M) maintaining a baseline modeling and simulation environment for testing and evaluating alternative concepts to satisfy Next Generation Air Transportation enterprise architecture requirements; and

"(N) pursuing the integration of unmanned aircraft systems into the national airspace system through research and demonstration programs under the auspices of a public and private partnership."; and

(2) in subsection (e), by striking "2010" and inserting "2011".

(b) ACCOUNTABILITY.—Section 709(a) is further amended—

(1) in paragraph (3), by inserting "(A)" after the paragraph designation; and

(2) by adding at the end of paragraph (3) the following:

"(B) The Administrator, the Secretary of Defense, the Administrator of NASA, the Secretary of Commerce, the Secretary of Homeland Security, and the head of any other Department or Federal agency from which the Secretary of Transportation requests assistance under paragraph (A) shall designate a senior official in the department or agency to be responsible for—

"(i) implementing the department's or agency's Next Generation Air Transportation System activities with the Office, including the execution of all aspects of the department's or agency's work on developing and implementing the integrated plan described in section 709(2)(A); and

"(ii) ensuring that the department or agency meets its obligations as set forth in the memorandum of understanding executed by or on behalf of the department or agency under subparagraph (D).

"(C) The head of any such department or agency shall—

"(i) establish an office within the department or agency to carry out its responsibilities under the memorandum of understanding under the supervision of the designated official; and

"(ii) ensure that the designated official has sufficient budgetary authority and staff resources to carry out the department's or agency's Next Generation Air Transportation System responsibilities as set forth in the integrated plan under section 709(b).

"(D) Not later than 6 months after the date of enactment of the Federal Aviation Research and Development Reauthorization Act of 2007, the head of each department or agency that has responsibility for carrying out any activity under the integrated plan under section 709(b) shall execute a memorandum of understanding with the Office obligating that department or agency to carry out those activities.".

(c) INTEGRATED PLAN.—Section 709(b) of the Vision 100—Century of Aviation Reauthorization Act (49 U.S.C. 40101 note) is amended—

(1) by striking the first sentence and inserting "The integrated plan shall be designed to ensure that the Next Generation Air Transportation System meets anticipated future air transportation safety, security, mobility, efficiency, and capacity needs and accomplishes the goals under subsection (c).";

(2) in paragraph (3)(C), by striking "; and" and inserting a semicolon;

(3) in paragraph (4) by striking the period and inserting a semicolon; and

(4) by adding at the end the following:

"(5) Date-specific timetables for the partial and complete implementation of planned Next Generation Air Transportation System capabilities, including but not limited to Automated Dependent Surveillance-Broadcast, Unmanned Aircraft Systems operations, Next Generation Enabled Weather system, Next Generation Data Communications, NAS Voice Switch, System Wide Information Management system, and space weather information, and including any necessary certification activities, and including an evaluation of the costs and benefits of accelerating any of the implementation and certification timetables;

"(6) Identification of planned demonstration projects and date-specific timetables for the conduct of the demonstration projects and subsequent certification activities and an evaluation of the costs and benefits of accelerating any of the demonstration projects and certification activities;

"(7) Date-specific timetables for meeting the environmental requirements identified in subsection (I); and

"(8) Identification, on an annual basis, of each entity that will be responsible for each component of any research, development, or implementation activity.".

(d) ANNUAL REPORT.—Section 709(d) of the Vision 100—Century of Aviation Reauthorization Act (49 U.S.C. 40101 note) is amended to read as follows:

"(d) ANNUAL REPORTS.—The Director of the Office shall transmit a report annually to the Committee on Science and Technology and the Committee on Transportation and Infrastructure of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate at the time of the President's budget request describing the progress in carrying out the plan required under subsection (b) and any changes to that plan. The annual report shall include—

"(1) the updated integrated plan developed under subsection (b);

"(2) a detailed description of the progress made in carrying out the integrated plan and any changes made to that plan since the previous annual report, and identifying any changes resulting from funding shortfalls or limitations set by the Office of Management and Budget;

"(3) any deviation from previously established development and implementation milestones, the reasons for the deviation, and the impact of the deviation;

"(4) the relevant programs and activities for the previous fiscal year and the proposed programs and activities under the President's budget request, of each participating Federal agency and department; and

"(5) the levels of funding for each participating Federal agency and department devoted to the programs and activities in paragraph (4) for the previous fiscal year and under the President's budget request.".

(e) SENIOR POLICY COMMITTEE.—Section 710(a) of the Vision 100—Century of Aviation Reauthorization Act (49 U.S.C. 40101 note) is amended in the last sentence by inserting ", and shall meet at least four times each year" before the period.

(f) BUDGET PREPARATION.—

(1) Each Federal agency and department participating in the office shall, as part of its annual request for appropriations to the Office of Management and Budget, submit a report to the Office of Management and Budget which—

(A) identifies each element of its work program which contributes directly to Next Generation Air Transportation System initiative; and

(B) states the portion of its request for appropriations that is allocated to each such element.

(2) The Office of Management and Budget shall review each such report in light of the goals, priorities, and agency and departmental responsibilities set forth in the annual report submitted under the amendment made by subsection (d), and shall include, in the President's annual budget estimate, a statement of the portion of each appropriate agency's or department's annual budget estimate relating to its activities undertaken pursuant to the Next Generation Air Transportation System initiative.

(g) CONTINGENCY PLANNING.—The Director shall, as part of the design of the Next Generation Air Transportation System, develop contingency plans for dealing with the degradation of the Next Generation Air Transportation System in the event of a natural disaster, major equipment failure, or act of terrorism.

(h) ENVIRONMENTAL RESEARCH.—The Director shall establish environmental objectives for noise, emissions, and energy consumption to be satisfied in the Next Generation Air Transportation System through a combination of technologies and operational procedures. The Director shall assign primary responsibility for the research, development, and demonstration of the applicable technologies in a relevant environment to NASA and primary responsibility for demonstration of optimized operational procedures to the FAA.

(i) GOVERNMENT ACCOUNTABILITY OFFICE ASSESSMENT AND REPORT.—

(1) SCOPE.—The Comptroller General shall assess compliance with the requirements of section 709 of the Vision 100—Century of Aviation Reauthorization Act (49 U.S.C. 40101 note) to determine—

(A) the effectiveness of the Next Generation Air Transportation System Joint Planning and Development Office in meeting the deadlines and milestones of the integrated plan under that section; and

(B) the adequacy and effectiveness of the memoranda of understanding executed by Federal departments and agencies under that section.

(2) REPORT.—Not later than 270 days after the date of enactment of this Act, and annually thereafter until the Next Generation Air Transportation System is fully operational, the Comptroller General shall transmit a report to the Committee on Science and Technology and the Committee on Transportation and Infrastructure of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate containing the Comptroller General's findings, conclusions and recommendations related to the assessment in paragraph (1).

(j) UNMANNED AIRCRAFT SYSTEMS.—

(1) RESEARCH INITIATIVE.—

(A) IMPROVED MANNED AND UNMANNED AIRCRAFT.—Section 44504 of title 49, United States Code, is amended—

(i) in subsection (a), by inserting "unmanned and manned" after "improve";

(ii) in subsection (b)(6), by striking "and" after the semicolon;

(iii) in subsection (b)(7) by striking the period and inserting "; and"; and

(iv) by adding at the end of subsection (b) the following:

"(8) in conjunction with other Federal agencies as appropriate, to develop technologies and methods to assess the risk of and prevent defects, failures, and malfunctions of products, parts, and processes, for use in all classes of unmanned aircraft systems that could result in a catastrophic failure of the unmanned aircraft that would endanger other aircraft in the national airspace system.".

(B) SYSTEMS, PROCEDURES, FACILITIES, AND DEVICES.—Section 44505(b) of such title is amended—

(i) in paragraph (4), by striking "and" after the semicolon;

(ii) in paragraph (5)(C), by striking the period and inserting a semicolon; and

(iii) by adding at the end of subsection (b) the following:

"(6) to develop a better understanding of the relationship between human factors and unmanned aircraft systems safety; and

"(7) to develop dynamic simulation models for integrating all classes of unmanned aircraft systems into the national airspace system without any degradation of existing levels of safety for all national airspace system users.".

(2) ROADMAP.—Not later than 90 days after the date of enactment of this Act, the Administrator shall develop and transmit an unmanned aircraft systems research, development, demonstration and implementation "roadmap" to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate.

(3) INDEPENDENT ASSESSMENT.—

(A) IN GENERAL.—Not later than 3 months after the date of enactment of this Act, the Administrator shall enter into an arrangement with the National Research Council for an assessment of the status of unmanned aircraft systems that shall include consideration of—

(i) human factors regarding unmanned aircraft systems operation;

(ii) "detect, sense and avoid technologies" with respect to both cooperative and non-cooperative aircraft;

(iii) spectrum issues and bandwidth requirements;

(iv) operation in suboptimal winds and adverse weather conditions;

(v) mechanisms for communicating unmanned aircraft system location;

(vi) airworthiness and system redundancy;

(vii) flight termination systems for safety and security;

(viii) technologies for unmanned aircraft systems flight control;

(ix) technologies for unmanned aircraft systems propulsion;

(x) unmanned aircraft systems operator qualifications, medical standards, and training requirements;

(xi) unmanned aircraft systems maintenance requirements and training requirements;

(xii) any other unmanned aircraft systems-related issue the Administrator believes should be addressed; and

(xiii) recommendations for integrating unmanned aircraft systems into the national airspace system in a timely manner without any degradation of existing levels of safety for all national airspace system users.

(B) REPORT.—Not later than 12 months after initiating the study, the National Academy shall submit its report to the Administrator, the Senate Committee on Commerce, Science, and Transportation, and the House of Representatives Committee on Science and Technology containing its finding and recommendations.

(4) PILOT PROJECTS FOR TRANSITIONING RESEARCH AND DEVELOPMENT RESULTS.—

(A) IN GENERAL.—The Administrator shall establish pilot projects in sparsely populated, low-density Class G air traffic airspace to conduct experiments and collect data in order to accelerate the safe integration of unmanned aircraft systems into the national airspace system without any degradation of existing levels of safety for all national airspace system users.

(B) USE OF PUBLIC-PRIVATE PARTNERSHIP.—In conducting the pilot projects, the Administrator shall encourage the formation of a public-private partnership.

(C) REPORT.—Not later than 90 days after completing the pilot projects, the Administrator shall transmit a report to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate, setting forth the Administrator's findings and conclusions concerning the projects.

(D) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated to the Administrator for fiscal years 2008 and 2009 such sums as may be necessary to carry out the pilot projects under this paragraph.

SEC. 5. INTERAGENCY RESEARCH INITIATIVE ON THE IMPACT OF AVIATION ON THE CLIMATE.

(a) IN GENERAL.—The Administrator, in coordination with NASA and the United States Climate Change Science Program, shall establish a research initiative to assess the impact of aviation on the climate and, if warranted, to evaluate approaches to mitigate that impact.

(b) RESEARCH PLAN.—Not later than 1 year after the date of enactment of this Act, the participating Federal entities shall jointly develop a plan for the research program that contains the objectives, proposed tasks, milestones, and 5-year budgetary profile.

(c) REVIEW.—The Administrator shall have the National Research Council conduct an independent review of the interagency research program plan and provide the results of that review to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate not later than 18 months after the date of enactment of this Act.

(d) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated $2,000,000 for fiscal year 2008, and $5,000,000 in each of the fiscal years 2009 through 2011, for the interagency research program established under this section.

SEC. 6. RESEARCH PROGRAM ON RUNWAYS.

(a) ESTABLISHMENT OF RESEARCH PROGRAM.—The Administrator shall establish a program of research grants to universities and non-profit research foundations for research and technology demonstrations related to—

(1) improved runway surfaces; and

(2) engineered material restraining systems for runways at both general aviation airports and airports with commercial air carrier operations.

(b) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated $5,000,000 for each of the fiscal years 2008 through 2011 to carry out this section.

SEC. 7. RESEARCH ON DESIGN FOR CERTIFICATION.

(a) JOINT PROGRAM.—Not later than 6 months after the date of enactment of this Act, the FAA and NASA shall establish a joint research program on methods to improve both confidence in and the timeliness of certification of new technologies for their introduction into the national airspace system.

(b) RESEARCH PLAN.—Not later than 1 year after the date of enactment of this Act, as part of the activity described in subsection (a), the FAA and NASA shall jointly develop a plan for the research program that contains the objectives, proposed tasks, milestones, and five-year budgetary profile.

(c) REVIEW.—The Administrator shall have the National Research Council conduct an independent review of the joint research program plan and provide the results

of that review to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate not later than 18 months after the date of enactment of this Act.

SEC. 8. CENTERS OF EXCELLENCE.

(a) AMENDMENT.—Section 44513(f) of title 49, United States Code, is amended to read as follows:

"(f) GOVERNMENT'S SHARE OF COSTS.—The United States Government's share of establishing and operating the center and all related research activities that grant recipients carry out shall not exceed 75 percent of the costs. The United States Government's share of an individual grant under this section shall not exceed 90 percent of the costs.".

(b) ANNUAL REPORT.—The Administrator shall transmit a report annually to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate at the time of the President's budget request that lists—

(1) the research projects that have been initiated by each Center of Excellence in the preceding year;

(2) the amount of funding for each research project and the funding source;

(3) the institutions participating in each project and their shares of the overall funding for each research project; and

(4) the level of cost-sharing for each research project.

SEC. 9. AIRPORT COOPERATIVE RESEARCH PROGRAM.

Section 44511(f) of title 49, United States Code, is amended—

(1) in paragraph (1), by striking "establish a 4-year pilot" and inserting "maintain an"; and

(2) in paragraph (4)—

(A) by striking "expiration of the program" and inserting "expiration of the pilot program"; and

(B) by striking "program, including recommendations as to the need for establishing a permanent airport cooperative research program" and inserting "program".

SEC. 10. RESEARCH GRANTS PROGRAM INVOLVING UNDERGRADUATE STUDENTS.

(a) IN GENERAL.—The Administrator shall establish a program to utilize colleges and universities, including Historically Black Colleges and Universities, Hispanic Serving Institutions, tribally controlled colleges and universities, and Alaska Native and Native Hawaiian serving institutions in conducting research by undergraduate students on subjects of relevance to the FAA. Grants may be awarded under this section for—

(1) research projects to be carried out primarily by undergraduate students;

(2) research projects that combine undergraduate research with other research supported by the FAA;

(3) research on future training requirements related to projected changes in regulatory requirements for aircraft maintenance and power plant licensees; and

(4) research on the impact of new technologies and procedures, particularly those related to aircraft flight deck and air traffic management functions, and on training requirements for pilots and air traffic controllers.

(b) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated $5,000,000 for each of the fiscal years 2008 through 2011, for research grants under this section.

SEC. 11. BUDGET FORMULATION.

Section 48102 of title 49, United States Code, is amended by inserting after subsection (f) the following new subsection:

"(g) BUDGET FORMULATION.—(1) The Department of Transportation's annual budget request for the Federal Aviation Administration shall identify all of the activities carried out by the Administration within the categories of basic research, applied research, and development, as classified by the Office of Management and Budget Circular A–11. Each activity in the categories of basic research, applied research, and development shall be identified regardless of the budget category in which it appears in the budget request.

"(2) The budget request specified in paragraph (1) shall be submitted to the Committee on Science and Technology and the Committee on Transportation and Infrastructure of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate at the same time as the President's Budget Request is submitted to the Congress.".

SEC. 12. RESEARCH PROGRAM ON SPACE WEATHER AND AVIATION.

(a) ESTABLISHMENT.—The Administrator of the Federal Aviation Administration shall, in coordination with the National Science Foundation, National Aeronautics and Space Administration, National Oceanic and Atmospheric Administration, and other relevant agencies, initiate a research program to—

(1) conduct or supervise research projects on impacts of space weather to aviation, including communication, navigation, avionic systems, and on airline passengers and personnel; and

(2) facilitate the transfer of technology from space weather research programs to Federal agencies with operational responsibilities and to the private sector.

(b) USE OF GRANTS OR COOPERATIVE AGREEMENTS.—The Administrator may use grants or cooperative agreements in carrying out this section.

(c) AUTHORIZATION OF APPROPRIATIONS.—In addition to amounts authorized to be appropriated by the amendments made by this Act, there is authorized to be appropriated $1,000,000 for each of the fiscal years 2008 through 2011 to carry out this section.

SEC. 13. AVIATION GAS RESEARCH AND DEVELOPMENT PROGRAM.

(a) CONTINUATION OF PROGRAM.—The Administrator, in coordination with the NASA Administrator, shall continue research and development activities into technologies for modification of existing general aviation piston engines to enable their safe operation using unleaded aviation fuel.

(b) ROADMAP.—Not later than 120 days of the enactment of this Act, the Administrator shall develop a research and development roadmap for the program continued in subsection (a), containing the specific research and development objectives and anticipated timetable for achieving the objectives.

(c) REPORT.—Not later than 130 days of the enactment of this Act, the Administrator shall provide the roadmap specified in subsection (b) to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate.

(d) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated $750,000 for each of the fiscal years 2008 through 2010, to carry out this section.

SEC. 14. RESEARCH REVIEWS AND ASSESSMENTS.

(a) REVIEW OF FAA'S ENERGY- AND ENVIRONMENT-RELATED RESEARCH PROGRAMS.—

(1) STUDY.—The Administrator shall enter into an arrangement with the National Research Council for a review of the FAA's energy- and environment-related research program. The review shall assess whether—

(A) the programs have well-defined, prioritized, and appropriate research objectives;

(B) the program are properly coordinated with the energy- and environment-related research programs of NASA, NOAA, and other relevant agencies;

(C) the program have allocated appropriate resources to each of the research objectives; and

(D) there exist suitable mechanisms for transitioning the research results into the FAA's operational technologies and procedures and certification activities.

(2) REPORT.—A report containing the results of the review shall be provided to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate within eighteen months of the enactment of this Act.

(b) ASSESSMENT OF THE IMPACT OF SPACE WEATHER ON AVIATION.—

(1) STUDY.—The Administrator shall enter into an arrangement with the National Research Council for a study of the impacts of space weather on the current and future United States aviation industry, and in particular, to examine the risks for Over-The-Pole (OTP) and Ultra-Long-Range (ULR) operations. The study shall—

(A) examine space weather impacts on at least the following areas: communications, navigation, avionics, and human health in flight;

(B) assess the benefits of space weather information and services to reduce aviation costs and maintain safety;

(C) provide recommendations on how NASA, NOAA, and the NSF can most effectively carry out research and monitoring activities related to space weather and aviation; and

(D) provide recommendations on how to integrate space weather information into the Next Generation Air Transportation System.

(2) REPORT.—A report containing the results of the study shall be provided to the Committee on Science and Technology of the House of Representatives

and the Committee on Commerce, Science, and Transportation of the Senate not later than 1 year after the date of enactment of this Act.

SEC. 15. REVIEW OF FAA'S AVIATION SAFETY-RELATED RESEARCH PROGRAMS.

(a) REVIEW.—The Administrator shall enter into an arrangement with the National Research Council for an independent review of the FAA's aviation safety-related research programs. The review shall assess whether—

(1) the programs have well-defined, prioritized, and appropriate research objectives;

(2) the programs are properly coordinated with the safety research programs of NASA and other relevant Federal agencies;

(3) the programs have allocated appropriate resources to each of the research objectives; and

(4) there exist suitable mechanisms for transitioning the research results from the programs into the FAA's operational technologies and procedures and certification activities in a timely manner.

(b) AVIATION SAFETY-RELATED RESEARCH PROGRAMS TO BE ASSESSED.—The FAA aviation safety-related research programs to be assessed under the review shall include, at a minimum, the following:

(1) Air traffic control/technical operations human factors.
(2) Runway incursion reduction.
(3) Flightdeck/maintenance system integration human factors.
(4) Airports technology research—safety.
(5) Airport cooperative research program—safety.
(6) Weather program.
(7) Atmospheric hazards/digital system safety.
(8) Fire research and safety.
(9) Propulsion and fuel systems.
(10) Advanced materials/structural safety.
(11) Aging aircraft.
(12) Aircraft catastrophic failure prevention research.
(13) Aeromedical research.
(14) Aviation safety risk analysis.
(15) Unmanned aircraft systems research.
(16) Safe Flight 21—Alaska Capstone.

(c) REPORT.—Not later than 14 months after the date of enactment of this Act, the Administrator shall submit to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report on the results of the review.

(d) AUTHORIZATION OF APPROPRIATIONS.—In addition to amounts authorized to be appropriated by the amendments made by this Act, there is authorized to be appropriated $700,000 for fiscal year 2008 to carry out this section.

II. PURPOSE OF THE BILL

The purpose of the bill is to reauthorize appropriations for the Federal Aviation Administration's research and development programs for fiscal years 2008, 2009, 2010, and 2011 and to clarify responsibilities and activities of the Next Generation Air Transportation System's Joint Planning and Development Office; amend provisions related to FAA's Centers of Excellence; establish an interagency initiative on the impact of aviation on the climate; authorize a runway research program; extend the Airport Cooperative Research Program; and authorize a number of other R&D initiatives. The funds authorized by this Act are aimed at improving the safety, capacity, and efficiency of the nation's air transportation system to meet expected air traffic demands of the future.

III. BACKGROUND AND NEED FOR THE LEGISLATION

The Federal Aviation Administration (FAA) was created to develop the nation's air commerce system and promote aviation safety. As part of the Airport Development and Airway Trust Fund established by Congress in 1982, a comprehensive research and development program was put in place to maintain a safe and effi-

cient air transportation system. In 2003, Congress passed Vision 100—Century of Aviation Reauthorization Act [P.L. 108–176] that authorized funding for FAA's activities, including research and development, for fiscal years 2003 through 2007. P.L. 108–176 also established the Next Generation Air Transportation System's Joint Planning and Development Office (JPDO) in Title VII Aviation Research, to manage work related to planning, research, development, and creation of a transition plan for the implementation of the Next Generation Air Transportation System.

IV. Hearing Summaries

The House Subcommittee on Space and Aeronautics held two hearings relevant to H.R. 2698 during the first session of the 110th Congress.

On Thursday, March 22, 2007, the Subcommittee on Space and Aeronautics held a hearing to review the FY 2008 budget request for the Federal Aviation Administration's (FAA) research and development (R&D) programs and to examine current and potential R&D priorities, including support for the Next Generation Air Transportation System (NextGen).

Four witnesses testified: Ms. Victoria Cox, Vice President for Operations Planning, Air Traffic Organization, Federal Aviation Administration; Dr. R. John Hansman, Co-Chair, FAA Research, Engineering and Development Advisory Committee, Professor of Aeronautics and Astronautics, Director, MIT International Center for Air Transportation; Dr. Donald Wuebbles, Chair, Workshop on the Impacts of Aviation on Climate Change, Department Head and Professor, Department of Atmospheric Sciences, University of Illinois-Urbana Champaign; Mr. Steve Alterman, President, Cargo Airline Association, Chairman, Environment Subcommittee, FAA Research, Engineering and Development Advisory Committee.

Chairman Udall noted that the hearing is timely because FAA reauthorization is due this year. He spoke of his concern over NASA's reduced funding commitment to aeronautics research. He also noted that the impact of aviation on climate change is receiving increasing attention. Representative Calvert seconded concerns about NASA's research, and wondered whether FAA's research funding is adequate.

Ms. Cox said that NextGen will enable support of a three-fold increase in airspace demand by 2025. The Operational Evolution Partnership (OEP), planning document will be published in June. Dr. Hansman reported that the airspace is being stressed by current demand, and delays have been increasing. He was concerned about the loss of national capability in applied aeronautics. He was also concerned about the FAA's capability to quickly implement new technologies. Dr. Wuebbles chaired a workshop on the impacts of aviation on climate change last summer. The workshop's conclusion was that further research is warranted, because of the potentially serious impact and because there is much uncertainty. Mr. Alterman agreed with concerns about NASA research, implementation speed, and aviation environmental impact. He promoted the benefits of improved operational procedures such as Continuous Descent Arrivals.

During the question and answer period, Dr. Hansman agreed with Ms. Cox's comment that human factors research will be im-

portant for NextGen. Mr. Alterman endorsed ADS–B implementation. He predicted that environmental constraints will prove more binding than capacity constraints. Dr. Hansman said that some research areas have been underfunded, such as aircraft icing, fire protection, terminal area safety, and safety-critical software.

Representative Rothman was concerned that airspace usage might some day fill the skies, degrading quality of life. He was particularly concerned about aviation noise. Dr. Wuebbles said that the amount of funding for research on the effects of aviation on climate is "essentially zero." Representative Rohrabacher said that he felt aviation emissions research should emphasize the health of the population today rather than emphasize global climate change. Representative Calvert wondered if the speed of replacement of older, louder and more polluting, aircraft could be increased with some sort of incentives. Dr. Hansman worried that NASA is under funding innovation.

In Questions for the Record, Mr. Alterman said he expects the FAA will have to mandate equipage for NextGen. He felt that the FAA, not the Joint Planning and Development Office (JPDO), should be in charge of NextGen implementation. Ms. Cox reported that the FY 2007 Operating Plan will not drive any adjustments to the FY 2008 R&D plan. The FY 2008 plan includes an additional $10M request for NextGen research on wake vortex and on human factors. About $18 million is being spent by the FAA on aviation environmental research. The FAA plans to support routine unmanned aircraft systems (UAS) access to the national airspace system (NAS) within the 2012–2015 timeframe.

Dr. Hansman said that the REDAC would recommend increasing support for UAS research. Dr. Wuebbles encouraged the FAA to develop stronger interactions with the academic community.

On Thursday, March 29, 2007, the Subcommittee on Space and Aeronautics held a hearing to examine the status of the Next Generation Air Transportation System initiative (also known as NGATS or NextGen) and explore key issues related to the initiative and the interagency Joint Planning and Development Office (JPDO).

Four witnesses testified: Mr. Charles Leader, Director, Joint Planning and Development Office, Federal Aviation Administration (FAA); Dr. Gerald L. Dillingham, Director, Physical Infrastructure Issues, Government Accountability Office; Hon. John Douglass, President and CEO, Aerospace Industries Association; Dr. Bruce Carmichael, Director, Aviation Applications Program, Research Applications Laboratory, National Center for Atmospheric Research.

In his opening remarks, Chairman Udall noted delays in NextGen developments since last year's hearing. He spoke with concern about NASA's uncertain commitment to its aeronautics program, and NextGen management continuity. Mr. Leader reported that two fundamental NextGen technologies are already beginning implementation: Automatic Dependence Surveillance Broadcast, (ADS–B), and System Wide Information Management, (SWIM). The DOD, DHS and the FAA are each contributing $5 million to a SWIM demonstration this year. He mentioned the near-term release of three important NextGen documents: the Concept of Operations, the Enterprise Architecture, and the Integrated Work Plan. He spoke of the importance of weather research.

Mr. Dillingham discussed JPDO's organizational structure, technical planning, and research funding. He felt that the FAA and JPDO must address the factors that have contributed to the frequent turnover of its JPDO senior management. He urged the JPDO to involve all stakeholders, including active traffic controllers and technicians. Mr. Douglas noted that industry is an essential partner in NextGen and it is important that industry have confidence that the government is committed to NextGen. Dr. Carmichael stated that seventy percent of delays in today's system are attributable to weather. NextGen will integrate the weather programs of the FAA, DOD and NOAA. Dr. Carmichael said that NASA would be a logical weather research partner but doesn't have much funding for it.

