FAA

Report No. AV2023027
May 2, 2023

Opportunities Exist for FAA To Strengthen Its Workforce Planning and Training Processes for Maintenance Technicians

U.S. Department of Transportation
Office of Inspector General

Highlights

Opportunities Exist for FAA To Strengthen Its Workforce Planning and Training Processes for Maintenance Technicians

Requested by the House Committee on Appropriations

Federal Aviation Administration | AV2023027 | May 2, 2023

What We Looked At

The Federal Aviation Administration (FAA) employs approximately 5,000 maintenance technicians who install, maintain, repair, and certify roughly 74,000 pieces of equipment in the National Airspace System. Citing concerns with staffing and training for this important workforce, the House Committee on Appropriations directed our office to assess the Agency's plans for hiring, training, and placing maintenance technicians. Previously, we reported on FAA's process for hiring and placement. Our objective for this review was to evaluate FAA's process for prioritizing and providing training to maintenance technicians.

What We Found

FAA projects training and hiring requirements only 1 year in advance and does not proactively identify and prioritize maintenance technician training and hiring needs in anticipation of pending retirements. According to Federal internal control standards, management should consider how best to plan for employees' eventual departure and retain needed skills and abilities. As a result, FAA has developed workforce plans for air traffic controllers and aviation safety inspectors that target training and hiring needs 10 years in advance—but does not do so for maintenance technicians. It takes 1.5 years on average to promote a newly hired maintenance technician to the journeyman level, so 1 year of advance planning is not adequate to prepare for future workforce needs. Two FAA lines of business that fall under three different vice presidents are responsible for the maintenance technician training process, which makes it difficult to establish a collaborative training process and make budgetary decisions. Travel funding and other factors have also hindered FAA's ability to increase the number of technicians who can receive training in a given year. Although the Agency is using e-learning options, it has not documented lessons learned or formally analyzed student feedback to determine course formats. The lack of a strategic approach hinders FAA's ability to develop a sustainable workforce model.

Our Recommendations

We made four recommendations to improve FAA's approach to prioritizing and providing technical training to maintenance technicians. FAA concurred with all four recommendations.

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U. S. Department of Transportation
Office of Inspector General

Memorandum

Date: May 2, 2023

Subject: ACTION: Opportunities Exist for FAA To Strengthen Its Workforce Planning and Training Processes for Maintenance Technicians | Report No. AV2023027

From: Nelda Z. Smith
Assistant Inspector General for Aviation Audits

To: Federal Aviation Administrator

The Federal Aviation Administration (FAA) operates a vast network of facilities and maintains communication, navigation, and surveillance equipment to support the safety and efficiency of the National Airspace System (NAS). FAA's Technical Operations Services (Tech Ops), a part of FAA's Air Traffic Organization (ATO), employs approximately 5,000 Airway Transportation Systems Specialists. These maintenance technicians install, maintain, repair, and certify roughly 74,000 pieces of equipment in the NAS (e.g., radar systems that allow air traffic controllers to identify the specific locations of all the aircraft in the airspace they are monitoring).

Citing concerns with staffing and training for this important workforce, in 2017 the House Committee on Appropriations directed the Office of Inspector General (OIG) to assess FAA's plans for hiring, training, and placing maintenance technicians.[1] In 2018, we reported on FAA's process for hiring and placement and assessed the tool the Agency developed to improve hiring prioritization.[2] We found that the tool lacked key factors, such as the significant time new technicians need to complete equipment training courses and certification. Accordingly, we focused this review on the Agency's maintenance technician training. Specifically, our objective was to evaluate FAA's process for prioritizing and providing training to maintenance technicians.

We conducted this audit in accordance with generally accepted Government auditing standards. Exhibit A details our scope and methodology. Exhibit B lists

[1] H. Rept. No. 114-606, p. 17 (2016).
[2] *Underlying Data Quality Issues Hinder the Staffing and Placement of FAA's Maintenance Technicians* (OIG Report Number AV2018057), June 27, 2018. OIG reports are available on our website: https://www.oig.dot.gov/.

the organizations we visited or contacted, and exhibit C lists the acronyms used in this report.

We appreciate the courtesies and cooperation of Department of Transportation representatives during this audit. If you have any questions concerning this report, please contact me or Robin Koch, Program Director.

cc: The Secretary
DOT Audit Liaison, M-1
FAA Audit Liaison, AAE-100

Results in Brief

Strengthening workforce planning and training processes for maintenance technicians can help FAA better prepare for future workforce needs.

