REDAC
NAS OPS
Subcommittee

R&D Budget Status

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August 11, 2015

R,E&D FY 15 Budget

- **R,E&D FY 15 Budget Request - $156.750M**
- **FY 15 Appropriation $156.750**
  - Signed Dec. 16, 2014
  - Safety - $91.019
  - Improve Efficiency - $22.286
  - Reduce Environmental Impacts - $37.935
  - Mission Support - $5.510

FAA FY 2016 Budget Request

Account	FY 16 Request	FY 16 House Mark	Difference (+/-)	FY 16 Senate Mark	Difference (+/-)
Operations	$ 9,915,000,000	$ 9,847,700,000	$ (67,300,000)	$ 9,897,818,000	$ (17,182,000)
Facilites & Equipment	$ 2,855,000,000	$ 2,500,000,000	$ (355,000,000)	$ 2,600,000,000	$ (255,000,000)
Research, Engineering & Development	$ 166,000,000	$ 156,750,000	$ (9,250,000)	$ 163,325,000	$ (2,675,000)
Airports	$ 2,900,000,000	$ 3,350,000,000	$ 450,000,000	$ 3,350,000,000	$ 450,000,000
Total	$ 15,836,000,000	$ 15,854,450,000	$ 18,450,000	$ 16,011,143,000	$ 175,143,000

FY 16 R,E&D Request

Program	FY 15 Enacted	FY 16 Request
Fire Research & Safety	$ 6,000,000	$ 6,643,000
Propulsion & Fuel Systems	$ 2,000,000	$ 3,034,000
Advanced Materials /Structural Safety	$ 2,909,000	$ 3,625,000
Aircraft Icing/Digital System Safety	$ 5,500,000	$ 6,920,000
Continued Air Worthiness	$ 9,619,000	$ 8,987,000
Aircraft Catastrophic Failure Prevention Research	$ 1,500,000	$ 1,433,000
Flightdeck/Maintenance/System Integration Human Factors	$ 6,000,000	$ 9,947,000
Safety System Management	$ 7,970,000	$ 6,063,000
Air Traffic Control/Technical Operations Human Factors	$ 5,400,000	$ 5,995,000
Aeromedical Research	$ 8,300,000	$ 10,255,000
Weather Research	$ 14,847,000	$ 18,253,000
Unmanned Aircraft Systems Research	$ 14,974,000	$ 9,635,000
NextGen - Alternative Fuels for General Aviation	$ 6,000,000	$ 5,833,000
Total Safety	$ 91,019,000	$ 96,623,000
NextGen - Wake Turbulence	$ 8,541,000	$ 8,680,000
NextGen - Air Ground Integration	$ 9,697,000	$ 8,875,000
NextGen - Weather Technology in the Cockpit	$ 4,048,000	$ 4,116,000
Commercial Space	$ -	$ 3,000,000
Total Economic Competiveness	$ 22,286,000	$ 24,671,000
Environment & Energy	$ 14,921,000	$ 15,061,000
NextGen Environmental Research - Aircraft Technologies, Fuels and Metrics	$ 23,014,000	$ 23,823,000
Environmental Sustainability	$ 37,935,000	$ 38,884,000
System Planning and Resource Management	$ 2,100,000	$ 2,377,000
WJHTC Lab Facilities	$ 3,410,000	$ 3,445,000
Mission Support	$ 5,510,000	$ 5,822,000
Total Research Engineering & Development	$ 156,750,000	$ 166,000,000

FY 16 R,E&D Request

Program	FY 2016 Request ($000)	FY 16 House Mark ($000)	FY 16 Request/FY 16 House +/-	FY 2016 Senate Mark ($000)	FY 16 Request/FY16 Senate +/-	2016 Conference Mark ($000)	FY 16 Request/FY16 Conference +/-
Fire Research and Safety	6,643	6,000	(643)	6,643	-		(6,643)
Propulsion and Fuel Systems	3,034	2,500	(534)	2,034	(1,000)		(3,034)
Advanced Materials/Structural Safety	3,625	3,000	(625)	7,409	3,784		(3,625)
Aircraft Icing /Digital System Safety	6,920	6,000	(920)	5,920	(1,000)		(6,920)
Continued Airw orthiness	8,987	8,987	-	8,987	-		(8,987)
Aircraft Catastrophic Failure Prevention Research	1,433	1,433	-	1,433	-		(1,433)
Flightdeck/Maintenance/System Integration Human Factors	9,947	6,802	(3,145)	5,000	(4,947)		(9,947)
System Safety Management	6,063	6,063	-	6,063	-		(6,063)
Air Traffic Control/Technical Operations Human Factors	5,995	5,410	(585)	4,995	(1,000)		(5,995)
Aeromedical Research	10,255	8,467	(1,788)	8,300	(1,955)		(10,255)
Weather Program	18,253	15,388	(2,865)	15,000	(3,253)		(18,253)
Unmanned Aircraft Systems Research	9,635	12,635	3,000	14,635	5,000		(9,635)
NextGen - Alternative Fuels for General Aviation	5,833	7,000	1,167	7,000	1,167		(5,833)
NextGen - Wake Turbulence	8,680	8,680	-	8,541	(139)		(8,680)
NextGen - Air Ground Integration Human Factors	8,875	8,875	-	7,875	(1,000)		(8,875)
NextGen - Self Separation Human Factors			-		-		-
NextGen - Weather Technology in the Cockpit	4,116	4,116	-	4,048	(68)		(4,116)
Commercial Space	3,000	1,000	(2,000)	2,000	(1,000)		(3,000)
Environment and Energy	15,061	15,061	-	16,074	1,013		(15,061)
NextGen - Environmental Research - Aircraft Technologies, Fuels, and Metrics	23,823	23,823	-	25,823	2,000		(23,823)
System Planning and Resource Management	2,377	2,100	(277)	2,100	(277)		(2,377)
William J. Hughes Technical Center Laboratory Facility	3,445	3,410	(35)	3,445	-		(3,445)
TOTAL	166,000	156,750	(9,250)	163,325	(2,675)	-	(166,000)

