AVIATION SAFETY
WORKFORCE PLAN
FY 2023 – FY 2032

Federal Aviation Administration

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Executive Summary

The Federal Aviation Administration (FAA) Fiscal Year (FY) 2023 Aviation Safety (AVS) Workforce Plan outlines the staffing plan for existing and future personnel in AVS[1]. The AVS Workforce Plan is divided into four sections. The first section provides a description of the AVS workforce using three staffing categories to fulfill the safety mission—safety critical, safety technical, and operational support. The second section explains our mission, highlighting major safety objectives. The third section describes modeling for the workforce forecast, using data-driven models to anticipate the needs between FY 2023 and FY 2032. The fourth section looks ahead by exploring the challenges of attracting qualified talent while competing with industry to hire from the same pool of candidates. The plan further describes initiatives to recruit, develop, maintain, and retain technical experts in the workforce.

The overall plan supports the FY 2024 President's Budget request of $1.746 billion for 7,897 full-time personnel. At the close of FY 2022, AVS was staffed at 99 percent of our enacted staffing target.

[1] Pay Period 20 ending on September 24, 2022

Introduction to the AVS Workforce Plan

To meet the requirements of the Consolidated Appropriations Act, 2023 (Public Law [Pub. L.]117-328), the FAA prepared this 16th annual update to the AVS Workforce Plan. This plan includes information of interest to key external stakeholders, such as the Congressional Authorization and Appropriations Committees and the White House. It includes staffing estimates for the FAA AVS services and offices, as well as actual onboard levels at the end of September 2022. This FY 2023 report accounts for aircraft fleet changes, operations forecasts, inspector and engineer attrition, and other factors.

Aviation safety is our mission and our passion. As of September 2022, AVS has approximately 7,500 skilled and dedicated professionals who make up the AVS workforce and contribute to ensuring the United States (U.S.) National Airspace System (NAS) remains the safest in the world. Our NAS is the world's most complex airspace, encompassing commercial and general aviation, as well as the expanding drone and commercial space launch sectors.

Everything AVS does across the aviation lifecycle ensures that every entity certified to operate within the NAS meets required aircraft design and operational safety standards. This plan is designed to strengthen our recruitment, training, and professional development activities. It is intended to address rapid change and evolution of the aviation industry in such areas as: safety management systems, human-machine interface, integration of drones, data and information sharing, advanced analytics, data mining, and voluntary safety reporting.

Our efforts ensure we can hire and retain the right people, with the right skills, at the right time, with the ability to proactively address risk throughout the lifecycle of aviation systems.

SECTION 1
UNDERSTANDING THE AVS WORKFORCE

This section of the plan describes the staffing categories, organizational structure, and AVS occupations that enable mission execution.

Staffing Categories

The AVS workforce falls into three broad categories: safety critical, safety technical, and operational support.

1. SAFETY CRITICAL STAFF

The safety critical AVS staffing category represents positions where the duties have a direct operational impact on the AVS safety mission. The responsibilities of such members include, but are not limited to:

- Monitoring and enforcing industry compliance with safety regulations through inspections, data analysis, and risk management;

- Certifying aviation personnel, airlines, repair stations, training centers, and other aviation entities;

- Oversight of the FAA Air Traffic Organization (ATO) safety management system;

- Certifying aircraft, including aircraft alterations, equipment, and avionics;

- Overseeing and monitoring AVS delegation programs;

- Monitoring and enforcing industry drug and alcohol testing programs;

- Investigating aviation accidents and incidents; and

- Overseeing and monitoring new entrant integration into the NAS.

2. SAFETY TECHNICAL STAFF

The safety technical staffing category describes those positions providing specialized support to enable safety critical staff to perform their jobs efficiently and effectively. These responsibilities include, but are not limited to:

- Evaluating and analyzing the effectiveness of existing AVS certification, regulatory, and compliance processes;

- Developing new programs, activities and methods for improved oversight activities, and enhanced industry safety;

- Defining, managing, and applying research required to inform regulations, policy, standards, and procedures for safe operations;

- Designing, developing, and delivering technical training curricula for the workforce;

- Managing the airman and aircraft registries, as well as the airman medical certification system; and

- Guiding the development and publication of FAA regulations through the rulemaking process.

3. OPERATIONAL SUPPORT STAFF

The operational support staffing category describes those positions providing support for the safety critical and safety technical staff. These responsibilities include, but are not limited to, administrative tasks, research, finance and budget, international outreach, communications, talent management, planning, and project management.

Organizational Structure

The AVS organization, one of the five FAA lines of business, is structured into business units called services and offices with physical locations in the United States and internationally. An Executive Director, or equivalent head, leads each service and office. These Executive Directors and their respective deputies make up the AVS Management Team. The AVS Management Team is led by the Associate Administrator for Aviation Safety.

Services

- Aircraft Certification (AIR)
- Air Traffic Safety Oversight (AOV)
- Flight Standards (FS)

Offices

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

Occupational Series Within the AVS Workforce

An occupational series is a subdivision of an occupational group or job family consisting of positions similar to a specialized line of work and qualification requirements. This section describes the occupational series that comprise the majority of the AVS workforce. The two largest occupational series within AVS are Aviation Safety Inspectors (ASI) and Aviation Safety Engineers (ASE), which account for approximately two-thirds of all positions. Additional series not featured include human factors specialists, economists, business analysts, and program managers, among others.

Aviation Safety Inspector

An ASI is responsible for the certification and surveillance of air carriers, aircraft product and part manufacturers, and air operators in accordance with Title 14 of the Code of Federal Regulations (CFR). Major ASI responsibilities include administering, investigating, and enforcing safety regulations and standards for the production, operation, maintenance, and modification of all aircraft flying today. ASIs work in four specialty areas: avionic, manufacturing, maintenance, and operations.

Aviation Safety Engineer

An ASE is responsible for applying engineering knowledge and experience in specific disciplines such as airframes, systems and equipment, propulsion, and flight tests. Major ASE responsibilities include administering safety standards for the design and certification of aeronautical products; evaluating designs for compliance with safety regulations and standards; and ensuring the continued operational safety of aircraft, engines, and propellers.

Occupational Series Within The AVS Workforce continued

Physicians

A physician is responsible for the oversight and implementation of policy for the airmen medical certification program; oversight of the air traffic control specialist medical qualification program; administration of the medical appeals process; and administration of the aviation industry, as well as internal drug and alcohol testing programs. AVS physicians also operate the FAA's aeromedical education programs, the planning and conduct of aerospace medical and human factors research, and the investigation of aircraft accident medical factors.

SECTION 2
ADVANCING THE SAFETY MISSION

One Mission, Many Contributors

The AVS 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 safely and efficiently requires our organization to be at the forefront of aerospace technology and human factors. This section describes some of the many tools that AVS employs to help keep the NAS operating safely.

