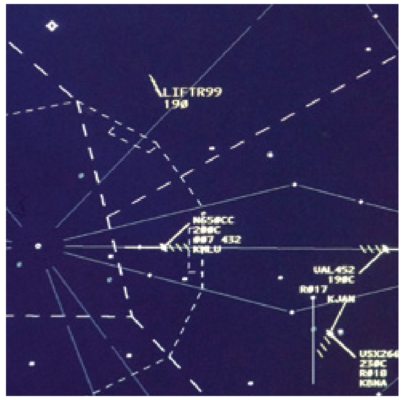
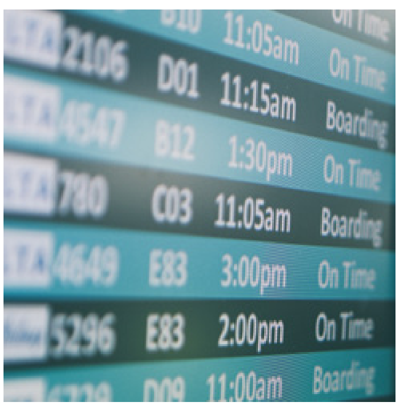


Air Traffic Controller
WORKFORCE PLAN

2019 – 2028



U.S. Department
of Transportation

**Federal Aviation
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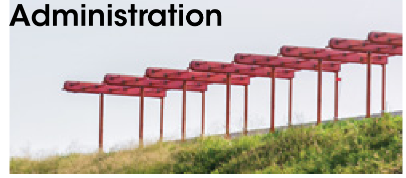

This 2019 report is the FAA's fourteenth annual update to the controller workforce plan. The FAA issued the first comprehensive controller workforce plan in December 2004. It provides staffing ranges for all of the FAA's air traffic control facilities and actual onboard controllers as of September 29, 2018.

Section 221 of Public Law 108-176 (updated by Public Law 115-141) requires the FAA Administrator to transmit a report to the Senate Committee on Commerce, Science and Transportation and the House of Representatives Committee on Transportation and Infrastructure that describes the overall air traffic controller workforce plan.

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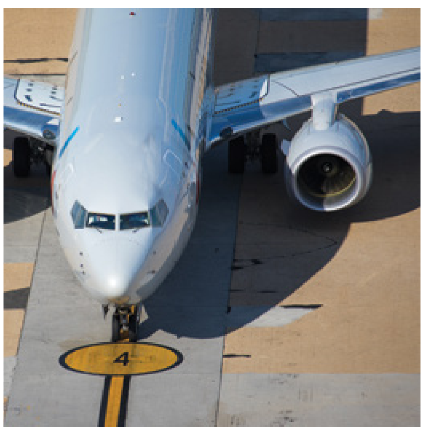
Executive Summary

Safety is the top priority of the Federal Aviation Administration (FAA) as it manages America's National Airspace System (NAS). The NAS is the common network of U.S. airspace — air navigation facilities, equipment and services; airports or landing areas; aeronautical charts, information and services; rules, regulations and procedures; technical information; and manpower and material. Thanks to the expertise of people and the support of technology, tens of thousands of aircraft are guided safely and expeditiously every day through the NAS to their destinations.



WORKLOAD

An important part of managing the NAS involves actively aligning controller resources with demand. The FAA "staffs to traffic," matching the number of air traffic controllers at its facilities with traffic volume and workload. The FAA's staffing needs are dynamic due to the dynamic nature of the workload and traffic volume.

TRAFFIC

Air traffic demand has declined significantly since 2000, the peak year for traffic. For the purposes of this plan, air traffic includes aircraft that are controlled, separated and managed by air traffic controllers. This includes commercial passenger and cargo aircraft, as well as general aviation and military aircraft. System-wide, air traffic declined 24 percent between 2000 and 2013. It has been slowly recovering since, and traffic in 2018 was 20 percent lower than in 2000. We expect the growth to continue, but traffic is not expected to return to 2000 levels during the period of this plan. While there have been decreases year over year for system-wide traffic counts, there are some facilities that have experienced traffic increases. The FAA's staffing standards incorporate location-specific traffic counts and forecasts to account for these changes.

Unmanned Aircraft Systems (UAS) are changing the way we see the future of flight. Keeping pace with the technological advances in this growing industry presents unique challenges and innovative opportunities for the FAA and the aviation community. The FAA is taking an incremental approach to safe UAS integration, aided by a compliance program designed to help identify and correct potential hazards before they result in an incident or accident. The impact of UAS on air traffic

control will continue to evolve as the FAA pursues its vision for fully integrating unmanned systems into the NAS.

