REDAC Aircraft Safety Subcommittee

RE&D Budget Status

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August 10, 2021

FAA FY 2021 Budget

Funding Bill Enacted, December 20, 2020

Appropriation	FY 2021 Request	House Mark	Difference	Senate Mark	Difference	Conference
Operations	$ 11,001,500,000	$ 11,051,500,000	$ 50,000,000	$ 11,001,500,000	$ -	$ 11,001,500,000
Facilities & Equipment	$ 3,000,000,000	$ 3,045,000,000	$ 45,000,000	$ 3,011,980,000	$ 11,980,000	$ 3,015,000,000
Research Engineering & Development	$ 170,000,000	$ 192,665,000	$ 22,665,000	$ 190,097,000	$ 20,097,000	$ 198,000,000
Grants-in-aid for Airports	$ 3,350,000,000	$ 3,850,000,000	$ 500,000,000	$ 3,750,000,000	$ 400,000,000	$ 5,750,000,000
Total	$ 17,521,500,000	$ 18,139,165,000	$ 617,665,000	$ 17,953,577,000	$ 432,077,000	$ 19,964,500,000

R,E&D FY 2022 Budget

- **FY 2022 President's Budget Request -** submitted to Congress and released to the public on May 28, 2021

- **FY 2022 FAA total funding level is at $18.860 billion per House Bill.**
  - Overall increase of $408 million above the FY 2022 request and $9.1 billion below the FY 2021 enacted level (which includes the $10 billion in Coronavirus response supplemental funding).

R,E&D FY 2022 Budget continued

- Without the Coronavirus related supplemental funding the FY 2022 House level is an increase of $896.1 million above FY 2021

- **FY 22 R,E&D Request $258.5M**
  - House funded R,E&D at $260.5 million, an increase of $2 million above the request and $62.5 million above the FY 2021 enacted level.
  - Senate Appropriation Committee R,E&D funded at TBD

R,E&D FY 2022 Budget

- **Does this mean appropriation bills are passed?**
  - No
- **Can we still have a shutdown**
  - Yes (probably not)

FAA FY 2022 Budget

Appropriations	FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 House Mark	House Delta w/ Request	House Delta w/2021
Operations	$ 10,630,000,000	$ 11,001,500,000	$ 11,434,100,000	$ 11,434,100,000	$ -	$ 432,600,000
Facilities & Equipment	$ 3,045,000,000	$ 3,015,000,000	$ 3,410,000,000	$ 3,416,000,000	$ 6,000,000	$ 401,000,000
Research, Engineering & Development	$ 192,665,000	$ 198,000,000	$ 258,500,000	$ 260,500,000	$ 2,000,000	$ 62,500,000
Grants-In-aid for Airports	$ 13,750,000,000	$ 13,750,000,000	$ 3,350,000,000	$ 3,750,000,000	$ 400,000,000	$ (10,000,000,000)
Total	$ 27,617,665,000	$ 27,964,500,000	$ 18,452,600,000	$ 18,860,600,000	$ 408,000,000	$ (9,103,900,000)