Data-Driven Risk-Based Decision-Making

employs the active use of safety and performance data using methodologies to assess safety risk and existing safety performance controls.

Safety Management System (SMS)

is a formal, top-down, organization-wide approach for ensuring a standardized and proactive approach to system safety. SMS establishes aviation standards for Safety Policy, Safety Risk Management, Safety Assurance, and Safety Promotion, which enable transparent data sharing and a strong safety culture.

The Compliance Program

is a risk-based approach to ensure industry maintains compliance to regulations by proactively identifying and mitigating problems. The Compliance Program focuses on using the most effective means to fix problems before they cause an accident or serious incident. While recognizing that most operators or manufacturers voluntarily comply with the core principles of safety, the Compliance Program regards intentional noncompliance as the greatest safety risk, which requires strong enforcement.

Government–Industry Cooperative Efforts,

such as the Commercial Aviation Safety Team and General Aviation Joint Steering Committee, use integrated, data-driven strategies to reduce accidents and fatality risk.

International Cooperation and Collaboration

enhances safety by influencing regional and global alignment and increasing transparency, compatibility, and harmonization of various global approaches to aviation safety. International cooperation and collaboration include mechanisms such as the effective use of bilateral aviation safety agreements, technical assistance, provision of training and workshops, as well as taking an influential role in the International Civil Aviation Organization (ICAO).

Information Sharing Programs,

such as Aviation Safety Information Analysis and Sharing, leverage data and information sources across government and industry, including voluntarily-provided safety data, to monitor

known risks, evaluate the effectiveness of deployed mitigations, and detect emerging risks. Collaboration with union partners is a critical component to the success of voluntary safety information sharing.

Certification and Safety Oversight Reform

A foundational component of safety is the commitment to continuous improvement. The FAA is driving greater transparency, collaboration, and accountability across the Agency with our regulated parties. As part of this, the FAA is committed to an integrated approach to implementing all the requirements of the Aircraft Certification, Safety, and Accountability Act (ACSAA), 2020 (P.L. 116-260), as well as the recommendations from investigations and independent reviews related to the tragic 737 MAX accidents.

In the past year, the FAA fulfilled several requirements of ACSAA, including publishing a notice on ODA unit member interference and communication; publishing an Advisory Circular on Flightpath Management, which emphasizes the importance of manual flying skills; and completing an issue paper for Flightcrew Human Factors Assumptions in Aircraft and System Safety Assessments (SSA). Additionally, the FAA published two notices of proposed rulemaking responsive to requirements in ACSAA. The SSA Notice of Proposed Rulemaking would standardize the criteria for conducting safety assessments to reduce the likelihood of potentially catastrophic risks due to undetected failures, while the SMS rule would require the implementation of a safety management system for certain manufacturers and air tour operators, charters, and commercial operators.

The FAA continues to diligently implement the various recommendations and legislative mandates, as well as consistently evaluate and improve our certification process.

Conclusion

While the AVS services and offices accomplish our functional activities, they each work interdependently with each other and with external stakeholders to advance our safety mission. We must strive to uphold our safety standards through transparency and accountability, regardless of the challenges posed by our complex, diverse, and dynamic aviation environment. Investing in our people and creating an environment that supports learning, diversity, and inclusion ensures AVS can meet these challenges through a unified approach to managing risks and conducting oversight. Our shared passion for aviation safety is the driving force for all we do, with our services and offices working toward a shared vision, ultimately delivering results for the AVS safety mission.

Delivering Results

The numbers in Figure 1 illustrate the broad scope of AVS work. Beyond the number of aircraft registered, active pilots, designees, airmen medical examinations, and companies with drug testing programs are tangible accomplishments that enhance safety in our complex system. The scope of work depicted also extends to our international collaboration with the 193 Member States in ICAO.

6,438
Air Agency
Certificates

4,907
Air Operator
Certificates

34,439
Mechanics with
Inspection Authority

1,465
Approved
Manufacturers

8,370
Total
Designees

2,385
Aircraft
Certifications
Designees

3,591
Flight
Standards
Designees

2,394
Aerospace
Medicine
Designees

AIR:69 FS:12
Organization
Designation
Authorization

752,101
Non-Pilot
Personnel

287,750
Aircraft

12,396
ATCS Medical
Clearance
Examinations

373,880
Airmen
Medical
Examinations

6,573
Aviation Industry Entities
Covered by Anti-Drug &
Alcohol Programs

10,007
Check
Airmen

1,021,653
Active Pilots
(nearly 293,642
UAS Remote Pilots)

16,681
AOV
Credentials

3,888
DOD
Credentials

121,270
Flight
Instructors

Figure 1: The AVS purview across the aviation community, as depicted in numbers. Data is as of December 31, 2022.

The post-pandemic resurgence of the airline industry, combined with the rapid expansion of new entrants in the advanced air mobility segment, required AVS to be agile in how we ensure the safety of the National Airspace System.

Numerous examples from this past fiscal year help showcase a varied and extensive array of safety achievements where AVS has played a key role:

- AVS worked closely with the ATO spectrum office and the telecommunication industry as part of a broad government and industry/labor coalition to manage safety risks associated with the development of 5G C-Band telecommunications systems in the United States. The FAA was able to not only clearly articulate differences in global approaches but also issue approvals, allowing most of the U.S. commercial airliner fleet to perform low-visibility landings at airports near where wireless companies deployed 5G.

- Under the close certification oversight of AVS, FY 2022 saw the first flight of an all-electric aircraft, which is the only flight-proven electric propulsion system at scale.

- AVS signed three key international agreements: the FAA-Japan Management Plan on the Bell-Subaru type certificate, the FAA-Japan Declaration of Cooperation on Advanced Air Mobility, and the FAA-Vietnam Civil Aviation Authority Working Procedure.

- In support of eliminating leaded fuels in the aviation community, AVS approved a Supplemental Type Certificate that authorizes the use of high-octane unleaded aviation gas on most piston-driven airplanes.

- AVS developed an online portal for drones, which was essential in helping manufacturers and individuals comply with remote ID and Operations over People rules.

- Under the Advanced Aviation Integration Global Webinar Series, in FY 2022, AVS led two virtual webinars on UAS Security in an Airport Environment and Advanced Air Mobility / Urban Air Mobility, with 539 total participants, including 369 foreign government officials from approximately 110 countries or entities. This series continues to set a standard for the Agency, demonstrating streamlined, integrated outreach and message amplification to our global partners.

- AVS issued exemptions to four commercial drone operators to conduct air carrier operations under Title 14 CFR Part 135.