Representative Rothman voiced his concern that extreme growth of aviation could erode the quality of life. Representative Calvert spoke of his disappointment in NASA's decreased aeronautics activity.

In the question and answer period, Chairman Udall inquired where additional research funding could be most useful. Mr. Leader answered: safety related issues, human factors, a safety system that is predictive rather than forensic, automation issues and wake vortex work. Dr. Dillingham spoke of the importance of NASA aeronautics facilities. Mr. Douglas agreed, and also spoke of the importance of systems engineering, wake vortex and weather research. Mr. Douglas noted that weather research benefits the Department of Defense, too.

Dr. Dillingham noted that his organization has a study underway addressing the incorporation of unmanned aircraft systems into the air system.

In the questions for the record, Dr. Dillingham was asked if the JPDO should be moved out of the FAA for greater visibility and authority. He felt it should not be, but he suggested having the JPDO director report directly to the FAA Administrator, and making the director an Associate Administrator. He felt that the JPDO should not report to the Secretary of Transportation because that could remove it too far from program implementation. He endorsed Mr. Douglas' suggestion that agencies cooperating with the JPDO should designate a senior program official for JPDO management. He also felt that the Senior Policy Committee should hold regularly scheduled meetings.

Mr. Douglas felt that the NGATS Institute hadn't developed industry partnership adequately, and this slowed the development of the Concept of Operations. He noted that research and development is key to the success of NextGen; "however, NASA is the only agency capable to (sic) conducting the required R&D, particularly in the required timeframe." He reported that the AIA believes that a business case for necessary equipage by industry is necessary, and "a combination of operational and perhaps financial incentives should be considered."

Mr. Leader reported that the first segment of SWIM will be complete in 2013. The deployment across the NAS of ADSμ09B is planned to be completed by 2013. The FAA plans to maintain 50 percent of the current system of secondary radars at high-density locations to serve as a back-up. The FAA anticipates reducing, but

not eliminating, both VOR and ILS equipment. Some private sector involvement in the provision of key NextGen capabilities is likely.

V. Committee Actions

On June 13, 2007, H.R. 2698, a bill to reauthorize appropriations for the Federal Aviation Administration's research and development programs for fiscal years 2008, 2009, 2010, and 2011, was introduced by Congressman Udall and referred to the Committee on Science and Technology. On June 14, 2007, the Subcommittee on Space and Aeronautics met to consider H.R. 2698 and it was reported favorably by a voice vote. On June 22, 2007, the Full Committee met to consider H.R. 2698 and ordered the bill reported, as amended, by a voice vote.

VI. Summary of Major Provisions of the Bill as Reported

H.R. 2698 authorizes $1.88 billion for the Federal Aviation Administration's Research and Development (R&D) programs for fiscal years 2008µ092011, fully funding the President's budget request for each of FAA's R&D programs, and including total increases over the four years of $53.9 million for current R&D activities and $63.25 million for new R&D initiatives. The bill would strengthen the Joint Planning and Development Office and its planning and development of the Next Generation Air Transportation System by creating positions of responsibility within the participating agencies, strengthening the role of the JPDO Director, requiring the development of an integrated plan, as well as other provisions related to the JPDO. It would require the FAA in coordination with NASA and the U.S. Climate Change Science Program to establish an interagency research initiative on the impact of aviation on the climate. It would establish research programs on: runway materials; design for certification; and technologies for use of unleaded aviation gas in existing piston aircraft engines. It would require the FAA along with the NSF, NASA, NOAA, and other relevant agencies to establish a research program on the impacts of space weather on aviation. It would extend the Airport Cooperative Research Program and establish a research grants program involving undergraduate students. Finally, the bill would require a number of external assessments and reviews.

VII. Section-by-Section Analysis of the Bill as Reported

Sec. 1. Short Title

The Federal Aviation Research and Development Reauthorization Act of 2007.

Sec. 2. Definitions

Provides definitions for terms used in this Act.

Sec. 3. Authorization of Appropriations

Amends existing law and authorizes $335,191,000 for FY 08; $481,554,000 for FY 09; $486,502,000 for FY 10; and $514,832,000 for FY 11.

Sec. 4. Next Generation Air Transportation System Joint Planning and Development Office

Makes Director head of both the JPDO and Associate Administrator for the Next Generation Air Transportation System and voting member/co-chair of the Joint Resources Council.

Requires the Director to create a transition plan, establish quantitative goals, and ensure the interoperability of the Next Generation Air Transportation System with our international partners.

Requires the Administrator, the Secretary of Defense, the Administrator of NASA, the Secretary of Commerce, the Secretary of Homeland Security, and the head of any other department or Federal agency from which the Secretary of Transportation requests assistance to designate a senior official to implement each department's or agency's Next Generation Air Transportation System activities within the Office. Requires within six months for the department or agency that has responsibility for carrying out any activity under the plan to execute a memorandum of understanding with the Office.

Requires an integrated plan to ensure that the Next Generation Air Transportation System meets anticipated future air transportation safety, security, mobility, efficiency, and capacity needs. Requires date-specific timetables for implementation of the Next Generation Air Transportation System capabilities.

Requires an annual report from the Director of the Office describing the process of carrying out the implementation plan.

Requires the Senior Policy Committee to meet at least four times per year.

Requires each Federal agency and department participating in the Office to submit a report to the Office of Management and Budget identifying its portion of responsibility which contributes to the Next Generation Air Transportation System and to state the portion of its requests for appropriations.

Requires the Director to develop contingency plans for dealing with the degradation of the Next Generation Air Transportation System in the event of a natural disaster, major equipment failure, or act of terrorism.

Requires the Director to establish environmental requirements for noise, emissions, and energy consumption for the Next Generation Air Transportation System. NASA will be primarily responsible for research, development, and demonstration of applicable technologies, while the FAA will be primarily responsible for demonstration of optimized operational procedures.

Requires the Comptroller General to assess the effectiveness of the Next Generation Air Transportation System Joint Planning and Development Office in meeting the deadlines and milestones of the integrated plan, as well as the adequacy of the memoranda of understanding executed by the federal departments and agencies. Requires within 270 days of enactment and annually thereafter until the Next Generation Air Transportation System is operational, a report containing the Comptroller General's findings, conclusions and recommendations.

Requires within 90 days of enactment, an unmanned aircraft systems research, development, demonstration and implementation roadmap to be delivered to the Congress. Requires the FAA, within 3 months of enactment, to arrange for the National Research Coun-

cil to conduct an independent assessment of unmanned aircraft systems. Within 12 months, this report shall be submitted to the FAA and Congress. Requires the FAA to establish pilot projects for the tests of unmanned aircraft systems' integration into the national airspace system. Requires a report, within 90 days after the completion of these tests, on the findings which shall be submitted to the Congress. Authorizes such sums as may be necessary to carry out the pilot projects.

Sec. 5. Interagency research initiative on the impact of aviation on the climate

Requires the FAA in coordination with NASA and the U.S. Climate Change Science Program to establish a research initiative assessing the impact of aviation on the climate and to evaluate approaches to mitigate that impact. Requires within 1 year of enactment a jointly developed plan for this research program. The National Research Council will be directed by the FAA to provide an independent review of the research program plan. $2,000,000 is authorized to be appropriated in fiscal year 2008 for the research program, and $5,000,000 in each of the fiscal years 2009 through 2011.

Sec. 6. Research program on runways

Requires the FAA to establish a program of research grants to universities and non-profit research foundations for research and technology demonstrations related to improved runway surfaces and engineered material restraining systems for runways at general aviation and commercial air carrier airports. $5,000,000 is authorized to be appropriated for each of the fiscal years 2008 through 2011.

Sec. 7. Research on design for certification

Requires the FAA and NASA, within 6 months of enactment, to establish a joint research program on improving the timelines of certification for new national airspace system technologies. Requires, within one year of enactment, the FAA and NASA to provide a jointly developed plan for the research program's objectives, proposed tasks, milestones, and five-year budgetary profile. The National Research Council will be directed by the FAA to provide an independent review of the research program plan within eighteen months of enactment.

Sec. 8. Centers of excellence

Amends existing law, stating that the U.S. Government's share of establishing and operating a center and all related research grants shall not exceed 75% of the costs, and that the U.S. Government's share for an individual grant shall not exceed 90% of the costs. Requires an annual report to be sent to the Congress.

Sec. 9. Airport cooperative research program

Amends existing law to extend the program.

Sec. 10. Research grants program involving undergraduate students

Requires the Administrator to establish a program to utilize colleges and universities in conducting research by undergraduate students on subjects of relevance to the FAA. Authorizes

$5,000,000 for research grants for each of the fiscal years 2008 through 2011.

Sec. 11. Budget formulation

Amends existing law to require the FAA's annual budget request identify all of the activities that fall within categories of basic research, applied research, and development.

Sec. 12. Research program on space weather and aviation

Requires the FAA, in coordination with the NSF, NASA, NOAA and other relevant agencies, to initiate a research program to conduct research projects on the impacts of space weather on aviation, communication, navigation and avionic systems, and on airline crew and passengers, and to facilitate the transfer of technology from this program to Federal agencies and the private sector. $1,000,000 is to be authorized for each of the fiscal years 2008 through 2011.

Sec. 13. Aviation gas research and development program

Requires the FAA, in coordination with NASA, to continue research and development activities into technologies for modifying existing aviation piston engines to be operated with unleaded aviation fuel. Requires within 120 days of enactment for the FAA to develop a roadmap for specific objectives of the program. Requires within 130 days of enactment, for the FAA to deliver the roadmap of the program to the appropriate congressional committees. $750,000 is to be authorized for each of the fiscal years 2008 through 2010.

Sec. 14. Research reviews and assessments

Requires the Administrator to arrange for the National Research Council to conduct a review of the FAA's energy- and environment-related research programs, and to provide Congress with a report of the review within eighteen months of enactment.

Requires the Administrator to arrange for the National Research Council to conduct a study evaluating the impacts of space weather on the U.S. aviation industry, in particular for the Over-The-Pole (OTP) and Ultra-Long-Range (ULR) operations, and to provide Congress with a report of the study within one year of enactment.

VIII. COMMITTEE VIEWS

SECTION 3. AUTHORIZATION OF APPROPRIATIONS

The bill authorizes appropriations for all of the FAA's research and development activities, including those in the Research, Engineering, and Development (R, E &D) account, the Air Traffic Organization (ATO) Capital account, and the Airport Improvement (AIP) account. The FAA's annual plan for research and development, the National Aviation Research Plan (NARP), which is statutorily mandated to include all of the FAA's research and development activities was used as the basis for this authorization. The Committee intends to exercise vigorous oversight of research and development programs, projects, and activities wherever they may reside within the agency's budget.

The bill provides increased funding for research on human factors, aviation weather, energy and environment, and unmanned aircraft systems. The Committee based its actions on testimony it received from expert witnesses at its hearings on the FAA's R&D programs and the Next Generation Air Transportation System, and on the findings and recommendations of the FAA's Research, Engineering, and Development Advisory Committee (REDAC). The Committee believes that a continued commitment to research and development in the program areas authorized in Sec. 3 of the bill is important to the long-term safety and efficiency of the nation's air transportation system. Finally, it should be noted that the bill contains no authorizations for commercial space transportation safety research, since that research activity, as well as other commercial space transportation-related activities, has already been authorized in commercial space legislation originated by the Committee and enacted into law.

SECTION 4. NEXT GENERATION AIR TRANSPORTATION SYSTEM JOINT PLANNING AND DEVELOPMENT OFFICE

The FAA plays a unique and important role in the federal government as the manager and operator of a highly integrated communications, navigation, and surveillance system that provides air traffic management services 24 hours a day, seven days a week. Yet it has become clear that the existing air traffic management system is inadequate to meet the demands of the nation's future air traffic demand. In Title VII: Aviation Research of P.L. 108–176, the Vision 100—Century of Aviation Reauthorization Act, Congress established an Air Transportation System Joint Planning and Development Office (JPDO) to manage work related to the Next Generation Air Transportation System. The JPDO was given a number of important responsibilities, including:

(A) creating and carrying out an integrated plan for a Next Generation Air Transportation System;

(B) overseeing research and development on that system;

(C) coordinating aviation and aeronautics research programs to achieve the goal of more effective and directed programs that will result in applicable research;

(D) coordinating goals and priorities and coordinating research activities within the federal government with United States aviation and aeronautical firms;

(E) coordinating the development and utilization of new technologies to ensure that when available, they may be used to their fullest potential in aircraft and in the air traffic control system;

(F) facilitating the transfer of technology from research programs such as the NASA program and the DARPA program to federal agencies with operational responsibilities and to the private sector; and

(G) reviewing activities relating to noise, emissions, fuel consumption, and safety conducted by federal agencies including the FAA, NASA, DOC, and DOD.

The Committee believes that while the JPDO has made progress in carrying out those responsibilities, more needs to be done if the Next Generation Air Transportation System [NextGen] is to be successfully developed and implemented in a timely and cost-effective

manner. The Committee heard testimony from a number of expert witnesses concerning the need to strengthen the authority of the JPDO; to ensure that the JPDO addresses significant NextGen-related issues; and to ensure that each of the participating agencies meets its responsibilities to the NextGen initiative. With respect to the latter point, the Committee is concerned that NASA's renewed focus on basic research in its aeronautics programs not occur to the exclusion of its important role in carrying out research and development activities to a level of maturity that supports the requirements of the NextGen system. NASA has a critical role to play in support of NextGen, and the Committee expects that NASA will step up to its responsibility in that regard.

With respect to the need to strengthen the authority of the JPDO and ensure that each participating agency meets its responsibilities, the Committee has included provisions to require each participating agency to identify a senior official to implement the agency's NextGen responsibilities; to make the JPDO Director an FAA Associate Administrator for NextGen as well as a voting member/co-chair of the Joint Resources Council; and to require the JPDO's Senior Policy Committee to meet on a regular basis. Each agency would also have to work with the JPDO and the Office of Management and Budget (OMB) to improve the integration of each agency's resource commitments in support of the NextGen initiative.

With respect to the need to have the JPDO address critical NextGen-related issues, the Committee has included provisions to ensure that the JPDO establishes environmental objectives for noise (taking into account noise pollution reduction concerns of affected communities to the greatest extent practicable), emissions, and energy consumption—and has given NASA the primary responsibility for R&D and demonstration of applicable technologies and the FAA primary responsibilities for the demonstration of optimized operational procedures. The Committee has also asked the JPDO to develop contingency plans for the NextGen system in the event of a natural disaster, major equipment failure, or terrorist act. The bill also includes the requirement for a research, development, and implementation roadmap for unmanned aircraft systems (UAS). It is clear that UAS presents both significant opportunities and significant challenges to the NextGen system. As a result, the Committee believes that the JPDO, working with a public-private partnership of affected stakeholders, must address in a timely manner the R&D and demonstration issues that need to be resolved for a safe and efficient integration of UAS into the national airspace system.

Finally, it is clear to the Committee that the JPDO's success will depend in great measure on its ability to develop and execute the integrated plan called out in Vision 100 and in this bill. In that regard, it is important for the JPDO, working with all appropriate stakeholders, to develop clear milestones for completion of NextGen tasks and provide a clear roadmap for integration of NextGen technologies and procedures into the national airspace system. Unnecessary delays in the completion of the NextGen system will exact a significant cost to the nation's economic activities, quality of life, and competitive standing, with little or no compensating increase in the safety of the flying public. It is thus important that the JPDO be given both the resources and authority required, and

equally importantly, be held accountable for its performance in carrying out the NextGen initiative.

SECTION 5. INTERAGENCY RESEARCH INITIATIVE ON THE IMPACT OF AVIATION ON THE CLIMATE

The Committee is concerned that the nation has not made adequate efforts to assess the impact of aviation on the climate and, if warranted, appropriate approaches to mitigate that impact. The need for such a research initiative has been reinforced by recent announcements by the European Union concerning the proposed imposition of emissions penalties on aircraft operations in the next decade. The Committee is thus directing the FAA to work with NASA and the United States Climate Change Science Program to establish such a research initiative and to develop a research program plan for the initiative within one year of enactment of this legislation. In order to maximize the quality and productivity of the research initiative, the Committee is directing the FAA to have the National Research Council conduct an independent review of the research program plan.

SECTION 6. RESEARCH PROGRAM ON RUNWAYS

The Committee is establishing in this bill a program of research grants to universities and non-profit research foundations for research and technology demonstrations related both to improved runway surfaces and to engineered materials restraining systems. The FAA currently has runway-related research underway, and the Committee expects that such research activities would become part of this program. Research and technology demonstrations related to engineered materials restraining systems have the potential to significantly improve operations at general aviation airports in particular, and the Committee encourages the FAA to carry out research and technology demonstrations in this area.

SECTION 7. RESEARCH ON DESIGN FOR CERTIFICATION

In its report Decadal Survey of Civil Aeronautics—Foundation for the Future, the National Research Council stated that "As systems become more complex, methods to ensure that new technologies can be readily applied to certified systems become more difficult to validate. NASA in cooperation with the Federal Aviation Administration (FAA), should anticipate the need to certify new technology before its introduction, and it should conduct research on methods to improve both confidence in and the timeliness of certification." The Committee shares the National Research Council's view and thus is directing the FAA and NASA to establish a joint research program on methods to improve both the confidence in and the timeliness of certification of new technologies for their introduction into the national airspace system. In order to ensure that the research program addresses the critical research needs, the Committee is directing the FAA to have the National Research Council carry out an independent review of the joint research program plan.

SECTION 8. CENTERS OF EXCELLENCE

In order to ensure that meritorious research is not precluded by an inability to attract sufficient outside matching funds, the Committee is reducing the matching funds requirements currently governing the FAA's Centers of Excellence program. However, the Committee does not intend that such reduced matching funds requirements result in a significantly unbalanced allocation of research funding among the institutions in any given Center of Excellence. The Committee has directed the FAA to report on the activities and funding allocations of the Centers of Excellence program on an annual basis to help the Committee better evaluate the progress of the Centers of Excellence.

SECTION 10. RESEARCH GRANTS PROGRAM INVOLVING UNDERGRADUATE STUDENTS

The Committee believes strongly that the FAA needs to be more proactive in helping to educate and train the next generation of aviation specialists. A key component of that effort is to engage undergraduate students in research on subjects of relevance to the FAA. Thus, the Committee is directing the FAA to establish a program of research grants that will involve undergraduate students at colleges and universities. Beyond its benefits to the agency, the Committee believes that such a program will contribute to achieving the innovation and competitiveness goals of the nation, and thus the Committee will be closely monitoring the FAA's progress in complying with this provision.

SECTION 12. RESEARCH PROGRAM ON SPACE WEATHER AND AVIATION

The Committee is aware of the increasing importance of gaining a thorough understanding of the impact of space weather phenomena on aircraft operations. Space weather is becoming an important factor in aviation as more and more flights take place over the polar regions, affecting air passengers and crews as well as aviation-related systems. The Committee believes that the needed research can best be carried out if the FAA coordinates effectively with the NSF, NASA, NOAA and other relevant agencies both to ensure the quality and relevance of the research as well as to facilitate the transfer of technology to federal agencies with operational responsibilities and to the private sector. In addition, Section 14 of the bill contains a related provision directing the FAA to have the National Research Council carry out a study that will, among other things, provide recommendations on how best to integrate space weather information into the Next Generation Air Transportation System.

SECTION 13. AVIATION GAS RESEARCH AND DEVELOPMENT PROGRAM

The Committee is aware that the FAA has been carrying out R&D on technologies to allow existing general aviation piston engines to operate safely using unleaded aviation fuel, and the Committee supports such research. However, the Committee believes that it is important for the FAA to coordinate where appropriate with NASA on such research in view of NASA's experience in engine technology R&D. In addition, the Committee wants to ensure that the FAA's R&D efforts in this area are focused on developing

a technology solution as soon as practicable. Thus, the Committee is directing the FAA to develop an R&D roadmap containing the specific R&D objectives to be pursued, and the anticipated timetable for achieving the objectives.

SECTION 14. RESEARCH REVIEWS AND ASSESSMENTS

The Committee believes strongly that the FAA's energy and environment-related research programs would benefit from an independent review of their research objectives, their degree of coordination with the research programs of other relevant federal agencies, the resource allocations devoted to each of the research objectives, and whether there exist suitable mechanisms for transitioning the research results into the FAA's operational technologies and procedures and certification activities. The Committee further believes that the FAA's aviation safety research programs would also benefit from an independent review. Thus the Committee is directing the FAA to have the National Research Council carry out independent reviews of both the FAA's energy and environment-related research programs and the FAA's aviation safety-related research programs.

IX. COST ESTIMATE

A cost estimate and comparison prepared by the Director of the Congressional Budget Office under section 402 of the Congressional Budget Act of 1974 has been timely submitted to the Committee on Science and Technology prior to the filing of this report and is included in Section X of this report pursuant to House Rule XIII, clause 3(c)(3).

H.R. 2698 does not contain new budget authority, credit authority, or changes in revenues or tax expenditures. Assuming that the sums authorized under the bill are appropriated, H.R. 2698 does authorize additional discretionary spending, as described in the Congressional Budget Office report on the bill, which is contained in Section X of this report.

X. CONGRESSIONAL BUDGET OFFICE COST ESTIMATE

JULY 2, 2007.

Hon. BART GORDON,
Chairman, Committee on Science and Technology,
House of Representatives, Washington, DC.

DEAR MR. CHAIRMAN: The Congressional Budget Office has prepared the enclosed cost estimate for H.R. 2698, the Federal Aviation Research and Development Reauthorization Act of 2007.

If you wish further details on this estimate, we will be pleased to provide them. The CBO staff contact is Megan Carroll.

Sincerely,

PETER R. ORSZAG.

Enclosure.

H.R. 2698—Federal Aviation Research and Development Reauthorization Act of 2007

Summary: H.R. 2698 would authorize funding for research related to aviation. CBO estimates that implementing the bill would

cost about $200 million in 2008 and $1.9 billion over the 2008–2012 period, assuming appropriation of amounts specified and estimated to be necessary. Enacting H.R. 2698 would not affect direct spending or revenues.

H.R. 2698 contains no intergovernmental or private-sector mandates as defined in the Unfunded Mandates Reform Act (UMRA); the bill would benefit institutions of higher education.

Estimated cost to the Federal Government: The estimated budgetary impact of H.R. 2698 is shown in the following table. The costs of this legislation fall within budget function 400 (transportation).

	By fiscal year, in millions of dollars—					
	2007	2008	2009	2010	2011	2012
SPENDING SUBJECT TO APPROPRIATION						
Spending Under Current Law:						
Budget Authority/Authorization Level [1]	180	50	50	50	0	0
Estimated Outlays	115	85	72	65	18	0
Proposed Changes:						
Estimated Authorization Level	0	356	505	505	582	0
Estimated Outlays	0	201	401	487	559	244
Spending Under H.R. 2698:						
Estimated Authorization Level	180	406	555	555	582	0
Estimated Outlays	115	286	473	552	577	244

[1] The 2007 level is the amount appropriated for that year for research activities of the Federal Aviation Administration and the Joint Planning and Development Office (JPDO). Amounts for 2008 through 2010 reflect amounts authorized to be appropriated in those years for JPDO.

Basis of Estimate: H.R. 2698 would authorize appropriations totaling an estimated $1.9 billion over the 2008–2012 period for federal programs related to aviation research. Based on historical spending patterns for existing and similar programs, CBO estimates that implementing the legislation would cost $201 million in 2008 and about $1.9 billion over the 2008–2012 period, assuming appropriation of the necessary amounts.

Most of the funds authorized to be appropriated under the bill—$1.8 billion—would be used by the Federal Aviation Administration (FAA) for research, engineering, and development related to technologies to improve air traffic management. Under H.R. 2698, CBO estimates that those activities would cost $184 million in 2008 and $1.8 billion over the 2008–2012 period.

H.R. 2698 also would reauthorize, through 2011, appropriations totaling $50 million a year for the Joint Planning and Development Office (JPDO), which was established in 2003 to work cooperatively with multiple federal agencies to modernize the nation's air traffic control system. Current law authorizes appropriations for the JPDO of $50 million a year for each of fiscal years 2008 through 2010; hence, this estimate does not include additional spending related to JPDO in those years. CBO estimates that additional funding for the office in 2011 would cost $50 million over the 2011–2012 period.

Finally, H.R. 2698 would authorize appropriations totaling $69 million over the 2008–2012 period for a variety of research programs. That amount includes $54 million specifically authorized to study issues related to weather and climate change, runway and aviation technology, regulatory requirements, and other matters. CBO estimates that implementing the bill's provisions to direct the FAA and other agencies to complete various pilot projects, studies, and reports would require appropriations totaling $15 million over

the 2008–2011 period. CBO estimates that implementing those activities would cost $17 million in 2008 and $69 million over the 2008–2012 period.

Intergovernmental and private-sector impact: H.R. 2698 contains no intergovernmental or private-sector mandates as defined in UMRA. The bill would benefit institutions of higher education by authorizing grants for aviation research. Any costs those entities would incur to comply with conditions of federal assistance would be incurred voluntarily.

Estimate prepared by: Federal costs: Megan Carroll; Impact on state, local, and tribal governments: Elizabeth Cove; Impact on the private sector: Amy Petz.

Estimate approved by: Peter H. Fontaine, Deputy Assistant Director for Budget Analysis.

XI. Compliance With Public Law 104–4

H.R. 2698 contains no unfunded mandates.

XII. Committee Oversight Findings and Recommendations

The oversight findings and recommendations of the Committee on Science and Technology are reflected in the body of this report.

XIII. Statement on General Performance Goals and Objectives

Pursuant to clause (3)(c) of House Rule XIII, the goals of H.R. 2698 are authorize appropriations for the research and development programs of the Federal Aviation Administration for fiscal years 2008 through 2011; to advance the next generation air transportation system by coordinating research, development, and planning across affected agencies; and by establishing and extending research activities in a variety of important areas.

XIV. Constitutional Authority Statement

Article I, section 8 of the Constitution of the United States grants Congress the authority to enact H.R. 2698.

XV. Federal Advisory Committee Statement

H.R. 2698 does not establish nor authorize the establishment of any advisory committee.

XVI. Congressional Accountability Act

The Committee finds that H.R. 2698 does not relate to the terms and conditions of employment or access to public services or accommodations within the meaning of section 102(b)(3) of the Congressional Accountability Act (Public Law 104–1).

XVII. Earmark Identification

H.R. 2698 does not contain any congressional earmarks, limited tax benefits, or limited tariff benefits as defined in clause 9(d), 9(e), or 9(f) of rule XXI.

XVIII. STATEMENT ON PREEMPTION OF STATE, LOCAL, OR TRIBAL LAW

This bill is not intended to preempt any state, local, or tribal law.

