U.S. Department of Transportation

BUDGET ESTIMATES
FISCAL YEAR 2023

FEDERAL AVIATION ADMINISTRATION

SUBMITTED FOR USE OF
THE COMMITTEE ON APPROPRIATIONS

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Section 1. Overview

OVERVIEW

The FY 2023 budget request prioritizes safety as the foundation of everything the FAA does, while also helping the economy recover and rebuild from the COVID-19 pandemic, rising to the climate challenge, implementing the Bipartisan Infrastructure Law, and ensuring transportation is an engine for equity

For FY 2023, the FAA's budget request of $18.6 billion represents an increase of 3.3 percent from the FY 2022 Continuing Resolution (CR) level. When combined with the $5 billion in advanced annual appropriations under the Bipartisan Infrastructure Law, the total FY 2023 funding for FAA is $23.6 billion. This funding level allows the FAA to make continued investments to safeguard the most complex airspace in the world while transforming our aviation infrastructure. The budget requests $1.0 billion to continue the operationalization of NextGen technologies, allowing the FAA to deliver the benefits of these innovations to the users of the nation's airspace. This proposal includes a more focused Research and Development organization to look ahead to the future, an Integration and Engagement Office to facilitate more rapid adoption of aviation industry innovation, and a Chief Technology Officer to drive the continued modernization of the airspace system. Brought together, these organizational elements will position the FAA to meet the challenges of tomorrow.

Through dedicated funding to uphold the Americans with Disabilities Act and Title VI of the Civil Rights Act, the FAA seeks to ensure throughout its federally assisted programs an environment free of civil rights violations and discrimination, where all are treated equitably with dignity and respect.

The budget request continues the FAA's commitment to improve the physical condition of the facilities that are the heart of the FAA's air traffic control system by investing $536.3 million towards this effort. Coupled with the $1.0 billion in funding provided by the Bipartisan Infrastructure Law, this multi-year commitment represents a significant down payment on our commitment to the nation's infrastructure.

The budget request funds an increased focus on our ongoing efforts to address aviation's impact on our environment by funding significant investments to overcoming barriers to the development of sustainable aviation fuels.

Operations - The FY 2023 budget requests $11.9 billion for the Operations account, an 8.5 percent increase from the FY 2022 CR level. This funding level will allow the FAA to address uncontrollable cost increases while making targeted investments in key areas such as aircraft certification reform and cybersecurity.

This budget request factors in uncontrollable cost increases and programmatic increases from FY 2022 that were not covered under the CR level. Additionally, the FAA estimates $404.0 million in uncontrollable cost increases in FY 2023, including the annualization of the pay raise and hiring from FY 2022, a 4.6 percent pay raise for FY

2023, 1.5 percent for non-pay inflation, the transition of capital programs from the Facilities and Equipment account, and Working Capital Fund expenses.

The budget includes $96 million in targeted investments to address safety, equity, climate change, and other key priorities. This includes $17.5 million to address Aircraft Certification Reform Legislation; $1.3 million to bolster FAA's enforcement of Federal equity rules and regulations; $13.3 million to improve data sharing and analysis across the FAA as part of Enterprise Information Management; $24.9 million to support the prevention and detection of cybersecurity threats within the national airspace system; $6.1 million to streamline launch and reentry licensing for commercial space; $6.3 million to develop the aviation and aerospace workforce of the future; $2.4 million to implement a comprehensive climate program; $4.9 million to integrate unmanned aircraft systems (UAS) into the national airspace; $11.4 million to strengthen aviation safety oversight; $3.8 million to improve safety oversight of the transportation of hazardous materials; $2.2 million is dedicated to developing a human spaceflight oversight and licensing program; $1.3 million to strengthen FAA's community engagement efforts; and $500,000 to manage supply chain risks.

Facilities and Equipment - The FY 2023 Budget request includes $3.015 billion for Facilities and Equipment, equal to the FY 2022 CR level.

The request includes a total of $536.3 million to replace and improve the condition of air traffic control facilities. Of this total, $481.3 million will allow the FAA to continue addressing its $5.1 billion backlog in sustainment needs. Most air traffic control facilities are in poor condition. The FAA's air route traffic control centers range in age from 56 to 62 years, and some terminal air traffic control facilities are as old as 79 years. The remaining $55.0 million, in concert with funding for the replacement of facilities in the Bipartisan Infrastructure Law, will support replacement of aging facilities in poor condition and experiencing operational issues. This Facilities Replacement funding will allow FAA to fund equipment and disposition of facilities under replacement. In addition to helping transform a part of our nation's infrastructure, these investments offer the opportunity to reduce the FAA's environmental footprint by replacing facilities with modern, more efficient structures.

The budget request includes $899.6 million in support of core systems providing communications, surveillance, and other programs that make up our national airspace system. The request also includes $25.0 million to support integration of UAS into the national airspace and $10.0 million for commercial space. The FAA will use these funds to continue development of a UAS Traffic Management system, as well as work to automate commercial space launch and reentry operations that are currently manual in nature.

Research, Engineering & Development - This budget request includes $260.5 million for the Research, Engineering and Development account, a $62.0 million increase above the FY 2022 CR level. This increased funding showcases the Administration's commitment to its climate and sustainability goals.

Of the requested amount, $113.0 million is for programs focused on mitigating the impact of aviation on climate change and air quality. Of the amount for climate change and air quality, $50.0 million supports accelerated research with transformative impact potential in the areas of sustainable fuels, unleaded fuels and aircraft technologies. Additionally, this budget request supports research in the areas of sustainable aviation fuels created from waste and renewable sources, as well as lower-carbon aviation fuels created from fossil fuel sources. These activities will support a new sustainable aviation fuels industry that provides considerable economic development across rural America. FAA's global leadership role will be instrumental and influential in ensuring these fuels are contributing to meaningful carbon dioxide reductions around the world.

To continue to address the noise, air quality, climate, and energy issues confronting aviation, the FAA's research plans include assessing developing technologies that enable manufacturers to create aircraft and engines with lower noise and emissions, as well as improved fuel efficiency. To further that end, this budget request includes environmental research that funds programs such as the Continuous Lower Energy Emissions and Noise program.

The budget request includes $14.9 million for continued research to support safe integration of UAS operations, including efforts to support capabilities such as small UAS package delivery operations, large carrier cargo operations, and passenger transport operations.

Grants-in-Aid for Airports – The budget requests $3.35 billion for Grants-in-Aid for Airports, a $400 million decrease compared to the FY 2022 CR level. Of this total, $3.16 billion is for airport grants to preserve and improve critical airfield infrastructure at more than 3,300 public-use airports nationwide. Working alongside the additional funding provided through the Bipartisan Infrastructure Law in Airport Infrastructure Grants and to the Airport Terminal Program, this request supports our continued focus on safety-related development projects, while still promoting a sustainable, clean and resilient future for the FAA's airport facilities and infrastructure.

The request includes $137.3 million for personnel and related expenses for the FAA's Office of Airports. This funding includes $9.4 million to upgrade the System of Airports Reporting and the Airport Data and Information Portal, and $4.2 million for 51 new positions to increase staffing across all nine regions and headquarters. These positions will allow the Office of Airports to address important needs in support of the state block grant program, oversight of airports' compliance with grant requirements, policy guidance and oversight, and airport safety, which includes furthering the development of advanced air mobility and aeronautical data in a safe and secure manner.

The request includes $40.8 million for the Airport Technology Research program to support the safe and efficient integration of new and innovative technologies into the airport environment. Research areas include the continued testing of unmanned aircraft systems for integration at airports, field testing of solar-based technologies for runways

and taxiways lighting, development of infrastructure standards for advanced air mobility vehicles, and performance assessment of more environmentally-friendly pavement materials and Recycled Asphalt Pavements techniques. Finally, the request includes $15.0 million for the Airport Cooperative Research program.

Conclusion

The FAA's budget request for FY 2023 embodies the Administration's priorities of mitigating climate change and increasing equity. It will also enable continued investments to safeguard and modernize the most complex airspace in the world.

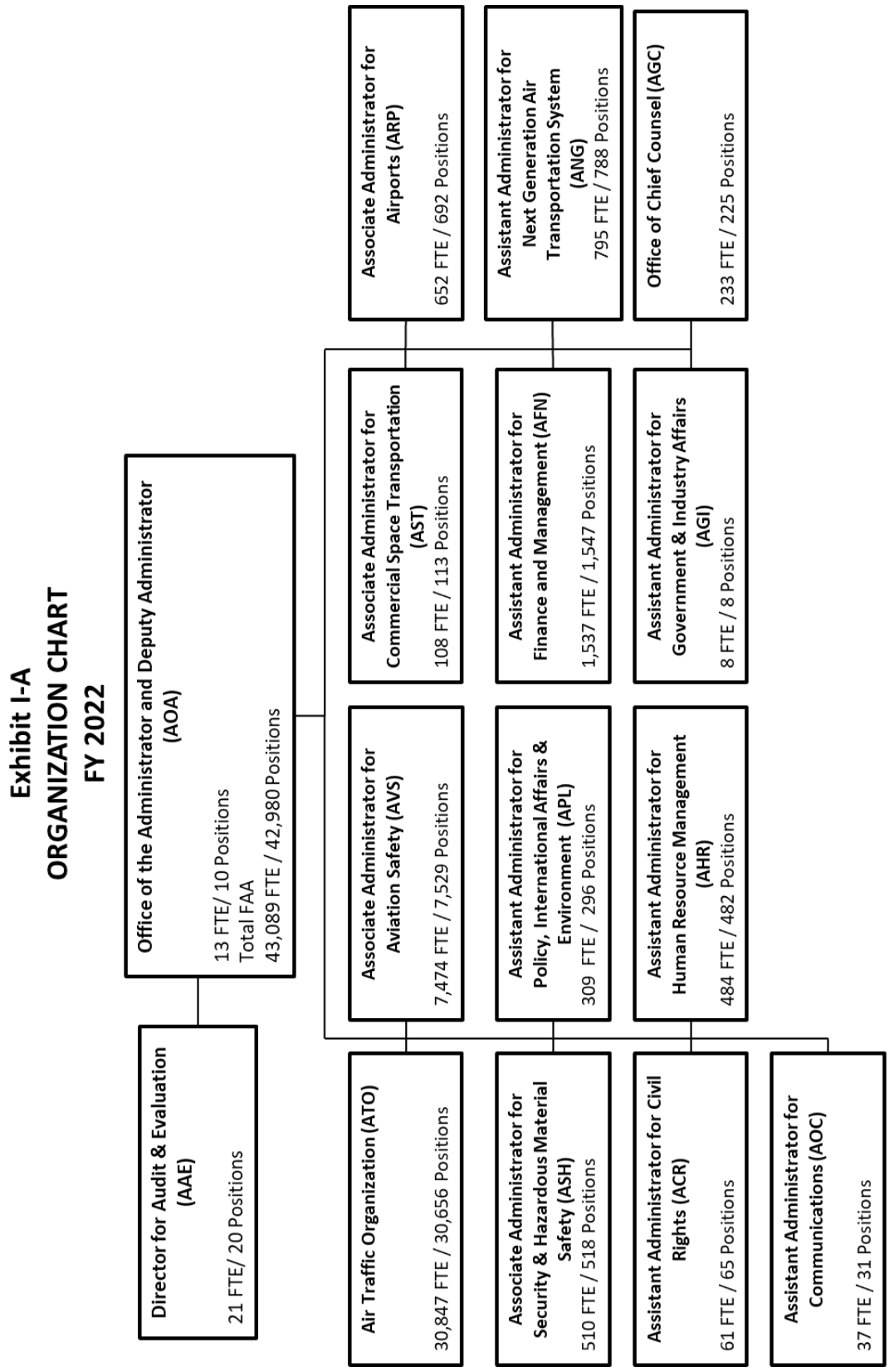
Exhibit I-A
ORGANIZATION CHART
FY 2022
Office of the Administrator and Deputy Administrator (AOA)
13 FTE/ 10 Positions
Total FAA
43,089 FTE / 42,980 Positions
Director for Audit & Evaluation (AAE)
21 FTE/ 20 Positions
Associate Administrator for Airports (ARP)
652 FTE / 692 Positions
Assistant Administrator for Next Generation Air Transportation System (ANG)
795 FTE / 788 Positions
Office of Chief Counsel (AGC)
233 FTE / 225 Positions
Associate Administrator for Commercial Space Transportation (AST)
108 FTE / 113 Positions
Assistant Administrator for Finance and Management (AFN)
1,537 FTE / 1,547 Positions
Assistant Administrator for Government & Industry Affairs (AGI)
8 FTE / 8 Positions
Associate Administrator for Aviation Safety (AVS)
7,474 FTE / 7,529 Positions
Assistant Administrator for Policy, International Affairs & Environment (APL)
309 FTE / 296 Positions
Assistant Administrator for Human Resource Management (AHR)
484 FTE / 482 Positions
Air Traffic Organization (ATO)
30,847 FTE / 30,656 Positions
Associate Administrator for Security & Hazardous Material Safety (ASH)
510 FTE / 518 Positions
Assistant Administrator for Civil Rights (ACR)
61 FTE / 65 Positions
Assistant Administrator for Communications (AOC)
37 FTE / 31 Positions

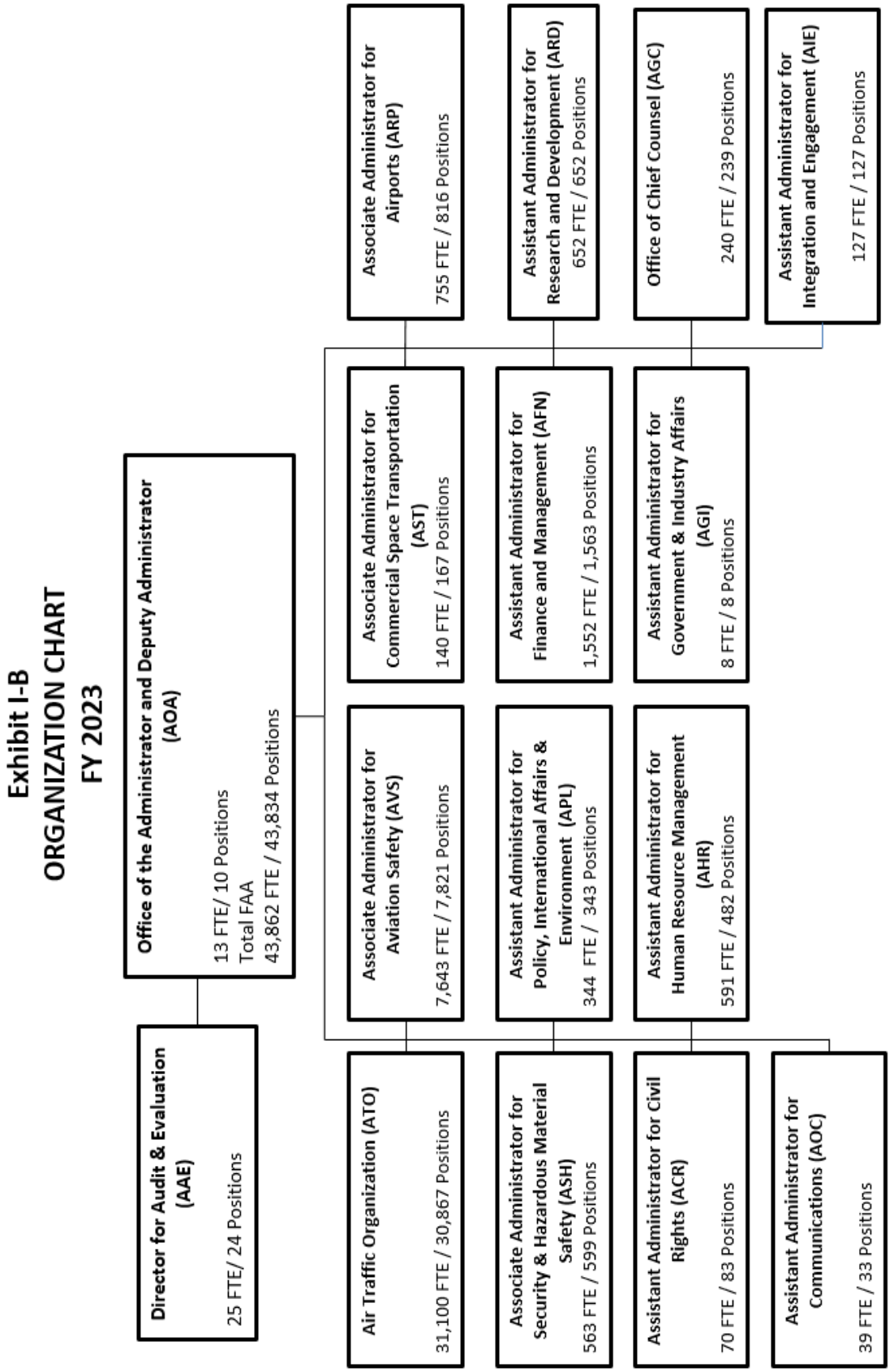
Exhibit I-B
ORGANIZATION CHART
FY 2023
Office of the Administrator and Deputy Administrator (AOA)
13 FTE/ 10 Positions
Total FAA
43,862 FTE / 43,834 Positions
Director for Audit & Evaluation (AAE)
25 FTE/ 24 Positions
Associate Administrator for Airports (ARP)
755 FTE / 816 Positions
Assistant Administrator for Research and Development (ARD)
652 FTE / 652 Positions
Office of Chief Counsel (AGC)
240 FTE / 239 Positions
Assistant Administrator for Integration and Engagement (AIE)
127 FTE / 127 Positions
Associate Administrator for Commercial Space Transportation (AST)
140 FTE / 167 Positions
Assistant Administrator for Finance and Management (AFN)
1,552 FTE / 1,563 Positions
Assistant Administrator for Government & Industry Affairs (AGI)
8 FTE / 8 Positions
Associate Administrator for Aviation Safety (AVS)
7,643 FTE / 7,821 Positions
Assistant Administrator for Policy, International Affairs & Environment (APL)
344 FTE / 343 Positions
Assistant Administrator for Human Resource Management (AHR)
591 FTE / 482 Positions
Air Traffic Organization (ATO)
31,100 FTE / 30,867 Positions
Associate Administrator for Security & Hazardous Material Safety (ASH)
563 FTE / 599 Positions
Assistant Administrator for Civil Rights (ACR)
70 FTE / 83 Positions
Assistant Administrator for Communications (AOC)
39 FTE / 33 Positions

Section 2. Budget
Summary Tables

EXHIBIT II-1
FY 2023 BUDGET AUTHORITY
FEDERAL AVIATION ADMINISTRATION
($000)

ACCOUNT NAME	M / D	(A) FY 2021 ENACTED	(B) FY 2022 CR (w/ IIJA Oblim)	(C) FY 2022 ENACTED	(D) FY 2023 PRES. BUDGET
Operations (TF)	**D**	$ 11,001,500	$ 11,001,500	$ 11,414,100	$ 11,933,821
Rescissions					
Transfers					
Offsets					
Facilities and Equipment (TF)	**D**	$ 3,015,000	$ 3,015,000	$ 2,892,888	$ 3,015,000
Rescissions					
Transfers					
Offsets					
Research, Engineering and Development (TF)	**D**	$ 198,000	$ 198,000	$ 248,500	$ 260,500
Rescissions					
Transfers					
Offsets					
Grants-in-Aid for Airports		$ 3,750,000	$ 3,750,000	$ 3,904,180	$ 3,350,000
Contract Authority (AATF)	**M**	$ 3,350,000	$ 3,350,000	$ 3,350,000	$ 3,350,000
General Fund Appropriation	**D**	$ 400,000	$ 400,000	$ 554,180	
Rescissions					
Transfers					
Offsets					
Overflight Fees*	**M**	43,899	74,504	74,504	86,187
Property Disposal or Lease Proceeds	**M**	8,606			
Overflight Fees (Transfer to EAS)	**M**	(43,899)	(74,504)	(74,504)	(86,187)
Gross New Budget Authority		**$ 17,973,106**	**$ 17,964,500**	**$ 18,459,668**	**$ 18,559,321**
Rescissions		**$ -**	**$ -**	**$ -**	**$ -**
Transfers		**$ -**	**$ -**	**$ -**	**$ -**
Offsets		**$ -**	**$ -**	**$ -**	**$ -**
NET NEW BUDGET AUTHORITY REQUESTED:		**17,973,106**	**17,964,500**	**18,459,668**	**18,559,321**
[Mandatory BA]		*3,358,606*	*3,350,000*	*3,350,000*	*3,350,000*
[Discretionary BA]		*14,614,500*	*14,614,500*	*15,109,668*	*15,209,321*
Supplemental Funding					
COVID-19 Supplementals		**$ 10,009,000**	**$ -**	**$ -**	**$ -**
CRRSA	**D**	$ 2,000,000			
Relief for Airports	**M**	$ 8,000,000			
Employee Leave Fund	**M**	$ 9,000			
Emergency Supplementals		**$ -**	**$ 100,000**	**$ 100,000**	**$ -**
Hurricane Relief	**D**		$ 100,000	$ 100,000	
IIJA Supplemental (Division J)		**$ -**	**$ 4,998,000**	**$ 4,998,000**	**$ 4,998,000**
Facilities and Equipment	**D**		$ 1,000,000	$ 1,000,000	$ 1,000,000
Airport Infrastructure Grants**	**D**		$ 2,999,000	$ 2,999,000	$ 2,999,000
Airport Terminal Program**	**D**		$ 999,000	$ 999,000	$ 999,000
Grand Total, All Appropriations		**27,982,106**	**23,062,500**	**23,557,668**	**23,557,321**

*The Consolidated and Further Continuing Appropriations Act, 2015, Public Law No. 113-235 requires the FAA to transfer a minimum of $50 million to the EAS program. Due to the lack of overflight fee receipts available for transfer in FY 2021, a portion of the $8.6 million in land proceeds collections was necessary to make up for the shortfall. DOT and OMB approved the use of land proceeds, which resulted in a total of $50 million transferred from the Aviation User Fees Account to the EAS program in FY 2021 as authorized by 49 U.S. Code § 41742.

** Reflects the transfer of $1 million in each year to the DOT Office of Inspector General.

EXHIBIT II-2
FY 2023 TOTAL BUDGETARY RESOURCES BY APPROPRIATION ACCOUNT
FEDERAL AVIATION ADMINISTRATION
Appropriations, Obligation Limitations, and Exempt Obligations
($000)

ACCOUNT NAME	M / D	(A) FY 2021 ENACTED	(B) FY 2022 CR (w/ IIJA Oblim)	(C) FY 2022 ENACTED	(D) FY 2023 PRES. BUDGET
Operations	**D**	**11,001,500**	**11,001,500**	**11,414,100**	**11,933,821**
Air Traffic Organization (ATO)		8,205,821	8,205,821	8,472,585	8,805,715
Aviation Safety (AVS)		1,479,039	1,479,039	1,536,298	1,603,803
Commercial Space Transportation (AST)		27,555	27,555	32,470	42,777
Finance & Management (AFN)		836,001	836,001	889,216	918,199
NextGen (ANG)		63,002	63,002	63,955	0
Security and Hazardous Materials Safety (ASH)		124,688	124,688	139,466	159,807
Research and Development (ARD)					58,135
Integration and Engagement					41,465
Staff Offices		265,394	265,394	280,110	303,920
Facilities & Equipment	**D**	**3,015,000**	**3,015,000**	**2,892,888**	**3,015,000**
Engineering, Development, Test and Evaluation		157,600	159,500	135,701	161,200
Air Traffic Control Facilities and Equipment		1,818,450	1,837,377	1,778,033	1,808,250
Non-Air Traffic Control Facilities and Equipment		256,250	260,323	219,754	223,200
Facilities and Equipment Mission Support		237,700	212,800	209,400	252,350
Personnel and Related Expenses		545,000	545,000	550,000	570,000
Research, Engineering & Development	**D**	**198,000**	**198,000**	**248,500**	**260,500**
Research, Engineering & Development		198,000	198,000	248,500	260,500
Grants-in-Aid for Airports		**3,750,000**	**3,750,000**	**3,904,180**	**3,350,000**
Grants-in-Aid for Airports	**M**	3,164,932	3,164,932	3,156,874	3,156,800
General Fund Appropriation	**D**	400,000	400,000	554,180	0
Personnel & Related Expenses	**M**	119,402	119,402	127,165	137,372
Airport Technology Research	**M**	40,666	40,666	40,961	40,828
Airport Cooperative Research Program	**M**	15,000	15,000	15,000	15,000
Small Community Air Service	**M**	10,000	10,000	10,000	0
TOTAL BUDGETARY RESOURCES:		**17,964,500**	**17,964,500**	**18,459,668**	**18,559,321**
[Mandatory]		3,350,000	3,350,000	3,350,000	3,350,000
[Discretionary]		14,614,500	14,614,500	15,109,668	15,209,321
[Obligation Limitation]		[3,350,000]	[3,350,000]	[3,350,000]	[3,350,000]
Supplemental Funding					
COVID-19 Supplementals		**$ 10,009,000**	**$ -**	**$ -**	**$ -**
CRRSA	**D**	$ 2,000,000			
Relief for Airports	**M**	$ 8,000,000			
Employee Leave Fund	**M**	$ 9,000			
Emergency Supplementals		**$ -**	**$ 100,000**	**$ 100,000**	**$ -**
Hurricane Relief	**D**		$ 100,000	$ 100,000	
IIJA Supplemental (Division J)		**$ -**	**$ 4,998,000**	**$ 4,998,000**	**$ 4,998,000**
Facilities and Equipment	**D**		$ 1,000,000	$ 1,000,000	$ 1,000,000
Airport Infrastructure Grants*	**D**		$ 2,999,000	$ 2,999,000	$ 2,999,000
Airport Terminal Program*	**D**		$ 999,000	$ 999,000	$ 999,000
Grand Total, All Appropriations		**27,973,500**	**23,062,500**	**23,557,668**	**23,557,321**

* Reflects the transfer of $1 million in each year to the DOT Office of Inspector General.

EXHIBIT II-3
FY 2023 BUDGET REQUEST BY DOT STRATEGIC AND ORGANIZATIONAL GOALS
Appropriations, Obligation Limitation, and Exempt Obligations
FEDERAL AVIATION ADMINISTRATION
($000)

	Safety	Economic Strength and Global Competitiveness	Equity	Climate & Sustainability	Transformation	Organizational Excellence	Total
OPERATIONS	**$ 7,000,644**	**$ 3,930,234**	**$ 28,979**	**$ 33,769**	**$ 135,552**	**$ 804,643**	**$ 11,933,821**
Air Traffic Organization (ATO)	$ 5,322,781	$ 3,253,323		$ 23,560		$ 206,051	$ 8,805,715
Aviation Safety (AVS)	$ 1,511,001		$ 750			$ 92,052	$ 1,603,803
Commercial Space Transportation (AST)	$ 6,345		$ 480		$ 35,952		$ 42,777
Finance and Management (AFN)		$ 676,911				$ 241,288	$ 918,199
Security and Hazardous Materials Safety (ASH)	$ 159,807						$ 159,807
Research and Development (ARD)					$ 58,135		$ 58,135
Integration and Engagement (AIE)					$ 41,465		$ 41,465
Staff Offices	$ 710		$ 27,749	$ 10,209		$ 265,252	$ 303,920
FACILITIES & EQUIPMENT	**$ 275,111**	**$ 1,343,432**	**$ 1,480**	**$ 159,937**	**$ 1,231,341**	**$ 3,699**	**$ 3,015,000**
Activity 1 - Engineering, Development, Test and Evaluation					$ 161,200		$ 161,200
Activity 2 - Air Traffic Control Facilities and Equipment	$ 68,800	$ 852,550	$ 1,200	$ 105,400	$ 780,300		$ 1,808,250
Activity 3 - Non-Air Traffic Control Facilities and Equipment	$ 154,300	$ 21,900		$ 24,300	$ 19,700	$ 3,000	$ 223,200
Activity 4 - Facilities and Equipment Mission Support		$ 215,000			$ 37,350		$ 252,350
Activity 5 - Personnel and Related Expenses	$ 52,011	$ 253,982	$ 280	$ 30,237	$ 232,791	$ 699	$ 570,000
RESEARCH, ENGINEERING & DEVELOPMENT	**$ 105,219**	**$ 15,708**	**$ 6,169**	**$ 112,995**	**$ 10,787**	**$ 9,622**	**$ 260,500**
GRANTS-IN-AID FOR AIRPORTS	**$ 346,810**	**$ 2,673,206**	**$ 203,762**	**$ 63,769**	**$ 62,245**	**$ 209**	**$ 3,350,000**
Grants-in-Aid for Airports	$ 313,711	$ 2,548,062	$ 199,430	$ 55,087	$ 40,511		$ 3,156,800
Personnel & Related Expenses	$ 14,574	$ 114,819	$ 182	$ 682	$ 7,106	$ 9	$ 137,372
Airport Technology Research	$ 12,525	$ 8,825	$ 3,600	$ 7,250	$ 8,628		$ 40,828
Airport Cooperative Research Program	$ 6,000	$ 1,500	$ 550	$ 750	$ 6,000	$ 200	$ 15,000
Small Community Air Service							$ -
TOTAL REQUESTED	**$ 7,727,783**	**$ 7,962,580**	**$ 240,390**	**$ 370,470**	**$ 1,439,925**	**$ 818,173**	**$ 18,559,321**
IIJA SUPPLEMENTAL ADVANCE APPROPRIATIONS	**$ 500,000**	**$ 3,744,000**	**$ 330,000**	**$ 396,000**	**$ 30,000**	**$ -**	**$ 5,000,000**
Facilities & Equipment		$ 964,000		$ 36,000			$ 1,000,000
Airport Infrastructure Grants	$ 300,000	$ 2,430,000	$ 180,000	$ 60,000	$ 30,000		$ 3,000,000
Airport Terminal Program	$ 200,000	$ 350,000	$ 150,000	$ 300,000			$ 1,000,000
GRAND TOTAL	**$ 8,227,783**	**$ 11,706,580**	**$ 570,390**	**$ 766,470**	**$ 1,469,925**	**$ 818,173**	**$ 23,559,321**

Safety: Make our transportation system safer for all people. Work toward a future where transportation-related serious injuries and fatalities are eliminated.

Economic Strength and Global Competitiveness: Grow an inclusive and sustainable economy. Invest in our transportation system to provide American workers and businesses reliable and efficient access to good-paying jobs, resources, and markets.

Equity: Reduce inequities. Support and engage people and communities to promote safe, affordable, accessible, and multimodal access to opportunities and services while reducing transportation-related disparities, adverse community impacts, and health effects.

Climate & Sustainability: Tackle the climate crisis by ensuring that transportation plays a central role in the solution. Substantially reduce greenhouse gas emissions and transportation-related pollution and build more resilient and sustainable transportation systems to benefit and protect communities.

Transformation: Design for the future. Invest in purpose-driven research and innovation to meet the challenge of the present and modernize a transportation system of the future that serves everyone today and in the decades to come.

Organizational Excellence: Strengthen our world class organization. Advance the Department's mission by establishing policies, processes, and an inclusive and innovative culture to effectively serve communities and responsibly steward the public's resources.

EXHIBIT II-4

FY 2023 OUTLAYS
FEDERAL AVIATION ADMINISTRATION
($000)

ACCOUNT NAME	M / D	FY 2021 ENACTED	FY 2022 CR (w/ IIJA Oblim)	FY 2023 REQUEST
Operations	**D**	**$10,945,680**	**$11,503,520**	**$12,098,090**
General		$673,200	$804,520	$2,117,290
AATF		$10,272,480	$10,699,000	$9,980,800
Facilities & Equipment		**$2,760,870**	**$2,851,230**	**$3,087,780**
AATF				
- Discretionary	**D**	$2,753,870	$2,851,230	$3,087,780
- Mandatory	**M**	$7,000		
Aviation Insurance				
Revolving Account	**M**	($15,613)	($30,000)	($23,000)
Research, Engineering & Development	**D**	**$159,091**	**$248,854**	**$277,273**
Grants-in-Aid for Airports	**D**	**$3,937,280**	**$3,377,170**	**$4,134,190**
Aviation User Fees (Overflight)	**M**	$1,634	$1,000	
Franchise Fund	**D**	$1,015	$75,000	$36,000
TOTAL:		**$ 17,789,957**	**$ 18,026,774**	**$ 19,610,333**
Mandatory		($6,979)	($29,000)	($23,000)
Discretionary		**$ 17,796,936**	**$ 18,055,774**	**$ 19,633,333**
Supplemental Funding				
COVID-19 Supplementals				
CARES	**D**	$4,158,000	$1,708,000	$1,084,000
CRRSA	**D**	$741,000	$1,100,000	$159,000
Relief for Airports	**M**	$333,000	$4,240,000	$2,160,000
Employee Leave Fund	**M**	$1,000	$8,000	
Emergency Supplementals				
Hurricane Relief	**D**		$3,000	$32,000
IIJA Supplemental (Division J)				
Facilities and Equipment	**D**		$67,000	$333,000
Airport Infrastructure Grants	**D**		$120,000	$1,919,000
Airport Terminal Program	**D**		$40,000	$639,000
Grand Total, Outlays from all Appropriations		**$ 23,022,957**	**$ 25,312,774**	**$ 25,936,333**

EXHIBIT II-5
SUMMARY OF REQUESTED FUNDING CHANGES FROM BASE
Federal Aviation Administration
Appropriations, Obligation Limitations, and Exempt Obligations
($000)

			Baseline Changes									
Operations	**FY 2021 Enacted**	**FY 2022 CR**	**Annualization of FY 2022 Pay Raise**	**Annualization of FY 2022 FTE**	**FY 2023 Pay Raise**	**Adjustment for Compensable Days (260 days)**	**GSA Rent**	**WCF Increase/ Decrease**	**Inflation and Other Adjustments to Base**	**FY 2023 Baseline Estimate**	**Program Increases/ Decreases**	**FY 2023 Request***
PERSONNEL RESOURCES (FTE)												
Direct FTE	39,259	39,331		121					231	39,683	208	39,891
FINANCIAL RESOURCES												
ADMINISTRATIVE EXPENSES												
Salaries and Benefits	$7,691,975	$8,098,334	$52,224	$20,879	$279,137	($29,423)		($1,073)	$21,272	$8,441,350	$33,384	$8,474,734
Travel	$72,590	$77,866							$4,056	$81,922	$1,583	$83,505
Transportation	$19,441	$22,840							$297	$23,137	$0	$23,137
GSA Rent	$133,270	$127,960					$0		$20,516	$148,476	$0	$148,476
Rental Payments to Other	$53,787	$55,035							$827	$55,862	$0	$55,862
Communications, & Utilities	$331,947	$390,809							$12,625	$403,434	$7	$403,441
Printing	$2,617	$3,283							$40	$3,323	$0	$3,323
Other Services	$2,479,612	$2,046,618						$5,660	$414,751	$2,467,029	$55,842	$2,522,871
Supplies	$139,895	$116,625							$3,735	$120,360	$170	$120,530
Equipment	$74,314	$57,305							$30,605	$87,910	$5,175	$93,085
Land and Strructure	$591	$3,080							$9	$3,089	$0	$3,089
Grants, Claims and Subsidies	$306	$833							$5	$838	$0	$838
Insurance Claims and Indemnities	$1,155	$912							$18	$930	$0	$930
Admin Subtotal	**$11,001,500**	**$11,001,500**	**$52,224**	**$20,879**	**$279,137**	**($29,423)**	**$0**	**$4,587**	**$508,756**	**$11,837,660**	**$96,161**	**$11,933,821**
PROGRAMS												
Air Traffic Organization (ATO)	$8,205,821	$8,205,821	$39,734	$1,015	$213,257	($22,345)		($68)	$340,355	$8,777,769	$27,946	$8,805,715
Aviation Safety (AVS)	$1,479,039	$1,479,039	$8,437	$15,255	$44,443	($4,792)		($26)	$63,288	$1,605,644	($1,841)	$1,603,803
Commercial Space Transportation (AST)	$27,555	$27,555	$133	$528	$721	($84)			$5,095	$33,948	$8,829	$42,777
Finance and Management (AFN)	$836,001	$836,001	$1,711	$290	$9,015	($968)		$4,926	$67,224	$918,199	$0	$918,199
NextGen (ANG)	$63,002	$63,002	$208		$1,095	($120)		($41)	$1,437	$65,581	($65,581)	$0
Security and Hazardous Materials Safety (ASH)	$124,688	$124,688	$599	$2,162	$3,188	($343)		$146	$15,698	$146,138	$13,669	$159,807
Research and Development (ARD)									$0	$0	$58,135	$58,135
Integration and Engagement									$0	$0	$41,465	$41,465
Staff Offices	$265,394	$265,394	$1,402	$1,629	$7,418	($771)		($350)	$15,659	$290,381	$13,539	$303,920
Programs Subtotal	**$11,001,500**	**$11,001,500**	**$52,224**	**$20,879**	**$279,137**	**($29,423)**	**$0**	**$4,587**	**$508,756**	**$11,837,660**	**$96,161**	**$11,933,821**
TOTAL	**$11,001,500**	**$11,001,500**	**$52,224**	**$20,879**	**$279,137**	**($29,423)**	**$0**	**$4,587**	**$508,756**	**$11,837,660**	**$96,161**	**$11,933,821**

* The FAA proposes to evolve the Office of NextGen to the Office of Research and Development, establish the Office of Integration and Engagement, and establish the Chief Technology Officer in the Air Traffic Organization.

EXHIBIT II-5
SUMMARY OF REQUESTED FUNDING CHANGES FROM BASE
Federal Aviation Administration
Appropriations, Obligation Limitations, and Exempt Obligations
($000)

			Baseline Changes									
FACILITIES and EQUIPMENT	**FY 2021 Enacted**	**FY 2022 CR (with IIJA Oblim)**	**Annualization of Prior Pay Raises**	**Annualization of new FY 2022 FTE**	**FY 2023 Pay Raises**	**Adjustment for Compensable Days (260 days)**	**GSA Rent**	**WCF Increase/ Decrease**	**Inflation and other adjustments to base**	**FY 2023 Baseline Estimate**	**Program Increases/ Decreases**	**FY 2023 Request**
PERSONNEL RESOURCES (FTE)												
Direct FTE	2,815	2,815								2,815		2,815
FINANCIAL RESOURCES												
ADMINISTRATIVE EXPENSES												
Salaries and Benefits	$507,352	$515,247	$3,373		$17,775	($1,882)				$534,513	$0	$534,513
Travel	$19,989	$18,280							$6,818	$25,098	($1)	$25,097
Transportation	$2,020	$1,714								$1,714	($26)	$1,688
GSA Rent	$678	$684								$684	($9)	$675
Rental Payments to Others	$40,650	$36,402								$36,402	$6,747	$43,149
Communications, & Utilities	$45,670	$46,124								$46,124	($707)	$45,417
Printing	$28	$22								$22	$1	$23
Other Services:	$2,022,440	$2,018,331							($1,089)	$2,017,242	($21,582)	$1,995,660
-WCF	$49	$49						$5		$54	$0	$54
Supplies	$34,615	$29,423								$29,423	($882)	$28,541
Equipment	$183,785	$189,714								$189,714	($5,632)	$184,082
Lands and Structures	$154,610	$156,152								$156,152	($3,315)	$152,837
Grants, Claims, Subsidies and Interest	$3,114	$2,858								$2,858	$406	$3,264
Admin Subtotal	**$3,015,000**	**$3,015,000**	**$3,373**	**$0**	**$17,775**	**($1,882)**	**$0**	**$5**	**$5,729**	**$3,040,000**	**($25,000)**	**$3,015,000**
PROGRAMS												
Engineering, Development, Test and Evaluation	$157,600	$159,500								$159,500	$1,700	$161,200
Air Traffic Control Facilities and Equipment	$1,818,450	$1,837,377								$1,837,377	($29,127)	$1,808,250
Non-Air Traffic Control Facilities and Equipment	$256,250	$260,323								$260,323	($37,123)	$223,200
Facilities and Equipment Mission Support	$237,700	$212,800								$212,800	$39,550	$252,350
Personnel & Related Expenses	$545,000	$545,000	$3,373		$17,775	($1,882)		$5	$5,729	$570,000	$0	$570,000
Programs Subtotal	**$3,015,000**	**$3,015,000**	**$3,373**	**$0**	**$17,775**	**($1,882)**	**$0**	**$5**	**$5,729**	**$3,040,000**	**($25,000)**	**$3,015,000**
BASE PROGRAMS TOTAL	**$3,015,000**	**$3,015,000**	**$3,373**	**$0**	**$17,775**	**($1,882)**	**$0**	**$5**	**$5,729**	**$3,040,000**	**($25,000)**	**$3,015,000**

*This exhibit does not include resources associated with the Infrastructure Investment and Jobs Act.

EXHIBIT II-5
SUMMARY OF REQUESTED FUNDING CHANGES FROM BASE
Federal Aviation Administration
Appropriations, Obligation Limitations, and Exempt Obligations
($000)

			Baseline Changes									
Research, Engineering & Development	FY 2021 Enacted	FY 2022 CR	Annualization of Prior Pay Raises	Annualization of new FY 2022 FTE	FY 2023 Pay Raises	Adjustment for Compensable Days (260 days)	GSA Rent	WCF Increase/ Decrease	Inflation and other adjustments to base	FY 2023 Baseline Estimate	Program Increases/ Decreases	FY 2023 Request
PERSONNEL RESOURCES (FTE)												
Direct FTE	196	217								217	10	227
FINANCIAL RESOURCES												
ADMINISTRATIVE EXPENSES												
Salaries and Benefits	$41.700	$42.937	$290	$0	$1.491	(179)				$44.539	$1.880	$46.419
Travel	$1.141	$1.141							$23	$1.164		$1.164
Transportation	$28	$28							$1	$29		$29
GSA Rent	$0	$0								$0		$0
Communications, & Utilities	$5	$5								$5		$5
Printing	$5	$5								$5		$5
Other Services:												
-Advisory and Assistance Services	$0	$0								$0		$0
-Others	$78.880	$77.643							$1.553	$79.196	$57.370	$136.566
-WCF	$0	$0							$0	$0		$0
Supplies	$695	$695							$14	$709		$709
Equipment	$2.467	$2.467							$49	$2.516		$2.516
Lands and Structures	$432	$432							$8	$440		$440
Grants, Claims & Subsidies	$72.647	$72.647								$72.647		$72.647
Interest and Dividends	$0	$0								$0		$0
Admin Subtotal	**$198,000**	**$198,000**	**$290**	**$0**	**$1,491**	**($179)**	**$0**	**$0**	**$1,648**	**$201,250**	**$59,250**	**$260,500**
PROGRAMS												
Research, Engineering and Development	$198,000	$198,000	$290	$0	$1,491	($179)	$0	$0	$1,648	$201,250	$59,250	$260,500
Programs Subtotal	**$198,000**	**$198,000**	**$290**	**$0**	**$1,491**	**($179)**	**$0**	**$0**	**$1,648**	**$201,250**	**$59,250**	**$260,500**
BASE PROGRAMS TOTAL	$198,000	$198,000	$290	$0	$1,491	($179)	$0	$0	$1,648	$201,250	$59,250	$260,500

*This exhibit does not include resources associated with the Infrastructure Investment and Jobs Act.

SUMMARY OF REQUESTED FUNDING CHANGES FROM BASE
Federal Aviation Administration
Appropriation: Obligation Limitation and Exempt Obligations
($000)

Grants-in-Aid for Airports	FY 2021 Enacted	FY 2022 CR	Baseline Changes: Annualization of Prior Pay Raise	Annualization of new 2022 FTE	2023 Pay Raise	Adjustment for Compensable Days (261 days)	FY 2023 FERS Increase	GSA Rent	WCF Increase/ Decrease	Other Base Adjustments	FY 2023 Baseline Estimate	Program Increase/ Decrease	FY 2023 Request
PERSONNEL RESOURCES (FTE)													
Direct FTE	595	612									612	26	638
FINANCIAL RESOURCES*													
ADMINISTRATIVE EXPENSES													
Salaries and Benefits	107,658	112,188	754		3,855	-449					116,348	4,641	120,989
Travel	3,156	3,156									3,156		3,156
Transportation	124	124									124		124
GSA Rent	104	104									104		104
Rental Payments to Others	789	789									789		789
Communications, Rent & Utilities	265	265									265		265
Printing	27	27									28		28
Other Services:													
-WCF	228	261							-65		196		196
-Advisory and Assistance Services	32,568	32,563									32,563	-6	32,557
-Other	35,277	38,777									38,777	9,400	48,177
Supplies	1,122	1,122									1,122		1,122
Equipment	1,236	1,236									1,236		1,236
Lands and Structures	496	496									496		497
Grants, Claims & Subsidies	5,556,931	3,548,873									3,548,873	-408,132	3,140,741
Insurance Claims and Indemnities	1	1									2		1
Interest and Dividends	19	18									18		18
Financial transfers	10,000	10,000									10,000	-10,000	0
Admin Subtotal	**5,750,000**	**3,750,000**	**754**	**0**	**3,855**	**-449**	**0**	**0**	**-65**	**0**	**3,754,097**	**-404,097**	**3,350,000**
PROGRAMS													
Grants	5,564,932	3,564,932									3,564,932	-408,132	3,156,800
Personnel and Related Expenses	119,402	119,402	724		3,700	-431			-65		123,331	14,041	137,372
Airport Technology Research	40,666	40,666	29		149	-17					40,828	0	40,828
Airport Cooperative Research	15,000	15,000	1		6	-1					15,006	-6	15,000
Small Community Air Service	10,000	10,000									10,000	-10,000	0
Program Subtotal	**5,750,000**	**3,750,000**	**754**	**0**	**3,855**	**-449**	**0**	**0**	**-65**	**0**	**3,754,097**	**-404,097**	**3,350,000**
TOTAL	**5,750,000**	**3,750,000**	**754**	**0**	**3,855**	**-449**	**0**	**0**	**-65**	**0**	**3,754,097**	**-404,097**	**3,350,000**

*Financial Resources does not include resources the Infrastructure Investment and Jobs Act and American Rescue Plan Act.

EXHIBIT II-6
WORKING CAPITAL FUND
FEDERAL AVIATION ADMINISTRATION
($000)

	FY 2021 ENACTED	FY 2022 CR (w/ IIJA Oblim)	FY 2023 PRES. BUD.
DIRECT: FAA			
Facilities & Equipment	49	49	54
Grants-in-Aid for Airports	202	234	196
Operations	53,505	54,170	59,831
TOTAL	**$ 53,755**	**$ 54,453**	**$ 60,081**

Footnote: Customer Estimate - FAA
1) F&E and Grants-in-Aid for Airports funding only support E-gov Initiatives
2) Adjustment made for rounding

	FY 2021 ENACTED	FY 2022 CR (w/ IIJA Oblim)	FY 2023 PRES. BUD.
DIRECT: FAA Regional Transit			
Grants-in-Aid for Airports	85	85	20
Operations	1,638	1,638	565
TOTAL	**$ 1,723**	**$ 1,723**	**$ 585**

Footnote: Customer Estimate - FAA Regional Transit
1) FY 2023 is the first time the FAA has included the Working Capital Fund - Regional Transit

EXHIBIT II-7
FEDERAL AVIATION ADMINISTRATION
PERSONNEL RESOURCE -- SUMMARY
TOTAL FULL-TIME EQUIVALENTS

	FY 2021 ENACTED	FY 2022 CR (w/ IIJA Oblim)	FY 2023 PRES. BUD.
DIRECT FUNDED BY APPROPRIATION			
Operations	39,259	39,331	39,891
Facilities & Equipment	2,815	2,815	2,815
Research, Engineering & Development	196	217	227
Grants-in-Aid for Airports	591	611	637
SUBTOTAL, DIRECT FUNDED	42,861	42,974	43,570
REIMBURSEMENTS / ALLOCATIONS / OTHER			
Reimbursements and 'Other'			
Operations	212	212	196
Aviation Insurance Revolving Fund	2	4	4
Facilities & Equipment	50	50	53
Grants-in-Aid for Airports	6	4	2
Administrative Services Franchise Fund	1,367	1,416	1,416
SUBTOTAL, REIMBURSE./ALLOC./OTH.	1,637	1,686	1,671
BASE TOTAL FTEs	**44,498**	**44,660**	**45,241**
SUPPLEMENTAL FUNDED FTEs			
COVID-19 Supplementals			
CARES Act	4	1	1
Relief for Airports (ARPA)	4	3	3
Employee Leave Fund (ARPA)	-	-	-
IIJA Supplemental (Division J)			
Facilities & Equipment	-	70	170
Airport Infrastructure Grants	-	30	87
Airport Terminal Program	-	11	31
SUBTOTAL, Supplemental Funded	8	115	292
TOTAL FTEs	**44,506**	**44,775**	**45,533**

INFO:
Allocations to Other Agencies

EXHIBIT II-8
FEDERAL AVIATION ADMINISTRATION
PERSONNEL RESOURCE -- SUMMARY
FULL-TIME PERMANENT POSITIONS

	FY 2021 ENACTED	FY 2022 CR (w/ IIJA Oblim)	FY 2023 PRES. BUD.
DIRECT FUNDED BY APPROPRIATION			
Operations	39,005	39,117	39,768
Facilities & Equipment	2,806	2,806	2,806
Research, Engineering & Development	196	221	240
Grants-in-Aid for Airports	600	611	662
SUBTOTAL, DIRECT FUNDED	42,607	42,755	43,476
REIMBURSEMENTS / ALLOCATIONS / OTHER			
Reimbursements and 'Other'			
Operations	94	98	98
Aviation Insurance Revolving Fund	2	4	4
Facilities & Equipment	-	-	-
Grants-in-Aid for Airports	-	4	2
Administrative Services Franchise Fund	1,352	1,442	1,442
SUBTOTAL, REIMBURSE./ALLOC./OTH.	1,448	1,548	1,546
BASE TOTAL POSITIONS	**44,055**	**44,303**	**45,022**
SUPPLEMENTAL FUNDED FTPs			
COVID-19 Supplementals			
CARES Act	1	1	1
Relief for Airports (ARPA)	-	3	3
Employee Leave Fund (ARPA)	-	-	-
IIJA Supplemental (Division J)			
Facilities & Equipment	-	140	200
Airport Infrastructure Grants	-	59	114
Airport Terminal Program	-	22	40
SUBTOTAL, Supplemental Funded	1	225	358
TOTAL POSITIONS	**44,056**	**44,528**	**45,380**

EXHIBIT II-9
FEDERAL AVIATION ADMINISTRATION
USER FEES
($000)

	FY 2021 ACTUAL	FY 2022 ESTIMATE	FY 2023 ESTIMATE
USER FEE			
Civil Aviation Registry Fees	1,411	1,322	1,454
Foreign Repair Station/Certification Fees	3,511	10,940	12,034
Aeronautical Charting Fees	41	45	34
Overflight Fees	36,050	74,504	86,187
Unmanned Aircraft Systems Registry Fees	1,762	1,276	1,404
Total User Fees	**42,775**	**88,087**	**101,113**

EXHIBIT II-10
FEDERAL AVIATION ADMINISTRATION
NEXTGEN PORTFOLIO
($ in millions)

	FY 2021 ENACTED	FY 2022 Full Year CR	FY 2023 REQUEST
Facilities and Equipment	**$794.5**	**$838.8**	**$768.2**
NextGen - Separation Management Portfolio	21.2	23.5	18.0
NextGen – Traffic Flow Management Portfolio	8.0	13.0	21.0
NextGen - On Demand NAS Portfolio	10.5	9.0	8.5
NextGen - NAS Infrastructure Portfolio	15.0	10.5	25.5
NextGen – Support (NIEC, Test Bed) Portfolio	8.4	7.0	5.0
NextGen - System Safety Management Portfolio	21.5	18.3	17.0
NextGen – Unmanned Aircraft System (UAS)	22.0	24.0	15.0
NextGen – Enterprise, Concept Devel, Human Factors, and Demo Portfolio	19.0	10.6	11.0
Performance Based Navigation (PBN) Support Portfolio	8.0	8.0	8.0
Unmanned Aircraft Systems (UAS) Implementation	26.6	31.3	10.0
Enterprise Information Platform	10.0	17.6	13.0
Data Communications in Support of NextGen	110.0	110.3	108.1
En Route Automation Modernization (ERAM) - System Enhancements	66.9	104.5	108.2
System Wide Information Management (SWIM)	31.1	34.0	10.2
ADS - B NAS Wide Implementation	180.0	157.6	155.2
Air Traffic Management Implementation Portfolio	17.2	10.0	7.4
Terminal Flight Data Manager (TFDM)	79.1	85.4	61.8
Time Based Flow Management (TBFM)	20.0	13.3	21.3
Next Generation Weather Processor (NWP)	24.3	48.2	30.7
Reduced Oceanic Separation	15.5	7.0	7.0
Aeronautical Information Management Program (AIM)	7.5	22.2	29.4
Activity 5 F&E PCBT - NextGen Staffing	72.9	73.6	77.0
Research Engineering and Development (RE&D)	**$72.9**	**$67.4**	**$97.4**
NextGen – Flight Deck Data Exchange Requirements	1.0	1.0	0.0
NextGen- Information Security	4.8	4.8	5.5
NextGen- Wake Turbulence *	3.7	0.0	0.0
NextGen - Air Ground Integration	6.0	3.0	0.0
NextGen - Weather in the Cockpit	2.0	3.0	3.0
NextGen - Environmental Research, Aircraft Technologies, and Fuels	31.5	33.5	74.0
Unmanned Aircraft Systems Research	24.0	22.1	14.9
Operations	**$126.3**	**$118.8**	**$144.8**
NextGen Staffing	39.9	40.3	42.2
NextGen Unmanned Aircraft System	65.3	65.3	92.5
Performance Based Navigation (PBN) Activities	21.1	13.2	10.1
Total NextGen Programs	**$993.8**	**$1,025.0**	**$1,010.4**

* RE&D Programs that are no longer categorized as part of the NextGen Portfolio.

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Section 3. Budget by
Appropriations Account

OPERATIONS

(AIRPORT AND AIRWAY TRUST FUND)

For necessary expenses of the Federal Aviation Administration, not otherwise provided for, including operations and research activities related to commercial space transportation, administrative expenses for research and development, establishment of air navigation facilities, the operation (including leasing) and maintenance of aircraft, subsidizing the cost of aeronautical charts and maps sold to the public, the lease or purchase of passenger motor vehicles for replacement only, $11,933,821,000, to remain available until September 30, 2024, of which $9,933,821,000 shall be derived from the Airport and Airway Trust Fund: Provided, That not later than 60 days after the submission of the budget request, the Administrator of the Federal Aviation Administration shall transmit to Congress an annual update to the report submitted to Congress in December 2004 pursuant to section 221 of the Vision 100-Century of Aviation Reauthorization Act (49 U.S.C. 40101 note): Provided further, That not later than 60 days after the submission of the budget request, the Administrator shall transmit to Congress a companion report that describes a comprehensive strategy for staffing, hiring, and training flight standards and aircraft certification staff in a format similar to the one utilized for the controller staffing plan, including stated attrition estimates and numerical hiring goals by fiscal year: Provided further, That funds may be used to enter into a grant agreement with a nonprofit standard-setting organization to assist in the development of aviation safety standards: Provided further, That none of the funds made available by this Act shall be available for new applicants for the second career training program: Provided further, That there may be credited to this appropriation, as offsetting collections, funds received from States, counties, municipalities, foreign authorities, other public authorities, and private sources for expenses incurred in the provision of agency services, including receipts for the maintenance and operation of air navigation facilities, and for issuance, renewal or modification of certificates, including airman, aircraft, and repair station certificates, or for tests related thereto, or for processing major repair or alteration forms.

Note.—A full-year 2022 appropriation for this account was not enacted at the time the budget was prepared; therefore, the budget assumes this account is operating under the Continuing Appropriations Act, 2022 (Division A of P.L. 117–43, as amended). The amounts included for 2022 reflect the annualized level provided by the continuing resolution.

Program and Financing (in millions of dollars)

Identification code: 69-1301-0-1-402		FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
	Obligations by program activity:			
0001	Air Traffic Organization (ATO)	8,257	8,230	8,770
0002	NextGen	65	65	.....
0003	Finance & Management	842	843	917
0004	Aviation Safety	1,494	1,508	1,599
0005	Commercial Space Transportation	27	30	41
0006	Security & Hazardous Materials Safety	125	129	156
0007	Staff Offices	268	268	301
0008	2017/2018 Hurricanes & CARES Act	16	.....	.....
0010	Research and Development	.....	.....	56
0011	Integration and Engagement	.....	.....	35
0100	Direct Program Activities Subtotal	11,094	11,073	11,875
0799	Total Direct Obligations	11,094	11,073	11,875
0801	Operations (Reimbursable)	147	143	145
0900	Total new obligations, unexpired accounts	11,241	11,216	12,020
1000	Unobligated balance brought forward, Oct. 1	167	153	124
1021	Recoveries of prior year unpaid obligations	89	.....	.....
1070	Unobligated balance (total)	256	153	124
	Budget authority:			
	Appropriations, discretionary:			
1100	Appropriation	483	483	2,000
	Spending authority from offsetting collections, discretionary,			
1700	Collected	10,400	10,861	10,086
1701	Change in uncollected payments, Federal sources	266	-157	33
1750	Spending auth from offsetting collections, disc (total)	10,666	10,704	10,119
1900	Budget authority (total)	11,149	11,187	12,119
1930	Total budgetary resources available	11,405	11,340	12,243
	Memorandum (non-add) entries:			
1940	Unobligated balance expiring	-11	.....	.....
1941	Unexpired unobligated balance, end of year	153	124	223
	Change in obligated balance:			
	Unpaid obligations:			
3000	Unpaid obligations, brought forward, Oct. 1	1,772	1,842	1,392
3010	New Obligations, unexpired accounts	11,241	11,216	12,020
3011	Obligations ("upward adjustments"), expired accounts	40	.....	.....
3020	Outlays (gross)	-11,092	-11,666	-12,203
3040	Recoveries of prior year unpaid obligations, unexpired	-89	.....	.....
3041	Recoveries of prior year unpaid obligations, expired	-30	.....	.....
3050	Unpaid obligations, end of year	1,842	1,392	1,209
	Uncollected payments:			
3060	Uncollected pymts, Fed sources, brought forward, Oct 1	-877	-1,128	-971
3070	Change in uncollected pymts, Fed sources, unexpired	-266	157	-33
3071	Change in uncollected pymts, Fed sources, expired	15	.....	.....
3090	Uncollected pymts, Fed sources, end of year	-1,128	-971	-1,004
	Memorandum (non-add) entries:			
3100	Obligated balance, start of year	895	714	421

Identification code: 69-1301-0-1-402		FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
3200	Obligated balance, end of year	714	421	205
	Budget authority and outlays, net:			
	Discretionary:			
4000	Budget authority, gross	11,149	11,187	12,119
	Outlays, gross:			
4010	Outlays from new discretionary authority	9,426	9,867	10,687
4011	Outlays from discretionary balances	1,666	1,799	1,516
4020	Outlays, gross (total)	11,092	11,666	12,203
	Offsets against gross budget authority and outlays:			
	Offsetting collections (collected) from:			
4030	Federal sources	-10,395	-10,825	-10,050
4033	Non-Federal sources	-22	-35	-35
4034	Offsetting governmental collections	-2	-1	-1
4040	Offsets against gross budget authority and outlays (total)	-10,419	-10,861	-10,086
	Additional offsets against gross budget authority only:			
4050	Change in uncollected pymts, Federal sources, unexpired	-266	157	-33
4052	Offsetting collections credited to expired accounts	19	.....	.....
4060	Additional offsets against budget authority only (total)	-247	157	-33
4070	Budget authority, net (discretionary)	483	483	2,000
4080	Outlays, net (discretionary)	673	805	2,117
4180	Budget authority, net (total)	483	483	2,000
4190	Outlays, net (total)	673	805	2,117

The 2023 Budget requests $11.934 billion for Federal Aviation Administration (FAA) operations. These funds will be used to continue to promote aviation safety and efficiency. The Budget provides funding for the Air Traffic Organization (ATO) which is responsible for managing the air traffic control system. As a performance-based organization, the ATO is designed to provide cost-effective, efficient, and, above all, safe air traffic services. The Budget also funds the Aviation Safety Organization which ensures the safe operations of the airlines and certifies new aviation products. In addition, the request also funds regulation of the commercial space transportation industry, as well as FAA policy oversight and overall management functions. This budget also enables some of the program evaluations the FAA conducts, as part of its normal course of business, to determine the effectiveness of its programs.

Object Classification (in millions of dollars)

Identification code: 69-1301-0-1-402		FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
	Direct obligations:			
	Personnel compensation:			
11.1	Full-time permanent	4,922	5,039	5,277
11.3	Other than full-time permanent	34	35	39
11.5	Other personnel compensation	466	579	601
11.9	Total personnel compensation	5,422	5,653	5,917
12.1	Civilian personnel benefits	2,316	2,447	2,551

Identification code: 69-1301-0-1-402		FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
13.0	Benefits for former personnel	8	3	3
21.0	Travel and transportation of persons	48	80	82
22.0	Transportation of things	23	26	20
23.1	Rental payments to GSA	127	129	147
23.2	Rental payments to others	55	55	56
23.3	Communications, utilities, and miscellaneous charges	388	398	396
24.0	Printing and reproduction	3	3	3
25.1	Advisory and assistance services	790	710	893
25.2	Other services from non-Federal sources	1,734	1,382	1,594
26.0	Supplies and materials	120	118	120
31.0	Equipment	55	64	88
32.0	Land and structures	3	3	3
41.0	Grants, subsidies, and contributions	.....	1	1
42.0	Insurance claims and indemnities	2	1	1
99.0	Direct obligations	11,094	11,073	11,875
99.0	Reimbursable obligations	147	143	145
99.9	Total new obligations	11,241	11,216	12,020

Employment Summary

Identification code: 69-1301-0-1-402		FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
1001	Direct civilian full-time equivalent employment	39,259	39,331	39,891
2001	Reimbursable civilian full-time equivalent employment	212	212	196

EXHIBIT III-1
OPERATIONS
Summary by Program Activity
Appropriations, Obligation Limitations, and Exempt Obligations
($000)

	FY 2021 ENACTED	FY 2022 CR	FY 2023 PRES. BUD.
Air Traffic Organization (ATO)	$ 8,205,821	$ 8,205,821	$ 8,805,715
Aviation Safety (AVS)	$ 1,479,039	$ 1,479,039	$ 1,603,803
Commercial Space (AST)	$ 27,555	$ 27,555	$ 42,777
Finance & Management (AFN)	$ 836,001	$ 836,001	$ 918,199
NextGen (ANG)	$ 63,002	$ 63,002	$ -
Security and Hazardous Materials Safety (ASH)	$ 124,688	$ 124,688	$ 159,807
Research and Development (ARD)	$ -	$ -	$ 58,135
Integration and Engagement (AIE)	$ -	$ -	$ 41,465
Staff Offices	$ 265,394	$ 265,394	$ 303,920
TOTAL, Base appropriations	$ 11,001,500	$ 11,001,500	$11,933,821
FTEs			
Direct Funded	39,259	39,331	39,891
Reimbursable, allocated, other	212	212	196
Supplemental Funding			
COVID-19 Supplementals			
CRRSA			
Relief for Airports (ARPA)			
Employee Leave Fund (ARPA)			
IIJA Supplemental (Division J)			
Faclities & Equipment			
Airport Infrastructure Grants			
Airport Terminal Program			
TOTAL, Base appropriations	$ -	$ -	$ -
FTEs			
Direct Funded			
Reimbursable, allocated, other			
Account	$ 11,001,500	$ 11,001,500	$11,933,821

The FAA proposes to evolve the Office of NextGen to the Office of Research and Development, establish the Office of Integration & Engagement, and establish the Chief Technology Officer in the Air Traffic Organization.

Program and Performance Statement

This account provides funds for the operation, maintenance, communications and logistical support of the air traffic control and air navigation systems. It also covers administrative and managerial costs for the FAA's regulatory, international, medical, engineering and development programs as well as policy oversight and overall management functions. The operations account includes the following major activities:

(1) operation on a 24-hour daily basis of a national air traffic system;
(2) establishment and maintenance of a national system of aids to navigation;
(3) establishment and surveillance of civil air regulations to assure safety in aviation;
(4) development of standards, rules and regulations governing the physical fitness of airmen as well as the administration of an aviation medical research program;
(5) regulation of the commercial space transportation industry;
(6) administration of acquisition programs; and
(7) headquarters, administration and other staff offices.

EXHIBIT III-1a

OPERATIONS
SUMMARY ANALYSIS OF CHANGE FROM FY 2022 TO FY 2023
Appropriations, Obligations, Limitations, and Exempt Obligations
($000)

	$000	FTE
FY 2022 CR	$11,001,500	39,331
Restoration of FY 2022 Request	432,600	124
ADJUSTMENTS TO BASE:		
Annualization of FY 2022 Pay Raise 2.7%	52,224	
Annualization of FY 2022 FTE	20,879	121
Conversion of FY 2022 MSI Interns		107
FY 2023 Pay Raise 4.6%	279,137	
One Less Compesensable Day (260 days)	-29,423	
Transition from F&E to Ops	23,930	
Non-Pay Inflation 1.5%	52,226	
Working Capital Fund	4,587	
SUBTOTAL, ADJUSTMENTS TO BASE	**403,560**	**228**
PROGRAM INCREASES		
Address Aircraft Certification Reform Legislation	17,496	57
Advance Equity for Underserved Communities Through Airport Civil Rights Compliance	1,341	9
Data Analysis/Enterprise Information Management	13,336	0
Cybersecurity	24,926	13
Streamline Commercial Space Launch and Reentry Licensing	6,170	18
Aviation and Aerospace Talent Development	6,321	6
Address Climate Change	2,441	3
Unmanned Aircraft Systems (UAS) Integration	4,934	28
Strengthen Aviation Safety Oversight	11,397	56
Improve Hazardous Materials Transportation Safety Oversight	3,812	9
Develop Human Spaceflight Program	2,179	5
Community Engagement	1,308	2
Supply Chain Risk Management	500	2
SUBTOTAL, PROGRAM INCREASES	**96,161**	**208**
REALIGNMENT PROPOSAL		
Base Transfer	0	0
Aviation and Aerospace Talent Development	0	0
Unmanned Aircraft Systems (UAS) Integration	0	0
SUBTOTAL, REALIGNMENT PROPOSAL	**0**	**0**
TOTAL	**11,933,821**	**39,891**

Operations Summary
($000)

	Dollars (in Thousands)	FTP	OTFTP	FTE
FY 2022 Annualized CR	**$11,001,500**	**39,117**	**445**	**39,331**
Restoration of FY 2022 Request	432,600	245	-	124
Adjustments to Base	**$403,560**	**-**	**108**	**228**
Annualization of FY 2022 Pay Raise 2.7%	52,224	-	-	-
Annualization of FY 2022 FTE	20,879	-	-	121
Conversion of FY 2022 MSI Interns	-	-	108	107
FY 2023 Pay Raise 4.6%	279,137	-	-	-
One Less Compensable Day (260 days)	(29,423)	-	-	-
Transition from F&E to Ops	23,930	-	-	-
Non-Pay Inflation 1.5%	52,226	-	-	-
Working Capital Fund	4,587	-	-	-
Discretionary Adjustments	**$96,161**	**406**	**5**	**208**
Address Aircraft Certification Reform Legislation	17,496	113	-	57
Advance Equity for Underserved Communities Through Airport Civil Rights Compliance	1,341	18	-	9
Data Analysis/Enterprise Information Management	13,336	-	-	-
Cybersecurity	24,926	26	-	13
Streamline Commercial Space Launch and Reentry Licensing	6,170	35	-	18
Aviation and Aerospace Talent Development	6,321	6	5	6
Address Climate Change	2,441	5	-	3
Unmanned Aircraft Systems (UAS) Integration	4,934	56	-	28
Stregthen Aviation Safety Oversight	11,397	111	-	56
Improve Hazardous Materials Transportation Safety Oversight	3,812	18	-	9
Develop Human Spaceflight Program	2,179	10	-	5
Community Engagement	1,308	4	-	2
Supply Chain Risk Management	500	4	-	2
Realignment Proposal	**-**	**-**	**-**	**-**
Base Transfer	-	-	-	-
Aviation and Aerospace Talent Development	-	-	-	-
Unmanned Aircraft Systems (UAS) Integration	-	-	-	-
FY 2023 Request	**$11,933,821**	**39,768**	**558**	**39,891**

Staffing Summary -- FY 2021 - FY 2023						
			Type	FY 2021 Actual	FY 2022 Annualized CR	FY 2023 Request
Air Traffic Organization		ATO	FTP	28,374	28,412	28,463
			OTFTP	324	324	324
			FTE	28,661	28,680	28,729
Associate Administrator for Aviation Safety		AVS	FTP	7,332	7,406	7,719
			OTFTP	63	63	56
			FTE	7,314	7,351	7,541
Associate Administrator for Commercial Space Transportation		AST	FTP	113	113	167
			OTFTP	4	4	4
			FTE	104	108	140
Assistant Administrator for Finance and Management		AFN	FTP	1,374	1,374	1,378
			OTFTP	16	16	16
			FTE	1,364	1,364	1,368
Assistant Administrator for Next Generation Air Transportation System		ANG	FTP	179	179	-
			OTFTP	3	3	-
			FTE	174	174	-
Associate Administrator for Security and Hazardous Materials Safety		ASH	FTP	517	517	598
			OTFTP	-	-	-
			FTE	503	509	562
Office of Research and Development		ARD	FTP	-	-	147
			OTFTP	-	-	3
			FTE	-	-	142
Office of Integration and Engagement		AIE	FTP	-	-	106
			OTFTP	-	-	7
			FTE	-	-	106
Staff Offices	Assistant Administrator for Human Resource Management	AHR	FTP	482	482	482
			OTFTP	6	6	114
			FTE	484	484	591
	Office of the Administrator and Deputy	AOA	FTP	10	10	10
			OTFTP	3	3	3
			FTE	13	13	13
	Assistant Administrator for Audit and Evaluation	AAE	FTP	20	20	24
			OTFTP	1	1	1
			FTE	21	21	25
	Assistant Administrator for Civil Rights	ACR	FTP	65	65	83
			OTFTP	3	3	3
			FTE	61	61	70
	Assistnat Administrator for Government and Industry Affairs	AGI	FTP	8	8	8
			OTFTP	-	-	-
			FTE	8	8	8
	Assistant Administrator for Communications	AOC	FTP	31	31	33
			OTFTP	9	9	9
			FTE	37	37	39
	Office of Chief Counsel	AGC	FTP	220	220	230
			OTFTP	7	7	7
			FTE	228	228	233
	Assistant Administrator for Policy, International Affairs and Environment	APL	FTP	280	280	320
			OTFTP	6	6	11
			FTE	287	293	324
Total			FTP	39,005	39,117	39,768
			OTFTP	445	445	558
			FTE	39,259	39,331	39,891

Resource Summary -- FY 2021 - FY 2023 ($000)

			FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Air Traffic Organization (ATO)		pcb	$ 5,853,149	$ 6,182,905	$ 6,422,629
		o/o	$ 2,352,672	$ 2,022,916	$ 2,383,086
ATO Total			**$ 8,205,821**	**$ 8,205,821**	**$ 8,805,715**
Associate Administrator for Aviation Safety (AVS)		pcb	$ 1,234,645	$ 1,294,115	$ 1,368,034
		o/o	$ 244,394	$ 184,924	$ 235,769
AVS Total			**$ 1,479,039**	**$ 1,479,039**	**$ 1,603,803**
Associate Administrator for Commercial Space Transportation (AST)		pcb	$ 18,932	$ 20,873	$ 25,993
		o/o	$ 8,623	$ 6,682	$ 16,784
AST Total			**$ 27,555**	**$ 27,555**	**$ 42,777**
Assistant Administrator for Finance and Management (AFN)		pcb	$ 255,043	$ 261,327	$ 271,590
		o/o	$ 580,958	$ 574,674	$ 646,609
AFN Total			**$ 836,001**	**$ 836,001**	**$ 918,199**
Assistant Administrator for NextGen Air Transportation System (ANG)		pcb	$ 31,550	$ 31,727	$ -
		o/o	$ 31,452	$ 31,275	$ -
ANG Total			**$ 63,002**	**$ 63,002**	**$ -**
Associate Administrator for Security and Hazardous Materials Safety (ASH)		pcb	$ 89,467	$ 92,384	$ 104,561
		o/o	$ 35,221	$ 32,304	$ 55,246
ASH Total			**$ 124,688**	**$ 124,688**	**$ 159,807**
Office of Research and Development (ARD)		pcb	$ -	$ -	$ 25,828
		o/o	$ -	$ -	$ 32,307
ARD Total			**$ -**	**$ -**	**$ 58,135**
Office of Integration and Enagagement (AIE)		pcb	$ -	$ -	$ 22,268
		o/o	$ -	$ -	$ 19,197
AIE Total			**$ -**	**$ -**	**$ 41,465**
Staff Offices	Assistant Administrator for Human Resource Management (AHR)	pcb	$ 80,444	$ 80,649	$ 86,158
		o/o	$ 30,545	$ 30,340	$ 33,548
	AHR Total		**$ 110,989**	**$ 110,989**	**$ 119,706**
	Office of the Administrator and Deputy (AOA)	pcb	$ 3,492	$ 2,943	$ 3,052
		o/o	$ 311	$ 830	$ 931
	AOA Total		**$ 3,803**	**$ 3,773**	**$ 3,983**
	Assistant Administrator for Audit and Evaluation (AAE)	pcb	$ 3,853	$ 4,170	$ 4,888
		o/o	$ 735	$ 418	$ 569
	AAE Total		**$ 4,588**	**$ 4,588**	**$ 5,457**
	Assistant Administrator for Civil Rights (ACR)	pcb	$ 10,600	$ 10,415	$ 12,025
		o/o	$ 2,161	$ 2,346	$ 3,118
	ACR Total		**$ 12,761**	**$ 12,761**	**$ 15,143**
	Assistant Administrator for Government and Industry Affairs (AGI)	pcb	$ 1,703	$ 1,620	$ 1,681
		o/o	$ 162	$ 245	$ 299
	AGI Total		**$ 1,865**	**$ 1,865**	**$ 1,980**
	Assistant Administrator for Communications (AOC)	pcb	$ 6,378	$ 7,333	$ 7,915
		o/o	$ 1,273	$ 318	$ 541
	AOC Total		**$ 7,651**	**$ 7,651**	**$ 8,456**
	Office of the Chief Counsel (AGC)	pcb	$ 46,283	$ 45,938	$ 48,342
		o/o	$ 2,970	$ 3,345	$ 5,009
	AGC Total		**$ 49,253**	**$ 49,283**	**$ 53,351**
	Assistant Administrator for Policy, International Affairs and Environment (APL)	pcb	$ 56,436	$ 61,935	$ 69,770
		o/o	$ 18,048	$ 12,549	$ 26,074
	APL Total		**$ 74,484**	**$ 74,484**	**$ 95,844**
Grand Total			**$ 11,001,500**	**$ 11,001,500**	**$ 11,933,821**

FY 2023 Discretionary Adjustments
(In thousands)

LOB/SO	ATO	AVS	AST	ASH	AIE	STAFF OFFICES	TOTAL
Discretionary Adjustments							
Address Aircraft Certification Reform Legislation (113 FTP/57 FTE)		$ 13,907		$ 1,595		**$ 1,994**	**$ 17,496**
Advance Equity for Underserved Communities Through Airport Civil Rights Compliance (18 FTP/9 FTE)						**$ 1,341**	**$ 1,341**
Data Analysis/Enterprise Information Management		$ 10,000		$ 3,336		**$ -**	**$ 13,336**
Cybersecurity (26 FTP/13 FTE)	$ 20,000			$ 4,926		**$ -**	**$ 24,926**
Streamline Commercial Space Launch and Reentry Licensing (35 FTP/18 FTE)			$ 6,170			**$ -**	**$ 6,170**
Aviation and Aerospace Talent Development (6 FTP/5 OTFTP/6 FTE)		$ 250	$ 480			**$ 5,591**	**$ 6,321**
Address Climate Change (5 FTP/3 FTE)						**$ 2,441**	**$ 2,441**
Unmanned Aircraft Systems (UAS) Integration (56 FTP/28 FTE)		$ 4,224				**$ 710**	**$ 4,934**
Strengthen Aviation Safety Oversight (111 FTP/56 FTE)		$ 11,243				**$ 154**	**$ 11,397**
Improve Hazardous Materials Transportation Safety Oversight (18 FTP/9 FTE)				$ 3,812		**$ -**	**$ 3,812**
Develop Human Spaceflight Program (10 FTP/5 FTE)			$ 2,179			**$ -**	**$ 2,179**
Community Engagement (4 FTP/2 FTE)						**$ 1,308**	**$ 1,308**
Supply Chain Risk Management (4 FTP/2 FTE)	$ 500					**$ -**	**$ 500**
Subtotal, Discretionary Adjustments	**$ 20,500**	**$ 39,624**	**$ 8,829**	**$ 13,669**	**$ -**	**$ 13,539**	**$ 96,161**
Discretionary Adjustments from Realignment Proposal							
Aviation and Aerospace Talent Development		$ (250)			$ 250	**$ -**	**$ -**
Unmanned Aircraft Systems (UAS) Integration (10 FTP/5 FTE)		$ (952)			$ 952	**$ -**	**$ -**
Subtotal, Discretionary Adjustments After Realignment Proposal	**$ 20,500**	**$ 38,422**	**$ 8,829**	**$ 13,669**	**$ 1,202**	**$ 13,539**	**$ 96,161**

Address Aircraft Certification Reform Legislation

Aviation Safety (AVS), Office of Security and Hazardous Materials Safety (ASH), Office of Policy, International Affairs, and Environment (APL), Office of the Chief Counsel (AGC), and Office of Communications (AOC)

(In thousands)

Address Aircraft Certification Reform Legislation	**$17,496**
PC&B	$8,533
Non-Pay	$8,963
FTE	**57**

1. Describe the problem or circumstance that prompted the need for this additional funding.

The FAA is taking a thorough approach to address the Aircraft Certification Safety and Accountability Act (Aircraft Certification Reform Act) and the investigations that preceded the legislation (including those conducted by the Indonesian National Transportation Safety Committee, the Ethiopian Civil Aviation Authority, the National Transportation Safety Board, the Special Committee, and Joint Authorities Technical Review). Collectively, these require the FAA, particularly AVS, ASH, APL, AGC, and AOC to design, implement, and deliver on these requirements.

The Aircraft Certification Reform Act directs AVS to reform the aircraft certification process, and includes a number of changes to existing law. These improvements include reforming oversight of the Organization Designation Authorization (ODA) program, improving domestic and international pilot training, and better integration of human factors and system safety assessments. The Act has over 100 requirements in support of refining and enhancing the aircraft safety lifecycle.

The Aircraft Certification Reform Act also directs ASH to establish the Office of Professional Responsibility (OPR). In FY 2022, ASH requested funding to establish the basic framework of the OPR, but additional resources are needed to expand the program in order to provide a comprehensive level of support and oversight to the agency.

Several staff offices directly support the agency's efforts to address the Aircraft Certification Reform Act. APL conducts regulatory impact analyses and other economic analyses of FAA regulatory and policy initiatives, as well as manages FAA international activities. AGC provides legal support by reviewing, providing drafting support, and determining the legal sufficiency of agency rules and guidance. AOC provides support for outreach and education on aviation safety.

2. Describe the strategy and the proposed solution you are using to address the situation.

The FAA will increase staffing across various offices and invest in various data systems to meet the requirements from the Aircraft Certification Reform Act.

AVS will increase the hiring of systems engineers, safety inspectors, flight test pilots, trainers, and human factors engineers. The additional staff are needed to conduct comprehensive reviews of each manufacturing ODA holder's ability to meet regulations, to process amended type certificates for modifying an aircraft, and to provide flight test and pilot training. Additional staff will better integrate human factors and system safety assessments of aircraft flight deck and flight control systems into the FAA's certification process and regulatory oversight.

AVS also plans to develop an Aircraft Certification oversight and data analytics platform. The current system relies on decentralized dashboards, disparate data streams, and does not provide any analytical evaluation capability. This investment will allow AVS to provide real time data analytics.

The Aviation Safety Information Analysis and Sharing Public (ASIAS-P) program within AVS will expand its data sources to address gaps identified in prior safety analyses. The program will also expand its data standardization and integration processes to develop integrated data marts, which will enable users to monitor safety topics via dashboards/metrics deployed on the ASIAS-P portal. The program will also expand its software licenses to take advantage of advanced analytical tools that will enable ASIAS-P to deploy new analytical methodologies to aid in the monitoring and identification of risks to meet the needs of the safety community.

Systems Safety Management Transformation will utilize additional staffing to provide sustained analytical support for both current and new FAA stakeholders to conduct integrated safety risk analyses, leverage existing safety risk models and subject matter expert elicitations, and identify, replay, and evaluate candidate safety events across the NAS. This will improve its degree of responsiveness to safety risk inquiries. AVS also requests an increase in resources to provide programmatic and organizational support for the evolution of FAA's SMS and safety risk assessments.

To address international requirements from the Aircraft Certification Reform Act, as well as to increase the FAA's global influence, FAA will increase engagement internationally. FAA must proactively address international safety gaps by actively engaging the International Civil Aviation Organization and key bilateral partners to establish an integrated approach to the effective promotion of AVS regulatory standards. This includes developing comprehensive regulatory harmonization and promotion policies, standardization of bilateral frameworks for shared regulatory oversight, promotion of international pilot training requirements, and coalition building with key stakeholders. International training is another tool for the FAA to influence foreign aviation policy and positions. APL will manage the new training program as well as integrate global data and trends into the agency's decision-making.

Rulemaking will be needed to accomplish several of the requirements in the implementation of the Aircraft Certification Reform Act. From increased engagement with Federal advisory

committees and aviation rulemaking committees to regulatory and economic analysis, AVS, APL, and AGC will require additional resources to support these efforts.

FAA staff offices will support additional FAA efforts to address Aircraft Certification Reform Act. AGC will support legal efforts related to type certification of aircraft, noise certification, supplemental type certification, production certification, parts and manufacturing approvals, and airworthiness certification. AOC will support expanded aviation safety outreach and education.

Finally, ASH will fully develop the Office of Professional Responsibility initiated in the FY 2022 Budget request. Increased staff and contract support will handle the agency-wide intake of information, perform data analytics for trends and gaps, and review agency recommended actions. ASH will upgrade existing IT systems to accomplish the OPR's mission.

3. How much are you requesting? Provide a detailed justification for the increase.

The FY 2023 Budget request includes $17.5 million and 113 FTP/57 FTE to support the following areas:

- **AVS: $13.9 million and 86 FTP/43 FTE.**
    - $6.4 million 86 FTP/43 FTE to address the staffing requirements from the Aircraft Certification Reform Act. These positions include systems engineers, safety inspectors, flight test pilots, trainers, and human factors engineers.

Service/Office	Total
AIR - Aircraft Certification	75
ARM - Office of Rulemaking	2
AVP - Office of Accident Prevention & Investigation	1
AQS – Office of Quality, Integration, and Executive Services	8
AVS Total	86

    - $6.0 million for an Aircraft Certification oversight support tool/data analytics platform that enhances the Continued Operation Safety modernization objectives.

- $750,000 for ASIAS-P, including support for specialized contractor services to implement the integration of advanced analytical methodologies, tools and data standardization routines, and supporting costs to expand software licenses to deploy data visualizations in the ASIAS-P Portal.

- $305,000 for Systems Safety Management Transformation for additional contractor support for the use of the Airport Surface Anomaly Investigation Capability. This tool allows the FAA to detect when runway conflicts occurred.

- $425,000 for SMS to provide programmatic and organizational support for the evolution of FAA's SMS and safety risk assessments.

- **APL: $1.3 million and 8 FTP/4 FTE.**

  - $343,000 and 4 FTP/2 FTE to meet new FAA global leadership priorities and related international engagement activities that support aircraft certification work. These additional resources will be responsible for data management, global leadership governance, and cross-cutting international policy, processes, and procedures.

  - $308,000 and 4 FTP/2 FTE to develop regulatory and economic analyses in support of rulemaking directly related to the Aircraft Certification Reform Act.

  - $650,000 for statistical software licenses, training, market studies, data, and software support for rulemaking projects including activities to integrate safety data for use in risk analyses and benefit-cost analyses, and to develop forecasting analyses.

- **ASH: $1.6 million and 12 FTP/6 FTE.**

  - $919,000 and 12 FTP/6 FTE to expand ASH's ability to address OPR responsibilities, to include resources to reinvestigate management inquires that were not properly addressed by managers, and provide a comprehensive review of FAA safety investigations that involve misconduct of managers.

  - $176,000 for funding for travel, training, supplies, and equipment.

  - $500,000 for technical infrastructure improvements to support the OPR program capabilities, which includes improved process management, new investigative intake processes, and increased tracking to ensure program efficiency and reporting to Congress.

- **AGC: $539,000 and 6 FTP/3 FTE.**
    - $318,000 and 4 FTP/2 FTE for additional attorneys to support an increase in workload in reviewing, drafting support, and determining the legal sufficiency of agency rules and guidance in support of ASH, AVS and APL and the Aircraft Certification Reform Act.
    - $129,000 and 2 FTP/1 FTE to support the operational work of the Office of Professional Responsibility.
    - $92,000 for training, communications, travel, subscriptions, supplies, and equipment.
- **AOC: $154,000 and 1 FTP/1 FTE.**
    - $154,000 and 1 FTP/1 FTE to support events that focus on outreach and education for Aviation Certification Reform.

Advance Equity for Underserved Communities Through Airport Civil Rights Compliance
Office of Civil Rights (ACR)
(In thousands)

	FY 2023
Advance Equity for Underserved Communities Through Airport Civil Rights Compliance	**$1,341**
PC&B	$1,246
Non-Pay	$95
FTE	**9**

1. Describe the problem or circumstance that prompted the need for this additional funding.

The FAA's Office of Civil Rights (ACR) provides oversight of airports with regard to civil rights laws and regulations. ACR works to ensure that all beneficiaries of federally assisted transportation programs are offered equal opportunity for participation and are free from discrimination, especially those that are at substantial risk of encountering significant barriers to airport access and business opportunities. These groups include small disadvantaged businesses; persons with disabilities; and people of various ages, sexes, gender identity, sexual orientation, racial, national origin, religious, ethnic, and other backgrounds.

Three recent congressionally mandated audits by the Department of Transportation's (DOT) Office of Inspector General (OIG) evaluated FAA's Disadvantaged Business Enterprise (DBE) and Airport Concession DBE (ACDBE) programs. The audits found that ACR needs to:

- increase resources including staffing;
- increase airport sponsor training, compliance oversight including certification processes;
- monitor, analyze, and report on trends and opportunities; and,
- accurately determine compliance.

In support of Executive Order 13985, DOT has expanded airport sponsor obligations to ensure equity in grant-funded programs. This expansion will require ACR to make an informed determination for each and every grant that an airport sponsor is in compliance with nondiscrimination and equity programs in order to be eligible for the grant. The Executive Order requirements, coupled with and the other expanded oversight responsibilities, exceed ACR's current resources.

ACR is leading the FAA in implementing the FAA's first ever Diversity and Inclusion Strategic Plan. As part of that plan, the plans to assess its efforts to achieve diversity, equity, inclusion, and accessibility (DEIA). FAA has committed to attract and retain a diverse and qualified talent pipeline through data-driven approaches, targeted outreach, recruitment, selection, career development, and advancement. To support this critical agency goal, ACR plans to improve its recruitment and outreach efforts with educational institutions.

2. Describe the strategy and the proposed solution you are using to address the situation.

The FAA will increase staffing resources to bolster FAA's enforcement of Federal equity rules and regulations. The Office of Civil Rights works to ensure that all beneficiaries of federally assisted transportation programs are offered equal opportunity for participation and are free from discrimination. Additional staff will support the oversight and review of airport compliance with the Americans with Disabilities Act (ADA), Rehabilitation Act, Disadvantaged Business Enterprise Program, Title VI of the Civil Rights Act, Limited English Proficiency, Environmental Justice, and other civil rights regulations. FAA will also dedicate resources to deliver additional training to airport sponsors and airport tenants about grant assurance compliance obligations. These two actions directly address OIG recommendations while also furthering Administration priorities. Finally, FAA will dedicate resources to support the agency's efforts to achieve a diverse workforce.

3. How much are you requesting? Provide a detailed justification for the increase.

The Office of Civil Rights is requesting approximately $1.3 million and 18 FTPs/9 FTEs

- $985,000 for 15 FTPs/7 FTEs to support DBE, ACDBE, the American Disabilities Act, and Title VI of the Civil Rights Act of 1964 programs through document reviews, approvals, compliance reviews, complaint investigations, and Congressional inquiries.
- $261,000 for 3 FTP/2 FTE to implement the FAA's Diversity and Inclusion Strategic Plan and accomplish its DEIA goals, thus ensuring a more inclusive workforce.
- $95,000 for contractor support for training development and travel to provide detailed in-person training to airport sponsors and airport tenants about grant assurance compliance obligations. Additional funding will allow regional specialists to provide additional technical assistance and training on complex and specific compliance concerns.

Data Analysis/Enterprise Information Management
Aviation Safety (AVS) and the Office of Security and Hazardous Materials Safety (ASH)
(In thousands)

	FY 2023
Data Analysis/Enterprise Information Management	**$13,336**
PC&B	$0
Non-Pay	$13,336
FTE	**0**

1. Describe the problem or circumstance that prompted the need for this additional funding.

The FAA stores and uses data in a variety of different ways. Many systems are outdated, resulting in limited access and limited visibility into risk and hazard identification. The FAA envisions a future where agency data is stored and managed in an integrated manner, allowing us all to make better use of it. FAA's Office of Information Technology (AIT) established an Enterprise Information Management (EIM) Platform and Data Governance Center in order to facilitate data management and sharing. The next step is for FAA offices to leverage these tools to improve the agency's data analytics.

Within the Office of Aviation Safety (AVS), data is currently spread across multiple systems, which may not talk to each other. This impacts AVS' ability to identify systemic trends and safety precursors. Data is not architected for advanced analytics, and therefore AVS cannot leverage capabilities such as machine learning. Systems for collecting and cleansing data must also be improved to ensure AVS is positioned to take full advantage of system modernization.

The Office of Security and Hazardous Materials Safety (ASH) maintains data in a number of legacy business applications that are used to support personnel security, infrastructure protection, internal investigations, regulatory investigations, and business and mission services. ASH is experiencing a growing volume of data, as well as increased cybersecurity requirements. The office needs to support advanced analytic capabilities in near real time, handle changing security workflows, and cloud-enable legacy data and applications.

2. Describe the strategy and the proposed solution you are using to address the situation.

Further investment in EIM will allow the FAA to take advantage of new technologies and data management techniques, such as machine learning, to sort, analyze, organize, and share its data. EIM is not a single technology or system, but a collection of best practices and technologies that enable interagency data sharing and analysis. It provides the necessary framework for a data-driven agency to share data across lines-of-business for more efficient and in-depth analysis. AVS is leveraging EIM to modernize safety data. This is a multi-year effort that will provide appropriate access to quality data at an enterprise level for the AVS workforce. In parallel to developing governance, AVS must begin addressing the legacy systems themselves. This work will ensure that data is reliable, accurate and timely, understood, and sourced authoritatively.

Additionally, the data will be architected in a manner to capitalize on data integration opportunities and to leverage advanced analytics.

AVS is currently focusing on four modernization efforts within Flight Standards:

- Data centralization
- Modernize and centralize databases for Part 91 and Part 135 Air Tour operations to support General Aviation Safety Assurance
- Data warehousing and analysis for hiring data, workforce skills, competencies, and training
- System Tool Information Management licenses to support Flight Standards information technology priorities

AVS's efforts will enable:

- Systemic trend analysis and risk identification
- Improved understanding of impacts
- Identification of emerging safety trends
- Improved analysis to inform safety decisions
- Improved agility in responding to changing demands
- Improved data collection and quality

ASH has prepared a roadmap to migrate legacy applications to the FAA cloud. ASH will need resources to execute and implement a data governance framework focused on ASH business mission and programs, support use of the FAA's data governance tool, and to coordinate with ASH data communities and stewards to on-ramp ASH data assets within the FAA Data Governance Center. This ensures ASH will avoid any pitfalls of increasing access to data to stakeholders from legacy web applications or new customized Commercial Off-the-Shelf applications built with low-code solutions, which are hosted, either on premise or in FAA cloud.

ASH also requests additional resources to migrate legacy data and applications for Personnel Security, Infrastructure Protection, and Business and Mission Services to FAA cloud, using low-code solutions, and FAA data solutions. Further refinement of the Busser Investigative Management System, a tool that tracks investigations from start to finish for internal investigations, insider threat investigations, and technical cyber investigations, as well as the Regulatory Investigations Tracking System, a tool that tracks investigations for DUI/DWI, law enforcement assistance program, law enforcement support, ramp inspection, and laser/UAS investigations, are required to enhance integration and data sharing with the Investigations Tracking System.

These efforts will enable ASH to:

- Integrate business processes, workflows, and data in a common platform, increasing efficiency and effectiveness of available data
- Support response prioritization and targeted resource allocation
- Make faster, better informed decisions to respond to incidents and mitigate threats and vulnerabilities

3. How much are you requesting? Provide a detailed justification for the increase.

AVS is requesting $10 million in contracts to fund the following data modernization efforts:

- $3.0 million to establish centralization of data currently spread across multiple systems. This will allow for systemic trend analysis and risk identification.
- $2.0 million to modernize and centralize databases for Part 91 and Part 135 Air Tour. Funding will centralize investigation data and information. This will improve the ability to identify trends and to understand the impact of air tour and illegal charter operations in certain areas.
- $1.0 million for data warehousing and analysis for hiring data, workforce skills, competencies, and training.
- $4.0 million to transform the Flight Standards Services systems, process and methodologies for data collection. Improved data quality enables improved analysis of emerging safety trends and informs safety decisions.

ASH is requesting $3.3 million for program management, data sharing strategy development and EIM registration, data architecture support services, low-code software licenses for ASH users, system enhancements, and ASH legacy application cloud migration.

Cybersecurity

Air Traffic Organization (ATO), Security and Hazardous Materials Safety (ASH)
(In thousands)

	FY 2023
Cybersecurity	**$24,926**
PC&B	$1,930
Non-Pay	$22,996
FTE	**13**

1. Describe the problem or circumstance that prompted the need for this additional funding.

Advanced threat analysis and mitigation is required to combat growing cyber security concerns. These concerns stem from a vulnerability of information for aerospace research and development, insider threats at critical facilities, and targeting of FAA international travelers on official business. Cyber-attacks, such as the SolarWinds breach, highlight the need for the FAA to increase its cybersecurity funding level.

In addition, these cyber threats targeting the FAA and aviation stakeholders are increasing in frequency, scope, and sophistication, posing intensifying risk to the safety and security of civil aviation operations. Meeting the challenges of this evolving FAA cyber environment (e.g., Cloud, UAS) requires continued organizational response and investments to support that response.

2. Describe the strategy and the proposed solution you are using to address the situation.

The FAA will expand the cybersecurity workforce, invest in training, and acquire the equipment and software needed to meet the challenges of the evolving cyber environment. Both the Air Traffic Organization (ATO) and the Office of Security and Hazardous Materials Safety (ASH) play significant roles in securing the national airspace infrastructure and cyber defense. The ATO is responsible for securing the national airspace infrastructure that is used to perform the nation's critical air traffic control and national defense services.

ATO's strategy is to invest in a combination of infrastructure, tools, and personnel to improve cybersecurity protection and monitoring capabilities. Major solution investments will be made as follows:

- Highly skilled cybersecurity contract workforce to perform real-time national airspace cyber operations monitoring and response, ensure Federal Information Security Modernization mandates are satisfied, and develop the governance and design required to defend the data, systems, and networks on which air traffic operations depend.

- Equipment and software that supports the development of tools and capabilities to provide enterprise protections for segregation and control of data flows between national

airspace operating and support environments and FAA business networks, perform required annual risk assessment testing, conduct 24x7x365 national airspace cyber monitoring, detection and analysis, provide automated system authorization workflow, perform risk management, and support secure removable media functions.

- Centralized remediation that is focused on risk-based, strategic, and transparent risk reduction. Although the ATO has closed over 6,200 Plan of Action and Milestones (POAM) items since the beginning of FY 2019, over 30 new systems have been added to the Information Systems Security (ISS) inventory during that time. Existing systems have operational needs that compete for limited funding with the need to implement hundreds of National Institute of Standards and Technology (NIST) security controls; hence the number of POAM items that require remediation to improve the national airspace security posture is significant. A Federal Security Re-Categorization effort—conducted for all national airspace systems—resulted in 45 national airspace systems moving from a categorization of moderate to a categorization of high. The change in security categorization for these systems requires the systems to comply with an additional set of security controls defined in NIST Special Publication 800-53. The implementation of these high controls is now being tracked by the Office of the Inspector General based on an audit conducted in 2020.

ASH plays a significant role in the FAA's cyber defense of FAA and national airspace networked systems. This includes providing vital cyber intelligence, insider threat monitoring, international travel support, defensive counterintelligence support and investigation support. The ASH cybersecurity strategy is to develop intelligence capabilities, which enable predictive analysis and identification of vulnerabilities, adversarial capabilities, and cyber threats to aviation in order to safeguard the national airspace and flight operations worldwide. ASH's strategy relies on strengthening these intelligence capabilities through specialized human resources. Advanced threat analysis and mitigation is critical to identifying risks and vulnerability within our domestic and international service areas where over 50,000 FAA personnel and critical systems exist. Major activities under this initiative are as follows:

- Increase staffing to identify vulnerabilities and develop a risk and threat matrix for the aviation community capacity to deliver cyber intelligence and risk analysis, and the FAA's capability to engage throughout the domestic and international aviation intelligence sectors.

- Augment staffing for regulatory and policy initiatives to develop policies governing cyber-safety, best practices, and responses.

- Establish a critical workforce in counterintelligence, insider threat, and international travel coverage for domestic and international areas encompassing all FAA operations, personnel, facilities, and networks, including real time insider threat monitoring, data collection that supports investigations and litigation as well as cyber security incident response.

3. How much are you requesting? Provide a detailed justification for the increase. The FY 2023 Budget request includes $24.9 million and 26 FTP/13 FTE to support the following areas:

- **ATO: $20.0 million.**
  - $9.8 million for remediation of ATO system vulnerabilities to address the new systems added to the ISS inventory and the reclassification of national airspace systems as higher risk.

  - $5.8 million for service contracts to support ATO cybersecurity critical functions including security risk assessment and testing, system authorization management, acquisition security support, policy development and maintenance, technology integration, privacy management, and security architecture review

  - $4.4 million for equipment and software licensing for tools and assets

- **ASH: $4.9 million and 26 FTP/13 FTE.**
  - $1.9 million and 26 FTP/13 FTE for Security Information and Event Management staff, cyber analysts, special agents, intelligence operations specialists, security specialists, and program support staff.

  - $3.0 million for contract support, software, licenses, and equipment.

Streamline Commercial Space Launch and Reentry Licensing and Staffing Requirements
Office of Commercial Space Transportation (AST)
(In thousands)

	FY 2023
Streamline Commercial Space Launch and Reentry Licensing	**$6,170**
PC&B	$2,465
Non-Pay	$3,705
FTE	**18**

1. Describe the problem or circumstance that prompted the need for this additional funding.

The Office of Commercial Space Transportation (AST) has a need for additional operational skillsets due to the continued rapid growth within the commercial space transportation industry. AST supported 32 launches in FY 2019 and 33 launches in FY 2020. In FY 2021, AST supported 64 operations (59 launches and 5 reentries). As of February 23, 2022, AST has already supported 22 operations (20 launches and 2 reentries) and expects a total of 67 operations for the fiscal year. Launch forecast projections are indicating a launch cadence of 167 possible launches during the FY 2023 year and continuous growth in operations with this new industry.

The growing volume of license applications for authorization and operations, as well as multiple licensing activities, will tax FAA's existing resources. These complex licensing activities will increase as commercial space programs grow to encompass fleets of vehicles with multiple configurations and operations at multiple spaceports. AST will need additional resources to meet the demands of launch providers in order to avoid stifling the industry's growth.

In addition, FAA has begun implementing a new regulatory regime which features a shift from a prescriptive to a performance-based approach. In December 2020, the FAA published the Streamlining Launch and Reentry Licensing Requirements final rule in the Federal Register. This rule creates a new Part 450 which consolidates different regulatory regimes, formerly across multiple parts, for both expendable and reusable launch and/or reentry vehicles into a single streamlined regulation for all vehicle and operation types. The new regulatory regime places a far greater burden on the regulator to evaluate innovative or non-traditional solutions to safety requirements. However, AST will be operating under two different regulatory approaches for up to five years until all operators are licensed under Part 450 requiring additional resources.

2. Describe the strategy and the proposed solution you are using to address the situation.

AST needs additional staff to manage the growing workload of licensing, permits, and safety approvals. AST also has a critical need for technical experience in areas such as space vehicles support, systems safety, flight safety systems, and orbital debris analysis. This additional staff will also provide support for tools development and industry standardization efforts for orbital and reentry safety. The FAA would actively recruit and hire engineers, safety analysts (flight

safety and system safety) and subject matter experts (flight safety, system safety, and other disciplines) to support this safety workload.

As AST evaluates applications through Part 450, AST will need additional staff to evaluate Part 450 application modules and conduct license review periods faster than their standard 180-day review period. Staff with technical experience in areas such as new and emerging space vehicles support, systems safety, flight safety systems, and orbital debris analysis will prove crucial. As Part 450 licenses are modified and expanded to encompass new operations, AST will update its current system to manage increases in license-associated work products. This will include procurement, development, and implementation of document and project management tools to track evaluation resources, license modifications, and approved vehicle configurations.

3. How much are you requesting? Provide a detailed justification for the increase.

AST is requesting $6.2 million:

- $2.5 million for 35 FTPs/18 FTEs to address the increasing number of launches and appropriately regulate the Part 450 vehicle operators. These resources will develop and execute new streamlined processes, procedures, and tools for license evaluations and maintenance under Part 450, while maintaining existing licenses under Parts 415, 417, 431, and 435. Additional resources across multiple disciplines (systems safety, flight safety, operational safety, and operational support) will allow FAA to manage the increasingly complex licensing activities.

- $3.7 million to keep pace with industry demands/needs for AST's licensing products and services. Funding will also be utilized to facilitate new tools for public and industry use to provide a standardized and accepted debris risk assessment, orbital lifetime prediction, and an updated risk to human life on Earth as a result of reentry.

Aviation and Aerospace Talent Development

Office of Policy, International Affairs and Environment (APL), Office of Commercial Space Transportation (AST), Office of Integration and Engagement (AIE), and Office of Human Resource Management (AHR)
(In thousands)

	FY 2023
Aviation and Aerospace Talent Development	**$6,321**
PC&B	$3,335
Non-Pay	$2,986
FTE	**6**

1. Describe the problem or circumstance that prompted the need for this additional funding.

FAA has a strong interest in developing the aviation and aerospace workforce of the future. The forecasted growth in the aerospace sector, coupled with the projected retirement trends of current employees, is driving a need for more specific and enhanced educational outreach to build up capacity among students in the fields of aviation and aerospace, especially in underserved communities. Additionally, the nature of the requirements and skills needed are changing as the industry adapts to new uses for airspace.

2. Describe the strategy and the proposed solution you are using to address the situation.

FAA intends to pursue a number of near-term opportunities to enhance outreach at various educational levels. At the K-12 level, the FAA will leverage the Science, Technology, Engineering, and Math Aviation and Space Education (STEM AVSED) program to increase aerospace career awareness and opportunities in diverse communities across the nation, in coordination with strategic partners in industry, academia, and government. In FY 2023, the goal is to expand strategic partnerships such as fellowships, public challenges and contests, as well as to increase the use of digital and virtual tools. FAA will also develop materials and targeted outreach around the We will broaden our lessons and offerings to include more ages and grade levels of students, ensuring we develop a pipeline and demonstrate pathways to aerospace careers.

FAA's STEM AVSED strategic plan targets specific training, tools, and events that will yield measurable outcomes with respect to active engagement with students, focusing on underserved communities and diverse student populations with programs such as Adopt-a-School and Girls in Aviation. One of the four strategic initiatives within the program plan is STEM for Every Student. Activities such as these specifically address the need to increase diversity within aerospace professions. The program staff will develop the plans and tools needed to execute the agency's STEM AVSED strategic goals to ensure targeted populations are reached and that meaningful engagement, whether in a virtual or an in-person setting, is achieved. The staff will also conduct activities, projects, programs, and events to inform kindergarten through postgraduate students about jobs and careers available in the aviation and aerospace industry.

With additional staff and support, a special emphasis will be placed on outreach and engagement efforts centered on Commercial Space and other emerging technologies. AST will utilize STEM AVSED resources to provide inspiration, outreach, and education that capitalizes on the popularity and successes of the commercial space field. Programs will focus on the various diverse forms of commercial space transportation; how it differs from civil and military space transportation; its contribution to the nation's economy; and career opportunities in the field.

At the college level, the FAA plans to cultivate its internal talent development programs. The FAA's Minority Serving Institution (MSI) Program provides college students with professional experiences in the aviation and aerospace industry, nationwide. The program is designed to provide members of diverse groups with opportunities in FAA career fields where they are otherwise under-represented. Students are placed in a variety of mission-critical areas, such as: aviation research, flight standards and operations, computer science, engineering, finance, business, legal, and other aviation and transportation fields. The program has increased significantly in the past four years and requires additional, sustained resources.

At the post-graduate level, the FAA will leverage the National Air Grant Fellowship program. In December 2020, Congress directed FAA to establish the National Air Grant Fellowship program (see Aircraft Certification, Safety, and Accountability Act). In doing so, Congress recognized the value of combining the technical skills of an aerospace engineer with the political acumen of the policy realm. The National Air Grant Fellowships are to be offered to post-graduate students in aerospace fields so they may develop administrative and policy skills that complement their technical skills. The candidates would be placed on Capitol Hill in committees working on aviation policy. The FAA will establish a program office within APL to manage the new program with a full-time staff coordinating professional development activities for Fellows.

3. How much are you requesting? Provide a detailed justification for the increase.

The FAA requests $6.3 million to support the development of long-term pipelines for aerospace technical professionals. APL, AST, AIE, and AHR will support FAA's commitment to address anticipated shortages and lack of diversity in aviation and aerospace technical professionals. This is needed to prepare and inspire the next generation of skilled professionals for the aviation and aerospace industry using STEM, and to educate the public about FAA's mission to maintain the safest, most efficient aerospace system in the world.

STEM AVSED (Total: $2.9 million = $2.2 million APL, $480,000 AST, $250,000 AIE and 4 FTP/2 FTE)

- $328,000 (APL) – Request 4 FTPs/2 FTEs to expand the STEM AVSED Program Office within FAA Headquarters and Alaska Region. Additional staffing resources will support FAA in delivering the strategic goals and objectives needed to ensure the STEM AVSED outreach program flourishes. Headquarters staffing will provide support and leadership for the Agency's STEM AVSED governance structure, manage stakeholder relationships and address the increased number of partnership agreements, and develop and implement broad communications to include a social media strategy, and marketing for the program.

The Alaska Regional analyst will provide a dedicated resource in Alaska that would support all of the FAA STEM AVSED strategic goals with a focus on the unique challenges and opportunities available to Alaskan students. Given the remote nature of Alaska, and the vital role general aviation serves in providing goods and services throughout the state, an additional resource will allow for added focus and emphasis on the importance of safety as well as aviation careers.

- $2.1 million ($1.4 million APL, $400,000 AST, $250,000 AIE) to increase STEM support, provide outreach to local communities and schools, and provide resources to help train the workforce of tomorrow. The funding will help establish virtual system platforms that will provide FAA the ability to host STEM AVSED events. The funding will allow for development of materials and routine educational supplies and targeted commercial space and drone related materials to introduce students to scientific concepts in ways that are exciting and educational while exploring aerodynamics, physics, astronomy and an endless world of aerospace.

- $300,000 for APL to acquire equipment and materials that allow for more physical demonstrations of concepts, while conducting outreach introducing and discussing careers. It will give the students hands-on engineering experience and expose them to careers in aerospace and STEM. It will help build a pipeline (primary school level) and demonstrate pathways (middle and high school level) that are encompassed in the strategic plan for this program.

- $248,000 ($168,000 APL and $80,000 AST**)** for training and travel to accommodate increases in staff numbers to support attendance at workshops and events across the nation to keep apprised of the latest innovative interaction tools, while inspiring the next generation of students.

Minority Serving Institution (MSI) Internship Program ($2.5 million AHR)

- $2.5 million - To pay intern's salaries as they progress through the internship program.

National Air Grant Fellowship Program ($857,000 APL and 2 FTP/5 OTFTP/4 FTE)

- $507,000 – To hire five Fellows in CY 2023, as well as for the appointment of a Director and program staff to manage the fellowship program.

- $350,000 - For contracts, travel, registrations, and other incidental costs associated with program activities that will enhance opportunities for Fellows in the program.

Address Climate Change

Office of Policy, International Affairs & Environment (APL)

(In thousands)

	FY 2023
Address Climate Change	**$2,441**
PC&B	$457
Non-Pay	$1,984
FTE	**3**

1. Describe the problem or circumstance that prompted the need for this additional funding.

As a response to the accelerating climate crisis, the current administration has issued several executive orders aimed at mitigating the crisis while reducing its impacts on disadvantaged communities. While we have taken steps to develop internal capacity to address these issues, the formal orders combined with the continually evolving nature and scope of the work are beyond what current resources can support. This work includes ensuring the organization is ready to meet the demands of a changing climate as well as providing a leadership role for industry and the international community in reacting to the crisis.

Internationally, the FAA must maintain its leadership role to assist in keeping international aviation on-track to achieving the International Civil Aviation Organization (ICAO) goal of carbon neutral growth from 2020 (*i.e.,* international aviation net CO_2 emissions do not exceed 2020 levels). This work includes updating international standards to reflect new technological and operational improvements that can help reduce international aviation CO_2 emissions even as the sector continues to grow. FAA will also need to continue supporting maintenance and implementation of ICAO's Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) international standard. CORSIA is a market-based measure that allows international operators to achieve carbon neutral growth through the use of carbon offsets and sustainable aviation fuel. Domestically, the FAA needs to assess its real estate portfolio of over 9,000 facilities and other critical assets to ensure the agency is prepared for the expected impacts of climate-change such as increased severe weather, wildfires, and rising sea levels.

We also have an ongoing effort to improve the quality of National Environmental Policy Act (NEPA) data utilized in airport and airspace projects. Environmental impacts are often the number one cause of opposition to airport capacity expansion and airspace redesign, and represent a considerable challenge to the continued growth of the national airspace. We need accurate data and predictions that can be communicated clearly and quickly. Currently, the collection of such data is complex, time-consuming and costly with each study undertaken independently using protocols and tools that are not standardized. Identifying and improving deficiencies in this process will allow us to rapidly make critical expansion decisions.

2. Describe the strategy and the proposed solution you are using to address the situation.

As the climate crisis continues to grow and our understanding of its widespread implications increases, it is apparent that a more proactive, systematic, and comprehensive agency-wide effort is needed. FAA needs to take actions to both reduce aviation's contribution to the climate crisis and to bolster adaptation and increase resilience of facilities, operations, and infrastructure to the impacts of climate change. This request will ensure the FAA is positioned to take the actions needed to address the climate crisis and respond to administration requests.

Additional resources will ensure that APL has the capacity to facilitate FAA's response to the climate crisis, including:

- facilitate and track the implementation of a comprehensive and effective Climate Action Plan;
- develop and implement domestic and international climate policy and analysis to inform FAA actions;
- fully facilitate tracking and compliance with ICAO's CORSIA;
- lead FAA planning, analysis, and coordination to bolster adaptation and increase resilience of facilities, operations, and infrastructure to the impacts of climate change; and,
- facilitate assessment of the impacts of FAA actions, particularly on communities of color and low-income communities who may be disproportionately harmed by climate impacts.

FAA plans to significantly standardize and streamline the baseline operational NEPA data. This will ensure consistency and quality while shortening project schedules by eliminating the expensive and time-consuming collection and preparation of operational information. With these efficiencies, FAA will be able to process more airport and airspace projects at a faster rate.

3. How much are you requesting? Provide a detailed justification for the increase.

- APL is requesting $2.4 million and 5 FTP/3 FTE.
    - $457,000 and 5 FTP/3 FTE to support the FAA's implementation of a comprehensive climate program and to facilitate efforts to improve FAA environmental analyses by developing, distributing, and incorporating into data from the operational inventory.
    - $2 million contract support.
        - $1.134 million for climate policy and program support.
        - $500,000 for assessing impacts of our actions and resiliency efforts.
        - $350,000 for the collection of raw data from individual sources, and data storage.

Unmanned Aircraft Systems (UAS) Integration
Office of Aviation Safety (AVS), Office of Policy, International Affairs, and Environment (APL), Office of Integration and Engagement (AIE), and Office of the Chief Counsel (AGC)
(In thousands)

	FY 2023
Unmanned Aircraft Systems (UAS) Integration	**$4,934**
PC&B	$4,170
Non-Pay	$764
FTE	**28**

1. Describe the problem or circumstance that prompted the need for this additional funding.

The nature of UAS (hereinafter known as drones) work continues to increase in complexity, breadth, and volume leading to a number of unique challenges, including:

- Facilitating the integration of new sectors of the aerospace industry such as Advanced Air Mobility (AAM), which includes Urban Air Mobility (UAM);
- Messaging and proactively addressing public safety and stakeholder (i.e. government, industry, public/community) concerns;
- Enabling routine Beyond Visual Line of Sight (BVLOS) operations;
- Developing environmental policy and analytical tools to inform FAA approvals and decisions and to support community engagement;
- New rulemaking efforts to support more complex drone operations;
- Supporting standards development and roadmaps for innovative and unique new entrants;
- Foster FAA culture change to adapt to innovative technology disrupters; and,
- Managing and coordinating international activities for emerging technologies and concepts within the FAA and aligning international activities with foreign civil aviation authorities.

Many of the challenges associated with AAM cross multiple domains (such as regulatory, infrastructure, technological, operational, and societal) and involve extensive coordination. At present, the FAA's capacity to support the needs of Part 135 drone operators is stretched despite only approving three Part 135 operators. These approvals require significant FAA resources to not only adapt existing safety requirements to radically different operations, but also to support applicants as they navigate a still-developing approval process. At the rate that drone volume and complexity are growing, current FAA resources will be unable to keep pace with new applicants while maintaining the safety of the users already operating in the system. Navigating these initial approvals requires significantly more resources than processing traditional aviation approvals, as policy adaptation is necessary to accommodate these novel operations before the regulations are updated to normalize them.

Additionally, commercial BVLOS operations are considered higher risk operations and the FAA must make significant updates to existing regulations before these operations can take place

routinely. The FAA needs to continue to hire to address scalable drone integration needs and meet the demands from industry, the public, and other relevant third parties while promoting technological innovation.

2. Describe the strategy and the proposed solution you are using to address the situation.

FAA will increase our capacity in outreach and support, AAM operations, and commercial BVLOS to handle the growing demand and complexity of drone integration into the airspace. In doing so, the FAA will not only be better positioned to support the current drone integration efforts but will also be better prepared to address future emerging concepts. Allocating resources to a dedicated outreach and support effort will increase waiver request quality and decreased processing times. To be successful, this effort will require developing drone-specific environmental policy and analytical tools to inform FAA approvals and decisions. This will allow the FAA to reach a broader audience, mitigate the general public's concerns over safety and environmental impacts, increase compliance rates, and facilitate economically viable advanced BVLOS operations. In addition to AAM and environmental outreach issues, it is critical that the agency educates the public on educational and job opportunities related to innovative new entrants. Therefore, this request also includes dedicated resources for the Collegiate Training Initiative and the Know Before You Fly initiative.

FAA will also allocate greater resources to improve our capacity in developing advanced AAM operations. This will allow the FAA to tackle challenges to implementing regular AAM operations, such as detect and avoid for low altitude urban airspace and the automation needed to safely assist and/or replace the pilot/controller for high-density urban operations. Additionally, the FAA must develop AAM-related environmental policy, guidance, analytical tools, and data for use by FAA offices who will perform environmental analyses to inform AAM-related approvals and facilitate integration. Increasing permanent personnel dedicated to AAM will allow the FAA to expand and/or supplement existing resources (such as existing environmental policy and guidance) with those that are tailored to AAM-unique vehicle and operational characteristics.

FAA will need additional resources to draft a proposed rule to update multiple parts in the Code of Federal Regulations that address higher risk commercial BVLOS operations. As we focus on expanding these operations to a level that's scalable and economically efficient, airworthy aircraft will be a necessity. The FAA will encourage manufacturers to pursue FAA type certification for their aircraft, but the FAA will need additional resources to certify these aircraft.

3. How much are you requesting? Provide a detailed justification for the increase.

The FAA is requesting $4.9 million and 56 FTP/28 FTE. This request will provide the funding needs for the following requirements:

- AVS is requesting $3.3 million and 40 FTP/20 FTE
    - $2.8 million and 40 FTP/20 FTE to provide public outreach, support type certification efforts for large drone operations and AAM, and allow for the expansion of policy development, surveillance, certification and operator risk analysis for drone applications and operations within the NAS.

  - $500,000 for travel, supplies, and equipment.

- APL is requesting $440,000 and 2 FTP/1 FTE
  - $190,000 for 2 FTP/1 FTE to focus on noise-specific aspects of AAM-specific environmental policy, guidance, analytical tools, and data efforts.
  - $250,000 for contract support for the environmental policy and guidance support. The contractor support will be used to identify environmental policy and guidance gaps and develop policy and guidance documents to address specific areas selected by APL.

- AIE is requesting $952,000 and 10 FTP/5 FTE to examine new entrants' potential impact on the national airspace, their likely benefits, and how the agency can ensure their continuous safe integration into existing operations.

- AGC is requesting $270,000 and 4 FTP/2 FTE
  - $256,000 for 4 FTP/2 FTE for attorneys dedicated to supporting regulatory development, enforcement actions, and other legal work in support of drone integration.
  - $14,000 for travel, supplies, and equipment

Strengthen Aviation Safety Oversight
Aviation Safety (AVS) and Office of Communications (AOC)
(In thousands)

	FY 2023
Strengthen Aviation Safety Oversight	**$11,397**
PC&B	$8,206
Non-Pay	$3,191
FTE	**56**

1. Describe the problem or circumstance that prompted the need for this additional funding.

The FAA must respond to new technologies, operations, applications of existing technologies, as well as new industry dynamics and business models. These evolving systems result in demand for more oversight, inspections, data, analytics, reports, and outreach and education. Consistent with the 2022 Aviation Safety Workforce Plan, the sustained increase requires additional resources to avoid unacceptable delays while maintaining the aviation safety system. These increased demands include:

- Inspections and Air Carrier oversight: AVS anticipates the requirement for oversight activities to grow as aircraft fleets and operations rebound and expand. The increase in the number of aviation safety inspectors employed by the FAA has not kept pace with growth in the aviation industry, especially commercial air carriers. Additionally, air carriers have increased the outsourcing of aircraft maintenance tasks to subcontractors, many of them outside the United States. There are approximately 153 new maintenance subcontractors outside the U.S. seeking approval from the FAA. This growth contributes to the need for more safety inspectors.

- General Aviation oversight: General aviation maintenance safety inspectors are responsible for certification and maintenance of mechanics and aircraft repair facilities. On top of the existing 5,007 repair facilities, there are over 480 additional repair facilities currently in the certification process with 153 of them outside of the U.S. Due to lack of safety inspectors, another 57 facilities are on a waiting list.

- Federal Contract Tower oversight: Air traffic safety inspectors perform oversight of the provision of air navigation services to ensure compliance with established safety standards. AVS expects to take on this designated examiner role for federal contract towers, which is an expansion of the current responsibilities in the Air Traffic Safety Oversight Office.

- Data and analytics: The annual general aviation survey provides the agency, industry, and the public with information on the activity and avionics of the general aviation and Part 135 fleets. Resources are needed to conduct additional analyses of general aviation operational activity data, to create and maintain a secure enclave with data protections, and to use that enclave for data deep-dives. In addition, the highly advanced avionics

systems of modern air carrier aircraft generate data over thousands of parameters that are captured on flight data recorders. The ability to analyze this data is critical to understanding the performance of the aircraft and crew in the final moments of flight preceding an accident. The FAA must enhance its accident investigation data lab with improved simulation inputs as well as importing FAA-gathered flight data to produce data points when flight data recorders cannot be recovered.

- Public health leadership: Prior to the pandemic, the FAA's medical regulatory work was primarily concerned and resourced to address issues around individual medical certificated airmen and the clearance of air traffic controller specialists. With the rise of the COVID-19 pandemic in early 2020, the FAA expanded its role to address issues of public health in order to ensure that critical transportation infrastructure continues to operate. Medical officers have provided nearly 24 hour on-call support every day to respond to questions, perform contact tracing, and, most importantly, develop policy and business practices necessary to address the impacts of the pandemic on the nation's air transportation infrastructure. However, FAA medical officers cannot continue to do so indefinitely. The approximately 40 medical officers supporting the pandemic response did so at the expense of their regular aviation safety mission work and with significant indirect overtime costs. Additional resources will be needed to make this a long-term capability and position the FAA to continue in this role as needed in the future.

2. Describe the strategy and the proposed solution you are using to address the situation.

The FAA proposes an expansion of the safety workforce to address increased demands. These personnel would better position the FAA to deliver against expectations for:

- Safety inspections,
- Air Carrier oversight,
- General Aviation oversight,
- Federal Contract Tower oversight, and
- Public health leadership.

Additionally, the FAA proposes additional resources to enhance the internal Safety Management System (SMS), evolve the Quality Management System (QMS), and ensure a holistic approach to the development of optimized and integrated solutions throughout AVS. This includes an integration component that ensures the various SMS programs are operating consistently in identifying risks and working collectively on mitigations with overlapping dependencies. AVS will also evolve the QMS program to improve the focus on the safety mission. These changes will ensure integrated success in delivering against increased demands.

Improvements to the analysis of the General Aviation Survey, as well as to the Accident Investigation Data Lab, will ensure the FAA is better positioned to provide quality data and data enclaves for analytics.

The FAA plans to establish virtual flight standards functionality. Such a capability would allow citizens and industry to engage with an inspector or office that could be located anywhere. This would provide convenience to industry, reduced cost to the FAA, and enable consistency. Finally, FAA will increase outreach and education event opportunities to interact with the general public. AOC requires additional resources to carry out this increased cadence, as well as to address the more frequent releases of safety information.

3. How much are you requesting? Provide a detailed justification for the increase.

AVS is requesting a total of $11.2 million and 110 FTP/55 FTE.

- $8 million and 110 FTP/55 FTE to address the staffing requirements from increased demand for more oversight, more safety inspections, and more data, analytics, and reporting. These positions include systems engineers, industrial engineers, medical officers, safety inspectors, safety technicians, data analysts, program analysts and operational support.

Service / Office	FTPs
ODA – Organization Designation Authorization	**2**
AAM – Office of Aerospace Medicine	**8**
AOV – Air Traffic Safety Oversight	**3**
AQS – Office of Quality, Integration, and Executive Services	**11**
FS - Flight Standards	**86**
Total	110

- $3.2 million for equipment, supplies, materials, and contractor support. Contractor services will support additional survey response breakouts including air cargo, survey administration (printing, mailing, 508-compliance), and the maintenance of a secure enclave for data analyses and continuation of the development of flight data recorders analysis, animation tools, and virtual software implementation.

AOC is requesting $154,000 and 1 FTP/1 FTE

- $154,000 and 1 FTP/1 FTE to support events that focus on outreach and education for aviation safety oversight.

Improve Hazardous Materials Transportation Safety Oversight
Office of Security and Hazardous Materials Safety (ASH)
(In thousands)

	FY 2023
Improve Hazardous Materials Transportation Safety Oversight	**$3,812**
PC&B	$1,562
Non-Pay	$2,250
FTE	**9**

1. Describe the problem or circumstance that prompted the need for this additional funding.

The current ASH Principal Hazmat Inspector program, which relies heavily on expert knowledge of specific certificate holders, has successfully provided effective dangerous goods oversight of regularly scheduled air carriers operating with a Part 121 certificate. With current resources, automation systems, and safety-risk-management tools, ASH has improved its risk-based decision-making capabilities for Part 121 certificate holders and enacted proactive risk mitigation with those air carriers. However, ASH's current staff of Principal Hazmat Inspectors and Hazardous Materials Aviation Safety Inspectors are not sufficient to extend the same oversight model to entities operating under Part 129 (foreign air carriers), Part 135 (on-demand air carriers), and Part 145 (repair stations). The growth of e-commerce and evolving air carrier business models have caused the risk related to limited certificate holder oversight to increase. Without additional resources to perform expanded certificate and safety performance oversight, the risk of uncertainty will continue to grow in this area, resulting in negative impacts on the FAA's ability to manage aviation hazmat safety risks at the enterprise level.

2. Describe the strategy and the proposed solution you are using to address the situation.

The FAA is requesting resources to bolster its safety oversight operations workforce to manage identified hazmat safety risks and perform proactive risk mitigation. With added resources, ASH will be better positioned to ensure existing Part 129, Part 135, and Part 145 certificate holders and other regulated entities meet the necessary safety requirements, standards, and regulations for the safe air transportation of dangerous goods through performance inspections, certificate management, evaluations, research, and accident or incident investigations.

Additional funding is requested to support the contracting needs for an enterprise-wide training system for FAA's hazmat safety workforce. The system will track training, qualifications, competencies, and currency to better assess employees' ability to execute safety oversight related work. It will connect the organization horizontally and vertically to provide the workforce with critical insight into their individual roles and responsibilities and how their actions contribute to enterprise-level aviation safety goals. The requested funding for staffing and tools will drive positive safety outcomes by adding the capacity to identify and connect hazards with effective risk mitigations.