- AVS hosted the 2022 FAA-European Union Aviation Safety Agency (EASA) International Aviation Safety Conference in Washington, D.C. for the first time since 2018, bringing together more than 400 participants representing 30 countries.

- AVS fielded the AVS Safety Culture survey to assess our organizational culture and effectiveness.

- AVS increased ASI staffing levels through outreach and recruitment efforts and hiring incentives.

Strategic Objectives Driving Workforce Skills Needs

Improve Aerospace Safety

Several FAA strategic objectives are driving how we assess our workforce skill needs. Beyond recruiting and retaining employees who have the right technical skills, we need employees who understand the FAA's safety mission, have an aptitude for aviation safety, and honor the FAA's commitments through shared accountability. Additionally, we need employees who have the right set of non-technical, interpersonal, and policy skills, who inspire and motivate, building strong teams and leading our talented AVS workforce into the future.

The aviation environment will continue to change rapidly due to new technologies and complex business models. Today's challenges include safely integrating new entrants into the NAS, including advanced air mobility aircraft, high-altitude drones, and commercial space operations. Staying abreast of these new technologies and entrants requires expanding and evolving our group of Chief Scientific and Technical Advisors and Senior Technical Specialists. Additionally, planning and executing 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 design, policy and rulemaking, inspection, and medicine.

The 2020 ACSAA mandates several major changes to U.S. aviation law and mandates adjustments to regulations and policy. ACSAA establishes unique requirements aimed primarily at adjusting the process for certifying new and amended aircraft designs, overseeing U.S. 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. ACSAA also addresses opportunities for improvements in the aviation system identified following the tragic 737 MAX accidents.

In addition, ACSAA contains provisions on international collaboration, workforce development, and the expansion of SMS. Collectively, these provisions will require a significant increase in staff and resources for AVS. Aligned with implementing and maintaining the provision requirements, AVS will hire numerous workforce disciplines across the three workforce categories, including engineers, inspectors, data analysts, human factors specialists, policy analysts, and foreign affairs specialists.

Excel Domestically to Influence Globally

Guiding international aviation safety approaches is increasingly more challenging due to the rise of influential stakeholders and the growing complexity of aviation systems. As part of the FAA's strategic goals, AVS will evaluate international-related workforce awareness, competencies, and training. AVS will also define AVS-wide workforce needs for international activities and establish workforce development improvements. AVS plans to increase safety technical staffing to effectively support corporate international policies, communications, strategic analysis, planning, and implementation.

Strive for Operational Excellence

The AVS workforce needs to be savvy in the development and consumption of data. Quality data is foundational for advanced analytics and the application of artificial intelligence, such as predictive analytics. Such capabilities enable accurate forecasting, improved insights, the ability to anticipate problems and opportunities, and well-informed and agile decision-making. A skilled workforce to develop and maintain these capabilities is requisite for effective and efficient safety management.

Continuous improvement is also a hallmark of AVS efforts in achieving operational excellence. AVS is a learning organization: analyzing our current state, identifying opportunities for improvement, and taking action to refine our operations. A framework for agility is key to continuous improvement and achieving operational excellence.

The ODA Office provides an example of AVS efforts to ensure operational excellence. This office was temporarily established in AIR, following the FAA Reauthorization Act of 2018 (Pub.L. 115-254) to establish standardization and consistency in how the FAA appoints, uses, and oversees ODA Holders.

In April 2021, the FAA realigned the ODA Office to report directly to the Associate Administrator for Aviation Safety, better positioning the office to work across AVS and emphasizing the Agency's focus on strengthening the ODA program. Over the past several months, the ODA Office worked with the AIR and FS to ensure the effective implementation of policy changes mandated by Congress.

The ODA Office is working to fill its remaining staff positions to oversee the development and implementation of ODA policy, develop measures to improve consistency in oversight, and engage with managers and staff who directly support the ODA program. These engagement efforts highlight opportunities for improvement and where best practices can be better applied across the system.

The ODA Office is also working diligently to support the implementation of multiple sections of the ACSAA, including the issuance of a supplemental policy to prevent ODA Holder interference with ODA unit members and facilitate open communication between unit members and the FAA. The ODA Office is also supporting work performed by the Expert Review Panels identified in Sections 103 and 125 of ACSAA.

Focus on People

Our workforce requires continuing investments to stay ahead of future technology trends. Hiring 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 and simulation engineering.

We will enhance the development and validation of AVS safety workforce staffing models to ensure the modeling reflects current relationships between the FAA and industry. We aim to improve training opportunities for AVS staff by collaborating with academia, union partners, and industry on curriculum development and delivery for both technical and non-technical skills.

AVS Strategy for Effective Use of Resources

At the close of FY 2022, AVS was at 99 percent of our enacted staffing target. Maintaining staffing levels with skilled personnel who have completed all onboarding training and are positioned to effectively deliver against job requirements is a delicate balance of sustaining a primed pipeline while anticipating attrition. Our commitment to efficiently detect and address the shifting demands of the aviation safety system requires a strategic approach to managing our staffing numbers across the AVS enterprise.

AVS is evaluating opportunities to streamline business operations and gain efficiencies. Using risk-based analysis and decision-making will enable us to direct resources to critical needs. This would be achieved through attrition and repurposing of the open positions to address unmet high-priority needs.

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

SECTION 3
Forecasting AVS Workforce Needs

ASIs and ASEs constitute the majority of positions within AVS. As a result, forecasting and modeling concentrate on assessing the requirements for these positions. The AVS staffing model, in conjunction with more targeted assessments by each organization, assists the FAA in identifying staffing requirements for ASIs and ASEs.