XIX. CHANGES IN EXISTING LAW MADE BY THE BILL, AS REPORTED

In compliance with clause 3(e) of rule XIII of the Rules of the House of Representatives, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italic, existing law in which no change is proposed is shown in roman):

TITLE 49, UNITED STATES CODE

* * * * * * *

Subtitle VII—AVIATION PROGRAMS

* * * * * * *

PART A—AIR COMMERCE AND SAFETY

* * * * * * *

SUBPART III—SAFETY

* * * * * * *

CHAPTER 445—FACILITIES, PERSONNEL, AND RESEARCH

* * * * * * *

§ 44504. Improved aircraft, aircraft engines, propellers, and appliances

(a) DEVELOPMENTAL WORK AND SERVICE TESTING.—The Administrator of the Federal Aviation Administration may conduct or supervise developmental work and service testing to improve *unmanned and manned* aircraft, aircraft engines, propellers, and appliances.

(b) RESEARCH.—The Administrator shall conduct or supervise research—

(1) * * *

* * * * * * *

(6) to develop advanced aircraft fuels with low flammability and technologies that will contain aircraft fuels to minimize post-crash fire hazards; [and]

(7) to develop technologies and methods to assess the risk of and prevent defects, failures, and malfunctions of products, parts, processes, and articles manufactured for use in aircraft, aircraft engines, propellers, and appliances that could result in a catastrophic failure of an aircraft[.]*; and*

(8) in conjunction with other Federal agencies as appropriate, to develop technologies and methods to assess the risk of and prevent defects, failures, and malfunctions of products, parts, and processes, for use in all classes of unmanned aircraft sys-

tems that could result in a catastrophic failure of the unmanned aircraft that would endanger other aircraft in the national airspace system.

* * * * * * *

§ 44505. Systems, procedures, facilities, and devices

(a) * * *

(b) RESEARCH ON HUMAN FACTORS AND SIMULATION MODELS.—The Administrator shall conduct or supervise research—

(1) * * *

* * * * * * *

(4) to identify innovative and effective corrective measures for human errors that adversely affect air safety; **[**and**]**

(5) to develop dynamic simulation models of the air traffic control system and airport design and operating procedures that will provide analytical technology—

(A) * * *

* * * * * * *

(C) to test proposed revisions in airport and air traffic control operations programs**[**.**]***;*

(6) to develop a better understanding of the relationship between human factors and unmanned aircraft systems safety; and

(7) to develop dynamic simulation models for integrating all classes of unmanned aircraft systems into the national airspace system without any degradation of existing levels of safety for all national airspace system users.

* * * * * * *

§ 44511. Aviation research grants

(a) * * *

* * * * * * *

(f) AIRPORT COOPERATIVE RESEARCH PROGRAM.—

(1) ESTABLISHMENT.—The Secretary of Transportation shall **[**establish a 4-year pilot**]** *maintain an* airport cooperative research program to—

(A) * * *

* * * * * * *

(4) REPORT.—Not later than 6 months after the **[**expiration of the program**]** *expiration of the pilot program* under this subsection, the Secretary shall transmit to the Congress a report on the **[**program, including recommendations as to the need for establishing a permanent airport cooperative research program**]** *program*.

* * * * * * *

§ 44513. Regional centers of air transportation excellence

(a) * * *

* * * * * * *

[(f) GOVERNMENT'S SHARE OF COSTS.—The United States Government's share of a grant under this section is 50 percent of the

costs of establishing and operating the center and related research activities that the grant recipient carries out.]

(f) GOVERNMENT'S SHARE OF COSTS.—The United States Government's share of establishing and operating the center and all related research activities that grant recipients carry out shall not exceed 75 percent of the costs. The United States Government's share of an individual grant under this section shall not exceed 90 percent of the costs.

* * * * * * *

PART C—FINANCING

* * * * * * *

CHAPTER 481—AIRPORT AND AIRWAY TRUST FUND AUTHORIZATIONS

* * * * * * *

§ 48102. Research and development

(a) AUTHORIZATION OF APPROPRIATIONS.—Not more than the following amounts may be appropriated to the Secretary of Transportation out of the Airport and Airway Trust Fund established under section 9502 of the Internal Revenue Code of 1986 (26 U.S.C. 9502) for conducting civil aviation research and development under sections 44504, 44505, 44507, 44509, and 44511-44513 of this title:

(1) * * *

* * * * * * *

(11) for fiscal year 2006, $352,157,000, including—

(A) * * *

* * * * * * *

(L) $7,906,000 for Airports Technology-Efficiency; [and]

(12) for fiscal year 2007, $356,261,000, including—

(A) * * *

* * * * * * *

(L) $8,000,000 for Airports Technology-Efficiency[.];

(13) for fiscal year 2008, $335,191,000, including—

(A) $7,350,000 for fire research and safety;

(B) $4,086,000 for propulsion and fuel systems;

(C) $2,713,000 for advanced materials and structural safety;

(D) $3,574,000 for atmospheric hazards and digital system safety;

(E) $14,931,000 for aging aircraft;

(F) $2,202,000 for aircraft catastrophic failure prevention research;

(G) $14,651,000 for flightdeck maintenance, system integration, and human factors;

(H) $9,517,000 for aviation safety risk analysis;

(I) $15,254,000 for air traffic control, technical operations, and human factors;

(J) $6,780,000 for aeromedical research;

(K) $19,888,000 for weather programs;

(L) $6,310,000 for unmanned aircraft systems research;
(M) $18,100,000 for the Next Generation Air Transportation System Joint Planning and Development Office;
(N) $13,755,000 for wake turbulence;
(O) $20,469,000 for environment and energy;
(P) $1,184,000 for system planning and resource management;
(Q) $3,415,000 for the William J. Hughes Technical Center Laboratory Facility;
(R) $74,200,000 for the Center for Advanced Aviation System Development;
(S) $2,000,000 for the Airport Cooperative Research Program—capacity;
(T) $3,000,000 for the Airport Cooperative Research Program—environment;
(U) $5,000,000 for the Airport Cooperative Research Program—safety;
(V) $3,600,000 for GPS civil requirements;
(W) $5,000,000 for runway incursion reduction;
(X) $6,500,000 for system capacity, planning, and improvement;
(Y) $3,000,000 for operations concept validation;
(Z) $1,000,000 for NAS weather requirements;
(AA) $4,000,000 for the Airspace Management Lab;
(BB) $5,000,000 for airspace redesign;
(CC) $4,000,000 for wind profiling and weather research, Juneau;
(DD) $1,000,000 for the Local Area Augmentation System (LAAS);
(EE) $15,000,000 for Safe Flight 21, Alaska Capstone;
(FF) $20,000,000 for NextGen demonstration;
(GG) $8,907,000 for airports technology research—capacity;
(HH) $9,805,000 for airports technology research—safety;
(14) for fiscal year 2009, $481,554,000, including—
(A) $8,457,000 for fire research and safety;
(B) $4,050,000 for propulsion and fuel systems;
(C) $2,686,000 for advanced materials and structural safety;
(D) $3,568,000 for atmospheric hazards and digital system safety;
(E) $14,683,000 for aging aircraft;
(F) $2,158,000 for aircraft catastrophic failure prevention research;
(G) $37,499,000 for flightdeck maintenance, system integration, and human factors;
(H) $8,349,000 for aviation safety risk analysis;
(I) $15,323,000 for air traffic control, technical operations, and human factors;
(J) $6,932,000 for aeromedical research;
(K) $22,336,000 for weather program;
(L) $6,738,000 for unmanned aircraft systems research;
(M) $18,100,000 for the Next Generation Air Transportation System Joint Planning and Development Office;
(N) $11,560,000 for wake turbulence;

(O) $35,039,000 for environment and energy;
(P) $1,847,000 for system planning and resource management;
(Q) $3,548,000 for the William J. Hughes Technical Center Laboratory Facility;
(R) $85,000,000 for Center for Advanced Aviation System Development;
(S) $5,000,000 for the Airport Cooperative Research Program—capacity;
(T) $5,000,000 for the Airport Cooperative Research Program—environment;
(U) $5,000,000 for the Airport Cooperative Research Program—safety;
(V) $3,469,000 for GPS civil requirements;
(W) $5,000,000 for runway incursion reduction;
(X) $6,500,000 for system capacity, planning and improvement;
(Y) $3,000,000 for Operations Concept Validation;
(Z) $1,000,000 for NAS weather requirements;
(AA) $4,000,000 for the Airspace Management Lab;
(BB) $3,000,000 for airspace redesign;
(CC) $20,000,000 for Safe Flight 21, Alaska Capstone;
(DD) $12,000,000 for NextGen demonstration;
(EE) $102,000,000 for NextGen system development;
(FF) $8,907,000 for airports technology research—capacity;
(GG) $9,805,000 for airports technology research—safety;
(15) for fiscal year 2010, $486,502,000, including—
(A) $8,546,000 for fire research and safety;
(B) $4,075,000 for propulsion and fuel systems;
(C) $2,700,000 for advanced materials and structural safety;
(D) $3,608,000 for atmospheric hazards and digital system safety;
(E) $14,688,000 for aging aircraft;
(F) $2,153,000 for aircraft catastrophic failure prevention research;
(G) $36,967,000 for flightdeck maintenance, system integration, and human factors;
(H) $8,334,000 for aviation safety risk analysis;
(I) $15,471,000 for air traffic control, technical operations, and human factors;
(J) $7,149,000 for aeromedical research;
(K) $23,286,000 for weather program;
(L) $6,236,000 for unmanned aircraft systems research;
(M) $18,100,000 for the Next Generation Air Transportation System Joint Planning and Development Office;
(N) $11,412,000 for wake turbulence;
(O) $34,678,000 for environment and energy;
(P) $1,827,000 for system planning and resource management;
(Q) $3,644,000 for William J. Hughes Technical Center Laboratory Facility;
(R) $90,000,000 for the Center for Advanced Aviation System Development;

(S) $5,000,000 for the Airport Cooperative Research Program—capacity;

(T) $5,000,000 for the Airport Cooperative Research Program—environment;

(U) $5,000,000 for the Airport Cooperative Research Program—safety;

(V) $3,416,000 for GPS civil requirements;

(W) $5,000,000 for runway incursion reduction;

(X) $6,500,000 for system capacity, planning and improvement;

(Y) $3,000,000 for operations concept validation;

(Z) $1,000,000 for NAS weather requirements;

(AA) $4,000,000 for the Airspace Management Lab;

(BB) $3,000,000 for airspace redesign;

(CC) $20,000,000 for Safe Flight 21, Alaska Capstone;

(DD) $12,000,000 for NextGen demonstration;

(EE) $102,000,000 for NextGen system development;

(FF) $8,907,000 for airports technology research—capacity;

(GG) $9,805,000 for airports technology research—safety; and

(16) for fiscal year 2011, $514,832,000, including—

(A) $8,815,000 for fire research and safety;

(B) $4,150,000 for propulsion and fuel systems;

(C) $2,747,000 for advanced materials and structural safety;

(D) $3,687,000 for atmospheric hazards and digital system safety;

(E) $14,903,000 for aging aircraft;

(F) $2,181,000 for aircraft catastrophic failure prevention research;

(G) $39,245,000 for flightdeck maintenance, system integration and human factors;

(H) $8,446,000 for aviation safety risk analysis;

(I) $15,715,000 for air traffic control, technical operations, and human factors;

(J) $7,390,000 for aeromedical research;

(K) $23,638,000 for weather program;

(L) $6,295,000 for unmanned aircraft systems research;

(M) $18,100,000 for the Next Generation Air Transportation System Joint Planning and Development Office;

(N) $11,471,000 for wake turbulence;

(O) $34,811,000 for environment and energy;

(P) $1,836,000 for system planning and resource management;

(Q) $3,758,000 for William J. Hughes Technical Center Laboratory Facility;

(R) $114,000,000 for Center for Advanced Aviation System Development;

(S) $5,000,000 for the Airport Cooperative Research Program—capacity;

(T) $5,000,000 for the Airport Cooperative Research Program—environment;

(U) $5,000,000 for the Airport Cooperative Research Program—safety;

(V) $3,432,000 for GPS civil requirements;
(W) $2,000,000 for runway incursion reduction;
(X) $6,500,000 for system capacity, planning and improvement;
(Y) $3,000,000 for operations concept validation;
(Z) $1,000,000 for NAS weather requirements;
(AA) $4,000,000 for the Airspace Management Lab;
(BB) $3,000,000 for airspace redesign;
(CC) $20,000,000 for Safe Flight 21, Alaska Capstone;
(DD) $12,000,000 for NextGen demonstration;
(EE) $105,000,000 for NextGen system development;
(FF) $8,907,000 for airports technology research—capacity;
(GG) $9,805,000 for airports technology research—safety.

* * * * * * *

(g) BUDGET FORMULATION.—(1) The Department of Transportation's annual budget request for the Federal Aviation Administration shall identify all of the activities carried out by the Administration within the categories of basic research, applied research, and development, as classified by the Office of Management and Budget Circular Aμ0911. Each activity in the categories of basic research, applied research, and development shall be identified regardless of the budget category in which it appears in the budget request.

(2) The budget request specified in paragraph (1) shall be submitted to the Committee on Science and Technology and the Committee on Transportation and Infrastructure of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate at the same time as the President's Budget Request is submitted to the Congress.

* * * * * * *

VISION 100—CENTURY OF AVIATION REAUTHORIZATION ACT

Sec. 709. AIR TRANSPORTATION SYSTEM JOINT PLANNING AND DEVELOPMENT OFFICE.

(a) ESTABLISHMENT.—(1) The Secretary of Transportation shall establish in the Federal Aviation Administration a joint planning and development office to manage work related to the Next Generation Air Transportation System. The office shall be known as the Next Generation Air Transportation System Joint Planning and Development Office (in this section referred to as the "Office"). *The head of the Office shall be the Director. The Director shall report to the Administrator of the Federal Aviation Administration and shall serve as Associate Administrator for the Next Generation Air Transportation System, and shall be a voting member and co-chair of the Joint Resources Council.*

(2) The responsibilities of the Office shall include—

(A) creating and carrying out an integrated plan for a Next Generation Air Transportation System pursuant to subsection (b);

(B) overseeing research and development on that system;

[(C) creating a transition plan for the implementation of that system;**]**

(C) creating a transition plan for the implementation of that system that includes date-specific milestones for the implementation of new capabilities into the national airspace system;

* * * * * * *

(G) facilitating the transfer of technology from research programs such as the National Aeronautics and Space Administration program and the Department of Defense Advanced Research Projects Agency program to Federal agencies with operational responsibilities and to the private sector; [and]

(H) reviewing activities relating to noise, emissions, fuel consumption, and safety conducted by Federal agencies, including the Federal Aviation Administration, the National Aeronautics and Space Administration, the Department of Commerce, and the Department of Defense[.]*; and*

(I) establishing specific quantitative goals for the safety, capacity, efficiency, performance, and environmental impacts of each phase of Next Generation Air Transportation System implementation activities and measuring actual operational experience against those goals, taking into account noise pollution reduction concerns of affected communities to the greatest extent practicable in establishing the environmental goals;

(J) working to ensure global interoperability of the Next Generation Air Transportation System;

(K) integrating aviation weather information and space weather information into the Next Generation Air Transportation System as soon as possible;

(L) overseeing, with the Administrator, the selection of products or outcomes of research and development activities that would be moved to the next stage of a demonstration project through the Joint Resources Council;

(M) maintaining a baseline modeling and simulation environment for testing and evaluating alternative concepts to satisfy Next Generation Air Transportation enterprise architecture requirements; and

(N) pursuing the integration of unmanned aircraft systems into the national airspace system through research and demonstration programs under the auspices of a public and private partnership.

(3)*(A)* The Office shall operate in conjunction with relevant programs in the Department of Defense, the National Aeronautics and Space Administration, the Department of Commerce and the Department of Homeland Security. The Secretary of Transportation may request assistance from staff from those Departments and other Federal agencies.

(B) The Administrator, the Secretary of Defense, the Administrator of NASA, the Secretary of Commerce, the Secretary of Homeland Security, and the head of any other Department or Federal agency from which the Secretary of Transportation requests assistance under paragraph (A) shall designate a senior official in the department or agency to be responsible for—

(i) implementing the department's or agency's Next Generation Air Transportation System activities with the Office, including the execution of all aspects of the department's or agency's work on developing and implementing the integrated plan described in section 709(2)(A); and

(ii) ensuring that the department or agency meets its obligations as set forth in the memorandum of understanding executed by or on behalf of the department or agency under subparagraph (D).

(C) The head of any such department or agency shall—

(i) establish an office within the department or agency to carry out its responsibilities under the memorandum of understanding under the supervision of the designated official; and

(ii) ensure that the designated official has sufficient budgetary authority and staff resources to carry out the department's or agency's Next Generation Air Transportation System responsibilities as set forth in the integrated plan under section 709(b).

(D) Not later than 6 months after the date of enactment of the Federal Aviation Research and Development Reauthorization Act of 2007, the head of each department or agency that has responsibility for carrying out any activity under the integrated plan under section 709(b) shall execute a memorandum of understanding with the Office obligating that department or agency to carry out those activities.

* * * * * * *

(b) INTEGRATED PLAN.—**[**The integrated plan shall be designed to ensure that the Next Generation Air Transportation System meets air transportation safety, security, mobility, efficiency, and capacity needs beyond those currently included in the Federal Aviation Administration's operational evolution plan and accomplishes the goals under subsection (c).**]** *The integrated plan shall be designed to ensure that the Next Generation Air Transportation System meets anticipated future air transportation safety, security, mobility, efficiency, and capacity needs and accomplishes the goals under subsection (c).* The integrated plan shall include—

(1) * * *

* * * * * * *

(3) a multiagency research and development roadmap for creating the Next Generation Air Transportation System with the characteristics outlined under clause (ii), including—

(A) * * *

* * * * * * *

(C) the technical milestones that will be used to evaluate the activities; **[**and**]**

(4) a description of the operational concepts to meet the system performance requirements for all system users and a timeline and anticipated expenditures needed to develop and deploy the system to meet the vision for 2025**[**.**]***;*

(5) Date-specific timetables for the partial and complete implementation of planned Next Generation Air Transportation System capabilities, including but not limited to Automated Dependent Surveillance-Broadcast, Unmanned Aircraft Systems operations, Next Generation Enabled Weather system, Next Generation Data Communications, NAS Voice Switch, System Wide Information Management system, and space weather information, and including any necessary certification activities,

and including an evaluation of the costs and benefits of accelerating any of the implementation and certification timetables;

(6) Identification of planned demonstration projects and date-specific timetables for the conduct of the demonstration projects and subsequent certification activities and an evaluation of the costs and benefits of accelerating any of the demonstration projects and certification activities;

(7) Date-specific timetables for meeting the environmental requirements identified in subsection (I); and

(8) Identification, on an annual basis, of each entity that will be responsible for each component of any research, development, or implementation activity.

* * * * * * *

[(d) REPORTS.—The Administrator of the Federal Aviation Administration shall transmit to the Committee on Commerce, Science, and Transportation in the Senate and the Committee on Transportation and Infrastructure and the Committee on Science in the House of Representatives—

[(1) not later than 1 year after the date of enactment of this Act , the integrated plan required in subsection (b); and

[(2) annually at the time of the President's budget request, a report describing the progress in carrying out the plan required under subsection (b) and any changes to that plan.]

(d) ANNUAL REPORTS.—The Director of the Office shall transmit a report annually to the Committee on Science and Technology and the Committee on Transportation and Infrastructure of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate at the time of the President's budget request describing the progress in carrying out the plan required under subsection (b) and any changes to that plan. The annual report shall include—

(1) the updated integrated plan developed under subsection (b);

(2) a detailed description of the progress made in carrying out the integrated plan and any changes made to that plan since the previous annual report, and identifying any changes resulting from funding shortfalls or limitations set by the Office of Management and Budget;

(3) any deviation from previously established development and implementation milestones, the reasons for the deviation, and the impact of the deviation;

(4) the relevant programs and activities for the previous fiscal year and the proposed programs and activities under the President's budget request, of each participating Federal agency and department; and

(5) the levels of funding for each participating Federal agency and department devoted to the programs and activities in paragraph (4) for the previous fiscal year and under the President's budget request.

(e) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Office $50,000,000 for each of the fiscal years 2004 through [2010] *2011*.

Sec. 710. NEXT GENERATION AIR TRANSPORTATION SENIOR POLICY COMMITTEE.

(a) IN GENERAL.—The Secretary of Transportation shall establish a senior policy committee to work with the Next Generation Air Transportation System Joint Planning and Development Office. The senior policy committee shall be chaired by the Secretary*, and shall meet at least four times each year*.

* * * * * * *

XX. COMMITTEE RECOMMENDATIONS

On June 22, 2007, the Committee on Science and Technology favorably reported the Federal Aviation Research and Development Reauthorization Act of 2007 by a voice vote, and recommended its enactment.

XXI. PROCEEDINGS OF THE MARKUP BY THE SUBCOMMITTEE ON SPACE AND AERONAUTICS ON H.R. 2698, THE FEDERAL AVIATION RESEARCH AND DEVELOPMENT REAUTHORIZATION ACT OF 2007

THURSDAY, JUNE 14, 2007

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON SPACE AND AERONAUTICS,
COMMITTEE ON SCIENCE AND TECHNOLOGY,
Washington, DC.

The Subcommittee met, pursuant to call, at 10:36 a.m., in Room 2318 of the Rayburn House Office Building, Hon. Mark Udall [Chairman of the Subcommittee] presiding.

Chairman UDALL. The Committee will come to order. Good morning to all of you. The Subcommittee on Space and Aeronautics will come to order. Pursuant to notice, the Subcommittee on Space and Aeronautics meets to consider the following measure, H.R. 2698, the *Federal Aviation Research and Development Reauthorization Act of 2007.*

We will now proceed with the markup beginning with opening statements and I will begin and then turn to Mr. Feeney for his remarks.

This morning the Subcommittee on Space and Aeronautics will mark up H.R. 2698, the *Federal Aviation Research and Development Reauthorization Act of 2007.* H.R. 2698 reflects the constructive input of Members on both sides of the aisle, witnesses at our series of FAA hearings earlier this spring as well as input from a diverse range of stakeholders in the aviation and research communities.

The Federal Aviation Administration's stated mission is to provide the safest, most efficient aerospace system in the world and its stated vision is to improve the safety and efficiency of aviation while being responsive to our customers and accountable to the public. I know those are laudable and important goals and I want to support FAA's efforts in striving to reach those goals.

To that end, this legislation is focused on ensuring that the FAA will have the tools that it will need to keep the Nation's air transportation system safe, efficient and environmentally friendly. Thus, the Act reauthorizes a range of important R&D activities at the FAA, starts up new initiatives in some key areas and contains provisions aimed at strengthening the interagency Joint Planning and Development Office, fondly known as JPDO, which has the responsibility of planning and developing the Next Generation Air Transportation System, NextGen.

With respect to the JPDO, the Act responds to the recommendations of the Government Accountability Office as well as other expert witnesses that the Space and Aeronautics Subcommittee heard from at our recent hearings by including provisions aimed at strengthening the effectiveness of the JPDO in carrying out the NextGen initiative. These include such things as strengthening the authority of the JPDO director; requiring each participating agency and department to identify a senior official to be in charge of its activities in support of the NextGen initiative; requiring an integrated plan with date-specific timetables for implementation of NextGen capabilities; having OMB coordinate each participating agency's and department's budget in support of the NextGen initiative; directing JPDO to develop contingency plans for dealing with degradation of the NextGen system due to a natural disaster, major equipment failure or act of terrorism; requiring the JPDO to establish noise emissions and energy consumption requirements for the NextGen system; directing JPDO to develop an R&D roadmap for the integration of unmanned aircraft systems into the national airspace system; and having the GAO carry out annual reviews of the JPDO's effectiveness.

As important as the JPDO is, the Act recognizes that the FAA in coordination with other agencies such as the National Aeronautics and Space Administration has a critical role to play in supporting other important aviation R&D activities, a number of which have been underfunded in recent years according to the testimony of the GAO, FAA's own advisory committee and expert witnesses at our hearings. To that end, the Act augments the President's funding requests for human factors research, weather research, unmanned aircraft systems research, and energy- and environment-related research.

In addition, recent announcements from Europe regarding the potential imposition of emissions penalties on aircraft operations in the next decade have made it clear in the United States that we need to be better prepared to understand the impact of aviation on the climate as well as what might be done to mitigate that impact. This legislation takes the first step in that direction by directing the FAA in coordination with NASA and the U.S. Climate Change Science Program to develop a plan for such research and then having the National Research Council carry out an independent assessment of that research plan.

The Nation's colleges and universities have an important role to play in carrying out research in support of the Nation's future air transportation system. At the same time, that research is a critical means to helping to train the next generation of scientists, engineers and aviation specialists that we will need over the coming decades. Thus, this Act establishes a research grants program in-

volving undergraduate students. It also contains provisions aimed at strengthening FAA's Centers of Excellence program, and I particularly want to thank Mr. Feeney for his constructive proposals in that regard.

The Act also contains R&D provisions to continue engine research in coordination with NASA that has the goal of enabling existing general aviation aircraft to operate with unleaded aviation fuel. That is a provision that Mr. Lipinski has been very interested in and I want to thank him for his efforts on behalf of it. In addition, the legislation continues the Airport Cooperative Research Program and also establishes a runway research program that should benefit both general aviation and commercial air carrier airports.

Finally, in view of the increased importance of space weather to aviation, especially with an increased incidence of flight operations over the polar regions, the Act establishes a multi-agency research program to conduct research on the impacts of space weather on aviation and air passengers.

We all know that air transportation is central to the Nation's economic well-being, our international competitiveness and our quality of life. FAA's R&D programs play an important role in ensuring the continued safety and efficiency of America's air transportation system and I believe that the *Federal Aviation Research and Development Act of 2007* will keep FAA's R&D enterprise healthy and productive. I again want to thank Mr. Feeney and my colleagues on both sides of the aisle for their support and their very constructive advice regarding this legislation, and I look forward to a productive markup this morning.

[The prepared statement of Chairman Udall follows:]

PREPARED STATEMENT OF CHAIRMAN MARK UDALL

This morning, the Subcommittee on Space and Aeronautics will mark up H.R. 2698, the *Federal Aviation Research and Development Reauthorization Act of 2007.* H.R. 2698 reflects the constructive input of Members on both sides of the aisle, witnesses at our series of FAA hearings earlier this spring, as well as input from a diverse range of stakeholders in the aviation and research communities.

The Federal Aviation Administration's stated mission is to *"provide the safest, most efficient aerospace system in the world,"* and its stated vision is to *"improve the safety and efficiency of aviation, while being responsive to our customers and accountable to the public."* I think those are laudable and important goals, and I want to support FAA's efforts in striving to reach those goals.

To that end, this legislation is focused on ensuring the FAA will have the tools that it will need to keep the Nation's air transportation system safe, efficient, and environmentally friendly. Thus, the Act reauthorizes a range of important R&D activities at the FAA, starts up new initiatives in some key areas, and contains provisions aimed at strengthening the interagency Joint Planning and Development Office (JPDO), which has the responsibility of planning and developing the Next Generation Air Transportation System (NextGen).