FY 2016 House Language

- ***Unmanned aircraft systems research.*—The FAA has established six UAS test sites, which are expected to provide valuable information for developing the regulatory framework for UAS integration. However, the FAA will need to ensure it develops a comprehensive plan to identify research priorities, including how data from test site operations will be gathered, analyzed, and used. The Committee recognizes these challenges and provides $12,635,000 for Unmanned Aircraft Systems Research, which is $3,000,000 above the budget request. These additional funds are provided to help meet the FAA's UAS research goals of system safety and data gathering, aircraft certification, command and control link challenges, control station layout and certification, sense and avoid, and environmental impacts.**

- ***NextGen-alternative fuels for general aviation.*—The Committee provides $7,000,000 for alternative fuels research for general aviation, which is $1,000,000 above the fiscal year 2015 enacted level and $1,167,000 above the budget request. During the complex transition of the general aviation piston fleet to an unleaded fuel, an increase in funding above last year is merited to move from research to a phase focused on coordinating and facilitating the fleetwide evaluation, certification and deployment of an unleaded fuel and to help overcome any market issues that prevent it from moving forward. The Committee recognizes this is a multi-year effort and looks forward to updates on the continued progress on this initiative as it effectively balances environmental improvement with aviation safety, technical challenges, and economic impact.**

FY 2016 House Language

- ***NextGen environmental research—aircraft technologies, fuels and metrics.*— The Committee provides $23,823,000 for the FAA's NextGen environmental research aircraft technologies, fuels and metrics program, which is $809,000 above the fiscal year 2015 enacted level and the same as the budget request. In addition, the Committee continues to support the FAA's continuous, lower energy emissions, and noise program (CLEEN). The CLEEN program has helped to advance the research and development of advanced engine and airframe technologies that conserve more fuel and produce fewer emissions than current technologies.**

FY 2015 Senate Language

- ***Unmanned Aerial Systems Research—Center of Excellence*.—The Committee recommendation includes $14,635,000 for unmanned aircraft systems research, an increase of $5,000,000 above the budget request and $339,000 below the fiscal year 2015 enacted level. The Committee directs the FAA to dedicate the funding increase over the budget request to the center of excellence. The Committee is pleased that the Department has established a UAS center of excellence to address a host of research challenges associated with integration of UAS into the national airspace. The formation of a UAS center of excellence is essential to meet the requirements enacted as part of the FAA Modernization and Reform Act of 2012. The Committee directs that the center of excellence shall focus on key areas of UAS research including: airworthiness, remote sensing, advanced composites, detect and avoid, and low altitude research in harsh climates. Additionally, the center should maintain close relations with disaster response agencies, the Department of Homeland Security and the Department of Agriculture in order to facilitate research in important UAS mission areas, such as environmental monitoring, weather and hydrologic prediction, precision agriculture, law enforcement, disaster response and oil transportation systems monitoring.**

FY 2016 Senate Language

- ***Unmanned Aerial Systems Research—Test Sites*.—The Committee notes that integration of UAS into the National Airspace System [NAS] remains a national priority with the potential to increase public safety and bring economic benefits to a wide range of industries. In December 2013, the FAA chose six UAS test sites to assist the FAA in meeting its UAS research needs. In order to successfully meet its goals for integration, the FAA must execute an organized research plan to effectively leverage the capabilities of the test sites, as well as research being done by other Federal agencies, such as the National Aeronautics and Space Administration, to guide its ongoing efforts to integrate UAS into the NAS. Research projects and programs funded through the center of excellence should use the airspace and capabilities available through the six test sites when conducting flight operations and collecting data. The Committee expects UAS flight operations conducted as part of the center of excellence research to be performed at one of six test sites selected for UAS research and airspace integration. The Committee also directs the FAA's William J. Hughes Technical Center to use these test sites in conducting its research and operational tests. The Committee recommendation includes $14,635,000 for unmanned aircraft systems research, of which $9,635,000 fully funds the FAA's budget request to support the technical center's research activities related to unmanned systems. This funding may be used to support the center's research activities and operational tests conducted at the test sites.**
- **Because of the importance of these efforts, the Committee reiterates its direction from last year to improve the ''Integration of Civil Unmanned Aircraft Systems [UAS] in the National Airspace System [NAS] Roadmap,'' by including a strategic plan on research efforts. The strategic plan shall discuss: the specific research needs to safely integrate UAS into the NAS, including an examination of the research goals that the FAA must reach in order to successfully and safely advance NAS integration; FAA's strategy to obtain the identified research through partnerships with other Federal agencies, the UAS center of excellence, participants in the UAS and aviation industry, and the UAS test sites; and an evaluation of the ability of the UAS test sites to coordinate with the FAA and its center of excellence, and participate in the FAA's strategy to help achieve the research goals identified in the roadmap. The roadmap should also address milestones for research and development activities needed to allow operations of UAS flying beyond the line of sight. The first edition of the roadmap was published in 2013, and the Committee directs the FAA to update this roadmap no later than December 31, 2016.**