As an additional element, AVS maintains a robust Senior Technical Experts Program (STEP) comprised of Chief Scientific and Technical Advisors, as well as Senior Technical Specialists, 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 Agency and industry needs.
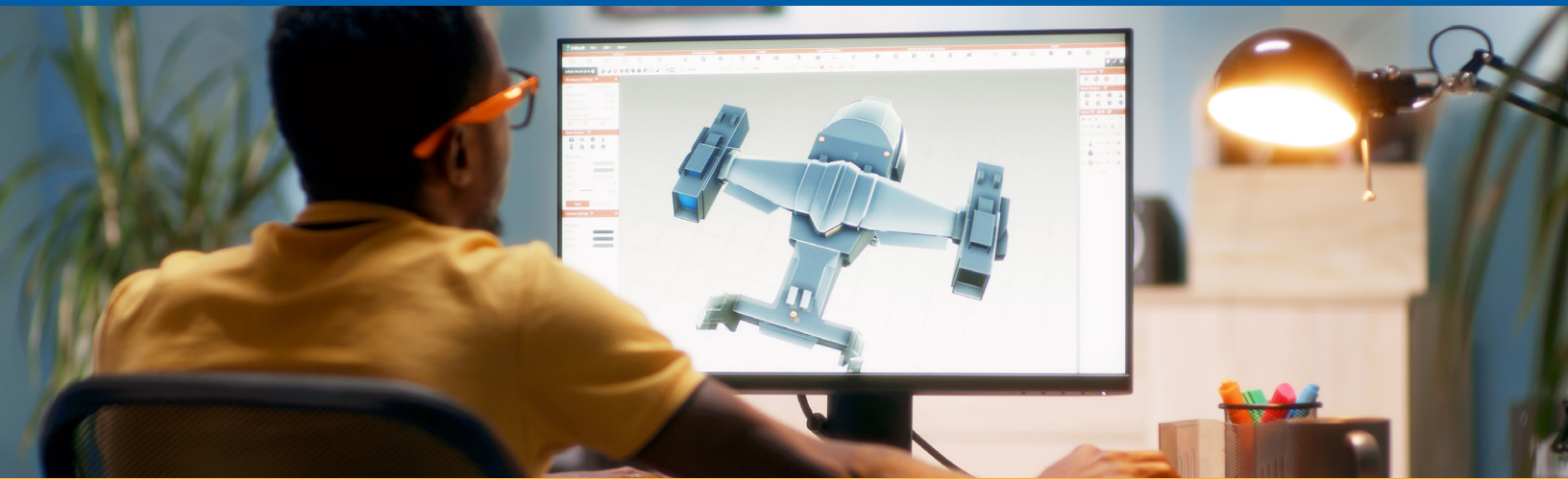
The workforce continues to evolve as advances are made in the aviation safety environment. Using and improving established methods of workforce forecasting and modeling will ensure we continue to meet our obligations to promote and improve safety in the NAS.

AVS Staffing Analytics

A data-driven model performs the initial analysis of staffing needs for AVS. The model is comprised of specialized modules that assess ASI and ASE staffing requirements within AVS. The model uses data inputs, such as historical work activities and work hours, as a starting point for the staffing analysis. AVS continues efforts to improve the staffing tool with additional sensitivity to better position the model for the future.

Data Quality

As with any software tool, the quality of analytical output is only as good as the data inputs. AVS has applied significant effort in the last nine years to improve 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 and ASE 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;

- Quantify and project all work hours, including those spent on training, administrative activities, leave, and travel; and

- Examine the workload impact associated with designee oversight.

Historical Work Activities and Work Hours

The staffing tool modules 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 system and other appropriate oversight activity tracking systems.

Forecasting

The number of activities forecasted for the next 10 years is based on their relationship to demand drivers. Where possible and applicable, FAA-produced forecasts are used to predict workload changes associated with industry growth. These forecasts are combined with field-level knowledge of expected workload changes.

The required modeled 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 on the growth or contraction of the current industry. The model results are reviewed and adjusted, if necessary, based on subject matter expertise to account for new industry efforts such as drones and the implementation of new automation applications.

Such an adjustment also incorporates expected challenges in talent sourcing due to industry competition. The pandemic years of 2020 and 2021 increased the availability to AVS of certain experienced aviation technical professionals due to furloughs and layoffs in the aviation industry. Conversely, the transition out of the pandemic has seen a vigorous resurgence of the travel industry and rehiring, further exacerbated by hiring in the rapidly growing advanced air mobility segment of the aviation industry. Both of those effects have created a highly competitive environment for talent acquisition for aviation organizations. It is reasonable to expect such hiring pressures to continue in the coming years, thus presenting more challenges to AVS in hiring technical experts.

Ratio Methodology Used for Safety Technical Specialist and Operational Support Staff

For AVS, 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. As work activities and structural office dynamics are changing, we plan to review ratio-based positions in the future to determine if modifications to existing calculations are required.

Fusion of Inputs

Figure 2 depicts the different components of the analysis process. The figure shows which positions are determined by the AVS staffing tool, which are ratio-driven, based upon the staffing tool's outputs, and which positions are forecasted outside of the staffing model's process.

AVS FY 2022 Population Ratio

- Modeled ASI
- Modeled ASE
- Modeled AAM
- Ratio-Driven Analysis
- Other Methods

709 Other Methods 9%

1,484 Ratio-Driven Analysis 20%

410 Modeled AAM 6%

735 Modeled ASE 10%
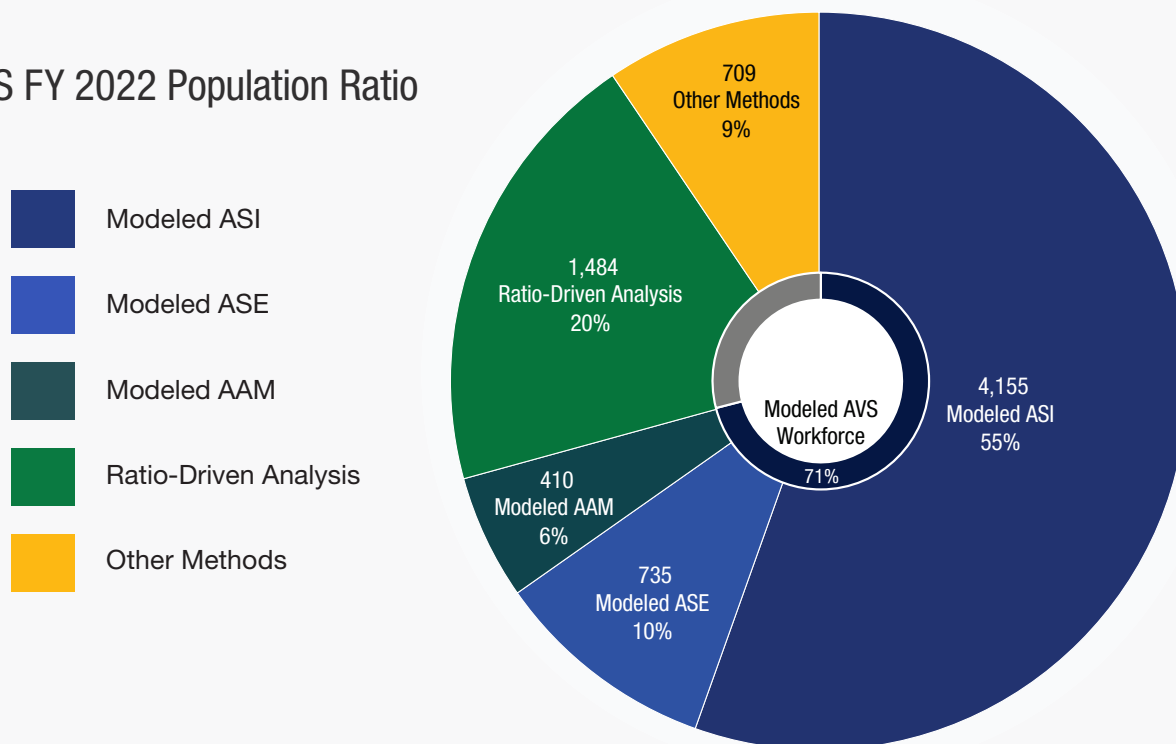
4,155 Modeled ASI 55%

Modeled AVS Workforce 71%

Figure 2: Identifies methods used to forecast staffing within AVS (Information shown represents actual positions at the end of FY 2022)

SECTION 4
LOOKING FORWARD

This section provides anticipated workforce needs, estimated levels of attrition, and the planned hiring for AVS from FY 2023 to FY 2032.