3. How much are you requesting? Provide a detailed justification for the increase.

ASH is requesting $3.8 million, including 18 FTP/9 FTEs.

- $1.6 million for 18 FTP/9 FTEs to expand the Principal Hazmat Inspector oversight and to manage and drive daily operations.

- $1.4 million for contractor support for an enterprise-wide training system for FAA's hazmat safety workforce.

- $873,000 for technology, training, supplies, and travel for the additional positions.

Develop Human Spaceflight Program
Office of Commercial Space Transportation (AST)
(In thousands)

	FY 2023
Develop Human Spaceflight Program	**$2,179**
PC&B	$829
Non-Pay	$1,350
FTE	**5**

1. Describe the problem or circumstance that prompted the need for this additional funding.

In December 2004, Congress passed the Commercial Space Launch Amendments Act of 2004 (CSLAA) giving the Secretary of Transportation authority to regulate commercial human space flight, and giving the Federal Aviation Administration (FAA) authority to issue a license or experimental permit for launch and reentry missions with humans on board. The CSLAA limited the authority of the Department of Transportation (DOT)/FAA to protect the safety of the people on board during a learning period for the industry. Congress established an informed consent regime that allows crew and space flight participants to fly at their own risk with informed consent. In 2015, Congress extended the learning period that prohibited regulations on occupant safety regulations. That moratorium is set to expire on October 1, 2023.

Since DOT/FAA was given authority to regulate commercial human spaceflight, the industry has continued to operationalize suborbital and orbital launch and reentry vehicles. Several commercial space companies have been investing in the development and flight-testing of commercial human spaceflight vehicles. FAA anticipates both Virgin Galactic's SpaceShipTwo and Blue Origin's New Shepherd programs will soon be operating FAA licensed suborbital commercial human spaceflight missions focused on science and space tourism.

While commercial human spaceflight missions are currently infrequent, AST anticipates the frequency to increase once the operational capability has been demonstrated. As the number of missions and the number of people on board these missions increase, the agency will need additional resources to ensure the safety of crew and space flight participants.

2. Describe the strategy and the proposed solution you are using to address the situation.

The FAA proposes to increase federal staffing to manage additional activities associated with human spaceflight support and licensing under the informed consent regime, as well as pre-rulemaking activities for occupant safety. This would ensure proper evaluation of human space flight safety, including environmental controls and life support systems, crew escape systems, and human performance, including human factors, human reliability engineering, and crew training subject matter experts. The FAA will manage the pre-rulemaking activities for human space flight, including stakeholder engagement through an Aerospace Rulemaking Committee. Space travel is inherently risky, so the human spaceflight branch will also prepare for human

space flight accidents, including stakeholder engagement, public outreach, and crisis management planning.

AST would also process the FAA's statutory obligations for each licensed operation with space flight participants during the informed consent regime. This includes informing the space flight participants, in writing, of any relevant information related to risk or probable loss during each phase of flight; executing cross waivers of liability with all space flight participants; and ensuring that licensees have informed the space flight participant in writing about the risks of the launch and reentry, including FAA verification of the safety record of the launch or reentry vehicle type and the overall human space flight safety record.

3. How much are you requesting? Provide a detailed justification for the increase.

AST is requesting $2.2 million and 10 FTP/5 FTE for the following activities:

- $829,000 for 10 FTP/5 FTE to ensure proper evaluation and oversight of operations involving of human spaceflight safety, performance and training subject matter experts. In addition to human space flight license evaluation and operations, these resources will also manage the pre-rulemaking activities, including engagement with industry through a Human Space Flight Aerospace Rulemaking Committee with various human space flight subject matter areas, public outreach, and coordination with NASA and other interagency partners.
- $1.4 million for contract funding to develop process, procedures, and tools to manage license maintenance activities and training of new employees.

Community Engagement

Office of Policy, International Affairs & Environment (APL)
(In thousands)

	FY 2023
Community Engagement	**$1,308**
PC&B	$308
Non-Pay	$1,000
FTE	**2**

1. Describe the problem or circumstance that prompted the need for this additional funding.

The FAA has successfully developed a community engagement framework to address aviation noise issues. Now the FAA is finding that communities are submitting concerns regarding other aviation and aerospace impacts and are demanding a higher level of engagement and improved information sharing. As FAA deploys new technology into the national airspace system such as Urban Air Mobility and commercial space launches, the FAA must respond to new concerns. We need to communicate and collaborate effectively with a broad range of stakeholders and be able to evaluate and communicate new ideas and solutions that arise from diverse sources.

In order to meet this increased demand, which includes responding to new entrants, the FAA requires more resources to provide proactive education and awareness. By doing this, the FAA can facilitate additional industry and community engagement to better support communities and respond in a timely manner with data-driven information.

2. Describe the strategy and the proposed solution you are using to address the situation.

As part of the community engagement process around noise, FAA developed regional integrated engagement teams to ensure relevant information is provided to interested communities. FAA's strategy is to strengthen the regional integrated teams by adding community engagement liaisons to the teams who can address other aerospace concerns. The liaisons will focus on subject areas, such as unmanned aircraft systems or commercial space, and be a conduit between the regional integrated team and the relevant FAA program offices. Since these liaisons are still a part of the regional integrated team, they can also proactively educate local community roundtables and government officials. This work is essential to support the development of solutions to growing concerns regarding namely Urban Air Mobility, Advanced Air Mobility, Commercial Space, and other emerging areas. This effort will also address the Alaska and Central regions who do not have community engagement officers and will be a flexible, additional resource if needed for another geographic region.

3. How much are you requesting? Provide a detailed justification for the increase.

APL is requesting $1.3 million and 4 FTP/2 FTE comprised of dedicated community engagement liaison staff and contractor services.

- $308,000 and 4 FTP/2 FTE for community engagement liaison staff

- $1 million to support, plan, and implement community engagement activities, including roundtables and meetings with the public and elected officials.

Supply Chain Risk Management
Air Traffic Organization (ATO)
(In thousands)

	FY 2023
Supply Chain Risk Management (SCRM)	**$500**
PC&B	$343
Non-Pay	$157
FTE	**2**

1. Describe the problem or circumstance that prompted the need for this additional funding.

The US Government Accountability Office (GAO) recently conducted a review that analyzed potential supply chain risks to Federal agencies. The GAO study, GAO-21-171, *Information and Communications Technology: Federal Agencies Need to Take Urgent Action to Manage Supply Chain Risks*, produced 145 recommendations to be implemented across Federal agencies.

2. Describe the strategy and the proposed solution you are using to address the situation.

In accordance with OMB A-130, FAA will establish a supply chain risk management (SCRM) program as part of a comprehensive U.S. government approach to be compliant with National Institute of Standards and Technology standards and guidelines. The new SCRM program will begin identifying the requisite functions and capabilities needed to satisfy SCRM requirements.

3. How much are you requesting? Provide a detailed justification for the increase.

The Air Traffic Organization is requesting $500,000 and 4 FTP/2 FTE for the following activities:

- $343,000 for 4 FTP/2 FTE to staff the new SCRM program
- $157,000 for contract services in support of implementing the SCRM program

FY 2023 Explanation of Funding Changes

Restoration of FY 2022 Request: The FY 2022 budget is displayed based on an annualized Continuing Resolution (CR) at the FY 2021 funding level, which is prior to the approval of an FY 2022 enacted budget. This increase is an agency-wide adjustment made to restore funding to the FY 2022 request level as opposed to an annualized CR.

Annualization of FY 2022 Pay Raise: This increase is required to provide for costs associated with base salary increases (October - December) resulting from the government-wide pay raise. The factor used is 0.25 of 2.7 percent.

Annualization of FY 2022 FTE: This increase is required to provide for costs associated with the annualization of salaries of the full time equivalent (FTE) employees from FY 2022.

FY 2023 Pay Raise: This increase is required to provide for costs associated with base salary increases resulting from a government-wide pay raise of 4.6 percent.

One Less Compensable Day (260 days): There are 260 Compensable days in FY 2023 vs. 261 days in FY 2022.

Transition from Facilities and Equipment to Operations: This increase transitions the operational costs of new systems acquired under the Facilities and Equipment account to the Operations account. Systems that go through this transition include everything from navigational aids to major software systems that provide air traffic control capabilities. The ongoing operational costs include hardware maintenance, software maintenance, software licenses, telecommunications, logistics support, and training. Under FAA policy, these operational costs transition to the Operations account two years after a system has been installed.

Non-Pay Inflation: This budget request assumes an inflation factor of 1.5 percent for non-pay.

Working Capital Fund: This cost adjustment funds the Department of Transportation's Working Capital Fund estimates for the FAA.

Address Aircraft Certification Reform Legislation: Funding is requested to continue implementing the requirements contained in the Aircraft Certification, Safety, and Accountability Act. In FY 2023, FAA will continue to add systems engineers, safety inspectors, flight test pilots, trainers, human factors engineers, communication specialists and legal support to its current staff. Funding will provide programmatic and organizational support for the evolution of FAA's Safety Management Systems (SMS) and safety risk assessments. The FAA will develop an Aircraft Certification oversight and data analytics platform to provide real time data analytics and support the Continued Operation Safety process. Resources will enhance Aviation Safety Information and Sharing Public (ASIAS-P), and Systems Safety Management Transformation (SSMT). Funding also supports addressing the requirements to expand the Office of Professional Responsibility (OPR). In addition, the funding will allow FAA to expand our international training and support agency-wide decision making related to global issues.

Advance Equity for Underserved Communities Through Airport Civil Rights Compliance: Funding is requested for additional personnel and contract support to bolster FAA's enforcement of Federal equity rules and regulations. The Office of Civil Rights works to ensure that all beneficiaries of federally assisted transportation programs are offered equal opportunity for participation and are free from discrimination. Funding addresses the equity challenges identified for small businesses, person with disabilities, people of various ages, sexes, gender, and other backgrounds with a history of discrimination.

Data Analysis/Enterprise Information Management: Funding is requested for the modernization and centralization of data currently spread across multiple systems. This effort includes data warehousing, modernizing data on investigations and on the impacts of air tour and illegal charter operations, and transforming Flight Standards systems and processes. Improved data quality enables improved analysis of emerging safety trends and informs better safety decisions. It also supports tools to enhance data sharing development & Enterprise Information Management registration, data architecture support services, low-code software licenses, system enhancements, and legacy application cloud migration and program management.

Cybersecurity: Funding is requested for FAA in order to maintain an adequate level of protection for and visibility into its most critical IT infrastructure. Requested funding supports cybersecurity critical functions like service contracts, equipment and software licensing tools, along with remediation of ATO's system vulnerabilities. The effort also supports the Cybersecurity Intelligence Program, Insider Threat Monitoring, and Advanced Threat Analysis and Mitigation with additional staffing and development of intelligence capabilities to enable predictive analysis and identification of vulnerabilities.

Streamline Commercial Space Launch and Reentry Licensing: Funding supports additional staffing and contract support to develop a new streamlined process & procedures for launch and reentry requirements, tools for license evaluations, and maintenance while maintaining existing licenses in order to keep pace with industry demands. It will also address the critical need for personnel with technical experience in areas such as new and emerging space vehicles support, systems safety, flight safety systems, orbital debris analysts and to develop support tools.

Aviation and Aerospace Talent Development: Funding is requested to build up capacity among students in the fields of aviation and aerospace, especially in underserved communities. Through the Science, Technology, Engineering, and Math Aviation and Space Education (STEM AVSED) Program we will continue outreach to local communities and schools and provide resources to help train the workforce of tomorrow. FAA will establish the National Air Grant Fellowship Program, which was authorized in the Aircraft Certification, Safety, and Accountability Act. Additional funding is requested for the sustainment of the FAA's Minority Serving Institution (MSI) Internship Program, which provides college students with professional experiences in the Aviation and Aerospace industry, nationwide. This program is designed to provide members of diverse groups with opportunities in FAA career fields where those groups are otherwise under-represented.

Address Climate Change: Funding supports additional staffing and contract support for the FAA's implementation of a comprehensive climate program. Funding will also improve the FAA's environmental analysis by developing, distributing, and incorporating data from the operational inventory.

Unmanned Aircraft Systems (UAS) Integration: Funding is requested to support additional staffing for Advanced Air Mobility (AAM) and examine new entrants' potential impacts on the National Airspace (NAS). These resources will facilitate new standards development and roadmaps for innovative technologies, while expanding rulemaking efforts. Additional contract support will aid in the development of AAM specific environmental policy. This effort will also focus on noise-specific activities, as well as facilitating other environmental entities (e.g., emissions, historic preservation, and tribal consultation) in order to provide policy and guidance. In addition, the FAA will need to allocate additional resources for attorneys to accommodate the increased requirements to provide multiple types of counsel in support of the integration of UAS into the NAS.

Strengthen Aviation Safety Oversight: Funding supports additional staffing and contract support for the FAA to respond to new technologies, operations, and applications of existing technologies, along with new industry dynamics, and business models. These personnel would better position the FAA to deliver against expectations for Safety inspections, Air Carrier oversight, GA oversight, and Federal Contract Tower oversight, and Disease prevention leadership, as well as focus on outreach education and relevant training.

Improve Hazardous Materials Transportation Safety Oversight: Funding is requested for additional staffing and contract support to bolster FAA's hazardous materials safety oversight workforce to manage identified hazmat safety risks and perform proactive risk mitigation. Funding will also support the contracting needs for an Enterprise-wide Training System for FAA's hazmat safety workforce.

Develop Human Spaceflight Program: Funding supports additional staffing and contract support to manage additional activities associated with human spaceflight program support and licensing under the informed consent regime, along with pre-rulemaking activities for occupant safety.

Community Engagement: Funding supports additional staffing and contract support to strengthen community engagement within the regions by adding community engagement liaisons. The liaisons will focus on subject areas that work across all regions, while proactively educating local community roundtables and government officials.

Supply Chain Risk Management: Funding is requested to establish an interdisciplinary supply chain risk management program.

Air Traffic Organization (ATO)

Detailed Justification for the Air Traffic Organization (ATO)

FY 2023 - Air Traffic Organization Budget Request
($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 Request*
Salaries and Expenses	5,853,149	6,182,905	6,422,629
Program Costs	2,352,672	2,022,916	2,383,086
Total	**$8,205,821**	**$8,205,821**	**$8,805,715**
FTE	**28,661**	**28,680**	**28,729**

***** The FAA proposes to evolve the Office of NextGen to the Office of Research and Development, establish the Office of Integration and Engagement, and establish the Chief Technology Officer in the Air Traffic Organization

Funding details for ATO's various service units:

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 Request
Air Traffic Services (AJT)	4,309,028	4,474,484	4,663,186
Technical Operations (AJW)	1,790,151	1,754,844	1,903,277
System Operations (AJR)	288,366	280,388	306,237
Safety and Technical Training (AJI)	203,932	184,184	199,636
Mission Support Services (AJV)	276,323	323,473	362,783
Management Services (AJG)	226,044	190,068	206,051
Program Management (AJM)	1,000,288	895,102	1,043,809
Flight Programs (AJF)	111,689	103,278	113,290
*Chief Technology Officer (CTO)			7,446
Total	**$8,205,821**	**$8,205,821**	**$8,805,715**

What is this program and what does this funding level support?

The Air Traffic Organization (ATO) operates the most complex and technically advanced air traffic control system in the world. In FY 2023, ATO is required to sustain and improve effective and efficient air traffic control throughout U.S. airspace. The funding requested will enable ATO to train FAA's highly-skilled workforce, provide information and updates to the flying public to ensure safe air travel, maintain the critical infrastructure necessary to operate the National Airspace System (NAS), review and update navigational information to promote more efficient air transportation, and effectively control air traffic, which is a major contributor to the national economy.

While the system is already exceedingly safe, ATO is making it safer by moving to a proactive safety culture in which every individual in ATO is committed to assessing and mitigating risks. While safety is paramount, ATO is also taking steps to enable growth and changes in aviation.

ATO is a performance-based organization providing safe, secure, and cost-effective air traffic control services to commercial, private aviation and the military. ATO is comprised of more than 29,000 Operations-funded professional employees committed to providing safe and efficient air traffic control services. Many ATO employees, including approximately 14,200 air traffic controllers, 4,100 air traffic supervisors and air traffic managers, 2,200 engineers, and 5,800 maintenance technicians, directly serve FAA's customers. The remaining employees work in a wide variety of professions to sustain the smooth operations of ATO. They research, plan, and build air traffic control equipment and programs; manage payroll and benefits programs; maintain productive relationships with the aviation industry and the general public; and ensure that the environment and ATO employees are protected.

ATO provides air traffic services for the Nation and is fully committed to the agency's mission. ATO handled over 44,000 scheduled passenger flights per day at U.S. airports and helps transport over 1 billion passengers per year, a vital part of the Nation's economy. In total, the ATO handled over 46,300 Instrument Flight Rules flights per day, and managed over 155,000 operations (including departures, arrivals and over-flights) per day at FAA and contract towers. FAA data shows that civil aviation accounted for over $1.8 trillion in total economic activity, supporting more than 5 percent of U.S. Gross Domestic Product. Approximately 11 million people are employed in aviation-related fields, and earn over $488.2 billion a year.

ATO's eight service organizations include:

Air Traffic Services (AJT): Air Traffic Services provides air traffic control (ATC) services for operations from en route, terminal, and combined control facilities in the United States, Puerto Rico, and Guam. Air Traffic Services also controls more than 29 million square miles of airspace. This represents more than 17 percent of the world's airspace, and includes all of the United States and large portions of the Atlantic and Pacific Oceans and Gulf of Mexico. Every day, the FAA ensures thousands of positively-controlled aircraft are directed safely and efficiently to their destinations.

The en route domain provides ATC services from 21 Air Route Traffic Control Centers or ARTCCs, and four combined control facilities, which interface with more than 18 air navigation service providers. Terminal ATC services include both airport surface operations and terminal area operations. Airport surface operations are conducted from 313 FAA facilities and 260 FAA Contract Towers located at the Nation's airports.

Terminal area operations are conducted from 25 stand-alone Terminal Radar Approach Control (TRACON) facilities, which routinely handle aircraft within 40 miles of an airport.

Air Traffic Services is divided into three geographical service areas (Eastern, Central, and Western) to better manage the delivery of ATC services. The primary function of each service area is to oversee ATC operations within its geographical area and to ensure that quality standards established for safety, capacity, and organizational excellence are met.

Technical Operations (AJW): The NAS is composed of a mix of hardware and software systems that enable controllers to monitor and communicate with pilots and other ATC facilities. NAS system capabilities include automation, communications, surveillance, and navigation. Failure at any point in the system can cause capacity reductions and potentially compromise safety. Reductions in capacity cause delays with costs to users and the flying public. Technical Operations ensures that terminal and en route controllers have all critical parts of the NAS infrastructure available for the safe and efficient delivery of air traffic services.

The mission of the Technical Operations Service Unit is to:

- Ensure efficient delivery of all NAS services for all stakeholders
- Increase NAS capacity for all users through changes in technology
- Maintain optimal NAS services for all users by strategically investing in the current infrastructure and providing operational oversight of leased NAS services
- Improve situational awareness for pilots, controllers and airfield operators by providing them with real- time information concerning potential conflicts and offering possible resolutions; and
- Provide a safe and healthful workplace for all FAA employees through an active Occupational Safety and Health Administration program

Technical Operations supports the delivery of safe and efficient flight services to customers through responsive and cost-effective maintenance of NAS facilities, systems, and equipment, and by providing operational oversight of leased services. The work consists of:

- NAS system design, development, acquisition, installation, maintenance, restoration, modification, certification and oversight of vendor-supplied NAS services and vendor maintenance programs;
- Facilities maintenance

- Engineering and assignment of the aeronautical frequency spectrum.

Core work is performed by personnel at System Support and Technical Operations Control Centers. The Centers focus on optimizing NAS performance through prioritization of response based on multiple factors, including the importance of the airport or ATC facility that is directly or indirectly affected by the equipment or service outage. Technical Operations leads the day-to-day defense and protection of the NAS by providing governance and requirements to enhance cybersecurity. Technical Operations coordinates threat information sharing and inter-agency collaboration and tailors cybersecurity business and acquisition strategies to support the rapid delivery of tools, applications, and other capabilities to defend the critical infrastructure from the evolving threat.

System Operations (AJR): The System Operations Service Unit directorates perform essential functions for the daily operation of the NAS. Daily operations consist of a broad range of operational services for the ATO, affecting all aspects of FAA Air Traffic Control operations, but also includes air transportation, commercial space operations, and integrating new entrants into NAS operations. All national air traffic flow management initiatives are managed by AJR along with policy and concept development for airport surface flow management programs. AJR is the focal for stakeholder interaction through formal Collaborative Decision-Making venues and serves as FAA's Customer Advocate. AJR provides the ATO, its customers and stakeholders with system operational data and performance analysis, trending and forecasting, as well as develops strategies and plans to ensure viability. Manages the Slot Program Office, which approves flight schedules at slot-controlled airports.

AJR also provides air traffic operational contingency oversight to ensure NAS operations continue efficiently and safely if there are planned or unplanned impacts on the NAS. AJR protects the United States Air Domain from threats and other major incidents, managing the impact of threats and associated response measures on the safety and efficiency of the NAS.

Safety and Technical Training (AJI): AJI provides safety, technical training, policy and performance, and strategic outreach necessary to help enable air traffic controllers, technicians, engineers and support personnel's daily efforts to keep the NAS safe and efficient.

AJI Safety, and Policy and Performance programs are responsible for ensuring the safety of the NAS through measuring, analyzing, mitigating, and monitoring risks. This strategy includes implementing corrective actions to mitigate identified hazards, gathering safety information from operational employees and systems, and deploying technology to better qualify risk. AJI serves as the focal point for the ATO's Safety Management System; ensures that national safety management policies are clearly defined, communicated, and adhered to; conducts audits and operational assessments of NAS changes and new technologies; and provides safety analysis and data management and integration capability. Additionally, AJI manages safety policy development, reduces fatigue risks through a comprehensive fatigue risk management system, facilitates an ongoing ATO safety culture transformation that leads to improved safety performance, and is the focal point for reducing the risk of runway collisions and excursions in the NAS.

AJI is the organization within ATO that provides technical training to controllers, technicians, and engineers. AJI strives to craft ATO's learning approach to be more efficient and effective through the development and implementation of the Mobile Learning Platform, Instructor Led, Virtual and Blended Training. These initiatives continue to increase the flexibility and accessibility of training solutions. AJI increases the value to the FAA by integrating simulations, and gamification of learning concepts, and the use of electronic training devices for the delivery and near real-time update of the course curriculum. AJI manages the course curriculum for more than 14,200 air traffic controllers, 5,200 Airway Transportation Systems Specialists, and 2,200 engineers with knowledge and skill transfer to make aviation safer and smarter.

Mission Support Services (AJV): Mission Support Services provides technical and administrative shared services to Air Traffic Organization (ATO) operational service units. Services provided include subject matter expertise and analyses, strategic planning, regulatory policy, international collaboration, aeronautical data services, and staff support.

The Service Unit supports ATO operations in four distinct areas:

- Strategy: Provides ATO corporate focus to align priorities, initiatives and resources that will expedite the implementation of advanced concepts in UAS, Space Operations and other Air Traffic Management areas. Strategy anticipates key changes that will affect air traffic while driving decisions for future ATO innovations and operational needs.
- Policy: Develops regulatory policy and provides ATC procedural support to users throughout the NAS. Provides guidance on matters involving ATC standards and procedures and creates rules, policies, and standards for the use of navigable airspace.
- International: Represents the ATO and delivers consistent, well-coordinated leadership in support of Global Leadership Initiatives to achieve collaborative international harmonization and operational priorities.
- Execution: Implements and coordinates the ATO's prioritized goals at the field facility level. Service includes aeronautical data services, quality control, operations support, planning and requirements, and resource management.

Management Services (AJG): The Management Services organization provides leadership and guidance in the areas of financial management, people services, business planning, technical labor relations, employee development, customer service, and employee engagement for the ATO. This shared services model was designed to decrease the administrative burden on ATO's operating service units and improve the overall efficiency and effectiveness of the ATO. Management Services strives to maximize economies of scale by promoting standardization of processes, providing budget formulation and execution, overseeing ATO administrative policy, providing personnel actions and technical labor advice and leading ATO-specific employee development and succession planning efforts on behalf of FAA's customers, who collectively operate and maintain the National Airspace System.

Management Services directly supports the workforce by providing technical requirements, forecasting, and onboarding, along with the personnel and organizational policies that meet the

needs of ATO's highly skilled workforce. AJG ensures performance stays on track by providing the framework to integrate ATO's plans, programs, and activities. AJG serves as a centralized point of contact for other FAA partners to develop strategies for implementing solutions within ATO.

Program Management Organization (AJM): The Program Management Organization (PMO) provides program and acquisition management for the FAA infrastructure programs that transform, modernize and sustain the NAS, including:

- The air traffic operation
- Mission support systems
- Business support systems
    - Aviation safety
    - Commercial Space Transportation
    - Unmanned Aircraft Systems (UAS)

The PMO implements the majority of the FAA's Next Generation Air Transportation System (NextGen) initiatives and leads the development of the multi-agency Spectrum Efficient National Surveillance Radar, also known as the SENSR program. The PMO ensures greater visibility, tighter alignment, and closer integration of innovative, complex, interdependent initiatives and technologies by managing a portfolio of 150 Facilities and Equipment and Operations programs.

The PMO comprises four directorates that support two functional areas:

- Engineering and acquisition
- Second-level engineering software maintenance for the FAA's automation systems

The PMO's executes its second-level engineering function at air traffic control facilities throughout the NAS and at the FAA William J. Hughes Technical Center in Atlantic City, New Jersey.

Chief Technology Officer (CTO): Chief Technology Officer (CTO) organization includes life cycle system engineering and development for national airspace systems.

The U.S. aviation sector is experiencing a renaissance in new users and technologies. As the FAA marks the completion of substantial NextGen foundational elements and positions itself for the future, FAA is aligning its organizational resources to meet new challenges in the decades to come. A key element of the strategy required to meet modernization needs includes a Chief Technology Officer to drive the continued modernization of the airspace system.

The CTO is responsible for the 0-10 year enterprise vision, including the NAS Enterprise Architecture, related systems engineering functions, requirements leadership and performance assessments. The CTO plays the role of a corporate strategist, to ensure the ATO continues to

deliver capabilities, integrate them into the operation, and assert a vision for the future. The day-to-day operations enhances the FAA's commitment to the future. The CTO will:

- Ensure the proper operation, maintenance, and cybersecurity of technology systems relating to the air traffic control system across all program offices of the Administration
- Coordinate the implementation, operation, maintenance, and cybersecurity of technology programs relating to the air traffic control system with the aerospace industry and other Federal agencies
- Review and provide advice to the Secretary, the Administrator, and the COO on the Administration's budget, and benefit-cost analyses with respect to technology programs relating to the air traffic control system
- Consult with the Administrator on the Capital Investment Plan of the Administration before to its submission to Congress
- Develop an annual air traffic control system technology operation and maintenance plan that is consistent with established annual performance targets
- And ensure that the air traffic control system architecture remains, to the maximum extent practicable and flexible enough to incorporate future technological advances developed and procured by aircraft operators

Flight Program Operations (AJF): Flight Program Operations is responsible for all aspects of the FAA's Flight Program, including safety, administration, manned and unmanned operations, training, and maintenance. AJF conducts multiple missions in FAA aircraft (owned, leased, rented, UAS etc.) to include aviation safety training; flight inspection; research, development, test and evaluation support; and transportation.

The service unit's core business is safe and efficient flight operations in support of four primary missions:

- Aviation Safety Training: Provide training and currency/proficiency services to Office of Aviation Safety personnel, including aviation safety inspectors and flight test personnel.
- Flight Inspection: Ensure the integrity of instrument approaches and airway procedures that constitute the NAS infrastructure and the agency's international commitments, including airborne inspection of all space- and ground-based instrument flight procedures and the validation of electronic signals in space transmitted from ground navigation systems. Flight procedures and surveillance systems are evaluated for accuracy, aeronautical data, human factors flyability, and obstacle clearance. Flight Program Operations also performs inspections of Department of Defense navigational facilities.
- Research, Development, Test & Evaluation Support: Conduct flights supporting agency research, development, test, and evaluation of new electronic aids, air traffic procedures, and aircraft improvement, under approved agency projects.

- Critical Event Response/Transportation: Provide transportation required to accomplish official FAA responsibilities in times of emergency or disaster such as hurricane response, as well as support the National Transportation Safety Board in carrying out its duties.

Flight Program Operations operates agency aircrafts at eight facilities across the country. Flight Program Operations implemented a single safety management system, established standards equivalent to industry and Title 14 of the Code of Federal Regulations, and integrated all missions under the same flight control system.

Transition from Facilities and Equipment to Operations:

Transition to Operations and Maintenance (TOM) funding covers the operational cost of new systems acquired under the FAA's Facilities and Equipment (F&E) Capital budget. Once new systems are installed in the NAS, the ongoing operational costs are transferred to the Operations appropriation. If legacy systems are being replaced or undergoing upgrading ("tech refresh"), the request is the net of current operating costs and the anticipated cost of the replacement system. New capabilities do not usually have offsetting costs.

The funding provides the ongoing support of contractor-provided hardware and software maintenance, licensing fees, telecommunications costs, logistics support, utilities, and the cost flight procedures and inspection for new systems.

Transition to Operations and Maintenance	Amount ($000)
Aircraft Related Equipment	113
Airport Surface Surveillance Capability (ASSC)	185
Communications Facility Sustainment (CFS)	127
Common Terminal Digitizer (CTD)	193
Distance Measuring Equipment (DME)	101
En Route Automation Modernization (ERAM)	5,735
Instrument Landing System (ILS)	8
Intelligent Traffic Monitor (ITM)	1,025
Logistics Center Support System (LCSS)	955
Precision Approach Path Indicator (PAPI)	3
Remote Management Access Gateway (RMAG)	3,007
Runway Visual Range (RVR)	66
Standard Terminal Automation Replacement System (STARS)	1,398

Transition to Operations and Maintenance	**Amount ($000)**
System Wide Information Management (SWIM)	7,046
Terminal Automation Modernization and Replacement (TAMR)	56
Wide Area Augmentation System (WAAS)	91
Weather Camera Program Hawaii	17
ATO Grand Total	**$20,126**

FY 2023 Anticipated Accomplishments:

Function/Office	FY 2023 Anticipated Accomplishments
Air Traffic Organization	• Maintain and sustain core infrastructure to ensure that terminal and en route controllers have all critical parts of the NAS infrastructure available for the safe and efficient delivery of air traffic services. • Continue to develop and execute policies for emerging technologies integration for the flight inspection mission, to include augmentation of the infrastructure inspections using UAS. • Continue efforts to improve the NAS with NextGen technologies to support the increased efficiency of the NAS and delivery of services. • Continue to prepare the NAS for new entrants, including UAS and Commercial Space. • Reduce runway incursions, excursions, and other airport surface safety events through use of the Surface Safety Risk Index. • Provide continuous NAS information to external aviation partners. • Develop strategic plans, conduct analyses, and perform systems engineering efforts to align with Trajectory Based Operations and the Performance Based Navigation NAS Navigation Strategy. • Optimize the process for delivering possible vehicle/pedestrian deviations by moving the entire process nationally to the Comprehensive Electronic Data Analysis and Reporting platform. • Foster an environment to improve NAS safety, operational efficiency and modernization by increasing organizational effectiveness and shared service delivery skills, broadening employee engagement, and ensuring ATO goals and strategies stay on track. • Continue increased focused efforts around Air Traffic Control Specialist training, resulting in increased Certified Professional Controllers at over 313 facilities. • Finish implementing an enterprise framework for the integration of UAS security features into the NAS, specifically including Counter-UAS and UAS detection capabilities.

Function/Activity	FY 2023 Anticipated Accomplishments
NextGen and Operational Related:	• Provide analytical studies and related safety monitoring services that support the continued use of and further reductions in separation standards within U.S. sovereign airspace. Airspace to include international airspace where FAA has delegated authority to provide air traffic services. • Conduct an annual safety analysis of Reduced Vertical Separation Minimum Operations (RVSM) in North America (United States, Canada, and Mexico) and within U.S. delegated oceanic airspace per International Civil Aviation Organization Requirements. • Conduct maintenance and operations of independent performance based monitoring for Altimetry System Error, a key component to the continued safe operation of RVSM.

Program Increase:

The FY 2023 budget request for ATO includes additional funding for the following programmatic initiatives.

Discretionary Adjustments	Amount ($000)	FTP	FTE
Cybersecurity	20,000	-	-
Supply Chain Risk Management	500	4	2
ATO Total	**$20,500**	**4**	**2**

Cybersecurity: The FY 2023 funding request of $20 million supports the FAA's National Airspace System initiative to keep pace with the evolving cybersecurity threats to our nation's critical infrastructure, have been increasing. Recent Executive Orders (EO), such as EO 13870 (2019), 13873 (2019) and 13920 (2020), establish the need for a strong cyber workforce, improved supply chain risk management, and strengthened cybersecurity protections. A 2021 GAO report on Electricity Grid Cybersecurity found that "systems are growing more vulnerable, in part because their industrial control systems increasingly allow remote access and connect to business networks". Real-world cyber-attacks, including the SolarWinds breach, highlight the

need for the FAA to increase its cybersecurity funding level. Evolving FAA cyber environments (e.g., Cloud, UAS) require an organizational response and investments to support that response. The added funding allows the ATO to address system vulnerabilities as well as conduct additional security risk assessments and testing, acquisition security support, policy development and maintenance, and security architecture reviews. While the ATO cybersecurity budget represents only between two and three percent of the total non-salary budget, the reported average at major institutions is approximately ten percent.

Supply Chain Risk Management: The FY 2023 funding request of $500,000 supports the FAA's strategy to evaluate and mitigate the risk associated with Information and Communication Technology (ICT) products and services. The additional funds will establish an interdisciplinary supply chain risk management (SCRM) program that address the 145 recommendations from GAO-21-171, as well as begin the implementation of the 7 foundational National Institute of Standards and Technology issued ICT SCRM practices.

(See also "Operations Summary" and "FY 2023 Discretionary Increase Request" for a detailed description of the Program Increase requests.)

What benefits will be provided to the American public through this request and why is this program necessary?

The ATO continues in its efforts to provide the American public, in keeping with our mission to ensure the safest, most efficient aerospace system in the world. In addition, ATO is providing an organized and expeditious flow of air traffic and supporting the National Security and Homeland Defense. As part of the NextGen modernization effort, ATO is introducing new airspace innovations every day. These innovations include satellite-based (or performance-based) navigation that enables more point-to-point flying which reduces fuel usage and emissions. ATO will continue to monitor the deployment progress for the Data Communication services into the NAS. Changes like these are making flying more efficient and environmentally friendly, while ensuring that all safety needs are met.

The ATO provides strategic and tactical NAS oversight, and regulates real-time air traffic when constraints such as weather, runway closures, equipment outages, security issues or other impacting conditions affect the NAS. By developing and coordinating FAA operational metrics, system operations develop recommendations for improving NAS capacity and system efficiency to reduce delays at specific airports and in high volume corridors. The flying public benefits directly by minimizing NAS delays and congestion, which delivers an efficient and safe mode of transportation to travelers. It will also lead to efficiencies that will save fuel and provide a better flying experience to the public.

The ATO's responsibilities also include environmental assessments and policies to manage effective airspace use, and complete regulatory development for UAS operations over urban

areas. This will expand the use of unmanned aircraft while deliberation on UAS rulemaking actions are completed.

The ATO creates standardization and provides synergy and efficiencies across the operations missions. The organization supports various programs and projects, and contributes to the user benefits of safety and flight efficiency to ensure the existing NAS infrastructure remains within established specifications.

The safety of American aviation is unparalleled. The FAA coordinated more than 45,000 flights per day throughout FY 2019, transporting over 2.7 million passengers safely to their destinations. This outstanding record is attributable to FAA's efforts at reducing fatal accident rates, deploying systems and procedures to reduce serious runway incursions, and conducting training programs aimed at reducing operational errors.

Controller Workforce: FY 2017 - FY 2021 End of Year Actuals
(FY 2022 - FY 2023 Forecasts from the FY 2022 Controller Workforce Plan)

FY 2017 Actual	14,481
FY 2018 Actual	14,695
FY 2019 Actual	14,375
FY 2020 Actual	14,242
FY 2021 Actual	13,850

FY 2022 Forecast	13,930
FY 2023 Forecast	14,056

Air Traffic Organization (ATO)
($000)

	Dollars (in Thousands)	FTP	OTFTP	FTE
FY 2022 Annualized CR	**$8,205,821**	**28,412**	**324**	**28,680**
Restoration of FY 2022 Request	283,764	15		8
Adjustments to Base	**$288,184**	**-**	**-**	**7**
Annualization of FY 2022 Pay Raise 2.7%	39,734	-	-	-
Annualization of FY 2022 FTE	1,015	-	-	7
FY 2023 Pay Raise 4.6%	213,257	-	-	-
One Less Compensable Day (260 days)	(22,345)	-	-	-
Transition from F&E to Ops	20,126	-	-	-
Non-Pay Inflation 1.5%	36,465	-	-	-
Working Capital Fund	(68)	-	-	-
Discretionary Adjustments	**$20,500**	**4**	**-**	**2**
Cybersecurity	20,000	-	-	-
Supply Chain Risk Management	500	4	-	2
Realignment Proposal	**$7,446**	**32**	**-**	**32**
Base Transfer	7,446	32	-	32
FY 2023 Request	**$8,805,715**	**28,463**	**324**	**28,729**

Aviation Safety (AVS)

Detailed Justification for the Aviation Safety (AVS)

FY 2023 - Aviation Safety Budget Request
($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 Request *
Salaries and Expenses	1,234,645	1,294,115	1,368,034
Program Costs	244,394	184,924	235,769
Total	**$1,479,039**	**$1,479,039**	**$1,603,803**
FTE	**7,314**	**7,351**	**7,541**

***** The FAA proposes to evolve the Office of NextGen to the Office of Research and Development, establish the Office of Integration and Engagement, and establish the Chief Technology Officer in the Air Traffic Organization.

Funding details for AVS services and offices:

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 Request
Flight Standards Service	931,346	931,346	998,648
Aircraft Certification Service	282,227	282,227	320,457
Office of Aerospace Medicine	74,262	74,262	96,779
Office of Rulemaking	8,394	8,394	9,170
Air Traffic Safety Oversight Service	33,286	33,286	35,825
Office of Accident Investigation and Prevention	34,145	34,145	39,235
* Office of Unmanned Aircraft Systems Integration	34,607	34,607	-
Office of Quality, Integration and Executive Services	73,772	73,772	92,052

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 Request
Organization Designation Authorization Office	7,000	7,000	11,637
Total	**$1,479,039**	**$1,479,039**	**$1,603,803**

* In FY 2023, the Office of Unmanned Aircraft Systems Integration is proposed to be transferred to the Office of Integration and Engagement.

What is this program and what does this funding level support?

The request allows Aviation Safety (AVS) to provide essential services for certification, production approval, and continued airworthiness of aircraft as well as the certification of pilots, mechanics, and others in safety-related positions; and to maintain essential safety data reporting capabilities.

AVS is responsible for setting the safety standards for every product, person, and organization that manufactures and operates aircraft in the national airspace. Through its approximately 7,700 employees, AVS provides the following services:

- Development and establishment of safety and certification standards for the civil aviation industry.
- Surveillance and oversight of certificate holders, air carriers, general aviation operators, repair stations, manufacturers and airmen.
- Issuance or denial of certifications.
- Ongoing and wide-ranging transformation of the NAS encompassed by NextGen
- Conducts independent safety oversight of ATO's air traffic services

AVS services and offices include:

Flight Standards Service (FS): The Flight Standards Service promotes safe air transportation by setting the standards, providing certification, and conducting oversight of airmen, air operators, air agencies, and designees.

Aircraft Certification (AIR): The Aircraft Certification Service develops and administers safety standards and procedures governing the design, production and airworthiness of civil aeronautical products. Certification staff oversee design, production, and airworthiness certification programs to ensure compliance with prescribed safety standards. AIR includes approximately 1,400 employees in five divisions and an executive support staff that develop safety standards, policies, and guidance that govern the design, production, and airworthiness of aircraft, engines, and propellers. AIR also issues approvals and provides oversight of

approval holders, designees, and delegated organizations.

Aerospace Medicine (AAM): The Office of Aerospace Medicine oversees a broad range of medical programs and services for both the domestic and international aviation communities. AAM performs medical certification/qualification of airmen and other persons associated with safety in flight, inspects and oversees aviation industry drug and alcohol testing programs, manages the FAA employee substance abuse testing programs, and performs aerospace medicine and human factors research.

Rulemaking (ARM): The Office of Rulemaking manages FAA's rulemaking program, processes, and timelines; develops proposed and final rules; manages responses to petitions for rulemaking and for exemption from regulatory requirements; and oversees rulemaking advisory committees that provide advice and recommendations on aviation-related issues.

Air Traffic Safety Oversight (AOV): The Air Traffic Safety Oversight Service conducts independent safety oversight of the Air Traffic Organization's (ATO) air traffic services, using risk-based, data-supported surveillance methods. Surveillance approaches include audits, inspections, investigations, compliance, and approvals, acceptances, and concurrences. AOV staff monitors local air traffic services, processes, and procedures using safety risk standards, safety management system principles, and certification/credentialing programs. AOV approves the ATO's safety management system, monitors the ATO for compliance with its approved safety management system, and reviews and approves the ATO's safety implementation actions and risk management strategies.

Accident Investigation and Prevention (AVP): The Office of Accident Investigation and Prevention manages the national airspace safety risk portfolio by investigating aviation accidents and incidents and collecting, analyzing, and sharing safety information with U.S. and international stakeholders. AVP leads the implementation and evolution of safety management at both the FAA and AVS levels, develops research planning needs, and manages the agency's National Transportation Safety Board and FAA safety recommendations programs.

Unmanned Aircraft Systems Integration (AUS): Office of Unmanned Aircraft Systems (UAS) Integration is responsible for facilitating the safe, efficient, and timely integration of UAS into the national airspace system. In FY 2023, there is a proposal for AUS to be transferred to the Office of Integration and Engagement.

Quality, Integration, and Executive Services (AQS): The Office of Quality, Integration, and Executive Services provides executive oversight and direction of consolidated management support services for all of AVS. AQS manages all phases of planning, financial management, Information Technology liaison services, and administrative activities for the immediate office of the Associate Administrator.

Organization Designation Authorization (ODA): The Organization Designation Authorization (ODA) Office will continue enhancing the promotion of standardized development, improving implementation, and application of coordinated national

ODA program policy, supporting standardized outcomes and improvements across the ODA program.

FY 2023 Anticipated Accomplishments:

Function/Office	FY 2023 Anticipated Accomplishments
Aviation Safety	• Facilitate government/industry safety teams to identify emerging system risk and to implement risk mitigation strategies utilizing the Aviation Safety Information Analysis and Sharing (ASIAS) and System Safety Management Transformation programs that provide data-driven safety analysis to reduce aviation risk in the national airspace worldwide. • Champion the evolving rulemaking efforts to modernize regulations in order to incorporate safety management principles into design and manufacturing environments. • Continue the implementation of the FAA and Industry Certification Process Guide in a consistent and sustainable manner to educate all stakeholders about needs/expectations in the certification process, reinforce that education through follow-up activities, and measure the effectiveness of application. • Establish baseline and ongoing levels of confidence in foreign Civil Aviation Authorities based on equivalency/compatibility of standards, policies and procedures and technical competency of each authority. • The Organization Designation Authorization Office will promote standardized development, implementation, and application of coordinated national Organization Designation Authorization (ODA) program policy. It will have focused ODA oversight on high-risk areas and support appropriate expansion of the ODA program, both in scope and utilization, in consideration of the rapidly changing aviation industry.

Transition to Operations and Maintenance (TOM):
TOM funding covers the operational cost of new systems acquired under the FAA's Facilities and Equipment Capital budget. Once new systems are installed in the national airspace system, the ongoing operational costs are transferred to the Operations appropriation.

The Aerospace Medical Equipment Needs (AMEN) program upgrades aging and obsolete equipment used in the performance of research and education at the Civil Aerospace Medical Institute. This request will provide for ongoing first level engineering, such as, calibration and configuration.

Regulation and Certification Infrastructure for System Safety (RCISS) is the capital investment that delivers Information Technology infrastructure utilized by the AVS safety workforce. RCISS continues

to modernize and enhance the AVS Information Technology infrastructure with solutions focused around improved security, migration to the cloud, and access to tools and applications to support the safety workforce. This request will provide for ongoing second level engineering, licenses, and training.

Systems Approach for Safety Oversight (SASO) is reengineering Flight Standards Service business processes and developing an oversight system based upon system safety principles. SASO increases aviation safety and controls cost by adopting the International Civil Aviation Organization's safety principles, FAA's transition to risk-based decision-making and integrated oversight philosophy. This request will provide for ongoing second level engineering and recurring training.

Transition to Operations and Maintenance	Amount ($000)
Aviation Medical Equipment Needs (AMEN)	53
Regulation and Certification Infrastructure for System Safety (RCISS)	272
System Approach for Safety Oversight (SASO)	1,889
AVS Grand Total	**$2,214**

Program Increases:

The FY 2023 budget request for AVS includes additional funding for the following programmatic initiatives.

Discretionary Adjustments	Amount ($000)	FTP	FTE
Address Aircraft Certification Reform Legislation	13,907	86	43
Data Analysis/Enterprise Information Management	10,000	-	-
Aviation and Aerospace Talent Development	250	-	-
Unmanned Aircraft Systems (UAS) Integration	4,224	50	25
Strengthen Aviation Safety Oversight	11,243	110	55
AVS – Subtotal	**$39,624**	**246**	**123**
Aviation and Aerospace Talent Development *(Proposed to transition to the Office of Integration and Engagement in FY 2023)*	(250)	-	-

Discretionary Adjustments	Amount ($000)	FTP	FTE
Unmanned Aircraft Systems (UAS) Integration *(Proposed to transition to the Office of Integration and Engagement in FY 2023)*	(952)	(10)	(5)
AVS Proposed Transfer to the Office of Integration and Engagement - Subtotal	***($1,202)***	***(10)***	***(5)***
AVS Total	**$38,422**	**236**	**118**

Address Aircraft Certification Reform Legislation: This request includes additional staffing, as well as the resources needed to implement requirements from the Aircraft Certification Safety and Accountability Act. The holistic solution will be a combination of investments in safety programs, infrastructure, innovation, and the AVS workforce. Significant human capital resources are needed to operationalize the recommendations and requirements of Congress and the various committees. AVS will also proactively address international safety gaps by actively engaging the International Civil Aviation Organization and key bilateral partners to establish an integrated approach to the effective promotion of AVS regulatory standards. Funding is requested for Safety Management Systems (SMS) to provide programmatic and organizational support for the evolution of FAA's SMS and safety risk assessments.

Data Analysis/Enterprise Information Management: This request will allow AVS to work collaboratively with FAA's Enterprise Information Management program to modernize and centralize safety data for AVS. This multi-year effort will provide appropriate access to quality data at an enterprise level for the AVS workforce. In parallel to developing governance, AVS must begin addressing the systems themselves. This work will ensure that safety data is reliable, accurate, timely, understood, and sourced authoritatively. Additionally, the data will be architected in a manner to capitalize on data integration opportunities and to leverage advanced analytics.

Unmanned Aircraft Systems Integration: This request provides for the expansion of policy development, surveillance, certification and operator risk analysis for UAS applications and operations within the national airspace. AVS is requesting for travel and other direct costs related to the planned hires, including supplies and equipment.

Strengthen Aviation Safety Oversight: This request will allow the FAA to respond to new technologies, new operations, new applications of existing technologies, new industry dynamics and business models. These evolving systems result in demand for more oversight, inspections, data, analytics, and reports. Consistent with the 2022 Aviation Safety Workforce Plan, the sustained increase requires additional resources to avoid unacceptable delays while maintaining the aviation safety system. These personnel will better position the FAA to deliver against expectations for safety inspections, air carrier oversight, general aviation oversight, and Federal Contract Tower oversight, and disease prevention leadership.

What benefits will be provided to the American public through this request and why is this program necessary?

AVS will provide the American public safety and economic benefits by maintaining an enhanced oversight of the national airspace through data analysis techniques used for audits, surveillance, and certification of aircraft operators and production manufacturers, pilots, mechanics, and, other safety related positions. AVS will provide certification and integration services for newly designed and manufactured aviation products associated with UAS. The engineer and inspector resources will provide manufacturing and operational approvals of UAS technologies while maintaining safety oversight services within the national airspace.

Staffing Information

	FY 2021 Enacted	FY 2022 CR	FY 2023 Request
Direct Full Time Equivalents (FTE)	**7,314**	**7,351**	**7,541**
Flight Standards Service	5,073	5,091	5,212
Aircraft Certification Service	1,417	1,426	1,506
Office of Aerospace Medicine	410	410	420
Office of Rulemaking	42	42	45
Air Traffic Safety Oversight Service	131	131	133
Office of Accident Investigation and Prevention	81	81	87
Office of Unmanned Aircraft Systems Integration	80	80	-
Office of Quality, Integration and Executive Services	77	77	87
Organization Designation Authorization Office	3	13	51

Full Time Permanent Employment (FTP)	**7,332**	**7,406**	**7,719**
Flight Standards Service	5,125	5,149	5,332
Aircraft Certification Service	1,413	1,434	1,554
Office of Aerospace Medicine	406	410	424
Office of Rulemaking	37	42	46
Air Traffic Safety Oversight Service	128	130	133
Office of Accident Investigation and Prevention	76	81	87
Office of Unmanned Aircraft Systems Integration	78	75	-
Office of Quality, Integration and Executive Services	66	72	91
Organization Designation Authorization Office	3	13	52

Aviation Safety (AVS)
($000)

	Dollars (in Thousands)	FTP	OTFTP	FTE
FY 2022 Annualized CR	**$1,479,039**	**7,406**	**63**	**7,351**
Restoration of FY 2022 Request	57,259	173		86
Adjustments to Base	**$69,346**	**-**	**-**	**87**
Annualization of FY 2022 Pay Raise 2.7%	8,437	-	-	-
Annualization of FY 2022 FTE	15,255	-	-	87
FY 2023 Pay Raise 4.6%	44,443	-	-	-
One Less Compensable Day (260 days)	(4,792)	-	-	-
Transition from F&E to Ops	2,214	-	-	-
Non-Pay Inflation 1.5%	3,815	-	-	-
Working Capital Fund	(26)	-	-	-
Discretionary Adjustments	**$39,624**	**246**	**-**	**123**
Address Aircraft Certification Reform Legislation	13,907	86	-	43
Data Analysis/Enterprise Information Management	10,000	-	-	-
Aviation and Aerospace Talent Development	250	-	-	-
Unmanned Aircraft Systems (UAS) Integration	4,224	50	-	25
Stregthen Aviation Safety Oversight	11,243	110		55
Realignment Proposal	**($41,465)**	**(106)**	**(7)**	**(106)**
Base Transfer	(40,263)	(96)	(7)	(101)
Aviation and Aerospace Talent Development	(250)	-	-	-
Unmanned Aircraft Systems (UAS) Integration	(952)	(10)	-	(5)
FY 2023 Request	**$1,603,803**	**7,719**	**56**	**7,541**

See Operations Summary for a detailed description of the explanation of funding changes.

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Commercial Space
Transportation(AST)

Detailed Justification for the Office of Commercial Space Transportation (AST)

FY 2023 – Office of Commercial Space Transportation Budget Request ($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 Request
Salaries and Expenses	18,932	20,873	25,993
Program Costs	8,623	6,682	16,784
Total	**$27,555**	**$27,555**	**$42,777**
FTE	**104**	**108**	**140**

What is this program and what does this funding level support?

The Commercial Space Launch Act authorized the Department of Transportation (DOT) to license and monitor the safety of commercial space launches and to promote the industry. Executive Order 12465 designated DOT as the lead Federal Agency for enabling private-sector launch capability.

AST's mission is to ensure protection of the public, property, and the national security and foreign policy interests of the United States during commercial launch or reentry activities, and to encourage, facilitate, and promote U.S. commercial space transportation. Recent years have witnessed dramatic growth in both the number of commercial space transportation companies and total operations. From FY 2017 to FY 2020 alone, AST witnessed a 70 percent increase in launch activities. In addition, the National Space Policy of 2010, the National Space Transportation Policy of 2013, and the National Space Policy of 2020 reflect a greater reliance by the Federal Government on the commercial space industry to accomplish national objectives. As a result, AST continues to see significant increases in the activities required to achieve its mission.

AST accomplishes its safety mission through the execution of its licensing, permitting, and safety inspection functions. Key focus areas include:

- Safety oversight: Primarily through on-site inspections, AST ensures license and permit holders adhere to regulatory requirements. At least one inspection of launch operations is required at time of flight, but inspection also encompasses sending safety inspectors to launch and reentry operations to ensure an operator's compliance with regulations and the representations made in its application. Additionally, key activities including dress rehearsals and the testing and installation of flight termination systems are also inspected. Finally, each year AST conducts inspections of all licensed launch sites.

- License and Permits: AST has 180 days to evaluate a license application or 120 days to evaluate a permit application. These evaluations are complex in nature, and require an in-depth safety evaluation, which also includes a policy review, interagency review, and a computation of maximum probable loss for determining an applicant's financial responsibility.

- Pre-application Consultation: AST conducts a pre-application consultation with every company or entity that approaches the FAA for a license or permit. This consultation process can last months or even years, as it serves to educate these proponents on the applicable regulations and assist them in identifying potential issues as they develop and shape their plans. In FY 2021, there were three launch sites in pre-application consultation with AST.

- Spaceports: AST is responsible for licensing the following operation of launch sites or "spaceports":

    - Spaceport Florida at Cape Canaveral Air Force Station, Florida
    - Mid-Atlantic Regional Spaceport at Wallops Flight Facility, Virginia
    - Mojave Air and Space Port, California
    - Kodiak Launch Complex on Kodiak Island, Alaska
    - Oklahoma Spaceport in Burns Flat, Oklahoma
    - Spaceport America near Las Cruces, New Mexico
    - Cecil Field in Jacksonville, Florida
    - Houston Airport System Spaceport at Ellington Airport, Texas
    - Midland International Airport in Midland, Texas
    - Colorado Air and Spaceport in Watkins, Colorado
    - Space Coast Regional Spaceport, Titusville, Florida
    - Camden, GA

FY 2023 Anticipated Accomplishments:

Function/Office	FY 2023 Anticipated Accomplishments
Commercial Space	• Enhance and revise regulatory framework, including implementation of the new Part 450 rule, in order to keep regulations flexible to address the increasing complexity and diversity of suborbital and orbital operations. • Complete licensing and permitting evaluations within statutory time limits. • Complete process reengineering efforts and improvements to support increased industry cadence and technological innovations while driving out inefficiencies and non-value added activities. • Complete additional safety approval applications, which evaluate space-related components, processes, or services.

Program Increases:
The FY 2023 budget request for AST includes additional funding for the following programmatic initiatives.

Discretionary Adjustments	Amount ($000)	FTP	FTE
Streamline Commercial Space Launch and Reentry Licensing	6,170	35	18
Aviation and Aerospace Talent Development	480	-	-
Develop Human Spaceflight Program	2,179	10	5
AST Total	**$8,829**	**45**	**23**

Streamline Commercial Space Launch and Reentry Licensing: This request supports a critical need for additional resources to implement the Part 450 rule and appropriately regulate the Part 450 vehicle operators. On December 10, 2020, the Streamlining Launch and Reentry Licensing Requirements final rule was published in the Federal Register to establish a new Part 450 for commercial space vehicle operators. When it became effective on March 21, 2021, any launch or reentry vehicle operator could apply to conduct launch and reentry operations under the

new part. This new regulatory regime consolidated and streamlined different regulatory regimes for expendable and reusable launch and/or reentry vehicles into a single streamlined regulation for all vehicle and operations types. This discretionary adjustment directly supports the implementation of this rule. Funding is also requested to address the critical need for personnel with technical experience in areas such as new and emerging space vehicles support, systems safety, flight safety systems and orbital debris analysis. This staff would also provide support to tools development and industry standardization efforts with regards to orbital and reentry safety.

Aviation and Aerospace Talent Development: This request supports the development of educational materials to enhance FAA's Science, Technology, Engineering, and Math Aviation and Space Education Program outreach for commercial space, as well as allows for increased attendance at workshops and events across the nation to keep apprised of the latest innovative interactive tools available.

Develop Human Spaceflight Program: This request enables the establishment of a new human spaceflight program to manage human spaceflight and licensing under the informed consent regime, as well as to undertake pre-rulemaking activities for occupant safety. This program would ensure proper evaluation of human space flight safety, including environmental controls and life support systems, crew escape systems, and human performance, including human factors, human reliability engineering, and crew training subject matter experts. The FAA will manage the pre-rulemaking activities for human space flight, including stakeholder engagement through an Aerospace Rulemaking Committee (SpARC). The human spaceflight program will also prepare for human space flight accidents, including stakeholder engagement, public outreach, and crisis management planning.

(See also "Operations Summary" and "FY 2023 Discretionary Increase Request" for a detailed description of the Program Increase requests.)

What benefits will be provided to the American public through this request and why is this program necessary?

Since AST's transfer to the FAA in 1995 through June 2021, the Office has licensed or permitted 404 commercial space launches and reentries. Providing this service to the commercial space industry, while ensuring the safety of the public, remains AST's top priority. The continued rapid pace of growth in commercial space transportation brings challenges beyond increasing launch cadences. New types of space vehicles, such as balloons and a variety of winged launch and reentry vehicles, increases the complexity of licensing and operations. Additionally, the commercial space industry is also seeing new ventures like small-satellites, cube-satellites, and commercial orbital servicing and commercial space stations, as well as the dawn of commercial human spaceflight operations.

Additionally, the National Aeronautics and Space Administration is increasingly relying on the commercial sector to provide cargo and commercial astronaut services for the International Space Station, with a much increased launch cadence. Finally, the 2020 National Space Policy requires the Department of Transportation to "seek to remove or streamline regulatory impediments that may discourage commercial space communications providers from obtaining licenses from the

United States".[1]

This directive provides for an integrated government–led program, working with private sector partners, for a return to the Moon, and possibly follow-on missions to Mars. The Office of Commercial Space Transportation will play a vital role in assuring the successful implementation of such a directive.

[1] Footnote: https://trumpwhitehouse.archives.gov/wp-content/uploads/2020/12/National-Space-Policy.pdf

Office of Commercial Space Transportation (AST)
($000)

	Dollars (in Thousands)	FTP	OTFTP	FTE
FY 2022 Annualized CR	**$27,555**	**113**	4	**108**
Restoration of FY 2022 Request	4,915	9		5
Adjustments to Base	**$1,478**	**-**	**-**	**4**
Annualization of FY 2022 Pay Raise 2.7%	133	-	-	-
Annualization of FY 2022 FTE	528	-	-	4
FY 2023 Pay Raise 4.6%	721	-	-	-
One Less Compensable Day (260 days)	(84)	-	-	-
Non-Pay Inflation 1.5%	180	-	-	-
Discretionary Adjustments	**$8,829**	**45**	**-**	**23**
Streamline Commercial Space Launch and Reentry Licensing	6,170	35	-	18
Aviation and Aerospace Talent Development	480	-	-	-
Develop Human Spaceflight Program	2,179	10	-	5
FY 2023 Request	**$42,777**	**167**	**4**	**140**

See Operations Summary for a detailed description of the explanation of funding changes.

Finance and Management(AFN)

Detailed Justification for Office of Finance and Management (AFN)

FY 2023 – Office of Finance and Management – Budget Request ($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 Request
Salaries and Expenses	255,043	261,327	271,590
Program Costs	580,958	574,674	646,609
Total	**$836,001**	**$836,001**	**$918,199**
FTE	**1,364**	**1,364**	**1,368**

What is this program and what does this funding level support?

The Office of Finance and Management (AFN) is responsible for providing the Agency's common business services through a consolidated, integrated approach. AFN oversees the delivery of financial operations, acquisition services, information technology, property management, and technical training to internal and external customers across the Agency.

AFN manages the FAA's enacted budget and plans for future budget requirements, handles more than 26,000 contract actions for more than $5.2 billion in goods and services annually, and supports over 65,000 technology users. AFN leads the FAA's efforts to identify cost savings, leverage technology, and optimize resources in order to position the Agency to achieve the aviation safety mission.

Each year, AFN averts cyber incidents by detecting and prioritizing over 100 million cyber alerts for the national airspace and non-national airspace systems throughout the FAA and the DOT and provides critical crisis response capability for all cyber incidents. In addition, AFN manages leases and real property assets that house 24,300 personnel in approximately 6.9 million square feet of office space and provides management and oversight for over $9 billion in personal property assets.

AFN's four service organizations include:

Financial Services (ABA)
The Office of Financial Services enables the FAA to meet its aviation safety mission by formulating, justifying, executing, and managing budgets for each of the Agency's lines of business and staff offices. ABA ensures that funding is available to support FAA's mission and advocates for funding to support FAA's critical Aviation Safety and Air Traffic

personnel, programs, and initiatives. ABA serves as the Agency's Chief Financial Officer and leads the FAA in identifying cost savings, providing responsible financial management of budget appropriations, and managing the Agency's workforce planning.

ABA provides three core services:

Budget and Program Services identifies and defines the Agency's budgetary needs to meet Agency goals. This organization tracks the status of major projects and monitors Agency spending to ensure compliance with appropriation law and other federal laws. It also serves as the liaison to Congress for funding and appropriation matters.

Financial Management develops and maintains corporate FAA-wide management systems and manages the capitalization of FAA's capital assets. The organization also implements accounting and financial management policies for the Agency and assures the adequacy of internal controls for compliance with laws, regulations, and policies.

Financial Analysis facilitates the Agency's cost reduction efforts and implements cost control initiatives; develops Agency policy; oversees financial guidance and advisory services for Agency contracts; ensures that business decisions are sound by analyzing the financial impact of proposed Agency labor contracts; develops Agency policy for spending and authorization controls; and develops the controller and aviation safety workforce plans.

ABA FY 2023 Anticipated Accomplishments:

Function	FY 2023 Anticipated Accomplishments
Budget and Programming	• Ensure that required funding needs for Agency programs are available. • Ensure Agency funds and resources are utilized effectively and that FAA maintains compliance with the Anti-Deficiency Act.
Financial Management	• Lead the Agency on all accounting operations and provide financial oversight and information to assist FAA organizations with making business decisions. • Ensure an unmodified audit opinion on Agency FY 2022 financial statements.
Financial Analysis	• Employ business case discipline to any cost/contract reviews for large investments as the Agency investment analysis process stewards. • Provide Controller and Aviation Safety Workforce plans.

Acquisitions and Business Services (ACQ)

ACQ provides contracting expertise, acquisition lifecycle support, and property management that enables the FAA to achieve its aviation safety mission by procuring goods and services that leverage emerging technologies and industry best practices. Procurements are negotiated at best value providing significant cost savings. In FY 2021, ACQ contracted for more than $5.2 billion in goods and services and generated $96.2 million in cost savings through its Strategic Sourcing of Acquisition of Various Equipment program, for purchases like office supplies, office equipment, IT hardware and software, aircraft navigational charting services, and video teleconferencing equipment.

ACQ develops the FAA's Acquisition Workforce Profile, which serves as the FAA's blueprint for developing and sustaining a high-performing acquisition workforce. This includes critical positions such as Contracting Officers/Specialists, Real Estate Contracting Officers, Program/Project Managers, Contracting Officer Representatives, Researchers, Engineers/System Engineers, Test and Evaluation Specialists, Financial Specialists, and other professionals providing specialized support. ACQ maintains the competency models for core acquisition disciplines.

ACQ manages certification programs that provide acquisition professionals opportunities to achieve and maintain professional development and certifications throughout the acquisition lifecycle. Due to the commitment to maintaining a strong framework for the Agency's acquisition workforce, ACQ is consistently one of the top performers among its peer group across the government.

ACQ oversees and manages real and personal property for the Agency. Real property includes management of administrative space at FAA Headquarters and other facilities in the National Capital Region; the space needs of more than 24,300 personnel from every FAA line of business and staff office housed in over 6.9 million square feet of FAA office space across the country.

ACQ provides five core services:

Procurement advises, plans, negotiates, and awards FAA organizations' cost-effective, best value contracts, purchase orders, delivery orders, agreements, and aviation research grants for all of FAA, including FAA headquarters, William J. Hughes Technical Center, Mike Monroney Aeronautical Center (MMAC), and the Service Areas.

Acquisition Workforce Planning and Development updates the FAA's Acquisition Workforce Profile and provides a comprehensive program of career development guidance and competency-based training and certification programs for acquisition personnel.

Acquisition Policy and Oversight develops and maintains Agency-wide lifecycle acquisition policy, guidance, and tools that comprise and support the FAA's Acquisition Management System. ACQ also analyzes acquisition data to formulate trends and traceable

metrics that identify areas for improvement to leverage government-leading practices, recommends improvements regarding Agency policies and processes based on lessons learned, potential deficiencies, and best practices. In addition, ACQ administers the Joint Resources Council, which makes and oversees corporate-level investment decisions for Agency acquisition programs.

Real Property Management maintains the DOT-wide inventory associated with more than 33,710 assets department-wide, 33,138 FAA and 572 DOT, including buildings, structures, and land parcels which include administrative offices, structures, and land leases for National Airspace System operational sites. ACQ oversees administrative space leases within each of the regions and field facilities for the Agency's Air Traffic Organization (ATO), Airports, Aviation Safety (AVS), and the Security, and Hazardous Materials Safety organizations.

Personal Property Management and Oversight provides support in leading and integrating logistics initiatives within the FAA and DOT. As part of ACQ's personal property responsibilities, ACQ establishes and oversees the Agency's property management system for the management and physical control of over 250,000 assets valued at $9.0 billion in global Agency assets throughout the national airspace and international facilities.

ACQ FY 2023 Anticipated Accomplishments:

Function	FY 2023 Anticipated Accomplishments
Procurement Actions	• Ensure contractor performance is in accordance with contract terms and conditions, issue contract modifications, and monitor contract deliverables. • Develop and implement best practices in acquisition to deliver best value for the taxpayer and increase efficiency and effectiveness of procurement methods. • Conduct internal and external small business outreach/training and target at least 25 percent of
Acquisition Training and Certification	• Manage training and certification programs for acquisition personnel, including program/project managers, contracting officers/specialists, contracting officer's representatives, systems engineers, test and evaluation specialists, and logistics specialists.

Acquisition Oversight	• Manage audits of cost reimbursable, time & material, and labor hour contracts with an estimated value of $100.0 million or more and perform audits for at least 15 percent of these contracts with estimated values below $100.0 million. • Conduct Integrated Baseline Reviews on investment programs along with validations of contractor Earned Value Management Systems. • Conduct investment program post-implementation reviews.
Personal Property Management	• Enhance management performance targets that measure adequacy of property management policies and procedures, staffing and training, performance review, and improvement program. • Implement performance targets that measure the quality and effectiveness of property management activities, staff productivity, and adequacy of checks and balances. • Optimize the Agency fleet size by reducing the number of FAA's underutilized administrative Fleet Vehicles.

Information and Technology Services (AIT)

AIT operates as the agency's information and technology backbone by providing and overseeing all aspects of the Agency's IT enterprise. This concept allows all lines of business and staff offices, including ATO and AVS, to connect, interact, respond to customers, stakeholders, colleagues, and access data and resources necessary to perform their daily operations in support of the FAA mission. AIT keeps the FAA's network safe from cyber threats, maintains a comprehensive cyber threat intelligence analysis capability, and supports innovative technology and tools to provide quick reliable information and data access to our customers while continuing the Agency on a path of increased efficiency and innovation.

AIT is responsible for providing comprehensive IT services to over 65,000 technology users across the FAA. AIT maintains a current inventory of over 345 Federal Information Security Management Act reportable systems, of which 61 are identified as mission critical. Public facing systems such as FAADroneZone[1], Low Altitude Authorization and Notification Capability, and FAA.gov (https://www.faa.gov/) are developed and maintained to ensure ease of access and transparency for our public users. AIT's Federal Identity, Credential, and Access Management program continues to support millions of internal and public users to ensure content accuracy and security.

[1] (https://faadronezone.faa.gov/)

AIT provides three core services:

Shared Services and Modernization delivers effective customer-driven solutions to enhance and modernize core services that meet mandates, and initiatives, while evolving as technology advances and the needs of our stakeholders change. AIT supports and maintains the lifecycle of FAA devices, IT infrastructure components, enterprise software, and specialized software application solutions and sustainment. These core services provide all of the FAA workforce with the necessary tools to enable them to conduct their jobs with maximum proficiency and efficiencies, while sustaining the most cost-effective technical solutions for the Agency.

AIT empowers enhanced work performance and productivity throughout the workforce, which includes telework readiness capabilities and the enhancement of standardized collaboration tools. An example of this occurred as a result of the COVID-19 pandemic, where AIT met the Agency's requirement of consistent connectivity. AIT nearly tripled the FAA remote access bandwidth, which enabled a virtual workplace. Implementing collaboration tools to meet the workforce needs provided instant connection to their remote teams. As a result of this implementation, collaboration, screen sharing, and team/peer-peer communication was enhanced to accommodate a functional and effective, long-term remote working environment for the FAA workforce.

Cybersecurity ensures the confidentiality, integrity, and availability of its information, information systems, and mission from evolving cyber threats, resulting in increased safety and security for our workforce, mission support, and national airspace.

AIT oversees cybersecurity across the FAA enterprise including air traffic control, research & development, and mission support systems. This includes collaboration with the Department of Homeland Security Continuous Diagnostics and Mitigation (CDM) program. CDM provides the FAA network and systems with tools that continuously identify cybersecurity risks, prioritizes these risks based on potential impacts, and enables cybersecurity personnel to mitigate the most significant problems first.

In addition, AIT is leading the effort to develop a well-informed and skilled workforce that will enable the FAA to execute federal-level cybersecurity initiatives and ensure secure operations of FAA systems and services. In an ever-changing cyber landscape, continuous improvement of cybersecurity services ensures resilience of FAA's mission and essential services.

Additional resources were provided in FY 2022 to nine agencies that were impacted by the SolarWinds incident. The FAA requested $34.1 million to increase FAA's security capabilities by increasing its capacity to support incident analysis and validation, improve FAA's ability to detect and contain security threats, mature the Security Operations Center (SOC), and enhance FAA's capacity to eradicate and evict cyber adversaries. The FAA will continue to increase its capacity to support incident analysis and validation by focusing on areas such as Cyber Threat Intelligence, Digital Forensics and Improved Logging. The

FAA will continue to improve its ability to detect and contain security threats by implementing Cloud Access Security Broker solutions and upgrading e-mail security. The FAA will continue to improve its SOC maturity by expanding its Security Information and Event Management solution.

Enterprise Information Management (EIM) capability is a modern cloud-based scalable enterprise platform that provides common information management capabilities and services across the FAA and eliminates the need to acquire and sustain dedicated and redundant information management capabilities for individual systems.

EIM creates an environment that enables the integration and development of diverse operational systems, critical data assets, and unique applications by providing a common framework for data, application re-use, and Agency-wide collaboration. The unified data layer enables analysts and data scientists to rapidly, and efficiently conduct data mining and advanced analysis across FAA data, in order to provide insight and answers to new, emerging, and ad hoc scenarios.

EIM enhancements will provide the FAA workforce and stakeholders with a suitable framework for efficiently accessing and utilizing relevant data resources to meet their requirements while reducing duplicate functions. The EIM program will buildout and extend current capabilities by supporting and enabling technology transfers from discrete programs to the cloud-hosted solutions that scale to support requirements of new and modernized systems. EIM will deliver improved development, test, staging, and production environments, and provide continuation of the system's development life cycle, including systems analysis, system design, and system security. Major enhancements will focus on "Big Data" analytics to include: data science, artificial intelligence, machine learning and data visualization capabilities.

AIT FY 2023 Anticipated Accomplishments:

Function	FY 2023 Anticipated Accomplishments
Shared Services and Modernization: *Optimize Information Access through Technology Innovation*	• Maximize the capabilities of the Integrated Service Center and MyIT support to provide improved services to FAA stakeholders. • Maximize employee efficiencies and effectiveness through implementation of process improvements and other enhancements in core IT services delivery. This includes onboarding, offboarding, break-fix, and other service center services. • Continue to develop and optimize Robotic Process Automation. • Continue to reduce IT carbon footprint through responsible asset disposition practices and processes. • Modernize asset management and service delivery by enabling critical asset procurement and product information tracking. • Implement additional solutions to improve the Mobile Customer Experience. • Optimize and standardize Video Collaboration services across the enterprise. • Continue to deploy the collaborative technologies across the enterprise.

Function	FY 2023 Anticipated Accomplishments
Cybersecurity: *IT Risk Management & Information Systems Security*	• Implement Security Operations orchestration and automation technologies to improve the speed and accuracy of detection and response capabilities. • Modernize the existing tools and automation technologies in the SOC to improve the speed and accuracy of detection and response capabilities. • Conduct incident response exercises, both domestically and internationally, to identify process gaps and coordinate remediation activities. • Implement hiring, retention, and training strategies for the Agency's cybersecurity workforce, in alignment with the National Academy of Science recommendations. • Expand CDM capabilities to implement additional authentication and role-based access control. • Operationalize CDM tools, which will secure the FAA network from unauthorized hardware and software, and from unauthorized user access on the network. • Incorporate security measures into the software development lifecycle to minimize risk and vulnerabilities.

Function	FY 2023 Anticipated Accomplishments
Enterprise Information Management: *Enable FAA's Employees to Work Smarter, Resource Optimization*	• Expand and improve advanced geospatial capabilities to manage and exploit the growing volume and variety of Geographic Information Systems data. • Buildout and improve intelligent computing engines to provide insights and optimization of responses on voluminous FAA data. • Evolve and mature the integration and use of machine learning to support and improve FAA analytic capabilities. • Continue to expand and evolve EIM Data Platform operations capabilities; provide the cloud-based platform in the Mission Support environment. • Deliver capabilities and services to enable the Agency to move away from silo-centric applications, toward a unified, secure data, and integrated EIM environment.

Transition to Operations and Maintenance (TOM):
TOM funding covers the operational cost of new systems acquired under the FAA's Facilities and Equipment Capital budget. Once new systems are installed in the national airspace, the ongoing operational costs are transferred to the Operations appropriation. EIM request will provide for ongoing firstlevel engineering, second-level engineering, software license fees, utility infrastructure and security audit.

Transition to Operations and Maintenance	Amount ($000)
Enterprise Information Management (EIM)	1,347

Mike Monroney Aeronautical Center (MMAC or AMC)

The Mike Monroney Aeronautical Center (AMC) provides centralized services critical to ensuring aerospace safety. The Center, located in Oklahoma City, OK is home to the largest single FAA site outside of Washington, D.C. with a population of more than 6,300 FAA employees, contractors, and students. AMC provides facility oversight, operations, architecture and engineering design, construction, space management, maintenance, and environmental and safety support for the entire Center which is comprised of 137 buildings with over 3.4 million square feet of space located on 1,057 acres.

AMC leverages the shared services concept to improve service delivery and performance, enhance customer satisfaction, and optimize value for the FAA and other federal agencies. AMC is home to the Enterprise Services Center, an OMB designated Financial Management Shared Services Provider and federal Information Systems Security provider. In addition, AMC oversees the FAA's $500.0 million Franchise Fund, composed of six organizations that provide shared services across the federal government. Services include financial management, supply chain and logistics, information technology services, technical and leadership training, flight program maintenance operations, and acquisition. The franchise fund operations provide products and services to the entire DOTand over 30 other different federal agencies. Additionally, the FAA Academy located at the Center is the primary source for aviation technical training for air traffic controllers, aviation safety inspector, and national airspace technicians and engineers.

AMC provides core services:

Technical Training: The FAA Academy (AMA) oversees and manages the delivery of technical training for all five lines of business within the FAA, supporting over 50,000 employees annually in resident and through distant learning platforms. The Academy is leading the Agency's transformation to remote and virtual training delivery across key platforms. AMA plays a vital role in meeting the Agency's controller workforce plan and the aviation safety workforce plan. Annually, AMA trains over 16,000 air traffic controllers, national airspace technicians, and aviation safety inspectors.

Financial Management Services: The Enterprise Services Center (ESC) is an OMB designated Financial Management Center of Excellence and Shared Services Provider. ESC provides financial management services to over 20 federal agencies including all DOT modes of operation. ESC processes approximately 270,000 commercial vendor invoices, 934,000 grants payments, 200,000 travel vouchers, 320,000 Accounts Receivable receipts for collections and 42,000 Accounts Receivable invoice-billing transactions annually. ESC provides turnkey financial services including financial statement and reporting packages for numerous customers. ESC is at the forefront of implementing intelligent automation, with Web Application Desktop Integrator and Enterprise Data Quality tools in production and continues to automate tasks and processes via Robotic Process Automation. Through financial shared services, ESC will also play a critical role in the reporting requirements for Bipartisan Infrastructure Law implementation.

Information Technology Services: As part of federal shared services, ESC is an accredited Fed RAMP Third Party Assessment Organization that provides a variety of Independent Assessment, Vulnerability Scanning/Penetration Testing and Cybersecurity Support services to federal agencies. ESC provides these services to federal customers enabling them to achieve Federal Information Security Management Act compliance and to better manage risk in today's cyber-centric environment.

ESC also provides oversight and management of a National Wireless Program providing best in government life-cycle management for cellular and satellite devices. The program provides over 20,000 wireless devices to federal agencies which results in an estimated annual savings of over $2.2 million.

AMC FY 2023 Anticipated Accomplishments:

Function	FY 2023 Anticipated Accomplishments
FAA Academy Technical Training	• Ensure the FAA's workforce of the future is equipped with the technical skills necessary to maintain and operate the national airspace. • Increase the safety of the NAS by providing technical training to all Air Traffic Controllers, national airspace technicians and Aviation Safety Inspectors. • Transform the delivery of FAA technical training, with the use of emerging technologies for in-person training, virtual platforms and mixed modalities. • Continue to facilitate a virtual training community of practice to share lessons learned across FAA, DOT, and other federal agency training challenges associated with new learning modalities.

Function	FY 2023 Anticipated Accomplishments
Facilities Oversight, Operations, Space Management, Maintenance, Environmental and Safety Support for the entire MMAC	• Drive FAA's sustainability and conservation efforts • Complete annual energy and water evaluations at each facility on the Center. • Integrate all feasible energy efficiency alternatives into new construction and major renovation projects on the Center. • Continue covering total electric usage with renewable wind RECs exceeding 30% of electric usage. • Drive to 100% zero-emission vehicle acquisition and zero-emission light vehicle acquisitions. • Reduce energy intensity by 2.5 percent annually through the end of FY 2025 to meet goals in FAA Order 1053.1C Energy and Water Management for FAA Buildings and Facilities as compared to FY 2015 baseline. • Ensure further reduction of greenhouse gas emissions from 2008 level. • Improve monitoring through the installation of advanced metering technologies for electricity, steam and water. • Lead the way with ISO 50001 certification for MMAC and assist the FAA's Office of Environment and Energy with agency-wide certification. • Continue to improve MMAC security through the convergence of cybersecurity and physical security via Security Convergence Team.
Financial Services / Information Technology	• Achieve efficiencies across federal government through financial shared services as part of the Cybersecurity Quality Services Management Office market place. • Continue to advance FAA's intelligent automation capabilities. • Maintain 99.5 percent availability for IT systems as defined in customer agreements detailing specific commitments. • Improve service provision through timely mitigation of audit findings focusing on strengthening processes
Franchise Fund Oversight and Management	• Manage over 2,000 active agreements worth $500 million of activity across FAA and other Federal agencies. These agreements are a part of the Franchise Fund activities, which include six franchise services lines.

What benefits will be provided to the American public through this request and why is this program necessary?

AFN's shared services approach to delivering the Agency's common finance, acquisitions, information technology, property, technical training, IT infrastructure security, is continuous improvement, and streamlined products and services to support the FAA's vital aviation safety mission. AFN's integrated delivery model also focuses on reducing costs across the Agency, saving taxpayer dollars while providing benefits to all customers and stakeholders.

AFN continues to find new and innovative ways to lessen the administrative burden on the Agency's employees, allowing them to meet their individual responsibilities to support the safety of the national airspace.

This budget will enable the continued operational support of all FAA Lines of Business and Staff Offices via the shared services business model. AFN-provided services include the following:

- Overseeing the FAA's annual budget and operating financial, cost accounting, and procurement systems;
- Protecting and updating the Agency's IT infrastructure;
- Competing, negotiating, awarding, and managing more than $5.2 billion in key contracts that support critical programs and projects including NextGen;
- Training more than 16,000 resident students in safety-related occupations annually to keep the national airspace operating at optimal capacity and efficiency at any given time;
- Maintaining 270,000 property and equipment assets.

Office of Finance and Management (AFN)
($000)

	Dollars (in Thousands)	FTP	OTFTP	FTE
FY 2022 Annualized CR	**$836,001**	**1,374**	**16**	**1,364**
Restoration of FY 2022 Request	56,215	4		2
Adjustments to Base	**$25,983**	**-**	**-**	**2**
Annualization of FY 2022 Pay Raise 2.7%	1,711	-	-	-
Annualization of FY 2022 FTE	290	-	-	2
FY 2023 Pay Raise 4.6%	9,015	-	-	-
One Less Compensable Day (260 days)	(968)	-	-	-
Transition from F&E to Ops	1,347	-	-	-
Non-Pay Inflation 1.5%	9,662	-	-	-
Working Capital Fund	4,926	-	-	-
FY 2023 Request	**$918,199**	**1,378**	**16**	**1,368**

See Operations Summary for a detailed description of the explanation of funding changes.

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Detailed Justification for Office of NextGen (ANG)

FY 2023 – Office of NextGen – Budget Request

($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 Request*
Salaries and Expenses	31,550	31,727	-
Program Costs	31,452	31,275	-
Total	**$63,002**	**$63,002**	**$-**
FTE	**174**	**174**	**-**

* The FAA proposes to evolve the Office of NextGen to the Office of Research and Development, establish the Office of Integration and Engagement, and establish the Chief Technology Officer in the Air Traffic Organization.

What is this program and what does this funding level support?

As the FAA marks the completion of substantial NextGen foundational elements and positions itself for the future, FAA is proposing to align its organizational resources to meet new challenges in the decades to come. To accomplish this, the NextGen organization will evolve into the Office of Research and Development (ARD), headed by the new Assistant Administrator for Research and Development. In addition, elements that support the operationalization of NextGen will be transferred to the newly created Office of the Chief Technology Officer (CTO) within the Air Traffic Organization (ATO).

The ARD Organization will include a refocused Research and Development Office to examine the long-term evolution of aviation and provide direction for the FAA's research and development portfolio. In addition, this office will retain the William J. Hughes Technical Center in its entirety, its test and evaluation function, and cybersecurity reviews of ATO programs.

The CTO will be responsible for life-cycle system engineering and development for national airspace systems. The existing Program Management Organization, within the ATO will be responsible for the development, test, and evaluation functions of the existing NextGen organization, as well as the contract management of system engineering contracts. Moving this function to ATO will reflect the shift of NextGen programs from development to operationalization.

Office of NextGen (ANG)
($000)

	Dollars (in Thousands)	FTP	OTFTP	FTE
FY 2022 Annualized CR	**$63,002**	**179**	**3**	**174**
Restoration of FY 2022 Request	953	-	-	-
Adjustments to Base	**$1,626**	**-**	**-**	**-**
Annualization of FY 2022 Pay Raise 2.7%	208	-	-	-
FY 2023 Pay Raise 4.6%	1,095	-	-	-
One Less Compensable Day (260 days)	(120)	-	-	-
Non-Pay Inflation 1.5%	484	-	-	-
Working Capital Fund	(41)	-	-	-
Realignment Proposal	**($65,581)**	**(179)**	**(3)**	**(174)**
Base Transfer	(65,581)	(179)	(3)	(174)
FY 2023 Request	**$0**	**0**	**0**	**0**

See Operations Summary for a detailed description of the explanation of funding changes.

Security and Hazardous
Materials Safety (ASH)

Detailed Justification for Office of Security and Hazardous Materials Safety (ASH)

FY 2023 – Office of Security and Hazardous Materials Safety Budget Request ($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 Request
Salaries and Expenses	89,467	92,384	104,561
Program Costs	35,221	32,304	55,246
Total	**$124,688**	**$124,688**	**$159,807**
FTE	**503**	**509**	**562**

What is this program and what does this funding level support?

The Office of Security and Hazardous Materials Safety (ASH) ensures aviation safety, supports national and homeland security, and promotes an efficient airspace system through development and execution of its safety and security policies and programs. ASH programs protect the flying public, airmen, FAA employees, contractors, information, facilities, and assets. ASH provides agency crisis management coordination, manages continuity of operations and government plans, and executes and supports FAA and other government agencies' national security responsibilities.

ASH protects the flying public and U.S. certificated airmen through identification and analysis of security threats to the FAA, the national airspace, and United States civil aviation operating worldwide; regulatory oversight of safe air transport of hazardous materials; and investigation of airmen and employee misconduct.

Office of Hazardous Materials Safety (AXH) is responsible for ensuring and promoting the safe air transportation of high-risk cargo, including hazardous materials through:

- Setting standards for certification and oversight for operators of manned and unmanned aircraft
- Investigating major incidents to identify safety deficiencies
- Focusing operators' documented hazardous materials safety program to promote safe operations
- Evaluating the effectiveness of operators' risk mitigation strategies
- Coordinating the collaborative efforts of government and industry safety teams
- Overseeing and monitoring safe integration of unmanned aircraft systems (UAS) transporting hazardous materials in the national airspace
- Evaluating and analyzing the effectiveness of existing ASH certification, regulatory, and compliance systems
- Collaborating with internal and external stakeholders to identify, analyze, mitigate, and manage safety risks

Office of Personnel Security (AXP) promotes the safety and security of over 88,000 personnel in the workplace, ensuring that only properly vetted personnel are granted access to critical FAA operational facilities, systems, and information by administering the:

- Personnel Security Program, and the
- Identification Media and Credential Program

Office of Infrastructure Protection (AXF) supervises nationwide facility security programs and provides program policy guidance, oversight, and evaluations for 1,100-staffed facilities, and supports the security needs of over 10,000 unstaffed facilities. Such programs include:

- Facility Security Management Program
- Information Security Program

Office of National Security Programs and Incident Response (AXE) is responsible for ensuring agency-level emergency readiness and response, crisis management, threat identification and analysis, and national security support to promote and ensure national airspace and aviation safety and security. Programs supported by AXE include:

- Washington Operations Center Complex
- Current Intelligence and Threat Evaluation Watch Operations
- Special Operations and Law Enforcement Support
- Command, Control, and Communications
- Emergency Preparedness and Response; Incident Management
- Regulatory Investigations
- Enforcement Standards and Policy
- Law Enforcement Assistance Program (LEAP)
- Unmanned Aircraft Systems Security

Office of Investigations and Professional Responsibility (AXI) conducts administrative and civil investigations involving FAA employees, contractors, and non-employees suspected of violating FAA orders and policy. ASH provides services in the following areas: cyber and UAS investigations and analysis, insider threat detection and mitigation, e-discovery, and defensive counter-intelligence services, including foreign travel briefings and de-briefings. Examples of activities they conduct include:

- Internal Misconduct and Whistleblower Retaliation Investigations
- Standards and Policy production -
- Threat Analysis and Mitigation
    - Defensive Counter-Intelligence
    - Insider Threat Detection & Mitigation
    - International Travel Security
- Technical Investigations
    - E-Discovery
    - Computer Cyber Investigations
    - UAS forensics and analysis

FY 2023 Anticipated Accomplishments:

Function/Office	FY 2023 Anticipated Accomplishments
Office of Hazardous Materials Safety (AXH)	• Improve industry compliance with aviation safety regulations and standards through inspections, data analyses, and risk management. • Continue the full implementation of the Safety Assurance System to improve ASH's ability to identify hazards and risks before they result in major incidents and accidents. • Conduct risk-based safety oversight of the aviation industry, targeting the highest-risk operators to ensure continued operational safety. • Implement new programs and revised approaches directed by safety recommendations. • Automate and standardize the safety oversight and inspection process. • Manage and coordinate UAS activities for ASH and ensure alignment with FAA and DOT initiatives. • Develop new and innovative stakeholder engagement approaches to inform the aviation community and industry of trends and emerging risks. • Improve the effectiveness of existing ASH certification, regulatory, and compliance systems.
Office of Personnel Security (AXP)	• Provide oversight to ensure the FAA workforce complies with federal personnel security requirements. • Continue implementing the recently increased Federal Investigation Standards requiring 5-year background re-investigations for all employees and contractors in Moderate Risk positions (much of the FAA). Ensuring phased implementation of a continuous evaluation program, designed to replace re-investigations. • Continued deployment and issuance of identification media in compliance with Homeland Security Presidential Directive (HSPD-12). • Continue enrolling National Security positions (clearance holders) into the Trusted Workforce (TW) 2.0 (Continuous Evaluation) program with Defense Counterintelligence and Security Agency (DCSA).

Function/Office	FY 2023 Anticipated Accomplishments
Office of Infrastructure Protection (AXF)	• Assess the security risks of FAA facilities and develop security countermeasure mitigation strategies for each assessed facility. • Ensure FAA facilities are compliant with facility and information security requirements that protect agency employees, visitors, information, systems, and facilities through a robust oversight and inspection program. • Continue to mature the Facility Security Management Program to improve the security posture of the national airspace's critical infrastructure and better inform future security investment decisions. • Enhance standards, programmatic safeguards and controls for protecting classified national security and controlled, unclassified information from loss, compromise, or unauthorized disclosure.
Office of National Security Programs and Incident Response (AXE)	• Manage the Washington Operations Center Complex and support the Air Traffic Security Coordinators who manage the Domestic Events Network; provide leadership at FAA, DOT, and the White House with situational awareness of all incidents affecting civil aviation and the national airspace, including a 24/7 intelligence fusion capability. • Provide threat identification and analysis to support FAA decision-making regarding emerging threats to aviation safety, to include emerging technologies and capabilities, such as UAS. • Support interagency efforts to safely integrate UAS into the national airspace; collaborate with national security partners to address UAS security concerns; facilitate Counter-UAS testing and employment. • Ensure the safe integration of Counter-UAS technologies into the national airspace. • Support agency investigations of non-compliant UAS operations.

Function/Office	FY 2023 Anticipated Accomplishments
	• Maintain emergency operations network capability and ensure continued situational awareness of daily operations and emergency events. • Support continuity of operations by maintaining the Primary Alternate Facility to enable FAA relocation in an emergency; ensure continuity of operations to maintain mission essential functions, to include continuous monitoring of the national airspace. • Investigate airmen with alcohol- and drug-related motor vehicle actions to ensure incidents are reported in accordance with the Code of Federal Regulations. • Initiate enforcement action, when warranted, to remove airmen who pose a risk to the national airspace. • Coordinate incident management response; provide timely and relevant information to leadership and stakeholders throughout the national airspace; coordinate and support preparedness and response policy development across the Agency and with DOT; support recovery operations. • Manage the FAA's LEAP by assisting and supporting federal, state, local, territorial, tribal, and international law enforcement agencies with investigations and interdictions involving illicit use of aircraft for narcotics, weapons, and human trafficking. • Draft and promulgate national FAA policy and provide recurrent training to support regulatory investigations and LEAP activities, such as aircraft registration violations. • Develop standards and web-based capabilities to enhance mission effectiveness for the DUI and LEAP programs. • Enhance awareness of UAS, Laser, and Unruly Passenger issues through the use of social media, educational material, and support of our partners. • Develop, implement, and integrate Cyber Threat Intelligence capabilities into the FAA's cyber security architecture.

Function/Office	FY 2023 Anticipated Accomplishments
Office of Investigations and Professional Responsibility (AXI)	• Conduct internal investigations of FAA employees and contractors for misconduct. • Conduct administrative and civil investigations/inquiries that fall under the FAA's jurisdiction, including whistleblower retaliation. • Develop standards and policies to enhance the efficiency and effectiveness of all ASH investigative programs. Draft and implement national FAA policy and unit procedures ensuring consistent execution of ASH program duties. • Develop and execute FAA's Defensive Counter-Intelligence Program to protect the agency personnel, systems, and networks from influence and targeting from Foreign Intelligence Services, including Counter-Intelligence cyber threat analysis, Insider Threat Detection and Mitigation Program, International Travel Security Program, e-Discovery, and Cyber and UAS investigations/forensics/Analysis Programs.

Transition to Operations and Maintenance (TOM):

TOM funding covers the operational cost of new systems acquired under the FAA's Facilities and Equipment Capital budget. Once new systems are installed in the National Airspace System, the ongoing operational costs are transferred to the Operations appropriation.

The National Airspace System Recovery Communications program provides the FAA with survivable, secure, and redundant communications and facilities that assure the Agency's ability to respond to emergencies, assist in the minimum essential restoration of the NAS, and enable the continuity of FAA operations. This request will provide for ongoing sustainment and maintenance.

Transition to Operations and Maintenance	Amount ($000)
National Air Space Recovery Communications	$243

Program Increases:

The FY 2023 budget request for ASH includes additional funding for the following programmatic initiatives.

Discretionary Adjustments	Amount ($000)	FTP	FTE
Address Aircraft Certification Reform Legislation	1,595	12	6
Data Analysis/Enterprise Information Management	3,336	-	-
Cybersecurity	4,926	26	13
Improve Hazardous Materials Transportation Safety Oversight	3,812	18	9
ASH Total	**$13,669**	**56**	**28**

Address Aircraft Certification Reform Legislation: This request supports the expansion of the Office of Investigations and Professional Responsibility (OPR) to improve FAA's oversight of whistleblower allegations. The funding provides the critical resources to meet key requirements and expand FAA's ability to address OPR responsibilities, reinvestigate management inquires, and provide a comprehensive review of the FAA safety investigations that involve misconduct of managers.

Data Analysis/Enterprise Information Management: This request supports the refinement of the Busser Investigative Management System and the Regulatory Investigations Tracking System tools to enhance integration and data sharing with the Investigations Tracking System. The funds will also enhance report automation, digital reading room capabilities, and report distribution capabilities. The funds will allow resources to migrate legacy data and applications for Personnel Security, Infrastructure Protection, and Business and Mission Services to FAA cloud, using low code solutions, and FAA data solutions.

Cybersecurity: This request supports the development of intelligence capabilities, which will enable predictive analysis and identification of vulnerabilities, adversarial capabilities and cyber threats to aviation in order to safeguard the national airspace and flight operations worldwide. The funding will also allow for the expansion of Advanced Threat Analysis and Mitigation capabilities providing coverage for domestic and international service areas.

Improve Hazardous Materials Transportation Safety Oversight: This request will bolster FAA's hazardous materials safety oversight workforce, enabling it to better manage identified hazmat safety risks and perform proactive risk mitigation. With added resources, FAA will ensure existing certificate holders and other regulated entities meet the necessary safety requirements, standards, and regulations for the safe air transportation of dangerous goods through performance inspections, certificate management, evaluations, research, and accident or incident investigations. Funding will also support the contracting needs for an Enterprise-wide

Training System for FAA's hazmat safety workforce.

(See also "Operations Summary" and "FY 2023 Discretionary Increase Request" for a detailed description of the Program Increase requests.)

What benefits will be provided to the American public through this request and why is this program necessary?

ASH is responsible for the FAA's critical infrastructure protection, personnel security, emergency operations, threat identification and analysis, contingency planning and crisis response, investigations of employees, contractors, and airmen who may present a safety or security risk to the national airspace, and the safe transportation of hazardous materials in air commerce. Protecting our critical infrastructure is a national and homeland security priority, which continues to demand a high level of attention and innovation.

In recognition of the criticality of the national airspace in our country's transportation infrastructure and economic stability, ASH develops and executes policies and programs to protect FAA employees, contractors, facilities, and assets, as well as airmen, aircraft, and the flying public. The FAA is committed to continuously improving the safety, security, and efficiency of flight, and continues to work with all of our partners and stakeholders to focus our experience, expertise, and new technology to ensure a safer and more secure global airspace.

Office of Security and Hazardous Materials Safety (ASH)
($000)

	Dollars (in Thousands)	FTP	OTFTP	FTE
FY 2022 Annualized CR	**$124,688**	**517**	**-**	**509**
Restoration of FY 2022 Request	14,778	25	-	13
Adjustments to Base	**$6,672**	**-**	**-**	**12**
Annualization of FY 2022 Pay Raise 2.7%	599	-	-	-
Annualization of FY 2022 FTE	2,162	-	-	12
FY 2023 Pay Raise 4.6%	3,188	-	-	-
One Less Compensable Day (260 days)	(343)	-	-	-
Transition from F&E to Ops	243	-	-	-
Non-Pay Inflation 1.5%	677	-	-	-
Working Capital Fund	146	-	-	-
Discretionary Adjustments	**$13,669**	**56**	**-**	**28**
Address Aircraft Certification Reform Legislation	1,595	12	-	6
Data Analysis/Enterprise Information Management	3,336	-	-	-
Cybersecurity	4,926	26	-	13
Improve Hazardous Materials Transportation Safety Oversight	3,812	18	-	9
FY 2023 Request	**$159,807**	**598**	**-**	**562**

See Operations Summary for a detailed description of the explanation of funding changes.

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Office of Research and
Development (ARD)

Detailed Justification for Office of Research and Development (ARD)

FY 2023 – Office of Research and Development – Budget Request ($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 Request*
Salaries and Expenses	-	-	25,828
Program Costs	-	-	32,307
Total	**-**	**-**	**$58,135**
FTE	**-**	**-**	**142**

* The FAA proposes to evolve the Office of NextGen to the Office of Research and Development, establish the Office of Integration and Engagement, and establish the Chief Technology Officer in the Air Traffic Organization.

What is this program and what does this funding level support?

The Assistant Administrator for Research and Development (ARD) will refocus the FAA's research and development efforts and allow the FAA to look ahead to the future. This dedicated Research and Development organization will also effectively and efficiently integrate new entrants and technologies into the national airspace system.

The United States aviation sector is experiencing a renaissance in new users and technologies. As the FAA marks the completion of substantial NextGen foundational elements and positions itself for the future, the FAA is proposing to align its organizational resources to meet new challenges in the decades to come.

As the development of mobility technologies accelerates and the number of users increase, the FAA faces increasing challenges to support a dynamic aviation sector. The ability of the FAA to establish oversight and foster the successful integration of these new users and technologies into the national airspace will likely determine global leadership in aviation.

ARD will examine the new technologies' potential impact on the national airspace, their likely benefits, and how the agency can ensure their safe integration into existing operations in order to maximize their benefits to the American public. It will provide leadership with regard to industry and international engagement and be the primary office for the facilitation of this engagement within the FAA.

Consistent with section 711 of the FAA Reauthorization Act of 2018, the Assistant

Administrator for Research and Development will be responsible for the management and oversight of all the FAA's Research and Development programs and activities, and the production of all congressional reports from the FAA relevant to research and development, including the National Aviation Research Plan required under section 44501(c) of title 49, United States Code, including management of the Research, Engineering and Development Advisory Committee.

Office of Research and Development

The responsibilities outlined provide the basis for a vibrant culture of aviation research fostered through the re-focused R&D organization. The organization will:

- Characterize the long-term evolution of aviation to set context for the R&D portfolio.
- Identify and investigate opportunities that advanced technologies and operations can bring to aviation, to include consideration of certification, testing and security.
- Continue efforts on research that reduce aviation hazards such as weather forecasting and characterization for safety such as turbulence, icing, etc.
- Conduct research in support of safety and health where the scope is beyond any individual member of industry.
- Develop performance-based standards with industry and international partners to support the opportunity for industry innovation.
- Provide flexibility and agility in advanced development by strengthening ties with academia and industry.
- Support stakeholder research through fee-for-service opportunities.
- Collaborate with research sponsors on developing and prioritizing requirements.
- Track and report research progress compared to established milestones and budget constraints.

FY 2023 Anticipated Accomplishments:

Function/Office	FY 2023 Anticipated Accomplishments
Facility Related:	• Provide the technical platform for research in aircraft safety (fire, structural, unmanned aircraft systems, etc.), airport technologies (safety and capacity), human factors, and weather. • Provide laboratory systems for conducting integrated concept evaluations, modeling and simulations, and testing and evaluating all NextGen technologies in the national airspace. • Provide 24 hours a day, 7 days a week, 365 days a year field support for all operational systems within the national airspace. • Provide facility operations and maintenance, environmental management and maintenance, and engineering support for all facilities located at the William J. Hughes Tech Center. • Safeguard both employees and campus infrastructure by ensuring compliance with environmental laws, policies, directives, and initiatives.
ARD and Operational Related:	• Provide analytical studies and related safety monitoring services that support the continued use of and further reductions in separation standards within U.S. sovereign airspace, international airspace where FAA has delegated authority to provide air traffic services, and international airspace where the U.S. and its citizens have safety-related interests. • Conduct an annual safety analysis of Reduced Vertical Separation Minimum Operations (RVSM) in North America (United States, Canada, and Mexico) and within U.S. delegated oceanic airspace per International Civil Aviation Organization Requirements. • Conduct maintenance and operations of independent performance based monitoring for Altimetry System Error, a key component to the continued safe operation of RVSM. • Provide improved advisories for Flight Operations Center Airline/Operations Center.

What benefits will be provided to the American public through this request and why is this program necessary?

The FAA must continue to be more effective and efficient in handling the surge of new users and integrating innovative technologies and concepts into the national airspace and must foster the creativity and collaboration necessary to ensure that taxpayers and the flying public enjoy the benefits of innovation. The FAA's integration work and partnerships will advance concepts of operations to enable complex operational capabilities, including medical and other package delivery, infrastructure inspection, public safety (e.g. firefighting, law enforcement, first responders), emergency response (e.g. natural disasters, pandemic response), Advanced Air Mobility, and other applications with economic and societal benefits.

This work will advance innovative concepts and technologies to facilitate improved productivity, efficiency, cost savings, and environmental protection that benefit the American public. For example, by replacing traditional aircraft operations with drones (e.g. for long-line linear infrastructure inspection and package delivery), operators will be able to perform missions more quickly, with lower cost and less pollution. In infrastructure inspection applications, this also will improve safe working conditions by reducing risk to employees performing inspections by limiting their exposure to hazards while ensuring the reliability of critical components of national infrastructure.

Additionally, first responders will be able to use emerging technologies and concepts such as drones to enhance the safety of police officers and the community by reducing on-scene response time and providing advanced information to determine the nature and severity of the incident to inform officer response and capture any applicable evidence. Drones and other innovative, emerging concepts are also a critical capability when responding to natural disasters, and will enable the assessment of damage and hazards across large and inaccessible areas to improve the speed and effectiveness of disaster response and to protect lives and property. During other emergencies drones will be uniquely positioned to provide vital support to the American public by offering quick and flexible services, just as they did during the COVID-19 pandemic, including the ability to conduct contactless deliveries to residential customers during shelter-in-place orders. As innovative concepts and technologies evolve and are integrated into the national airspace, additional benefits to the American public will be realized.

Office of Research and Development (ARD)

($000)

	Dollars (in Thousands)	FTP	OTFTP	FTE
FY 2022 Annualized CR	-	-	-	-
Realignment Proposal	**$58,135**	**147**	**3**	**142**
Base Transfer	58,135	147	3	142
FY 2023 Request	**$58,135**	**147**	**3**	**142**

See Operations Summary for a detailed description of the explanation of funding changes.

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Office of Integration
and Engagement (AIE)

Detailed Justification for Office of Integration and Engagement (AIE)

FY 2023 – Office of Integration and Engagement – Budget Request ($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 Request*
Salaries and Expenses	-	-	22,268
Program Costs	-	-	19,197
Total	**-**	**-**	**$41,465**
FTE	**-**	**-**	**106**

* The FAA proposes to evolve the Office of NextGen to the Office of Research and Development, establish the Office of Integration and Engagement, and establish the Chief Technology Officer in the Air Traffic Organization

What is this program and what does this funding level support?

The United States aviation sector is experiencing a renaissance in new users and technologies. As the development of mobility technologies accelerates and the number of users increase, the FAA faces increasing challenges to support a dynamic aviation sector. The Office of Integration and Engagement (AIE) will refocus the FAA's ability to efficiently integrate new entrants and technologies into the national airspace system. This new office will be composed of the Unmanned Aircraft Systems (UAS) Integration Office, transferred from the Aviation Safety organization, and will report directly to the FAA Administrator. The FAA's ability to establish policies and procedures that foster the integration of UAS, Advanced Air Mobility (AAM), and other new innovative concepts will likely determine leadership in global aviation innovation.

AIE will examine the new technologies' potential impact on the national airspace, their likely benefits, and how the agency can ensure their safe integration into existing operations in order to maximize their benefits to the American public. It will provide leadership with regard to industry and international engagement and be the primary office for the facilitation of this engagement within the FAA.

AIE will work closely with stakeholders[1] to facilitate new users, ideas, and technologies for potential incorporation into the national airspace. The FAA faces growing challenges as the nature of the work continues to increase in complexity, breadth, and volume. Therefore, the FAA must evolve as an organization that can both support nascent aviation concepts and technology while also being able to effectively and

[1] Includes private sector, as well as state, local, tribal, and territorial governments

efficiently manage their proliferation throughout the national airspace.

Specifically, AIE will:

- Serve as the primary gateway through which industry presents new aviation-related technologies.
- Examine the new technologies' potential impact on the National Airspace System (NAS), likely benefits (e.g. safety, economic, and societal), and methods to safely integrate the new technologies into the NAS.
- Provide leadership with regard to industry engagement and internal collaboration, using cross-functional teams to take reasonable risk and serve as disrupters.
- Sponsor and oversee initiatives and partnerships to establish the value of the innovative technologies, policies, or concepts to a maturity level to inform FAA decision making (e.g. a line of business or staff office can implement new policy, processes, and procedures to adapt to new innovation).
- Conduct preliminary reviews and framing of potential benefits and challenges related to UAS or other new technologies.
- Support the development of safety cases for UAS and other new technologies in coordination with the organization(s) that would need to approve of that type of operation.
- Develop agency integration strategy and use cross-functional teams to foster FAA policy and decision making, based on appropriate safety risk management analysis, to keep pace with industry demand.
- Manage and coordinate international activities for emerging technologies and concepts within the FAA and align international activities with foreign civil aviation authorities.
- Provide proactive outreach and support to industry stakeholders (e.g. waiver applicants) by responding to inquiries submitted through an online help desk in near-real time and developing innovative methods to reach new audiences and communities.
- Support the development and implementation of new rules, legislation, and other policies (e.g. remote identification, Unmanned Traffic Management) to enable the safe integration of innovative technologies and concepts (e.g. UAS, Advanced Air Mobility) into the national airspace.

FY 2023 Anticipated Accomplishments:

Function/Office	FY 2023 Anticipated Accomplishments
Integration and Engagement	• Develop policies, procedures, and approval processes to enable expanded operations of innovative technologies and concepts to include reducing the processing time of FAA approvals (e.g. non Part 107 approvals). • Conduct targeted outreach and engagement activities that inform current and potential operators of innovative technologies and concepts about safety, operational readiness, and enabling pathways. • Leverage data (e.g. operational, safety case, community sentiment, economic) from government and industry partnerships to assist in the development of policies, procedures, and standards that enable more routine, complex operations of innovative technologies and concepts. • Establish new government and industry partnerships to evaluate and integrate new aviation related technologies into the national airspace and collaborate on future societal needs. • Develop cross-functional teams to foster FAA policy and decision making, based on appropriate safety risk management analysis, to keep pace with industry.

Program Increases:

The FY 2023 budget request for AIE includes additional funding for the following programmatic initiatives.

Discretionary Adjustments	Amount ($000)	FTP	FTE
Aviation and Aerospace Talent Development	250	-	-
Unmanned Aircraft Systems (UAS) Integration	952	10	5
AIE Total	**$1,202**	**10**	**5**

Aviation and Aerospace Talent Development: This request provides Science, Technology, Engineering, and Math Aviation and Space Education program outreach to local communities and schools and provide resources to help train the workforce of tomorrow.

Unmanned Aircraft Systems (UAS) Integration: This request will increase our ability to examine new entrants' potential impacts on the national airspace. These resources will facilitate new standards development and roadmaps for innovative technologies, while expanding rulemaking efforts.

(See also "Operations Summary" and "FY 2023 Discretionary Increase Request" for a detailed description of the Program Increase requests.)

What benefits will be provided to the American public through this request and why is this program necessary?

The FAA must continue to be more effective and efficient in handling the surge of new users and integrating innovative technologies and concepts into the national airspace. The agency must foster the creativity and collaboration necessary to ensure that taxpayers and the flying public enjoy the benefits of innovation. The FAA's integration work and partnerships will advance concepts of operations to enable complex operational capabilities, including medical and other package delivery, infrastructure inspection, public safety (e.g. firefighting, law enforcement, first responders), emergency response (e.g. natural disasters, pandemic response), AAM, and other applications with economic and societal benefits.

This work will advance innovative concepts and technologies to facilitate improved productivity, efficiency, cost savings, and environmental protection that benefit the American public. For example, by replacing traditional aircraft operations with drones (e.g. for long-line linear infrastructure inspection and package delivery), operators will be able to perform missions more quickly, with lower cost and less pollution. In infrastructure inspection applications, this also will improve safe working conditions by reducing risk to employees performing inspections by limiting their exposure to hazards while ensuring the reliability of critical components of national infrastructure.

Additionally, first responders will be able to use emerging technologies and concepts, such as drones, to enhance the safety of police officers and the community by reducing on-scene response time and providing advanced information to determine the nature and severity of the incident to inform officer response and capture any applicable evidence. Drones and other innovative, emerging concepts are also a critical capability when responding to natural disasters, and will enable the assessment of damage and hazards across large and inaccessible areas to improve the speed and effectiveness of disaster response and to protect lives and property. As innovative concepts and technologies evolve and are integrated into the national airspace, additional benefits to the American public will be realized.

Office of Integration and Engagement (AIE)

($000)

	Dollars (in Thousands)	FTP	OTFTP	FTE
FY 2022 Annualized CR	-	-	-	-
Realignment Proposal	**$41,465**	**106**	**7**	**106**
Base Transfer	40,263	96	7	101
Aviation and Aerospace Talent Development	250	-	-	-
Unmanned Aircraft Systems (UAS) Integration	952	10	-	5
FY 2023 Request	**$41,465**	**106**	**7**	**106**

See Operations Summary for a detailed description of the explanation of funding changes.

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Staff Offices

Detailed Justification for Staff Offices

FY 2023 - Staff Offices – Budget Request
($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 Request
Salaries and Expenses	209,189	215,003	233,831
Program Costs	56,205	50,391	70,089
Total	**$265,394**	**$265,394**	**$303,920**
FTE	**1,139**	**1,145**	**1,303**

What is this program and what does this funding level support?

The Staff Offices of FAA include the Office of the Administrator, Chief Counsel and several assistant administrators who provide mission support services to the various lines of business. These services include legal counsel, economic trend analysis, diversity leadership, government and industry liaisons, communications, public relations, and human resources management. A brief description of staff offices is outlined as follows:

The **Office of Audit and Evaluation** (AAE) performs audit and investigative review functions primarily for internal safety disclosures and concerns, including the FAA Whistleblower Protection Program.

The **Office of Civil Rights** (ACR) advises, represents, and assists the FAA Administrator on civil rights and equal opportunity matters.

The **Office of Government and Industry Affairs** (AGI) serves as the Administrator's principal adviser and representative on matters concerning relationships with the Congress, aviation industry groups, and other governmental organizations, as well as with developing and reviewing plans and strategies involving these groups to enhance aviation safety.

The **Office of Communications** (AOC) is responsible for the policy, direction, and management of the agency's communications programs for the news media and FAA's employees nationwide.

The **Office of Human Resources Management** (AHR) organization provides human resource services to all operating lines of business and staff offices at the headquarters and to all the FAA regions including the two centers and overseas.

The **Office of Policy, International Affairs, and Environment** (APL) serves as the principle advisor to the Administrator on international matters, and manages the FAA's Regional Offices.

What benefits will be provided to the American public through this request and why is the program necessary?

Through the leadership of the Administrator, FAA successfully manages the most complex and safest aviation system in the world. By executing their mission responsibilities and providing management, leadership, and oversight, the FAA's Staff Offices have contributed to the overall success of the FAA.

Staff Offices provide services and resources necessary for the FAA's agency operations. Without these services, lines of business would not have the resources needed to meet their goals. From performing mission-critical services to receiving guidance and counsel on regulatory or legal issues, or managing annual appropriations, Staff Offices make a significant contribution to the mission of FAA.

Detailed Justification for Office of the Administrator (AOA)

FY 2023 – Office of the Administrator –Budget Request
($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 Request
Salaries and Expenses	3,492	2,943	3,052
Program Costs	311	830	931
Total	**$3,803**	**$3,773**	**$3,983**
FTE	**13**	**13**	**13**

What is this program and what does this funding level support?

The Office of the Administrator (AOA) leads the FAA in its mission to provide the safest, most efficient aerospace system in the world. This office is responsible for the overall planning, direction, coordination and control of FAA programs, and represents FAA in its work with DOT and other agencies, the White House, Congress, the aviation community, and the general public.

AOA directs and controls the operations of the FAA and acts as principal adviser to the Office of the Secretary (OST) on civil aviation matters and air transportation. Throughout FY 2023, AOA will continue to lead FAA toward achieving the Agency's performance goals and targets.

In leading the FAA, the Administrator oversees the Agency's employees in maintaining, operating, and overseeing the largest and most complex aviation system in the world. The Agency determines the regulatory and operational standards for the United States, and effectively sets the benchmark for aviation safety around the world.

The funding level supports executive direction of the FAA and provides for the Administrator and Deputy Administrator's direct staff.

What benefits will be provided to the American public through this request and why is this program necessary?

AOA provides direction and executive oversight for the management and operation of the world's largest, safest, and most efficient airspace system. Aviation is a significant contributor to the U.S. economy and the FAA provides continuous operational Air Traffic Control services to airlines and general aviation; safety oversight of operators and manufacturers; management of

airport improvement grants; and acquisition of the FAA's NextGen air traffic control system. AOA also houses the Executive Secretariat function using the Electronic Document Management System application, and supports the lines of business and staff offices to provide timely responses to DOT and other agencies, the White House, Congress, the aviation community, and the general public.

Detailed Justification for Office of Audit and Evaluation (AAE)

FY 2023 – Office of Audit and Evaluation (AAE) – Budget Request ($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 Request
Salaries and Expenses	3,853	4,170	4,888
Program Costs	735	418	569
Total	**$4,588**	**$4,588**	**$5,457**
FTE	**21**	**21**	**25**

What is this program and what does this funding level support?

The Office of Audit and Evaluation (AAE) has two primary functions: safety audit/investigation and hotline operations.

Safety audit and investigation analysis staff perform audit and investigative review functions primarily for internal safety disclosures and concerns, including the FAA Whistleblower Protection Program. It also coordinates and evaluates FAA responses to DOT, Office of Inspector General, General Accounting Office and United States Office of Special Counsel generated audits, investigations, and evaluations.

Hotline operations provides reporting and data for analysis of hotline submissions, coordination of AAE investigations, and reviews for completeness investigations conducted by appropriate FAA organizations. The office also operates and manages several administrative and safety hotlines.

The office provides an impartial agency venue for investigation and early resolution of safety disclosures. The FY 2023 funding will support the enhancement and upgrade of the FAA's Hotline and Whistleblower Protection Program system to a cloud solution while continuing to provide a centralized Agency focus for internally and externally generated safety-related complaints, critical audits, and investigations. Planned enhancements include increased analytics, searching, reporting, and improved case management.

What benefits will be provided to the American public through this request and why is this program necessary?

AAE has established itself as a viable forum for raising and addressing internal safety concerns and has developed standards to measure its successes. Currently, the success of the program can be gauged by its ability to timely process hotline matters, complete investigations, validate the completeness of agency responses to identified safety concerns, and ensure agency compliance with corrective actions.

AAE has become a vital and effective organization productively addressing and resolving safety-related whistleblower disclosures and employee workplace conflicts. Significantly, the visibility and accomplishments of the AAE office have generated a critical awareness and recognition that employees can bring their safety sensitive disclosures to an internal organization and have them objectively reviewed by an unbiased entity.

AAE enhances Agency accountability for internally identified safety concerns, whistle blower contributions, and employee workplace conflicts. The safety benefits of an effective internal reporting program are well received.

The direct beneficiaries of AAE's services are the Agency and the flying public. AAE embodies FAA's commitment to a vibrant and evolving internal safety culture based on continuous review, evaluation, objective analysis and measured change. AAE provides Agency employees and external stakeholders with an independent and highly visible forum to safely and constructively raise, address, and resolve safety complaints, concerns or whistleblower contributions.

Detailed Justification for Office of Civil Rights (ACR)

FY 2023 – Office of Civil Rights (ACR) – Budget Request
($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 Request
Salaries and Expenses	10,600	10,415	12,025
Program Costs	2,161	2,346	3,118
Total	**$12,761**	**$12,761**	**$15,143**
FTE	**61**	**61**	**70**

What is this program and what does this funding level support?

The Office of Civil Rights (ACR) administers several critical federally mandated programs under Titles VI and VII of the Civil Rights Act of 1964, the Rehabilitation Act of 1973, the Americans with Disabilities Amendments Act, the Genetic Information Nondiscrimination Act, the Age Discrimination and Employment Act, and the Equal Pay Act.

Internally, the ACR mission is to aid in the prevention of unlawful discrimination because of race, color, national origin, sex, age, religion, sexual orientation, and individuals with disabilities employed by the FAA. In addition, ACR works to proactively prevent complaints and resolve potential conflicts early and at the lowest possible level in order to reduce potential legal liability to the FAA. ACR also dedicates resources towards building a fully diverse and inclusive workforce and understanding potential barriers to Equal Employment Opportunity (EEO). The Office of Civil Rights implements a robust internal training program for the purpose of educating the workforce on adhering to EEO policies and guidelines, inclusion, diversity and reducing EEO complaints.

Externally, ACR's mission is to provide airport oversight for civil rights laws and regulations. ACR works to ensure that all beneficiaries of federally assisted transportation programs are offered equal opportunity for participation and are free from discrimination. These efforts address airport compliance with the Americans with Disabilities Act (ADA), Rehabilitation Act, Disadvantaged Business Enterprise Program, Title VI, Limited English Proficiency (LEP), Environmental Justice (EJ), and other civil rights regulations.

FY 2023 Anticipated Accomplishments:

Function/Office	FY 2023 Anticipated Accomplishments
Internal Civil Rights Services • EEO Complaint Services/Alternative Dispute Resolution Services • Model EEO Program • Diversity and Inclusion • EEO Training • Reasonable Accommodations Request Processing	• Process 100 percent of the allegations and inquiries regarding EEO complaints by providing quality counseling, mediation, and consulting services. • Assist and provide resources for agency selecting officials to increase the hiring of people with targeted disabilities. • Ensure that reasonable accommodation requests are processed timely and equitably. • Assist the agency in building a Model EEO Workplace through outreach, consultations, collaboration and educational partnerships. • Increase FAA managers and employees conflict resolution skills through the Conflict Coaching Program and reduce the number of EEO complaints that are filed in the agency with early intervention techniques.
External Civil Rights Services • Disability Airport Compliance • Airport Non-discrimination Compliance (Title VI of the Civil Rights Act) • Disadvantaged Business Enterprise (DBE)/Airport Concession Disadvantaged Business Enterprise (ACDBE) Compliance	• Conduct DBE/ACDBE, ADA/504 and Title VI/LEP/EJ compliance reviews, and ensure that small and disadvantaged business enterprises are able to compete with larger companies for airport construction projects and concessions. • Maintain an online FAA DBE-connect system to connect DBEs and relevant airport opportunities, and allow airports to identify certified DBEs in areas of work needed to support their DBE goals. https://faa.dbesystem.com/ • Deliver training, technical assistance and consultations in order to increase knowledge in the areas of DBE/ACDBE, ADA/504 and Title VI/LEP/EJ at the Nation's airports.

Program Increase:

The FY 2023 budget request for ACR includes additional funding for the following programmatic initiative.

Discretionary Adjustments	Amount ($000)	FTP	FTE
Advance Equity for Underserved Communities Through Airport Civil Rights Compliance	1,341	18	9
ACR Total	**$1,341**	**18**	**9**

Advance Equity for Underserved Communities Through Airport Civil Rights Compliance: This request will allow the FAA to support the Executive Order 13985 that instructs the Federal Government to allocate resources to address the historic failure to invest sufficiently, justly, and equally in underserved communities. This will directly support the FAA's ability to ensure the government's investments in our nation's airport ecosystem do not perpetuate historic failures to serve all communities sufficiently, justly, and equally. Additionally, this request will augment our efforts to implement the FAA's Diversity and Inclusion Strategic Plan, thus ensuring a more inclusive workforce.

(See also "Operations Summary" and "FY 2023 Discretionary Increase Request" for a detailed description of the Program Increase requests.)

What benefits will be provided to the American public through this request and why is this program necessary?

Under Title VI of the Civil Rights Act of 1964, all Federal agencies are required to ensure that federal funds do not subsidize programs or activities that discriminate on the basis of race, color or national origin. ACR provides leadership and direction for civil rights, diversity and EEO matters. The ACR mission is to implement civil rights, EEO policies, and operational programs to ensure their full and successful development in support of the FAA's mission to provide the safest, most efficient aerospace system in the world. ACR's goal is to achieve safety through implementing a strong civil rights program and further enhancing FAA's inclusive culture so that all employees understand they have the opportunity to achieve their full potential and, when conflicts arise, they are resolved early and at the lowest possible level.

ACR is committed to providing a workplace that promotes equal opportunity, is free of harassment, and is an environment where employees can focus on productivity, not conflict. Our vision is to create, within the FAA and its Federally-assisted programs, an environment free of civil rights violation and discrimination, where all are treated equitably with dignity and respect. The result of these efforts is a diverse and satisfied workforce that collaboratively helps to ensure the safety of the flying public.

Detailed Justification for Office of Government and Industry Affairs (AGI)

FY 2023 – Office of Government and Industry Affairs (AGI) – Budget Request ($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 Request
Salaries and Expenses	1,703	1,620	1,681
Program Costs	162	245	299
Total	**$1,865**	**$1,865**	**$1,980**
FTE	**8**	**8**	**8**

What is this program and what does this funding level support?

The Office of Government and Industry Affairs (AGI) supports the Administrator and represents the FAA by providing the principal linkage between the Agency and Congress.

AGI works with FAA offices to coordinate, facilitate, and present FAA's legislative message. AGI consistently monitors and gauges the interest and needs of the United States Congress. This relationship also extends to coordinating FAA legislative initiatives and responses with DOT. AGI also serves as liaison with the aviation industry, from manufacturers to carriers, and with other aviation-related organizations. Additionally, AGI serves as the principal point of contact for state and local governments.

The following core activities represent the FY 2023 budget request:

- Communicate to Congress on behalf of the Administrator and Management Board.
- Provide OST's Office of Governmental Affairs with factual, concise, and complete information from significant AGI congressional contacts and activities.
- Foster strong partnerships with key industry stakeholders.

What benefits will be provided to the American public through this request and why is this program necessary?

AGI continuously improves the quality, timeliness, and usefulness of FAA core business functions. AGI fosters productive relationships with key members of Congress and Congressional Oversight Committees. AGI solicits information from program offices within the Agency to better understand and communicate areas of interest or concerns to the United States Congress.

AGI's mission is to provide high quality, timely communications to Congress. It is essential that public policy be debated on its merits so that the best outcomes can result. The work of AGI enables the Administrator, Deputy Administrator, and Associate Administrators to effectively interact and communicate the policies and positions of the FAA before the United States Congress. AGI's established congressional relations are vital to advancing the aviation priorities of the FAA, the Department of Transportation, and the Administration.

Detailed Justification for Office of Communications (AOC)

FY 2023 – Office of Communications (AOC) – Budget Request
($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 Request
Salaries and Expenses	6,378	7,333	7,915
Program Costs	1,273	318	541
Total	**$7,651**	**$7,651**	**8,456**
FTE	**37**	**37**	**39**

What is this program and what does this funding level support?

The Office of Communications (AOC) delivers critical safety information to the news media, stakeholders, and FAA employees worldwide to support the FAA's operations, programs and mission. AOC helps the FAA achieve its mission by providing timely and accurate information and performing robust outreach to an increasingly diverse set of stakeholders. Using a variety of communications tools, AOC delivers its services through two major programs: Media Relations and Corporate Communications.

Media Relations:
Media Relations works closely with other FAA offices to provide timely and accurate information to the media, the aviation community and the public about FAA initiatives and activities. Media Relations develops and implements communication strategies and public outreach to alert and inform the traveling public and aviation stakeholders of urgent safety issues.

Corporate Communications:
Corporate Communications manages the FAA's digital communications, including FAA.gov, MyFAA and the Agency's social media accounts, which generate more than 470 million impressions annually. Corporate Communications leads the FAA's creative and multimedia services, including video, audio, and application development. The team coordinates with other FAA offices to provide more than 40,000 FAA employees with accurate and timely information on programs and activities.

FY 2023 Anticipated Accomplishments:

Function/Office	FY 2023 Anticipated Accomplishments
Media Relations	• Increase awareness and understanding of FAA initiatives and other issues through press conferences, media briefings, press releases, social media, and other communication channels. • Increase awareness of the FAA's role as a world leader on aviation issues. • Support open government initiatives to make data available, improve online services, and increase collaboration with citizens, stakeholders, and other government agencies.
Corporate Communications	• Expand the use of social media platforms to educate new audiences. • Use a variety of internal communication vehicles to educate employees about Agency strategic goals, programs, and activities. Obtain feedback that helps the FAA meet those goals.

Program Increases:

The FY 2023 budget request for AOC includes additional funding for the following programmatic initiatives.