FAA does not forecast maintenance technician training and hiring needs for multiple years in advance. Instead, FAA projects training and hiring requirements only 1 year in advance and does not proactively identify and prioritize maintenance technician training and hiring needs in anticipation of pending retirements. In its *Standards for Internal Control in the Federal Government*[3] (Internal Control Standards), the Government Accountability Office (GAO) states that, as part of workforce planning, management should consider how best to plan for employees' eventual departure and retain needed skills and abilities. As a result, FAA has developed workforce plans for air traffic controllers and aviation safety inspectors that target training and hiring needs 10 years in advance—but does not do so for maintenance technicians. It takes 1.5 years on average to promote a newly hired maintenance technician to the journeyman level,[4] so 1 year of advance planning for maintenance technicians is not adequate to prepare for future workforce needs. Additionally, two FAA lines of business that fall under three different vice presidents are responsible for the maintenance technician training process, making it difficult to establish a collaborative training process and make budgetary decisions. Further, factors such as travel funding, available instructors, contract management, course development, and the lack of a platform for refresher training have hindered FAA's ability to increase the number of technicians who can receive training in a given year. Although the Agency has worked to expand student access to training by using e-learning options, it has not documented lessons learned or formally analyzed student feedback to determine course formats. The lack of a strategic approach hinders FAA's ability to identify and properly prioritize hiring and training requirements, allocate resources for technical training, and develop a sustainable workforce model.

We are making recommendations to improve FAA's approach to prioritizing and providing technical training to maintenance technicians.

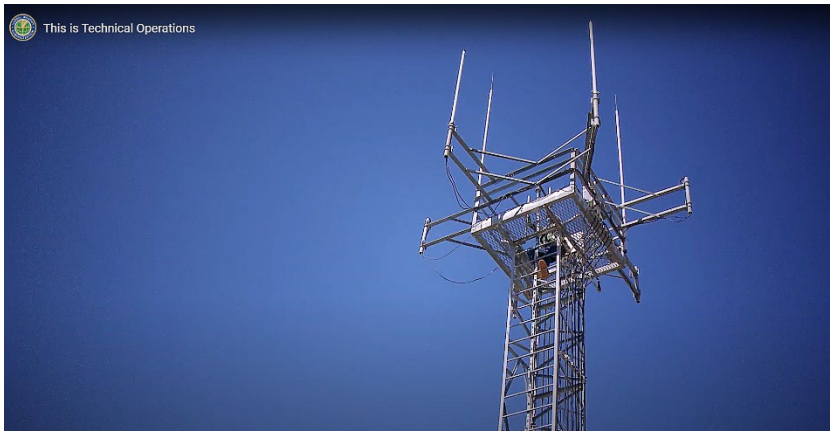
[3] Government Accountability Office (GAO), *Standards for Internal Control in the Federal Government* (GAO-14-704G), September 2014.

[4] FAA promotes technicians to the journeyman level or the H pay band after they meet job performance requirements and their supervisor recommends them for promotion.

Background

FAA's Tech Ops workforce of nearly 5,000 maintenance technicians maintains roughly 74,000 pieces of equipment throughout the United States and its territories at approximately 400 facilities, otherwise known as System Support Centers or support centers. These support centers are located in three Service Areas (Eastern, Central, and Western), which are managed by District Offices in those regions. They employ maintenance technicians that specialize in one or more of the five following disciplines:

1. Communications. Maintaining the systems, such as this Remote Transmitter Receiver site, that allow air traffic controllers and pilots to be in contact throughout flights.

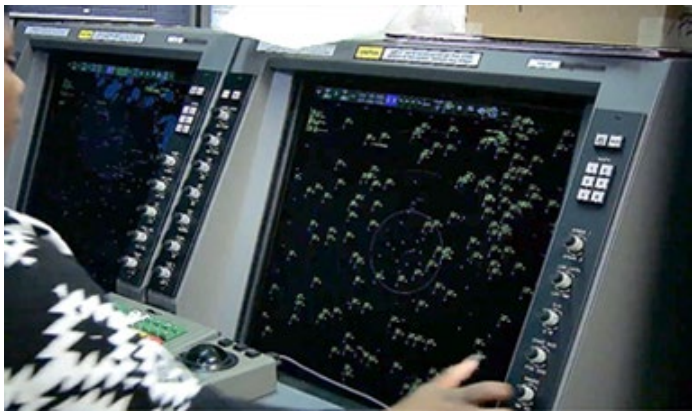


Source: FAA

2. Radar. Maintaining the systems that allow air traffic controllers to see the specific locations of all the aircraft and weather in the airspace they are monitoring.

Source: FAA

3. Automation. Maintaining the systems that allow air traffic controllers to track each aircraft's current and future position, speed, and altitude.

