

NASA Aeronautics FY 2017 Budget Request Investing in our Future

Briefing to REDAC NAS Operations Subcommittee Meeting

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Global Growth in Aviation: Opportunities and Challenges



Global Air Passengers by Region (% of Total)



Major Opportunities / Growing Challenges

Competitiveness—New state backed entrants, e.g., COMAC (China); Growing global R&D Environment—Very ambitious industry sustainability goals; Large technology advances needed Mobility—More speed to connect the worlds' major cities; Opportunity for commercial supersonic flight

U.S. Technological Leadership Required!

Major US Airlines Collaborating with NASA



American Airlines



Weather Rerouting Changing the non-profitable flights into profitable flights

Terminal Sequencing and Spacing Increasing throughput and fuel efficiency for arrivals US Airways (now part of American Airlines)



Surface Management Reducing delays and fuel consumption

Southwest



Data Mining Improving efficiency and safety

United



Efficient Descent Advisor Saving time and reducing fuel burn for arrivals

Flight deck Interval Management

Increasing throughput with improved arrival spacing for landing

Virgin America



Traffic Aware Strategic Aircrew Requests Optimizing time and fuel savings for pilot entered route changes

Flight Awareness Collaboration Tool

Reducing cancellations and delays due to winter storms

Alaska Airlines



Traffic Aware Strategic Aircrew Requests Optimizing time and fuel savings for pilot entered route changes

Major US Airports Collaborating with NASA



DEN Denver International Airport



Efficient Descent Advisor Improving arrival efficiencies

DFW

Dallas Fort Worth International Airport



Precision Departure Release Capability Increasing departure time conformance

CLT Charlotte Douglas International Airport

PHX Phoenix Sky Harbor International Airport



Integrated Arrival/Departure/Surface (IADS) Reducing overall departure delay



Terminal Sequencing and Spacing (TSAS) Increasing throughput and fuel efficiency for arrivals

Flight deck Interval Management (FIM) Increasing runway throughput for arrivals

LAX Los Angeles International Airport



Terminal Sequencing and Spacing (TSAS) Increasing throughput and fuel efficiency for arrivals

NASA Aeronautics

NASA Aeronautics Vision for Aviation in the 21st Century





U.S. leadership for a new era of flight

NASA Aeronautics Ready for Flight



Accomplishments and Planning



Ten Year Investment Plan—FY 2017 Budget Accelerates Key Components of NASA Aeronautics Plan







FY 2017 Budget



\$ Millions	FY 2015	Enacted FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Aeronautics	\$642.0	\$640.0	\$790.4	\$846.4	\$1,060.1	\$1,173.3	\$1 <i>,</i> 286.9	\$1,294.2	\$1,307.6	\$1,218.1	\$829.7	\$839.5
Airspace Operations and Safety	154.0		159.4	159.2	176.2	189.1	221.5	198.7	200.9	193.2	175.5	167.8
Advanced Air Vehicles	240.6		298.6	277.4	308.8	311.6	312.6	321.3	315.0	318.9	317.7	326.7
Integrated Aviation Systems	150.0		210.0	255.4	381.4	493.0	556.7	591.5	612.2	525.0	203.8	210.6
Transformative Aeronautics Concepts	97.4		122.3	154.4	193.8	179.7	196.2	182.8	179.4	181.0	132.7	134.4

Aeronautics budget includes paid-for 10-year mandatory funding from the Administration's 21st Century Clean Transportation Plan. See appendix for additional detail.

Mandatory Budget Authority						
\$ Millions	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Outyears
21 st Century Clean Transportation Plan	100	200	400	500	600	1900
Airspace Operations and Safety	18	20	35	45	75	170
Advanced Air Vehicles	30	41	79	80	65	305
Integrated Aviation Systems	37	84	196	300	370	1170
Transformative Aeronautics Concepts	15	55	90	75	90	255
Low Boom Flight Demonstrator	56					
Integrated Aviation Systems	56					

Ultra-Efficient Subsonic Demonstrators





Low Noise Supersonic Flight



First Step to Unlocking a Global Market





New Aviation Horizons Flight Demo Plan



Trajectory Based Operations: Concept to Demo



Next Step in NASA Research and NextGen Development



New Era For NASA Aeronautics



Investing In Our Future - Investments in NASA's cutting edge aeronautics research today are investments in a cleaner, safer, quieter and faster tomorrow for American aviation:

- A future where Americans are working in stable, well-paying jobs.
- A future where we fly on aircraft that consume half as much fuel and generate only one quarter of current emissions.
- A future where flight is fueled by greener energy sources.
- A future where our air transportation system is able to absorb nearly four billion more passengers over the next 20 years without compromising the safety of our skies.
- A future where our airports are better neighbors because aircraft noise is contained well within the airport boundary.
- A future where people can travel to most cities in the world in six hours or less in an airplane that can fly faster than the speed of sound on bio-fuels.



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Lab-to-Field





Lab-to-Field