Figure 3 depicts the FY 2022 actual and the FY 2023 - FY 2032 forecasted AVS headcount as the result of current levels plus planned hires minus estimated losses.

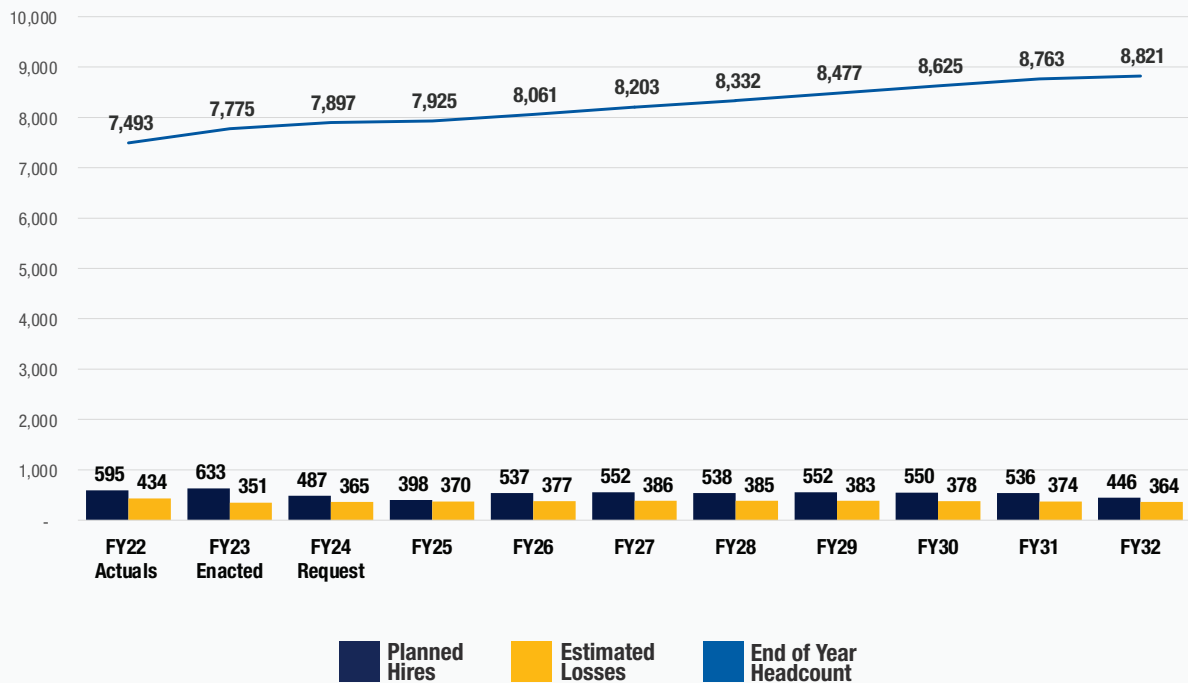## Total AVS Workforce with Planned Hires and Estimated Losses

Figure 3: FY 2022 actual staffing level, actual hires, and actual losses, as well as planned staffing levels, planned hires, and estimated losses for FY 2023 through FY 2032 for AVS Operations personnel

In FY 2022, AVS hired 595 full-time permanent (FTP) positions, which is 3.7 percent lower than planned. While this did not significantly diminish our ability to execute the mission, challenges finding qualified applicants continued to be an issue.

The planned hiring target of 633 FTPs in FY 2023 is driven primarily by the continued need to increase safety critical and safety technical positions (see Figure 4) needed to enhance aviation safety oversight. Average annual hiring for FY 2023 through FY 2032 is forecasted at 503 positions, reflecting requirements related to certification and safety oversight reform.
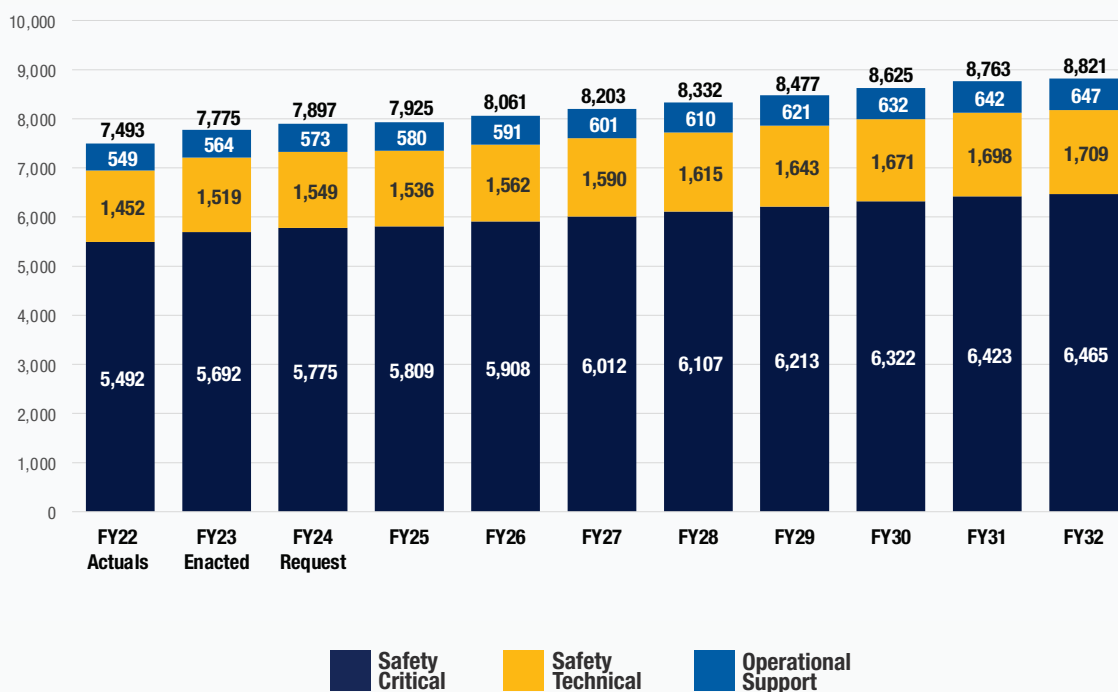
Projected Staff by Staffing Category

Figure 4: *Anticipated needs for safety critical, safety technical, and operational support staff in AVS for FY 2022 through FY 2032*

In FY 2022, 434 FTPs were lost due to attrition (304 were due to retirement). The projected average annual attrition through FY 2032 is 379 FTPs, which is consistent with historical trends.