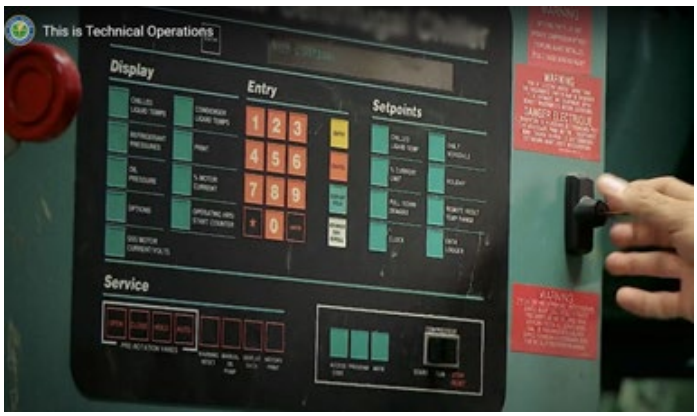


Source: FAA

4. Navigation. Maintaining the systems that allow pilots to take off, maintain their course, approach, and land their aircraft with precision.

Source: FAA

5. Environmental. Maintaining the power, lighting, and heating/air conditioning systems at air traffic control facilities.



Source: FAA

Most FAA systems require specific training and certification, and FAA does not typically train maintenance technicians on every equipment type. Therefore, individual maintenance technicians cannot work on all equipment, increasing the complexity of the technician workforce planning effort.

Coordinating maintenance technician training involves three different FAA offices (see table 1):

Table 1. Roles and Responsibilities

FAA Office	Responsibilities	Senior Official*	Line of Business
Safety and Technical Training (Technical Training)	Develops an integrated strategy to lead, direct, and guide the overall design, management, and delivery of technical training. Develops policies, standards, and oversight for ATO technical training.	Vice President, Safety & Technical Training	Air Traffic Operations
Technical Operations (Tech Ops)	Identifies requirements and the specific training needs of maintenance technicians.	Vice President, Technical Operations	Air Traffic Operations
Academy Technical Operations Training Division (the Academy)	Delivers initial and specialized technical training.	Assistant Administrator for Finance & Management	Finance & Management

* Unlike other parts of FAA, which are led by Administrators, the Air Traffic Organization consists of eight Vice Presidents who report to a Chief Operating Officer.

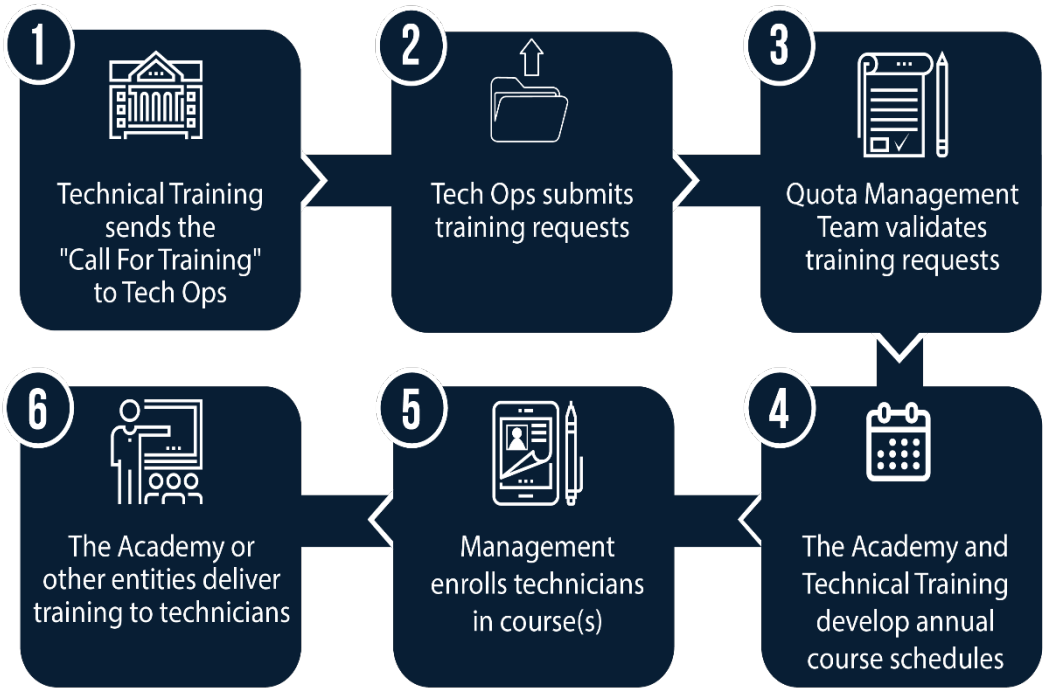
Source: FAA Order 3000.57A and organizational chart

FAA's Technical Training Office initiates an annual training requirements identification process to determine technician training needs. During this process, the Quota Management Team in Technical Training validates training requests and determines the total number of technicians that can be trained (i.e., the quota) based on the approved budget.[5] The following flowchart (see figure 1) highlights how the process typically unfolds, but it is important to note that,

[5] The Quota Management Team uses priority codes to ensure a national standard for defining operationally essential requirements. That standard allows FAA to prioritize quota allocations for equitable training consideration. Technical Training has the authority to manage priority codes by moving or removing technicians from courses.

according to FAA, the process does not guarantee that technicians will receive their requested courses.