With respect to the JPDO, the Act responds to the recommendations of the Government Accountability Office (GAO) as well as other expert witnesses that the Space and Aeronautics Subcommittee heard from at our recent hearings by including provisions aimed at strengthening the effectiveness of the JPDO in carrying out the NextGen initiative. These include such things as:

- Strengthening the authority of the JPDO Director;
- Requiring each participating agency and department to identify a senior official to be in charge of its activities in support of the NextGen initiative;
- Requiring an integrated plan with date-specific timetables for implementation of NextGen capabilities;
- Having OMB coordinate each participating agency's and department's budget in support of the NextGen initiative;

- Directing JPDO to develop contingency plans for dealing with degradation of the NextGen system due to a natural disaster, major equipment failure, or act of terrorism;
- Requiring the JPDO to establish noise, emissions, and energy consumption requirements for the NextGen system;
- Directing JPDO to develop an R&D roadmap for the integration of unmanned aircraft systems (UAS) into the national airspace system; and
- Having GAO carry out annual reviews of JPDO's effectiveness.

As important as the JPDO is, the Act recognizes that the FAA, in coordination with other agencies such as the National Aeronautics and Space Administration (NASA), has a critical role to play in supporting other important aviation R&D activities, a number of which have been under funded in recent years according to the testimony of the GAO, FAA's own R&D advisory committee, and expert witnesses at our hearings. To that end, the Act augments the President's funding requests for human factors research, weather research, unmanned aircraft systems research, and energy- and environment-related research.

In addition, recent announcements from Europe regarding the potential imposition of emissions penalties on aircraft operations in the next decade have made it clear that the United States needs to better understand the impact of aviation on the climate as well as what might be done to mitigate that impact. This legislation takes the first step in that direction by directing the FAA, in coordination with NASA and the U.S. Climate Change Science Program to develop a plan for such research and then having the National Research Council carry out an independent assessment of that research plan.

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The Act also contains R&D provisions to continue engine research, in coordination with NASA, which has the goal of enabling existing general aviation aircraft to operate with unleaded aviation fuel. That is a provision that Mr. Lipinski has been very interested in too, and I want to thank him for his efforts on behalf of it. In addition, the legislation continues the Airport Cooperative Research Program and also establishes a runway research program that should benefit both general aviation and commercial air carrier airports.

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We all know that air transportation is central to the Nation's economic well-being, our international competitiveness, and our quality of life. FAA's R&D programs play an important role in ensuring the continued safety and efficiency of America's air transportation system, and I believe that the *Federal Aviation Research and Development Act of 2007* will keep FAA's R&D enterprise healthy and productive. I again want to thank Mr. Feeney and my colleagues on both sides of the aisle for their support and constructive advice regarding this legislation, and I look forward to a productive markup this morning. With that, I would like to turn to my good friend Mr. Feeney for any opening statement he would like to make.

Chairman UDALL. With that, I would like to turn to my good friend, Mr. Feeney, for any opening statement he would like to make.

Mr. FEENEY. Thank you, Chairman Udall.

This morning's markup of legislation reauthorizing the Federal Aviation Administration's research and development programs is an important first step to redirect, reinforce and improve agency efforts to maintain the highest possible levels of safety, efficiency and capacity in our national airspace system. I support this legislation and would urge all Members to support it as well.

The FAA is a unique federal enterprise. Twenty-four hours a day, seven days a week, it operates a complex nationwide network of

communications, navigation and surveillance systems upon which our civil, military and general aviation aircraft are completely dependent. The architecture of this system dates back 50 years. It is simply incapable as currently designed of handling large increases in traffic.

But having said that, a huge and increasing portion of our economy is directly reliant on FAA's ability to manage the air traffic control system at the highest levels of performance. More and more commerce is utilizing the airways in one form or another to meet consumer demand. The result of these trends is not surprising: Congestion and increasing frequency of flight delays, clear signs of stress on a system that is close to saturation.

The bill before us takes several important steps to address this issue. First it reauthorizes R&D programs and projects requested by the Administration for fiscal years 2008 through 2011 generally at the requested levels. This bill does increase funding authorization for human factors, weather, unmanned aerial vehicles, the Joint Planning and Development Office, and environment research activities. In addition, the bill authorizes five new research programs, two of which are already being conducted by FAA.

The bill also makes several important improvements to the Joint Planning and Development Office which is housed within the FAA but serves to coordinate research among five federal departments and agencies, whose goal is to develop a new air traffic control system by the year 2025 that will triple the system's current capacity. Section 4 clarifies the role and responsibilities of the JPDO and its partner agencies, and clarifies accountability and budgeting.

Finally, I would like to emphasize one of the other features of the bill that address unmanned aerial vehicles. Section 4 includes an extensive provision directing FAA to provide Congress with research plans and conduct pilot projects designed to accelerate the introduction of UAVs into the national airspace system in a safe and effective manner. There are a number of federal and State agencies that desire to use UAVs to perform public safety missions, especially with regard to border protection and drug interdiction. UAVs are being used to great effect by the Defense Department and I believe, as I know the Chairman does as well, that UAVs can serve critical roles here at home.

I want to thank Chairman Udall and the Majority staff for their open and frequent consultation throughout this entire development of this bill. Bipartisanship has long been a hallmark of this committee, and this bill is certainly reflective of that tradition. I look forward to supporting the bill, and thank you.

I yield back my time, Mr. Chairman.

[The prepared statement of Mr. Feeney follows:]

PREPARED STATEMENT OF REPRESENTATIVE TOM FEENEY

Thank you, Mr. Chairman. This morning's markup of legislation reauthorizing the Federal Aviation Administration's research and development programs is an important first step to redirect, reinforce, and improve agency efforts to maintain the highest possible levels of safety, efficiency, and capacity in our national airspace system. I support this legislation and urge all Members to support it as well.

The FAA is a unique federal enterprise. Twenty-four hours a day, seven days a week, it operates a complex nationwide network of communications, navigation and surveillance systems upon which our civil, military and general aviation aircraft are completely dependent. The architecture of this system dates back 50 years. It is simply incapable, as currently designed, of handling large increases in traffic.

But having said that, a huge—and increasing—portion of our economy is directly reliant on FAA's ability to manage the air traffic control system at the highest levels of performance. More and more commerce is utilizing the airways in one form or another to meet consumer demand. The result of these trends is not surprising: congestion and increasing frequency of flight delays, clear signs of stress on a system that is close to saturation.

The bill before us takes several important steps to address this issue. First, it reauthorizes R&D programs and projects requested by the Administration for Fiscal Years 2008 through 2011, generally at the requested levels. The bill does increase funding authorization for human factors, weather, unmanned aerial vehicles, the Joint Planning and Development Office, and environment research activities. In addition, the bill authorizes five new research programs, two of which are already being conducted by FAA.

The bill also makes several important improvements to the Joint Planning and Development Office ("JPDO"), which is housed within the FAA but serves to coordinate research among five federal departments and agencies, whose goal is to develop a new air traffic control system by the year 2025 that will triple the system's current capacity. Section 4 clarifies the roles and responsibilities of the JPDO and its partner agencies, and clarifies accountability and budgeting.

Finally, I would like to emphasize one other feature of the bill that addresses unmanned aerial vehicles. Sec. 4 includes an extensive provision directing FAA to provide Congress with research plans and conduct pilot projects designed to accelerate the introduction of "UAVs" into the national airspace system in a safe and effective manner. There are a number of federal and State agencies that desire to use UAVs to perform public safety missions, especially with regard to border protection and drug interdiction. UAVs are being used to great effect by the Defense Department, and I believe, as does the Chairman, that UAVs can serve critical roles here at home.

I want to thank Mr. Udall and the Majority staff for their open and frequent consultation throughout the entire development of this bill. Bipartisanship has long been a hallmark of this committee, and this bill is certainly reflective of that tradition. I look forward to supporting this bill.

Thank you, Mr. Chairman.

Chairman UDALL. Thank you, Mr. Feeney, and without objection, Members may place statements in the record at this point.

I want to share with the Members present that after the markup was formally noticed, our staff discovered a technical error in the bill. We incorporated the correction of this error into H.R. 2698, which was introduced yesterday. It is my understanding that the corrected text has been made available to everyone. If there is no objection, I ask unanimous consent to consider H.R. 2698 as a base text for the purposes of amendment.

Seeing no objection, we will proceed to the first reading of the bill. I would ask unanimous consent that the bill is considered as read and open to amendment at any point and that the Members proceed with the amendments in the order of the roster. Without objection, so ordered.

We will proceed to a vote on the bill. Are there any amendments? Hearing none, the vote is on the bill H.R. 2698, the *Federal Aviation Research and Development Reauthorization Act of 2007*. All those in favor will say aye. All those opposed will say no. In the opinion of the Chair, the ayes have it.

At this point I recognize Mr. Feeney to offer a motion.

Mr. FEENEY. Mr. Chairman, I move that the Subcommittee favorably report H.R. 2698 as amended to the Full Committee. Furthermore, I move that the staff be instructed to prepare the Subcommittee legislative report and make the necessary technical and conforming changes to the bill as amended in accordance with the recommendations of the Subcommittee.

Chairman UDALL. The question is on the motion to report the bill favorably. Those in favor of the motion will signify by saying aye. Opposed, no. The ayes have it. The bill is favorably reported.

Without objection, the motion to reconsider is laid upon the table. Subcommittee Members will have two subsequent calendar days in which to submit supplemental Minority or additional views on the measure, ending Tuesday, June 19, at 9 a.m.

At this point I would like to thank the Members for their attendance. This concludes our Subcommittee markup.

The Subcommittee is adjourned.

[Whereupon, at 10:48 a.m., the Subcommittee was adjourned.]

Appendix:

H.R. 2698, Section-by-Section Analysis

I

110TH CONGRESS
1ST SESSION

H. R. 2698

To authorize appropriations for the civil aviation research and development projects and activities of the Federal Aviation Administration, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

JUNE 13, 2007

Mr. UDALL of Colorado (for himself and Mr. GORDON of Tennessee) introduced the following bill; which was referred to the Committee on Science and Technology

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A BILL

To authorize appropriations for the civil aviation research and development projects and activities of the Federal Aviation Administration, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Federal Aviation Research and Development Reauthorization Act of 2007".

SEC. 2. DEFINITIONS.

As used in this Act—

(1) the term "Administrator" means the Administrator of the Federal Aviation Administration;

(2) the term "Director" means the Director of the Joint Planning and Development Office;

(3) the term "FAA" means the Federal Aviation Administration;

(4) the term "NASA" means the National Aeronautics and Space Administration;

(5) the term "National Research Council" means the National Research Council of the National Academies of Science and Engineering;

(6) the term "NOAA" means the National Oceanic and Atmospheric Administration;

(7) the term "NSF" means the National Science Foundation;

(8) the term "Office" means the Next Generation Air Transportation System Joint Planning and Development Office; and

(9) the term "Secretary" means the Secretary of Transportation.

SEC. 3. AUTHORIZATION OF APPROPRIATIONS.

Section 48102(a) of title 49, United States Code, is amended—

(1) in paragraph (11)(L), by striking "and";

(2) in paragraph (12)(L), by striking the period and inserting a semicolon; and

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

"(13) for fiscal year 2008, $335,191,000, including—

"(A) $7,350,000 for fire research and safety;

"(B) $4,086,000 for propulsion and fuel systems;

"(C) $2,713,000 for advanced materials and structural safety;

"(D) $3,574,000 for atmospheric hazards and digital system safety;

"(E) $14,931,000 for aging aircraft;

"(F) $2,202,000 for aircraft catastrophic failure prevention research;

"(G) $14,651,000 for flightdeck maintenance, system integration, and human factors;

"(H) $9,517,000 for aviation safety risk analysis;

"(I) $15,254,000 for air traffic control, technical operations, and human factors;

"(J) $6,780,000 for aeromedical research;

"(K) $19,888,000 for weather programs;

"(L) $6,310,000 for unmanned aircraft systems research;

"(M) $18,100,000 for the Next Generation Air Transportation System Joint Planning and Development Office;

"(N) $13,755,000 for wake turbulence;

"(O) $20,469,000 for environment and energy;

"(P) $1,184,000 for system planning and resource management;

"(Q) $3,415,000 for the William J. Hughes Technical Center Laboratory Facility;

"(R) $74,200,000 for the Center for Advanced Aviation System Development;

"(S) $2,000,000 for the Airport Cooperative Research Program—capacity;

"(T) $3,000,000 for the Airport Cooperative Research Program—environment;

"(U) $5,000,000 for the Airport Cooperative Research Program—safety;

"(V) $3,600,000 for GPS civil requirements;

"(W) $5,000,000 for runway incursion reduction;

"(X) $6,500,000 for system capacity, planning, and improvement;

"(Y) $3,000,000 for operations concept validation;

"(Z) $1,000,000 for NAS weather requirements;

"(AA) $4,000,000 for the Airspace Management Lab;

"(BB) $5,000,000 for airspace redesign;

"(CC) $4,000,000 for wind profiling and weather research, Juneau;

"(DD) $1,000,000 for the Local Area Augmentation System (LAAS);

"(EE) $15,000,000 for Safe Flight 21, Alaska Capstone;

"(FF) $20,000,000 for NextGen demonstration;

"(GG) $8,907,000 for airports technology research—capacity;

"(HH) $9,805,000 for airports technology research—safety; and

"(14) for fiscal year 2009, $481,554,000, including—

"(A) $8,457,000 for fire research and safety;

"(B) $4,050,000 for propulsion and fuel systems;

"(C) $2,686,000 for advanced materials and structural safety;

"(D) $3,568,000 for atmospheric hazards and digital system safety;

"(E) $14,683,000 for aging aircraft;

"(F) $2,158,000 for aircraft catastrophic failure prevention research;

"(G) $37,499,000 for flightdeck maintenance, system integration, and human factors;

"(H) $8,349,000 for aviation safety risk analysis;

"(I) $15,323,000 for air traffic control, technical operations, and human factors;

"(J) $6,932,000 for aeromedical research;

"(K) $22,336,000 for weather program;

"(L) $6,738,000 for unmanned aircraft systems research;

"(M) $18,100,000 for the Next Generation Air Transportation System Joint Planning and Development Office;

"(N) $11,560,000 for wake turbulence;

"(O) $35,039,000 for environment and energy;

"(P) $1,847,000 for system planning and resource management;

"(Q) $3,548,000 for the William J. Hughes Technical Center Laboratory Facility;

"(R) $85,000,000 for Center for Advanced Aviation System Development;

"(S) $5,000,000 for the Airport Cooperative Research Program—capacity;

"(T) $5,000,000 for the Airport Cooperative Research Program—environment;

"(U) $5,000,000 for the Airport Cooperative Research Program—safety;

"(V) $3,469,000 for GPS civil requirements;

"(W) $5,000,000 for runway incursion reduction;

"(X) $6,500,000 for system capacity, planning and improvement;

"(Y) $3,000,000 for Operations Concept Validation;

"(Z) $1,000,000 for NAS weather requirements;

"(AA) $4,000,000 for the Airspace Management Lab;

"(BB) $3,000,000 for airspace redesign;

"(CC) $20,000,000 for Safe Flight 21, Alaska Capstone;

"(DD) $12,000,000 for NextGen demonstration;

"(EE) $102,000,000 for NextGen system development;

"(FF) $8,907,000 for airports technology research—capacity;

"(GG) $9,805,000 for airports technology research—safety; and

"(15) for fiscal year 2010, $486,502,000, including—

"(A) $8,546,000 for fire research and safety;

"(B) $4,075,000 for propulsion and fuel systems;

"(C) $2,700,000 for advanced materials and structural safety;

"(D) $3,608,000 for atmospheric hazards and digital system safety;

"(E) $14,688,000 for aging aircraft;

"(F) $2,153,000 for aircraft catastrophic failure prevention research;

"(G) $36,967,000 for flightdeck maintenance, system integration, and human factors;

"(H) $8,334,000 for aviation safety risk analysis;

"(I) $15,471,000 for air traffic control, technical operations, and human factors;

"(J) $7,149,000 for aeromedical research;

"(K) $23,286,000 for weather program;

"(L) $6,236,000 for unmanned aircraft systems research;

"(M) $18,100,000 for the Next Generation Air Transportation System Joint Planning and Development Office;

"(N) $11,412,000 for wake turbulence;

"(O) $34,678,000 for environment and energy;

"(P) $1,827,000 for system planning and resource management;

"(Q) $3,644,000 for William J. Hughes Technical Center Laboratory Facility;

"(R) $90,000,000 for the Center for Advanced Aviation System Development;

"(S) $5,000,000 for the Airport Cooperative Research Program—capacity;

"(T) $5,000,000 for the Airport Cooperative Research Program—environment;

"(U) $5,000,000 for the Airport Cooperative Research Program—safety;

"(V) $3,416,000 for GPS civil requirements;

"(W) $5,000,000 for runway incursion reduction;

"(X) $6,500,000 for system capacity, planning and improvement;

"(Y) $3,000,000 for operations concept validation;

"(Z) $1,000,000 for NAS weather requirements;

"(AA) $4,000,000 for the Airspace Management Lab;

"(BB) $3,000,000 for airspace redesign;

"(CC) $20,000,000 for Safe Flight 21, Alaska Capstone;

"(DD) $12,000,000 for NextGen demonstration;

"(EE) $102,000,000 for NextGen system development;

"(FF) $8,907,000 for airports technology research—capacity;

"(GG) $9,805,000 for airports technology research—safety; and

"(16) for fiscal year 2011, $514,832,000, including—

"(A) $8,815,000 for fire research and safety;

"(B) $4,150,000 for propulsion and fuel systems;

"(C) $2,747,000 for advanced materials and structural safety;

"(D) $3,687,000 for atmospheric hazards and digital system safety;

"(E) $14,903,000 for aging aircraft;

"(F) $2,181,000 for aircraft catastrophic failure prevention research;

"(G) $39,245,000 for flightdeck maintenance, system integration and human factors;

"(H) $8,446,000 for aviation safety risk analysis;

"(I) $15,715,000 for air traffic control, technical operations, and human factors;

"(J) $7,390,000 for aeromedical research;

"(K) $23,638,000 for weather program;

"(L) $6,295,000 for unmanned aircraft systems research;

"(M) $18,100,000 for the Next Generation Air Transportation System Joint Planning and Development Office;

"(N) $11,471,000 for wake turbulence;

"(O) $34,811,000 for environment and energy;

"(P) $1,836,000 for system planning and resource management;

"(Q) $3,758,000 for William J. Hughes Technical Center Laboratory Facility;

"(R) $114,000,000 for Center for Advanced Aviation System Development;

"(S) $5,000,000 for the Airport Cooperative Research Program—capacity;

"(T) $5,000,000 for the Airport Cooperative Research Program—environment;

"(U) $5,000,000 for the Airport Cooperative Research Program—safety;

"(V) $3,432,000 for GPS civil requirements;

"(W) $2,000,000 for runway incursion reduction;

"(X) $6,500,000 for system capacity, planning and improvement;

"(Y) $3,000,000 for operations concept validation;

"(Z) $1,000,000 for NAS weather requirements;

"(AA) $4,000,000 for the Airspace Management Lab;

"(BB) $3,000,000 for airspace redesign;

"(CC) $20,000,000 for Safe Flight 21, Alaska Capstone;

"(DD) $12,000,000 for NextGen demonstration;

"(EE) $105,000,000 for NextGen system development;

"(FF) $8,907,000 for airports technology research—capacity;

"(GG) $9,805,000 for airports technology research—safety; and".

SEC. 4. NEXT GENERATION AIR TRANSPORTATION SYSTEM JOINT PLANNING AND DEVELOPMENT OFFICE.

(a) STATUS OF DIRECTOR AND RESPONSIBILITIES OF OFFICE.—Section 709 of the Vision 100— Century of Aviation Reauthorization Act (49 U.S.C. 40101 note) is amended—

(1) in subsection (a)—

(A) in paragraph (1), by adding at the end the following: "The head of the Office shall be the Director. The Director shall report to the Administrator of the Federal Aviation Adminis-

tration and shall serve as Associate Administrator for the Next Generation Air Transportation System, and shall be a voting member and co-chair of the Joint Resources Council.";

(B) by amending paragraph (2)(C) to read:

"(C) creating a transition plan for the implementation of that system that includes date-specific milestones for the implementation of new capabilities into the national airspace system;";

(C) in paragraph (2)(G), by striking "; and" and inserting a semicolon;

(D) in paragraph (2)(H), by striking the period at the end and inserting "; and";

(E) by adding at the end of paragraph (2) the following:

"(I) establishing specific quantitative goals for the safety, capacity, efficiency, performance, and environmental impacts of each phase of Next Generation Air Transportation System implementation activities and measuring actual operational experience against those goals;

"(J) working to ensure global interoperability of the Next Generation Air Transportation System;

"(K) integrating aviation weather information and space weather information into the Next Generation Air Transportation System as soon as possible;

"(L) overseeing, with the Administrator, the selection of products or outcomes of research and development activities that would be moved to the next stage of a demonstration project through the Joint Resources Council;

"(M) maintaining a baseline modeling and simulation environment for testing and evaluating alternative concepts to satisfy Next Generation Air Transportation enterprise architecture requirements; and

"(N) pursuing the integration of unmanned aircraft systems into the national airspace system through research and demonstration programs under the auspices of a public and private partnership."; and

(2) in subsection (e), by striking "2010" and inserting "2011".

(b) ACCOUNTABILITY.—Such section is further amended—

(1) in paragraph (3), by inserting "(A)" after the paragraph designation; and

(2) by adding at the end of paragraph (3) the following:

"(B) The Administrator, the Secretary of Defense, the Administrator of NASA, the Secretary of Commerce, the Secretary of Homeland Security, and the head of any other Department or Federal agency from which the Secretary of Transportation requests assistance under paragraph (A) shall designate a senior official in the department or agency to be responsible for—

"(i) implementing the department's or agency's Next Generation Air Transportation System activities with the Office, including the execution of all aspects of the department's or agency's work on developing and implementing the integrated plan described in section 709(2)(A); and

"(ii) ensuring that the department or agency meets its obligations as set forth in the memorandum of understanding executed by or

on behalf of the department or agency under subparagraph (D).

"(C) The head of any such department or agency shall—

"(i) establish an office within the department or agency to carry out its responsibilities under the memorandum of understanding under the supervision of the designated official; and

"(ii) ensure that the designated official has sufficient budgetary authority and staff resources to carry out the department's or agency's Next Generation Air Transportation System responsibilities as set forth in the integrated plan under section 709(b).

"(D) Not later than 6 months after the date of enactment of the Federal Aviation Research and Development Reauthorization Act of 2007, the head of each department or agency that has responsibility for carrying out any activity under the integrated plan under section 709(b) shall execute a memorandum of understanding with the Office obligating that department or agency to carry out those activities.".

(c) INTEGRATED PLAN.—Section 709(b) of the Vision 100—Century of Aviation Reauthorization Act (49 U.S.C. 40101 note) is amended—

(1) by striking the first sentence and inserting ''The integrated plan shall be designed to ensure that the Next Generation Air Transportation System meets anticipated future air transportation safety, security, mobility, efficiency, and capacity needs and accomplishes the goals under subsection (c).'';

(2) in paragraph (3)(C), by striking ''; and'' and inserting a semicolon;

(3) by adding at the end the following:

''(5) Date-specific timetables for the partial and complete implementation of planned Next Generation Air Transportation System capabilities, including but not limited to Automated Dependent Surveillance-Broadcast, Unmanned Aircraft Systems operations, Next Generation Enabled Weather system, Next Generation Data Communications, NAS Voice Switch, System Wide Information Management system, and space weather information, and including any necessary certification activities, and including an evaluation of the costs and benefits of accelerating any of the implementation and certification timetables;

"(6) Identification of planned demonstration projects and date-specific timetables for the conduct of the demonstration projects and subsequent certification activities and an evaluation of the costs and benefits of accelerating any of the demonstration projects and certification activities;

"(7) Date-specific timetables for meeting the environmental requirements identified in subsection (I); and

"(8) Identification, on an annual basis, of each entity that will be responsible for each component of any research, development, or implementation activity.".

(d) ANNUAL REPORT.—Section 709(d) of the Vision 100—Century of Aviation Reauthorization Act (49 U.S.C. 40101 note) is amended to read as follows:

"(d) ANNUAL REPORTS.—The Director of the Office shall transmit a report annually to the Committee on Science and Technology and the Committee on Transportation and Infrastructure of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate at the time of the President's budget request describing the progress in carrying out the plan required under subsection (b) and any changes to that plan. The annual report shall include—

"(1) the updated integrated plan developed under subsection (b);

"(2) a detailed description of the progress made in carrying out the integrated plan and any changes made to that plan since the previous annual report, and identifying any changes resulting from funding shortfalls or limitations set by the Office of Management and Budget;

"(3) any deviation from previously established development and implementation milestones, the reasons for the deviation, and the impact of the deviation;

"(4) the relevant programs and activities for the previous fiscal year and the proposed programs and activities under the President's budget request, of each participating Federal agency and department; and

"(5) the levels of funding for each participating Federal agency and department devoted to the programs and activities in paragraph (4) for the previous fiscal year and under the President's budget request.".

(e) SENIOR POLICY COMMITTEE.—Section 710 of the Vision 100—Century of Aviation Reauthorization Act (49 U.S.C. 40101 note) is amended in the last sentence by

inserting ", and shall meet at least four times each year" before the period.

(f) BUDGET PREPARATION.—

(1) Each Federal agency and department participating in the office shall, as part of its annual request for appropriations to the Office of Management and Budget, submit a report to the Office of Management and Budget which—

(A) identifies each element of its work program which contributes directly to Next Generation Air Transportation System initiative; and

(B) states the portion of its request for appropriations that is allocated to each such element.

(2) The Office of Management and Budget shall review each such report in light of the goals, priorities, and agency and departmental responsibilities set forth in the annual report submitted under the amendment made by subsection (d), and shall include, in the President's annual budget estimate, a statement of the portion of each appropriate agency's or department's annual budget estimate relating to its activities undertaken pursuant to the Next Generation Air Transportation System initiative.

(g) CONTINGENCY PLANNING.—The Director shall, as part of the design of the Next Generation Air Transportation System, develop contingency plans for dealing with the degradation of the Next Generation Air Transportation System in the event of a natural disaster, major equipment failure, or act of terrorism.

(h) ENVIRONMENTAL RESEARCH.—The Director shall establish environmental requirements for noise, emissions, and energy consumption to be satisfied in the Next Generation Air Transportation System through a combination of technologies and operational procedures. The Director shall assign primary responsibility for the research, development, and demonstration of the applicable technologies in a relevant environment to NASA and primary responsibility for demonstration of optimized operational procedures to the FAA.

(i) GOVERNMENT ACCOUNTABILITY OFFICE ASSESSMENT AND REPORT.—

(1) SCOPE.—The Comptroller General shall assess compliance with the requirements of section 709 of the Vision 100—Century of Aviation Reauthorization Act (49 U.S.C. 40101 note) to determine—

(A) the effectiveness of the Next Generation Air Transportation System Joint Planning and Development Office in meeting the dead-

lines and milestones of the integrated plan under that section; and

(B) the adequacy and effectiveness of the memoranda of understanding executed by Federal departments and agencies under that section.