AVS continues to hire additional staff with expertise in human factors, systems safety engineering, software engineering, manufacturing and industrial engineering, and data analytics and science.

Detailed views into anticipated staffing requirements for safety critical, safety technical and operational support personnel, as well as ASIs and ASEs, are presented in figures 4, 5, and 6.

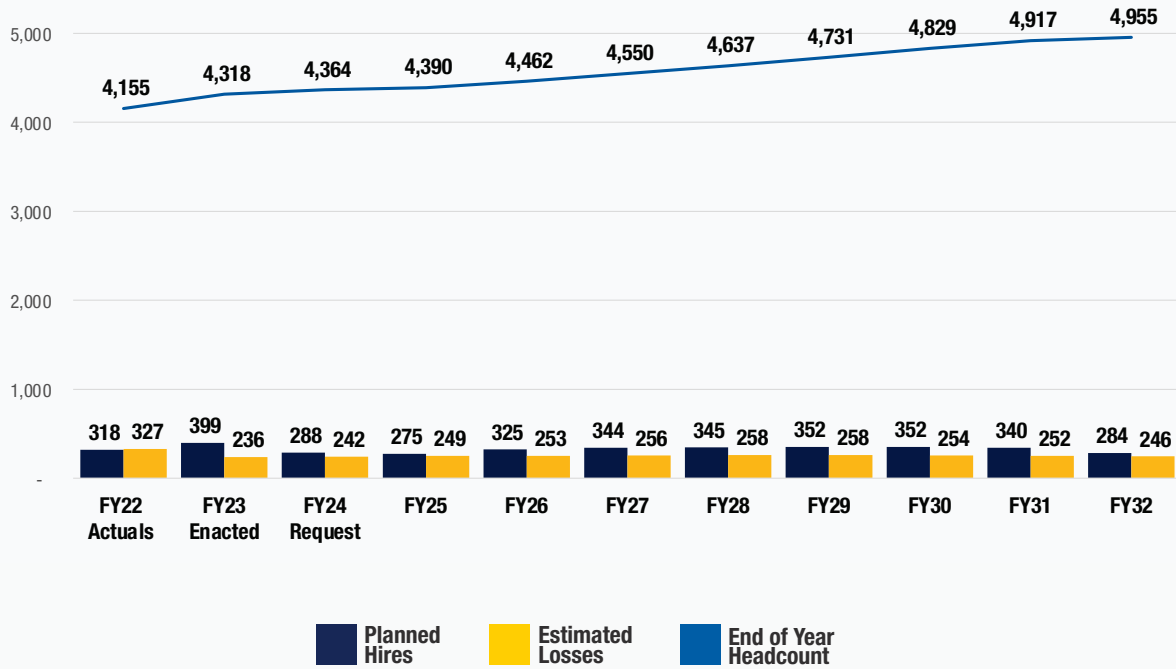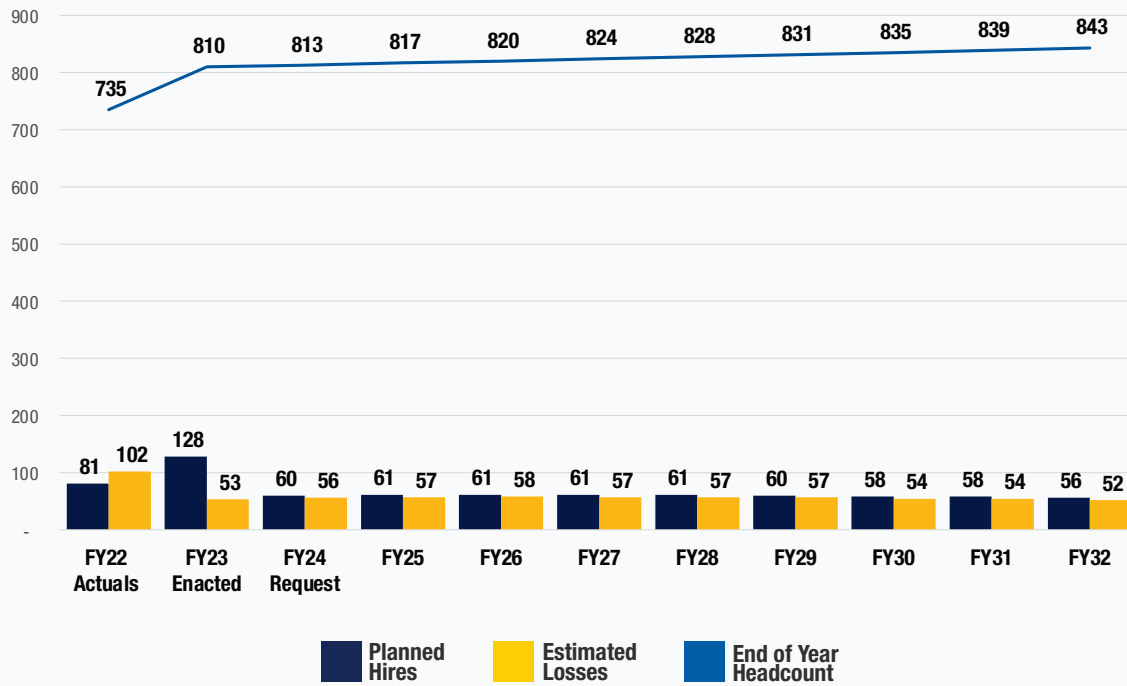## ASI² Forecast with Planned Hires and Estimated Losses

Figure 5: FY 2022 actual staffing level, actual hires, and actual losses, as well as planned staffing levels, planned hires, and estimated losses for FY 2023 through FY 2032 for all ASIs in AVS

²ASIs are 1825 occupational series in FS and AIR

ASE[3] Forecast with Planned Hires and Estimated Losses

Figure 6: FY 2022 actual staffing level, actual hires, and actual losses, as well as planned staffing levels, planned hires, and estimated losses for FY 2023 through FY 2032 for all ASEs in AVS

[3]ASEs includes all 800 (8XX) occupational series in AIR

Recruiting and Retaining a Skilled Workforce

The average age of AVS employees when hired is 46, and the current average age of AVS employees is 55. Attrition analysis shows that a low percentage of employees retire immediately upon becoming eligible, and there is no mandatory retirement age for AVS employees. Over the last two years, the average age at retirement for safety critical AVS personnel was 66, and for non-mission-critical personnel, it was 64. The chart below shows the historical rates of retirement with respect to the year of eligibility.