Discretionary Adjustments	Amount ($000)	FTP	FTE
Address Aircraft Certification Reform Legislation	154	1	1
Strengthen Aviation Safety Oversight	154	1	1
AOC Total	**$308**	**2**	**2**

Address Aircraft Certification Reform Legislation: The Office of Communications (AOC) will hire one additional associate producer dedicated to outreach and education for Aircraft Certification Reform. This will allow the associate producer to gain a deeper understanding of the content, and strategically build agendas with the highest return on investment.

Strengthen Aviation Safety Oversight: The Office of Communications (AOC) will increase outreach and education event opportunities to interact with the general public. To carry out this increased cadence, as well as to address the more frequent releases of safety information, AOC

will hire one additional associate producer to focus on outreach and education for aviation safety matters.

(See also "Operations Summary" and "FY 2023 Discretionary Increase Request" for a detailed description of the Program Increase requests.)

What benefits will be provided to the American public through this request and why is this program necessary?

With more than 119 million page views a year, FAA.gov provides a wealth of resources to the American public. Pilots, mechanics, and other members of the flying public consistently read FAA's news, directives, hazardous materials information, and airworthiness information every second of every day of the year.

The FAA has seen a persistent increase in demand for secure access to critical aviation safety information. Users downloaded more than 9.5 million documents from FAA.gov related to pre-flight safety procedures and planning, airmen/aircraft certification, aircraft mechanical records, airport safety regulations, and accident/incident data. Information for air traffic operations, General Aviation safety, NextGen and unmanned aircraft systems is delivered via text, video, and graphical formats.

With more than 40,000 employees working in offices and in the field, across the country and abroad, the FAA intranet, employee news, daily broadcast, and audio/video production services are a vital part of ensuring employees are connected with the vision, mission and values of the agency. These vital communication vehicles ensure that employees are able to access information about everything from Human Resource benefits to changes in compensation programs that may directly affect them. Strong internal communications generate a more engaged, productive, and loyal workforce.

As the demand for safety information continues to grow from all stakeholders (employees, the public, the media, and the aviation community), these groups expect unfettered 24 hours a day/7 days per week access to information the FAA provides, and interaction with that information through the Web, email, and social media. AOC will provide accurate critical information about FAA operations, safety oversight, efficiency initiatives and other programs to all of these groups as quickly as possible.

Detailed Justification for Office of the Chief Counsel (AGC)

FY 2023 – Office of the Chief Counsel (AGC) – Budget Request
($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 Request
Salaries and Expenses	46,283	45,938	48,342
Program Costs	2,970	3,345	5,009
Total	**$49,253**	**$49,283**	**$53,351**
FTE	**228**	**228**	**233**

What is this program and what does this funding level support?

The Office of the Chief Counsel (AGC) provides mission critical legal services for the FAA. Within the FAA, AGC is both a key partner to each line of business and staff office and an integral contributor to the success of every major agency program and function. Across every line of business and every agency program, AGC provides legal advice, reviews agency action for legal sufficiency and conformity, represents agency interests in various administrative and court forums, defends the agency's actions, and enhances risk management by proactively seeking to identify and mitigate risk. In addition, AGC is responsible for internal FAA adjudicative functions responsible for adjudicating bid protests and contract disputes, aviation civil penalties below a specified threshold, and complaints filed against airport sponsors. This office also provides alternative dispute resolution services.

AGC's principal legal practice areas are:

1) Enforcing aviation safety rules, and protecting intellectual property/data rights law interests; aircraft litigation; appellate and other district court litigation (e.g., constitutional, tort, APA, Freedom of Information Act (FOIA), etc.);
2) Rulemaking activity, environmental legal services, airport legal services which support airport expansion and capacity, commercial space legal services which support launch activities, and acquisition of technologies that support increased capacity and efficiency; international activity and harmonization of safety rules; and
3) Enhancing FAA's high performing workforce, supporting numerous agency-wide strategic initiatives, and providing legal services in support of agency administrative functions including, but not limited to, acquisition and fiscal law; employment and labor law; ethics counsel and program; FOIA and Privacy Act; Congressional oversight investigations; real property, data, and intellectual property; national security; cybersecurity; legislative; and emergency management.

FY 2023 Anticipated Accomplishments:

Funding at the FY 2023 requested level would provide necessary legal services, including representation, in support of significant FAA program responsibilities and functions. Among the more significant of these are:

- Advice and counsel on implementation of key priorities of the Administration, including Pandemic response, safer workforce, climate change, environmental justice, and equity, as established in executive orders issued since January 20, 2021.

- Rulemaking, including critical safety rules and regulatory aspects of NextGen and not only the safe, but also the timely integration of new entrants into the national airspace. In particular, AGC has had to devote a steadily increasing amount of resources to aid in the safe integration of Unmanned Aircraft Systems (UAS). For example, current UAS rulemaking projects involve the substantial time of nine attorneys. More than 10 percent of AGC personnel are engaged in UAS matters and the workload is increasing.

- Enforcement of FAA regulations and statutes including those involving illegal UAS operations, unruly passengers, noncompliance with drug and alcohol use prohibitions and industry drug testing requirements, certificate holder falsification, improper aircraft maintenance, medical disqualification, illegal aircraft charters, and noncompliance with hazardous materials requirements. Division attorneys advise on enforcement investigations, work with FAA offices on the development of compliance and enforcement policies, and coordinate with other federal and state agencies regarding matters concerning aviation safety.

- Supporting all aspects of lifecycle acquisition management for the FAA through proactive legal engagement and program support to assist with increasing quality, reducing the time, managing the risk and budget of delivering safe and secure services to the aviation community and flying public. In particular, AGC devotes increasing amounts of time to acquisition and administration of operational safety systems and associated equipment and real property, including acquisition aspects of NextGen development, and compliance with commercial and fiscal requirements.

- Acquisition legal support and oversight of contracts that supply 40,000 contractor support personnel, requirements development, planning support, and applicability of evolving government-wide policies.

- Proactive legal engagement and program support for executing and managing the technical aspects of FAA programs and helping ensure that FAA interests and equities are protected.

- Establishing an acquisition workforce-aligned (and integrated) training program for

incoming acquisition attorneys that meets the needs of the overall acquisition workforce, clear expectations for performance and promotion, and a professionalization effort for acquisition attorneys in the division.

- Providing proactive legal support to all policy development for the FAA, focusing in the acquisition and finance operations, plus key support to unmanned aerial systems and the War Risk Insurance program.

- Supporting environmental reviews of airports capacity enhancement projects and grants, environmental streamlining for airport infrastructure projects, new entrants, and NextGen development, including litigation support.

- Providing management advice and counsel to AOA, Dash-1s and Regional Administrators on noise issues. Noise issues may act as an environmental constraint on aviation growth, as a result AGC devotes substantial time of 15 attorneys and all managers to this issue.

- Safety and environmental review of commercial space launch activities.

- Providing management advice and counsel on employment and labor matters: including whistleblower protection, Executive Orders regarding DEIA and labor negotiations, and air traffic controller hiring.

- Representing the FAA in litigation before the Office of Dispute Resolution for Acquisition (ODRA), Merit Systems Protection Board, Equal Employment Opportunity Commission, and Federal courts.

- Defending aviation accident and other tort claims and appellate challenges to FAA Order and final agency decisions.

- Improving FAA information management including FOIA, Privacy Act and Paperwork Reduction Act obligations and legal challenges to how the FAA manages its information.

- Supporting the FAA's national security and cybersecurity missions.

- Advising lines of business and staff offices about Congressional oversight investigations and responding to Congressional document and interview requests.

- Advising lines of business and staff offices on all matters related to international aviation and space law issues, providing legal expertise in international safety assessments and technical assistance, and developing international agreements.

- Serving as liaison for FAA on international aviation legal matters with international

organizations, foreign countries, and other Government agencies and industry.

- Providing legal support for FAA emergency operations and warnings to the aviation community respecting foreign airspace.

- Dispute resolution services and/or administrative adjudication of acquisition related disputes, and administration of the Civil Penalty Program; representation of agency interests and choice of actions including the National Transportation Safety Board (NTSB).

- Coordination across the Executive and Legislative branches on legislative services.

- Provides a broad range of pre-, during, and post-employment advice to FAA managers and employees throughout the Agency as to their ethical obligations.

- Review of financial disclosure reports filed by those employees at the FAA, currently approximately 18,000, whose duties and responsibilities require the employee to participate personally and substantially through decision or the exercise of significant judgment in the Agency taking action regarding an inherently governmental function. These numbers disclose that AGC touches approximately one out of every 22 financial disclosure statements filed by employees of the Executive Branch of the United States Government.

- Provide required onboarding and annual ethics training.

Program Increases:

The FY 2023 budget request for AGC includes additional funding for the following programmatic initiatives.

Discretionary Adjustments	Amount ($000)	FTP	FTE
Address Aircraft Certification Reform Legislation	539	6	3
Unmanned Aircraft Systems (UAS) Integration	270	4	2
AGC Total	**$809**	**10**	**5**

Address Aircraft Certification Reform Legislation: The AGC will hire new attorneys to provide legal support as the agency implements the requirements within the Aircraft Certification Reform, Safety and Accountability Act. Increased resources will allow AGC to support the agency's responsibilities under the Act as they relate to traditional manned aircraft and emerging technologies. Additionally, AGC will support the operational work of the Office of Professional

Responsibility in order to better address agency ethics issues, minimizing any actual or apparent conflicts of interest.

Unmanned Aircraft Systems (UAS) Integration: AGC will hire new attorneys dedicated to support the ongoing and anticipated UAS work in the various aspects of UAS integration in the NAS. Increased resources will allow AGC to support the agency's responsibilities as they relate to unmanned aircraft, including integration work involving regulatory development, enforcement actions, environmental reviews, and the creation and sustainment of industry engagement with the FAA.

(See also "Operations Summary" and "FY 2023 Discretionary Increase Request" for a detailed description of the Program Increase requests.)

What benefits will be provided to the American public through this request and why is this Program necessary?

AGC contributes to the overall success of FAA programs and functions that reside with the various lines of business and staff offices with programmatic responsibility. AGC's contribution cannot be assessed through a single measure. AGC contributes to many programs to ensure that overall FAA actions are consistent with legal requirements, risks are defined and managed to the extent practicable, and the interests of the government and the flying public are strongly represented.

AGC acquisition attorneys provide key support in the development, acquisition, and deployment of NextGen air traffic control, and safety systems and technologies, including land and facility sites to house said NextGen equipment and systems. The FAA's Acquisition and Fiscal law attorneys support the deployment of 40,000 contract support personnel, support business decisions in every FAA line of business, the protection (and ownership) of information and data rights, real property issues, legislative initiatives, critical support to financial operations, the franchise fund, and engagement in policy-making. The rulemaking attorneys play a critical role in establishing regulatory requirements involving certification (airman and aircraft), operations, airspace, airports and commercial space licensing. The enforcement attorneys provide essential legal support for the Agency's safety oversight programs, including handling over 2,000 cases on average each year where legal enforcement action is necessary for the safety of the national airspace. The environmental attorneys are critical to ensuring environmental assessments are completed for infrastructure, new systems and airspace redesigns. In addition to its role in defending the Agency in employment and labor litigation, the employment attorneys have a significant role in addressing the staffing and labor implications of the air traffic control system. The information lawyers play a significant role in managing the information and data generated and collected by the FAA consistent with the FAA's legal obligations to properly manage information. The national security and emergency management attorney is critical in supporting the FAA's efforts in protecting the FAA's critical infrastructure, including the handling of sensitive national security information/data. The international law attorneys develop the FAA's

position on international aviation and space law issues, and are critical in providing legal advice on all matters related to international aviation, including aircraft registration, flight standards subjects, airworthiness and certification, air traffic matters, UAS, statutes addressing international issues, and treaties and conventions concerning aviation and space and matters. The aviation accident and tort litigators are critical to defending Agency employees and systems against claims of negligence arising from fatal aircraft accidents.

The direct beneficiaries of AGC's services are the Agency organizations that have operational and programmatic responsibility for carrying out FAA's mission, and by extension, the goals of the Department of Transportation. More significantly, the flying public is the overarching beneficiary of the increased safety and efficiency of a modern air transportation system. AGC is a key partner supporting the Agency's success in all of FAA's various program areas.

Detailed Justification for Office of Policy, International Affairs, and Environment (APL)

FY 2023 – Office of Policy, International Affairs, and Environment (APL) – Budget Request ($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 Request
Salaries and Expenses	56,436	61,935	69,770
Program Costs	18,048	12,549	26,074
Total	**$74,484**	**$74,484**	**$95,844**
FTE	**287**	**293**	**324**

What is this program and what does this funding level support?

The Office of Policy, International Affairs, and Environment (APL) consists of the following offices:

Aviation Policy and Plans improves the FAA's effectiveness with corporate planning and performance management; makes coordinated and well-informed policy decisions for crosscutting and novel civil aerospace issues using independent economic, quantitative and qualitative analysis, information and tools; and positions the FAA for the future by coordinating FAA's reauthorization efforts, identifying, researching, and projecting emerging issues and trends.

International Affairs is responsible for formulating the FAA's international strategy and associated regional and global priorities, aligning FAA's international activities, programs and initiatives to most effectively accomplish the strategic goals and initiatives of the FAA, DOT, and the United States government, and leading collaborative engagement and cooperation with civil aviation authorities and aviation stakeholders across the world.

Environment and Energy is responsible for developing, recommending, coordinating, and implementing national and international standards, policy and guidance, research and studies, and analytical capabilities on aviation environmental and energy matters with the vision of removing environmental constraints on aviation growth by achieving quiet, clean, and efficient air transportation.

National Engagement and Regional Administration is responsible for conducting outreach, engagement, and horizontal integration to Congressional officials, federal, state and local governments, airports, military, civic organizations, as well as to customers across the Agency. In addition, the office provides a national strategy and oversight for the agency's Science,

Technology, Engineering, and Math Aviation and Space Education program (STEM AVSED). In addition, it is responsible for administration of regional offices and coordinates with building facility managers of the agency's administrative buildings. Regional Administrators oversee regional emergency operations and integration services to ensure that appropriate communication and coordination occurs in critical crisis response incidents related to U.S. National Airspace System continuity.

APL will continue to achieve the goals of the Administration and the Department in connection with various domestic and international initiatives, while maximizing outcomes through the leveraging of partnerships, technology, and expertise.

Anticipated FY 2023 Accomplishments:

Function/Activity	FY 2023 Anticipated Accomplishments
Aviation Policy and Plans	▪ Facilitate the implementation of a long-term FAA reauthorization bill, working across the Agency, with the Administration, and with Congress and stakeholders. ▪ Provide timely economic analysis to enable the Agency to send critical safety rules, cost-relieving regulation, and economically enabling rules such as UAS advanced operations, Commercial Space Launch and Re-entry, and supersonic aviation to the Office of the Secretary of Transportation and the Office of Management and Budget. ▪ Develop national and airport level activity forecasts, benefit-cost studies, issue analysis, economic impact studies, and stakeholder outreach, to facilitate national airspace planning ▪ Improve FAA's effectiveness by leading streamlined and responsive corporate planning, performance, and risk management processes for the agency. ▪ Conduct analysis and coordinate cross-FAA efforts regarding impacts to the FAA and the aviation industry, including recovery strategy and implementation (such as for COVID-19).

Function/Activity	FY 2023 Anticipated Accomplishments
International Affairs	▪ Influenced the International Civil Aviation Organization, member States, and appropriate regional aviation organizations and industry to align global standards and recommended practices with U.S. best practices in aviation safety oversight, operational efficiency and capacity, environmental sustainability, commercial space transportation, and integration of new and innovative technologies. ▪ Achieved a safe and seamless global air transportation system through coordinated outreach and training on U.S. aviation innovative systems, procedures, and concepts. ▪ Managed international agreements and arrangements to support FAA and United States research, collaboration, and technical assistance with States and key international organizations to advance global aviation safety, efficiency, capacity, and environmental stewardship. ▪ Orchestrated FAA response to, and support of, global conflicts and crisis/incident management events to mitigate impacts to the safety and security of civil aviation.
Environment and Energy	▪ Review and update environmental policies, as needed, based on research outcomes, technology development, and stakeholder engagement with a particular focus on community noise. ▪ Support standard setting and certification, including the development and/or updating of processes and procedures for noise and emissions certification of subsonic aircraft, UAS, advanced air mobility vehicles, and supersonic aircraft. ▪ Provide international leadership on aviation environmental matters, including through implementation of the Carbon Offsetting and Reduction Scheme for International Aviation ▪ Continue to improve environmental review processes and update the FAA's National Environmental Policy Act implementation Order 1050.1, associated analytical tools and references, as necessary. Lead FAA planning, analysis, coordination, and reporting of energy and water efficiency and resilience of facilities, operations, and infrastructure to the impacts of climate change.

Function/Activity	FY 2023 Anticipated Accomplishments
National Engagement and Regional Administration	▪ Enhance aviation safety by increasing awareness and outreach on the FAA high priority safety initiatives. ▪ Enhance community engagement techniques and proactively address growing noise concerns associated with aircraft and airspace procedures with communities throughout the US. ▪ Support emergency preparedness and continuity of operations. ▪ Provide program management assistance and coordination activities to support the prioritization and implementation of Northeast Corridor initiatives that reduce delays and improve schedule reliability. ▪ Increase support for the Science, Technology, Engineering, and Math Aviation and Space Education program (STEM AVSED).

Program Increases:

The FY 2023 budget request for APL includes additional funding for the following programmatic initiatives.

Discretionary Adjustments	Amount ($000)	FTP	OTFTP	FTE
Address Aircraft Certification Reform Legislation	1,301	8	-	4
Aviation and Aerospace Talent Development	3,091	6	5	6
Address Climate Change	2,441	5	-	3
Unmanned Aircraft Systems (UAS) Integration	440	2	-	1
Community Engagement	1,308	4	-	2
APL Total	**$8,581**	**25**	**5**	**16**

Address Aircraft Certification Reform Legislation: This request will allow FAA to meet the increased demands for aircraft certification and safety rulemaking through forecasting, strategic planning, and economic regulatory analysis necessary for the development of these rulemakings and policy guidance. These funds would support a mix of FTEs, contract funding, training, and software associated with the rulemaking and economic analysis processes. Funding is also requested for additional staffing to create two new divisions. One office will provide strategic oversight to FAA's international training and the other office will support agency-wide decision making related to global issues.

Aviation and Aerospace Talent Development: This request will develop a measurable, sustainable and meaningful program that provides outreach and connections with targeted populations. The FY 2023 funding request will enhance educational outreach through the Science, Technology, Engineering, and Math Aviation and Space Education Program, as well as establish the Air Grant Fellowship program as directed by Congress in December 2020.

Address Climate Change: This request will allow the FAA to address the climate crisis by both reducing aviation's contribution to climate change and bolstering adaptation and increasing resilience of facilities, operations, and infrastructure to the impacts of climate change. To enhance FAA's capability to analyze climate and other impacts (e.g., noise), this request also includes funding for creating and providing FAA offices with consistent and validated national airspace-wide data ready to use in FAA's National Environmental Policy Act studies for both environmental modeling and community outreach on FAA sponsored projects.

Unmanned Aircraft Systems (UAS) Integration: This request will allow the FAA to develop and implement Advanced Air Mobility-specific environmental policy, guidance, analytical tools, and data efforts. In addition, the positions will focus on facilitating the remaining aspects of environmental policy, guidance, analytical tools, and data efforts (e.g., emissions, historic preservation, and tribal consultation). Contractor support will be used to identify environmental policy and guidance gaps and develop policy and guidance documents to address specific areas.

Community Engagement: This request will strengthen community engagement within the regions by adding community engagement liaisons. The liaisons will focus on subject areas that work across all regions. Each liaison will be focused on a subject area, such as unmanned aircraft system or commercial space. The liaison will be the conduit between the regional integrated team and the program office to ensure the necessary information for community engagement is available. These liaisons will ensure the program office is aware of community concerns regarding the specified subject areas, while proactively educating local community roundtables and government officials.

(See also "Operations Summary" for a detailed description of the Program Increase requests.)

What benefits will be provided to the American public through this request and why is this program necessary?

APL is the agency lead for Aviation Policy, International Aviation, National Engagement, and Environmental issues. Specifically, APL coordinates the agency's reauthorization before Congress, and is responsible for national aviation policies and strategies including aviation activity forecasts, economic analyses, aircraft noise and emissions analyses and mitigation, and environmental policy.

In addition, the Regional Administrators serve as the corporate representatives for the FAA Administrator in communicating with local, state and Federal agencies, the aviation industry

(from manufacturing to air carriers), and community organizations. APL works closely with other Federal agencies on national and international policy, environmental and energy issues, as well as with industry partners, other civil aviation authorities, academia, non-governmental organizations, and community representatives to strengthen U.S. positions as the gold standard for aviation.

As the global leader in aviation, the FAA must engage internationally to increase global safety standards and enhance aviation safety and efficiency. APL is responsible for improving environmental performance and addressing energy and sustainability needs, and for developing broad based approaches and coordinating Agency responses to limit and reduce future aviation environmental impacts.

APL operates the Cornerstone Regional Operations Center that serves as a 24-hours-a-day/7 days-a-week communication hub that provide voice and data dissemination necessary to direct management of the national airspace. Regional Administrators coordinate communication responses related to aircraft accidents, emergencies, missing aircrafts, hijacking, security threats, facility and system outages, airport closures, earthquakes/natural disasters and public information requests and complaints.

Detailed Justification for Office of Human Resource Management (AHR)

FY 2023 – Office of Human Resource Management (AHR) – Budget Request ($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 Request
Salaries and Expenses	80,444	80,649	86,158
Program Costs	30,545	30,340	33,548
Total	**$110,989**	**$110,989**	**$119,706**
FTE	**484**	**484**	**591**

What is this program and what does this funding level support?

The FAA workforce is the backbone of the agency's success in providing the safest and most efficient aerospace system in the world. The Office of Human Resource Management (AHR) request covers daily work in providing human resource services to the nearly 45,000 FAA employees. AHR provides the strategic management of human capital that ensures the FAA has the skilled workforce needed to meet the changing demands of the industry we serve. In FY 2023, AHR will:

- Continue implementing agency-wide leadership development programs to build a solid pipeline of future leaders and provide existing leaders with the tools needed to provide transformational leadership in support of the FAA mission.

- Refine efforts to improve the engagement, commitment, and satisfaction of FAA's workforce, which is a significant factor in enabling the Department of Transportation to advance the multi-modal transportation system of the future.

- Employ a corporate strategy that fosters effective, positive, and collaborative labor management relations.

As the FAA builds the foundation for the aerospace system of the future through the implementation of NextGen capabilities, the agency's workforce will play an increasingly critical role. AHR focuses on the FAA's human capital by identifying, recruiting, and training FAA's workforce with the leadership, technical, and functional skills needed to meet the challenges of the future while maintaining the world's safest and most efficient aerospace sector. AHR's objectives align with the FAA and the Office of the Secretary of Transportation's strategic goals.

The Office of Human Resource Services, **AHF** establishes, delivers, and improves the agency-wide employment services and programs through payroll and personnel action processing. It also includes facilitating position management and classification, recruitment, hiring, and enterprise onboarding. AHR serves as a business partner to agency employees, supervisors, managers, and executives on personnel matters involving employment and pay. By doing this, we are able to develop strategic workforce plans across the administration and assist with individual workforce plans for LOBs/SOs and divisions.

Key Activities include:

- Human resources management consultation
- Workforce planning, position management, and classification
- Recruitment, applicant assessment, referral of qualified applicants, and job offers.
- Engage and onboard employees throughout the enterprise
- Personnel action processing and pay administration
- Oversight and processing of personnel actions including the development of systems to support processing
- Developing strategic workforce plans across the enterprise
- Process benefit forms and applications, to include providing counseling on survivor benefits, disability compensation, and changes to Federal Employees Health Benefits, Dental, Vision, Flexible Spending Accounts, Federal Employees Group Life Insurance, and the Thrift Savings Plan. Operate benefits operation center with employees able to call from 7 am to 5pm central and send requests electronically 24/7

The Office of Compensation, Benefits, and Worklife, AHB manages the FAA's employee benefit, retirement programs, compensation, performance management, work-life, and workers' compensation programs.

Key Activities include:

- Administer two distinct performance management programs and systems: Valuing Performance System and the Performance Management & Assessment System
- Administer Short Term Incentive and Management Performance Incentive Program

- Calculate and administer pay programs
- Manage Agency-wide recognition initiative, INSPIRE
- Manage the FAA and DOT Worker's Compensation Program to include timely processing of injury claim forms, containment of Agency costs, and training of Agency managers, including eCOMP system to process claims
- Manage and promote the Employee Assistance Program/ WorkLife Solutions Program
- Manage and promote work-life programs including the child care centers, health and wellness, child subsidy, nursing mothers, emergency planning, telework, and voluntary leave programs

The Office of Labor and Employee Relations, AHL manages the relationships between FAA and the unions that represent its employees.

Key Activities include:

- Manages labor relations with the eight unions (with a total of 32 bargaining units) which represent nearly 35,000 (78%) of the approximate 45,000 employees working at the FAA
- Represents the agency in all national and headquarters negotiations, and most regional negotiations
- Handles third party matters, such as unfair labor practice proceedings and arbitrations, at both the national and regional levels of recognition
- Provides labor and employee relations training to management
- Provides consultative labor and employee relations services and guidance, such as conduct and discipline and performance improvement
- Provides and manages labor and employee relations and anti-harassment case management tracking services for departmental modes

The Office of Career Leadership and Development, AHD delivers innovative Human Capital Development solutions that power individual and enterprise success.

Key Activities include:

- FAA Leadership & Learning Institute
- FAA Human Capital Development Solutions

- Executive Development
- Enterprise Succession Planning
- Rotational Development Programs
- Emerging Enterprise Leaders Program
- Aspiring Managers Program
- FAA Learning and Development Council
- Learning Services Management Contract
- Mandatory Training Program
- Degree Completion/Tuition Assistance Program
- SkillSoft Learning Platform

The Office of Accountability and Strategic Business Management, AHA focuses on management accountability in response to allegations of harassment; strategic communications, project and business management; processes/procedures enabling proactive, data driven decision-making across AHR.

Key Activities include:

- FAA Accountability Board
- FAA HR Data Analysis and Reporting
- FAA Federal Employee Viewpoint and Employee Engagement
- Awards (monetary, time off and length of service)
- AHR Financial Contracts & Records Management
- AHR Business Management & Planning
- FAA Off boarding
- FAA Human Capital Management Technology

Function/Activity	FY 2023 Anticipated Accomplishments
AHF	• Adoption of a streamlined and technologically advanced employment and personnel action request process, which improves FAA's ability to attract, hire, and retain top talent. • Continue maturation of strategic HR services to forecast, recruit, and onboard the optimal number of FAA employees with the critical competencies. • Standardizing and automating the Personnel Action Request process. • Significant maturation of an agency-wide strategic workforce planning framework. • Benefits Operations Planning: Deployment/Implementation of new Case Management System to include build out of modules, testing and iterative refinements. Continued expansion of education programs. Further development of FHR NAV II Program.
AHB	• Deploy case digitization/claims management tool. • Ensure compliance with workers' compensation components of Department of Labor's Protecting Employees, Enabling Reemployment initiative. • Go live with expanded Performance Management & Assessment System, consolidating the Valuing Performance program and the EV3 population into this new tool. • Redesign of Short Term Incentive program to align with best practices that best support FAA's mission. • Enhance performance management and pay for performance programs to achieve better alignment with all programs, simplify programs, and achieve best practices that best support FAA's mission. • Telework: Support the expansion of agency readiness with the assessment and enhancement of workplace flexibilities based upon the Future of Work deliverables and publishing of the Flexible Work Arrangements policy.

Function/Activity	FY 2023 Anticipated Accomplishments
AHB Cont'd	• EAP/WorkLife Solutions: To align services with and to develop or deepen stakeholder partnerships in support of the FAA safety mission and the goal of employee engagement (such actions maintain utilization benchmark. • Emergency Planning: Identify an acceptable mobile accountability application and begin collaboration with the unions to implement the program for self-reporting during an event/incident. • Leave Programs: Continue to successfully execute the Voluntary Leave Bank (in place in FY 2021) and continue working in collaboration with the union to transition the Voluntary Leave Transfer Program to a secure electronic system synced with payroll and time keeping systems. • Nursing Mothers Program: Expanding the Nursing Mothers program to include 2 portable lactation rooms in FY 2023. • Child Care Centers: Assist in establishing a consortium with DHS, Board of Directors and other federal agencies to fund a designated number of child care spaces at various FAA child care facilities. • Child Care Subsidy: Determine if subsidy cap should be increased to meet market demands.
AHL	• Provide day-to-day operational support and services to FAA managers on labor and employee relations. • Implement a labor and employee relations strategy. • Manage oversight and compliance of all bargaining with FAA unions.
AHD	• Provide best practice leadership development programs to prepare leaders to effectively respond to ongoing changes in strategic priorities. • Continue implementing enterprise level, innovative approaches to leadership development to build a solid pipeline of future leaders, and provide existing leaders the tools needed to deliver transformational leadership in support of the FAA mission. • Enhance the available learning services available to all FAA employees through the eLMS. • Addition of comprehensive virtual learning inventory focusing on managerial and leadership development.

Function/Activity	FY 2023 Anticipated Accomplishments
AHA	• Continue to foster a workplace free of harassment and inappropriate behavior through investigation and adjudicating allegations of employee misconduct. • Lead the Agency in executing action plans for increased employee engagement across the FAA. • Ensure AHR compliance with IT systems, budget, contracting and financial rules and regulations. • Develop executive level strategic partnerships and communications • Provide HR data reports and analysis to support FAA-wide human capital decision-making. • Completed migration to Electronic Transition System for automated off boarding.

Program Increase:

The FY 2023 budget request for AHR includes additional funding for the following programmatic initiative.

Discretionary Adjustments	Amount ($000)	OTFTP	FTE
Aviation and Aerospace Talent Development	2,500	108	107
AHR Total	**$2,500**	**108**	**107**

Aviation and Aerospace Talent Development: This request will expand the Minority Serving Institution program with additional interns. The Office of Human Resource Management manages the FAA's Minority Serving Institution (MSI) Program, which provides college students with professional experiences in the Aviation and Aerospace industry, nationwide. The program is designed to provide members of diverse groups with opportunities in FAA career fields where they are otherwise under-represented.

(See also "Operations Summary" and "FY 2023 Discretionary Increase Request" for a detailed description of the Program Increase requests.)

What benefits will be provided to the American public through this request and why is this program necessary?

Funding at the requested level is critical to continue providing personnel services to all FAA employees. The non-pay costs within AHR's budget include systems like CASTLE for time and

attendance and FAA's learning management system. AHR also supports the Employee Assistance Program, the FAA's Accountability Board, and the agency's worker's and unemployment compensation program, all of which are necessary for FAA's lines of business to be successful.

With FAA's core mission of aviation safety, AHR is the lead office with responsibility for attracting, recruiting, and hiring qualified US citizens to fill safety critical positions. This ensures the traveling public is supported by a system which is both safe and secure. At the requested level AHR will be able to support the FAA and achieve and sustain the required level of employees at the right level of qualification and expertise necessary to maintain the safety of the aviation system.

Staff Offices
($000)

	Dollars (in Thousands)	FTP	OTFTP	FTE
FY 2022 Annualized CR	**$265,394**	**1,116**	**35**	**1,145**
Restoration of FY 2022 Request	14,716	19	-	10
Adjustments to Base	**$10,271**	**-**	**-**	**9**
Annualization of FY 2022 Pay Raise 2.7%	1,402	-	-	-
Annualization of FY 2022 FTE	1,629	-	-	9
FY 2023 Pay Raise 4.6%	7,418	-	-	-
One Less Compensable Day (260 days)	(771)	-	-	-
Non-Pay Inflation 1.5%	943	-	-	-
Working Capital Fund	(350)	-	-	-
Discretionary Adjustments	**$13,539**	**55**	**113**	**139**
Address Aircraft Certification Reform Legislation	1,994	15	-	8
Advance Equity for Underserved Communities Through Airport Civil Rights Compliance	1,341	18	-	9
Aviation and Aerospace Talent Development	5,591	6	113	113
Address Climate Change	2,441	5	-	3
Unmanned Aircraft Systems (UAS) Integration	710	6	-	3
Stregthen Aviation Safety Oversight	154	1	-	1
Community Engagement	1,308	4	-	2
FY 2023 Request	**$303,920**	**1,190**	**148**	**1,303**

See Operations Summary for a detailed description of the explanation of funding changes.

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FACILITIES AND EQUIPMENT

(AIRPORT AND AIRWAY TRUST FUND)

For necessary expenses, not otherwise provided for, for acquisition, establishment, technical support services, improvement by contract or purchase, and hire of national airspace systems and experimental facilities and equipment, as authorized underpart A of subtitle VII of title 49, United States Code, including initial acquisition of necessary sites by lease or grant; engineering and service testing, including construction of test facilities and acquisition of necessary sites by lease or grant; construction and furnishing of quarters and related accommodations for officers and employees of the Federal Aviation Administration stationed at remote localities where such accommodations are not available; and the purchase, lease, or transfer of aircraft from funds available under this heading, including aircraft for aviation regulation and certification; to be derived from the Airport and Airway Trust Fund, $3,015,000,000, of which $570,000,000 shall remain available until September 30, 2024, and $2,445,000,000 shall remain available until September 30, 2025: Provided, That there may be credited to this appropriation funds received from States, counties, municipalities, other public authorities, and private sources, for expenses incurred in the establishment, improvement, and modernization of national airspace systems: Provided further, That not later than 60 days after submission of the budget request, the Secretary shall transmit to the Congress an investment plan for the Federal Aviation Administration which includes funding for each budget line item for fiscal years 2024 through 2028, with total funding for each year of the plan constrained to the funding targets for those years as estimated and approved by the Office of Management and Budget.

Note.—A full-year 2022 appropriation for this account was not enacted at the time the budget was prepared; therefore, the budget assumes this account is operating under the Continuing Appropriations Act, 2022 (Division A of P.L. 117–43, as amended). The amounts included for 2022 reflect the annualized level provided by the continuing resolution.

Program and Financing
(in millions of dollars)

Identification code: 69-8107-0-7-402		FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
	Obligations by program activity:			
	Direct program:			
0001	Engineering, development, test and evaluation	206	189	187
0002	Procurement and modernization of (ATC) facilities and equipment	1,751	1,834	1,816
0003	Procurement and modernization of non-ATC facilities and equipment	212	197	195
0004	Mission support	298	238	235
0005	Personnel and related expenses	532	574	555
0007	Spectrum Efficient National Surveillance Radar (SENSR)	2	. . . . .	. . . . .
0008	2017 Hurricanes/2018 Supplemental	7	8	6
0100	Subtotal, direct program	3,008	3,040	2,994
0799	Total Direct obligations	3,008	3,040	2,994
0801	Facilities and Equipment (Airport and Airways Trust Fund)	116	92	92
0900	Total new obligations, unexpired accounts	3,124	3,132	3,086
	Budgetary resources: Unobligated balance:			
1000	Unobligated balance brought forward, Oct 1	2,154	2,206	2,155
1001	Discretionary unobligated balance brought fwd Oct 1	2,152	. . . . .	. . . . .
1021	Recoveries of prior year unpaid obligations	106	. . . . .	. . . . .
1070	Unobligated balance (total)	2,260	2,206	2,155
	Budget authority: Appropriations, discretionary:			
	Appropriations discretionary:			
1101	Appropriation (special or trust fund)	3,015	3,015	3,015
	Spending authority from offsetting collections, discretionary:			
1700	Collected	56	66	66
1701	Change in uncollected payment, Federal sources	4	. . . . .	. . . . .
1750	Spending authority from offsetting collections, disc (total)	60	66	66
	Spending authority from offsetting collections, mandatory			
1900	Budget authority (total)	3,075	3,081	3,081
1930	Total budgetary resources available	5,335	5,287	5,236
	Memorandum (non – add) entries:			
1940	Unobligated balance expiring	-5	. . . . .	. . . . .
	Special and non-revolving trust funds:			
1941	Unexpired Unobligated balance, end of year	2,206	2,155	2,150
1950	Other balances withdrawn and returned to	30	. . . . .	. . . . .

Identification code: 69-8107-0-7-402		FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
	unappropriated receipts			
1951	Unobligated balance expiring	5	. . . . .	. . . . .
1952	Expired Unobligated balance, start of year	87	86	86
1953	Expired Unobligated balance, end of year	81	86	86
1954	Unobligated balance canceling	30	. . . . .	. . . . .
	Change in obligated balances:			
3000	Unpaid obligations, brought forward, Oct 1	2,208	2,370	2,585
3010	New obligations, unexpired accounts	3,124	3,132	3,086
3011	Obligations (upwards adjustments), expired accounts	1	. . . . .	. . . . .
3020	Outlays (gross)	-2,832	-2,917	-3,154
3040	Recoveries of prior year unpaid obligations, unexpired	-106	. . . . .	. . . .
3041	Recoveries of prior year unpaid obligations, expired	-25	. . . . .	. . . . .
3050	Unpaid obligations, end of year	2,370	2,585	2,517
	Uncollected payments:			
3060	Uncollected pymts, Fed sources, brought forward, Oct 1	-55	-46	-46
3061	Adjustment to uncollected pymts, Fed sources brought forward , Oct 1	-1	. . . . .	. . . . .
3070	Change in uncollected pymts, Fed sources, unexpired	-4	. . . . .	. . . . .
3071	Change in uncollected pymts, Fed sources, expired	14	. . . . .	. . . . .
3090	Uncollected pymts, Fed sources, end of year	-46	-46	-46
	Memorandum (non-add) entries:			
3100	Obligated balance, start of year	2,152	2,324	2,539
3200	Obligated balance, end of year	2,324	2,539	2,471
	Budget Authority and outlays, net:			
	Discretionary:			
4000	Budget authority, gross	3,075	3,081	3,081
	Outlay gross:			
4010	Outlays from new discretionary authority	925	1,015	1,033
4011	Outlays from discretionary balances	1,900	1,902	2,121
4020	Outlays, gross (total)	2,825	2,917	3,154
	Offsets:			
	Against gross budget authority and outlays:			
	Offsetting collections (collected) from:			
4030	Federal sources	-43	-36	-36
4033	Non-Federal sources	-28	-30	-30
4040	Offsets against gross budget authority and outlays (total)	-71	-66	-66
	Additional offsets against gross budget authority only:			
4050	Change in uncollected pymts, Fed sources, unexpired	-4	. . . . .	. . . . .
4052	Offsetting collections credited to expired accounts	15	. . . . .	. . . . .
4060	Additional offsets against budget authority only (total)	11	. . . . .	. . . . .
4070	Budget authority, net (discretionary)	3,015	3,015	3,015
4080	Outlay, net (discretionary)	2,754	2,851	3,088
	Mandatory:			
	Outlays, gross:			

Identification code: 69-8107-0-7-402		FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
4101	Outlays from mandatory balances	7	. . . . .	. . . . .
	Offsets against gross budget authority and outlays:			
	Offsetting collections (collected) from:			
4180	Budget authority, net (total)	3,015	3,015	3,015
4190	Outlay, net (total)	2,761	2,851	3,088
	Memorandum (non-add) entries:			
5090	Unexpired unavailable balance, SOY Offsetting collections	3	3	3
5092	Unexpired unavailable balance, EOY Offsetting collections	3	3	3

Funding in this account provides for the deployment of communications, navigation, surveillance, and related capabilities within the National Airspace System (NAS). This includes funding for several activities of the Next Generation Air Transportation System, a joint effort between the Department of Transportation, the National Aeronautics and Space Administration, and the Departments of Defense, Homeland Security, and Commerce to improve the safety, capacity, security, and environmental performance of the NAS. The funding request supports the Federal Aviation Administration's comprehensive plan for modernizing, maintaining, and improving air traffic control and airway facilities services.

Object Classification
(in millions of dollars)

Identification code: 69-8107-0-7-402		FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
	Direct obligations:			
	Personnel compensation:			
11.1	Full-time permanent	361	369	383
11.3	Other than full-time permanent	2	2	1
11.5	Other personnel compensation	8	8	7
11.9	Total personnel compensation	371	379	391
12.1	Civilian personnel benefits	130	137	143
21.0	Travel and transportation of persons	17	41	11
22.0	Transportation of things	3	2	2
23.2	Rental payments to others	44	39	39
23.3	Communications, utilities, and miscellaneous charges	96	45	45
25.1	Advisory and assistance services	1,702	1,708	1,690
25.2	Other services from non-federal sources	168	125	119
25.3	Other goods and services from federal sources	12	43	42
25.4	Operation and maintenance of facilities	79	83	80
25.5	Research and development contracts	13	1	1
25.7	Operation and maintenance of equipment	84	63	62
25.8	Subsistence and support of persons	. . . . .	1	1
26.0	Supplies and materials	15	31	30
31.0	Equipment	194	202	198
32.0	Land and structures	77	137	137
41.0	Grants, subsidies, contributions	. . . . .	3	3
43.0	Interest and dividends	3	. . . . .	. . . . .
99.0	Direct obligations	3,008	3,040	2,994
99.0	Reimbursable obligations	116	92	92
99.9	Total new obligations, unexpired accounts	3,124	3,132	3,086

Employment Summary

Identification code: 69-8107-0-7-402		FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
1001	Direct civilian full-time equivalent employment	2,815	2,815	2,815
2001	Reimbursable civilian full-time equivalent employment	50	50	53

EXHIBIT III-1

FACILITIES and EQUIPMENT
SUMMARY BY PROGRAM ACTIVITY
Appropriations, Obligations Limitations, and Exempt Obligations
($000)

	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Engineering, Development, Test and Evaluation	157,600	159,500	161,200
Air Traffic Control Facilities and Equipment	1,818,450	1,837,377	1,808,250
Non-Air Traffic Control Facilities and Equipment	256,250	260,323	223,200
Facilities and Equipment Mission Support	237,700	212,800	252,350
Personnel and Related Expenses	545,000	545,000	570,000
TOTAL BASE	**3,015,000**	**3,015,000**	**3,015,000**
FTEs			
Direct Funded	2,815	2,815	2,815
Reimbursable	50	50	53
IIJA Supplemental			
Facilities and Equipment		1,000,000	1,000,000
Total Base		**1,000,000**	**1,000,000**
FTEs			
Direct Funded		70	170
Reimbursable			
Total	**3,015,000**	**4,015,000**	**4,015,000**

This account provides funds for programs that improve operational efficiency, constrain costs, modernize automation and communication technology and systems, and deal with aging facilities. Particular emphasis is placed on en route and terminal air traffic control, satellite navigation and landing systems, and communications.

Program and Performance Statement

This account provides funds for programs that improve operational efficiency, constrain costs, modernize automation and communication technology and systems, and deal with aging facilities. Particular emphasis is placed on en route and terminal air traffic control, satellite navigation and landing systems, and communications.

Funding is organized within the following activity areas of FAA:

Activity 1: Engineering, Development, Test and Evaluation

Activity 2: Procurement and Modernization of Air Traffic Control Facilities and Equipment

Activity 3: Procurement and Modernization of Non-Air Traffic Control Facilities and Equipment

Activity 4: Facilities and Equipment Mission Support

Activity 5: Personnel and Related Expenses

EXHIBIT III-1a

FACILITIES and EQUIPMENT
SUMMARY ANALYSIS OF CHANGE FROM FY 2022 TO FY 2023
Appropriations, Obligations Limitations, and Exempt Obligations
($000)

Item	Change from FY 2022 to FY 2023 ($000)	Change from FY 2022 to FY 2023 (FTE)
FY 2022 Annualized CR	**$3,015,000**	**2,815**
ADJUSTMENTS TO BASE		
Annualization of FY 2022 FTE	0	
Annualization of Prior Pay Raise(s)	3,373	
FY 2022 Pay Raise	17,775	
One Less Compensable Day (260 days)	-1,882	
Non-Pay Inflation	5,729	
Working Capital Fund	5	
Subtotal, Adjustments to Base	**25,000**	**0**
PROGRAM REDUCTIONS		
Engineering, Development, Test and Evaluation	0	
Air Traffic Control Facilities and Equipment	-29,127	
Non-Air Traffic Control Facilities and Equipment	-37,123	
Facilities and Equipment Mission Support	0	
Personnel and Related Expenses	0	
Subtotal, Program Reductions	**-66,250**	**0**
PROGRAM INCREASES		
Engineering, Development, Test and Evaluation	1,700	
Air Traffic Control Facilities and Equipment	0	
Non-Air Traffic Control Facilities and Equipment	0	
Facilities and Equipment Mission Support	39,550	
Personnel and Related Expenses	0	
Subtotal, Program Increases	**41,250**	**0**
FY 2023 REQUEST	**$3,015,000**	**2,815**
Supplemental Appropriation (IIJA)	**1,000,000**	**170**
Total	**4,015,000**	**2,985**

Facilities and Equipment (F&E) Index

		Amount	Page
Activity 1, Engineering, Development, Test and Evaluation			
1A01	Advanced Technology Development and Prototyping	$25,300,000	17
1A02	William J. Hughes Technical Center Laboratory Sustainment	$16,900,000	22
1A03	William J. Hughes Technical Center Infrastructure Sustainment	$15,000,000	25
1A04	NextGen – Separation Management Portfolio	$18,000,000	27
1A05	NextGen – Traffic Flow Management Portfolio	$21,000,000	31
1A06	NextGen – On Demand NAS Portfolio	$8,500,000	36
1A07	NextGen – NAS Infrastructure Portfolio	$25,500,000	39
1A08	NextGen – NextGen Support Portfolio	$5,000,000	43
1A09	NextGen – Unmanned Aircraft Systems	$15,000,000	45
1A10	NextGen – Enterprise, Concept Development, Human Factors, and Demonstrations Portfolio	$11,000,000	48
	Total, Activity 1	**$161,200,000**	
Activity 2, Procurement and Modernization of Air Traffic Control Facilities and Equipment			
2A01	En Route Modernization (ERAM) – System Enhancements and Technology Refresh	$108,150,000	51
2A02	Next Generation Weather Radar (NEXRAD)	$3,000,000	55
2A03	ARTCC and CCF Building Improvements	$94,700,000	56
2A04	Air/Ground Communications Infrastructure	$7,700,000	59
2A05	Air Traffic Control En Route Radar Facilities Improvements	$6,700,000	61
2A06	Oceanic Automation System	$12,250,000	63
2A07	Next Generation Very High Frequency Air/Ground Communications System (NEXCOM)	$52,000,000	65
2A08	System-Wide Information Management (SWIM)	$10,200,000	67
2A09	ADS-B NAS Wide Implementation	$155,200,000	70
2A10	Windshear Detection Service	$3,200,000	74
2A11	Air Traffic Management Implementation Portfolio	$7,400,000	76
2A12	Time Based Flow Management Portfolio (TBFM)	$21,300,000	79
2A13	Next Generation Weather Processor	$30,700,000	82
2A14	Data Communications in Support of NextGen	$108,050,000	85
2A15	Offshore Automation	$38,000,000	89
2A16	Reduced Oceanic Separation	$7,000,000	91
2A17	En Route Service Improvements	$1,000,000	93

2A18	Commercial Space Integration	$10,000,000	94
2B01	Terminal Doppler Weather Radar (TDWR)-Provide	$1,000,000	96
2B02	Standard Terminal Automation Replacement System (STARS) (TAMR Phase 1)	$62,000,000	98
2B03	Terminal Automation Program	$3,000,000	101
2B04	Terminal Air Traffic Control Facilities – Replace	$55,000,000	103
2B05	ATCT/Terminal Radar Approach Control (TRACON) Facilities – Improve	$79,000,000	106
2B06	NAS Facilities OSHA and Environmental Standards Compliance	$27,000,000	108
2B07	Integrated Display System (IDS)	$45,000,000	111
2B08	Terminal Flight Data Manager (TFDM)	$61,800,000	114
2B09	Performance Based Navigation Support Portfolio	$8,000,000	117
2B10	Unmanned Aircraft System (UAS) Implementation	$10,000,000	119
2B11	Air Ground Surveillance Portfolio	$18,000,000	122
2B12	Terminal and En Route Surveillance Portfolio	$117,400,000	125
2B13	Terminal and En Route Voice Switch and Recorder Portfolio	$50,100,000	130
2B14	Enterprise Information Platform	$13,000,000	134
2B15	Remote Towers	$3,000,000	137
2C01	Automated Surface Observing System (ASOS)	$10,000,000	139
2C02	Future Flight Service Program (FFSP)	$1,500,000	141
2C03	Alaska Flight Service Facilities Modernization (AFSFM)	$2,700,000	143
2C04	Juneau Airport Wind System (JAWS) – Technology Refresh	$500,000	145
2C05	Weather Camera Program	$1,200,000	147
2D01	VHF Omnidirectional Radio Range (VOR) Minimum Operation Network(MON)	$7,100,000	149
2D02	Wide Area Augmentation System (WAAS) for GPS	$91,800,000	151
2D03	Instrument Flight Procedures Automation (IFPA)	$3,600,000	154
2D04	Runway Safety Areas – Navigational Mitigation	$2,500,000	156
2D05	Landing and Lighting Portfolio	$60,800,000	158
2D06	DME, VORTAC, TACAN, Sustainment Portfolio	$10,000,000	164
2E01	Fuel Storage Tank Replacement and Management	$26,200,000	166
2E02	Unstaffed Infrastructure Sustainment	$56,300,000	168
2E03	Aircraft Replacement and Related Equipment Program	$46,200,000	170
2E04	Airport Cable Loop Systems – Sustained Support	$10,000,000	172
2E05	Alaskan Satellite Telecommunications Infrastructure (ASTI)	$500,000	174
2E06	Real Property Disposition	$4,500,000	176

2E07	Electrical Power System – Sustain/Support	$139,800,000	178
2E08	Energy Management and Compliance (ECM)	$6,900,000	182
2E09	Child Care Center Sustainment	$1,200,000	184
2E10	FAA Telecommunications Infrastructure	$69,000,000	186
2E11	Operational Analysis and Reporting Systems	$26,100,000	190
	Total, Activity 2	**$1,808,250,000**	

Activity 3, Procurement and Modernization of Non-Air Traffic Control Facilities and Equipment

3A01	Hazardous Materials Management	$24,300,000	193
3A02	Aviation Safety Analysis System (ASAS)	$28,200,000	195
3A03	National Air Space Recovery Communications (RCOM)	$12,000,000	199
3A04	Facility Security Risk Management	$14,000,000	201
3A05	Information Security	$23,000,000	203
3A06	System Approach for Safety Oversight (SASO)	$26,700,000	206
3A07	Aviation Safety Knowledge Management Environment (ASKME)	$12,000,000	208
3A08	Aerospace Medical Equipment Needs (AMEN)	$2,200,000	210
3A09	NextGen - System Safety Management Portfolio	$17,000,000	212
3A10	National Test Equipment Program (NTEP)	$3,000,000	215
3A11	Mobile Assets Management Program	$1,900,000	217
3A12	Aerospace Medicine Safety Information System (AMSIS)	$16,200,000	219
3A13	Configuration, Logistics, and Maintenance Resource Solutions (CLMRS)	$19,700,000	222
3B01	Aeronautical Center Infrastructure Modernization	$20,000,000	225
3B02	Distance Learning	$3,000,000	227
	Total, Activity 3	**$233,200,000**	

Activity 4, Facilities and Equipment Mission Support

4A01	System Engineering and Development Support	$38,000,000	229
4A02	Program Support Leases	$45,000,000	232
4A03	Logistics Support Services (LSS)	$12,000,000	234
4A04	Mike Monroney Aeronautical Center Leases	$16,000,000	236
4A05	Transition Engineering Support	$19,000,000	238
4A06	Technical Support Services Contract (TSSC)	$28,000,000	240
4A07	Resource Tracking Program (RTP)	$8,000,000	242
4A08	Center for Advanced Aviation System Development	$57,000,000	244

	(CAASD)		
4A09	Aeronautical Information Management Program	$29,350,000	247
	Total, Activity 4	**$252,350,000**	
5A01	Personnel and Related Expenses	$570,000,000	250
	Total, All Activities	**$3,015,000,000**	

Executive Summary – Facilities and Equipment (F&E) Budget Summary

What is this program and what does this funding level support?

The FY 2023 President's Budget requests $3.015 billion to enable FAA to maintain the capacity and safety of the current National Airspace System. This amount is commensurate with the FY 2022 Full Year Continuing Resolution of $3.015 billion. In addition, the Infrastructure Investment and Jobs Act (IIJA), also known as the Bipartisan Infrastructure Law (BIL), provides $1.0 billion in advance appropriations for the F&E account, for a combined total of $4.015 billion.

This investment will sustain current systems, including maintaining aging infrastructure, power systems, information technology, navigational aids, communications, surveillance, and weather systems. It will also continue to implement improvements that will optimize the National Airspace System. The F&E budget is structured around five activities that group programs according to a common purpose.

Activity 1 - Engineering, Development, Test and Evaluation:

For Activity 1, the FAA requests $161.2 million to sustain the laboratories and facility infrastructure at the William J Hughes Technical Center and for Unmanned Aircraft System innovation work. This represents an increase of $1.7 million above the FY 2022 Full Year Continuing Resolution of $159.5 million. The primary reason for the increase is that innovation work for the future remains an FAA priority.

Activity 2 - Procurement and Modernization of Air Traffic Control Facilities and Equipment:

For Activity 2, the FAA requests $1.8 billion to perform modernization of air traffic control facilities, systems, and equipment, and to support infrastructure upgrades, system replacements, and technology refresh at manned and unmanned facilities. This request is a decrease of $29.1 million below the FY 2022 Full Year Continuing Resolution. This decrease is the result of reducing the Facilities Programs under the Facilities and Equipment Account since there is $1.0 billion is Infrastructure Investment and Jobs Act funding to support that purpose.

Activity 2 supports major systems acquisitions and facilities infrastructure programs in the implementation phase. These programs and initiatives fund the procurement and modernization of air traffic control facilities and equipment, including all funding related to the acquisition of air traffic control facilities, navigation and landing aids, surveillance equipment and facilities, automation systems, and communications systems and equipment. Activity 2 funding will support the following work:

- Upgrades to existing equipment

- Acquiring production systems to replace existing systems, extend serviceable life, or technology refresh system components
- Deploying systems for installation or transition to operational status
- Sustaining satellite-based infrastructure such as Automatic Dependent Surveillance-Broadcast and Wide Area Augmentation Systems
- Deploying communications infrastructure to provide surveillance and navigation services
- Replacing or modernizing manned and unmanned air traffic control facilities
- Replacing or modernizing automation, communications, navigation, surveillance/weather infrastructure, systems, and equipment
- Decommissioning and disposal of the systems and facilities that have been replaced

Activity 3 - Procurement and Modernization of Non-Air Traffic Control Facilities and Equipment:

For Activity 3, the FAA requests $223.2 million for the modernization of non-air traffic control facilities, business systems, and equipment. This represents a decrease of $37.1 million below the FY 2022 Full Year Continuing Resolution. Nearly all the programs funded under this account are requesting less funding than currently allocated under a FY 2022 Full Year Continuing Resolution. Most notably are Facility Security Risk Management, System Approach for Safety Oversight, and Aerospace Medicine Safety Information Systems. The programs under Activity 3 support safety, regulation, security, information technology security, and regional and service center building infrastructure and support.

Activity 4 – Facilities and Equipment Mission:

For Activity 4, the FAA requests $252.4 million to provide system wide integration, transition engineering, and technical contractual support in direct support of system acquisition or installation. This request is an increase of $39.6 million above the FY 2022 Full Year Continuing Resolution. Notably, the Aeronautical Information Management Program is requested at $29.4 million. This will allow the acceleration of a sole Notice to Airmen repository and eliminate the failing vintage hardware that currently supports that function in the national airspace system. In addition, Program Support Leases is funded at $45.0 million and is $30.0 million more than the one-time correction level of $15.0 million for FY 2022. The funding in this activity will provide for the following:

- Transition engineering, integration, and support
- NAS integrated logistics support
- Technical support services for implementation
- Program Support and Aeronautical Center Leases

Activity 5 - Personnel, Compensation, Benefits, and Travel:

For Activity 5, the FAA requests $570.0 million for the direct cost of federal salaries, benefits, travel, and related personnel costs of FAA employees supporting all capital projects under the F&E account. This amount represents an increase of $20.0 million above the FY 2022 Full Year Continuing Resolution. This increase will support inflation and pay raises in FY 2023.

NAS Facility Infrastructure Sustainment:

FAA has an approximately $5.1 billion sustainment backlog for facilities that directly support national air space operations. The request includes $481.3 million toward this backlog, which increases FAA operational risk.

In total, the request includes $536.3 million to advance the state of good repair for FAA infrastructure facilities including replacement projects. This amount represents a decrease of $60.8 million compared to the FY 2022 Full Year Continuing Resolution. This infrastructure funding will improve the Facility Condition Index ratings at FAA facilities that provide the backbone for the National Airspace System.

In addition, the IIJA provides $1.0 billion in additional funding towards these types of projects in FY 2023. This funding will support capital improvements that will improve, sustain, and replace FAA's staffed and unstaffed FAA facilities. Combined with the FY 2023 President's Budget Request, $971.3 million will be available for facilities sustainment work and $565.0 million will support the replacement of outdated facilities.

NAS System Sustainment:

Funding of $899.6 million is requested for Automation, Communication, Navigation/Landing, and Surveillance Air Traffic Control systems infrastructure. This represents an increase of $30.4 million compared to the FY 2022 Full Year Continuing Resolution. The increase is the result of prioritizing systems sustainment work in this budget request.

These systems allow the National Airspace System to operate at the highest safety standards and provide airline operators and general aviation the dependable Air Traffic Control services they require. Providing continued safe and expected services to these users requires sustainment of the aging systems infrastructure. The inventory of radios supporting terminal communications is between 40 to 50 years old, voice switches used to communicate between pilots and air traffic controllers are 17 to 22 years of age, and on-airport radars are more than 20 years old. Of the 1,200 Instrument Landing Systems in operation today, 125 are over 25 years old. Funding is requested to replace unsupportable components and systems for this system infrastructure. As FAA progresses to satellite-based services and technology, a number of these systems will continue to provide required support for advanced NextGen capabilities or to

provide redundant and safety backup capabilities in the event of satellite service outages and interference.

NextGen

NextGen is a portfolio of programs, systems, and procedures at different levels of maturity that will provide enhanced capabilities for the movement and management of Air Traffic. The work in the portfolio is being deployed in stages. Some enhancements are currently in deployment, some are nearing implementation, and some of the capabilities of NextGen are being defined and matured, as the technology to support them becomes available (Pre-Implementation).

Pre-Implementation – The request includes $104.0 million to continue basic and applied research efforts in support of Unmanned Aircraft System technologies and other concepts such as trajectory based operations.

Implementation – The request includes $557.8 million to continue the implementation of NextGen programs that have achieved or are near a Final Investment Decision (FID). Work on a number of these programs has been delayed due to limitations imposed by COVID-19 restrictions and other factors. Programs with deferred work include Terminal Flight Data Manager, Data Communications, NextGen Weather Processor, and En Route Automation Modernization Enhancements.

What benefits will be provided to the American public through this request and why is this program necessary?

The procurement and modernization of the nation's air traffic control system was first highlighted in 1980 with the publication of the first National Airspace System Modernization Plan. Since that time, FAA has replaced old technologies with new systems that perform required functions better and more efficiently. During this period, aviation services were extended to new, small and medium-sized localities through the expanded deployment of updated air traffic control technologies, equipment, and infrastructure at these locations.

FAA has met most of the cost and schedule goals for the programs within F&E. F&E programs contribute to the success of metrics that show a safe and efficient airspace system and include runway incursion reduction, Air Traffic Control system operational availability, and National Airspace System on-time arrivals.

Detailed Justification for - 1A01 Advanced Technology Development and Prototyping

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Advanced Technology Development and Prototyping	$26,600	$29,000	$25,300

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. Runway Incursion Reduction Program	---	$3,000.0
B. System Capacity Planning and Improvements	---	2,000.0
C. Operations Concept Validation and Infrastructure Evolution	---	3,000.0
D. Major Airspace Redesign	---	5,000.0
E. Strategy and Evaluation	---	1,000.0
F. Dynamic Capital Planning	---	3,200.0
G. Operational Modeling Analysis and Data	---	2,000.0
H. Enterprise, Management, Integration, Planning and Performance	---	4,000.0
I. In-Service Engineering	---	1,500.0
J. Strategic Initiative Analysis and Validation	---	600.0

What is this program and what does this funding level support?

FAA's Advanced Technology Development and Prototyping program develops and validates technology and systems that support safe and efficient air traffic services. For FY 2023, a total of $25.3 million is requested to support the evolving air traffic system architecture and improvements in airport safety and capacity.

A. Runway Incursion Reduction Program (RIRP)

The Runway Incursion Reduction Program objective is to discover and research innovative technologies that will detect the presence of an unauthorized object in the Runway Safety Area at every airport, and deliver a directive cue to the individual who can take corrective action.

Consistent with standing National Transportation Safety Board recommendations, Runway Incursion Reduction research emphasis will remain on testing the application

of technology for the development of situational awareness tools aimed at pilots, controllers, and vehicle operators that operate on taxiways and runways. Current initiatives include Runway Safety Assessment studies such as Runway Incursion Prevention Shortfall Analysis to identify candidate small-to-medium sized airports with historically high rates of Runway Incursions. Candidate technologies best suited to an airport based on causal factors encountered at that site (e.g. converging runways, ground vehicle operations, taxiway/runway hotspots, etc.) will be identified.

For FY 2023, $3.0 million is requested for technology testing, demonstration and documentation for the reduction of risk associated with the acquisition of new safety technologies in the national airspace system. The Runway Incursion Reduction Program objective is to discover research and innovative technologies that will detect the incorrect presence of an object in the Runway Safety Area at every airport, and deliver a directive cue to the individual who can take corrective action.

B. System Capacity, Planning, and Improvements

This program sponsors performance metric tasks where experts from the FAA, academia, and industry collaborate to identify the relationships between national airspace modernization and airline performance and to develop recommendations for improving capacity, system efficiency, and delays at specific airports. This work includes research, modelling, airline schedule forecasting, and analysis of capital investment benefits. Methods for correlating airline schedules, weather events, and FAA actions with outcomes such as flight delay, cancellations, diversions, or extended routing are developed and dashboard style reporting tools for these relationships are provided to both FAA management and commercial airlines. These dashboards align and harmonize performance metrics for use during joint operational reviews.

Additionally, this program funds operational performance reporting under international Memoranda of Cooperation with Europe and Singapore as well as support to international organizations such as the International Civil Aviation Organization and the Civil Air Navigation Services Organization.

For FY 2023, $2.0 million is requested to continue performance reporting that supports FAA agreements under international Memoranda of Understanding, performance metric development, and tool development for FAA reporting, automation, and integration for National Airspace System modernization.

C. Operations Concept Validation and Infrastructure Evolution

As new concepts evolve, this program identifies operational gaps and potential technologies that could address these gaps. It conducts studies and analyses in operational focus areas to include Commercial Space Operations in the National Airspace System, Evolution of Trajectory-Based Operations, and Time-Based Metering Operations with Advanced Rerouting. This program ensures that potential

enhancements are operationally sound and captured in the architecture plans for the national airspace.

For FY 2023, $3.0 million is requested to conduct analysis and risk mitigation activities for the identified operational focus areas.

D. Major Airspace Redesign

The purpose of this national initiative is to review, redesign, and restructure airspace. The FAA prioritizes candidate airspace redesign projects to determine which projects provide the most benefits and develops criteria for assessing that project's system-wide impact. Redesign projects have taken on increased emphasis at both the national and regional levels to ensure that FAA is able to manage effectively the projected growth in demand, increased complexity, new entrants, and changing infrastructure needs at FAA facilities and airports.

For FY 2023, $5.0 million will continue implementation of airspace redesign efforts that frequently result in changes in the number and shape of operational positions, sectors or facility boundaries. Required infrastructure changes can include communication modifications such as changes in frequencies, connectivity of a radio site to the air traffic control facility, and improved controller-to-controller connectivity. In addition, these changes can include surveillance infrastructure modifications to ensure proper radar coverage as well as automation modifications to the En-Route Automation Modernization data processing or flight data processing. The program is also developing the Airspace Modernization Roadmap, the agency's strategic plan to continuously evaluate and modernize the National Airspace System while balancing the needs of the FAA and aviation stakeholders.

E. Strategy and Evaluation

This program develops and maintains mathematical models of the national airspace system that are used to aid organizations throughout the FAA in new investment analyses, implementation prioritizations, trade-off studies, and capability benefit estimates under various operational conditions (e.g., weather, demand, new entrants, etc.). The FAA and contractors use these simulation capabilities to analyze advanced air traffic management concepts and conduct related national airspace performance analyses. These models also support rapid analysis of airport improvements, air carrier demand changes, and new air traffic technology implemented within the national airspace. For FY 2023, $1.0 million is requested to enhance our existing models in order to more effectively estimate potential benefits of new concepts and implementations of trajectory based operations.

F. Dynamic Capital Planning

The Dynamic Capital Planning tools and support will allow FAA to make optimum decisions based on best business practices. These tools and support will provide

verification that disciplined management of capital programs continues to be carried out and major acquisition programs remain on schedule and within cost. The program will focus on the following activities:

- Determining quantitative economic value and internal benefits validation for capital projects
- Milestone tracking, schedule modeling, and performance measurement
- Earned value management, auditing, trend analysis, and monitoring through program life cycle
- Field implementation planning and support for capital portfolio management and post implementation analysis for corporate lessons learned results

For FY 2023, $3.2 million is requested to sustain and enhance an automated tracking and reporting system for facilities and equipment projects. Managers and engineers have up-to-date reliable data on projects through the resource tracking program and productivity continues to improve under standardized project management operating procedures.

G. Operational Modeling Analysis and Data

The Operational Modeling Analysis and Data program provides support to national airspace performance analysis by improving the efficiency and integration of operational data, national airspace performance reporting, and the tools used for both. This program also makes enhancements to individual and consolidated products in an effort to keep up with growing data demands in the FAA. These enhancements support of the Air Traffic Organization operational units, operational and capital investment planning, as well as post operational modeling and analysis.

For FY 2023, $2.0 million is requested to modernize and integrate the National Airspace System Data Warehouse and the Aviation System Performance Metrics systems. A shortfall in available analytical products has been identified that this program will address through the creation of a database to capture operational events associated with individual flights. This will improve the timeliness of operational analyses and reduce cost. This program will develop and publish standardized operational events data on a per-flight basis and by facility (e.g. airport). This program will also make the data products available to the FAA Enterprise Information Management system for use FAA wide.

H. Enterprise, Management, Integration, Planning and Evaluation for NAS/NextGen

The Enterprise Management, Integration, Planning and Evaluation for the National Airspace Sysytem NextGen program will support human capital management,

enterprise management, technical support, and outreach functions required to deliver the NextGen enterprise. Transforming the National Airspace Sysytem into a flexible, scalable, and time-based management system is the fundamental objective of NextGen research, infrastructure development and operational integration. The successful, ongoing rollout of NextGen is the result of rigorous program and acquisition management partnered with stakeholder collaboration. This program provides technical support for conducting proof of concept for new technology planned for integration into systems that enables more efficient and effective business processes in support of National Airspace Systems operations. This will lead to the transformation of the national airspace system and promote increased capacity and efficiency. For FY 2023, $4.0 million is requested to support this initiative.

I. In-Service Engineering

In-service engineering allows for immediate response and tactical distribution of resources to emerging technology solutions. For FY 2023, $1.5 million is requested for ongoing engineering support of all prototyping efforts.

J. Strategic Initiatives Analysis and Validation

For FY 2023, $600,000 is requested for technological advances and innovation opportunities in the interests of aviation improvements for air traffic, regulation/certification and all lines of business that cannot be anticipated two years prior to budget submission. Examples include demonstrations and modeling concepts, validation of commercial products offered to FAA for certification, as well as exploration of concepts for future aviation operational usage one to four years from now. These opportunities typically arise during the execution budget year after funding has been appropriated.

What benefits will be provided to the American public through this request and why is this program necessary?

The projects funded under this program will ensure that the essential hardware and software components are in place and operational in order to accurately collect and report operational and safety data associated with air traffic operations. These projects will support management and oversight of implementation for new programs, assess metrics and operational parameters of new programs, and allow for alterations of programs based upon that data. These efforts will ensure the national airspace system remains the safest and most efficient air traffic control system in the world.

Detailed Justification for - 1A02 William J. Hughes Technical Center Infrastructure Sustainment

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
William J. Hughes Technical Infrastructure Sustainment	$16,900	$16,900	$16,900

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
William J. Hughes Technical Center Infrastructure Sustainment	---	$16,900.0

What is this program and what does the funding level support?

This program sustains the William J. Hughes Technical Center (WJHTC) Laboratories. This centralized set of laboratories supports the Acquisition Management System lifecycle of projects from concept and requirements definition through the determination to implement those systems in the national airspace system.

These laboratories are the only location where it is possible to simulate the national airspace system in a realistic environment and it is necessary to maintain the laboratory systems with capabilities that match field sites that currently exist or are planned for the future. These facilities can be altered to replicate desired field configurations and traffic scenarios providing stakeholders with an understanding of how upgraded systems will perform prior to operational deployment. These labs also provide a flexible high-fidelity environment to support and validate research that advances future air traffic concepts in an environment that is integrated with other WJHTC capabilities. For FY 2023, $16.9 million is requested to support the following activities:

- **Laboratory Support Contracts**: Includes contract support services to sustain the operation of the laboratories including infrastructure engineering; technical services; laboratory networking; test and simulation services; laboratory maintenance; scheduling support for multi-user laboratories; and laboratory management.

- **Hardware/Software Licenses and Maintenance Agreements**: Over 50 annually renewed hardware and software licenses and maintenance agreements are required for the Laboratory equipment each year. Examples include Cisco maintenance; Lutron lighting maintenance; AutoCAD License and annual subscription services; Linux; Red Hat; etc.

- **Laboratory Space and Infrastructure Master Plan**: A long-term laboratory Master Plan will improve the overall function and efficiency of the facility. The FY 2023 portion of this plan will complete all phases of the consolidated facility that provides continuity of operations for national airspace operational equipment as well as non-operational, but critical. Construction that adds resiliency to the electrical and mechanical infrastructure of this already robust facility will be initiated. After taking some additional time to formally analyze the available options, construction will begin on the space for the relocation and consolidation of the Cockpit Simulation Facility and the Airway Facilities Tower Integration Laboratory.

- **Laboratory Equipment Technology Refresh**: Laboratory Equipment refresh addresses lifecycle replacement of national airspace supporting equipment. This ensures that laboratory equipment is available for use and in proper operating order. Technology Refresh is required of the Laboratory Network Management and Laboratory Network Operations Center systems.

- **Land Leases, Miscellaneous Supplies and Parts**: Items include land leases for three radar sites, laboratory communications, laboratory cabling, general supplies, and diagnostic equipment.

- **Continued Improvements to Laboratory Systems and Infrastructure:** The FAA's centralized set of laboratories and infrastructure must be modified, upgraded, and reorganized as capital programs and their supporting systems are delivered, installed, and eventually removed. The laboratory infrastructure encompasses over 210,000 square feet of laboratory space in the main buildings, along with numerous outlying buildings, and remote sites. Lifecycle replacement of infrastructure includes some of the on-going improvements such as transient voltage surge suppression upgrades; raised floor replacements; electrical distribution panel lifecycle replacements; and computer air conditioning unit replacements.

What benefits will be provided to the American public through this request and why is this program necessary?

The American public benefits by having WJHTC Laboratory Facilities to support research, development, testing, and evaluation of current and future national airspace systems. This support includes the operational support of national airspace systems in the field. When problems are identified at field locations, the appropriate laboratory is

utilized to recreate or simulate the problem; identify a solution; test the solution; and if necessary, develop a field modification that will be installed to correct the problem. The capabilities developed in the laboratories will reduce the overall cost of national airspace system development and will enhance the safety and efficiency of air travel.

Detailed Justification for - 1A03 William J. Hughes Technical Center Infrastructure Sustainment

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
William J. Hughes Technical Center Infrastructure Sustainment	$10,000	$16,000	$15,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
William J. Hughes Technical Center Infrastructure Sustainment	1	$15,000.0

What is this program and what does the funding level support?

This program sustains the William J Hughes Technical Center (WJHTC) facilities, site utilities, and infrastructure. This represents approximately 1.6 million square feet of test and evaluation, research and development, and administrative facilities, plus numerous project test sites on 5,000+ acres of land. The WJHTC is at the forefront of the FAA's challenge to modernize the U.S. air transportation system. For FY 2023, $15.0 million is requested to accomplish the following projects that promote sustainment of the FAA's infrastructure at the WJHTC:

- **Mold Remediation Program at Technical and Administrative Building - Building 300.** Construction and design efforts required to replace Heating, Ventilation and Air Conditioning equipment. The air-handling units in this building are more than 35 years old and have exceeded the industry standard lifecycle of 20 years.

- **Main Electrical Utility Sub Station Sustainment.** Construction efforts to replace high voltage electrical distribution switching equipment and associated structures that are more than 35 years old and have exceeded the industry standard lifecycle of 25 years.

- **Electrical Distribution System Sustainment at Equipment Repair Facility and Equipment Repair Facility – Buildings 306.** Construction efforts to replace

facility electrical distribution elements that are 35 years old and well beyond their industry standard lifecycle of 20 years. Some systems are already failing or are exhibiting symptoms of potential failure.

- **Replacement of Roofing Systems at Equipment Repair Facility – Building 306.** Construction efforts to replace roofing and waterproofing systems that are more than 30 years old and have exceeded the industry standard lifecycle of 20 years.

- **Requirements and Investment Analysis for Expansion of Laboratory Facilities and Infrastructure Support at the WJHTC.** Compile Agency requirements for infrastructure changes that are necessary to support future information-driven Internet Protocol based/cloud based systems and services. The resulting infrastructure will support development, test, evaluation, and second level engineering in this new information-driven environment.

- **Electrical Distribution Equipment Lifecycle Sustainment at Technical and Administrative Complex - Building 300.** Construction efforts to replace electrical distribution switching equipment and associated systems that are more than 35 years old and have exceeded the industry standard lifecycle of 25 years.

- **Program Support** provides project engineering design services, design reviews, and construction management/oversight for various engineering disciplines. This work includes, but is not limited to electrical, mechanical, and architectural engineering type projects in the Capital Investment Plan.

What benefits will be provided to the American public through this request and why is this program necessary?

Infrastructure sustainment at the WJHTC saves taxpayer money by reducing expenses associated with ongoing operation and maintenance activities as well as reducing the frequency of expenses associated with system replacement. System updates reduce energy consumption, and cost, on a per-square-foot basis, thus supporting current Federal Energy Management requirements for sustainability and energy consumption.

Detailed Justification for - 1A04 NextGen - Separation Management Portfolio

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
NextGen - Separation Management Portfolio	$21,200	$23,500	$18,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. Wake Turbulence Re-Categorization	---	$2,500.0
B. Separation Automation System Engineering	---	5,000.0
C. Closely Spaced Parallel Runway Operations Concept Development for Integrated National Airspace	---	1,000.0
D. Design and Procedures Planning	---	2,000.0
E. Space Integration Capabilities (SIC)	---	2,500.0
F. Unmanned Aircraft Systems (UAS) Upper Airspace	---	4,000.0
G. Common Trajectory Models	---	1,000.0

What is this program and what does the funding level support?

This portfolio evaluates concepts and capabilities that enhance aircraft separation assurance through use of ground based automation and aircraft enhancements. The improvements identified under this portfolio will enable more arrival and departure aircraft operations.

A. Wake Turbulence Re-Categorization

This program is focused on increasing the throughput at capacity constrained airports and airspace. Obtaining this increase requires aircraft wake mitigation separation concepts using current weather conditions and specific performance characteristics of aircraft. This data allows reductions in separation between aircraft while maintaining an acceptable level of safety in the national airspace.

For FY 2023, $2.5 million is requested to finalize concepts for advanced wake separation management in the terminal area and develop benefit and safety

assessments of those solutions. The funding will also support the development of wake product design requirements for future technical transfer documentation.

B. Separation Automation System Engineering

This program matures emerging separation management automation capabilities and develops automation enhancements for En Route, Terminal, and Oceanic domains to support planned operational improvements. Separation management automation includes all air traffic control computerized capabilities that assist air traffic controllers in maintaining safe aircraft separation while maximizing the number of aircraft in the airspace. This program plans to explore the leveraging of new innovative technological advancements and agile services to accommodate and integrate new entrants into the national airspace system such as unmanned aircraft systems, urban air mobility services and new types of space vehicles.

For FY 2023, $5.0 million is requested to complete artifacts and activities in support of Investment Analysis Readiness Decisions for En Route Automation Modernization Enhancement 3. The requested funding will also support research and prototype for conflict detection services using ground surveillance and aircraft system data supported by machine learning and creating a final prototype applying automated speech recognition technologies to the national airspace system separation automation systems. This program will also assess changes to the oceanic operations leveraging modern aircraft equipage and capabilities to operate in a performance based oceanic airspace.

C. Closely Spaced Parallel Runway Operations

This program involves simultaneous approaches and departures of aircraft at airports with parallel runways that are closely spaced, or less than 4,300 feet apart. These operations are utilized at several large metropolitan airports to accommodate increased aircraft volume. The program will develop and finalize concepts for airports with closely spaced parallel runways that face operational constriction when under limited visual conditions. It will focus on performing safety studies on integrated arrival and departure concepts; reductions in minimum radar separations on final approach; and research to reduce separation requirements for the dependent departures concept. The program will also conduct site analyses for the various concepts to determine applicable airports and parallel runways in the national airspace system.

For FY 2023, $1.0 million is requested for safety analysis completion for final approach, continued support of existing program concepts, as well as to identify further concepts for closely spaced parallel operations.

D. Concept Development for Integrated National Airspace Design and Procedures Planning

This program continues to prepare for the future national airspace system wide implementation of Performance Based Navigation procedures with the initial focus on Established on Required Navigation Performance (RNP) Instrument Approach Procedures. As the Established on Required Navigation Performance (EoR) application matured, the research moved to the next Performance Based Navigation initiative known as Multiple Airport Route Separation. This initiative leverages the EoR concept and extends it from single airport usage to multiple airport operations. Multiple Airport Route Separation safety analysis requires six-extended phases to explore the concept of arrival and departure paths for air traffic at adjacent airports. The EoR Independent simultaneous parallel operations safety analysis and related Technical Transfer have been completed, one safety analysis remains to do to further study EoR national airspace system-wide Dependent Operations.

For FY 2023, $2.0 million is requested to conduct concept validation at one or more developmental launch sites, prepare for the next Performance Based Navigation safety analysis, update implementation guidance and complete related concept validation reports. As the safety analysis progresses, and criteria is known, the project will provide safety risk management artifacts to support national airspace system-wide changes to the air traffic controller handbook.

E. Space Integration Capabilities

This program will ensure the availability of airspace for space launch and reentry operations while minimizing the effect of these operations on other national airspace system stakeholders. Given the growing number of stakeholders involved with space launch and reentry operations, the current use of non-integrated systems to manage operation's safe access to airspace does not exist. This program will define and mature a set of capabilities to facilitate the integration of operations into the national airspace system. Requirements will be prioritized and bundled into a set of phased acquisitions for Air Traffic Services with the required upgrades. The program will leverage work already completed to support decisions for modified policies, procedures, acquisitions, or other activities to support Air Traffic Services. For FY 2023, $2.5 million is requested to achieve the following activities:

- Complete documentation to support the Concept and Requirements Definition Readiness Decision activities including a Preliminary Shortfall Analysis and Concept and Requirements Definition Plan

- Develop Proof of Concept and Engineering Support

F. UAS Class E Upper Airspace

This program will investigate future operations above 60,000 feet, where demand for this airspace is projected to increase. While current Class E regulations are predicated on traditional airspace usage, the advent of new technologies and increasing commercial interests present opportunities for the diversification of operations within

this airspace. This program will analyze communications and surveillance requirements needed to integrate these types of operations (i.e. geostationary, extreme velocity, and long duration). Activities will include engineering and assessments of communications and surveillance solutions and conducting modeling and simulation on separation procedures for traditional airspace and Upper Class E Airspace above 60,000 feet.

For FY 2023, $4.0 million is requested to continue requirements maturation for Communications and Surveillance requirements for Class E Upper Airspace. Efforts will include coordination/collaboration with internal and external stakeholders to determine requirements for international/global harmonization of airspace management as well as industry partner engagement to identify updates to the national airspace system capabilities in support of their operational needs and Human Evaluations.

G. Common Trajectory Modeling

This program performs engineering work to produce a standardized approach to trajectory data, modeling, and use across national airspace systems. In the national airspace system, several systems perform trajectory modeling in support of functions such as surface management, conflict probe, time-based metering, and strategic flow management. Each system separately derives and modifies trajectories from route or the flight plan information to meet its unique requirements. This can result in sub-optimal or even conflicting national airspace system level operational outcomes Controllers, traffic flow managers, and dispatchers need the capability to reconcile multiple operational objectives represented in trajectory information from different systems. Trajectory data synchronization and common trajectory modeling have been studied between individual systems and an integrated enterprise approach across national airspace systems is needed to support Trajectory Based Operations.

For FY 2023, $1.0 million is requested to improve the cataloging of current trajectory modeling capabilities and trajectory data management approaches, including performance parameters.

What benefits will be provided to the American public through this request and why is this program necessary?

Separation Management Portfolio enhancements will provide controllers with tools and procedures to manage aircraft in a mixed environment of varying navigation equipment and wake generation and encounter capabilities. Separation management in the national airspace system can be accomplished procedurally and/or by using automation support. Through this request, procedures, orders and automation support capabilities will be enhanced, thus improving safety, increasing operational efficiency, and expanding current capabilities throughout the national airspace system.

Detailed Justification for - 1A05 NextGen – Traffic Flow Management (TFM) Portfolio

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
NextGen – Traffic Flow Management (TFM) Portfolio	$8,000	$13,000	$21,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. Surface Tactical Flow	---	$2,000.0
B. Strategic Flow Management Application	---	3,000.0
C. Strategic Flow Management Engineering Enhancement	---	7,000.0
D. Advanced Methods	---	2,000.0
E. Initial Trajectory Based Operations (TBO) Implementation	---	7,000.0

What is this program and what does this funding level support?

This portfolio involves national airspace operators and FAA traffic managers, along with advanced automation, in managing daily flight and flow decision making. The project evaluates airspace and airport capability issues, such as special activity airspace and weather to improve the overall efficiency of the national airspace system. TFM provides greater flexibility to the flight planners, and makes the best use of available airspace and airport capacity.

A. Surface Tactical Flow

This program is researching and developing airport surface capabilities to optimize the experience for the flying public, Air Traffic Control and the industry by improving the collaboration and decision-making among the national airspace system users. The program will provide the tools necessary to achieve a collaborative surface environment by participating in collaborative decision-making initiatives where the input of flight operators, airport authorities and air traffic controllers provide a shared surface situational awareness and improve predictability.

For FY 2023, $2.0 million is requested for activities that include:

- Complete and deliver technical interchange to industry of strategic departure demand capabilities through mobile applications

- Improvement of departure demand predictions through collection of strategic departure intent information and machine learning methods

- Modeling and Simulation of On-Demand Surface Management capability to include low to medium density Air Traffic Control Tower facilities where airport surface might be congested and Terminal Flight Data Monitoring surface metering is not configured

B. Strategic Flow Management Application

This program will leverage automation to improve TFM operations by addressing system-wide demand and capability imbalances. There is a need to access and share data for the purpose of advancing future traffic flow operations addressed through the research in TFM Information Flows, and the concepts identified in the Performance Based Flow Management concept of operations. The Performance Based Flow Management environment features shared decision-making responsibilities among relevant stakeholders enabled by improved coordination, communication, and information sharing. Industries across the board are investing in data driven solutions by leveraging learning automation and cloud computing. The aviation/aerospace industry is no exception. Performance Based Flow Management will move away from legacy, monolithic automation systems to a new cloud and microservices-based, flexible, and scalable architecture that leverages new learning automation technologies.

For FY 2023, $3.0 million is requested for activities that include:

- Operational Scenarios and Use Cases for Dynamic Routes for Arrivals in Weather

- Functional analysis criteria for Extensible Traffic Management

- Conduct validation activities for the integration of flow management activities such as Extensible Traffic Management in Air Traffic Management

C. Strategic Flow Management Engineering Enhancement

Strategic Flow Management Engineering Enhancement is a multi-year project that will support future work packages for TFM enhancements. The concept engineering work for the individual capabilities that comprise these future work packages will be conducted primarily through the Strategic Flow Management Application and Advanced Methods programs. This project will be responsible for using the capability-level concept engineering artifacts developed in Strategic Flow

Management Application SFMA and AM to develop the full suite of future TFM Acquisition Management System artifacts that will ultimately support a Final Investment Decision of the new Flow Management Data and Services Program.

Flow Management Data and Services will be the replacement system for the current Traffic Flow Management System. Flow Management Data and Services will be designed with a new architecture to maximize efficiency and flexibility, while making the best use of the existing TFM capabilities. Today, the Traffic Flow Management System supports the FAA's Traffic Management personnel in providing efficiency-critical National Airspace Systems services. Each day, Traffic Managers use the Traffic Flow Management System to maintain near real-time situational awareness and predict geographic areas that may experience congestion due to capacity reductions or unusual demand increase. The Traffic Flow Management System is used to facilitate collaborative planning and decision making to proactively plan impact mitigation strategies between the Air Traffic Control System Command Center, Traffic Management Units at all major Air Traffic Control facilities (80 sites), and flight operators.

For FY 2023, $7,000,000 is requested for Strategic Flow Management Engineering Enhancement to develop the following acquisition products in support of the Final Investment Decision for Flow Management Data and Services:

- Final system engineering documentation including:
    - Program Requirements Document
    - Enterprise Architecture artifacts
    - Safety Risk Management Document
    - Information System Security Assessment
- Final Business Case documentation including the cost and benefits estimates
- Issuance of the Screening Information Request

D. Advanced Methods

Advanced Methods will explore technologies (e.g. speech recognition, machine learning, and artificial intelligence), infrastructure enhancements, and procedural changes to meet current and future traffic management needs. This program will support improvements to increase airport capacity and sector throughput, and reduce sector delays by providing National Airspace System users and air traffic management with a common understanding of national airspace constraints. The program will develop and test prototype improvements and provide operational concepts and requirements for potential implementation in automation programs and operational

organizations. These leading-edge technologies could advance the use of data storage solutions to provide better-organized and accessible data. Additionally, improved coordination data will allow the FAA to drive operational analysis of traffic management. This program will also support improvements needed to adapt the FAA's certification tools, processes, best practices and policies.

For FY 2023, $2.0 million is requested for activities that include:

- Develop prototype capability for an Artificial Intelligence data storage application

- Complete recommendations report and lessons learned for Artificial Intelligence data storage capability

E. Initial Trajectory Based Operations

Initial Trajectory Based Operations (TBO) is an Air Traffic Management method for strategically planning, managing, and optimizing flights throughout the national airspace by using time-based management, information exchange between air and ground systems, and the aircraft's ability to fly precise paths in time and space. Four regional operating areas spanning multiple air traffic facilities and airports are targeted for initial TBO implementation (which is comprised of a series of milestones). The regional operating areas include the North East Corridor area (which is aligned with the NextGen Advisory Committee Northeast Corridor initiative to reduce flight congestion from Washington D.C to Boston Massachusetts). The three other areas are Northwest Mountain area (with focus on Denver International Airport), the Southwest area (with focus on Los Angeles International Airport), and the Mid-Atlantic area (with focus on Hartsfield-Jackson Atlanta International Airport).

For FY 2023, $7.0 million is requested for activities that include:

- Development and enhancement of an analytical platform to incorporate remaining iTBO metrics which will be used to perform analyses that characterize/quantify operational impact and measure success criteria, allowing for communication of specific operator benefit expectations and to inform any follow-up field action(s) needed to transition the workforce to iTBO

- Execution of iTBO operating area pre-implementation risk management technical analyses and interoperability assessments that integrate new and existing technologies, procedures, and coordination/collaboration, inclusive of cross-domain roles (ARTCC, TRACON, Tower, and ATCSCC), for the purpose of identifying and developing mitigations to operational and system risks that will be used to inform operating area implementation plans

- Development and execution of operational stakeholder demonstrations involving field personnel, as part of the FAA's change management strategy to communicate

the envisioned operation and to educate the workforce on the use of technologies and procedures at the four initial TBO operating areas targeted

- Maturation and application of interactive, remote software methods and simulation capabilities for use by operational stakeholders (e.g., Time Based Flow Management National Ops Team, Field Implementation Teams) to enable them to explore initial TBO technologies performance and to foster workforce familiarity via virtual team coordination/collaboration

- Execution of technical analyses to define clear guidance and practices for applying time-based management technologies and initiatives (foundational for achieving TBO) in order to proliferate consistent and effective use across the national airspace system.

What benefits will be provided to the American public through this request and why is this program necessary?

The TFM portfolio researches and implements capabilities that are expected to improve both the efficiency of individual flights and optimization of throughput. This work will make travel safer for the traveling public, help reduce passenger delays leading to a better traveling experience, and contribute to less pollution as the result of improved prediction performance for TFM decision support systems. These support systems include flexibility to avoid airspace constraints, better predict capacity demands and ensure efficient utilization of national airspace capacity.

The TFM portfolio supports the average daily airport capacity metric by providing more efficient use of system capacity through maximizing airspace and airport throughput using time-based management. It also provides improved operational predictability through more accurate and efficient end-to-end strategic planning and scheduling. Enhanced flight efficiency is achieved by delivering more efficient flows into and out of major metropolitan areas through integrated operations. Increased operational flexibility is provided through increased user collaboration regarding preferred trajectories and priorities to support business objectives.

Detailed Justification for - 1A06 NextGen – On Demand National Airspace System Portfolio

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
NextGen – On Demand National Airspace System Portfolio	$10,500	$9,000	$8,500

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. Flight Objects	---	$3,500.0
B. Common Status and Structural Data	---	1,000.0
C. Dynamic Airspace	---	1,000.0
D. Flight Deck Collaborative Decision Making	---	3,000.0

What is this program and what does this funding level support?

Operating in an Info-Centric National Airspace System environment, the On Demand National Airspace System Information portfolio conducts pre-implementation work to reduce risk in supporting the efficient and secure exchange of information within the FAA as well as between the FAA and other national airspace system users. This portfolio provides flight planners, air navigation service providers' staff, and flight crews with reliable information on changes in conditions throughout the national airspace system. This portfolio examines concepts and matures capabilities through validation activities, demonstrations conducted with stakeholders, and human systems engineering.

A. Flight Object

The project will define the mechanisms for capturing and sharing the most up to date information on any flight. Additionally, using innovative technologies the project will develop a single common reference for all system information about a flight and will seek to eliminate exchange of flight information that is redundant or inconsistently defined. This project is engaged in the alignment of the standards for flight information definitions with the emerging International Civil Aviation Organization

efforts such as Flight and Flow-Information for a Collaborative Environment. The global Flight and Flow-Information for a Collaborative Environment concept will be the basis for both Flight Information Exchange Model standard and Flight Object information exchange and will support the modernization of flight planning across various users in air traffic management. The Flight Information Exchange Model includes definition and format for flight information exchange.

For FY 2023, $3.5 million is requested to demonstrate and mature Flight Object capabilities, update the Flight Object concept report to support future flight information management concepts and provide the technical transfer of the Flight Object package to our implementation organization. In addition, Flight Information Exchange Model artifacts for the next release will be developed.

B. Common Status and Structure Data

The project will establish the requirements and information flows for the collection, management, and maintenance of Aeronautical Information in a digital format for machine-to-machine exchange. The common data and information services, as well as related integration activities, enable improved flight planning and pilot briefing services. They also allow increased on-demand national airspace system operational performance information, as well as better airspace management using timely schedule information and a common awareness of Special Activity Airspace status across the national airspace system.

For FY 2023, $1.0 million is requested to facilitate alignment and inclusion of new requirements into the Aeronautical Information Exchange Model and to develop preliminary program requirements for Aeronautical Information Management Modernization Enhancement 2.

C. Dynamic Airspace

The project will create a future vision where flexible routing of national airspace infrastructure data to Air Traffic Control facilities enables the temporary transfer of airspace control from one or more facilities to other facilities in the event of an outage. This will improve national airspace resiliency and flexibility. The work will capitalize on planned enhancements to national airspace system infrastructure and Air Traffic Management automation focused on cloud-based systems and Internet Protocol routable networks. Capabilities to monitor, coordinate, execute, and restore the routing of data will also be identified along with temporary transfer of airspace control between facilities.

For FY 2023, $1.0 million is requested to complete final versions of the functional requirements for automation systems and final technology transfers of requirements to the applicable programs.

D. Flight Deck Collaborative Decision Making

The project addresses the disparities in the implementation of flight deck automation advancements to support flight crew and air traffic management decision-making in a collaborative environment. This project will determine the initial services to be deployed with System Wide Information Management services for use with the flight deck in the National Airspace System. It will support the flight crew in their decision-making abilities by providing Electronic Flight Bag applications and the corresponding air traffic management enhancements that will enable future capabilities such as flight planning, mobile Instrument Flight Rule clearances, and trajectory negotiations. An electronic flight bag is a handheld information management device that helps flight crews perform flight management tasks more easily and efficiently with less paper. The program will develop, standardize, certify, approve and implement flight deck applications that enable enhanced participation by the flight crew in the collaborative decision-making process.

For FY 2023, $3.0 million is requested to complete flight deck enhanced surface application development and testing, complete development of flight deck negotiation concept engineering, application prototype environment and to conduct proof of concept exercise for negotiation applications. In addition, flight deck clearance development application concept of use and engineering artifacts will also be developed.

What benefits will be provided to the American public through this request and why is this program necessary?

This portfolio will improve efficiency, minimize delays, and will provide benefits to the American Public in the areas of safety, capacity and efficiency, and cost avoidance.

This portfolio is an enabler for a digital information environment that supports machine learning and Artificial Intelligence for decision-making. The standardization of flight information enables flight planning that is more efficient and leads to improvement in traffic management and decision-making. Enhancing automation capabilities and improved collaboration with the flight deck results in increased predictability of aircraft allowing a reduction in delays and improved capacity in national airspace system. Having a common, shared situational awareness and increased accessibility to accurate, actionable national airspace information results in safer conditions nationwide. Accelerated recovery following system outages accompanied by systemic reduction in delays allows for continuous, efficient use of available airspace capacity.

Detailed Justification for - 1A07 NextGen – NAS Infrastructure Portfolio

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
NextGen – NAS Infrastructure Portfolio	$15,000	$10,500	$25,500

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. Weather Forecast Improvements	---	$3,000.0
B. NextGen Navigation Engineering	---	1,500.0
C. New Air Traffic Management (ATM) Requirements	---	17,000.0
D. Information Management	---	3,000.0
E. Applications in Support of Air Traffic Control	---	1,000.0

What is this program and what does this funding level support?

The National Airspace System Infrastructure portfolio conducts pre-implementation activities to reduce risk for aviation weather-related and cross cutting engineering issues. The National Airspace System Infrastructure Portfolio contains key transformational and infrastructure sustainment capabilities that are critical to the success of NextGen. They involve the transformation or improvement of infrastructure that supports multiple portfolios. This portfolio provides the research, development, and analysis of validation activities, human system engineering, and demonstrations. Work in this portfolio supports the following programs:

A. **Weather Forecast Improvements:** This program seeks to improve weather predictions and determine how to improve the use of that information. Currently, there is minimal automation available to assist with identifying, analyzing, and translating raw weather data into National Airspace System constraints. For FY 2023, $3.0 million funding will support the following tasks:

   - Final Investment Decision support work for NextGen Weather Processor and Common Support Services – Weather future enhancements

- FAA weather commitments to the International Civil Aviation Organization including updated reports depicting U.S. position on draft amendments to International Civil Aviation Organization

- Facilitation and coordination of the Weather Community of Interest meetings and yearly technical letter

B. NextGen Navigation Engineering: This program supports the NextGen goal to increase National Airspace System efficiency, capacity, and access to the National Airspace System through innovation. NextGen Navigation Engineering conducts pre-implementation activities to explore navigation needs, and to identify and develop concepts to address these needs.

FY 2023, $1.5 million is requested to perform the research and development of procedures, tools, and systems in support of operational improvements, support of NextGen Distance Measuring Equipment and Segment 3 strategic decision development and conduct engineering assessment of identified industry navigation solutions.

C. New Air Traffic Management Requirements: This program identifies new opportunities to improve the efficiency and effectiveness of air traffic management. It supports the NextGen goal of expanding capacity by developing decision support tools that improve the strategic management of operations in the National Airspace System. New Air Traffic Management Requirements will continue activities in support of Weather Transition, Advanced Air/Ground Procedures, Command and Control in a Cloud Environment, Next Generation Input Devices, Internet Protocol Based Command and Control Data Links, Surveillance Portfolio Analysis, Automation Evolution Strategy, and Ubiquitous Communications. For FY 2023, $17.0 million will support work that includes:

- Development of improved weather performance requirements that enable enhanced forecasting capabilities in support of FAA operational decision-making

- Develop requirements for hardware application and link performance requirements to support the potential use of internet based data exchange for command and control applications

- Developing initial performance requirements for Ubiquitous Communications framework

- Identify, evaluate, and document National Airspace Systems potentially suitable for command and control in a cloud environment

- Identification and replacement of obsolete weather products with more efficient weather information already available from the meteorological community to ensure capability with existing FAA systems

- Conduct analyses and develop future surveillance services including assessment of surveillance data distribution and required surveillance performance.

- Develop a to-be architecture of the future Air Traffic Management systems that leverage innovation such as edge computing, cloud platform and microservices for separation and flow services.

D. Information Management: This program is performing engineering analysis on the information infrastructure to address future requirements for System Wide Information Management. Information Management will merge the information sharing needs with additional requirements from upcoming NextGen initiatives and capabilities. The research initiated within the Information Management program will identify gaps, business needs, alternatives, and tradeoffs that exist in the transition from the current System Wide Information Management program and define the functional requirements for future enhancements to System Wide Information Management to support information sharing with National Airspace systems and users. Research will also assess the factors related to information sharing such as bandwidth restrictions, security, performance requirements, and an increasing number of various types of users. The work performed within Information Management will be useful in resolving questions pertaining to the efficient management of information within the FAA and users.

For FY 2023, $3.0 million is requested to identify candidate solutions that can be assessed through the Enterprise Services Infrastructure framework, perform analysis for additional requirements and additional enhancements to the information sharing infrastructure, and develop the products to support in the Investment Analysis Readiness Decision for System Wide Information Management Enhancement 2.

E. Applications in Support of Air Traffic Control: This program will perform pre-implementation engineering activities for future applications on air traffic automation systems. These applications will provide new controller capabilities, enhancing controller ability to deliver on Trajectory Based Operations in the various air traffic domains, i.e., en route, surface, and terminal in the National Airspace System. Applications include features such as path stretch and assigned required time of arrival; capabilities to aid controllers in delivering aircraft to meter points at the right times; and supporting more effective use of time based management. The developed applications build upon NextGen infrastructure investments such as Data Communications that provide the communications linkage to support the execution of air traffic functions and airspace user investments such as aircraft equipage. This program will conduct engineering

analysis and define the functional requirements for the candidate applications. Upon definition and maturation of an application to meet controller needs, the appropriate automation system and associated program will be identified for technology transfer and subsequent implementation of the application.

For FY 2023, $1.0 million is requested to identify and document shortfalls for the current applications in support of Air Traffic Control. The program will also develop and document prioritization of candidate capabilities for application development.

What benefits will be provided to the American public through this request and why is this program necessary?

The work under the National Airspace System Infrastructure portfolio supports the NextGen goals of improved capacity, efficiency, and safety though its cross-cutting development programs. Through improved weather forecast timeliness and accuracy, Weather Forecast Improvements will optimize the usage of available airspace. The navigation capabilities developed under NextGen Navigation Engineering will enhance National Air Space capacity and efficiency. New Air Traffic Management Requirements span multiple areas including communications, information management, and weather. The benefits delivered by these efforts support operational improvements that will increase the number of arrivals and departures at major airports. Information Management will improve the use of enterprise wide data and information management for data analysis purposes while also minimizing costs by providing an enterprise solution for the collection, storage and analysis of operational data for post-operational use. This program will also provide the American public greater access to desired data housed within the FAA.

Detailed Justification for - 1A08 NextGen Support Portfolio

($000)

Activity/Component	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 Request
NextGen Support Portfolio	$8,400	$7,000	$5,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
NextGen Laboratories	Various	$5,000.0

What is this program and what does the funding level support?

The NextGen Support Portfolio provides the National Airspace System laboratory environments required to evaluate, mature, and validate the broad framework of concepts, technologies, operational functions, and systems prior to and in the early phases of implementation into the operational national airspace environment.

For FY 2023, $5.0 million is requested for the annual operation, maintenance and upgrade of laboratories and to support impact assessments of national airspace requirements and capabilities as they become available in an operational environment. This program will develop and host prototype microservices on the research cloud platform to evaluate the integration of information and new services for Air Traffic Management decision making.

The NextGen Integration and Evaluation Capability Laboratory is an integration and evaluation facility located at the William J. Hughes Technical Center in Atlantic City, New Jersey. This laboratory provides an environment that allows for concept development and validation, integration, and operations analysis capabilities through Human-in-the-Loop simulation testing and data analysis. Human-in-the-Loop simulations have the intended users (air traffic controllers/technicians/etc.) of a concept actively participate in the simulation to help identify any issues/concerns. This work supports studies that measure and validate concept feasibility, human performance, usability, changes in workload, and safety.

The Florida Test Bed laboratory is located at the Daytona Beach International Airport and provides a platform where early stage concepts are integrated, demonstrated, and evaluated. The Florida Test Bed core infrastructure is configured to enable remote connections with other FAA and industry partner sites to allow for multi-site demonstration capabilities. The laboratory infrastructure is being enhanced to support the FAA's Automation Evolution Strategy and associated prototyping activities. The Test Bed provides the ability for industry to bring and integrate new concepts and technologies.

The Enterprise Operational Analysis Performance task provides the support and performance models to assess new capabilities and initiatives, predict, monitor and track the impact of their implementation and identify future benefits. This work informs the NextGen Advisory Committee decision-making and ensures the NextGen Segment Implementation Plan is updated to include the incremental improvements necessary to develop, integrate, and implement new capabilities in the national airspace system.

What benefits will be provided to the American public through this request and why is this program necessary?

The American public benefits by having flexible laboratory environments and tools to evaluate future concepts and technologies that are necessary to move the national airspace system into the 21st century. These advanced tools will benefit the American public through the enhancement of safety and efficiency for air travel.

Detailed Justification for - 1A09 NextGen – Unmanned Aircraft Systems (UAS)

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
NextGen – Unmanned Aircraft Systems (UAS)	$22,000	$24,000	$15,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. UAS Concept Validation and Requirements Development	---	$5,000.0
B. UAS Flight Information Management	---	5,000.0
C. Urban Air Mobility	---	5,000.0

What is this program and what does the funding level support?

These projects will allow integration of UAS operations into the national airspace system without impact to manned aircraft operations or creating disruptions or delays. The program will identify industry's innovation work that can be leveraged in public-private partnerships. These projects support expanded operational opportunities while ensuring that national airspace operations will continue to remain as safe as they are today.

A. UAS Concept Validation and Requirements Development:

This project conducts the overall analysis and planning for the development and integration of UAS enabling technologies within the national airspace infrastructure. The project will examine, develop, and validate concepts and requirements, leading to investments in support of expanding UAS access to the national airspace system. This work provides the foundation for the development of new air traffic policies, procedures, automation functionality, and training requirements to enable safe integration of UAS operations into the national airspace system. This includes efforts associated with Advance Air Mobility and Airborne Collision Avoidance System-small UAS.

For FY 2023, $5.0 million is requested for:

- Advanced Air Mobility Beyond Visual Line of Sight National Airspace System Evaluation Concept of Use Development.

- Prototype Development for information management infrastructure and services to support large Beyond Visual Line of Sight operations.

- Complete Airborne Collision Avoidance System – small UAS and Radio Technical Commission for Aeronautics Special Committee -147 Standards Development.

B. UAS Flight Information Management:

The UAS Flight Information Management project supports multiple UAS operations in the national airspace to keep the airspace safe from aviation-related known and potential hazards and provide adequate notification to users. The FAA must be aware of when and where UAS operations are occurring in order to operate an effective and safe National Airspace.

Focusing on Integrated UAS Traffic Management and Urban Operations enables the FAA to develop infrastructure to support various UAS Traffic Management functionalities across the FAA that is specifically designed to handle increases in capacity resulting from increasing UAS traffic.

For FY 2023, $5.0 million will support work that includes:

- Complete Update of UTM Data Exchange Requirements Version 3.0 to include Beyond Visual Line of Sight and Security

- Develop Safety Risk Management Plan Version 2.0

- Complete Final System/Subsystem Specifications Version 2.0

C. Urban Air Mobility:

While the increase in urbanization over the recent past has led to increasing transportation congestion and environmental stress, it also offers an opportunity to explore solutions to transportation related problems in the national airspace. The aviation industry is exploring the feasibility of manned and unmanned aerial cargo and air passenger vehicles such as air taxis and air ambulances under the Urban Air Mobility concept.

Urban Air Mobility requires innovative traffic management techniques and tools where traditional air traffic management and separation services provided by the FAA may not be adequate. This project will explore the safe integration of Urban Air Mobility operations into the national airspace, which may need to operate within both UAS Traffic Management and Air Traffic Management environments. This includes

efforts associated with Airborne Collision Avoidance System- Rotorcraft for aerial cargo and air passenger vehicles.

For FY 2023, $5.0 million is requested for the following:

- Update Program Safety Plan for Urban Air Mobility Operations
- Complete final data exchange requirements and notional system architecture for Urban Air Mobility
- Complete initial Urban Air Mobility data exchange model with operational performance requirements on the information
- Complete final Operational Analysis and Functional Analysis for Urban Air Mobility
- Conduct Human-In-The-Loop evaluation exercise for initial Urban Air Mobility operations
- Conduct final engineering analysis on Urban Air Mobility separation management with vehicle technology consideration
- Complete report on Operational Tuning for Airborne Collision Avoidance System-Rotorcraft logic
- Complete safety and operational suitability analysis report for Airborne Collision Avoidance System- Rotorcraft

What benefits will be provided to the American public through this request and why is this program necessary?

The UAS projects play a critical role in enabling UAS operations in the national airspace without affecting manned aircraft operations, without creating disruptions or delays, and ensuring national airspace operations will continue to be safe. A major part of providing for UAS operations is the direct engagement with industry to build a public-private partnership exploiting industry's research and innovative technologies. Leveraging the partnership to provide improvements to national airspace capabilities and operations through this integrated framework provides a cost-effective approach to addressing needs and solutions.

Detailed Justification for - 1A10 NextGen – Enterprise, Concept Development, Human Factors, and Demonstrations Portfolio

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Enterprise, Concept Development, Human Factors, and Demonstrations Portfolio	$19,000	$10,600	$11,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. Enterprise Concept Development	---	$1,500.0
B. Enterprise Human Factor Development	---	1,500.0
C. Stakeholder Demonstrations	---	8,000.0

What is this program and what does this funding level support?

Enterprise Concept Development, Human Factors, and Stakeholder Demonstration Portfolio conducts enterprise level activities, including the development of concepts across the national airspace system, human factors analysis of a NextGen operational environment, and demonstrations of proposed system improvements to ensure operational feasibility and viability.

These early development efforts lead to improvements that provide air traffic controllers with new and/or improved tools and procedures to manage air traffic. As an example, the Urban Air Mobility program held a series of FAA, National Atmospheric and Space Administration, Industry collaborative forums to validate key assumptions regarding incorporating Unmanned Aircraft System operations into the national airspace system. The outcome of these activities will inform demonstrations that showcase the practical application of proposed system improvements and validate their feasibility.

A. Enterprise Concept Development

The Enterprise Concept Development program is used to identify and assess early concepts and conduct validation activities (i.e., modeling and real-time simulations)

that will transform the national airspace system. Areas of interest include, but are not limited to, trajectory-based coordination, the use of artificial intelligence in the national airspace system and the potential of unmanned aircraft systems for urban transportation. When appropriate, concept activities will be considered from a global perspective including International Civil Aviation Organization requirements for global aircraft tracking and network communication.

For FY 2023, $1.5 million is requested to support concept development and validation activities, research, concept engineering, and concept analysis.

B. Enterprise Human Factor Development

The Enterprise Human Factor Development program provides human performance guidance and recommendations to support the maturation, development and validation of new concepts. Embedding human factors considerations into concept development activities allows for the identification of potential human performance issues and mitigation strategies for those issues. This increases the usability, acceptability, and safety of new concepts and systems as they integrate into the national airspace system.

For FY 2023, $1.5 million is requested to continue research into human factors performance considerations for modernization of the national airspace system and future requirements.

C. Stakeholder Demonstrations

The Stakeholder Demonstration program provides practical application and analysis of proposed system improvements to verify concept feasibility and assess the cost-benefit trade space. Through collaboration with stakeholders, operators, and end-users, these demonstrations reduce implementation risk by providing early prototyping of requirements before capabilities are fully incorporated. Demonstrations collect and provide data to support business case and investment decisions tied to the decision points in the national airspace system architecture. These demonstrations promote industry involvement and attain community acceptance. Rigorous demonstrations ensure the integration and interoperability of systems and reveal the need for rulemaking, policy changes, and training.

For FY 2023, $8.0 million is requested to support multiple demonstrations related to modernizing the national airspace system including, but not limited to, the following:

Innovative Airports: The project will complete safety risk management activities in preparation for the final demonstration and transition package.

Artificial Intelligence for Future Flow Management: This project leverages enhancements in information technology and Artificial Intelligence to move the National Airspace System towards a performance-based flow management model to enable a more proactive National Airspace System and better integrate new entrants. It

will evaluate different types of machine learning algorithms, statistical models, and best practices applicable to real-time National Airspace System performance monitoring and optimization.

What benefits will be provided to the American public through this request and why is this program necessary?

The Enterprise Portfolio promotes safety, efficiency and a reduction in air traffic delays. The program will continue to validate operational concepts to identify technical and operational requirements paying particular attention to human factors considerations and conduct stakeholder demonstrations to collaborate with users, operators, and other partners on emerging technologies and national airspace system wide concepts to prepare the national airspace system for air traffic operations in 2035 and beyond.

Detailed Justification for - 2A01 En Route Automation Modernization (ERAM) System Enhancements and Technology Refresh

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
ERAM System Enhancements and Technology Refresh	$66,900	$104,450	$108,150

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. ERAM Sustainment 3	---	$75,000.0
B. ERAM Enhancement 2	---	32,700.0
C. Independent Operational Assessment	---	450.0

What is this program and what does the funding level support?

The ERAM System is the Automation System used in 20 Air Route Traffic Control Centers. The ERAM System displays all aircraft positions in the En Route Sectors across the country. The ERAM system provides the main tools used by air traffic controllers in the En Route environment to maintain the safe and efficient separation of aircraft.

A. ERAM Sustainment 3

This project is the third project in the planned technology refresh required to sustain the ERAM equipment, which has become obsolete and unsupportable. This sustainment program will address all remaining ERAM infrastructure hardware, network equipment and operating system in the operational, training and support environments that were not replaced in the previous technology refresh efforts.

For FY 2023, $75.0 million is requested to support the following activities:

- Complete deployment of Enterprise Storage System and Tape Backup units hardware to remaining waterfall sites

- Complete test, deployment and integration of William J. Hughes Technical Center replacement ERAM Software Integration and Test Facility systems

- Implementation activities for items planned for deployment (servers, workstations, monitors, network equipment and other associated items)

    - Complete operations test of software for deployment

    - Complete procurement of hardware for operational sites

    - Coordinate site preparation activities for deployment

- Implementation of security upgrades to align with network communication and the FAA telecommunication systems

B. ERAM Enhancements 2

This project includes improvements in separation management, trajectory prediction, and human interface capabilities to improve the delivery of air traffic services today and to continue the evolution of trajectory-based operations. The Final Investment Decision was completed in December 2016.

ERAM Enhancements 2 is focusing on the capabilities listed below. The FAA regards these improvements as high priorities:

- Automating the handoff procedure between domestic airspace and international partner Canada will reduce controller workload

- Properly processing updates to International Civil Aviation Organization equipage will impact 160,000 flights per year that are currently improperly processed, leading to improvements in safety while improving the ability to perform Optimized Profile Descents due to the correct equipage at the Terminal Radar Approach Control boundary

- Conflict Probe Enhancements that provide increased conflict detection and resolution capabilities to support separation management

- Aircraft Trajectory Modeling Enhancements that will lead to improved conflict probe accuracy and reduced occurrence of false and missed alerts

- Technical Operations User issues: improvements for monitoring the status of external systems and provide detailed information for ERAM system troubleshooting

For FY 2023, $32.7 million is requested for solution development, integration and testing, operational evaluation, and site implementation. The program plans to complete the following solution developmental activities:

- In-Service Decision and address needed Independent Operational Assessments for the automated handoff capability to Canadian Air Traffic system. Implement ERAM software for this capability to the remaining 4 border sites:
  - Seattle Air Traffic Control Center (**ZSE**)
  - Cleveland Air Traffic Control Center (**ZOB**)
  - Boston Air Traffic Control Center (**ZBW**)
  - Minneapolis Air Traffic Control Center (**ZMP**)
- Software implementation for Conflict Probe Modeling Enhancements
- Software development for the Conflict Probe Enhancements
- Software development for the Trajectory Modeling Enhancements
- Implementation of the Conflict Probe Enhancements
- Implementation of the Trajectory Modeling Enhancements
- Software development, integration and testing, and implementation for the International Civil Aviation Organization Flight Plan Processing Capability
- Address and resolve new capability issues with user communities

C. Independent Operational Assessment

For FY 2023, $450,000 is requested for an assessment to identify any safety hazards and/or operational concerns with ERAM Enhancements 2 system capabilities.

What benefits will be provided to the American public through this request and why is this program necessary?

The program focus is on maintaining the high availability of the ERAM capability. The ERAM Sustainment projects are necessary for the replacement of equipment that is approaching the end-of-life, beyond economic repair and hardware that is being discontinued by the manufacturer. ERAM Enhancements will provide software enhancements for the En Route controller team and will improve the efficiency and

effectiveness of En Route sector operations. This will sustain the safety critical Air Traffic operations as well as lower system life cycle cost.

Detailed Justification for - 2A02 Next Generation Weather Radar (NEXRAD)

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Next Generation Weather Radar (NEXRAD)	$3,600	$3,900	$3,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Next Generation Weather Radar (NEXRAD) Sustainment 2	---	$3,000.0

What is this program and what does the funding level support?

NEXRAD is a long-range weather radar that detects, analyzes, and transmits weather information for use by the Air Traffic Control System Command Center, En Route, Terminal, and Flight Service Facilities. NEXRAD detects, processes, and distributes for display, hazardous and routine weather information. NEXRAD is a joint program among Departments of Transportation, Defense, and Commerce, with National Weather Service as the lead. The FAA owns and operates 12 NEXRADs, located in Alaska (seven), Hawaii (four), and Puerto Rico (one).

NEXRAD was originally installed between 1990 and 1996 with an economic service life of 20 years, there are currently 159 operational NEXRAD systems in the United States and overseas, jointly operated and maintained by the Tri-Agency partners. NEXRAD has reached the end of its economic life and a major sustainment effort is required to extend the service life. For FY 2023, $3.0 million is requested to support National Weather Service's sustainment efforts. The FAA funding share for NEXRAD Program Improvement and Technology Refresh is an annual requirement as established in the Memorandum of Agreement among the three agencies.

What benefits will be provided to the American public through this request and why is this program necessary?

NEXRAD systems have increased aviation safety with the accurate and timely detection of hazardous aviation weather conditions. Weather related arrival and departure delays have been reduced, thus allowing aviation fuel consumption savings.

Detailed Justification for - 2A03 Air Route Traffic Control Center (ARTCC) and Combined Control Facility (CCF) Building Improvements

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
ARTCC/CCF Building Improvements	$101,200	$101,200	$94,700

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. ARTCC and CCF Facility Sustainment	23	$85,630.0
B. Enterprise Facilities Sustainment	1	7,670.0
C. In-Service Engineering	---	1,400.0

What is this program and what does this funding level support?

The ARTCC and CCF Building Sustainment Program supports En Route air traffic operations and service-level availability by providing life-cycle management of the physical plant infrastructure at the 21 ARTCCs and two CCF facilities. It is one of the programs within the Air Traffic Control Facilities Sustainment Portfolio.

Many of these structures were built in the 1960s and have been expanded several times since then. The average age of the ARTCC and CCF facilities is 61 years old. Currently, there is a $313.5 million facility backlog of needed repairs or upgrades, which includes all building systems such as heating, ventilation, and air conditioning components; all piping, plumbing, control systems; and both the exterior and interior of the building. This backlog increases the risk of outages and may result in increased maintenance costs. This program sustains these buildings to meet air traffic service requirements and to reduce the backlog of building components that are critical to the safe and efficient continuous air traffic control operations.

Major construction projects will replace obsolete plant equipment and improve work areas. These projects include replacement of chillers, cooling towers and associated mechanical and electrical system elements necessary for cooling national airspace system electronics and computer equipment. Fire protection systems that have risk for

failure will be replaced. The new systems are more efficient and will reduce energy consumption at the facilities.

For FY 2023, $85.6 million is requested for ongoing ARTCC sustainment projects. The requested funding amount is required to continue efforts to ensure that critical national airspace system En Route and Enterprise facilities are brought into a state of good repair and help promote the health and safety of the Air Traffic and Technical Operations work force.

The FY 2023 major improvement project:

- **Environmental Wing Project** - This project will remove the major facility equipment, chillers, boilers, pumps, and critical spaces air handling units from untenable locations such as basements and attics. The new environmental wing structure will co-locate a large proportion of the mechanical equipment in a location, which provides significantly improved access for both preventive and corrective maintenance. Increased reliability and improved Operation Risk Management are the key benefits to this project. The project will also selectively allow the replacement of other essential facility equipment that is part of the backlog such as air handling units, electrical panels, lighting controls, roofs, and raised floor systems.

FY 2023 Projects

- Construct Environmental Wing – Washington, DC ARTCC.

- Design Environmental Wing – Anchorage, AK and Oakland, CA ARTCC's.

Specific mission critical and local sustainment projects will also be accomplished at each ARTCC/CCF facility to replace old and/or obsolete building infrastructure and equipment that support air traffic operations.

For FY 2023, $7.7 million is requested for the sustainment of FAA Enterprise Facilities. These facilities include the FAA Air Traffic Control System Command Center, two National Enterprise Management Centers, and the Northeast Operational Support Facility. The major work in FY 2023 will be the construction phase of the expansion of the control room within the Command Center, to include the upgrade of the heating, ventilation, and air conditioning system associated with that expansion. Additionally, sustainment projects associated with the Enterprise Facilities will include the funding of needed repairs or upgrades for all building systems, such as HVAC components; all piping, plumbing, control systems; electrical, conveying, and general infrastructure; and both the exterior and interior of buildings.

For FY 2023, $1.4 million is requested for in-service engineering activities that provide an immediate response to emerging technology solutions.

What benefits will be provided to the American public through this request and why is this program necessary?

This program sustains 21 ARTCC and two CCF facilities, as well as 10 Enterprise Facilities that are critical and vital to facilitate the FAA's mission to serve the flying public. The mission of the En Route Facilities Sustainment Program is to support En Route Air Traffic operations and service level availability through facility life-cycle program management of the 21 ARTCC's, the two CCFs at San Juan and Guam, and the 10 Enterprise Facilities such as the FAA Air Traffic System Control Command Center and National Enterprise Management Centers buildings. Much of the infrastructure and plant equipment within these buildings has exceeded its life expectancy and must be replaced. This program replaces obsolete equipment and provides an efficient, reliable, and safe work environment for En Route air traffic control and Enterprise facilities operations.

Detailed Justification for - 2A04 Air/Ground Communications Infrastructure

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Air/Ground Communications Infrastructure	$7,850	$7,815	$7,700

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. Communications Facilities Sustainment	---	$6,000.0
B. Radio Control Equipment Sustainment	---	1,000.0
C. In-Service Engineering	---	700.0

What is this program and what does the funding level support?

The Air-to-Ground Communications Infrastructure Sustainment programs enhance operational efficiency and effectiveness by replacing aging radio equipment, providing new, relocated or upgraded remote communications facilities, and providing equipment and support to detect and resolve radio frequency interference with FAA communications.

A. Communications Facilities Sustainment:

For FY 2023, $6.0 million is requested to initiate the expansion/relocation sites as determined by the Air-To-Ground Integrated Requirements Team Meeting in FY 2023; upgrade obsolete communications equipment; procure replacement radios, equipment racks, antennas, towers; and continue multi-year projects previously initiated.

The Communications Facilities Sustainment project provides new, relocated or upgraded Remote Communication Facilities to enhance the Air to Ground communications between air traffic control and the aircraft when there are gaps in coverage or new routes are adopted.

B. Radio Control Equipment Sustainment

For FY 2023, $1.0 million is requested for the Radio Control Equipment Program to maintain existing units in the National Airspace Systems that are organically maintained by Oklahoma City. This project replaces obsolete radio signaling and control equipment, which controllers use to select a remote radio channel enabling them to talk to pilots. The funding will support the construction and verification of the Radio Control Equipment test beds. Additionally, the program will procure control type power supplies and redesigned modules to replace obsolete parts while providing longer-term support for the operational Control Site Radio Control Equipment systems.

C. In Service Engineering:

In-service engineering allows for immediate response and tactical distribution of resources to emerging technology solutions. For FY 2023, $700,000 is requested for ongoing engineering support of communication systems.

What benefits will be provided to the American public through this request and why is this program necessary?

Air/Ground Communications Infrastructure will significantly improve safety by replacing aging and increasingly unreliable equipment and communications facilities. New communications equipment will lower periodic and correctional maintenance costs associated with the old and technically obsolete equipment in the field, and as a result will reduce costs for the FAA and taxpayers.

Detailed Justification for - 2A05 Air Traffic Control En Route Radar Facilities Improvements

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Air Traffic Control En Route Radar Facilites Improvements	$7,500	$7,500	$6,700

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. Long Range Radar Infrastructure Sustainment	35	$6,050.0
B. In-Service Engineering	---	650.0

What is this program and what does the funding level support?

The Air Traffic Control En Route Radar Facilities Improvements Program is responsible for 157 Long Range Radar surveillance facilities that provide aircraft position information to FAA En Route control centers for air traffic control, and to the Department of Defense and the Department of Homeland Security for security monitoring of the national airspace system.

About 80 percent of the long range radar inventory is older than 30 years. Sixty-six of these sites were established in the early 1950's and have reached the end of their useful life. Average Facility Condition Index of all 157 long range radar facilities is currently at 78.2 percent, which is below the minimum 90 percent required for such facilities. This surveillance equipment must remain operational for the foreseeable future.

For FY 2023, $6.1 million is requested to sustain approximately 35 facilities that are in poor condition and have greatest impact to the national airspace system. The scope of the long range radar infrastructure sustainment program includes upgrades and/or replacement of buildings and towers: mechanical, electrical, security, fire detection, and lightning protection systems; facility access roads; and related infrastructure. This work will extend the service life of the facilities, and reduce the chance of outages that often cause air traffic delays.

For FY 2023, $650,000 is requested for ongoing engineering support of long range radar. In-service engineering allows for immediate response and tactical distribution of resources to emerging technology solutions.

What benefits will be provided to the American public through this request and why is this program necessary?

The infrastructure improvements will improve the reliability of, better protect, and reduce the operating costs of these critical long range radar sites. The goal of this infrastructure sustainment program is to reach 90 percent Facility Condition Index by 2030.

Detailed Justification for - 2A06 Oceanic Automation System

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Oceanic Automation System	$9,150	$10,400	$12,250

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimate Cost ($000)
A. Oceanic Improvements	---	$2,000.0
B. Advanced Technologies/Oceanic Procedures Enhancements 1	---	9,900.0
C. Independent Operational Assessment	---	350.0

What is this program and what does the funding level support?

From 2005 to 2007, the Advanced Technologies and Oceanic Procedures program replaced the original oceanic air traffic control system, updated procedures, and modernized the Oakland, New York, and Anchorage Air Route Traffic Control Centers, which house the oceanic automation systems. Advanced Technologies and Oceanic Procedures integrates flight and surveillance data processing and detects conflicts between aircraft for safe oceanic air traffic control operations.

A. Oceanic Improvements

Support a category of requirements that address system changes driven by new operational standards and other International Civil Aviation Organization mandates. These changes are small in nature, must be addressed quickly, and the scope of these enhancements does not require significant capital investments. For FY 2023, $2.0 million is requested for analysis and solution implementation activities that improve the delivery of oceanic domain services.

B. Advanced Technologies and Oceanic Procedures Enhancement 1

Addresses the operational shortfalls of the current oceanic system as the FAA moves forward with new initiatives and other national airspace system upgrades. The Automatic Dependent Surveillance - Contract Reduced Oceanic Separation

modification will provide controllers the automated tools to safely apply and monitor reduced oceanic separation minima. The change will reduce the current standard from 30 Nautical Mile Lateral and 30 Nautical Mile Longitudinal to 23 Nautical Mile Lateral and 20 Nautical Mile Longitudinal separation standards.

For FY 2023, $9.9 million is requested for the Advanced Technologies and Oceanic Procedures Enhancement 1 program. This request will complete development of modifications and continue testing for the Enhanced Controller Coordination and Enhanced Conflict Probe in Surveillance Airspace to be deployed in FY 2023.

The funding will also support software development to move the existing weather data to the System Wide Information Management interface. Once established on the System Wide Information Management interface, new services for retrieving the published weather data will streamline and automate manual processes of inputting weather data into the system. This change is planned to be delivered in 2024 and deployed at all sites by 2025.

