AVIATION SAFETY
WORKFORCE
PLAN

2021 | 2030

Federal Aviation Administration

This is the Federal Aviation Administration's (FAA) 14th annual update to the Aviation Safety (AVS) Workforce Plan. This plan provides staffing estimates for all of the FAA's AVS Services and Offices as well as actual on-board levels as of September 2020.

This 2021 report incorporates changes in aircraft fleet and operations forecasts, inspector and engineer retirements, and other factors. To meet the requirements of the FAA Reauthorization Act of 2018 (P.L. 115-254), and the Consolidated Appropriations Act, 2021 (P.L. 116-260), the FAA has prepared an annual AVS Workforce Plan that:

- Provides the background for current staffing levels

- Describes the evolving AVS environment

- Provides a staffing forecast for Aviation Safety Inspectors and Aviation Safety Engineers based on model results

- Forecasts expected attrition and specific hiring targets over a 10-year period

- Details strategies for meeting staffing needs

TABLE OF CONTENTS

EXECUTIVE SUMMARY

This document reflects the Federal Aviation Administration's (FAA) fourteenth annual update to the Aviation Safety (AVS) Workforce Plan. The plan plays an integral role in helping to shape the future of the AVS organization.

Aviation safety is our mission and our passion. There are 7,276 skilled and dedicated professionals who make up the AVS workforce and are vital contributors to making certain America's National Airspace System (NAS) remains the safest in the world. The NAS is the world's most complex airspace, encompassing commercial and general aviation, and the emerging unmanned aircraft systems and commercial space launch sectors. Everything AVS does from an aircraft's design through operation ensures every entity certified to operate within the NAS meets required safety standards and is in a condition for safe operation. This work is not conducted in a vacuum. It is the outcome of the work conducted by skilled and dedicated people who are committed to accomplish our safety mission.

Even though the FAA is operating the safest aerospace system in the world, the aerospace industry is continually evolving and transforming due to consolidation, globalization, and the introduction of new business processes to stay competitive. To meet these challenges, our workforce and our safety processes need to evolve to ensure we can proactively address emerging safety risks through consistent, data-informed, risk-based processes and practices.

Our Workforce Plan highlights opportunities for us to build a stronger and more dynamic workforce for the future, one able to evolve in support of aviation's constantly-evolving environment. As such, it compels us in our recruitment, training, and professional development activities to address rapid change in such fields as: safety management systems, human-machine interface, unmanned aircraft systems, data and information sharing, advanced analytics and data mining, and voluntary safety reporting.

To meet the safety needs of the NAS, AVS will need to recruit, hire, maintain, and retain a workforce with outstanding technical expertise, capabilities, and adaptability. Our efforts must ensure we can hire and retain the right people with the right skills and mindset, engaged at the right time, with systematic coordination between certification and operational suitability.

[1] *https://www.bts.dot.gov/newsroom/2018-traffic-data-us-airlines-and foreign-airlines-us-flights*

AVS's workforce development efforts are tied to our strategic vision of being an innovative and agile organization that achieves excellence and assures safety in the global aerospace system. True to this aim, AVS intends to be at the vanguard of: using predictive modeling to anticipate problems in the operation of aircraft systems before they result in accidents; anticipating new technologies and novel applications of current technology in our plans and activities; responding with agility in our regulatory and oversight work to the dynamics of the aviation system; creatively leading domestic and international stakeholders in efforts to influence global excellence in aviation safety.

By learning from our past successes and challenges, and by thoughtfully plotting our future trajectory as the world's leading aviation safety organization, we are determined to develop a workforce with the skills needed to keep delivering the safe aviation environment upon which the public depends.
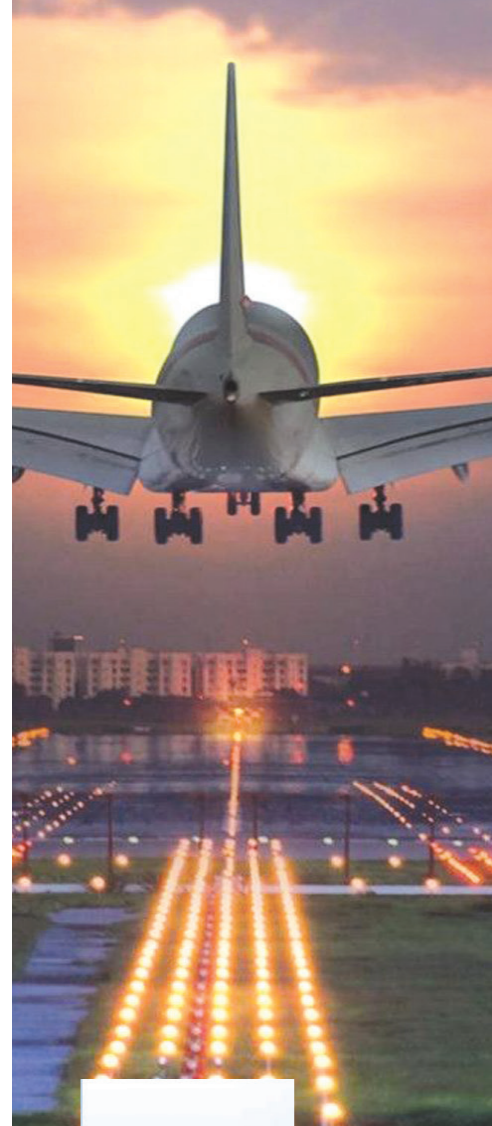
SECTION 1: ADVANCING THE SAFETY MISSION

One Mission, Many Contributors

AVS's mission is to provide the safest, most efficient aerospace system in the world through a data-driven, risk-based, systems approach for standards, certification, and oversight. The scope of responsibilities required to keep the NAS operating at the height of safety and efficiency requires our organization to be at the forefront of aerospace technology and human factors.

To advance our mission, AVS takes on broad responsibilities including: setting standards for certification, oversight of design and manufacturing organizations, and oversight of airmen, air operators, air agencies, and designees; issuing airworthiness certificates; and, through Continued Operational Safety, assuring the integrity of a product throughout its service life. Excellence in all elements of AVS: people, operations, maintenance, and the oversight of those who design or produce aviation products, is central to our success.

The breadth of our work reflects the constant demands of the world's most complex transportation system. On a typical day -prior to the pandemic, there were nearly 50,000 flights and almost 3 million passengers in the air over the United States. That's nearly a billion passengers per year. Although the number of flights and passengers declined in 2020, these metrics are projected to return to form and continue to grow once we are past the pandemic[1] numbers that are projected to return and continue to grow. Going forward alongside expected increases in passenger demand and fleet sizes, the variety of technologies traversing the skies continues to grow. It is important to note, however, that risk is not necessarily a function of traffic levels alone. The shifting nature of risk carries with it a significant workload to manage. For example, with the use of unmanned aircraft systems or drones becoming more ubiquitous and the cadence of commercial space launch and recovery operations increasing at a steady pace, the challenges facing our workforce have never been greater.

[1] *www.faa.gov/data_research/aviation/aerospace_forecasts/media/FY2020-40_FAA_Aerospace_Forecast.pdf*

From a broader perspective, AVS's safety goals could not be achieved without active engagement with key stakeholders, including airlines/operators, airports, air navigation service providers, aircraft product and part manufacturers, maintenance and repair organizations, national and international aviation organizations, and union and industry representatives. AVS is proud to rely upon expertise and collaboration across all facets of aviation safety. In the conduct of our work, we employ several tools that enable mutual cooperation in service to our common goals. They include:

- **Risk-Based Decision Making** is the active use of safety and performance data to integrate risk into the decision-making process. This method is used in all aspects of managing aviation safety and also applies to how we manage our resources. It employs an active use of safety data using monitoring and tracking methodologies to assess the acceptance criteria for safety risk and existing safety performance controls. The active use of safety and performance data to integrate risk into the decision-making processes. This method is used in all aspects of managing aviation safety and also applies to how we manage our resources. It employs an active use of safety data using monitoring and tracking methodologies to assess the acceptance criteria for safety risk and existing safety performance controls.

- **Safety Management Systems (SMS)**, a formal, top-down, organization-wide approach, ensures a formalized and proactive approach to system safety through risk management using an integrated collection of processes, procedures, and programs. SMS promotes a culture of data sharing and leveraging resources that focus on safety oversight of systems and processes establishing aviation standards for Safety Policy, Safety Risk Management, Safety Assurance, and Safety Promotion.

- **Compliance Program** is about following the rules. It also means going beyond the rules to take proactive measures to find and fix problems and mitigate the risk they create. The Compliance Program focuses on that core goal—using the most effective means to fix problems before they cause an accident. Although intentional non-compliance poses the greatest systemic safety risk, the compliance program recognizes that most operators voluntarily comply with both the rules and the core principles of safety. The Compliance Program addresses unintentional errors that can have a serious adverse impact on safety. The Compliance Program addresses situations such as flawed procedures, simple mistakes, a lack of understanding or diminished skills. In these cases, corrective tools can include root cause analysis and training, education, or other appropriate improvements to procedures or training programs for regulated entities, which are documented and verified to ensure effectiveness. The FAA's goal is to use the most effective and appropriate means to ensure compliance and prevent recurrence.

- **Designees,** are qualified individuals and organizations in the aviation industry authorized to conduct examinations, perform tests, and issue approvals and certificates on behalf of the FAA.

- **Government-industry cooperative efforts,** such as the Commercial Aviation Safety Team (CAST) and General Aviation Joint Steering Committee (GAJSC), which use integrated, data-driven strategies to reduce accident and fatality risk.

- **Information sharing programs,** such as Aviation Safety Information Analysis and Sharing (ASIAS), which taps data and information sources across government and industry, including voluntarily-provided safety data, to monitor known risk, evaluate the effectiveness of deployed mitigations, and detect emerging risk.

We have an integrated approach to safety, with the whole of AVS being greater than the sum of our parts. While AVS's functional activities are accomplished by eight services and offices, each works interdependently with the other services and offices and with external stakeholders to advance our mission goals. Our shared passion for aviation safety is the driving force for all we do, with our services and offices united in a spirit we call "OneAVS" to deliver results for the AVS safety mission.

Delivering Results

As this chart indicates, there is much for AVS to manage up in the skies and on the ground. These numbers illustrate the broad scope of AVS's work. Beyond the numbers of aircraft registered, active pilots, designees, and airmen medical examinations, etc. are tangible accomplishments that enhance safety in this complex system.

2020 AVIATION ENVIRONMENT

(Figure 1)

6,856
Air Agency Certificates

5,392
Air Operator Certificates

21,097
Mechanics with Inspection Authority

1,500
Approved Manufacturers

Designees

Almost 8,200

More Than 2,000 Aircraft Certifications Designees

More Than 3,700 Flight Standards Designees

Almost 2,500 Aerospace Medicine Designees

ODA

AIR: 70
FS: 9

750,000
Non-Pilot
Personnel

432
Aviation
Authorities
(other countries)

**Almost
300,000**
Aircraft

617
National
Transportation
Safety Board
Recommendations
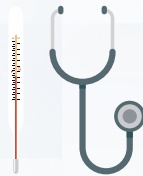
16,000
ATCS Medical
Clearance
Examinations

350,000
Airmen Medical
Examinations

6,500
Aviation Industry
Entities Covered
by Anti-Drug &
Alcohol Programs

10,000
Check
Airmen

**Nearly 1 Million
Active Pilots**
(nearly 200,000 UAS
Remote Pilots)

Over 16,000
AOV Credentials

**Approaching
4,000 DOD
Credentials**

Nearly 120,000
Flight
Instructors

**UAS Registrations:
Approaching
2 Million**

Air Carrier Fatality Rates/ Targets Fatalities Per 100 Million Persons on Board

Legend:
- Target - Achieve 50% Reduction By 2025
- FY 97-06 Baseline
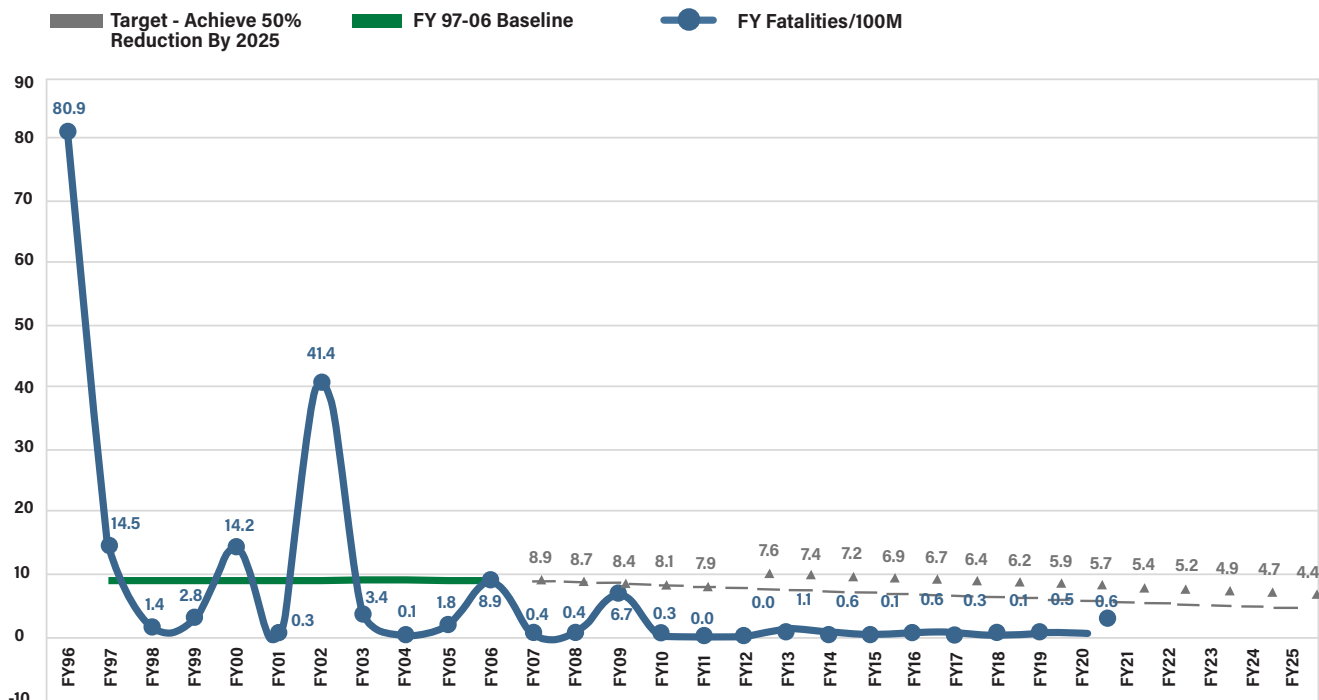- FY Fatalities/100M