Figure 1. Training Requirements Identification Process



Source: OIG analysis of FAA Order 3000.57A

Strengthening Workforce Planning and Training Processes for Maintenance Technicians Can Help FAA Better Prepare for Future Workforce Needs

FAA does not forecast maintenance technician training and hiring needs for multiple years in advance, which could help plan for technicians' eventual departure and maintain needed skills and abilities. Instead, Tech Ops develops training and hiring targets only 1 year in advance, and FAA does not track data that would help identify training and hiring needs. Further, stronger communication and collaboration between the multiple offices responsible for training could help increase the number of technicians completing training and minimize unmet training requirements and the resulting backlog. Finally, the Agency is hindered in its ability to increase the number of trained technicians due to factors such as the availability of travel funding, instructors, contract management, and course development.

FAA Lacks a Comprehensive Plan To Identify and Prioritize Future Maintenance Technician Training Needs

FAA developed an initial technician workforce strategy 7 years ago but has not updated it since then to include all technical personnel and changes in training and hiring processes. The Agency also lacks a comprehensive workforce plan to address hiring and training needs for its entire technical workforce. In addition, FAA does not currently account for planned retirements or track how long it takes on average to train new technicians, data that would be useful for determining future training and hiring needs.

FAA Has Not Updated Its Technician Workforce Strategy Since 2015

In its Internal Control Standards, GAO states that effective management of an entity's workforce is essential to achieving results and important to internal controls. Therefore, as part of workforce planning, management should consider how best to plan for technicians' eventual departure and maintain needed skills and abilities. For example, FAA has developed workforce plans for air traffic controllers and aviation safety inspectors that target training and hiring needs 10 years in advance and are updated annually. FAA's Air Traffic Controller Workforce Plan (2022–2031) states that new controllers are typically hired 2 to 3 years in advance of expected attrition to allow for sufficient training time. However, according to FAA officials, Tech Ops currently develops training and hiring targets only 1 year in advance. Therefore, FAA does not follow the same approach to plan for maintenance technicians' hiring and training needs as it does for controllers and inspectors.

FAA created a *Technician Workforce Strategy* in September 2015 as an initial, baseline strategy that would eventually expand to include the Agency's entire technical workforce, such as Engineering Services. The strategy included information about where technicians work, historical attrition for fiscal years 2012 to 2014, and estimated attrition for fiscal years 2015 and 2016. It also provided an overview of the hiring process, training, and a forecast of staffing needs and workforce development. In March 2022, an FAA official stated the Agency was in the early stages of updating the *Technician Workforce Strategy*. However, FAA officials informed us in October 2022 that their focus had shifted, and they now intend to develop a comprehensive workforce plan that covers the entire technical workforce. According to FAA, the plan is in the early stages of development and it is unknown what it will include and when it will be completed. As such, FAA does not currently have a comprehensive workforce plan for hiring and training maintenance technicians over the next decade, as it

has for other FAA workforces, such as air traffic controllers and aviation safety inspectors. FAA did develop a Technical Operations Strategic Plan in 2021 that highlights some workforce goals the Agency plans to achieve in 3 to 5 years. Such goals include providing the Technical Operations workforce with enhanced training, support, and career development opportunities. However, the plan does not fully address hiring and training requirements of maintenance technicians similar to a comprehensive workforce plan that would identify future technician hiring and training needs based on current staffing levels, as well as historical attrition and training completion time.

FAA Does Not Track Planned Retirements or the Time It Takes To Train New Technicians

The time it takes to train, combined with the time required to hire[6] new technicians, affects the overall staffing levels at support centers. Although FAA has a prioritization process for allocating training,[7] it does not proactively identify and prioritize maintenance technician training and hiring needs in anticipation of pending retirements. While hiring and training officials at Headquarters stated that they plan for retirements, field support center managers we interviewed identified issues with the planning process. Field support managers stated that when they communicate pending departures through their chain of command, senior management often does not take action until after a technician departs. Additionally, managers and technicians stated there is a lack of succession planning, and FAA should focus on backfilling these positions sooner due to the amount of time it takes to train new technicians. As a result, departing technicians are unable to share their knowledge and skills with newly hired technicians.