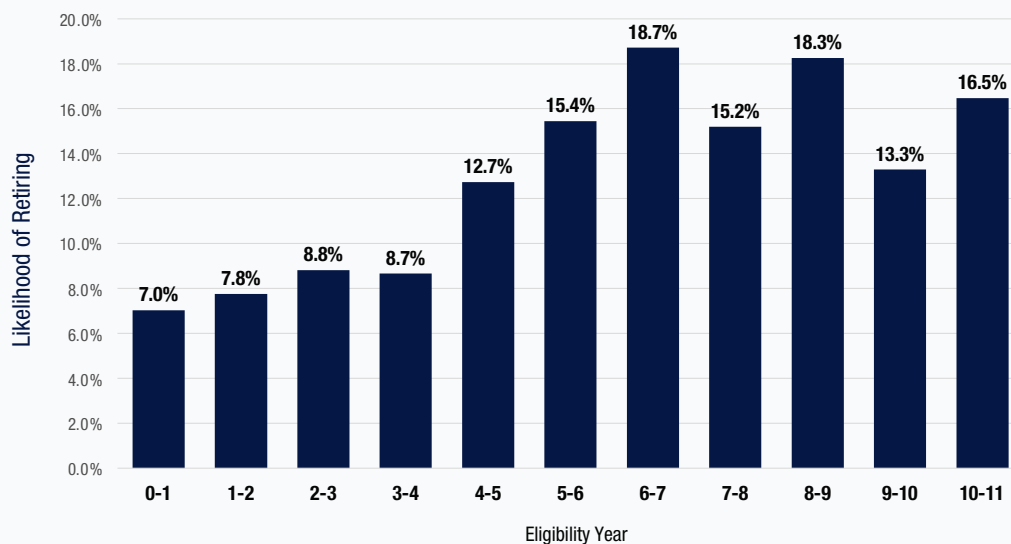**Retirement Behavior Profile**

Figure 7: Forecasted percentage of AVS employees expected to retire during each year of retirement eligibility

In FY 2023, AVS will leverage knowledge gained through federal best practices for workforce development by assessing 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 increasing responsibility using recruitment, retention, and development initiatives as detailed in the following sections.

Recruitment and Outreach

AVS must compete with private industry and other government agencies to recruit and retain experts from a specialized talent pool. The FAA recognizes the ongoing challenge of identifying and attracting diverse talent into key safety positions, and we are pursuing a number of initiatives, activities, and incentives to do so.

One avenue to promote AVS hiring incentives and flexibilities includes recruitment efforts at professional conferences, career fairs, aviation events, and airshows. Another is the use of social media. Both are used to reach a greater pool of applicants nationwide.

Over the last fiscal year, AVS participated in sixteen virtual recruitment events reaching 6,500 potential candidates to support the hiring of safety critical and safety technical positions. These events help AVS 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 2023. AVS also offers student internships for high school, undergraduate, and graduate level students to promote interest in aviation. The goal of this effort is to build a talent pipeline to increase the pipeline of qualified pilots and aviation mechanics across industry and government.

Additionally, in alignment with ACSAA, AVS is collaborating with our unions 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.

Currently, the primary recruitment and hiring vehicle AVS uses is the Office of Personnel Management's automated hiring system, USAJOBS. AVS also uses applicable recruitment resources like the On-the-Spot hiring authority to expedite the process for hiring ASIs and ASEs, as well as physicians.

AVS continues to use the FAA's Managerial and Employee Leadership Competency Profiles to correlate and define the required core competencies AVS needs for interpersonal, business, and specific technical skills. This model allows us to compare the competencies of employees against the requirements of positions across AVS.

Retention

Once AVS hires an employee, the focus shifts to retention as we strive to be a workplace of choice. AVS will continue to promote a professional and safe work culture that encourages innovation, empowerment, and growth. Our senior leaders actively embrace their roles by communicating with and engaging employees through numerous interactions, education and advancement opportunities, and idea and knowledge-sharing efforts that join pertinent information with employee engagement.

Compensation Incentives

To better compete with aviation industry recruitment, 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 ASIs, including higher entry-level employee salaries to increase the pool of eligible applicants and referral incentives. Such incentives were in place during FY 2022 and continue in FY 2023. In FY 2020, AVS expanded recruitment incentives for Operations ASIs and, wherever possible, extended them to other Aviation Safety units. In FY 2022, AVS continued the use of effective incentives, including:

- 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

- A Management Performance Incentive Program

Expanding Recruitment and Workforce

In the fall of 2022, the FAA published Flight Plan 21 (FP21), our Strategic Plan for FY 2022-2026. FP21 focuses on four pillars — Safety, People, Global Leadership, and Operational Excellence — to build the 21st-century FAA. The People Pillar of this plan emphasizes the importance of recruiting and maintaining a diverse workforce of the future.

To support efforts to create a future pipeline of diverse candidates, AVS works with the Office of Human Resource Management (AHR) to host student interns through the Minority Serving Institute Internship Program. AVS also holds STEM Career Symposiums to include middle, high school, and college students from underrepresented student populations, featuring a variety of learning activities and diverse speakers provided by internal and external stakeholders.

These practices facilitate the organization in attracting and hiring talented applicants from diverse backgrounds and meeting future needs to create a workforce with the leadership, technical, and functional skills necessary to ensure the United States has the world's safest and most productive aviation sector.

Workforce Training and Development

Training Goals

AVS regularly assesses skills and competencies we rely on to meet future needs, and where necessary, AVS locates or develops requisite staff and training resources. Understanding our role as a regulator to manage risk and provide safety oversight, we maintain a well-trained workforce that supports learning, diversity, equity, inclusion, and accessibility.

In order to sustain today's required skills and develop tomorrow's skills, AVS encourages professional development opportunities and provides employees with training. AVS training includes synchronous web-based virtual learning, where students and instructors are present at the same time; asynchronous web-based training, which is self-paced; and traditional classroom-based instruction.

While services and offices within AVS maintain their own mission-specific training programs/courses, these 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, continuing education, and recurrent training 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, adaptive learning, and mobile learning;

- Providing a two-day Introduction to AVS course for all new hires, including a panel session with senior AVS leadership, to understand basic accident prevention theory, the AVS Quality Management System, the AVS Safety Management System, the Voluntary Safety Reporting Program, and diversity and inclusion concepts;

- Identifying training gaps for international knowledge and job functions and developing innovative training solutions to fill those gaps; and

- Developing a human factors education program that addresses the effects of modern flight deck systems, including automated systems, on human performance for airplanes and the approaches for better integration of human factors in aircraft design and certification.