C. Independent Operational Assessment

For FY 2023, $350,000 is requested for an assessment to identify any safety hazards and/or operational concerns with Enhancement 1 capabilities.

What benefits will be provided to the American public through this request and why is this program necessary?

The new enhancements will provide airlines and general aviation with reduced operating costs and system delays by delivering improved coordination and user request capabilities that support optimum flight profiles, increasing the likelihood of on-time arrivals.

Detailed Justification for - 2A07 Next Generation Very High Frequency (VHF)/ Ultra High Frequency (UHF) Air/Ground Communications System (NEXCOM)

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Next Generation Very High Frequency Air/Ground Communications System	$60,000	$51,000	$52,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. Next Generation VHF/UHF A/G Communications Phase 2	---	$45,000.0
B. Next Generation VHF/UHF A/G Communications Phase 3	---	7,000.0

What is this program and what does the funding level support?

For FY 2023, $45.0 million is requested for NEXCOM Phase 2 to replace and modernize the aging and obsolete national airspace system air-to-ground analog radios that allow direct voice communication with pilots with new Very High Frequency and Ultra High Frequency radios at terminal and flight services facilities.

For FY 2023, $7.0 million is requested to support in the operational testing of a new radio product in support of NEXCOM Phase 3.

The existing Very High Frequency analog controller-to-pilot communications system lacks the capacity and flexibility to accommodate future growth in air traffic and air/ground communication frequency assignments. The system is beyond its estimated lifecycle and is increasingly expensive to maintain. Air/ground communication is the most fundamental and safety important element of the air traffic control system supporting all phases of flight for En Route, Terminal, and Flight Service operational environments.

The NEXCOM program plans to use funding to deploy 2,500 new Terminal Air Traffic Control Radios (receivers and transmitters) at 115 terminal and flight services facilities, purchase Very High Frequency and Ultra High Frequency radios, procure

125 Emergency Transceivers, and fund related implementation and support activities. Ultimately, 35,000 Very High Frequency and Ultra High Frequency radios will be deployed in the national airspace system under the NEXCOM Phase 2 program through 2026.

NEXCOM will meet the new and growing demands for air transportation services and provide the operational flexibility and Voice over Internet Protocol capability. NEXCOM allows for efficient utilization of Very High Frequency spectrum required for voice communications and enables the recovered spectrum to be available for data communications as needed.

What benefits will be provided to the American public through this request and why is this program necessary?

NEXCOM will improve reliability and reduce growing maintenance costs replacing existing communications equipment with modern Air to Ground Communications equipment. An added performance benefit of NEXCOM is the ability to increase capacity by expanding the number of communications channels within the spectrum assigned to the FAA. The Mean Time between Failure performance metric, which is closely related to availability, will be increased from 11,000 hours to 50,000 hours at the completion of NEXCOM Phase 2. This will both increase the safety of the national airspace system benefitting commercial airlines, general aviation and the flying public as well as reducing costs to taxpayers.

Detailed Justification for - 2A08 System-Wide Information Management (SWIM)

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
System-Wide Information Management (SWIM)	$31,050	$33,973	$10,200

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Estimated Cost Quantity	($000)
A. SWIM – Segment 2C	---	$5,200.0
B. National Cloud Integration Service	---	2,000.0
C. SWIM – Segment 2D	---	3,000.0

What is this program and what does the funding level support?

As the FAA migrates toward an information rich environment and information centric operations, the SWIM program is an information management and data sharing system. SWIM provides policies, standards and an enterprise infrastructure to support data management, secure data integrity, and control data access and use.

A. System-Wide Information Management (SWIM) - Segment 2C

SWIM Segment 2C provides a technology refresh of aging national airspace system Enterprise Messaging Service infrastructure. This messaging service centralizes data messaging between internal and external systems and users. It also refreshes SWIM capabilities and equipment reaching end of service, end of life, and the end of security patching. These capabilities include:

- **Enterprise Service Monitoring:** Collects and provides centralized situational awareness data from multiple sources; allows single point data access that helps expedite fault isolation and service restoration, enabling near real-time end-to-end monitoring and reporting of enterprise SWIM services.

- **Identity and Access Management:** Establishes an authorization capability, which allows SWIM and other national air space programs to centralize management of access privileges to national air space data on different platforms. This authorization capability reduces cyber security vulnerabilities by ensuring enforcement of proper security policies when creating, managing, and revoking access privileges.

- **SWIM Flight Data Publication Service:** Provides en-route flight data to national airspace system consumers; allows consumers to receive real-time data for analytics, business processes, research, and other activities.

- **SWIM Cloud Distribution Service with SWIM Industry FAA Team portal technology insertion:** This portal is a publicly accessible cloud-based infrastructure that provides scalable platform and data distribution services for external consumers thus relieving the strain on the national air space Enterprise Security Gateway.

For FY 2023, $5.2 million is requested to continue technology refresh of national airspace system Enterprise Messaging Service infrastructure, to install Identity and Access Management and Enterprise Service Monitoring hardware technology refresh, to complete SWIM Industry FAA Team Portal version 4 Initial Operating Capability, and complete service acceptance of national airspace system Enterprise Messaging Service storage devices in September 2023.

B. National Cloud Integration Service

This project will establish services, processes and capabilities to address FAA programs' emerging need to enable cloud services and enterprise infrastructure adoption. This will significantly reduce the technical risks and complexity for programs. The National Cloud Integration Service project will also define a standardized process for providing engineering support to national airspace system programs seeking to transition to a cloud environment and readily identify the most useful services that will optimize their cloud benefits. Additionally, the National Cloud Integration Service Sandbox Environment will continue to be maintained and enhanced. This will allow programs the ability to prototype an architecture that will support their future cloud operations. The National Cloud Integration Service will actively work to standardize the security authorization process for national airspace system systems utilizing cloud infrastructure. These efforts are critical in supporting the agency's exploration into cloud services.

For FY 2023, $2.0 million is requested to continue the development of a cloud opportunity roadmap for national airspace system programs. This roadmap will be used to identify future non-safety critical systems and applications that are viable candidates to transfer to a cloud environment.

C. System-Wide Information Management (SWIM) - Segment 2D

SWIM Segment 2D addresses the operational shortfalls associated with the ending FAA Telecommunications Infrastructure Services and Infrastructure program as well as recurring national airspace system Enterprise Messaging Service infrastructure technology refresh requirements through transition of SWIM capabilities and operations from the legacy program to the replacement FAA Enterprise Network Services program.

For FY 2023, $3.0 million is requested to begin transition of SWIM services and capabilities to the new program and to begin architectural design and software development of Information Management Services to replace legacy national airspace system Enterprise Messaging Service.

What benefits will be provided to the American public through this request and why is this program necessary?

SWIM reduces both the number and types of unique communication interfaces, reduces redundancy of information and better facilitates information sharing, improves predictability and operational decision-making, and reduces cost of service. The improved coordination that SWIM provides allows for the transition from tactical conflict management of air traffic to strategic trajectory-based operations. SWIM provides the foundation for greatly enhanced information exchange and sharing with other agencies. SWIM provides policies and standards to support data management, secure data integrity, and control data access and use.

Detailed Justification for - 2A09 Automatic Dependent Surveillance – Broadcast (ADS-B) NAS Wide Implementation

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
ADS-B NAS Wide Implementation	$180,000	$157,633	$155,200

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. ADS-B Sustain Leased Services	---	$141,200.0
B. ADS-B NAS Wide Implementation – Enhancement 1	---	14,000.0

What is this program and what does the funding level support?

ADS-B is an advanced surveillance technology that provides highly accurate information by using an aircraft's broadcasted position instead of position information from traditional radar. This technology reduces delays and enhances safety. Aircraft position (longitude, latitude, altitude, and time) is determined using the Global Navigation Satellite System. The aircraft's ADS-B equipment processes this position information, along with other flight parameters, for a periodic broadcast transmission, typically once a second, to airborne and ground-based ADS-B receivers. The information is used to display aircraft position on En route and terminal automation systems used by air traffic controllers.

The Gulf of Mexico implementation of air traffic control services is providing ADS-B surveillance data for aircraft operating in a large area without access to traditional radar coverage. The program utilizes energy platforms in the Gulf of Mexico to host surveillance, communications, and weather facilities. These platforms have a temporary lifespan that are impacted by a number of economic and technical criteria. The shutdown of a platform requires the removal of existing facilities and the installation of replacement facilities on platforms that address any operational shortfall. Program funding supports the removal, refurbishment, and relocation of the ADS-B, Very High Frequency communications, and/or weather facilities.

A. Baseline Services Future Segments:

For FY 2023, $141.2 million is requested to provide for the continued implementation and operation of the following baseline applications:

- ADS-B Separation Services
- Pilot Advisory Services
- Traffic Information Services – Broadcast
    - Flight Information Services – Broadcast
    - Automated Dependent Surveillance – Rebroadcast
- Weather and National Airspace System Situation Awareness

The funding will also allow continued operation of Wide Area Multilateration surveillance services capability. Wide Area Multilateration provides aircraft location information to the automation systems at Denver Air Route Traffic Control Center, Southern California Terminal Radar Approach Control, and Charlotte Terminal Radar Approach Control. Additionally, the funding will allow for continued engineering and design work for the implementation of a spectrum congestion solution to ensure the viability of the 1,090 MHz spectrum to support surveillance services throughout the national airspace system.

The requested funding will also support the continuation of FAA air traffic control services with Gulf of Mexico helicopter operators and energy platform owners, as agreed upon in the Memorandum of Agreement. This funding will be used to:

- Remove and refurbish facilities and equipment from active energy platforms when Memorandum of Agreement partner platform owners make the decision to shut them down
- Identify and evaluate an appropriate site to restore any lost services
- Install new or refurbished systems on strategically located energy platforms
- Install equipment in new facilities on other strategically located Memorandum of Agreement partner energy platforms.

This funding will also continue ADS-B Baseline Services, utilizing subscription fees for ADS-B infrastructure owned and operated by the prime contractor. The anticipated FY 2023 activities for Baseline Services Future Segments include:

- Provide and maintain ADS-B baseline services and applications.

- Pay subscription fees:

  - Provide service to more than 300 service volumes within specified requirements. A service volume is a cylinder of airspace and is used in planning areas of air operations.

  - Provide additional Wide Area Multilateration surveillance services supporting air traffic operations for selected airspace.

- Provide enhancements to ADS-B pre-flight Service Availability Prediction Tool. This tool is used by industry to assist pilots and dispatchers in their global positioning system performance checking.

- Provide enhancements to ADS-B Performance Monitor tool. This effort defines and implements changes to the ADS-B Performance Monitor to provide Flight Standards with advanced monitoring capabilities for aircraft performance and compliance.

B. ADS-B Enhancement 1:

For FY 2023, $14.0 million is requested to support the operational enhancement of this portfolio. The funding will be used to provide additional ADS-B benefits by implementing activities that may include:

- Expanding ADS-B service coverage in selected areas with limited surveillance. This expansion is focused on five remaining service volumes in Alaska.

- More comprehensive vehicle ADS-B equipage at large airports. This includes equipping FAA Technical Operations vehicles with ADS-B Out transmitters at 44 airports with Airport Surveillance Detection Model X or Airport Surface Surveillance Capability systems. The equipage will increase Air Traffic's visibility of these vehicles on the surface.

- Utilization of additional ADS-B parameters to monitor altitude compliance, enhancing safety and efficiency of the national airspace system. This project includes updates to the En Route Automation Modernization software that will use data from ADS-B Out messages to notify Air Traffic of discrepancies between pilot selected altitude and the controller cleared altitude.

- Displaying ADS-B In capability indicators on ground automation systems. The display of ADS-B In capabilities on En Route Automation Modernization and Standard Terminal Area Replacement System data blocks will enable ADS-B In spacing applications.

What benefits will be provided to the American public through this request and why is this program necessary?

Benefits provided by ADS-B to the American public include more efficient use of airspace capacity, fewer flight delays, and more optimal routing for aircraft. Other efficiency benefits include reduced weather deviations and fewer cancellations during inclement weather conditions resulting from increased access to some Alaskan regions and Gulf of Mexico oil platforms. These efficiencies translate to savings in both aircraft direct operating costs and passenger value of time.

ADS-B meets a large performance gap in the capability of pilots and air traffic control to receive situation awareness information, thus providing for safety in ways legacy systems cannot by delivering the following services through cockpit avionics:

- Enhanced see-and-avoid capabilities, which will assist pilots in preventing mid-air collisions.

- Air Traffic Control services in non-radar airspace.

- Weather information, helping to reduce incidences related to Instrument Flight Rule operations.

Detailed Justification for - 2A10 Windshear Detection Service (WDS)

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Windshear Detection Service (WDS)	$2,500	$3,000	$3,200

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Windshear Detection Services (WSDS) Sustainment 2	83	$3,200.0

What is this program and what does the funding level support?

This program provides automated windshear and microburst alerts used by Air Traffic Controllers to warn pilots of immediate hazards to approach, landing, and departure at eighty-three large and moderate size airports. WSDS Sustainment 2 provides a nationwide technical refresh to keep legacy windshear detection systems working after they exceed their planned, 20-year service lives. This program will address all obsolescence and supportability problems of the Low-Level Windshear Alert Systems and Weather Systems Processors.

- These systems automatically detect hazardous microbursts and wind shear activity near runways and along approach/departure corridors.

- Sustainment of these systems will allow Air Traffic Controllers to continue providing warnings to aircraft of hazardous wind shear and microburst conditions as they happen.

For FY 2023, $3.2 million is requested to continue design, development and prototyping of the technology refresh solutions for sustainment and to address immediate service life extension issues.

What benefits will be provided to the American public through this request and why is this program necessary?

This Windshear Detection Service, Sustainment 2 activity helps maintain aviation safety through the continuation of automated detection and alerting services for Air Traffic Controllers, to the presence of windshear and microburst hazards near runways and approach/departure corridors at major airports. Pilots are responsible to the flying public for safe arrival and departure. When pilots are busy with landing preparations and thunderstorms are near the airport, they especially rely on Air Traffic Controllers to promptly issue warnings when wind shear and microburst hazards begin to affect runways.

Since the LLWAS and WSP entered service over twenty years ago, no major wind shear-related accidents have happened at their "protected airports," due in large part to their timely warnings, especially when hazards cannot be seen due to darkness and obstructions to vision aloft. WSDS Sustainment 2 must resolve nationwide system obsolescence and maintainability shortfalls that have arisen after two decades in-service.

Detailed Justification for - 2A11 Air Traffic Management Implementation Portfolio

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Air Traffic Management Implementation Portfolio	$17,200	$10,000	$7,400

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. Traffic Flow Management Improvements	---	$1,000.0
B. Traffic Flow Management System Sustainment 3	---	5,000.0
C. Air Traffic Management - In-Service Engineering	---	1,400.0

What is this program and what does the funding level support?

Throughout each day, Traffic Managers use Traffic Flow Management System (TFMS) to maintain near real-time situational awareness and predict areas that may experience congestion due to capacity reductions or unusual demand increase. TFMS becomes especially important when external factors, such as adverse weather, reduces national airspace system capacity. This requires proactive planning, coordination and adjustments to mitigate impacts, for missed connections, canceled flights, increased fuel consumption, etc. resulting from the weather. The Air Traffic Control System Command Center uses TFMS to model and implement national airspace system wide Traffic Management Initiatives to make the most efficient use of available capacity to avoid gridlock and minimize delays.

A. Traffic Flow Management Improvements:

This project was implemented to respond to stakeholder-identified inefficiencies in current Traffic Flow Management systems. The scope of these national airspace system improvements is limited to operational changes that do not require significant capital investments nor involve significant systems complexity, interdependencies, or national airspace system operational changes. This project will support operational and engineering analyses, solution development, and solution implementation

activities designed to improve the delivery of Traffic Flow Management services. For FY 2023, $1.0 million is requested to complete the following improvements:

- Rapid Development Deployment Pioneering will develop a model to expedite the development and deployment of new traffic flow management decision support applications and tools.

- Traffic Flow Management System Auxiliary Offloading will provide testing and benefits assessment for offloading non-operational (e.g. administrative and post-analysis) tools from the Traffic Flow Management System and relocating them in a cloud environment.

- Pivotal agile software development will use new methodologies and cloud-based technologies to enhance traffic flow management software, reducing development time and costs and delivering new software in an incremented process.

B. TFMS Sustainment 3

TFMS Sustainment 3 contains activities that are urgently needed to stabilize and sustain the system. For FY 2023, $5.0 million is requested to begin the technology refresh of extending the service life of existing hardware and corresponding software that is currently beyond the End-of-Life/End-of-Service stage. This effort will bridge the gap between TFMS and a new concept of operations being proposed in Flow Management Data and Services. The Sustainment 3 investment also includes risk mitigation activities to stabilize further an already overburdened TFMS Core, which will lessen the likelihood of any service interruptions or other impacts to the vast Traffic Flow Management user community. For FY 2023, $5.0 million is requested to conduct the following:

- Maintain the Traffic Flow Management Processing Center hardware until Flow Management Data and Services can be put into operation

- Risk mitigation activities, including offloading routine Traffic Flow Management web applications to a separate platform

C. In Service Engineering:

In-service engineering allows for immediate response and tactical distribution of resources to emerging technology solutions. For FY 2023, $1.4 million is requested for ongoing engineering support of air traffic management systems.

What benefits will be provided to the American public through this request and why is this program necessary?

The requested funding will reduce erroneous alerts presented to En Route Supervisors and improve accuracy of demand predictions, which yields better traffic management decisions. The program will improve the overall availability and reliability of the TFMS tools by integrating data for departure management and making data readily available to traffic management unit users. In addition, sustainment of the system will allow TFMS to maintain the overall operational availability within the national airspace system, enabling the Traffic Flow Management system and capabilities that reside on it to continue providing benefits that include:

- Greater system reliability, dependability and availability, enabling TFMS to achieve and sustain its full benefits of avoiding national airspace system delay as well as retain TFMS users trust.

- Decrease maintenance and repair activities, thereby reducing time to repair which will reduce the impact of outages as well as avoid increased TFMS operational and support costs.

Detailed Justification for - 2A12 Time Based Flow Management (TBFM) Portfolio

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Time Based Flow Management (TBFM) Portfolio	$20,000	$13,300	$21,300

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. Time Based Flow Management Enhancement 1	---	$14,300.0
B. Time Based Flow Management Sustainment 1	---	6,600.0
C. Independent Operational Assessment	---	400.0

What is this program and what does the funding level support?

The Time Based Flow Management portfolio includes Enhancement and Sustainment initiatives that support the national airspace system. These capabilities enhance system efficiency by leveraging the time based metering decision-support tool, a system that has already been deployed to Continental United States Air Route Traffic Control Centers, select Terminal Radar Approach Control facilities and select Air Traffic Control Towers.

For FY 2023, $21.3 million is requested for the Time Based Flow Management Portfolio to continue the integration, installation and deployment of Time Based Flow Management tools. Improvements in the core Time-Based Metering capability and an expansion of the Time Based Flow Management tools to additional locations will enhance efficiency and optimize demand and capacity.

A. Time Based Flow Management Enhancement 1:

The core capabilities of the Time Based Flow Management Enhancement 1 investment effort are Terminal Sequencing and Spacing and expansion of Integrated Departure/Arrival Capability. Terminal Sequencing and Spacing will provide efficient sequencing and runway assignment by making the time-based flight plan visible to the terminal controllers. Currently, visibility to the plan within the automation tool is lost

as the flight is transferred from En route to terminal controllers. This visibility will allow efficiencies to be realized for the remaining 80 miles of airspace typically seen between the terminal boundary and runway. Integrated Departure/Arrival Capability streamlines and automates the monitoring and scheduling process for aircraft departures. It identifies departure demands and available slots, assigns the slots to aircraft and de-conflicts departures. The Integrated Departure/Arrival Capability enables electronic negotiation of Call For Release process between tower and Air Route Traffic Control Centers instead of the manual phone call. This increases efficiency for departure operations.

For FY 2023, $14.3 million is requested for activities that include:

- Achieve operational suitability determination for Terminal Sequencing and Spacing based on testing at William J. Hughes Technical Center
- Complete initial Terminal Sequencing and Spacing adaptation for the first Terminal Sequencing and Spacing site
- Improve time based metering capabilities at Philadelphia International Airport
- Provide enhancements (adaptation, software, and procedural) as identified per Independent Operational Assessment and initial Terminal Sequencing and Spacing operational use

B. Time Based Flow Management Sustainment 1

Will replace existing end-of-life hardware, increase the reliability of the current system and reduce operations costs.

For FY 2023, $6.6 million is requested to:

- Complete Engineering Analysis for new hardware selection
- Complete hardware testing and key site testing activities for new hardware suite
- Initiate hardware procurement
- Initiate hardware installation

C. Independent Operational Assessment:

For FY 2023, $400,000 is requested for an assessment to identify any safety hazards and operational concerns with TBFM capabilities.

What benefits will be provided to the American public through this request and why is this program necessary?

The Time Based Flow Management capabilities will enable an increase in arrivals and departures in areas where demand for runway capacity is high. Time Based Flow Management tools will increase efficiency by allowing aircraft to fly Performance Based Navigation operations down to approach. The public will experience fewer delays and reduced carbon emissions as a result of the Time Based Flow Management system.

Time Based Flow Management Enhancement 1 provides core capabilities and implementation support and resources for Trajectory Based Operations to support trajectory based operations and implementation in the National Air Space. The implementation approach will deliver the right tools at the right sites in a logical sequence, while conducting the appropriate training and change management to ensure acceptance and sustained use of deployed capabilities.

TBFM Sustainment will reduce maintenance costs of the existing hardware and continue sustainment of the TBFM system. It will ensure Operational Availability of 99.5 percent at the TBFM sites.

Detailed Justification for - 2A13 Next Generation Weather Processor (NWP)

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Next Generation Weather Processor (NWP)	$24,300	$48,200	$30,700

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. NextGen Weather Processor (NWP)	---	$17,100.0
B. Common Support Services Weather	---	12,900.0
C. Independent Operational Assessment	---	700.0

What is this program and what does the funding level support?

Air Traffic Management and flight operations rely on weather information for decision making. Current aviation weather processing infrastructure and capabilities are inadequate and do not meet the real-time needs of air traffic management decision support tools and operational decision-makers. Existing aviation weather products lack the spatial resolution and the timeliness necessary to assess the impact of weather phenomena on air traffic. Legacy weather system infrastructure is limited and unable to ingest and process observation, forecast, and modeling data to create high quality weather products with a longer time horizon than currently available.

A. Next Generation Weather Processor (NWP)

Will establish a common weather processing platform that will functionally replace legacy FAA weather processor systems and host new capabilities. NWP uses data from the FAA and National Oceanic and Atmospheric Administration radar and sensors, and forecast models. NWP includes sophisticated algorithms to create aviation-specific current and predicted weather information. NWP creates enhanced weather products that will be available via the Common Support Services-Weather system. It will perform the weather translation necessary to enable the use of weather information by automated decision support tools. For FY 2023, $17.1 million is requested to provide the following:

- Continue NWP Solution Development and Implementation activities

- Execute Project Management oversight by the government and its support organizations

- Complete NWP Aviation Weather Display system testing

B. Common Support Services-Weather

Will enable universal access and the standardization of weather information for dissemination to users by System Wide Information Management. Common Support Services-Weather will filter weather information by location and time. Consumers of the information published by Common Support Services-Weather will include air traffic controllers, traffic managers, commercial aviation, general aviation, and the flying public. This system will be the FAA's single provider of aviation weather data, consolidating several legacy weather dissemination systems, and will provide weather information for integration into NextGen enhanced decision support tools. Common Support Services-Weather will also be scalable to facilitate the addition of new users and new systems.

This System will make improved weather products provided by NWP, the National Oceanic and Atmospheric Administration's NextGen Information Technology Web Services, and other weather sources, available to FAA and national airspace system users for input into collaborative decision-making. Common Support Services-Weather will resolve the issue of multiple interfaces, inflexible and inefficient information data management, unique data types and point-to-point information exchange.

Implementation of this capability will provide cost savings, improvement of capacity, efficiency and safety in adverse weather. For FY 2023, $12.9 million is requested to:

- Continue Common Support Services-Weather Solution Development and Implementation activities

- Execute Project Management oversight by the government and its support organizations

- Complete Common Support Services-Weather Release 2 integration testing

C. Independent Operational Assessment

Additionally, for FY 2023, $700,000 is requested for an assessment to identify any safety hazards and operational concerns with NWP and Common Support Services-Weather capabilities.

What benefits will be provided to the American public through this request and why is this program necessary?

Users will be able to identify the best routes to fly based on aircraft type, flight plan and flying preferences, using optimized weather observations, improved predictions, and translation of weather information into airspace constraints. Improved weather products will enable Traffic Flow Management to plan operations that optimize airspace capacity and reduce passenger delays. Additionally, the production of advanced aviation specific weather information improves safety for the American public.

Detailed Justification for - 2A14 Data Communications in Support of NextGen Air Transportation System

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Data Communications in Support of NextGen Air Transportation System	$110,000	$110,250	$108,050

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. Data Communications – Segment 1 Phase 2 Initial Services	---	$5,000.0
B. Data Communications – Air Ground Internet Protocol Gateway	---	5,000.0
C. Segment 1 Phase 2 Full Services	---	31,900.0
D. Segment 1 Phase 1/2 DCIS Network Services	---	65,700.0
E. Independent Operational Assessment	---	450.0

What is this program and what does this funding level support?

The Data Communications (Data Comm) program provides data communications between Air Traffic Control facilities and aircraft and serves as an enabler for the NextGen operational improvements. Data Comm Segment 1 delivers the initial set of Data Comm services integrated with automation support tools, which provides National Airspace System benefits and lays the foundation for a data-driven National Airspace System.

Data Comm is needed to bridge the gap between current voice-only air traffic control and the data-intensive NextGen operations. Data Comm enables air traffic controller efficiency improvements and permits capacity growth without requisite cost growth associated with equipment and maintenance. Data Comm is comprised of automation enhancements for air traffic control message generation and exchange (hardware and software) and the communications data link between ground and airborne users. Current analog voice communications contribute to operational errors due to miscommunications, stolen clearances, and delayed messages due to frequency congestion. In FY 2004 and FY 2005, approximately 20 percent of En Route operational errors were voice communication related and, 30 percent of the high

severity En Route operational errors were deemed communications related. Data Comm significantly reduces communications related operational errors and improves the safety of air travel.

Data Comm increases controller efficiency by automating routine exchanges. As controllers become more productive, Tower and En Route capacity will grow without the need to assign additional resources. This increase in traffic handling ability has a direct correlation to reduced delays and increased efficiency. Recent benefits analysis show airline operations are benefiting from reduced gate delay and taxi times and improved on-time performance. The busiest airport clearance delivery positions at the busiest airports are seeing the most dramatic benefit.

Data Comm services improves operations in the following manner:

- Improves flight efficiency due to improved controller and flight crew efficiency by providing automated information exchange
- Improves re-routing capabilities
- Provides more efficient routes for aircraft
- Decreases congestion on voice channels and provides an alternate communications capability
- Improves national airspace system capacity and reduces delays associated with congestion and weather
- Improves communication accuracy and safety with digital communication (i.e., reduced read/hear back errors, reduced loss of communications events)
- Reduces environmental impact due to less fuel burn and fewer emissions
- Reduces direct operating cost savings from increased throughput realized through reduced delays and improved communications

For FY 2023, $108.1 million is requested for the Data Comm program. This funding supports the deployment of Segment 1 Phase 2 Initial and Full Services, funding for the Data Comm Network Services, and investment analysis activities for the Air Ground Internet Protocol Gateway. In addition, the request will fund software upgrades for the avionics that enable Data Comm communications possible on the flight deck.

A. Segment 1 Phase 2 Initial En Route Services

For FY 2023, Data Comm is requesting $5.0 million for Segment 1 Phase 2 Initial En Route Services. This funding will be used to complete the implementation, site

testing, and training activities at the remaining Continental United States Air Route Traffic Control Centers. The funding will go towards En Route Automation modernization (ERAM) prime vendor support of site testing, training, and fixing any software issues found during testing and implementation. Funding is also needed for program management, program control, implementation, operations and contract management support as well as second-level engineering support.

Segment 1 Phase 2 Initial En Route Services milestones include:

- Last Site Initial Operating Capability for En Route Services moved to FY 2023 or later as the FAA is continuing to evaluate the impact of the Pandemic on program schedules

B. Air Ground Internet Protocol Gateway

For FY 2023, $5.0 million is requested for the Air Ground Internet Protocol Gateway. This funding will enable the program to conduct pre-implementation and implementation engineering analysis and develop a detailed design of the ground architecture solution. This activity will leverage published and validated standards as developed within International Civil Aviation Organization, Radio Technical Commission for Aeronautics, and Airlines Electronic Engineering Committee to support implementation. Additional hardware and software enabling this design will allow the Data Comm system to support Internet Protocol communications beyond the Future Air Navigation System. Future Air Navigation System consists of a legacy message set that enables communication between pilots and Air Traffic Control. This design will also cover the infrastructure to support advanced capabilities and additional research and development in the Data Comm Segment 2 timeframe. This will support the implementation of more advanced NextGen services such as 4 Dimensional Trajectories, Advanced Interval Management, Tailored Arrivals, Digital Taxi, and Dynamic Required Navigation Performance.

C. Segment 1 Phase 2 Full Services

For FY 2023, Data Comm is requesting $31.9 million for Segment 1 Phase 2 Full En Route Services. Activities will include the completion of software development integration testing of Data Comm Full Services capabilities and the beginning of deployment. In addition, this funding will allow the vendor to provide specialty-engineering support related to system safety, security, human factors, and reliability engineering. The vendor will complete the test and evaluation process for Full Services and the program office will begin its implementation program. The program office will work with the vendors as well as Second Level Engineering to design scenarios, test processes and evaluation criteria, and deployment plans.

Upcoming Segment 1 Phase 2 Full En Route Services milestones include:

- First Site Initial Operating Capability for En Route Services moved to FY 2024 or later as the FAA is continuing to evaluate the impact of the Pandemic on program schedules

D. Segment 1 Phase 1 and Segment 1 Phase 2 Data Comm Integrated Services (DCIS) Network Services

For FY 2023, $65.7 million is requested for network services. This funding will provide the Very High Frequency Data Link Mode 2 air ground network service that provides connectivity between the controllers and the cockpit. The Data Comm Network Services also include operations and maintenance, monitoring and control, network engineering and security, and certification suite activities. This Data Comm Network Service supports both Tower and En Route operations.

E. Independent Operational Assessment

For FY 2023, $450,000 is requested for an assessment to identify any safety hazards and/or operational concerns with Data Comm system capabilities.

What benefits will be provided to the American public through this request and why is this program necessary?

Data Comm reduces operational errors associated with communications, enhancing the safety and efficiency of the National Airspace System. Data Comm also reduces environmental impact due to less fuel burn and fewer emissions. The program will improve National Airspace System capacity and reduce delays resulting in estimated passenger value of time savings of $11.3 billion for Tower and Initial En Route Services over the program life cycle. The addition of Full Services capabilities will add another $734 million of passenger value of time savings over the program life cycle.

Detailed Justification for - 2A15 Offshore Automation (OA)

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Offshore Automation (OA)	$0	$10,000	$38,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Offshore Automation	---	$38,000.0

What is this program and what does the funding level support?

The OA program objective is to standardize automation platforms that support control of En route and terminal airspace at the four non-continental United States facilities referred to as the offshore facilities: Anchorage Air Route Traffic Control Center, Honolulu Control Facility, Guam Center Radar Approach Control, and San Juan Center Radar Approach Control. These facilities do not currently have an En Route Automation Modernization (ERAM) or a Standard Terminal Automation Replacement System (STARS) system to perform automation information for the air traffic controllers. The program plans to address the sustainability concern associated with the Offshore Flight Data Processing System (OFDPS) at Honolulu Control Facility that is reaching an end of life status. This problem is the result of hardware limitations with the mainframe computer as well as retention of legacy expertise.

The program will provide nationally supported standardized automation platforms that will bring the four facilities and their systems into better strategic alignment with the Continental United States National Air Space. The program will develop solutions to improve automation redundancy and resiliency, address future lifecycle challenges associated with these facilities and systems, and increase workforce flexibility by providing standardization to the offshore facilities.

The OA program is executing a segmented approach to address program affordability and sustainability concerns with the OFDPS system in Honolulu Control Facility. Segment 1 will include deploying ERAM to both Honolulu (with support to Guam from Honolulu ERAM) and Anchorage Air Route Traffic Control Center. Full

deployment at Honolulu and Anchorage is expected by FY 2025 and FY 2026, respectively.

For FY 2023, $38.0 million is requested for Prime contract to begin software development for Honolulu functions; systems engineering and program management for the associated software development effort. Planning, authorizing and management for successful program implementation will be conducted. All work activity associated with evaluating software and hardware operation as a subsystem will be conducted. Provide for Second Level Engineering contractor support and program office contract support. Hardware will be procured to replace the legacy automation systems that are nearing their end of service/life. Training for these new systems will be developed. Physical facility reconfiguration will be conducted to accommodate the new system. Government Furnished Equipment, such as the En Route Communications Gateway and the En Route Data Distribution System, will be procured.

What benefits will be provided to the American public through this request and why is this program necessary?

Offshore Automation will standardize the En route and the terminal systems utilized by air traffic control at Anchorage Air Route Traffic Control Center, Honolulu Control Facility, Guam Center Radar Approach Control, and San Juan Center Radar Approach Control facilities. The program will address sustainability risk; provide greater workforce efficiency and flexibility; and allow access to NextGen technologies.

Detailed Justification for - 2A16 Reduced Oceanic Separation

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Reduced Oceanic Separation	$15,450	$7,000	$7,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Advanced Surveillance Enhanced Procedural Separation (ASEPS)	---	$7,000.0

What is this program and what does the funding level support?

The Advanced Surveillance Enhanced Procedural Separation (ASEPS) program analyzes and evaluates enhancements in surveillance technology that can support reduced separation between aircraft and provide safety and efficiency benefits in oceanic Flight Information Regions.

For FY 2023, $7.0 million is requested in support of Space-based Automatic Dependent Surveillance – Broadcast (ADS-B) services initiatives.

Operational Space-based ADS-B Activities:

The ASEPS program is performing investment analysis efforts to determine the suitability and benefits of applying Space-Based ADS-B surveillance in the oceanic environment on Advanced Technologies and Oceanic Procedures. These funds will support the investigation of Space-based ADS-B performance with the three oceanic facilities at ZOA, ZAN, ZNY, as well as additional applications.

Additionally, ASEPS' work will enable the FAA to make recommendations on whether to accelerate the implementation of enhanced technologies for operational contingency capability, such as to mitigate the impact of radar outages during disaster events.

Non-Operational Space-based ADS-B Activities:

The ASEPS program will also continue procurement of non-operational Space-based ADS-B data, as well as support activities to determine future investments. Non-operational Space-based ADS-B data provides an opportunity to support Agency-wide use cases. Use cases consist of air traffic management, airport safety, search and rescue operations, aircraft performance monitoring beyond U.S. airspace, and accident/incident investigations, as well as support other activities.

What benefits will be provided to the American public through this request and why is this program necessary?

These efforts will advance the FAA's understanding of the suitability and potential safety and efficiency benefits of using Space Based Automatic surveillance in oceanic environments. They will also support the Agency's development of a new operational concept for oceanic operations that includes enhanced, Very High Frequency-like communications and use of weather products paired with enhanced surveillance to make air travel safer and more efficient.

Detailed Justification for - 2A17 En Route Service Improvements

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
En Route Service Improvements	$2,000	$2,000	$1,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
En Route Service Improvements	---	$1,000.0

What is this program and what does the funding level support?

This program supports a category of requirements that address necessary and unplanned changes in the En Route domain. These sudden needs are the result of operational changes in the field, unanticipated changes from external organizations like the International Civil Aviation Organization, third party data providers, neighboring Air Navigation Service Providers, or potential cost-savings initiatives. The scope of these changes are limited to operational changes that do not require significant capital investments or involve significant systems complexity or system interdependencies. For FY 2023, $1.0 million is requested for operational and engineering analysis, solution development and implementation activities. This work will improve the presentation, access, and use of En Route Automation Modernization and other systems data by air traffic controllers and managers, resulting in more efficient, safer, and cost-effective delivery of En route services.

What benefits will be provided to the American public through this request and why is this program necessary?

This program will provide increased Air Traffic Management efficiency, improved target levels of safety, and enhanced productivity through the implementation of high priority En Route functional improvements. Improved interaction between the human and the systems, and increasing the accuracy and use of flight data will directly enhance the timeliness and fidelity of controller decisions.

Detailed Justification for - 2A18 Commercial Space Integration

($000)

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Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Commercial Space Integration	$11,000	$6,500	$10,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
NAS Space Integration Capabilities	---	$10,000.0

What is this program and what does the funding level support?

The Commercial Space Integration into the National Airspace System program will automate the FAA's ability to monitor and respond to launch and reentry operations in the airspace. Many of the planned commercial space missions will include new technologies that have never been undertaken such as reusable rockets, presenting an unprecedented level of complexity. Planning and execution challenges are making it increasingly difficult for the FAA to manage the growing volume of operations in the national airspace system without significant disruptions to both space and air operators.

For FY 2023, $10.0 million is necessary to conduct preliminary and detailed design and initiated system development on En Route Automation Modernization, Standard Terminal Automation Replacement System and Traffic Flow Management System (or its replacement). Implementation of National Airspace Space Integration capabilities will enable space data to be displayed on these systems to help FAA users ensure the availability of airspace for space launch and reentry operations while minimizing the effect of these operations on other national airspace stakeholders.

What benefits will be provided to the American public through this request and why is this program necessary?

This program will automate resource intensive processes and reduce the potential for human error during launch and reentry operations. This program will also help

maximize availability of airspace to support space operations, while minimizing the impact on other stakeholders such as major airlines, general aviation and the general flying public.

Detailed Justification for - 2B01 Terminal Doppler Weather Radar-Provide

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Terminal Doppler Weather Radar-Provide	$0	$1,000	$1,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Terminal Doppler Weather Radar Sustainment 3	---	1,000.0

What is this program and what does this funding level support?

The Terminal Doppler Weather Radar (TDWR) is a Doppler weather radar system used by Air Traffic Controllers to increase the safety of the National Airspace System and provide vital information and warnings regarding hazardous wind shear conditions to air traffic controllers managing arriving and departing flights in the terminal area. The current system is facing serious obsolescence issues and has been in service since 1994. This program will extend the service life of the system and replace TDWR components not addressed in previous efforts that have deteriorated due to aging or have otherwise become obsolete or unsupportable. This sustainment program will enable these systems to continue to provide safety and traffic management services throughout the national airspace system.

For FY 2023, $1.0 million will be used to address system shortfalls while completing the business case for the TDWR system. These funds will support activities such as:

- Address critical supportability components
- Second-Level Engineering Teams to support the business case
- Massachusetts Institute of Technology (MIT) / Lincoln Labs Technical Support for business case developing approaches to update Radar Data Acquisition and Radar Product Generator
- System engineering subject matter expertise to complete business case.

What benefits will be provided to the American public through this request and why is this program necessary?

FAA has an agreement with the National Weather Service to provide TDWR data. Operational benefits of the system include the real time detection of microbursts, gust fronts, wind shifts, and precipitation, as well as prediction of wind changes that allow improved airfield efficiency when making runway changes. Weather-related delays have been reduced since TDWR implementation, allowing savings in aviation fuel consumption. The program will lower TDWR operations costs and eliminate outages.

Detailed Justification for - 2B02 Standard Terminal Automation Replacement System (STARS)

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Standard Terminal Automation Replacement System (STARS)	$74,900	$63,697	$62,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. STARS Sustainment 3	---	$57,000.0
B. STARS Sustainment 4	---	5,000.0

What is this program and what does the funding level support?

STARS is used by Air Traffic Controllers to ensure the safe separation of both military and civilian aircraft within the nation's terminal airspace. It is a real-time digital processing and display system that replaced legacy air traffic control automation equipment at:

- 147 FAA and 91 Department of Defense (DoD) Terminal Radar Approach Control facilities totaling 238
- 432 FAA and 173 DoD Air Traffic Control Tower facilities totaling 605
- More than 100 systems installed and maintained at the STARS support sites that include Operational Support Facilities and the FAA Academy.

A. STARS – Sustainment 3:

This program will enable the FAA to replace key elements of STARS that have reached their end of life and/or are no longer compatible with current commercial offerings. This sustainment investment will deploy products required to mitigate end of life technology issues and will ensure continued STARS reliability, maintainability, and availability. Continued sustainment investments for STARS are necessary to maintain system performance levels, respond to future security threats, and continue

support for Air Traffic Control Tower operations by replacing obsolete components with modern technology. For FY 2023, $57.0 million is requested for the following work:

- Deployment of the new Operating System
- Deployment of Digital Video
- Deployment of X4000 Replacement Processors
- Preparing STARS to be compatible with either Time Division Multiplexing or Internet Protocol based communications between Terminal Radar Approach Control Facilities and Air Traffic Control Towers
- Program Office Support for program management, training, deployment, systems engineering and logistics

B. STARS – Sustainment 4:

This investment will provide engineering, development and deployment activities that will enable the FAA to replace key components of STARS that have reached their end of life and are no longer compatible with current commercial offerings. Continued sustainment investments for STARS are necessary to maintain system performance levels, respond to future security threats, and continued support for Terminal Radar Approach Control operations by replacing obsolete components with modern technology.

For FY 2023, $5.0 million is requested to fund Investment Analysis activities (e.g. engineering pathfinding, acquisition documentation development, etc.) for the next investment of sustainment activities for STARS. The program will evaluate and implement:

- Updates to the STARS Operating System
- New Terminal Control Workstations
- A set of qualification activities and corresponding Bulk Buys for replacement for various End of Life STARS components including:
    - Main Display Monitor
    - Processor and Digital Recording Device
    - Local Area Network Switch

- Serial Interface Components (Communication Gateway Converters)

What benefits will be provided to the American public through this request and why is this program necessary?

STARS infrastructure can be expanded and extended to meet increased traffic demands and accommodate the introduction of new automation functions necessary for improved safety, efficiency, and capacity. STARS is the principal tool used by air traffic controllers in and around airport terminal facilities for controlling aircraft.

Detailed Justification for - 2B03 Terminal Automation Program

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Terminal Automation Program	$3,900	$4,000	$3,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. Flight Data Input/Output Sustainment	---	$2,000.0
B. Terminal Improvements	---	1,000.0

What is this program and what does this funding level support?

A. Flight Data Input/Output (FDIO) Replacement

The FDIO system provides standardized flight plan data, weather information, safety-related data, and Wake turbulence Re-categorization data to Air Traffic Controllers and terminal automation systems located at approximately 690 remote sites. The FDIO system provides flight data information to mission critical automation systems. This information assists controllers in tracking aircraft, providing departure clearances, traffic metering, and anticipating the arrival of the aircraft in the sector under their control. The FDIO Sustainment program is based on a five-year replacement cycle for the various components in order to maintain system operational availability while implementing an Ethernet-based architecture in support of future automation requirements. The FDIO program implements new requirements and functionality in support of NAS modernization. The program replaces end-of-life/obsolete FDIO equipment with fully compatible commercial off the shelf and modified commercial off the shelf equipment.

For FY 2023, $2.0 million is requested to continue the procurement and installation of hardware and software of replacement FDIO components at Federal Aviation Administration and Department of Defense air traffic control facilities.

B. Terminal Automation Modernization Improvements

Supports a category of requirements that address necessary and unplanned changes to various systems in the Terminal domain. These sudden needs are the result of operational changes in the field, unanticipated changes from external organizations like the International Civil Aviation Organization, third part data providers, neighboring Air Navigation Service Providers or potential cost-savings initiatives. The scope of these improvements is limited to changes that do not require significant capital investments or involve significant systems complexity. For FY 2023, $1.0 million is requested to improve the presentation, access, and use of terminal automation systems data by air traffic controllers and managers, resulting in more efficient, safer, and cost-effective delivery of terminal services. These projects reduce the operating and maintenance costs associated with maintaining aging hardware and software, extend the service life of the systems, and provide the latest technology and security features.

What benefits will be provided to the American public through this request and why is this program necessary?

These projects reduce the operating and maintenance costs associated with maintaining aging hardware and software, extend the service life of the systems and provide the latest technology and security features.

Detailed Justification for - 2B04 Terminal Air Traffic Control Facilities – Replace

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Terminal Air Traffic Control Facilities – Replace	$55,000	$70,231	$55,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Terminal Air Traffic Control Facilities – Replace	---	$55,000.0

What is this program and what does this funding level support?

This program is included in the Air Traffic Control Facilities Replacement Portfolio. Funding the programs will improve and maintain the facility condition index rating at FAA facilities that provide the backbone for the National Airspace System.

The FAA provides air traffic control services from more than 500 Air Traffic Control Towers and Terminal Radar Approach Control facilities. Under this program, the FAA evaluates which buildings need to be replaced, sustained, or modernized to ensure an acceptable level of building conditions and to meet current and future operational requirements. The average age of Air Traffic Control Towers in the FAA portfolio is 33 years, and the average age of a Terminal Radar Approach Control facility is 26 years. There are facilities that are 65 years old. In some cases, Air Traffic Control Towers and Terminal Radar Approach Control facilities built 20 years ago do not meet today's Occupational Safety and Health Administration, operational, and building requirements. The FAA now manages a $627.0 million backlog of Terminal Facilities projects.

FAA has a number of Terminal Air Traffic Control facilities that have problems that impede Air Traffic Control operations. The facilities also may not have been built to meet today's technological needs and, while some facilities can be modernized or sustained, replacement may be the most efficient method for the FAA to meet operational needs and conform to current building codes and design standards.

Segment 1 funding of $11.7 million is requested for FY 2023 to support advance requirements definition. Activities supported under Segment 1 include the evaluation of unique operational and maintenance requirements that impact the Air Traffic Control Tower and Terminal Radar Approach Control facilities. This funding supports the development of business cases, mock-ups of the Airport Facilities Terminal Integration Laboratory to assist with the evaluation of the attributes of proposed airport sites, actual site selection, and other advance engineering considerations.

Segment 2 funding of $10.9 million is requested for FY 2023 to support the design phase of an Air Traffic Control Tower and Terminal Radar Approach Control replacement project at the requested facilities to include $3.3 million at Tamiami, Florida (TMB) $3.3 million at Hooks, Texas (DWH), $4.3 million at Fairbanks, Alaska (FAI).

Segment 4 funding of $28.4 million is requested for FY 2023 to support utilities installation at Terminal Radar Approach Control to include $7.7 million at Grand Forks, North Dakota (GFK), $8.0 million at Greer, South Carolina (GSP), and $12.7 million at Nashville, Tennessee (BNA).

Segment 5 funding in the amount of $4.0 million is requested for FY 2023 for one facility. This segment funds the disposition, demolition and decommissioning of the facility that has been replaced. The facility included in this request is Charleston, South Carolina (CHS) Terminal Radar Approach Control.

What benefits will be provided to the American public through this request and why is this program necessary?

The benefits provided by the Terminal Air Traffic Control Facilities – Replace program include:

- Eliminating line-of-sight issues, thus increasing efficiency and safety
- Providing adequate space for all approved operational and support positions to enhance efficiency at the Air Traffic Control Tower and Terminal Radar Approach Control
- Providing adequate space and infrastructure for new modern equipment and systems
- Reducing the high cost of maintaining old and outdated buildings
- Increasing the overall Facility Condition Index of terminal facilities by providing new buildings that meet current codes

These benefits are instrumental in providing efficiency and effectiveness, which in turn will produce cost savings for taxpayers.

Detailed Justification for - 2B05 Air Traffic Control Tower (ATCT)/Terminal Radar Approach Control (TRACON) Facilities – Improve

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
ATCT/TRACON Facilities – Improve	$84,600	$84,600	$79,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. ATCT/TRACON Sustainment	---	$78,530.0
B. In-Service Engineering	---	470.0

What is this program and what does this funding level support?

ATCT/TRACON Terminal Facilities Improve is one of the programs included in the FAA's Air Traffic Control Facilities Sustainment Portfolio. More than 50 percent of the Terminal Facilities in the National Airspace System infrastructure are more than 40 years of age and need improvement projects to bring Facility Condition Index scores into the "Good" range. FAA currently manages a $627.0 million backlog of Terminal Facilities projects and that increases the risk of facility outages. For FY 2023, $79.0 million is requested for the following:

A. ATCT/TRACON Sustainment

For FY 2023, $78.5 million is requested to initiate modifications, improvements, sustainment and repairs to ATCT/TRACON facilities. Funding will also support system engineering activities, configuration management, facility planning, facility condition assessments and program support services.

The ATCT/TRACON Terminal Facilities Improvement program includes projects that will enable facilities to maintain current operational, environmental, and safety needs in lieu of replacing or relocating the entire facility. This effort will result in a smooth and orderly transition of new equipment into the FAA's terminal facilities. It will also improve the operational efficiency and environment of equipment within ATCT/TRACON facilities. The upgrades and improvements to terminal facilities

support the national airspace system, modernization strategy to achieve efficient aerospace systems and operations. Facility improvements must incorporate new requirements for relocated or replaced equipment with minimal impact to existing operations.

The program funds an average of 50 sustainment projects each year. Sustainment is defined as activities to continue the national airspace system/terminal service mission critical capability by modifying, repairing, replacing, and reconfiguring. Routine and ongoing maintenance activities are not funded from this program. The sustainment projects include many sites throughout the national airspace system and consist of efforts such as mechanical, electrical, elevators and plumbing.

B. In-Service Engineering

For FY 2023, $470,000 is requested for in-service engineering to promote the improvements and allow for immediate response and tactical distribution in response to emerging solutions.

What benefits will be provided to the American public through this request and why is this program necessary?

The benefits of the ATCT/TRACON Terminal Facilities Improve program are that repairs will be made to critical infrastructure that facilitates the movement of air traffic. These repairs will increase the overall Facility Condition Index of those facilities and reduce the risk of air traffic control outages by providing safe, secure, resilient, and efficient buildings that meet modern codes. These improvements reduce the ongoing cost of operational maintenance at these facilities.

Detailed Justification for - 2B06 National Airspace System Facilities Occupational Safety and Health Administration (OSHA) and Environmental Standards Compliance

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
National Airspace System Facilities OSHA and Environmental Standards Compliance	$28,900	$28,900	$27,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
National Airspace System Facilities OSHA and Environmental Standards Compliance	---	$27,000.0

What is this program and what does this funding level support?

The Air Traffic Organization National Airspace System Facilities OSHA and Environmental Standards Compliance Program provides occupational safety and environmental risk management technical expertise. This work supports compliance with applicable safety and environmental protection standards and mitigate identifiable hazards in the Air Traffic operational workplace.

Air Traffic Organizations acquisitions, installations, modifications, and operations must comply with a wide variety of safety and environmental protection standards. These governing areas range from fire and life safety, electrical safety, and fall protection for our facilities through the storage and disposition of hazardous wastes and materials.

The Environmental and Occupational Safety and Health (EOSH) Services provide safety and environmental protection and risk management support management expertise through the life cycle of Air Traffic operations. EOSH professionals consult in the planning phases of retrofitted and new construction efforts to mitigate risks and even completely engineer out hazards at the earliest possible point. EOSH professionals devise, develop, and publish orders, policies, procedures, and practices

that promote cultural risk management. EOSH professionals conduct job hazard analyses and facility inspections to identify actual and potential risks. Risk mitigation plans are developed and enacted. Risk mitigation methodologies include educational opportunities focused on safety and environmental risks, application of risk awareness and mitigation techniques through modification of existing Air Traffic assets. The EOSH program performs data analyses to identify, track, and mitigate emerging or recurrent risk concerns.

EOSH program risk management efforts include:

- Protect employees and the environment
- Prevent damage and loss of FAA resources
- Promote a culture of safety and environmental responsibility

For FY 2023, $27.0 million is requested to provide technical compliance expertise to address Federal, State, and local environmental and safety regulations and binding commitments. Primary focus areas include:

- Employee Health/Industrial Hygiene
- Fire and Life Safety
- Fall Protection
- Environmental Compliance
- Occupational Safety
- Service Area Technical Implementation
- Electrical Safety Hazard Analysis
- Asbestos
- Confined Space
- Job Hazard Analysis
- Requirements and Compliance Assurance

Non-compliance with Federal, State, and local environmental, safety, health, legal, and other requirements imposes significant liabilities on the FAA. These can be in the

form of personnel injury or loss, interruptions to national airspace system operations, violations of bargaining unit agreements, post-incident response actions (such as costly cleanups), and a decrease in employee morale. Failing to manage safety and environmental risks also incurs short term and long term financial impacts for the agency. Employee injuries directly affect not only the injured worker, with lost time and productivity. They also require the cost and time commitments associated with first and second level responders, generate unplanned workload for post incident investigatory and administrative personnel, and create personnel backfill requirements to achieve the continuing mission.

What benefits will be provided to the American public through this request and why is this program necessary?

The program goal is to identify and reduce or eliminate occupational hazards and environmental liabilities present in FAA operations through a combination of compliance policies and procedures, continuous hazard identification and monitoring, targeted training, deployment of protective measures, and hazard abatement activities. These efforts reduce occupational safety and environmental risks, resulting in a safer, healthier workforce, reduced employee injuries and associated costs, a strong agency compliance posture, and reduced impacts to FAA operations. These efforts also put the FAA in compliance with applicable Federal and State compliance regulations.

Detailed Justification for - 2B07 Integrated Display System (IDS)

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Integrated Display System (IDS)	$30,000	$30,000	$45,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Enterprise Information Display System (E-IDS) Phase 1	---	$45,000.0

What is this program and what does the funding level support?

In the national airspace system, Information Display Systems (IDS) are used operationally in facilities that include En Route Air Route Traffic Control Centers, Terminal Radar Approach Control facilities, Center Radar Approach Control facilities, and Airport Traffic Control Towers. These systems provide air traffic controllers across the entire country with auxiliary information that complements the information provided on their primary displays (i.e., radar displays). External entities (e.g., Department of Defense, airlines, airport authorities) also use or interface with these IDS.

Information displayed on IDS consists of dynamic information like weather observations from airport surface weather sensors, airport runway status, visibility information, and static information such as airport diagrams, approach charts, and facility directives. The FAA plans to address obsolescence and end-of-life issues of older IDS systems and the separate maintenance, sustainment, and logistics pipelines of each. The work under this program will allow the new IDS system to interface and integrate with NAS Enterprise Services and System Wide Information Management-enabled information services and comply with existing and future national airspace security policies.

E-IDS will replace five legacy IDS currently in use at just over 450 facilities, namely:

- Information Display System Model 4, Automated Surface Observing System Controller Equipment-IDS, and National Airspace System Information Display System are all used in the Terminal Environment

- En Route Information Display System are used at Air Route Traffic Control Centers

- Air Traffic Control Specialist Auxiliary Information Display used in the Anchorage, Alaska Air Route Traffic Control Center

This program will replace legacy IDS with an enterprise system consisting of a common hardware and software platform. The approach provides a standardized configuration that simplifies the logistics pipeline, reduces training needs, and provides national configuration management. The new Enterprise IDS will allow users to work efficiently by providing timely display and correlation of relevant operational information simultaneously on an integrated geospatial display.

Enterprise IDS will provide each user access to information coupled with accurate data filtering, easy-to-use sorting and searching capabilities, and quick reference information. Information managed and displayed will include Notices to Airmen, Special Activity Airspace schedule information, weather products, Pilot Reports, and facility-specific information entered by users.

For FY 2023, $45.0 million is requested to support the prime contractor's software development, completing testing lab buildout, performing development and operational testing, and creating technical manuals. The funding will also enable hardware procurement and implementation for the initial sites, as well as fund contractors for program support such as budget, scheduling, earned value management, risk management, testing, implementation, systems engineering, and logistics.

What benefits will be provided to the American public through this request and why is this program necessary?

Enhanced IDS will provide multiple safety benefits to the American public. Enhanced IDS will provide increased productivity, user efficiency, and national airspace system safety by displaying, entering, and distributing Notices to Airmen, and access to Special Activity Airspace schedule and status. This system will also enhance safety in the national airspace system with Pilot Reports collection and distribution across the system enterprise and to other national airspace system users. Improving national airspace system resiliency by supporting faster recovery during adverse events and providing required operational position information to any other properly configured position in the national airspace system will support Air Traffic Management service providers in maintaining continuity of operations.

By replacing multiple legacy IDS that are approaching obsolescence, E-IDS, as a single system, will reduce sustainment costs and increase program oversight efficiencies compared to the cost of maintaining multiple legacy systems.

Detailed Justification for - 2B08 Terminal Flight Data Manager (TFDM)

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Terminal Flight Data Manager (TFDM)	$79,050	$85,400	$61,800

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. Terminal Flight Data Manager (TFDM)	---	$61,400.0
B. Independent Operational Assessment	---	400.0

What is this program and what does the funding level support?

The Terminal Flight Data Manager (TFDM) program will provide the equipment and software for the collection, distribution, and update of electronic flight data information in the terminal area, and will improve access to information for the safe and efficient control of air traffic. TFDM decision support tools will improve system efficiency by developing runway-specific departure schedules, predicting capacity-demand imbalances and allowing for the implementation of metering programs that reduce congestion on the airport surface. TFDM will automate manual flight data processes to enable enhanced data sharing between the Tower, En Route, Approach Control, Traffic Flow Management and Flight/Airline Operations Centers.

A key component of the TFDM system is the transition from paper flight strips to electronic flight data representation and exchange. This will facilitate enhanced flight data exchange between controllers within the tower, those in other air traffic control facilities, and those overseeing traffic flow management systems. This will also facilitate data exchange with key stakeholders such as the airlines' flight operations centers and airport operators to share real-time updates on expected departure times, gate changes and runway assignment requests. Providing flight data in electronic format eliminates the necessity of the physical exchange of flight data, reduces telephone call volume between facilities and reduces the manual re-entry of data among multiple air traffic control systems. Air traffic controllers will have more heads up time, looking out the window, to focus on the surface traffic, therefore, increasing safety.

Another key component of the TFDM system is the introduction of a surface scheduler/metering capability. TFDM will provide the basis for efficient management of traffic flows on the surface at U.S. airports. It will transition airport surface operations from a "first come, first served" model (all planes lining up on the taxiway with engines running waiting to take off). TFDM will create a strategic model that allocates taxi clearances to minimize taxi time (planes are given a specific time slot for departure and they start engines and leave the gate at that precise time to taxi and take off). This will reduce fuel burn and greenhouse gas emissions.

The Final Investment Decision was approved and the prime contract was awarded in June 2016. The program's implementation plan is based on a two software build approach (Build 1 and Build 2) and deployment to 89 airports from FY 2022 to FY 2031 (current COVID recovery plan dates). The Build 1 software provides the electronic flight data capabilities, while the Build 2 software provides the decision support capabilities to enable TFDM surface scheduling and metering. TFDM is currently in the Development and Testing phase and starting the implementation activities. The program has completed the following key milestones:

Build 1 Key Milestones:

- System Requirements Review
- Critical Design Review
- Development Test Complete
- Operational Test Start

Build 2 Key Milestones

- System Requirements Review
- Critical Design Review

The COVID-19 pandemic significantly impacted the program by stopping all travel and facility access completely which stopped all implementation activities. The TFDM program did establish remote access into the Leidos (development contractor) lab and William J. Hughes Technical Center Labs to allow software development and system test to continue. TFDM missed three major milestones in FY 2020 (Build 1 Operational Test completion/First Key Site Phoenix Initial Operations/Build 1 Initial Operational Assessment). This has rippled through all future milestones with a current twenty-three month impact since the onset of COVID. The TFDM recovery plan in place has Build 1 Operational Test planned for February 2022 and First Key Site Phoenix Initial Operations planned for May 2022.

A. Terminal Flight Data Manager

For FY 2023, $61.4 million is requested for the Implementation of TFDM Build 1 and to complete System Development of TFDM Build 2. The Prime Contract costs for FY 2023 will cover the anticipated key milestones outlined below. They will also provide Program Management and Technical Support resources to support the TFDM Program Office in the planning, oversight and management of the Prime Contractor. The

remaining FY 2023 funding will provide the TFDM Program Office with the test resources required to oversee and witness the formal system test activities and conduct the Operational Test.

Additionally, TFDM will integrate into the national air space system and will have program interdependencies for data exchanges with numerous other FAA systems. The costs associated with other system interfaces and modifications required to deliver TFDM capabilities is included in the TFDM cost baseline. In FY 2023, TFDM will complete funding for these other system interfaces.

Lastly, the funding will provide resources needed to support further preparation for the implementation of the TFDM system into the national airspace system.

The FAA is continuing to evaluate the impact of the Pandemic on program schedules. Anticipated key milestones for FY 2023 are summarized below:

- Complete site surveys at 10 sites
- Complete hardware installations at seven sites
- Complete Build 1 Initial Operational Capability at seven additional sites
- Achieve Build 2 Operational Test (Acquisition Program Baseline milestone)
- Achieve Build 2 Key-Site Charlotte Initial Operational Capability (Acquisition Program Baseline milestone)

B. Independent Operational Assessment

For FY 2023, $400,000 is requested for an assessment to identify any safety hazards and/or operational concerns with Build 2 activities.

What benefits will be provided to the American public through this request and why is this program necessary?

This program focuses on gaining efficient flow and management of aircraft on the surface at selected metroplex airports and the complex terminal airspaces within the national airspace system. High density airports typically see higher demand for runway capacity, operate multiple runways, and have complex airspace and ground interactions in the arrival and departure phases of flight. The surface capabilities resulting from this program are expected to improve both the efficiency of individual flights while optimizing runway throughput. This system will make air travel safer for the flying public, help reduce passenger delays leading to a better traveling experience, and contribute to less pollution.

Detailed Justification for - 2B09 NextGen – Performance Based Navigation (PBN) Support Portfolio

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Performance Based Navigation (PBN) Support Portfolio	$8,000	$8,000	$8,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Distance Measuring Equipment Support for PBN	12	$8,000.0

What is this program and what does this funding level support?

Performance Based Navigation (PBN) uses Area Navigation and Required Navigation Performance to improve access and flexibility in the national airspace system with the goal of providing the most direct and efficient aircraft routes possible. This begins with leaving the departure runway to arriving at the destination runway while also enabling right-sizing of conventional procedures and navigation infrastructure. PBN defines the requirements for routes and procedures that enable aircraft to navigate with greater precision and accuracy. It provides a basis for designing and implementing new flight paths, redesigning airspace, and providing safe obstacle clearance. In support of PBN, the objective of NextGen Distance Measuring Equipment Program is to provide a resilient network to continue PBN operations during a Global Navigation Satellite System disruption. The program will add Distance Measuring Equipment systems to the existing network to eliminate single points of failure and fill coverage gaps to enable Area Navigation aircraft.

For FY 2023, $8.0 million is requested to fund program management, system engineering, logistics support, Distance Measuring Equipment service volume class changes, to procure five Distance Measuring Equipment systems for installation, and complete the installation of seven Distance Measuring Equipment Systems.

What benefits will be provided to the American Public through this request and why is this program necessary?

These resources benefit the American public by allowing pilots flying aircraft equipped with Area Navigation avionics to continue PBN operations in the event of a Global Navigation Satellite System outage. This will significantly maintain flight efficiency, reduce delays and reduce carbon emissions and noise, thereby providing an environmental benefit. DME/DME Area Navigation service will be available to the 30 percent of commercial aircraft that are not equipped with Inertial Reference Unit, (a capability which enables the aircraft to navigate through coverage gaps up to 33 nautical miles), significantly reducing the impact on pilot/controller workload during Global Navigation Satellite System disruptions, thereby improving safety. The NextGen Distance Measuring Equipment program will discontinue existing Distance Measuring Equipment facilities that are not needed for Area Navigation, thereby reducing maintenance costs for equipment, facilities, and instrument flight procedures.

Detailed Justification for - 2B10 Unmanned Aircraft System (UAS) Implementation

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Unmanned Aircraft System (UAS) Implementation	$26,600	$31,300	$10,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated ($000)
Small Unmanned Aircraft Systems (UAS) Implementation	---	$10,000.0

What is this program and what does the funding level support?

The FAA introduced new and updated regulations to manage the influx of Small UAS into the national airspace system. As a result, of these new regulations, rapid implementation was necessary to manage public interactions and expedite internal FAA business processes. These projects will create the framework needed to allow UAS to operate safely without impact to manned aircraft operations or creating disruptions and delays.

This program is used to operationalize and implement new UAS Traffic Management programs and capabilities. UAS traffic management capabilities that will be in the implementation phase in FY 2023 are Low Altitude Authorization and Notification Capability, Remote Identification, and Drone Zone. The FAA Drone Zone platform supports the backend Information Technology systems that run the Low Altitude Authorization and Notification Capability program. Drone Zone supports the UAS Traffic Management operating environment by allowing registered UAS to be identified to stakeholders.

Low Altitude Authorization and Notification Capability is an enterprise capability to automate the FAA's ability to grant authorizations allowing small UAS operators to fly in controlled airspace. Each enhancement is the result of data gathered by stakeholders both in and outside of the FAA and by ongoing usage and integration within the air traffic management community. Low Altitude Authorization and

Notification Capability enhancements will mature as concepts, then as requirements and operating rules. They will then be implemented to realize the operational enhancement. The program office anticipates an incremental developmental approach that introduces capabilities over a yearly cycle through prototyping and national rollouts. For FY 2023, $10.0 million is requested to:

- Complete requirements, software development and implementation of UAS Service Suppliers Performance Rules enhancements to Low Altitude Authorization and Notification Capability. This includes:
    - Capability enhancements related to revised UAS Facility Maps structure update
    - Development of functionalities supporting Part 107 policy updates (Night Operation Functions, Operations Over People, etc)
    - Complete training and policy enhancements for use by air traffic managers on new capabilities
- Complete implementation of Low Altitude Authorization and Notification Capability at additional Department of Defense sites
- Complete implementation of audit processes for UAS Service Suppliers
- Complete migration to Federal Cloud Services

UAS Services are a supporting complement of enterprise and secondary services developed in support of Low Altitude Authorization and Notification Capability and future UAS data exchanges, including support to FAA implementation of Remote Identification. This includes enhancements/integration of Drone Zone within the FAA Enterprise Infrastructure and UAS Traffic Management capacities supporting emerging rules and policies.

- Implement Enterprise Service solution for UAS Data Correlation for Low Altitude Authorization and Notification Capability and Drone Zone
- Incorporate enhancements for user interface and machine-to-machine interface to access correlated UAS data
- Integrate and enhance common authentication and common logging and monitoring services
- Define and operationalize additional services supporting FAA implementation of Remote Identification

- Enhancement of UAS Traffic Management infrastructure for security compliance
- Enhancement of the UAS Traffic Management ecosystem on Enterprise Infrastructure
- Enhance Drone Zone Capabilities

What benefits will be provided to the American public through this request and why is this program necessary?

The UAS programs play a critical role in enabling UAS operations in the national airspace system without impacting manned aircraft operations and creating disruptions or delays, and ensuring operations will be as safe as or safer than they are today. Government cost of allowing UAS operations will decrease from the reduction of "exception handling" of UAS flights. Improvements to national airspace system capabilities and operations will be made cost effective due to the integrated framework approach to addressing needs and solutions.

Detailed Justification for - 2B11 Airport Ground Surveillance Portfolio

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Airport Ground Surveillance Portfolio	$27,350	$28,400	$18,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. Airport Surface Detection Equipment – Sustainment	---	$2,000.0
B. Runway Status Lights Sustainment	---	14,600.0
C. Navigation Aids Monitoring Equipment	---	1,000.0
D. Independent Operational Assessment	---	400.0

What is this program and what does this funding level support?

This program maintains surface safety by ensuring continuing functionality of all surface surveillance capabilities that have led to increased runway safety, improved efficiency in air traffic, and increased airport throughput.

A. Airport Surface Detection Equipment Sustainment:

This Sustainment program will address maintainability and obsolescence issues associated with the Airport Surface Detection Equipment – Model X and Airport Surface Surveillance Capability systems. The existing Airport Surface Detection Equipment-Model X systems at 35 airports and Airport Surface Surveillance Capability systems at nine airports are surface surveillance systems that use radar, multilateration (a surveillance technique based on measurement of the times of arrival of aircraft and vehicle transponder signals at multiple receivers), and Automatic Dependent Surveillance-Broadcast to track aircraft and vehicles. These systems help air traffic controllers prevent surface collisions and reduce runway incursions by improving situational awareness.

The Airport Surface Detection Equipment Sustainment activity will address the following:

- Aging non-cooperative Surface Movement Radars and infrastructure

- Obsolescence, depleting inventory levels, and necessary technological updates with processors, remote units, and ancillary equipment

For FY 2023, $2.0 million is requested. The program received its Investment Analysis Review Decision in the third quarter of FY 2020.

B. Runway Status Lights Sustainment:

This sustainment activity will address maintainability, obsolescence, and information technology security issues associated with the Runway Status Light system. Replacing obsolete Commercial Off-the-Shelf hardware with newer generation hardware and updating the software to current technology will ensure the continued sustainable, reliable and cost-effective operation of the system throughout its life cycle. The Runway Status Lights system integrates airport lighting equipment with surface surveillance systems to provide a visual signal to pilots and vehicle operators indicating that it is unsafe to enter, cross, or begin takeoff on the runway. The system has automated light control logic that commands in-pavement lights to illuminate red when there is traffic on or approaching the runway.

The Runway Status Light Sustainment activity will address the following:

- Aging Field Lighting System equipment

- Obsolescence, depleting inventory levels, and Information System Security deficiencies

For FY 2023, $14.6 million is requested. The program received its Investment Analysis Review Decision in the third quarter of FY 2020.

C. Navigation Aids Monitoring Equipment:

The Navigation Aids Monitoring Equipment program will replace or upgrade legacy air traffic control and monitoring systems operating in the national airspace system. Two legacy systems are used in the national airspace; the Interlock Control and Monitoring System and the FA-30000. These systems, typically located in the tower and equipment room, are used by air traffic control specialists and airway transportation system specialists for controlling and monitoring a predefined set of Navigation Aids. These systems include Instrument Landing Systems Airport Lighting Systems, Runway Visual Range equipment, Runway End Identifier Lights, Precision Approach Path Indicator light arrays, and other Navigation Aids located at an airport. The Navigation Aids Monitoring Equipment program will provide a common requirements baseline across all systems. The Navigation Aids Monitoring

Equipment will be deployed at 32 airports across the national airspace system. The program received a Final Investment Decision in December 2020.

For FY 2023, $1.0 million is requested to continue execution of the Navigation Aids Monitoring Equipment program baseline, which was established at Final Investment Decision.

D. Independent Operational Assessment

In addition, $400,000 is requested for an assessment to identify any safety hazards and/or operational concerns Navigation Aids Monitoring Equipment system capabilities.

What benefits will be provided to the American public through this request and why is this program necessary?

This program enhances runway safety while maximizing operational efficiency and ensuring airport capacity. The reduction of runway incursions has been identified as one of the FAA's most important aviation safety initiatives.

Detailed Justification for - 2B12 Terminal and En Route Surveillance Portfolio

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Terminal and En Route Surveillance Portfolio	$78,600	$55,373	$117,400

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. Air Traffic Control Beacon Interrogator Model 6 Sustainment	---	$3,900.0
B. Air Traffic Control Beacon Interrogator Model 5 Sustainment	---	3,500.0
C. Airport Surveillance Radar Model 9 Sustainment 3	---	11,500.0
D. Airport Surveillance Radar Model 9 Sustainment 4	---	25,000.0
E. Airport Surveillance Radar Model 8 Sustainment 1	---	7,400.0
F. Airport Surveillance Radar Model 11 Sustainment 3	---	19,400.0
G. Mode Select Replacement Phase 1A	---	45,300.0
H. In-Service Engineering	---	1,400.0

What is this program and what does this funding level support?

The current stock of FAA Primary Surveillance Radars and Secondary Surveillance Radars are aging. This inventory includes systems such as the Air Traffic Control Beacon Interrogator-5 and the Airport Surveillance Radar-8, which were both originally fielded in the 1970s, and the Airport Surveillance Radar Model 9, which was originally fielded in the mid-1980s. While many of these systems will eventually be replaced, they must be maintained until replacement systems are fully fielded, preventing gaps in radar coverage. Many of these radar systems will remain in place and require sustainment past 2035.

The Terminal and En Route Surveillance Technology Refresh Portfolio is being developed to consolidate, prioritize, and manage sustainment activities for the ground-based radar surveillance systems until they are replaced or divested from the national

airspace system. The sustainment portfolio Investment Analysis Readiness Decision was achieved December 2021 and will be managed through 2031.

A. Air Traffic Control Beacon Interrogator Model 6 Sustainment 1:

The Air Traffic Control Beacon Interrogator Model 6 is a Monopulse Secondary Surveillance Radar with selective interrogation capability that significantly improves the accuracy of aircraft position and altitude data provided to air traffic control automation systems. The original Air Traffic Control Beacon Interrogator Model 6 project commissioned the first system in FY 2002 and the last system in FY 2013. This sustainment project will determine the retrofit requirement for the 132 operational and seven support systems, to ensure sustainment until divested or replaced. The project plans to procure form, fit, and function and/or redesign replacements, as required. For FY 2023, $3.9 million is required for contractor support, program management, second level engineering analysis, and procurement of floppy disk drive interface replacement, global positioning system time source and the Position Adjustable Range Reference Orientation Transponder site monitoring hardware. The requested funding will also begin legacy Mode S sustainment of portfolio initiatives and critical Line Replacement Units (LRUs).

B. Air Traffic Control Beacon Interrogator Model 5 Sustainment 1:

The Air Traffic Control Beacon Interrogator Model 5 is a Cooperative Secondary Surveillance Radar System that provides aircraft data for air traffic controllers in En route and terminal airspace. These systems are currently installed at 54 airports and five Department of Defense (DoD) facilities where they are co-located with Airport Surveillance Radar Model 8s and Model 9s. Additionally, there are four support systems at the Mike Monroney Aeronautical Center and the William J. Hughes Technical Center. The Air Traffic Control Beacon Interrogator Model 5 was originally commissioned in 1973. This technology refresh project will sustain the entire system or obsolete Air Traffic Control Beacon Interrogator Model 5 equipment, including original, manufacturer peculiar, and commercial off-the-shelf hardware and software. This will ensure the continued reliable and cost-effective operation of the Air Traffic Control Beacon Interrogator Model 5 until divested or replaced. For FY 2023, $3.5 million is requested for contractor support, program management and second level engineering support.

C. Airport Surveillance Radar Model 9 Sustainment 3:

The Airport Surveillance Radar Model 9 system was procured in the mid-1980s, fielded between 1989 and 1994, and has significantly exceeded the expected 20-year lifecycle. This Sustainment project continues the phased strategy to extend the service life of the Airport Surveillance Radar Model 9 systems, implementing modifications to sustain primary radar surveillance in terminal airspace. The Airport Surveillance Radar Model 9 uses hardware and software architectures that are becoming obsolete. Without modifications, the radar system will experience decreasing reliability,

lowering availability, and increasing supportability risks due to the limited commercial availability of some critical components. Airport Surveillance Radar Model 9 Sustainment 3 achieved a successful Final Investment Decision in March 2018, to keep the systems operational. For FY 2023, $11.5 million is requested for test and installation of data communication equipment, program management, second level engineering support and address telecommunications issues.

D. Airport Surveillance Radar Model 9 Sustainment 4:

The Airport Surveillance Radar Model 9 system was procured in the mid-1980s, fielded between 1989 and 1994, and has significantly exceeded the expected 20-year lifecycle. The Airport Surveillance Radar Model 9 Sustainment 4 project will continue to address and conduct an in-depth analysis of alternatives to determine the optimal sustainment strategy for these radar systems to ensure the availability of critical terminal surveillance services until divested or replaced. For FY 2023, $25.0 million is requested for program management, second level engineering support and awarding contacts for the following projects: Antenna Replacement; Remote Monitoring System Computer; Uni-Directional and Bi-Directional Couplers and Rotary Joint Plate Drive System. Additionally, $2.0M is being requesting to continue the Investment Analysis process for non-cooperative radar replacement. Investment Analysis Readiness Decision is planned in June 2024.

E. Airport Surveillance Radar Model 8 Sustainment 1:

The Airport Surveillance Radar Model 8 technology refresh project is needed to sustain these primary surveillance radar systems until divested or replaced. The Airport Surveillance Radar Model 8 systems were fielded between 1975 and 1980 to provide primary surveillance radar data to air traffic controllers at low and medium-activity airports. Forty-six of these radar systems currently remain in use in the national airspace system. The receiver portion of the system is being modernized by the Common Terminal Digitizer to enable the analog data to interface to the new Standard Terminal Automation Systems. The Sustainment 1 will replace or redesign obsolete hardware and software. For FY 2023, $7.4 million is requested for contractor support, program management and second level engineering support and to complete implementation and integration of remaining Common Terminal Digitizer equipment.

F. Airport Surveillance Radar Model 11 Sustainment 3:

The Airport Surveillance Radar Model 11 Sustainment project investments are managed in five-year segments to ensure availability of critical weather and terminal surveillance services until radar is divested or a replacement system is deployed. The Airport Surveillance Radar Model 11 was procured via Interagency Agreement with the Department of Defense United States Air Force. The FAA procured 69 systems and fielded the last system in 2013. This Sustainment 3 project will address parts obsolescence maintenance issues, and current national airspace system requirements to

ensure continued reliable and cost-effective operation of the radar systems until divested or replaced. The program plans to procure form, fit and function and/or redesign replacements, as required. For FY 2023, $19.4 million is requested for design and development, test, initial hardware procurements, program management support and ASR-11 Sustainment 4 investment analysis activities. Also included in funding Windfarm Mitigation engineering analysis.

G. Mode Select Replacement System Phase 1A:

The legacy Mode Select System is a Cooperative Surveillance Radar that supports Air Traffic Control in Terminal and En Route airspaces. The Mode Select also interrogates and receives aircraft identification and altitude information from equipped aircraft. There are currently 137 operational and 11 support systems in the national airspace system. The legacy system is more than 25 years old and suffers from a shortage of replacement parts and/or repair capabilities. The Mode Select Beacon Replacement System Project will replace unsustainable portions of the legacy Mode Select system with a design that incorporates modern surveillance interfaces, defends and mitigates cyber security threats, and provides modifications needed to ensure supportability and sustainment. Phase 1 of this Project will address critical obsolescence and end of service life issues for terminal Cooperative Surveillance Radar systems that will remain in the national airspace system for the foreseeable future. Phase 1 is divided into two parts. Phase 1A will include design, development and test, and limited production with a total number of nine systems. Phase 1B will complete the production and deployment of the remainder of the 41 systems to fulfill national airspace system surveillance requirements. The project will replace the legacy Mode Select system, with a procurement of a Mode Select Beacon System; the existing antenna, encoder, and rotary joint will be retained.

For FY 2023, $45.3 million is requested for first article systems, on-site development test, program management support, System Security Services, configuration management, procurement of limited production sites, implementation activities, Interim Contractor Depot Logistic Support, site survey and training development.

H. In-Service Engineering:

In addition, $1.4 million is requested to allow immediate response and tactical distribution of in-service engineering resources to emerging technology solutions across the entire surveillance portfolio.

What benefits will be provided to the American public through this request and why is this program necessary?

Outages of primary and secondary surveillance systems contribute significantly to aircraft arrival and departure delays at major airports throughout the United States. The sustainment work under this portfolio will increase equipment and service

availability and reduce delays that cost airlines and the flying public money and time. Expected outcomes from the work will be to:

- Extend the service life of the surveillance systems
- Decrease system maintenance
- Reduce outages
- Increase equipment and service availability
- Decrease operating costs

Detailed Justification for - 2B13 Terminal and En Route Voice Switch Recorder Portfolio

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Terminal and En Route Voice Switch Recorder Portfolio	$37,750	$57,496	$50,100

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. Voice Switching and Control System Sustainment 4	---	$20,100.0
B. Terminal Voice Switch Sustainment	---	6,000.0
C. NAS Voice Recorder	---	6,500.0
D. Voice Communication Systems – Phase 1	---	16,800.0
E. In Service Engineering	---	700.0

What is this program and what does the funding level support?

Voice Switches and Recorders are integral parts of the FAA's air traffic control system. The reliability of communications from controller to controller and controllers to pilots is vital to a safe air traffic control system.

A. Voice Switch and Control System Sustainment 4

Involves sustaining the aging, obsolete voice switches and associated training and back-up systems located in the Air Route Traffic Control Centers throughout the national airspace system. The VSCS equipment provides voice communication services that allow the En route air traffic controllers to communicate with other controllers, pilots, ground personnel and other locations while separating, managing and directing air traffic. The Sustainment 4 project replaces and upgrades obsolete components that are no longer supportable and will focus on the components that pose the greatest risk to affecting the operational availability to the FAA's En route voice communications.

For FY 2023, $20.1 million is requested for sustainment activities, which may include the VSCS Liebert Power Conditioner Replacement and the VSCS Multiport

technology refresh. Funding will also be used for contract program management and engineering analysis, which identifies the Voice Switch and Control System or Training and Back-up System components with the greatest risk of affecting operational availability.

B. Terminal Voice Switch – Legacy Voice Switch Sustain

Involves sustaining the aging, obsolete voice switches in Air Traffic Control Tower and Terminal Radar Approach Control facilities. Terminal voice switches provide voice communication services to air traffic controllers in the airport towers and Terminal Radar Approach Control facilities. This allows the terminal air traffic controllers to communicate with other controllers, pilots, ground personnel and other locations while separating, managing and directing air traffic.

The Terminal Voice Switch – Legacy Voice Switch Sustainment project covers various types of terminal voice switches, including Small Tower Voice Switch, Enhanced Terminal Voice Switch, Rapid Deployment Voice Switch, Voice Switch By-Pass, and Interim Voice Switch Replacement systems. This project will focus on the components of the existing voice switches that pose the greatest risk to affecting the operational availability to the FAA's voice communications.

For FY 2023, $6.0 million is requested for terminal voice switch sustainment activities, including the continued procurement and installation of the Small Tower Voice Switch Technology Refresh retrofit kits. Funding may also be used for end of life hardware procurements for parts no longer manufactured, power supply replacements and/or refurbishment of other high risk components to extend the service life of the existing equipment.

C. National Air Space Voice Recorder

Will replace the legacy Digital Audio Legal Recorders and provide enhanced digital voice recording functionality to meet new requirements. The replacement of aging voice recorders will reduce operational costs and address the increasing demand for more expeditious audio access and capabilities such as increased recording capacity, recording of Voice Over Internet Protocol telephones using secure intranet services, and connection to FAA Telecommunications Infrastructure enterprise Network Time Protocol.

As the voice recorder technology and voice recorder requirements have evolved, earlier digital voice recorders are experiencing obsolescence and supportability issues. There are currently over 460 recorders in operation today, which were deployed between 2007 and 2015; they began to reach their end of service life starting in 2017. Full implementation of this program will result in the replacement of the legacy voice recorders, Digital Audio Legal Recorders, which do not meet current Safety Requirements. Additionally, it will decrease the risk of Diminishing Manufacturing Sources and Material Shortages issues in order to maintain Operational Availability.

For FY 2023, $6.5 million is requested for the delivery and installation of approximately twenty systems, vendor program management, systems engineering, vendor installation and training.

D. Voice Communication Systems – Phase 1

Will provide interface equipment to resolve Radio Control Equipment obsolescence issues as well as add the capability to convert analog signals transmitted from the existing voice switch equipment into the approved international Voice over Internet Protocol standard. Phase 1 will include procurements for Air-to-Ground Protocol Converters and Ground-to-Ground Protocol Converters. The Air-to-Ground Protocol Converters will replace the end-of-life Radio Control Equipment and can operate in Voice over Internet Protocol or in legacy analog mode. The Air-to-Ground Protocol Converters and Ground-to-Ground Protocol Converters will also simplify the future replacement of the legacy voice switches in Phase 2 by allowing the use of protocol converters to communicate with FAA analog interfaces.

For FY 2023, $16.8 million is requested to finalize products in support of the final investment decisions and source selection documentation for the Air-to-Ground Protocol Converter and Ground-to-Ground Protocol Converter acquisitions. In addition, funding may be used to draft products in support of strategic planning and future investment decisions planned for during Phase 2. Voice Communication Systems Phase 2 will focus on the procurement of Internet Protocol-based voice switches.

E. In Service Engineering

In addition, $700,000 is requested to allow immediate response and tactical distribution of resources to emerging technology solutions across this portfolio.

What benefits will be provided to the American public through this request and why is this program necessary?

Direct voice communication between the air traffic controllers and pilots is critical to safe operations throughout the national airspace system. The projects in this budget line item ensure existing and future voice communication systems continue to provide safe and reliable voice communication services. The sustainment projects focus on reducing obsolescence and maintaining availability, until such time that there is a new Internet Protocol-based voice communication system available for deployment to the national airspace system. The replacement program will enable the FAA to transition to Internet Protocol-based voice communication services; thus, allowing the FAA to gain the inherent benefits of Internet Protocol-based voice communication services, such as asset sharing and load sharing. Overall, these projects promote operational

availability, which ensures critical safety communications and helps reduce flight delays.

Voice recorders are used by the FAA for recording voice conversations between air traffic controllers, pilots, and ground-based personnel. Recorded conversations are used in the investigation of accidents, incidents, and in the routine evaluation of air traffic operations. The National Airspace Voice Recorder program reduces costs associated with current voice recorder models that have obsolescence, supportability, and information security concerns.

Detailed Justification for - 2B14 Enterprise Information Platform

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Enterprise Information Platform	$10,000	$17,600	$13,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. Common Support Services – Flight Data	---	$4,000.0
B. Enterprise Information Management Platform	---	9,000.0

What is this program and what does the funding level support?

A. Common Support Services – Flight Data

This investment leverages the FAA's previous investments in System-Wide Information Management to advance flight information management across the air traffic management system and stakeholders (e.g. flight planning service providers, airlines, and other airspace users). This project will develop the following capabilities to meet the FAA's growing need for coordinated strategic flight planning and distribution of standardized flight information:

- **Flight Planning and Filing** – A standards-based flight planning and filing environment to be used by flight operators and the FAA to negotiate preliminary and filed flight plans. Constraint sharing/feedback will enable the flight operator to receive and address constraints early in the planning phase.

- **Flight Data Sharing**– Provides a single common reference, Flight and Flow Information for a Collaborative Environment facilitating operational flight data sharing/exchanges across the national airspace system ecosystem in accordance with centralized and managed business rules.

For FY 2023, $4.0 million will be used to support the phased implementation of Flight Planning and Filing and Flight Data Sharing capabilities and development of

additional enhancements to enable richer flight information exchange amongst stakeholders. The program will finalize all products and achieve a Final Investment Decision for Phase 1 in the first quarter FY 2023. Funding will also support Phase 2 Final Investment Analysis Activities. In addition, the funding will be used to integrate preliminary flight plans and traffic flow management information into the Common Support Services-Flight Data test environment as part of the Risk Reduction Activity exercises.

B. Enterprise Information Management

This is a cloud-based big data platform, which unifies and secures agency-wide data. This capability provides FAA systems and users with the ability to rapidly find and exploit relevant data from across the FAA, to support faster and more comprehensive analysis, synthesis, and decision-making. This will overcome current data access and processing challenges and existing limitations of the legacy infrastructure. The build out of the Enterprise Information Management Platform will enable the integration of existing and future systems and will bring in additional data sources to maximize the operational impact of these systems. For FY 2023, $9.0 million is requested for the development of staging and production environments, as well as continued systems development life cycle work that includes system design, implementation and deployment. Planned activities include:

- Provide an Enterprise Information Management Platform hosted development environment to support the pre-production design integration needs of the Operational Analysis and Reporting System, Operational Network Replacement, or other national airspace acquisition programs.

- Complete the integration of 10 additional data sources: i.e., Air Traffic Control voice data, imagery, technical operations logistics information and an additional information line of business domain, such as human resources, finance, etc.

- Integrate 15 additional data processing capabilities that transform the data to add value or enhance usability.

- Provide 10 additional common service tools and four additional advanced analytic capabilities.

What benefits will be provided to the American public through this request and why is this program necessary?

This program reduces the need to build and maintain redundant data management capabilities that support individual programs and systems. Benefits include alignment of existing and future data requirements into an efficient and effective information-sharing environment. This program standardizes flight information sharing that

integrates information from multiple systems, consolidates redundant services, and reliably associates information to the appropriate flight.

Detailed Justification for - 2B15 Remote Towers

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Remote Towers	$0	$4,900	$3,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Remote Towers	---	$3,000.0

What is this program and what does this funding level support?

Many airports cannot afford and/or justify the establishment and maintenance of a traditional Air Traffic Control Tower to provide air traffic services because of initial implementation and lifecycle costs of a physical, brick and mortar facility. While some airports can subsidize personnel costs via the FAA Contract Tower program, a significant amount of airports cannot afford the cost of construction and recurring maintenance. As mandated by congress, remote tower demonstrations were previously conducted at low and medium density airports in Class D and Class E airspace to evaluate proposed technologies, identify system criteria and develop a process to approve the use of these technologies to provide air traffic services remotely. Additional demonstrations will be conducted to develop standards for systems approved for use at higher density traffic airports in Class B or Class C airspace and initiate research to evaluate the optimal location of remote tower technologies at specific airports.

For FY 2023, $3.0 million is requested to support the following activities:

- Maintain remote equipment during the period of the Remote Tower System evaluation at Northern Colorado Regional to conduct evaluations and collect data.
- Provide ATCT controller support for continued testing and System Design Approval of the Remote Tower equipment and provide Air Traffic Control Tower

services at Northern Colorado Regional in order to conduct evaluations and collect data.

- Continue development of Remote towers Camera siting research and Remote Towers Technical Requirements.
- Provide ATCT controller staffing to operate the Remote Tower equipment and provide ATCT services at Leesburg Executive Airport in order to conduct evaluations and collect data.
- Provide project management, engineering and human factors support to begin testing of a Remote Tower system at a third pilot site.

What benefits will be provided to the American public through this request and why is this program necessary?

The Remote Tower demonstration activities will allow technologically advanced methods and systems that can be used to monitor aircraft at non-brick and mortar towered airports. This will ultimately improve safety at these airports and prevent operational costs associated with the upkeep and maintenance of physical structures.

Detailed Justification for - 2C01 Aviation Surface Observation System (ASOS)

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Aviation Surface Observation System (ASOS)	$5,000	$8,000	$10,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Aviation Surface Weather Observation Network Sustainment	2	--- $10,000.0

What is this program and what does the funding level support?

The Aviation Surface Observation System, also known as the Aviation Surface Weather Observation Network (ASWON), is a portfolio program that consists of multiple subsystems in the National Airspace System that detect and report surface weather conditions required to conduct aircraft operations. Air Traffic Control, Part 91, 121, and 135 Operators, and National Weather Service rely on the data provided by ASWON. The following National Airspace Systems depend on the data provided by ASWON:

- Automatic Terminal Information Service
- Surveillance Broadcast Services - Flight Information Service Broadcast
- Standard Terminal Automation Replacement System
- National Airspace System Information Display System
- Weather System Processor
- NextGen Weather Processor
- Common Support Services – Weather

- Integrated Terminal Weather System
- Weather and Radar Processor
- Corridor Integrated Weather System

This program will address obsolescence of hardware components no longer manufactured or supported by vendor coupled with insufficient inventory of sub-systems and parts. For FY 2023, $10.0 million is requested for the implementation of the Aviation Surface Weather Observation Network Sustainment 2 Project. The project will award contracts to acquire replacement sensors and hardware components required to sustain operational capabilities provided by this network.

What benefits will be provided to the American public through this request and why is this program necessary?

ASOS systems provide official airport weather information that is required to conduct Part 91, 121, and 135 aircraft operations. The program also increases the accuracy and timeliness of forecast and warning products that are provided by the National Weather Service for protection of life and property and enhancement of the national economy.

Detailed Justification for - 2C02 Future Flight Services Program (FFSP)

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Future Flight Services Program (FFSP)	$17,800	$3,000	$1,500

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Future Flight Services Program – Alaska Automation Capability	---	$1,500.0

What is this program and what does this funding level support?

Currently, a combination of entities and platforms provide Flight Services to the General Aviation community. These services include pre-flight and in-flight flight planning, advisory services, weather briefings, pilot weather report processing, and Search and Rescue coordination. Flight Services also provides Visual Flight Rules coordination, orientation support to lost aircraft, maintain continuous weather broadcasts on selected Navigational Aids, and issues Notices to Airman. General Aviation pilots access flight service information directly through web portals, thus reducing the need for pilots to talk to a flight service specialist.

Future Flight Services Segment 1 enhancement work will promote the self-assisted service delivery and reduce costly human-assisted delivery of flight services as much as possible. This project will leverage current solutions in order to increase operational efficiency, and improve aeronautical data acquisition and utilization in the support of flight services. The primary objective of FFSP is to realign the Flight Services mission by modernizing services and delivery methodologies at a lower cost.

Segment 1 focused on providing these services in the Continental United States, Puerto Rico, and Hawaii. Future Flight Services Segment 2 Alaska Automation Capability extends these services to Alaska where General Aviation is a primary method of transportation.

Segment 2 Alaska Automation Capability will leverage the Air-to-Ground Media Gateway architecture to deliver inflight services in standardized Voice over Intranet Protocol mode using secure intranet services for the Flight Service Provider's voice switch. For FY 2023, $1.5 million is requested to start the work on acquiring FAA Telecommunication and Air-to-Ground Media Gateway Infrastructure.

What benefits will be provided to the American public through this request and why is this program necessary?

The American Public, as well as the General Aviation community, will benefit from technology enhancements and cost savings gained by elimination and reduction of services which are redundant, obsolete and/or do not align with Flight Service Core Services.

Detailed Justification for - 2C03 Alaska Flight Service Facility Modernization (AFSFM)

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Alaska Flight Service Facility Modernization (AFSFM)	$2,650	$2,700	$2,700

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. Alaska Flight Service Facility Modernization (AFSFM)	---	$2,000.0
B. In-Service Engineering	---	700.0

What is this program and what does the funding level support?

The AFSFM program is a multi-year facility modernization, improvement and sustainment program that addresses FAA Flight Service Stations in Alaska. Thirty-three percent of the Alaska Flight Service facilities were constructed in the 1970s and require extensive renovations to meet current building codes, fire life safety, electrical standards and/or heating and cooling systems that could disrupt flight service operations by reducing the reliability of flight service automation systems. The facilities do not meet the American's with Disabilities Act accessibility requirements.

These requirements are defined and imposed by the Uniform Federal Accessibility Standards and the Architectural Barriers Act Accessibility Standard. These conditions endanger FAA personnel health and safety and increase the risk of critical service outages.

Seventeen Flight Service Station facilities will be updated and improved to meet current environmental, safety and accessibility requirements and the infrastructure needs of Flight Service in a changing and emerging National Air Space.

For FY 2023, $2.0 million is requested to conduct Phase 1 of studies/research on future Alaska Flight Service Station facilities optimization, complete phase 2 of mechanical, electrical and major architectural upgrades at Barrow Flight Service

Station, complete phase 2 of modernization/upgrade of Flight Service Station Specialists' Workstation Consoles.

Also requested is In-service engineering that allows for immediate response and tactical distribution of resources to emerging technology solutions. For FY 2023, $700,000 is requested for ongoing engineering support of Flight Service Facilities.

What benefits will be provided to the American public through this request and why is this program necessary?

This program efficiently uses funds to correct safety and infrastructure deficiencies in older Flight Service Station facilities to bring them up to date with current building and safety codes and optimize infrastructure to meet Flight Service Operational needs. Project schedules are developed at least two years in advance, which allows opportunities to reduce costs through efficient use of engineering and technical resources. Additionally, this program allows the FAA to avoid hefty expenses and costs associated with unscheduled and emergency upgrades to Flight Service Facilities. Effectively managing this program to ensure costs for upgrades are within project scope provides cost savings to the American public.

Detailed Justification for - 2C04 Juneau Airport Wind System (JAWS) Technology Refresh

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Juneau Airport Wind System (JAWS) Technology Refresh	$1,000	$4,000	$500

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Juneau Airport Wind System (JAWS) Sustainment	---	$500.0

What is this program and what does the funding level support?

JAWS measures and transmits wind information to the Juneau Automated Flight Service Station, Alaska Airlines, and the National Weather Service for weather forecasting. Other Alaskan aviation users access JAWS data via the Internet. This data provides terrain induced wind and turbulence data that addresses safety of flight and decreases the probability of experiencing unnecessary weather related delays in and out of the Juneau International Airport, Alaska. Although JAWS data is advisory, it is essential for pilots to be aware of wind conditions that affect approach and departure paths because of the restrictive geographical features on both sides of the corridor in and out of the Juneau Airport.

Periodic replacement of commercial off-the-shelf system components is necessary because of the weather condition on the mountains where the wind sensors are located. Updating these sensors assures continued supportability of the system through an indefinite service life. This program will include the replacement of computers and controllers, radios, firmware and software, anemometers, profilers, and may include National Center for Atmospheric Research consulting support.

For FY 2023, $500,000 is requested to acquire and install replacement wind profiler subsystems. Timely replacement of the wind profilers is critical to ensure sustainment of the JAWS turbulence alerting capabilities.

What benefits will be provided to the American public through this request and why is this program necessary?

During the JAWS Post Implementation Review, the system has achieved the baseline expectation for increased capacity with actual Required Navigational Procedures. The system has achieved 91 percent detection of all alert messages. JAWS has improved the commercial flight operations with a 52 percent improvement in flights diverted and 9.51 minutes of improvement in average arrival delays while improving arrivals on time. JAWS provides the safe operation of aircraft going in and out of Juneau Airport, and has received positive feedback from Alaska Airlines.

Detailed Justification for - 2C05 Weather Camera Program

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Weather Camera Program	$2,000	$2,000	$1,200

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Weather Camera Enhancement 1	---	$1,200.0

What is this program and what does the funding level support?

The Weather Camera program manages the operational Weather Cameras installed at airports and strategic en-route locations in to provide pilots, dispatchers, and flight service station specialists with real-time video weather information. The program office ensures that weather camera services are operational and readily accessible to pilots and aviation users. It provides camera operations restoral activities, logistics management, and technician training, and it manages all of its procurement and contract requirements including telecommunication services and site facility leases and agreements. Images are updated every 10 minutes and stored for six hours to be used in a loop function for weather trending analysis by pilots. These images are available through a user-friendly, web-enabled application: http://weathercams.faa.gov. In addition to improving aviation safety benefits, the cameras improve operator efficiency by reducing unnecessary flight time caused by weather-related deviations while in-flight.

In FY 2023, $1.2 million in requested to support a Final Investment Decision and to support planning and procurement in preparation for the expansion of camera systems in Alaska and the continental United States.

What benefits will be provided to the American public through this request and why is this program necessary?

The Weather Camera Program and its service continues to facilitate measurable reductions in weather-related aviation accidents, fatalities and weather-related flight interruptions and deviations. The actual accident statistics associated with this program in Alaska were reduced from .28 accidents per 100,000 operations in 2007 to .04 accidents per 100,000 operations in 2014, the last year that the metrics were calculated. With the expansion of camera services to Hawaii and the continental United States, it is expected that the aviation community throughout the National Air Space will obtain increases in safety and efficiencies similar to those experienced in Alaska.

Detailed Justification for - 2D01 Very High Frequency (VHF) Omnidirectional Radio Range (VOR) Minimum Operational Network (MON)

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Very High Frequency (VHF) Omnidirectional Radio Range (VOR) Minimum Operating Network (MON)	$19,000	$5,900	$7,100

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
VOR Minimum Operational Network (MON) Program Phase 2	---	$7,100.0

What is this program and what does the funding level support?

The Very High Frequency Omnidirectional Range Minimum Operational Network program is repurposing the Very High Frequency Omnidirectional Range network in the Contiguous United States to serve as a backup during Global Positioning System outages. The scope of the program includes the following:

- Amendment, cancelation, and replacement of Instrument Flight Procedures
- Flight inspections of procedures and new service volumes
- Relocation of any services and equipment dependent on a Very High Frequency Omnidirectional Range

The program will transition the legacy network of 896 Very High Frequency Omnidirectional Ranges in the Contiguous United States to a Minimum Operational Network of approximately 590 with a target date of FY 2030. The Minimum Operational Network will allow aircraft to navigate and land under Instrument Flight Rules in the event of disruption in a Global Positioning System signal; however, the planned backup capability will be less than the current network.

As the need for Very High Frequency Omnidirectional Range based procedures and routes decreases due to the transition to Performance Based Navigation, resources that are currently being spent in sustaining and operating the conventional airspace can be shifted for more efficient use.

For FY 2023, $7.1 million is requested to meet phase 2 program goals. The program will discontinue up to 34 Very High Frequency Omnidirectional Ranges and fund discontinuance work for 26 systems in FY 2024. Procedure work takes multiple years.

What benefits will be provided to the American public through this request and why is this program necessary?

The FAA is transitioning the National Airspace System to more efficient Performance Based Navigation routes and procedures, therefore fewer Very High Frequency Omnidirectional Ranges are needed. The benefits of reducing Very High Frequency Omnidirectional Ranges include opportunities for reduced operations and maintenance costs of instrument flight procedures, flight inspection, and opportunities to avoid potential recapitalization costs. This program will result in a more optimized National Airspace System, where the more efficient Performance Based Navigation operations will be primary and a Minimum Operational Network of Very High Frequency Omnidirectional Ranges will be retained to serve as a backup in the event of a Global Positioning System outage or interference.

Detailed Justification for - 2D02 Wide Area Augmentation System (WAAS) for GPS

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Wide Area Augmentation System (WAAS) for GPS	$83,900	$97,143	$91,800

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Wide Area Augmentation System Phase 4B	---	$91,800.0

What is this program and what does this funding level support?

WAAS is a system consisting of several components with the mission to augment GPS to enable the safe use of satellite navigation for all phases of flight, including precision approach. A network of 38 precisely located ground reference stations distributed across the United States, Canada and Mexico monitor the GPS satellite signals. GPS errors generated by the GPS satellite or caused by ionospheric distortion must be corrected or alerted within seconds to provide the accuracy and integrity required for a precision approach. Three master stations receive reference station data and calculate corrections and integrity messages for each GPS and WAAS Geostationary satellite. These corrections are sent from the master stations to uplink stations that provide the WAAS messages for transmission to three leased Geostationary communications satellites. The satellites receive and subsequently rebroadcast the messages to user receivers across the National Airspace System. User receivers process the messages to obtain a precise navigation position suitable to precision approach operations.

The FAA will continue to work collaboratively with the Department of Defense to assure GPS aviation safety and security, and to make sure changes to GPS do not adversely affect aviation, while supporting changes that improve GPS.

In 2023, the Program Office will conduct its first full year of WAAS Phase 4B. The program will focus on developing and deploying an initial Dual Frequency Service that will enable testing and prototyping of a future new operational satellite signal. In

addition, to sustain current services, the FAA must replace one of the GPS signals with a new safety of life signal. For those users who do not upgrade their avionics, WAAS will continue to support current single frequency based service on an existing frequency. The program will include continued sustainment of the constellation of geostationary satellites required to broadcast the WAAS signal.

For FY 2023, $91.8 million is requested to execute planned tasks that include:

- Maintain existing three geostationary satellite leases.

- Under Dual Frequency Operations Segment 2 Contract, conduct architecture studies to support the AIX-Linux transition, security upgrades, implementation of the Internet Protocol communications, and the dual frequency service.

- Field the Geostationary Uplink Station receiver replacement.

- Support agency wide initiative to transition to performance based navigation through the development and publication of WAAS-enabled Required Navigation (GPS) procedures with Localizer Performance with Vertical Guidance/Localizer Performance lines of minima.

- Update prototype Dual-Frequency integrity algorithms.

- Demonstration of horizontal ARAIM service performance using prototype Integrity Support Message Generation capability.

- Evaluate final iteration of GPS Next Generation Operational Control System (OCX) for aviation safety and security

- Support Position Navigation and Timing efforts in response to Executive Order 13905 and Space Policy Directive 7 Implementation Plan authentication requirements

- Conduct technical engineering and program support to include:

    - System Engineering and Hardware and Software development oversight
    - Hazardously Misleading Information analysis and Reliability-Maintainability-Availability analysis
    - System performance assessment

- Complete Fiscal Year 2023 Security Authorization

What benefits will be provided to the American public through this request and why is this program necessary?

WAAS directly supports national air space modernization by supporting the Performance-Based Navigation framework and providing additional precision approach services.

It reduces the impact of constrained aircraft navigation that is tied to the location of ground-based Navigation Aids, which restrict aircraft paths and available airspace. GPS operations remove the requirement for a direct link between aircraft navigation and a Navigation Aid, thereby allowing aircraft better access and permitting flexibility of point-to-point operations.

The program also supports operations by providing over 4,700 satellite-based low visibility landing procedures for aircraft to a Decision Altitude as low as 200 feet above the runway and is available on an estimated 200,000 aircraft. Equipage is expected to continue to grow until Instrument Flight Rules operators outside of major airports commonly use these procedures. Performance-Based Navigation framework is supported by the program in the enabling of technology that transmits precision position, navigation, and timing services that supports Automatic Dependent Surveillance-Broadcast.

The Dual Frequency Operations 2 Prime contract award as part of Phase 4B will provide the infrastructure for dual frequency satellite operations. Dual Frequency allows for greater safety as well as a higher chance of completing an approach in inclement weather conditions. For many paved public airports without a precision approach, the use of a satellite based approach with minima of ½ mile visibility can be achieved without requiring significant airport improvements. The program will continue to publish procedures until all qualified runways are equipped with a WAAS approach based capability.

Real time data and plots, daily plots, performance videos and performance analysis is available at the following website: http://www.nstb.tc.faa.gov/.

Detailed Justification for - 2D03 Instrument Flight Procedure Automation (IFPA)

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Instrument Flight Procedure Automation (IFPA)	$0	$1,000	$3,600

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Instrumental Flight Procedure Sustainment 3	---	$3,600.0

What is this program and what does the funding level support?

Much like on-ramps, off-ramps, and highways in the sky, Instrument Flight Procedures provide commercial airline and general aviation pilots with approach and departure paths into and out of airports that are clear of obstacles such as cell towers, buildings and trees. The IFPA suite of Information Technology systems are used in the design/development, documentation, and tracking/reporting of Instrument Flight Procedures in the FAA.

For FY 2023, $3.6 million is requested to complete IFPA commercial off-the-shelf Personal Computer hardware technology replacement, continue the modular development and testing of Terminal Area Route Generation, Evaluation and Traffic Simulation (TARGETS) tool for Instrument Flight Procedure design/development capabilities, and enhance IFPA Documentation systems to include Standard Terminal Arrival Route procedures. The TARGETS tool, one of the IFPA suite's information technology tools, provides three-dimensional design capabilities for Performance Based Navigation, which is satellite based, and conventional, which is ground based, navigation for design/development of Instrument Flight Procedures.

What benefits will be provided to the American public through this request and why is this program necessary?

The IFPA suite provided productivity gains for all Aeronautical Information Services' major work products. Since the program's inception, the development time required for new and amended Instrument Flight Procedures, Notices to Airmen generation time, and obstacle evaluation time have all been reduced. These efficiency gains are multiplied by the hundreds and thousands of these products produced and maintained on an annual basis and they reduce the costs for these activities to the American public.

In addition, IFPA enables the efficient design, documentation, and publication of new and revised Instrument Flight Procedures increasing the airport arrival capacity for the nation's busiest airports and metropolitan areas when visibility is restricted. IFPA increases automated capabilities for all types of precision and non-precision flight procedures including Performance Based Navigation and conventional navigation.

Detailed Justification for - 2D04 Runway Safety Areas (RSA) – Navigational Mitigation

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Runway Safety Areas (RSA) – Navigational Mitigation	$1,800	$800	$2,500

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Runway Safety Areas (RSA) Phase 2	---	$2,500.0

What is this program and what does this funding level support?

For FY 2023, $2.5 million is requested to supply the RSA Phase II Program with additional funds. This amount will fully fund approximately eight projects across three service areas and be completed in FY 2024.

The scope of the work will range from the installation of frangible connections on identified structures to the relocation of facilities within and outside the RSA. These facilities or structures are classified as: 1) fixed by function and 2) not fixed by function. Objects that are fixed by function are permitted within the RSA as long as it meets the frangibility requirements. The RSA must be free of all objects that are three inches above the grade and are not frangible, do not break apart into fragments. Objects that are not considered fixed by function will be moved outside the RSA to extent practical.

What benefits will be provided to the American public through this request and why is this program necessary?

Compliance with the RSA standards provide a measure of safety in the event of an aircraft's excursion from the runway by significantly reducing the extent of personal injury or aircraft damage during overruns, undershoots and veer-offs. Thus, the

primary benefit of the RSA Phase II program is the prevention of loss of life from aircraft striking non-compliant Navigational Aids located in designated safety areas.

Detailed Justification for - 2D05 Landing and Lighting Portfolio

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Landing and Lighting Portfolio	$64,930	$63,416	$60,800

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. Very High Frequency Omni Directional Range collocated with Tactical Air Navigation	1	$5,300.0
B. Instrument Landing System Sustainment	2	5,000.0
C. Distance Measuring Equipment Sustainment	15	4,500.0
D. Navigational Aids Sustainment	1	14,300.0
E. Visual Navigation Aids for New Qualifiers	2	2,000.0
F. Runway Visual Range Sustainment	25	20,900.0
G. Approach Lighting System Safety Enhancement	1	4,500.0
H. Replace Visual Approach Slope Indicator with Precision Path Approach Indicator	2	2,900.0
I. In-Service Engineering	---	1,400.0

What is this Program and what does the funding level support?

The Landing and Lighting Portfolio contains critical ground infrastructure that collectively enables all aircraft to navigate the established aircraft routes in the sky as well as the ability to safely descend and land on the airport runway. The work under this portfolio includes assessment of the systems to determine the need for system relocations, operational modifications, sustainment work to maintain and/or improve system performance, and to procure and install systems as needed.

A. Very High Frequency Omni Directional Range Collocated with Tactical Air Navigation:

Relocates and refreshes technology at Very High Frequency Omni Directional Range facilities as well as Very High Frequency Omni Directional Range that are collocated

with Tactical Air Navigation facilities. This project improves Very High Frequency Omni Directional Range operational performance by procuring and installing Doppler electronic kits and Doppler antenna hardware kits to upgrade the conventional systems. Numerous systems have radial restrictions because of encroachment by obstacles that block the transmission of the signals. Doppler upgrades eliminate signal reflection restrictions caused by newly constructed tall buildings, nearby industrial parks with a high concentration of metallic buildings, overhead transmission lines, radio, television and cellphone towers, and wind farm stations. The Very High Frequency Omni Directional Range and Very High Omni Directional Range Collocated with Tactical Air Navigation systems provide navigational guidance for civilian and military aircraft in both the en route and terminal areas. For FY 2023, $5.3 million is requested for engineering and technical services/support, to incrementally fund one on-going Very High Frequency Omni Directional Range Collocated with Tactical Air Navigation project and to fund nine Tactical Air Navigation to Distance Measuring Equipment conversion projects.

B. Instrument Landing Systems:

Supports the establishment and sustainment of Instrument Landing Systems and/or the associated runway approach lighting systems that support all categories of instrument landing approaches. An Instrument Landing System precision approach is comprised of a grouping of electronic devices that include:

- Localizer
- Glide Slope
- Marker Beacons
- Ancillary aids such as Distance Measuring Equipment, Approach Lighting Systems, and Runway Visual Range.

These systems provide landing aircraft with both electronic guidance and visual landing aids. These systems allow properly equipped aircraft to land safely in adverse weather conditions. The Instrument Landing System provides both vertical and lateral guidance information for the pilot to allow safe landing to touchdown and rollout. The components of an Instrument Landing System sends information to the cockpit so that the pilot can maintain a predetermined flight path to the runway even in low visibility conditions. The Instrument Landing Systems also provides a backup landing capability in the event of a loss of Global Navigation Satellite System service. For FY 2023, $5.0 million is requested for engineering and technical services/support, procure one Instrument Landing Systems system and ancillary equipment, and continue to incrementally fund one runway Approach Lighting System ALSF-2 project.

C. Distance Measuring Equipment:

Pilots use this radio navigation aid to determine the aircraft slant distance from the Distance Measuring Equipment location. The program is procuring and installing state-of-the-art Distance Measuring Equipment systems to:

- Support replacement of systems that have exceeded their service life expectancy
- Establish new systems at qualifying airports
- Relocate Distance Measuring Equipment facilities
- Establish Distance Measuring Equipment systems in lieu of Instrument Landing System marker beacons

Distance Measuring Equipment reduces the need for less desirable step-down non-precision approach procedures in which a pilot descends to the minimum allowable altitude to locate the runway visually. These systems lead to better specification and control over the vertical descent profile as well as reducing controlled-flight-into-terrain risk. For FY 2023, $4.5 million is requested for program management, engineering/technical services support, procurement of five Distance Measuring Equipment systems, and complete 10 establish/replacement Distance Measuring Equipment projects.

D. Navigational Aids Sustainment:

Renovates or replaces airport approach lighting systems at sites where there is a high risk for failure and where that failure would result in loss of the primary precision approach. Navigational Aids include:

- Medium Approach Lighting System with Runway Alignment Indicator Lights for Category I approaches
- High Intensity Approach Lighting System with Sequencing Flashing Lights systems for Category II/III approaches
- Runway End Identifier Lights
- Lead-In Lights
- Precision Approach Path Indicator

For FY 2023, $14.3 million is requested to procure Receiver and Decoders, and initiate the procurement of Remote Radio Control Systems, Semi-Flush Light Fixtures for Approach Lighting System with Sequencing Flashing Lights systems and Medium Approach Lighting System with Runway Alignment Indicator Lights and Medium Approach Lighting System with Runway Alignment Indicator Lights, and complete

one Medium Approach Lighting System with Runway Alignment Indicator Lights installation project.

E. Visual Navigational Aids for New Qualifiers:

These systems facilitate the transition from cockpit instruments to external visual references during the final landing phase. Different categories and types of approaches require different visual Navigation Aid equipment. This program supports the procurement, installation, and commissioning of Precision Approach Path Indicator systems and Runway End Identifier Lights systems. The Precision Approach Path Indicator provides visual glide slope information on approach to pilots and enables them to make a stabilized descent with a safe margin of approach clearance over obstructions. The system projects a pattern of red and white lights along the desired glide slope so a pilot can tell whether they are on the glide slope and how to correct their glide slope if they are above or below it.

Runway End Identifier Lights are a visual aid that provides the pilot with a rapid and positive identification of the runway end in use during approach. The system consists of two simultaneously flashing white lights, one on each side of the runway-landing threshold. For FY 2023, $2.0 million is requested to procure two LED Precision Approach Path Indicator systems and to install LED Precision Approach Path Indicator at two locations.

F. Runway Visual Range Replacement and Establishment:

Allows airports to conduct takeoff and landing operations during conditions of low visibility. Replaces older equipment with Personal Computer Based equipment as well as equipment for sites that have qualified for an upgrade from a Category I to a Category II/III precision approach. Runway Visual Range provides air traffic controllers with a measurement of the visibility at key points along a runway that is used to decide whether it is safe to take off or land during limited visibility conditions. During reduced visibility weather conditions, Runway Visual Range system measurements are used by Air Traffic to establish airport operating categories; thus, properly equipped aircraft with a trained crew may continue operations under reduced visibility (Category I, Category II and Category III) conditions.

Runway Visual Range decreases diversions and delays at an airport by providing an accurate measure of the runway visibility. This information affects airline scheduling decisions and air traffic decisions regarding whether flight plans should be approved for an aircraft to fly to or take off from an airport with low visibility. For FY 2023, $20.9 million is requested for engineering and technical services/support, procurement of Runway Visual Range systems and spare equipment and replace Runway Visual Range systems at approximately 25 locations.

G. Approach Lighting System Safety Enhancement:

Upgrades and enhances aging approach lighting systems in the National Airspace System. The project upgrades the equipment to current standards and reduces the potential severity of take-off and landing accidents by replacing rigid structures with lightweight and low-impact resistant structures that collapse or break apart upon impact. The entire approach lighting system is replaced when rigid structures are replaced. The High Intensity Approach Lighting System with Sequencing Flashing Lights provides visual information on whether the pilot is aligned with the runway centerline, the aircraft's height above the runway plane, roll guidance, and horizontal reference for Category II and III Precision Approaches.

The Medium Approach Lighting System with Runway Alignment Indicator Lights provides visual information on runway alignment, height perception, roll guidance, horizontal references for Category I Precision, and Special Authorization Category II Approaches. For FY 2023, $4.5 million is requested for engineering and technical services/support; the program will procure LED PAR-38 and LED PAR-56s lamps, procure Medium Approach Lighting System with Runway Alignment Indicator Lights ancillary equipment, and complete Medium Approach Lighting System with Runway Alignment Indicator Lights replacement at one location.

H. Replace Visual Approach Slope Indicator with Precision Approach Path Indicator:

The International Civil Aviation Organization has recommended that all international airports replace the Visual Approach Slope Indicator lights with Precision Approach Path Indicator lights. This standardizes the equipment used to allow pilots to determine visually that they are on the proper glideslope for landing. The program supports the procurement, installation, and commissioning of Precision Approach Path Indicator systems in order to comply with this recommendation. For FY 2023, $2.9 million is requested for engineering and technical services/support; to procure two LED Precision Approach Path Indicator systems and to replace the Visual Approach Slope Indicator systems with Precision Approach Path Indicator systems at two locations.

I. In-Service Engineering:

For FY 2023, $1.4 million is requested for ongoing engineering support of the Landing and Lighting Portfolio.

What benefits will be provided to the American Public through this request and why is the program necessary?

The FAA is transitioning the national airspace system to more efficient Performance Based Navigation routes and procedures that rely on satellite technology. To achieve the transition, FAA is aggressively pursuing the implementation of satellite navigation and the sustainment of the ground based navigation infrastructure.

Ground Based Navigational Aids will continue to provide a backup function, as required, in the event of a Global Positioning System outage to ensure consistent and reliable landing operations and provide resiliency in the navigation domain.

Visual Navigation Aids must continue to identify runway parameters, provide visual landing cues, and identify visibility constraints to commercial and general aviation pilots. These visual systems provide enhanced safety of operations for landing aircraft and the American public.

Detailed Justification for - 2D06 Distance Measuring Equipment (DME), Very High Frequency (VHF) Omni-Directional Range (VOR), Tactical Air Navigational (TACAN) (DVT) Sustainment Portfolio

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
DVT Sustainment Portfolio	$10,000	$10,000	$10,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
DVT Sustainment Portfolio	---	$10,000.0

What is this program, and what does the funding level support?

The FAA is committed to ensuring that the national airspace system navigational infrastructure remains safe, secure, sustainable, and resilient. The systems being sustained and replaced under this program are over 30 years old and must be sustained/replaced to provide resiliency during any Global Positioning System service interruptions. The DVT Sustainment Program intends to provide long-term sustainment and replacement of Distance Measuring Equipment, Very High-Frequency Omni-Directional Range, and Tactical Air Navigation services.

Distance Measuring Equipment provides slant range (Distance) information to all aircraft and enables area navigation service for air carrier aircraft. Area navigation service is a method of instrument flight rules navigation that allows an aircraft to choose any course within a network of navigation beacons rather than navigate point to point.

Very High-Frequency Omni-Directional Range systems provide azimuth (position) information for En route navigation and approach services. This Navigation Aid allows aircraft to fly point to point along established airways between systems.

Tactical Air Navigational systems provide azimuth information to military aircraft and slant range information to military and civilian aircraft.

The DVT Sustainment Program will sustain/replace Distance Measuring Equipment, Very-High Frequency Omni-Directional Range and Tactical Air Navigational systems installed in the National Airspace System, and there are approximately 1,500 systems at approximately 1,000 locations included in the DVT sustainment program.

For FY 2023, $10.0 million is requested to support the following Program activities:

- Program management support for all the activities related to the management of the program, contractual documentation and procurement planning
- Continue the Tactical Air Navigational Antenna Contract Activities
- Site Assessment for operational test sites

What benefits will be provided to the American public through this request, and why is this program necessary?

The DVT Sustainment Program will ensure this resilient navigational backup infrastructure is available for the foreseeable future by providing effective, cost-efficient operations and maintenance solutions that improve NavAid reliability and availability and address long term sustainment challenges.

Detailed Justification for - 2E01 Fuel Storage Tank Replacement and Management

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Fuel Storage Tank Replacement and Management	$32,400	$32,400	$26,200

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Fuel Storage Tank Replacement and Management	64	$26,200.0

What is this program and what does this funding level support?

The Air Traffic active tank system inventory includes over 3,700 units that support communication, navigation, weather, and surveillance missions. Fuel storage tank (FST) systems store and supply electrical generator fuel, lubricating oil, building heater and boiler system fuel, service vehicle fuel, liquid waste, and similar bulk liquids.

FST system manufacture, installation, operation, and disposal is regulated under Federal, State and local statutes, including the Clean Water Act, the Oil Pollution Act, and the Resource Conservation and Recovery Act, among others, with significant penalties for compliance failures. The FST program operates to attain three primary objectives:

- Sustain national airspace system operational readiness - A loss of integrity on any storage tank component can negatively affect the operational capacity of the supported systems and may ultimately result in a total air traffic control facility outage

- Mitigate environmental damage and regulatory non-compliance - Fiscal impacts include costly cleanup activities, fines, and unplanned retrofit costs

- Conduct effective in-service management and lifecycle replacement - As fuel tanks age beyond their service life, there is an escalating risk of failure and associated leakage with attendant operational impacts and environmental damage

For FY 2023, $26.2 million is requested to fund tank unit replacements, modernizations, and upgrades at approximately one En route Air Traffic Control Center, three Prime Power, and 60 General National Airspace System locations across the national airspace system. In coordination with the Electrical Power Systems – Sustain/Support budget line item, the FST program will perform power systems modifications, engine systems replacement, or engine system removal when circumstances are warranted to save funding and align schedules across dependent programs for FST and power systems implementation work at the same facilities.

What benefits will be provided to the American public through this request and why is this program necessary?

Executing an FST lifecycle sustainment program achieves the cost benefit of sustaining availability of the systems for national airspace operations, reducing the risk of leaking FST systems, minimizing adverse impact to personal and environmental safety, and preventing regulatory fines of up to $32,500 per day per unit for failing to comply with regulatory standards.

Monthly tracking confirms fuel systems continually achieve the goal of 99.7 percent sustained operational availability. Operating modern equipment, sustainable, and regulatory-compliant fuel systems mitigate damage and associated costs resulting from incidental release of hazardous, toxic, or dangerous materials and assures the travelling public and aviation stakeholders a reliable and safe transit experience.

Detailed Justification for- 2E02 Unstaffed Infrastructure Sustainment (UIS)

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Unstaffed Infrastructure Sustainment (UIS)	$60,200	$60,200	$56,300

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. Unstaffed Infrastructure Sustainment (UIS)	181	$54,900.0
B. In-Service Engineering	---	1,400.0

What is this program and what does this funding level support?

The UIS program sustains national airspace supporting infrastructure at approximately 12,000 sites in the national airspace system, which enable the reliable and continuous operations of surveillance, navigation, communication, and weather equipment. Unstaffed infrastructure protects electronic equipment from weather hazards and unauthorized entry. UIS sustainment includes major repairs to and replacement of real property assets and structures that are normally not staffed, such as:

- Major repair, refurbishment, and replacement of national airspace system antenna and equipment towers such as those at Remote Transmitter Receiver and Remote Communications Air/Ground sites

- Major repair, refurbishment, and replacement of buildings; shelters; roofs; Heating Ventilation and Air Conditioning equipment; electrical panels and distribution wiring; locks and alarm sensors; lighting; access roads; grounds; and fencing

- The National Airspace System radio tower assessment program

A. Unstaffed Infrastructure Sustainment (UIS)

For FY 2023, $54.9 million is requested to complete 181 unstaffed infrastructure sustainment projects, which are spread across the United States and adjacent countries/US territories. The UIS Program sustains the buildings, broadcast towers, air conditioning systems, roads, fences, and other related infrastructure at approximately 12,000 unstaffed sites. This infrastructure, which houses and enables essentially all of the FAA's Communications, Surveillance, Weather, and Navigation systems, is past its service life and requires a comprehensive sustainment effort to ensure the integrity of the national airspace system.

B. In-Service Engineering

For FY 2023, $1.4 million is requested for in-service engineering activities that provide an immediate response to emerging technology issues.

What benefits will be provided to the American public through this request and why is this program necessary?

The American Public will benefit from the national airspace system infrastructure sustained by this program. This program will extend the operational service life of national airspace system remote facilities that protect and enable critical Communications, Surveillance, Weather, and Navigation systems.

The UIS Program has the second largest backlog in the Facilities Infrastructure Portfolio at approximately $1.3 billion. A significant portion of this backlog is associated with the 7,700 radio towers.

Detailed Justification for - 2E03 Aircraft Replacement and Related Equipment Program

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Aircraft Replacement and Related Equipment Program	$36,100	$35,000	$46,200

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. Aircraft Related Equipment Sustainment	---	$7,000.0
B. Flight Program Fleet Modernization	---	39,200.0

What is this program and what does the funding level support?

This program requests funding for the FAA Flight Program Operations Fleet Modernization Strategy. The strategy incorporates all aspects of FAA flight program safety, administration, operations, training, and sustainment. Flight Program Operations conducts multiple missions in FAA aircraft (owned, leased, rented, unmanned aircraft systems). The FAA is currently in the process of reducing the fleet from twelve different makes and models to two makes and models. In addition to supporting the purchase of new aircraft, this program will continue to sustain and modernize the current fleet, improve flight operations infrastructure, and reduce aircraft downtime and maintenance costs.