In addition, according to FAA officials, training times vary based on area of specialty, types of equipment, training availability, and staffing levels at support centers. However, the Agency does not track how long it takes to train maintenance technicians. Based on our analysis of records for nearly 1,400 technicians hired between fiscal years 2017 and 2021,[8] it took 1.5 years on average for FAA to promote maintenance technicians from entry (starting at either the F or G pay bands) to journeyman level.[9] This is important because

[6] According to FAA, it can take at least 3 months to complete the hiring process once the Agency has identified a vacancy.
[7] FAA uses codes to determine which technicians to enroll in training courses based on a pre-established level of importance.
[8] We analyzed information provided by FAA's Management Services, as well as data pulled from FAA's e-Learning Management System and the Federal Personnel and Payroll System.
[9] Entry-level pay bands are F and G. The major difference between pay bands F and G is the experience level of technicians when they are hired by FAA. Technicians that begin at the F band have less maintenance experience than technicians hired at the G band level. The journeyman level falls under the H pay band. The overall average minimum days to promotion to the H pay band was 98 days, while the overall average maximum was 3.7 years.

technicians-in-training are significantly limited in the duties they can perform. For promotion to the journeyman level, maintenance technicians took an average of 2.7 courses with performance exams. However, FAA officials stated that it could take 2 to 3 years for new technicians to acquire the necessary experience to work independently at their assigned duty locations. Based on our interviews and the collective bargaining agreement, FAA promotes technicians to the journeyman level after they meet job performance requirements and their supervisor recommends them for promotion (see table 2).

Table 2. Average Time for Promotion to Journeyman Level (H Pay Band)

Entry Pay Band	Average Promotion Time to H Pay Band	Average Number of Courses With Performance Exams Taken
Entry at F Pay Band	1.7 Years	3.4
Entry at G Pay Band	1.4 Years	2.5
Weighted Average*	**1.5 Years**	**2.7**

Note: Our analysis did not account for the time it takes to announce vacant positions and hire a new technician. *The weighted average is based on 162 technicians from pay band F and 525 technicians from pay band G who were promoted to pay band H between fiscal years 2017 and 2021.

Source: OIG analysis of the 687 maintenance technicians promoted to the H pay band based on data from FAA's e-Learning Management System and the Federal Personnel and Payroll System

Training constraints can limit the number of maintenance technicians that FAA is ultimately able to hire. For example, FAA chose to limit its technician hiring target to 300 in fiscal year 2022. That total matches the number of technicians Agency officials believed they could train due to preexisting unmet training requirements, as well as class size restrictions that occurred during the COVID-19 pandemic. In addition, when the Academy hires new instructors, support center technicians normally fill these positions, further reducing the number of technicians available to perform maintenance duties.

The lack of a workforce plan based on statistical attrition rates, actual employees on board, and training times limits FAA's ability to identify training priorities and allocate resources to technical training. FAA's limitations also affect maintenance technicians at support centers, who have to take on extra workloads due to the shortfall in trained personnel, as well as managers' ability to release technicians to attend training.

FAA Created a Committee To Improve Collaboration Among Multiple Offices, but Missed Opportunities To Clearly Define Roles and Responsibilities

FAA established a multi-office steering committee in 2019[10] to enhance communication and collaboration for critical technician and air traffic controller training. However, the Steering Committee is facing difficulties in identifying new goals and priorities and has to rely on the proactivity of its current members, due to the lack of an established charter delineating specific roles and responsibilities and measurable milestones.

At the initial Steering Committee meeting, FAA developed priorities for Tech Ops and Air Traffic Services, as well as shared goals for the entire committee. Some of the initial priorities that directly affect technician training included converting courses from in-person to distance learning and leveraging technology to increase the number of students trained. Additionally, in an effort to improve training plans for newly hired maintenance technicians, in April 2020, FAA's Management Services' Technical Requirements & Forecasting Group implemented standardized Statistical Specialty Codes. Technical Training started using these codes to project the first set of training requirements for new technicians that came on board after April 2020.

As the committee was working on accomplishing its initial goals, the COVID-19 pandemic shifted its priorities. Committee members had to focus instead on ways to accomplish training while complying with health protocols. Between March 2020 and December 2021, the Academy was either closed or operating at limited capacity, which has adversely affected course availability and capacity, as well as increased the backlog of technicians waiting for hands-on equipment training. Although the Academy started offering courses at full student capacity again in January 2022, according to FAA officials, it will take at least 2 years to clear the training backlog. The volume of training backlog is difficult to measure because FAA's existing training management system does not store historical changes to training plans. For example, if a field manager changes the student assigned to a course, the system removes the original student's name, and there is no record of the enrollment. Therefore, it is nearly impossible to track students originally assigned to courses. To improve tracking and modernize capabilities, FAA is in the process of developing a new system, which had an original anticipated

[10] The A-5 Steering Committee consists of five offices: Tech Ops, Air Traffic Services, Technical Training, Mike Monroney Aeronautical Center, and the Academy. Of the of the five offices, only Tech Ops, Technical Training, and the Academy are directly involved with maintenance technician training.

completion date of March 2023. However, senior FAA officials told us the program is currently on hold due to budgetary constraints.