Figure 2

AVS Safety Performance GA Fatal Accident Rate Fatal Accidents/100,000 Hours)

Legend:
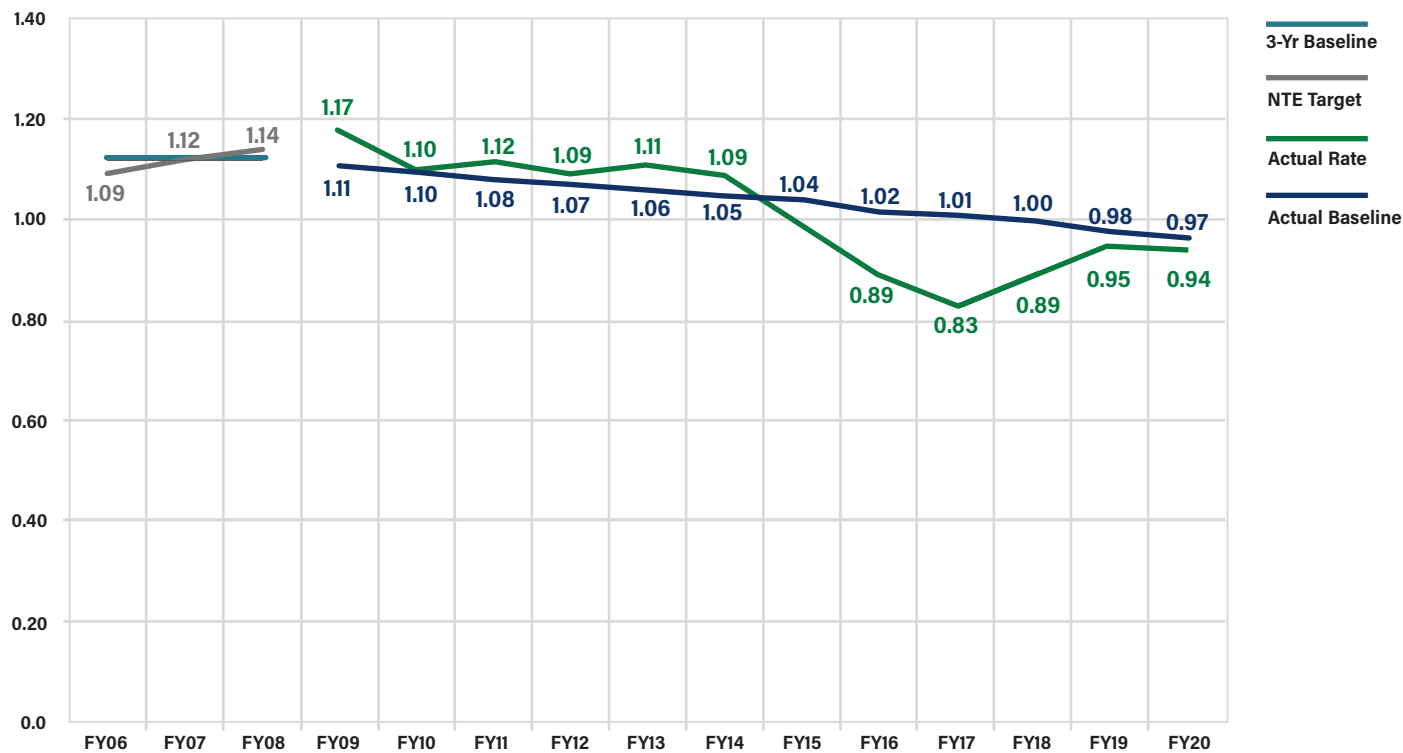- 3-Yr Baseline
- NTE Target
- Actual Rate
- Actual Baseline

Figure 3

AVS managed the FAA's Unmanned Aircraft Systems Integration Pilot Program (IPP), which ran from 2017-2020, and significantly advanced the safe integration of unmanned aircraft systems into the NAS. This cooperative effort with nine state, local, and tribal governments throughout the United States evaluated a host of operational concepts, including night operations, flights over people and beyond the pilot's line of sight, package delivery, detect-and-avoid technologies, and the reliability and security of data links between pilot and aircraft. Recently, the delivery of packages, medical supplies, and even library books by drones under FAA air carrier certification provided an important alternative for Americans limiting their travel during the coronavirus 2019 (COVID-19) pandemic. In commercial and general aviation, long-term safety trends continue to be positive (see chart above). The commercial aviation sector, having reduced fatality risk by 83 percent from 1998 to 2008 in the United States, is on track to meet the ambitious goal of reducing this risk by another 50 percent from 2010 to 2025. The commercial aviation sector is accelerating the transition from reacting to accidents to conducting prognostic safety analysis to prevent accidents. This is done by leveraging data from across the aviation community to identify emerging and changing risks and proactively adopting voluntary safety enhancements to mitigate the risks. Similarly, by promoting data-driven risk reduction efforts focused on education, training, and new equipment in general aviation aircraft, the target goal of reducing the general aviation fatal accident rate per 100,000 flight hours by 10 percent from 2009 to 2019 was met, and subsequent progress was registered in 2020.

The rapidly evolving and globalized aviation sector also benefits from AVS's unique technical prowess and experience in aviation safety. This past year, AVS continued to strengthen our engagement in the International Civil Aviation Organization (ICAO) and provided expertise to support the FAA's engagement in the ICAO Council Aviation Recovery Team (CART). We expanded our cooperation under the U.S.-EU Aviation Safety Agreement, and we finalized documents that reestablish our direct working relationship with the United Kingdom Civil Aviation Authority (CAA). Additionally, consistent with the FAA's international strategy, AVS's safety efforts in the coming years will focus on the people involved in aviation safety, our core mission as aviation safety champion and regulator, and the advancement of safety and security in critical technical areas.

Without a doubt, successes like these significantly enabled AVS to meet its staffing goals in early fiscal year 2021 by hiring the people with the necessary technical expertise, capabilities, and adaptability to advance our safety mission. This was especially true concerning badly needed Aviation Safety Inspectors, thanks to an energized outreach and recruitment effort, along with helpful incentives. Our people are foundational for having and maintaining the world's safest aviation system, and we are determined to hire and retain the right people with the right skills and mindset, engaged at the right time with systematic coordination between certification and operational suitability.

Drivers of Future Skills Needs

One of the key tenets of the AVS organization is to be a learning organization. We cannot perfectly predict the future. We can, however, take the challenges of yesterday and learn from them to deliver on our mission today and to position us for improved operations tomorrow. The last few years have provided several opportunities to learn. As a result of this, we will pursue several avenues of improvement, including:

- Establishing the Organization Delegation Authorization (ODA) office as approved in the FY21 Appropriations. The ODA office provides oversight and ensures the consistency of the FAA's audit functions under the ODA program across AVS. Growing this office over the next few years will require AVS to expand the complement of talented oversight professionals having skills related to systems thinking, systems engineering, human factors, technical engineering, Safety Management Systems, analytics, and program management.

- Ensuring AVS is capable of meeting the needs of the expanding global aviation system, the AVS international group will expand its safety technical staff to enable organizational integration, corporate decision-making, agility, and efficiency in order to maximize the global influence of AVS international efforts.

- Positioning to address the rapid pace of new entrants into the NAS. One avenue to enable this entails updating position descriptions for safety critical positions (including oversight staff) to include a focus on new technologies, human-machine interface, and systems engineering.

- Improving our ability to predict emerging aviation risks before they become problems in a more complex aviation environment. This requires us to build up our bench strength of data scientists and data mining and data analytics specialists.

- Enhancing the development and validation of Aircraft Certification and Flight Standards safety workforce staffing models to ensure the modeling reflects current relationships between the FAA and industry. Modeling engineering skills are required to ensure the translation of subject matter expertise to the right set of variables. Improving training opportunities for AVS staff by collaborating with academia and industry on curriculum development and delivery for both technical and foundational skills.

- Implementation of virtual and remote oversight practices. To ensure AVS is capable of meeting the needs of the expanding global aviation system, the Aircraft Safety and Certification Reform Act of 2021 enacts several major changes to US aviation law and mandates adjustments to regulations and policy. It establishes over 40 unique requirements aimed primarily at adjusting the process for certifying new and amended aircraft designs, overseeing US transport airplane manufacturers, and ensuring systems safety and human factors are effectively accounted for in the design and operation of aircraft. The act includes requirements for FAA technical experts to more directly participate in the approval, qualifications review, and mentorship of ODA unit members. It also addresses opportunities for improvements in the aviation system that may have been identified following the tragic 737 MAX accidents. In addition, it also contains provisions on international collaboration, workforce development, and the expansion of Safety Management Systems. Collectively, these provisions will require a significant increase in staff and resources above and beyond other major change drivers impacting AVS.

Adapting to a Rapidly Changing World

Continual change has always been a tenet of the aviation industry, and recent events reinforce this. Changes are occurring in broad areas of impact such as technology, participants, and practices and places greater demands on AVS and how we will shape our future workforce.

A More Globally Connected System

Aviation is an increasingly global enterprise, driven by diverse suppliers and service providers operating under increasingly complex and decentralized business models. We have to be vigilant in looking out for new safety hazards that may require different approaches and more agile responses to rapid technological change.

Growing Aviation Demand and Diversity

The projected growth in demand and diversity from conventional customers as well as new entrants in non-traditional areas will challenge the FAA's ability to provide responsive and consistent service to our stakeholders. This resource challenge could inhibit innovation, a key driver of long-term improvements in aviation safety.

Ever Increasing Safety Expectations

The public is accustomed to exceptional levels of aviation safety. We must strive to uphold this fundamental standard through transparency and accountability, irrespective of the challenges posed by the more complex, diverse, and dynamic aviation environment.

Looking to the future, in the face of rapid global change, our safety mission of providing the safest, most efficient aerospace system in the world through a data-driven, risk-based systems approach for standards, certification, and oversight is steadfast. We embrace, however, the imperative of adopting transformative change in how we conduct our work.

It was in this spirit we developed a Strategic Vision, reflecting the idea that no matter what comes next, we must be ready. The aviation safety community envisions a future that enables increased flexibility, faster time to market for aviation products, and solutions that are expertly tailored to specific needs. Increased demands and the promise of new entrants, technologies, and designs necessitate we adapt our approach if we are to continue to deliver on our safety mission. Our five-year Strategic Plan moves us toward this future.

We are already seeing the impact on our organization and our team due to the changing aviation landscape. The pace of change has increased, demands have increased, and resources are limited. At a minimum, changing demands on aviation safety professionals require new or enhanced skills so we can continue to be agile and innovative in delivering progress toward achieving our mission.

To achieve our common safety mission, we will continue to build on the framework of a culture that promotes a unified approach to managing safety risks and conducting safety oversight, thereby enhancing our impact on stakeholders organizations at home and abroad. And we will continue to invest in our people with training, skill building, and leadership development opportunities in an environment that supports learning, diversity, and inclusion.

Strategic Objectives Driving Workforce Skills Needs

Improve Aerospace Safety

Several AVS strategic objectives are driving how we assess our workforce skill needs. First among them is improving aerospace safety. Beyond recruiting employees who have the right technical skills, we need employees with the right attitude who will always stand up for safety, employees who will consistently uphold the highest ethical standards and who will honor our commitments through shared accountability. Consistent with this objective, we are working to expand voluntary safety programs across aviation stakeholders. Within AVS we are developing a new Voluntary Safety Reporting Program (VSRP) in which employees will have the ability to raise safety issues, anonymously if desired, without fear of retribution. As these programs generate and amass data, we will need data scientists and data analysts to structure and mine the data, identify trends, and reveal precursors. Systems engineers are needed to develop optimized solutions that address the safety concern with efficient use of resources.

Excel Domestically to Influence Globally

AVS understands that the excellence our workforce demonstrates in the operation of the domestic aviation system will also help us influence continuous improvement of aviation safety worldwide. With the rise of other influential international stakeholders and the connectivity of AVS efforts with the international community, our workforce must be informed and able to integrate international considerations.

[2] *Due to Covid-19, interim passenger fleet size dropped by 32 percent and interim cargo fleet size dropped by 28 percent over 2020. Forecasts indicate a return to normal operations over the next eight years, along with continued growth in demand.*

In the coming years, AVS will evaluate international-related workforce awareness, competencies, and training; define AVS-wide workforce needs for international activities; and establish workforce development improvement efforts. AVS will expand expertise in international policy, communications, strategic analysis, planning and implementation.

Anticipate and Accommodate Change

We also recognize the aviation environment will continue to change rapidly, driven by new technologies and complex business models. Today's challenges include safely accommodating the full scope of new entrants and capabilities into the NAS, including urban air mobility, high altitude drones, the commercialization of space operations, and soon, the return to supersonic passenger flight. Staying abreast of new technologies and entrants while anticipating the impacts they may have on the aviation system requires expanding and evolving our group of chief scientists and technical advisors. Additionally, planning and executing the safe entrance into the NAS requires coordination across several disciplines, such as systems engineering, software engineering, manufacturing and industrial engineering, data science and analysis, human-machine interface, policy and rule-making, inspecting, and medical.