A. Aircraft Related Equipment Sustainment:

This project ensures FAA owned and operated aircraft continue to meet regulatory and sustainment requirements while avoiding obsolescence. For FY 2023, $7.0 million is requested for ongoing operational sustainment, modifications and upgrades to aircraft, avionics, and mission equipment.

B. Flight Program Fleet Modernization Phase 1:

This project requests funding to procure replacement aircraft that will continue to meet all aspects of the FAA's flight program responsibilities. Additionally, these aircraft

will require equipage and modification to achieve that mission. The aircraft will enable the service unit's core business of safe and efficient flight operations in support of four primary missions:

- **Aviation Safety Training:** Provide training and currency/proficiency services to Office of Aviation Safety personnel, including aviation safety inspectors and flight test personnel.

- **Flight Inspection:** Ensure the integrity of instrument approaches and airway procedures that constitute the National Airspace System infrastructure and the agency's international commitments, including airborne inspection of all space- and ground-based instrument flight procedures and the validation of electronic signals in space transmitted from ground navigation systems. Flight procedures and surveillance systems are evaluated for accuracy, aeronautical data, human factors fly ability, and obstacle clearance. Flight Program Operations also performs inspections of Department of Defense navigational facilities.

- **Research, Development, Test and Evaluation Support**: Conduct flights supporting agency research, development, test and evaluation of new electronic aids, air traffic procedures, and aircraft improvements, under approved agency projects.

- **Critical Event Response/Transportation:** Provide transportation required to accomplish official FAA responsibilities in times of emergency or disaster such as hurricane response, as well as support the National Transportation Safety Board in carrying out its duties.

For FY 2023, $39.2 million is requested for procurement and modification of two aircraft in accordance with the Flight Program Operations fleet modernization strategy, aircraft modifications, and program support and acquisition planning.

What benefits will be provided to the American public through this request and why is this program necessary?

Safe, supportable, and regulatory compliant aircraft are necessary for the continued successful performance of the Flight Program Operations missions. This request provides the means to support standardization and sustainment of the FAA aircraft fleet, and provides the infrastructure to manage the flight program and process mission results. This program will save taxpayer dollars through the replacement of obsolete and unsupportable aircraft and components. In addition, standardization of the FAA fleet will improve the long-term efficiency of sustainment, and provide improved continuity of service.

Detailed Justification for - 2E04 Airport Cable Loop Systems – Sustained Support

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Airport Cable Loop Systems – Sustained Support	$9,000	$10,000	$10,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Airport Cable Loop Systems Sustained Support	---	$10,000.0

What is this program and what does the funding level support?

For FY 2023, $10.0 million is requested for advanced engineering, construction activities, and Fiber Optic Transmission Systems equipment installations. The Airport Cable Loop Systems Sustainment (ACLS) program replaces underground telecommunications cable infrastructure systems that are essential to the safe and efficient operation of FAA's navigation, surveillance and communication systems. The ACLS program is committed to continue with five large-scale Airport Cable Loop projects and complete four small scale sites as determined by the Air to Ground Communications Integrated Requirements Team in FY 2023.

The program replaces existing on-airport, copper-based, signal/control cable lines that have deteriorated. A portion of the FY 2023 budget will be used to procure equipment to replace obsolete underground telecommunications cable infrastructure systems that are vulnerable to failure and have caused flight delays related to these cable outages. The primary focus will be on projects at airports with high traffic counts and enplanements. These lines feed airport surveillance radar, air/ground communications, landing systems data and information to the Air Traffic Control Tower, and operational and maintenance information to FAA-staffed facilities. Where cost effective, the program will install fiber optic cable in a ring configuration to provide communications diversity.

The program reduces the number of unplanned outages due to deteriorated copper lines, and improves signaling and communications, which allows for increased operational availability of infrastructure, such as navigation, surveillance, and communication systems. There have been 1,498 delays and outages associated with on- airport cable loop from 2004 to 2015 for airports in the national airspace system, which the Airport Cable Loop program will reduce overtime. The House Committee has made additional requests on addressing this issue.

This program, along with multiple other programs, has mutual dependencies on the telecommunications infrastructure. More than 15 FAA programs rely on Airport Cable Loop to provide connectivity to and from control facilities.

What benefits will be provided to the American public through this request and why is this program necessary?

Airport Cable Loop Systems Sustainment is presently reducing on-airport telecommunication infrastructure related delays of core airports by approximately three percent annually. System reliability and safety are enhanced due to increased system performance from redundant or diverse pathways provided by the cable loop system. Standardizing requirements will simplify and reduce operation requirements for logistics, configuration management, training, procurement, and depot support, which saves taxpayer dollars.

Detailed Justification for - 2E05 Alaskan Satellite Telecommunications Infrastructure

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Alaskan Satellite Telecommunications Infrastructure	$1,000	$0	$500

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Alaskan Satellite Telecommunications Infrastructure	---	$500.0

What is this program and what does the funding level support?

The ASTI program modernized the Alaskan National Airspace System Interfacility Communications System (ANICS) to support National Airspace Systems and Services by providing Alaska with critical, essential, and routine air traffic control telecommunications capabilities. ANICS provided 90 percent of the communications to En Route, Terminal Air Traffic Control, and Flight Service in Alaska and the associated oceanic airspace. ASTI accommodated legacy serial interfaces for National Airspace Systems and provided ability to migrate to modern interfaces.

The ASTI Sustainment program addresses system availability and lifecycle support of the deployed ASTI network by providing and maintaining highly reliable service levels of interfacility communications in Alaska via satellite-based network to overcome lack of terrestrial infrastructure.

For FY 2023, $500,000 is requested and will be used for contractor and program management support, as well as supporting the remaining software/hardware releases to allow for continual maintenance to the base system deployed. The yearly releases will help to ensure that components fielded under ASTI are maintained and remain operational through the system lifecycle.

What benefits will be provided to the American public through this request and why is this program necessary?

The objective of the ASTI Sustainment program is to keep the deployed system maintainable, operational and reliable throughout the system lifecycle. The program will address non-core requirements that were not included in the original ASTI modernization program, along with replacing End-of-Life hardware/software components. The program will upgrade and repair critical Radio Frequency infrastructure that was not addressed in the Modernization Program. Additionally, the program will keep the system current with evolving network security requirements by funding updates to software and systems as security requirements evolve. Finally, the program will be researching system architecture changes to support evolving Internet Protocol transport requirements needed to support future National Airspace System changes.

Detailed Justification for - 2E06 Real Property Disposition

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Real Property Disposition	$4,800	$4,800	$4,500

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Real Property Disposition	30	$4,500.0

What is this program and what does this funding level support?

The Real Property Disposition program works with other FAA program offices to identify and plan for the timely disposition of real property assets that are no longer required by the agency. When the FAA decommissions a site or system, this program assesses the property to determine the best course of action for disposal. Planning for the orderly disposition of property at multiple locations across the country is prioritized considering cost, available technical resources, and potential environmental or safety impacts if disposition is delayed. Demand for disposal of real property is increasing as ground based sites are being minimized in the national airspace system as the FAA moves to satellite-based technology.

The program provides services to:

- Identify, verify, and schedule candidate sites and structures
- Investigate and document the structures to be removed, environmental conditions, and site restorations required to develop project scopes and schedules
- Preserve and protect environmental resources
- Abate and remediate hazardous materials

- Demolish and restore sites
- Develop environmental due diligence reports for the transfer of government-owned and leased properties
- Support the Acquisitions Office in the sale of property and the termination of leases

For FY 2023, $4.5 million is requested to fund the final disposition of decommissioned infrastructure at approximately 30 sites.

What benefits will be provided to the American public through this request and why is this program necessary?

The program provides cost savings by reducing operations and maintenance costs (e.g. grass cutting, snow removal, utility fees, communications frequency fees, etc.) and cost avoidance by eliminating lease costs. The final disposal of the FAA's unneeded real property assets supports effective financial management by optimizing maintenance costs and disposing of excess assets. Between FY 2008 and FY 2020, the Real Property Disposition Program disposed of 1,894 facilities at a 10-year cost avoidance of $57.4 million and generated $5.7 million from land and asset sales.

Detailed Justification for - 2E07 Electrical Power System – Sustain/Support

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Electrical Power System – Sustain/Support	$149,400	$149,400	$139,800

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Electrical Power System – Sustain/Support	304	$139,800.0

What is this program and what does this funding level support?

For FY 2023, $139.8 million is requested to sustain components of the FAA's power system infrastructure necessary to operate the national airspace system. This program sustains components of the FAA's power system infrastructure to ensure air traffic operational needs are met with high quality electrical power. The Power Services Group manages this program by sustaining and supporting the existing electrical power components and systems that include primary power, power conditioning, power regulation, power distribution, standby power, onsite prime power, grounding, monitoring, and electrical power cable infrastructure. Power systems' performance is critical to national airspace system operations and any power disruptions are briefed daily to the administrator and senior management. The requested funding will address a large backlog and systemic problems by replacing obsolete equipment and electrical systems that power all national airspace systems.

The Electrical Power program sustains the following electrical power systems areas:

- Program Management and System Engineering: provides system engineering to define and document customer requirements for national airspace power systems. It administers requirements from inception to the end of the system operational life. This effort includes identifying alternatives, preparing drawings, administering training, and completing power projects in support of the specific power programs listed below.

- Engine Generators: provides backup power when commercial power is unavailable or becomes unreliable. Engine generators have a 20 year expected system operational life. In coordination with the Fuel Storage Tank program, the program performs fuel systems modifications, fuel tank replacement, or fuel tank removal when circumstances are warranted to save funding and align schedules across dependent programs at the same facilities.

- Power Conditioning System and Uninterruptible Power Supply: provides a short-duration Alternating Current power source that prevents commercial power disruptions and surges from adversely affecting electronic system performance and critical national airspace services. This equipment has an expected system operation life of up to 15 years.

- Lightning Protection, Grounding, Bonding and Shielding: minimizes electrical hazards to personnel, facilities, and electronic equipment caused by lightning, voltage surges, electrostatic discharge and power faults at national airspace facilities. Sites are protected to minimize or preclude outages.

- Direct Current Backup Systems: Using commercial power as the source, Direct Current Backup Systems provides and distributes conditioned Alternating Current and Direct Current power to national airspace electronic equipment. It provides a medium term power source at facilities with limited power needs. These systems have an expected operational life of up to 15 years.

- National Airspace System Batteries: large "stationary" battery banks that support Power Conditioning Systems, Direct Current Back up Systems, Very High Frequency Omnidirectional Range, Backup Emergency Communication and selected Surveillance, General National Airspace Systems, Communications and Navigation equipment. The Program tracks stationary batteries for National Airspace System equipment, replacing battery banks that have a service life that is less than the equipment it supports or experience degradation.

- Electrical Line Distribution: consists of underground distribution cables, transformers, and switchgear at airports and ancillary facilities that distribute utility level electrical power to national airspace facilities.

- ARTCC Critical and Essential Power Systems: provides high-quality and high-reliability power to 21 En Route ARTCC's and three large Terminal Radar Approach Control (TRACONs) Facilities. The system consists of engine generators, switchgear, and uninterruptable power supply systems. Most of this equipment is obsolete with engine generators having an average age greater than 50 years, which is beyond its expected system operational life of 20 years. The uninterruptable power supplies are more than 20 years old, obsolete, out of production and unsupportable. ARTCC Critical and Essential Power Systems represent the largest portion of the Power Systems sustainment backlog.

- Critical Power Distribution System: supports FAA mission critical Terminal facilities such as Combined Control Facilities, large TRACONs and most significant Air Traffic Control Towers. It provides a highly reliable power system with multiple by-pass points that support efficient maintainability. It significantly improves personal safety during maintenance activities, addresses obsolescence, ensures effective national training, and timely logistics. This system consists of electrical distribution equipment, transfer switches, engine generators, uninterruptable power supplies, and batteries. The Power program maintains design and configuration control of all of these systems throughout the national airspace system.

- Environmental Remote Monitoring System: provides power system sensors and interfaces to the Environmental Remote Monitoring System network, which reports power system status to the operations control centers. The information provides the FAA with real-time data on the status of the systems, allowing a prompt response to system-related issues that might otherwise go undetected.

- Alternative Energy Systems: sustains and supports a broad range of clean energy technologies to meet national airspace operational demands. These technologies reduce the FAA's carbon footprint and help to achieve the goals of Executive Order 13693, Federal Leadership in Environmental, Energy, and Economic Performance. These systems reduce fossil fuel dependencies and include solar energy, wind energy, fuel cell, and geothermal. This project sustains the electronics at 10 years and photocells at 20 years.

- Visual Navigational Aids Cabling: provides power through dedicated, long runs of underground cables supporting Visual Navigational Aid systems at airports. These systems include Approach Lighting System with Sequenced Flashing Lights and Medium-Intensity Approach Lighting System with Runway Alignment Indicator Lights. Visual Navigational Aids provide guidance information to help pilots locate the runway and land safely. Outages can affect Instrument Flight Rules equipped aircraft in limited visibility weather conditions.

What benefits will be provided to the American public through this request and why is this program necessary?

The Power program funds the replacement, refurbishment, purchase, and installation of components to sustain national airspace electrical power infrastructure valued at approximately $2 billion, which in turn sustains billions of dollars' worth of national airspace services to the American public. Commercial power disruption can result in flights being kept on the ground, placed in airborne holding patterns, or re-routed to other airports.

This program prevents expensive damage to Air Traffic Control electronic equipment and enhances the safety of national airspace operations. The FAA's independent

Investment Planning and Analysis Office determined that a single ARTCC Critical and Essential Power Systems outage results in an economic impact to national airspace users of approximately $2.0 million per hour in terms of estimate is based on an August 15, 2016 En Route Automation Aircraft Direct Operating Costs and Passenger Value of Time savings. This Modernization (ERAM) outage event at the District of Columbia ARTCC. This program is vital to maintaining and increasing national airspace capacity, reliability, and availability through sustainment of power equipment so that systems and electronics can deliver their required availability.

Detailed Justification for - 2E08 Energy Management and Compliance (EMC)

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Energy Maintenance and Compliance	$7,400	$7,400	$6,900

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Energy Management and Compliance	21	$6,900.0

What is this program and what does this funding level support?

The EMC program orchestrates cost-effective reductions of energy and water use at air traffic facilities by coordinating policies, technical support, targeted infrastructure investments, and data analysis and reporting. By upgrading older facility infrastructure, such as mechanical and electrical systems, the program will not only reduce operational costs but will increase reliability of the national airspace system by reducing the likelihood of facility outages and disruptions that can be caused by out-of-service building systems. The EMC program promotes energy and water-use efficiency and the use of off-grid power and non-polluting energy sources for all activities and acquisitions.

For FY 2023, $6.9 million is requested to support the following:

- Perform energy and water improvements at 14 high energy using facilities
- Perform advanced meter installation at seven facilities
- Develop and implement performance-based contracts to maximize third-party investments in air traffic infrastructure
- Provide required quarterly and annual reports on progress against legislative and executive order mandates to the Department of Transportation, the Department of Energy, and the Office of Management and Budget

The EMC program has identified 325 facilities that comprise 75 percent of the Air Traffic Organizations energy usage. The mandates of the Energy Independence and Security Act and the Energy Policy Act require the agency to identify and implement recommended energy and water improvements to reduce utility usage and associated costs at these facilities. The program has already identified more than $200 million in recommended improvements to lower energy usage at air traffic facilities, many of which would pay back in fewer than 10 years.

What benefits will be provided to the American public through this request and why is this program necessary?

The EMC program is necessary to provide a coordinated approach for identifying and implementing cost-effective investments in the FAA infrastructure to reduce ongoing utility expenses. The American public benefits from reduced energy consumption at FAA facilities as well as cost savings that are the result of those efforts.

Detailed Justification for - 2E09 Child Care Center Sustainment

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Child Care Center Sustainment	$1,000	$1,000	$1,200

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Child Care Center Sustainment	12	$1,200.0

What is this program and what does this funding level support?

This project was implemented to respond to stakeholder-identified inefficiencies in FAA-owned child care centers. The scope of these sustainments is limited to operational changes that do not require significant capital investments nor involve significant systems complexity, interdependencies, or National Airspace System operational changes. The FAA-owned centers are reaching a facility age of 20 to 25 years. Many are in need of roof replacements, Heating Ventilation and Air Conditioning system upgrades, and modernization to meet safety and building code requirements. This program is a multi-year sustainment program that will address facility requirements for the 12 FAA Operated Child Care Centers. The Child Care Centers provide FAA personnel with priority enrollment and flexibility to meet the unique schedule needs of the FAA workforce; i.e. air traffic personnel. FAA is responsible for maintaining the safety of the buildings. The program is necessary to ensure that the Centers are properly maintained according to local building codes and regulations, and are safe and secure.

For FY 2023, $1.2 million is requested to modernize the 12 FAA Operated Centers that are in need of major projects and other expenses unique to a childcare center (e.g. kitchen, children size restrooms, outdoor playground equipment). Outdoor playground equipment located at FAA Child Care Centers is considered real property, permanent structures, and an integral part of the childcare center facility.

What benefits will be provided to the American public through this request and why is this program necessary?

The required funding specifically allocated to these Centers will decrease deferred maintenance, which is the cost of rebuilding or replacing components whose service life has exceeded their scheduled lifetime. It will increase the employee retention rate, employee satisfaction, loyalty, and decreases job vacancies. Employee satisfaction leads to more productive employees that benefit the American Public by making government more efficient. Additionally, these Centers have a 100 percent national childcare accreditation rate compared to only nine percent nationwide.

Detailed Justification for - 2E10 FAA Telecommunications Infrastructure

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
FAA Telecommunications Infrastructure	$34,700	$64,200	$69,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. FAA Enterprise Network Services	---	$49,000.0
B. FAA Telecommunications Infrastructure Sustainment 2	---	5,000.0
C. Time Division Multiplexing – to – Internet Protocol Migration	---	15,000.0

What is this program and what does this funding level support?

A. FAA Enterprise Network Services

This project is the successor to the existing FAA Telecommunications Infrastructure program, which provides the majority of the telecommunications services required by the FAA. Telecommunications services are essential to the operations of the national airspace system and the FAA. The current FAA Telecommunications Infrastructure project is providing services today with its contract ending in 2022. FAA Enterprise Network Services will provide high-availability, low latency telecommunications services for national airspace systems and a separate mission support network that serves as the FAA's Intranet for secure connectivity to FAA internal administrative applications as well as the public Internet.

FAA Enterprise Network Services will be responsible for establishing a modern infrastructure that is capable of meeting the FAA's future demands for telecommunications services through 2037. This project will provide a robust competitive environment for meeting the FAA's future telecommunications needs. For example, FAA Enterprise Network Services will implement modern Internet Protocol based infrastructure to replace legacy Time Division Multiplex based infrastructure that will no longer be supported in the commercial marketplace. The

new network infrastructure will support the connectivity requirements of programs such as System Wide Information Management and Data Communications.

For FY 2023, $49.0 million is requested to fund the necessary resources, program and contract support to:

- Support activities to achieve In-Service Decision in November 2023
    - Establish the network.
    - Develop prime tools, and modify FAA tools for network management and operations, service ordering and invoicing tracking.
    - Implement service at key sites.
    - Conduct test and evaluation.
- Support operational/site activation activities to ensure sites are ready for transition after In-Service Decision is achieved - Site surveys, site prep, and special construction.

B. FAA Telecommunications Infrastructure Sustainment 2

As the implementation of the FAA Enterprise Network Services project progresses, the FAA Telecommunications Infrastructure Sustainment 2 program will replace telecommunications components to extend the life of the current infrastructure through the contract bridge period and until the transition to FAA Enterprise Network Services is complete. The FAA Telecommunications Infrastructure program currently has several critical hardware components that are reaching End of Support imminently which, thereby, pose a high risk to the FAA's security, boundary protection and intrusion detection capabilities.

The program will mitigate any network capacity shortfalls and target replacements of security boundary, network controls, and obsolescent parts. For FY 2023, $5.0 million is requested to replace existing security hardware components before their End of Support dates to protect against vulnerabilities that may be exploited in cyber-attacks due to delays in the patching of security components.

C. Time Division Multiplexing – to – Internet Protocol Migration (TDM-to-IP)

Time Division Multiplexing is a lower bandwidth, 1960s technology that is reliant on copper wires, and increasingly outdated, unsupportable equipment that is labor intensive and costly to sustain. Telecommunication carriers are discontinuing Time Division Multiplexing offerings, potentially affecting services at roughly 40 percent of FAA sites and 75 percent of FAA system interfaces. To date, the FAA has received discontinuance notices from major telecommunications carriers including AT&T,

Century Link, and Verizon. These TDM discontinuances force the FAA to invest in technology for FAA Systems and Network Access to sustain national airspace operations and capitalize on an all-Internet Protocol FAA Enterprise Network Services network.

The FAA intends to address the sites under threat of telecommunications discontinuance and enable system interface Internet Protocol-compatibility to leverage the modern Internet Protocol based infrastructure implemented by FAA Enterprise Network Services network. FAA has developed a Time Division Multiplexing – to – Internet Protocol Migration strategy that will:

- Modernize FAA systems and or system interfaces to utilize Internet Protocol technology to take advantage of a modern broadband/carrier Ethernet based network and reduce dependence on Time Division Multiplexing technology.

- Reduce dependence on obsolete low speed Time Division Multiplexing technology that is being discontinued by commercial telecommunication providers nationwide.

- Replace communication carrier copper with fiber where cost effective and available.

- Reduce the risk to national airspace system operations related to the sun setting of Time Division Multiplexing.

For FY 2023, $15.0 million is requested to address near-term Time Division Multiplexing discontinuances, and develop and implement Enterprise Interface Modernization Solutions that will enable Internet Protocol communication between systems like Air to Ground Voice, Ground-to-Ground Voice, Automation, Communication, Navigation, Surveillance and Weather service categories. This funding will also support work that specifically addresses ERAM migration to Internet Protocol (ERAM ASTERIX).

What benefits will be provided to the American public through this request and why is this program necessary?

The FAA Telecommunications Infrastructure program will benefit the American Public directly and indirectly:

- Ensure continuity of the telecommunications services required for the operation of the United States Air Traffic Control system as the existing telecommunications services contract reaches the end of its period of performance.

- Reduce telecommunications service delivery timeframes so that new capabilities can be put into operation more quickly to support the flying public and air carriers.

- Provide enhanced network service monitoring, control, and security capabilities that improve visibility in outage impacts and reduce restoration times.

- Provide the enhanced security capabilities needed to ensure secure communications with internal and external stakeholders that depend upon the FAA's wide area networks and System Wide Information Management enterprise messaging services.

The work under this program supports FAA initiatives to improve the resiliency of the national airspace system through a robust infrastructure that has the ability to auto-recover during outages in a manner that is transparent to FAA end user systems and reduces air traffic delays.

Detailed Justification for - 2E11 Operational Analysis and Reporting Systems

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Operational Analysis and Reporting System	$15,900	$15,500	$26,100

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. Visualization, Analytics, and Dashboards for Efficiency Reporting	---	$9,500.0
B. Operations Analysis and Reporting System Phase 1	---	2,600.0
C. Operational Analysis and Reporting System Phase 2	---	14,000.0

What is this program and what does the funding level support?

A. Visualization, Analytics, and Dashboards for Efficiency Reporting (VADER) System

The Visualization, Analytics, and Dashboards for Efficiency Reporting System will serve as a replacement and technology insertion and upgrade to two existing legacy systems, the Performance Data Analysis and Reporting System and the Operations Network. This activity combines prior activities of the two systems into one integrated effort.

The current Performance Data Analysis and Reporting System is an important part of the System Capacity, Planning, and Improvements Program and served as critical tool in assisting the FAA in modernizing and improving the National Airspace System infrastructure.

The current Operations Network is a system of data collection that consists of an automated component collecting data from multiple systems, and a manual component requiring data entry from personnel at each facility. The Operations Network reporting components generate and distribute delay and traffic activity reports to the

Department of Transportation and FAA Executive leadership, Air Traffic Management decision makers, and the Aviation Community. Primary uses of Operations Network include national airspace system performance monitoring, post-operational assessments of traffic management initiatives, measurement of system improvements, financial benchmarking, facility reviews and classifications, and investment planning.

The Visualization, Analytics, and Dashboards for Efficiency Reporting System will serve as a critical toolset, providing widespread access to the capabilities that will ensure maintenance of a safe and modern National Airspace System infrastructure. The system will provide modular processing, integrated visualization and near real-time reporting tools allowing users to access quality National Airspace System data through an enterprise data solution accessible on the FAA network to evaluate day-of-operation performance, perform modeling, analysis, and trending. The system will also provide a comprehensive and accurate accounting of delays with appropriate attribution of causal factors. The replacement system will automate, to the maximum extent possible, the collection of operational data and minimize manual entries.

For FY 2023, $9.5 million is requested to continue rapid development and deployment of the program's remaining requirements, to deliver an integrated visualization capability using an enterprise wide portal that incorporates Performance Data, Analysis and Reporting System and Operations Network functionality, robust user reporting, and performance metrics on demand for key flight events.

B. Operational Analysis and Reporting System Phase 1

Will provide the Air Traffic Organization with data-sharing capability among legacy and future systems used for safety risk analysis. The result will provide the end-user with quick and easy access to consistent, accurate, and timely data to allow more efficient, comprehensive, and proactive analyses of risk in the national airspace system. Operational Analysis and Reporting System will be delivered in multiple phases. Phase 1 will develop a single portal user interface to all current legacy safety tools and improve the login and security features for over 40,000 users. Phase 1 will re-host selected legacy applications into the FAA's cloud infrastructure. The legacy applications that will be part of Phase 1 are:

- Comprehensive Electronic Data Analysis and Reporting
- Falcon Rapid Air Traffic Replay Tool
- Traffic Analysis and Review Program
- Risk Analysis Process Tools (Airborne, Surface and Service Integrity)

- Search and Rescue database

For FY 2023, $2.6 million is requested to complete Phase 1 system implementation, and for system engineering and program management support.

C. Operational Analysis and Reporting System Phase 2

Operational Analysis and Reporting System Phase 2 will build upon the single portal established in Phase 1, delivering the Operational Analysis and Reporting System safety application and replacing legacy capabilities, such as Quality Assurance/Quality Control, Safety Event Detection, Replay, and Risk Analysis Process. Phase 2 will also continue to address the lack of flexibility and expandability of legacy applications by re-hosting a second set of legacy applications to the common enterprise host environment delivered in Phase 1. Those legacy applications are Runway Safety Tools, Safety Management Tracking System, Compliance Verification Tool, and Compliance Services Group Tool.

For FY 2023, $14.0 million is requested to develop the Operational Analysis and Reporting System application that will replace key legacy applications with modern cloud-based services, as well as re-host additional legacy applications to the cloud environment.

What benefits will be provided to the American public through this request and why is this program necessary?

Planning for facility and system enhancements requires the ability to track, monitor, and analyze the daily national airspace system operations information. The modernization of the systems in this portfolio will provide a modernized enterprise cloud solution inclusive of data processing, visualization, and reporting. FAA will realize efficiencies by modernizing and enhancing air traffic control services after determining root causes for performance and risk issues in the national airspace system as identified and monitored by information in these systems. Additionally, FAA will realize productivity gains for the personnel that track and monitor the information provided by these systems.

Detailed Justification for - 3A01 Hazardous Materials (HAZMAT) Management

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Hazardous Materials (HAZMAT) Management	$26,000	$26,000	$24,300

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Hazardous Materials (HAZMAT) Management	28	$24,300.0

What is this program and what does this funding level support?

The FAA operates the hazardous materials, or HAZMAT management program, to clean up approximately 677 contaminated areas of concern that require investigation, remediation, and closure activities. Investigations at the identified sites have revealed that toxic contamination resulted from a variety of hazardous substances, including petroleum cleaning solvents, degreasing agents, pesticides, asbestos, polychlorinated biphenyls, and heavy metals.

The FAA has identified cleanup schedules as part of enforcement agreements with regulatory agencies. These agreements require the FAA to remediate contaminated soil, surface water, sediments, and groundwater. Extensive contamination at the William J. Hughes Technical Center in Atlantic City, New Jersey prompted the Environmental Protection Agency to place the site on its National Priority List or "Superfund" as one of the nation's most environmentally dangerous sites. Other contaminated sites (many of which are located in Alaska) encompass the requirements of the HAZMAT management program that account for a large portion of unfunded environmental liabilities documented in the FAA's annual financial statements.

For FY 2023, $24.3 million is requested to continue the management and remediation of 677 contaminated areas of concern, as of October 2020. During FY 2020, the HAZMAT program both removed 99 areas of concern and added 99 more to the program.

To achieve compliance with Federal, State, and local environmental cleanup statutes, including the Resource Conservation and Recovery Act of 1976, the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, and the Superfund Amendments and Reauthorization Act of 1986, the FAA must continue mandated program activities. Highlight activities include:

- Continue remediation activities at the Superfund site at the William J. Hughes Technical Center.

- Move the status of sites listed on the Environmental Protection Agency Federal Hazardous Waste Compliance Docket (Docket) to "No Further Remedial Action Planned" status. The majority of non- "No Further Remedial Action Planned" status sites remaining on the Docket have significant technical challenges to obtaining closure (e.g., long timeframe for site remediation, Superfund site, and ownership liability issues). The four remaining FAA Docket sites include the Mike Monroney Aeronautical Center, Ronald Reagan Washington National Airport, William J. Hughes Technical Center, and the Guam Center Radar Approach Control Systems Support Center.

- Continue investigations and remediation projects at all other identified contaminated sites under Federal, State, and local mandates to limit future liability to the agency and foster environmental stewardship.

Postponing remedial activities at these contaminated areas of concern can lead to noncompliance with the Federal, State, and local environmental cleanup statues. Noncompliance with these statues includes maximum penalty amounts that range from $1,000 (Bahamas) to $100,000 (Alaska) for the first day of violation, and that range from $1,000 (Bahamas and Idaho) to $50,000 (Hawaii, New Hampshire, and New Jersey) for each day after the first day of violation.

What benefits will be provided to the American public through this request and why is this program necessary?

The direct outcome of closing these contaminated areas of concern leads to overall decreased environmental remediation liability to the FAA. Investigating, remediating, and obtaining site closure at the FAA's contaminated areas of concern also increases employee and public safety by minimizing exposure to toxic and hazardous substances at these sites. From FY 2009 through FY 2019, the HAZMAT management program has closed 1,047 areas of concern.

The FAA is currently analyzing alternate remedial technology that optimizes remediation and cost efficiency. A new remediation procedure is being employed at the William J. Hughes Technical Center's Superfund Site that during 15 months of operation has reduced the status quo operation of the existing treatment system by 80 years yielding a cost avoidance of $150.0 million.

Detailed Justification for - 3A02 Aviation Safety Analysis System (ASAS)

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Aviation Safety Analysis System (ASAS)	$23,500	$30,502	$28,200

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. Regulation and Certification Infrastructure for System Safety	---	$20,200.0
B. FAA Critical Infrastructure for System Safety	---	8,000.0

What is this program and what does this funding level support?

The FAA workforce must have a modern information technology infrastructure and tools to effectively perform its data-driven analytical safety work and collaborate with both internal FAA and external aviation stakeholders. At regular lifecycle intervals, information technology infrastructure components must be modernized in order to maintain safety operations without disruption due to failure or security vulnerabilities. Funding is required in order to deploy modern Commercial-Off-the-Shelf information technology products and services in the following areas:

- Mobile Technologies and End User Devices: Notebook computers, tablet computers, and peripherals used by the workforce.

- Network Infrastructure and Data Services: Telecommunications switching devices and bandwidth services at FAA facilities.

- Remote Connectivity Telecommunications: Mobile device telecommunications services for the safety workforce.

- Consolidated Server/Data Storage Systems: Hardware infrastructure where critical mission and safety data is stored/accessed.

- Safety and Business Application Hosting Services: Hardware infrastructure, as well as cloud services, that is used to host business applications.

- Enterprise Commercial-Off-The-Shelf Software and services.

- Management Tools: Software and tools used to support the workforce and efficiently/securely manage the information technology infrastructure.

- Disaster Recovery: Disaster recovery solutions required to ensure business applications and data are not lost if a catastrophic event occurs.

- Implementation and Planning Support Services: Vendor services required to plan and implement information technology infrastructure enhancements across the enterprise.

- End User Technology Training: Developing training courses and instructional aides to support the use of hardware and software solutions deployed by the investment.

These products and services ensure continuity of operations for critical and non-critical Mission Support safety and business systems. Additionally, these services ensure that critical safety data is safeguarded against loss by providing a secure, reliable and timely back up of data.

A. Regulation and Certification Infrastructure for System Safety

For FY 2023, $20.2 million is requested for Regulation and Certification Infrastructure for System Safety in order to provide all the information technology infrastructure components that support the Office of Aviation Safety's 6,400-person safety workforce and ensure standard and reliable accessibility to safety data. This program provides safety data to the Aviation Safety workforce while they are mobile and conducting safety inspections and investigations of airlines, manufacturers, pilots, accidents, etc. It also provides methods to access all of Aviation Safety's national safety applications developed by System Approach for Safety Oversight, Aviation Safety Knowledge Management Environment, and the Aerospace Medicine Safety Information System. It will also allow access to all other Aviation Safety national safety programs including Civil Aviation Registry Electronic Services and the Pilot Records Database.

Regulation and Certification Infrastructure for System Safety also supports the coming integration of Aviation Safety's disparate safety data, where individual stove-piped applications' data sets are combined into an enterprise level data store that isolates the data from the applications. In this new environment, safety workers assemble data as needed from various data sources to support new business processes.

The program supports the Aviation Safety workforce in their effort to reduce aviation accidents by making real-time safety data immediately accessible to and from all related parties, e.g., inspectors, engineers, investigators, and medical examiners. By enabling the Aviation Safety workforce with the ability to perform its work from nearly any virtual workplace, the Regulation and Certification Infrastructure for System Safety infrastructure facilitates increases to workload capacity and performance without additional staffing requirements.

B. FAA Critical Infrastructure for System Safety

For FY 2023, $8.0 million is requested to begin technology refresh of the legacy Mission Support information technology infrastructure. FAA Critical Infrastructure for System Safety will provide similar infrastructure products, services, and benefits as Regulation and Certification Infrastructure for System Safety to the nearly 50,000-person FAA workforce not included under the Regulation and Certification Infrastructure for System Safety program. Currently, there are over 600 legacy FAA Mission Support business applications and several Capital Investment Programs, such as Unmanned Aircraft Systems; Traffic Analysis and Review Program; Knowledge Services Network; Data Visualization, Analysis, and Reporting System; and Operations Network Replacement, that will utilize this infrastructure.

Personnel at both national airspace system and Mission Support sites will utilize the infrastructure provided by this project to access applications and data vital to the health of the national airspace system, including weather-related data and services. For example, national airspace system facilities management uses the Mission Support network for logging maintenance tasks and certification status of equipment, tracking outages, and dispatching technicians for maintenance/repair assignments.

Unlike Regulation and Certification Infrastructure for System Safety, the infrastructure this project seeks to modernize has not been proactively replaced in accordance with prescribed technology life cycles. As a result, the infrastructure is becoming increasingly less reliable, insecure and more prone to failures that can cause disruption to operations and the possible loss of critical data and applications used by the FAA workforce. Proactive planning and modernization of the FAA Critical Infrastructure for System Safety infrastructure will result in fewer operational disruptions and more efficient utilization of fiscal and personnel resources.

What benefits will be provided to the American public through this request and why is this program necessary?

A proactive technology refresh and modernization approach will positively affect the reliability, maintainability, and availability of the information technology infrastructure components supporting the critical applications and data systems utilized by the FAA Safety and Mission Support workforce. Operational disruptions caused by out-of-lifecycle infrastructure components will be minimized and the security of vital

data will be enhanced. Further, proactive technology refreshment, modernization, and standardization of the infrastructure will reduce maintenance costs and allow greater scalability and flexibility for the infrastructure to meet evolving business needs, including mitigation of events that could adversely affect the flying public and aviation industry revenue.

Detailed Justification for - 3A03 National Air Space Recovery Communications (RCOM)

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
National Air Space Recovery Communication (RCOM)	$12,000	$12,338	$12,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
National Air Space Recovery Communication (RCOM)	---	$12,000.0

What is this program and what does the funding level support?

This program supports the Office of Security and Hazardous Material Safety's Command and Control Communications Division. The Command and Control Communications/RCOM program has Presidential and Congressional mandated responsibilities to provide reliable communications support to the White House, DOT, FAA, and other government agencies during national security events, disaster recovery efforts, accident investigations, government exercises, and special invitational events. To achieve this mandate, the RCOM program provides survivable, secure, and redundant communications and facilities that enables the FAA to respond to emergencies, assist in restoration of the National Airspace System, protect national security, and enable the continuity of FAA operations. Facilities, equipment and services provided by the RCOM program to fulfill its program mission and Presidential and Congressional mandates include, but is not limited to:

- Equipping air traffic technical operations and emergency response personnel with Very High Frequency/Frequency Modulated radio networks, communication fly away kits, and a fully-equipped Emergency Response Vehicle to assist with ground communications in emergencies and data/network connectivity, such as the restoration of air traffic operations at Lake Charles Airport, LA, in the aftermath of Hurricane Laura.

- Installing fixed-based satellite communication terminals in critical air-traffic control facilities for use during interruptions in communication services caused either by damage to commercial communications infrastructure, or by a surge in demand exceeding the capacity of that infrastructure.

- Providing decision-makers and emergency response personnel with information technology infrastructure and applications via the FAA's Emergency Operations Network to facilitate the exchange and visualization of data during emergencies, such as the FAA COVID-19 dashboard developed to inform FAA decision-making and FAA employees regarding COVID-19 statistics related to U.S. Government "Opening Up America Again" guidelines.

- Maintaining a national High Frequency radio, Microwave and information technology networks, for use by FAA and other Federal agencies and Departments in the National Capital Region, and Emergency Operations Facilities to ensure compliance with Presidential Policy Directive 40, National Continuity Policy. Most recently, FAA used its Emergency Operations capabilities and Facilities for COVID-19 response, to accommodate social distancing of essential emergency response personnel, and to provide a safe and secure work environment during demonstrations and civil unrest in the Washington, D.C. area.

- Maintaining national security systems to enabling the appropriate handling of classified information and communications agency-wide, to help ensure the safety and security of the National Airspace System.

For FY 2023, $12.0 million is requested to support the RCOM program. The funding requested meets the minimum support necessary to refresh, maintain and improve the infrastructure mandated by mission needs and Federal continuity directives

What benefits will be provided to the American public through this request and why is this program necessary?

The FAA's RCOM program ensures the FAA can reliably and continuously communicate to exchange information, including during times of crisis and natural disaster, to maintain the timely flow of information to support agency-wide decision making. Investments made by the FAA's RCOM program enable the FAA to bypass disrupted common carrier communication circuits and systems to coordinate National Airspace System restoration when disrupted by natural disasters, wartime events, terrorist activities, or other catastrophic events. The RCOM program provides the resiliency needed for the FAA to maintain mission essential functions, such as air navigation services. Maintaining these services minimizes impacts to air travel and supports continued national defense and law enforcement operations during times of crisis, to safety and benefit of the American people.

Detailed Justification for - 3A04 Facility Security Risk Management (FSRM)

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Facility Security Risk Management (FSRM)	$22,000	$22,000	$14,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Facility Security Risk Management (FSRM)	26	$14,000.0

What is this program and what does the funding level support?

In 1999, the FAA established the FSRM program, which implements standardized facility protective measures at all FAA-staffed facilities. These measures include personnel access control (via card readers, fencing, gates, and security guards), surveillance (cameras), vehicle access control (barriers), visibility enhancements (lighting), and X-ray machines. The FSRM program participates in the construction of facilities that secure FAA personnel and assets, such as guardhouses, and facility retrofitting to protect against blast or explosive attacks.

The FSRM program manages contracts that install security systems, and that provide maintenance services to installed security systems regardless of age, manufacturer, or condition. In addition to the protection of FAA personnel and assets, another program goal is one of standardization across the national airspace system. The standardization of security equipment and processes will result in a substantial cost savings to the FAA. The FSRM Sustainment program is instrumental in ensuring that FAA efficiently and cost effectively implements all issued Presidential Directives aimed at securing Federal facilities and personnel. For FY 2023, $14.0 million is requested to support the following efforts that will result in increased security at FAA-staffed facilities.

- Construction/Installation for security upgrades

- Engineering design and equipment installation for the Eastern and Western Pacific regional offices

- Security Personal Identification Verification upgrades at Facility Security Level 2 and 3 facilities

- Technology refresh of security systems at Facility Security Level 2, 3, and 4 facilities to replace outdated security equipment

- Continued installation of cameras and Personal Identification Verification card readers at all access points to areas housing critical national airspace systems in all Air Route Traffic Control Centers, Airport Traffic Control Towers and Terminal Radar Approach Control facilities that support the busiest United State terminal areas

What benefits will be provided to the American public through this request and why is this program necessary?

The FSRM program has contributed to obtaining security accreditations at over 980 FAA facilities. This continues to be accomplished through the program's management of national contracts that assess and upgrade security measures such as X-ray machines, cameras, card readers, gates, and vehicle barriers at FAA-staffed facilities. This program is necessary in order to continue the assessment and upgrade of obsolete and unsupportable security systems, reducing the risk of intrusion and unauthorized entry to FAA-staffed facilities nationwide.

Detailed Justification for - 3A05 Information Security

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Information Security	$18,500	$22,589	$23,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. Information Systems Security Enhancements	---	$12,000.0
B. National Airspace System Critical Infrastructure Cyber Enhancements	---	11,000.0

What is this program and what does this funding level support?

The Federal Information Security Management Act of 2014 requires that the FAA must identify and provide information security protection. FAA must prevent unauthorized access, use, disclosure, disruption, modification, or destruction of information that supports the Agency, aviation safety and security, and the national airspace system. This includes detection of alerts and attacks generated against the FAA/DOT infrastructure, mitigation of cyber events, and prevention of privacy breaches. The FAA Security Operations Center, a 24x7x365 operation, is the central reporting point for all cyber events occurring within the FAA and DOT.

The transition of the national airspace system to a fully Internet Protocol based infrastructure increases the threat of damage from cyber-attacks. Damage to FAA systems and aviation safety related information such as Air Traffic, Airway, and Airport Information Systems; or Pilot and Airman Medical processing and Certifications data, can have potentially serious consequences for the entire aviation community and the American public.

A. Information Systems Security Enhancement

The Information Systems Security Enhancement program fortifies the security of the FAA's networks and infrastructure by developing and ensuring compliance with

Information Technology security and privacy policies and controls. The scope of this program is to protect the confidentiality, integrity, and availability of all FAA information and systems. This program will enhance the cybersecurity posture across the FAA and strengthen the security of the aviation domain through collaboration with public and private entities, and the intelligence community. For FY 2023 $12.0 million is requested to complete the following program enhancements:

- Cybersecurity Operations (includes FAA Security Operation Center) will provide a threat intelligence solution to support Department of Homeland Security's reporting requirements, align to Watchtower methodology and modernize existing security tools that are approaching end-of-life.

- Cybersecurity Test Facility will evaluate new technologies and capabilities to prevent, monitor and mitigate cyber alerts and events prior to integration within the National Airspace System and Mission Support domains. This includes the installation of monitoring and detection tools on the Research and Development networks to assist with detection of cyber incidents and threats.

- Cybersecurity Risk Model provides an enterprise-wide strategy for identifying and assessing the impacts of cyber threats to agency services required to maintain a safe and efficient airspace. The model will support the integration of threat information from the FAA Cyber Threat Intelligence process to improve cyber risk metrics.

- Zero Trust is a comprehensive network security model that requires strict identity verification for every user and device attempting to access FAA networks, applications and data. It will enforce data security by restricting access and granting only the minimum privileges needed to perform the mission. This program will develop the future architecture, integration and acquisition strategy for zero trust cybersecurity within the FAA.

B. National Airspace System Critical Infrastructure Cybersecurity Enhancement

For FY 2023, $11.0 million is requested to support the National Airspace System Critical Infrastructure Cybersecurity Program in providing services and capabilities to enhance Air Traffic Control and ensure the national airspace system remains secure and resilient. The Air Traffic Organizations strategy is to invest in enterprise capabilities that provide infrastructure protection, cyber monitoring and management tools, and defense against the evolving threat environment. National Airspace System Critical Infrastructure Cybersecurity Program security investments include:

- Network and Access Controls: provide the enterprise services that prevent unauthorized access to the National Airspace System infrastructure and secure external connection paths to limit communications to only those required for National Airspace System operations.

- Enterprise Tools: provide centralized capabilities that support the monitoring of National Airspace System networking and computing environments to identify potential malicious activity and provide management of National Airspace System assets to maintain secure configurations.
- Evolving Threat Protection: provide zero-trust segmentation for critical infrastructure assets, centralized cybersecurity intelligence collection and analysis, and automated cybersecurity event detection and response activity workflow.

What benefits will be provided to the American Public through this request and why is this program necessary?

The continuing mission of the FAA is to provide the safest, most efficient aerospace system in the world. Such efforts include satellite communications, navigation, weather and aircraft worthiness to prevent aviation related fatality, injury or significant property loss. The FAA is undertaking multiple strategic and tactical initiatives in the development of a comprehensive and strategic framework to reduce cybersecurity risks to the national airspace system, civil aviation, and agency information systems.

The enhanced national airspace system Cybersecurity protection, detection and response capabilities identified above would significantly limit the likelihood of a major cyber-attack against the national airspace system being successful and, thereby, protect the American public from severe economic disruption and threats to safety. Implementing the initiatives at an enterprise level, rather than on a system-by-system basis, provides the agency with economies of scale and reduces or eliminates redundant costs.

Detailed Justification for - 3A06 System Approach for Safety Oversight (SASO)

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
System Approach for Safety Oversight (SASO)	$29,200	$35,400	$26,700

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. System Approach for Safety Oversight (SASO) Phase 3	---	$8,000.0
B. System Approach for Safety Oversight (SASO) Phase 4	---	18,700.0

What is this program and what does this funding level support?

For FY 2023, the System Approach for Safety Oversight (SASO) program requests a total of $26.7 million for continued development of the Safety Assurance System.

The SASO program increases aviation safety and controls cost by adopting the International Civil Aviation Organization mandate to revise Safety Programs to incorporate Safety Management System principles. The SASO program also supports the FAA Administrator's transition to risk-based decision-making and integrated oversight philosophy. The scope of the SASO investment includes reengineering Flight Standards Service business processes and partially integrating Flight Standards Service systems. SASO serves approximately 4,800 FAA Aviation Safety employees across headquarters and approximately 100 field offices, and more than 25,000 additional aviation industry professionals managing aviation safety throughout the United States.

Flight Standards Service is responsible for oversight of nearly the entire civil aviation industry using the National Airspace System. Its legacy safety oversight system is stove piped, reactive in nature, and "regulatory compliance-based." While many technical and human factors problems contributing to accident rates have been resolved, more complex organizational factors remain which requires additional systems-based, data-supported analysis and assessment for their resolution. SASO closes the performance gap between a "regulatory compliance-based" approach and the reengineered system safety-based approach to safety oversight.

Increases in technical and operational complexity of aviation operations and introduction of new technologies further stress today's oversight system. SASO implements a more structured data-supported risk-based oversight system, for the Flight Standards Service aviation safety inspector workforce. The primary product is the Safety Assurance System. Flight Standards Service uses this system to more efficiently manage its statutory responsibility to oversee National Airspace System certificate holders, and as a hazard identification and risk assessment tool to formulate surveillance plans and target Flight Standards Service resources to the highest risk areas in the National Airspace System. The Safety Assurance System core functionality was first deployed in 2016 for oversight of three Title 14 Code of Federal Regulations (14 CFR) parts, a subset of Flight Standards Service overall responsibility.

SASO Phase 3 implements the requirements associated with safety oversight of aviation training schools and adds an interface with the Designee Management System. SASO Phase 3 enhances the Safety Assurance System functionality in the areas of activity recording, office workload list, risk profile, and the Certification Services Oversight Process. Finally, SASO Phase 3 develops Safety Management System safety educational materials and support systems for general aviation certificate holders.

During FY 2023, the program will complete transitioning offices to the new system and achieve Safety Assurance System Final Operational Capacity in January, 2023 for Phase 3. The program also continues its second full year in SASO Phase 4. SASO Phase 4 will improve Flight Standards Service safety oversight in three ways. One, by improving the Safety Assurance System. Second, by exchanging safety information with other lines of business and programs who are responsible for aviation safety oversight. The sum of the first two improvement will expand the Safety Assurance System to the aerospace system level to leverage a larger pool of safety information.

The success of the SASO program depends upon continued development funding through FY 2028 to achieve and sustain full benefits. The required funding supports further Safety Assurance System automation development, policy updates, training, and implementation to achieve the full oversight capabilities and benefits as envisioned during the business process re-engineering analysis and design phase of the program.

What benefits will be provided to the American public through this request and why is this program necessary?

The primary benefit of the SASO program to the American public is its contribution to the reduction of aviation accidents and fatalities. By implementing the system safety principles, FAA oversight of the aviation industry results in fewer accidents attributable to FAA oversight gaps or failures. The new processes and tools developed under this program allow Flight Standards Service to focus its resources on the highest risk areas in the National Airspace System.

Detailed Justification for - 3A07 Aviation Safety Knowledge Management Environment (ASKME)

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Aviation Safety Knowledge Management Environment (ASKME)	$9,700	$9,800	$12,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Aviation Safety Knowledge Management Environment (ASKME) Enhancement 1	---	$12,000.0

What is this program and what does this funding level support?

The ASKME program was established to provide a comprehensive suite of Information Technology applications and other services to support critical safety processes within the Aircraft Certification Service of Aviation Safety. Segment 1 was completed in 2014, and Phase 2 was completed in September 2020. ASKME Enhancements will include:

- Business process analysis to identify automation gaps in Aircraft Certification Service business processes
- Enhancements to previously funded applications, including the development of portals to allow external users to enter data directly into applications in support of Aircraft Certification Service processes
- New automation of Aircraft Certification Service business functions that were not included in ASKME Segment 1 or Phase 2
- Data transformation and support for the Information Management Strategy for Aircraft Certification Service, coordinating with Enterprise Information Management and the Safety Data and Analysis Team initiatives

For FY 2023, $12.0 million is requested to complete the following activities:

- Data Transformation that includes consolidating and standardizing data among the ASKME applications

- Software Development and Integration:

  - Enhancing existing ASKME applications so they support updated Aircraft Certification business processes and meet new requirements from system users

  - Developing an application to help FAA analyze safety data and make oversight plans based on risk, which will lead to a more efficient use of FAA personnel

  - Developing external application portals to allow users (i.e. aircraft manufacturers, suppliers, etc.) to provide data directly into ASKME applications, which will remove the need for FAA personnel to manually enter information from these external sources

What benefits will be provided to the American public through this request and why is this program necessary?

ASKME Enhancement 1 will increase productivity and efficiency of the Aircraft Certification Service by providing a centralized system to share aircraft certification information that promotes quicker and more effective decision-making. This work includes identifying the highest risks to aviation safety (production, design, or a specific company, etc.), and determining where FAA inspectors should prioritize their efforts with inspections or audits. The program promotes rapid data sharing through an external public portal that allows faster access to FAA resources. This fast exchange allows rapid identification of potential safety trends and reduces safety risks to the traveling public.

Detailed Justification for - 3A08 Aerospace Medical Equipment Needs (AMEN)

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Aerospace Medical Equipment Needs	$26,800	$6,900	$2,200

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Aerospace Medical Equipment Needs (AMEN) – Sustainment	3 ---	$2,200.0

What is this program and what does the funding level support?

Civil Aerospace Medical Institute personnel enhance the safety and performance of the most important aspect of the National Airspace System, the human operator and the public that they serve. This investment supports research that includes assessments of human performance under various conditions of impairment, human error analysis and remediation, and agency workforce optimization. Institute personnel require sophisticated, highly technical, and specialized equipment to perform their mission.

This equipment must be replaced due to advanced age and diminished technology capability. For FY 2023, $2.2 million is requested to support the replacement of equipment supporting three main objectives:

- Perform research simulation and training
- Analyze and investigate aviation accidents and incidents
- Collect and analyze the data for patterns and trends.

Specifically, this equipment supports A) Assessment of crash environments to determine effectiveness of safety devices, B) Evaluation of emerging technologies and procedures and their effects on Air Traffic Controller workload, situational awareness, and performance, C) Medical monitoring of human subjects required for aviation safety research.

What benefits will be provided to the American public through this request and why is this program necessary?

These investments allow for continued performance of aerospace research, which serves as a knowledge base for Physicians, Physiologists, Human Factors Experts, Engineers, Psychologists, Educators, Flight Attendants, Aircrew, and numerous other academia, industry, and government personnel in the U.S. and abroad who are concerned with the safety of humans in aerospace operations. Identifying survival factors in simulated studies is essential to the prevention of death and injury.

Detailed Justification for - 3A09 NextGen – System Safety Management Portfolio

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
System Safety Management Portfolio	$21,500	$18,294	$17,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. Aviation Safety Information Analysis and Sharing	---	$15,000.0
B. System Safety Management Transformation	---	2,000.0

What is this program and what does this funding level support?

This portfolio contains activities that ensure that changes introduced with NextGen enhance and do not degrade safety while delivering benefits. The work under this program will enable the development of tools to convert text, digital radar, weather, and other data into safety information to support predictive analyses. It will also support the development of anomaly detection and visualization capabilities to enable causal/contributing factor analyses and risk assessments, utilizing machine-learning capabilities. In addition, safety analysis capabilities, tools and metrics will be developed to integrate safety data from a number of disparate sources into a suite of system level models.

A. Aviation Safety Information Analysis and Sharing:

The mission of Aviation Safety Information Analysis and Sharing is to provide a global resource to identify emerging, systemic aviation safety hazards affecting the National Airspace System and the global air transportation system, to inform timely development of safety mitigations and reduce risks. The program is a collaborative government/industry initiative to analyze data and share aviation safety analysis, in order to discover safety concerns before accidents/incidents occur. Aviation Safety Information Analysis and Sharing participation includes more than 170 stakeholder organizations across the aviation community (including commercial and corporate

aviation, general aviation and rotorcraft, trade associations, government agencies, universities and others) who contribute various safety data for use in safety analyses. This funding includes program efforts to address new and emerging risks in collaboration with the aviation community.

For FY 2023, $15.0 million is requested to:

- Conduct predictive analytic activities to extract information from aviation-related data; Develop and leverage artificial intelligence/machine learning technologies to analyze aviation safety hazards.

- Deliver controlled access to Aviation Safety Information Analysis and Sharing data for customized safety studies and the development of analytical tools, through a shared analytic environment.

- Implement processes to prioritize requests for the program's safety information, in order to address aviation hazards across the passenger, cargo, general aviation, and rotorcraft communities.

- Provide an expanded aviation data repository with information from new sources, including data from the general aviation and rotorcraft communities, in order to discover emerging safety issues.

- Deliver enhanced safety metrics based on radar surveillance data, digital flight data, and aircrew safety reports, infused with additional data sources; these metrics are based on tools, algorithms and models to analyze priority safety issues.

B. System Safety Management Transformation:

System Safety Management Transformation is a stakeholder-driven, cross-functional program that supports the development and implementation of integrated safety management systems across the air transportation system to ensure that safety risk throughout the system is managed to an acceptable level. System Safety Management Transformation incorporates integrated safety risk models, enables customization of models from the National Airspace System to a single operator or region, and provides identification of, data about, and replay of detected candidate safety events for surface and En route operations.

For FY 2023, $2.0 million is requested to provide the following:

- Validate and verify safety risk models and lead safety risk assessments for FAA Lines of Business. The selected model(s) will be created or, if existing, restructured, quantified with the best available data to reflect baseline risk in FY 2023 and will be based on emergent safety risks identified by the FAA as critical for FY 2023 National Airspace System operations.

- Align existing automated methods for quantification of commercial aviation safety risk baseline with updated/new FAA data sources and Enterprise Information Management requirements and maintain quantification of commercial safety risk models necessary for ongoing safety risk assessment of NextGen Operational Improvements.

- Expand capabilities to detect, report, and replay candidate safety events across the National Airspace System to inform safety analyses, support accident and incident investigations and provide safety risk metrics to programs such as Aviation Safety Information Analysis and Sharing.

- Continue joint development with EUROCONTROL of integrated safety risk assessment models and candidate safety event detection tools for commercial aviation.

What benefits will be provided to the American public through this request and why is this program necessary?

The planned growth and complexity in the air transportation system requires a fundamental change in the way the air transportation community manages safety. System safety management research provides a shared, proactive approach to identifying, assessing and mitigating risk, enabling all stakeholders to be more effective in their approach to managing safety. The primary benefit of this program is the development of safety analysis to proactively reduce aviation incidents, accidents, and fatalities.

Detailed Justification for - 3A10 National Test Equipment Program (NTEP)

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
National Test Equipment Program (NTEP)	$3,000	$3,000	$3,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
National Test Equipment Program (NTEP)	---	$3,000.0

What is this program and what does the funding level support?

The National Test Equipment Sustainment program manages the modernization, distribution, calibration, and inventory of test equipment. This equipment is required to perform preventive and corrective maintenance, equipment installations, modifications, and service certifications in support of numerous National Airspace System Platforms. Failure to achieve certification of critical National Airspace System systems (at any of the 27,000 FAA facilities) will result in the restriction of air traffic in the facility's air space and potentially cause major flight delays.

A large portion of the test equipment is either damaged or rife with supportability and maintenance issues. The problem affects Mean-Time-To-Restore, safety, maintenance cost, and inventory management for every system within the National Airspace System. No other FAA program office or initiative currently addresses this problem.

For FY 2023, $3.0 million is requested to replace obsolete test equipment. The program will finalize the prioritization of test equipment requirements based on the facility need and equipment availability. Current requirements reflect critical need for oscilloscopes, universal data test sets, vector network analyzers, and reducing the test equipment backlog. The majority of test equipment has reached its end of life cycle and can no longer be maintained or repaired by the FAA Logistic Center or the Original Equipment Manufacturer.

What benefits will be provided to the American public through this request and why is this program necessary?

The National Test Equipment Sustainment program's mission is to support the restoration of Air Traffic services by procuring and delivering functioning test equipment throughout the National Airspace System. Technicians need up to date calibrated test equipment in order to make necessary adjustments and alignments to major National Airspace Systems. The lack of up to date test equipment poses a serious risk that will result in delaying the restoration of critical Air Traffic systems that are crucial for the protection of the flying public.

Detailed Justification for – 3A11 Mobile Assets Management Program

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Mobile Assets Management Program	$2,500	$2,500	$1,900

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Mobile Assets Sustainment	---	$1,900.0

What is this program and what does this funding level support?

The Mobile Assets Sustainment Project provides transportable National Airspace System equipment to restore certain operations during periods of extended equipment outages. The FAA's mobile assets deploy to support relief efforts during natural disasters such as earthquakes, forest fires, and hurricanes and ensures continuity of National Airspace System operations. The Mobile Assets Sustainment Project provides mobile assets that function as air traffic control towers and terminal radar approach control facilities, remote transmitter/receiver sites, remote communications air/ground sites, and other facilities/systems that experience unexpected outages or planned system downtime for non-routine maintenance, modernization, or upgrade.

This mobile equipment provides for the continuity or restoral of air traffic control when an Air Traffic Control Tower or other National Airspace System equipment is out of service due to a disaster or an extensive repair, modernization, or upgrade. The Mobile Assets Sustainment Project provides assets needed to augment air traffic control in support of major public events such as NASCAR and the NFL Super Bowl.

For FY 2023, $1.9 million is requested to ensure that a sufficient number of the FAA's mobile assets are available to restore continuity of aviation operations by procuring mobile assets and equipment upgrades/technology refreshes.

What benefits will be provided to the American public through this request and why is this program necessary?

The American public will benefit from the efficient restoration of air traffic control operations in emergencies or natural disasters within hours of the mobile assets arriving on site. The program will be working to ensure the availability and readiness of mobile assets to maintain or re-establish continuity of air traffic operations in response to emergencies and natural disasters.

Detailed Justification for - 3A12 Aerospace Medicine Safety Information System (AMSIS)

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Aerospace Medicine Safety Information System (AMSIS)	$20,200	$25,000	$16,200

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Aerospace Medicine Safety Information System (AMSIS) Phase 1	---	$16,200.0

What is this program and what does the funding level support?

The AMSIS program is developing a new aerospace medical information network that integrates critical medical information associated with pilots, air traffic controllers, and other aviation related personnel. The Office of Aerospace Medicine is responsible for advancing the field-of-study of aerospace medicine and for the medical certification of pilots, Air Traffic Control Specialists and other safety critical personnel. Office of Aerospace Medicine processes approximately 450,000 medical applications annually and maintains records on millions of past examinations as part of their role in the oversight of 600,000 pilots and approximately 15,000 Air Traffic Control Specialists.

Currently, all the coordination between FAA and the medical certification applicants is conducted through the United States Postal Service and is very labor intensive. In addition, the information systems that support the storage and record keeping for this information were originally developed in the 1990's, and while they have undergone several upgrades, the architecture of these systems is becoming unsupportable and will eventually become obsolete. The business processes that support the medical certification of airmen, and the other aviation safety programs, have changed and need to be re-engineered.

The AMSIS Program will eliminate the current labor-intensive process required by applicants today as well as align the new technology with industry architectural and

security standards. AMSIS will provide better data accessibility and a greater ability to analyze medical information, including denials due to disqualifying medical conditions or substance abuse issues, to identify safety trends that could affect system safety. Specifically, AMSIS is necessary to:

- Improve safety for the public by reducing fraudulent certification
- Improve FAA's responsiveness to the individual/pilot with reduced turn-around times, enhanced ability to track status, and to protect health and identifying information
- Improved visibility for airlines and other employers on the certification history of their pilots
- Deliver a better product for use by Aviation Medical Examiners
- AMSIS will be implemented in two phases. Phase 1 delivers automation improvements to the following processes:
    - Common Functionality (such as user management and support)
    - Medical Certification (Airman) and Medical Clearance (Air Traffic Control Specialists)
    - Industry Substance Abuse Oversight and Management
    - Workflow Management
    - Reporting and Data Services

For FY 2023, $16.2 million is requested to complete pre-deployment work including user testing, data migration, and training, to deploy AMSIS, and to execute post-deployment work including second-level engineering and maintenance.

What benefits will be provided to the American public through this request and why is this program necessary?

AMSIS will provide the tools required to capture, exchange, evaluate, and analyze information with significant improvements in efficiency, accuracy, and detail. AMSIS will simplify current processes and eliminate wasted effort by incorporating current technical medical standards. In addition, the updated automated process will reduce operational cost while improving customer service. These systems will securely interface with approximately 4,250 FAA Medical Examiners to perform pilot and Air Traffic Control Specialist medical examinations.

AMSIS will provide increased access to medical history and support earlier National Driver Register checks to determine ineligible candidates more effectively. This will result in an improved ability to prevent pilots from flying while incapacitated by health conditions or substance abuse.

Detailed Justification for - 3A13 Configuration, Logistics, and Maintenance Resource Solutions (CLMRS)

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Configuration, Logistics, and Maintenance Resource Solutions (CLMRS)	$26,350	$23,500	$19,700

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. Logistics Support Systems and Facilities Segment 3	---	$9,500.0
B. Automated Maintenance Management System	---	9,000.0
C. Remote Monitoring and Logging System Sustainment	---	600.0
D. Configuration Management Automation Phase 1	---	600.0

What is this program and what does the funding level support?

A. Logistics Center Support Systems 3 - Enhancement

This project is a mission support procurement that automated the FAA's logistics management and supply chain processes. The processes include planning, procurement, sales, maintenance, repair, overhaul, quality, inventory management, finance, and engineering of National Airspace System equipment for the Air Traffic Organization. Logistics Support Systems and Facilities automates these processes for routine and emergency logistics products and services to FAA customers at facilities nationwide, as well as to the Department of Defense, Department of Homeland Security, state agencies, and foreign countries.

For FY 2023, $9.5 million is requested for Segment 3 to begin the enhancements phase for additional capabilities. These additional capabilities include implementation of accurate depot inventory in the Industrial Financial System, which includes but is not limited to subsuming the Warehouse Management System.

B. Automated Maintenance Management System

FAA will deliver benefits through technology and infrastructure by interfacing the dispersed maintenance system within the currently existing System Wide Information Management Service Oriented Architecture environment. This will include an interface to the Industrial Financial System, the system that automates configuration management and logistics.

This investment standardizes system interfaces, and governance is applied to data exchanges. Data will be cleansed, and authoritative data sources will be documented. Data exchange services will be utilized to provide common services for maintenance systems, and enhanced, modernized maintenance tools will be implemented, as to promote more efficient maintenance practices.

For FY 2023, $9.0 million is requested to perform software and hardware engineering activities to continue solution implementation based on the chosen alternative for Automated Maintenance Management System activities. The key capabilities include: single event logging, interface with logistics, flight check, and notices to airmen.

C. Remote Monitoring and Logging System Sustainment

Will replace aging legacy core hardware components to accommodate National Airspace System growth and ensure that the legacy National Logging Network and the National Remote Maintenance Monitoring Network infrastructure supports the agency's storage, bandwidth, and security needs. This program is necessary because the hardware upgrade will allow the Remote Monitoring and Logging System infrastructure to comply with the FAA's mandated security requirements.

For FY 2023, $600,000 is requested to perform hardware-engineering activities to continue solution implementation. Remote Monitoring and Logging System Sustainment contractor support will perform hardware install, assemble, test and checkout of Remote Monitoring and Logging System equipment at eight locations, and provide program management to assist with program solution implementation.

D. Configuration Management Automation

The goal of FAA's Configuration Management is to record technical information, including system specifications and installation data, of all systems installed in FAA facilities. In addition, Configuration Management requires documentation for all proposed and actual changes to these systems in order for maintenance technicians and replacement programs to have accurate and up to date information for maintaining or replacing existing systems. The primary tool currently used to support Configuration Management has become obsolete.

The investment will utilize a phased approach to replace the legacy tool and establish lifecycle traceability and enhanced interfaces (Phase 2) with updated functionality. This will align the FAA with industry best practices and lifecycle management of agency assets and restructure interfaces to meet industry standards that support

emerging transfer technology. Configuration Management Automation will have the ability to effectively manage business rules, trace, predict, and manage an asset's status, opportunities, and risks during any phase of the lifecycle.

For FY 2023, $600,000 is requested for IFS license maintenance, software maintenance and FAA Cloud Services.

What benefits will be provided to the American public through this request and why is this program necessary?

The elements included under this program will meet the demands of sustaining the National Airspace System in a more efficient and cost competitive manner by managing inventory levels, optimizing delivery channels to meet National Airspace System availability requirements, and reducing cycle time of parts acquisition, ensuring and documenting standardized configurations. This program will upgrade existing systems with current hardware and software that support all of FAA sustainment and inventory supply chain management. The current systems are obsolete and unsupportable. The new technology will reduce FAA operating costs because they offer efficiencies and will not require intensive maintenance, as do the current systems.

Detailed Justification for: 3B01 Aeronautical Center Infrastructure Sustainment

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Aeronautical Center Infrastructure Modernization	$14,000	$21,500	$20,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Aeronautical Center Infrastructure Sustainment	1	$20,000.0

What is this program and what does the funding level support?

The Mike Monroney Aeronautical Center is an aging facility of 137 leased and FAA-owned buildings. The ages of the buildings vary from a few months to 73 years. Missions are accomplished in Mike Monroney Aeronautical Center facilities whose personnel train controllers to direct air traffic across the country and at airports and train technicians to maintain National Airspace Systems. Parts and repair services are provided by logistics personnel in these facilities and comprise the FAA's centralized National Airspace System inventory, sharing support of some systems with Department of Defense and foreign countries having common systems. There are $50.0 million of requirements to replace heating, ventilation, air conditioning, boilers/chillers, electrical/lighting, plumbing, interior finishes, exterior enclosures, roofs, interior construction, elevators, and stairs to prevent deterioration of building conditions. Seismic, wind bracing, and added fire protection is needed in many buildings. The requirements can be addressed with systematic funding to improve conditions and assure the aging infrastructure remains viable in future years.

For FY 2023, $20.0 million is requested for the following:

- Award design and renovation construction for replacement of building systems that include: heating, ventilation, air conditioning, electrical, plumbing, roofs, energy systems (lighting, insulation) and building automation systems

- Provide technology replacement of telecommunications at the Aeronautical Center.

- Provide National Airspace System Integration Support Services and Technical Support Services Construction inspectors.
- Award contracts for Quesada Gate Improvements.
- Award contracts for the renovation construction of Bldg #25 Radar Training Facility.
- Award construction contracts for the ASR-9 and tower relocation.

What benefits will be provided to the American public through this request and why is this program necessary?

Renovation improves facility space and energy utilization, reduces maintenance costs of major systems within renovated buildings, provides for incremental upgrades of telecommunications infrastructure, and improves productivity of personnel using renovated facilities through space efficiencies and improved environmental controls. It extends the useful life of the buildings, 25 to 30 years, for current and future generations of the FAA work force.

Detailed Justification for - 3B02 Distance Learning

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Distance Learning	$1,000	$1,000	$3,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Distance Learning	---	$3,000.0

What is this program and what does the funding level support?

Training has a direct impact on safety and competency in the National Airspace System and the international community. This program delivers state-of-the-art quality distance course delivery and enhancement of training infrastructure for geographically dispersed students. This capability reduces, and in some cases eliminates, the need for resident-based training.

Distance Learning provides the infrastructure to deliver simulations and training to all personnel at the FAA, U.S. Customs and Border Protection, Commercial Space Transportation, and to international students. The requested Distance Learning funding of $1.0 million, will provide resources for a necessary technology refresh of the Distance Learning Platforms, the FAA Academy Virtual Training Network, and Virtual Training Studios equipment located at every Air Traffic, Federal Contract Tower, and Airway Transportation Systems Specialist facility in the National Airspace System. The Distance Learning Platforms need a technology refresh to support high-performance media/simulation requirements and to replace the obsolete parts of current platforms. The funding will also provide resources for establishing connectivity between multiple field sites and the Academy Virtual Training Network system; thereby, allowing virtual training at an expanded number of field locations.

The STEP Program will modernize technical training for Air Traffic Control Specialists and Airway Transportation System Specialists under a phased, multi-year program. STEP will ensure that the FAA has the foundational technology

infrastructure to create learning content at a higher capacity, deliver learning in a way that increases engagement and reach, and measure relevance and quality of learner content so that continuous improvement may be achieved.

The current training model is heavily dependent on in-person Instructor-Led Training and outdated tools and technology, which limit training capacity, prolongs the time to certify personnel, and hinders workforce continuous improvement. Unexpected events such as COVID-19 highlight the risks with in-person Instructor-Led Training. A modern learning technology infrastructure will provide flexibility for continued training under extreme circumstances such as a pandemic.

For FY 2023, $2.0 million is requested for investment analysis towards development of FAA Acquisition Management System artifacts for a Joint Resources Council Investment Decision. The amount will fund investment analysis contractor support for program management, systems engineering, acquisition planning, cost estimation, benefits analysis, risk analysis, schedule development, and solution implementation planning.

What benefits will be provided to the American public through this request and why is this program necessary?

These projects allow air traffic controllers and technicians to build and maintain competencies within their areas of expertise. A major cost savings benefit of distance learning is the substantial reduction in time, travel, and per diem costs associated with resident-based training. In addition, distance learning delivery methods, a robust learning analytics capability, and rapid curriculum development tools increase training relevance and effectiveness across the FAA workforce while also providing flexibility in training schedules through local management control.

Detailed Justification for - 4A01 System Engineering and Development Support

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
System Engineering and Development Support	$39,100	$37,000	$38,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. System Engineering Support	---	$35,000.0
B. ATC/AFN Systems Support Program Evaluation	---	3,000.0

What is this program and what does the funding level support?

For FY 2023, $38.0 million is requested to provide technical contract support services, which will ensure sound systems engineering practices and business case development processes, instrumental to the safety, efficiency, and security of the National Airspace System.

The System Engineering and Development support budget line item provides future enhancement of the Air Traffic System by establishing and documenting the FAA's Enterprise Architecture requirements. The Enterprise Architecture is the blue print for the future air transportation system and must be documented clearly and accurately. This program assists in developing, delivering, and implementing guidance and support tools to move forward the engineering and prototyping effort for NextGen. In addition, contract support services have ensured sound systems engineering practices and business case development processes. The contract also provides support to FAA's planning and budgetary processes and contract administration, ensuring consistent application of the Acquisition Management System policy.

The research of emerging procedures and technologies will help to determine the best way to develop and deploy critical NextGen initiatives. These activities include demonstrating that NextGen procedures and operational changes will work on a large scale within the current and evolving air traffic system. In addition, automated data processing and information resource support is required to support the development

and/or enhancement of computer simulation models, miscellaneous software upgrades, databases, and program management tools. Program management, financial management and investment analysis support are provided to assist with planning, decision-making, and budgetary oversight of the activities involved in implementing newly acquired systems, components, and equipment in existing operational National Airspace System facilities.

A. System Engineering Support:

- Provides continuous critical support activities, which complement NextGen Air Transportation System programs, which include Configuration Management, Infrastructure Roadmaps, Operation Planning, Requirements Engineering, Verification and Validation, Systems Engineering Analyses, System Engineering Services, Enterprise Integration Services, Forecast Analysis and Investment Planning and Analysis for the life of the NextGen Program.

- Supports critical programs such as National Airspace System Enterprise Architecture (integrate and align the Enterprise Architecture portal), Segment Implementation Plan, and Safety Process Improvement are procured through this budget line item.

- Supports the oversight and administration of contract portfolios consisting of multiple prime contractors with large subcontracting teams who provide support across a broad range of Research and Mission Analysis and System Engineering requirements thus reducing the need for new standalone contracts and contract vehicles, which reduces overall costs and promotes efficiency.

- Supports the Office of Investment Planning and Analysis to conduct investment analysis and to support business case development and analyses. Investment analysis is conducted in the context of the FAA Enterprise Architecture and strategic goals and objectives. This work will provide decision makers with a clear picture of investment opportunities, risks and value.

- Supports the integration and development of corporate tools and processes to strengthen NextGen integration into the National Airspace System.

- Funds data warehouse enhancements that expand upon existing financial management and accounting analytics and reporting capabilities.

- Provides cost estimating, cost and benefit analysis, operations research, risk and schedule analysis, market surveys, and business case analysis and development in support of investment analyses for NextGen and the National Airspace System. Conduct Engineering Analysis on NextGen systems.

- Supports application and upgrades to program management financial tools. Supports the design, development, maintenance, training, and reporting on all aspects of Simplified Program Information Reporting and Evaluation, FAA Acquisition System Toolset, Financial Management System, and other management tools.

B. Air Traffic Control/Finance and Management Systems Support:

Supports technical analysis and oversight of acquisition programs goals and performance reporting

What benefits will be provided to the American public through this request and why is this program necessary?

This request will support the agency's goals of improving aviation safety, security, and efficiency while increasing capacity and productivity by providing technical assistance through cost effective contracts for various programs. The technical assistance will provide support for enhancing software tools, integrating and aligning the Enterprise Architecture portal, along with updating infrastructure roadmaps annually. The economies of scale created by the contracts under this project will allow for a reduction in award time of new tasks and a shorter cycle time for product implementation into the National Airspace System. It also increases agility in response to stakeholder requirements and serves to track funding costs and resources efficiently and effectively.

Detailed Justification for - 4A02 Program Support Leases

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Program Support Leases	$48,000	$15,000	$45,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Program Support Leases	---	$45,000.0

What is this program and what does this funding level support?

For FY 2023 $45.0 million is requested to pay rents on approximately 2,800 real estate leases, for land and facilities that are managed by this program. Funds are also required to provide the necessary real property rights for land, tower space, aerial easements, and technical operational space. These leases and property rights directly support air traffic control. Requirements include:

- Payment of rents for land and space leases that directly support navigation, communication, weather observation and reporting, air traffic control, maintenance of equipment and other functions that support the National Airspace System
- Funds for conversion of existing leases to fee ownership or perpetual easements
- Payments for condemnation (leasehold or fee) of real property interests
- Costs for land surveys, real estate appraisals, market surveys, title reports, environmental due diligence audits and other costs associated with the acquisition and management of real property assets
- Costs to record land leases for public record
- Funds for all costs associated with the relocation of offices, facilities, personnel, and equipment (e.g. move, furniture, IT/Telco, finishes)

- Funds for the downsizing, consolidation, or combination of multiple offices when technically feasible and economically advantageous

- Funds for the development of technical and administrative space lease evaluation tools to enhance real estate acquisition and management activities and for implementing program efficiency practices

- Funding for costs associated with real property lease terminations and equipment disposals

- Funding for testing and studies (environmental, suitability, sustainability, cost-effectiveness, etc.) in connection with the leasing, purchasing, usage, management, and disposal of real property

- Funding for real property costs associated with the transition to Next Generation (NextGen) facilities.

What benefits will be provided to the American public through this request and why is this program necessary?

Maintaining operational ground based navigational aids, towers, facilities, and equipment is paramount to the safety of the flying public. Accurate management will prevent FAA from incurring significant costs associated with defaults on leases. Funding for the implementation of co-location, consolidation, and oversight measures are an integral part of this program in order to achieve long-term savings and effective use of taxpayer dollars.

Detailed Justification for - 4A03 Logistics and Acquisition Support Services

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Logistics and Acquisition Support Services	$12,000	$12,000	$12,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Logistics and Acquisition Support Services	---	$12,000.0

What is this program and what does this funding level support?

For FY 2023, $12.0 million is requested to fund property and acquisition support services. This program provides contractor support services in planning, documentation, and oversight required to establish new facilities or upgrade existing facilities; audit functions; and capitalization of FAA assets. Facilities requiring support range from Airport Traffic Control Towers to Terminal Radar Approach Control facilities across the nation. The funds are required to obtain contract resources to provide acquisition support, improve real estate processes, and execute capitalization activities. These funds support drawing/design support for the space management at the three FAA Logistics Service Areas located in Atlanta, Ft. Worth, and Seattle: the William J. Hughes Technical Center in Atlantic City, New England Region (Boston); Great Lakes Region (Chicago); and the Mike Monroney Aeronautical Center in Oklahoma City. Contract resources are also used to support the Defense Contract Audit Agency program. The Program is required by the FAA Acquisition Management System (AMS), to audit 100 percent of all cost-reimbursement contracts greater than $100 million and a minimum of 15 percent of all cost-reimbursement contracts not expected to exceed $100 million. These contracts include support for National Airspace System capability development and critical services.

This support provides:

- Contract management and support of activities supporting the National Airspace System

- Asset tracking and documenting of capitalized assets

- Performance of contract activities in support of FAA Capital Investment Plan projects, including contract oversight and audits that ensure that no unallowable or unreasonable costs are being paid

What benefits will be provided to the American public through this request and why is this program necessary?

Maintaining appropriate oversight of the acquisition and management of these assets will ensure that tax payer dollars are utilized in the most prudent and transparent manner.

Detailed Justification for - 4A04 Mike Monroney Aeronautical Center (MMAC) Lease

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Mike Monroney Aeronautical Center (MMAC) Lease	$21,100	$14,600	$16,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Mike Monroney Aeronautical Center (MMAC) Lease	1	$16,000.0

What is this program and what does the funding level support?

The MMAC leases provide leased land/building rent and insurance that comprise approximately 80 percent of Aeronautical Center space. 2.7 million square feet of leased space and 1,067 acres of land, having a leased facility replacement value of $804 million. The MMAC provides facilities that support the work of 6,300 employees, students, and contractors on a daily basis and is the largest concentration of FAA personnel outside of Washington D.C. Approximately 11,000 visitors come to the Aeronautical Center annually.

The MMAC requires large parcels of land as National Airspace System test sites for surveillance radar, communications, weather, and navigation/landing systems, as well as warehouse, administrative office space, and training facilities. It is a Level IV security site based on numbers of employees, facility square footage, sensitivity of records, volume of public contact, and mission essential facilities whose loss, damage, or destruction would have serious impact on the National Airspace System. For FY 2023, $16.0 million is requested to pay rent under the long-term lease agreement. These facilities support missions that include:

- Aviation training for 90,000 FAA and international students per year in resident and distance learning, including approximately 1,000,000 hours of distance learning delivered annually

- Logistics services and supply support to the operational National Airspace Systems to all FAA Airway Facility locations, Air Traffic, and approximately 70 Department of Defense and international organizations

- Engineering services for National Airspace Systems modification and repair

- Aviation research of medical and human factors impacting aviation personnel

- Regulation certification of safety related positions and equipment, airmen and aircraft records and registration

What benefits will be provided to the American public through this request and why is this program necessary?

This program benefits the American Public and National Airspace System by leasing cost effective space in the Oklahoma City, Oklahoma market, which has one of the lowest lease, and utility rates in the nation. Facilities allow flexibility and growth to support National Airspace System operations and maintenance support. Investments made at the MMAC decrease energy consumption and operations costs by replacing old equipment with more efficient systems.

Detailed Justification for - 4A05 Transition Engineering Support

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Transition Engineering Support	$17,000	$19,000	$19,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
NAS Integration Support Contract	---	$19,000.0

What is this program and what does this funding level support?

The National Airspace Integration Support Contract program provides engineering and technical resources to the FAA organizations responsible for National Airspace Systems transition and implementation. The National Airspace Integration Support Contract team, working in partnership with these organizations, ensures that capital investments and regional projects are implemented most effectively to support the National Airspace System mission. This program provides technical support to assist the FAA's technical workforce in handling a surge in demand for short-term programs and projects that are vital to managing the volume of diverse systems and equipment associated with National Airspace System modernization.

For FY 2023, $19.0 million is requested to support the modernization schedules for National Airspace System programs. The requested level is necessary to provide continual National Airspace Integration Support contract management and infrastructure support for the prime contractor for the National Airspace Integration Support Contract III contract valued at $1.4 billion. In addition, these funds will be used for program acquisition management, financial management, administrative support services, continued operation and Information Technology support services for the National Airspace Integration Support contract tracking system and reporting system, other indirect contractor costs, and other program management support.

What benefits will be provided to the American public through this request and why is this program necessary?

It affords the FAA the flexibility in obtaining the technical expertise required to meet demand surges with minimal lead-time and without the need for long-term commitments. The National Airspace Integration Support Contract program provides the FAA with rapid access to highly qualified and experienced professional engineering and technical support where and when determined necessary by the incumbent Federal workforce. This program facilitates other national programs in defining, securing and administering the utilization of hard to capture professional labor categories once deemed necessary by those program offices.

Detailed Justification for - 4A06 Technical Support Services Contract (TSSC)

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Technical Support Services Contract (TSSC)	$28,000	$28,000	$28,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Technical Support Services Contract (TSSC)	---	$28,000.0

What is this program and what does this funding level support?

For FY 2023, $28.0 million is requested to continue the TSSC infrastructure. Funding the TSSC infrastructure sustains the FAA's national capability to supplement and leverage Federal workforce skills during site-specific National Airspace System implementation efforts. TSSC is the agency's primary installation support service vehicle and is used by a myriad of capital budget improvement program customers to achieve timely and cost-effective National Airspace System modernization. The TSSC program is the agency's vehicle to provide a workforce multiplier that installs equipment and supports the capital budget improvements to the National Airspace System in a timely, cost-effective manner. These activities include work planning, quality control, subcontracting, the contractor safety program, and award fee paid under the contract, as well as the usual rent, telecommunications, and utility costs incurred under the contract.

Significant work is required to install, modify, and relocate equipment by personnel with electronic, mechanical, and civil engineering skills. Often the engineering and technician support is of short duration and requires skills that the FAA government employee workforce does not have or that exist in insufficient numbers. The TSSC program allows the FAA to avoid hiring additional employees for a limited duration to handle a surge in demand, such as when new equipment is installed at multiple locations and during compressed schedule periods. TSSC infrastructure funding pays for the following:

- Project implementation safety, security, and quality control efforts

- The prime contractor's costs to award and administer subcontracts to accomplish $35.0 million of annual public works efforts on behalf of the FAA

- Contractor management of its personnel, office rent, communications, and utilities

- Award and transition from the present contract to the next support contract.

What benefits will be provided to the American public through this request and why is this program necessary?

The TSSC program has an award fee for the performance-based acquisition contract vehicle to promote efficiency and FAA customer satisfaction. The TSSC customer award fee evaluation survey participation return rate is typically greater than 90 percent. Direct FAA customer award fee feedback rated contractor performance greater than 90 percent in the excellent and good range across several hundred individual contractor performance evaluations in the past years of TSSC performance.

Detailed Justification for - 4A07 Resource Tracking Program (RTP)

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Resource Tracking Program (RTP)	$8,000	$8,000	$8,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Resource Tracking Program (RTP)	---	$8,000.0

What is this program and what does this funding level support?

The RTP is a computer management system (including hardware, software, development, training, and support) used by the FAA Service Centers, the William J. Hughes Technical Center, and the Mike Monroney Aeronautical Center for identifying requirements, internal budget preparation, implementation planning, resource estimating, project tracking, and measuring performance of projects. The Corporate Work Plan process is the Air Traffic Organizations method to implement approved projects and to standardize National Processes in support of the National Airspace System. The Corporate Work Plan system, which falls under the RTP program, enables users to share FAA's project data during the various stages of implementation (e.g., planning, scheduling, budgeting, execution, and closeout). Corporate Work Plan and its supporting data are continuously used for reporting project metrics to project managers, responsible engineers, program offices, and various other customers.

For FY 2023, $8.0 million is requested to continue to keep hardware and software licenses current, program/project management support for the National Airspace Systems, upgrade training documentation, and continue to provide training to users and data administrators. In addition, hardware and software licenses will be maintained to keep the cost of upgrades to a minimum. The hardware and software for the Corporate Work Plan must be constantly maintained and upgraded, to support FAA and the processes that will be impacted as it continues to evolve. The Corporate Work Plan is used to track all Air Traffic Organization capital projects from cradle to

grave. This system is also used to develop the Corporate Work Plan and work releases for the Technical Support Services Contract.

This system interfaces with DELPHI and Fund Control Module and various other systems. The Corporate Work Plan is a centralized system with load-balanced servers residing in Oklahoma City, Oklahoma.

What benefits will be provided to the American public through this request and why is this program necessary?

The Corporate Work Plan contributes to improving the efficiency of the FAA and enhances program management of FAA capital programs. This project provides cost and schedule assistance for major acquisition programs by providing enhanced program/project management capabilities with reliable data on cost accounting of capital expenses for FAA Managers and engineers through the Corporate Work Plan. This product improves productivity (on time completion of projects in the field) when a standardized project management process is supported by the toolset and emulates current operating procedures.

Detailed Justification for - 4A08 Center for Advanced Aviation System Development (CAASD)

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Center for Advanced Aviation System Development (CAASD)	$57,000	$57,000	$57,000

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
Center for Advanced Aviation System Development (CAASD)	---	$57,000.0

What is this program and what does this funding level support?

CAASD is an FAA-sponsored Federally Funded Research and Development Center operated under a Sponsoring Agreement with the MITRE Corporation since 1990. CAASD provides independent advanced research and development required by the FAA to obtain technical analyses, prototypes and operational concepts needed to fulfill the agency's Strategic Initiatives, under the Capital Investment Plan. CAASD provides support and guidance in an environment aligned with the FAA and free of competitive pressures because a Federally Funded Research and Development Center neither competes with private industry nor manufactures hardware products or software.

CAASD provides the FAA with key operational and technological concepts, analysis, and inputs, including the transfer of technology, capabilities, and investigatory prototypes based on years of research, systems engineering, and technical and operational expertise and analysis to meet and advance FAA and industry milestones. CAASD is uniquely positioned with its significant knowledge of the FAA and a profound perspective of the National Airspace System as well as global challenges through its international work encouraged by the FAA. CAASD understands the challenges across the aerospace and transportation landscape; has strong relationships across the aviation community; this offers a unique vantage point and an objective and independent view.

The support provided by CAASD is critical for the continuing development for the future of National Airspace Systems and the Enterprise Architecture. CAASD provides a unique system-wide integrated understanding, tools, labs, and other capabilities that are fundamental to FAA's ability to address its challenges. The required development of system architecture and comprehensive research, development, and system engineering services can only be provided by a Federally Funded Research and Development Center whose charter permits special access to sensitive Agency and Aviation Industry information and data, not normally available to support contractors. Numerous elements of the CAASD work program are highly specialized research and systems engineering activities that require extensive knowledge of the present and planned National Airspace Systems.

For FY 2023, $57.0 million is requested to fund technical, engineering, as well as research and development support for the CAASD program. The FY 2023 funding will support core MITRE research and systems engineering work as well as technical and operational analyses. Efforts to be supported in FY 2023 include:

- Research and Analysis of new innovations evolving National Airspace System capabilities and their accelerated implementation under a service-based approach that solicits and encourages industry to provide early insights into new innovations.

- Cyber and operational security research and operational resiliency analysis for aviation and other transportation systems including the Global Navigation Satellite System.

- Safety operational risk approach analysis and assessments, applied under real-time safety concepts.

- Research optimizing National Airspace System services leveraging emerging technologies and practices including data analytics, artificial intelligence, and machine learning.

- Automation evolution research of problems that require simulation and modeling; innovation; and investigatory prototyping to include follow-on prototype requirements analysis and definition. Affordability assessments with long-term economic implications of National Airspace System investments, and proposed FAA Policies.

- Analyses of United States and International Air Traffic Management Enhancements.

- Advancement of Safety Analytics' and the identification and assessment of advance capabilities and standards mitigating Safety issues in the National Airspace System.

- Assessment of Industry equipage (inventories and capabilities) alignments with proposed National Airspace System operational improvements.

What benefits will be provided to the American public through this request and why is this program necessary?

This is a critical time for the Agency and the evolution of the National Airspace System beyond NextGen. FAA's development of Trajectory Based Operations is underway and CAASD provides key research and infrastructure support to those efforts across the FAA. MITRE leverages commercial aviation industry data (such as fleet equipage, pilot incident information, and airline operations planning) to directly assist FAA in its decision-making; acting as a "trusted partner" for both the FAA and the commercial airline industry. Finally, MITRE's long-term experience provides crucial support to agency rule making activities from an Aviation Safety standpoint. Specific immediate benefits to the American public include:

- Improvements in Airport Operations through demand analysis and modeling
- Improvements to Arrival/Departure Scheduling through Time Based Flow Management under the Traffic Flow Management System
- Flight Safety improvements through Trajectory Based Operations, Procedure Design improvements
- Operations Integration with Performance Based Navigation
- Improvements to the National Airspace System Cybersecurity Operations and Resiliency; and security of our Global Navigation Satellite Systems
- Airspace Policy and Rulemaking improvements focused on integration of Unmanned Aircraft Systems and Commercial Space Operations into the National Airspace System

Detailed Justification for - 4A09 Aeronautical Information Management Program

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Aeronautical Information Management Program	$7,500	$22,200	$29,350

COST ESTIMATE OF WORK TO BE FUNDED THIS YEAR

Activity Tasks	Locations/ Quantity	Estimated Cost ($000)
A. Federal Notices to Airmen System Sustainment	---	$21,000.0
B. Aeronautical Information Management Modernization Enhancement 2	---	8,000.0
C. Independent Operational Assessment	---	350.0

What is this program and what does this funding level support?

A. Federal Notices to Airmen System Sustainment

Notices to Airmen provide important information describing temporary changes to components of the National Airspace System such as Airport Configuration, Obstacles, and Procedures. These notices help the aviation community identify where to fly, any issues with departure and arrival airports, and other crucial aviation safety information.

The purpose of this investment is to accelerate the migration of the current United States Notices to Airmen System to the new system, creating a sole Notices to Airmen repository and accomplishing one of the requirements of the 2018 Reauthorization Act 394 (H.R.302). Federal Notices to Airmen System Sustainment will continue fulfilling the Agency's Top 5 Safety Priorities by providing a single consolidated and baselined notification platform. This migration activity will address issues with failing "vintage" hardware and software modules associated with the current United States Notices to Airmen System.

For FY 2023, $21.0 million is requested to ensure completion of a sole Notices to Airmen repository achieved through migration of the old system functionality onto the

new. Funding will support completion of prime vendor software code development, technically refreshing vintage hardware and software that can no longer be updated, the conduct of testing activities including operational testing and User Acceptance Testing by Second Level Engineering, and training.

Federal Notices to Airmen System Sustainment will ensure a safe transition during the planned cutover. This requires substantial coordination with key stakeholders. Users will be notified and redirected to a website to access Notices to Airmen during this time period.

As the sole repository for Notices to Airmen's data, the Federal Notices to Airmen System will take over all functionality. To enable sun-setting of the legacy system, the new system will process (number and validate) all US domestic, Flight Data Center, and Department of Defense Notices to Airmen for origination. Legacy users will still be supported.

Increased automation will reduce the workload for Notices to Airmen stakeholders by reducing or eliminating many data management and communications tasks that were done manually. This automation will support increased collaboration and communication between stakeholders; reduce time that users spend originating, validating, and coordinating Notices to Airmen. A reduction in multiple (mostly redundant) systems will result in lower costs to the FAA for system maintenance and training. Consolidation of Notices to Airmen processing into a single core system with input and output interfaces customized to user needs will provide computational efficiencies, fewer delays in data exchange, a simpler more stable system/network architecture, and reduced maintenance.

B. Aeronautical Information Management Modernization Enhancement 1

This project will develop and integrate information flows for the management and maintenance of aeronautical information in a digital format for machine-to-machine exchange with National Airspace automation systems. The digital format is essential for enabling National Airspace System automation integration and information distribution to consumers involved in National Airspace System decision support, flight planning, and pilot briefing. Program work is focused on three areas: International Civil Aviation Organization requirements, consolidation of Enterprise Airspace Tools, and Aeronautical Common Service enhancements.

- Complete the transition to an International Civil Aviation Organization approved format. This migration will bring the Federal Notices to Airmen System in line with international standards. This work will enable advanced filtering and sorting by aviation systems and pilots to deliver the most relevant and timely information needed for safe flight.

- Provide an enterprise airspace tool that consolidates four legacy tools. This capability will improve the origination, management, and dissemination of airspace data for Air Traffic Management Service Providers, mission and national airspace personnel, and other users. This work will consolidate redundant legacy systems used to manage airspace descriptions.

- Enhance the Aeronautical Common Services by creating a flexible data source ingestion module and onboarding new authoritative data sources, support additional web service standards, enable conversion and distribution of a variety of industry standard data formats.

For FY 2023, $8.0 million is requested to initiate design and development activities to include preliminary and critical design reviews, software requirements specification, software design document development, and contract support. Aeronautical Information Management Modernization Enhancement 1 will complete the automation portion of the remaining 2018 Reauthorization mandates; achieve FAA commitments made to stakeholders and aviation industry; and address one of FAA's Top Five Safety Priorities.

C. Independent Operational Assessment

For FY 2023, $350,000 is requested for Independent Operational Assessment to identify any safety hazards and/or operational concerns with Aeronautical Information Management Modernization capabilities.

What benefits will be provided to the American public through this request and why is this program necessary?

The Aeronautical Information Management Modernization Program will provide safety benefits due to reduction in accidents attributable to pilot briefing errors, missing information, or accidents caused by violation of National Airspace System flow constraints and restrictions. The program will help the aviation community identify where to fly, departure and arrival airport issues, and other aviation safety information. Flight efficiency and reduction in delays will improve as airplane operators realize savings from better information leading to improved flight planning and pilot briefing. The Federal Aviation Administration will realize costs benefits through infrastructure consolidation and enhancement and System Wide Information Management connectivity as well as reduced cost of aeronautical information gathering, management, and utilization across the National Airspace System enterprise.

Detailed Justification for – 5A01 Personnel and Related Expenses

($000)

Activity/Component	FY 2021 Enacted	FY 2022 Annualized CR	FY2023 Request
Salaries and Benefits	507,353	515,247	534,513
Non-Pay	37,647	29,753	35,487
Total	**$545,000**	**$545,000**	**$570,000**
FTE	2,815	2,815	2,815

What is this program and what does this funding level support?

This request provides funding for the personnel, travel and related expenses for the Facilities and Equipment (F&E) workforce performing work essential to FAA's efforts to sustain and modernize the National Airspace System (NAS). These employees are assigned to all phases of managing and implementing major capital acquisitions including site engineering, installation and implementation, and oversight of capital programs.

The F&E workforce includes electronic, civil and mechanical engineers; electronics technicians; quality control and contract specialists; Operations research analysts, and safety inspector personnel. The F&E workforce resides in the Air Traffic (ATO), Aviation Safety (AVS), Finance and Management (AFN), Research and Development (ARD), and Integration and Engagement (AIE) offices. Approximately seventy-five percent of the F&E workforce are located in the field.

F&E personnel and related expenses are distributed across FAA organizations as follows:

($000)

Organization	FY 2021 Enacted	FY 2022 CR	FY 2023 Request
ATO*	391,809	391,809	434,713
AVS	12,158	12,158	8,400
AFN	40,758	40,758	41,429
ANG*	100,275	100,275	0
ARD*	0	0	81,053
AIE*	0	0	4,405
Total	**$545,000**	**$545,000**	**$570,000**

* The FAA proposes to evolve the Office of NextGen to the Office of Research and Development, establish the Office of Integration and Engagement, and establish the Chief Technology Officer in the Air Traffic Organization.

F&E employees perform essential services in managing the acquisition and installation of new systems into the NAS. Major capital programs can take over a decade to implement from proof of concept to final implementation, which requires a sustained engagement. Civil, mechanical and electrical engineers, along with technicians, provide technical support for design reviews, perform site preparation and installation, conduct technical evaluations, and provide systems integration and in-service management. Operations research analysts and cost estimators conduct investment analyses for new capital projects. Contracting officers provide acquisition services, and safety inspectors conduct the necessary regulatory and safety oversight functions for new services and operational capabilities being installed in the NAS.

On average, the FAA has over 8,000 active projects and completes approximately 2,500 every year. This requires long-term program management and oversight capabilities to ensure continuity and to get best value for the government's investment in new systems and technology. This budget line item provides FAA personnel with the long-term technical expertise necessary to oversee the design and implementation of new NAS systems as well as provide for the sustainment of core NAS Infrastructure such as radar, communication, automation, facilities, and navigation systems.

What benefits will be provided to the American public through this request and why is this program necessary?

The FAA's Facilities and Equipment capital program invests in developing and implementing new technologies to meet future demand and to sustain the current NAS.

The FAA continues to recognize operational benefits from the transformation of America's air traffic control system from a ground-based system to a satellite-based system. GPS technology is being used to shorten routes, save time and fuel, reduce traffic delays, increase capacity, and permit controllers to monitor and manage aircraft with greater safety margins. Planes are able to take more direct routes and avoid delays. The FAA requires a stable workforce to sustain the current systems and services of staffed and unstaffed air traffic control facilities.

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3C. Reseach Engineering & Development

RESEARCH, ENGINEERING, AND DEVELOPMENT

(AIRPORT AND AIRWAY TRUST FUND)

For necessary expenses, not otherwise provided for, for research, engineering, and development, as authorized under part A of subtitle VII of title 49, United States Code, including construction of experimental facilities and acquisition of necessary sites by lease or grant, $260,500,000, to be derived from the Airport and Airway Trust Fund and to remain available until September 30, 2025: Provided, That there may be credited to this appropriation as offsetting collections, funds received from States, counties, municipalities, other public authorities, and private sources, which shall be available for expenses incurred for research, engineering, and development.

Note.—A full-year 2022 appropriation for this account was not enacted at the time the budget was prepared; therefore, the budget assumes this account is operating under the Continuing Appropriations Act, 2022 (Division A of P.L. 117–43, as amended). The amounts included for 2022 reflect the annualized level provided by the continuing resolution.

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PROGRAM AND FINANCING
($ in Millions)

Identification code: 69-8108-0-7-402	FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
Obligations by program activity:			
0011 Improve aviation safety	94	29	……
0012 Improve Efficiency	3	……	……
0013 Reduce environmental impact of aviation	26	3	……
0014 Improve the efficiency of mission support	1	10	……
0015 Research, Engineering and Development	95	205	234
0100 Subtotal, direct program	219	247	234
0799 Total direct obligations	219	247	234
0801 Research, Engineering & Development (Airport & Airway Trust Fund (Reimbursable)	11	11	11
0900 Total new obligations (total)	230	258	245
Budgetary resources available for obligation:			
1000 Unobligated balance brought forward, Oct 1	171	149	98
1021 Recoveries of prior year unpaid obligations	2	……	……
1070 Unobligated balance (total)	173	149	98
New budget authority (gross), detail:			
Appropriation, discretionary:			
1101 Appropriation (special or trust fund)	198	198	261
Spending authority from offsetting collections, discretionary:			
1700 collected	7	9	9
1701 Change in uncollected payments, Federal sources……..	1	……	……
1750 Spending Auth from offsetting collections, disc (total)……	8	9	9
1900 Budget authority (total)	206	207	270
1930 Total budgetary resources available	379	356	368
Memorandum (non –add) entries:			
1941 Unexpired Unobligated balance, end of year	149	98	123
Special and non-revolving trust funds:			
1950 Other balances withdrawn and returned to unappropriated receipts	2	……	……
1952 Expired Unobligated balance, start of year	6	5	5
1953 Expired Unobligated balance, end of year	5	5	5
1954 Unobligated balance canceling	2	……	……
Change in obligated balances:			
Unpaid obligations:			
3000 Unpaid obligations, brought forward, Oct 1 (gross)	166	225	225
3010 New obligations incurred, unexpired accounts	230	258	245
3011 Obligations ("upward adjustments"), expired accounts	1	……	……
3020 Outlays (gross)	-167	-258	-286

3040	Recoveries of prior year unpaid obligations, unexpired	-2	……	……
3041	Recoveries of prior year unpaid obligations, expired....	-3	……	……
3050	Unpaid obligations, end of year.....	225	225	184
	Uncollected payments:			
-3060	Uncollected payments, Federal Sources, brought forward, Oct 1……..…….	-9	-9	-9
3070	Change in uncollected pymts, Fed sources, unexpired……...	-1	……	……
3071	Change in uncollected pymts, Fed sources, expired……..……	1	……	……
3090	Uncollected payments, Federal sources, end of year ...	-9	-9	-9
	Memorandum (non-add) entries:			
3100	Obligated balance, start of year	157	216	216
3200	Obligated balance, end of year	216	216	175
	Budget Authority and outlays, net:			
	Discretionary:			
4000	Budget authority, gross.....	206	207	270
	Outlays, gross:			
4010	Outlays from new discretionary authority.....	46	96	124
4011	Outlays from discretionary 0balances	121	162	162
4020	Outlays, gross (total)	167	258	286
	Offsets against gross budget authority and outlays			
	Offsetting collections (collected) from:			
4030	Federal sources	-8	-9	-9
4040	Offsets against gross budget authority and outlays (total)	-8	-9	-9
	Additional offsets against gross budget authority only:			
4050	Change in uncollected pymts, Fed sources, unexpired…….…..	-1	……	……
4052	Offsetting collections credited to expired accounts…..	1	……	……
4070	Budget Authority, net (discretionary)……..….	198	198	261
4080	Outlays, net (discretionary)…….……..	159	249	277
4180	Budget authority, net (total)	198	198	261
4190	Outlays, net (total).....	159	249	277

This account provides funding to conduct research, engineering, and development to improve the national airspace system's capacity and safety, as well as the ability to meet environmental needs. The request includes funding for several research and development activities of the Next Generation Air Transportation System (NextGen), as well as activities related to unmanned aircraft systems.

OBJECT CLASSIFICATION
($ in Millions)

Identification code: 69-8108-0-7-402		FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
	Direct obligations:			
	Personnel compensation			
11.1	Full-time permanent: Full-time permanent	27	32	34
12.1	Civilian personnel benefits	9	11	12
21.0	Travel and transportation of persons	……	1	1
25.1	Advisory and assistance services……	34	38	34
25.2	Other services from non-Federal sources……	62	69	64
25.3	Other goods and services from Federal sources.…	9	10	10
25.4	Operation and maintenance of facilities…….....	1	1	1
25.5	Research and development contracts.....	11	12	11
26.0	Supplies and materials	1	1	1
31.0	Equipment.....	2	2	2
41.0	Grants, subsidies, and contributions	63	70	64
99.0	Direct obligations	219	247	234
99.0	Reimbursable obligations	11	11	11
99.9	Total new obligations, unexpired accounts	230	258	245

Employment Summary

Identification code: 69-8108-0-7-402	FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
1001 Direct civilian full-time equivalent employment	196	217	227

EXHIBIT III-1
Research, Engineering and Development
Summary by Program Activity
Appropriations, Obligation Limitations, and Exempt Obligations
($000)

	FY 2021 ENACTED	FY 2022 CR	FY 2023 PRES. BUD.
Research, Engineering and Development	$ 198,000	$ 198,000	$ 260,500
TOTAL, Base appropriations	$ 198,000	$ 198,000	$ 260,500
FTEs	196	217	227
Direct Funded			
Reimbursable, allocated, other			
Supplemental Funding			
COVID-19 Supplementals			
CRRSA			
Relief for Airports (ARPA)			
Employee Leave Fund (ARPA)			
IIJA Supplemental (Division J)			
Faclities & Equipment			
Airport Infrastructure Grants			
Airport Terminal Program			
TOTAL, Base appropriations	$ -	$ -	$ -
FTEs			
Direct Funded			
Reimbursable, allocated, other			
Account	$ 198,000	$ 198,000	$ 260,500

Program and Performance Statement

This account provides funding for establishing and overseeing FAA's Research and Development (R&D) policies and plans. Its diverse scientific, engineering and technical workforce supports all aspects of aviation from research on materials to development of new products and procedures.

In partnership with both domestic and international entities within the aviation community, the FAA RE&D programs provide world leadership by conducting high-priority research and developing innovative technologies to support a safe, efficient, and environmentally acceptable global aviation system.

EXHIBIT III-1a			
RESEARCH, ENGINEERING & DEVELOPMENT			
SUMMARY ANALYSIS OF CHANGE FROM FY 2022 TO FY 2023			
Appropriations, Obligations, Limitations, and Exempt Obligations			
($000)			
	$000		**FTE**
	-		-
FY 2022 Annualized CR	$198,000		217
	-		-
ADJUSTMENTS TO BASE:			
Annualization of FY 2022 FTE			
Annualization of Prior Pay Raise(s)	290		
FY 2023 Pay Raise	1,491		
Adjustment for Compensable Days (260 days)	-179		
GSA Rent			
Working Capital Fund			
FERS Increase in FY2022	0		
Non-Pay Inflation	1,648		
SUBTOTAL, ADJUSTMENTS TO BASE	**3,250**		**0**
PROGRAM REDUCTIONS			
SUBTOTAL, PROGRAM REDUCTIONS	**0**		**0**
PROGRAM INCREASES			
Research, Engineering and Development Increase in FTE	57,370 1,880		10
SUBTOTAL, PROGRAM INCREASES	**59,250**		**10**
FY 2023 REQUEST	**260,500**		**227**

		Request	Page
FEDERAL AVIATION ADMINISTRATION			
A. Research, Engineering and Development		**260,500**	
a.	Fire Research and Safety	7,367	8
b.	Propulsion and Fuel Systems	5,471	10
c.	Advanced Materials/Structural Safety	2,886	13
d.	Aircraft Icing	3,353	16
e.	Digital System Safety	5,287	18
f.	Continued Air Worthiness	12,430	20
g.	Flight Deck/Maintenance/System Integration Human Factors	15,292	22
h.	System Safety Management/Terminal Area Safety	10,111	24
i.	Air Traffic Control Technical Operations Human Factors	5,911	27
j.	Aeromedical Research	10,000	29
k.	Weather Program	16,178	32
l.	Unmanned Aircraft Systems Research	14,935	34
m.	Alternative Fuels for General Aviation	12,385	37
n.	Emerging Technology Accelerator	10,000	40
o.	Commercial Space Transportation Safety	5,708	42
p.	Wake Turbulence	3,728	44
q.	NextGen - Weather Technology in the Cockpit	3,028	46
r.	Information/Cyber Security	5,500	48
s.	Environment and Energy	21,163	50
t.	NextGen Environmental Research - Aircraft Technologies and Fuels	73,976	53
u.	System Planning and Resource Management	4,141	57
v.	Aviation Workforce Development – Section 625	6,169	59
w.	William J. Hughes Technical Center Laboratory Facilities	5,481	61

Detailed Justification for A11.a Fire Research and Safety

FY 2023 – A11.a Fire Research and Safety – Budget Request
($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 President's Budget
Salaries and Expenses	4,378	4,467	4,634
Program Costs	2,758	3,109	2,733
Total	**7,136**	**7,576**	**7,367**
FTE (if applicable)	**24**	**24**	**24**

What is this program and what does this funding level support?

The Fire Research and Safety program supports the Administration's principle of Safety and seeks to protect aircraft occupants through the prevention or mitigation of in-flight fires and the improvement of survivability in the event of a post-crash fire. Researchers in this program conduct tests to evaluate potential fire threats from the integration of new aerospace technologies and develop procedures, standardized test methods, and data to support the certification of aircraft systems and materials. This program is essential to ensure that the innovative technologies and materials emerging in the aerospace industry can be safely integrated into the aircraft environment.

This program also provides funds for modifications and improvements to facilities and the purchase of equipment to support the fire safety research at the William J. Hughes Technical Center. These unique fire safety facilities enable this program to continue to support the rapidly evolving technologies of the aviation industry.

Major Activities Planned:

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
Component/Material Fire Testing	Develop new and/or revised aircraft materials flammability standards.	Revised aircraft materials flammability standards to address existing and emerging technologies and manufacturing processes	Reduce the risk of a catastrophic in-flight fire, while enabling the introduction of new materials and components into commercial transport aircraft	First year of an on-going Five year activity
Cargo Fire Protection	Improve fire detection, containment and suppression in cargo containers, and	Technical Standards to allow for: - Evaluation of new fire detection and	Reduce hazards and risks of in-flight fires in large cargo and	First year of an on-going five year activity

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
	evaluate new fire suppression agents and systems	suppression technologies - Evaluation of fire resistant containers - Safe shipment of lithium batteries	passenger transport aircraft	
Engine Fire Protection	Assess and mitigate fire threats in aircraft engines and auxiliary power units	Research results to allow for: - Development of consensus based fire test standards for engine components - Evaluation of new engine fire suppression agents	Reduce risks associated with engine related fires by improving performance of materials and suppression agents	First year of an on-going five year activity

What benefits will be provided to the American public through this request and why is this program necessary?

The primary benefit of this research to the American public is the prevention of the catastrophic consequences of uncontrollable aircraft fires, including loss of life and the destruction of the aircraft. This program is necessary to ensure the continued safety of aircraft as technology, materials, and construction methods evolve. The testing supports the need to upgrade aircraft certification standards to keep pace with the emerging technologies used by the aerospace industry, while also working towards the development, validation, and transfer of cost-effective aircraft fire safety technology to industry.

Detailed Justification for A11.b Propulsion and Fuel Systems

FY 2023 – A11.b Propulsion and Fuel Systems – Budget Request ($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 President's Budget
Salaries and Expenses	1,994	2,034	2,266
Program Costs	2,221	1,087	3,205
Total	**4,215**	**3,121**	**5,471**
FTE (if applicable)	**10**	**10**	**11**

What is this program and what does this funding level support?

The Propulsion and Fuel Systems Program supports the Administration's principles of Safety, Climate and Resilience, and conducts research on new and legacy aircraft propulsion systems in order to develop the technical basis for rules, policy, and guidance used for certification and continued airworthiness.

One specific focus of the current research program is to reduce the threat of uncontained jet engine failures. Uncontained failures occur when high energy rotating components break into fragments that escape the engine case and impact other parts of the aircraft–posing a serious safety threat to passengers and the continued operation of the aircraft. At least nine such uncontained events have occurred over the past six years, with one instance resulting in the first fatality on a major US commercial flight in nearly a decade.

Causes of these events vary, but generally involved some form of inherent material anomaly or in-service damage that reduced the engine's structural integrity and led to the premature failure. To combat uncontained engine events, a three-prong safety strategy has been adopted consisting of research activities intended to: prevent the failure from ever happening, predict or forewarn of the impending failure to allow preventative action, and mitigate or minimize the risk and threat when failures do occur.

The development of more fuel efficient airframes and engines are critical for aviation to reduce the aviation sector's carbon dioxide emissions. This research program will also be evaluating emerging alternative propulsion technologies that optimize the efficiency of internal combustion engines used in the current general aviation fleet.

Major Activities Planned:

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
Advanced Damage Tolerance and Risk Assessment Methods for Engine Life Limited Parts	To better predict how material flaws affect the integrity of critical jet engine parts	Data and analysis methods - Enhanced version of the DARWIN engine design code to address nickel alloy anomalies - Advisory materials to determine engine part life limits	Program outputs will provide a standardized, publicly available means to accurately predict the service life of critical engine parts.	Final year of four year phase
Improved Nondestructive Evaluation to Prevent Uncontained Engine Failures	Reduce the risk of in-service failures of critical jet engine parts	An inspection method and industry standard for nickel alloy materials having increased sensitivity over conventional methods	Program output will ensure the integrity of critical engine parts by enabling more sensitive inspections to detect hidden flaws prior to failure	Complete nickel billet phase in FY23 and initiate new phase for nickel rotor forgings
Advanced Analysis Methods for Impact of Aircraft Materials from Rotor Burst and Blade Release	Evaluate engine fragment impacts and minimize catastrophic risk	LS-DYNA impact models - Metal and composite material data - User guidance, test cases and technical reports Uncontained Engine Debris Damage Assessment Model support - Engine debris fragment model updates	Program outputs provide industry with FAA certification standards with publicly available tools, data, and methods to advance engine fragment analysis capability	Ongoing, fourth year of project final phase
Engine Safety Event Prevention thru Engine Health Monitoring (EHM)	To monitor engine operating parameters and thresholds to forewarn of an impending engine failure, allowing preventative corrective action to occur.	- Review of current EHM capabilities - A robust methodology to detect abnormal engine performance deterioration in flight, enabling the crew to trigger maintenance inspections prior to next flight	Program outputs will facilitate EHM using analytics and artificial intelligence to detect unsafe conditions and precursors before they propagate to major engine events	First year of a four year project

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
Electric Motor Research for the Safe Implementation of Electric Propulsion	To test electric motors under various environmental conditions such as altitude and temperature to evaluate performance and failure modes	- Data and reports to inform the development of standards and guidance material for the safe implementation of electric propulsion systems for aircraft	The output of the research supports the DOT priority of the development of performance-based safety rules by providing the data necessary for policy and industry standard development for electric motors for aircraft electric propulsion systems	First year of four year effort

What benefits will be provided to the American public through this request and why is this program necessary?

Since 2015, there have been nine high profile failures that ejected engine fragment debris. The benefit of this research program to the American public is the prevention of catastrophic airplane accidents caused by turbine engine failures and an associated reduction of fatalities, injuries, and property damage. This program develops improved inspection technologies and publicly available design tools that will reduce or eliminate critical component failures attributable to inherent manufacturing flaws and in-service damage. It also produces analysis tools to ensure that the safety risk to the passengers and crew is minimized when failures do occur. Continuing program efforts are necessary to advance scientific understanding of the failures of turbine engines and to develop tools to reduce the likelihood of such failures, thereby sustaining and enhancing air transportation safety.

The development of more fuel efficient airframes and engines and FAA's certifications of these technologies are critical for reducing the aviation sector's carbon dioxide emissions. As civil aviation is continuously changing, so too must the analytical tools and research data used to certify new and existing engines to ensure their safe operation and the safety of the flying public.

Detailed Justification for A11.c Advanced Materials/Structural Safety

FY 2023 – A11.c Advanced Materials/Structural Safety – Budget Request

($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 President's Budget
Salaries and Expenses	999	1,019	1,057
Program Costs	13,721	659	1,829
Total	**14,720**	**1,678**	**2,886**
FTE (if applicable)	**6**	**6**	**6**

What is this program and what does this funding level support?

This program supports the Administration's principle of Safety. Recent years have seen the first use of composites in critical, primary structure, the introduction of additive manufactured parts as well as the introduction of other novel materials, all of which are rapidly evolving. It is part of the FAA's safety oversight responsibility to ensure that these new technologies are safe when they enter service and remain safe as they age. This program takes a proactive approach and seeks to develop an understanding of novel materials in the laboratory without risk to the flying public.

This program conducts research to support FAA safety and regulatory activities in the technical areas of composites and other advanced materials, and their impact on flight safety. While composites have been used in non-critical components of aircraft for some time, they are now finding widespread use in primary and critical structures, bringing enormous challenges to the certification process.

This level of funding will support: development of guidelines for new materials to improve certification efficiency; evaluation of long-term material and structural behavior and associated maintenance to ensure safety; evaluation of crashworthiness behavior of new materials; development of efficient methods for characterizing new materials to tie to best practice design and certification principles; funding for modifications and improvements of facilities and the purchase of equipment to support this research; funding for industry standards, educational initiatives, and the Joint Advanced Materials and Structures (JAMS) Center of Excellence.

Major Activities Planned:

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
Evaluation of long-term material and structural behavior	Investigate in-service aging behaviors of adhesively bonded joints in helicopter applications	- Industry best practices for estimating the effect of long term service on composite and metal bonded structures. - Test standards for estimating design life of helicopter rotor blades.	Facilitate development of industry standards and guidance and promote associated performance-based safety rules.	Multiple coordinated projects. Second year of on-going seven year activity
Fatigue and damage tolerance behavior of bonded joints	Conduct research to support development of public data for best practices and acceptable methods to substantiate bonded composite structures and repairs	Report and data summarizing results from test and analysis for inclusion in Composite Materials Handbook -17 and other reports used to determine the adequacy of existing regulations in preserving safe airframe designs incorporating bonded repair technology	Program outputs will facilitate improved safety, increased efficiency, and provide validated procedures to implement bonded repair technology in a safe and efficient manner	Third year of on-going five year activity
Crashworthiness performance of composite aircraft seats.	Construct analytical models of seats for proposed composite material systems. Conduct tests to verify and validate these seat models.	Data and findings published in a technical report to support modification of existing FAA guidance for acceptance of analytical results in the certification process for seats using composite components.	Current certification guidance needs to be expanded for composite seating systems.	New start. First year of a three year activity
Develop guidelines for characterizing new material forms and assessing manufacturing maturity.	To understand new materials and processes being introduced into aviation products and prepare for their certification and safe incorporation into the aerospace system.	- Material databases and technical reports documenting the process of generating the data. - Test data to establish acceptable minimum criteria	Development of a standardized approach that industry can follow when generating material property databases.	Multiple coordinated projects. Second year of on-going seven year activity

What benefits will be provided to the American public through this request and why is this program necessary?

The use of advanced materials is central to a vibrant aviation industry in the United States. While traditional composites (generally, continuous fiber epoxy material systems) have been used in aircraft structure for some time, non-traditional composites such as those with discontinuous fibers or thermoplastics, as well as other advanced materials and processes such as additive manufacturing, are increasingly being used in aviation products.

As the methods of structural verification are being extended to new components and aircraft applications, it is important to understand acceptable design limits that have not been explored with composite materials and structures. This research addresses this gap in knowledge and supports standardization of industry practices to accelerate safe implementation of these technologies into aviation products thereby maintaining safety of the American flying public. Standardization also promotes efficiency by shortening the time and cost to introducing new structures made with advanced materials.

Detailed Justification for A11.d Aircraft Icing

FY 2023 – A11.d Aircraft Icing – Budget Request
($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 President's Budget
Salaries and Expenses	1,098	1,120	1,162
Program Costs	423	1,352	2,191
Total	**1,522**	**2,472**	**3,353**
FTE (if applicable)	**6**	**6**	**6**

What is this program and what does this funding level support?

The FAA Aircraft Icing Research Program supports the Administration's principles of Safety and focuses on ground icing and inflight icing effects on all types of aircraft, including innovative aircraft, in particular urban air mobility vehicles, aiming to reduce the risk of icing events and accidents. Icing continues to be a factor in accidents and serious events involving large commercial transports, small general aviation airplanes, and rotorcraft. It affects all phases of flight, from takeoff to landing. Research focuses on deicing and anti-icing methods and decision-making as well as the aerodynamic and operational effects of icing on different aircraft designs as well as engines.

Funding will support research to maintain safe winter ground operations, evaluate the effects of changing ground operations, and develop testing and analysis methods to support these changes. Holdover time is the term for the time of protection provided by an anti-icing fluid during winter weather conditions such as snow, freezing rain, freezing drizzle, freezing fog, and frost. Holdover time tables are used by airlines worldwide, enabling their pilots to determine if a fluid has exceeded its time of protection and another application of anti-icing fluid is needed. The FAA mandates the use of these tables and leads the provision of vital information on new issues through FAA leadership in an international ground deicing committee. This program provides funds for modifications and improvements of facilities and the purchase of equipment to support the icing research at the William J. Hughes Technical Center. This program is necessary for the FAA to continue to play an international leadership role in ground icing research.

Major Activities Planned:

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
Ice protection of vertical stabilizer prior to takeoff.	Determine whether application of anti-icing fluids provides sufficient protection of the vertical stabilizer or other protection methods are needed.	Risk assessment through analysis of testing data.	Facilitate formation of policy and guidance relative to protection of the vertical stabilizer.	Final year of a five year activity.
Fluid protection time for mixed phase ground icing conditions	Determine mixed phase conditions that are sufficiently common and suitable for simulation to be included in hold over time tables.	Methods of simulation for mixed phase conditions.	Facilitate formation of policy and modification of holdover time tables.	Second year of a five year activity.

What benefits will be provided to the American public through this request and why is this program necessary?

Icing events and accidents continue to occur. This program conducts research to help prevent future aircraft icing events and accidents, and ultimately reduce the icing risk to all aircraft. The American public benefits from this program through safer operations in all icing conditions, from take-off to landing. Aircraft icing can occur at any phase of flight highlighting the need for research of the various icing environments, from the ground to high altitudes.

Detailed Justification for A11.e Digital System Safety

FY 2023 – A11.e Digital System Safety – Budget Request
($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 President's Budget
Salaries and Expenses	1,707	1,741	1,807
Program Costs	3,197	1,948	3,480
Total	**4,904**	**3,689**	**5,287**
FTE (if applicable)	**8**	**8**	**8**

What is this program and what does this funding level support?

This program supports the Administration's principles of Safety, and Transformation, as well as Executive Order 14028 "Improving the Nation's Cybersecurity" by identifying, deterring, protecting against, detecting, and responding to malicious cyber events.
Aircraft operations are increasingly dependent on highly integrated and networked digital systems in safety-critical digital aircraft systems. The application of advanced digital technologies such as artificial intelligence (AI) and machine learning (ML) in safety-critical aircraft systems will enable increasingly efficient and safe flight management. This ultimately leads to greater on time predictability, improved air travel safety, and reduced emissions thereby mitigating aviation's impact on climate change. These benefits will be realized only if the FAA can assure the continued operational safety and security of the advanced technology applications. This program advances the understanding of the critical issues that will influence design, integration, safety assurance and operational approvals of advanced technology applications. The outputs of this research will inform updates to standards, guidance, and training materials to sustain or improve operational safety.

Major Activities Planned:

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
Complex Digital Systems-Assurance Criteria for Emerging Technologies	Conduct studies to assess the risks associated with the application of AI/ML technologies in safety-critical digital airborne systems and develop appropriate mitigations measures and assurance criteria	Technical Reports: - Risk Assessment - Mitigation Measures Assurance Criteria	Program outputs will facilitate safe implementation of AI/ML in safety-critical digital airborne systems	Ongoing: 2024 Third year of ongoing four year activity

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
Complex Digital Systems- Assurance Approaches	Conduct case studies on new assurance approaches and assess the feasibility of these approaches to certify AI/ML applications	Technical Report: New assurance approaches and application guidance	Program outputs will equip aircraft certification staff with effective assurance methods to facilitate safe application of AI/ML in safety-critical airborne digital systems	Ongoing: 2024 Third year of ongoing four year activity
Aircraft Performance, Navigation, and Timing Cyber Safety- Assessment and Prototyping	Perform initial assessment of Global Navigation Satellite System multi-element, civil anti-spoof antenna, for conformity, suitability, intended function, and aircraft installation	Initial prototype of authentication scheme for dual-frequency GPS/Galileo Satellite Based Augmentation System avionics receiver	Program outputs ensure all commercial, general aviation, helicopters, Unmanned Aerial Vehicle and Urban Air Mobility are resilient in their use of Global Navigation Satellite System data for their positioning (i.e., ADS-B), navigation (i.e., Performance Based Navigation), timing (e.g., DataCom) and aircraft safety systems	Ongoing: 2024 First year of ongoing 1.5 year activity

What benefits will be provided to the American public through this request and why is this program necessary?

New digital technologies are revolutionizing air travel across the world and are making flights more efficient and eco-friendly. These technologies enable industry to optimize routes leading to reduced emissions that contribute towards mitigating aviation's impact on climate change. Additionally, this research improves security and gets crucial timely information to pilots. For the flying public this ultimately leads to greater on time predictability and air travel safety. To implement these advancements the aviation industry depends on FAA's timely and consistent certification of these new technologies. FAA's research supports developing and updating certification methods/guidance and assuring the continued operational safety and security of advanced technology applications. This program's research efforts position the FAA to enable the timely and safe introduction of advanced digital technologies for air transportation.

Detailed Justification for A11.f Continued Air Worthiness

FY 2023 – A11.f Continued Air Worthiness – Budget Request ($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 President's Budget
Salaries and Expenses	3,454	3,524	3,656
Program Costs	7,815	5,305	8,774
Total	**11,269**	**8,829**	**12,430**
FTE (if applicable)	**15**	**15**	**15**

What is this program and what does this funding level support?