(2) REPORT.—Not later than 270 days after the date of enactment of this Act, and annually thereafter until the Next Generation Air Transportation System is fully operational, the Comptroller General shall transmit a report to the Committee on Science and Technology and the Committee on Transportation and Infrsatructure of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate containing the Comptroller General's findings, conclusions and recommendations related to the assessment in paragraph (1).

(j) UNMANNED AIRCRAFT SYSTEMS.—

(1) RESEARCH INITIATIVE.—

(A) IMPROVED MANNED AND UNMANNED AIRCRAFT.—Section 44504 of title 49, United States Code, is amended—

(i) in subsection (a), by inserting ''unmanned and manned'' after ''improve'';

(ii) in subsection (b)(6), by striking "and" after the semicolon;

(iii) in subsection (b)(7) by striking the period and inserting "; and"; and

(iv) by adding at the end of subsection (b) the following:

"(8) in conjunction with other Federal agencies as appropriate, to develop technologies and methods to assess the risk of and prevent defects, failures, and malfunctions of products, parts, and processes, for use in all classes of unmanned aerial systems that could result in a catastrophic failure.".

(B) SYSTEMS, PROCEDURES, FACILITIES, AND DEVICES.—Section 44505(b) of such title is amended—

(i) in paragraph (4), by striking "and" after the semicolon;

(ii) in paragraph (5)(C), by striking the period and inserting a semicolon; and

(iii) by adding at the end of subsection (b) the following:

"(6) to develop a better understanding of the relationship between human factors and unmanned aircraft systems safety; and

"(7) to develop dynamic simulation models for integrating all classes of unmanned aircraft systems into the national airspace system.".

(2) ROADMAP.—Not later than 90 days after the date of enactment of this Act, the Administrator shall develop and transmit an unmanned aircraft systems research, development, demonstration and implementation "roadmap" to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate.

(3) INDEPENDENT ASSESSMENT.—

(A) IN GENERAL.—Not later than 3 months after the date of enactment of this Act, the Administrator shall enter into an arrangement with the National Research Council for an assessment of the status of unmanned aircraft systems that shall include consideration of—

(i) human factors regarding unmanned aircraft systems operation;

(ii) "detect, sense and avoid technologies" with respect to both cooperative and non-cooperative aircraft;

(iii) spectrum issues and bandwidth requirements;

(iv) operation in suboptimal winds and adverse weather conditions;

(v) mechanisms for communicating unmanned aircraft system location;

(vi) airworthiness and system redundancy;

(vii) flight termination systems for safety and security;

(viii) technologies for unmanned aircraft systems flight control;

(ix) technologies for unmanned aircraft systems propulsion;

(x) unmanned aircraft systems operator qualifications, medical standards, and training requirements;

(xi) unmanned aircraft systems maintenance requirements and training requirements;

(xii) any other unmanned aircraft systems-related issue the Administrator believes should be addressed; and

(xiii) recommendations for integrating unmanned aircraft systems into the national airspace system in a timely manner.

(B) REPORT.—Not later than 12 months after initiating the study, the National Academy shall submit its report to the Administrator, the Senate Committee on Commerce, Science, and Transportation, and the House of Representatives Committee on Science and Technology containing its finding and recommendations.

(4) PILOT PROJECTS FOR TRANSITIONING RESEARCH AND DEVELOPMENT RESULTS.—

(A) IN GENERAL.—The Administrator shall establish pilot projects in sparsely populated, low-density Class G air traffic airspace to conduct experiments and collect data in order to accelerate the safe integration of unmanned aircraft systems into the national airspace system.

(B) USE OF PUBLIC-PRIVATE PARTNERSHIP.—In conducting the pilot projects, the Administrator shall encourage the formation of a public-private partnership.

(C) REPORT.—Not later than 90 days after completing the pilot projects, the Administrator shall transmit a report to the Committee on Science and Technology of the House of Representatives and the Committee on Com-

merce, Science, and Transportation of the Senate, setting forth the Administrator's findings and conclusions concerning the projects.

(D) AUTHORIZATION OF APPROPRIATIONS.—In addition to amounts authorized to be appropriated by the amendments made by this Act, there is authorized to be appropriated to the Administrator for fiscal years 2008 and 2009 such sums as may be necessary to carry out the pilot projects under this paragraph.

SEC. 5. INTERAGENCY RESEARCH INITIATIVE ON THE IMPACT OF AVIATION ON THE CLIMATE.

(a) IN GENERAL.—The Administrator, in coordination with NASA and the United States Climate Change Science Program, shall establish a research initiative to assess the impact of aviation on the climate and to evaluate approaches to mitigate that impact.

(b) RESEARCH PLAN.—Not later than 1 year after the date of enactment of this Act, the participating Federal entities shall jointly develop a plan for the research program that contains the objectives, proposed tasks, milestones, and 5-year budgetary profile.

(c) REVIEW.—The Administrator shall have the National Research Council conduct an independent review of the interagency research program plan and provide the re-

sults of that review to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate not later than 18 months after the date of enactment of this Act.

(d) AUTHORIZATION OF APPROPRIATIONS.—In addition to amounts authorized to be appropriated by the amendments made by this Act, there is authorized to be appropriated $2,000,000 for fiscal year 2008, and $5,000,000 in each of the fiscal years 2009 through 2011, for the interagency research program established under this section.

SEC. 6. RESEARCH PROGRAM ON RUNWAYS.

(a) ESTABLISHMENT OF RESEARCH PROGRAM.—The Administrator shall establish a program of research grants to universities and non-profit research foundations for research and technology demonstrations related to—

(1) improved runway surfaces; and

(2) engineered material restraining systems for runways at both general aviation airports and airports with commercial air carrier operations.

(b) AUTHORIZATION OF APPROPRIATIONS.—In addition to amounts authorized to be appropriated by the amendments made by this Act, there is authorized to be

appropriated $5,000,000 for each of the fiscal years 2008 through 2011 to carry out this section.

SEC. 7. RESEARCH ON DESIGN FOR CERTIFICATION.

(a) JOINT PROGRAM.—Not later than 6 months after the date of enactment of this Act, the FAA and NASA shall establish a joint research program on methods to improve both confidence in and the timeliness of certification of new technologies for their introduction into the national airspace system.

(b) RESEARCH PLAN.—Not later than 1 year after the date of enactment of this Act, as part of the activity described in subsection (a), the FAA and NASA shall jointly develop a plan for the research program that contains the objectives, proposed tasks, milestones, and five-year budgetary profile.

(c) REVIEW.—The Administrator shall have the National Research Council conduct an independent review of the joint research program plan and provide the results of that review to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate not later than 18 months after the date of enactment of this Act.

SEC. 8. CENTERS OF EXCELLENCE.

(a) AMENDMENT.—Section 44513(f) of title 49, United States Code, is amended to read as follows:

"(f) GOVERNMENT'S SHARE OF COSTS.—The United States Government's share of establishing and operating the center and all related research activities that grant recipients carry out shall not exceed 75 percent of the costs. The United States Government's share of an individual grant under this section shall not exceed 90 percent of the costs.".

(b) ANNUAL REPORT.—The Administrator shall transmit a report annually to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate at the time of the President's budget request that lists—

(1) the research projects that have been initiated by each Center of Excellence in the preceding year;

(2) the amount of funding for each research project and the funding source;

(3) the institutions participating in each project and their shares of the overall funding for each research project; and

(4) the level of cost-sharing for each research project.

SEC. 9. AIRPORT COOPERATIVE RESEARCH PROGRAM.

Section 44511(f) of title 49, United States Code, is amended—

(1) in paragraph (1), by striking ''establish a 4-year pilot'' in paragraph (1) and inserting ''maintain an''; and

(2) in paragraph (4)—

(A) by striking ''expiration of the program'' and inserting ''expiration of the pilot program''; and

(B) by striking ''program, including recommendations as to the need for establishing a permanent airport cooperative research program'' and inserting ''program''.

SEC. 10. RESEARCH GRANTS PROGRAM INVOLVING UNDERGRADUATE STUDENTS.

(a) IN GENERAL.—The Administrator shall establish a program to utilize colleges and universities, including Historically Black Colleges and Universities, Hispanic Serving Institutions, tribally controlled colleges and universities, and Alaska Native and Native Hawaiian serving institutions in conducting research by undergraduate students on subjects of relevance to the FAA. Grants may be awarded under this section for—

(1) research projects to be carried out primarily by undergraduate students;

(2) research projects that combine undergraduate research with other research supported by the FAA;

(3) research on future training requirements related to projected changes in regulatory requirements for aircraft maintenance and power plant licensees; and

(4) research on the impact of new technologies and procedures, particularly those related to aircraft flight deck and air traffic management functions, and on training requirements for pilots and air traffic controllers.

(b) AUTHORIZATION OF APPROPRIATIONS.—In addition to amounts authorized to be appropriated by the amendments made by this Act, there is authorized to be appropriated $5,000,000 for each of the fiscal years 2008 through 2011, for research grants under this section.

SEC. 11. BUDGET FORMULATION.

Section 48102 of title 49, United States Code, is amended by inserting after subsection (f) the following new subsection:

''(g) BUDGET FORMULATION.—(1) The Department of Transportation's annual budget request for the Federal Aviation Administration shall identify all of the activities carried out by the Administration within the categories of

basic research, applied research, and development, as classified by the Office of Management and Budget Circular A–11. Each activity in the categories of basic research, applied research, and development shall be identified regardless of the budget category in which it appears in the budget request.

''(2) The budget request specified in paragraph (1) shall be submitted to the Committee on Science and Technology and the Committee on Transportation and Infrastructure of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate at the same time as the President's Budget Request is submitted to the Congress.''.

SEC. 12. RESEARCH PROGRAM ON SPACE WEATHER AND AVIATION.

(a) ESTABLISHMENT.—From amounts made available under section 48102(a) of title 49, United States Code, the Administrator of the Federal Aviation Administration shall, in coordination with the National Science Foundation, National Aeronautics and Space Administration, National Oceanic and Atmospheric Administration, and other relevant agencies, initiate a research program to—

(1) conduct or supervise research projects on impacts of space weather to aviation, including com-

munication, navigation, avionic systems, and on airline passengers and personnel; and

(2) facilitate the transfer of technology from space weather research programs to Federal agencies with operational responsibilities and to the private sector.

(b) USE OF GRANTS OR COOPERATIVE AGREEMENTS.—The Administrator may use grants or cooperative agreements in carrying out this section.

(c) AUTHORIZATION OF APPROPRIATIONS.—In addition to amounts authorized to be appropriated by the amendments made by this Act, there is authorized to be appropriated $1,000,000 for each of the fiscal years 2008 through 2011 to carry out this section.

SEC. 13. AVIATION GAS RESEARCH AND DEVELOPMENT PROGRAM.

(a) CONTINUATION OF PROGRAM.—The Administrator, in coordination with the NASA Administrator, shall continue research and development activities into technologies for modification of existing general aviation piston engines to enable their safe operation using unleaded aviation fuel.

(b) ROADMAP.—Not later than 120 days of the enactment of this Act, the Administrator shall develop a research and development roadmap for the program contin-

ued in subsection (a), containing the specific research and development objectives and anticipated timetable for achieving the objectives.

(c) REPORT.—Not later than 130 days of the enactment of this Act, the Administrator shall provide the roadmap specified in subsection (b) to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate.

(d) AUTHORIZATION OF APPROPRIATIONS.—In addition to amounts authorized to be appropriated by the amendments made by this Act, there is authorized to be appropriated $750,000 for each of the fiscal years 2008 through 2010, to carry out this section.

SEC. 14. RESEARCH REVIEWS AND ASSESSMENTS.

(a) REVIEW OF FAA'S ENERGY- AND ENVIRONMENT-RELATED RESEARCH PROGRAMS.—

(1) STUDY.—The Administrator shall enter into an arrangement with the National Research Council for a review of the FAA's energy- and environment-related research program. The review shall assess whether—

(A) the programs have well-defined, prioritized, and appropriate research objectives;

(B) the program are properly coordinated with the energy- and environment-related research programs of NASA, NOAA, and other relevant agencies;

(C) the program have allocated appropriate resources to each of the research objectives; and

(D) there exist suitable mechanisms for transitioning the research results into the FAA's operational technologies and procedures and certification activities.

(2) REPORT.—A report containing the results of the review shall be provided to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate within eighteen months of the enactment of this Act.

(b) ASSESSMENT OF THE IMPACT OF SPACE WEATHER ON AVIATION.—

(1) STUDY.—The Administrator shall enter into an arrangement with the National Research Council for a study of the impacts of space weather on the current and future United States aviation industry, and in particular, to examine the risks for Over-The-Pole (OTP) and Ultra-Long-Range (ULR) operations. The study shall—

(A) examine space weather impacts on at least the following areas: communications, navigation, avionics, and human health in flight;

(B) assess the benefits of space weather information and services to reduce aviation costs and maintain safety;

(C) provide recommendations on how NASA, NOAA, and the NSF can most effectively carry out research and monitoring activities related to space weather and aviation; and

(D) provide recommendations on how to integrate space weather information into the Next Generation Air Transportation System.

(2) REPORT.—A report containing the results of the study shall be provided to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate not later than 1 year after the date of enactment of this Act.

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SECTION-BY-SECTION ANALYSIS OF H.R. 2698,
FEDERAL AVIATION RESEARCH AND DEVELOPMENT
REAUTHORIZATION ACT OF 2007

SEC. 1. SHORT TITLE

"Federal Aviation Research and Development Reauthorization Act of 2007".

SEC. 2. DEFINITIONS

Defines terms used in the bill.

SEC. 3. AUTHORIZATION OF APPROPRIATIONS

Amends existing law and authorizes $335,191,000 for FY08; $481,554,000 for FY09; $486,502,000 for FY10; and $514,832,000 for FY11.

SEC. 4. NEXT GENERATION AIR TRANSPORTATION SYSTEM JOINT PLANNING AND DEVELOPMENT OFFICE

Makes Director head of both the JPDO and Associate Administrator for the Next Generation Air Transportation System and voting member/Co-Chair of Joint Resources Council.

Requires the Director to create a transition plan, establish quantitative goals, and ensure the inter-operability of the Next Generation Air Transportation System.

Requires the Administrator, the Secretary of Defense, the Administrator of NASA, the Secretary of Commerce, the Secretary of Homeland Security, and the head of any other department or federal agency from which the Secretary of Transportation requests assistance to designate a senior official to implement each department or agency's Next Generation Air Transportation System activities within the Office. Requires within six months for the department or agency that has responsibility for carrying out activity under the plan to execute a memorandum of understanding with the Office.

Requires an integrated plan to ensure that the Next Generation Air Transportation System meets anticipated future air transportation safety, security, mobility, efficiency, and capacity needs. Requires date-specific timetables for the implementation of the Next Generation Air Transportation System capabilities.

Requires an annual report from the Director of the Office describing the process of carrying out the implementation plan.

Requires Senior Policy Committee to meet at least four times per year.

Requires each federal agency and department participating in the Office to submit a report to the Office of Management and Budget identifying its portion of responsibility which contributes to the Next Generation Air Transportation System and to state the portion of its requests for appropriations.

Requires the Director to develop contingency plans for dealing with the degradation of the Next Generation Air Transportation System in the event of a natural disaster, major equipment failure, or act of terrorism.

Requires the Director to establish environmental requirements for noise, emissions, and energy consumption for the Next Generation Air Transportation System. NASA will be primarily responsible for research, development, and demonstration of applicable technologies, while the FAA will be primarily responsible for demonstration of optimized operational procedures.

Requires the Comptroller General to assess the effectiveness of the Next Generation Air Transportation System Joint Planning and Development Office in meeting the deadlines and milestones of the integrated plan, as well as the adequacy of the memoranda of understanding executed by the federal departments and agencies. Requires within 270 days of enactment and annually thereafter until the Next Generation Air Transportation System is operational, a report containing the Comptroller General's findings, conclusions and recommendations.

Requires within 90 days of enactment, an unmanned aircraft systems research, development, demonstration and implementation roadmap to be delivered to the Congress. Requires within three months of enactment for the FAA to arrange for the National Research Council to conduct an independent assessment of unmanned aircraft systems. Within 12 months, this report shall be submitted to the FAA and the Congress. Requires the FAA to establish pilot projects for the tests of unmanned aircraft systems' integration into the national airspace system. Requires within 90 days after the completion of these tests, a report on the findings which shall be submitted to the Congress. Authorizes such sums of as may be necessary to carry out the pilot projects.

SEC. 5. INTERAGENCY RESEARCH INITIATIVE ON THE IMPACT OF AVIATION ON THE CLIMATE

Requires the FAA in coordination with NASA and the U.S. Climate Change Science Program to establish a research initiative assessing the impact of aviation on the climate and to evaluate approaches to mitigate that impact. Requires within one year of enactment a jointly developed plan for this research program. The National Research Council will be directed by the FAA to provide an independent review of the research program plan. $2,000,000 is authorized to be appropriated in fiscal year 2008 for the research program, and $5,000,000 in each of the fiscal years 2009 through 2011.

SEC. 6. RESEARCH PROGRAM ON RUNWAYS

Requires the FAA to establish a program of research grants to universities and non-profit research foundations for research and technology demonstrations related to improved runway surfaces and engineered material restraining systems for runways at general aviation and commercial air carrier airports. $5,000,000 is authorized to be appropriated for each of the fiscal years 2008 through 2011.

SEC. 7. RESEARCH ON DESIGN FOR CERTIFICATION

Requires within six months of enactment for the FAA and NASA to establish a joint research program on improving the timelines of certification for new national airspace system technologies. Requires within one year of enactment for the FAA and NASA to provide a jointly developed plan for the research program's objectives, proposed tasks, milestones, and five-year budgetary profile. The National Research Council will be directed by the FAA to provide an independent review of the research program plan within eighteen months of enactment.

SEC. 8. CENTERS OF EXCELLENCE

Amends existing law, stating that the U.S. Government's share of establishing and operating a center and research grants shall not exceed 75 percent of the costs, and that the U.S. Government's share for an individual grant shall not exceed 90 percent of the costs. Requires an annual report to be sent to the Congress.

SEC. 9. AIRPORT COOPERATIVE RESEARCH PROGRAM

Amends existing law to extend the program.

SEC. 10. RESEARCH GRANTS PROGRAM INVOLVING UNDERGRADUATE STUDENTS

Requires the Administrator to establish a program to establish a program to utilize colleges and universities in conducting research by undergraduate students on subjects of relevance to the FAA. Authorizes $5,000,000 for research grants for each of the fiscal years 2008 through 2011.

SEC. 11. BUDGET FORMULATION

Amends existing law to require the FAA's annual budget request identify all of the activities that fall within categories of basic research, applied research, and development.

SEC. 12. RESEARCH PROGRAM ON SPACE WEATHER AND AVIATION

Requires the FAA, in coordination with the NSF, NASA, NOAA and other relevant agencies, to initiate a research program to conduct research projects on the impacts of space weather to aviation, communication, navigation, avionic systems, and on airline passengers, and to facilitate the transfer of technology from this program to federal agencies and the private sector. $1,000,000 is to be authorized for each of the fiscal years 2008 through 2011.

SEC. 13. AVIATION GAS RESEARCH AND DEVELOPMENT PROGRAM

Requires the FAA, in coordination with NASA, to continue research and development activities into technologies for modifying existing aviation piston engines to be operated with unleaded aviation fuel. Requires within 120 days of enactment for the FAA to develop a roadmap for specific objectives of the program. Requires within 130 days of enactment, for the FAA to deliver the roadmap of the program to the appropriate congressional committees. $750,000 is to be authorized for each of the fiscal years 2008 through 2010.

SEC. 14. RESEARCH REVIEWS AND ASSESSMENTS

Requires the Administrator to arrange for the National Research Council to conduct a review of the FAA's energy- and environment-related research programs, and to provide the Congress with a report of the review within eighteen months of enactment.

Requires the Administrator to arrange for the National Research Council to conduct a study evaluating the impacts of space weather on the U.S. aviation industry, in particular for the Over-The-Pole (OTP) and Ultra-Long-Range (ULR) operations, and to provide the Congress with a report of the study within one year of enactment.

XXII. PROCEEDINGS OF THE FULL COMMITTEE MARKUP ON H.R. 2698, THE FEDERAL AVIATION RESEARCH AND DEVELOPMENT REAUTHORIZATION ACT OF 2007

FRIDAY, JUNE 22, 2007

HOUSE OF REPRESENTATIVES,
COMMITTEE ON SCIENCE AND TECHNOLOGY,
Washington, DC.

The Committee met, pursuant to call, at 10:50 a.m., in Room 2318 of the Rayburn House Office Building, Hon. Bart Gordon [Chairman of the Committee] presiding.

Chairman GORDON. The Committee will come to order. Pursuant to notice, the Committee on Science and Technology meets to consider the following measures: H.R. 906, the *Federal Aviation Research and Development Reauthorization Act of 2007;* and H.Res. 487, *Recognizing the contribution of modeling and simulation technology to the security and prosperity of the United States and recognizing modeling and simulation as a national critical technology,* and let me thank the Members for coming here this morning. We have lots going on. There will be a vote in about an hour but I think we can take care of our business with that period. So again, thank you.

We will now proceed with the markup. Today the Committee is meeting to mark up two good bipartisan pieces of legislation.

The first bill we will consider today is H.R. 2698, the *Federal Aviation Research and Development Reauthorization Act of 2007,* and H.R. 2698 was introduced by Chairman Udall. The Space and Aeronautics Subcommittee met last Thursday to consider H.R. 2698 and favorably reported the bill by voice vote without amendment. I want to thank and congratulate the Members of the Subcommittee for their hard work and bipartisan cooperation on this bill. There are two central features of this legislation before us. The first is a set of provisions intended to strengthen both the national authority and the accountability of the Next Generation Air Transportation System Joint Planning and Development Office, JPDO, because its success or failure is going to determine in large measure whether or not the Nation will have a safe and efficient air traffic management system in the future, and let me just say, this is a big deal, bigger than we are making it today. It is imperative that for both the aviation industry as well as our nation at large that we have this Next Generation air traffic control system and by and large it is going to be developed by virtue of the R&D we are going to provide here in the FAA bill as well as in the NASA bill, so we are going to play a major role, and this is important to the country.

The second feature is a four-year authorization of FAA's research and development activities including the establishment of important new research initiatives on the impact of space weather on aviation, the impact of aviation on the climate research, runway materials and engineering materials, restraining systems, among others. This FAA authorization expires this year. That is why it is important for us to move forward, and the reason it is important is that we have the option of going to the conference with Transportation either without a bill or with a bill, and I think by us putting a mark in the sand today, it is going to make us more relevant in being able to do that. Our friend and colleague, Mr. Costello, isn't here but I was hoping he would come so we could give him a lesson on legislating so that he could get it out of his committee also. I am sure he will finally get here at which time we will give him some pointers. But again, this is important. This bill will expire and we have the option of either participating or not participating, and I think we are doing the right thing, and I thank you for that. So I urge my colleagues to support this very good bipartisan bill.

Today we will also take up H.Res. 487, *Recognizing the contribution of modeling and simulation technology to the security and prosperity of the United States and recognizing modeling and simulation as a national critical technology,* as well as the thousands of Americans who work to develop this project. This is an under-appreciated but fundamentally important area of research to our country and I urge my colleagues to support this measure.

[The prepared statement of Chairman Gordon follows:]

PREPARED STATEMENT OF CHAIRMAN BART GORDON

Good morning. Today the Committee is meeting to mark up two good pieces of legislation that have bipartisan support.

The first bill that we will consider today is H.R. 2698, the *Federal Aviation Research and Development Reauthorization Act of 2007.*

H.R. 2698 was introduced by Chairman Udall, and I was pleased to be an original co-sponsor of the legislation.

The Space and Aeronautics Subcommittee met last Thursday to consider H.R. 2698 and favorably reported the bill by voice vote without amendment.

I want to thank and congratulate Members of the Subcommittee for their hard work and bipartisan cooperation on this bill.

There are two central features to the legislation before us today.

The first is a set of provisions intended to strengthen both the authority and the accountability of the Next Generation Air Transportation System's Joint Planning and Development Office–JPDO—because its success or failure is going to determine in large measure whether or not the Nation will have a safe and efficient air traffic management system in the future.

The second feature is a four-year authorization of FAA's research and development activities, including the establishment of important new research initiatives on the impact of space weather on aviation, the impact of aviation on the climate, research on runway materials and engineered materials restraining systems, among others.

I believe each of those new initiatives will better position the FAA to respond to emerging research challenges.

As I have noted, the focus of today's markup is FAA's R&D program and the Next Generation Air Transportation System initiative.

However, it is clear that FAA cannot ensure the successful development of the Nation's future air transportation system on its own.

As the establishment of the interagency JPDO by Congress four years ago indicates, it is going to take the combined efforts of multiple federal agencies, working in partnership with industry and the academic community, to make the NextGen initiative a success.

NASA, in particular, has an important R&D role to play, and we will need to ensure that NASA is given the necessary resources to play that role, and—in turn—that NASA steps up to its responsibilities for conducting needed R&D.

That is something that the Committee will devote more attention to as we start work on reauthorizing NASA later in this Congress.

For now, however, our focus is on the FAA, and I think that H.R. 2698 is a good bill that will help ensure that America's aviation system remains safe and preeminent in the world.

I urge my colleagues to support it.

Today, we will also take up H.Res. 487, *Recognizing the contribution of modeling and simulation technology to the security and prosperity of the United States, and recognizing modeling and simulation as a National Critical Technology.*

Chairman GORDON. I now recognize Mr. Hall to present his opening statement.

Mr. HALL. I thank you, Chairman Gordon, for the chance to make some opening remarks about today's markup on H.R. 2698, the *Federal Aviation Research and Development Reauthorization Act of 2007,* and H.Res. 487, recognizing the contribution of modeling and simulation technology to the security and the prosperity of our country. These are two very important pieces of legislation, as you pointed out, that have been worked out in a bipartisan fashion. I believe the FAA legislation will do a great deal to improve research and development in aviation and I am proud that this committee is advancing this legislation.

I am also very supportive of the resolution co-sponsored by my good friend, Mr. Feeney, which praises the good work of modeling and simulation technology.

Mr. Chairman, as always, I look forward to discussing these bills further as we move through the markup today, and I yield back the balance of my time.

Chairman GORDON. Without objection, Members may now place statements in the record at this point.

We will now consider H.R. 2698, the *Federal Aviation Research and Development Reauthorization Act of 2007.* I yield to the gentleman from Colorado five minutes to describe his bill.

Mr. UDALL. Thank you, Mr. Chairman. As you have indicated, H.R. 2698, the *Federal Aviation Research and Development Reauthorization Act of 2007,* was passed out of the Subcommittee on Space and Aeronautics on a voice vote last week. I especially want to thank Mr. Feeney, the Ranking Member of the Subcommittee, and my colleagues on both sides of the aisle for the bipartisan approach that we have all taken towards this legislation, and I hope we can continue that approach today.

This bill will help ensure that the FAA has the tools it needs to keep the Nation's air transportation system safe, efficient and environmentally friendly. It reauthorizes important R&D activities at the FAA, starts up new initiatives in key areas and contains provisions to strengthen the interagency Joint Planning and Development Office, which has responsibility for planning and developing the Next Generation Air Transportation System. NextGen, as it is known by, will replace the Nation's current air traffic management system which is being pushed to its limits and will be unable to satisfy the projected demand for future air travel.