Innovate and Facilitate to be on the Cutting Edge

Our Workforce Plan envisions that continuing research investments will give us insight into future technology trends, and that hiring the people who are acknowledged experts in their fields will keep us innovative and on the cutting edge of progress. Our aim is to harness the power of big data and predictive analytics to identify and manage emerging risks through objective, well-understood criteria. To accomplish this, we are assessing the best methods for hiring specialists in artificial intelligence, data mining and analysis, machine learning, and modeling engineering.

Foster Organizational Excellence

Finally, the AVS workplace of the future will be defined by a positive, highly engaged workforce. Armed with improved workforce development and recruitment strategies, we will develop a workforce that will foster organizational excellence through its commitment to and embrace of our long-standing and well-tested core values: safety, excellence, integrity, people are our strength, and innovation. Already, the FAA's Safety Oversight and Certification Advisory Committee (SOCAC) is examining and making recommendations on how the FAA can plan for future personnel knowledge and skill needs. The committee's work will assist future FAA hiring plans and assessments as the Agency and industry workforce evolves and position the FAA to align workforce development and training with its future needs.

AVS Strategy for Effective Use of Resources

After several years of operating below staffing targets, AVS achieved full staffing in the first month of Fiscal Year 2021. With an increase in available candidates due to the downturn in the aviation industry, the ability to do this was enhanced by using the hiring flexibilities afforded to AVS. Maintaining that staffing level with skilled personnel that have completed all onboarding training and are positioned to effectively deliver against job requirements is a delicate balance of maintaining a primed pipeline while anticipating attrition.

Our commitment to be agile in responding to the shifting demands of the aviation safety system requires a strategic approach to managing our staffing numbers across the AVS enterprise. While the need for core aviation competencies remains steady, other skill needs may be somewhat dynamic. The skills needed in one area of aviation safety today may be in higher demand in a different area tomorrow, or the skill may phase out altogether. AVS is committed to our fiduciary responsibility for the effective use of our resources to manage aviation safety risk. There are several tools AVS will leverage throughout the year to ensure we continue to address critical priorities.

Risk-based decision-making is a tool used in all aspects of managing aviation safety. It also applies to how we manage our resources. AVS is working to leverage an enterprise approach to resource management. The priority need for a given skill set may shift across the services and offices depending on the system needs. Resources may be realigned across the AVS organization to address identified critical priorities. This agility is key to addressing the critical needs of a changing landscape.

Additionally, AVS is evaluating opportunities to streamline business operations and gain efficiencies. Using risk-based analysis and decision-making, any efficiency gains will enable us to realign resources to the critical needs. This realignment would be achieved through attrition and repurposing of the open billets to unmet high-priority needs.

Finally, AVS is working to evolve the methodology for workforce modeling to enable sensitivity analysis across a greater breadth of variables, allowing for improved strategic planning.

SECTION 2: UNDERSTANDING THE AVS WORKFORCE

Staffing Categories

The AVS workforce is comprised of three staffing categories.

Safety Critical Operational Staff

Safety Critical Operational Staff have a direct operational impact on the AVS safety mission. These individuals provide expertise in monitoring, oversight, enforcing compliance, certification, and investigation functions of AVS.

Safety Technical Specialist Staff

Safety Technical Specialist Staff provide the necessary support for Safety Critical Operational Staff to do their jobs efficiently and effectively. These individuals perform functions such as evaluating and analyzing safety critical programs, developing and maintaining the tools and programs needed to support the safety critical operations, and supervising and directing safety critical program activities at headquarters and regional levels.

Operational Support Staff

Operational Support Staff consist of personnel in functions that are not classified as Safety Critical Operational Staff or Safety Technical Specialist Staff. These individuals perform functions such as management, supervision, resource planning, and project administration.

AVS Services and Offices

AVS serves the aviation community by promoting safety and providing a breadth of services. The AVS workforce includes eight services and offices located domestically and abroad.

The population distribution charts represent the September 26, 2020 workforce.
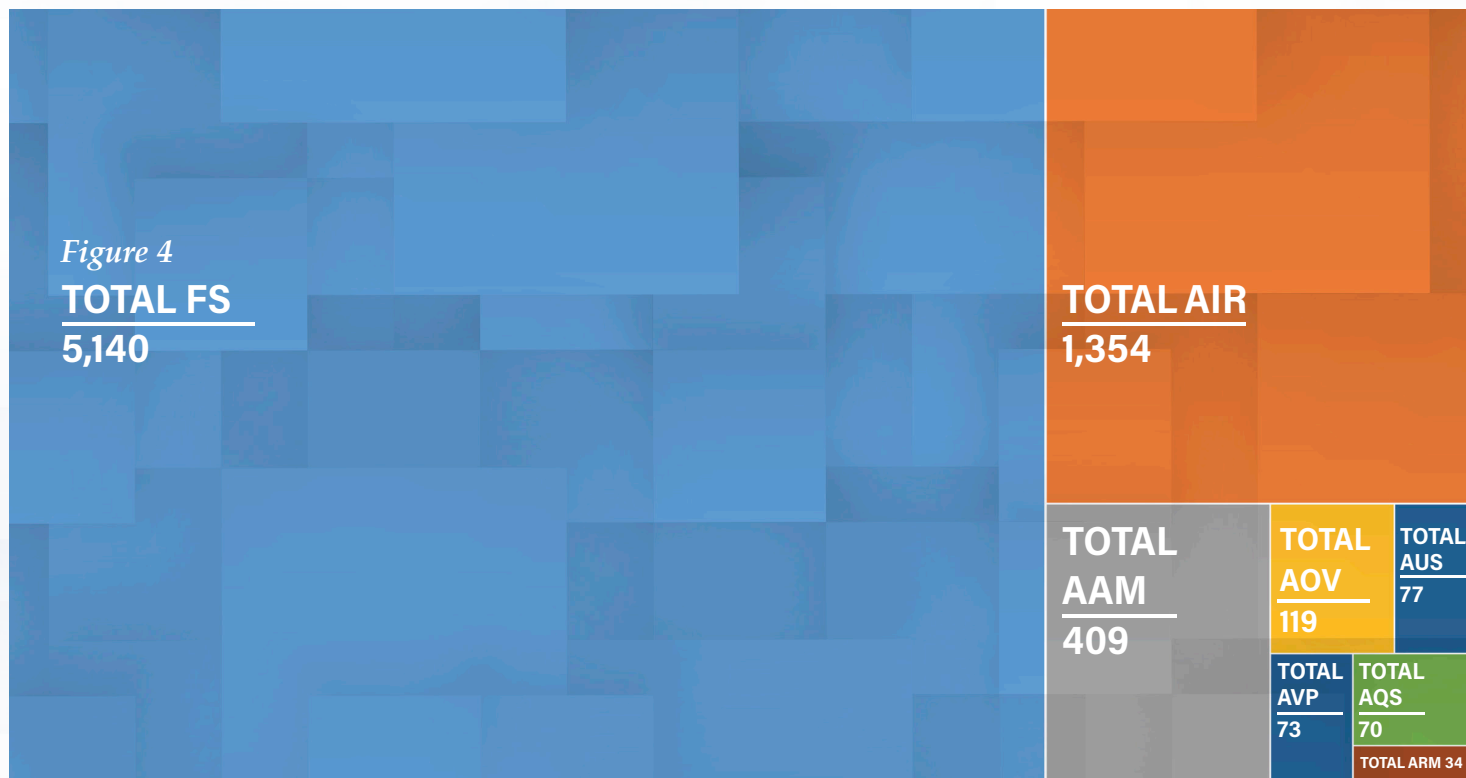
Services
- Flight Standards (FS)
- Aircraft Certification (AIR)
- Air Traffic Safety Oversight (AOV)

Offices
- Aerospace Medicine (AAM)
- Accident Investigation and Prevention (AVP)
- Rulemaking (ARM)
- Quality, Integration and Executive Services (AQS)
- Unmanned Aircraft Systems Integration (AUS)

AVS Population

The population distribution charts represent the FY 2020 workforce. The composition of the Aviation Safety Workforce by service and office.

Figure 4

TOTAL FS
5,140

TOTAL AIR
1,354

TOTAL AAM
409

TOTAL AOV
119

TOTAL AUS
77

TOTAL AVP
73

TOTAL AQS
70

TOTAL ARM 34

Flight Standards 5,140 (as of September 26 2020) (70.6%)

The Flight Standards Service promotes safety in air transportation by setting the standards for certification and oversight of airmen, air operators, air agencies, and designees, as well as safe flight of civil aircraft in air commerce by:

- Setting regulations and standards that consider the duty of air carriers, air agencies and airmen to operate in the public interest at the highest possible degree of safety
- Certification, inspection, surveillance, investigation, and enforcement activities
- Managing the registry system for civil aircraft and all official airmen records
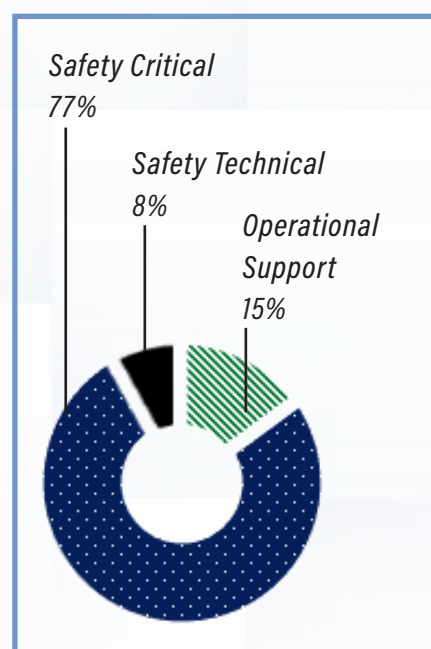
Safety Critical

Safety Technical

Operational Support

Safety Critical
77%

Safety Technical
8%

Operational Support
15%

Figure 5

Aircraft Certification 1,354 (18.6%)

The Aircraft Certification Service is responsible for the certification and continued operational safety of the design and manufacturing of civil aeronautical products. AIR promotes safety in the National Airspace System (NAS) by:

- Developing and administrating safety standards for the design, production and airworthiness certification for civil aeronautical products
- Assuring design, production, and airworthiness certification programs comply with prescribed safety standards
- Establishing and maintaining systems for continued operational safety of aircraft
- Providing oversight of production approval holders, individual designees, and delegated organizations
- Working with aviation authorities, design and manufacturing organizations, and other stakeholders to help improve safety in the international air transportation system
- Working with new entrants in the Urban Air Mobility and other sectors to foster innovation through early engagement on certification

Aerospace Medicine 409 (5.6%)

The Office of Aerospace Medicine is responsible for a broad range of medical programs and services for both the domestic and international aviation communities. AAM provides global leadership for aerospace medicine in the 21st century by:

- Providing aerospace medical education
- Conducting and providing aerospace medical and human factors research
- Establishing and overseeing aviation industry drug and alcohol testing
- Providing the employee health awareness program
- Providing FAA employee drug and alcohol testing
- Conducting and determining medical clearance of air traffic control specialists and other FAA employees required to meet medical standards to perform safety sensitive duties
- Providing Occupational Health
- Establishing and determining pilot medical certification
- Should be supporting for consistency agency and department level responses to public health issues
- Support agency and department level responses to public health issues

---

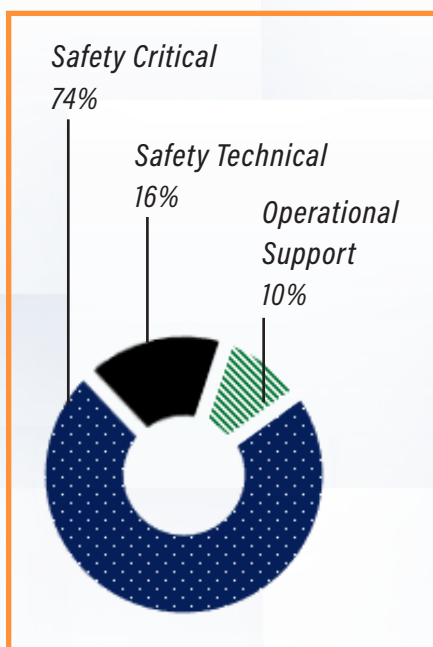▦ Safety Critical   ■ Safety Technical   ▨ Operational Support

Safety Critical
74%

Safety Technical
16%

Operational Support
10%

Figure 5 (Continued)

Safety Critical
31%

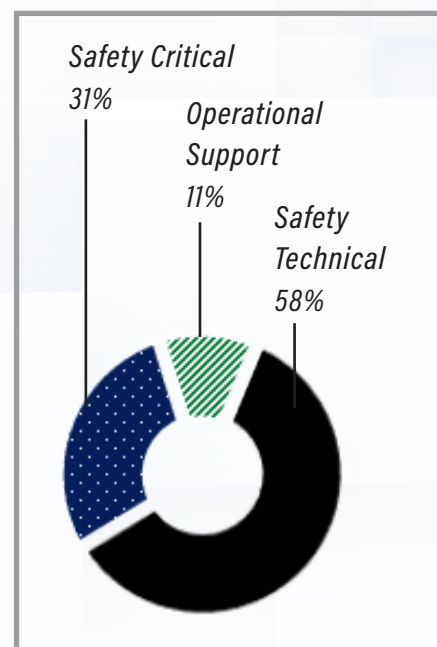*Operational Support*
11%

Safety Technical
58%

Figure 5 (Continued)

Air Traffic Safety Oversight 119 (1.6%)

The Air Traffic Safety Oversight Service is responsible for the independent safety oversight of the provision of air navigation services in the NAS. AOV's safety oversight follows a system safety approach by:

- Establishing, approving, or accepting safety standards for ANS in the NAS
- Establishing standards and ensuring compliance with the ATO SMS
- Monitoring Air Navigation Services operations for compliance with safety standards and the SMS
- Providing oversight of the Credentialing and Control Tower Operator Certification Program to determine compliance with training, certification, and qualification requirements for the FAA Air Traffic Controllers and Airway Transportation System Specialists, as well as the Department of Defense and the Air Traffic Organization and National Geospatial Intelligence Agency Aeronautical Information Specialists
- Using a total system safety approach to identify and resolve safety issues in the NAS related to the provision of Air Navigation Services

Accident Investigation and Prevention 73 (1.0%)

The Office of Accident Investigation and Prevention's overall mission is to make air travel safer through accident and incident investigation, data collection, risk analysis and information sharing by:

- Investigating major or significant accidents and incidents to identify safety deficiencies and unsafe conditions and trends and to recommend policy
- Addressing NTSB and internal FAA safety recommendations
- Directing ASIAS initiatives, conducting data analyses and creating an environment to share safety information with government and industry to enhance safety
- Overseeing the AVS R&D portfolio
- Managing the US SSP, FAA SMS and AVS SMS.
- Coordinating the collaborative efforts of the government and industry safety teams—CAST and GAJSC

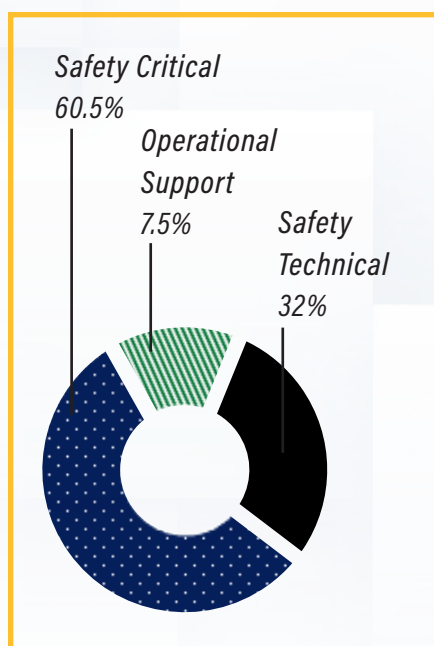**Safety Critical**   **Safety Technical**   **Operational Support**

Safety Critical
60.5%

Operational Support
7.5%

Safety Technical
32%

Figure 5 (Continued)

Safety Critical
33%

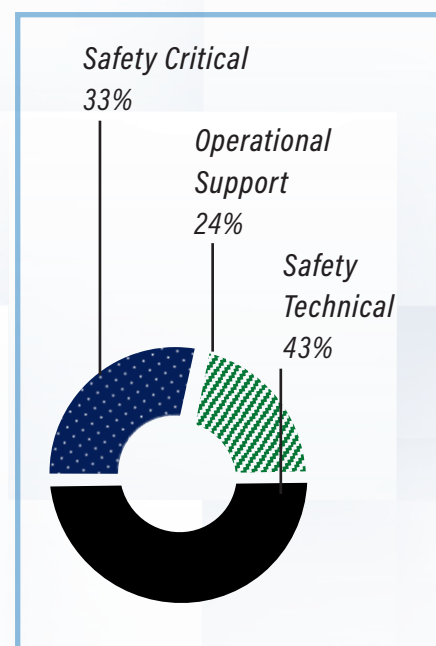Operational Support
24%

Safety Technical
43%

Figure 5 (Continued)

Unmanned Aircraft Systems Integration 77 (1.1%)

The Unmanned Aircraft Systems Integration Office is responsible for facilitating the safe, efficient and timely integration of UAS into the NAS by:

- Managing and coordinating international UAS activities for AVS and ensuring alignment of these activities with United States and FAA strategy
- Developing strategic planning goals and providing direct support for UAS R&D
- Providing project management and data support for all UAS integration related programs and activities
- Supporting standards and policy development related to UAS integration and providing engineering resources to support UAS projects
- Ensuring consistency of messaging and public outreach tools for all UAS-related communications materials
- Coordinating operational aspects of safe and timely integration of UAS into the NAS
- Working with industry stakeholders to ensure FAA strategic goals align with industry objectives and resources
- Facilitating cross governmental coordination of efforts on UAS integration across FAA LOBs and SOs

Quality, Integration & Executive Services 70 (1.0%)

The Office of Quality, Integration & Executive Services provides executive oversight and consolidated management support services for all of AVS. AQS manages all phases of administrative activities for the immediate Office of the Associate Administrator by:

- Approving, overseeing and facilitating integration initiatives among the AVS Services and Offices
- Overseeing the AVS Quality Management System
- Providing budget and labor distribution reporting management
- Providing business planning and administrative management

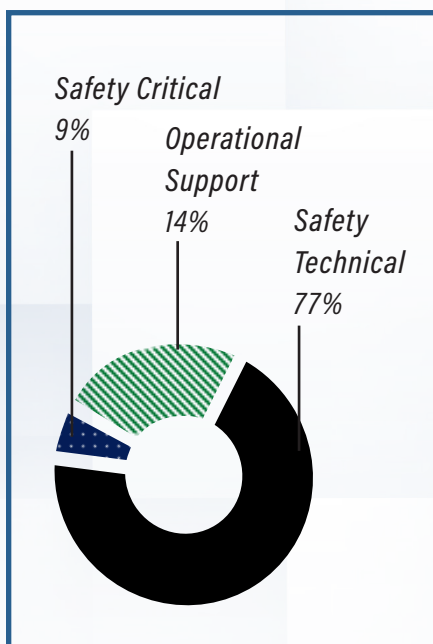Safety Critical   Safety Technical   Operational Support

Safety Critical
9%
Operational Support
14%
Safety Technical
77%

Figure 5 (Continued)

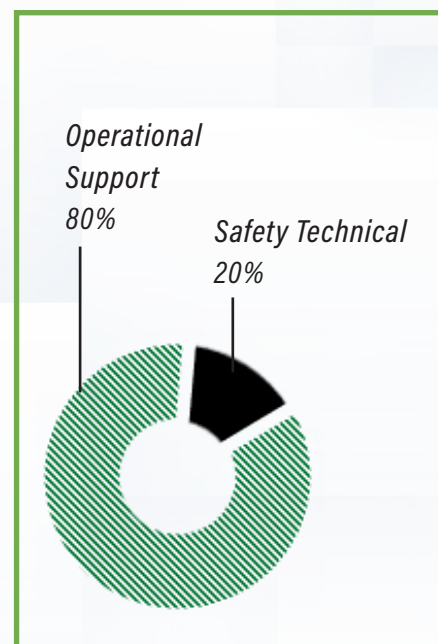Operational Support
80%
Safety Technical
20%

Figure 5 (Continued)

Rulemaking 34 (0.5%)

The Office of Rulemaking manages the FAA's Rulemaking program, processes and timelines by:

- Developing proposed and final rules and managing responses to petitions for rulemaking
- Managing responses to petitions for exemption from regulatory requirements
- Overseeing aviation rulemaking and advisory committees that provide advice and recommendations on aviation and aerospace related issues
- Leading, guiding, supporting and coordinating FAA's cross organizational strategies for aviation regulations
- Coordinating with international partners

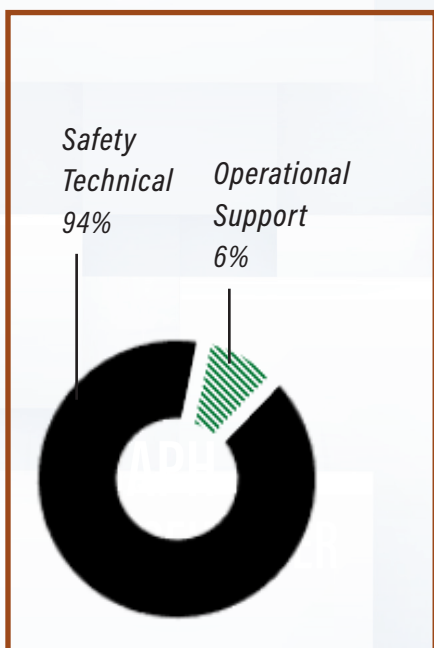■ Safety Critical   ■ Safety Technical   ▨ Operational Support

Safety Technical 94%   Operational Support 6%

Figure 5 (Continued)

Aviation Safety Inspectors and Aviation Safety Engineers

Flight Standards and Aircraft Certification are the two largest entities within AVS, representing 89 percent of positions. The two largest occupational series, aviation safety inspectors and aviation safety engineers, makeup 68 percent of the personnel within FS and AIR. These positions comprise more than two-thirds of all positions within AVS.

AVS = 100%

FS & AIR = 89%

ASE & ASI = 68%
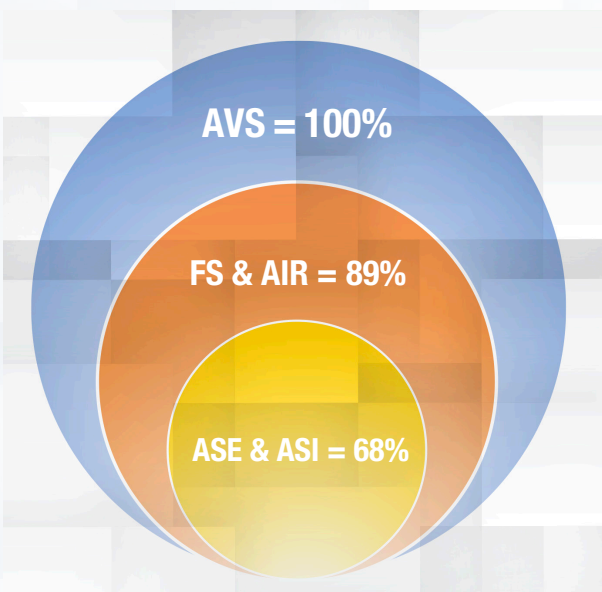
Figure 6

Air Traffic Safety Inspectors

Air Traffic Safety Inspectors (ATSIs) are AOV employees that perform oversight of the provision of Air Navigation Services (ANS) in the NAS to ensure compliance with established safety standards. ATSIs use a variety of surveillance techniques to monitor ANS operations for compliance with the safety standards outlined in several FAA Orders to include 7110.65 and 7210.3 as directed in FAA Order 1100.161. In addition, ATSIs ensure the Air Traffic Organization (ATO) effectively manages a Safety Management System (SMS) following standards and recommended practices established by ICAO as part of the larger State Safety Program.

Aviation Safety Inspectors (ASI)

An ASI is responsible for the certification and surveillance of air carriers, aircraft product and part manufacturers and air operators in accordance with 14 CFR's. ASI reside within FS and AIR.

Flight Standards ASI responsibilities:
- Work within the aviation community to promote safety and enforce FAA regulations
- Provide oversight of aircraft operators and maintainers, pilots, designees, flight attendants, dispatchers, flight and maintenance schools, and maintenance facilities
- Develop FAA rules, policies and guidance for operations, maintenance and avionics-related issues

Aircraft Certification ASI responsibilities:
- Work within the aviation community to promote safety management systems and provide oversight of FAA regulations and safety standards
- Provide oversight of individual designees and delegated organizations
- Oversee the production, airworthiness and continued operational safety of aircraft, engines, propellers, and other civil aeronautical products both domestically and internationally
- Develop rules, regulations, policies, and guidance for manufacturing organizations and operations

Aviation Safety Engineers (ASE)

An ASE applies advanced engineering knowledge and experience in specific engineering disciplines such as airframes, systems and equipment (electronics/avionics and electrical or mechanical), propulsion and flight tests. The majority of ASEs reside in AIR, and their responsibilities are:

- Work within the aviation community to promote safety management systems and provide oversight of FAA regulations and safety standards
- Administer safety standards governing the design and certification of aeronautical products
- Evaluate designs both domestically and internationally for compliance with safety regulations and standards
- Provide oversight of individual designees and delegated organizations
- Develop rules, regulations, policies, and guidance for certification and airworthiness standards. Ensure continued operational safety of aircraft, engines and propellers including safety risk assessments and development of Airworthiness Directives both domestically and internationally

SECTION 3: FORECASTING AVS WORKFORCE NEEDS

Safety inspectors and safety engineers constitute the majority of positions within AVS. As a result, forecasting and modeling concentrate on assessing the requirements for these positions. The AVS staffing tool in conjunction with more targeted assessments by each organization assists the FAA to identify staffing requirements for ASI, ASE, Aerospace Medicine airman medical certification, and Air Traffic Control Specialist medical clearance.

As an additional element, AVS maintains a robust Senior Technical Experts Program (STEP) comprised of Chief Scientists and Technical Advisors (CSTA) as well as Senior Technical Specialists (STS) whose technical disciplines span a wide range of safety and operational considerations. These disciplines include, but are not limited to, human factors, avionics, composites, cabin safety, flight meteorological effects, and software. In view of the rapid advances in types of operations, vehicle design, and materials, AVS will continue to assess these emerging trends to ensure that STEP can meet and anticipate the agency and industry needs.

The workforce continues to evolve as advances are made in the aviation safety environment. Using and improving established methods of workforce forecasting and modeling will ensure we continue to meet our obligations to the promotion and improvement of safety in the NAS.