The Continued Air Worthiness research program supports the Administration's principle of Safety and supports the FAA's aviation safety oversight responsibility to ensure that aircraft maintain operational safety, as they age, or as new technologies are introduced. The FAA accomplishes this by anticipating aging issues during the certification process and ensuring risks are adequately addressed in operations, maintenance, and inspection protocols. The agency monitors in-service data as it accumulates, identifying concerns at the earliest possible point, and communicates potential risks through advisories, directives, regulations, or other guidance. Funding for this program will support development of guidelines for legacy and new materials, including structural technologies such as: composites, additive manufacturing, and new fabrication techniques such as structural bonding to improve certification efficiency and ensure long-term airworthiness. It also includes the development of industry standards (such as MMPDS Metallic Materials Development and Standardization) and educational initiatives.

Major Activities Planned:

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
Develop a Method of Compliance to Support Certification of Advanced Flight Controls in General Aviation and Hybrid Vehicles	Support the retrofitting of advanced flight controls into the General Aviation (GA) aircraft	Performance based standards for novel cockpit pilot interfaces for GA aircraft and/or optionally piloted aircraft capable of vertical or short takeoff and landing.	Critical Policy development for automation	Ongoing multiyear effort

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
Metallic Materials Development and Standardization (MMPDS)	Develop data and analysis tools for use in promoting standardization and safety across the aerospace industry while streamlining the certification process	Development of updates to the MMPDS, recognized worldwide as the premier source of metallic materials property data needed for certification and continued airworthiness	Enable the FAA and industry to operate in a cost effective and efficient manner.	Ongoing effort with MMPDS updates released annually
Examine the effects that different platform materials have on the results of rotorcraft fuel system drop testing	Determine the most appropriate system setup to evaluate different types of platform materials that applicants use for fuel systems drop testing	Test results provide independent data to policy makers for standardizing requirements and supporting certification of rotorcraft fuel systems across industry	Provide regulators with independent test data to standardize the materials used in helicopter fuel cell drop tests as well as standardize the evaluation of rotorcraft fuel systems.	First year of a three year project
Large electric energy storage systems research	Understand the impacts of the more complex, increased voltage, and highly integrated systems being proposed on modern aircraft	Data and reports that will be used as the basis for developing FAA regulatory standards, associated guidance and policy material as well as industry standards for the safe integration of large energy storage systems on aircraft.	Development of performance-based safety rules by providing the data necessary for policy and industry standards	Third year of ongoing four year activity

What benefits will be provided to the American public through this request and why is this program necessary?

Continued Airworthiness program research is key to the FAA's ability to maintain safety for the flying public through the safe implementation of rapidly evolving aircraft technologies and emerging materials in aircraft products. The program ensures the safety of the flying public as new technologies are integrated by anticipating and resolving potential safety issues before implementation, thereby reducing aviation accidents.
The program takes a proactive approach by creating a common understanding of the key failure mechanisms and processes that can occur while aircraft are in service. The program will also ensure new technologies are safely introduced to certified aircraft and help streamline certification efforts, ensuring continued airworthiness within the aerospace industry.

Detailed Justification for A11.g Flight Deck/Maintenance/System Integration Human Factors Program

FY 2023 – A11.g Flight Deck/Maintenance/System Integration Human Factors Program – Budget Request ($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 President's Budget
Salaries and Expenses	4,562	4,654	5,405
Program Costs	2,907	9,147	9,887
Total	**7,469**	**13,801**	**15,292**
FTE (if applicable)	**26**	**26**	**29**

What is this program and what does this funding level support?

The Flight Deck, Maintenance, System Integration Human Factors Program supports the Administration's principle of Safety and provides research and engineering data to support safe aircraft and maintenance operations through the development and update of human factors related regulations, guidance material, standards, handbooks, job aids, and other documentation. These products are used by Flight Standards and Aircraft Certification personnel who evaluate, approve, and oversee pilot and aviation maintenance technician training, aircraft systems and equipment, operations, and procedures.

Major Activities Planned:

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
Advances and Innovation in Equipment, Technology, Systems, and Operations	Examine the human-machine interface and underlying aircraft automation systems	Technical report with human factors research and engineering data on potential safety issues related to pilot interactions with new flight deck technologies, including control automation, information automation, and the intended function of systems.	Reduce human factors related accidents and incidents by incorporating human factors best practices, early in the design process.	New start of a two-year project
Advanced Vision Systems	Examine human factors and pilot performance considerations using Synthetic Vision Guidance System (SVGS)	Technical report with human factors research and engineering data that could indicate whether SVGS is a viable alternative to traditional rollout systems	Increase safety, efficiency, capacity, access, and throughput in low visibility conditions using advanced vision systems	On-going activity, phase two of two.

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
Long Haul (LH)/Ultra-long-range (ULR) Flight Operations Study	Evaluate human factors and pilot performance considerations related to multiple time-zone changes	Technical Report with research and engineering data on human performance and alertness, and fatigue mitigation effectiveness	Research data will inform objective performance standards and provide greater flexibility and clear identification of the operational data needed for continued safe long haul and ultra-long range flight operations	New project planned for FY 2023.
Helicopter Air Ambulance Operations	Examine the current state of schedule-based fatigue in Helicopter Air Ambulance (HAA) operations to establish a draft fatigue risk baseline	HAA fatigue risk baseline technical report with objective human factors research and engineering data	Inform strategies and procedures for controlling risks to reduce HAA accidents and incidents attributable to human error	Second year of ongoing four-year activity

What benefits will be provided to the American public through this request and why is this program necessary?

The research under this program focuses on the needs of pilots, inspectors, and aircraft maintainers. Research results will inform FAA personnel charged with developing aviation-related operations and safety regulations, standards, and guidance material. This information is used by field personnel to evaluate, approve, and oversee training and qualification, flight operations, inspections, maintenance, and certification. This program addresses some of the most critical areas for flight safety that are directly relevant to the flying public.

Detailed Justification for A11.h System Safety Management/Terminal Area Safety

FY 2023 – A11.h System Safety Management/Terminal Area Safety – Budget Request ($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 President's Budget
Salaries and Expenses	2,589	2,641	2,740
Program Costs	2,896	5,257	7,371
Total	**5,485**	**7,898**	**10,111**
FTE (if applicable)	**13**	**13**	**13**

What is this program and what does this funding level support?

The System Safety Management Program supports the Administration's principle of Safety and focuses on research that supports better tools and techniques for pilots, operators, and the development of analytics tools that aid and support the high safety standard the FAA sets for the National Airspace System. The program develops data collection methods, advances data and risk analysis techniques, and creates prototypes for risk-based decision-making capabilities to identify and analyze emerging safety issues in cooperation with aviation stakeholders. In addition the program develops training solutions to mitigate key causes of fatal accidents. The research takes advantage of emerging technologies such as machine learning, artificial intelligence, advanced data analytics and virtual reality to provide better decision making power and application of smarter safety tools. When these programs complete, the resulting regulatory and training changes will increase overall safety while enhancing the managing and piloting of aircraft through the system.

Major Activities Planned:

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
Evaluation of simulated air traffic control (ATC) using artificial intelligence (AI)	Assess the strengths and weaknesses of a simulated ATC system using AI, and provide guidance on certification requirements and criteria for continued development	Technical reports and proposed guidance on the effective use and implementation of simulated air traffic control using artificial intelligence	Define acceptable use of simulated ATC technologies and shorten implementation time into the field, leading to more effective pilot training and an expected reduction in the fatal accident rate	New Start: First year of a three year activity
Evaluation of virtual reality	Assess the strengths and	Technical report and proposed guidance on	Define acceptable use of virtual	New Start:

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
goggles for immersive flight simulation	weaknesses of virtual reality goggles for immersive flight simulation during pilot training, and provide guidance on certification requirements and criteria for continued development	the effective use and implementation of virtual reality goggles for immersive flight simulation	reality goggles for immersive flight simulation and shorten implementation time into the field, leading to more effective pilot training and an expected reduction in the fatal accident rate	First year of a three year activity
Develop Helicopter Enhanced Flight Vision Systems	Assess new operational concepts for the use of vision systems in all-weather conditions and varied mission environments during critical phases of flight	Simulation and flight test data from experimental studies	Facilitate the development of operational specifications, FAA policy, Advisory Circulars, regulatory material, and best practices/guidance for operators through the U.S. Helicopter Safety Team and other safety-based organizations.	Ongoing: fifth year of an eight year activity
Develop Predictive Analytics	Predict risk exposure for runway operations safety issues by applying AI and machine learning algorithms	Technical report	Facilitate FAA's safety oversight professionals to predict and mitigate risk exposure for runway operations	Ongoing: third year of a three year activity

What benefits will be provided to the American public through this request and why is this program necessary?

The System Safety Management research project benefits the public through a reduction in the risk of aviation incidents and accidents. They support improved risk-based decision-making, which allows the FAA to identify system-level vulnerabilities through evaluating and developing aggregate level data and metrics, determine indicators of performance (safety metrics) and processes to reliably identify potential risk, and identify and assess risks associated with anticipated changes in procedures or technologies. The research improves aviation safety by analyzing trends, identifying precursors and addressing the critical safety issues that represent

the leading causes of fatalities in the worldwide commercial transport, general aviation, and rotorcraft communities.

Detailed Justification for A11.i Air Traffic Control/Technical Operations Human Factors

FY 2023 – A11.i Air Traffic Control Technical Operations Human Factors– Budget Request
($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 President's Budget
Salaries and Expenses	3,445	3,515	3,647
Program Costs	2,240	2,396	2,264
Total	**5,685**	**5,911**	**5,911**
FTE (if applicable)	**22**	**22**	**22**

What is this program and what does this funding level support?

The research program supports the Administration's principle of Safety and provides timely human factors products and consultation services focusing on improving the safety and efficiency of complex air traffic control (ATC) systems. Research supports Goal 4 *Improve Human Performance in the System* as identified in FAA's National Aviation Research Plan (NARP) as it addresses Air Traffic Organization (ATO) sponsor challenges in five human factors research and development (R&D) focus areas: (1) Improved safety, reduced hazards, and error mitigation in ATC; (2) Automation effects and controller performance; (3) Improved design and operation of ATC systems; (4) Improved controller selection and training; and (5) Controller and technical operations workforce optimization. The program strives to provide useful human factors R&D results that support the ATO's development and implementation of new technologies and procedures in the national airspace system (NAS), in accordance with FAA Order 9550.8 *Human Factors Policy*, which specifically requires that *"Human factors shall be systematically integrated into the planning and execution of the functions of all FAA elements and activities associated with system acquisitions and system operations. FAA endeavors shall emphasize human factors considerations to enhance system performance and capitalize upon the relative strengths of people and machines. These considerations shall be integrated at the earliest phases of FAA projects."*

Major Activities Planned:

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
Mitigate Controller Fatigue Effects from Workload	Develop facility operational guidance and training for recognition and mitigation of workload effects on controller fatigue and performance	Applying findings from FY 2022 research describing workload effects on controller fatigue and proposed mitigations, develop draft facility guidance and initial training program	Facility guidance and controller training will increase awareness of fatigue effects and drive improvements in facility operation to mitigate fatigue and improve controller performance.	Third year of a five-year activity

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
Improve Human-Automation Teaming	Define human supervisory control interactions and performance measures for shared computer-human ATC methods using advanced artificial intelligence decision aiding approaches	Report with a plan for a human in the loop simulation with selected AI decision aiding automation and probable use scenarios, to assess recommended performance measures for ATC methods using advanced AI decision aiding approaches	To improve controller performance, research will enable development of user-system interface guidance for system developers, and controller training to support implementation of AI in ATC decision aids	Second year of a five-year activity
Compare Training Effectiveness of Various ATC Training Technologies and Methods	Evaluate and compare controller training alternatives including full fidelity simulation, computer-based instruction with embedded simulations, and team training	Report with a plan to conduct effectiveness evaluations of various controller training alternatives including team training for basic radar skills and advanced trajectory-based operations.	Improve effectiveness and efficiency in controller Academy and field facility training using the variety of training technologies and methods that are available	Initial phase in a five-year investigation.

What benefits will be provided to the American public through this request and why is this program necessary?

The research is mandated by 49 USC Section 445 and the public benefit results from application of the research that enables improvements to air traffic safety and efficiency. The NAS is a human-centered enterprise. Human performance is a key factor in total system performance, and enhancements to human performance will contribute to enhancing the total system's performance, reducing errors, and helping reduce life cycle ownership costs.

The FAA's Human Factors research program provides products to enhance the quality of this service through the successful integration of the human into the system. The research program contributes scientific and technical information to the Air Traffic Organization to inform policies and system design decisions that will prevent and reduce transportation-related fatalities and serious injuries across the transportation system. The program provides the human factors research and expertise upon which FAA system development programs rely to ensure that FAA ATC/Technical Operations systems are accepted by the user community and utilized to achieve maximum operational benefit. FAA research identifies and develops recommended mitigations for human factors challenges in the design of new and enhanced NAS systems and capabilities.

Detailed Justification for A11.j Aeromedical Research

FY 2023 – A11.j Aeromedical Research – Budget Request
($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 President's Budget
Salaries and Expenses	4,601	4,694	4,871
Program Costs	5,634	8,563	5,129
Total	**10,235**	**13,257**	**10,000**
FTE (if applicable)	**30**	**30**	**30**

What is this program and what does this funding level support?

This program supports the Administration's principle of Safety. The Aeromedical Research program focuses on safety sensitive personnel, airline passenger, and commercial space vehicle occupant health, safety, and performance in current and forecasted future civilian aerospace operations. It performs aerospace-relevant applied research in the biomedical, biodynamics and survivability/cabin safety sciences. This research culminates in the transition of knowledge and technology to enable innovation in aerospace operations and mitigation and prevention of aeromedical hazards associated with aerospace mishaps.

This program identifies, develops and validates new technologies, policies, training methodologies, personnel selection tools and procedures to improve the performance of humans in the operation of aerospace systems. The program has three lines of effort, which align to aviation safety and create a data-driven, risk-based systemic safety approach. Each line of effort centers on ensuring reliably safe aircraft cabin environments, reliably safe aircrew, and survivable aircraft, with the latter scoped to enhancing passenger safety during adverse events and streamlining the certification process for new safety equipment and cabin designs. The outputs of this research inform updates to standards, guidance, policy, and training materials to improve operational safety and facilitate new entrants into the National Airspace System.

Major Activities Planned:

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
Fatigue Biomarker Panel: Identifying a Metric for Performance Impairment from Sleep Loss	Develop a biomarker panel metric for performance impairment from fatigue, and apply it to postmortem analysis. End result will be a biomarker sleep-analyzer for accident investigation and prevention	Technical Reports; - RNA biomarker fatigue impairment panel - RNA biomarkers with response to Modafinil - DNA biomarkers for individual fatigue susceptibility - Validation of fatigue biomarkers - Initial biorepository (both samples and biodata)	Program outputs will facilitate increased detection of fatigue and improved FAA forensic accident reports	Ongoing. Third year of on-going nine year activity
Precision-based, Data-driven Aeromedical Standards: Next Generation Aeromedical Certification Safety Management System (SMS)	Develop and validate tools, techniques, and procedures, particularly in the areas of big data and machine learning, which will form the technological foundations to implement a next generation airman medical certification SMS	Technical Reports: - Evidence Based Risk Assessment (EBRA) process and associated requirements and implementation plan - Probabilistic Risk Assessment (PRA) process and associated requirements and implementation plan	Program outputs will facilitate better use of agency medical data and enable use of other government and private sector medical data for timely risk based airman medical certification decision-making	Ongoing. Third year of on-going five year activity
Develop Safety Standards for Omnidirectional Seats to Support Urban Air Mobility/eVTOL	Develop injury criteria and test methods to evaluate the crash safety of the range of potential impact scenarios, seat orientations, occupant sizes, and restraint configurations	Technical Report: - Injury criteria - Test method(s)	Project outputs will facilitate the rightsizing of crashworthiness standards, including passenger seat design	New start. First year of three year activity
Determine the Influence of Delta-wing Design on Egress Paths and Evacuation Efficiency for Supersonic Transports	Determine the influence of delta-wing design on egress paths and evacuation efficiency to streamline future supersonic transport certification efforts	Technical Report: - Egress test results - Proposed regulatory guidance	Project outputs will equip airworthiness certification with data regarding how many passengers each exit could allow to safely evacuate from an aircraft in an emergency	New start. First year of two year activity

What benefits will be provided to the American public through this request and why is this program necessary?

The public will benefit from better protection and survival for themselves in the event of an aircraft accident or incident. The aerospace industry will benefit from evidence-based regulations and standards, which are right-sized according to the evidence, but designed to be as inclusive as possible, while ensuring continued operational safety. These benefits will be realized only if the FAA can keep abreast of emerging health and safety issues brought on by technological innovations and changes in the characteristics of population participating in aerospace operations. The research efforts supported by this program will position the FAA to develop the requisite regulations and certification processes to ensure the continued safety, health, and survival of those involved in current and future aerospace operations.

Detailed Justification for A11.k Weather Program

FY 2023 – A11.k Weather Program – Budget Request
($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 President's Budget
Salaries and Expenses	1,046	1,067	1,107
Program Costs	5,190	11,719	15,071
Total	**6,236**	**12,786**	**16,178**
FTE (if applicable)	**4**	**4**	**4**

What is this program and what does this funding level support?

This program supports the Administration's principles of Safety and Climate and Resilience, and develops new capabilities to improve observation, prediction and timely dissemination of integrated weather information to inform air traffic management decisions. Weather is by far the largest cause of air traffic delay and can add risk to air travel safety. For example, during FY 2019, weather was the cause of 67 percent of all air traffic delays, adding hundreds of millions in costs to the flying public and industry. Beyond air traffic delay, potential flight into hazardous weather poses a significant risk to air travel safety and avoiding such hazards requires timely, accurate and effective presentation of current and predicted weather information to pilots, controllers and airline operations personnel.

This program supports a National Aviation Research Plan (NARP) goal to improve airport operations, air traffic and airspace management capabilities. The requested funding provides for research, analyses, development and demonstrations aimed at advancing capabilities to observe and predict the onset of weather conditions that affect aviation operations. The program leverages advances in meteorological science to enhance observation methods, improve weather prediction models and produce increasingly accurate forecasts of convective weather, turbulence, icing and low ceiling and visibility conditions. Timely dissemination and presentation of such forecasts provide critical input to support traffic flow management decisions. In particular, traffic managers, controllers, pilots and airline operations personnel rely on these forecasts to determine tactical and strategic traffic management initiatives needed to avoid encounters with severe weather, reduce delays and mitigate safety risks.

Strong partnership and research collaboration with the National Oceanic and Atmospheric Administration are foundational to the success of the program. Specifically, a standing Memorandum of Understanding with the National Weather Service (NWS) and an Interagency Agreement with the National Center for Environmental Prediction provide the technology transfer mechanisms to assure that aviation relevant weather forecast products (e.g. turbulence, ceiling and visibility, icing, convection) are incorporated into their general weather product suite and deployed for operational use.

Major Activities Planned:

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
Improve Convective Weather Forecast for Aviation	Technology transfer of numerical thunderstorm weather model forecasts to the National Weather Service (NWS) for ultimate use by the World Area Forecast System (WAFS)	Automated 6-48 hour convective weather forecasts with finer resolutions than current manual capabilities	Improved convective weather forecast will promote efficiency for planning and execution of transoceanic flights and safety of aircrews and passengers	Research for this effort began in FY 2013, and will be transferred to NWS for experimental operational use in FY 2023
Ceiling and Visibility (C&V) Decision Support Guidance	Quantify the risks and impact of adverse C&V conditions on the NAS	C&V risk and impact assessment	The assessment will be used to develop C&V decision support guidance that provides common situational awareness for decision makers and pilots	FY 2023 is the second year of a five year effort
Turbulence Forecast Enhancements	Technology transfer turbulence forecast products to NWS for operational implementation	High resolution, rapid refresh turbulence mitigation products and decision support aids	High resolution turbulence avoidance capability will alert pilots and controllers of location and severity of turbulent conditions, boosting aircrew and passenger safety	FY 2023 is the fifth year of a six year effort

What benefits will be provided to the American public through this request and why is this program necessary?

Adverse weather continues to be a major source of delay and disruptions in aviation operations resulting in considerable costs to airlines and the traveling public. This request will enable the Weather Program to continue to develop and enhance capabilities to observe, predict, diagnose, and disseminate information about aviation-related weather conditions with increasing accuracy, timeliness, and effectiveness. The FAA will deploy successful research capabilities on new or existing FAA platforms and systems, transition them to NWS platforms, or transition them to industry. These capabilities will support and inform dispatcher, pilot, and air traffic management decisions resulting in adverse weather avoidance, reduced air traffic delays, increased air travel predictability for the flying public, and reduced CO^2 emissions.

Detailed Justification for A11.l Unmanned Aircraft Systems Research

FY 2023 – A11.l Unmanned Aircraft Systems Research – Budget Request ($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 President's Budget
Salaries and Expenses	1,548	1,579	1,638
Program Costs	22,487	20,498	13,297
Total	**24,035**	**22,077**	**14,935**
FTE (if applicable)	**7**	**7**	**7**

What is this program and what does this funding level support?

This program supports the Administration's principles of Safety, Transformation, Equity and Economic Growth. The Unmanned Aircraft Systems (UAS) research program supports the safe and efficient integration of UAS into the national airspace. The FAA is incrementally expanding the UAS operational envelope by allowing UAS operations with increasing levels of complexity, while fully maintaining critical safeguards for existing users of the NAS. This will ultimately allow UAS to safely conduct routine operations.

Research informs capabilities such as expanded operations, small UAS package delivery operations, integrated operations, routine/scheduled operations, large carrier cargo operations, and passenger transport operations. The key enablers associated with these capabilities are Detect and Avoid Technology, UAS Traffic Management (UTM), and the development of standards, policies, procedures, and rules. The integration of UAS into the NAS is evolving to missions beyond visual line of sight. These advances are enabling package delivery operations, operations on airport surfaces, and will someday enable fully integrated operations and the transport of passengers.

The FAA is leveraging many UAS-related research activities across different research organizations, such as academia, NASA, UAS Test Sites, and standards bodies. It is leveraging technological advances from industry, lessons learned from approved operations, and expertise from around the world. It is expected that the demand for UAS integration will accelerate as technology advances and market opportunities evolve.

Major Activities Planned:

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
Conduct Science Technology Engineering and Math (STEM) Outreach to Minority K-12 Students Using Unmanned Aircraft Systems (UAS) as a Learning Platform	Ensure that underrepresented communities are engaged in STEM and helps in the development of future workforce.	This research will directly inform the advancement of all UAS operational capabilities and increase students' interest in the UAS/STEM field.	This research facilitates future workforce development by encouraging and exposing students to aviation and Unmanned Aircraft Systems careers.	Year four of seven
Evaluate UAS Disaster Preparedness and Emergency Response Operations	To advance the safe integration of UAS into the NAS through the expansion of disaster preparedness and emergency	Procedures to coordinate with UAS operators from within federal agencies, as well as local and state disaster preparedness and emergency response organizations, to ensure proper coordination.	Program outputs will accelerate use of UAS during disasters and emergency response operations	Year three of five
Explore the Impact of Lost Link (when the pilot in command loses the communications link with the UAS aircraft)	Enhance the safety, security, and performance of the Nation's transportation system.	Recommendations for the implementation of changes to UAS-related ATC policy and procedures, workstation designs, etc. to support UAS integration.	Program outputs will inform requirements for a secure and reliable command and control link between the aircraft and the control station.	New start planned for one year with the possibility for continuing work after reviewing the outcome.
Assess the Challenges of Retrofitting Technologies for Urban Air Mobility	Develop and deploy innovative practices and technologies that improve the safety and performance of the nation's transportation system.	UAS standards, FAA policies, and Technical Standard Orders. The work effort may also result in future industry standards applicable to: Advanced Air Mobility/ Urban Air Mobility	Program outputs will inform regulations and certification requirements for passenger transport vehicles	New start planned for one year with the possibility for continuing work after reviewing the outcome.

What benefits will be provided to the American public through this request and why is this program necessary?

The safe integration of unmanned aircraft into the NAS is a significant challenge. Current UAS research contributes and informs technical and regulatory standards, policy guidance, and operational procedures on which successful UAS integration depends. These research efforts significantly contribute to addressing the challenges of integrating UAS into the NAS by leveraging studies of UAS operations and associated technologies.

These research programs will help develop unmanned aircraft systems, training, technology, and procedures that increase the safety of UAS operations and increase the confidence of the American public that UAS flights can be safely and efficiently integrated into national airspace. The research will facilitate approval and use of systems that prevent accidents and help reduce the severity of UAS accidents in the NAS. Additionally, UAS operations predominately uses electric propulsion. Their integration in the aviation transport domain will have a transformative impact on reducing aviation-related emissions and the goal of net-zero emissions for our economy by 2050.

Detailed Justification for A11.m Alternative Fuels for General Aviation

FY 2023 – A11.m Alternative Fuels for General Aviation – Budget Request ($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 President's Budget
Salaries and Expenses	0	0	0
Program Costs	2,524	4,986	12,385
Total	**2,524**	**4,986**	**12,385**
FTE (if applicable)	**0**	**0**	**0**

What is this program and what does this funding level support?

This program supports the Administration's principles of Safety, Climate and Resilience and also Executive Order 14008 "Tackling the Climate Crisis at Home and Abroad" by conducting research to mitigate climate pollution using multiple clean alternatives.

The research under this program supports addressing current and historical environmental injustices from aviation, particularly lead emissions. There is no known safe exposure level of lead, and multiple studies have documented the health impacts to urban and other disadvantaged communities of lead exposure[1]. Current leaded aviation gasoline (avgas) is the only remaining transportation fuel in the U.S. that contains lead additives. These additives protect piston engines against damaging detonation, or engine 'knock'. EPA reports that GA aircraft contribute approximately 70 percent of total airborne lead emissions. Market forces and/or international regulatory actions will eliminate the availability of leaded avgas in the near future. Safe alternatives must be in place before this occurs.

These investments will enhance and accelerate research in the areas of unleaded, sustainable aviation fuels, and other fuel alternatives operating in piston-engine aircraft, aircraft and engine modifications to allow safe operation on reduced octane unleaded fuels, and innovative aircraft technologies that safely reduce emissions. Additionally, the program will support the accelerated development of fuel efficient, low-emissions aircraft technologies, including electric, and electric hybrid propulsion, and support collaborative research on technologies that reduce harmful emissions.

To ensure the work is done in an expedited manner, the work will enhance laboratory capabilities and build on research partnerships that the FAA has established with academia and industry. A key element of the FAA's role in this effort, is the testing of aircraft, engines, components, and energy sources at the William J. Hughes Technical Center. The extended research enabled by

1 National Academies of Sciences, Engineering, and Medicine 2021. Options for Reducing Lead Emissions from Piston-Engine Aircraft. Washington, DC: The National Academies Press. https://doi.org/10.17226/26050

this program will be coordinated with air transportation stakeholders in industry and academia and with partner federal agencies.

Major Activities Planned:

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
Engine testing of prospective fuels in fleet representative models	Validate that proposed unleaded fuel meet the engine operational and safety criteria required for FAA fleet authorization under Piston Aviation Fuels Initiative (PAFI)	Technical reports on test outcomes - Engine performance - Engine detonation - Engine durability characteristics - Laboratory scale fuel performance properties	Support Aircraft Certification for fuel safety	Third year of a five-year activity
Flight-testing on final candidate fuel formulas in fleet representative aircraft models	Validate each of the proposed fuels against engine operational and safety criteria in differing weather conditions required for FAA fleet authorization under PAFI.	Technical reports of comparative testing between unleaded fuels and current leaded fuels - Normal day - Hot day - Cold day - Ground handling	Support Aircraft Certification for fuel safety	First year of a three-year activity
Research and test technologies that could have transformative impact in reducing harmful emissions from the GA fleet of aircraft	Evaluate and test aircraft and engine technologies to reduce fuel burn and harmful emissions	Maturation and expanded use of technologies that could provide a reduction in fuel burn and harmful emissions	Technologies will produce fuel burn, emissions, and climate impact benefits throughout the fleet over many years	First year of a two-year activity
Research and test sustainable and renewable fuels and components for the first time for general aviation fuels	Evaluate and test sustainable and renewable aviation fuels and fuel components that could be used safely, including those that blend with conventional petroleum-based fuels	Research reports to demonstrate the safety of renewable / sustainable aviation fuels	Enable general aviation industry to reduce emissions through the use of renewable and/or sustainable aviation fuels	First year of a three-year activity
Evaluate key certification considerations for electric propulsion systems, including development of energy reserve	Evaluate technical and safety criteria for high-voltage electric engine controls, fault protection features, and equipment physical limitations	Research to establish, determine, or verify reliability rates for safety-critical features and functions of electrical propulsion systems	Establish standardized testing criteria to evaluate safety of electric engines that are used for propulsion and control	First year of a five-year activity

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
requirements, environmental effects, electromagnetic compatibility, and other requirements	associated with electric engine technology		surfaces in electric and electric-hybrid aircraft	

What benefits will be provided to the American public through this request and why is this program necessary?

The general aviation fleet of aircraft is a significant and integral element of the national airspace and of the U.S. economy. Directly or indirectly, general aviation supported 1.2 million jobs and contributed over $247 billion to the U.S. economy making a positive impact on the U.S. balance of trade ($75 billion) (GAMA 2020 study). The general aviation industry, its economic contributions, and other benefits are at risk unless the fleet can transition to unleaded fuels before market and/or regulatory forces eliminate the availability of leaded fuel. In addition, the availability of well-vetted unleaded replacement fuels will eliminate the need for operators to seek less safe alternative fuels causing safety of flight issues for the NAS.
The general aviation community has access to over 16,000 public and private airports and landing facilities nationwide. Elimination of lead, and reductions in emissions from research into sustainable / renewable fuels, and other safe emission reduction technologies, will improve the environment for at-risk children and all Americans. Lastly, research into electrical propulsion technologies will accelerate the development of highly efficient, environmentally friendly, next generation aircraft, as well as enhance U.S. competitiveness in the global aviation industry.

Detailed Justification for A11.n Emerging Technology Accelerator

FY 2023 – A11.n Emerging Technology Accelerator – Budget Request ($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 President's Budget
Salaries and Expenses	0	0	265
Program Costs	0	0	9,735
Total	**0**	**0**	**10,000**
FTE (if applicable)	**0**	**0**	**1**

What is this program and what does this funding level support?

The FAA's Emerging Technology Accelerator (ETA) program engages innovators and entrepreneurs in developing and applying transformative ideas and technologies to the National Aerospace System. This program supports the Administration's Safety, Transformation, and Climate priorities as well as those aimed at promoting Economic Growth, Equity and Inclusion. The program is open to innovators across the nation who are developing and applying emerging science and technology that may address specified air transportation system challenges. The program aims to discover and leverage advances in technologies, tools, and methods that can lead to transformation in aviation operations and its supporting infrastructure, thereby improving air transportation safety, efficiency and mitigating the impact of aviation on climate change.

The program provides an effective pathway for development, demonstration, and transfer of technology applications that address problems or can lead to a tangible operational improvement to the aviation infrastructure. Distinctive program objectives include progression of selected innovation proposals from initial consideration to technology transfer within three years and focused outreach to elicit engagement and participation from underserved communities.

The air transportation system of the future is envisioned to be one that accommodates a growing diversity of air vehicles and airspace operations served by an integrated information environment. Advancement toward that vision requires an environment that attracts talent from all sectors of society, lowers the barriers for advancing and presenting promising technology and creates a space for meaningful demonstration and validation of innovation that enables future operational concepts or addresses vexing operational issues. This program aims to leverage the science and technology assets of the William J. Hughes Technical Center and the Mike Monroney Aeronautical Center/ Civil Aerospace Medical Institute to create such an innovation hub.

Major Activities Planned:

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
Evaluation of initial Innovation Proposals	Complete first program solicitation/award cycle	Awards for Selected Innovation Proposals	Engages Innovators across the nation in shaping the air transportation system of the future	First year of ongoing effort
Develop Aviation Challenge Statement	Provide a refined articulation of current aviation challenges to support the second innovation solicitation cycle	Validated Aviation Challenge Statement for the second solicitation cycle	With the benefit of lessons learned from the initial solicitation cycle, a refined articulation of current aviation challenges will elicit quality innovation proposals during the second solicitation cycle	First year of ongoing effort
Issue Innovation Solicitation	Invite innovation proposals responsive the current aviation challenge statement	Solicitation released to the public	Continues initial program implementation and incorporates lessons from the initial solicitation cycle	First year of ongoing effort
Annual Report	Reflect on performance and lessons from program initiation activities to determine if adjustments are needed	Annual Program Performance Report	Discloses program performance after second year and provides basis for improvement	Second year of ongoing effort

What benefits will be provided to the American public through this request and why is this program necessary?

The rapid pace of advancement in science and technology presents significant opportunities to address known and emerging challenges in air transportation. This program supports discovery and advancement of technologies that may otherwise not find a pathway to real-world application. By ensuring broad access to and engagement of science, technology and engineering talent across the nation, the program will leverage increasingly diverse sources of American ingenuity to help improve the nation's air transportation infrastructure. Moreover, by pursuing broad inclusion and participation objectives the program will support current economic growth, equity.

Detailed Justification for A11.o Commercial Space Transportation Safety

FY 2023 – A11.o Commercial Space Transportation Safety – Budget Request ($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 President's Budget
Salaries and Expenses	0	0	0
Program Costs	5,840	5,708	5,708
Total	**5,840**	**5,708**	**5,708**
FTE (if applicable)	**0**	**0**	**0**

What is this program and what does this funding level support?

This program supports the Administration's principles of Safety, Economic Growth. And Transformation. Commercial Space Transportation public safety research supports safe integration of commercial space operations into the NAS, spaceport infrastructure, systemic safety initiatives, and regulatory reform. This program executes research through development of activities addressing maturation of technologies through flight testing and collaborative activities executed within a research consortium. Research projects spanning 2-3 years are awarded to teams of 3-5 members, including government, industry, non-profit sector, and academic actors.

Major Activities Planned:

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
Explosive Yield Research Project	Improve FAA's ability to predict public risk due to an explosion produced from vehicle impact when loaded with methane fuel	Test results from drop tests of propellant tanks under a variety of test conditions, and analysis improvements of explosive yield	Increased safety to the uninvolved public	New Start Year one of a three to six years

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
Orbital Spaceflight Participant Research	Identify optimal test data collection methods and storage architectures for spaceflight participant biometric data	Guidance for data collection methods, specific data elements, and a database architecture	Increased safety, for spaceflight crew and participants	New Start Year one of a two to four years
Innovation Foresight Research Project	Improve FAA's understanding of industry trends and conditions	Detailed industry emergence event maps, and recommendations for future regulatory research, organization, and policy	Accountability by better adapting to emerging and evolving industry conditions	New Start

What benefits will be provided to the American public through this request and why is this program necessary?

Protecting the safety of the public and their property from the potential consequences of commercial space launches and reentries demands that the FAA keep pace with emerging technologies and operational concepts from a diverse and exponentially growing industry. This research program will position the FAA to provide increasingly timely guidance and regulations, and improve our responsiveness to this emerging sector. Similarly, industry would benefit from improved techniques, practices, and technologies that result from a strong FAA commercial space research and development program.

Detailed Justification for A11.p Wake Turbulence

FY 2023 – A11.p Wake Turbulence – Budget Request
($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 President's Budget
Salaries and Expenses	804	820	851
Program Costs	2,894	2,908	2,877
Total	**3,698**	**3,728**	**3,728**
FTE (if applicable)	**4**	**4**	**4**

What is this program and what does this funding level support?

NextGen - Wake Turbulence supports the Administration's principles of Safety and provides safety assessments of wake encounter risk mitigating procedures and solutions. The program requires keeping its wake data collection infrastructure technology current and adding improved technology, as it becomes available, to increase the collection of aircraft wake tracks over a wider range of weather conditions. The program uses the data to develop safety assessments of wake encounter risk mitigating procedures and solutions in current and future air traffic control (ATC) separation operations.

In support of improving airport operations, air traffic, and air space management capabilities, the NextGen – Wake Turbulence program will provide wake separation assessments that are safe and allow maximum runway capacity and provide the assurance that the proposed improvement in ATC operations does not increase the risk of a wake encounter. This is done through assessments of new aircraft types for ATC wake risk mitigating separations; collection/analysis of wake track data; and wake encounter risk assessments of proposed changes to ATC procedures (to include the terminal area dynamic wake separation solution).

Major Activities Planned:

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
Assessment of wake separations needed for new aircraft types entering the NAS	Provide wake separation recommendations for use in the terminal area	Initial wake separation criteria for an estimated 50 new aircraft types Re-evaluation of 10 to 20 aircraft types based on collected wake track data	Provide wake separations to maintain capacity and efficiency in the terminal area	Ongoing as new aircraft enter service

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
Wake Mitigation Solutions and Associated Infrastructure Modification Recommendations	Assess ATC changes for wake safety to maintain an acceptable level of wake safety	Wake risk assessments of ATC separation standards and procedure changes	Facilitate efficient operations in the terminal area.	Ongoing
Ground-based wake track data collection and analysis	Collect actionable data to improve historical wake track database to include new aircraft types.	Assessment of the 80,000 aircraft wake tracks at two major airports.	Provide wake separation recommendations and concepts.	Ongoing

What benefits will be provided to the American public through this request and why is this program necessary?

The NextGen - Wake Turbulence program provides the necessary data, modeling, and concept developments to advance capacity-efficient ATC wake mitigation solutions that will safely allow more flights during periods of peak demand at our nation's airports and in crowded air corridors. This program's products (when implemented either directly into ATC operations or through follow-on engineering development programs) provide the American flying public with reduced flight delays and increased flight predictability.

Detailed Justification for A11.q NextGen – Weather Technology in the Cockpit

FY 2023 – A11.q NextGen – Weather Technology in the Cockpit – Budget Request ($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 President's Budget
Salaries and Expenses	1,163	1,186	1,231
Program Costs	819	1,842	1,797
Total	**1,982**	**3,028**	**3,028**
FTE (if applicable)	**5**	**5**	**5**

What is this program and what does this funding level support?

This program supports the Administration's principles of Safety, Transformation and "Future Proofing", and Climate and Resilience.

Weather continues to be a contributing factor in 35% of all general aviation (GA) accidents with 75% of these accidents resulting in fatalities. The NextGen Weather Technology in the Cockpit (WTIC) program is addressing the need for enhanced cockpit weather technology, information, and human factors principals to improve airport operations, air traffic and air space management capabilities. Program research supports the reduction of weather impacts on aviation and the enhancement of flight safety. WTIC is the only FAA program tasked with developing cockpit-related standards and guidance to achieve these objectives. The WTIC program conducts research, uses innovation, and performs demonstrations to develop techniques and technologies to enhance pilot weather training, resolve gaps in human factors principles, and remedy weather information gaps that are preventing achievement of these objectives. The program also identifies human factors enhancements to improve pilot decision making during adverse weather.

Major Activities Planned:

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
Improving Turbulence Avoidance Phase 4 - ADS-B Turbulence	Develop capability to derive turbulence reports from the data already contained in downlinked ADS-B reports	Technical transfer package of algorithms that derive turbulence information from aircraft already equipped with ADS-B, with considerable increase in accuracy versus PIREPs	Automated, derived turbulence data from existing ADS-B downlinked reports will increase the number of turbulence reports 10-fold over existing methods, providing better situational awareness to pilots and reducing	Final year of a five-year effort

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
			injuries to aircrews and passengers	
Resolving Cockpit Weather Information Gaps - ADS-B and Hands-Free Pilot Report (PIREP) Submittals	Accelerate the use and benefits of equipping aircraft with ADS-B by producing a standard and cockpit interface that will enable ADS-B to downlink pilot reports	Complete end-to-end demonstration and final report of a cockpit interface to ADS-B and hands-free/minimized entry technology to downlink PIREPs from GA aircraft	A hands-free pilot interface for producing PIREPs will improve the quality and quantity of pilot reports, enhancing safety by increasing situational awareness of adverse weather	Third year of a five-year effort
Cockpit Decision Support Tools - Most Representative Weather Information Sources in Remote Areas	Provide weather information to the cockpit that is more representative of actual conditions than from certified weather sensors that can be miles away in different weather environments	Literature review of studies on decorrelation of weather systems, climatology, and terrain factors impacting representativeness of non-collocated weather sensors. Selected regions for the study will be based on prior accidents.	The cockpit-based decision support tools will improve pilot situational awareness of adverse weather in remote areas, which will improve access to under-served communities	Second year of a four-year effort

What benefits will be provided to the American public through this request and why is this program necessary?

Inadvertent flight into hazardous weather by GA pilots poses a significant risk to air travel safety and avoiding such hazards requires timely, accurate and effective presentation of current and predicted weather information to pilots, controllers and airline operations personnel. In 2009, the number of GA accidents with weather cited as a contributing factor was 65 with 47 fatalities. In 2017 that number was reduced to 42 with 32 fatalities, coinciding with advances in weather forecasting, increases in cockpit weather information, and better technology, much of which was directly attributable to successful WTIC research projects. However, there are still over 30 gaps related to cockpit weather technology, information, training, and human factors that are causal factors in accidents/incidents, inefficiencies in flight operations, and flight delays. The impacts of these gaps are likely to increase with the proliferation of new entrant aircraft and their pilots. Global warming is a major concern to the public resulting in pressure on aviation to reduce carbon emissions, and more efficient flight operations to avoid adverse weather provides the best near-term opportunity to achieve this reduction. Continued research by the WTIC program to close these known weather-related gaps is essential to achieve public confidence in new entrant and current flight operations.

Detailed Justification for A11.r Information /Cyber Security

FY 2023 – A11.r Information /Cyber Security – Budget Request
($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 President's Budget
Salaries and Expenses	0	0	0
Program Costs	4,769	4,769	5,500
Total	**4,769**	**4,769**	**5,500**
FTE (if applicable)	**0**	**0**	**0**

What is this program and what does this funding level support?

This program supports the Administration's principles of Safety, Transformation and "Future Proofing" and also Executive Order 14028 "Improving the Nation's Cybersecurity" by identifying, deterring, protecting against, detecting, and responding to malicious cyber events.

The Information/Cyber Security research and development (R&D) program will conduct the research, analysis, demonstration, evaluation, and development of cyber data science tools, technologies, and methods to detect, prevent, and mitigate the effects of cyber-attacks.
The program uses Cybersecurity Data Science methodologies, including innovative concepts such as Machine Learning (ML) and Artificial Intelligence to defend the national airspace system and select components of the aviation ecosystem against emerging threats and advanced persistent threats. The research supports ongoing and future industry-government collaborative efforts, integration of innovative algorithms, execution of advanced technology concept exploration studies, and demonstrations and evaluations of promising cyber data science tools.

Major Activities Planned:

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
Predictive analytics prototype development and demonstration	Determine possible threats and attack vectors of malicious actors	Prototype software toolset for Predictive Analytics Report on prototype demonstration	Provides enhanced capabilities for a more resilient, safe, and secure aviation system.	New Start
Context Aware Behavioral AI Algorithm Adaptation and Initial Software Prototype Development	To correlate cyber events with other data and network activities to improve the cyber analyst performance	Report on Context Aware Behavioral AI Algorithm Adaptation	Provides continuous monitoring and automatic classification that encompasses the full range of requirements for the aviation ecosystem security landscape.	New Start

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
Explainable AI-Stakeholder requirements and Use case development	Develop a suite of toolsets to enable cyber analysts to understand, trust and effectively manage the information that is generated and presented to them by the AI.	Report on Explainable AI Requirements and Use Case	Provides greater end-user trust and improves transparency with human-interpretable explanations of AI.	New Start

What benefits will be provided to the American public through this request and why is this program necessary?

There is a critical need for research to address cyber vulnerabilities and weaknesses in Air Traffic Control systems. This program will enable critical research and development leading to enhanced capabilities for a more resilient, safe, and secure aviation system.

Detailed Justification for A11.s Environment & Energy

FY 2023 – A11.s Environment & Energy – Budget Request
($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 President's Budget
Salaries and Expenses	2,718	2,773	2,877
Program Costs	17,585	17,563	18,286
Total	**20,303**	**20,336**	**21,163**
FTE (if applicable)	**12**	**12**	**12**

What is this program and what does this funding level support?

This program supports the Administration's principles of Safety and Climate, as well as Executive Order 14008 "Tackling the Climate Crisis at Home and Abroad" by conducting research to mitigate climate pollution using clean energy.

The FAA's long-term vision is to remove environmental constraints on aviation growth by achieving quiet, clean, and efficient air transportation. This Program supports this vision by advancing our understanding of civil aviation noise and emissions at their source, how noise and emissions propagate and are modified in the atmosphere, and their ultimate health and welfare impacts. A central part of the program is the continued development of an integrated aviation environmental tools suite that can be used to evaluate a wide range of environmental mitigation solutions. The suite is built upon a sound scientific understanding of aviation noise and emissions as well as their environmental, health, and welfare impacts. The tools analyze and inform decision-making on technology development, operational procedures, regulatory compliance, and international and domestic standards and policies relating to civil aviation's energy use and environmental impacts. This Program supports work done by ASCENT - the FAA Center of Excellence (COE) for Alternative Jet Fuels - and the Volpe Center.

Aviation noise and emissions are a considerable challenge to the continued growth of aviation. Despite the technological advancements achieved during the last four decades, the impact of aircraft noise demands considerable Federal resources and is a constraint on aviation growth. Environmental impacts, especially aircraft noise, are often the number one cause of opposition to airport capacity expansion and airspace redesign. Concerns about the impacts of aircraft emissions on climate change could limit the growth of international aviation. The research in this budget line item also addresses the impacts of aviation emissions on local air quality as well as the need for environmental justice. The implementation of precision navigation over the last few years has contributed to increased airport community concerns regarding noise. This challenge is anticipated to grow with new entrants such as unmanned aerial systems, urban air mobility, civil supersonic aircraft, and commercial space vehicles. The ability to manage this growth will partly depend on the extent to which we address the effects of noise and emissions.

Technologies that reduce noise and emissions are regulated at the vehicle level as a part of airworthiness certification. These environmental standards are harmonized internationally through the International Civil Aviation Organization's (ICAO) Committee on Aviation Environmental Protection (CAEP). A significant portion of this Program is devoted to informing decision making at ICAO CAEP. Finally, the program will coordinate efforts with federal and international partners to ensure that knowledge is shared broadly.

Major Activities Planned:

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
Advance Scientific Understanding of Environmental Impacts of Noise and Emissions	Expand the scientific understanding of the impacts of noise and emissions on people, the environment, and climate.	Knowledge and data on the environmental impacts of noise and emissions.	Provides the understanding of the issues on which technological and operational solutions can be developed	On-going
Aviation Environmental Design Tool (AEDT) Development	Continue expanding the AEDT capabilities of integrated assessment of noise, fuel burn and emissions impacts from commercial aviation by integrating the latest scientific knowledge.	Public release of a new version of the AEDT software.	Provide the analytical capabilities needed for environmental reviews and standards development	On-going effort with annual AEDT releases
Decision Making on Standard Setting, Certification, and Policy	Provide the data and analysis necessary to support the development of appropriate certification procedures, standards, and policies for conventional aircraft, drones, advanced air mobility vehicles and supersonic aircraft.	Analyses and data to support decision making.	Develop the data and information needed to support decision making on both domestic policy and international environmental standards at ICAO CAEP	Second year of a recurring 3-year cycle

The following chart below provides a breakdown of CLEEN and ASCENT funding from this BLI. The ASCENT COE program is also funded from the NextGen - Environmental Research – Aircraft Technologies and Fuels BLI.

	FY 2021 Actual	FY 2022 CR	FY 2023 President's Budget
CLEEN Program	$0	$0	$0
ASCENT COE	$7,500,000	$7,500,000	$7,500,000

What benefits will be provided to the American public through this request and why is this program necessary?

Civil aviation is evolving continuously, and so must the analytical tools and research that quantify and characterize the environmental consequences of civil aviation. The increased knowledge and analytical capabilities provided by the E&E Program ensure the FAA has ability to define and mitigate environmental issues related to noise, air quality, and climate change that the aviation industry will need to overcome to ensure sustainable aviation growth. This request would continue efforts to advance our scientific understanding of the environmental and climate impacts of civil aviation, develop tools to quantify these impacts, and then use the tools to inform decision making to ensure that cost-effective solutions are developed to address the noise, air quality, climate, and energy issues confronting aviation.

Detailed Justification for A11.t NextGen – Environmental Research – Aircraft Technologies and Fuels

FY 2023 – A11.t NextGen – Environmental Research – Aircraft Technologies and Fuels – Budget Request ($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 President's Budget
Salaries and Expenses	901	919	2,101
Program Costs	30,564	32,557	71,875
Total	**31,465**	**33,476**	**73,976**
FTE (if applicable)	**4**	**4**	**9**

What is this program and what does this funding level support?

This program supports the Administration's principles of Safety and Climate, as well as being a key element in the FAA's plan to reduce greenhouse gas emissions from aviation in support of the U.S. Aviation Climate Action Plan (https://www.faa.gov/sustainability/aviation-climate-action-plan).

The NextGen – Environmental Research: Aircraft Technologies and Fuels project supports efforts to develop new aircraft and engine technologies, and advance sustainable aviation fuels in line with the Administration commitments on climate change and the environment. Technologies developed by this program will result in a fleet of aircraft that have lower noise, use less fuel, and produce fewer emissions. This program also provides test data, analyses, and methodologies to support the development and deployment of sustainable aviation fuels. Funds from this program ensure novel jet fuels are drop-in compatible with today's fleet of aircraft and are certified as being safe for use. They also ensure that sustainable aviation fuels, produced from renewable and waste feedstocks, and lower carbon aviation fuels, produced from fossil feedstocks, are appropriately credited under the International Civil Aviation Organization (ICAO) Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).

Through the Continuous Lower Energy Emissions and Noise (CLEEN) program, the FAA and industry are working together to develop technologies that will enable manufacturers to create aircraft and engines with lower noise and emissions, as well as improved fuel efficiency. Technologies accelerated by the CLEEN program have relatively large technological risk. Government resources help mitigate this risk and incentivize aviation manufacturers to invest in developing these technologies. By cost sharing the development with the FAA, industry is willing to accept the greater risk. Once entered into service, the CLEEN technologies will produce noise, fuel burn, and emissions benefits throughout the fleet for years to come. This budget line item supports the third five-year phase of the CLEEN Program, which started in 2021.

Funding from this program also supports efforts by ASCENT — the FAA's Center of Excellence (COE) for Alternative Jet Fuels and Environment — to develop innovative technological solutions to reduce noise, emissions, and fuel burn from subsonic and supersonic aircraft. Aircraft technology development projects under ASCENT complement the CLEEN Program's industry partnership approach by providing a venue for University-led research to expand knowledge broadly across the industry and develop technologies at all levels of maturity that will reduce noise, emissions, and fuel burn. The program also provides funding for alternative jet fuel testing and analysis efforts by ASCENT. This cooperative aviation research organization is co-led by Washington State University and Massachusetts Institute of Technology.

This program also supports the Commercial Aviation Alternative Fuels Initiative (CAAFI) in its effort to engage with commercial aviation and emerging alternative fuels industries.

Major Activities Planned:

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
CLEEN Phase III	Support the maturation of airframe and engine technologies to reduce civil aviation fuel burn, emissions, and noise impacts via one-to-one cost share partnership with manufacturers.	Accelerated maturation of new technologies that could reduce noise, emissions and fuel burn.	CLEEN technologies will produce noise, fuel burn, and emissions benefits throughout the fleet over many years	Year two of the five year CLEEN Phase III Program
ASCENT Technology Innovation	Examine the use of novel technologies and other forms of innovation to reduce noise, emissions, and fuel burn in commercial aircraft.	Improved methods and data to enable the development of technologies and innovative solutions with lower noise, emissions, and fuel burn from subsonic and supersonic commercial aircraft.	The knowledge provided by ASCENT will aid industry in developing solutions to enable quiet, clean, and efficient air transportation.	On-going
Ensure Novel Jet Fuels are Safe for Use	Support the approval of novel jet fuel pathways within the ASTM International certification process through testing and coordination to ensure these fuels are safe for use	Research reports to demonstrate the safety of novel jet fuel pathways for certification by ASTM Intl and streamline the ASTM certification process to reduce the time and cost of certification	The development and approval of new fuel pathways will expand the opportunities to move towards environmental sustainability in a cost-effective manner.	On-going
Move Beyond the 50% SAF Blend	Develop and test sustainable aviation	Research reports to demonstrate the safety	Eliminate current limitations on	On-going

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
Wall to Enable 100% SAF Use	fuels through ASCENT, CAAFI, and CLEEN that could be used safely in jet engines without blending with conventional petroleum-based jet fuel	of sustainable aviation fuel pathways that can be used without blending for certification by ASTM Intl	environmental benefits of SAF due to current blending constraints	
Maximize environmental benefits of sustainable aviation fuels	Evaluate aviation fuel supply chains within ASCENT to reduce the cost to produce sustainable aviation fuels and maximize their environmental benefits	Analyses and data to support actions by industry and government to cost-effectively produce sustainable aviation fuels with minimal life cycle GHG emissions	Enable aviation industry to cost effectively reach net zero CO_2 emissions through the use of sustainable aviation fuels	On-going
Support inclusion of Sustainable Aviation Fuels in ICAO CORSIA	Support the inclusion of sustainable aviation fuels created from waste and renewable feedstocks, and lower carbon aviation fuels created from fossil feedstocks, within the ICAO CORSIA framework	Develop robust lifecycle greenhouse gas emissions values and methods for alternative fuel pathways and sustainability criteria for use in ICAO CORSIA	High integrity international standards are needed to ensure that sustainable aviation fuels provide CO_2 reductions in a sustainable manner.	On-going

The following chart below provides a breakdown of CLEEN and ASCENT funding from this BLI. The ASCENT COE program is also funded from the Environment & Energy BLI.

	FY 2021 Actual	FY 2022 CR	FY 2023 President's Budget
CLEEN Program	$19,000,000	$20,000,000	$42,000,000
ASCENT COE	$9,500,000	$10,000,000	$27,000,000

What benefits will be provided to the American public through this request and why is this program necessary?

Tackling climate change is a top national priority. In the April 2021 Global Climate Summit, the United States committed to working on a vision toward reducing the aviation sector's emissions in a manner consistent with the goal of net-zero emissions for our economy by. These commitments have been subsequently captured in the U.S. Aviation Climate Action Plan that was announced by the Secretary of Transportation in November 2021. This plan captures the

importance of technology and SAF to reducing emissions that contribute to climate change. Through the SAF Grand Challenge, the Departments of Transportation, Energy and Agriculture committed to advancing the development and deployment of high integrity sustainable aviation fuels. Achieving sufficient SAF production and technology development to achieve the net zero emissions goal will require focused federal investments on high value and high potential initiatives that will accelerate and enable progress in meeting this national objective. This project provides this support to these efforts.

The CLEEN program aids industry in developing the analytical tools needed to design aircraft for lower noise, emissions, and fuel use. Cumulatively, CLEEN Phase I and II are estimated to save the aviation industry 36 billion gallons of fuel by 2050, resulting in CO2 reductions that are equivalent to removing three million cars from the road from 2020 to 2050. The technologies from the first phase of CLEEN are estimated to decrease land area exposed to noise by 14 percent. These technologies, as well as the use of sustainable aviation fuels, will also dramatically reduce nitrogen oxide and soot emissions from aircraft operations. Deployment of sustainable aviation fuels will also support the development of a new industry, and provide economic and environmental benefits. In addition to reducing the environmental impact of aviation, these fuels have the opportunity to provide considerable economic development across rural America where the feedstocks would be produced and where industrial infrastructure could be leveraged. Continued funding will also ensure U.S. global leadership on how sustainable aviation fuels are counted within CORSIA; thus ensuring that these fuels are contributing to meaningful CO2 reductions across the globe.

This program's research efforts support FAA's timely and safe introduction of advanced technologies that mitigate climate change. It provides the framework for directing targeted investments toward acceleration of research initiatives with high potential to mitigate the impact of aviation operations on the environment. Furthermore, the program will coordinate high value research initiatives with federal partners to assure benefits are properly aligned and shared in support of national objectives.

Detailed Justification for A11.u System Planning and Resource Management

FY 2023 – A11.u System Planning and Resource Management – Budget Request ($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 President's Budget
Salaries and Expenses	1,605	1,637	1,699
Program Costs	11,417	2,504	2,442
Total	**13,022**	**4,141**	**4,141**
FTE (if applicable)	**6**	**6**	**6**

What is this program and what does this funding level support?

The System Planning and Resource Management program leads the planning, coordination, development, presentation, and review of the FAA's research and development (R&D) portfolio. The program facilitates and coordinates the FAA's R&D Executive Board (REB), a group of senior executives representing the major FAA R&D sponsors. The REB ensures research priorities meet the FAA's strategic goals and objectives while optimizing the overall R&D portfolio.

This process helps ensure the FAA's research meets the president's criteria for R&D, increases program efficiency, sustains and maintains management of the program within operating cost targets, and enables effective program review by the Research, Engineering and Development Advisory Committee (REDAC), and DOT's Office of the Assistant Secretary for Research and Technology (OST-R).

Major Activities Planned:

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
Annual statutory deliverables to Congress	Ensure that research conducted enables and safely advances aviation	Various reports: - National Aviation Research Plan (NARP) - R&D Annual Review - RE&D Budget Narratives	Program outputs are required, including as specified in U.S. Code 49 (Section 44505(c))	On-going

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
Departmental (OST) R&D program planning and performance reporting requirements	Reduce the overlap of research areas with other Departmental modes Facilitate government and private sector partnerships to help develop and commercialize aviation ideas, concepts, and products	Various reports: - Annual Modal Research Plan - OST Spend Plan - OST Quarterly Performance Management Review - RD&T Annual Funding Report - RD&T Annual Performance Plan	Program outputs are required, as specified in the Fixing America's Surface Transportation Act (Pub. L. No. 114-94)	On-going
Development and submission of the FAA's R&D investment portfolio	Conduct the administration of the congressionally mandated (P.L. 100-591 Section 6 Advisory Committee) REDAC Maximize the impact of federally funded R&D by accelerating the transfer of innovative technologies to the commercial marketplace	Reports, guidance, and transmittals	Ensures the understanding of industry trends and technology advancements	On-going

What benefits will be provided to the American public through this request and why is this program necessary?

This program provides the support for the FAA to formulate its annual R,E,&D portfolio and submit the mandatory R&D planning documents to Congress each year. Through the management of the REDAC, this program facilitates an independent, expert review of the FAA's R&D portfolio that provides meaningful recommendations for the agency to refine and improve research focus areas. This results in a more effective research program that will benefit the public by making aviation safer and smarter while enhancing U.S. global leadership in aviation.

Detailed Justification for A11.v Aviation Workforce Development – Section 625

FY 2023 – A11.v Aviation Workforce Development – Section 625 – Budget Request ($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 President's Budget
Salaries and Expenses	0	0	675
Program Costs	0	5,752	5,494
Total	**0**	**5,752**	**6,169**
FTE (if applicable)	**0**	**0**	**3**

What is this program and what does this funding level support?

This program supports the Administration's principles of Rebalancing Investments to Meet Racial Equity and Economic Inclusion Goals and also Executive Order 13985 "Advancing Racial Equity and Support for Underserved Communities Through the Federal Government" by pursuing a comprehensive approach to advancing equity for all, including people of color and others who have been historically underserved, marginalized, and adversely affected by persistent poverty and inequality.

In response to projected shortages in the Aircraft Pilots and Aviation Maintenance Workforce, the United States Congress gave the FAA the authority to establish two separate Aviation Workforce Development Grant Programs in the FAA Reauthorization of 2018; Aircraft Pilots Workforce Development Grant Program and Aviation Maintenance Technical Workforce Development Grant Program.

The goal of these programs is to support education, recruitment and development of the aviation workforce. The Aviation Workforce Development grant program will provide support to administer grants for eligible projects that educate, develop, and recruit aircraft pilots and an aviation maintenance technical workforce.

Major Activities Planned:

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
Grant awards to eligible entities for Aircraft Pilots	Conduct grant administration and management activities	Facilitate the implementation of the aircraft pilot workforce development grant program Recommended grant recipients will be submitted to the Secretary	This program provides an opportunity to educate, develop, and recruit the next generation of aircraft pilots	On-going five year activity

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
		of Transportation for final decision.		
Grant awards to eligible entities for Aviation Maintenance Technicians	Conduct grant administration and management activities	Facilitate the implementation of the maintenance technician's workforce development grant program Recommended grant recipients will be submitted to the Secretary of Transportation for final decision.	This program provides an opportunity to educate, develop, and recruit the next generation of maintenance technicians.	On-going five year activity

What benefits will be provided to the American public through this request and why is this program necessary?

More than 800,000 new pilots and 750,000 new aviation technicians will be needed worldwide to sustain aviation in the coming decades. This includes a need for 200,000 pilots in the United States alone.

The American flying public will benefit from having skilled aircraft pilots and maintenance technicians to maintain operations and ensure global aviation safety. The goal of this program is to provide funding to support education, recruitment, and development of aircraft pilots and aviation maintenance technicians.

Detailed Justification for A11.w William J. Hughes Technical Center Laboratory Facilities

FY 2023 – A11.w William J. Hughes Technical Center Laboratory Facilities – Budget Request ($000)

Program Activity	FY 2021 Enacted	FY 2022 CR	FY 2023 President's Budget
Salaries and Expenses	2,545	2,596	2,694
Program Costs	376	2,385	2,787
Total	**2,921**	**4,981**	**5,481**
FTE (if applicable)	**12**	**12**	**12**

What is this program and what does this funding level support?

This program supports the Administration's principles of Safety, Transformation and "Future Proofing", Equitable Economic Strength and Improving Core Assets. Research and Development (R&D) programs require specialized facilities that provide flexible, high fidelity environments to perform Human-In-the-Loop simulations and evaluate advanced air traffic concepts. This program sustains the specialized research facilities located at the William J. Hughes Technical Center (WJHTC) used to support R&D program goals and objectives. Funding supports the existing laboratory infrastructure, as well as R&D facility modifications and improvements, project/engineering support, equipment, software/hardware licenses, and support tools. Numerous R&D programs use the laboratory facilities to conduct research activities that encompass current day capabilities and the ongoing transition to NextGen technologies.

Major Activities Planned:

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
Research Development and Human Factors Laboratory enhancements	Enhance simulation and data reduction software to take advantage of new advances in biometric data collection, i.e. smart watches and eye tracking	- Less intrusive data collection techniques that decrease impact on human study participant's performance. - Improved validity and more accurate data collected	Better data provides for simplified analysis and increased probability of finding human and computer/systems interaction correlation	On-going activity
Network Infrastructure	Provide network platform to facilitate integration of FAA and partner networks and facilities to expand collaborative	- Further mature the existing FAA Research and Development Network Domain participants to include	Provide cost effective common network capability to support FAA and partner research	On-going activity

Major Activities	Objective	Expected Outputs	Value Statement	Timeframe
	capabilities and position the FAA to best support internal research within the FAA, other government agencies, industry and academia partners	additional FAA resources from the WJHTC and the Mike Monroney Aeronautical Center - Establish/update secure network connections with DOD for joint Cyber Security activities	and development goals	
Cockpit Simulation Facility & Target Generation Facility enhancements	Install an appropriate out-of-the-window visual system on the S76D simulator	This enhancement will increase the fidelity of results and provide an improved platform for rotorcraft safety research	This will improve NAS safety and help incorporate the latest technologies	Market research to begin in FY 2021 The end result to be completed in FY 2023

What benefits will be provided to the American public through this request and why is this program necessary?

This program is necessary to provide researchers with the specialized laboratories and infrastructure required to achieve R&D program goals and objectives. Additionally, the ability to partner and collaborate with government, academia and industry fosters innovation in aviation. Having an efficient and flexible platform to evaluate current and future air transportation system concepts and technologies enhances the safety and efficiency of air travel for the American public. Performing research in simulated environments rather than with live aircraft is safer, generates cost savings, and allows researchers to study conditions that would not be possible during live flight.

GRANTS-IN-AID FOR AIRPORTS

(LIQUIDATION OF CONTRACT AUTHORIZATION)
(LIMITATION ON OBLIGATIONS)
(AIRPORT AND AIRWAY TRUST FUND)
(INCLUDING TRANSFER OF FUNDS)

For liquidation of obligations incurred for grants-in-aid for airport planning and development, and noise compatibility planning and programs as authorized under subchapter I of chapter 471 and subchapter I of chapter 475 of title 49, United States Code, and under other law authorizing such obligations; for procurement, installation, and commissioning of runway incursion prevention devices and systems at airports of such title; for grants authorized under section 41743 of title 49, United States Code; and for inspection activities and administration of airport safety programs, including those related to airport operating certificates under section 44706 of title 49, United States Code, $3,350,000,000, to be derived from the Airport and Airway Trust Fund and to remain available until expended: Provided, That none of the amounts made available under this heading shall be available for the planning or execution of programs the obligations for which are in excess of $3,350,000,000, in fiscal year 2023, notwithstanding section 47117(g) of title 49, United States Code: Provided further, That none of the amounts made available under this heading shall be available for the replacement of baggage conveyor systems, reconfiguration of terminal baggage areas, or other airport improvements that are necessary to install bulk explosive detection systems: Provided further, That notwithstanding any other provision of law, of amounts limited under this heading, not more than $137,372,000 shall be available for administration, not less than $15,000,000 shall be available for the Airport Cooperative Research Program, and not less than $40,828,000 shall be available for Airport Technology Research.

Note.—A full-year 2022 appropriation for this account was not enacted at the time the budget was prepared; therefore, the budget assumes this account is operating under the Continuing Appropriations Act, 2022 (Division A of P.L. 117–43, as amended). The amounts included for 2022 reflect the annualized level provided by the continuing resolution.

Special and Trust Fund Receipts
(in millions of dollars)

Identification code: 69-8106-0-7-402	2021 Actual	2022 CR	2023 Estimate
0100 Balance, start of year	. . . .	. . . .	. . . .
Receipts:			
Current Law:			
1140 General Fund Payment, Grants-in-Aid for Airports	2,400	400	. . . .
2000 Total: Balances and receipts	2,400	400	. . . .
Appropriations:			
Current Law:			
2101 Grants-in–aid for Airports (Airport and Airways Trust Fund)	-2,400	-400	. . . .
5099 Balance, end of year	. . . .	. . . .	. . . .

Program and Financing
(in millions of dollars)

Identification code: 69-8106-0-7-402	FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
Obligations by program activity:			
0001 Grants-in-aid for airports	3,301	3,165	3,157
0002 Personnel and related expenses	119	119	137
0003 Airport technology research	41	41	41
0005 Small community air service	10	10	. . . .
0006 Airport Cooperative Research	15	15	15
0007 Grants - General Fund Appropriation……..	390	258	226
0008 Administrative Expenses – General Fund Approp.	. . . .	. . . .	1
0009 Coronavirus Aid, Relief, and Economic Security Act, P.L. 116–136	512	30	. . . .
0010 Coronavirus Response and Relief Supplemental Appropriations (CRRSA) Act - Grants Program	1,996	. . . .	. . . .
0011 Coronavirus Response and Relief Supplemental Appropriations (CRRSA) Act - SCASDP Program	4	. . . .	. . . .
0100 Total direct program	6,388	3,638	3,577
0799 Total direct obligations	6,388	3,638	3,577
0801 Grants-in-aid for Airports (Airport and Airway Trust Fund) Reimbursable	1	2	2
0900 Total new obligations, unexpired accounts	6,389	3,640	3,579
Budgetary Resources:			
Unobligated balance:			
1000 Unobligated balance carried forward, Oct 1	1,125	706	818

Identification code: 69-8106-0-7-402	FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
1001 Discretionary unobligated balance brought fwd, Oct 1.	1,107	. . . .	. . . .
1021 Recoveries of prior year unpaid obligations.....	219	. . . .	. . . .
1033 Recoveries of prior year paid obligations.....	1	. . . .	. . . .
1070 Unobligated balance (total)	1,345	706	818
Budget Authority:			
Appropriations, discretionary:			
1101 Appropriation (special or trust fund).....	3,350	3,350	3,350
1101 Appropriation (special or trust fund).....	2,400	400	. . . .
1138 Appropriation applied to liquidate contract authority ...	-3,350	-3,350	-3,350
1160 Appropriation, discretionary (total)	2,400	400	. . . .
Contract authority, mandatory:			
1600 Contract authority (Reauthorization).....	3,350	3,350	3,350
Spending authority from offsetting coll., Discretionary:			
1700 Collected.....	. . . .	2	2
1900 Budget authority (total)	5,750	3,752	3,352
1930 Total Budgetary Resources Available.....	7,095	4,458	4,170
Memorandum (non-add) entries:			
1941 Unexpired unobligated balance, end of year	706	818	591
Special and non-revolving trust funds:			
1952 Expired unobligated balances, start of year	. . . .	2	2
1953 Expired unobligated balances, end of year	2	2	2
Change in obligated balances:			
Unpaid obligations:			
3000 Unpaid obligations, brought forward, Oct 1.....	13,001	10,332	7,785
3010 New Obligations, unexpired accounts.....	6,389	3,640	3,579
3020 Outlays (gross)	-8,837	-6,187	-5,379
3040 Recoveries of prior year unpaid obligations, unexpired	-219	. . . .	. . . .
3041 Recoveries of prior year paid obligations, expired.....	-2	. . . .	. . . .
3050 Unpaid obligations, end of year	10,332	7,785	5,985
Memorandum (non-add) entries:			
3100 Obligated balance, start of year.....	13,001	10,332	7,785
3200 Obligated balance, end of year.....	10,332	7,785	5,985
Budget authority and outlays, net:			
Discretionary:			
4000 Budget authority, gross	2,400	402	2
Outlays, gross:			
4010 Outlays from new discretionary authority.....	1,091	501	468
4011 Outlays from discretionary balances	7,746	5,686	4,911
4020 Outlays, gross (total)	8,837	6,187	5,379
Offsets against gross budget authority and outlays:			
Offsetting collections (collected) from:			
4033 Non-federal sources.....	-1	-2	-2

Identification code: 69-8106-0-7-402	FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
4040 Offsets against gross budget authority and outlays (total)	-1	-2	-2
Additional collections (collected) from:			
4053 Recoveries of prior year paid obligations, unexpired accounts	1	....	....
4070 Budget authority, net (discretionary)	2,400	400	....
4080 Outlays, net (discretionary)	8,836	6,185	5,377
Mandatory			
4090 Budget authority, gross	3,350	3,350	3,350
4180 Budget authority, net (total)	5,750	3,370	3,350
4190 Outlays, net (total)	8,836	6,185	5,377
Memorandum (non-add) entries:			
5052 Obligated balance, SOY: Contract authority	4,164	4,164	4,164
5053 Obligated balance, EOY: Contract authority	4,164	4,164	4,164
5061 Limitation on obligations (Highway Trust Funds)	3,350	3,350	3,350

Subchapter I of chapter 471, title 49, U.S. Code provides for airport improvement grants, including those emphasizing capacity development, safety and security needs; and chapter 475 of title 49 provides for grants for aircraft noise compatibility planning and programs.

Object Classification (in millions of dollars)

Identification code: 69-8106-0-7-402		FY 2019 Actual	FY 2020 Estimate	FY 2021 Estimate
	Direct obligations:			
	Personnel compensation			
11.1	Full-time permanent	76	77	78
11.3	Other than full-time permanent	1	1	1
11.5	Other personnel compensation	2	2	2
11.9	Total personnel compensation	79	80	81
12.1	Civilian personnel benefits	28	29	29
21.0	Travel and transportation of persons	1	1	1
23.2	Rental payments to others	1	1	1
25.1	Advisory and assistance services	39	37	37
25.2	Other services from non-Federal sources	1	1	1
25.3	Other services from Federal sources	19	19	19
25.7	Operation and maintenance of equipment	9	9	9
26.0	Supplies and materials	1	1	1
31.0	Equipment	1	1	1
41.0	Grants, subsidies, and contributions	6,195	3,445	3,384
94.0	Financial Transfers	14	14	14
99.0	Direct obligations	6,388	3,638	3,578
41.0	Reimbursable obligations	1	2	1

Identification code: 69-8106-0-7-402		FY 2019 Actual	FY 2020 Estimate	FY 2021 Estimate
99.9	Total new obligations, unexpired accounts	6,389	3,640	3,579

Employment Summary

Identification code: 69-8106-0-7-402		FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
1001	Direct: Civilian full-time equivalent employment....	591	611	637
1001	Direct: Civilian full-time equivalent employment....	4	1	1
2001	Reimbursable: Civilian full-time equivalent employment.....	6	4	2

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EXHIBIT III-1
GRANTS-IN-AID FOR AIRPORTS
Summary by Program Activity
Appropriations, Obligation Limitations, and Exempt Obligations
($000)

	FY 2021 ENACTED	FY 2022 CR	FY 2023 PRES. BUD.
Grants-in-Aid for Airports	$ 3,564,932	$ 3,564,932	$ 3,156,800
Personnel & Related Expenses	$ 119,402	$ 119,402	$ 137,372
Airport Technology Research	$ 40,666	$ 40,666	$ 40,828
Airport Cooperative Research	$ 15,000	$ 15,000	$ 15,000
Small Community Air Service	$ 10,000	$ 10,000	$ -
TOTAL, Base appropriations	$ 3,750,000	$ 3,750,000	$ 3,350,000
FTEs			
Direct Funded	591	611	637
Reimbursable, allocated, other	6	4	2
Supplemental Funding			
COVID-19 Supplementals			
CRRSA	2,000,000		
Relief for Airports (ARPA)			
Employee Leave Fund (ARPA)			
IIJA Supplemental (Division J)			
Facilities & Equipment			
Airport Infrastructure Grants			
Airport Terminal Program			
TOTAL, Base appropriations	$ 2,000,000	$ -	$ -
FTEs			
Direct Funded (CARES Act)	4	1	1
Reimbursable, allocated, other			
Account	$ 5,750,000	$ 3,750,000	$ 3,350,000

Program and Performance Statement
This account provides funds for planning and developing a safe and efficient national airport system to satisfy the needs of the aviation interests of the United States, with due consideration for economics, environmental compatibility, local proprietary rights and safeguarding the public investment.

EXHIBIT III-1a

GRANTS-IN-AID FOR AIRPORTS
SUMMARY ANALYSIS OF CHANGE FROM FY 2022 TO FY 2023
Appropriations, Obligations, Limitations, and Exempt Obligations
($000)

	$000		FTE
FY 2022 Annualized CR	$3,750,000		612
ADJUSTMENTS TO BASE:			
Annualization of FY 2022 FTE	0		
Annualization of Prior Pay Raise(s)	754		
FY 2023 Pay Raise	3,855		
Adjustment for Compensable Days	-447		
Adjustment in Working Capital Fund	-65		
FERS Increase in FY 2023	0		
SUBTOTAL, ADJUSTMENTS TO BASE	**4,097**		**0**
PROGRAM REDUCTIONS			
Reductions to Grants program to offset uncontrollable increases, increases for Admin program, and eliminate supplementatl funding	-408,132		
Discontinue SCASDP Program	-10,000		
Reduction to ACRP to retain $15 million target amount	-6		
SUBTOTAL, PROGRAM REDUCTIONS	**-418,138**		**0**
PROGRAM INCREASES			
51 new positions in Admin	4,641		26
Funding for SOAR and ADIP upgrades	9,400		
SUBTOTAL, PROGRAM INCREASES	**14,041**		**26**
FY 2023 REQUEST	**3,350,000**		**638**
Supplemental Appropriations	**0**		**0**
TOTAL	**3,350,000**		**638**

Executive Summary

What Is the Request and What Funds are Currently Spent on the Program?

For FY 2023, the President's Budget requests $3.35 billion to fund the Grants-in-Aid for Airports program, also known as the Airport Improvement Program (AIP). The Infrastructure Investment and Jobs Act, also referred to as the Bipartisan Infrastructure Law (BIL), established the Airport Terminal Program (ATP) program with an annual advance appropriation of $1 billion and the Airport Infrastructure Grants (AIG) program with an annual advance appropriation of $3 billion, starting in FY 2022. These are separate and distinct programs from the Airport Improvement Program. Combined, the $3.35 billion of the base budget, the $1.0 billion in ATP, and the $3.0 billion in AIG would make available $6.35 billion for our Nation's airports.

The Budget request will enable the FAA to continue providing capital funding to help airports preserve and maintain critical airport infrastructure. The Grants-in-Aid program enables FAA to advance important safety, capacity and efficiency projects at more than 500 airports supporting commercial service and more than 2,800 general aviation airports that provide critical functions at the national, regional, and local level. The AIP also helps airports address environmental concerns for neighboring communities. It provides direct, on-going grant support for residential sound-insulation near airports with significant noise. The AIP requires grantees to procure goods, products and equipment according to statutory Buy American provisions.

What Is this Program and Why is it Necessary?

The AIP provides grants to local and state airport authorities to help ensure the safety, capacity, and efficiency of U.S. airports. Through the AIP, the agency funds a range of activities to assist in airport development, including preservation and development of critical transportation infrastructure.

The FAA identifies public-use airports for the national transportation system and the National Plan of Integrated Airport Systems (NPIAS). These public-use airports support scheduled air carrier service at more than 500 commercial service airports. In addition to the scheduled passenger and cargo service, the airport system serves a diverse range of functions at approximately 2,800 general aviation airports that support remote communities, emergency medical services and disaster response, flight training, law enforcement support, agricultural activities, and business/corporate activities.

Why Do We Want/Need To Fund The Program At The Requested Level?

Every two years, as required by statute, the FAA publishes the National Plan of Integrated Airport Systems (NPIAS) that looks five years into the future, identifying AIP-eligible development needs for the NPIAS airports. The latest NPIAS, which was published in September 2020, identified approximately $43.6 billion in capital needs over the 5-year period

from 2021-2025.[1] The FAA will publish the next update in September 2022. The FAA funds capital projects that support system safety, capacity, and environmental projects and the highest priority needs in the NPIAS. The AIP statutorily sets aside a percentage of the overall funding level for environmental projects, including residential sound insulation and projects that reduce emissions to improve air quality and lower greenhouse gas emissions. Thusly, the AIP promotes environmental stewardship and equity.

What Benefits will be Provided to the American Public Through This Request?

The investment of AIP funds in the national system of airports is critical to helping maintain and improve the safety, efficiency, capacity, equity, and environmental stewardship of U.S. airports. The FAA works closely with airports and state aeronautical agencies to monitor the condition of critical airfield infrastructure. These efforts can be directly linked to improving airfield safety and standards, ensuring airport infrastructure meets the needs of all airport users, enhancing public access to the airport, mitigating aircraft noise impacts and reducing greenhouse gas emissions in surrounding communities. Through the AIP, the FAA helps ensure there is a safe and reliable system of airports to support the needs of the traveling public, including accommodations for persons with disabilities; the airlines; other aeronautical users (including businesses that depend upon aviation for time-critical delivery of goods and communications); and other airport stakeholders, including non-aeronautical employers and workers in airport terminals. The AIP also contributes to efforts ensuring access to remote communities with critical community needs such as emergency medical services and disaster response, flight training, law enforcement support, agricultural activities, and business/corporate activities.

[1] National Plan of Integrated Airport Systems (NPIAS) 2021-2025. See https://www.faa.gov/airports/planning_capacity/npias/current/

Detailed Justification for Grants-in-Aid for Airports

FY 2023 Grants-in-Aid for Airports Budget Request ($000)

Program Activity	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Salaries and Expenses			
Program Costs	3,564,932	3,564,932	3,156,800
Total	**$ 3,564,932**	**$ 3,564,932**	**$ 3,156,800**
FTE	0	0	0

What is this program and what does this funding level support?

For FY 2023, the President's Budget requests $3.15 billion to fund the Grants-in-Aid for Airports program, known as the Airport Improvement Program (AIP).

Through the AIP, the agency funds a broad range of capital projects at eligible U.S. airports. As required by statute (49 U.S.C. 47103), the FAA maintains the National Plan of Integrated Airport Systems (NPIAS), which identifies airports eligible for AIP funding as well as the kind and estimated costs of eligible airport development projects under the AIP. Currently, there are over 3,300 public use airports in the NPIAS, of which approximately 520 support scheduled air carrier service. In addition to the commercial service airports supporting scheduled passenger and cargo service, approximately 2,800 eligible airports in the NPIAS provide critical community access, support emergency medical services and disaster response, provide flight training, and support law enforcement, agricultural activities, and business/corporate activities.

With this funding request, the FAA will continue to award AIP grants for eligible, well-justified projects at NPIAS airports within four key focus areas:

Safety: Among the agency's long-term safety activities are to provide AIP funds to projects that protect public safety eliminating outmoded airport conditions that contribute to accidents and to ensure that airport safety standards projects receive the highest funding priorities. This includes projects that will help improve pilot awareness and reduce the risk of runway incursions or wrong-surface landings or departures, eliminate or mitigate obstructions, reduce risks associated with wildlife hazards, and other categories of safety enhancements - all focused on reducing fatalities, injuries, and property damage ensuring the safe movements of the public, pilots and aviation industry support personnel.

Capacity/Efficiency/Access: The FAA will continue its focus on improvements throughout the system that will enhance capacity, increase efficiency, and ensure equitable access for everyone. The FAA achieves these goals by providing financial and technical support to regional and metropolitan system plans, airport master plans, and environmental reviews, as well as by directing funding toward the preservation, construction, and expansion of terminals, runways, and other airfield infrastructure, such as access roads and intermodal connections.

Environmental Stewardship/Climate Resilience: The FAA will continue to work with airport sponsors to address environmental issues and community concerns that allow airport infrastructure improvements to proceed in a timely manner, including grants to help airport sponsors complete environmental review and permitting processes as expeditiously as possible. The FAA will continue its work on sustainability and related climate change and severe weather resiliency planning at NPIAS Airports. We will also continue and reestablish programs that improve air quality, promote energy efficiency, foster energy resilience, encourage the greater use of renewable energy sources, and reduce greenhouse gas emissions.

Security: Although not a primary FAA focus area, the AIP provides funding for specific types of security projects required by statute or regulation. These projects carry a high priority for AIP funding, particularly those related to protecting the airport's "secured area," including airport perimeter fencing, security gates, lighting, and closed circuit television cameras as part of access control to the secured area. The FAA supports infrastructure and facility modifications that allow the Transportation Security Administration (TSA) to optimize the layout and functionality of public screening areas, and works with the TSA to determine AIP funding eligibility and priority for other capital needs.

The Infrastructure Investment and Jobs Act, also referred to as the Bipartisan Infrastructure Law (BIL), established the Airport Terminal Program (ATP) program with an annual appropriation of $1.0 billion and the Airport Infrastructure Grants (AIG) program with an annual appropriation of $3.0 billion, starting in FY 2022. These are separate and distinct programs from the Airport Improvement Program.

The ATP will make available competitive grants for airport terminal development (including multimodal and on-airport rail access) and airport-owned air traffic control tower projects that address the aging infrastructure of the nation's airports. As set forth in the BIL, the program will prioritize grants for projects that increase capacity and passenger access; projects that replace aging infrastructure; projects that achieve compliance with the Americans with Disabilities Act and expand accessibility for persons with disabilities; projects that improve airport access for historically disadvantaged populations; projects that improve energy efficiency, including upgrading environmental systems, upgrading plant facilities, and achieving Leadership in Energy and Environmental Design (LEED) accreditation standards; projects that improve airfield safety through terminal relocation; and projects that encourage actual and potential competition.

Through the AIG Program, as mandated by BIL, the agency will distribute funds primarily by formula to both primary and non-primary airports in the National Plan of Integrated Airport Systems (NPIAS). Airports are expected to use the funds on a broad range of planning and development projects.

What benefits will be provided to the American Public through this request and why is this program necessary?

The U.S. aviation system plays a critical role in the success, strength, and growth of the U.S. economy. Approximately 691,000 active pilots, 212,000 general aviation aircraft, and 7,500 air carrier aircraft rely on the U.S. airport system. The economic impacts of the air traffic control

system are well documented in FAA's report on "The Economic Impact of Civil Aviation on the US Economy," published in January 2020.[2] It states that, in 2016, aviation accounted for 5.2 percent of our gross domestic product, contributed $1.8 trillion in total economic activity, and supported 10.9 million jobs.[3] Since 2000, the AIP has funded infrastructure projects at 23 major airports to accommodate more than 2 million additional annual operations each year.

AIP funding in FY 2023 will support the following key infrastructure projects:

- To mitigate safety risks, enhance capacity, and increase efficiency, the AIP will fund reconstruction and rehabilitation of terminals, hangars, runways, taxiways, protective surfaces, and aircraft parking areas (aprons), as well as associated data collection, to preserve the nation's critical aviation infrastructure as well as mitigate the risk of foreign object debris damage to aircraft from cracked or broken pavement surfaces;

- To reduce the risk of runway incursions, the AIP will fund projects to reconfigure taxiways, perimeter service roads and other airport facilities; and improve marking, lighting, and signage;

- To enhance safety, the AIP will fund projects to conduct wildlife hazard assessments and develop wildlife hazard management plans;

- To modernize and enhance efficiency and capacity at airports using a safety risk model, the AIP will fund Safety Management Systems (SMS) manual and implementation plans to expand the use of SMS, either by voluntary implementation or regulated mandate across the system; and

- To improve the environment the AIP is funding a pilot program for projects that measurably reduce or mitigate aviation impacts on noise, air quality or water quality. We will also continue to fund projects required to achieve compliance with existing noise, air quality, and water quality laws and policies, with the goals of reducing impacts and streamlining processes.

- To continue to participate in and fund existing and new sound insulation programs. Existing programs include Burlington, Los Angeles, San Diego, Fort Worth, Key West and Fort Lauderdale. New program starts may include New York and Madison, WI. .

The AIP is crucial to help support the FAA's mission to provide the safest and most efficient transportation system in the world. The AIP helps assure the American Public has a safe, reliable, efficient, and accessible system of airports to support and advance U.S. economic interests as well as technology, security, and safety at all levels of aviation user needs from next-day air deliveries to emergency support services.

[2] The Economic Impact of Civil Aviation on the U.S. Economy – January 2020. See https://www.faa.gov/about/plans_reports/media/2020_jan_economic_impact_report.pdf
[3] The Economic Impact of Civil Aviation on the U.S. Economy – January 2020. Page 5. See https://www.faa.gov/about/plans_reports/media/2020_jan_economic_impact_report.pdf

The AIP supports the FAA's safety focus by providing funding for safety-related development at airports that benefit U.S. aviation consumers at all levels, whether commercial service and general aviation operators and passengers, or recipients of goods transported via aircraft worldwide. For example, the AIP provides funds to airports to make improvements that help reduce runway incursions caused by vehicle/pedestrian deviations or by pilot error due to complex or confusing geometry at runway intersections, many of which were developed before modern airport design standards were established.

The Runway Incursion Mitigation (RIM) Program is a key initiative that the Office of Airports (ARP) manages to reduce runway incursions at runway/taxiway intersections where either at least three incursions have occurred in a year or that average at least one incursion a year at towered airports throughout the country. The FAA has is in the process of mitigating incursions at more than 100 locations, and has completed mitigation activities more than 77 RIM locations. The FAA develops estimated schedule and cost estimates annually for five year projections. Additionally, ARP maintains an annual report on RIM program to date.

The AIP also provides support to accelerate improvements to Runway Safety Areas (RSA) that do not meet current standards and other similarly high priority projects that support safety through efforts to reduce the risks of air transportation-related fatalities and injuries. RSA improvements include the installation of Engineered Materials Arresting Systems at some airports. Other projects include pavement rehabilitation and geometric improvements to avoid pilot confusion and enhance safety.

The AIP ensures maintenance of existing airport infrastructure as well as modernization of the national system of airports. The AIP also supports vital technical and financial assistance for planning, environmental analysis, engineering design, and the construction or rehabilitation of terminals, hangars, runways, taxiways, and aprons as well as other measures to expand capacity and make more efficient use of airports.

A significant part of the FAA's safety mission also supports capacity and efficiency. For example, the AIP helps ensure that the vast majority of paved runways at nearly 3,300 NPIAS airports are maintained in excellent, good, or fair condition. This reduces system delays by ensuring capacity is not compromised due to pavement safety issues.

Other AIP-funded safety projects serve to ensure system capacity and efficiency. For example, providing equipment to enable airports to keep runways and taxiways clear of snow, ice, and ponding water that can jeopardize aircraft directional control or braking action. Chemicals, plowing, and freeze-thaw cycles take a toll on runways, taxiways, and other paved areas, requiring careful environmental analysis and engineering planning to ensure adequate drainage. Additionally, AIP grants help fund professional planning, engineering, and environmental consulting services and pavement maintenance programs to ensure airports are maintained and operated in safe and serviceable conditions as required by statute (49 U.S.C. 47107).

Every other year, the FAA is required to publish a five-year prospective analysis of AIP-eligible capital needs. The latest NPIAS, published in September 2020, identified $43.6 billion in

estimated capital needs over the 5-year period from 2021 through 2025.[4] This funding request will contribute to the immediate airport safety, capacity, efficiency, and environmental stewardship projects identified by the FAA and airport sponsors to maintain existing airport infrastructure as well as modernize it to support the air transportation needs of the public.

[4] National Plan of Integrated Airport Systems (NPIAS) 2021-2025. See https://www.faa.gov/airports/planning_capacity/npias/current/

GRANTS-IN-AID FOR AIRPORTS

Grants-in-Aid for Airports
($ in Thousands)

Item Title	Dollars	FTP	FTE
FY 2022 Annualized CR	**3,166,874**	**0**	**0**
Total Adjustments to Base	**0**	**0**	**0**
Discretionary Increases/ Decreases			
1. Discretionary decrease of offset uncontrollable adjustments, and discretionary increases in other programs, and to eliminate supplement funding	-408,132		
Total Discretionary Increases/Decreases	**-408,132**	**0**	**0**
FY 2023 Request	**3,156,800**	**0**	**0**

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Detailed Justification for Personnel and Related Expenses

FY 2023 Personnel and Related Expenses Budget Request ($000)

Program Activity	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Salaries and Expenses	103,432	107,237	115,872
Program Costs	15,970	12,165	21,500
Total	**$ 119,402**	**$ 119,402**	**$ 137,372**
FTE	568	583	609
CARES Act FTE	4	1	1

What is this program and what does this funding level support?

For FY 2023, the President's Budget requests $137 million, 635 positions and 610 FTEs to cover the administrative expenses for the Office of Airports (ARP). The request supports ARP's legislatively directed mission of leadership to plan and develop a safe and efficient national airport system to satisfy the needs of the aviation interests of the United States, with consideration for economics, environmental compatibility, local proprietary rights, and safeguarding the public investment. (See 49 U.S.C. 47103).

The requested funding level will support 51 additional positions in FY 2023:

- 7 State Block Grant Program (SBGP);
- 5 airport compliance;
- 3 AIP grant and financial oversight;
- 3 safety and NAS integration specialists;
- 6 field airspace specialists
    - Three airspace as Regional leads
    - Three airspace support
- 2 frontline positions in Puerto Rico; and
- 25 additional safety and frontline specialists to provide engineering, community planning, and environmental protection oversight.

These additional positions are essential for sufficient resources to provide safety and grant oversight at NPIAS airports. Additional resources are necessary because of increased workload, increased complexity, and evolving new entrant needs. Sufficient resources will benefit the American public with increased guidance and support for NPIAS airport sponsors to advance the safest, most efficient airport system.

Seven new SBGP positions will support the States participating in that program. Under the SBGP, the FAA provides funds directly to participating States that in turn, prioritize, select, and fund AIP projects at non-primary airports. Department of Transportation's Office of Inspector General (OIG) identified audit gaps in the FAA's Oversight of the

AIP SBGP. These positions will ensure proper oversight of the SBGP to ensure compliance with FAA's requirements, policies, and practices.

Five airport compliance positions will support an increased workload associated with single audits, annual and other ad hoc audits, as directed by OIG and GAO, and to enhance our ability to informally resolve compliance issues at the regional level.

Three AIP grant and financial positions will assure the appropriate level of policy guidance and oversight. The FAA Reauthorization Act of 2018 increased the complexity and workload of the financial, environmental, and planning programs of the Office of Airports.

Three new safety and NAS integration specialists positions will work within the design standards team located at HQ and provide national-level safety experts to address the safe integration of Urban Air Mobility (UAM) and Advanced Air Mobility (AAM) in/on or near the airport environment. These positions will enhance safety, increase innovation, and improve customer service and response times to requests for access to airports, heliports, and vertiports.

Six new field airspace positions are requested in the Regions co-located with the Air Traffic Service Areas. Three of these positions will be leads that will focus on growing safety concerns with the accuracy of aeronautical data and the timely assessment of off-airport obstruction evaluation (OE) cases. The addition of these positions will allow the ARP LOB to adapt to the changing needs over the years needed to handle the varying workload of disparate airspace matters, including the future work associated with the review and establishment of vertiports. The other three new airport airspace positions will increase safety of the national airspace by providing national experts to address all actions submitted in accordance with 14 CFR Part 157. With one position for each FAA Service Center (Eastern, Central and Western), the FAA can enhance safety and improve customer service and response times to privately owned, Non-NPIAS airports.

Nearly all medical use airports/heliports are privately owned. Many solicit and/or need FAA assistance in the design and development of their facility. There are over 5,800 heliports in addition to the 2,500 hospital heliports. The FAA is experiencing an increase in the number of medical/hospital facilities seeking to be properly registered and compliant with Part 157. Per section 314, these private, nonregulated facilities comprise a large percentage of where for-hire commercial passenger and/or patient transport operations occur. These new positions will help the FAA address the current increase in demand and the potential for even more private airports to support urban vertiports for urban air mobility or other similar activities.

Two positions are requested in the FAA Airports District Office in San Juan, Puerto Rico. This established field office provides planning, environmental, engineering, and compliance services to support improvements to infrastructure at the 12 NPIAS airports in Puerto Rico and the U.S. Virgin Islands. This office ensures the successful initiation

and completion of critical airport infrastructure projects. These positions are critical to providing advice, guidance, and support to Puerto Rico Ports Authority.

Another 25 positions (based on growing demands for staffing needs among 31 offices located in nine Regions) are requested in response to increasing levels of AIP oversight and execution that has shifted to the Regions and Airport District Offices (ADO), limiting their ability to maintain their own program and audit responsibilities, and impacting their capacity to help airport sponsors navigate through the increasingly numerous and complex programs and processes. These frontline personnel are essential to improve airport safety through implementation of SMS, conduct wildlife hazard assessments or site visits at general aviation airports, and improvements to runway safety areas for over 3,300 NPIAS airports.

For FY 2023, $7.0 million is requested for the System of Airports Reporting (SOAR) transformation. SOAR Transformation is the revision of SOAR to incorporate new technology selected and proven in prior years into the remaining legacy SOAR application. SOAR is the primary software program for the Office of Airports (ARP) used to formulate and define the National Plan of Integrated Airport Systems (NPIAS), and administer the Airport Improvement Program (AIP), supplemental, and COVID relief grants. As currently planned, the funding will support cross-module functionality such as Airport Owner contacts, Air Carrier/Scenarios module and database redesign.

The FY 2023 request includes $2.4 million for the Airport Data and Information Portal (ADIP). ADIP establishes aeronautical data collection standards, automated processes for the collection and management of airport safety critical data, and information. The funding is used to support flight operations within the National Airspace System (NAS). ADIP is identified as the FAA authoritative source for the collection of safety critical data necessary for the development of instrument flight procedures, runway safety area analysis, airspace evaluation, obstacle evaluation and collection of airport data and information used to support CFR FAR Part 91.103.

What benefits will be provided to the American Public through this request and why is this program necessary?

Congress statutorily directed the FAA to plan and develop a safe and efficient national airport system to satisfy the needs of the aviation interests of the United States, with consideration for economics, environmental permitting, local proprietary rights, and safeguarding the public investment.

The FAA's Office of Airports has responsibility for maintaining this plan and associated systems to include establishing standards for the safe planning, data collection, design, construction, operation, and maintenance of the nation's airports. This is critical because the safe operation of air transportation requires nationwide and (in certain cases) international consistency in design standards, construction standards, signage, marking, lighting, and emergency response.

SOAR Transformation updates 20-year old code to new, easier to maintain and change software architecture, incorporating new functionality that has been handled through largely manual processes using spreadsheets and document templates. In some cases, new systems were built in a Sharepoint site (e.g., Airports Contacts) with the full intention of being able to incorporate and maintain the data via SOAR in the future. Many of these off line processes will integrate in SOAR, resulting in SOAR operational maintenance being less complicated, less costly, and more flexible. While some SOAR modules, such as the Air Carrier and Grants functionality, have a direct impact to the National Plan of Integrated Airport System (NPIAS) and thus directly affect the safety of the flying public; other work such as the Airports Contacts module and database redesign are still critical for dissemination of information to Airports and achieving database efficiencies. Administering the Airports Improvement Program (or any other program such as Supplemental or COVID relief) or Passenger Facility Charge oversight will be done more efficiently with essential data being maintained properly rather than off line in spreadsheets or other systems. ARP plans to complete the SOAR Transformation in 2025. When COVID hit the American public in early 2020, SOAR transformation answered the need for remote work by moving integration of document management and eSign cloud-based software solution in SOAR. In addition, SOAR fast tracked converting an external manual "red folder" review process in both desktop and mobile application. While Operations and Maintenance (O&M) was able to incorporate two new Supplemental and three COVID Relief programs, review of the (O&M) implementation timeline confirms that the program, staff and the American public would have been negatively affected by failure of one or more of these system components.

The continued investment in ADIP directly supports the climate and sustainability initiatives of the Administration. The Program ensures the information collected continues to enhance and supplement the FAA's efforts to reduce greenhouse gas emissions and noise associated with the arrival, departure, terminal flight operations and efficient movement of aircraft within the NAS and airport environment by ensuring the integrity of aeronautical data for aviation stakeholders. The benefits of the ADIP system has resulted in the development of over 1,400 vertically guided instrument approach procedures (IAP) since 2012 due to the increased level of data accuracy the Airports GIS tool provides to the Flight Procedure Teams (FPTs). In addition to maintaining airport safety critical data, ADIP is also the authoritative source for Order 5010.4 and AC 150/5300-19 aeronautical data - also commonly referred to as 5010 data.

By 2025, the ADIP will have implemented system enhancements in accordance with the ADIP Strategic Plan to streamline and expand the collection and management of airport data and information. This will result in safety improvements by ensuring aircraft navigational systems are receiving the highest quality safety critical aeronautical data for flight operations within the NAS. The realized benefits enable FAA and USG leadership to make better, evidence-based decisions guided by the best available data during the development or modification of policy, programmatic, budget, operational, regulatory, and management processes. Additionally, the FAA operates ADIP daily while prioritizing IT Modernization and Cybersecurity. The agency budgets regularly to ensure security of systems and protection of information through regularly scheduled

assessments. Finally, the FAA procures contracts that leverage federal acquisition by hiring small businesses to provide the services of enhancing and maintaining the system.

ARP personnel possess expertise in many professional and technical areas, as they regularly engage in opportunities to work collaboratively across government agencies, with industry, and with affected stakeholders. It is important to have the appropriate amount and technically competent staff to perform work on behalf of the American public to maintain the existing national airport system. These staff members must also work to modernize airports and meet specific requirements to fulfill the goals of ensuring our system of airports supports the safest, most efficient aerospace system in the world.

Airports and their tenants and customers are rapidly attempting to integrate Unmanned Aircraft Systems (UAS) into the airport environment. Airport operators are also looking for FAA guidance on how to detect and mitigate UAS operating near airports that could become hazards to air navigation. This has created challenges for both the airport's operations and the FAA's oversight. UAS research can expand on ways to identify and evaluate the issues and requirements for using UAS for airport-centric operations, such as wildlife monitoring, aircraft rescue and firefighting operations, and pavement and infrastructure inspection. This research can lead to efficiencies and cost savings for airports. All these factors are accelerating to a level beyond current resources.

The three new airport airspace positions will increase safety of the National Airspace System by providing national experts to address all actions submitted in accordance with 14 CFR Part 157. Part 157 actions are currently assigned to various ARP frontline personnel that handle a variety of tasks, including but not limited to, implementation and oversight of the AIP. With an increasing number of aeronautical studies, including an increase in the number of medical facility establishments, providing three new airport airspace positions to focus on 14 CFR Part 157 submittals will improve stakeholder support, enhance safety, improve data integrity and provide a major relief to ARP frontline staff. In addition, the newly created positions will establish consistency across the nation, improve FAA partnership with the industry and improve the accuracy of the airport and runway database on aeronautical data, and reduce a growing backlog of aeronautical studies.

After extensive experimentation, the FAA concluded that none of this growing workload can be absorbed by existing staff without severe negative impacts to the various stakeholders like airports, airlines and other user-groups, neighboring and impacted communities, and the traveling public.

GRANTS-IN-AID FOR AIRPORTS

Personnel and Related Expenses
($ in Thousands)

Item Title	Dollars	FTP	FTE
FY 2022 Annualized CR /A	**119,402**	**584**	**584**
Adjustments to Base			
1. Annualization of FY 2022 Pay Raise	724		
2. FY 2023 Pay Raise	3,700		
3. Adjustment for Number of Compensable Days	-429		
4. FERS Increase	0		
5. Decrease to Working Capital Fund	-65		
Total Adjustments to Base	**3,929**	**0**	**0**
New or Expanded Programs			
1. 51 new positions (26 FTE) to perform various safety and oversight activities	4,186	51	26
2. Funding for System of Airports Reporting (SOAR) and Airport Data and Input Program (ADIP) Upgrades	9,400		
Total Discretionary Increases	**14,041**	**51**	**26**
FY 2023 Request	**137,372**	**635**	**610**

/A Includes CARES Act, 1 FTP & 1 FTE

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Detailed Justification for Airport Technology Research

FY 2023 Airport Technology Research Budget Request ($000)

Program Activity	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Salaries and Expenses	4,047	4,342	4,504
Program Costs	36,619	36,324	36,324
Total	**$ 40,666**	**$ 40,666**	**$ 40,828**
FTE	**22**	**26**	**26**

What is this program and what does this funding level support?

For FY 2023, the President's Budget requests $40.8 million to fund the Airport Technology Research (ATR) program. This program is diversified and supports several goals in safety, economic growth, equity, climate solutions and transformation. The program has 20 research program areas and more than 125 on-going complex projects.

Research areas include the development of infrastructure standards for Advanced Air Mobility vehicles; continued testing of new, environmentally-friendly firefighting agents; field performance monitoring of solar technology for runway and taxiway lights; development of smart technologies to monitor runway conditions; integrating machine learning and artificial intelligence techniques into airport safety and performance monitoring; and the continued evaluation of more resilient and environmentally-friendly pavement materials. Overall, this research program focuses on continually improving safety at airports in various ways that support strong economic growth. There are a number of research projects related to climate solutions and resilience. For instance, in FY 2023 research will continue in the appropriate use of solar technology and in the safe applications of LED lighting at airports. On the infrastructure side, research is ongoing on the use of more environmentally friendly pavement materials that can perform under extreme weather conditions and new research on infrastructure resiliency will help NPIAS Airports plan for greater resiliency to address climate change and severe weather impacts, while helping airports and FAA better understand which airports are most vulnerable.

In the areas of transformation and economic growth, the program will also include funding for the innovative Airport Pavement Technology Program to perform short-term applied research in collaboration with the Concrete Pavement and Asphalt Pavement industries, as authorized by Section 744 of the 2018 FAA Authorization Act.

ATR findings are used in updating Advisory Circulars, manuals, and technical specifications that airports heavily rely on to maintain and expand their infrastructure in the safest and most efficient manner. This includes all engineering standards for airport construction projects as well as specific safety guidance and requirements to assure safe aircraft and airport operations on the ground. For example, current research projects will

advance ARP's ability to maintain the highest safety standards in areas with rapidly evolving technologies such as visual guidance, airport surveillance systems, pavement testing and materials research, and airport geometry enhancements to name a few. All ATR activities are conducted to support ARP's mission to ensure the safest and most efficient airports network achievable.

The success of the research is reflected in our ability to issue updated and new program guidance. For example, based on research and evaluation, in 2019 ARP issued a Certification Alert on the use of aqueous film-forming foams foam proportioning systems that have since permitted airports to test their firefighting equipment with minimal environmental impacts. Each research project is sponsored by a FAA Headquarters engineer, or other specialist, that prepares the research requirements, reviews the research plan, and approves the completed deliverable. Some research that requires large scale testing is conducted in-house using unique and one-of-kind facilities located at the FAA Technical Center, and some research is conducted with specialized research private industry partners. When appropriate, research is also conducted at selected academic institutions.

What benefits will be provided to the American Public through this request and why is this program necessary?

The ATR program provides extensive tangible and intangible benefits to the American Public in terms of safety, environmental concerns, and forward thinking technological solutions.

Safety–related ATR programs provide fact-based assessments and complex analyses of safety and operational data to help the FAA and airport operators institute and maintain standard and proven practices at all NPIAS airports. To do so, the ATR program manages a number of research databases. This is in line with providing information that is "evidence and data" driven. In FY 2023, integration and support of the databases (bird strike, foreign object debris detection, airport pavement management systems) into one location will continue. This will ensure compliance with FAA standards, improve the overall functionality of the databases, and promote public access and sharing of the data as well as enhancements to programs to advance public safety.

A key safety project with an environmental benefit is ATR's work investigating ways to reduce or eliminate chemicals that may pose either health or environmental hazards. Specifically, there has been a growing concern about the potential health and environmental impacts that perfluoroalkyl or polyfluoroalkyl substances (PFAS) may cause. PFAS can be found in a broad range of products, materials, and systems, ranging from consumer and healthcare products to building materials and many other products. This includes aqueous film-forming foams used in aircraft rescue and firefighting.

This research will continue with testing the effectiveness of new firefighting extinguishing agents that do not contain PFAS. In FY 2023, ATR will continue the multi-year research effort at ATR's new Aircraft Rescue and Fire Fighting Research

Facility. In FY 2023, ATR will continue testing, that started in FY 2020, of numerous and selected fluorine-free foams and determine if any can provide the same (or better) levels of fire extinguishment.

In the area of climate solutions, in FY 2023 ATR will continue the evaluation of solar lighting systems for airports. In the past years, technological developments relating to light emitting diode (LED) lighting and solar technology have made solar powered lighting systems a practical alternative in certain airfield environments. Solar technology advancements present an opportunity for airports to produce on-site electricity and reduce long-term energy costs. In FY 2023, ATR will continue long-term performance analysis of prototype PV technologies at multiple airports across the United States as part of a program that will include testing at five airports in total. Each of the five airports are in areas of the country that experience different levels of 'solar irradiance' (output of light energy from the sun), temperature, and snow conditions. Researchers will analyze data from a multi-year effort, with the goal of developing standards and performance specifications for PV systems on airports.

In the areas of equity, economic growth and climate solutions, in FY 2023, ATR will continue research on the impact and needs of Advanced Air Mobility (AAM), including electric Vertical Take-Off (eVTOL) vehicles on existing and future airport infrastructures. ATR also plans to carry on testing of actual prototype vertiport designs with various eVTOL and other Advanced Air Mobility vehicles at the FAA Technical Center.

For FY 2023 airport safety and design research, ATR will update the annual Runway Incursion Mitigation report to include an airfield geometry assessment of all towered airports that may have airport design features that are considered at risk for incursions. ATR will geo-reference all runway incursions that occurred in FY 2022 as well as mitigated incursion locations. Based on the addition of this data, ATR will conduct an analysis on the program's progress. In the area of safety data analysis, ATR will conduct an analysis of all available safety data to identify top occurrences at airports and associated causal factors for the period of FY 2017 through FY 2022.

In the area of transformative technologies, in FY 2023, ATR will continue to research how UAS can be utilized in at least five application areas: obstruction analysis, airfield pavement inspections, wildlife hazard management, perimeter security, and aircraft rescue and firefighting. ATR will perform field testing for the use of these UAS applications at airports, and ATR will consider investigating new applications as they mature.

In FY 2023, ATR will continue supporting the FAA Office of Security and Hazardous Materials (ASH) with the execution of the UAS Detection and Mitigation Airport Pilot Program, as required by Section 383 of the FAA Reauthorization Act of 2018. As part of this support, ATR will continue working with the Department of Homeland Security and other relevant federal departments and agencies to ensure proper coordination. This effort involves the test and evaluation of numerous UAS detection and mitigation

technologies/systems at five airports in the United States, with the goal of developing performance standards for these types of technologies/systems

To support core assets and climate solutions, in FY 2023, ATR will continue to use its full-scale accelerated pavement test facilities National Airport Pavement Test Facility (NAPTF) and National Airport Pavement and Materials Research Center (NAPMRC) to test and conduct research on advancing pavement design and developing specifications for new sustainable and recyclable pavement material technologies, which will provide longer life to the airport pavements. In FY 2023, ATR will use a state-of-the-art materials testing laboratory to research new longer-lasting pavement materials and research the use of emerging and innovative pavement materials, used in various fields, for airports.

Also in FY 2023, research will continue in the use of additives, nanoparticles and geosythetics to improve pavement materials and pavement design themselves. This research will result in increased use of locally available materials (materials modified with admixtures), quantifying material properties, improved/optimized pavement thickness designs, and provide a more durable longer-life airport pavements. This supports an overall goal of "sustainability" for the airport paving industry.

In FY 2023 ATR will continue to collect data at various airport-instrumented sites, and will analyze performance data from across the country to help in determining how, environmental factors and varying load conditions play a significant role on pavement performance.

In FY 2023, ATR will continue to use testing data from NAPTF and NAPMRC along with field data to improve the FAA Airport Pavement Design Software, namely "FAARFIELD". The improvements will be focused on determining how improved pavement materials and climatic effects pavement behavior.

The ATR program enhances the consistency of pavement design and construction standards around the country, optimizing construction costs by enhancing competition for airport construction bids. These increases in safety and cost efficiency provide positive benefits to the American public.

In terms of equity, aircraft noise continues to be a principal obstacle to expanding and modernizing airport infrastructure due to community concerns about increases in aircraft operations and noise exposure. In FY 2023, the ATR program will continue to research ways to reduce community noise impacts. Data collection will continue that will help the FAA better understand the relationship of aircraft noise exposure and residential sleep disturbance. Research will also continue in support of the residential sound insulation program by investigating innovative noise level reduction testing methods to enhance testing effectiveness and efficiency. Noise abatement charting will also continue to be improved and standardized to aid pilots in effectively flying the preferred procedures to route aircraft away from noise sensitive areas. ATR projects in these areas will provide

distinct benefits to the American public, on the ground and in the air, with more efficient routes, quieter communities, and enhanced capacity.

The research initiatives supported by this funding are crucial to continued maintenance and enhancement of safety for the traveling public. Communities of every size throughout the nation benefit from increased accessibility and competitive access. Environmental quality benefits both the traveling public and neighboring communities by enabling airports to be well positioned to support critical infrastructure projects and by helping airports minimize their environmental effects on surrounding areas.

ATR's research portfolio for FY 2023 has been briefed to the FAA's Research, Engineering and Development Advisory Committee's Subcommittee on Airports (REDAC). The REDAC reviews the ATR Program every six months. The Subcommittee has members from airports, aircraft manufacturers, Air Line Pilots Association, and airport associations. The Subcommittee is briefed on both ongoing research and planned research and offers recommendations to ensure the research program is responsive to the needs of FAA and the airport community. These in-depth bi-annual reviews constitute a "Program Evaluation" of the ATR Program. The ATR portfolio is "Evidence and Data" driven and its various and diverse research projects support the goals of "Safety" , "Climate & Sustainability" , "Equity", "Economic Strength", and "Modernization of the Nation's Infrastructure".

GRANTS-IN-AID FOR AIRPORTS

Airport Technology Research
($ in Thousands)

Item Title	Dollars	FTP	FTE
FY 2022 Annualized CR	**40,666**	**26**	**26**
Adjustments to Base			
1. Annualization of FY 2022 Pay Raise	29		
2. FY 2023 Pay Raise	150		
3. Adjustment for compensable days	-17		
4. FERS Increase	0		
Total Adjustments to Base	**162**	**0**	**0**
Total Discretionary Increases	**0**	**0**	**0**
FY 2023 Request	**40,828**	**26**	**26**

Detailed Justification for Airport Cooperative Research Program

FY 2023 Airport Cooperative Research Program ($000)

Program Activity	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Salaries and Expenses	178	183	189
Program Costs	14,822	14,817	14,811
Total	**$ 15,000**	**$ 15,000**	**$ 15,000**
FTE	**1**	**2**	**2**

What is this program and what does this funding level support?

The Airport Cooperative Research Program (ACRP) is an industry driven research program managed by the Transportation Research Board (TRB) of the National Academies of Sciences, Engineering, and Medicine. It was authorized by section 712 of Vision 100 – Century of Aviation Reauthorization Act. The Secretary of Transportation maintains a Memorandum of Agreement among Department of Transportation, FAA, and National Academy of Sciences to implement the ACRP. The Secretary also appoints the 13 members of the ACRP Oversight Committee.

The ACRP's mission is to develop near-term, evidence-based, practical solutions to problems faced by airport operators. ACRP uses contractors, selected in a competitive process, to conduct the research overseen by industry experts and a designated FAA subject matter expert. The results of the research are published in the form of handbooks and best practices. To date, the vast library of publications includes areas of safety, airport management, airport financing, airport environmental quality, airport compliance, and airport planning. These publications are available to the general public on the ACRP website and for purchase in hard copy.

For FY 2023, the President's Budget requests $15.0 million for the program. Approximately 19 research topics will be funded under this request in FY 2023. ACRP is designed to address needs that are not being addressed by other federal research programs and that cannot be undertaken cost-effectively by individual airports.

What benefits will be provided to the American Public through this request and why is this program necessary?

ACRP is a national resource for the airport industry, providing valuable information, guidance, and practical tools to airport owners and operators (as well as consultants and contractors) by providing industry-driven research identified as critical or crucial by airport operators, industry, and users. This community has continually submitted over 100 topics for research each year. ACRP has engaged thousands of public and private sector airport practitioners, academia, consultants, advocates, and students to address the airport industry's most pressing challenges, including addressing climate change,

promoting sustainability, addressing gaps in workforce development, ensuring equality of access and opportunity, enhancing cybersecurity, mitigating threats posed by infectious diseases, and leveraging emerging new technologies.

The 13-member ACRP Oversight Committee reviews the topics selected each year. This Committee, appointed by the Secretary of Transportation, meets every six months to review progress and select additional topics to fund. This ensures tax dollars are committed in the most efficient and beneficial manner, mitigating wasteful delays, unreasonable contract terms, and unneeded proposals. The ACRP Oversight Committee selects the highest rated topics and ensures that proposed studies will not duplicate other federal research. The TRB appoints expert technical panels for each selected project. The technical panels convert the topics into requests for proposals to select contractors to perform the research. The panels also monitor each project to ensure it stays on track and meets project deliverables.

ACRP's broad mission is to provide resources to support applied research on a wide variety of issues faced by airport practitioners, including all levels of professional staff within the airport community, from CEOs, airport managers, executive directors to mid-level managers, nonsupervisory technical and professional staff, trainees, students, and interns. These professionals represent airports, suppliers, public safety agencies, airlines, airport tenants, local and regional government authorities, industry associations, and many other stakeholders in the airport community. Each of these practitioners has different interests and responsibilities, and each is an integral part of this cooperative research effort.

In addition to publishing reports on industry-driven research priorities, ACRP works to ensure that these products reach those who need them most. These efforts have reached several thousand stakeholders through e-videos, webinars, workshops, speaker presentations, and publications on applied results. The benefits to the American public are a more cohesive and educated cadre of airport sponsors, armed with the knowledge and tools through ACRP's efforts, to implement the AIP more consistently and compliantly, which results in a safer and more efficient National system of airports.

GRANTS-IN-AID FOR AIRPORTS

Airport Cooperative Research
($ in Thousands)

Item Title	Dollars	FTP	FTE
FY 2022 Enacted	**15,000**	**2**	**2**
Adjustments to Base			
1. Annualization of FY 2022 Pay Raise	1		
2. FY 2023 Pay Raise	6		
3. Adjustment for compensable days	-1		
4. FERS Increase	0		
Total Adjustments to Base	**6**	**0**	**0**
Discretionary Increases/ Decreases			
1. Discretionary decrease of offset uncontrollable adjustments	-6		
Total Discretionary Increases/Decreases	**-6**	**0**	**0**
FY 2023 Request	**15,000**	**2**	**2**

AIRPORT IMPROVEMENT PROGRAM

Grants-in-Aid to Airports Planned Distribution

$000

	FY 2021 Enacted	FY 2022 CR 2/	FY 2023 Request
Formula Grants			
Primary Airports	926,686	941,201	941,201 **3/**
Cargo Service Airports	110,773	110,773	110,488
Alaska	21,345	21,345	21,345
States (General Aviation)	632,986	632,986	631,360
Carryover (from Formula Grants)	640,477	715,669	713,630 **4/**
Subtotal, Formula Grants	2,332,267	2,421,975	2,418,024
Discretionary Grants			
Discretionary Set-Aside: Noise Compatibility	91,877	56,550	55,087
Discretionary Set-Aside: Reliever	1,733	1,066	1,039
Discretionary Set-Aside: Military Airport Prog	10,500	6,463	6,296
C/S/S/N (Capacity/Safety/Security/Noise)	118,797	73,120	71,227
Discretionary -- AATF	39,599	24,373	23,742
Discretionary -- General Fund	398,000 **1/**	398,000	0
Subtotal, Discretionary Grants	660,506	559,572	157,391
Small Airport Fund	570,159	581,385	581,385
Total Grants	**3,562,932**	**3,562,932**	**3,156,800**

1/ FY 2021 Funding provided by the Consolidated Appropriations Act, 2021. This act provides Supplemental Discretionary funding of $398.0 million to Grants-in Aid for Airports and $2 million is retained for Airport Administration.

2/ FY 2022 is based of FY 2021 budget level.

3/ FY 2023 Primary Entitlements reflect the same forecast activity levels for FY 2022, because we do not yet have sufficient updated information to warrant any significant change.

4/ FY 2023 carryover figures are estimated based on a five-year rolling average.

The FY 2023 Budget request assumes the Passenger Facility Charge (PFC) at current maximum allowable level of $4.50 per ticket sold, under Public Law 106-181, enacted in 2000.