The JPDO, the Joint Planning and Development Office, must integrate the work of numerous agencies on complex projects. The bill will help strengthen the JPDO and increase its effectiveness.

The bill also recognizes that the FAA in coordination with other agencies plays a critical role in supporting other important aviation R&D activities that the General Accounting Office and FAA's own R&D advisory committee say have been underfunded in recent years.

One such area is aviation emissions, which has been receiving a lot of attention lately. For example, the European Union may impose penalties on aircraft emissions in the next decade, and we should address this issue proactively. The bill takes the first step of directing the FAA, in coordination with other agencies, to develop a research plan, and by having the National Research Council carry out an independent assessment of that plan.

Our colleagues and universities plan an important role as well in research to support the Nation's future air transportation system, research that as it is underway helps to train the next generation of scientists, engineers and aviation specialists. That is why the bill authorizes a university research grants program and strengths the FAA's Centers of Excellence program, and again I want to thank Mr. Feeney for his work on that latter issue.

The bill also contains R&D provisions to continue engine research to help enable existing general aviation piston engine aircraft to operate with unleaded aviation fuel. I would like to thank Mr. Lipinski for his important efforts on this provision.

The Chairman mentioned that space weather is becoming even more critical to aviation as more planes fly over the polar regions. The bill establishes a multi-agency research program to study the impacts of it on the aviation system and on air passengers and crews.

It is clear that the Nation's air transportation system is critical to our economic well-being, our international competitiveness and our quality of life. I believe that this bill will keep the FAA's R&D enterprise healthy and productive. We have received letters of endorsement from several organizations including the Aerospace Industries Association, the Aircraft Owners and Pilots Association, the Airports Council International, the American Meteorological Society, the Colorado Department of Transportation—I had noting to do with that—and the American Institute of Aeronautics and Astronautics.

In conclusion, I think that this is a good bipartisan bill and I would urge my colleagues to support it. Thank you, Mr. Chairman.

[The prepared statement of Mr. Udall follows:]

PREPARED STATEMENT OF CHAIRMAN MARK UDALL

Good morning.

As Chairman Gordon has indicated, H.R. 2698, the *Federal Aviation Research and Development Act of 2007,* was passed by the Subcommittee on Space and Aeronautics on a voice vote at its markup last week.

I want to thank my colleagues on both sides of the aisle, especially my friend and Ranking Member, Mr. Feeney, for the bipartisan approach they have taken towards this legislation during its development.

I hope that we will continue that approach today.

H.R. 2698 will help ensure that the FAA has the tools it needs to keep the Nation's air transportation system safe, efficient, and environmentally friendly.

It reauthorizes important R&D activities at the FAA, starts up new initiatives in key areas, and contains provisions to strengthen the interagency Joint Planning and Development Office (JPDO), which has responsibility for planning and developing the Next Generation Air Transportation System (NextGen).

The NextGen initiative will replace the Nation's current air traffic management system, which is being pushed to its limits and will be unable to satisfy the projected demand for future air travel.

The JPDO must integrate the work of numerous agencies on complex projects. The bill will help strengthen the JPDO and increase its effectiveness.

The bill also recognizes that the FAA, in coordination with other agencies, plays a critical role in supporting other important aviation R&D activities that the GAO and FAA's own R&D advisory committee say have been underfunded in recent years.

One such issue is aviation emissions, which has been receiving a lot of attention lately. For example, the European Union may impose penalties on aircraft emissions in the next decade.

We should address this issue proactively. This bill takes the first step of directing the FAA, in coordination with other agencies, to develop a research plan, and by having the National Research Council carry out an independent assessment of that plan.

Our colleges and universities play an important role in research to support the Nation's future air transportation system—research that also helps to train the next generation of scientists, engineers, and aviation specialists.

That's why the bill authorizes a university research grants program and strengthens FAA's Centers of Excellence program, and I again want to thank Mr. Feeney for work on that latter issue.

The bill also contains R&D provisions to continue engine research to help enable existing general aviation piston engine aircraft to operate with unleaded aviation fuel. I would like to thank Mr. Lipinski for his efforts on this provision.

Space weather is becoming even more critical to aviation as more planes fly over the polar regions. The bill establishes a multi-agency research program to study the impacts of it on the aviation system and on air passengers and crews.

Mr. Chairman, as I have said before, the Nation's air transportation system is critical to our economic well-being, our international competitiveness, and our quality of life.

I believe that this bill will keep the FAA's R&D enterprise healthy and productive.

We have received letters of endorsement from several organizations, including the Aerospace Industries Association, the Aircraft Owners and Pilots Association, the Airports Council International, the American Meteorological Society, the Colorado Department of Transportation, and the American Institute of Aeronautics and Astronautics.

In conclusion, I think that this is a good bipartisan bill, and I urge my colleagues to support it.

Chairman GORDON. Thank you, Mr. Udall, for your good work on this bill.

Mr. Hall is recognized.

Mr. HALL. Mr. Chairman, I thank you for scheduling the markup today, legislation reorganizing the Federal Aviation Administration's research and development program for the years 2008 through 2011, and let me just say at the outset that I support this legislation and I urge all the Members to support it as well. It is a very good bill. It authorizes a total of $1.88 billion in R&D spending over four years, and while this number may seem—may appear to some to be fairly substantial, of course, it is substantial, but when compared to overall spending requested by the FAA, R&D funding is about three and one-half percent of the agency's annual spending. This is an extraordinarily small amount for an organization that is heavily dependent on maintaining a national network of communications, navigation and surveillance technologies as is the FAA, and it is possible only because of its R&D work as performed by NASA.

H.R. 2698 fully funds the Administration's budget request for FAA R&D and includes several increases for R&D projects that total $117 million over the life of the bill, or about six and one-half percent above the Administration's request. It also assumes full

funding responsibility for two important R&D activities, and those are the Joint Planning and Development Office and the Center for Advanced Aviation Systems design.

This bill before us this morning is comprehensive and makes a number of needed improvements but in the time remaining I will confine my remarks to provisions dealing with the Joint Planning and Development Office. The Federal Aviation Administration manages the safest and busiest airport system in the world, and all indications point to a doubling of the number of users within the next 10 to 12 years. The biggest R&D challenge confronting FAA is keeping pace with this growth before routine gridlock pervades our entire airspace system. Four years ago during the last reauthorization cycle of FAA programs, this committee authored the provision creating the Joint Planning and Development Office. It was directed to coordinate the design and development of a Next Generation Air Transportation System that will by the year 2025 be capable of handling three times the current level of traffic without any degradation in safety. The Department of Defense, Homeland Security, Commerce, Transportation as well as NASA and the White House Office of Science and Technology Policy all play key roles in this endeavor.

The bill before us this morning strengthens JPDO's ability to coordinate and direct these agencies as they work together to develop the Next Generation system. It directs the JPDO to establish a clear set of milestones. It strengthens the roles and responsibilities of the office's top management and it directs participating agencies to designate and hold accountable the senior career officials tasked with managing JPDO-related activities. These are good and necessary improvements.

As noted in your opening statement, this bill also makes a number of other improvements that will give FAA the tools it needs to keep our airspace system the safest and the most efficient in the world.

Before closing, I do want to note for the record several concerns raised by NASA regarding a small number of provisions in this bill. Before it goes to the House Floor, I want to express my hope to the Chairman that he would work with us to address them as best we can.

Mr. Chairman, I want to take a moment to highlight the close and cooperative work of the Majority staff in putting this bill together, particularly Dick Obermann. Throughout this entire mark-up process, Dick consulted with our staff frequently and openly seeking the Minority's input on the bill's provisions and report language. All Committee staff on both sides should survive any negotiations one with the other and should as these have done strive to follow Dick's very good example. Thank you, Dick, and thank you, Mr. Chairman. I yield back my time.

[The prepared statement of Mr. Hall follows:]

PREPARED STATEMENT OF REPRESENTATIVE RALPH M. HALL

Mr. Chairman, thank you for scheduling this morning's markup of H.R. 2698, legislation reauthorizing the Federal Aviation Administration's research and development programs for fiscal years 2008 through 2011. Let me say at the outset that I support this legislation and I urge all Members to support it as well. It is a good bill.

The bill authorizes a total of $1.88 billion in R&D spending over four years. While this number may appear to some to be fairly substantial, when compared to overall spending requested by the FAA, R&D funding is about 3.5 percent of the agency's annual spending. This is an extraordinarily small amount for an organization as heavily dependent on maintaining a national network of communications, navigation and surveillance technologies as is FAA, and it's possible only because some of its R&D work is performed by NASA.

H.R. 2698 fully funds the Administration's budget request for FAA R&D, and includes several increases for R&D projects that total $117 million over the life of the bill, or about 6.5 percent above the Administration's request. It also assumes full funding responsibility for two important R&D activities: the Joint Planning and Development Office, and the Center for Advanced Aviation Systems Design.

The bill before us this morning is comprehensive and makes a number of needed improvements, but in the time remaining, I will confine my remarks to provisions dealing with the Joint Planning and Development Office (JPDO).

The Federal Aviation Administration manages the safest and busiest airspace system in the world, and all indications point to a doubling of the number of users within the next ten to twelve years. The biggest R&D challenge confronting FAA is keeping pace with this growth before routine gridlock pervades our entire airspace system.

Four years ago, during the last reauthorization cycle of FAA programs, this committee authored the provision creating the Joint Planning and Development Office that was directed to coordinate the design and development of a Next Generation Air Transportation System that will, by the year 2025, be capable of handling three times the current level of traffic without any degradation in safety. The Departments of Defense, Homeland Security, Commerce, Transportation, as well as NASA and the White House Office of Science and Technology Policy all play key roles in this endeavor.

The bill before us this morning strengthens the JPDO's ability to coordinate and direct these agencies as they work together to develop the Next Generation system. It directs the JPDO to establish a clear set of milestones, it strengthens the roles and responsibilities of the office's top management, and it directs participating agencies to designate—and hold accountable—a senior career official tasked with managing JPDO-related activities. These are good and necessary improvements.

As noted in your opening statement, this bill also makes a number of other improvements that will give FAA the tools it needs to keep our airspace system the safest and most efficient in the world.

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Thank you, Mr. Chairman.

Chairman GORDON. Thank you, Mr. Hall. Let me concur with those statements, and I am particularly pleased to hear that about Dick Obermann. He is a good professional and he is a model for all of us to follow. Thank you, Dick, and that is the way we want to do legislation.

Mr. Hall, your concerns about JPDO are also—were well said. This is very important to us.

Mr. Lipinski I believe had a statement to make.

Mr. LIPINSKI. Move to strike the last word.

Chairman GORDON. The gentleman is recognized for five minutes.

Mr. LIPINSKI. Thank you, Mr. Chairman. As a Member of the Aviation Subcommittee of Transportation Infrastructure Committee, I want to echo the Chairman's words about the importance of this bill to the future of our air transportation system. We are

also fortunate to have the Chair of the Aviation Subcommittee on the Science Committee. I am sure now he is working on hammering out finishing the T&I portion of the FAA reauthorization bill right now.

In order to improve the safety and efficiency of aviation and limit harm to the environment, it is critical that we invest in research and development, something Mr. Udall had mentioned and emphasized. Now, currently, general aviation piston aircraft operate on 100-octane leaded aviation gas, or av gas. Av gas contains four times the amount of lead found in already banned leaded automotive fuel. It is extremely toxic, four times that found in automobile gas which we banned a number of years ago. Unfortunately, there is no economical alternative that currently exists. We definitely need to work on changing that. I would like to thank Chairman Gordon and Chairman Udall for working with me to include a provision in this bill to continue to enhance R&D for alternative aviation fuels.

Increasing R&D for alternative aircraft fuels is crucial if we hope to hasten their introduction into the market and in doing so help protect our environment. I would like to thank Chairman Udall and Ranking Member Hall for all their work on this bill and for including this important environmental provision.

Thank you, Mr. Chairman, and I yield back the balance of my time.

Chairman GORDON. Thank you, Mr. Lipinski, and also for doing double duty on this FAA bill on both your committees. We are going to provide a copy of the Subcommittee and Full Committee markup for you to present to Mr. Costello as a model for him to move his work, and we are sure that he will catch up with us at a later date.

Mr. LIPINSKI. I am sure he will appreciate that.

Chairman GORDON. Mr. Feeney, you did a good job on this. Do you want to brag a little bit about it?

Mr. FEENEY. No, but I do want to bring on both the Majority and the Minority staff and Chairman Udall. I am very grateful for his leadership because this really was a bipartisan consensus and so it was a very easy markup once we got to that, and this is a vital bill. I think that Chairman Gordon said it right. We are making too little of this because this is vital to have a system based on Next Generation leadership that will triple the capacity of our air traffic. It is so important that we do that in an environmentally responsible manner, in a safe manner, and it is critical to the prosperity of our country.

I thank my Ranking Member, Mr. Hall, and again I just want to tell you how appreciative I am of the leadership of Mr. Udall and his staff as we pass a very good bill today. I yield back.

Chairman GORDON. Thank you, Mr. Feeney. I think you make a good point. You know, just because we don't yell and holler around here, it doesn't mean we are not doing important work. We have gotten some bills out.

Mr. FEENEY. Mr. Chairman, I can yell and holler if it will help.

Chairman GORDON. Hopefully that won't be necessary. Save that for another committee.

Does anyone else wish to be recognized? We will get to your amendment in just a moment, Mr. Chandler. Is that what you wanted to do? Okay.

I ask unanimous consent that the bill is considered as read and open to amendment at any point and that Members proceed with amendments in order of the roster. Without objection, so ordered.

The first amendment on the roster is a manager's amendment offered by the Chair. The Clerk will report the amendment.

The CLERK. Amendment to H.R. 2698 offered by Mr. Gordon of Tennessee.

Chairman GORDON. I ask unanimous consent to dispense with the reading. Without objection, so ordered. I recognize myself for five minutes to explain the amendment.

I have what I believe is a straightforward amendment that makes a number of technical corrections to the bill as well as clarify several provisions of the bill. The amendment clarifies that the bill provides new funding authorizations for the research initiatives included in section 4J, 5, 6, 10 and 13.

It also clarifies that we are directing JPDO to establish noise, emission and energy consumption objectives in section 4H. In section 5, it makes clear that we are not prejudging the results of the interagency research initiative into the impact of aviation on the climate.

Finally, the amendment makes explicit that the bill's presumption that unmanned aircraft systems are to be integrated into the national airspace system in a manner that does not degrade the system. I have worked closely with the Minority in crafting this amendment, and I appreciate their assistance and their good ideas. I believe that this is a noncontroversial amendment and I would urge your support.

Is there further discussion on the amendment? If not, the vote occurs on the amendment. All in favor say aye. Those opposed, no. The ayes have it and the amendment is agreed to.

The second amendment on the roster is offered by the gentleman from Kentucky, Mr. Chandler. Are you ready to proceed with your amendment?

Mr. CHANDLER. Yes, Mr. Chairman. There is an amendment at the desk and I would like to ask for unanimous consent to dispense with the reading.

Chairman GORDON. The gentleman is recognized for five minutes.

Mr. CHANDLER. Thank you, sir. As we all know, everybody I think has a great deal of concern for air safety in this country. I have a particular concern now because the last very large air disaster occurred in my district in August of last year when 49 people were killed. I hope it will be the last such event for a very long time in this country, and I hope that we can do what we can to see that that is the case.

This amendment that I am offering would mandate an independent assessment be made of the FAA's aviation safety-related research programs. This assessment would be made by the National Academy's National Research Council. The assessment will investigate whether the FAA's research programs are working effectively and will ensure that there are mechanisms in place for

implementing this research into the FAA's safety operations and their procedures. Specifically, the safety-related research programs that the council will review focus on issues such as air traffic control and technical operations, runway incursion reduction and human-to-machine interactions. Neither I nor my staff have been able to find any record of any prior independent assessment of the FAA's safety-related programs. I am determined to find every way possible to work toward better safety in our nation's skies and airports and I believe that this amendment gets to the heart of FAA aviation safety and provides a much-needed independent review. I also want to thank you, Mr. Chairman, for your assistance in working with me on this, the Ranking Member and the Chairman and Ranking Member of the Subcommittee. Thank you.

[The prepared statement of Mr. Chandler follows:]

PREPARED STATEMENT OF REPRESENTATIVE BEN CHANDLER

Mr. Chair, as you know, I have become passionate about improving aviation safety, particularly after the tragic Comair crash that occurred in my own district on August 27, 2006, which killed 49 people.

The amendment I am offering today is the bill that I introduced last week—the *FAA Aviation Safety Research Assessment Act.*

This amendment would mandate that an independent assessment be made of the FAA's aviation safety-related research programs. This assessment would be made by the National Academies' National Research Council.

The assessment will investigate whether the FAA's research programs are working effectively, and will ensure that there are mechanisms in place for implementing their research into the FAA's safety operations and procedures.

Specifically, the safety-related research programs that the Council will review focus on issues such as air traffic control and technical operations, runway incursion reduction, and human-machine interactions. Neither I nor my staff has been able to find any record of a prior independent assessment of the FAA's safety-related programs.

I am determined to find every way possible to work toward better safety in our nation's skies and airports.

I believe that this amendment gets to the heart of FAA aviation safety and provides a much needed independent review.

I ask the Committee for their support of this amendment.

Thank you.

Chairman GORDON. Thank you for that explanation. The Clerk will report the amendment.

The CLERK. Amendment to H.R. 2698 offered by Mr. Chandler of Kentucky.

Chairman GORDON. I ask unanimous consent that we dispense with the reading. I think Mr. Chandler has done a good job of explaining his bill. Does anyone else wish to make comments? If there is no further discussion, then the vote will occur on the amendment. All in favor say aye. Those opposed, no. The ayes have it and the amendment is agreed to.

The third amendment on the roster is offered by the gentleman from Utah, Mr. Matheson. Are you ready to proceed with your amendment?

Mr. MATHESON. I am ready, Mr. Chairman, and I do have an amendment at the desk.

Chairman GORDON. The Clerk will report the amendment.

The CLERK. Amendment to H.R. 2698 offered by Mr. Matheson.

Chairman GORDON. I ask unanimous consent to dispense with the reading. Without objection, so ordered. The gentleman is recognized for five minutes to explain his amendment.

Mr. MATHESON. Thank you, Mr. Chairman. The amendment is actually quite simple. It asks the FAA to prioritize noise pollution when redesigning commercial airspace. Though safety should be the most important consideration in airspace design, I think the consideration of noise pollution is also essential in order to provide the public with the best possible airspace design. Currently the FAA's only priority in assessing airspace design is safety, which should certainly be the number one concern. However, there should be an effort to ensure that the public is happy with decisions that affect their communities. Airspace redesigns that do not consider noise pollution in their environmental impact studies can be delayed by litigation, and in fact I bet we all have a story where they have been delayed by litigation. In my own district, we located a new airport in the town of St. George and it was an 11-year process in noise pollution issues, which ultimately were resolved, and that is the good news is that everyone is happy, but if they had received a greater priority and emphasis at the front end, that 11-year process could have been completed in a more reasonable time frame. So reducing noise pollution should be an important consideration at the front end of airspace design. It is a good first step toward finding solutions where everybody feels satisfied with the outcome.

So this amendment requires the FAA to take a more serious approach to noise pollution, which is an issue that I think we all can relate to and I hope my colleagues will join me in supporting the amendment. Mr. Chairman, thank you for your cooperation on this and your staff. I yield back.

[The prepared statement of Mr. Matheson follows:]

PREPARED STATEMENT OF REPRESENTATIVE JIM MATHESON

Thank you, Mr. Chairman.

My amendment is quite simple, it asks the FAA to prioritize noise pollution when redesigning commercial airspace. Though safety should be the most important consideration in airspace design, I believe that consideration of noise pollution is also essential in order to provide the public with the best possible flight paths.

Currently, the FAA's only priority in assessing airspace redesign is safety, which should certainly be the #1 concern. However, there should also be an effort to ensure that the public is happy with decisions that affect residential communities. Airspace redesigns that do not consider noise pollution in their Environmental Impact Studies (EIS) can be delayed by litigation.

Reducing noise pollution should be an important consideration at the front end of an airspace redesign—it's a good first step towards finding solutions that satisfy the public.

This amendment requires the FAA to take a more serious approach to noise pollution, which is an issue that almost every community surrounded. I hope my colleagues will join me in supporting this amendment.

Chairman GORDON. Thank you, Mr. Matheson. You did a good job with the amendment and also describing it.

Does anyone else—oh——

Mr. ROTHMAN. Could I just speak on Mr. Matheson's amendment?

Chairman GORDON. Oh, certainly, yes, Mr. Rothman.

Mr. ROTHMAN. Thank you. Mr. Chairman. I would like to speak in favor of the gentleman's amendment. You know, for many years those at the FAA assumed that people who cared about noise pollution were living in densely crowded spaces immediately adjacent to airports and it was just a niche, a little group of people unique to a couple of places around the country. They were wrong then and

they are wrong now. Mr. Matheson has rightly pointed—he represents the State of Utah, not exactly the most densely crowded state in the country. The State of Utah, the people there are concerned about their quality of life and they are fed up with the stress, the unnecessary stress of airplane noise in their busy, already stressful lives. So it is well past time for the FAA to get the message that everyone in America is fed up with airplane noise and it is time for FAA to join with Americans across this country and help us solve this problem while addressing the other responsibilities of the FAA but as I have said before, Mr. Chairman, commerce, interstate or otherwise, serves the quality of life. That is the purpose of commerce, to enhance the quality of life of the people. When commerce is so poorly managed that it is destructive of the quality of life of the people, then it needs to be fixed and addressed, and when the management of our aviation system is so poorly managed that it destroys the quality of life of the people across the country from Utah to New Jersey, there should be a clear and loud message that even the FAA can understand.

It is time for them to change the way they do business with regard to aircraft noise, and I ask my colleagues to support the Matheson.

Thank you, Mr. Chairman.

Chairman GORDON. Thank you, Mr. Rothman.

Mr. Hall is recognized.

Mr. HALL. Mr. Chairman, I think the gentleman from New Jersey is entirely correct in what he is saying and I like Mr. Matheson's approach to this amendment, and of course the Minority has reviewed it and we urge its adoption. I think it is good to point out about noise pollution and all other types of pollution today. I think he has well worded this one. Noise pollution reduction concerns have affected communities to the greatest extent practical, and that word practical really brings in there because, you know, we have offshore rigs all around this country here, offshore rigs that are keeping our kids from having to go overseas to fight a war to keep energy for us, and they object to some of those because they say they are of all things sight pollution. You know, give me a break. You know, if that is sight pollution, they ought to envision that offshore rig as it turns out that black gold for people that build our roads and turns their lights on and off and the people that work in the energy thrust today, they are appreciated because if they can just envision that that is their grandsons in a troop ship 14 miles out there headed east, west, south or north that gets them energy for us when they are out there producing it, as soon as practicable sure makes sense.

I yield back.

Chairman GORDON. Anyone else? Mr. Costello is recognized.

Mr. COSTELLO. Mr. Chairman, thank you, and Mr. Chairman, I just want to speak on the gentleman's amendment and associate myself with the comments made by our friend from New Jersey. The FAA, sometimes it is helpful for them to get the message and we hope that they get the message here today, and as we move forward with the FAA reauthorization bill, we hope that they will get the message.

Let me just comment quickly, as a Member of the Science Committee as well as Chairman of the Aviation Subcommittee of Transportation, I strongly support this legislation and, well, not only support the legislation but hope to complement it as we move forward. There is no question that this legislation helps modernize our system by reforming the Joint Planning and Development Office by providing much needed work in av gas. It provides generous R&D into a variety of other safety issues. These initiatives will continue to improve our aviation system and continue to make it the safest and most efficient in the world.

With that, Mr. Chairman, I support the gentleman's amendment and I yield back.

Chairman GORDON. Thank you, Mr. Chairman. We are glad you could join us. Before you got here, there was unanimous consent agreement that Mr. Lipinski would present you with a DVD of our Subcommittee and Full Committee markup so that you can review it in the hopes that you would also be able to join us at this conference at a later date.

Is there anyone else that has any discussion? If there is no further discussion, the vote occurs on the amendment. All in favor say aye. Those opposed, no. The ayes have it and the amendment is agreed to.

Are there other amendments? Mr. Neugebauer.

Mr. NEUGEBAUER. Mr. Chairman, I don't have another amendment but I did ask for unanimous consent to strike the last word. You know, one of the things is that this research is very important and recently in my district we had meetings with people from FAA and DOD and Air Force and NOAA and a number of other agencies about the issue of making sure we have a storing place or a clearinghouse for information as it relates to renewable energy resources, particularly wind energy. As you know, I have one of the largest wind farms in the world in my district and one of the things that came up is that while the FAA and the wind industry have all been working very closely together and I am very proud of the cooperation that is going on right now. I think the thing that came out from that meeting is that there may be need to have kind of a clearinghouse of all of the issues as it relates to wind energy and, you know, Air Force—I mean operations, FAA operations and those kinds of issues down the road so that the private sector and the public sector are working together as they have done very successfully, but as we anticipate emphasis in this country on renewable energy, it may make sense, you know, down the road for us to have some discussions on how we can facilitate that. I don't want to create any kind of new bureaucracy at all but just finding out what is the appropriate agency possibly to be the clearinghouse for that information, and as these important new technologies that bill will hopefully bring forward making sure that the information that is developed and the technology that is developed, making sure it is compatible with the environments that those are going to operate in and so that also that the people that are going to be building structures in that same environment understand, you know, some of the issues as it relates to those infrastructure, you know, operating appropriately. And so down the road, you know, this is a very important bill for the purpose that, you know, we need to be on the

cutting edge of air safety with our technology but also making sure that we are sharing that information and also working with the private sector to make sure that everybody is talking and speaking with the same voice and understands the issues.

Chairman GORDON. You raise a very good point, and your staff put us on notice, and I am trying to think about this, and we really don't have any specific jurisdiction here but what I think we can do is this: It is more of an interagency problem within the Administration. If you can convince your colleague from Texas to join with me and if you would like to help us, we will try to write a letter to the Administration talking about our concerns here and asking them to get, if it is necessary, some type of a joint group between the various agencies to address it, and if you think that it is necessary, we will have a hearing on it later. I think that is where we can—how we can best serve.

Mr. NEUGEBAUER. I thank the Chairman.

Chairman GORDON. Are there any other amendments? Mr. Rothman.

Mr. ROTHMAN. Mr. Chairman, I have an amendment at the desk and I would ask unanimous consent that the reading be waived.

The CLERK. Amendment to H.R. 2698 offered by Mr. Rothman.

Mr. ROTHMAN. I ask unanimous consent that reading of the amendment be waived and I just——

Chairman GORDON. The gentleman is recognized for five minutes to explain his amendment.

Mr. ROTHMAN. Thank you, Mr. Chairman, and I will be withdrawing this amendment. I would first like to express my thanks to Chairman Gordon and Ranking Member Hall and both the outstanding Majority and Minority staffs for their hard work in crafting this overall bipartisan legislation and all the cooperation that they continue to provide to me and my staff as express our views about various matters under the jurisdiction of this committee.