AVS Staffing Tool

Multiple distinct staffing models forecast workforce needs under AVS's staffing tool:

- Office of Aerospace Medicine
- Aircraft Certification Service
- Flight Standards Service
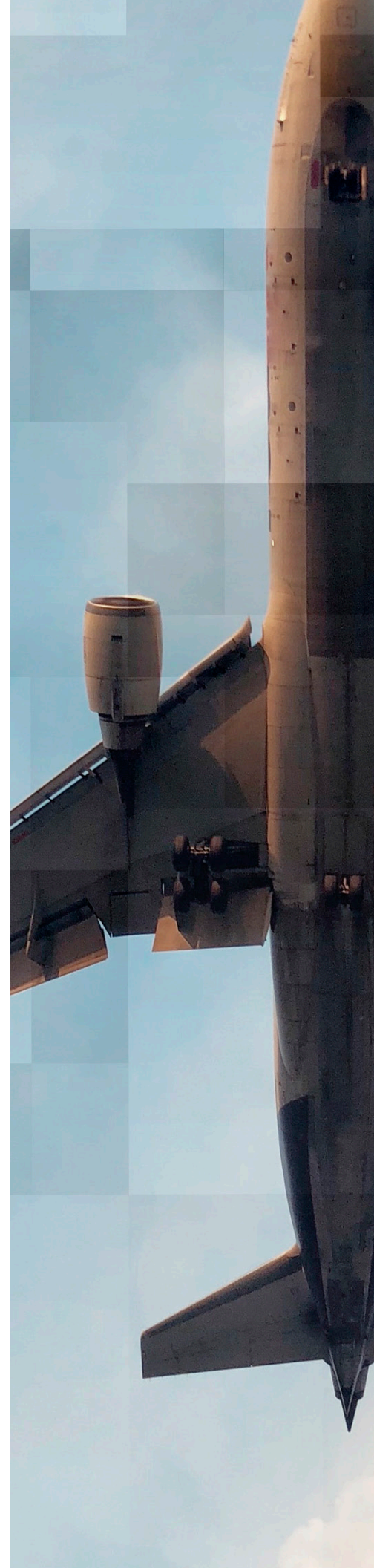
Historical Work Activities and Work Hours

The staffing tool models all share the same general structure. Activities and work hours are classified and quantified by work type. The average time per activity, referred to as the nominal time, is calculated annually by using hours recorded in the Labor Distribution and Reporting (LDR) system and other appropriate oversight activity tracking systems.

Forecasting

The number of activities forecasted for the next 10 years is based upon their relationship to demand drivers. Annual model improvement activities include analyzing and incorporating regression analysis to validate that a relationship exists between demand drivers and activities. Where possible and applicable, FAA-produced forecasts are used to predict workload change associated with industry growth. These forecasts are combined with field-level knowledge of expected workload changes.

The required workforce is then calculated by multiplying the nominal time per activity by the number of forecasted activities for each year for 10 years. The model determines the staffing levels that will be required if the same level of effort needed to support current activities is forecasted based upon the growth or contraction of the current industry. The model is adjusted to account for new industry efforts such as UAS and the implementation of new automation applications. We are currently examining the workload demand drivers and expect to incorporate them in the AVS out-year staffing requirements next year.

Calculation Review

The AVS staffing tool's models, as well as other AVS strategic staffing models, follow the same general development process that includes both historical data calculation and Subject Matter Expert (SME) review. The focus of the review is to research and identify workload information that is supported with data and field experience. The specific staffing review teams include a multidisciplinary group of model developers, such as operations research analysts, economists, industrial engineers, and mathematicians. The teams also include field ASI, ASE, physicians, managers, and policy makers charged with developing AVS work activities.

Data Quality Improvements

AVS has applied significant effort in the last seven years on improving the data quality of workload and work-hour tracking systems. With improved data, analysts have been able to:

- Identify and review actual working time for various ASI, ASE, and AAM certification or clearance activities
- Categorize and priority-rank work activities
- Identify and quantify the potential change in activities associated with staffing increases or shortfalls
- Examine the relationship between activity categories and industry growth
- Research training times for employees at different experience levels
- Compare workload recorded in various oversight applications (i.e. the Air Transportation Oversight System, the Program Tracking and Reporting Subsystem and the Safety Assurance System)
- Examine the year-over-year change in time spent per activity and estimate future workload
- Examine workload differences between offices and identify potential causes (e.g. work type, company profile and travel times)
- Quantify and project all work hours, including those spent on training, administrative activities, leave and travel
- Examine the workload impact associated with designee oversight

As a result, the models have been improved and now are a more reliable source for data-informed decision-making.

Ratio Methodology Used for Safety Technical Specialist and Operational Support Staff

For both AIR and FS, the number of Safety Technical Specialist Staff and Operational Support Staff are forecasted using current and projected staffing ratios that compare managers and administrative support personnel to Safety Critical Operational Staff requirements. Safety Technical Specialist and Operational Support positions are projected to grow based on historical ratios to the ASI and ASE positions.

Model Population Ratio
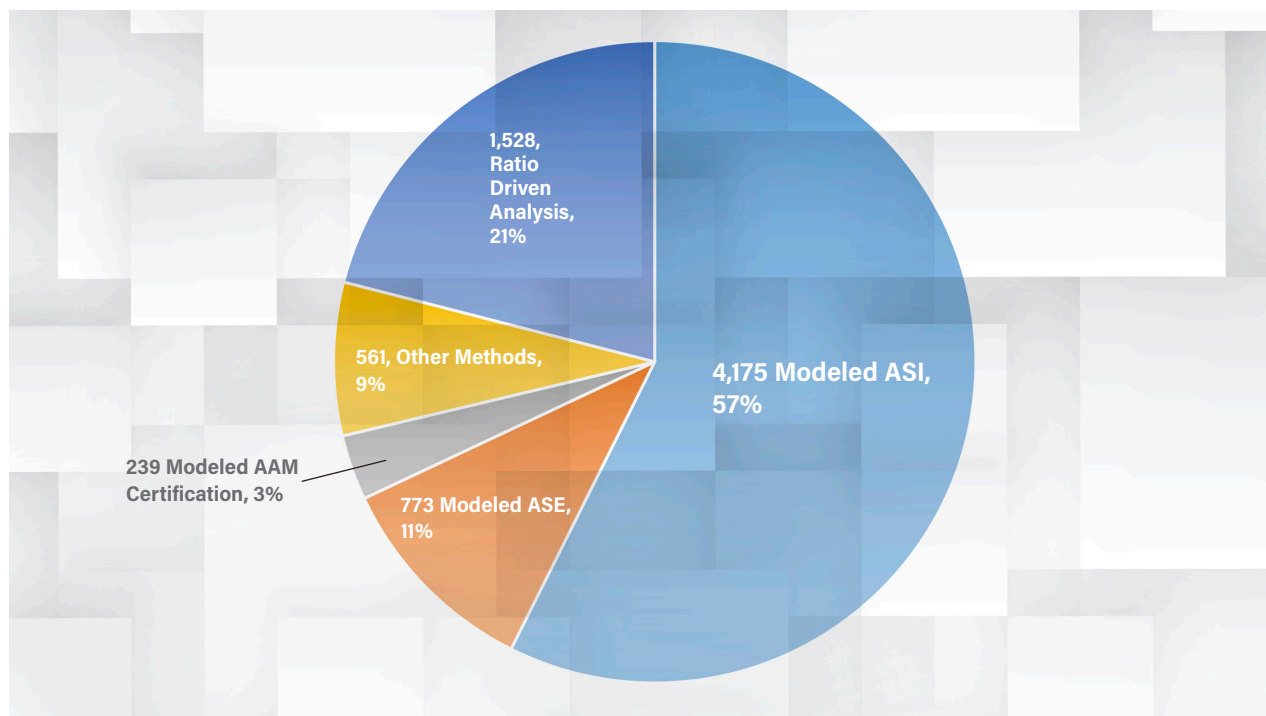
Figure 7: *The figure above identifies methods used to forecast staffing within AVS. Information shown represents actual positions at the end of FY 2020.*

The figure above shows which positions are determined by the AVS staffing tool, which are ratio-driven based upon the staffing tool's outputs, and which are forecasted outside of the staffing tool's process. Forecasts of ASI, ASE, and AAM Certification positions (5,187) are generated by the staffing tool's staffing models and comprise 71 percent of all AVS staffing. An additional 1,053 positions are Safety Technical Operational Staff. The FAA continues to work to incorporate other workforces into data-driven models.

Managerial Input

The staffing tool is not the sole determinant for staffing-level decisions each fiscal year.

The AVS staffing tool provides managers with macro-level resource guidance. For instance, the staffing tool model forecasts out-year (beyond FY 2021) staffing levels for FS inspectors, and AAM medical certification and controller medical clearances. The macro-level resource guidance can be used in conjunction with expertise and judgment from Regional Flight Surgeons, field managers, division managers, executive management, and SMEs to finalize staffing decisions. This is consistent with the National Academy of Sciences 2006 report, which recommended the incorporation of subject matter expertise with model results. In addition, AVS regularly evaluates changes in the aviation safety environment, industry advances, and U.S. government priorities and mandates to determine if additional resources are necessary to oversee the evolving aviation system. The AVS staffing tool is one method to determine appropriate staffing to meet AVS Mission.

SECTION 4: LOOKING FORWARD

This section provides anticipated workforce needs, estimated levels of attrition and the planned hiring for AVS from FY 2021 to FY 2030.

FY 2020 is shown in each figure below to illustrate end-of-fiscal-year actual levels. Detailed views into anticipated staffing requirements for safety critical and operational support personnel, as well as ASI and ASEs, are also presented in the following pages.

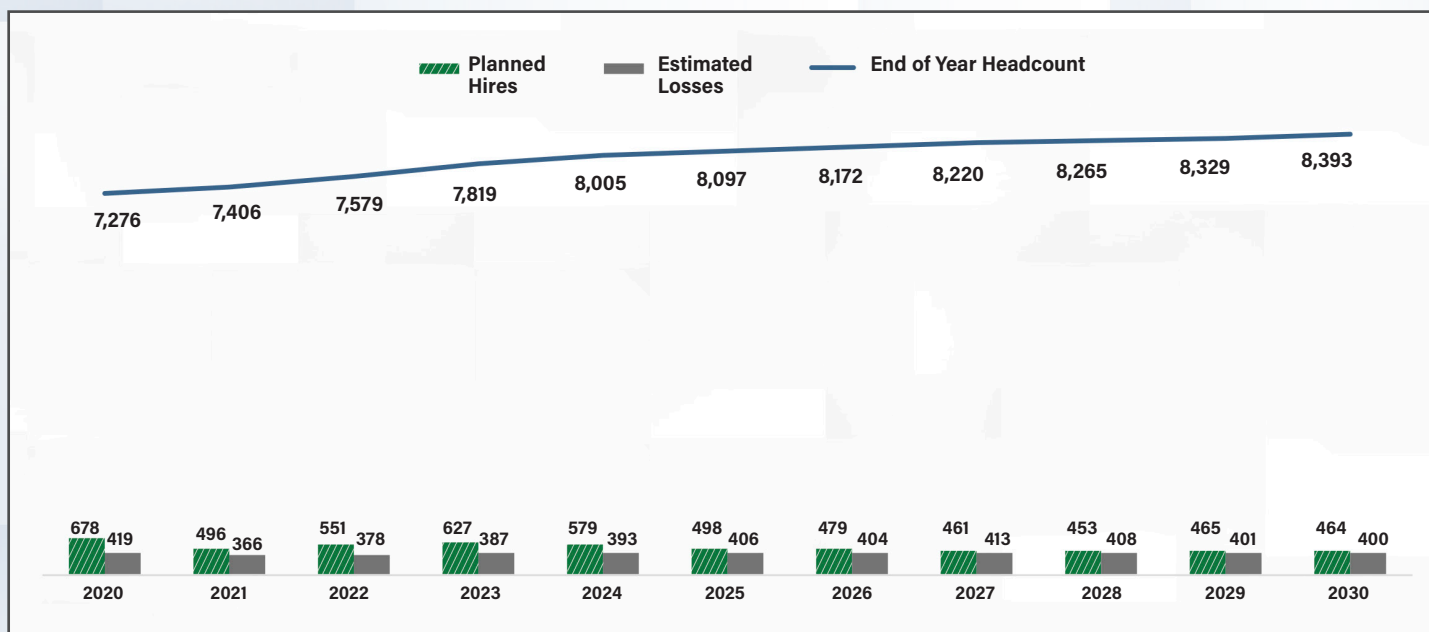**Actual Losses for FY 2020 and Projected Losses for FY 2021 through FY 2030**

Figure 8: FY 2020 actual staffing level, actual hires and actual losses, as well as planned staffing levels, planned hires and estimated losses for FY 2021 through FY 2030, for all personnel of AVS.

The chart above shows Total AVS Forecast with Planned Hires and Estimated Losses, and projects estimated losses due to natural attrition, retirements, net transfers, and other losses. In FY 2020, actual losses were 419, including 239 positions due to retirement. The projected average annual attrition is 396 positions for FY 2021 through FY 2030.

Actual Losses for FY 2020 and Projected Losses for FY 2021 through FY2030

The chart also illustrates planned hires for the AVS workforce over the next 10 years and compares FY 2020 actual data with FY 2021 also out-year projections. In FY 2021, actual hires were 678, slightly below the plan of 699. Our challenges finding qualified applicants continued throughout the fiscal year. The challenges of attracting qualified talent in a tight labor market were compounded by the public health crisis. The planned hiring target for FY 2021 is 496, and the projected average annual hiring is 521 positions for FY 2021 through FY 2030. This hiring target reflects the number of positions required to fulfill the needs discussed in the Forecasting AVS Needs section.

AVS continues to collaborate with Office of Human Resource Management (AHR), the Office of the Chief Counsel (AGC), and members of FAA employee associations to analyze hiring practices and to develop and implement appropriate diversity and inclusion strategies. These practices ensure AVS assesses best practices and identifies barriers to hiring, development, promotion, and retention. These practices facilitate the organization in attracting and hiring talented applicants from diverse backgrounds and to meet future needs. A commitment to diversity and inclusion supports AVS's strategic initiative to create a workforce with the leadership, technical, and functional skills necessary to ensure the U.S. has the world's safest and most productive aviation sector.

As a result of the recommendations from multiple expert panels following the 737 MAX accidents, we are hiring additional staff with expertise in human factors, systems safety engineering, software engineering, manufacturing and industrial engineering, data analytics and science, and international aviation safety standards.

ASI Forecast with Planned Hires and Estimated Losses

Figure 9: FY 2020 actual staffing level, actual hires and actual losses, as well as planned staffing levels, planned hires and estimated losses for FY 2021 through FY 2030, for all ASI in AVS.