According to an FAA official, now that the Academy is operating at full student capacity, the committee is working on identifying new goals but, again, that work is dependent on the individuals involved rather than on defined guidance. For example, Tech Ops is the customer that identifies training needs and requests training courses, but Technical Training ultimately determines the training courses offered to technicians. Additionally, the Academy is primarily responsible for the delivery of technician training, but it does not determine its own instructor staffing levels. Technical Training is responsible for authorizing and funding instructor-staffing levels at the Academy. As a result of assigning responsibility to two lines of business and three vice presidents, it is difficult to establish a collaborative training process and make budgetary decisions that allow technicians to receive the required or requested training.

FAA Has Experienced Difficulties in Increasing the Number of Trained Technicians

Many factors influence the number of maintenance technicians who receive training, such as funding allocation and contract management. Although the Agency has worked to increase the number of technicians trained by using e-learning options, it does not document lessons learned or formally analyze student feedback to determine course formats. FAA has identified the need for a platform with refresher training resources for maintenance technicians. However, due to resource constraints, that platform is a long way from becoming reality. Given the lack of an updated educational platform—particularly one that can improve content, development, management, and delivery of refresher training—FAA faces the risk that technicians will maintain systems with outdated knowledge.

Funding and Contract Management Play a Major Role in Expanding Technician Training

The amount of funding allocated by Technical Training plays a major role in how many maintenance technicians receive technical training annually. Additionally, the extent of funding from Technical Training determines how many instructors are available to teach courses and how many technicians can travel to the Academy for training. Based on our review of Academy and Technical Training budgetary documentation, funding for instructor positions and technician travel steadily decreased between fiscal years 2017 and 2021, although travel and living expenses increased. Notably, between fiscal years 2018 and 2019, Technical

Training decreased student travel funds by over $3 million. During this same period, the per diem rate authorized by the General Services Administration for Oklahoma City, OK, where the Academy is located, reflected an increase in costs, not including airfare. This differs from prior years when budget increases coincided with travel cost increases. For example, in 2010, GAO[11] reported that annual travel costs increased 34 percent between fiscal years 2006 and 2009 with associated budgets increasing accordingly. Ultimately, the funding FAA allocates for instructors and travel is a major determinant of the number of maintenance technicians who are able to receive training in a given year.

According to senior FAA officials, Technical Training has identified shortfalls in managing external training and course revision contracts. Technical Training has multiple job aids that cover the major aspects of contract award and management. However, those aids do not include the specific roles and responsibilities for the groups within Technical Training responsible for reviewing and paying invoices. Technical Training officials stated they are in the process of identifying and developing procedures to better define roles and responsibilities. However, until there is more clarity on roles and a better understanding of the responsibilities of each group in Technical Training, FAA's training contracts remain potentially susceptible to cost overruns and course delays.

FAA Increased E-Learning and Course Development Activities but Did Not Identify and Share Lessons Learned or Develop a Review Process

In response to the FAA Reauthorization Act of 2018,[12] FAA began an e-learning training pilot program, but it did not assess the program or identify any lessons learned. The act required the Administrator to assess and establish or update an e-learning training program that incorporates lessons learned from the pilot program. The act did not provide a requirement to report to Congress after the pilot program, and FAA did not formally document the results or lessons learned. Additionally, FAA was unable to provide us with documentation to indicate when or which course(s) transitioned to the e-learning format following the pilot program. Yet, due to the restrictions on in-person classes caused by the COVID-19 pandemic, FAA accelerated the development of its e-learning courses.

During the pandemic, Technical Training converted over 30 in-person courses to e-learning, which allowed training to continue for maintenance technicians. Still, the technicians and managers we met with stated that a hands-on experience is

[11] GAO, *Federal Aviation Administration: Agency Is Taking Steps to Plan for and Train Its Technician Workforce, but a More Strategic Approach Is Warranted* (GAO 11-91), October 2010.
[12] Pub. L. No. 115-254, § 302 (2018).

the most important element in technical training, which can be difficult to accomplish effectively through e-learning.