Mr. Chairman, as many of my colleagues know, I represent one of the most densely populated regions in the most densely populated state in the Nation, New Jersey, and quality-of-life issues, just as they are important for my friends in Utah and every other state, are very important to me. Today the Committee is presented with an opportunity to help improve the quality of life for people not just in New Jersey but all over the country, people who live or work near general aviation airports. My amendment, Mr. Chairman, seeks to raise the authorization level for the environment portion of the Airport Cooperative Research program for fiscal year 2008 from $3 million to $5 million. The amendment expresses the intent of this committee that the additional funding shall be dedicated to noise reduction research in relation to general aviation airports in urban and densely populated areas. While the funding for this program is scheduled to increase to $5 million next—in the fiscal year 2009 through fiscal year 2011, the problem of airport noise and the impact it has on millions of Americans is important enough I think to start at that funding level for this coming fiscal year.

We were late, Mr. Chairman, in getting this amendment to the Committee and therefore the Committee staff did not have enough time to review this proposal. Therefore, Mr. Chairman, I will be

withdrawing my amendment and asking the Chairman to work with me before the bill moves to the Floor to ensure that the funding level for this critical research program is raised sufficient to improve the quality of life of our constituents who live or work near urban area general aviation airports.

[The prepared statement of Mr. Rothman follows:]

PREPARED STATEMENT OF REPRESENTATIVE STEVEN R. ROTHMAN

Mr. Chairman, I rise today to offer an amendment, which I plan to withdraw.

I would first like to express my thanks to Chairman Gordon, Ranking Member Hall, and both the Majority and Minority staff for their hard work in crafting this bipartisan legislation.

Mr. Chairman, as many of my colleagues know, I represent the most densely populated region of the most densely populated state in the Nation, New Jersey.

Quality of life issues for my constituents are always a top concern for me. Today, this committee is presented with an opportunity to help improve the quality of life not just for the people of New Jersey, but for all people who live, work, or attend school near airports.

My amendment seeks to raise the authorization level for the environment portion of the Airport Cooperative Research Program, for fiscal year 2008 to $5,000,000.

The amendment expresses the intent of this committee that the additional funding shall be dedicated to noise reduction research in relation to general aviation airports in urban and densely populated areas.

The time for this committee and this Congress to act is now. While the funding for this program is scheduled to increase to $5,000,000 each year for the years of FY09 through FY11, the problem of airport noise and the impact it has on millions of Americans is wreaking havoc upon the quality of life within our urban communities.

I move to withdraw my amendment and ask the Chairman to work with me before this bill moves to the Floor to ensure that the funding level for this critical research program is raised sufficiently to improve the quality of life of our constituents who live, work, or attend school near urban area general aviation airports.

Chairman GORDON. Thank you, Mr. Rothman. As you pointed out, through no fault of anyone, we did not receive this amendment until 8:30 this morning. On first view, it certainly looks like to be a positive amendment. In all fairness though, I think that the Minority needs to have a chance to fully vet it. Once that is done, I feel confident that we can work together to make this part of a manager's amendment at a later date, and thank you for bringing this up.

Mr. ROTHMAN. I thank the Chair, and I ask unanimous consent to withdraw my amendment.

Chairman GORDON. Without objection.

Are there any other amendments? If there are no other amendments, then the vote is on the bill, H.R. 2698, as amended. All those in favor, say aye. Those opposed, no. In the opinion of the Chair, the ayes have it.

I recognize Mr. Hall to offer a motion.

Mr. HALL. Mr. Chairman, I move that the Committee favorably report H.R. 2698, as amended, to the House with the recommendation that the bill as amended do pass. Furthermore, I move that the staff be instructed to prepare the legislative report and make necessary technical and conforming changes and that the Chairman take all necessary steps to bring the bill before the House for consideration, and I yield back.

Chairman GORDON. The question is on the motion to report the bill favorably. Those in favor of the motion will signify by saying

aye. Opposed, no. The ayes appear to have it, and the bill is favorably reported.

Without objection the motion to reconsider is laid upon the table. The Members have two subsequent calendar days in which to submit supplemental Minority or additional views on the measure ending Wednesday, June 27, at 9:00 a.m. I move pursuant to clause 1 of Rule 22 of the Rules of the House of Representatives that the Committee authorize the Chairman to offer such motions as may be necessary in the House to adopt and pass H.R. 2698, the *Federal Aviation Research and Development Reauthorization Act of 2007,* as amended. Without objection, so ordered.

And now let me thank the Members for one more constructive markup, and the Committee is adjourned.

[Whereupon, at 11:35 a.m., the Committee was adjourned.]

Appendix:

SUBCOMMITTEE ON SPACE AND AERONAUTICS MARKUP REPORT, H.R. 2698, AMENDMENT ROSTER

COMMITTEE ON SCIENCE AND TECHNOLOGY
SUBCOMMITTEE ON SPACE AND AERONAUTICS
REPORT FROM SUBCOMMITTEE MARKUP
JUNE 14, 2007

H.R. 2698, the Federal Aviation Research and
DEVELOPMENT REAUTHORIZATION ACT OF 2007

I. Purpose

The purpose of the bill is to reauthorize appropriations for the Federal Aviation Administration's research and development programs for fiscal years 2008, 2009, 2010, and 2011 and to clarify responsibilities and activities of the Next Generation Air Transportation System's Joint Planning and Development Office; amend provisions related to FAA's Centers of Excellence; establish an interagency initiative on the impact of aviation on the climate; authorize a runway research program; extend the Airport Cooperative Research Program; and authorize a number of other R&D initiatives. The funds authorized by this Act are aimed at improving the safety, capacity, and efficiency of the Nation's air transportation system to meet expected air traffic demands of the future.

II. Background and Need for Legislation

The Federal Aviation Administration (FAA) was created to develop the Nation's air commerce system and promote aviation safety. As part of the Airport Development and Airway Trust Fund established by Congress in 1982, a comprehensive research and development program was put in place to maintain a safe and efficient air transportation system. In 2003, Congress passed *Vision 100—Century of Aviation Reauthorization Act* [P.L. 108–176] that authorized funding for FAA's activities, including research and development, for fiscal years 2003 through 2007. P.L. 108–176 also established the Next Generation Air Transportation System's Joint Planning and Development Office (JPDO) in Title VII–Aviation Research, to manage work related to planning, research, development, and creation of a transition plan for the implementation of the Next Generation Air Transportation System.

III. Subcommittee Actions

The Subcommittee on Space and Aeronautics heard testimony in the 110th Congress relevant to the programs authorized in H.R. 2698 at hearings held March 22 and March 29, 2007. During those hearings, the Subcommittee heard testimony from the Vice President of Operations Planning in the FAA's Air Traffic Organization, the Co-Chair for the FAA's Research Engineering and Development Advisory Committee, the Chair for the Workshop on the Impacts of Aviation on Climate Change, the Chairman of the Environment Subcommittee of the FAA's Research, Engineering and Development Advisory Committee, as well as the Director of the Joint Planning and Development Office, a Director of Physical Infrastructure Issues in the Government Accountability Office, the President and CEO of the Aerospace Industries Association, and the Director of the Aviation Applications Program at the National Center for Atmospheric Research, all of whom provided an array of viewpoints on the FAA's R&D programs.

On June 13, 2007, Representative Mark Udall, Chairman of the Subcommittee on Space and Aeronautics of the Committee on Science and Technology, for himself and Representative Gordon, introduced H.R. 2698, the *Federal Aviation Research and Development Reauthorization Act of 2007,* a bill to authorize appropriations for fiscal years 2008, 2009, 2010 and 2011 for the Federal Aviation Administration's Research and Development programs, and for other purposes.

The Subcommittee on Space and Aeronautics met to consider H.R. 2698 on Thursday, June 14, 2007. Ranking Member Feeney moved that the Subcommittee favorably report the bill, without amendment, to the Full Committee. The motion was agreed to by a voice vote.

IV. Summary of Major Provisions of the Bill

H.R. 2698 authorizes $1.88 billion for the Federal Aviation Administration's Research and Development (R&D) programs for fiscal years 2008–2011, fully funding the President's budget request for each of FAA's R&D programs, and including total increases over the four years of $53.9 million for current R&D activities and $63.25 million for new R&D initiatives. The bill would strengthen the Joint Planning and Development Office and its planning and development of the Next Generation Air Transportation System by creating positions of responsibility within the partici-

pating agencies, strengthening the role of the JPDO Director, requiring the development of an integrated plan, as well as other provisions related to the JPDO. It would require the FAA in coordination with NASA and the U.S. Climate Change Science Program to establish an interagency research initiative on the impact of aviation on the climate. It would establish research programs on: runway materials; design for certification; and technologies for use of unleaded aviation gas in existing piston aircraft engines. It would require the FAA along with the NSF, NASA, NOAA, and other relevant agencies to establish a research program on the impacts of space weather on aviation. It would extend the Airport Cooperative Research Program and establish a research grants program involving undergraduate students. Finally, the bill would require a number of external assessments and reviews.

V. Section-by-Section Analysis of the Bill, as reported by the Subcommittee

SEC. 1. SHORT TITLE

The Federal Aviation Research and Development Reauthorization Act of 2007.

SEC. 2. DEFINITIONS

Provides definitions for terms used in this Act.

SEC. 3. AUTHORIZATION OF APPROPRIATIONS

Amends existing law and authorizes $335,191,000 for FY08; $481,554,000 for FY09; $486,502,000 for FY10; and $514,832,000 for FY11.

SEC. 4. NEXT GENERATION AIR TRANSPORTATION SYSTEM JOINT PLANNING AND DEVELOPMENT OFFICE

Makes Director head of both the JPDO and Associate Administrator for the Next Generation Air Transportation System and voting member/Co-Chair of the Joint Resources Council.

Requires the Director to create a transition plan, establish quantitative goals, and ensure the inter-operability of the Next Generation Air Transportation System with our international partners.

Requires the Administrator, the Secretary of Defense, the Administrator of NASA, the Secretary of Commerce, the Secretary of Homeland Security, and the head of any other department or federal agency from which the Secretary of Transportation requests assistance to designate a senior official to implement each department's or agency's Next Generation Air Transportation System activities within the Office. Requires within six months for the department or agency that has responsibility for carrying out any activity under the plan to execute a memorandum of understanding with the Office.

Requires an integrated plan to ensure that the Next Generation Air Transportation System meets anticipated future air transportation safety, security, mobility, efficiency, and capacity needs. Requires date-specific timetables for implementation of the Next Generation Air Transportation System capabilities.

Requires an annual report from the Director of the Office describing the process of carrying out the implementation plan.

Requires the Senior Policy Committee to meet at least four times per year.

Requires each federal agency and department participating in the Office to submit a report to the Office of Management and Budget identifying its portion of responsibility which contributes to the Next Generation Air Transportation System and to state the portion of its requests for appropriations.

Requires the Director to develop contingency plans for dealing with the degradation of the Next Generation Air Transportation System in the event of a natural disaster, major equipment failure, or act of terrorism.

Requires the Director to establish environmental requirements for noise, emissions, and energy consumption for the Next Generation Air Transportation System. NASA will be primarily responsible for research, development, and demonstration of applicable technologies, while the FAA will be primarily responsible for demonstration of optimized operational procedures.

Requires the Comptroller General to assess the effectiveness of the Next Generation Air Transportation System Joint Planning and Development Office in meeting the deadlines and milestones of the integrated plan, as well as the adequacy of the memoranda of understanding executed by the federal departments and agencies. Requires within 270 days of enactment and annually thereafter until the Next Generation Air Transportation System is operational, a report containing the Comptroller General's findings, conclusions and recommendations.

Requires within 90 days of enactment, an unmanned aircraft systems research, development, demonstration and implementation roadmap to be delivered to the Congress. Requires the FAA, within three months of enactment, to arrange for the

National Research Council to conduct an independent assessment of unmanned aircraft systems. Within 12 months, this report shall be submitted to the FAA and Congress. Requires the FAA to establish pilot projects for the tests of unmanned aircraft systems' integration into the national airspace system. Requires a report, within 90 days after the completion of these tests, on the findings which shall be submitted to the Congress. Authorizes such sums of as may be necessary to carry out the pilot projects.

SEC. 5. INTERAGENCY RESEARCH INITIATIVE ON THE IMPACT OF AVIATION ON THE CLIMATE

Requires the FAA in coordination with NASA and the U.S. Climate Change Science Program to establish a research initiative assessing the impact of aviation on the climate and to evaluate approaches to mitigate that impact. Requires within one year of enactment a jointly developed plan for this research program. The National Research Council will be directed by the FAA to provide an independent review of the research program plan. $2,000,000 is authorized to be appropriated in fiscal year 2008 for the research program, and $5,000,000 in each of the fiscal years 2009 through 2011.

SEC. 6. RESEARCH PROGRAM ON RUNWAYS

Requires the FAA to establish a program of research grants to universities and non-profit research foundations for research and technology demonstrations related to improved runway surfaces and engineered material restraining systems for runways at general aviation and commercial air carrier airports. $5,000,000 is authorized to be appropriated for each of the fiscal years 2008 through 2011.

SEC. 7. RESEARCH ON DESIGN FOR CERTIFICATION

Requires the FAA and NASA, within six months of enactment, to establish a joint research program on improving the timelines of certification for new national airspace system technologies. Requires, within one year of enactment, the FAA and NASA to provide a jointly developed plan for the research program's objectives, proposed tasks, milestones, and five-year budgetary profile. The National Research Council will be directed by the FAA to provide an independent review of the research program plan within eighteen months of enactment.

SEC. 8. CENTERS OF EXCELLENCE

Amends existing law, stating that the U.S. Government's share of establishing and operating a center and all related research grants shall not exceed 75 percent of the costs, and that the U.S. Government's share for an individual grant shall not exceed 90 percent of the costs. Requires an annual report to be sent to the Congress.

SEC. 9. AIRPORT COOPERATIVE RESEARCH PROGRAM

Amends existing law to extend the program.

SEC. 10. RESEARCH GRANTS PROGRAM INVOLVING UNDERGRADUATE STUDENTS

Requires the Administrator to establish a program to utilize colleges and universities in conducting research by undergraduate students on subjects of relevance to the FAA. Authorizes $5,000,000 for research grants for each of the fiscal years 2008 through 2011.

SEC. 11. BUDGET FORMULATION

Amends existing law to require the FAA's annual budget request identify all of the activities that fall within categories of basic research, applied research, and development.

SEC. 12. RESEARCH PROGRAM ON SPACE WEATHER AND AVIATION

Requires the FAA, in coordination with the NSF, NASA, NOAA and other relevant agencies, to initiate a research program to conduct research projects on the impacts of space weather on aviation, communication, navigation and avionic systems, and on airline crew and passengers, and to facilitate the transfer of technology from this program to federal agencies and the private sector. $1,000,000 is to be authorized for each of the fiscal years 2008 through 2011.

SEC. 13. AVIATION GAS RESEARCH AND DEVELOPMENT PROGRAM

Requires the FAA, in coordination with NASA, to continue research and development activities into technologies for modifying existing aviation piston engines to be operated with unleaded aviation fuel. Requires within 120 days of enactment for the FAA to develop a roadmap for specific objectives of the program. Requires within 130 days of enactment, for the FAA to deliver the roadmap of the program to the

appropriate congressional committees. $750,000 is to be authorized for each of the fiscal years 2008 through 2010.

SEC. 14. RESEARCH REVIEWS AND ASSESSMENTS

Requires the Administrator to arrange for the National Research Council to conduct a review of the FAA's energy- and environment-related research programs, and to provide Congress with a report of the review within eighteen months of enactment.

Requires the Administrator to arrange for the National Research Council to conduct a study evaluating the impacts of space weather on the U.S. aviation industry, in particular for the Over-The-Pole (OTP) and Ultra-Long-Range (ULR) operations, and to provide Congress with a report of the study within one year of enactment.

.....

(Original Signature of Member)

110TH CONGRESS
1ST SESSION

H. R. _____

To authorize appropriations for the civil aviation research and development projects and activities of the Federal Aviation Administration, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

Mr. UDALL of Colorado (for himself and Mr. GORDON of Tennessee) introduced the following bill; which was referred to the Committee on

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A BILL

To authorize appropriations for the civil aviation research and development projects and activities of the Federal Aviation Administration, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Federal Aviation Research and Development Reauthorization Act of 2007".

SEC. 2. DEFINITIONS.

As used in this Act—

(1) the term "Administrator" means the Administrator of the Federal Aviation Administration;

(2) the term "Director" means the Director of the Joint Planning and Development Office;

(3) the term "FAA" means the Federal Aviation Administration;

(4) the term "NASA" means the National Aeronautics and Space Administration;

(5) the term "National Research Council" means the National Research Council of the National Academies of Science and Engineering;

(6) the term "NOAA" means the National Oceanic and Atmospheric Administration;

(7) the term "NSF" means the National Science Foundation;

(8) the term "Office" means the Next Generation Air Transportation System Joint Planning and Development Office; and

(9) the term "Secretary" means the Secretary of Transportation.

SEC. 3. AUTHORIZATION OF APPROPRIATIONS.

Section 48102(a) of title 49, United States Code, is amended—

(1) in paragraph (11)(L), by striking "and";

(2) in paragraph (12)(L), by striking the period and inserting a semicolon; and

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

"(13) for fiscal year 2008, $335,191,000, including—

"(A) $7,350,000 for fire research and safety;

"(B) $4,086,000 for propulsion and fuel systems;

"(C) $2,713,000 for advanced materials and structural safety;

"(D) $3,574,000 for atmospheric hazards and digital system safety;

"(E) $14,931,000 for aging aircraft;

"(F) $2,202,000 for aircraft catastrophic failure prevention research;

"(G) $14,651,000 for flightdeck maintenance, system integration, and human factors;

"(H) $9,517,000 for aviation safety risk analysis;

"(I) $15,254,000 for air traffic control, technical operations, and human factors;

"(J) $6,780,000 for aeromedical research;

"(K) $19,888,000 for weather programs;

"(L) $6,310,000 for unmanned aircraft systems research;

"(M) $18,100,000 for the Next Generation Air Transportation System Joint Planning and Development Office;

"(N) $13,755,000 for wake turbulence;

"(O) $20,469,000 for environment and energy;

"(P) $1,184,000 for system planning and resource management;

"(Q) $3,415,000 for the William J. Hughes Technical Center Laboratory Facility;

"(R) $74,200,000 for the Center for Advanced Aviation System Development;

"(S) $2,000,000 for the Airport Cooperative Research Program—capacity;

"(T) $3,000,000 for the Airport Cooperative Research Program—environment;

"(U) $5,000,000 for the Airport Cooperative Research Program—safety;

"(V) $3,600,000 for GPS civil requirements;

"(W) $5,000,000 for runway incursion reduction;

"(X) $6,500,000 for system capacity, planning, and improvement;

"(Y) $3,000,000 for operations concept validation;

"(Z) $1,000,000 for NAS weather requirements;

"(AA) $4,000,000 for the Airspace Management Lab;

"(BB) $5,000,000 for airspace redesign;

"(CC) $4,000,000 for wind profiling and weather research, Juneau;

"(DD) $1,000,000 for the Local Area Augmentation System (LAAS);

"(EE) $15,000,000 for Safe Flight 21, Alaska Capstone;

"(FF) $20,000,000 for NextGen demonstration;

"(GG) $8,907,000 for airports technology research—capacity;

"(HH) $9,805,000 for airports technology research—safety; and

"(14) for fiscal year 2009, $481,554,000, including—

"(A) $8,457,000 for fire research and safety;

"(B) $4,050,000 for propulsion and fuel systems;

"(C) $2,686,000 for advanced materials and structural safety;

"(D) $3,568,000 for atmospheric hazards and digital system safety;

"(E) $14,683,000 for aging aircraft;

"(F) $2,158,000 for aircraft catastrophic failure prevention research;

"(G) $37,499,000 for flightdeck maintenance, system integration, and human factors;

"(H) $8,349,000 for aviation safety risk analysis;

"(I) $15,323,000 for air traffic control, technical operations, and human factors;

"(J) $6,932,000 for aeromedical research;

"(K) $22,336,000 for weather program;

"(L) $6,738,000 for unmanned aircraft systems research;

"(M) $18,100,000 for the Next Generation Air Transportation System Joint Planning and Development Office;

"(N) $11,560,000 for wake turbulence;

"(O) $35,039,000 for environment and energy;

"(P) $1,847,000 for system planning and resource management;

"(Q) $3,548,000 for the William J. Hughes Technical Center Laboratory Facility;

"(R) $85,000,000 for Center for Advanced Aviation System Development;

"(S) $5,000,000 for the Airport Cooperative Research Program—capacity;

"(T) $5,000,000 for the Airport Cooperative Research Program—environment;

"(U) $5,000,000 for the Airport Cooperative Research Program—safety;

"(V) $3,469,000 for GPS civil requirements;

"(W) $5,000,000 for runway incursion reduction;

"(X) $6,500,000 for system capacity, planning and improvement;

"(Y) $3,000,000 for Operations Concept Validation;

"(Z) $1,000,000 for NAS weather requirements;

"(AA) $4,000,000 for the Airspace Management Lab;

"(BB) $3,000,000 for airspace redesign;

"(CC) $20,000,000 for Safe Flight 21, Alaska Capstone;

"(DD) $12,000,000 for NextGen demonstration;

"(EE) $102,000,000 for NextGen system development;

"(FF) $8,907,000 for airports technology research—capacity;

"(GG) $9,805,000 for airports technology research—safety; and

"(15) for fiscal year 2010, $468,502,000, including—

"(A) $8,546,000 for fire research and safety;

"(B) $4,075,000 for propulsion and fuel systems;

"(C) $2,700,000 for advanced materials and structural safety;

"(D) $3,608,000 for atmospheric hazards and digital system safety;

"(E) $14,688,000 for aging aircraft;

"(F) $2,153,000 for aircraft catastrophic failure prevention research;

"(G) $36,967,000 for flightdeck maintenance, system integration, and human factors;

"(H) $8,334,000 for aviation safety risk analysis;

"(I) $15,471,000 for air traffic control, technical operations, and human factors;

"(J) $7,149,000 for aeromedical research;

"(K) $23,286,000 for weather program;

"(L) $6,236,000 for unmanned aircraft systems research;

"(M) $18,100,000 for the Next Generation Air Transportation System Joint Planning and Development Office;

"(N) $11,412,000 for wake turbulence;

"(O) $34,678,000 for environment and energy;

"(P) $1,827,000 for system planning and resource management;

"(Q) $3,644,000 for William J. Hughes Technical Center Laboratory Facility;

"(R) $90,000,000 for the Center for Advanced Aviation System Development;

"(S) $5,000,000 for the Airport Cooperative Research Program—capacity;

"(T) $5,000,000 for the Airport Cooperative Research Program—environment;

"(U) $5,000,000 for the Airport Cooperative Research Program—safety;

"(V) $3,416,000 for GPS civil requirements;

"(W) $5,000,000 for runway incursion reduction;

"(X) $6,500,000 for system capacity, planning and improvement;

"(Y) $3,000,000 for operations concept validation;

"(Z) $1,000,000 for NAS weather requirements;

"(AA) $4,000,000 for the Airspace Management Lab;

"(BB) $3,000,000 for airspace redesign;

"(CC) $20,000,000 for Safe Flight 21, Alaska Capstone;

"(DD) $12,000,000 for NextGen demonstration;

"(EE) $102,000,000 for NextGen system development;

"(FF) $8,907,000 for airports technology research—capacity;

"(GG) $9,805,000 for airports technology research—safety; and

"(16) for fiscal year 2011, $514,832,000, including—

"(A) $8,815,000 for fire research and safety;

"(B) $4,150,000 for propulsion and fuel systems;

"(C) $2,747,000 for advanced materials and structural safety;

"(D) $3,687,000 for atmospheric hazards and digital system safety;

"(E) $14,903,000 for aging aircraft;

"(F) $2,181,000 for aircraft catastrophic failure prevention research;

"(G) $39,245,000 for flightdeck maintenance, system integration and human factors;

"(H) $8,446,000 for aviation safety risk analysis;

"(I) $15,715,000 for air traffic control, technical operations, and human factors;

"(J) $7,390,000 for aeromedical research;

"(K) $23,638,000 for weather program;

"(L) $6,295,000 for unmanned aircraft systems research;

"(M) $18,100,000 for the Next Generation Air Transportation System Joint Planning and Development Office;

"(N) $11,471,000 for wake turbulence;

"(O) $34,811,000 for environment and energy;

"(P) $1,836,000 for system planning and resource management;

"(Q) $3,758,000 for William J. Hughes Technical Center Laboratory Facility;

"(R) $114,000,000 for Center for Advanced Aviation System Development;

"(S) $5,000,000 for the Airport Cooperative Research Program—capacity;

"(T) $5,000,000 for the Airport Cooperative Research Program—environment;

"(U) $5,000,000 for the Airport Cooperative Research Program—safety;

"(V) $3,432,000 for GPS civil requirements;

"(W) $2,000,000 for runway incursion reduction;

"(X) $6,500,000 for system capacity, planning and improvement;

"(Y) $3,000,000 for operations concept validation;

"(Z) $1,000,000 for NAS weather requirements;

"(AA) $4,000,000 for the Airspace Management Lab;

"(BB) $3,000,000 for airspace redesign;

"(CC) $20,000,000 for Safe Flight 21, Alaska Capstone;

"(DD) $12,000,000 for NextGen demonstration;

"(EE) $105,000,000 for NextGen system development;

"(FF) $8,907,000 for airports technology research—capacity;

"(GG) $9,805,000 for airports technology research—safety; and".

SEC. 4. NEXT GENERATION AIR TRANSPORTATION SYSTEM JOINT PLANNING AND DEVELOPMENT OFFICE.

(a) STATUS OF DIRECTOR AND RESPONSIBILITIES OF OFFICE.—Section 709 of the Vision 100 Century of Aviation Reauthorization Act (49 U.S.C. 40101 note) is amended—

(1) in subsection (a)—

(A) in paragraph (1), by adding at the end the following: ''The head of the Office shall be the Director. The Director shall report to the Administrator of the Federal Aviation Administration and shall serve as Associate Administrator for the Next Generation Air Transportation System, and shall be a voting member and co-chair of the Joint Resources Council.'';

(B) by amending paragraph (2)(C) to read:

''(C) creating a transition plan for the implementation of that system that includes date-specific milestones for the implementation of new capabilities into the national airspace system;'';

(C) in paragraph (2)(G), by striking ''; and'' and inserting a semicolon;

(D) in paragraph (2)(H), by striking the period at the end and inserting ''; and'';

(E) by adding at the end of paragraph (2) the following:

''(I) establishing specific quantitative goals for the safety, capacity, efficiency, performance, and environmental impacts of each phase of Next Generation Air Transportation System im-

plementation activities and measuring actual operational experience against those goals;

"(J) working to ensure global interoperability of the Next Generation Air Transportation System;

"(K) integrating aviation weather information and space weather information into the Next Generation Air Transportation System as soon as possible;

"(L) overseeing, with the Administrator, the selection of products or outcomes of research and development activities that would be moved to the next stage of a demonstration project through the Joint Resources Council;

"(M) maintaining a baseline modeling and simulation environment for testing and evaluating alternative concepts to satisfy Next Generation Air Transportation enterprise architecture requirements; and

"(N) pursuing the integration of unmanned aircraft systems into the national airspace system through research and demonstration programs under the auspices of a public and private partnership.' "'; and

(2) in subsection (e), by striking "2010" and inserting "2011".