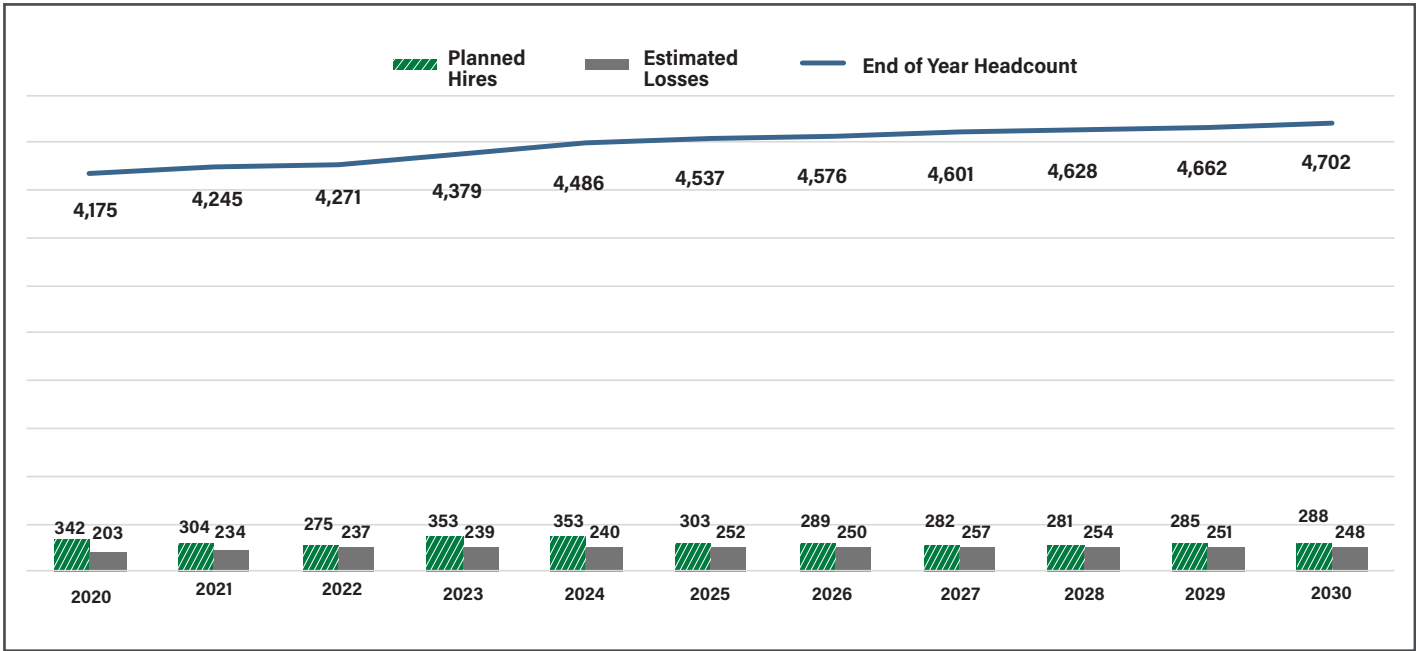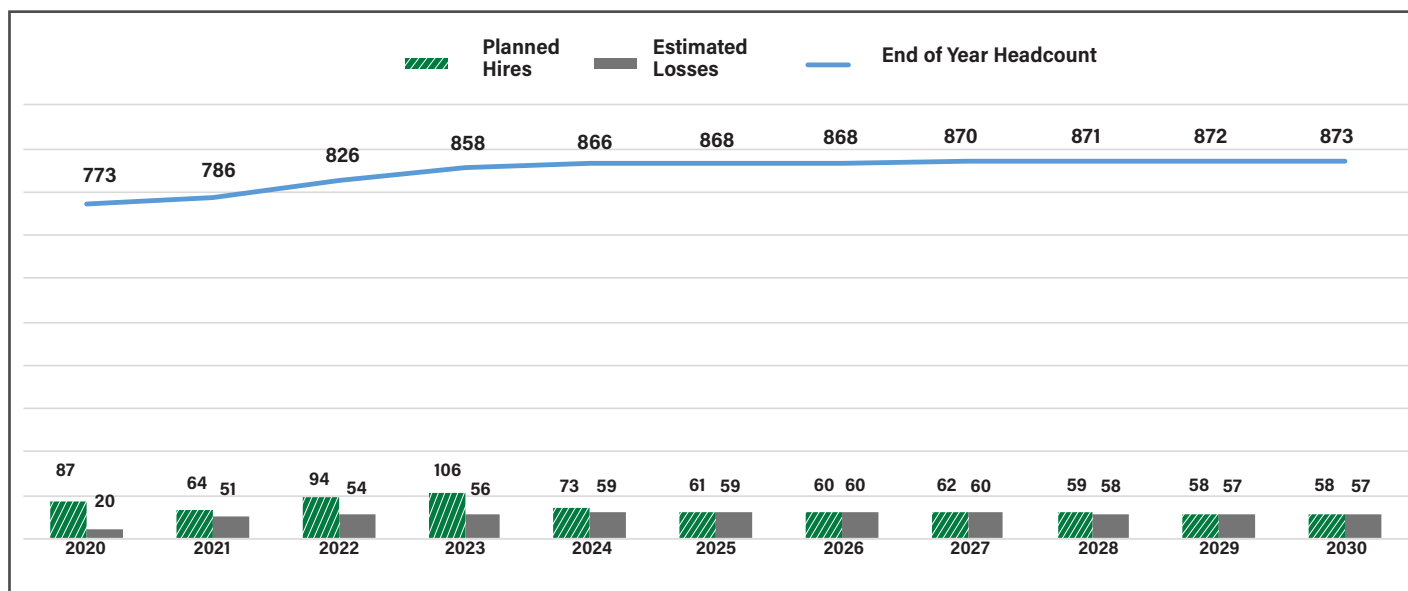## ASE Forecast with Planned Hires and Estimated Losses

Figure 10: FY 2020 actual staffing level, actual hires and actual losses, as well as planned staffing levels, planned hires and estimated losses for FY 2021 through FY 2030, for all ASEs in AVS.

Projected Staff by Staffing Category
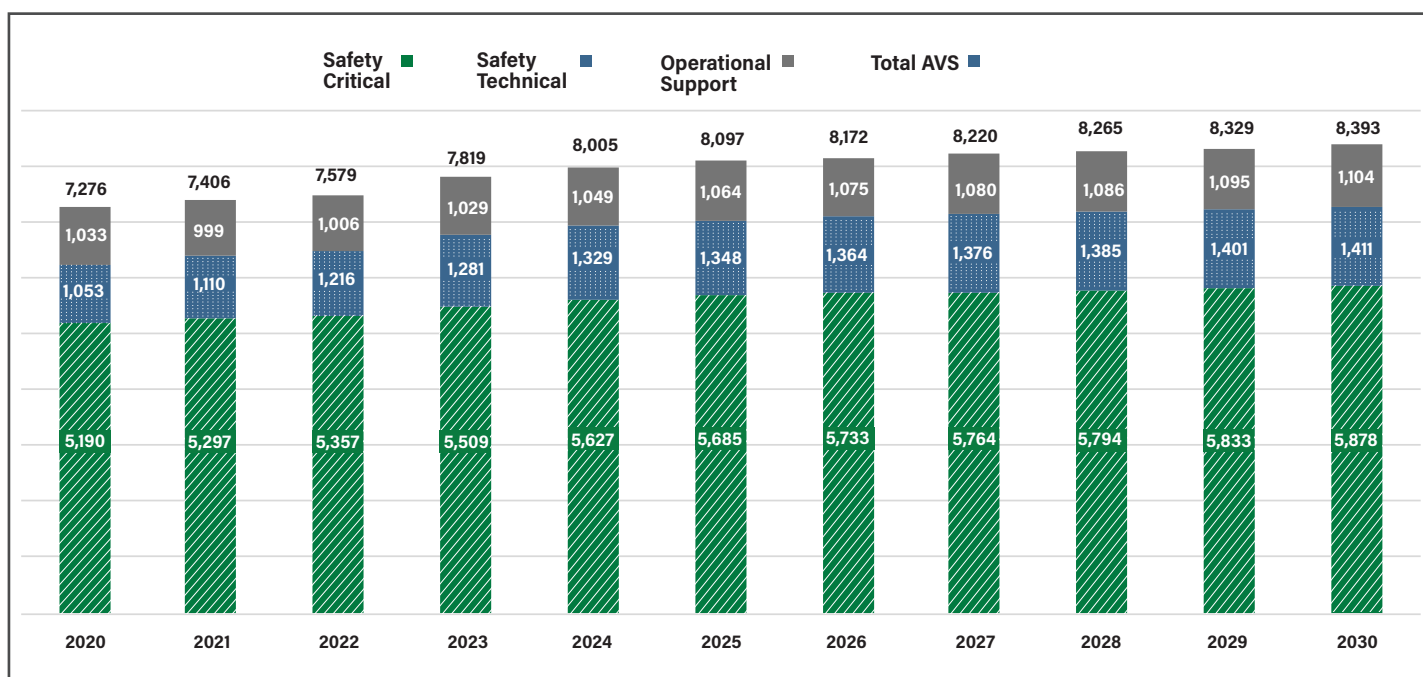
Figure 11: Anticipated needs specifically for Safety Critical staff, Safety Technical staff and Operational Support staff.

SUCCESSION PLANNING

AVS tends to hire a very experienced safety workforce for many of its safety positions. The average age of AVS employees when hired is 46 and the current average age of AVS employees is 54. Over the last two years, the average age at retirement for AVS personnel was 66. Past behavior shows that a low percentage of employees retire immediately upon becoming eligible, and there is no mandatory retirement age for AVS employees. The chart below shows the historical rates of retirement with respect to year of eligibility.

Percent of AVS Employees Retiring By Year of Eligibility
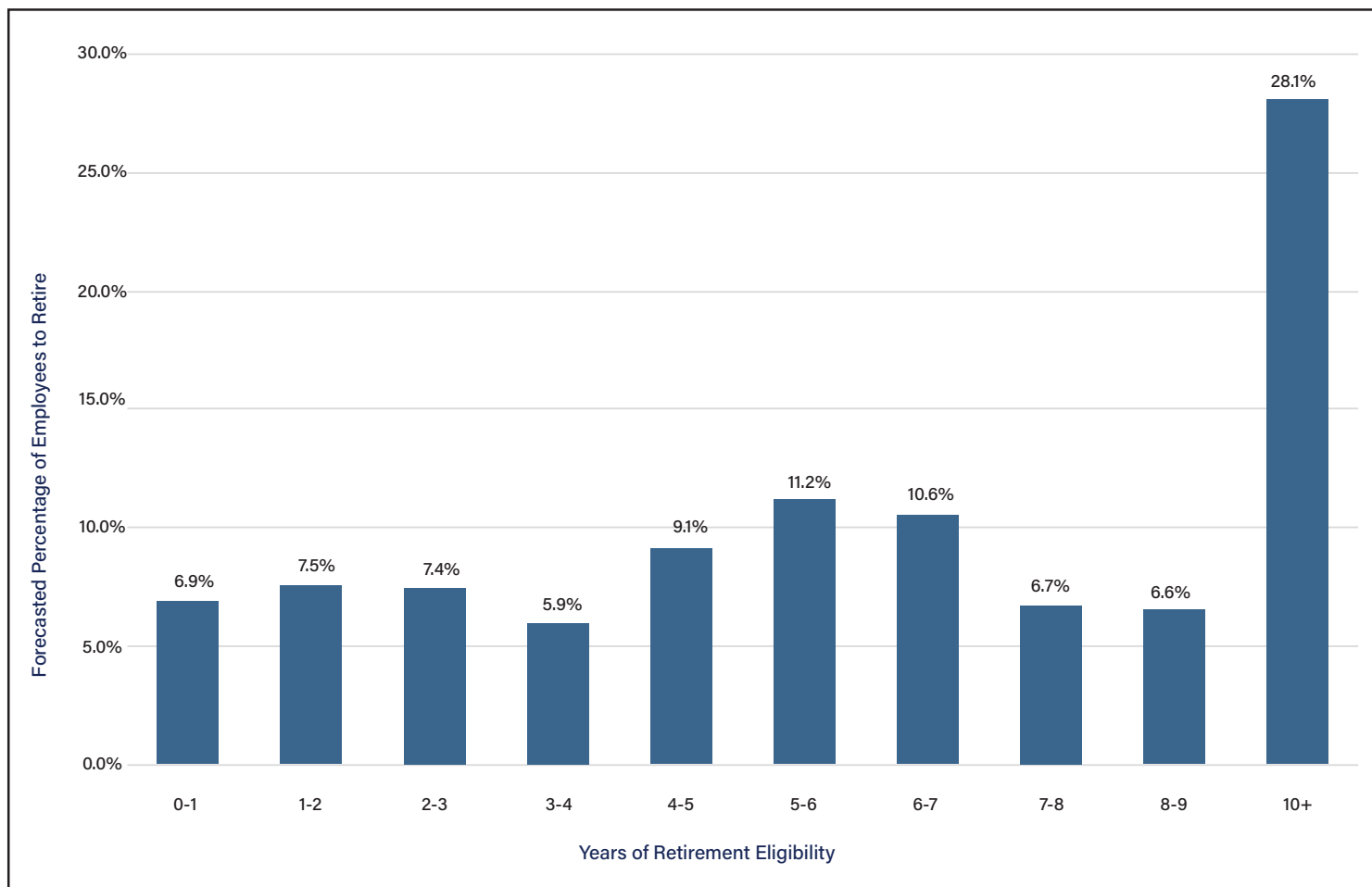
Figure 12: Forecasted percentage of AVS employees expected to retire during each year of retirement eligibility.

In FY 2021, AVS will leverage knowledge gained through federal best practices for succession planning to assess talent readiness, career desire, and development gaps, while mitigating the potential loss of talent and experience. AVS continues to focus on building and maintaining a pipeline of skilled employees trained and prepared to take on roles of increasing responsibility using recruitment, retention and development initiatives as detailed in the following sections.