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Passenger Facility Charge (PFC) Approved Locations
As of January 31, 2022
(Whole Dollars)
PFC APPROVED LOCATIONS

Associated City	State	Airport Name	LOC ID	Hub size	Level	Start Date	Expiration Date	Total PFC Approved
Anchorage	AK	Ted Stevens Anchorage International	ANC	M	$3.00	10/1/2000	12/1/2026	106,043,173
Fairbanks	AK	Fairbanks International	FAI	S	$3.00	10/1/2000	4/1/2004	
Fairbanks	AK	Fairbanks International	FAI	S	$4.50	4/1/2004	10/1/2026	38,413,252
Juneau	AK	Juneau International	JNU	N	$3.00	10/1/1998	2/1/2001	
Juneau	AK	Juneau International	JNU	N	$4.50	8/1/2001	7/1/2026	26,084,549
Ketchikan	AK	Ketchikan International	KTN	N	$3.00	2/1/1999	8/1/2001	
Ketchikan	AK	Ketchikan International	KTN	N	$4.50	8/1/2001	6/1/2018	
Ketchikan	AK	Ketchikan International	KTN	N	$4.50	4/1/2019	8/1/2028	10,587,010
Sitka	AK	Sitka Rocky Gutierrez	SIT	N	$4.50	7/1/2007	9/1/2013	
Sitka	AK	Sitka Rocky Gutierrez	SIT	N	$4.50	5/1/2018	5/1/2038	8,073,347
Birmingham	AL	Birmingham-Shuttlesworth International	BHM	S	$3.00	8/1/1997	11/1/2003	
Birmingham	AL	Birmingham-Shuttlesworth International	BHM	S	$3.00	12/1/2003	10/1/2008	
Birmingham	AL	Birmingham-Shuttlesworth International	BHM	S	$4.50	10/1/2008	2/1/2031	212,563,127
Dothan	AL	Dothan Regional	DHN	N	$3.00	2/1/1998	8/1/2001	
Dothan	AL	Dothan Regional	DHN	N	$4.50	8/1/2001	12/1/2025	5,515,948
Huntsville	AL	Huntsville International-Carl T Jones Field	HSV	S	$3.00	6/1/1992	9/1/2004	
Huntsville	AL	Huntsville International-Carl T Jones Field	HSV	S	$4.50	9/1/2004	3/1/2027	67,768,460
Mobile	AL	Mobile Downtown	BFM	CS	$4.50	1/1/2020	11/1/2026	988,418
Mobile	AL	Mobile Regional	MOB	N	$3.00	12/1/1997	7/1/2004	
Mobile	AL	Mobile Regional	MOB	N	$3.00	3/1/2005	5/1/2013	
Mobile	AL	Mobile Regional	MOB	N	$3.00	6/1/2013	10/1/2017	
Mobile	AL	Mobile Regional	MOB	N	$4.50	10/1/2017	5/1/2026	22,996,341

Associated City	State	Airport Name	LOC ID	Hub size	Level	Start Date	Expiration Date	Total PFC Approved
Montgomery	AL	Montgomery Regional (Dannelly Field)	MGM	N	$4.50	5/1/2005	1/1/2027	28,404,900
Muscle Shoals	AL	Northwest Alabama Regional	MSL	CS	$3.00	6/1/1992	10/1/2003	
Muscle Shoals	AL	Northwest Alabama Regional	MSL	CS	$3.00	12/1/2004	4/1/2009	
Muscle Shoals	AL	Northwest Alabama Regional	MSL	CS	$4.50	4/1/2009	3/1/2022	583,538
Fayetteville/Springdale/Rogers	AR	Northwest Arkansas Ntl	XNA	S	$3.00	12/1/1998	4/1/2001	
Fayetteville/Springdale/Rogers	AR	Northwest Arkansas Ntl	XNA	S	$4.50	4/1/2001	9/1/2047	119,872,895
Fayetteville	AR	Drake Field	FYV	GA	$3.00	1/1/1996	1/1/2001	2,221,887
Fort Smith	AR	Fort Smith Regional	FSM	N	$3.00	8/1/1994	2/1/2008	
Fort Smith	AR	Fort Smith Regional	FSM	N	$4.50	2/1/2008	11/1/2028	9,938,242
Little Rock	AR	Bill and Hillary Clinton Ntl/Adams Field	LIT	S	$3.00	5/1/1995	9/1/2001	
Little Rock	AR	Bill and Hillary Clinton Ntl/Adams Field	LIT	S	$4.50	9/1/2001	3/1/2025	136,288,892
Texarkana	AR	Texarkana Regional-Webb Field	TXK	N	$3.00	2/1/1995	9/1/2001	
Texarkana	AR	Texarkana Regional-Webb Field	TXK	N	$4.50	9/1/2001	3/1/2005	
Texarkana	AR	Texarkana Regional-Webb Field	TXK	N	$4.50	7/1/2008	5/1/2014	
Texarkana	AR	Texarkana Regional-Webb Field	TXK	N	$4.50	4/1/2015	11/1/2017	
Texarkana	AR	Texarkana Regional-Webb Field	TXK	N	$4.50	10/1/2019	9/1/2025	3,018,493
Pago Pago	AS	Pago Pago International	PPG	N	$3.00	7/1/1995	6/1/2000	
Pago Pago	AS	Pago Pago International	PPG	N	$4.50	9/1/2001	9/1/2005	
Pago Pago	AS	Pago Pago International	PPG	N	$4.50	6/1/2006	2/1/2026	7,563,954
Bullhead City	AZ	Laughlin/Bullhead International	IFP	GA	$2.00	5/1/2008	10/1/2012	
Bullhead City	AZ	Laughlin/Bullhead International	IFP	GA	$2.00	1/1/2014	1/1/2025	2,951,578
Flagstaff	AZ	Flagstaff Pulliam	FLG	N	$3.00	12/1/1992	9/1/2012	
Flagstaff	AZ	Flagstaff Pulliam	FLG	N	$4.50	9/1/2012	8/1/2021	4,319,005

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Phoenix	AZ	Phoenix-Mesa Gateway	IWA	S	$4.50	11/1/2008	6/1/2043	79,754,998
Peach Springs	AZ	Grand Canyon West	1G4	GA	$3.00	9/1/2004	9/1/2006	
Peach Springs	AZ	Grand Canyon West	1G4	GA	$3.00	6/1/2008	1/1/2024	9,922,946
Phoenix	AZ	Phoenix Sky Harbor International	PHX	L	$3.00	4/1/1996	4/1/2002	
Phoenix	AZ	Phoenix Sky Harbor International	PHX	L	$4.50	7/1/2002	9/1/2034	2,987,194,014
Tucson	AZ	Tucson International	TUS	S	$3.00	2/1/1998	10/1/2006	
Tucson	AZ	Tucson International	TUS	S	$4.50	10/1/2006	2/1/2027	179,290,015
Yuma	AZ	Yuma MCAS/Yuma International	NYL	N	$3.00	12/1/1993	10/1/2005	
Yuma	AZ	Yuma MCAS/Yuma International	NYL	N	$4.50	10/1/2005	4/1/2007	
Yuma	AZ	Yuma MCAS/Yuma International	NYL	N	$4.50	11/1/2007	3/1/2023	6,159,399
Arcata/Eureka	CA	California Redwood Coast-Humboldt County	ACV	N	$3.00	2/1/1993	3/1/1994	
Arcata/Eureka	CA	California Redwood Coast-Humboldt County	ACV	N	$3.00	11/1/1994	11/1/1997	
Arcata/Eureka	CA	California Redwood Coast-Humboldt County	ACV	N	$3.00	4/1/1998	6/1/2003	
Arcata/Eureka	CA	California Redwood Coast-Humboldt County	ACV	N	$4.50	6/1/2003	3/1/2005	
Arcata/Eureka	CA	California Redwood Coast-Humboldt County	ACV	N	$4.50	7/1/2005	10/1/2005	
Arcata/Eureka	CA	California Redwood Coast-Humboldt County	ACV	N	$4.50	12/1/2005	8/1/2011	
Arcata/Eureka	CA	California Redwood Coast-Humboldt County	ACV	N	$4.50	10/1/2011	5/1/2022	7,073,764
Bakersfield	CA	Meadows Field	BFL	N	$3.00	6/1/1995	5/1/2002	
Bakersfield	CA	Meadows Field	BFL	N	$4.50	5/1/2002	2/1/2024	13,781,709
Burbank	CA	Bob Hope	BUR	M	$3.00	9/1/1994	4/1/2003	
Burbank	CA	Bob Hope	BUR	M	$4.50	4/1/2003	8/1/2017	
Burbank	CA	Bob Hope	BUR	M	$3.00	8/1/2017	12/1/2017	
Burbank	CA	Bob Hope	BUR	M	$4.50	12/1/2017	3/1/2024	251,441,879

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Carlsbad	CA	McClellan-Palomar	CRQ	G A	$4.50	1/1/2009	2/1/2043	4,947,065
Chico	CA	Chico Municipal	CIC	G A	$3.00	12/1/1993	9/1/1998	
Chico	CA	Chico Municipal	CIC	G A	$3.00	6/1/1999	2/1/2001	
Chico	CA	Chico Municipal	CIC	G A	$3.00	11/1/2001	12/1/2009	
Chico	CA	Chico Municipal	CIC	G A	$4.50	12/1/2010	12/1/2014	707,290
Crescent City	CA	Jack McNamara Field	CEC	CS	$3.00	9/1/1998	6/1/2000	
Crescent City	CA	Jack McNamara Field	CEC	CS	$3.00	1/1/2001	6/1/2003	
Crescent City	CA	Jack McNamara Field	CEC	CS	$4.50	6/1/2003	10/1/2014	
Crescent City	CA	Jack McNamara Field	CEC	CS	$4.50	12/1/2014	2/1/2025	899,295
Fresno	CA	Fresno Yosemite International	FAT	S	$3.00	12/1/1996	12/1/2004	
Fresno	CA	Fresno Yosemite International	FAT	S	$4.50	12/1/2004	5/1/2022	67,102,125
Imperial	CA	Imperial County	IPL	CS	$4.50	4/1/2003	4/1/2030	892,781
Inyokern	CA	Inyokern	IYK	G A	$3.00	3/1/1993	3/1/2003	
Inyokern	CA	Inyokern	IYK	G A	$3.00	4/1/2004	10/1/2004	
Inyokern	CA	Inyokern	IYK	G A	$4.50	9/1/2006	2/1/2009	
Inyokern	CA	Inyokern	IYK	G A	$4.50	3/1/2009	3/1/2019	675,899
Long Beach	CA	Long Beach (Daugherty Field)	LGB	S	$3.00	8/1/2003	5/1/2008	
Long Beach	CA	Long Beach (Daugherty Field)	LGB	S	$4.50	5/1/2008	7/1/2043	238,353,747
Los Angeles	CA	Los Angeles International	LAX	L	$3.00	7/1/1993	1/1/1996	
Los Angeles	CA	Los Angeles International	LAX	L	$3.00	2/1/1998	7/1/2003	
Los Angeles	CA	Los Angeles International	LAX	L	$4.50	7/1/2003	1/1/2038	6,039,314,452
Mammoth Lakes	CA	Mammoth Yosemite	MMH	N	$3.00	9/1/1995	9/1/2005	
Mammoth Lakes	CA	Mammoth Yosemite	MMH	N	$4.50	11/1/2009	9/1/2019	1,017,875
Modesto	CA	Modesto City-County-Harry Sham Field	MOD	G A	$3.00	8/1/1994	3/1/2005	
Modesto	CA	Modesto City-County-Harry Sham Field	MOD	G A	$4.50	8/1/2008	12/1/2015	1,031,955
Monterey	CA	Monterey Regional	MRY	N	$3.00	1/1/1994	7/1/2003	
Monterey	CA	Monterey Regional	MRY	N	$4.50	7/1/2003	4/1/2006	
Monterey	CA	Monterey Regional	MRY	N	$4.50	5/1/2006	9/1/2024	23,691,288

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Oakland	CA	Metro Oakland International	OAK	M	$3.00	9/1/1992	6/1/1999	
Oakland	CA	Metro Oakland International	OAK	M	$3.00	9/1/1999	5/1/2003	
Oakland	CA	Metro Oakland International	OAK	M	$4.50	5/1/2003	12/1/2035	892,892,621
Ontario	CA	Ontario International	ONT	M	$3.00	7/1/1993	12/1/1996	
Ontario	CA	Ontario International	ONT	M	$3.00	7/1/1998	11/1/2007	
Ontario	CA	Ontario International	ONT	M	$4.50	11/1/2007	1/1/2013	
Ontario	CA	Ontario International	ONT	M	$2.00	1/1/2013	4/1/2016	
Ontario	CA	Ontario International	ONT	M	$4.50	4/1/2016	10/1/2028	333,596,343
Oxnard	CA	Oxnard	OXR	GA	$4.50	1/1/2002	3/1/2011	631,115
Palm Springs	CA	Palm Springs International	PSP	S	$3.00	9/1/1992	1/1/2002	
Palm Springs	CA	Palm Springs International	PSP	S	$4.50	1/1/2002	10/1/2037	140,310,796
Redding	CA	Redding Municipal	RDD	N	$3.00	4/1/1997	4/1/2002	
Redding	CA	Redding Municipal	RDD	N	$4.50	4/1/2002	4/1/2007	
Redding	CA	Redding Municipal	RDD	N	$4.50	8/1/2007	1/1/2024	4,559,200
Sacramento	CA	Sacramento International	SMF	M	$3.00	4/1/1993	1/1/2002	
Sacramento	CA	Sacramento International	SMF	M	$4.50	1/1/2002	2/1/2003	
Sacramento	CA	Sacramento International	SMF	M	$3.00	2/1/2003	9/1/2003	
Sacramento	CA	Sacramento International	SMF	M	$4.50	9/1/2003	11/1/2034	953,252,732
San Diego	CA	San Diego International	SAN	L	$3.00	10/1/1995	8/1/2003	
San Diego	CA	San Diego International	SAN	L	$4.50	8/1/2003	5/1/2040	1,600,393,933
San Francisco	CA	San Francisco International	SFO	L	$4.50	10/1/2001	12/1/2030	2,320,316,302
San Jose	CA	Norman Y Mineta San Jose International	SJC	M	$3.00	9/1/1992	4/1/2001	
San Jose	CA	Norman Y Mineta San Jose International	SJC	M	$4.50	4/1/2001	1/1/2030	1,049,294,754
San Luis Obispo	CA	San Luis County Regional	SBP	N	$3.00	2/1/1993	2/1/1995	
San Luis Obispo	CA	San Luis County Regional	SBP	N	$3.00	6/1/1995	9/1/2002	
San Luis Obispo	CA	San Luis County Regional	SBP	N	$4.50	9/1/2002	6/1/2011	
San Luis Obispo	CA	San Luis County Regional	SBP	N	$3.00	6/1/2011	6/1/2014	

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San Luis Obispo	CA	San Luis County Regional	SBP	N	$4.50	6/1/2014	12/1/2022	16,710,065
Santa Ana	CA	John Wayne/Orange County	SNA	M	$4.50	7/1/2006	1/1/2024	311,602,130
Santa Barbara	CA	Santa Barbara Municipal	SBA	S	$3.00	1/1/1998	11/1/2003	
Santa Barbara	CA	Santa Barbara Municipal	SBA	S	$4.50	11/1/2003	7/1/2039	36,388,365
Santa Maria	CA	Santa Maria Public/Capt G Allan Hancock Field	SMX	N	$4.50	10/1/2007	10/1/2028	5,380,346
Santa Rosa	CA	Charles M Schulz - Sonoma County	STS	N	$3.00	5/1/1993	4/1/2005	
Santa Rosa	CA	Charles M Schulz - Sonoma County	STS	N	$4.50	5/1/2008	4/1/2013	
Santa Rosa	CA	Charles M Schulz - Sonoma County	STS	N	$4.50	7/1/2013	4/1/2049	21,925,017
South Lake Tahoe	CA	Lake Tahoe	TVL	GA	$3.00	8/1/1992	3/1/2007	169,838
Stockton	CA	Stockton Metro	SCK	N	$4.50	2/1/2007	8/1/2009	
Stockton	CA	Stockton Metro	SCK	N	$4.50	9/1/2009	9/1/2012	
Stockton	CA	Stockton Metro	SCK	N	$4.50	9/1/2013	9/1/2025	6,684,435
Alamosa	CO	San Luis Valley Regional/Bergman Field	ALS	CS	$3.00	3/1/1997	7/1/2016	
Alamosa	CO	San Luis Valley Regional/Bergman Field	ALS	CS	$4.50	7/1/2016	7/1/2034	714,140
Aspen	CO	Aspen-Pitkin County/Sardy Field	ASE	N	$3.00	7/1/1995	5/1/2003	
Aspen	CO	Aspen-Pitkin County/Sardy Field	ASE	N	$4.50	5/1/2003	8/1/2004	
Aspen	CO	Aspen-Pitkin County/Sardy Field	ASE	N	$4.50	1/1/2005	10/1/2024	21,206,253
Colorado Springs	CO	City of Colorado Springs Municipal	COS	S	$3.00	3/1/1993	8/1/2016	
Colorado Springs	CO	City of Colorado Springs Municipal	COS	S	$4.50	8/1/2016	1/1/2029	113,141,129
Cortez	CO	Cortez Municipal	CEZ	CS	$3.00	11/1/1999	3/1/2008	
Cortez	CO	Cortez Municipal	CEZ	CS	$4.50	3/1/2008	6/1/2030	701,694
Denver	CO	Denver International	DEN	L	$3.00	7/1/1992	4/1/2001	
Denver	CO	Denver International	DEN	L	$4.50	4/1/2001	10/1/2031	3,598,660,339
Durango	CO	Durango-La Plata County	DRO	N	$3.00	2/1/1995	8/1/1997	
Durango	CO	Durango-La Plata County	DRO	N	$3.00	9/1/1997	3/1/2003	

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Durango	CO	Durango-La Plata County	DRO	N	$4.50	6/1/2005	4/1/2011	
Durango	CO	Durango-La Plata County	DRO	N	$4.50	11/1/2011	8/1/2012	
Durango	CO	Durango-La Plata County	DRO	N	$4.50	9/1/2013	7/1/2022	11,780,838
Eagle	CO	Eagle County Regional	EGE	N	$3.00	9/1/1993	4/1/2001	
Eagle	CO	Eagle County Regional	EGE	N	$4.50	4/1/2001	6/1/2009	
Eagle	CO	Eagle County Regional	EGE	N	$3.00	6/1/2009	7/1/2009	
Eagle	CO	Eagle County Regional	EGE	N	$4.50	7/1/2009	5/1/2036	22,869,216
Fort Collins/Loveland	CO	Northern Colorado Regional	FNL	GA	$3.00	10/1/1993	5/1/1999	
Fort Collins/Loveland	CO	Northern Colorado Regional	FNL	GA	$4.50	8/1/2004	12/1/2011	
Fort Collins/Loveland	CO	Northern Colorado Regional	FNL	GA	$4.50	2/1/2012	3/1/2015	1,593,522
Grand Junction	CO	Grand Junction Regional	GJT	N	$3.00	4/1/1993	9/1/2006	
Grand Junction	CO	Grand Junction Regional	GJT	N	$4.50	9/1/2006	10/1/2036	32,267,359
Gunnison	CO	Gunnison-Crested Butte Regional	GUC	N	$3.00	11/1/1993	4/1/2001	
Gunnison	CO	Gunnison-Crested Butte Regional	GUC	N	$4.50	4/1/2001	8/1/2023	4,214,518
Hayden	CO	Yampa Valley	HDN	N	$3.00	11/1/1993	7/1/2001	
Hayden	CO	Yampa Valley	HDN	N	$4.50	7/1/2001	9/1/2039	16,063,641
Montrose	CO	Montrose Regional	MTJ	N	$3.00	11/1/1993	8/1/2003	
Montrose	CO	Montrose Regional	MTJ	N	$4.50	8/1/2003	6/1/2006	
Montrose	CO	Montrose Regional	MTJ	N	$4.50	8/1/2006	8/1/2010	
Montrose	CO	Montrose Regional	MTJ	N	$4.50	11/1/2010	10/1/2022	7,573,116
Pueblo	CO	Pueblo Memorial	PUB	CS	$3.00	11/1/1993	12/1/2014	
Pueblo	CO	Pueblo Memorial	PUB	CS	$4.50	3/1/2015	4/1/2036	1,229,111
Steamboat Springs	CO	Steamboat Springs/Bob Adams Field	SBS	GA	$3.00	4/1/1993	6/1/1997	159,576
Telluride	CO	Telluride Regional	TEX	CS	$3.00	2/1/1993	4/1/2002	
Telluride	CO	Telluride Regional	TEX	CS	$4.50	4/1/2002	1/1/2019	
Telluride	CO	Telluride Regional	TEX	CS	$4.50	2/1/2020	3/1/2030	7,547,037
New Haven	CT	Tweed/New Haven	HVN	N	$3.00	12/1/1993	4/1/1998	
New Haven	CT	Tweed/New Haven	HVN	N	$4.50	10/1/2001	7/1/2005	
New Haven	CT	Tweed/New Haven	HVN	N	$4.50	5/1/2006	1/1/2025	4,957,187
Windsor Locks	CT	Bradley International	BDL	M	$3.00	10/1/1993	12/1/1995	
Windsor Locks	CT	Bradley International	BDL	M	$3.00	7/1/1996	1/1/1997	
Windsor Locks	CT	Bradley International	BDL	M	$3.00	9/1/1997	8/1/2000	

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Windsor Locks	CT	Bradley International	BDL	M	$4.50	5/1/2001	10/1/2036	415,649,482
Wilmington	DE	New Castle	ILG	R	$4.50	7/1/2014	5/1/2025	1,810,089
Daytona Beach	FL	Daytona Beach International	DAB	N	$3.00	7/1/1993	8/1/2001	
Daytona Beach	FL	Daytona Beach International	DAB	N	$3.00	2/1/2002	11/1/2005	
Daytona Beach	FL	Daytona Beach International	DAB	N	$4.50	11/1/2005	5/1/2030	44,248,626
Fort Lauderdale	FL	Fort Lauderdale/Hollywood International	FLL	L	$3.00	1/1/1995	10/1/2005	
Fort Lauderdale	FL	Fort Lauderdale/Hollywood International	FLL	L	$4.50	10/1/2005	2/1/2035	2,023,359,886
Fort Myers	FL	Southwest Florida International	RSW	M	$3.00	11/1/1992	11/1/2003	
Fort Myers	FL	Southwest Florida International	RSW	M	$4.50	11/1/2003	11/1/2039	908,293,745
Gainesville	FL	Gainesville Regional	GNV	N	$3.00	7/1/2000	2/1/2002	
Gainesville	FL	Gainesville Regional	GNV	N	$4.50	1/1/2003	2/1/2013	
Gainesville	FL	Gainesville Regional	GNV	N	$4.50	1/1/2014	9/1/2015	
Gainesville	FL	Gainesville Regional	GNV	N	$4.50	3/1/2016	10/1/2023	13,645,529
Jacksonville	FL	Jacksonville International	JAX	M	$3.00	4/1/1994	5/1/2003	
Jacksonville	FL	Jacksonville International	JAX	M	$4.50	5/1/2003	3/1/2026	363,462,178
Key West	FL	Key West International	EYW	S	$3.00	3/1/1993	8/1/1996	
Key West	FL	Key West International	EYW	S	$3.00	12/1/1997	6/1/2003	
Key West	FL	Key West International	EYW	S	$4.50	6/1/2003	7/1/2005	
Key West	FL	Key West International	EYW	S	$4.50	10/1/2005	8/1/2024	36,719,110
Marathon	FL	The Florida Keys Marathon International	MTH	GA	$3.00	3/1/1993	6/1/1998	390,001
Melbourne	FL	Melbourne Orlando International	MLB	N	$3.00	5/1/1997	12/1/2009	
Melbourne	FL	Melbourne Orlando International	MLB	N	$4.50	12/1/2009	5/1/2018	
Melbourne	FL	Melbourne Orlando International	MLB	N	$4.50	7/1/2018	4/1/2030	25,640,518
Miami	FL	Miami International	MIA	L	$3.00	11/1/1994	1/1/2002	

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Miami	FL	Miami International	MIA	L	$4.50	1/1/2002	10/1/2037	2,597,130,503
Naples	FL	Naples Municipal	APF	GA	$3.00	2/1/1995	2/1/2001	
Naples	FL	Naples Municipal	APF	GA	$3.00	2/1/2002	5/1/2004	991,336
Orlando	FL	Orlando International	MCO	L	$3.00	2/1/1993	4/1/2007	
Orlando	FL	Orlando International	MCO	L	$4.50	4/1/2007	1/1/2046	5,030,693,530
Orlando	FL	Orlando Sanford International	SFB	S	$1.00	3/1/2001	12/1/2003	
Orlando	FL	Orlando Sanford International	SFB	S	$2.00	12/1/2003	9/1/2011	
Orlando	FL	Orlando Sanford International	SFB	S	$4.00	9/1/2011	6/1/2026	97,050,210
Panama City	FL	Northwest Florida Beaches International	ECP	S	$3.00	2/1/1994	5/1/2004	
Panama City	FL	Northwest Florida Beaches International	ECP	S	$4.50	5/1/2004	4/1/2039	48,700,720
Pensacola	FL	Pensacola International	PNS	S	$3.00	2/1/1993	12/1/2002	
Pensacola	FL	Pensacola International	PNS	S	$4.50	12/1/2002	10/1/2031	144,489,392
Punta Gorda	FL	Punta Gorda	PGD	S	$2.00	8/1/2017	1/1/2019	
Punta Gorda	FL	Punta Gorda	PGD	S	$4.50	1/1/2019	1/1/2026	18,831,198
Sarasota/Bradenton	FL	Sarasota/Bradenton International	SRQ	S	$3.00	9/1/1992	5/1/2002	
Sarasota/Bradenton	FL	Sarasota/Bradenton International	SRQ	S	$4.50	5/1/2002	4/1/2024	92,349,299
St Petersburg-Clearwater	FL	St Pete-Clearwater International	PIE	S	$3.00	5/1/2005	11/1/2006	
St Petersburg-Clearwater	FL	St Pete-Clearwater International	PIE	S	$4.50	11/1/2006	3/1/2023	49,672,547
Tallahassee	FL	Tallahassee International	TLH	N	$3.00	2/1/1993	10/1/2002	
Tallahassee	FL	Tallahassee International	TLH	N	$4.50	10/1/2002	7/1/2028	56,306,718
Tampa	FL	Tampa International	TPA	L	$3.00	10/1/1993	6/1/2002	
Tampa	FL	Tampa International	TPA	L	$4.50	6/1/2002	10/1/2037	1,687,138,071
Valparaiso/Destin-Ft Walton Beach	FL	Eglin AFB/Destin-Ft Walton Beach	VPS	S	$3.00	1/1/2001	6/1/2002	
Valparaiso/Destin-Ft Walton Beach	FL	Eglin AFB/Destin-Ft Walton Beach	VPS	S	$4.50	6/1/2002	2/1/2023	44,211,218
West Palm Beach	FL	Palm Beach International	PBI	M	$3.00	4/1/1994	7/1/2008	
West Palm Beach	FL	Palm Beach International	PBI	M	$4.50	7/1/2008	8/1/2022	304,200,098

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Albany	GA	Southwest Georgia Regional	ABY	N	$3.00	9/1/1995	6/1/1998	
Albany	GA	Southwest Georgia Regional	ABY	N	$3.00	6/1/1999	2/1/2003	
Albany	GA	Southwest Georgia Regional	ABY	N	$4.50	2/1/2003	2/1/2008	
Albany	GA	Southwest Georgia Regional	ABY	N	$4.50	7/1/2008	8/1/2016	
Albany	GA	Southwest Georgia Regional	ABY	N	$4.50	10/1/2017	3/1/2020	2,856,060
Athens	GA	Athens/Ben Epps	AHN	GA	$3.00	8/1/1997	1/1/2002	165,615
Atlanta	GA	Hartsfield - Jackson Atlanta International	ATL	L	$3.00	5/1/1997	4/1/2001	
Atlanta	GA	Hartsfield - Jackson Atlanta International	ATL	L	$4.50	4/1/2001	5/1/2032	6,342,413,005
Augusta	GA	Augusta Regional at Bush Field	AGS	N	$3.00	9/1/1999	7/1/2001	
Augusta	GA	Augusta Regional at Bush Field	AGS	N	$4.50	7/1/2001	12/1/2030	34,127,162
Brunswick	GA	Brunswick Golden Isles	BQK	N	$3.00	5/1/2001	11/1/2003	
Brunswick	GA	Brunswick Golden Isles	BQK	N	$4.50	11/1/2003	4/1/2017	
Brunswick	GA	Brunswick Golden Isles	BQK	N	$4.50	4/1/2018	11/1/2042	4,066,789
Columbus	GA	Columbus	CSG	N	$3.00	12/1/1993	9/1/1995	
Columbus	GA	Columbus	CSG	N	$3.00	8/1/2000	6/1/2003	
Columbus	GA	Columbus	CSG	N	$4.50	6/1/2003	11/1/2006	
Columbus	GA	Columbus	CSG	N	$4.50	2/1/2010	4/1/2012	
Columbus	GA	Columbus	CSG	N	$4.50	8/1/2012	3/1/2015	
Columbus	GA	Columbus	CSG	N	$4.50	3/1/2016	6/1/2018	
Columbus	GA	Columbus	CSG	N	$4.50	2/1/2020	4/1/2029	5,223,235
Macon	GA	Middle Georgia Regional	MCN	CS	$4.50	3/1/2002	5/1/2011	561,716
Savannah	GA	Savannah/Hilton Head International	SAV	S	$3.00	7/1/1992	4/1/2001	
Savannah	GA	Savannah/Hilton Head International	SAV	S	$4.50	4/1/2001	2/1/2010	
Savannah	GA	Savannah/Hilton Head International	SAV	S	$3.00	2/1/2010	5/1/2010	
Savannah	GA	Savannah/Hilton Head International	SAV	S	$4.50	5/1/2010	11/1/2028	148,358,515
Valdosta	GA	Valdosta Regional	VLD	N	$3.00	3/1/1993	10/1/1999	
Valdosta	GA	Valdosta Regional	VLD	N	$3.00	4/1/2000	6/1/2001	
Valdosta	GA	Valdosta Regional	VLD	N	$4.50	6/1/2001	9/1/2004	
Valdosta	GA	Valdosta Regional	VLD	N	$3.00	2/1/2006	5/1/2006	
Valdosta	GA	Valdosta Regional	VLD	N	$3.00	11/1/2006	1/1/2007	
Valdosta	GA	Valdosta Regional	VLD	N	$3.00	8/1/2009	7/1/2010	
Valdosta	GA	Valdosta Regional	VLD	N	$4.50	6/1/2011	1/1/2014	

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Valdosta	GA	Valdosta Regional	VLD	N	$4.50	4/1/2014	4/1/2016	
Valdosta	GA	Valdosta Regional	VLD	N	$4.50	7/1/2016	11/1/2016	1,910,607
Guam	GU	Guam International	GUM	S	$3.00	2/1/1993	11/1/2002	
Guam	GU	Guam International	GUM	S	$4.50	11/1/2002	3/1/2025	258,370,758
Hilo	HI	Hilo International	ITO	S	$3.00	2/1/2007	11/1/2008	
Hilo	HI	Hilo International	ITO	S	$4.50	11/1/2008	1/1/2010	
Hilo	HI	Hilo International	ITO	S	$4.50	2/1/2014	7/1/2029	4,774,857
Honolulu	HI	Daniel K Inouye International	HNL	M	$3.00	10/1/2004	11/1/2008	
Honolulu	HI	Daniel K Inouye International	HNL	M	$4.50	11/1/2008	7/1/2029	608,622,145
Kahului	HI	Kahului	OGG	M	$3.00	10/1/2004	11/1/2008	
Kahului	HI	Kahului	OGG	M	$4.50	11/1/2008	7/1/2029	162,914,905
Kailua/Kona	HI	Ellison Onizuka Kona International at Keahole	KOA	S	$3.00	10/1/2004	11/1/2008	
Kailua/Kona	HI	Ellison Onizuka Kona International at Keahole	KOA	S	$4.50	11/1/2008	7/1/2029	54,928,542
Lihue	HI	Lihue	LIH	S	$3.00	10/1/2004	11/1/2008	
Lihue	HI	Lihue	LIH	S	$4.50	11/1/2008	7/1/2029	45,298,964
Burlington	IA	Southeast Iowa Regional	BRL	CS	$3.00	7/1/1997	9/1/2001	
Burlington	IA	Southeast Iowa Regional	BRL	CS	$4.50	9/1/2001	11/1/2028	941,789
Cedar Rapids	IA	The Eastern Iowa	CID	S	$3.00	1/1/1995	6/1/2002	
Cedar Rapids	IA	The Eastern Iowa	CID	S	$4.50	6/1/2002	3/1/2004	
Cedar Rapids	IA	The Eastern Iowa	CID	S	$4.50	5/1/2004	9/1/2025	60,866,105
Des Moines	IA	Des Moines International	DSM	S	$3.00	3/1/1994	8/1/2001	
Des Moines	IA	Des Moines International	DSM	S	$4.50	8/1/2001	10/1/2037	161,663,019
Dubuque	IA	Dubuque Regional	DBQ	N	$3.00	1/1/1993	5/1/2001	
Dubuque	IA	Dubuque Regional	DBQ	N	$4.50	5/1/2001	2/1/2033	7,568,350
Fort Dodge	IA	Fort Dodge Regional	FOD	CS	$3.00	3/1/1995	9/1/2001	
Fort Dodge	IA	Fort Dodge Regional	FOD	CS	$4.50	1/1/2002	4/1/2011	414,736
Mason City	IA	Mason City Municipal	MCW	CS	$3.00	2/1/1996	10/1/2001	
Mason City	IA	Mason City Municipal	MCW	CS	$4.50	10/1/2001	4/1/2003	
Mason City	IA	Mason City Municipal	MCW	CS	$4.50	8/1/2003	12/1/2022	1,310,907
Sioux City	IA	Sioux Gateway/Brig General Bud Day Field	SUX	N	$3.00	6/1/1993	6/1/1994	
Sioux City	IA	Sioux Gateway/Brig	SUX	N	$3.00	2/1/1995	3/1/2002	

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		General Bud Day Field						
Sioux City	IA	Sioux Gateway/Brig General Bud Day Field	SUX	N	$4.50	3/1/2002	1/1/2004	
Sioux City	IA	Sioux Gateway/Brig General Bud Day Field	SUX	N	$4.50	11/1/2004	10/1/2044	8,385,459
Spencer	IA	Spencer Municipal	SPW	GA	$3.00	9/1/1995	3/1/2006	77,638
Waterloo	IA	Waterloo Regional	ALO	CS	$3.00	6/1/1994	6/1/1998	
Waterloo	IA	Waterloo Regional	ALO	CS	$3.00	9/1/1999	7/1/2001	
Waterloo	IA	Waterloo Regional	ALO	CS	$4.50	7/1/2001	5/1/2022	3,298,315
Boise	ID	Boise Air Trml/Gowen Field	BOI	M	$3.00	8/1/1994	8/1/2001	
Boise	ID	Boise Air Trml/Gowen Field	BOI	M	$4.50	8/1/2001	9/1/2015	
Boise	ID	Boise Air Trml/Gowen Field	BOI	M	$4.50	5/1/2020	10/1/2023	132,824,792
Hailey	ID	Friedman Memorial	SUN	N	$3.00	9/1/1993	10/1/1994	
Hailey	ID	Friedman Memorial	SUN	N	$3.00	3/1/1995	6/1/2005	
Hailey	ID	Friedman Memorial	SUN	N	$4.50	6/1/2005	7/1/2028	6,987,776
Idaho Falls	ID	Idaho Falls Regional	IDA	N	$3.00	1/1/1993	1/1/1998	
Idaho Falls	ID	Idaho Falls Regional	IDA	N	$3.00	2/1/1998	4/1/2001	
Idaho Falls	ID	Idaho Falls Regional	IDA	N	$4.50	4/1/2001	4/1/2023	13,388,132
Lewiston	ID	Lewiston/Nez Perce County	LWS	N	$3.00	5/1/1994	5/1/2001	
Lewiston	ID	Lewiston/Nez Perce County	LWS	N	$4.50	5/1/2001	11/1/2018	
Lewiston	ID	Lewiston/Nez Perce County	LWS	N	$4.50	2/1/2019	7/1/2022	5,940,004
Pocatello	ID	Pocatello Regional	PIH	N	$3.00	9/1/1994	5/1/2001	
Pocatello	ID	Pocatello Regional	PIH	N	$4.50	5/1/2001	5/1/2023	3,764,353
Twin Falls	ID	Joslin Field/Magic Valley Regional	TWF	N	$3.00	11/1/1992	6/1/2001	
Twin Falls	ID	Joslin Field/Magic Valley Regional	TWF	N	$4.50	6/1/2001	6/1/2007	
Twin Falls	ID	Joslin Field/Magic Valley Regional	TWF	N	$4.50	7/1/2007	1/1/2028	4,220,967
Belleville	IL	Scott AFB/Midamerica St Louis	BLV	N	$3.00	11/1/2005	3/1/2047	7,000,000
Bloomington/Normal	IL	Central Il Regional/Bloomington-Normal	BMI	N	$3.00	11/1/1994	4/1/2001	

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Bloomington/Normal	IL	Central Il Regional/Bloomington-Normal	BMI	N	$4.50	4/1/2001	11/1/2030	29,245,583
Champaign/Urbana	IL	University of Illinois/Willard	CMI	N	$3.00	12/1/1995	2/1/2004	
Champaign/Urbana	IL	University of Illinois/Willard	CMI	N	$4.50	10/1/2005	11/1/2028	10,495,789
Chicago	IL	Chicago Midway International	MDW	L	$3.00	9/1/1993	1/1/2007	
Chicago	IL	Chicago Midway International	MDW	L	$4.50	1/1/2007	5/1/2056	2,477,196,685
Chicago	IL	Chicago O'Hare International	ORD	L	$3.00	9/1/1993	4/1/2001	
Chicago	IL	Chicago O'Hare International	ORD	L	$4.50	4/1/2001	7/1/2041	6,926,705,514
Decatur	IL	Decatur	DEC	CS	$4.50	6/1/2006	5/1/2030	732,628
Marion	IL	Veterans Airport of Southern Illinois	MWA	CS	$4.50	9/1/2005	4/1/2019	
Marion	IL	Veterans Airport of Southern Illinois	MWA	CS	$4.50	9/1/2019	9/1/2026	804,602
Moline	IL	Quad Cities International	MLI	N	$3.00	12/1/1994	1/1/2002	
Moline	IL	Quad Cities International	MLI	N	$4.50	1/1/2002	7/1/2037	55,435,491
Peoria	IL	General Downing - Peoria International	PIA	N	$3.00	12/1/1994	7/1/2001	
Peoria	IL	General Downing - Peoria International	PIA	N	$4.50	7/1/2001	8/1/2008	
Peoria	IL	General Downing - Peoria International	PIA	N	$4.50	11/1/2008	9/1/2023	28,880,056
Quincy	IL	Quincy Regional-Baldwin Field	UIN	CS	$3.00	10/1/1994	7/1/1997	
Quincy	IL	Quincy Regional-Baldwin Field	UIN	CS	$3.00	11/1/1997	6/1/2005	
Quincy	IL	Quincy Regional-Baldwin Field	UIN	CS	$3.00	11/1/2005	1/1/2008	
Quincy	IL	Quincy Regional-Baldwin Field	UIN	CS	$4.50	1/1/2008	6/1/2052	2,757,509
Chicago/Rockford	IL	Chicago/Rockford International	RFD	N	$3.00	10/1/1992	10/1/1996	
Chicago/Rockford	IL	Chicago/Rockford International	RFD	N	$3.00	5/1/1997	6/1/2007	
Chicago/Rockford	IL	Chicago/Rockford International	RFD	N	$4.50	6/1/2007	3/1/2038	16,080,225
Springfield	IL	Abraham Lincoln Capital	SPI	N	$3.00	6/1/1992	5/1/2002	
Springfield	IL	Abraham Lincoln Capital	SPI	N	$4.50	5/1/2002	11/1/2035	13,950,565
Evansville	IN	Evansville Regional	EVV	N	$4.50	8/1/2007	11/1/2008	

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Evansville	IN	Evansville Regional	EVV	N	$4.50	12/1/2008	4/1/2026	13,705,101
Fort Wayne	IN	Fort Wayne International	FWA	S	$3.00	7/1/1993	12/1/2005	
Fort Wayne	IN	Fort Wayne International	FWA	S	$4.50	12/1/2005	10/1/2024	35,256,566
Indianapolis	IN	Indianapolis International	IND	M	$3.00	9/1/1993	4/1/2001	
Indianapolis	IN	Indianapolis International	IND	M	$4.50	4/1/2001	9/1/2022	
Indianapolis	IN	Indianapolis International	IND	M	$3.00	9/1/2022	10/1/2022	524,907,605
South Bend	IN	South Bend International	SBN	S	$3.00	11/1/1994	7/1/2011	
South Bend	IN	South Bend International	SBN	S	$4.50	7/1/2011	10/1/2030	41,684,619
Garden City	KS	Garden City Regional	GCK	N	$4.50	10/1/2013	2/1/2026	1,336,914
Hays	KS	Hays Regional	HYS	CS	$4.50	4/1/2015	5/1/2024	454,192
Manhattan	KS	Manhattan Regional	MHK	N	$3.00	10/1/1998	3/1/2002	
Manhattan	KS	Manhattan Regional	MHK	N	$4.50	3/1/2002	5/1/2025	4,499,903
Topeka	KS	Topeka Regional	FOE	GA	$4.50	8/1/2007	3/1/2023	823,720
Wichita	KS	Wichita Dwight D Eisenhower Ntl	ICT	S	$3.00	12/1/1994	5/1/2005	
Wichita	KS	Wichita Dwight D Eisenhower Ntl	ICT	S	$4.50	5/1/2005	6/1/2007	
Wichita	KS	Wichita Dwight D Eisenhower Ntl	ICT	S	$4.50	7/1/2007	9/1/2009	
Wichita	KS	Wichita Dwight D Eisenhower Ntl	ICT	S	$4.50	11/1/2010	4/1/2046	199,528,281
Covington	KY	Cincinnati/Northern Kentucky International	CVG	M	$3.00	6/1/1994	8/1/2000	
Covington	KY	Cincinnati/Northern Kentucky International	CVG	M	$3.00	7/1/2001	8/1/2003	
Covington	KY	Cincinnati/Northern Kentucky International	CVG	M	$4.50	8/1/2003	5/1/2009	
Covington	KY	Cincinnati/Northern Kentucky International	CVG	M	$3.00	5/1/2009	1/1/2013	
Covington	KY	Cincinnati/Northern Kentucky International	CVG	M	$4.50	1/1/2013	6/1/2023	632,280,768
Lexington	KY	Blue Grass	LEX	S	$3.00	11/1/1993	6/1/2001	
Lexington	KY	Blue Grass	LEX	S	$4.50	6/1/2001	6/1/2003	
Lexington	KY	Blue Grass	LEX	S	$3.00	8/1/2003	12/1/2003	
Lexington	KY	Blue Grass	LEX	S	$4.50	12/1/2003	8/1/2042	114,892,322

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Louisville	KY	Louisville Muhammad Ali International	SDF	S	$3.00	5/1/1997	3/1/2006	
Louisville	KY	Louisville Muhammad Ali International	SDF	S	$4.50	3/1/2006	10/1/2006	
Louisville	KY	Louisville Muhammad Ali International	SDF	S	$3.00	10/1/2006	9/1/2008	
Louisville	KY	Louisville Muhammad Ali International	SDF	S	$4.50	9/1/2008	10/1/2008	
Louisville	KY	Louisville Muhammad Ali International	SDF	S	$3.00	10/1/2008	12/1/2010	
Louisville	KY	Louisville Muhammad Ali International	SDF	S	$4.50	12/1/2010	8/1/2015	
Louisville	KY	Louisville Muhammad Ali International	SDF	S	$3.00	8/1/2015	10/1/2016	
Louisville	KY	Louisville Muhammad Ali International	SDF	S	$1.00	10/1/2016	10/1/2017	
Louisville	KY	Louisville Muhammad Ali International	SDF	S	$3.00	10/1/2017	5/1/2019	
Louisville	KY	Louisville Muhammad Ali International	SDF	S	$4.50	5/1/2019	2/1/2024	147,558,198
Paducah	KY	Barkley Regional	PAH	CS	$3.00	3/1/1994	5/1/2014	
Paducah	KY	Barkley Regional	PAH	CS	$4.50	5/1/2014	8/1/2024	2,107,439
Alexandria	LA	Alexandria International	AEX	N	$3.00	5/1/1999	1/1/2002	
Alexandria	LA	Alexandria International	AEX	N	$4.50	1/1/2002	10/1/2032	15,500,835
Baton Rouge	LA	Baton Rouge Metro, Ryan Field	BTR	N	$3.00	12/1/1992	10/1/2005	
Baton Rouge	LA	Baton Rouge Metro, Ryan Field	BTR	N	$4.50	10/1/2005	7/1/2031	81,359,236
Lafayette	LA	Lafayette Regional/Paul Fournet Field	LFT	N	$3.00	9/1/1995	9/1/1998	
Lafayette	LA	Lafayette Regional/Paul Fournet Field	LFT	N	$3.00	4/1/2001	4/1/2002	
Lafayette	LA	Lafayette Regional/Paul Fournet Field	LFT	N	$4.50	4/1/2002	1/1/2005	
Lafayette	LA	Lafayette Regional/Paul Fournet Field	LFT	N	$4.50	5/1/2005	4/1/2008	

Associated City	State	Airport Name	LOC ID	Hub size	Level	Start Date	Expiration Date	Total PFC Approved
Lafayette	LA	Lafayette Regional/Paul Fournet Field	LFT	N	$4.50	8/1/2008	12/1/2014	
Lafayette	LA	Lafayette Regional/Paul Fournet Field	LFT	N	$4.50	10/1/2017	8/1/2029	22,685,640
Lake Charles	LA	Lake Charles Regional	LCH	N	$3.00	3/1/2001	5/1/2005	
Lake Charles	LA	Lake Charles Regional	LCH	N	$4.50	5/1/2005	5/1/2017	
Lake Charles	LA	Lake Charles Regional	LCH	N	$4.50	2/1/2018	1/1/2024	4,509,883
Monroe	LA	Monroe Regional	MLU	N	$4.50	4/1/2003	9/1/2007	
Monroe	LA	Monroe Regional	MLU	N	$4.50	11/1/2008	6/1/2036	17,759,504
New Orleans	LA	Louis Armstrong New Orleans International	MSY	M	$3.00	6/1/1993	4/1/2002	
New Orleans	LA	Louis Armstrong New Orleans International	MSY	M	$4.50	4/1/2002	8/1/2034	965,553,986
Shreveport	LA	Shreveport Regional	SHV	N	$3.00	2/1/1994	11/1/2002	
Shreveport	LA	Shreveport Regional	SHV	N	$4.50	11/1/2002	9/1/2014	
Shreveport	LA	Shreveport Regional	SHV	N	$4.50	2/1/2015	2/1/2023	32,790,343
Boston	MA	General Edward Lawrence Logan International	BOS	L	$3.00	11/1/1993	10/1/2005	
Boston	MA	General Edward Lawrence Logan International	BOS	L	$4.50	10/1/2005	1/1/2036	2,455,832,708
Hyannis	MA	Cape Cod Gateway	HYA	CS	$2.00	3/1/2011	10/1/2024	2,573,600
Vineyard Haven	MA	Martha's Vineyard	MVY	N	$3.00	1/1/1998	2/1/1998	
Vineyard Haven	MA	Martha's Vineyard	MVY	N	$4.50	10/1/2017	3/1/2022	820,069
Nantucket	MA	Nantucket Memorial	ACK	N	$4.50	7/1/2014	6/1/2029	8,040,374
Worcester	MA	Worcester Regional	ORH	N	$3.00	10/1/1992	10/1/1997	
Worcester	MA	Worcester Regional	ORH	N	$3.00	9/1/1999	12/1/2011	1,782,161
Baltimore	MD	Baltimore/Washington International Thurgood Marshall	BWI	L	$3.00	10/1/1992	6/1/2002	
Baltimore	MD	Baltimore/Washington International Thurgood Marshall	BWI	L	$4.50	6/1/2002	5/1/2037	1,629,632,015
Hagerstown	MD	Hagerstown Regional/Richard A Henson Field	HGR	N	$3.00	8/1/1999	3/1/2002	
Hagerstown	MD	Hagerstown Regional/Richard A Henson Field	HGR	N	$4.50	3/1/2002	8/1/2007	429,244

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Salisbury	MD	Salisbury-Ocean City Wicomico Regional	SBY	N	$3.00	2/1/2002	3/1/2008	
Salisbury	MD	Salisbury-Ocean City Wicomico Regional	SBY	N	$4.50	3/1/2008	9/1/2026	5,108,326
Cumberland Heights	MD	Greater Cumberland Regional	CBE	GA	$3.00	7/1/1994	7/1/1999	
Cumberland Heights	MD	Greater Cumberland Regional	CBE	GA	$3.00	10/1/1999	6/1/2006	144,345
Bangor	ME	Bangor International	BGR	N	$3.00	6/1/1995	9/1/2010	
Bangor	ME	Bangor International	BGR	N	$4.50	12/1/2010	5/1/2018	
Bangor	ME	Bangor International	BGR	N	$4.50	7/1/2021	12/1/2024	20,533,329
Portland	ME	Portland International Jetport	PWM	S	$3.00	2/1/1994	2/1/2009	
Portland	ME	Portland International Jetport	PWM	S	$4.50	2/1/2009	4/1/2040	165,807,186
Presque Isle	ME	Presque Isle International	PQI	CS	$4.50	9/1/2004	6/1/2009	
Presque Isle	ME	Presque Isle International	PQI	CS	$4.50	8/1/2010	6/1/2018	
Presque Isle	ME	Presque Isle International	PQI	CS	$4.50	2/1/2019	8/1/2029	1,053,437
Rockland	ME	Knox County Regional	RKD	GA	$4.50	1/1/2012	8/1/2022	329,549
Alpena	MI	Alpena County Regional	APN	CS	$3.00	8/1/2001	12/1/2005	
Alpena	MI	Alpena County Regional	APN	CS	$4.50	12/1/2005	4/1/2022	632,191
Detroit	MI	Coleman A Young Municipal	DET	GA	$3.00	1/1/2000	3/1/2004	240,053
Detroit	MI	Detroit Metro Wayne County	DTW	L	$3.00	1/1/1993	10/1/2001	
Detroit	MI	Detroit Metro Wayne County	DTW	L	$4.50	10/1/2001	2/1/2034	3,134,966,084
Escanaba	MI	Delta County	ESC	CS	$3.00	2/1/1993	11/1/1997	
Escanaba	MI	Delta County	ESC	CS	$3.00	8/1/1998	7/1/2000	
Escanaba	MI	Delta County	ESC	CS	$3.00	10/1/2001	3/1/2004	
Escanaba	MI	Delta County	ESC	CS	$4.50	3/1/2004	1/1/2006	
Escanaba	MI	Delta County	ESC	CS	$4.50	4/1/2006	1/1/2016	
Escanaba	MI	Delta County	ESC	CS	$4.50	6/1/2018	10/1/2020	1,076,162
Flint	MI	Bishop International	FNT	N	$3.00	9/1/1993	10/1/2001	
Flint	MI	Bishop International	FNT	N	$4.50	10/1/2001	4/1/2023	42,304,023

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Grand Rapids	MI	Gerald R Ford International	GRR	S	$3.00	12/1/1992	11/1/2005	
Grand Rapids	MI	Gerald R Ford International	GRR	S	$4.50	11/1/2005	1/1/2026	120,165,695
Hancock	MI	Houghton County Memorial	CMX	N	$3.00	7/1/1993	3/1/1996	
Hancock	MI	Houghton County Memorial	CMX	N	$3.00	7/1/1996	7/1/1999	
Hancock	MI	Houghton County Memorial	CMX	N	$3.00	10/1/1999	7/1/2005	
Hancock	MI	Houghton County Memorial	CMX	N	$4.50	7/1/2005	8/1/2016	
Hancock	MI	Houghton County Memorial	CMX	N	$4.50	11/1/2018	8/1/2030	2,405,690
Iron Mountain Kingsford	MI	Ford	IMT	N	$3.00	9/1/1995	6/1/2004	
Iron Mountain Kingsford	MI	Ford	IMT	N	$4.50	5/1/2019	3/1/2023	475,705
Ironwood	MI	Gogebic/Iron County	IWD	CS	$3.00	8/1/1993	10/1/2006	
Ironwood	MI	Gogebic/Iron County	IWD	CS	$4.50	6/1/2007	6/1/2025	385,248
Kalamazoo	MI	Kalamazoo/Battle Creek International	AZO	N	$3.00	4/1/1997	6/1/2000	
Kalamazoo	MI	Kalamazoo/Battle Creek International	AZO	N	$3.00	1/1/2001	1/1/2005	
Kalamazoo	MI	Kalamazoo/Battle Creek International	AZO	N	$4.50	1/1/2005	8/1/2006	
Kalamazoo	MI	Kalamazoo/Battle Creek International	AZO	N	$4.50	10/1/2006	4/1/2008	
Kalamazoo	MI	Kalamazoo/Battle Creek International	AZO	N	$4.50	9/1/2008	3/1/2019	
Kalamazoo	MI	Kalamazoo/Battle Creek International	AZO	N	$4.50	9/1/2019	5/1/2022	14,029,687
Lansing	MI	Capital Region International	LAN	N	$3.00	10/1/1993	7/1/2002	
Lansing	MI	Capital Region International	LAN	N	$4.50	7/1/2002	4/1/2028	30,496,100
Manistee	MI	Manistee County/Blacker	MBL	GA	$4.50	6/1/2008	11/1/2040	388,986
Marquette	MI	Sawyer International	SAW	N	$3.00	12/1/1992	12/1/1996	
Marquette	MI	Sawyer International	SAW	N	$3.00	4/1/1998	7/1/2002	
Marquette	MI	Sawyer International	SAW	N	$4.50	7/1/2002	9/1/2006	
Marquette	MI	Sawyer International	SAW	N	$4.50	10/1/2006	5/1/2008	
Marquette	MI	Sawyer International	SAW	N	$4.50	8/1/2008	8/1/2011	
Marquette	MI	Sawyer International	SAW	N	$4.50	3/1/2012	3/1/2015	
Marquette	MI	Sawyer International	SAW	N	$4.50	5/1/2015	5/1/2017	

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Marquette	MI	Sawyer International	SAW	N	$4.50	5/1/2019	10/1/2022	4,450,601
Muskegon	MI	Muskegon County	MKG	CS	$3.00	5/1/1994	5/1/2004	
Muskegon	MI	Muskegon County	MKG	CS	$4.50	5/1/2004	11/1/2054	4,999,100
Pellston	MI	Pellston Regional/Emmet County	PLN	N	$3.00	3/1/1993	9/1/1997	
Pellston	MI	Pellston Regional/Emmet County	PLN	N	$3.00	12/1/1997	7/1/2011	
Pellston	MI	Pellston Regional/Emmet County	PLN	N	$4.50	7/1/2011	1/1/2023	2,572,190
Saginaw	MI	MBS International	MBS	N	$3.00	2/1/1997	7/1/2007	
Saginaw	MI	MBS International	MBS	N	$4.50	7/1/2007	11/1/2029	16,480,946
Sault Ste. Marie	MI	Chippewa County International	CIU	N	$4.50	11/1/2005	1/1/2028	1,819,032
Traverse City	MI	Cherry Capital	TVC	N	$3.00	1/1/1997	1/1/2002	
Traverse City	MI	Cherry Capital	TVC	N	$4.50	1/1/2002	12/1/2010	
Traverse City	MI	Cherry Capital	TVC	N	$4.50	2/1/2011	2/1/2016	
Traverse City	MI	Cherry Capital	TVC	N	$4.50	2/1/2017	6/1/2026	20,527,383
Bemidji	MN	Bemidji Regional	BJI	N	$3.00	11/1/1996	2/1/2002	
Bemidji	MN	Bemidji Regional	BJI	N	$4.50	2/1/2002	8/1/2005	
Bemidji	MN	Bemidji Regional	BJI	N	$4.50	6/1/2006	7/1/2023	2,351,855
Brainerd	MN	Brainerd Lakes Regional	BRD	N	$3.00	8/1/1993	7/1/2001	
Brainerd	MN	Brainerd Lakes Regional	BRD	N	$4.50	7/1/2001	8/1/2033	2,147,011
Duluth	MN	Duluth International	DLH	N	$3.00	10/1/1994	4/1/2002	
Duluth	MN	Duluth International	DLH	N	$4.50	4/1/2002	11/1/2004	
Duluth	MN	Duluth International	DLH	N	$4.50	4/1/2005	9/1/2023	13,384,602
Grand Rapids	MN	Grand Rapids/Itasca County-Gordon Newstrom Field	GPZ	GA	$3.00	12/1/1997	10/1/2001	
Grand Rapids	MN	Grand Rapids/Itasca County-Gordon Newstrom Field	GPZ	GA	$4.50	10/1/2001	1/1/2007	151,263
Hibbing	MN	Range Regional	HIB	CS	$3.00	6/1/1996	7/1/2003	
Hibbing	MN	Range Regional	HIB	CS	$4.50	7/1/2003	2/1/2029	1,322,734
International Falls	MN	Falls International/Einarson Field	INL	CS	$3.00	12/1/1994	6/1/2002	
International Falls	MN	Falls International/Einarson Field	INL	CS	$4.50	6/1/2002	6/1/2005	

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International Falls	MN	Falls International/Einarson Field	INL	CS	$4.50	11/1/2005	4/1/2048	3,111,127
Minneapolis	MN	Minneapolis-St Paul International/Wold-Chamberlain	MSP	L	$3.00	6/1/1992	4/1/2001	
Minneapolis	MN	Minneapolis-St Paul International/Wold-Chamberlain	MSP	L	$4.50	4/1/2001	6/1/2026	2,075,669,615
Rochester	MN	Rochester International	RST	N	$3.00	5/1/1996	3/1/2002	
Rochester	MN	Rochester International	RST	N	$4.50	3/1/2002	5/1/2025	14,191,835
St. Cloud	MN	St. Cloud Regional	STC	N	$3.00	2/1/2000	7/1/2002	
St. Cloud	MN	St. Cloud Regional	STC	N	$4.50	7/1/2002	3/1/2060	4,375,081
Thief River Falls	MN	Thief River Falls Regional	TVF	CS	$4.50	6/1/2003	6/1/2023	636,828
Columbia	MO	Columbia Regional	COU	N	$4.50	11/1/2002	3/1/2016	
Columbia	MO	Columbia Regional	COU	N	$4.50	6/1/2016	1/1/2034	11,314,880
Joplin	MO	Joplin Regional	JLN	N	$4.50	4/1/2003	6/1/2026	2,117,227
Kansas City	MO	Kansas City International	MCI	M	$3.00	3/1/1996	8/1/2005	
Kansas City	MO	Kansas City International	MCI	M	$4.50	8/1/2005	4/1/2023	543,708,221
Springfield	MO	Springfield-Branson Ntl	SGF	S	$3.00	11/1/1993	5/1/1997	
Springfield	MO	Springfield-Branson Ntl	SGF	S	$3.00	7/1/1998	5/1/2001	
Springfield	MO	Springfield-Branson Ntl	SGF	S	$4.50	5/1/2001	1/1/2004	
Springfield	MO	Springfield-Branson Ntl	SGF	S	$4.50	5/1/2004	8/1/2005	
Springfield	MO	Springfield-Branson Ntl	SGF	S	$4.50	9/1/2005	3/1/2006	
Springfield	MO	Springfield-Branson Ntl	SGF	S	$4.50	1/1/2007	1/1/2036	96,200,309
St. Louis	MO	St Louis Lambert International	STL	M	$3.00	12/1/1992	12/1/2001	
St. Louis	MO	St Louis Lambert International	STL	M	$4.50	12/1/2001	5/1/2025	
St. Louis	MO	St Louis Lambert International	STL	M	$3.00	5/1/2025	1/1/2026	
St. Louis	MO	St Louis Lambert International	STL	M	$4.50	1/1/2026	11/1/2026	1,127,481,976
Rota Island	MP	Benjamin Taisacan Manglona International	GRO	CS	$4.50	1/1/2005	5/1/2021	1,507,159
Saipan Island	MP	Francisco C Ada/Saipan International	GSN	N	$4.50	1/1/2005	5/1/2021	27,799,933

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Tinian Island	MP	Tinian International	TNI	N	$4.50	1/1/2005	5/1/2021	1,676,462
Columbus/W Point/Starkville	MS	Golden Triangle Regional	GTR	N	$3.00	8/1/1992	4/1/2001	
Columbus/W Point/Starkville	MS	Golden Triangle Regional	GTR	N	$4.50	4/1/2001	10/1/2023	4,912,599
Greenville	MS	Greenville Mid-Delta	GLH	CS	$3.00	10/1/1998	2/1/2003	
Greenville	MS	Greenville Mid-Delta	GLH	CS	$3.00	4/1/2003	4/1/2005	
Greenville	MS	Greenville Mid-Delta	GLH	CS	$4.50	4/1/2005	8/1/2011	
Greenville	MS	Greenville Mid-Delta	GLH	CS	$4.50	9/1/2012	7/1/2018	
Greenville	MS	Greenville Mid-Delta	GLH	CS	$4.50	7/1/2020	7/1/2030	646,503
Gulfport	MS	Gulfport-Biloxi International	GPT	S	$3.00	7/1/1992	8/1/2001	
Gulfport	MS	Gulfport-Biloxi International	GPT	S	$3.00	12/1/2001	5/1/2003	
Gulfport	MS	Gulfport-Biloxi International	GPT	S	$4.50	5/1/2003	1/1/2028	66,424,061
Hattiesburg-Laurel	MS	Hattiesburg/Laurel Regional	PIB	CS	$3.00	7/1/1992	6/1/2001	
Hattiesburg-Laurel	MS	Hattiesburg/Laurel Regional	PIB	CS	$4.50	6/1/2001	12/1/2024	1,363,015
Jackson	MS	Jackson-Medgar Wiley Evers International	JAN	S	$3.00	5/1/1993	10/1/2003	
Jackson	MS	Jackson-Medgar Wiley Evers International	JAN	S	$4.50	10/1/2003	12/1/2025	68,069,655
Meridian	MS	Key Field	MEI	CS	$3.00	11/1/1992	8/1/1996	
Meridian	MS	Key Field	MEI	CS	$3.00	3/1/1997	12/1/2001	
Meridian	MS	Key Field	MEI	CS	$4.50	12/1/2001	5/1/2004	
Meridian	MS	Key Field	MEI	CS	$4.50	10/1/2005	2/1/2032	2,855,496
Tupelo	MS	Tupelo Regional	TUP	CS	$3.00	11/1/1994	4/1/2003	
Tupelo	MS	Tupelo Regional	TUP	CS	$4.50	4/1/2003	11/1/2019	
Tupelo	MS	Tupelo Regional	TUP	CS	$4.50	4/1/2021	5/1/2022	1,591,253
Billings	MT	Billings Logan International	BIL	S	$3.00	4/1/1994	9/1/2014	
Billings	MT	Billings Logan International	BIL	S	$3.00	11/1/2016	10/1/2019	
Billings	MT	Billings Logan International	BIL	S	$4.50	10/1/2019	3/1/2042	61,248,003
Bozeman	MT	Bozeman Yellowstone International	BZN	S	$3.00	8/1/1993	3/1/2009	
Bozeman	MT	Bozeman Yellowstone International	BZN	S	$4.50	3/1/2009	1/1/2033	72,452,519
Butte	MT	Bert Mooney	BTM	N	$3.00	7/1/1994	6/1/2006	
Butte	MT	Bert Mooney	BTM	N	$3.00	7/1/2006	8/1/2007	

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Butte	MT	Bert Mooney	BTM	N	$3.00	11/1/2007	3/1/2010	
Butte	MT	Bert Mooney	BTM	N	$4.50	3/1/2010	3/1/2036	4,358,765
Great Falls	MT	Great Falls International	GTF	N	$3.00	11/1/1992	7/1/2002	
Great Falls	MT	Great Falls International	GTF	N	$4.50	7/1/2002	3/1/2025	17,754,080
Helena	MT	Helena Regional	HLN	N	$3.00	4/1/1993	8/1/2002	
Helena	MT	Helena Regional	HLN	N	$4.50	8/1/2002	4/1/2026	12,269,525
Kalispell	MT	Glacier Park International	GPI	S	$3.00	12/1/1993	4/1/2005	
Kalispell	MT	Glacier Park International	GPI	S	$4.50	4/1/2005	9/1/2048	67,371,078
Missoula	MT	Missoula Montana	MSO	S	$3.00	9/1/1992	4/1/2001	
Missoula	MT	Missoula Montana	MSO	S	$4.50	4/1/2001	5/1/2038	59,763,526
West Yellowstone	MT	Yellowstone	WYS	CS	$4.50	6/1/2011	5/1/2032	550,862
Asheville	NC	Asheville Regional	AVL	S	$3.00	12/1/1994	10/1/2002	
Asheville	NC	Asheville Regional	AVL	S	$4.50	10/1/2002	11/1/2006	
Asheville	NC	Asheville Regional	AVL	S	$4.50	4/1/2007	9/1/2007	
Asheville	NC	Asheville Regional	AVL	S	$4.50	10/1/2007	8/1/2022	36,997,136
Charlotte	NC	Charlotte/Douglas International	CLT	L	$3.00	11/1/2004	4/1/2047	3,237,340,333
Fayetteville	NC	Fayetteville Regional/Grannis Field	FAY	N	$3.00	11/1/2000	2/1/2006	
Fayetteville	NC	Fayetteville Regional/Grannis Field	FAY	N	$4.00	7/1/2009	10/1/2012	
Fayetteville	NC	Fayetteville Regional/Grannis Field	FAY	N	$4.00	3/1/2013	6/1/2013	
Fayetteville	NC	Fayetteville Regional/Grannis Field	FAY	N	$4.00	5/1/2015	3/1/2019	
Fayetteville	NC	Fayetteville Regional/Grannis Field	FAY	N	$4.50	3/1/2019	11/1/2025	11,489,838
Greensboro	NC	Piedmont Triad International	GSO	S	$4.50	9/1/2011	1/1/2025	43,872,158
Greenville	NC	Pitt-Greenville	PGV	N	$3.00	10/1/1997	4/1/2001	
Greenville	NC	Pitt-Greenville	PGV	N	$4.50	4/1/2001	1/1/2016	
Greenville	NC	Pitt-Greenville	PGV	N	$4.50	7/1/2016	3/1/2026	5,493,214
Jacksonville	NC	Albert J Ellis	OAJ	N	$3.00	1/1/1996	10/1/1998	
Jacksonville	NC	Albert J Ellis	OAJ	N	$3.00	9/1/1999	8/1/2000	
Jacksonville	NC	Albert J Ellis	OAJ	N	$3.00	3/1/2005	1/1/2009	
Jacksonville	NC	Albert J Ellis	OAJ	N	$3.00	2/1/2009	2/1/2012	
Jacksonville	NC	Albert J Ellis	OAJ	N	$4.50	2/1/2012	9/1/2032	16,302,907
New Bern	NC	Coastal Carolina Regional	EWN	N	$3.00	2/1/1997	11/1/2003	
New Bern	NC	Coastal Carolina Regional	EWN	N	$4.50	11/1/2003	10/1/2025	11,200,275

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Raleigh/Durham	NC	Raleigh-Durham International	RDU	M	$3.00	4/1/2003	10/1/2004	
Raleigh/Durham	NC	Raleigh-Durham International	RDU	M	$4.50	10/1/2004	9/1/2032	772,690,405
Wilmington	NC	Wilmington International	ILM	S	$3.00	2/1/1994	9/1/1996	
Wilmington	NC	Wilmington International	ILM	S	$3.00	6/1/1998	5/1/2003	
Wilmington	NC	Wilmington International	ILM	S	$4.50	5/1/2003	8/1/2028	50,197,145
Bismarck	ND	Bismarck Municipal	BIS	N	$3.00	7/1/1996	7/1/1997	
Bismarck	ND	Bismarck Municipal	BIS	N	$3.00	6/1/1998	4/1/2002	
Bismarck	ND	Bismarck Municipal	BIS	N	$4.50	4/1/2002	6/1/2042	46,068,291
Dickinson	ND	Dickinson/Theodore Roosevelt Regional	DIK	N	$4.50	4/1/2014	1/1/2028	1,382,746
Fargo	ND	Hector International	FAR	S	$3.00	1/1/1997	8/1/2002	
Fargo	ND	Hector International	FAR	S	$4.50	8/1/2002	2/1/2026	38,534,473
Grand Forks	ND	Grand Forks International	GFK	N	$3.00	2/1/1993	8/1/1996	
Grand Forks	ND	Grand Forks International	GFK	N	$3.00	5/1/1997	4/1/2001	
Grand Forks	ND	Grand Forks International	GFK	N	$4.50	4/1/2001	6/1/2003	
Grand Forks	ND	Grand Forks International	GFK	N	$4.50	5/1/2004	10/1/2008	
Grand Forks	ND	Grand Forks International	GFK	N	$4.50	1/1/2009	8/1/2022	10,202,624
Jamestown	ND	Jamestown Regional	JMS	CS	$4.50	8/1/2018	5/1/2034	830,000
Minot	ND	Minot International	MOT	N	$3.00	3/1/1994	7/1/1998	
Minot	ND	Minot International	MOT	N	$3.00	3/1/1999	2/1/2002	
Minot	ND	Minot International	MOT	N	$4.50	2/1/2002	12/1/2027	16,405,153
Williston	ND	Williston Basin International	XWA	N	$4.50	4/1/2013	12/1/2034	8,874,709
Grand Island	NE	Central Nebraska Regional	GRI	N	$3.00	2/1/1999	4/1/2001	
Grand Island	NE	Central Nebraska Regional	GRI	N	$4.50	5/1/2001	1/1/2030	5,248,737
Kearney	NE	Kearney Regional	EAR	N	$4.00	11/1/2005	9/1/2007	
Kearney	NE	Kearney Regional	EAR	N	$4.50	9/1/2007	7/1/2011	
Kearney	NE	Kearney Regional	EAR	N	$4.50	10/1/2011	11/1/2037	1,749,744
Lincoln	NE	Lincoln	LNK	N	$4.50	11/1/2016	11/1/2025	5,411,638
Omaha	NE	Eppley Airfield	OMA	M	$4.50	2/1/2018	9/1/2023	43,013,145

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Scottsbluff	NE	Western Nebraska Regional/William B Heilig Field	BFF	CS	$3.00	3/1/2000	3/1/2003	
Scottsbluff	NE	Western Nebraska Regional/William B Heilig Field	BFF	CS	$4.50	7/1/2004	7/1/2024	1,299,534
Lebanon	NH	Lebanon Municipal	LEB	CS	$3.00	8/1/1995	8/1/2002	
Lebanon	NH	Lebanon Municipal	LEB	CS	$4.50	11/1/2003	5/1/2006	
Lebanon	NH	Lebanon Municipal	LEB	CS	$4.50	10/1/2007	5/1/2014	
Lebanon	NH	Lebanon Municipal	LEB	CS	$4.50	10/1/2014	10/1/2023	1,186,558
Manchester	NH	Manchester Boston Regional	MHT	S	$3.00	1/1/1993	1/1/2008	
Manchester	NH	Manchester Boston Regional	MHT	S	$4.50	1/1/2008	1/1/2023	198,491,244
Atlantic City	NJ	Atlantic City International	ACY	S	$3.00	10/1/1999	12/1/2005	
Atlantic City	NJ	Atlantic City International	ACY	S	$4.50	12/1/2005	8/1/2014	
Atlantic City	NJ	Atlantic City International	ACY	S	$4.50	9/1/2014	3/1/2025	57,765,575
Newark	NJ	Newark Liberty International	EWR	L	$3.00	10/1/1992	4/1/2006	
Newark	NJ	Newark Liberty International	EWR	L	$4.50	4/1/2006	6/1/2025	1,892,806,803
Trenton	NJ	Trenton Mercer	TTN	N	$3.00	1/1/2001	5/1/2004	
Trenton	NJ	Trenton Mercer	TTN	N	$4.50	5/1/2004	8/1/2022	14,406,401
Albuquerque	NM	Albuquerque International Sunport	ABQ	S	$3.00	7/1/1996	7/1/2011	
Albuquerque	NM	Albuquerque International Sunport	ABQ	S	$4.50	7/1/2011	3/1/2023	238,123,525
Farmington	NM	Four Corners Regional	FMN	GA	$3.00	6/1/2003	5/1/2023	661,102
Roswell	NM	Roswell Air Center	ROW	N	$3.00	4/1/1999	2/1/2004	
Roswell	NM	Roswell Air Center	ROW	N	$4.50	2/1/2004	6/1/2004	
Roswell	NM	Roswell Air Center	ROW	N	$3.00	6/1/2004	6/1/2005	
Roswell	NM	Roswell Air Center	ROW	N	$4.50	6/1/2005	2/1/2008	
Roswell	NM	Roswell Air Center	ROW	N	$4.50	3/1/2008	9/1/2027	3,637,712
Elko	NV	Elko Regional	EKO	N	$3.00	9/1/1998	11/1/2003	
Elko	NV	Elko Regional	EKO	N	$4.50	11/1/2003	2/1/2021	3,189,551
Las Vegas	NV	Harry Reid International	LAS	L	$3.00	6/1/1992	11/1/2004	
Las Vegas	NV	Harry Reid International	LAS	L	$4.50	11/1/2004	9/1/2006	
Las Vegas	NV	Harry Reid International	LAS	L	$3.00	9/1/2006	1/1/2007	
Las Vegas	NV	Harry Reid International	LAS	L	$4.00	1/1/2007	10/1/2008	

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Las Vegas	NV	Harry Reid International	LAS	L	$4.50	10/1/2008	11/1/2053	4,563,146,058
Reno	NV	Reno/Tahoe International	RNO	M	$3.00	1/1/1994	2/1/2001	
Reno	NV	Reno/Tahoe International	RNO	M	$4.50	8/1/2001	6/1/2002	
Reno	NV	Reno/Tahoe International	RNO	M	$3.00	6/1/2002	2/1/2003	
Reno	NV	Reno/Tahoe International	RNO	M	$4.50	2/1/2003	10/1/2004	
Reno	NV	Reno/Tahoe International	RNO	M	$3.00	10/1/2004	4/1/2005	
Reno	NV	Reno/Tahoe International	RNO	M	$4.50	4/1/2005	7/1/2007	
Reno	NV	Reno/Tahoe International	RNO	M	$3.00	7/1/2007	12/1/2007	
Reno	NV	Reno/Tahoe International	RNO	M	$4.50	12/1/2007	11/1/2024	230,459,435
Albany	NY	Albany International	ALB	S	$3.00	3/1/1994	9/1/2009	
Albany	NY	Albany International	ALB	S	$4.50	9/1/2009	3/1/2023	124,883,075
Binghamton	NY	Greater Binghamton/Edwin A Link Field	BGM	CS	$3.00	11/1/1993	9/1/2002	
Binghamton	NY	Greater Binghamton/Edwin A Link Field	BGM	CS	$4.50	9/1/2002	2/1/2008	
Binghamton	NY	Greater Binghamton/Edwin A Link Field	BGM	CS	$4.50	5/1/2008	5/1/2028	10,679,845
Buffalo	NY	Buffalo Niagara International	BUF	S	$3.00	8/1/1992	8/1/2007	
Buffalo	NY	Buffalo Niagara International	BUF	S	$4.50	8/1/2007	3/1/2026	277,465,974
Elmira/Corning	NY	Elmira/Corning Regional	ELM	N	$3.00	12/1/2004	1/1/2008	
Elmira/Corning	NY	Elmira/Corning Regional	ELM	N	$4.50	5/1/2008	6/1/2037	15,795,148
New York	NY	Long Island MacArthur	ISP	S	$3.00	12/1/1994	9/1/2005	
New York	NY	Long Island MacArthur	ISP	S	$4.50	9/1/2005	12/1/2025	97,256,614
Ithaca	NY	Ithaca Tompkins International	ITH	N	$3.00	1/1/1993	3/1/2009	
Ithaca	NY	Ithaca Tompkins International	ITH	N	$4.50	3/1/2009	7/1/2022	8,990,405
Jamestown	NY	Chautauqua County/Jamestown	JHW	GA	$3.00	6/1/1993	8/1/2002	
Jamestown	NY	Chautauqua County/Jamestown	JHW	GA	$4.50	9/1/2004	3/1/2018	781,130
Massena	NY	Massena International-Richards Field	MSS	GA	$3.00	4/1/1996	4/1/2061	163,429

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New York	NY	John F Kennedy International	JFK	L	$3.00	10/1/1992	4/1/2006	
New York	NY	John F Kennedy International	JFK	L	$4.50	4/1/2006	7/1/2025	2,590,259,697
New York	NY	Laguardia	LGA	L	$3.00	10/1/1992	4/1/2006	
New York	NY	Laguardia	LGA	L	$4.50	4/1/2006	7/1/2025	1,511,384,650
New York	NY	New York Stewart International	SWF	N	$3.00	11/1/1995	3/1/2002	
New York	NY	New York Stewart International	SWF	N	$4.50	3/1/2002	11/1/2005	
New York	NY	New York Stewart International	SWF	N	$4.50	5/1/2007	9/1/2007	
New York	NY	New York Stewart International	SWF	N	$4.50	7/1/2010	8/1/2026	22,250,900
Niagara Falls	NY	Niagara Falls International	IAG	N	$4.50	11/1/2017	7/1/2024	3,662,905
Ogdensburg	NY	Ogdensburg International	OGS	CS	$3.00	4/1/1996	7/1/2016	
Ogdensburg	NY	Ogdensburg International	OGS	CS	$4.50	7/1/2016	10/1/2032	865,512
Plattsburgh	NY	Plattsburgh International	PBG	N	$3.00	7/1/1993	3/1/2001	
Plattsburgh	NY	Plattsburgh International	PBG	N	$3.00	6/1/2001	4/1/2003	
Plattsburgh	NY	Plattsburgh International	PBG	N	$4.50	1/1/2009	12/1/2043	39,561,720
Rochester	NY	Frederick Douglass/Greater Rochester International	ROC	S	$3.00	12/1/1997	9/1/2004	
Rochester	NY	Frederick Douglass/Greater Rochester International	ROC	S	$4.50	9/1/2004	5/1/2033	159,989,895
Saranac Lake	NY	Adirondack Regional	SLK	GA	$3.00	8/1/1994	9/1/2007	
Saranac Lake	NY	Adirondack Regional	SLK	GA	$4.50	2/1/2011	6/1/2033	591,574
Syracuse	NY	Syracuse Hancock International	SYR	S	$3.00	10/1/1995	1/1/2002	
Syracuse	NY	Syracuse Hancock International	SYR	S	$4.50	10/1/2002	8/1/2005	
Syracuse	NY	Syracuse Hancock International	SYR	S	$4.50	11/1/2005	2/1/2007	
Syracuse	NY	Syracuse Hancock International	SYR	S	$4.50	4/1/2007	6/1/2030	135,219,946
Utica	NY	Oneida County	UCA	GA	$3.00	8/1/1997	6/1/2010	119,867
Watertown	NY	Watertown International	ART	N	$4.50	4/1/2017	4/1/2023	605,205
White Plains	NY	Westchester County	HPN	S	$3.00	2/1/1993	12/1/2001	
White Plains	NY	Westchester County	HPN	S	$4.50	12/1/2001	5/1/2014	

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White Plains	NY	Westchester County	HPN	S	$4.50	8/1/2016	3/1/2023	72,338,257
Akron	OH	Akron-Canton Regional	CAK	N	$3.00	9/1/1992	9/1/2002	
Akron	OH	Akron-Canton Regional	CAK	N	$4.50	9/1/2002	8/1/2035	88,874,705
Cleveland	OH	Cleveland-Hopkins International	CLE	M	$3.00	11/1/1992	3/1/2002	
Cleveland	OH	Cleveland-Hopkins International	CLE	M	$4.50	3/1/2002	1/1/2024	587,493,770
Columbus	OH	John Glenn Columbus International	CMH	M	$3.00	10/1/1992	4/1/2002	
Columbus	OH	John Glenn Columbus International	CMH	M	$4.50	4/1/2002	12/1/2024	418,441,520
Dayton	OH	James M Cox Dayton International	DAY	S	$3.00	10/1/1994	9/1/2001	
Dayton	OH	James M Cox Dayton International	DAY	S	$4.50	9/1/2001	2/1/2027	138,930,431
Toledo	OH	Eugene F Kranz Toledo Express	TOL	N	$3.00	9/1/1993	9/1/1996	
Toledo	OH	Eugene F Kranz Toledo Express	TOL	N	$3.00	7/1/1997	7/1/2001	
Toledo	OH	Eugene F Kranz Toledo Express	TOL	N	$4.50	7/1/2001	8/1/2023	18,846,604
Youngstown/Warren	OH	Youngstown/Warren Regional	YNG	GA	$3.00	5/1/1994	7/1/1996	
Youngstown/Warren	OH	Youngstown/Warren Regional	YNG	GA	$3.00	8/1/1997	2/1/2002	
Youngstown/Warren	OH	Youngstown/Warren Regional	YNG	GA	$4.50	4/1/2007	12/1/2027	5,467,796
Lawton	OK	Lawton-Fort Sill Regional	LAW	N	$2.00	8/1/1992	1/1/1994	
Lawton	OK	Lawton-Fort Sill Regional	LAW	N	$3.00	1/1/1994	4/1/1996	
Lawton	OK	Lawton-Fort Sill Regional	LAW	N	$3.00	1/1/1998	8/1/2000	
Lawton	OK	Lawton-Fort Sill Regional	LAW	N	$4.50	6/1/2002	3/1/2004	
Lawton	OK	Lawton-Fort Sill Regional	LAW	N	$4.50	9/1/2004	10/1/2005	
Lawton	OK	Lawton-Fort Sill Regional	LAW	N	$4.50	11/1/2007	9/1/2038	8,133,616
Stillwater	OK	Stillwater Regional	SWO	N	$4.50	10/1/2020	8/1/2026	751,098
Oklahoma City	OK	Will Rogers World	OKC	M	$3.00	7/1/1997	4/1/2010	
Oklahoma City	OK	Will Rogers World	OKC	M	$4.50	4/1/2010	10/1/2035	262,452,615
Tulsa	OK	Tulsa International	TUL	S	$3.00	8/1/1992	3/1/1996	
Tulsa	OK	Tulsa International	TUL	S	$3.00	1/1/1997	12/1/2010	
Tulsa	OK	Tulsa International	TUL	S	$4.50	12/1/2010	6/1/2032	202,173,707

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Eugene	OR	Mahlon Sweet Field	EUG	S	$3.00	11/1/1993	6/1/2001	
Eugene	OR	Mahlon Sweet Field	EUG	S	$4.50	6/1/2001	5/1/2024	49,985,342
Klamath Falls	OR	Crater Lake/Klamath Regional	LMT	GA	$3.00	3/1/2000	4/1/2001	
Klamath Falls	OR	Crater Lake/Klamath Regional	LMT	GA	$4.50	4/1/2001	12/1/2011	
Klamath Falls	OR	Crater Lake/Klamath Regional	LMT	GA	$4.50	4/1/2012	10/1/2023	2,132,265
Medford	OR	Rogue Valley International - Medford	MFR	S	$3.00	7/1/1993	4/1/2001	
Medford	OR	Rogue Valley International - Medford	MFR	S	$4.50	4/1/2001	8/1/2025	39,592,547
North Bend	OR	Southwest Oregon Regional	OTH	CS	$3.00	2/1/1994	8/1/2001	
North Bend	OR	Southwest Oregon Regional	OTH	CS	$4.50	8/1/2001	4/1/2038	2,900,608
Pendleton	OR	Eastern Oregon Regional at Pendleton	PDT	CS	$3.00	12/1/1995	10/1/2009	
Pendleton	OR	Eastern Oregon Regional at Pendleton	PDT	CS	$4.50	10/1/2009	5/1/2018	
Pendleton	OR	Eastern Oregon Regional at Pendleton	PDT	CS	$4.50	12/1/2018	2/1/2033	902,869
Portland	OR	Portland International	PDX	M	$3.00	7/1/1992	10/1/2001	
Portland	OR	Portland International	PDX	M	$4.50	10/1/2001	7/1/2036	1,200,914,626
Redmond	OR	Roberts Field	RDM	S	$3.00	10/1/1993	11/1/2001	
Redmond	OR	Roberts Field	RDM	S	$4.50	11/1/2001	12/1/2006	
Redmond	OR	Roberts Field	RDM	S	$4.50	3/1/2007	7/1/2040	33,531,050
Allentown	PA	Lehigh Valley International	ABE	S	$3.00	11/1/1992	2/1/2001	
Allentown	PA	Lehigh Valley International	ABE	S	$3.00	6/1/2001	11/1/2001	
Allentown	PA	Lehigh Valley International	ABE	S	$4.50	11/1/2001	1/1/2003	
Allentown	PA	Lehigh Valley International	ABE	S	$4.50	9/1/2003	6/1/2033	61,856,718
Altoona	PA	Altoona/Blair County	AOO	GA	$3.00	5/1/1993	2/1/1996	
Altoona	PA	Altoona/Blair County	AOO	GA	$3.00	1/1/1997	10/1/1999	
Altoona	PA	Altoona/Blair County	AOO	GA	$3.00	7/1/2000	12/1/2008	

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Altoona	PA	Altoona/Blair County	AOO	GA	$4.50	12/1/2008	4/1/2021	
Altoona	PA	Altoona/Blair County	AOO	GA	$4.50	8/1/2021	5/1/2022	716,045
Bradford	PA	Bradford Regional	BFD	GA	$3.00	8/1/1995	5/1/2003	
Bradford	PA	Bradford Regional	BFD	GA	$4.50	5/1/2003	6/1/2030	548,588
DuBois	PA	Dubois Regional	DUJ	GA	$3.00	6/1/1995	4/1/2001	
DuBois	PA	Dubois Regional	DUJ	GA	$4.50	4/1/2001	11/1/2003	
DuBois	PA	Dubois Regional	DUJ	GA	$4.50	4/1/2004	12/1/2030	988,067
Erie	PA	Erie International/Tom Ridge Field	ERI	N	$3.00	10/1/1992	6/1/1997	
Erie	PA	Erie International/Tom Ridge Field	ERI	N	$3.00	12/1/1997	5/1/2001	
Erie	PA	Erie International/Tom Ridge Field	ERI	N	$4.50	8/1/2003	1/1/2005	
Erie	PA	Erie International/Tom Ridge Field	ERI	N	$4.50	7/1/2005	2/1/2025	15,928,448
Harrisburg	PA	Harrisburg International	MDT	S	$3.00	2/1/1997	1/1/2003	
Harrisburg	PA	Harrisburg International	MDT	S	$4.50	1/1/2003	7/1/2034	136,117,114
Johnstown	PA	John Murtha Johnstown/Cambria County	JST	CS	$3.00	11/1/1993	12/1/1996	
Johnstown	PA	John Murtha Johnstown/Cambria County	JST	CS	$3.00	12/1/1997	5/1/2001	
Johnstown	PA	John Murtha Johnstown/Cambria County	JST	CS	$4.50	5/1/2001	1/1/2007	
Johnstown	PA	John Murtha Johnstown/Cambria County	JST	CS	$4.50	7/1/2007	5/1/2023	1,083,114
Lancaster	PA	Lancaster	LNS	GA	$3.00	2/1/1995	2/1/2009	
Lancaster	PA	Lancaster	LNS	GA	$4.50	7/1/2013	6/1/2024	695,464
Latrobe	PA	Arnold Palmer Regional	LBE	N	$3.00	3/1/1996	8/1/2012	
Latrobe	PA	Arnold Palmer Regional	LBE	N	$4.50	8/1/2012	2/1/2028	12,346,595
Philadelphia	PA	Philadelphia International	PHL	L	$3.00	9/1/1992	4/1/2001	
Philadelphia	PA	Philadelphia International	PHL	L	$4.50	4/1/2001	2/1/2013	

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Philadelphia	PA	Philadelphia International	PHL	L	$3.00	2/1/2013	3/1/2013	
Philadelphia	PA	Philadelphia International	PHL	L	$4.50	3/1/2013	6/1/2023	1,564,269,848
Pittsburgh	PA	Pittsburgh International	PIT	M	$3.00	10/1/2001	12/1/2004	
Pittsburgh	PA	Pittsburgh International	PIT	M	$4.50	12/1/2004	1/1/2034	565,792,196
Reading	PA	Reading Regional/Carl A Spaatz Field	RDG	GA	$3.00	12/1/1994	7/1/2008	1,006,653
State College	PA	University Park	UNV	N	$3.00	11/1/1992	11/1/2003	
State College	PA	University Park	UNV	N	$4.50	11/1/2003	10/1/2036	19,765,587
Wilkes-Barre/Scranton	PA	Wilkes-Barre/Scranton International	AVP	N	$3.00	12/1/1993	6/1/1997	
Wilkes-Barre/Scranton	PA	Wilkes-Barre/Scranton International	AVP	N	$3.00	12/1/1997	5/1/2001	
Wilkes-Barre/Scranton	PA	Wilkes-Barre/Scranton International	AVP	N	$4.50	5/1/2001	8/1/2025	25,986,567
Williamsport	PA	Williamsport Regional	IPT	CS	$3.00	5/1/1997	11/1/1998	
Williamsport	PA	Williamsport Regional	IPT	CS	$4.50	11/1/2013	9/1/2028	1,857,488
Aguadilla	PR	Rafael Hernandez	BQN	N	$3.00	3/1/1993	5/1/1996	
Aguadilla	PR	Rafael Hernandez	BQN	N	$4.50	12/1/2005	4/1/2015	
Aguadilla	PR	Rafael Hernandez	BQN	N	$4.50	10/1/2020	12/1/2022	5,402,507
Ponce	PR	Mercedita	PSE	N	$3.00	3/1/1993	9/1/1998	
Ponce	PR	Mercedita	PSE	N	$4.50	9/1/2020	9/1/2024	2,476,641
San Juan	PR	Luis Munoz Marin International	SJU	M	$3.00	3/1/1993	12/1/2005	
San Juan	PR	Luis Munoz Marin International	SJU	M	$4.50	12/1/2005	9/1/2027	594,010,551
Providence	RI	Rhode Island Tf Green International	PVD	S	$3.00	2/1/1994	9/1/2006	
Providence	RI	Rhode Island Tf Green International	PVD	S	$4.50	9/1/2006	9/1/2032	295,114,484
Charleston	SC	Charleston AFB/International	CHS	M	$4.50	3/1/2010	7/1/2039	189,546,679
Columbia	SC	Columbia Metro	CAE	S	$3.00	11/1/1993	12/1/2001	
Columbia	SC	Columbia Metro	CAE	S	$4.50	12/1/2001	10/1/2028	70,528,884
Florence	SC	Florence Regional	FLO	N	$3.00	12/1/1995	11/1/1999	
Florence	SC	Florence Regional	FLO	N	$3.00	12/1/1999	2/1/2000	
Florence	SC	Florence Regional	FLO	N	$4.50	12/1/2014	6/1/2020	1,777,480
Greer	SC	Greenville Spartanburg International	GSP	S	$4.50	5/1/2020	7/1/2023	16,505,571

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Hilton Head Island	SC	Hilton Head	HXD	N	$3.00	2/1/1994	6/1/2000	
Hilton Head Island	SC	Hilton Head	HXD	N	$3.00	12/1/2000	10/1/2007	
Hilton Head Island	SC	Hilton Head	HXD	N	$4.50	5/1/2012	1/1/2023	6,532,944
Myrtle Beach	SC	Myrtle Beach International	MYR	S	$3.00	10/1/1996	8/1/2001	
Myrtle Beach	SC	Myrtle Beach International	MYR	S	$4.50	8/1/2001	8/1/2007	
Myrtle Beach	SC	Myrtle Beach International	MYR	S	$4.50	6/1/2010	12/1/2025	104,185,413
Aberdeen	SD	Aberdeen Regional	ABR	N	$3.00	1/1/2000	1/1/2002	
Aberdeen	SD	Aberdeen Regional	ABR	N	$4.50	1/1/2002	10/1/2023	2,282,913
Pierre	SD	Pierre Regional	PIR	CS	$4.50	2/1/2003	7/1/2009	
Pierre	SD	Pierre Regional	PIR	CS	$4.50	9/1/2009	4/1/2042	2,070,789
Rapid City	SD	Rapid City Regional	RAP	N	$3.00	8/1/1997	1/1/2000	
Rapid City	SD	Rapid City Regional	RAP	N	$3.00	6/1/2000	6/1/2006	
Rapid City	SD	Rapid City Regional	RAP	N	$4.50	6/1/2006	6/1/2033	34,628,990
Sioux Falls	SD	Joe Foss Field	FSD	S	$4.50	1/1/2017	4/1/2025	17,612,920
Watertown	SD	Watertown Regional	ATY	CS	$4.50	10/1/2019	4/1/2031	688,896
Bristol/Johnson/ Kingsport	TN	Tri-Cities	TRI	N	$3.00	2/1/1997	7/1/2007	
Bristol/Johnson/ Kingsport	TN	Tri-Cities	TRI	N	$4.50	7/1/2007	10/1/2023	18,839,520
Chattanooga	TN	Lovell Field	CHA	S	$3.00	7/1/1994	4/1/2001	
Chattanooga	TN	Lovell Field	CHA	S	$4.50	4/1/2001	11/1/2004	
Chattanooga	TN	Lovell Field	CHA	S	$3.00	11/1/2004	2/1/2005	
Chattanooga	TN	Lovell Field	CHA	S	$4.50	2/1/2005	10/1/2022	35,073,749
Jackson	TN	McKellar-Sipes Regional	MKL	CS	$4.50	10/1/2002	6/1/2025	332,248
Knoxville	TN	McGhee Tyson	TYS	S	$3.00	1/1/1994	10/1/2003	
Knoxville	TN	McGhee Tyson	TYS	S	$4.50	10/1/2003	10/1/2025	92,301,420
Memphis	TN	Memphis International	MEM	M	$3.00	8/1/1992	1/1/1997	
Memphis	TN	Memphis International	MEM	M	$4.50	9/1/2018	5/1/2029	152,090,128
Nashville	TN	Nashville International	BNA	L	$3.00	1/1/1993	12/1/2009	
Nashville	TN	Nashville International	BNA	L	$4.50	12/1/2009	9/1/2010	
Nashville	TN	Nashville International	BNA	L	$3.00	9/1/2010	5/1/2015	
Nashville	TN	Nashville International	BNA	L	$4.50	5/1/2015	3/1/2036	943,703,242
Abilene	TX	Abilene Regional	ABI	N	$3.00	1/1/1998	9/1/2002	
Abilene	TX	Abilene Regional	ABI	N	$4.50	9/1/2002	10/1/2022	7,176,261

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Amarillo	TX	Rick Husband Amarillo International	AMA	N	$4.50	1/1/2009	8/1/2023	19,200,000
Austin	TX	Austin-Bergstrom International	AUS	M	$2.00	11/1/1993	2/1/1994	
Austin	TX	Austin-Bergstrom International	AUS	M	$3.00	2/1/1994	2/1/1995	
Austin	TX	Austin-Bergstrom International	AUS	M	$3.00	7/1/1995	4/1/2004	
Austin	TX	Austin-Bergstrom International	AUS	M	$4.50	4/1/2004	11/1/2034	831,089,379
Beaumont/Port Arthur	TX	Jack Brooks Regional	BPT	N	$3.00	9/1/1994	3/1/2002	
Beaumont/Port Arthur	TX	Jack Brooks Regional	BPT	N	$4.50	3/1/2002	3/1/2029	4,901,113
Brownsville	TX	Brownsville/South Padre Island International	BRO	N	$3.00	10/1/1997	5/1/2003	
Brownsville	TX	Brownsville/South Padre Island International	BRO	N	$4.50	5/1/2003	8/1/2045	15,969,178
College Station	TX	Easterwood Field	CLL	N	$3.00	7/1/1996	4/1/2001	
College Station	TX	Easterwood Field	CLL	N	$4.50	4/1/2001	2/1/2033	10,946,107
Corpus Christi	TX	Corpus Christi International	CRP	N	$3.00	3/1/1994	3/1/2003	
Corpus Christi	TX	Corpus Christi International	CRP	N	$4.50	3/1/2003	8/1/2031	57,428,922
Dallas	TX	Dallas Love Field	DAL	M	$3.00	2/1/2008	2/1/2010	
Dallas	TX	Dallas Love Field	DAL	M	$4.50	2/1/2010	4/1/2027	507,477,926
Dallas-Fort Worth	TX	Dallas-Fort Worth International	DFW	L	$3.00	5/1/1994	6/1/1996	
Dallas-Fort Worth	TX	Dallas-Fort Worth International	DFW	L	$3.00	2/1/1997	7/1/2002	
Dallas-Fort Worth	TX	Dallas-Fort Worth International	DFW	L	$4.50	7/1/2002	10/1/2038	5,655,256,130
Del Rio	TX	Del Rio International	DRT	CS	$4.50	2/1/2010	6/1/2022	403,739
El Paso	TX	El Paso International	ELP	S	$3.00	1/1/1997	8/1/2010	
El Paso	TX	El Paso International	ELP	S	$4.50	8/1/2010	5/1/2013	
El Paso	TX	El Paso International	ELP	S	$4.50	6/1/2013	12/1/2024	146,723,170
Harlingen	TX	Valley International	HRL	N	$3.00	11/1/1998	12/1/2007	
Harlingen	TX	Valley International	HRL	N	$4.50	12/1/2007	7/1/2009	
Harlingen	TX	Valley International	HRL	N	$4.50	8/1/2009	11/1/2023	31,155,709
Houston	TX	William P Hobby	HOU	M	$3.00	11/1/2006	3/1/2015	
Houston	TX	William P Hobby	HOU	M	$4.50	3/1/2015	9/1/2038	736,300,640
Houston	TX	George Bush Intcntl/Houston	IAH	L	$3.00	12/1/2008	3/1/2015	

Associated City	State	Airport Name	LOC ID	Hub size	Level	Start Date	Expiration Date	Total PFC Approved
Houston	TX	George Bush Intcntl/Houston	IAH	L	$4.50	3/1/2015	4/1/2039	2,809,691,307
Fort Hood/Killeen	TX	Robert Gray AAF	GRK	N	$3.00	1/1/1993	11/1/1994	
Fort Hood/Killeen	TX	Robert Gray AAF	GRK	N	$3.00	4/1/1995	5/1/2001	
Fort Hood/Killeen	TX	Robert Gray AAF	GRK	N	$4.50	5/1/2001	8/1/2003	
Fort Hood/Killeen	TX	Robert Gray AAF	GRK	N	$4.50	12/1/2003	1/1/2006	
Fort Hood/Killeen	TX	Robert Gray AAF	GRK	N	$4.50	6/1/2006	2/1/2026	15,783,776
Laredo	TX	Laredo International	LRD	N	$3.00	10/1/1993	6/1/2009	
Laredo	TX	Laredo International	LRD	N	$4.50	6/1/2009	4/1/2040	20,779,276
Longview	TX	East Texas Regional	GGG	N	$3.00	9/1/1996	4/1/2002	
Longview	TX	East Texas Regional	GGG	N	$3.00	9/1/2002	9/1/2012	
Longview	TX	East Texas Regional	GGG	N	$4.50	9/1/2012	9/1/2023	2,350,343
Lubbock	TX	Lubbock Preston Smith International	LBB	S	$3.00	10/1/1993	2/1/2005	
Lubbock	TX	Lubbock Preston Smith International	LBB	S	$2.00	2/1/2005	2/1/2007	
Lubbock	TX	Lubbock Preston Smith International	LBB	S	$3.00	2/1/2007	6/1/2008	
Lubbock	TX	Lubbock Preston Smith International	LBB	S	$4.50	6/1/2008	12/1/2032	71,825,694
McAllen	TX	McAllen Miller International	MFE	S	$3.00	4/1/1998	6/1/2011	
McAllen	TX	McAllen Miller International	MFE	S	$4.50	6/1/2011	8/1/2025	34,100,716
Midland	TX	Midland International Air And Space Port	MAF	S	$3.00	1/1/1993	9/1/2004	
Midland	TX	Midland International Air And Space Port	MAF	S	$4.50	9/1/2004	1/1/2014	
Midland	TX	Midland International Air And Space Port	MAF	S	$3.00	1/1/2014	11/1/2014	
Midland	TX	Midland International Air And Space Port	MAF	S	$4.50	11/1/2014	12/1/2024	57,152,868
San Angelo	TX	San Angelo Regional/Mathis Field	SJT	N	$3.00	5/1/1993	4/1/2002	
San Angelo	TX	San Angelo Regional/Mathis Field	SJT	N	$4.50	4/1/2002	1/1/2030	8,489,950
San Antonio	TX	San Antonio International	SAT	M	$3.00	11/1/2001	10/1/2007	

Associated City	State	Airport Name	LOC ID	Hub size	Level	Start Date	Expiration Date	Total PFC Approved
San Antonio	TX	San Antonio International	SAT	M	$4.50	10/1/2007	1/1/2032	438,164,103
Tyler	TX	Tyler Pounds Regional	TYR	N	$3.00	3/1/1994	9/1/2003	
Tyler	TX	Tyler Pounds Regional	TYR	N	$4.50	9/1/2003	10/1/2037	11,668,802
Victoria	TX	Victoria Regional	VCT	CS	$3.00	12/1/1994	8/1/1998	
Victoria	TX	Victoria Regional	VCT	CS	$3.00	1/1/1999	1/1/2002	
Victoria	TX	Victoria Regional	VCT	CS	$4.50	1/1/2002	8/1/2016	828,792
Waco	TX	Waco Regional	ACT	N	$3.00	11/1/1995	10/1/2001	
Waco	TX	Waco Regional	ACT	N	$4.50	10/1/2001	1/1/2023	6,373,838
Wichita Falls	TX	Sheppard AFB/Wichita Falls Municipal	SPS	N	$4.50	10/1/2008	8/1/2058	9,607,509
Cedar City	UT	Cedar City Regional	CDC	CS	$4.50	2/1/2007	10/1/2011	
Cedar City	UT	Cedar City Regional	CDC	CS	$4.50	2/1/2012	8/1/2043	1,883,165
Salt Lake City	UT	Salt Lake City International	SLC	L	$3.00	12/1/1994	4/1/2001	
Salt Lake City	UT	Salt Lake City International	SLC	L	$4.50	4/1/2001	4/1/2037	2,089,765,683
St. George	UT	St George Regional	SGU	N	$3.00	5/1/1998	9/1/2002	
St. George	UT	St George Regional	SGU	N	$4.50	6/1/2003	1/1/2048	11,693,919
Wendover	UT	Wendover	ENV	GA	$3.00	8/1/1996	10/1/1999	142,300
Arlington	VA	Ronald Reagan Washington Ntl	DCA	M	$3.00	11/1/1993	5/1/2001	
Arlington	VA	Ronald Reagan Washington Ntl	DCA	M	$4.50	5/1/2001	7/1/2034	1,594,139,210
Dulles	VA	Washington Dulles International	IAD	L	$3.00	1/1/1994	5/1/2001	
Dulles	VA	Washington Dulles International	IAD	L	$4.50	5/1/2001	12/1/2038	2,442,302,508
Charlottesville	VA	Charlottesville-Albemarle	CHO	N	$2.00	9/1/1992	10/1/1993	
Charlottesville	VA	Charlottesville-Albemarle	CHO	N	$3.00	4/1/1995	1/1/2005	
Charlottesville	VA	Charlottesville-Albemarle	CHO	N	$4.50	1/1/2005	1/1/2010	
Charlottesville	VA	Charlottesville-Albemarle	CHO	N	$4.50	8/1/2010	5/1/2023	21,881,327
Lynchburg	VA	Lynchburg Regional/Preston Glenn Field	LYH	N	$3.00	7/1/1995	7/1/1996	
Lynchburg	VA	Lynchburg Regional/Preston Glenn Field	LYH	N	$3.00	9/1/2000	6/1/2002	
Lynchburg	VA	Lynchburg Regional/Preston Glenn Field	LYH	N	$4.50	6/1/2002	9/1/2031	8,364,446

Associated City	State	Airport Name	LOC ID	Hub size	Level	Start Date	Expiration Date	Total PFC Approved
Newport News	VA	Newport News/Williamsburg International	PHF	N	$3.00	10/1/2006	7/1/2007	
Newport News	VA	Newport News/Williamsburg International	PHF	N	$4.50	7/1/2010	11/1/2022	15,313,209
Norfolk	VA	Norfolk International	ORF	S	$3.00	5/1/1997	1/1/2010	
Norfolk	VA	Norfolk International	ORF	S	$4.50	9/1/2010	1/1/2023	150,029,994
Richmond	VA	Richmond International	RIC	S	$3.00	5/1/1994	1/1/2005	
Richmond	VA	Richmond International	RIC	S	$4.50	1/1/2005	3/1/2031	213,819,516
Roanoke	VA	Roanoke/Blacksburg Regional (Woodrum Field)	ROA	N	$3.00	9/1/1998	12/1/2001	
Roanoke	VA	Roanoke/Blacksburg Regional (Woodrum Field)	ROA	N	$4.50	12/1/2001	9/1/2022	27,451,220
Staunton/Waynesboro/Harrisonburg	VA	Shenandoah Valley Regional	SHD	CS	$3.00	12/1/2001	12/1/2006	
Staunton/Waynesboro/Harrisonburg	VA	Shenandoah Valley Regional	SHD	CS	$4.50	6/1/2007	10/1/2025	1,039,952
Charlotte Amalie	VI	Cyril E King	STT	S	$3.00	3/1/1993	8/1/1995	
Charlotte Amalie	VI	Cyril E King	STT	S	$3.00	12/1/1995	12/1/2002	
Charlotte Amalie	VI	Cyril E King	STT	S	$3.00	8/1/2004	4/1/2012	
Charlotte Amalie	VI	Cyril E King	STT	S	$4.50	4/1/2012	5/1/2025	55,060,671
Christiansted	VI	Henry E Rohlsen	STX	N	$3.00	3/1/1993	4/1/1996	
Christiansted	VI	Henry E Rohlsen	STX	N	$3.00	12/1/1996	7/1/2003	
Christiansted	VI	Henry E Rohlsen	STX	N	$3.00	10/1/2011	7/1/2016	9,339,163
Burlington	VT	Burlington International	BTV	S	$3.00	4/1/1997	9/1/2003	
Burlington	VT	Burlington International	BTV	S	$4.50	9/1/2003	10/1/2009	
Burlington	VT	Burlington International	BTV	S	$4.50	12/1/2009	4/1/2023	56,354,764
Bellingham	WA	Bellingham International	BLI	N	$3.00	7/1/1993	8/1/1998	
Bellingham	WA	Bellingham International	BLI	N	$3.00	3/1/1999	7/1/2002	
Bellingham	WA	Bellingham International	BLI	N	$4.50	7/1/2002	7/1/2010	
Bellingham	WA	Bellingham International	BLI	N	$4.50	10/1/2010	10/1/2027	38,188,548
Friday Harbor	WA	Friday Harbor	FHR	CS	$3.00	2/1/2001	7/1/2016	
Friday Harbor	WA	Friday Harbor	FHR	CS	$4.50	4/1/2018	6/1/2029	1,060,107
Moses Lake	WA	Grant County International	MWH	GA	$3.00	3/1/1999	11/1/2005	
Moses Lake	WA	Grant County International	MWH	GA	$4.50	11/1/2005	2/1/2017	162,124

Associated City	State	Airport Name	LOC ID	Hub size	Level	Start Date	Expiration Date	Total PFC Approved
Pasco	WA	Tri-Cities	PSC	S	$3.00	11/1/1993	10/1/2001	
Pasco	WA	Tri-Cities	PSC	S	$4.50	10/1/2001	6/1/2038	55,309,026
Port Angeles	WA	William R Fairchild International	CLM	G A	$3.00	8/1/1993	5/1/1995	
Port Angeles	WA	William R Fairchild International	CLM	G A	$3.00	9/1/1996	10/1/2011	
Port Angeles	WA	William R Fairchild International	CLM	G A	$3.00	7/1/2012	4/1/2022	1,000,156
Pullman	WA	Pullman/Moscow Regional	PUW	N	$3.00	6/1/1994	2/1/1996	
Pullman	WA	Pullman/Moscow Regional	PUW	N	$3.00	2/1/2000	1/1/2002	
Pullman	WA	Pullman/Moscow Regional	PUW	N	$4.50	1/1/2002	9/1/2013	
Pullman	WA	Pullman/Moscow Regional	PUW	N	$4.50	11/1/2013	3/1/2067	11,133,088
Seattle	WA	Seattle-Tacoma International	SEA	L	$3.00	11/1/1992	10/1/2001	
Seattle	WA	Seattle-Tacoma International	SEA	L	$4.50	10/1/2001	1/1/2043	3,841,864,375
Spokane	WA	Spokane International	GEG	S	$3.00	6/1/1993	4/1/2003	
Spokane	WA	Spokane International	GEG	S	$4.50	4/1/2003	3/1/2023	166,674,198
Walla Walla	WA	Walla Walla Regional	ALW	N	$3.00	11/1/1993	10/1/2001	
Walla Walla	WA	Walla Walla Regional	ALW	N	$4.50	10/1/2001	11/1/2024	3,745,775
Wenatchee	WA	Pangborn Memorial	EAT	N	$3.00	8/1/1993	10/1/1995	
Wenatchee	WA	Pangborn Memorial	EAT	N	$3.00	6/1/1998	7/1/2002	
Wenatchee	WA	Pangborn Memorial	EAT	N	$4.50	7/1/2002	2/1/2003	
Wenatchee	WA	Pangborn Memorial	EAT	N	$4.50	5/1/2003	4/1/2010	
Wenatchee	WA	Pangborn Memorial	EAT	N	$4.50	5/1/2010	4/1/2023	5,232,631
Yakima	WA	Yakima Air Trml/McAllister Field	YKM	N	$3.00	2/1/1993	2/1/1999	
Yakima	WA	Yakima Air Trml/McAllister Field	YKM	N	$3.00	5/1/1999	4/1/2011	
Yakima	WA	Yakima Air Trml/McAllister Field	YKM	N	$4.50	4/1/2011	12/1/2027	7,059,532
Appleton	WI	Appleton International	ATW	N	$3.00	7/1/1994	6/1/2006	
Appleton	WI	Appleton International	ATW	N	$4.50	6/1/2006	4/1/2008	

Associated City	State	Airport Name	LOC ID	Hub size	Level	Start Date	Expiration Date	Total PFC Approved
Appleton	WI	Appleton International	ATW	N	$3.00	4/1/2008	9/1/2008	
Appleton	WI	Appleton International	ATW	N	$4.50	9/1/2008	8/1/2036	41,406,402
Eau Claire	WI	Chippewa Valley Regional	EAU	N	$3.00	2/1/1996	12/1/2001	
Eau Claire	WI	Chippewa Valley Regional	EAU	N	$4.50	12/1/2001	1/1/2006	
Eau Claire	WI	Chippewa Valley Regional	EAU	N	$4.50	8/1/2006	6/1/2024	2,147,974
Green Bay	WI	Green Bay/Austin Straubel International	GRB	N	$3.00	3/1/1993	3/1/2002	
Green Bay	WI	Green Bay/Austin Straubel International	GRB	N	$4.50	3/1/2002	12/1/2028	46,299,787
La Crosse	WI	La Crosse Regional	LSE	N	$3.00	7/1/1994	4/1/2001	
La Crosse	WI	La Crosse Regional	LSE	N	$4.50	4/1/2001	4/1/2028	12,741,825
Madison	WI	Dane County Regional/Truax Field	MSN	S	$3.00	9/1/1993	11/1/2001	
Madison	WI	Dane County Regional/Truax Field	MSN	S	$4.50	11/1/2001	10/1/2023	92,211,569
Milwaukee	WI	General Mitchell International	MKE	M	$3.00	5/1/1995	11/1/2012	
Milwaukee	WI	General Mitchell International	MKE	M	$4.50	11/1/2012	7/1/2027	398,687,403
Mosinee	WI	Central Wisconsin	CWA	N	$3.00	11/1/1993	9/1/2007	
Mosinee	WI	Central Wisconsin	CWA	N	$4.50	9/1/2007	10/1/2025	15,547,303
Rhinelander	WI	Rhinelander/Oneida County	RHI	N	$3.00	1/1/1994	4/1/1996	
Rhinelander	WI	Rhinelander/Oneida County	RHI	N	$3.00	6/1/1996	9/1/2001	
Rhinelander	WI	Rhinelander/Oneida County	RHI	N	$4.50	9/1/2001	3/1/2022	2,750,883
Beckley	WV	Raleigh County Memorial	BKW	CS	$4.50	8/1/2017	8/1/2039	285,965
Charleston	WV	Yeager	CRW	N	$3.00	8/1/1993	11/1/2001	
Charleston	WV	Yeager	CRW	N	$4.50	11/1/2001	12/1/2050	43,949,270
Clarksburg	WV	North Central West Virginia	CKB	N	$3.00	4/1/1994	10/1/1995	
Clarksburg	WV	North Central West Virginia	CKB	N	$4.50	4/1/2001	8/1/2002	
Clarksburg	WV	North Central West Virginia	CKB	N	$4.50	5/1/2004	5/1/2054	3,101,233
Huntington	WV	Tri-State/Milton J Ferguson Field	HTS	N	$3.00	12/1/1995	12/1/2008	
Huntington	WV	Tri-State/Milton J Ferguson Field	HTS	N	$3.00	5/1/2009	6/1/2012	
Huntington	WV	Tri-State/Milton J Ferguson Field	HTS	N	$4.50	7/1/2012	4/1/2027	8,421,335

Associated City	State	Airport Name	LOC ID	Hub size	Level	Start Date	Expiration Date	Total PFC Approved
Lewisburg	WV	Greenbrier Valley	LWB	CS	$4.50	4/1/2011	1/1/2025	1,104,958
Morgantown	WV	Morgantown Municipal (Walter L Bill Hart Field)	MGW	CS	$2.00	12/1/1992	1/1/1994	
Morgantown	WV	Morgantown Municipal (Walter L Bill Hart Field)	MGW	CS	$2.00	12/1/1994	1/1/2002	
Morgantown	WV	Morgantown Municipal (Walter L Bill Hart Field)	MGW	CS	$4.50	1/1/2002	3/1/2008	
Morgantown	WV	Morgantown Municipal (Walter L Bill Hart Field)	MGW	CS	$4.50	6/1/2009	1/1/2026	1,170,454
Parkersburg	WV	Mid-Ohio Valley Regional	PKB	CS	$3.00	5/1/1999	8/1/2002	
Parkersburg	WV	Mid-Ohio Valley Regional	PKB	CS	$4.50	8/1/2003	10/1/2027	798,612
Casper	WY	Casper/Natrona County International	CPR	N	$3.00	9/1/1993	4/1/2001	
Casper	WY	Casper/Natrona County International	CPR	N	$4.50	4/1/2001	3/1/2012	
Casper	WY	Casper/Natrona County International	CPR	N	$3.00	3/1/2012	10/1/2019	
Casper	WY	Casper/Natrona County International	CPR	N	$4.50	10/1/2019	7/1/2031	10,100,378
Cheyenne	WY	Cheyenne Regional/Jerry Olson Field	CYS	CS	$3.00	11/1/1993	4/1/2001	
Cheyenne	WY	Cheyenne Regional/Jerry Olson Field	CYS	CS	$4.50	4/1/2001	9/1/2012	
Cheyenne	WY	Cheyenne Regional/Jerry Olson Field	CYS	CS	$4.50	9/1/2014	9/1/2024	1,804,637
Cody	WY	Yellowstone Regional	COD	N	$3.00	8/1/1997	7/1/2001	
Cody	WY	Yellowstone Regional	COD	N	$4.50	7/1/2001	4/1/2005	
Cody	WY	Yellowstone Regional	COD	N	$4.50	9/1/2005	6/1/2018	
Cody	WY	Yellowstone Regional	COD	N	$4.50	7/1/2018	2/1/2020	
Cody	WY	Yellowstone Regional	COD	N	$4.50	12/1/2020	7/1/2025	3,407,352
Everett	WA	Snohomish County (Paine Field)	PAE	N	$4.50	11/1/2020	2/1/2024	7,434,100
Gillette	WY	Northeast Wyoming Regional	GCC	N	$3.00	9/1/1993	12/1/2001	

Associated City	State	Airport Name	LOC ID	Hub size	Level	Start Date	Expiration Date	Total PFC Approved
Gillette	WY	Northeast Wyoming Regional	GCC	N	$4.50	12/1/2001	6/1/2004	
Gillette	WY	Northeast Wyoming Regional	GCC	N	$4.50	1/1/2005	1/1/2023	2,516,993
Jackson	WY	Jackson Hole	JAC	S	$3.00	8/1/1993	4/1/2001	
Jackson	WY	Jackson Hole	JAC	S	$4.50	4/1/2001	9/1/2041	39,383,556
Laramie	WY	Laramie Regional	LAR	CS	$3.00	8/1/1996	10/1/2000	
Laramie	WY	Laramie Regional	LAR	CS	$3.00	12/1/2000	8/1/2001	
Laramie	WY	Laramie Regional	LAR	CS	$4.50	12/1/2006	4/1/2013	
Laramie	WY	Laramie Regional	LAR	CS	$4.50	6/1/2013	2/1/2024	847,142
Riverton	WY	Central Wyoming Regional	RIW	CS	$3.00	5/1/1995	4/1/2001	
Riverton	WY	Central Wyoming Regional	RIW	CS	$4.50	4/1/2001	11/1/2036	1,180,133
Rock Springs	WY	Southwest Wyoming Regional	RKS	CS	$3.00	4/1/1995	4/1/2006	
Rock Springs	WY	Southwest Wyoming Regional	RKS	CS	$4.50	4/1/2006	11/1/2023	2,009,268
Sheridan	WY	Sheridan County	SHR	N	$3.00	3/1/1996	12/1/2001	
Sheridan	WY	Sheridan County	SHR	N	$4.50	12/1/2001	9/1/2008	
Sheridan	WY	Sheridan County	SHR	N	$4.50	10/1/2008	8/1/2035	1,388,712
Worland	WY	Worland Municipal	WRL	GA	$4.50	1/1/2003	3/1/2008	
Worland	WY	Worland Municipal	WRL	GA	$4.50	8/1/2008	7/1/2022	265,060
Total PFC Approved								$116,626,577,079

unique locations approved 404

NOTES: Total PFC approved includes all the collections at the location

Letter of Intent (LOI) Commitments by Fiscal Year

State	City	Airport Name	Discretionary 2022	Entitlement 2022	Discretionary 2023	Entitlement 2023
FL	Fort Lauderdale	Fort Lauderdale/Hollywood International	10,000,000	0	0	0
IL	Chicago	Chicago O'Hare International	30,000,000	0	30,000,000	0
OH	Cleveland	Cleveland-Hopkins International	0	203,427	0	0
TX	Dallas-Fort Worth	Dallas-Fort Worth International	0	0	0	0
		Total	40,000,000	203,427	30,000,000	0

Letter of Intent (LOI) Commitments by Fiscal Year (Cont'd)

State	City	Airport Name	Discretionary 2024	Entitlement 2024	Discretionary 2025	Entitlement 2025
FL	Fort Lauderdale	Fort Lauderdale/Hollywood International	0	0	0	0
IL	Chicago	Chicago O'Hare International	30,000,000	0	30,000,000	0
OH	Cleveland	Cleveland-Hopkins International	0	0	0	0
TX	Dallas-Fort Worth	Dallas-Fort Worth International	25,000,000	9,000,000	25,000,000	0
		Total	55,000,000	9,000,000	55,000,000	0

Letter of Intent (LOI) Commitments by Fiscal Year (Cont'd)

State	City	Airport Name	Discretionary 2026	Entitlement 2026	Discretionary 2027	Entitlement 2027
FL	Fort Lauderdale	Fort Lauderdale/Hollywood International	0	0	0	0
IL	Chicago	Chicago O'Hare International	20,000,000	0	0	0
OH	Cleveland	Cleveland-Hopkins International	0	0	0	0
TX	Dallas-Fort Worth	Dallas-Fort Worth International	0	0	0	0
		Total	20,000,000	0	0	0

Letter of Intent (LOI) Commitments by Fiscal Year (Cont'd)

State	City	Airport Name	Discretionary 2028	Entitlement 2028	Discretionary 2029	Entitlement 2029
FL	Fort Lauderdale	Fort Lauderdale/Hollywood International	0	0	0	0
IL	Chicago	Chicago O'Hare International	0	0	0	0
OH	Cleveland	Cleveland-Hopkins International	0	0	0	0
TX	Dallas-Fort Worth	Dallas-Fort Worth International	0	0	0	0
		Total	0	0	0	0

Letter of Intent (LOI) Commitments by Fiscal Year (Cont'd)

State	City	Airport Name	Discretionary 2030	Entitlement 2030	Discretionary Beyond	Entitlement Beyond
FL	Fort Lauderdale	Fort Lauderdale/Hollywood International	0	0	0	0
IL	Chicago	Chicago O'Hare International	0	0	0	0
OH	Cleveland	Cleveland-Hopkins International	0	0	0	0
TX	Dallas-Fort Worth	Dallas-Fort Worth International	0	0	0	0
		Total	0	0	0	0

Letter of Intent (LOI) Commitments by Fiscal Year (Cont'd)

State	City	Airport Name	Discretionary Totals	Entitlement Totals
FL	Fort Lauderdale	Fort Lauderdale/Hollywood International	10,000,000	0
IL	Chicago	Chicago O'Hare International	140,000,000	0
OH	Cleveland	Cleveland-Hopkins International	0	203,427
TX	Dallas-Fort Worth	Dallas-Fort Worth International	50,000,000	9,000,000
		Total	200,000,000	9,203,427

3E. Other Information

PAYMENT TO THE AIRPORT AND AIRWAY TRUST FUND

Program and Financing
(in millions of dollars)

Identification code: 069-0250-0-1-402		FY2021 Actual	FY 2022 Estimate	FY 2023 Request
	Obligations by program activity:			
0001	Direct Program Activity	14,000	……	……
0900	Total new obligations, unexpired accounts (object class 94.0)	14,000	……	……
	Budgetary resources:			
	Budget Authority:			
	Appropriations, mandatory:			
1200	Appropriation	14,000	……	……
1930	Total budgetary resources available	14,000	……	……
	Change in obligated balance:			
	Unpaid obligations:			
3010	New Obligations, unexpired accounts	14,000	……	……
3020	Outlays (gross)	-14,000	……	……
	Budget authority and outlays, net:			
	Mandatory:			
4090	Budget authority, gross	14,000	……	……
	Outlay, gross:			
4100	Outlays from new mandatory authority	14,000	……	……
4180	Budget authority, new (total)	14,000	……	……
4190	Outlays, net (total)	14,000	……	……

FACILITIES AND EQUIPMENT

[For an additional amount for "Facilities and Equipment", $100,000,000, to remain available until September 30, 2024, for necessary expenses related to the consequences of Hurricane Ida.] (Disaster Relief Supplemental Appropriations Act, 2022.)

FACILITIES AND EQUIPMENT

[For an additional amount for "Facilities and Equipment", $5,000,000,000, to remain available until expended: Provided, That $1,000,000,000, to remain available until expended, shall be made available for fiscal year 2022, $1,000,000,000, to remain available until expended, shall be made available for fiscal year 2023, $1,000,000,000, to remain available until expended, shall be made available for fiscal year 2024, $1,000,000,000, to remain available until expended, shall be made available for fiscal year 2025, and $1,000,000,000, to remain available until expended, shall be made available for fiscal year 2026: Provided further, That amounts made available under this heading in this Act shall be derived from the general fund of the Treasury: Provided further, That funds provided under this heading in this Act shall be for: (1) replacing terminal and en route air traffic control facilities; (2) improving air route traffic control center and combined control facility buildings; (3) improving air traffic control en route radar facilities; (4) improving air traffic control tower and terminal radar approach control facilities; (5) national airspace system facilities OSHA and environmental standards compliance; (6) landing and navigational aids; (7) fuel storage tank replacement and management; (8) unstaffed infrastructure sustainment; (9) real property disposition; (10) electrical power system sustain and support; (11) energy maintenance and compliance; (12) hazardous materials management and environmental cleanup; (13) facility security risk management; (14) mobile asset management program; and (15) administrative expenses, including salaries and expenses, administration, and oversight: Provided further, That not less than $200,000,000 of the funds made available under this heading in this Act shall be for air traffic control towers that are owned by the Federal Aviation Administration and staffed through the contract tower program: Provided further, That not later than 90 days after the date of enactment of this Act, the Secretary of Transportation shall submit to the House and Senate Committees on Appropriations a detailed spend plan, including a list of project locations of air traffic control towers and contract towers, to be funded for fiscal year 2022: Provided further, That for each fiscal year through 2026, as part of the annual budget submission of the President under section 1105(a) of title 31, United States Code, the Secretary of Transportation shall submit a detailed spend plan for funding that will be made available under this heading in the upcoming fiscal year, including a list of projects for replacing facilities that are owned by the Federal Aviation Administration, including air traffic control towers that are staffed through the contract tower program: Provided further, That such amount is designated by the Congress as being for an emergency requirement pursuant to section 4112(a) of H. Con. Res. 71 (115th Congress), the concurrent resolution on the budget for fiscal year 2018, and to section 251(b) of the Balanced Budget and Emergency Deficit Control Act of 1985.] (Infrastructure Investments and Jobs Appropriations Act.)

Program and Financing
(in millions of dollars)

Identification code: 69-1308-0-1-402		FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
	Obligations by program activity:			
0001	Infrastructure Investment and Jobs Act, F&E	. . . .	452	702
0002	Hurricane Ida	. . . .	10	50
0900	Total new obligations, unexpired accounts	. . . .	462	752
	Budgetary Resources:			
	Unobligated balance:			
1000	Unobligated balance brought forward, Oct 1	. . . .	. . . .	638
	Budget authority:			
	Appropriations, discretionary:			
1100	Appropriation	. . . .	1,100	. . . .
	Advance appropriations, discretionary:			
1170	Advance Appropriation	. . . .	. . . .	1,000
1900	Budget authority (total)	. . . .	1,100	1,000
1930	Total budgetary resources available	. . . .	1,100	1,638
	Memorandum (non-add) entries:			
1941	Unexpired unobligated balance, end of year	. . . .	638	886
	Change in obligated balances:			
	Unpaid obligations:			
3000	Unpaid obligations, brought forward, Oct 1	. . . .	. . . .	392
3010	New obligations, unexpired accounts	. . . .	462	752
3020	Outlays (gross)	. . . .	-70	-365
3050	Unpaid obligations, end of year	. . . .	392	779
	Memorandum (non-add) entries:			
3100	Obligated balance, start of year	. . . .	. . . .	392
3200	Obligated balance, end of year	. . . .	392	779
	Budget authority and Outlays, net:			
	Discretionary:			
4000	Budget authority, gross	. . . .	1,100	1,000
	Outlays gross:			
4010	Outlays from new discretionary authority	. . . .	70	93
4011	Outlays from discretionary balances	. . . .	. . . .	272
4020	Outlays, gross (total)	. . . .	70	365
4180	Budget authority, net (total)	. . . .	1,100	1,000
4190	Outlays, net (total)	. . . .	70	365

The Infrastructure Investment and Jobs Act (P.L. 117–58) appropriated $1 billion for Facilities & Equipment, in annual installments of $1 billion from FY 2022 to FY 2026, for the improvement of existing and construction of new air traffic control infrastructure. The Extending Government Funding and Delivering Emergency Assistance Act (P.L.

117–43) appropriated $100 million for necessary expenses related to the consequences of Hurricane Ida.

Object Classification
(in millions of dollars)

Identification code: 69-1308-0-1-402		FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
	Direct obligations:			
11.1	Personnel compensation: Full-time permanent	. . . .	10	21
12.1	Civilian personnel benefits	. . . .	4	8
21.0	Travel and transportation of persons	. . . .	8	16
22.0	Transportation of things	. . . .	2	2
23.1	Rental payments to GSA	. . . .	1	1
25.1	Advisory and assistance services	. . . .	265	379
25.2	Other services from non-Federal sources	. . . .	21	35
25.4	Operation and maintenance of facilities	. . . .	32	94
25.7	Operation and maintenance of equipment	. . . .	2	4
26.0	Supplies and materials	. . . .	6	7
31.0	Equipment	. . . .	72	86
32.0	Land and structures	. . . .	34	76
33.0	Investments and loans	. . . .	5	23
99.9	Total new obligations, unexpired accounts	. . . .	462	752

Employment Summary

Identification code: 69-1308-0-1-402		FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
1001	Direct civilian full-time equivalent employment	. . . .	70	170

AIRPORT TERMINAL PROGRAM

[(INCLUDING TRANSFER OF FUNDS)]

[For an additional amount for "Airport Terminal Program", $5,000,000,000, to remain available until September 30, 2030, for the Secretary of Transportation to provide competitive grants for airport terminal development projects that address the aging infrastructure of the nation's airports: Provided, That $1,000,000,000, to remain available until September 30, 2026, shall be made available for fiscal year 2022, $1,000,000,000, to remain available until September 30, 2027, shall be made available for fiscal year 2023, $1,000,000,000, to remain available until September 30, 2028, shall be made available for fiscal year 2024, $1,000,000,000, to remain available until September 30, 2029, shall be made available for fiscal year 2025, and $1,000,000,000, to remain available until September 30, 2030, shall be made available for fiscal year 2026: Provided further, That amounts made available under this heading in this Act shall be derived from the general fund of the Treasury: Provided further, That the Secretary shall issue a notice of funding opportunity not later than 60 days after the date of enactment of this Act: Provided further, That of the funds made available under this heading in this Act, not more than 55 percent shall be for large hub airports, not more than 15 percent shall be for medium hub airports, not more than 20 percent shall be for small hub airports, and not less than 10 percent shall be for nonhub and nonprimary airports: Provided further, That in awarding grants for terminal development projects from funds made available under this heading in this Act, the Secretary may consider projects that qualify as "terminal development" (including multimodal terminal development), as that term is defined in 49 U.S.C. 47102(28), projects for on-airport rail access projects as set forth in Passenger Facility Charge (PFC) Update 75–21, and projects for relocating, reconstructing, repairing, or improving an airport-owned air traffic control tower: Provided further, That in awarding grants for terminal development projects from funds made available under this heading in this Act, the Secretary shall give consideration to projects that increase capacity and passenger access; projects that replace aging infrastructure; projects that achieve compliance with the Americans with Disabilities Act and expand accessibility for persons with disabilities; projects that improve airport access for historically disadvantaged populations; projects that improve energy efficiency, including upgrading environmental systems, upgrading plant facilities, and achieving Leadership in Energy and Environmental Design (LEED) accreditation standards; projects that improve airfield safety through terminal relocation; and projects that encourage actual and potential competition: Provided further, That the Federal share of the cost of a project carried out from funds made available under this heading in this Act shall be 80 percent for large and medium hub airports and 95 percent for small hub, nonhub, and nonprimary airports: Provided further, That a grant made from funds made available under this heading in this Act shall be treated as having been made pursuant to the Secretary's authority under section 47104(a) of title 49, United States Code: Provided further, That the Secretary may provide grants from funds made available under this heading in this Act for a project at any airport that is eligible to receive a grant from the discretionary fund under section 47115(a) of title 49, United States Code: Provided further, That in making awards from funds made available under this heading in this Act, the Secretary shall provide a preference to projects that achieve a complete development

objective, even if awards for the project must be phased, and the Secretary shall prioritize projects that have received partial awards: Provided further, That up to 3 percent of the amounts made available under this heading in this Act in each fiscal year shall be for personnel, contracting and other costs to administer and oversee grants, of which $1,000,000 in each fiscal year shall be transferred to the Office of Inspector General of the Department of Transportation for oversight of funding provided to the Department of Transportation in this title in this Act: Provided further, That such amount is designated by the Congress as being for an emergency requirement pursuant to section 4112(a) of H. Con. Res. 71 (115th Congress), the concurrent resolution on the budget for fiscal year 2018, and to section 251(b) of the Balanced Budget and Emergency Deficit Control Act of 1985.] (Infrastructure Investments and Jobs Appropriations Act.)

Program and Financing
(in millions of dollars)

Identification code: 69-1337-0-1-402		FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
	Obligations by program activity:			
0001	Airport Terminal Program	. . . .	999	999
	Budgetary Resources:			
	Budget authority:			
	Appropriations, discretionary:			
1100	Appropriation	. . . .	1,000	. . . .
1120	Appropriations transferred to other account [069-0130]	. . . .	-1	. . . .
1160	Appropriation, discretionary (total)	. . . .	999	. . . .
	Advance appropriations, discretionary:			
1170	Advance Appropriation	. . . .	. . . .	1,000
1172	Advance appropriations transferred to other account [069-0130]	. . . .	. . . .	-1
1180	Advanced appropriation, discretionary (total)	. . . .	. . . .	999
1900	Budget authority (total)	. . . .	999	999
1930	Total budgetary resources available	. . . .	999	999
	Change in obligated balances:			
	Unpaid obligations:			
3000	Unpaid obligations, brought forward, Oct 1	. . . .	. . . .	959
3010	New obligations, unexpired accounts	. . . .	999	999
3020	Outlays (gross)	. . . .	-40	-639
3050	Unpaid obligations, end of year	. . . .	959	1,319
	Memorandum (non-add) entries:			
3100	Obligated balance, start of year	. . . .	. . . .	959
3200	Obligated balance, end of year	. . . .	959	1,319
	Budget authority and Outlays, net:			
	Discretionary:			
4000	Budget authority, gross	. . . .	999	999

	Outlays gross:			
4010	Outlays from new discretionary authority	. . . .	40	110
4011	Outlays from discretionary balances	. . . .	. . . .	529
4020	Outlays, gross (total)	. . . .	40	639
4180	Budget authority, net (total)	. . . .	999	999
4190	Outlays, net (total)	. . . .	40	639

The Infrastructure Investment and Jobs Act (P.L. 117–58) appropriated $5 billion for the Airport Terminal Program, in annual $1 billion installments from FY 2022 to FY 2026, for the Secretary of Transportation to provide competitive grants for airport terminal development projects that address the aging infrastructure of the nations airports.