(b) ACCOUNTABILITY.—Such section is further amended—

(1) in paragraph (3), by inserting "(A)" after the paragraph designation ; and

(2) by adding at the end of paragraph (3) the following:

"(B) The Administrator, the Secretary of Defense, the Administrator of NASA, the Secretary of Commerce, the Secretary of Homeland Security, and the head of any other Department or Federal agency from which the Secretary of Transportation requests assistance under paragraph (A) shall designate a senior official in the department or agency to be responsible for—

"(i) implementing the department's or agency's Next Generation Air Transportation System activities with the Office, including the execution of all aspects of the department's or agency's work on developing and implementing the integrated plan described in section 709(2)(A); and

"(ii) ensuring that the department or agency meets its obligations as set forth in the

memorandum of understanding executed by or on behalf of the department or agency under subparagraph (D).

"(C) The head of any such department or agency shall—

"(i) establish an office within the department or agency to carry out its responsibilities under the memorandum of understanding under the supervision of the designated official; and

"(ii) ensure that the designated official has sufficient budgetary authority and staff resources to carry out the department's or agency's Next Generation Air Transportation System responsibilities as set forth in the integrated plan under section 709(b).

"(D) Not later than 6 months after the date of enactment of the Federal Aviation Research and Development Reauthorization Act of 2007, the head of each department or agency that has responsibility for carrying out any activity under the integrated plan under section 709(b) shall execute a memorandum of understanding with the Office obligating that department or agency to carry out those activities.".

(c) INTEGRATED PLAN.—Section 709(b) of the Vision 100–Century of Aviation Reauthorization Act (49 U.S.C. 40101 note) is amended—

(1) by striking the first sentence and inserting ''The integrated plan shall be designed to ensure that the Next Generation Air Transportation System meets anticipated future air transportation safety, security, mobility, efficiency, and capacity needs and accomplishes the goals under subsection (c).'';

(2) in paragraph (3)(C), by striking ''; and'' and inserting a semicolon;

(3) by adding at the end the following:

''(5) Date-specific timetables for the partial and complete implementation of planned Next Generation Air Transportation System capabilities, including but not limited to Automated Dependent Surveillance-Broadcast, Unmanned Aircraft Systems operations, Next Generation Enabled Weather system, Next Generation Data Communications, NAS Voice Switch, System Wide Information Management system, and space weather information, and including any necessary certification activities, and including an evaluation of the costs and benefits of accelerating any of the implementation and certification timetables;

"(6) Identification of planned demonstration projects and date-specific timetables for the conduct of the demonstration projects and subsequent certification activities and an evaluation of the costs and benefits of accelerating any of the demonstration projects and certification activities;

"(7) Date-specific timetables for meeting the environmental requirements identified in subsection (I); and

"(8) Identification, on an annual basis, of each entity that will be responsible for each component of any research, development, or implementation activity.".

(d) ANNUAL REPORT.—Section 709(d) of the Vision 100 Century of Aviation Reauthorization Act (49 U.S.C. 40101 note) is amended to read as follows:

"(d) ANNUAL REPORTS.—The Director of the Office shall transmit a report annually to the Committee on Science and Technology and the Committee on Transportation and Infrastructure of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate at the time of the President's budget request describing the progress in carrying out the plan required under subsection (b) and any changes to that plan. The annual report shall include—

"(1) the updated integrated plan developed under subsection (b);

"(2) a detailed description of the progress made in carrying out the integrated plan and any changes made to that plan since the previous annual report, and identifying any changes resulting from funding shortfalls or limitations set by the Office of Management and Budget;

"(3) any deviation from previously established development and implementation milestones, the reasons for the deviation, and the impact of the deviation;

"(4) the relevant programs and activities for the previous fiscal year and the proposed programs and activities under the President's budget request, of each participating Federal agency and department; and

"(5) the levels of funding for each participating Federal agency and department devoted to the programs and activities in paragraph (4) for the previous fiscal year and under the President's budget request.".

(e) SENIOR POLICY COMMITTEE.—Section 710 of the Vision 100 Century of Aviation Reauthorization Act (49 U.S.C. 40101 note) is amended in the last sentence by

inserting ", and shall meet at least four times each year" before the period.

(f) BUDGET PREPARATION.—

(1) Each Federal agency and department participating in the office shall, as part of its annual request for appropriations to the Office of Management and Budget, submit a report to the Office of Management and Budget which—

(A) identifies each element of its work program which contributes directly to Next Generation Air Transportation System initiative; and

(B) states the portion of its request for appropriations that is allocated to each such element.

(2) The Office of Management and Budget shall review each such report in light of the goals, priorities, and agency and departmental responsibilities set forth in the annual report submitted under the amendment made by subsection (d), and shall include, in the President's annual budget estimate, a statement of the portion of each appropriate agency's or department's annual budget estimate relating to its activities undertaken pursuant to the Next Generation Air Transportation System initiative.

(g) CONTINGENCY PLANNING.—The Director shall, as part of the design of the Next Generation Air Transportation System, develop contingency plans for dealing with the degradation of the Next Generation Air Transportation System in the event of a natural disaster, major equipment failure, or act of terrorism.

(h) ENVIRONMENTAL RESEARCH.—The Director shall establish environmental requirements for noise, emissions, and energy consumption to be satisfied in the Next Generation Air Transportation System through a combination of technologies and operational procedures. The Director shall assign primary responsibility for the research, development, and demonstration of the applicable technologies in a relevant environment to NASA and primary responsibility for demonstration of optimized operational procedures to the FAA.

(i) GOVERNMENT ACCOUNTABILITY OFFICE ASSESSMENT AND REPORT.—

(1) SCOPE.—The Comptroller General shall assess compliance with the requirements of section 709 of the Vision 100 Century of Aviation Reauthorization Act (49 U.S.C. 40101 note) to determine—

(A) the effectiveness of the Next Generation Air Transportation System Joint Planning and Development Office in meeting the dead-

lines and milestones of the integrated plan under that section; and

(B) the adequacy and effectiveness of the memoranda of understanding executed by Federal departments and agencies under that section.

(2) REPORT.—Not later than 270 days after the date of enactment of this Act, and annually thereafter until the Next Generation Air Transportation System is fully operational, the Comptroller General shall transmit a report to the Committee on Science and Technology and the Committee on Transportation and Infrsatructure of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate containing the Comptroller General's findings, conclusions and recommendations related to the assessment in paragraph (1).

(j) UNMANNED AIRCRAFT SYSTEMS.—

(1) RESEARCH INITIATIVE.—

(A) IMPROVED MANNED AND UNMANNED AIRCRAFT.—Section 44504 of title 49, United States Code, is amended—

(i) in subsection (a), by inserting "unmanned and manned" after "improve";

(ii) in subsection (b)(6), by striking "and" after the semicolon;

(iii) in subsection (b)(7) by striking the period and inserting "; and"; and

(iv) by adding at the end of subsection (b) the following:

"(8) in conjunction with other Federal agencies as appropriate, to develop technologies and methods to assess the risk of and prevent defects, failures, and malfunctions of products, parts, and processes, for use in all classes of unmanned aerial systems that could result in a catastrophic failure.".

(B) SYSTEMS, PROCEDURES, FACILITIES, AND DEVICES.—Section 44505(b) of such title is amended—

(i) in paragraph (4), by striking "and" after the semicolon;

(ii) in paragraph (5)(C), by striking the period and inserting a semicolon; and

(iii) by adding at the end of subsection (b) the following:

"(6) to develop a better understanding of the relationship between human factors and unmanned aircraft systems safety; and

"(7) to develop dynamic simulation models for integrating all classes of unmanned aircraft systems into the national airspace system.".

(2) ROADMAP.—Not later than 90 days after the date of enactment of this Act, the Administrator shall develop and transmit an unmanned aircraft systems research, development, demonstration and implementation "roadmap" to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate.

(3) INDEPENDENT ASSESSMENT.—

(A) IN GENERAL.—Not later than 3 months after the date of enactment of this Act, the Administrator shall enter into an arrangement with the National Research Council for an assessment of the status of unmanned aircraft systems that shall include consideration of—

(i) human factors regarding unmanned aircraft systems operation;

(ii) "detect, sense and avoid technologies" with respect to both cooperative and non-cooperative aircraft;

(iii) spectrum issues and bandwidth requirements;

(iv) operation in suboptimal winds and adverse weather conditions;

(v) mechanisms for communicating unmanned aircraft system location;

(vi) airworthiness and system redundancy;

(vii) flight termination systems for safety and security;

(viii) technologies for unmanned aircraft systems flight control;

(ix) technologies for unmanned aircraft systems propulsion;

(x) unmanned aircraft systems operator qualifications, medical standards, and training requirements;

(xi) unmanned aircraft systems maintenance requirements and training requirements;

(xii) any other unmanned aircraft systems-related issue the Administrator believes should be addressed; and

(xiii) recommendations for integrating unmanned aircraft systems into the national airspace system in a timely manner.

(B) REPORT.—Not later than 12 months after initiating the study, the National Academy shall submit its report to the Administrator, the Senate Committee on Commerce, Science, and Transportation, and the House of Representatives Committee on Science and Technology containing its finding and recommendations.

(4) PILOT PROJECTS FOR TRANSITIONING RESEARCH AND DEVELOPMENT RESULTS.—

(A) IN GENERAL.—The Administrator shall establish pilot projects in sparsely populated, low-density Class G air traffic airspace to conduct experiments and collect data in order to accelerate the safe integration of unmanned aircraft systems into the national airspace system.

(B) USE OF PUBLIC-PRIVATE PARTNERSHIP.—In conducting the pilot projects, the Administrator shall encourage the formation of a public-private partnership.

(C) REPORT.—Not later than 90 days after completing the pilot projects, the Administrator shall transmit a report to the Committee on Science and Technology of the House of Representatives and the Committee on Com-

merce, Science, and Transportation of the Senate, setting forth the Administrator's findings and conclusions concerning the projects.

(D) AUTHORIZATION OF APPROPRIATIONS.—In addition to amounts authorized to be appropriated by the amendments made by this Act, there is authorized to be appropriated to the Administrator for fiscal years 2008 and 2009 such sums as may be necessary to carry out the pilot projects under this paragraph.

SEC. 5. INTERAGENCY RESEARCH INITIATIVE ON THE IMPACT OF AVIATION ON THE CLIMATE.

(a) IN GENERAL.—The Administrator, in coordination with NASA and the United States Climate Change Science Program, shall establish a research initiative to assess the impact of aviation on the climate and to evaluate approaches to mitigate that impact.

(b) RESEARCH PLAN.—Not later than 1 year after the date of enactment of this Act, the participating Federal entities shall jointly develop a plan for the research program that contains the objectives, proposed tasks, milestones, and 5-year budgetary profile.

(c) REVIEW.—The Administrator shall have the National Research Council conduct an independent review of the interagency research program plan and provide the re-

sults of that review to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate not later than 18 months after the date of enactment of this Act.

(d) AUTHORIZATION OF APPROPRIATIONS.—In addition to amounts authorized to be appropriated by the amendments made by this Act, there is authorized to be appropriated $2,000,000 for fiscal year 2008, and $5,000,000 in each of the fiscal years 2009 through 2011, for the interagency research program established under this section.

SEC. 6. RESEARCH PROGRAM ON RUNWAYS.

(a) ESTABLISHMENT OF RESEARCH PROGRAM.—The Administrator shall establish a program of research grants to universities and non-profit research foundations for research and technology demonstrations related to—

(1) improved runway surfaces; and

(2) engineered material restraining systems for runways at both general aviation airports and airports with commercial air carrier operations.

(b) AUTHORIZATION OF APPROPRIATIONS.—In addition to amounts authorized to be appropriated by the amendments made by this Act, there is authorized to be

appropriated $5,000,000 for each of the fiscal years 2008 through 2011 to carry out this section.

SEC. 7. RESEARCH ON DESIGN FOR CERTIFICATION.

(a) JOINT PROGRAM.—Not later than 6 months after the date of enactment of this Act, the FAA and NASA shall establish a joint research program on methods to improve both confidence in and the timeliness of certification of new technologies for their introduction into the national airspace system.

(b) RESEARCH PLAN.—Not later than 1 year after the date of enactment of this Act, as part of the activity described in subsection (a), the FAA and NASA shall jointly develop a plan for the research program that contains the objectives, proposed tasks, milestones, and five-year budgetary profile.

(c) REVIEW.—The Administrator shall have the National Research Council conduct an independent review of the joint research program plan and provide the results of that review to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate not later than 18 months after the date of enactment of this Act.

SEC. 8. CENTERS OF EXCELLENCE.

(a) AMENDMENT.—Section 44513(f) of title 49, United States Code, is amended to read as follows:

''(f) GOVERNMENT'S SHARE OF COSTS.—The United States Government's share of establishing and operating the center and all related research activities that grant recipients carry out shall not exceed 75 percent of the costs. The United States Government's share of an individual grant under this section shall not exceed 90 percent of the costs.''.

(b) ANNUAL REPORT.—The Administrator shall transmit a report annually to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate at the time of the President's budget request that lists—

(1) the research projects that have been initiated by each Center of Excellence in the preceding year;

(2) the amount of funding for each research project and the funding source;

(3) the institutions participating in each project and their shares of the overall funding for each research project; and

(4) the level of cost-sharing for each research project.

SEC. 9. AIRPORT COOPERATIVE RESEARCH PROGRAM.

Section 44511(f) of title 49, United States Code, is amended—

(1) in paragraph (1), by striking ''establish a 4-year pilot'' in paragraph (1) and inserting ''maintain an''; and

(2) in paragraph (4)—

(A) by striking ''expiration of the program'' and inserting ''expiration of the pilot program''; and

(B) by striking ''program, including recommendations as to the need for establishing a permanent airport cooperative research program'' and inserting ''program''.

SEC. 10. RESEARCH GRANTS PROGRAM INVOLVING UNDERGRADUATE STUDENTS.

(a) IN GENERAL.—The Administrator shall establish a program to utilize colleges and universities, including Historically Black Colleges and Universities, Hispanic Serving Institutions, tribally controlled colleges and universities, and Alaska Native and Native Hawaiian serving institutions in conducting research by undergraduate students on subjects of relevance to the FAA. Grants may be awarded under this section for—

(1) research projects to be carried out primarily by undergraduate students;

(2) research projects that combine undergraduate research with other research supported by the FAA;

(3) research on future training requirements related to projected changes in regulatory requirements for aircraft maintenance and power plant licensees; and

(4) research on the impact of new technologies and procedures, particularly those related to aircraft flight deck and air traffic management functions, and on training requirements for pilots and air traffic controllers.

(b) AUTHORIZATION OF APPROPRIATIONS.—In addition to amounts authorized to be appropriated by the amendments made by this Act, there is authorized to be appropriated $5,000,000 for each of the fiscal years 2008 through 2011, for research grants under this section.

SEC. 11. BUDGET FORMULATION.

Section 48102 of title 49, United States Code, is amended by inserting after subsection (f) the following new subsection:

''(g) BUDGET FORMULATION.—(1) The Department of Transportation's annual budget request for the Federal Aviation Administration shall identify all of the activities carried out by the Administration within the categories of

basic research, applied research, and development, as classified by the Office of Management and Budget Circular A–11. Each activity in the categories of basic research, applied research, and development shall be identified regardless of the budget category in which it appears in the budget request.

''(2) The budget request specified in paragraph (1) shall be submitted to the Committee on Science and Technology and the Committee on Transportation and Infrastructure of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate at the same time as the President's Budget Request is submitted to the Congress.''.

SEC. 12. RESEARCH PROGRAM ON SPACE WEATHER AND AVIATION.

(a) ESTABLISHMENT.—From amounts made available under section 48102(a) of title 49, United States Code, the Administrator of the Federal Aviation Administration shall, in coordination with the National Science Foundation, National Aeronautics and Space Administration, National Oceanic and Atmospheric Administration, and other relevant agencies, initiate a research program to—

(1) conduct or supervise research projects on impacts of space weather to aviation, including com-

munication, navigation, avionic systems, and on airline passengers and personnel; and

(2) facilitate the transfer of technology from space weather research programs to Federal agencies with operational responsibilities and to the private sector.

(b) USE OF GRANTS OR COOPERATIVE AGREEMENTS.—The Administrator may use grants or cooperative agreements in carrying out this section.

(c) AUTHORIZATION OF APPROPRIATIONS.—In addition to amounts authorized to be appropriated by the amendments made by this Act, there is authorized to be appropriated $1,000,000 for each of the fiscal years 2008 through 2011 to carry out this section.

SEC. 13. AVIATION GAS RESEARCH AND DEVELOPMENT PROGRAM.

(a) CONTINUATION OF PROGRAM.—The Administrator, in coordination with the NASA Administrator, shall continue research and development activities into technologies for modification of existing general aviation piston engines to enable their safe operation using unleaded aviation fuel.

(b) ROADMAP.—Not later than 120 days of the enactment of this Act, the Administrator shall develop a research and development roadmap for the program contin-

ued in subsection (a), containing the specific research and development objectives and anticipated timetable for achieving the objectives.

(c) REPORT.—Not later than 130 days of the enactment of this Act, the Administrator shall provide the roadmap specified in subsection (b) to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate.

(d) AUTHORIZATION OF APPROPRIATIONS.—In addition to amounts authorized to be appropriated by the amendments made by this Act, there is authorized to be appropriated $750,000 for each of the fiscal years 2008 through 2010, to carry out this section.

SEC. 14. RESEARCH REVIEWS AND ASSESSMENTS.

(a) REVIEW OF FAA'S ENERGY- AND ENVIRONMENT-RELATED RESEARCH PROGRAMS.—

(1) STUDY.—The Administrator shall enter into an arrangement with the National Research Council for a review of the FAA's energy- and environment-related research program. The review shall assess whether—

(A) the programs have well-defined, prioritized, and appropriate research objectives;

(B) the program are properly coordinated with the energy- and environment-related research programs of NASA, NOAA, and other relevant agencies;

(C) the program have allocated appropriate resources to each of the research objectives; and

(D) there exist suitable mechanisms for transitioning the research results into the FAA's operational technologies and procedures and certification activities.

(2) REPORT.—A report containing the results of the review shall be provided to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate within eighteen months of the enactment of this Act.

(b) ASSESSMENT OF THE IMPACT OF SPACE WEATHER ON AVIATION.—

(1) STUDY.—The Administrator shall enter into an arrangement with the National Research Council for a study of the impacts of space weather on the current and future United States aviation industry, and in particular, to examine the risks for Over-The-Pole (OTP) and Ultra-Long-Range (ULR) operations. The study shall—

(A) examine space weather impacts on at least the following areas: communications, navigation, avionics, and human health in flight;

(B) assess the benefits of space weather information and services to reduce aviation costs and maintain safety;

(C) provide recommendations on how NASA, NOAA, and the NSF can most effectively carry out research and monitoring activities related to space weather and aviation; and

(D) provide recommendations on how to integrate space weather information into the Next Generation Air Transportation System.

(2) REPORT.—A report containing the results of the study shall be provided to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate not later than 1 year after the date of enactment of this Act.

COMMITTEE ON SCIENCE AND TECHNOLOGY
FULL COMMITTEE MARKUP
JUNE 22, 2007

AMENDMENT ROSTER

H.R. 2698 – Federal Aviation Research and Development Reauthorization Act of 2007

No.	Sponsor	Description	Results
1	Mr. Gordon	Manager's amendment making technical and clarifying changes to the bill.	Accepted by voice vote.
2	Mr. Chandler	Adds new section requiring the National Research Council carry out an independent review of FAA's aviation safety-related research programs.	Accepted by voice vote.
3	Mr. Matheson	Amends section 4 by directing the JPDO Director to take noise pollution concerns of affected communities into account when establishing environmental goals for the Next Generation air transportation system.	Accepted by voice vote.

AMENDMENT TO H.R. 2698

OFFERED BY MR. GORDON

Page 13, line 17, strike "; and" and insert a period.

Page 22, line 8, strike "requirements" and insert "objectives".

Page 23, line 13, strike "Infrsatructure" and insert "Infrastructure".

Page 24, line 11, strike "aerial" and insert "aircraft".

Page 24, line 12, insert "of the unmanned aircraft that would endanger other aircraft in the national airspace system" before the period.

Page 25, line 3, insert "without any degradation of existing levels of safety for all national airspace system users" before the period.

Page 26, line 24, insert "without any degradation of existing levels of safety for all national airspace system users" before the period.

Page 27, line 16, insert "without any degradation of existing levels of safety for all national airspace system users" before the period.

Page 28, beginning on line 4, strike "In addition" and all that follows through "Act, there" on line 7, and insert "There".

Page 28, line 16, insert ", if warranted," after "climate and".

Page 29, beginning on line 6 strike "In addition" and all that follows through "Act, there" on line 8, and insert "There".

Page 29, beginning on line 22, strike "In addition" and all that follows through "Act, there" on line 24, and insert "There".

Page 33, beginning on line 13, strike "In addition" and all that follows through "Act, there" on line 15, and insert "There".

Page 34, beginning on line 16 strike "From amounts" and all that follows through "Code, the" and insert "The".

Page 36, beginning on line 10, strike "In addition" and all that follows through "Act, there" on line 12, and insert "There".

AMENDMENT TO H.R. 2698

OFFERED BY MR. CHANDLER OF KENTUCKY

At the end of the bill, add the following:

SEC. 15. REVIEW OF FAA'S AVIATION SAFETY-RELATED RESEARCH PROGRAMS.

(a) REVIEW.—The Administrator shall enter into an arrangement with the National Research Council for an independent review of the FAA's aviation safety-related research programs. The review shall assess whether—

(1) the programs have well-defined, prioritized, and appropriate research objectives;

(2) the programs are properly coordinated with the safety research programs of NASA and other relevant Federal agencies;

(3) the programs have allocated appropriate resources to each of the research objectives; and

(4) there exist suitable mechanisms for transitioning the research results from the programs into the FAA's operational technologies and procedures and certification activities in a timely manner.

(b) AVIATION SAFETY-RELATED RESEARCH PROGRAMS TO BE ASSESSED.—The FAA aviation safety-re-

lated research programs to be assessed under the review shall include, at a minimum, the following:

(1) Air traffic control/technical operations human factors.

(2) Runway incursion reduction.

(3) Flightdeck/maintenance system integration human factors.

(4) Airports technology research—safety.

(5) Airport cooperative research program—safety.

(6) Weather program.

(7) Atmospheric hazards/digital system safety.

(8) Fire research and safety.

(9) Propulsion and fuel systems.

(10) Advanced materials/structural safety.

(11) Aging aircraft.

(12) Aircraft catastrophic failure prevention research.

(13) Aeromedical research.

(14) Aviation safety risk analysis.

(15) Unmanned aircraft systems research.

(16) Safe Flight 21—Alaska Capstone.

(c) REPORT.—Not later than 14 months after the date of enactment of this Act, the Administrator shall submit to the Committee on Science and Technology of the

House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report on the results of the review.

(d) AUTHORIZATION OF APPROPRIATIONS.—In addition to amounts authorized to be appropriated by the amendments made by this Act, there is authorized to be appropriated $700,000 for fiscal year 2008 to carry out this section.

AMENDMENT TO H.R. 2698

OFFERED BY MR. MATHESON

Page 15, line 2, insert before the semicolon the following: ", taking into account noise pollution reduction concerns of affected communities to the greatest extent practicable in establishing the environmental goals".

XXIII. LETTERS OF EXCHANGE FROM TRANSPORTATION AND INFRASTRUCTURE

U.S. House of Representatives
Committee on Transportation and Infrastructure
Washington, DC 20515

James L. Oberstar
Chairman

David Heymsfeld, Chief of Staff
Ward W. McCarragher, Chief Counsel

John L. Mica
Ranking Republican Member

James W. Coon II, Republican Chief of Staff

September 17, 2007

The Honorable Bart Gordon
Chairman
Committee on Science and Technology
U.S. House of Representatives
2320 Rayburn House Office Building
Washington, D.C. 20515

Dear Chairman Gordon:

I write to you regarding H.R. 2698, the "Federal Aviation Research and Development Reauthorization Act of 2007".

H.R. 2698 contains provisions that fall within the jurisdiction of the Committee on Transportation and Infrastructure. I recognize and appreciate your desire to bring this legislation before the House in an expeditious manner and, accordingly, I will not seek a sequential referral of the bill. However, I agree to waive consideration of this bill with the mutual understanding that my decision to forego a sequential referral of the bill does not waive, reduce, or otherwise affect the jurisdiction of the Committee on Transportation and Infrastructure over H.R. 2698.

Further, the Committee on Transportation and Infrastructure reserves the right to seek the appointment of conferees during any House-Senate conference convened on this legislation on provisions of the bill that are within the Committee's jurisdiction. I ask for your commitment to support any request by the Committee on Transportation and Infrastructure for the appointment of conferees on H.R. 2698 or similar legislation.

Please place a copy of this letter and your response acknowledging the Committee on Transportation and Infrastructure's jurisdictional interest in the Committee Report on H.R. 2698.

I look forward to working with you as we prepare to pass this important legislation.

Sincerely,

James L. Oberstar, M.C.
Chairman

cc: The Honorable Nancy Pelosi, Speaker
The Honorable John L. Mica, Ranking Member
The Honorable Ralph Hall, Ranking Member, Committee on Science and Technology
The Honorable John Sullivan, Parliamentarian

BART GORDON, TENNESSEE
CHAIRMAN

RALPH M. HALL, TEXAS
RANKING MEMBER

U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON SCIENCE AND TECHNOLOGY
SUITE 2320 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515–6301
(202) 225–6375
TTY: (202) 226–4410
http://science.house.gov

September 17, 2007

The Honorable James L. Oberstar
Chairman
Committee on Transportation and Infrastructure
U.S. House of Representatives
2165 Rayburn House Office Building
Washington, D.C. 20515

Dear Chairman Oberstar:

Thank you for your September 17, 2007 letter regarding H.R. 2698, the "Federal Aviation Research and Development Reauthorization Act of 2007." Your support for this legislation and your assistance in ensuring its timely consideration are greatly appreciated.

I agree that provisions in the bill are of jurisdictional interest to the Committee on Transportation and Infrastructure. I acknowledge that by forgoing a sequential referral, your Committee is not relinquishing its jurisdiction and I will fully support your request to be represented in a House-Senate conference on those provisions over which the Committee on Transportation and Infrastructure has jurisdiction in H.R. 2698. A copy of our letters will be placed in the Committee Report on H.R. 2698.

I value your cooperation and look forward to working with you as we move ahead with this important legislation.

Sincerely,

BART GORDON
Chairman

cc: The Honorable Nancy Pelosi, Speaker
The Honorable Ralph M. Hall, Ranking Member
The Honorable John L. Mica, Ranking Member,
Committee on Transportation and Infrastructure
The Honorable John Sullivan, Parliamentarian

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