Initial Technical Training

Training provided to new safety critical operational staff varies across the different services and offices and ranges from 1 to 15 weeks, depending on specialty. For most employees, initial technical training is provided within the first 12 months of employment.

AVS requires all safety critical operational staff to attend indoctrination training to introduce and familiarize employees with the AVS mission and values.

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 the 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 1,083 AVS executives and managers, 369 are eligible for retirement, representing 34 percent of the management population. Within the next one to five years, another 306 will become retirement eligible, representing an additional 28 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 Aspiring Managers Program for staff-level personnel aspiring to be managers, the Federal Executive Institute for all levels of management, and the Emerging Enterprise Leaders 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 approach to hiring leaders at every level, which supports AVS's culture of collaboration and organizational excellence. Additionally, AVS trains managers in effective communications via the Crucial Accountability course.

Funding

Staffing is the AVS organization's largest cost. Because personnel compensation and benefits consumed more than 84 percent of the AVS FY 2022 actual expenditure, continuing to support 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 an agile workforce that is not geographically constrained; is reliant on tools, equipment, and technology to operate in dispersed work areas; and is both trained and equipped to carry out the organization's safety mission.

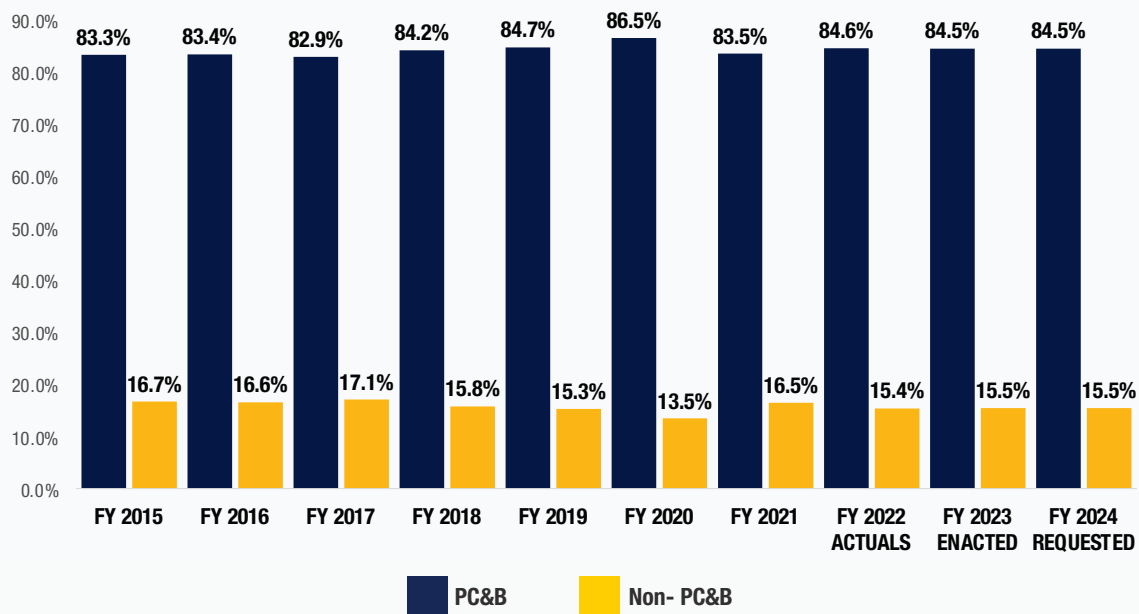**Personnel Compensation and Benefits (PC&B) and Non-PC&B Shares**

Figure 8: Percentage allotments for PC&B, FY 2015 – FY 2024[4]

[4]*FY 2023 enacted and FY 2024 requested budget*

SUPPLEMENTAL INFORMATION: APPENDIX

APPENDIX: AVS STAFFING (Operations Appropriation)[5]

FY 2023 WFP Appendix	FY 2022 ACTUAL	FY 2023 ENACTED	FY 2024 REQUESTED
FS	**5,184**	**5,292**	**5,347**
Safety Critical	4,034	4,118	4,161
Safety Technical	703	718	725
Operational Support	447	456	461
AIR	**1,451**	**1,553**	**1,586**
Safety Critical	1,117	1,196	1,221
Safety Technical	262	280	286
Operational Support	72	77	79
AAM	**410**	**424**	**438**
Safety Critical	135	140	144
Safety Technical	253	261	270
Operational Support	22	23	24
AOV	**132**	**134**	**134**
Safety Critical	95	96	96
Safety Technical	35	36	36
Operational Support	2	2	2
AQS/AVS	**80**	**75**	**76**
Safety Critical	24	22	23
Safety Technical	54	51	51
Operational Support	2	2	2
ARM	**37**	**46**	**47**
Safety Critical	5	6	7
Safety Technical	31	39	39
Operational Support	1	1	1
AVP	**83**	**97**	**115**
Safety Critical	45	53	62
Safety Technical	36	42	50
Operational Support	2	2	3
AUS	**87**	**96**	**96**
Safety Critical	15	17	17
Safety Technical	72	79	79
Operational Support	–	-	-
ODA	**29**	**58**	**58**
Safety Critical	22	44	44
Safety Technical	6	13	13
Operational Support	1	1	1
Grand Total	**7,493**	**7,775**	**7,897**
Safety Critical	5,492	5,692	5,775
Safety Technical	1,452	1,519	1,549
Operational Support	549	564	573

[5]As of Pay Period 20 ending on September 24, 2022
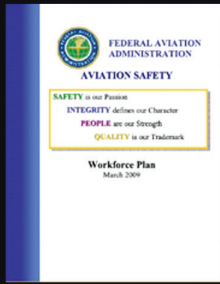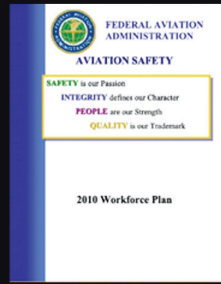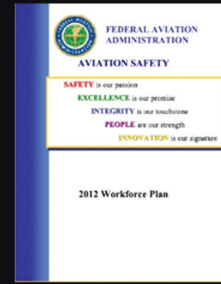
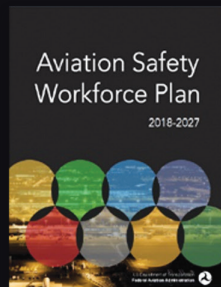FY 2009   FY 2010   FY 2011   FY 2012

FY 2013   FY 2014   FY 2015   FY 2016

FY 2017   FY 2018   FY 2019   FY 2020

FY 2021   FY 2022