Recruitment Plan

To operate successfully in a more collaborative and technologically advanced environment, AVS must continue to build a workforce adept at risk-based, data-driven decision-making, as well as systematic, critical thinking. AVS must compete with private industry and other government agencies to recruit the best candidates from a specialized talent pool. The FAA recognizes the ongoing challenge to identify and attract talent into key safety positions, and we are pursuing a number of initiatives, activities, and incentives to do so.

In alignment with the Aircraft Certification, Safety and Accountability Act, AVS is collaborating with the impacted labor organizations to develop a strategy to improve recruitment and retention. This strategy targets a wide group of technical employees, including engineers, safety inspectors, human factors specialists, chief scientific and technical advisors, and software and cybersecurity experts. These experts perform duties related to the certification of aircraft, aircraft engines, propellers, appliances, and new and emerging technologies, and perform other regulatory activities.

The primary recruitment and hiring vehicle AVS uses is the Office of Personnel Management's automated hiring system, USAJOBS, which has allowed AVS to reach a wide pool of candidates. Additionally, AVS uses applicable recruitment resources like the On-the-Spot hiring authority to expedite the process for hiring ASIs and ASEs.

AVS continues to use the FAA's Managerial and Employee Leadership Competency Profiles to correlate and define the baseline-mastery level interpersonal, business, and specific technical core competencies when recruiting.

This model allows us to compare the competencies of employees against the requirements of positions across AVS. As a result, comparisons enable individuals to:

- Better understand how their individual and group job functions support the AVS mission
- Identify how their individual competency profiles compare to the competencies required across AVS

The use of assessment tools allows AVS to fill safety critical positions with skilled individuals who possess the skills needed to support the implementation of SMS and NextGen over the position's lifecycle. Using thorough job analyses, AVS assesses and incorporates these core competencies as part of its Knowledge, Skills, and Abilities (KSA) assessment when creating vacancy announcements.

In an effort to build a sufficient talent pipeline to address the shortage of qualified pilots and aviation mechanics, AVS continues proactive engagement with students and the community, providing hands-on demonstrations and education to encourage consideration of aviation careers. Hosting the annual STEM Career Symposium, providing hands-on aviation safety demonstrations, and increasing our focus on early outreach and education efforts encourages students to consider aviation careers, creating a bridge to the next generation of aviation professionals.

Operational Support Hiring

While AVS is composed mostly of technical employees, operational support personnel are required to provide business and administrative support to technical employees. AVS is committed to attracting and retaining this workforce, and has a growing talent pool of qualified candidates.

Entry-Level Hiring

To strengthen the AVS pipeline of candidates who will eventually replace retiring leaders, AVS continues to focus on the goal of recruiting new hires in safety critical occupations. Over the last four fiscal years, AVS has participated in 100-plus recruitment and outreach events to help reach and provide career opportunity information to talent at the entry level, including career fairs at colleges and universities, collegiate information sessions and professional conferences. AVS plans to continue such outreach efforts in FY 2021.

AVS continues to aggressively recruit and hire technically skilled employees at the entry level. In addition, AVS has made changes to the way it recruits for the lower-level positions, such as Aviation Safety Technicians. Changes include greater use of plain language in announcements and increasing the recruitment and outreach footprint in certain locations.

Compensation Incentives

To better compete with aviation industry recruitment practices, AVS offers a number of incentives, such as leave enhancements (included in job announcement), new hire pay flexibilities, telework, and degree completion programs.

In FY 2018, AVS introduced recruitment incentives for Operations ASI, including on-the-spot hiring authority and higher entry-level employee salaries to increase the pool of eligible applicants. In 2019, AVS proposed a referral incentive specifically for ASIs, in an effort to increase the pool of eligible applicants and engage the workforce in referring candidates. In 2020, AVS continued to expand recruitment incentives for Operations ASIs, and wherever possible, extend them to other Aviation Safety units. These incentives included:

- Higher entry-level employee salaries (within the same grade)
- $10,000 relocation incentive (with a 1 year service agreement) offered to applicants moving more than 100 miles to their new duty location
- Paying for candidates to travel to interviews
- Management Performance Incentive (MPI)

AVS will continue to evaluate the need for and effectiveness of these hiring incentives on an annual basis. We are also developing exciting new recruitment, retention, relocation, and outreach hiring initiatives.

- AVS is establishing collaborative relationships with colleges and universities across the United States, with the intention to hire engineers immediately after graduation in fields like aircraft certification.
- In areas like aircraft certification, entry-level engineers will take part in a customized training program for the first two years of federal service. This represents the FAA's investment in their future by providing specific training, mentoring, coaching, and on-the-job opportunities to groom them for their exciting new career in aviation.

Medical Officers pose a significant challenge in terms of hiring for hard-to-fill positions. As such, the FAA has granted the Office of Aerospace Medicine Direct Hire Authority, which reduces the time to recruit Medical Officers.

To promote our hiring incentives and flexibilities, the FAA targets recruitment efforts at professional conferences, career fairs, aviation events and airshows, as well as through social media, to reach a greater pool of applicants nationwide.

AVS is engaged in several initiatives to advance diversity and inclusion in our workforce. For example, AVS' recruitment and outreach efforts emphasize participating in events and establishing collaborations with organizations that focus on promoting employment opportunities to women, minorities, people with disabilities, and veterans (ex: The Organization of Black Aerospace Professionals, Gallaudet University, Women In Aviation, etc.). Also, to support efforts to create a future pipeline of diverse candidates, AVS works with AHR to host student interns through the Minority Serving Institute (MSI) Internship Program. AVS also holds an annual AVS Science, Technology, Engineering, and Mathematics (STEM) Symposium to include middle and high school students from underrepresented student populations, featuring a variety of learning activities and diverse speakers provided by internal and external stakeholders. In addition, in 2015, AVS established an annual Equal Employment Opportunity (EEO) training week, during which AVS managers and employees are encouraged to participate in at least one training course focused on diversity and inclusion.

AVS Diversity and Inclusion

AGENCY GOALS

Workforce Diversity	Workforce Inclusion	Sustainability
AVS shall recruit from a diverse, qualified group of potential applicants to secure a high-performing workforce	AVS shall cultivate a culture that encourages collaboration, flexibility, and fairness to enable individuals to contribute to their full potential and further retention	AVS shall develop structures and strategies to equip leaders with the ability to manage diversity, be accountable, measure results, refine approaches

Figure 13: *The AVS Diversity and Inclusion Work Plan establishes long-term goals, strategies and actions to assist managers to successfully recruit, hire, promote, educate and retain a more diverse workforce.*

RETENTION PLAN

Employee Engagement

Once AVS hires an employee, the focus shifts to retention. To increase employee satisfaction and engagement levels, AVS continues to strive to become a workplace of choice by ensuring:

- Employees have a professional, open, transparent, and safe work culture that encourages innovation, empowerment, and growth
- Training stays current with Agency strategic challenges and strengthens leadership and technical competencies
- Employees have the opportunity to participate in development programs to strengthen leadership skills

People are our strength, and a healthy and supported workforce ensures we stay at the forefront of aviation safety. It is vital that skilled individuals not only want to work for AVS, but that they have the opportunity and encouragement to continue our excellence in safety by excelling themselves.

Our senior leaders actively take on their roles by communicating with and engaging employees through face-to-face interactions, education and advancement opportunities, and idea and knowledge sharing efforts that join pertinent information with employee engagement to build on our trusting and collaborative environment.

WORKFORCE DEVELOPMENT PLAN

Training Goals

Aligning workforce development and training with future needs is one of AVS's strategic initiatives and is fundamental to our core mission. To this end, we established the AVS Learning Council (ALC) with representatives from all Services, Offices, and Bargaining units. The ALC serves as a collaborative team to represent service unit/office priorities and business needs in AVS workforce development. The ALC will provide clarity, communication, and coordination of matters related to workforce development in AVS by:

- Developing an AVS workforce development and learning technology roadmap
- Reviewing Services and Offices workforce development programs for overlap and opportunities to integrate, share, and/or consolidate to meet AVS needs
- Establishing working groups to address any issues or requirements
- Sharing of workforce development processes, best practices, and lessons learned across AVS

AVS regularly inventories the required skills and competencies we rely on to meet these future needs, and where necessary, AVS locates or develops requisite staff and training resources. Understanding that the role of the regulator is to manage risk and provide safety oversight, we provide and maintain a well-trained workforce that aligns with enterprise needs. An environment that supports learning, diversity, and inclusion allows the workforce to adapt rapidly to emerging needs.

AVS encourages career opportunities that promote organizational health.

AVS develops its workforce by providing employees with training to ensure they have the knowledge and skills needed to respond to aviation safety challenges and assume roles of increasing responsibility. AVS training leverages a combination of innovative training, including synchronous web-based virtual training (student and instructor present at the same time), asynchronous web-based training (self-paced), and traditional classroom-based instruction. Although FS, AIR, AAM, and AOV maintain their own training organizations, their efforts align with and support AVS's overarching workforce development program,

which focuses on the development, delivery, and evaluation of specialized technical training. AVS workforce development goals include:

- Identifying training needs and requirements for inspectors, engineers, and other safety critical occupations
- Providing training and professional development opportunities to fill any skill or competency gap and to enhance current performance
- Continuing to use technology for training delivery as appropriate, such as virtual training platforms, training webinars, self-paced web-based training, and mobile learning
- Implementing the FAA Compliance Program in curricula where applicable, including the AVS 101 Webinar, the AVS Overview Course, and technical job functions training courses
- Reinforcing AVS curricula with risk-based decision-making concepts
- Providing an AVS 101 Webinar to all new hires
- Continuing to deliver diversity and inclusion concepts through the AVS Overview Course for new hires and the Leading & Leveraging Course for managers
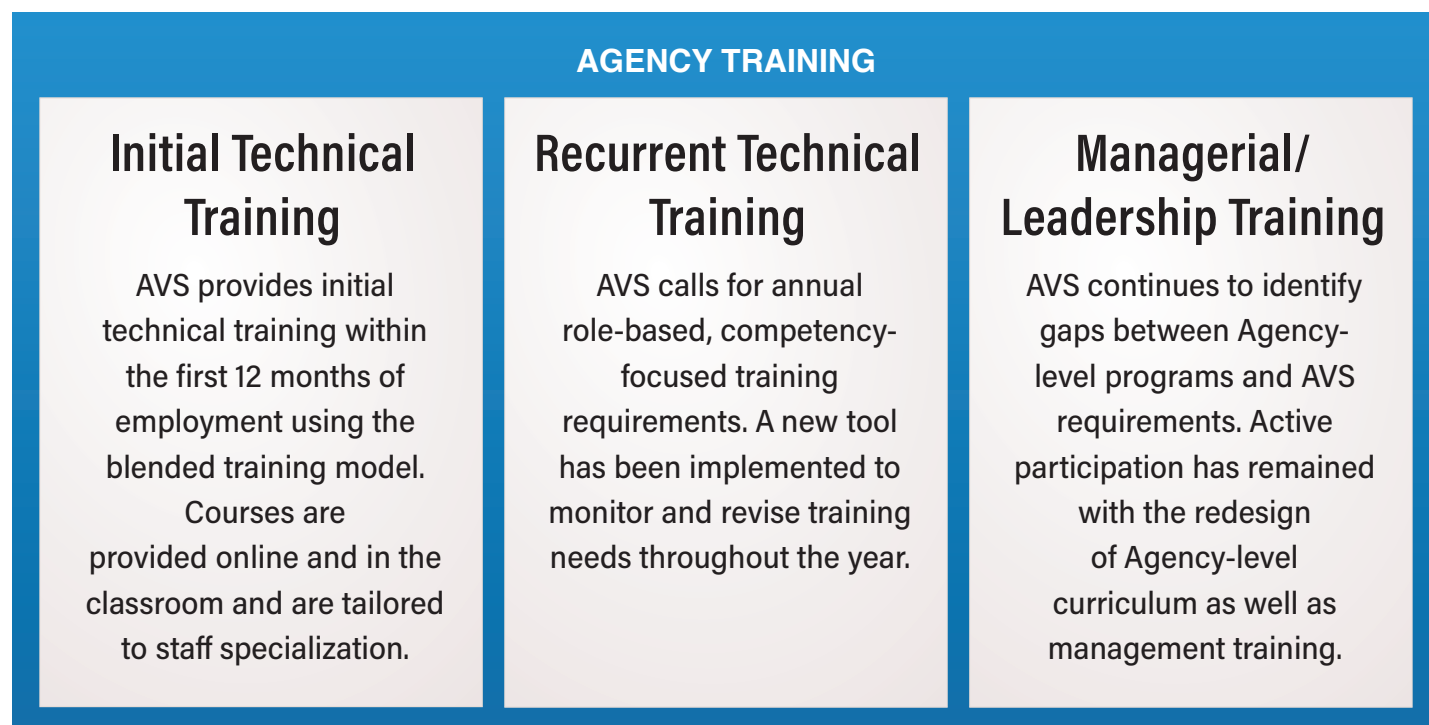
Agency Training Types

AGENCY TRAINING		
Initial Technical Training	**Recurrent Technical Training**	**Managerial/ Leadership Training**
AVS provides initial technical training within the first 12 months of employment using the blended training model. Courses are provided online and in the classroom and are tailored to staff specialization.	AVS calls for annual role-based, competency-focused training requirements. A new tool has been implemented to monitor and revise training needs throughout the year.	AVS continues to identify gaps between Agency-level programs and AVS requirements. Active participation has remained with the redesign of Agency-level curriculum as well as management training.

Figure 14: The figure above explains the distinction between several types of training AVS provides its workforce.