FY 2016 Senate Language

- ***Unmanned Aerial Systems Research—Coordination with Other Agencies*.—Both the U.S. Customs and Border Protection [CBP] and the National Aeronautics and Space Administration [NASA] research and develop UAS technologies. The Committee therefore encourages the FAA to leverage these research and development efforts as it integrates UAS into the national airspace. The Committee expects the FAA to use the resources provided for UAS research under the Committee recommendation to collect and evaluate data and information from CBP and NASA UAS projects, and to collaborate with these partners on research efforts necessary to integrate UAS into the national airspace.**
- ***Unmanned Aerospace Systems.—Media Projects.*—The Committee urges the FAA to direct potential news and broadcast media pilot projects to the UAS test sites for consideration. The test sites would conduct these projects of small unmanned aircraft systems in both simulated and live demonstrations of covering breaking news and other special events. Current FAA regulations and policies generally prohibit the operation of small UAS over persons not directly involved with the UAS operation. These restrictions severely inhibit the media's ability to serve the public interest through effective news gathering, and instead relegate media to use of manned helicopters, which the FAA itself has recognized poses greater risks to persons on the ground. The Committee recognizes the FAA's recently announced Pathfinder program includes a project with CNN to study operations over people. The Committee supports this project but believes it should be expanded, given the public interest in enhancing news gathering through innovative technologies. The objective of the pilot projects is to demonstrate the technological capabilities and operational conditions that would ensure the safety of operations of small UASs to attend breaking news and other special events.**
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FY 2016 Senate Language

- ***Unmanned Aircraft Systems and Airport Operations.*—Given the rise in the number of UAS sightings at our Nation's airports, there is interest in using technology that will detect, identify and track air vehicles and ground controllers to explicitly identify UAS without interference and ensure the safety of existing airport operations. The Committee therefore urges the FAA to work with airports in order to assess the ability of such technology to defeat an errant or hostile UAS without causing collateral damage to essential navigation systems, wireless communications, the general public or other airport operations.**

- ***Alternative Fuels for General Aviation*.—The Committee recommendation includes $7,000,000 for research that supports alternative fuels for general aviation. This funding level is $1,167,000 above the budget request and $1,000,000 above the fiscal year 2015 enacted level.**

- ***Environmental Sustainability*.—The Committee recommendation includes a total of $41,897,000 for research related to environmental sustainability, which is $3,013,000 above the budget request and $3,962,000 above the fiscal year 2015 enacted level. This total includes $16,074,000 under the ''Environment and energy'' and another $25,823,000 under ''NextGen—Environmental research aircraft technologies, fuels, and metrics.'' The funding provided under these headings supports the FAA's continuous, lower energy emissions, and noise program [CLEEN], which has helped advance the research and development of advanced engine and airframe technologies that conserve more fuel and produce fewer emissions than today's technology. The funding also supports the FAA's center of excellence for alternative jet fuels and environment. The Committee directs the increase provided under its recommendation to this center**

FY 16 Congressional Issues

- **Sequestration is an issue for FY 2016 Budget Request**
- **Defense Overseas Contingency Operations ($38B)**
- **Senate filibuster problem**
- **Debt Ceiling not suppose to be an issue for FY 2016 Budget Request**
- **FY 2016 is most likely to start FY 2016 a CR**

R,E&D FY 17 Budget Status

- **FY 17 R,E&D OST Submission June 15, 2015**
- **FY 17 R,E&D OMB Submission early Sept. 2015**
- **Scheduled date of FY 17 budget presented to Congress February 1, 2016**

Out Year Targets

- **Targets established Jan. 2015**
  - FY 17 - $169M
  - FY 18 - $173M
  - FY 19 - $174M
  - FY 20 - $176M
  - FY 21 - $180M
- **Expect targets to change**

FAA Reauthorization

- **Current Authorization thru FY 2015**
- **Congress has put reauthorization on hold until September 2015**
  - Will require an extension

Budget Future - TBD

•It is unclear regarding funding levels after FY 15