To provide this hands-on experience, FAA offers traditional instructor-led courses at the Academy and blended courses that include a combination of both virtual instructor-led and in-person lab training at the Academy. Both provide hands-on learning but have advantages and disadvantages, even apart from any difference in effectiveness. Based on training proposal analyses provided by Academy officials, traditional in-person courses can train technicians in less time than blended courses that incorporate a virtual instructor-led component. Blended courses with a virtual instructor-led portion require more training days due to shorter instruction time on virtual days and the need to account for a travel day to the Academy after the virtual portion and before the lab portion begins. In-person courses require fewer training days but cost more per student because of travel and living expenses.

The student feedback we obtained from Academy officials highlighted technicians' concerns with the effectiveness of the virtual training format. For example, students commented that the virtual format did not allow for hands-on equipment training, staying engaged was difficult, and there were challenges in properly assessing proficiency. However, we found that, although students complete evaluations after course completions at the Academy, Technical Training does not review the feedback on a recurring basis to ensure course effectiveness. Technical Training only evaluates student feedback during the validation process for new or updated courses to determine whether the course meets training objectives, rather than on a recurring basis after course completions. As a result, FAA cannot be sure that existing course formats will meet technician training needs or that they are the best use of limited resources.

Further, based on our interviews with FAA officials, due to budgetary constraints and training backlogs, Technical Training is currently unable to offer refresher training to maintenance technicians. Without refresher training, it can be difficult for technicians to recall how to properly perform maintenance actions on equipment with infrequent preventative maintenance requirements. In addition, preventative maintenance intervals and requirements vary based on the piece of equipment. To address the lack of refresher training, according to FAA officials, the Agency is developing a new education platform that, if implemented, could improve content development, management, and delivery. It could also house educational videos and other technical training materials to help fill the current refresher training gap. This new platform requires approval from FAA's Joint Resources Council, and the original estimated final investment decision was slated for March 2025. However, in July 2022, FAA officials stated that the Agency had placed this platform on hold indefinitely due to budgetary constraints.

Conclusion

Having a well-constituted, trained, and equipped maintenance technician workforce is paramount to maintaining the safety and efficiency of the NAS as technicians ensure all equipment operate seamlessly. Taking steps, then, to put improved processes in place for planning future technician training needs is necessary. However, the Agency currently lacks a strategic approach to technician workforce planning that prepares for future workforce needs, such as training and hiring in anticipation of pending retirements. The current 1-year planning horizon for technicians limits FAA's ability to effectively plan to meet future NAS needs. Additionally, effective communication, standard operating procedures, and contract management are critical to ensuring that FAA's maintenance technician training requirements are met in an efficient and effective manner.

Recommendations

To strengthen its workforce planning and training processes for maintenance technicians, we recommend that the Federal Aviation Administrator:

1. Establish and implement a maintenance technician workforce plan that considers factors such as average training time, training requirements, and staffing turnover for a period longer than 1 year.

2. Update and implement a formal process that better defines roles and responsibilities and establishes improved communication and collaboration among the stakeholders responsible for maintenance technician training, including Technical Operations, Technical Training, and the FAA Academy.

3. Develop and implement a process that includes defined roles and responsibilities for the groups within Technical Training responsible for the management of training solution procurements.

4. Update and implement a formal process to periodically evaluate training course feedback from maintenance technicians, generate regular reports for FAA Technical Training management's review, and share the lessons learned to improve future course content and delivery.

Agency Comments and OIG Response

We provided FAA with our draft report on March 15, 2023, and received its official response on April 13, 2023, which is included as an appendix to this report. FAA concurred with all four of our recommendations and proposed appropriate actions and completion dates. Accordingly, we consider all recommendations as resolved but open pending completion of the planned actions.

Actions Required

We consider recommendations 1 through 4 resolved but open pending completion of the planned actions.

Exhibit A. Scope and Methodology

This performance audit was conducted between October 2021 and February 2023. We conducted this audit in accordance with generally accepted Government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

In 2017, the U.S. House Committee on Appropriations directed our office to assess FAA's plans for hiring, placing, and training maintenance technicians. In 2018, we reported on FAA's process for hiring and placement and assessed the tool the Agency developed to improve hiring prioritization. We found that the tool lacked key factors, such as the significant time new technicians need to complete equipment training courses and certification. Accordingly, we focused this review on the Agency's maintenance technician training. Specifically, our objective was to evaluate FAA's process for prioritizing and providing training to maintenance technicians.

To evaluate FAA's process for prioritizing and providing training to maintenance technicians, we reviewed the training and promotion data for new maintenance technicians hired between October 1, 2016, and September 30, 2021. We reviewed FAA orders and standard operating procedures to identify maintenance technician training requirements, roles, and responsibilities. We also reviewed several FAA workforce-planning documents to better understand the workforce plans, if any, that the Agency uses. Additionally, we interviewed officials from FAA Headquarters and the Academy, as well as representatives from the Professional Aviation Safety Specialists to determine the status of e-learning, the multi-office steering committee, training contract management, and existing and pending new training platforms. Finally, we analyzed training budgetary documentation to examine funding for instructor positions and maintenance technician training travel.