Initial Technical Training

Training provided to new Safety Critical Operational Staff varies across the different Services and Offices and ranges from one to 15 weeks, depending on specialty. For most employees, initial technical training is provided within the first 12 months of employment. AVS uses a blended training delivery model, with some components delivered through online courses and others in the classroom. Flight Standards has four main curriculums of technical specialization, each requiring a series of initial courses:

- General Aviation Operations
- General Aviation Airworthiness
- Air Carrier Operations
- Air Carrier Airworthiness

AIR requires all Safety Critical Operational Staff to attend AIR Indoctrination training to introduce and familiarize employees with AIR's mission and values followed by role-specific training. Safety Critical Operational Staff also take required training in functional specific areas such as:

- Aerospace Engineering (Airframe, Propulsion, Systems, and Software)
- Aviation Safety Inspection-Manufacturing
- Delegation Management
- Flight Testing

Employees with other technical specialties in AVS (e.g., Drug Abatement Inspectors, Air Traffic Safety Inspectors, and Rulemaking staff) receive structured initial technical training specific to their field of expertise.

Additional/Recurrent Technical Training

After employees complete the initial technical courses, AVS identifies additional training needs during annual calls for training requirements. These requirements are role-based and focused on competency. Supervisors work with their employees to determine what kind of training employees need and when they need it. Inspectors, designee advisors, and flight test pilots are required to receive initial and recurrent training tailored to their particular job responsibilities. Supervisors and their employees continually review training requirements to keep pace with changes in the aviation industry.

Foundational Skills and Managerial/Leadership Training

Of the 955 AVS executives and managers, 305 are eligible for retirement, representing 32 percent of the management population. Within the next one to five years, another 281 will become retirement eligible, representing an additional 29 percent of the management population.

Like other positions within AVS, executives and managers are not required to retire immediately upon eligibility. However, it is important to build and maintain a pipeline of skilled employees who are trained and prepared to take on roles of increasing responsibility.

AVS strongly encourages participation in leadership development opportunities offered by the Agency, such as the Program for Emerging Leaders for staff-level personnel aspiring to be managers, the Federal Executive Institute for all levels of management, and the Senior Leadership Development Program for high potential senior managers.

AVS, in collaboration with AHR has started the development of a Leadership Selection Process. The intent is to provide a standardized, comprehensive (holistic) approach to hiring leaders at every level and supports the OneAVS culture and practices.

AQS has continued its Succession Planning Program pilot for front line managers. The goal of the program is to develop a pipeline of managers ready to assume more senior roles within AVS/FAA.

AVS continues to train managers in effective communications via the Crucial Accountability course. This course has reached all eight Services and Offices. AVS continues to conduct the AVS Overview Course for all new AVS employees, which includes a panel session with senior AVS leadership.

FS continues to use its Curriculum Oversight Team to oversee the curriculum for managers, implement content that focuses on leadership and communication skills, and streamline content across various mandatory training courses. In addition, the oversight team oversees the common curriculum requirements that impact multiple courses and provide corporate leadership with strategies and policies that impact the training required by managers. The approach is a blend of activities related to organizational health, coaching, mentoring, and training. AVS will continue to monitor FS initiatives to consider expanding their management and leadership activities across all Services and Offices.

Within AIR, workforce development established roles of training portfolio managers to provide focal points in working with AIR divisions on training requirements, training policy, and ensuring the workforce development resources optimized as much as possible to meet workforce needs. AIR continues to update ASE and ASI training standards, establishing a credentialing framework, modularizing training, leveraging external training, and standardizing on the job (OJT) training and evaluation program.

Though the safety critical workforce is the first priority, AIR also will seek to ensure the technical safety and operation staff have the needed training to accomplish their mission. AIR will provide professional development opportunities for employees at all grade levels of the organization through training, managerial success profiles, coaching, and mentorship.

Funding

Staffing is AVS's largest cost. Because personnel compensation and benefits consumed more than 86 percent of the AVS FY 2020 operational budget, supporting these costs will be critical to the long-term sustainability of operations and ensuring the safety of the NAS.

AVS requires specialized training and equipment as well as supplies, travel, and other non-payroll funding to perform the organization's safety oversight and surveillance responsibilities effectively. AVS policy is to maintain a mobile workforce that is both trained and equipped to carry out the organization's safety mission.

Personnel Compensation and Benefits (PC&B) and Non-PC&B Shares

■ Non PC&B Shares   ▨ Personnel Compensation & Benefits (PC&B)

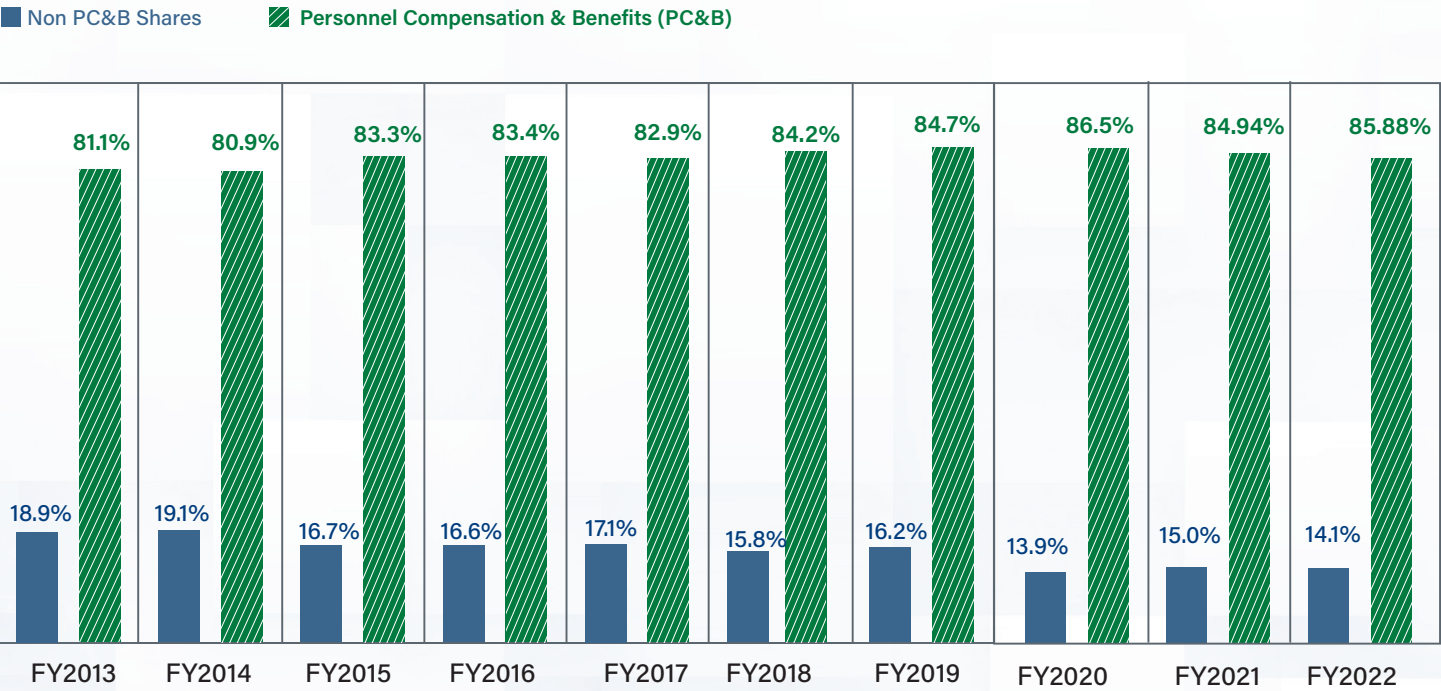|	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022
PC&B	81.1%	80.9%	83.3%	83.4%	82.9%	84.2%	84.7%	86.5%	84.94%	85.88%
Non-PC&B	18.9%	19.1%	16.7%	16.6%	17.1%	15.8%	16.2%	13.9%	15.0%	14.1%

Figure 15: AVS actual and historical projected percentage funding by fiscal year and major object classification.

SUPPLEMENTAL INFORMATION: Appendices

Appendix 1 | AVS Staffing (Operations Appropriation)

Safety Critical   **Safety Technical**   **Operational Support**

End-of-Year Employment–Full-Time Positions (FTP)		FY 2020 Actual	FY 2021 Enacted	FY 2022 Requested
FLIGHT STANDARDS	Engineers	18	21	23
(Safety Critical)	Aviation Safety Inspectors	3,940	3,947	3,971
(Safety Technical)	Safety Technical Specialist Staff	420	466	493
(Operational Support)	Operational Support	762	716	720
	Total	5,140	5,150	5,207
AIRCRAFT CERTIFICATION	Aviation Safety Inspectors	235	298	300
	Pilots, Engineers, and CSTAs	773	786	814
	Safety Technical Specialist Staff	210	198	210
	Operational Support	136	200	153
	Total	1,354	1,434	1,477
AEROSPACE MEDICINE	Physicians, Physician Assistants, Nurses	73	76	76
	Alcohol/Drug Abatement Inspectors	54	54	54
	Safety Technical Specialist Staff	239	237	245
	Operational Support	43	43	43
	Total	409	410	418
AIR TRAFFIC SAFETY OVERSIGHT	Aviation Safety Inspectors	72	83	85
	Safety Technical Specialist Staff	38	39	37
	Operational Support	9	8	8
	Total	119	130	130
RULEMAKING	Safety Technical Specialist Staff	32	40	42
	Operational Support	2	2	2
	Total	34	42	44
ACCIDENT INVESTIGATION AND PREVENTION	Aviation Safety Inspectors	7	7	7
	Safety Technical Specialist Staff	56	64	64
	Operational Support	10	10	10
	Total	73	81	81
UNMANNED AIRCRAFT SYSTEMS INTEGRATION	ASIs and ASEs	18	25	27
	Safety Technical Specialist Staff	44	32	51
	Operational Support	15	18	18
	Total	77	75	96
QUALITY, INTEGRATION, AND EXECUTIVE SERVICES AND AVS EXECUTIVE STAFF	Safety Technical Specialist Staff	14	19	19
	Operational Support	56	52	52
	Total	70	71	71
ODA (WITHIN AVS)	Safety Criticlal Staff (ASIs & ASEs)		13	41
GRAND TOTAL	Total Safety Critical Staff	5,190	5,297	5,357
	Total Safety Technical Staff	1,053	1,110	1,216
	Total Operational Support Staff	1,033	999	1,006
	Total	7,276	7,406	7,579

Appendix II

Aviation Safety Primary Stakeholders as of December 2020

Air Agency Certificates: 6,989
965 Pilot Training Schools
5,415 Repair Stations
210 Maintenance Training Schools
399 Pilot Training Centers

Air Operator Certificates: 5,367
75   Major Air Carriers -- (e.g. United Airlines)
2,193 Commuter Air Carriers/On Demand Air Taxis
77   Commercial Operators (e.g. Baltimore Orioles)
505   Foreign Air Carriers (e.g. Lufthansa)
379   External Load (Logging/Oil Platform)
1,839 Agricultural Operators
299   Public Use Authorities (State/City/Police)

Mechanics with Inspection Authority: 21,556
Approved Manufacturers: 1,492

Designees: 8.754
2,532 Aircraft Certification
3,761 Flight Standards
2,461 Aerospace Medicine

ODA: AIR: 70 FS: 9

Non-Pilot Air Personnel: 753,151
347,252 Mechanics & repairmen
24,621 Control Tower Operator
248,742 Flight Attendant
71,991 Ground instructors
60,545 other (dispatchers/flight navigators/parachute riggers/flight engineers)

National Transportation Safety Board: 617
29 Safety Recommendations (avg/yr based on last 5 yrs)
337 Formal NTSB requested for FAA research & info
251 Open NTSB Safety Recommendations

ATCS Medical Clearance Exams: 11,082
10,964 Air Traffic Controller Workforce
118 Flight Service Station Workforce

Airmen Medical Examinations: 352,110
33,067 Special Issuances
308,058 Standard Issuances

Aviation Industry Entities Covered by Anti-Drug & Alcohol Programs: 6,552

Aircraft: 287,920

Aviation Authorities – other countries: 432
52 International Agreements
193 Foreign Civil Aviation Authorities
187 Accident Investigation Authorities

UAS Registrations: 1,711,392
1,211,425 Hobby
496,467 Commercial
3,500 Paper Registration

Check Airmen: 9,257
5,389 Part 121
101   Parts 121/135
3,767 Part 135

Active Pilots: 942,959
170,120 ATP
119,242 Commercial
172,945 Private
107   Recreational
6,643   Sport
222,629 Student
44,952   Foreign Pilot
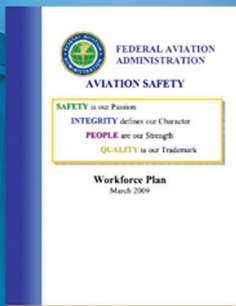206,321 UAS Remote Pilots

AOV Credentials: 16,109
11,703 ATCS Credentials
4,131   ATSS Credentials
275   AIS Credentials

DoD Credentials: 3,931
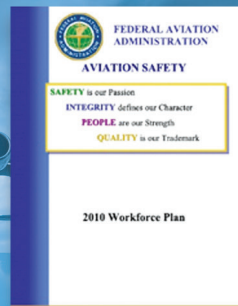1,060 USN/USMC
237   NGA
65   USA
2,569 USAF
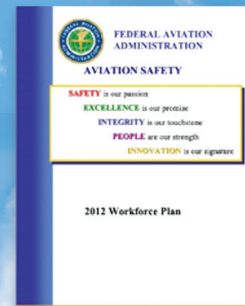
Flight Instructors: 117,558
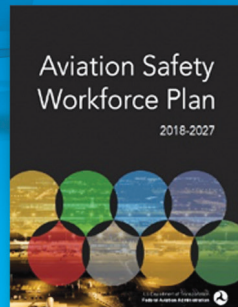
2009

2010

2011

2012

2013

2014

2015

2016

2017

2018

2019

2020

U S Department of Transportation
Federal Aviation Administration

800 Independence Avenue, SW
Washington, DC 20591