Object Classification
(in millions of dollars)

Identification code: 69-1337-0-1-402		FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
	Direct obligations:			
11.1	Personnel compensation: Full-time permanent	. . . .	1	4
11.9	Total personnel compensation	. . . .	1	4
12.1	Civilian personnel benefits	. . . .	. . . .	2
25.2	Other services from non-Federal sources	. . . .	1	1
41.0	Grants, subsidies, and contributions	. . . .	997	992
99.9	Total new obligations, unexpired accounts	. . . .	999	999

Employment Summary

Identification code: 69-1337-0-1-402		FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
1001	Direct civilian full-time equivalent employment	. . . .	11	31

AIRPORT INFRASTRUCTURE GRANTS

[(INCLUDING TRANSFER OF FUNDS)]

[For an additional amount for "Airport Infrastructure Grants", $15,000,000,000, to remain available until September 30, 2030: Provided, That $3,000,000,000, to remain available until September 30, 2026, shall be made available for fiscal year 2022, $3,000,000,000, to remain available until September 30, 2027, shall be made available for fiscal year 2023, $3,000,000,000, to remain available until September 30, 2028, shall be made available for fiscal year 2024, $3,000,000,000, to remain available until September 30, 2029, shall be made available for fiscal year 2025, and $3,000,000,000, to remain available until September 30, 2030, shall be made available for fiscal year 2026: Provided further, That amounts made available under this heading in this Act shall be derived from the general fund of the Treasury: Provided further, That amounts made available under this heading in this Act shall be made available to sponsors of any airport eligible to receive grants under section 47115 of title 49, United States Code, for airport-related projects defined under section 40117(a)(3) of title 49, United States Code: Provided further, That of the funds made available under this heading in this Act, in each of fiscal years 2022 through 2026—] [(1) Not more than $2,480,000,000 shall be available for primary airports as defined in section 47102(16) of title 49, United States Code, and certain cargo airports: Provided, That such funds shall not be subject to the reduced apportionments of section 47114(f) of title 49, United States Code: Provided further, That such funds shall first be apportioned as set forth in sections 47114(c)(1)(A), 47114(c)(1)(C)(i), 47114(c)(1)(C)(ii), 47114(c)(2)(A), 47114(c)(2)(B), and 47114(c)(2)(E), 47114(c)(1)(J) of title 49, United States Code: Provided further, That there shall be no maximum apportionment limit: Provided further, That any remaining funds after such apportionment shall be distributed to all sponsors of primary airports (as defined in section 47102(16) of title 49, United States Code) based on each such airport's passenger enplanements compared to total passenger enplanements of all airports defined in section 47102(16) of title 49, United States Code, for calendar year 2019 in fiscal years 2022 and 2023 and thereafter for the most recent calendar year enplanements upon which the Secretary has apportioned funds pursuant to section 47114(c) of title 49, United States Code;] [(2) Not more than $500,000,000 shall be for general aviation and commercial service airports that are not primary airports as defined in paragraphs (7), (8), and (16) of section 47102 of title 49, United States Code: Provided, That the Secretary of Transportation shall apportion the remaining funds to each non-primary airport based on the categories published in the most current National Plan of Integrated Airport Systems, reflecting the percentage of the aggregate published eligible development costs for each such category, and then dividing the allocated funds evenly among the eligible airports in each category, rounding up to the nearest thousand dollars: Provided further, That any remaining funds under this paragraph in this Act shall be distributed as described in paragraph (3) in this proviso under this heading in this Act; and] [(3) $20,000,000 for the Secretary of Transportation to make competitive grants to sponsors of airports participating in the contract tower program and the contract tower cost share program under section 47124 of title 49, United States Code to: (1) sustain, construct, repair, improve, rehabilitate, modernize, replace or relocate nonapproach control towers; (2) acquire and install air traffic control, communications, and related equipment to be used

in those towers; and (3) construct a remote tower certified by the Federal Aviation Administration, including acquisition and installation of air traffic control, communications, or related equipment: Provided, That the Federal Aviation Administration shall give priority consideration to projects that enhance aviation safety and improve air traffic efficiency: Provided further, That the Federal share of the costs for which a grant is made under this paragraph shall be 100 percent:] [Provided further, That any funds made available in a given fiscal year that remain unobligated at the end of the fourth fiscal year after which they were first made available for obligation shall be made available in the fifth fiscal year after which they were first made available for obligation to the Secretary for competitive grants: Provided further, That of the amounts made available to the Secretary for competitive grants under the preceding proviso, the Secretary shall first provide up to $100,000,000, as described in paragraph (3) of the fourth proviso, and any remaining unobligated balances in excess of that amount shall be available to the Secretary for competitive grants otherwise eligible under the third proviso that reduce airport emissions, reduce noise impact to the surrounding community, reduce dependence on the electrical grid, or provide general benefits to the surrounding community: Provided further, That none of the amounts made available under this heading in this Act may be used to pay for airport debt service: Provided further, That a grant made from funds made available under this heading in this Act shall be treated as having been made pursuant to the Secretary's authority under section 47104(a) of title 49, United States Code: Provided further, That up to 3 percent of the amounts made available under this heading in this Act in each of fiscal years 2022 through 2026 shall be for personnel, contracting, and other costs to administer and oversee grants, of which $1,000,000 in each fiscal year shall be transferred to the Office of Inspector General of the Department of Transportation for oversight of funding provided to the Department of Transportation in this title in this Act: Provided further, That the Federal share of the costs of a project under paragraphs (1) and (2) of the fourth proviso under this heading shall be the percent for which a project for airport development would be eligible under section 47109 of title 49, United States Code: Provided further, That obligations of funds under this heading in this Act shall not be subject to any limitations on obligations provided in any Act making annual appropriations: Provided further, That such amount is designated by the Congress as being for an emergency requirement pursuant to section 4112(a) of H. Con. Res. 71 (115th Congress), the concurrent resolution on the budget for fiscal year 2018, and to section 251(b) of the Balanced Budget and Emergency Deficit Control Act of 1985.] (Infrastructure Investments and Jobs Appropriations Act.)

Program and Financing
(in millions of dollars)

Identification code: 69-1338-0-1-402		FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
	Obligations by program activity:			
0001	Airport Infrastructure Grants	. . . .	2,999	2,999
	Budgetary Resources:			
	Budget authority:			

	Appropriations, discretionary:			
1100	Appropriation	. . . .	3,000	. . . .
1120	Appropriations transferred to other account [069-0130]	. . . .	-1	. . . .
1160	Appropriation, discretionary (total)	. . . .	2,999	. . . .
	Advance appropriations, discretionary:			
1170	Advance Appropriation	. . . .	. . . .	3,000
1172	Advance appropriations transferred to other account [069-0130]	. . . .	. . . .	-1
1180	Advanced appropriation, discretionary (total)	. . . .	. . . .	2,999
1900	Budget authority (total)	. . . .	2,999	2,999
1930	Total budgetary resources available	. . . .	2,999	2,999
	Change in obligated balances:			
	Unpaid obligations:			
3000	Unpaid obligations, brought forward, Oct 1	. . . .	. . . .	2,879
3010	New obligations, unexpired accounts	. . . .	2,999	2,999
3020	Outlays (gross)	. . . .	-120	-1,919
3050	Unpaid obligations, end of year	. . . .	2,879	3,959
	Memorandum (non-add) entries:			
3100	Obligated balance, start of year	. . . .	. . . .	2,879
3200	Obligated balance, end of year	. . . .	2,879	3,959
	Budget authority and Outlays, net:			
	Discretionary:			
4000	Budget authority, gross	. . . .	2,999	2,999
	Outlays gross:			
4010	Outlays from new discretionary authority	. . . .	120	330
4011	Outlays from discretionary balances	. . . .	. . . .	1,589
4020	Outlays, gross (total)	. . . .	120	1,919
4180	Budget authority, net (total)	. . . .	2,999	2,999
4190	Outlays, net (total)	. . . .	120	1,919

The Infrastructure Investment and Jobs Act (P.L. 117–58) appropriated $15 billion, in annual installments of $3 billion from FY 2022 to FY 2026, for airport projects that increase safety and expand capacity.

Object Classification
(in millions of dollars)

Identification code: 69-1338-0-1-402		FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
	Direct obligations:			
11.1	Personnel compensation: Full-time permanent	. . . .	3	12
11.9	Total personnel compensation	. . . .	3	12
12.1	Civilian personnel benefits	. . . .	2	6

21.0	Travel and transportation of persons	. . . .	2	2
25.2	Other services from non-Federal sources	. . . .	3	3
41.0	Grants, subsidies, and contributions	. . . .	2,989	2,976
99.9	Total new obligations, unexpired accounts	. . . .	2,999	2,999

Employment Summary

Identification code: 69-1338-0-1-402		FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
1001	Direct civilian full-time equivalent employment	. . . .	30	87

PAYMENT TO GRANTS-IN-AID FOR AIRPORTS

Program and Financing
(in millions of dollars)

Identification code: 069-2813-0-1-402		FY2021 Actual	FY 2022 Estimate	FY 2023 Request
	Obligations by program activity:			
0001	Direct Program Activity	2,400	400	……
0900	Total new obligations, unexpired accounts (object class 94.0)	2,400	400	……
	Budgetary resources:			
	Budget Authority:			
	Appropriations, discretionary:			
1100	Appropriation	2,400	400	……
1930	Total budgetary resources available	2,400	400	……
	Change in obligated balance:			
	Unpaid obligations:			
3010	New Obligations, unexpired accounts	2,400	400	……
3020	Outlays (gross)	-2,400	-400	……
	Budget authority and outlays, net:			
	Discretionary:			
4000	Budget authority, gross	2,400	400	……
	Outlay, gross:			
4010	Outlays from new discretionary authority	2,400	400	……
4180	Budget authority, net (total)	2,400	400	……
4190	Outlays, net (total)	2,400	400	……

The regular appropriations acts for 2020 and 2021 each provided $400 million of supplemental funding for Grants-in-Aid for Airports. Funds are appropriated from the General Fund of the U.S. Treasury. Discretionary grants are being awarded to qualified airports, with up to 0.5 percent of the funds provided applied to the administrative costs of awarding grants under the program. In addition, the CARES Act provided $10 billion in 2020 and the Coronavirus Response and Relief Supplemental Appropriations Act of 2021 provided $2 billion, both from the General Fund of the U.S. Treasury, to help airports prevent, prepare for, and respond to coronavirus.

RELIEF FOR AIRPORTS

Program and Financing
(in millions of dollars)

Identification code: 069-2815-0-1-402		FY2021 Actual	FY 2022 Estimate	FY 2023 Request
	Obligations by program activity:			
0001	Direct Program Activity	4,341	3,659	……
0900	Total new obligations, unexpired accounts (object class 41.0)	4,341	3,659	……
	Budgetary resources:			
	Unobligated Balance:			
1000	Unobligated balance brought forward, Oct 1	……	3,659	……
	Budget Authority:			
	Appropriations, mandatory:			
1200	Appropriation	8,000	……	……
1930	Total budgetary resources available	8,000	3,659	……
	Memorandum (non-add) entries:			
1941	Unexpired unobligated balance, end of year	3,659	……	……
	Change in obligated balance:			
	Unpaid obligations:			
3000	Unpaid obligations, brought forward, Oct 1	……	4,008	3,427
3010	New Obligations, unexpired accounts	4,341	3,659	……
3020	Outlays (gross)	-333	-4,240	-2,160
3050	Unpaid obligations, end of year	4,008	3,427	1,267
	Memorandum (non-add) entries:			
3100	Obligated balance, start of year	……	4,008	3,427
3200	Obligated balance, end of year	4,008	3,427	1,267
	Budget authority and outlays, net:			
	Mandatory:			
4090	Budget authority, gross	8,000	……	……
	Outlay, gross:			
4100	Outlays from new mandatory authority	333	……	……
4101	Outlays from mandatory balances	……	4,240	2,160
4110	Outlays, gross (total)	333	4,240	2,160
4180	Budget authority, new (total)	8,000	……	……
4190	Outlays, net (total)	333	4,240	2,160

The American Rescue Plan Act of 2021 (P.L. 117–2) appropriated $8 billion, to remain available until September 30, 2024, for assistance to sponsors of airports, to be made available to prevent, prepare for, and respond to coronavirus.

EMERGENCY FAA EMPLOYEE FUND

Program and Financing
(in millions of dollars)

Identification code: 069-2816-0-1-402		FY2021 Actual	FY 2022 Estimate	FY 2023 Request
	Obligations by program activity:			
0001	Emergency FAA Employee Fund	1	8	……
	Budgetary resources:			
	Unobligated Balance:			
1000	Unobligated balance brought forward, Oct 1	……	8	……
	Budget Authority:			
	Appropriations, mandatory:			
1200	Appropriation	9	……	……
1930	Total budgetary resources available	9	8	……
1941	Unexpired unobligated balance, end of year	8	……	……
	Change in obligated balance:			
	Unpaid obligations:			
3010	New Obligations, unexpired accounts	1	8	……
3020	Outlays (gross)	-1	-8	……
	Budget authority and outlays, net:			
	Mandatory:			
4090	Budget authority, gross	9	……	……
	Outlay, gross:			
4100	Outlays from new mandatory authority	1	……	……
4101	Outlays from mandatory balances	……	8	……
4110	Outlays, gross (total)	1	8	……
4180	Budget authority, new (total)	9	……	……
4190	Outlays, net (total)	1	8	……

The American Rescue Plan Act of 2021 (P.L. 117–2) established the Emergency FAA Employee Leave Fund and appropriated $9 million, which shall be deposited into the Fund and remain available through September 30, 2022. The Fund is for the use of paid leave for FAA employees who are unable to work due to reasons related to the COVID-19 pandemic.

Object Classification
(in millions of dollars)

Identification code: 69-2816-0-1-402		FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
	Direct obligations:			
11.1	Personnel compensation: Full-time permanent	1	7	……
12.0	Civilian personnel benefits…	……	1	……
99.9	Total new obligations, unexpired accounts ……	1	8	……

AVIATION INSURANCE REVOLVING FUND

Program and Financing
(in millions of dollars)

Identification code: 69-4120-0-3-402		FY2021 Actual	FY 2022 Estimate	FY 2023 Request
	Obligations by program activity:			
0801	Program administration	1	2	2
0802	Insurance Claims	3	2	2
0900	Total new obligations, unexpired accounts	4	4	4
	Budget resources:			
	Unobligated balance:			
1000	Unobligated balance brought forward, Oct. 1	2,300	2,315	2,345
	Budget authority:			
	Spending authority form offsetting collections, mandatory:			
1800	Collected	19	34	25
1900	Budget authority (total)	19	34	25
1930	Total budgetary resources available	2,319	2,349	2,370
	Memorandum (non-add) entries:			
1941	Unexpired unobligated balance, end of year	2,315	2,345	2,366
	Change in obligated balance:			
	Unpaid obligations:			
3000	Unpaid obligations, brought forward, Oct. 1	2	2	2
3010	New Obligations, unexpired accounts	4	4	4
3020	Outlays (gross)	-4	-4	-2
3050	Unpaid obligations, end of year	2	2	4
	Memorandum (non-add) entries:			
3100	Obligated balance, start of year	2	2	2
3200	Obligated balance, end of year	2	2	4
	Budget authority and outlays net:			
	Mandatory:			
4090	Budget authority, gross	19	34	25
	Outlay, gross:			
4100	Outlays from new mandatory authority	3	2	2
4101	Outlays from mandatory balances	1	2	….
4110	Outlays, gross (total)	4	4	2
	Offsets against gross budget authority and outlays:			
	Offsetting collections (collected) from:			
4120	Federal Sources	….	-2	-2
4121	Interest on Federal securities	-19	-32	-23
4130	Offsets against gross budget authority and outlays (total)	-19	-34	-25

4170	Outlays, net (mandatory)	-15	-30	-23
4180	Budget authority, net (total)	….	….	….
4190	Outlays, net (total)	-15	-30	-23
	Memorandum (non-add) entries:			
5000	Total investments, SOY: Federal securities: Par value	2,302	2,217	2,313
5001	Total investments, EOY: Federal securities: Par value	2,217	2,313	2,230

The fund provides direct support for the aviation insurance program (chapter 443 of title 49, U.S. Code). In December 2014, Congress sunset part of the aviation insurance program. Specifically, Congress returned U.S. air carriers to the commercial aviation market for all of their war risk insurance coverage by ending the FAA's authority to provide war risk insurance for a premium. Pursuant to 49 USC 44305, the FAA may provide insurance without premium at the request of the Secretary of Defense, or the head of a department, agency, or instrumentality designated by the President when the Secretary of Defense or the designated agency head agrees to indemnify the Secretary of Transportation against all losses covered by the insurance. The "non-premium" aviation insurance program is authorized through September 30, 2023 in the National Defense Authorizations Act for 2020.

Object Classification
(in millions of dollars)

Identification code: 69-4120-0-3-402		FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
	Reimbursable obligations:			
11.1	Personnel compensation: Full-time permanent	….	1	1
25.2	Other services from non-Federal sources ……	1	1	1
42.0	Projected insurance claims and indemnities ……	3	2	2
99.9	Total new obligations, unexpired accounts ……	4	4	4

Employment Summary

Identification code: 69-4120-0-3-402		FY 2021 Actual	FY 2022 Estimate	FY 2023 Request
2001	Reimbursable Civilian full-time equivalent employment	2	4	4

ADMINISTRATIVE SERVICES FRANCHISE FUND

Program and Financing
(in millions of dollars)

Identification code: 69-4562-0-4-402		FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
	Obligations by program activity:			
0801	Accounting Services	39	50	52
0804	Information Services	110	143	129
0806	Multi Media	11	3	3
0807	FLLI (formerly CMEL/Training)	6	9	9
0808	International Training	2	2	2
0810	Logistics	287	292	294
0811	Aircraft Maintenance	61	57	62
0812	Acquisition	5	5	6
0900	Total new obligations, unexpired accounts	521	561	557
	Budgetary Resources:			
	Unobligated balance:			
1000	Unobligated balance brought forward, Oct 1	230	213	235
1021	Recoveries of prior year unpaid obligations	34	36	36
1050	Unobligated balance (total)	264	249	271
	Budget authority:			
	Spending authority from offsetting collections, discretionary:			
1700	Collected	470	547	542
1930	Total budgetary resources available	734	796	813
	Memorandum (non-add) entries:			
1941	Unexpired unobligated balance, end of year	213	235	256
	Change in obligated balances:			
	Unpaid obligations:			
3000	Unpaid obligations, brought forward, Oct 1	170	186	89
3010	New obligations, unexpired accounts	521	561	557
3020	Outlays (gross)	-471	-622	-578
3040	Recoveries of prior year unpaid obligations unexpired	-34	-36	-36
3050	Unpaid obligations, end of year	186	89	32
	Memorandum (non-add) entries:			
3100	Obligated balance, start of year	170	186	89
3200	Obligated balance, end of year	186	89	32
	Budget authority and Outlays, net:			
	Discretionary:			
4000	Budget authority, gross	470	547	542
	Outlays gross:			
4010	Outlays from new discretionary authority	362	372	369
4011	Outlays from discretionary balances	109	250	209

4020	Outlays, gross (total)	471	622	578
	Offsets against gross budget authority and outlays:			
	Offsetting collections (collected) from:			
4030	Federal sources	-404	-545	-540
4033	Non-Federal sources	-66	-2	-2
4040	Offsets against gross budget authority and outlays (total) ….	-470	-547	-542
4080	Outlays, net (discretionary)	1	75	36
4180	Budget authority, net (total)	….	….	….
4190	Outlays, net (total)	1	75	36

In 1997, the Federal Aviation Administration (FAA) established a franchise fund to finance operations where the costs for goods and services provided are charged to the users on a fee-for-service basis. The fund improves organizational efficiency and provides better support to FAA's internal and external customers. The activities included in this franchise fund are as follows: training, accounting, travel, duplicating services, multi-media services, information technology, materiel management (logistics), and aircraft maintenance.

Object Classification
(in millions of dollars)

Identification code: 69-4562-0-4-402		FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
	Reimbursable obligations:			
11.1	Personnel compensation: Full-time permanent	119	132	136
11.3	Other than full-time permanent……	1	1	1
11.5	Other personnel compensation……	5	5	5
11.9	Total Personnel compensation	125	138	142
12.1	Civilian personnel benefits	49	52	53
21.0	Travel and transportation of persons	4	8	8
22.0	Transportation of things	8	6	6
23.2	Rental payment to others	3	3	4
23.3	Communications, utilities, and miscellaneous charges	13	11	14
25.1	Advisory and assistance services……..	63	71	60
25.2	Other services from non-Federal sources	59	73	57
25.3	Other goods and services from Federal sources…..	15	17	14
25.4	Operation and maintenance of facilities……..	6	5	6
25.7	Operation and maintenance of equipment……	71	59	68
26.0	Supplies and materials	76	108	114
31.0	Equipment	5	4	4
32.0	Land and structures……..	2	2	2
44.0	Refunds……	22	4	5
99.9	Total new obligations, unexpired accounts	521	561	557

Employment Summary

Identification code: 69-4562-0-4-402		FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
2001	Reimbursable civilian full-time equivalent employment	1,367	1,416	1,416

AVIATION USER FEES

Special and Trust Fund Receipts
(in millions of dollars)

Identification code: 69-5422-0-2-402		FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
0100	Balance, start of year……	7	2	4
0198	Reconciliation Adjustment ……..	-3	……	……
0199	Balance, start of year ……	4	2	4
	Receipts:			
	Current Law:			
1110	Aviation User Fees, Overflight Fees …….	36	75	86
1130	Property Disposal or Lease Proceeds, Aviation User Fee ……..	9	……	……
1199	Total Current Law Receipts ……	45	75	86
1999	Total Receipts ….……	45	75	86
2000	Total: Balances and Receipts ……..……	49	77	90
	Appropriations:			
	Current Law:			
2101	Essential Air Service and Rural Airport Improvement Fund ….……	-7	-2	-4
2101	Aviation User Fee ……..	-45	-75	-86
2132	Essential Air Service and Rural Airport Improvement Fund …….	2	4	5
2199	Total current law appropriations ……	-50	-73	-85
2999	Total appropriations ……..……	-50	-73	-85
5098	Reconciliation adjustment……..……	3	……	……
5099	Balance, end of year ……..……	2	4	5

Program and Financing
(in millions of dollars)

Identification code: 69-5422-0-2-402		FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
	Obligations by program activity:			
0001	Land Proceeds …….…….	1	……	……
0100	Direct program activities, subtotal ……..….	1	……	……
0900	Total new obligations, unexpired accounts (object class 25.2)……	1	……	……
	Budgetary resources:			
	Unobligated balance:			
1000	Unobligated balance brought forward, Oct 1…	21	15	10
1010	Unobligated balance transferred to other accts			

	[069-5423]…….	-14	-5	……
1070	Unobligated balance (total)…….....	7	10	10
	Budget authority:			
	Appropriations, mandatory:			
1201	Appropriations (special or trust fund)……...	45	75	86
1220	Appropriations Transferred to other accounts			
	[069-5423]…….	-36	-75	-86
1260	Appropriations, mandatory (total)……...	9	……	……
1900	Budget authority (total)…….	9	……	……
1930	Total budgetary resources available …..……..	16	10	10
	Memorandum (non-add) entries:			
1941	Unexpired unobligated balance, end of year…….	15	10	10
	Change in obligated balance:			
	Unpaid obligations:			
3000	Unpaid Obligations, brought forward, Oct 1 …….	2	1	……
3010	New Obligations, unexpired accounts ……...	1	……	……
3020	Outlays (gross) ……	-2	-1	……
3050	Unpaid Obligations, end of the year ……	1	……	……
	Memorandum (non-add) entries:			
3100	Obligated balance, start of the year …….	2	1	……
3200	Obligated balance, end of the year …..……	1	……	……
	Budget authority and outlays, net:			
	Mandatory:			
4090	Budget authority, gross ……	9	……	……
	Outlays, gross:			
4101	Outlays from mandatory balances …..……	2	1	……
4180	Budget authority, net (total) ……	9	……	……
4190	Outlays, net (total) ……	2	1	……

The Federal Aviation Reauthorization Act of 1996 (P.L. 104–264) authorized the collection of user fees for air traffic control and related services provided by the Federal Aviation Administration to aircraft that neither take off nor land in the United States, commonly known as overflight fees. The Budget estimates that $86.2 million in overflight fees will be collected in 2023.

AIRPORT AND AIRWAY TRUST FUND

Program and Financing
(in millions of dollars)

Identification code: 69-8103-0-7-402		FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
	Memorandum (non-add) entries:			
5000	Total investments, start of year: Federal securities: Par value	7,900	15,902	13,020
5001	Total investments, end of year: Federal securities: Par value	15,902	13,020	10,892

Section 9502 of Title 26, U.S. Code, provides for amounts equivalent to the funds received in the U.S. Treasury for the passenger ticket tax and certain other taxes paid by airport and airway users to be transferred to the Airport and Airway Trust Fund. In turn, appropriations are authorized from this fund to meet obligations for airport improvement grants, Federal Aviation Administration facilities and equipment, research, operations, payment to air carriers, and for the Bureau of Transportation Statistics Office of Airline Information.

The status of the fund is as follows:

Status of Funds (in millions of dollars)

Identification code: 69-8103-0-7-402		FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
	Unexpended balance, start of year:			
0100	Balance, start of year	8,971	14,796	12,298
0999	Total balance, start of year	8,971	14,796	12,298
	Cash Income during the year:			
	Current law:			
	Receipts			
1110	Excise Taxes, Airport and Airway Trust Fund	8,184	14,369	17,642
1130	Grants-in-aid for Airports (Airport and Airway Trust Fund)	1	2	2
1130	Facilities and Equipment (Airport and Airway and Airport Trust Fund)	28	30	30
1130	Research, Engineering and Development (Airport and Airway Trust Fund)	0	0	0
1150	Interest, Airport and Airway Trust Fund	268	222	169
1160	General Fund Payment, Airport and Airways Trust Fund	14,000	0	0
1160	Facilities and Equipment (Airport and Airway			

	Trust Fund)….....	43	36	36
1160	Research, Engineering and Development (Airport and Airway Trust Fund) ……	8	9	9
1199	Income under present law …….	22,532	14,668	17,888
1999	Total cash income ……..	22,532	14,668	17,888
	Cash outgo during year:			
	Current law:			
2100	Payments to Air Carriers (021-04-8304-0)	-143	-169	-320
2100	Trust Fund Share of FAA Activities (Airport and Airway Trust Fund) (021-12-8104-0) ……	-10,272	-10,699	-9,981
2100	Grants-in-aid for Airports (Airport and Airway Trust Fund) (021-12-8106-0)	-8,837	-6,187	-5,379
2100	Facilities and Equipment (Airport and Airway Trust Fund) (021-12-8107-0)	-2,832	-2,917	-3,154
2100	Research, Engineering and Development (Airport and Airway Trust Fund) (021-12-8108-0).....	-167	-258	-286
2198	Adjustments…….....	5,544	3,064	1,547
2199	Outgo under current law (-).....	-16,707	-17,166	-17,573
2999	Total Cash outgo (-)	-16,707	-17,166	-17,573
	Surplus or Deficit:			
3110	Excluding interest …….	5,557	-2,720	146
3120	Interest …….	268	222	169
3199	Subtotal, surplus or deficit ……...	5,825	-2,498	315
3298	Rounding adjustment.....			
3299	Total adjustments			
3999	Total change in fund balance……..	5,825	-2,498	315
	Unexpended balance, end of year:			
4100	Un-invested balance (net), end of year.....	-1,106	-722	1,721
4200	Airport and Airway Trust Fund.....	15,902	13,020	10,892
4999	Total balance, end of year	14,796	12,298	12,613

TRUST FUND SHARE OF FAA ACTIVITIES
(AIRPORT AND AIRWAY TRUST FUND)

Program and Financing
(in millions of dollars)

Identification code: 69-8104-0-7-402		FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
	Obligations by program activity:			
0001	Payment to Operations	10,519	10,519	9,934
0900	Total new obligations, unexpired accounts (object class 94.0)	10,519	10,519	9,934
	Budgetary resources:			
	Appropriations, discretionary:			
	Budge authority:			
1101	Appropriations (special or trust)	10,519	10,519	9,934
1930	Total budgetary resources available	10,519	10,519	9,934
	Change in obligated balance:			
	Unpaid obligations:			
3000	Unpaid obligations, brought forward, Oct 1	775	1,022	842
3010	New obligations, unexpired accounts	10,519	10,519	9,934
3020	Outlays (gross)	-10,272	-10,699	-9,981
3050	Unpaid obligations, end of year	1022	842	795
	Memorandum (non-add) entries:			
3100	Obligated balance, start of year	775	1,022	842
3200	Obligated balance, end of year	1,022	842	795
	Budget authority and outlays, net:			
	Discretionary:			
4000	Budget authority, gross	10,519	10,519	9,934
	Outlays, gross:			
4010	Outlays from new discretionary authority	9,500	9,677	9,139
4011	Outlays from discretionary balances	772	1,022	842
4020	Outlays, gross (total)	10,272	10,699	9,981
4180	Budget authority, net (total)	10,519	10,519	9,934
4190	Outlays, net (total)	10,272	10,699	9,981

The 2023 Budget proposes $11.934 billion for Federal Aviation Administration Operations, of which $9.934 billion would be provided from the Airport and Airway Trust Fund.

FAA ADMINISTRATIVE PROVISIONS - REQUESTED

Sec. 110. The Administrator of the Federal Aviation Administration may reimburse amounts made available to satisfy section 41742(a)(1) of title 49, United States Code, from fees credited under section 45303 of title 49, United States Code, and any amount remaining in such account at the close of any fiscal year may be made available to satisfy section 41742(a)(1) of title 49, United States Code, for the subsequent fiscal year.

- In order to satisfy 49 U.S.C. 41742(a)(1), at the beginning of each fiscal year FAA makes available to the Essential Air Services (EAS) program funding from the Facilities & Equipment (F&E) account. This provision ensures that the F&E account is reimbursed from the over-flight fees collected and is needed in order to continue the practice in FY 2022.

Sec. 111. Amounts collected under section 40113(e) of title 49, United States Code, shall be credited to the appropriation current at the time of collection, to be merged with and available for the same purposes of such appropriation.

- As authorized under 49 USC 40113(e), the FAA may provide safety-related training and operational services to foreign aviation authorities with or without reimbursement. While FAA generally enforces a prepayment policy for reimbursable goods and services provided to foreign countries or international organizations, many have laws or regulations similar to the U.S. that prohibit advance payments. In those instances, FAA often receives payments for services provided during a fiscal year after that year has ended. This provision allows FAA to use the funds for additional technical assistance work that cannot be prepaid, instead of returning the funds to a lapsed appropriation.

Sec. 112. None of the funds made available by this Act shall be available for paying premium pay under subsection 5546(a) of title 5, United States Code, to any Federal Aviation Administration employee unless such employee actually performed work during the time corresponding to such premium pay.

- The provision stems from past legal action taken by air traffic controllers to receive premium pay for a full shift, even if only part of the shift was eligible for premium pay. The FAA recommends retaining this provision as a GP that would apply to all FAA accounts. FAA also recommends keeping this provision for FY 2023 in order to minimize potential payroll liability.

Sec. 113. None of the funds in this Act may be obligated or expended for an employee of the Federal Aviation Administration to purchase a store gift card or gift certificate through use of a Government-issued credit card.

- This provision prohibits FAA employees from using a government-issued credit card to purchase a store gift card or gift certificate. FAA recommends retaining this provision as a GP that would apply to all FAA accounts.

Sec. 114. Notwithstanding any other transfer restriction under this Act, not to exceed 10 percent of any appropriation made available for the current fiscal year for the Federal Aviation Administration by this Act or provided by previous appropriations Acts may be transferred between such appropriations for the Federal Aviation Administration, but no such appropriation except as otherwise specifically provided, shall be increased by more than 10 percent by any such transfer: Provided, That funds transferred under this section shall not be available for obligation unless the Committees on Appropriations of the Senate and the House of Representatives are notified 15 days in advance of such transfer: Provided further, That any transfer from an amount made available for obligation as discretionary grants-in-aid for airports pursuant to section 47117(f) of title 49, United States Code shall be deemed as obligated for grants-in-aid for airports under part B of subtitle VII of title 49, United States Code for the purposes of complying with the limitation on incurring obligations in this appropriations Act or any other appropriations Act under the heading "Grants in-Aid for Airports."

- The FY 2023 budget requests additional budget flexibility. While the FAA has long benefited from the ability to seek congressional approval to reprogram limited amounts within budget accounts, there has traditionally been no flexibility at the account level. This new authority will allow the FAA to request the transfer of up to 10 percent of any appropriation across accounts, provided that no account is increased by more than 10 percent. Such a transfer would be subject to approval by both congressional Committees on Appropriations.

Sec. 115. The Federal Aviation Administration Administrative Services Franchise Fund may be reimbursed after performance or paid in advance from funds available to the Federal Aviation Administration and other Federal agencies for which the Fund performs services.

- The 1997 Department of Transportation and Related Agencies Appropriations Act (P.L. 104-205) created the FAA's Administrative Services Franchise Fund and outlined its basic rules for operation. One of the provisions in that law stipulated that the Fund "…shall be paid in advance from funds available to the FAA and other Federal agencies for which such centralized services are performed…" This requirement for advances without exception creates inefficiencies in operations as service providers spend resources to ensure timely advances on approximately 1,500 active agreements annually, regardless of amount. While this original language requires strict compliance for collection of funds in advance of performance services, the requested provision provides flexibility in the collection of advances. The flexibility allowed by this provision will not change the requirement for service providers to ensure timely advances, but will allow service providers to prioritize efforts and gain efficiencies. Through financial oversight and the use of operating reserve, the FAA Franchise Fund maintains sufficient funds available to continue operations. The flexibility of the payment timing allowed under this provision does not jeopardize operations or solvency of the Fund. This flexibility is also in accordance with how similar funds in other Federal agencies (such as the Department of Interior, authorized in P.L. 108-7) are allowed to operate.

Section 4. Research
Development & Technology

Department of Transportation
FY 2023 Budget
Federal Aviation Administration
Research, Development, & Technology Budget
(Budget Authority in Thousands)

Budget Account	FY 2021 Enacted	FY 2022 CR	FY-2023 Request	Applied	Technology Transfer	Facilities	Experimental Development	Major Equipment, R&D Equipment
Research, Engineering & Development	**198,000**	**198,000**	**260,500**	**255,019**		**5,481**		
Fire Research and Safety	7,136	7,576	7,367	7,367				
Propulsion and Fuel Systems	4,215	3,121	5,471	5,471				
Advanced Materials /Structural Safety	14,720	1,678	2,886	2,886				
Aircraft Icing	6,426	2,472	3,353	3,353				
Digital System Safety	-	3,689	5,287	5,287				
Continued Air Worthiness	11,269	8,829	12,430	12,430				
Aircraft Catastrophic Failure Prevention Research	1,565	-	-	-				
Flight deck/Maintenance/System Integration Human Factors	7,469	13,801	15,292	15,292				
System Safety Management/Terminal Area Safety	5,485	7,898	10,111	10,111				
Air Traffic Control/Technical Operations Human Factors	5,685	5,911	5,911	5,911				
Acromedical Research	10,235	13,257	10,000	10,000				
Weather Program	6,236	12,786	16,178	16,178				
Unmanned Aircraft Systems Research	24,035	22,077	14,935	14,935				
Alternative Fuels for General Aviation	2,524	4,986	12,385	12,385				
Emerging Technology Accelerator (ETA)	-	-	10,000	10,000				
Commercial Space Transportation Safety	5,840	5,708	5,708	5,708				
Wake Turbulence	3,698	3,728	3,728	3,728				
NextGen - Air Ground Integration Human Factors	6,000	3,000	-	-				
NextGen - Weather Technology in the Cockpit	1,982	3,028	3,028	3,028				
NextGen - Flight Data Exchange	1,000	1,000	-	-				
Information/Cyber Security	4,769	4,769	5,500	5,500				
Environment & Energy	20,303	20,336	21,163	21,163				
NextGen – Environmental Research – Aircraft Technologies and Fuels	31,465	33,476	73,976	73,976				
Airliner Cabin Environment Research	-	-	-	-				
System Planning and Resource Management	13,022	4,141	4,141	4,141				
Aviation Workforce Development - Section 625	-	5,752	6,169	6,169				
William J. Hughes Technical Center Laboratory Facilities	2,921	4,981	5,481	-		5,481		
Facilities & Equipment	**214,600**	**216,500**	**218,200**			**31,900**	**186,300**	
Advanced Technology Development and Prototyping	26,600	29,000	25,300				25,300	
Plant	26,900	32,900	31,900			31,900		
NextGen Research & Development	104,100	97,600	104,000				104,000	
Center for Advanced Aviation System Development (CAASD)	57,000	57,000	57,000				57,000	
Grants-In-Aid for Airports	**55,666**	**55,666**	**55,828**	**55,828**				
Airport Technology Research	40,666	40,666	40,828	40,828				
Airport Cooperative Research	15,000	15,000	15,000	15,000				
Administrative - Ops	**10,293**	**16,418**	**17,154**				**17,154**	
Total	**478,559**	**486,584**	**551,682**	**310,847**	**-**	**37,381**	**203,454**	**-**

Exhibit IV-2 FY 2023 Budget Request – RD&T Program Funding by DOT Strategic Goal

Department of Transportation
FY 2023 Budget
Federal Aviation Administration
Research, Development, & Technology Budget
(Budget Authority in Thousands)

ACCOUNT/PROGRAM	FY-2023 President's Budget	DOT STRATEGIC GOALS					
		SAFETY	ECONOMIC GROWTH	EQUITY	CLIMATE SOLUTIONS	TRANSFORMATION	ORGANIZATIONAL EXCELLENCE
Research, Engineering & Development	**260,500**	**105,219**	**15,708**	**6,169**	**112,995**	**10,787**	**9,622**
Fire Research and Safety	7,367	7,367					
Propulsion and Fuel Systems	5,471				5,471		
Advanced Materials /Structural Safety	2,886	2,886					
Aircraft Icing	3,353	3,353					
Digital System Safety	5,287					5,287	
Continued Air Worthiness	12,430	12,430					
Aircraft Catastrophic Failure Prevention Research	-	-					
Flight deck/Maintenance/System Integration Human Factors	15,292	15,292					
System Safety Management/Terminal Area Safety	10,111	10,111					
Air Traffic Control/Technical Operations Human Factors	5,911	5,911					
Aeromedical Research	10,000	10,000					
Weather Program	16,178	16,178					
Unmanned Aircraft Systems Research	14,935	14,935					
Alternative Fuels for General Aviation	12,385				12,385		
Emerging Technology Accelerator (ETA)	10,000		10,000				
Commercial Space Transportation Safety	5,708		5,708				
Wake Turbulence	3,728	3,728					
NextGen - Weather Technology in the Cockpit	3,028	3,028					
Information/Cyber Security	5,500					5,500	
Environment & Energy	21,163				21,163		
NextGen – Environmental Research – Aircraft Technologies and Fuels	73,976				73,976		
System Planning and Resource Management	4,141						4,141
Aviation Workforce Development - Section 625	6,169			6,169			
William J. Hughes Technical Center Laboratory Facilities	5,481						5,481
Facilities & Equipment	**218,200**		**57,000**	-	-	**161,200**	-
Advanced Technology Development and Prototyping	25,300					25,300	
Plant	31,900					31,900	
NextGen Research & Development	104,000					104,000	
Center for Advanced Aviation System Development (CAASD)	57,000		57,000				
Grants-In-Aid for Airports	**55,828**	**18,525**	**10,325**	**4,350**	**8,000**	**14,628**	-
Airport Technology Research	40,828	12,525	8,825	3,600	7,250	8,628	
Airport Cooperative Research	15,000	6,000	1,500	750	750	6,000	
Administrative - Ops	**17,154**					**17,154**	
Total	**551,682**	**123,744**	**83,033**	**10,519**	**120,995**	**203,769**	**9,622**

Research, Development and Technology: This **$551.6 million** budget request supports the Department's Safety, Economic Growth, Equity, Climate Solutions, Transformation and Organizational Excellence goals through FAA's applied research on new and advanced technologies. These research efforts enable the timely and safe introduction of technologies and improves performance across all elements of the aviation system. Of this amount, **$123.7 million** supports the Departments safety goal, **$83 million** supports the Department's economic growth strategic goal, **$10.5 million** supports the equity goal, **$121 million** supports the climate solutions goal, **$203.8 million** supports the Department's transformation goal and **$9.6 million** supports the Department's organizational excellence goal. Noteworthy investments include:

Safety

- **Unmanned Aircraft Systems (UAS): $15 million (R,E&D)** is requested to support research to inform capabilities such as expanded operations, small UAS package delivery operations, integrated operations, routine/scheduled operations,

large carrier cargo operations, and passenger transport operations. The integration of UAS into the National Airspace System (NAS) is evolving to missions beyond visual line of sight and operations predominately using electric propulsion. Therefore, their integration into the aviation transport domain will have a transformative impact on reducing aviation-related emissions and the goal of net-zero emissions for our economy by 2050. The requested funds also support continued efforts using UAS as a learning platform for science, technology, engineering and math (STEM) outreach efforts with minority K-12 students.

- **Airport Technology Research: $12.5 million (AIP)** is requested for the program to continue research in airport safety, to advance pavement research specific to airports, and to support the safe and efficient integration of new and innovative technologies into the airport environment. Research areas include the development of infrastructure standards for Advanced Air Mobility vehicles, continued testing of new environmentally-friendly firefighting agents, field performance monitoring of solar technology for runway and taxiway lights, development of smart technologies to monitor runway conditions, integrating machine learning and artificial intelligence techniques into airport safety and performance monitoring, and the continued evaluation of more resilient and environmentally-friendly pavement materials.
- **Airport Cooperative Research program: $6 million (AIP)** is requested to continue research into a variety of topics as selected by an industry-led panel that are valuable and timely to airport operators. Topics are relevant to airport administration, environment, policy and planning, safety, security, human resource management, airport design, construction, maintenance, and operations. Research areas include identification of carbon-capture technologies that can be integrated into airports; creating and refining noise models for conventional, urban air mobility, and commercial space operations; creating strategies and guidance for parking and landside accommodations of autonomous vehicles; enhancing public transit access to airports; and identifying how airports can address economic and environmental justice issues within their communities. These topics are solicited from the airport community at large and reflect the sense of the industry on emerging issues that the airport industry will confront in the next 3-5 years.

Economic Growth

- **Commercial Space Transportation Safety Program: $5.7 million (R,E&D)** is requested to support research for the safe integration of commercial space operations into the NAS, spaceport infrastructure, systemic safety initiatives, and regulatory reform. This program executes research through development of activities addressing maturation of technologies through flight testing and collaborative activities executed within a research consortium. Research projects spanning 2-3 years are awarded to teams of 3-5 members, including government, industry, non-profit sector, and academic actors.
- **Emerging Technology Accelerator (ETA)**: **$10 million (R,E&D)** is requested to support a program for engaging innovators across the nation in the development and application of emerging science and technology to address specified air transportation system challenges. The air transportation system of the future is envisioned to be one that accommodates a growing diversity of air vehicles and airspace operations that are safely enabled by new services driven by an integrated information environment. Achieving that vision requires an innovation environment that attracts talent from all sectors of society, lowers the barriers for advancing and presenting promising technology, and creates a space

for meaningful demonstration and validation of innovation that enables future operational concepts or addresses vexing operational issues. The program aims to discover and leverage advances in technologies, tools, and methods that can lead to transformation in aviation operations and its supporting infrastructure, thereby improving air transportation safety, efficiency and mitigating the impact of aviation on climate change.

Equity

- **Aviation Workforce Development: $6.2 million (RE&D)** is requested to continue supporting two congressionally mandated grant programs. In response to projected workforce shortages in Aircraft Pilots and Aviation Maintenance Workers, the United States Congress granted the FAA authority (i.e. reauthorization of 2018) to establish two separate Aviation Workforce Development Grant Programs; Aircraft Pilots Workforce Development Grant Program and Aviation Maintenance Technical Workforce Development Grant Program. The goal of these programs is to support education, recruitment and development of the aviation workforce. The Aviation Workforce Development grant program will provide support to administer grants for eligible projects that educate, develop, and recruit aircraft pilots and an aviation maintenance technical workforce.

Climate Solutions

- **NextGen Environmental Research: $73.9 million (R,E&D)** is requested to support efforts to develop new aircraft and engine technologies, and advance sustainable aviation fuels in line with the Administration commitments on climate change and the environment. Through the Continuous Lower Energy Emissions and Noise (CLEEN) program, the FAA and industry are working together to develop technologies that will enable manufacturers to create aircraft and engines with lower noise and emissions, and improved fuel efficiency. Funding from this program also supports efforts by ASCENT — the FAA's Center of Excellence (COE) for Alternative Jet Fuels and Environment. CLEEN is estimated to save the aviation industry 36 billion gallons of fuel by 2050, resulting in CO2 reductions that are equivalent to removing three million cars from the road from 2020 to 2050. The technologies from the first phase of CLEEN are estimated to decrease land area exposed to noise by 14 percent.
- **Alternative Fuels – General Aviation**: **$12.4 million (R,E&D)** is requested to support continuing research, analyses and tests leading to the replacement of leaded aviation gasoline with a high-octane, safe unleaded alternative that reduces the impact of general aviation operations on climate change and air quality. Aviation gasoline (avgas) is the only remaining transportation fuel in the United States that contains lead. More than 170,000 piston-engine aircraft used in general aviation rely on this fuel for safe operation.

Transformation

- **Digital System Safety Program: $5.3 million (R,E&D)** is requested to support research on the application of advanced digital technologies such as artificial intelligence (AI) and machine learning (ML) in safety-critical aircraft systems to enable increasingly efficient and safe flight management. New digital technologies are revolutionizing air travel across the world and are making flights more efficient and eco-friendly. These

technologies enable industry to optimize routes leading to reduced emissions that contribute towards mitigating aviation's impact on climate change. Additionally, this research improves security and provides crucial timely information to pilots. For the flying public this ultimately leads to greater on time predictability and air travel safety.

- **NextGen Unmanned Aircraft Systems (UAS): $15 million (F&E)** is requested to support research that allows integration of UAS without impact to manned aircraft operations or creating disruptions or delays, and will ensure National Airspace System operations will be as safe as they are today. The UAS operators will be allowed more operations that cost less, are better for the environment, and have the ability to operate in extreme conditions while lowering risk to human life. This program has three core pre-implementations tasks. The first task is validating concepts and developing requirements for enabling and managing small UAS operations in airspace where no air traffic control services exist today - above ground and below 400 feet. The second task is developing concepts, use cases, and requirements for a Flight Information Management System that will to safely manage UAS operations primarily through operator-operator sharing of flight intent and operator-FAA sharing of flight intent and airspace constraints. The third task explores the safe integration of Urban Air Mobility operations into the national airspace, which may need to operate within both UAS Traffic Management and Air Traffic Management environments.
- **NextGen On Demand NAS Information (ODNI): $8.5 million (F&E)** is requested to conduct pre-implementation work to reduce risk in supporting the efficient and secure exchange of information within the FAA as well as between the FAA and other national airspace system users. This portfolio provides flight planners, air navigation service providers, and flight crews with reliable information on changes in conditions throughout the national airspace system. The development of a standard set of flight information will simplify the flight planning process and provide information that will cross multiple Air Traffic Control systems and domains with ease, leading to improvements in on-going traffic management initiatives and decision-making.
- **NextGen NAS Infrastructure: $25.5 million (F&E)** is requested to conduct pre-implementation activities to reduce risk for aviation weather-related and cross cutting engineering issues. This program provides the research, development, and analysis of validation activities, human system engineering, and demonstrations to improve the efficiency and effectiveness of air traffic management. Funding will support the development of concepts to address navigational needs, identify and document shortfalls for the current applications in support of Air Traffic Control and the development of an automation evolution strategy and ubiquitous communications framework.

Organizational Excellence

- **System Planning and Resource Management Program: $4.1 million (R,E&D)** is requested to plan, coordinate, develop, present, and review the FAA's research and development (R&D) portfolio. The program facilitates and coordinates the FAA's R&D Executive Board (REB), a group of senior executives representing the major FAA R&D sponsors. The REB ensures research priorities meet the FAA's strategic goals and objectives while optimizing the overall R&D portfolio. This process helps ensure the FAA's research meets the president's criteria for R&D, increases program efficiency, sustains and maintains management of the program within operating cost targets, and enables effective program review by the Research, Engineering and Development Advisory Committee (REDAC), and DOT's Office of the Assistant Secretary for Research and Technology (OST-R).

- **William J. Hughes Technical Center Laboratory Facilities: $5.5 million (R,E&D)** is requested to sustain the specialized laboratories located at the Technical Center used to support R&D program goals and objectives. Funding supports the existing laboratory infrastructure, as well as R&D facility modifications and improvements, project/engineering support, equipment, software/hardware licenses, and support tools. Numerous R&D programs use the laboratory facilities to conduct research activities that encompass current day capabilities and the ongoing transition to NextGen technologies.

For more information on these programs see Section III.

Section 5.
Information Technology

INFORMATION TECHNOLOGY
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
BUDGET AUTHORITY

($000)

Budget Account	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request
Operations	**$1,658,756**	**$1,601,923**	**$1,698,049**
Commodity IT SS WCF	*$9,466*	*$9,264*	*$15,059*
Modal IT	*$1,649,290*	*$1,592,659*	*$1,682,990*
Facilities & Equipment (F&E)	**$1,499,573**	**$1,549,992**	**$1,570,802**
Commodity IT SS WCF	*$0*	*$0*	*$0*
Modal IT	*$1,499,573*	*$1,549,992*	*$1,570,802*
Total	**$3,158,329**	**$3,151,915**	**$3,268,851**

Note: This funding data is as of February 22, 2022

The Federal Aviation Administration requests $3.27 billion in FY 2023 for information technologies (IT) that support the full spectrum of FAA programs as well as the Department's initiative to transform and consolidate the management of certain IT solutions centrally by the Office of the Chief Information Officer (OCIO).

Commodity IT Shared Services (SS) through the Working Capital Fund

OCIO will continue to provide all modes Commodity IT Shared Services in FY 2023 to achieve economies of scale and increase consistency of cybersecurity protections across the Department. Commodity IT Shared Services include IT functions and activities dedicated to basic support services, including network operations, end-user computing, telecommunications services, and server operations.

- The budget requests **$15.1 million** in the Operations account for Commodity IT Shared Services. FAA's share was based on actual commodity IT consumption in prior years as well as planned future consumption. OCIO, in collaboration with FAA, assumed a one-to-one cost estimate to transition all commodity IT to OCIO. FAA will only be charged for services rendered.

Modal IT

The following major mission-critical IT systems will be maintained by FAA in FY 2023. This list is only a subset of all IT systems that support FAA and are reported in the Office of Management and Budget's Corporate Investment Management System.

- **Automatic Dependent Surveillance – Broadcast (ADS-B) National Airspace System (NAS) Wide Implementation –** The budget requests **$155.2 million** in the Facilities and Equipment (F&E) account to support the sustainment of ADS-B services. ADS-B reduces delays and enhances safety by using an aircraft's broadcasted position instead of position information from traditional radar. It benefits the American public by providing more efficient use of airspace capacity, fewer flight delays, and more optimal routing for aircraft.

- **Terminal and En Route Surveillance Portfolio –** The budget requests **$117.4 million** in the F&E account to consolidate, prioritize, and manage sustainment activities for the ground-based radar surveillance systems until they are replaced or divested from the national airspace system. The current stock of FAA Primary Surveillance Radars and Secondary Surveillance Radars are aging. This inventory includes systems such as the Air Traffic Control Beacon Interrogator-5 and the Airport Surveillance Radar-8, which were both originally fielded in the 1970s, and the Airport Surveillance Radar Model 9, which was originally fielded in the mid-1980s. While many of these systems will eventually be replaced, they must be maintained until replacement systems are fully fielded, preventing gaps in radar coverage. Many of these radar systems will remain in place and require sustainment past 2035.

- **En Route Automation Modernization (ERAM) System Enhancements and Technology Refresh -** The budget requests **$108.2 million** in the F&E account to replace equipment that is approaching the end-of-life and hardware being discontinued by the manufacturer, which will sustain the safety critical Air Traffic operations as well as lower system life cycle cost. The ERAM System is the main tool used by air traffic controllers to separate aircraft in the En Route sector and it improves the efficiency and effectiveness of En Route section operations.

- **Data Communications (Data Comm) in Support of NextGen** – The budget requests **$108.1 million** in the F&E account for the payment of network services to support the existing Data Comm infrastructure. Data Comm improves air traffic controller efficiency and will improve NAS capacity and reduce delays

resulting in estimated passenger value of time savings of $11.3 billion for Tower and Initial En Route Services over the program life cycle.

- **Wide Area Augmentation System (WAAS) for Global Positioning System (GPS) –** The budget requests **$91.8 million** in the F&E account for the continuation of correction calculations and integrity messages for each GPS satellite. The WAAS messages are broadcast to user receivers via leased navigation transponders on three commercial geostationary (GEO) satellites. Aircraft receivers apply corrections and from the WAAS satellite network, to obtain a precise three dimensional navigation position. The WAAS program directly supports NAS modernization by replacing ground based navigation aids with satellite navigation technology and reduces the impact of constrained aircraft navigation due to the location of ground-based Navigation Aids. WAAS allows aircraft the flexibility of point-to-point flight operations.

Information Technology System Support – The budget requests **$2.72 billion** for maintenance of nearly 324 Federal Information Security Management Act reportable systems, which include 64 mission critical systems. Funding will also be used to migrate and modernize legacy systems to provide risk management, security, and common information management capabilities and services across the FAA; to include the airspace, navigation facilities and airports of the United States along with their associated information, services, rules, regulations, policies, procedures, personnel and equipment.

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Section 6. Ten-Year Tables

FEDERAL AVIATION ADMINISTRATION

OPERATIONS

ESTIMATES		APPROPRIATIONS	
2012	[1]9,823,000,000	2012	[2]9,653,395,000
2013	[3]9,517,948,000	2013	[4]9,653,395,000
		2013 Sequester (P.L.112-240)	[5]-485,623,489
		2013 Rescission (P.L. 113-6)	[6]-19,307,790
2014	[7]9,707,000,000	2014	[8]9,651,422,000
2015	[9]9,750,000,000	2015	[10]9,740,700,000
2016	[11]9,915,000,000	2016	[12]9,909,724,000
2017	[13]9,994,352,000	2017	[14]10,025,852,000
2018	[15]9,890,886,000	2018	[16]10,211,754,000
		2018 Supplemental (P.L. 115-123)	[17]35,000,000
2019	[18]9,931,312,000	2019	[19]10,410,758,000
2020	[20]10,340,000,000	2020	[21]10,630,000,000
2021	[22]11,001,500,000	2021	[23]11,001,500,000
2022	[24]11,434,100,000	2022	...11,414,100,000
2023	[25]11,933,821,000		

FEDERAL AVIATION ADMINISTRATION

[1] Includes $4,958,000,000 from the Airport and Airway Trust Fund.
[2] Includes $5,060,694,000 from the Airport and Airway Trust Fund.
[3] Includes $6,721,000,000 from the Airport and Airway Trust Fund.
[4] Reflects funding at the FY 2012 funding level pursuant to P.L. 113-6, Consolidated and Further Continuing Appropriations Act, 2013.
[5] FY 2013 funds sequestered pursuant to the Budget Control Act of 2011 as Amended by The American Taxpayer Relief Act of 2012 (P.L. 112-240).
[6] Reflects a 0.20 percent across-the-board rescission per P.L. 113-6.
[7] Includes $6,484,000,000 from the Airport and Airway Trust Fund.
[8] Includes $6,495,208,000 from the Airport and Airway Trust Fund.
[9] Includes $9,040,850,000 from the Airport and Airway Trust Fund.
[10] Includes $8,595,000,000 from the Airport and Airway Trust Fund.
[11] Includes $8,547,000,000 from the Airport and Airway Trust Fund.
[12] Includes $7,922,000,000 from the Airport and Airway Trust Fund.
[13] Includes $7,608,000,000 from the Airport and Airway Trust Fund.
[14] Includes $9,173,000,000 from the Airport and Airway Trust Fund.
[15] Includes $8,100,000,000 from the Airport and Airway Trust Fund.
[16] Includes $8,886,000,000 from the Airport and Airway Trust Fund.
[17] Supplemental funding from the Further Additional Supplemental Appropriations for Disaster Relief Requirements Act, 2018 (P.L. 115-123)
[18]Includes $8,632,721,000 from the Airport and Airway Trust Fund.
[19]Includes $9,833,400,000 from the Airport and Airway Trust Fund.
[20] Includes $9,364,085,000 from the Airport and Airway Trust Fund.
[21] Includes $10,519,000,000 from the Airport and Airway Trust Fund.
[22] Includes $11,001,500,000 from the Airport and Airway Trust Fund.
[23] Includes $10,519,000,000 from the Airport and Airway Trust Fund.
[24] Includes $8,434,000,000 from the Airport and Airway Trust Fund.
[25] Include 9,933,821,000 from the Airport and Airway Trust Fund.

FACILITIES AND EQUIPMENT
(AIRPORT AND AIRWAY TRUST FUND)

ESTIMATES		APPROPRIATIONS	
2012	3,120,000,000	2012	2,730,731,074
2013	2,850,000,000	2013	[26]2,730,731,074
		2013 Supplemental (P.L. 113-2)	[27]30,000,000
		2013 Sequester (P.L.11-240)	[28]-141,642,505
		2013 Rescission (P.L. 113-6)	[29]-5,461,462
2014	2,777,798,000	2014	2,600,000,000
2015	2,603,700,000	2015	2,600,000,000
2016	2,855,000,000	2016	2,855,000,000
2017	2,838,000,000	2017	2,855,000,000
2018	2,766,200,000	2018	3,250,000,000
		2018 Supplemental (P.L. 115-123)	[30]79,600,000
2019	2,766,572,000	2019	3,000,000,000
2020	3,295,000,000	2020	3,045,000,000
2021	3,000,000,000	2021	3,015,000,000
2022	3,410,000,000	2022	2,892,888,000
		2022 Hurricane Relief	[31]100,000,000
		2022 IIJA Supplemental	[32]1,000,000,000
2023	[33]3,015,000,000	2023 IIJA Supplemental	[34]1,000,000,000
		2024 IIJA Supplemental	[35]1,000,000,000
		2025 IIJA Supplemental	[36]1,000,000,000
		2026 IIJA Supplemental	[37]1,000,000,000

[26] Reflects funding at the FY 2012 funding level pursuant to P.L. 113-6, Consolidated and Further Continuing Appropriations Act, 2013.
[27] Hurricane Sandy Emergency Supplemental, P.L. 113-2
[28] FY 2013 funds sequestered pursuant to the Budget Control Act of 2011 as Amended by The American Taxpayer Relief Act of 2012 (P.L. 112-240). Includes $2,770,000 in offsetting collections.
[29] Reflects a 0.20 percent across-the-board rescission per P.L. 113-6.
[30] Supplemental funding from the Further Additional Supplemental Appropriations for Disaster Relief Requirements Act, 2018 (P.L. 115-123)
[31] Extending Government Funding and Delivering Emergency Assistance Act, 117-43 from the General Fund.
[32] Infrastructure Investment and Jobs Act, P.L. 117-58 from the General Fund.
[33] Does not include funding from Infrastructure Investment and Jobs Act.
[34] Infrastructure Investment and Jobs Act, P.L. 117-58 from the General Fund.
[35] Infrastructure Investment and Jobs Act, P.L. 117-58 from the General Fund.
[36] Infrastructure Investment and Jobs Act, P.L. 117-58 from the General Fund.
[37] Infrastructure Investment and Jobs Act, P.L. 117-58 from the General Fund.

FEDERAL AVIATION ADMINISTRATION

RESEARCH, ENGINEERING, AND DEVELOPMENT
(AIRPORT AND AIRWAY TRUST FUND)

ESTIMATES		APPROPRIATIONS	
2012	190,000,000	2012	167,556,000
2013	180,000,000	2013	[32]167,556,000
		2013 Sequester (P.L.112-240)	[33]-8,429,072
		2013 Rescission (P.L. 113-6)	[34] -335,112
2014	166,000,000	2014	158,792,000
		2014 Rescission	[35]-26,183,998
2015	156,750,000	2015	156,750,000
2016	166,000,000	2016	166,000,000
2017	167,500,000	2017	176,500,000
2018	150,000,000	2018	188,926,000
2019	74,406,000	2019	191,100,000
2020	120,000,000	2020	192,665,000
2021	170,000,000	2021	198,000,000
2022	258,500,000	2022	248,500,000
2023	260,500,000		

[32] Reflects funding at the FY 2012 funding level pursuant to P.L. 113-6, Consolidated and Further Continuing Appropriations Act, 2013.
[33] FY 2013 funds sequestered pursuant to the Budget Control Act of 2011 as Amended by The American Taxpayer Relief Act of 2012 (P.L. 112-240).
[34] Reflects a 0.20 percent across-the-board rescission per P.L. 113-6.
[35] Reflects a $26,183,998 rescission, per P.L. 113-76.

FEDERAL AVIATION ADMINISTRATION

GRANTS-IN-AID FOR AIRPORTS
(LIQUIDATION OF CONTRACT AUTHORIZATION)
(AIRPORT AND AIRWAY TRUST FUND)

ESTIMATES		APPROPRIATIONS	
2012	3,600,000,000	2012	3,435,000,000
2013	3,400,000,000	2013	3,435,000,000
2014	3,200,000,000	2014	3,200,000,000
2015	3,200,000,000	2015	3,200,000,000
2016	3,500,000,000	2016	3,600,000,000
2017	3,500,000,000	2017	3,750,000,000
2018	3,000,000,000	2018	3,350,000,000
		2018 Supplemental	[42]1,000,000,000
2019	3,000,000,000	2019	3,350,000,000
		2019 Supplemental	[43]500,000,000
2020	3,000,000,000	2020	3,350,000,000
		2020 Supplemental	[44]400,000,000
		CARES Act	[45]10,000,000,000
2021	3,350,000,000	2021	3,350,000,000
		2021 Supplemental	[46]400,000,000
		CRRSA Act	[47]2,000,000,000
2022	3,350,000,000	2022	3,350,000,000
		2022 Supplemental	[48]554,180,000
2023	3,350,000,000		

[42] FY 2018 Consolidated Appropriations Act (P.L. 115-141) from the General Fund.
[43] FY 2019 Consolidated Appropriations Act (P.L. 116-6) from the General Fund.
[44] FY 2020 Consolidated Appropriations Act (P.L. 116-94) from the General Fund.
[45] CARES Act (P.L. 116-136) from the General Fund.
[46] FY 2021 Consolidated Appropriations Act (P.L. 116-260) from the General Fund.
[47] Coronavirus Response and Relief Supplemental Appropriations Act (P.L. 116-260) from the General Fund.
[48] FY 2022 Consolidated Appropriations Act (P.L. 117-103) from the General Fund.

FEDERAL AVIATION ADMINISTRATION

GRANTS-IN-AID FOR AIRPORTS
LIMITATION ON OBLIGATIONS
(AIRPORT AND AIRWAY TRUST FUND)

ESTIMATES		APPROPRIATIONS	
2012	(2,424,000,000)	2012	(3,350,000,000)
2013	(2,424,000,000)	2013	[49](3,343,300,000)
2014	(2,900,000,000)	2014	(3,350,000,000)
2015	(2,900,000,000)	2015	(3,350,000,000)
2016	(2,900,000,000)	2016	(3,350,000,000)
2017	(2,900,000,000)	2017	(3,350,000,000)
2018	(3,350,000,000)	2018	(3,350,000,000)
2019	(3,350,000,000)	2019	(3,350,000,000)
2020	(3,350,000,000)	2020	(3,350,000,000)
2021	(3,350,000,000)	2021	(3,350,000,000)
2022	(3,350,000,000)	2022	(3,350,000,000)
2023	(3,350,000,000)		

49 Reflects funding at the FY 2012 funding level pursuant to P.L. 113-6, Consolidated and Further Continuing Appropriations Act, 2013, minus the 0.20% across-the-board rescission.

FEDERAL AVIATION ADMINISTRATION

RELIEF FOR AIRPORTS

ESTIMATES		APPROPRIATIONS	
2021	0	2021	[1]8,000,000,000
2022	0	2022	0
2023	0		

[1] American Rescue Plan (P.L. 117-2) from the General Fund.

FEDERAL AVIATION ADMINISTRATION

Employee Leave Fund

ESTIMATES		APPROPRIATIONS	
2021	0	2021	[2]9,000,000
2022	0	2022	0
2023	0		

[2] American Rescue Plan (P.L. 117-2) from the General Fund.

IIJA Supplemental (Division J)
Airport Infrastructure Grants

ESTIMATES		APPROPRIATIONS	
2022	0	2022	[1]3,000,000,000
2023	0	2023	[2]3,000,000,000
		2024	[3]3,000,000,000
		2025	[4]3,000,000,000
		2026	[5]3,000,000,000

[1] Infrastructure Investment and Jobs Act, P.L. 117-58 from the General Fund.
[2] Infrastructure Investment and Jobs Act, P.L. 117-58 from the General Fund.
[3] Infrastructure Investment and Jobs Act, P.L. 117-58 from the General Fund.
[4] Infrastructure Investment and Jobs Act, P.L. 117-58 from the General Fund.
[5] Infrastructure Investment and Jobs Act, P.L. 117-58 from the General Fund.

IIJA Supplemental (Division J)
Airport Terminal Program

ESTIMATES		APPROPRIATIONS	
2022	0	2022	[1]1,000,000,000
2023	0	2023	[2]1,000,000,000
		2024	[3]1,000,000,000
		2025	[4]1,000,000,000
		2026	[5]1,000,000,000

[1] Infrastructure Investment and Jobs Act, P.L. 117-58 from the General Fund.
[2] Infrastructure Investment and Jobs Act, P.L. 117-58 from the General Fund.
[3] Infrastructure Investment and Jobs Act, P.L. 117-58 from the General Fund.
[4] Infrastructure Investment and Jobs Act, P.L. 117-58 from the General Fund.
[5] Infrastructure Investment and Jobs Act, P.L. 117-58 from the General Fund.

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Section 7. Realignment Proposal

Realignment to Enhance Research & Development, Innovation, and NAS Modernization

As the FAA marks the completion of substantial NextGen foundational elements and positions itself for the future, FAA is proposing to align its organizational resources to meet new challenges in the decades to come. The key elements of the strategy required to meet modernization needs include a more focused Research and Development organization to look ahead to the future, an Integration and Engagement Office to facilitate more rapid adoption of aviation industry innovation, and a Chief Technology Officer (CTO) to drive the continued modernization of the airspace system.

Brought together, these organizational elements, which combined encompass 927 full time permanent positions and $360.0 million in FY 2023 resources, will position the FAA to meet the challenges of tomorrow. The changes in this proposed realignment are base transfers within the budget with no additional positions or funding requested to support the reorganization. A description of the new organizations follows, with a detailed funding table (Exhibit 1) and organization charts (Exhibit 2 and Exhibit 3) provided at the end of this section.

- **Evolve the Office of NextGen to the Office of Research and Development** (ARD)**,** headed by an Assistant Administrator for Research and Development. This office would retain the Tech Center in its entirety, its test and evaluation function, and cybersecurity reviews of FAA programs. This will provide an enterprise-wide approach to research and development while also meeting the requirement and goal of the 2018 Reauthorization.

- **Establish the Office of Integration & Engagement** and transfer the Office of Unmanned Aircraft Systems Integration into this new office reporting directly to the FAA Administrator. This will provide a high profile "gateway" for cutting-edge technology and to ensure Unmanned Aircraft Systems (UAS)/Advanced Air Mobility (AAM) issues remain priorities across the agency.

- **Establish the CTO position** and office reporting to the Chief Operating Officer of the Air Traffic Organization. The National Airspace System (NAS) engineering and modernization will improve and meet the reauthorization requirement.

Additional details on each of these three organizational elements are provided below.

Assistant Administrator for Research and Development (ARD)

With the foundational elements of the NextGen program complete, FAA has refocused its efforts on operationalizing NextGen, translating technology investments into benefits of

improved safety and efficiency. This proposal will align FAA's organization with this strategic focus.

To meet these challenges the FAA will evolve the Office of NextGen into the Office of Research and Development, headed by an Assistant Administrator for Research and Development. By retaining the William J. Hughes Technical Center in its entirety, this office will provide an enterprise-wide approach to aviation R&D, utilizing seasoned research personnel while meeting the requirement and goal of section 711 of the 2018 Reauthorization.

Section 711 of the FAA Reauthorization Act of 2018 established the position of Assistant Administrator for Research and Development. This position will be tasked with the management and oversight of all the FAA's Research and Development programs and activities, as well as the production of all congressional reports from the FAA relevant to Research and Development. To assist the Assistant Administrator, FAA will transfer the funding and positions that are currently located in the Office of NextGen.

Assistant Administrator for Integration and Engagement (AIE)

The Integration and Engagement Office will work closely with industry to facilitate new users, ideas and technologies for potential incorporation into the national airspace. This new office will be composed of the UAS Integration Office, transferred from the Aviation Safety organization, and will report directly to the Administrator.

The FAA's ability to establish oversight and foster the integration of UAS and other new technologies will likely determine leadership in aviation innovation throughout the world. Therefore, the FAA requires an organization that can both support nascent aviation concepts and technology while being able to effectively and efficiently manage their proliferation throughout the national airspace. The organization will:

- Serve as the primary gateway through which industry presents new aviation-related technologies

- Examine the new technologies' potential impact on the NAS, likely benefits, and methods to safely integrate the new technologies into the NAS

- Work collaboratively and have strong relationships with subject matter experts from all lines of business and staff offices to examine technology in an expeditious manner

- Provide leadership with regard to industry engagement and internal collaboration, using cross-functional teams to take reasonable risk and serve as disrupters

- Sponsor and oversee initiatives to establish the value of the technology or policies to a maturity level that a line of business or staff office can oversee the initiative

- Conduct preliminary reviews and framing of potential benefits and challenges related to UAS or other new technologies

- Lead cross-agency integration, coordination and collaboration in support of UAS

- Support the development of safety cases for UAS and other new technologies in coordination with the operational approval organization

- Facilitate approval of UAS and innovation including support to any required rule-making efforts

Chief Technology Officer (CTO)

The FAA's Air Traffic Organization (ATO) will focus on the operation, maintenance, and modernization of the national airspace system, with a new Chief Technology Officer (CTO) that drives the near-term modernization of the system.

Section 545 of the FAA Reauthorization Act of 2018 established the position of the CTO. The CTO will be charged with maintaining and protecting currently utilized national airspace technology, integrating developing national airspace technology, and planning for future technological developments that impact the national airspace. The CTO will be assisted in this task by the staff of the Office of the Chief Technology Officer housed within the ATO. Funding and positions that are currently located in the Office of NextGen will be transferred to ATO to support the new organization.

The CTO will play the role of a corporate strategist, to ensure the ATO continues to deliver capabilities, integrate them into the operation, and assert a vision for the future. The day-to-day operations should serve to enhance FAA's commitment to the future. It is proposed that the organizational structure created within the ATO will acknowledge and directly address this challenge. The CTO will:

- Ensure the proper operation, maintenance, and cybersecurity of technology systems relating to the air traffic control system across all program offices of the Administration

- Coordinate the implementation, operation, maintenance, and cybersecurity of technology programs relating to the air traffic control system with the aerospace industry and other Federal agencies

- Review and provide advice to the Secretary, the Administrator, and the ATO Chief Operating Officer on the Administration's budget, and benefit-cost analyses with respect to technology programs relating to the air traffic control system

- Consult with the Administrator on the Capital Investment Plan of the Administration prior to its submission to Congress

- Develop an annual air traffic control system technology operation and maintenance plan that is consistent with established annual performance targets

- And ensure that the air traffic control system architecture remains, to the maximum extent practicable and flexible enough to incorporate future technological advances developed and procured by aircraft operators

Exhibit 1. FY 2023 Resource Distribution Table

Movement of Resources

FTE, FTP and Funding provided for Personnel and Related Expenses

Operations Account:

OPS ($000)				
		Dollars	FTP	FTE
From:	To:	Ops	Ops	Ops
AVS-AUS	AIE	$ 41,465	106	106
ANG	ATO-CTO	$ 7,446	32	32
ANG	ARD	$ 58,135	147	142

Facilities and Equipment Account (Activity 5):

F&E ($000)				
		Dollars	FTP	FTE
From:	To:	F&E	F&E	F&E
AVS-AUS	AIE	$ 4,405	21	21
ANG	ATO-CTO	$ 24,163	116	117
ANG	ARD	$ 81,053	367	380

Research, Engineering and Development Account:

RE&D ($000)				
		Dollars	FTP	FTE
From:	To:	RED	RE&D	RE&D
AVS-AUS	AIE	$ -	-	-
ANG	ATO-CTO	$ -	-	-
ANG	ARD	$ 143,336	138	130

Acronym	Meaning
FTP	Full-Time Position
FTE	Full-Time Equivalent
Ops	Operations Account
F&E	Facilities and Equipment Account
RE&D	Research, Engineering, and Development Account
AVS-AUS	Unmanned Aircraft Systems Integration Office within the Aviation Safety Line of Business
AIE	Office of Integration and Engagement
ANG	Office of NextGen
ATO-CTO	Office of the Chief Technology Officer within the Air Traffic Organization
ARD	Office of Research and Development

Exhibit 2. FAA Organization Chart (Current)

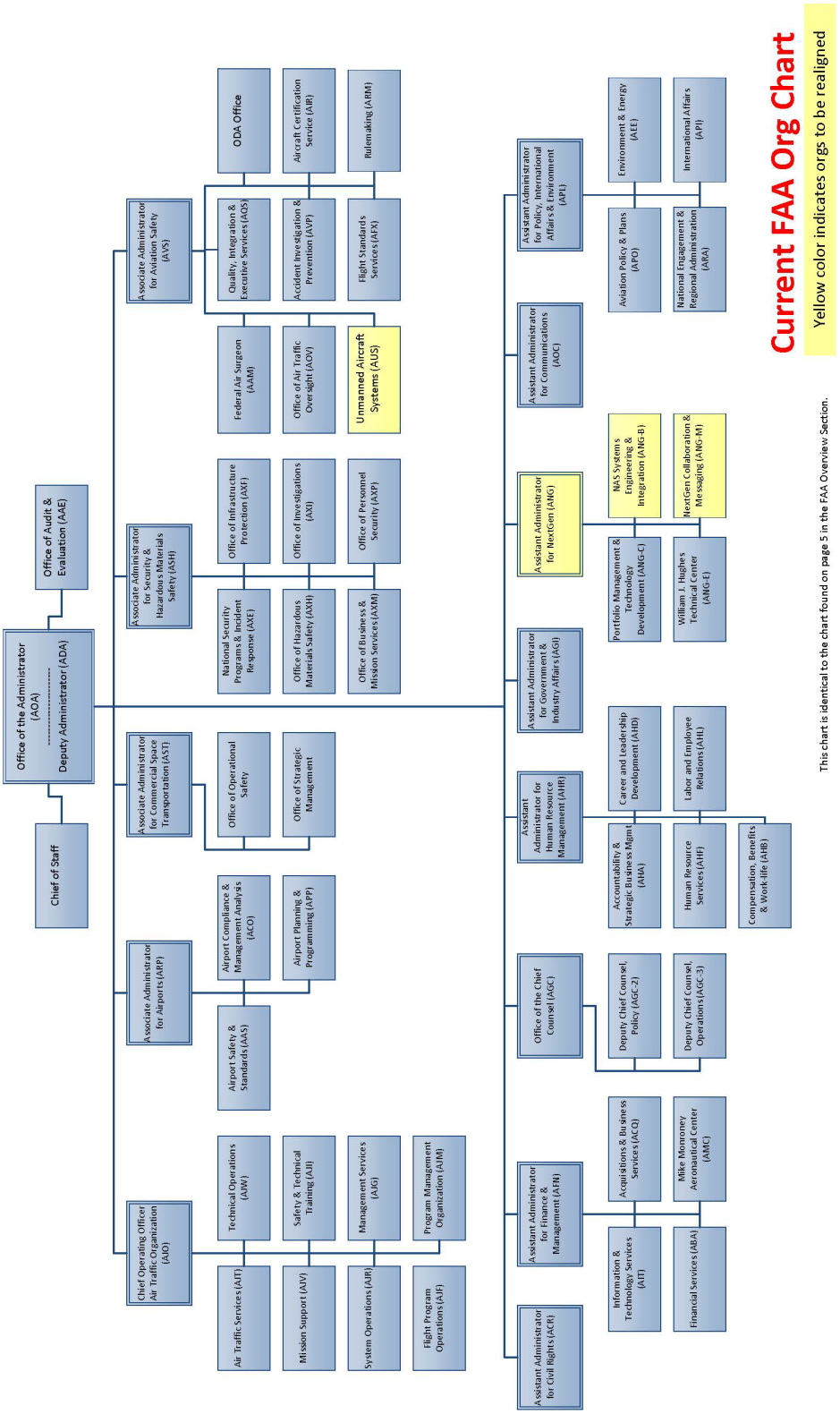
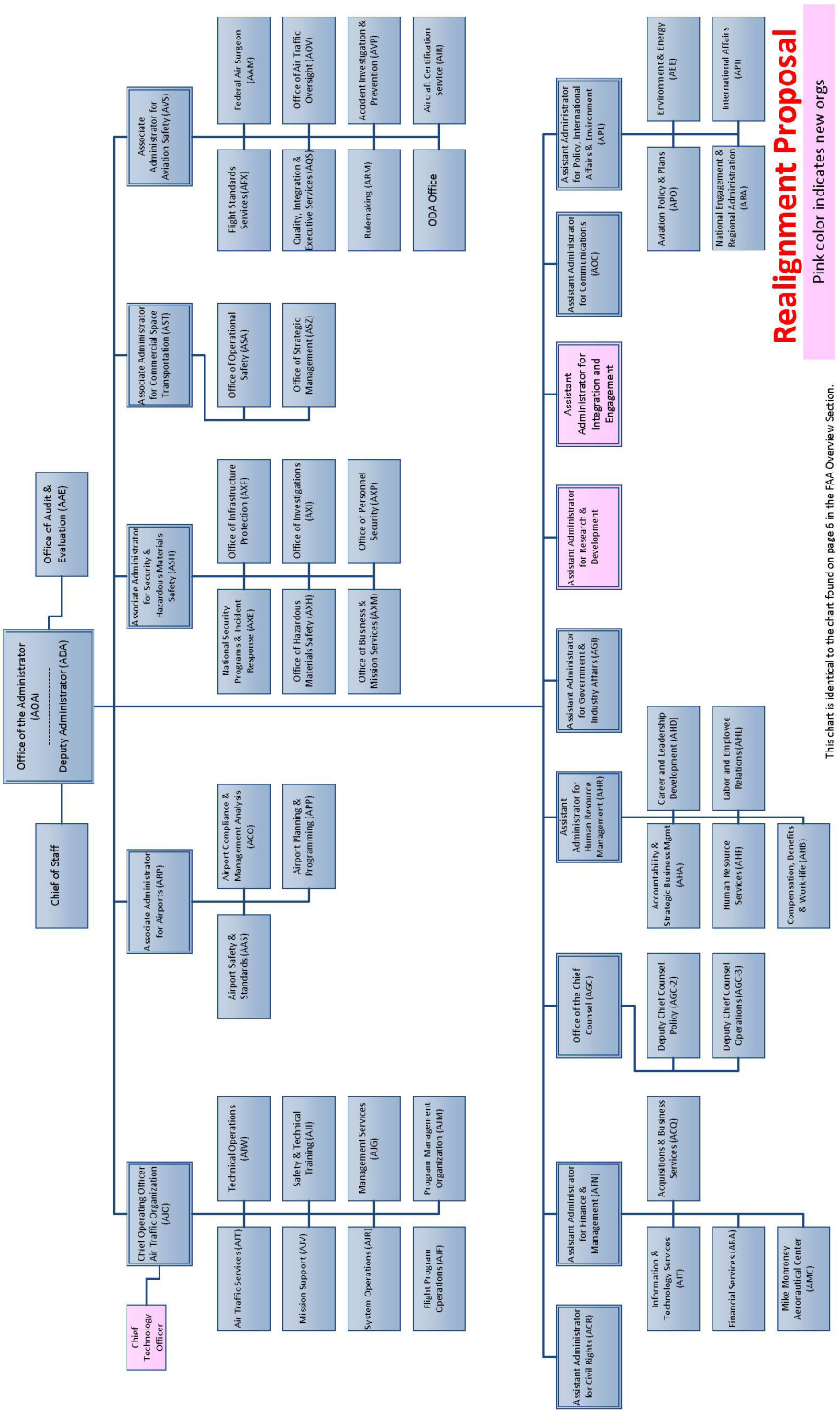


Exhibit 3. FAA Organization Chart (Proposed)



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Section 8.
Capital Investment Plan

Federal Aviation Administration

NATIONAL AIRSPACE SYSTEM CAPITAL INVESTMENT PLAN

FY2023–2027

Federal Aviation Administration
Abbreviated National Airspace System Capital Investment Plan
Fiscal Years 2023–2027

Background

The Further Consolidated Appropriations Act, 2021 became Public Law 116-260 on December 27, 2020 and provided the appropriation amounts and other direction for the Federal Aviation Administration within DIVISION L — TRANSPORTATION, HOUSING AND URBAN DEVELOPMENT, AND RELATED AGENCIES APPROPRIATIONS ACT, 2021 under Title I—Department of Transportation. For FAA's Facilities and Equipment (F&E) appropriation, the following direction was provided regarding the Five-Year Capital Investment Plan for the National Airspace System:

Provided further, that no later than 60 days after the submission of the budget request, the Secretary of Transportation shall transmit to the Congress an investment plan for the Federal Aviation Administration which includes funding for each budget line item for fiscal years 2023 through 2027, with total funding for each year of the plan constrained to the funding targets for those years as estimated and approved by the Office of Management and Budget.

To comply with the Congressional direction above, this Abbreviated National Airspace System (NAS) Capital Investment Plan (CIP) for Fiscal Years (FY) 2023-2027 is included within the FAA's FY 2023 President's Budget.

Highlights

The Abbreviated five-year NAS CIP fulfills the Secretary's commitment; complies with the language in the Further Consolidated Appropriations Act, 2021; and, addresses the following topics:

- Important Factors Affecting Planning for the Future and Key Considerations in Capital Planning
- Next Generation Air Transportation System (NextGen), NAS Modernization, Sustaining Systems and Infrastructure, Facilities Replacement
- Five-year F&E funding table by budget line item for FY 2023 through FY 2027
- Current Status of Major Capital Programs

Important Factors Affecting Planning for the Future

Access to a reliable worldwide aviation network is essential to the health of the U.S. economy. Both domestic and international commerce rely heavily on ready access to aviation services for carrying passengers and freight to the cities around the world, which helps to sustain economic

growth. According to the most recent available study on *The Economic Impact of Civil Aviation on the U.S. Economy*[1], economic activity attributed to civil aviation-related goods and services during 2016 totaled $1.8 trillion, generated 11 million jobs, and $488 billion in earnings. In total, U.S. aviation contributed 5.2 percent to the U.S. Gross Domestic Product. Other aviation related economic activity highlighted in the January 2020 report included:

- Air carriers operating in U.S. airspace transported 946.4 million passengers with over 1,377.1 billion revenue passenger miles
- U.S. airports accommodated more than 66.8 billion revenue ton-miles of freight in support of commercial activities
- Commercial airline operations enabled $357.8 billion of visitor expenditures on goods and services
- Civil aircraft manufacturing, a top U.S. net exporter, had a positive trade balance of $70.9 billion

Key Considerations in Capital Planning

The development of the CIP requires significant time to plan, define, and prioritize expected program outcomes for review and approval by decision makers. Maintaining a balanced portfolio of FAA's capital investments is critical to the long-term sustainment and modernization of the NAS to meet projected demand, deliver new services and capabilities, and improve system safety and efficiency. Program offices and sponsors must develop business cases to justify the need for programs, define the technical approach and requirements, develop lifecycle cost and schedule estimates, and identify interdependencies among programs.

In accordance with FAA's Acquisition Management System, proposed capital investments are presented to the Joint Resources Council for review and approval to initiate these programs. Once approved, programs enter the investment analysis process, are added to the Enterprise Architecture and the CIP, and are included in the President's Budget to request funds from Congress. Once funds are appropriated, program offices must then manage risk during program execution to deliver planned outcomes on schedule and on budget. In addition, new systems or capabilities must demonstrate compliance with all applicable FAA reliability and safety standards before receiving final approval to operate in the NAS.

Addressing real-time changes in air traffic demand and anticipated future growth may require increases in NAS safety, capacity, efficiency, reliability, and system flexibility. Other variables affecting capital planning include periodic changes in economic conditions, scheduled expansion projects at major airports, and ongoing sustainment needs for mission critical Air Traffic Control (ATC) systems, facilities, and other NAS infrastructure. By statute, each year of the CIP

[1] Source: Federal Aviation Administration, "The Economic Impact of Civil Aviation on the U.S. Economy," January 2020 https://www.faa.gov/sites/faa.gov/files/about/plans_reports/2020_jan_economic_impact_report.pdf

estimates must balance to the most recent F&E funding target for that year, as issued to FAA by the Office of Management and Budget. In the CIP development process, the FAA allocates funding to capital programs to support the implementation of operational changes for NextGen, programs sustaining and modernizing current NAS systems and infrastructure, and mission support. This approach to planning ensures that current NAS performance and safety standards are maintained or improved.

NextGen, NAS Modernization, Sustaining Systems and Infrastructure, Facilities Replacement

The air traffic control infrastructure is a complex system made up of several thousand components that control air traffic approaching, landing, and departing from airports. ATC infrastructure includes 21 Air Route Traffic Control Centers housing the automation equipment used by air traffic controllers to control en route air traffic, over 500 Air Traffic Control Towers, and over 150 Terminal Radar Approach Control facilities. This daily flow of air traffic is dependent upon several hundred surveillance and weather radars, navigation systems for en route and airport approach guidance, and thousands of radios that allow pilots and air traffic controllers to stay in contact during all phases of an aircraft's flight.

The air traffic control system requires automation, communication, navigation, surveillance, and weather systems to maintain safe separation of aircraft operating in controlled airspace and on the airport surface. Each of these systems has a high degree of redundancy to support system reliability and availability to minimize the risk of service disruptions. Before these systems reach the end of their service lives, planning for their replacement must be well underway to reduce the risk of performance degradation or outages in the event that replacement parts become obsolete or are otherwise difficult to obtain.

NextGen is implementing operational improvements to ensure the NAS is prepared to meet future capacity, safety, and environmental requirements and is supported by many capital programs. Operationalizing NextGen will provide greater access and flexibility for users to choose route options that best meet their needs. By combining new technologies for surveillance, navigation, weather, and communications with automation system enhancements, workforce training, procedural changes, and airfield development, NextGen is fundamentally changing the way air traffic is managed.

Selected key investments from 86 Capital Budget Line Item (BLI) Facility and Equipment (F&E) Programs are highlighted below:

- **Terminal Air Traffic Control Facilities Replacement** –This program will support the replacement of a number of Terminal Air Traffic Control facilities that have problems that impede Air Traffic Control operations. These issues include line-of-site obstructions that prevent Air Traffic Control from being able to view all runways and taxiways on the airport grounds, overcrowding of the facility, outdated technological and structural issues, and those related to the increases in seismic activity. (BLI 2B03)

- **Air Route Traffic Control Center (ARTCC) and Combined Control Facility (CCF) Building Improvements** - Major construction projects will replace obsolete plant equipment and improve work areas. These projects include replacement of chillers, cooling towers and associated mechanical and electrical system elements necessary for cooling national airspace system electronics and computer equipment. Fire detection systems that have exceeded life expectancy and not supported by the manufacturer will be replaced. The new systems will be more efficient and reduce energy consumption at the facilities. (BLI 2A03)

- **Electrical Power System Sustain/Support** - The Power program undertakes the replacement, refurbishment, purchase, and installation of components that sustain national airspace electrical power infrastructure. Mitigating commercial power disruption ensures that air traffic operations can continue uninterrupted. (BLI 2E07)

- **Unstaffed Infrastructure Sustainment (UIS)** - The UIS program sustains national airspace supporting infrastructure at approximately 12,000 sites in the national airspace system. This will continue to enable the reliable and continuous operations of surveillance, navigation, communication, and weather equipment. Unstaffed infrastructure protects electronic equipment from weather hazards and unauthorized entry. (BLI 2E02)

- **En Route Automation** – The En Route Automation Modernization (ERAM) Enhancements include improvements to trajectory modeling, increased conflict detection and resolution capabilities to support separation management, and expand the automated coordination of flight data and aircraft control with the Canadian Air Navigation Service Provider (Nav Canada). (BLI 2A01)

- **Automatic Dependent Surveillance – Broadcast (ADS-B) NAS Wide Implementation (ADS-B)** – Continued implementation of ADS-B will provide more efficient use of airspace capacity, fewer flight delays, and more optimal routing for aircraft. Other efficiencies include reduced weather deviations and fewer cancellations during inclement weather conditions. ADS-B increases access to some Alaskan regions and Gulf of Mexico oil platforms. (BLI 2A09)

- **Data Communications (Data Comm) in support of NextGen** – Data Comm will reduce operational errors associated with communications, enhancing the safety and efficiency of the National Airspace System. Data Comm will also reduce environmental impact of aviation operations due to less fuel burn and fewer emissions. The program will improve National Airspace System capacity and reduce delays resulting in passenger value of time savings. (BLI 2A14)

- **Terminal Automation** – Standard Terminal Automation Replacement System (STARS) is the principal tool used by air traffic controllers in and around airport terminal facilities for controlling aircraft. STARS infrastructure can be expanded and extended to meet increased traffic demands and accommodate the introduction of new automation functions necessary for improved safety, efficiency, and capacity. (BLI 2B01)

- **Terminal Flight Data Manager (TFDM)** – This program focuses on gaining efficient flow and management of aircraft on the surface at selected Metroplex airports and complex terminal airspaces within the national airspace system. High density airports typically see higher demand for runway capacity, operate multiple runways, and have complex airspace and ground interactions in the arrival and departure phases of flight. The surface capabilities resulting from this program will improve both the efficiency of individual flights, while optimizing runway throughput. (BLI 2B07)

- **Unmanned Aircraft Systems (UAS)** – The UAS programs will enable UAS operations in the national airspace system without impacting manned aircraft operations and creating disruptions or delays, and ensuring operations will be as safe as or safer than they are today. Improvements to national airspace system capabilities and operations will provide an integrated framework approach to addressing needs and solutions for safety and efficiency. (BLI 2B09)

- **Terminal and En Route Surveillance Portfolio** – Primary and secondary surveillance systems-outages contribute significantly to aircraft arrival and departure delays at major airports throughout the United States. The sustainment work under this portfolio will increase equipment and service availability, while reducing operational delays. (BLI 2B11)

- **Terminal and En Route Voice Switch and Recorder Portfolio** – Voice recorders are used by the FAA for recording voice conversations between air traffic controllers, pilots, and ground-based personnel. Recorded conversations are used in the investigation of accidents, incidents, and in the routine evaluation of air traffic operations. This program addresses reliability and availability concerns associated with deployed voice recorder models that are becoming obsolete and unsupportable. (BLI 2B12)

- **Landing and Lighting Portfolio** –This portfolio contains critical ground infrastructure that collectively enables all aircraft to navigate the established aircraft routes in the sky as well as the ability to safely descend and land on the airport runway. The work under this portfolio includes assessment of the systems to determine the need for system relocations, operational modifications, sustainment work to maintain and/or improve system performance, and to procure and install systems as needed. (BLI 2D05)

The FAA's FY 2023-2027 CIP provides a balanced portfolio of capital programs for the modernization and sustainment of systems and critical NAS infrastructure, integration of UAS operations into the NAS, and the operationalization of NextGen.

Estimated Funding by Budget Line Item

The following table (displayed on multiple pages) shows funding by BLI in millions of dollars for the capital programs in the FY 2023 to FY 2027 timeframe. The FY 2023 funding amounts in this table are consistent with this budget submission. The FY 2024 through FY 2027 total year funds are constrained to the F&E targets issued by the Office of Management and Budget.

Estimated Funding by Budget Line Item
(*In millions of dollars)*

FY23 BLI Number	Capital Budget Line Item (BLI) Program	FY 2023 Budget	FY 2024 Est.	FY 2025 Est.	FY 2026 Est.	FY 2027 Est.
	Activity 1: Engineering, Development, Test and Evaluation	**$161.20**	**$157.80**	**$161.49**	**$181.40**	**$180.51**
1A01	Advanced Technology Development and Prototyping (ATDP)	$25.30	$32.00	$34.09	$33.51	$43.61
1A02	William J. Hughes Technical Center Laboratory Sustainment	$16.90	$16.90	$16.90	$16.90	$16.90
1A03	William J. Hughes Technical Center Infrastructure Sustainment	$15.00	$10.00	$10.00	$10.00	$10.00
1A04	NextGen - Separation Management Portfolio	$18.00	$17.00	$17.00	$20.00	$20.00
1A05	NextGen - Traffic Flow Management (TFM) Portfolio	$21.00	$10.00	$11.00	$14.00	$14.00
1A06	NextGen - On Demand NAS Portfolio	$8.50	$9.50	$10.50	$15.00	$16.00
1A07	NextGen - NAS Infrastructure Portfolio	$25.50	$16.40	$18.50	$21.00	$22.00
1A07	NextGen - Support Portfolio	$5.00	$8.00	$8.00	$8.00	$8.00
1A09	NextGen - Unmanned Aircraft Systems (UAS)	$15.00	$27.00	$24.00	$31.00	$18.00
1A10	NextGen - Enterprise, Concept Development, Human Factors, and Demonstrations Portfolio	$11.00	$11.00	$11.50	$12.00	$12.00
	Activity 2: Procurement and Modernization of the Air Traffic Control Facilities and Equipment	**$1,808.25**	**$1,908.37**	**$1,966.28**	**$2,002.30**	**$2,112.00**
	A. En Route Programs	**$676.55**	**$670.91**	**$695.71**	**$629.12**	**$914.40**
2A01	NextGen - En Route Automation Modernization (ERAM) - System Enhancements and Technology Refresh	$108.15	$70.01	$75.11	$80.94	$88.70
2A02	Next Generation Weather Radar (NEXRAD)	$3.00	$3.00	$3.00	$3.00	$7.00
2A03	Air Route Traffic Control Center (ARTCC) and Combined Control Facility (CCF) Building Sustainment	$94.70	$104.60	$107.60	$102.60	$107.50
2A04	Air/Ground Communications Infrastructure	$7.70	$6.85	$6.85	$6.85	$9.00
2A05	Air Traffic Control En Route Radar Facilities Improvements	$6.70	$7.60	$7.60	$7.60	$7.50
2A06	Oceanic Automation System	$12.25	$11.34	$7.82	$4.30	$23.00
2A07	Next Generation Very High Frequency Air/Ground Communications System	$52.00	$48.00	$43.20	$29.90	$56.70
2A08	NextGen - System-Wide Information Management (SWIM)	$10.20	$31.50	$34.10	$37.30	$50.00
2A09	NextGen - Automatic Dependent Surveillance - Broadcast (ADS-B) NAS Wide Implementation	$155.20	$143.40	$165.70	$162.20	$281.40
2A10	Wind Shear Detection Service (WSDS)	$3.20	$5.00	$9.60	$10.00	$5.80
2A11	NextGen - Air Traffic Management Implementation Portfolio	$7.40	$47.90	$45.80	$52.00	$94.70
2A12	NextGen - Time Based Flow Management (TBFM) Portfolio	$21.30	$5.46	$13.86	$18.27	$25.90
2A13	NextGen - Next Generation Weather Processor (NWP)	$30.70	$49.01	$31.61	$7.74	$23.00
	Airborne Collision Avoidance System X (ACAS X)	$0.00	$0.00	$1.70	$1.70	$0.00
2A14	NextGen - Data Communication in support of NextGen	$108.05	$84.70	$97.80	$81.11	$119.70
2A15	Offshore Automation	$38.00	$33.54	$27.36	$13.61	$0.00
2A16	NextGen - Reduced Oceanic Separation	$7.00	$7.00	$5.00	$0.00	$0.00
2A17	En Route Improvements	$1.00	$2.00	$2.00	$0.00	$0.00
2A18	Commercial Space Integration	$10.00	$10.00	$10.00	$10.00	$14.50

FY23 BLI Number	Capital Budget Line Item (BLI) Program	FY 2023 Budget	FY 2024 Est.	FY 2025 Est.	FY 2026 Est.	FY 2027 Est.
	B. Terminal Programs	**$553.30**	**$626.67**	**$647.93**	**$715.59**	**$641.10**
2B01	Terminal Doppler Weather Radar (TDWR)	$1.00	$8.30	$9.00	$4.00	$10.00
2B02	Standard Terminal Automation Replacemetn System (STARS)	$62.00	$78.67	$79.14	$86.16	$56.30
2B03	Terminal Automation Program	$3.00	$4.10	$4.10	$4.00	$18.30
2B04	Terminal Air Traffic Control Facilities - Replace	$55.00	$55.00	$78.00	$89.00	$80.00
2B05	Air Traffic Control Tower (ATCT)/Terminal Radar Approach Control (TRACON) Facilities - Improve	$79.00	$57.60	$57.60	$57.60	$61.00
2B06	NAS Facilities Occupational Safety and Health Administration (OSHA) and Environmental Standards Compliance	$27.00	$35.00	$35.00	$35.00	$35.00
2B07	Integrated Display System (IDS)	$45.00	$55.00	$53.50	$51.30	$50.30
2B08	NextGen - Terminal Flight Data Manager (TFDM)	$61.80	$59.37	$67.17	$43.71	$33.50
2B09	NextGen - Performance Based Navigation (PBN) Support Portfolio	$8.00	$9.70	$9.50	$10.30	$9.70
2B10	NextGen - Unmanned Aircraft Systems (UAS) Implementation	$10.00	$10.00	$10.00	$9.00	$9.00
2B11	Surface Surveillance Portfolio Sustain 1	$18.00	$30.86	$31.96	$30.57	$35.00
2B12	Terminal and En Route Surveillance Portfolio	$117.40	$110.87	$101.56	$117.45	$70.10
2B13	Terminal and En Route Voice Switch and Recorder Portfolio	$50.10	$90.80	$99.90	$155.50	$152.90
2B14	NextGen - Enterprise Information Platform	$13.00	$21.40	$11.50	$22.00	$20.00
2B15	Remote Towers	$3.00	$0.00	$0.00	$0.00	$0.00
	C. Flight Service Programs	**$15.90**	**$19.05**	**$19.25**	**$22.35**	**$24.40**
2C01	Aviation Surface Weather Observation System	$10.00	$14.00	$15.00	$15.00	$20.00
2C02	Future Flight Services Program (FFSP)	$1.50	$0.00	$0.00	$0.00	$0.00
2C03	Alaska Flight Service Facility Modernization (AFSFM)	$2.70	$2.75	$2.75	$2.75	$2.70
2C04	Juneau Airport Wind System (JAWS) - Technology Refresh	$0.50	$2.30	$1.50	$4.60	$1.70
2C05	Weather Camera Program	$1.20	$0.00	$0.00	$0.00	$0.00
	D. Landing and Navigation Aids Programs	**$175.80**	**$177.36**	**$190.92**	**$210.01**	**$197.10**
2D01	VHF Omnidirectional Radio Range (VOR) Minimum Operating Network (MON)	$7.10	$16.00	$14.30	$11.80	$13.40
2D02	Wide Area Augmentation System (WAAS) for GPS	$91.80	$92.10	$92.30	$92.00	$94.40
2D03	Instrument Flight Procedures Automation (IFPA)	$3.60	$2.00	$4.10	$2.40	$0.00
2D04	Runway Safety Areas (RSA) - Navigational Mitigation	$2.50	$0.00	$0.00	$0.00	$0.00
2D05	Landing and Lighting Portfolio	$60.80	$57.26	$70.22	$93.81	$74.30
2D06	Distance Measuring Equipment (DME), VHF Omni-Directional Range (VOR), Tactical Air Navigation (TACAN) (DVT) Portfolio	$10.00	$10.00	$10.00	$10.00	$15.00
	E. Other ATC Facilities Programs	**$386.70**	**$414.38**	**$412.47**	**$425.23**	**$335.00**
2E01	Fuel Storage Tank Replacement and Management	$26.20	$22.00	$22.00	$21.00	$22.00
2E02	Unstaffed Infrastructure Sustainment (UIS)	$56.30	$52.65	$52.65	$52.65	$53.50
2E03	Aircraft Replacement and Related Equipment Program	$46.20	$26.10	$38.50	$38.50	$6.50
2E04	Airport Cable Loop Systems - Sustained Support	$10.00	$10.00	$10.00	$10.00	$10.00
2E05	Alaskan Satellite Telecommunications Infrastructure (ASTI)	$0.50	$0.00	$0.00	$0.00	$0.00
2E07	Real Property Disposition / Facilities Decommissioning	$4.50	$5.00	$5.00	$5.00	$10.00
2E06	Electrical Power Systems - Sustain/Support	$139.80	$175.00	$180.00	$185.00	$185.00
2E08	Energy Management and Compliance (EMC)	$6.90	$5.00	$4.00	$4.00	$4.00
2E09	Child Care Center Sustainment	$1.20	$1.00	$1.00	$1.00	$4.00
2E10	FAA Telecommunications Infrastructure	$69.00	$100.13	$88.32	$99.08	$35.00
2E11	Operational Analysis and Reporting Systems	$26.10	$17.50	$11.00	$9.00	$0.00
	Independent Operational Assessment	$0.00	$0.00	$0.00	$0.00	$5.00
	Activity 3: Non-Air Traffic Control Facilities and Equipment	**$223.20**	**$188.20**	**$186.10**	**$180.00**	**$140.20**
	A. Support Programs	**$200.20**	**$167.20**	**$165.10**	**$160.00**	**$120.20**
3A01	Hazardous Materials Management	$24.30	$26.00	$26.00	$26.00	$25.00
3A02	Aviation Safety Analysis System (ASAS)	$28.20	$20.00	$20.90	$25.00	$21.30
3A03	National Airspace System Recovery Communications (RCOM)	$12.00	$12.00	$12.00	$12.00	$0.00
3A04	Faciility Security Risk Management	$14.00	$15.00	$15.00	$15.00	$15.00
3A05	Information Security	$23.00	$22.00	$22.00	$23.50	$22.70
3A06	System Approach for Safety Oversight (SASO)	$26.70	$18.00	$18.50	$20.20	$1.40
3A07	Aviation Safety Knowledge Management Environment (ASKME)	$12.00	$0.00	$0.00	$0.00	$0.00
3A08	Aerospace Medical Equipment Needs (AMEN)	$2.20	$0.10	$0.00	$0.00	$0.00
3A09	NextGen - System Safety Management Portfolio	$17.00	$16.00	$16.00	$16.00	$16.00
3A10	National Test Equipment Program	$3.00	$3.00	$3.00	$3.00	$0.00
3A11	Mobile Assets Management Program	$1.90	$2.00	$2.00	$2.00	$2.00
3A12	Aerospace Medicine Safety Information System (AMSIS)	$16.20	$10.00	$10.00	$10.00	$10.00
3A13	Configuration, Logistics, and Maintenance Resource Solutions (CLMRS)	$19.70	$23.10	$19.70	$7.30	$6.80
	B. Training, Equipment and Facilities	**$23.00**	**$21.00**	**$21.00**	**$20.00**	**$20.00**
3B01	Aeronautical Center Infrastructure Modernization	$20.00	$20.00	$20.00	$20.00	$20.00
3B02	Distance Learning	$3.00	$1.00	$1.00	$0.00	$0.00

FY23 BLI Number	Capital Budget Line Item (BLI) Program	FY 2023 Budget	FY 2024 Est.	FY 2025 Est.	FY 2026 Est.	FY 2027 Est.
	Activity 4: Facilities and Equipment Mission Support	**$252.35**	**$239.63**	**$232.13**	**$233.29**	**$233.29**
4A01	System Engineering and Development Support	$38.00	$38.00	$38.00	$39.00	$39.00
4A02	Program Support Leases	$45.00	$45.00	$45.00	$45.00	$45.00
4A03	Logistics and Acquisition Support Services	$12.00	$12.00	$12.00	$12.00	$12.00
4A04	Mike Monroney Aeronautical Center Lease	$16.00	$16.40	$16.90	$16.00	$16.00
4A05	Transition Engineering Support	$19.00	$19.00	$19.00	$19.00	$19.00
4A06	Technical Support Services Contract (TSSC)	$28.00	$28.00	$28.00	$28.00	$28.00
4A07	Resource Tracking Program (RTP)	$8.00	$8.00	$8.00	$8.00	$8.00
4A08	Center for Advanced Aviation System Development (CAASD)	$57.00	$57.00	$57.00	$57.00	$57.00
4A09	NextGen - Aeronautical Information Management Program	$29.35	$16.23	$8.23	$9.29	$9.29
	Activity 5: Personnel Compensation, Benefits and Travel	**$570.00**	**$590.00**	**$610.00**	**$631.00**	**$641.00**
5A01	Personnel and Related Expenses	$570.00	$590.00	$610.00	$631.00	$641.00
	Total Year Funding	**$3,015.00**	**$3,080.00**	**$3,149.00**	**$3,219.00**	**$3,295.00**

This is direct F&E funding. There is an additional $1B per year in FY23-26 for Infrastructure, Investment, and Jobs Act (IIJA)

Information for Major Capital Programs

The criticality of on-budget and on-time acquisitions are important for the success of these major capital programs. In accordance with Congressional direction through the Government Accountability Office (GAO), the FAA is required to provide the status of Air Traffic Organization's performance in acquiring ATC systems. In addition, the FAA regularly reports to Congress and the public on its overall performance in acquiring ATC systems.

Major Capital Programs are typically classified in Acquisition Categories that have an aggregate rating of medium or high in the following areas: complexity, risk, political sensitivity, safety, security or cost; requirement of special management attention because of its importance to the mission of the FAA; significance of program or policy implications; executive visibility; or, high developmental costs. For more information on Acquisition Categories see: http://fast.faa.gov/NFFCA_Acquisition_Categories.cfm

The FAA continues to experience uncertainty due to the extended duration of the COVID-19 pandemic. In addition, program managers face a number of re-planning issues. As the FAA addresses the overall uncertainty, there is no clear path on when or how restrictions will be lifted. COVID-19 has presents several barriers to deployment, testing, and training for programs. Many program schedules have been compromised as onsite activities were suspended. Local conditions dictated travel restrictions, subject matter expert availability, and facility access across the system. Performance impacts include schedule delays, cost overruns, and limited vendor support. Other physical limitations, such as mandatory quarantines and social distancing have also hindered progress.

The table below shows the most recent information on "FAA's Major Capital Programs". The final page of the report reflects "Completed or Cancelled Major Capital Programs" for the referenced fiscal year.

FAA Capital Programs
Current Information for Major Programs

Programs	Original Baseline			Rebaseline			Current Estimate*		Comments
	Original APB Date	Completion Date	Budget $M	Rebaseline APB Date	Revised Completion Date	Revised Budget $M	Completion Date	Budget $M	
Aerospace Medicine Safety Information System (AMSIS) ACAT 4	Sep-17	Jan-22	$85.3				Jan-23	$127.2	**Current Estimate vs. Original Baseline:** The cost and schedule estimates are preliminary and will be finalized with the BCD planned for May 2022. The estimated schedule delay of 12 months (-23.1% schedule variance) and estimated cost increase of $41.9M (-49.1% cost variance) is attributed to software development delays, emerging complexity in requirements, vendor hiring delays, and delays in provisioning government furnished equipment and information. In addition, the program was impacted by the FY19 Government Shutdown.
Automatic Dependent Surveillance Broadcast (ADS-B) – Baseline Services Future Segments ACAT 1 NI	May-19	Jan-26	$718.3				Jan-26	$732.3	**Current Estimate vs Original Baseline:** The cost increase of $14.0M (-1.9% variance) is due to the addition of the Joint Base Andrews Airport Surface Surveillance Capability (ASSC) project to the program scope.
Advanced Technologies and Oceanic Procedures (ATOP) Enhancement 1 ACAT 3 NI	Apr-19	May-25	$81.7				May-25	$81.7	
Common Support Services Weather (CSS-Wx) ACAT 1	Mar-15	Aug-22	$120.1	May-21	Apr-26	$211.4	Apr-26	$211.4	**Rebaseline vs. Original Baseline:** The schedule delay of 44 months (-49.4% variance) and cost increase of $91.3M (-76.0% variance) is associated with underestimating software development efforts, hardware requirements, platform changes, interface changes, integration issues, ineffective management of resources and processes related to software development and testing by the prime contractor.
Data Communications (Data Comm) Segment 1, Phase 2 (S1P2), Full En Route Services ACAT 1 NI	Aug-16	Dec-23	$421.4				Mar-26	$465.4	**Current Estimate vs Original Baseline:** The schedule delay of 27 months (-30.7% variance) is associated with the delays to the Data Comm S1P2 Initial Services program waterfall. The deployment schedule for Full Services is impacted by the Initial Services deployment schedule shifting to the right and impacts to the En Route Automation Modernization (ERAM) release plan as a result of COVID-19. The schedule is likely to be further delayed. The cost increase of $44.0M (-10.4% varaince) is associated with impacts from the elongated waterfall due to the COVID-19 restrictions and the FY19 Government Shutdown, the Data Comm share of the ERAM COVID-19 impact from the prime vendor, and Controller Training Solutions (CTS) ghost pilots in lieu of FAA Subject Matter Experts (SMEs).
Data Communications (Data Comm) Segment 1, Phase 2 (S1P2), Initial En Route Services ACAT 1 NI	Oct-14	Feb-21	$816.7				Dec-23	$857.9	**Current Estimate vs Original Baseline:** The schedule delay of 34 months (-44.7% variance) and the cost increase of $41,2M (-5.0% variance) is due to COVID-19 restrictions, the FY19 Government Shutdown, latent avionics and air/ground network issues, and Controller Training Solutions (CTS) ghost pilots in lieu of FAA SMEs..
Enterprise-Information Display Systen (EIDS) ACAT 1NI	Jun-20	May-27	$219.2				May-27	$234.5	**Current Estimate vs Original Baseline:** The cost increase of $15.3M (-7.0% variance) is due to the prime contractor underestimating system engineering and software development efforts.
En Route Automation Modernization (ERAM) Enhancement 2 ACAT 1	Dec-16	Dec-23	$253.6	Dec-18	Dec-24	$192.9	Dec-24	$192.9	**Rebaseline vs. Original Baseline:** The schedule delay of 12 months (-14.3% variance) is associated with budget uncertainty and reductions, technical changes, and adjusting priorities. The cost under run of $60.7M (23.9% variance) is due to reduced scope as a result of a reprioritization of enhancements to include only mature capabilities validated through engineering and development activities.
ERAM Sustainment 2 ACAT 4 TR	Dec-16	Sep-20	$279.2				Jul-22	$279.2	**Current Estimate vs Original Baseline**: The schedule delay of 22 months (-48.9% variance) is associated with the FY19 Government Shudown; display monitor and trackball issues; and the COVID-19 restrictions.
ERAM Sustainment 3 ACAT 4 TR	Dec-19	Sep-26	$332.9				Sep-26	$334.9	**Current Estimate vs Original Baseline:** The cost increase of $2.0M (-0.6% variance) is associated with COVID-19 impacts.

FAA Capital Programs
Current Information for Major Programs

	Original Baseline			Rebaseline			Current Estimate*		
Logistics Center Support System (LCSS) ACAT 2	Apr-10	Apr-14	$67.4	Apr-14	Apr-16	$79.4	Sep-22	$132.0	**Rebaseline vs. Original Baseline:** The schedule delay of 24 months (-50% variance) and cost increase of $12M (-17.8% variance) is associated with the following factors: 1) Business processes developed during the Business Process Reengineering (BPR) phase did not address system interactions between functional areas; 2) delays in developing interfaces with legacy systems; 3) complexity of the tool integration required for interfaces; and 4) changes in contract and program management. In Apr-14, the JRC approved a Baseline Change Decision (BCD) for LCSS. **Current Estimate vs Rebaseline:** The schedule delay of 77 months (-106.9% variance) and cost increase of $52.6M (-66.2% variance) are associated with: 1) user and system requirements that were identified after the Initial Operational Capability (IOC) remain to be developed; 2) workarounds as a result of unmet requirements that did not have documentation to support the remaining development; 3) related work processes and system interfaces that were not fully defined or documented that resulted in additional requirements to be developed to meet user needs; 4) efforts to stabilize defects found during initial production; and 5) JetBrains impact.
MODE S Beacon Replacement System (MSBRS) Phase 1A ACAT 4 TR	Nov-19	Apr-27	$209.2				Apr-27	$209.2	
NextGen Weather Processor (NWP) ACAT 1	Mar-15	Aug-22	$189.3	May-21	Apr-26	$319.9	Apr-26	$319.9	**Rebaseline vs. Original Baseline:** The schedule delay of 44 months (-49.4% variance) is associated with the CSS-Wx delays and Government Furnished Information (GFI). NWP and CSS-Wx are highly integrated programs. NWP is dependent on CSS-Wx going operational. The cost increase of $130.6M (-69.0% variance) is associated with underestimating software design and development, prime contractor rate changes due to a corporate reorganization, interface changes with CSS-Wx for input and output data, underestimating the Integrated Logistics Support (ILS) Transition, and the transfer of Aviation Weather Display (AWD) service responsibility to NWP which included the development of an interface to System Wide Information Management (SWIM).
Next-Generation VHF/UHFAir to Ground Communication System (NEXCOM) Phase 2 ACAT 2 NI	Aug-17	Dec-26	$334.2				Dec-26	$344.1	**Current Estimate vs. Original Baseline:** The cost increase of $9.9 (-3.0%) is due to a congressional plus up in Fiscal Year 2020 which will be used to prioritize the procurement and replacement of version 1 radios with a supportability issue at En route and Terminal sites.
System Approach for Safety Oversight (SASO) Phase 3 ACAT 3 NI	Feb-16	May-23	$135.7				May-23	$135.7	
System Approach for Safety Oversight (SASO) Phase 4 ACAT 3 NI	Jul-21	Sep-28	$130.4				Sep-28	$130.4	

FAA Capital Programs
Current Information for Major Programs

Programs	Original Baseline			Rebaseline			Current Estimate*		Comments
	Original APB Date	Completion Date	Budget $M	Rebaseline APB Date	Revised Completion Date	Revised Budget $M	Completion Date	Budget $M	
System Wide Information Management (SWIM) Segment 2B ACAT 2	Oct-15	Sep-21	$119.6				Sep-22	$124.4	**Current Estimate vs. Original Baseline:** The schedule delay of 12 months (-16.9% variance) is associated with the COVID-19 restrictions. SWIM Segment 2B is comprised of four capabilities, three of which have experienced delays related to COVID-19 ~~work~~ restrictions. Of those, only one—the deployment of the SWIM Terminal Data Distribution Service (STDDS) Release 6—results in a schedule variance exceeding the original baseline completion date. The cost increase of $4.8M (-4.0% variance) is associated with under estimated costs for Transitioning to Operations & Maintenance (TOM), additional costs for system development for SWIM capabilities, and impacted by the FY19 Government Shutdown.
System Wide Information Management (SWIM) Segment 2C ACAT 4TR	Mar-20	Sep-25	$129.5				Sep-25	$133.9	**Current Estimate vs. Original Baseline:** The cost increase of $4.4M (-3.4% variance) is associated with replacement of the legacy National Offload Program (NOP) hardware at 148 Standard Terminal Automation Replacement System (STARS) sites with Store and Forward Appliances (SAFA Devices) and the related upgrade of the SWIM Terminal Data Distribution Services (STDDS) software.
Standard Terminal Automation Replacement System (STARS) Sustainment 2 ACAT 4 TR	Sep-17	May-22	$102.1				May-22	$102.1	
Standard Terminal Automation Replacement System (STARS) Sustainment 3 ACAT 4TR	Jun-21	Mar-27	$241.4				Mar-27	$241.4	
Terminal Flight Data Manager (TFDM) ACAT 1 NI	Jun-16	Sep-28	$795.2				May-31	$1,004.9	**Current Estimate vs. Original Baseline:** The schedule delay of 32 months (-21.8% variance) and cost increase of $209.7 (-26.4% variance) is associated primarily with COVID-19 restrictions as well as the enhancement/sustainment shortfall, TFMS DSP impact, FTI/SWIM cost growth, FY19 Government Shutdown, and new two-way interface with Tower Data Link Services requirements.
Time Based Flow Management (TBFM) Enhancement 1 ACAT 3 NI	Apr-15	Sep-22	$188.3				Dec-23	$228.8	**Current Estimate vs. Original Baseline:** The schedule delay of 15 months (-16.9% variance) and the cost increase of $40.5M (-21.5% varaiance) is associated with the following: 1) A replan to address high priority North East Corridor improvements; 2) the FY19 Government Shutdown; 3) COVID-19 restrictions and 4) the need to address the complexity of multiple stakeholders, training, and the degree of change management required in the field to implement regional integration as part of Trajectory Based Operations (TBO).
Traffic Flow Management System (TFMS) Enhancement 4 ACAT 3 NI	Jun-17	Sep-22	$78.6				Apr-23	$68.6	**Current Estimate vs. Original Baseline:** The program has been impacted by a contract protest and resulting orders from the Office of Dispute Resolution for Acquisitions (ODRA) and the FAA Administrator. Compliance with the ODRA rulings have limited the work allowed on the contract. The schedule delay of 7 months (-11.1% variance) and the cost decrease of $10.0 (12.7% variance) is associated with 1) the Improved Demand Prediction (IDP), Integrated Departure Route Planning (IDRP) and Common Support Services-Weather (CSS-Wx) requirements deferred to a future project due to contractual limitations and 2) addition of TFMS Reroute Impact Assessment (RRIA) capability to the program baseline.

*Impacts related to the work restrictions implemented due to COVID-19, which include travel restrictions, limitiations on facility access to support the operation, subject matter expert availability, are still emerging. The current estimates are as of January 2022.

FAA Capital Programs
Major Programs - Completed or Cancelled

	Original Baseline			Actual Results		
Programs	Original APB Date	Completion Date	Budget $M	Completion Date	Budget $M	Comments
None						No major programs were completed or cancelled since the last publication of the National Airspace System (NAS) Capital Investment Plan (CIP)

Section 9. IIJA
F&E Spend Plan

Facilities and Equipment Spend Plan for Fiscal Year 2023
Infrastructure Investment and Jobs Act Funding

The following table depicts the Facilities and Equipment (F&E) detailed spend plan at the Budget Line Item (BLI) level. FAA plans to distribute $1 billion in funding for FY 2023 for the facilities projects listed below.

FY23 BLI Number	Facilities and Equipment (F&E) Infrastructure Program Name	FY23 Amount ($M)
1J01	Air Route Traffic Control Center (ARTCC) & Combined Control Facility (CCF) Building Improvements	45.0
1J02	Terminal and En Route Air Traffic Control Facilities - Replace	510.0
1J03	Air Traffic Control En Route Radar Facilities Improvements	1.0
1J04	ATCT/Terminal Radar Approach Control (TRACON) Facilities - Improve	147.0
1J05	Unstaffed Infrastructure Sustainment and Real Property Disposition	52.0
1J06	Electrical Power Systems - Sustain/Support and Fuel Storage Tank Replacement and Management	148.0
1J07	Hazardous Materials Management and NAS Facilities OSHA and Environmental Standards Compliance	36.0
1J08	Facility Security Risk Management	1.0
1J09	Personnel Compensation, Benefits, and Travel (PCB&T)	60.0
	Total Infrastructure Account	**1,000.0**

In conjunction with the spend plan, the law further requests a list of projects for replacing facilities that are owned by the FAA, including air traffic control towers that are staffed through the contract tower program. There are 35 facility projects under BLI 1J02 shown in the table above that are being evaluated for replacement.

- There are four high priority operationally needed terminal facilities on track for replacement. Three facilities previously requested design funding in the FY 2022 President's Budget Request Des Moines (DSM), San Jose (SJC), Hillsboro (HIO) and one facility, Nashville (BNA) received design funding in the FY 2020 F&E appropriation.

- The remaining 31 towers are being evaluated for replacement with a standard modular facility design and were selected based on the following criteria:

    - Facility is FAA owned and more than 40 years of age.

    - Facility is located within the continental United States.

    - Facility is a standalone tower that does not have a Terminal Radar Approach Control Facility collocated at the site. Future modular replacements could include a collocated Terminal Radar Approach Control Facility.

    - Facility is under 100 feet in height.

  - Tier 3 and Tier 4 facilities that support small airports in the United States. Small airports have less than 150,000 air traffic control operations per year.

Additional qualifications used for the identification of these initial planned sites includes the following criteria:

  - Located in a Small Business Administration (SBA) designated "HUBZone." This is a SBA program for small companies that operate and employ people in historically underutilized business zones.

  - The FAA has a recurring process for evaluating if a facility should be replaced, sustained, or modernized to ensure an acceptable level of building conditions. Several facilities were under evaluation as potential replacement projects prior to IIJA enactment and have been included in this spend plan.

- It should be noted that if issues arise during the pre-construction phase of the replacement process for the smaller modular facilities, the FAA would consider other FAA owned air traffic control facilities that meet the qualifications above for replacement. Potential issues that could impact the successful construction of a facility include:

  - The virtual siting of the facility reveals that the new Air Traffic Control Tower would exceed the 120-foot standard design that will be used to construct these facilities.

  - A location proposed on the airport grounds requires extensive infrastructure investment such as building roads and running utilities to a land parcel that is in a remote area of the airport.

  - Environmental issues involving wetlands and environmental offsets.

  - Other issues will be evaluated on a case-by-case basis.

  - The replacement of these Tier 3 and Tier 4 facilities is designed to be an efficient and streamlined construction process and any impediments to that process could result in FAA moving to the next candidate site.

- The actual cost of these replacements has not been determined and will impact the total number of facility projects.

The following tables identify the four high-priority operationally-needed facility projects on track for replacement, as well as the 31 Tier 3 and Tier 4 standardized modular facility projects under evaluation for replacement.

Priority Facility Replacements				
Location ID	**State**	**City**	**Facility Type**	**HUBZone/ Recurring Process**
BNA	TN	Nashville	Combined TRACON Tower	Recurring Process
DSM	IA	Des Moines	Combined TRACON Tower	Recurring Process
HIO	OR	Hillsboro	FAA Tower	Recurring Process
SJC	CA	Santa Clara	FAA Tower	Recurring Process

Standardized Modular Facility Replacement Candidates (Tier 3 and Tier 4 Facilities)				
Location ID	**State**	**City**	**Facility Type**	**HUBZone/ Recurring Process**
AHN	GA	Athens	FAA Contract Tower (FCT)	HUBZone
ALN	IL	East Alton	FAA Contract Tower (FCT)	HUBZone
BFM	AL	Mobile	FAA Contract Tower (FCT)	HUBZone
BLI	WA	Bellingham	FAA Contract Tower (FCT)	HUBZone
DET	MI	Detroit	FAA Contract Tower (FCT)	HUBZone
DTN	LA	Shreveport	FAA Contract Tower (FCT)	HUBZone
EMT	CA	El Monte	FAA Tower	HUBZone
EYW	FL	Key West	FAA Contract Tower (FCT)	Recurring Process
FCM	MN	Eden Prairie	FAA Tower	Recurring Process
FLO	SC	Florence	FAA Tower	HUBZone
FMY	FL	Ft. Myers	FAA Contract Tower (FCT)	HUBZone
FTW	TX	Fort Worth	FAA Tower	HUBZone
GLH	MS	Greenville	FAA Contract Tower (FCT)	HUBZone
HFD	CT	Hartford	FAA Contract Tower (FCT)	HUBZone
HKS	MS	Jackson	FAA Contract Tower (FCT)	HUBZone
LAW	OK	Lawton	FAA Contract Tower (FCT)	HUBZone
LEB	NH	West Lebanon	FAA Contract Tower (FCT)	HUBZone
LOU	KY	Louisville	FAA Tower	HUBZone
MCN	GA	Macon	FAA Contract Tower (FCT)	HUBZone
MOD	CA	Modesto	FAA Contract Tower (FCT)	HUBZone
MVY	MA	Tisbury	FAA Contract Tower (FCT)	HUBZone
MWA	IL	Marion	FAA Contract Tower (FCT)	HUBZone
OGD	UT	Ogden	FAA Contract Tower (FCT)	HUBZone
PAH	KY	West Paducah	FAA Contract Tower (FCT)	HUBZone
PIH	ID	Pocatello	FAA Contract Tower (FCT)	HUBZone
PNE	PA	Philadelphia	FAA Tower	HUBZone
PUB	CO	Pueblo	FAA Tower	HUBZone
RDG	PA	Reading	FAA Tower	Recurring Process
RVS	OK	Tulsa Riverside	FAA Tower	HUBZone
SLE	OR	Salem	FAA Contract Tower (FCT)	HUBZone
TOP	KS	Topeka	FAA Contract Tower (FCT)	HUBZone

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