For our analyses of promotions and the number of performance exams taken by maintenance technicians, we retrieved data from FAA's e-Learning Management System and the Federal Personnel and Payroll System to compare against hiring information provided by FAA. Our initial universe of maintenance technicians was 1,393 newly hired technicians between October 1, 2016, and September 30, 2021. Of the 1,393 technicians in our universe, FAA promoted 692 technicians to the H pay band during the scope of the audit. However, five of these technicians were both hired and promoted to the H pay band on the same day. Those five technicians were removed from our analysis to avoid skewing the time it takes a technician to be promoted. Therefore, our analyses for the number of

performance exams taken and the timeframe for promotion to the H pay band included 687 technicians.

With assistance from the OIG statisticians and using Federal Personnel and Payroll System data, we calculated how long on average it took 687 technicians to be promoted to the H pay band from their hire date. Technicians are promoted to the H pay band when their manager concludes they can work independently in their area of specialty. Then, we used data from FAA's e-Learning Management System to calculate the average number of courses with performance exams taken by the 687 technicians from their hire date to the date of promotion to the H pay band.

To gain maintenance technicians and managers' perspectives on FAA's training program for maintenance technicians, we judgmentally selected nine system support centers and one service operations center to visit in person or virtually based on geographical service area and work location (i.e., Terminal Radar Approach Control [TRACON], Core Airport, and General National Airspace System). We chose the managers and technicians we interviewed based on their area of specialty and availability. We interviewed 10 managers and 10 maintenance technicians in 5 separate locations to identify their concerns and challenges related to workforce planning and training.

Exhibit B. Organizations Visited or Contacted

FAA Headquarters, Washington, DC

Air Traffic Organization

- Management Services
- Safety & Technical Training
- Technical Operations

Office of Finance and Management

- Office of Labor Analysis

FAA System Support Center (SSC)

Columbia Basin SSC, Washington

Navigation/Communication SSC Orlando, Florida

Automation/Radar SSC Orlando, Florida

Environmental Support Unit SSC Orlando, Florida

Daytona Beach SSC, Florida

Melbourne SSC, Florida

Environmental Support Unit SSC, New York TRACON (N90), New York

Automation SSC, New York TRACON (N90), New York

Communication SSC, New York TRACON (N90), New York

FAA Service Operations Center

Service Operations Center, New York TRACON (N90), New York

Regional FAA Organizations

Office of Finance and Management

- Mike Monroney Aeronautical Center

Other Organizations

Professional Aviation Safety Specialists

Exhibit C. List of Acronyms

ATO	Air Traffic Organization
DOT	Department of Transportation
FAA	Federal Aviation Administration
GAO	Government Accountability Office
NAS	National Airspace System
OIG	Office of Inspector General
SSC	System Support Center
Tech Ops	Technical Operations Services
TRACON	Terminal Radar Approach Control

Exhibit D. Major Contributors to This Report

ROBIN **KOCH**	PROGRAM DIRECTOR
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Appendix. Agency Comments

Federal Aviation Administration

Memorandum

Date: April 13, 2023

To: Nelda Z. Smith, Assistant Inspector General for Aviation Audits

From: Erika Vincent, Acting Director, Office of Audit and Evaluation, AAE-1 ERIKA S VINCENT Digitally signed by ERIKA S VINCENT Date: 2023.04.13 10:39:26 -04'00'

Subject: Federal Aviation Administration's (FAA) Response to Office of Inspector General (OIG) Draft Report: FAA Maintenance Technician Training

The FAA understands that having a well-trained and equipped maintenance technician workforce is paramount to maintaining the safety and efficiency of the National Airspace System (NAS). The FAA relies heavily on approximately 5,000 Airway Transportation System Specialists (ATSS) in accomplishing its safety-driven mission. These ATSS maintenance technicians install, maintain, repair, and certify roughly 74,000 pieces of equipment in the NAS, and must be trained to accomplish those tasks. FAA's stakeholders responsible for maintenance technician training, including Technical Training, Technical Operations, and the FAA Academy, are working together to identify and meet necessary training requirements for improving current and future technician training needs.

Upon review of OIG's draft report, FAA concurs with all 4 recommendations as written. We plan to implement recommendation 1 by August 31, 2023; recommendation 2 by January 31, 2024; recommendation 3 by December 31, 2023; and recommendation 4 by March 31, 2024.

We appreciate this opportunity to respond to the OIG draft report. Please contact Erika Vincent at Erika.Vincent@faa.gov if you have any questions or require additional information about these comments.

U.S. Department of Transportation
Office of Inspector General

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