FY 2022 R,E&D Request

BLI Name	FY2020 Enacted $192.6M ($000s)	FY2021 Enacted $198M ($000s)	FY2022 President's Budget $258.5M ($000s)	FY2022 House Mark $260.5M ($000s)	FY 2022 Request/ FY 2022 House +/-	FY 2022 House Directed Item ($000s)	Comments
Research, Engineering & Development							
Fire Research and Safety	7,200	7,136	7,576	9,576	2,000		
Propulsion and Fuel Systems	2,100	4,215	3,121	3,315	194		
Advanced Materials /Structural Safety	14,720	14,720	1,678	1,678	0		
Aircraft Icing	9,000	6,426	2,472	6,426	3,954		
Digital System Safety	-	-	3,689	3,689			
Continued Air Worthiness	10,269	11,269	8,829	8,829			
Aircraft Catastrophic Failure Prevention Research	1,565	1,565	-	-			
Flight deck/Maintenance/System Integration Human Factors	7,300	7,469	14,301	14,301			
System Safety Management/Terminal Area Safety	4,500	5,485	7,898	7,898			
Air Traffic Control/Technical Operations Human Factors	5,800	5,685	5,911	5,911			
Aeromedical Research	7,919	10,235	13,257	13,257			
Weather Program	12,911	6,236	13,786	13,786			
Unmanned Aircraft Systems Research	24,035	24,035	22,077	24,035	1,958	14,035	
Alternative Fuels for General Aviation	1,900	2,524	4,986	10,000	5,014		Additional funding - part of the $50M from ARPA-C- refer to recommendation
Innovation & Emerging Technologies	-	-	8,500	-	-8,500		Not Funded - Funding moved to other BLIs
Commercial Space Transportation Safety	2,500	5,840	5,708	5,840	132		
Wake Turbulence	5,000	3,698	3,728	3,728			
NextGen - Air Ground Integration Human Factors	5,300	6,000	3,000	6,000	3,000		
NextGen - Weather Technology in the Cockpit	3,144	1,982	3,028	3,028			
NextGen - Flight Data Exchange	1,005	1,000	1,000	1,000			
Information/Cyber Security	2,675	4,769	4,769	4,769			
Environment & Energy	18,013	20,303	20,336	35,336	15,000	32,000	Additional funding - part of the $50M from ARPA-C- refer to recommendation
NextGen – Environmental Research – Aircraft Technologies and Fuels	29,174	31,465	33,476	58,476	25,000	46,000	Additional funding - part of the $50M from ARPA-C- refer to recommendation
Airliner Cabin Environment Research	1,000	-	-	-			
System Planning and Resource Management	12,135	13,022	4,141	4,141			
Aviation Workforce Development - Section 625	-	-	5,752	10,000	4,248	10,000	
William J. Hughes Technical Center Laboratory Facilities	3,500	2,921	5,481	5,481			
ARPA-C Aviation Climate Research	-	-	50,000	-	-50,000		Funded in other BLIs - $15M - E&E, $25M - NextGen - Environmental Research and $5M - Alternative Fuels - refer to recommendation
TOTAL RE&D	**192,665**	**198,000**	**258,500**	**260,500**	**2,000**	**102,035**	

FY 2022 House Language

- **Aviation climate and noise research –** The Committee supports the FAA's research to reduce greenhouse gas emissions from aviation and strongly encourages the FAA to coordinate its activities with other Federal agencies. The recommendation provides $50,000,000 for this endeavor across multiple existing research programs that strive to advance, among other things, the screening and testing of alternative and sustainable aviation fuels, the development of electric and hybrid-electric propulsion technology, and the design of engine and airframe efficiency to reduce the environmental impact of aviation noise and emissions.

- **Environment and Energy –** The recommendation provides $35,336,000 for Environment and Energy, an increase of $15,000,000 above the request, of which not less than $30,000,000 is for the Center of Excellence for Alternative Jet Fuels and Environment (ASCENT) to analyze, model, and measure technologies capable of reducing noise, improving air quality, increasing energy efficiency, and producing sustainable aviation fuels at commercial scale. Of these funds, not less than $2,000,000 is for the study of the impacts of aviation noise on community annoyance, sleep, health, and children's learning.

FY 2022 House Language - Continued

- **Environment and Energy continued -** The Committee appreciates that the FAA completed its evaluation of alternative airplane noise metrics and has awarded a grant to the FAA's Air Transportation Center of Excellence for Alternative Jet Fuels and Environment in April 2019 in order to study the health impacts of noise from overflights in accordance with sections 173 and 189 of the FAA Reauthorization Act (P.L. 115–254). Research on the health effects of aircraft noise in the United States is lagging. Studies on sleep disturbances due to a range of noise exposure would be informative for airport and flight operations.

- **NextGen-Environmental Research – Aircraft Technologies and Fuels –** The recommendation provides $58,476,000 for NextGen-Environmental Research-Aircraft Technologies and Fuels, of which $46,000,000 is to support the Continuous Lower Energy, Emissions, and Noise (CLEEN) program to reduce noise and emissions at its source—the aircraft engine. The Committee is pleased that the CLEEN program is adding reducing community noise exposure and particulate matter emissions to its goals.

FY 2022 House Language - Continued

- **Aviation professionals –** The Committee supports increasing the strength and number of aviation professionals who are well-trained and can be relied upon to make air travel safe and efficient. To that end, the Committee provides $5,000,000 for the aviation maintenance technician development program and $5,000,000 for aviation workforce development program in accordance with section 625 of the FAA Reauthorization Act (P.L. 115–254).

- **Crew complements** - The presence of two well-trained, qualified pilots in commercial aircraft is another example of safety through redundancy. Funding made available in this Act to study alternative crew complements for flight decks in commercial operations should prioritize the safety effects relative to two-person flights. This direction is not intended to limit the FAA's research and development activities related to unmanned aerial vehicles.

FY 2022 House Language - Continued

- **Emissions reduction plan -** The FAA anticipates revising its United States Aviation Greenhouse Gas Emission Reduction Plan in support of achieving net-zero emissions, economy-wide by 2050. The Committee believes such a plan must be comprehensive (addressing airframe design, engine technology, operational improvements through the NextGen program, and alternative fuels), actionable (resulting in specific policies, standards, measures, and timetables), and defensible (based on peer-reviewed quantitative analysis and modeling). The Committee directs the FAA to brief the House and Senate Committees on Appropriations on its framework for revising the plan not later than 60 days after the date of enactment of this Act.

- **Fire research and safety -** The Committee values the FAA's work on aircraft fire safety research to prevent accidents caused by inflight fires and to improve survivability in post-crash fires. Among this research is testing to support the development of standards for new fire detection technology and suppression agents and fire-safety materials.

FY 2022 House Language - Continued

- **Ice** - Aircraft icing continues to be one of the major safety threats to aircraft operations, both in flight and on the ground. The Committee provides $6,426,000 for aircraft icing research for the FAA to deepen its understanding of the effectiveness of ice protection and detection systems on aircraft operations under different atmospheric and climate conditions and to address the emerging issue of ice and UAS operations.

- **UAS research -** The Committee supports the safe integration of UAS into the national airspace system, including the continued development of a low-altitude UAS traffic management (UTM) system and low altitude authorization and notification capability (LAANC) program. The Committee provides $14,035,000 for the Center of Excellence for UAS Research.

FY 2022 House Language - Continued

- **Supersonic aircraft -** The Committee encourages the FAA to continues its research, rulemaking, and international engagement activities related to supersonic aircraft, including developing noise and emissions standards. Certification will ultimately depend on safety, but should also be informed by acoustical modeling, health effects on persons and animals, pollutants in the stratosphere, and the interdependency among noise, emissions, and fuel.

- **Structural safety** - With the current and forecasted use of advanced material growing, the Committee supports the FAA's research, primarily through the Joint Centers of Excellence for Advance Materials and Structures (JAMS), to ensure the safety of aircraft made of advanced materials. This research contributes to the FAA's ability to provide consistent guidance to industry for compliance with certification requirements and to evaluate test and analysis procedures used by industry to comply with crashworthiness regulations.

FY 2022 House Language - Continued

- **Test environments -** The Committee reminds the FAA that interested state aviation departments, universities, UAS centers, test complexes and relevant industry stakeholders can be valuable partners to demonstrate the operational requirements for remote towers, unmanned and manned aerial vehicles, urban air mobility flight and electric vertical takeoff and landing (eVTOL) vehicles between multiple airports in order to measure community acceptance and to identify training requirements for the controller, technician and pilot workforces to safely operate and integrate these vehicles and systems into the NAS. Research should be conducted at a variety of places that offer different air traffic operating environments, weather conditions, runway configurations, and terrains to assess their impact on operations.

FY 2022 Senate Language

- **TBD**

FY 2023 Budget

- **Delivered to OST June 25, 2021**
- **FY 2023 remaining schedule**
  - Submit to OMB mid September
  - Submit Presidents request to Congress Feb. 3, 2022

Out Year Targets

- **Targets established May 2021**
  - FY 23 - $264M
  - FY 24 - $270M
  - FY 25 - $276M
  - FY 26 - $282M
  - FY 27 - $289M
- **Expect targets to change**

FAA Reauthorization

- **Current Authorization signed by President Oct 5, 2018 which extends authorization thru 2023.**