HEADCOUNT

In many facilities, the current Actual on Board (AOB) number may exceed the facility's target staffing ranges. This is because many facilities' current AOB numbers (all controllers at the facility) include many developmental controllers in training to offset expected future attrition. While the FAA strives to keep Certified Professional Controllers (CPCs) and Certified Professional Controllers in Training (CPC-ITs) within the range, individual facilities can be above the range due to advance hiring. The FAA hires and staffs facilities so that trainees, once fully certified, are prepared to take over responsibilities when senior controllers leave.

RETIREMENTS

The long-anticipated wave of controller retirements peaked more than a decade ago, in 2007, at 828 retirements. Over the past five years, the FAA has averaged 622 controller retirements per year. However, due to the shifting demographics of the workforce, controller retirements are expected to continue to decline for the next five years to a new level of 200-240 per year through 2028. In the last five years, 3,110 controllers have retired. Fiscal year 2018 retirements were lower than projected. Cumulative Retirement Eligibility has also fallen. Tens of thousands of controllers were hired after the 1981 strike, and at the end of FY 2018 only 25 controllers remain from those who were hired before 1984. **This clearly demonstrates that the controller retirement wave that peaked more than a decade ago is over.**

The FAA carefully tracks actual retirements and projects losses to ensure its recruitment and training keep pace.

HIRING

Over the past five years, the FAA has hired over 7,800 new air traffic controllers. We exceeded our hiring target in 2018, hiring 1,787 new controllers compared with a plan of 1,701.

The anticipated number of new controller hires in FY 2019 is 907. This represents a substantial reduction to the FY 2019 target of 1,431 stated in the FY 2018 Controller Workforce Plan. This is also the lowest number of new controller hires since 2013. The reduction is primarily due to:

- The FAA hiring of 86 more controllers than forecasted last year while losing 113 fewer controllers to attrition. This resulted in a total onboard controller headcount of nearly 200 higher than forecasted at the end of FY 2018.

The FAA's goal is to ensure that the agency has the flexibility to match the number of controllers at each facility with traffic volume and workload. Staffing to traffic is just one of the ways we manage America's National Airspace System.

- A lapse in funding in the first quarter of FY 2019 resulted in a partial government shutdown and disruption to the hiring process. This limited our administrative hiring and screening activities, and it caused current FAA Air Traffic Academy students to retake portions of their training while delaying start dates for others.
- For FY 2019 hiring, there were fewer well-qualified applicants in Pool 1 (Collegiate Training Initiative (CTI) graduates and veterans) thus limiting the number of well-qualified Pool 2 (general public) applicants that could be selected for a position.

In FY 2016, Public Law 114-190 – FAA Extension, Safety and Security Act (FESSA) of 2016 – was enacted. The law established two hiring tracks totaling three distinct hiring pools.

FESSA requires that the hiring track that includes individuals with previous air traffic control experience be given priority consideration. It also increases the maximum hiring age to 35 for those meeting certain requirements. More than 1,350 applicants responded to the air traffic control experienced vacancy announcement in March 2018. More than 750 were referred for employment consideration.

FESSA establishes a separate track that is divided into two pools. The first pool includes graduates from CTI programs and certain military veterans. The second pool is open to the general public. FESSA mandates that there be no more than a 10 percent variance between those two pools in making hiring selections.

Once applicants are notified of selection and have accepted their offer, they are then required to attain medical and security clearances. Upon successful completion of clearances, the applicants will then be scheduled for FAA Air Traffic Academy training as agency needs are identified.

Over the past five years, the FAA has hired over 7,800 new air traffic controllers.

TRAINING

As the FAA brings these new employees on board, training continues to be closely monitored at all facilities. We must carefully manage the process to ensure that our trainees are hired in the places we need them and progress in a timely manner to become CPCs. The FAA will also continue to take action at the facility level should adjustments become necessary due to changes in traffic volume, retirements or other attrition.

Ongoing hiring and training initiatives, as well as increased simulator use, are helping the FAA meet its goals. While the FAA is managing today's air traffic, we must also integrate new technologies into air traffic operations. From state-of-the-art simulators to satellite technology, air traffic is evolving into a more automated system. The FAA is working diligently to ensure well-trained controllers continue to uphold the highest safety standards as we plan for the future.

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Ch. 1 Introduction

STAFFING TO TRAFFIC

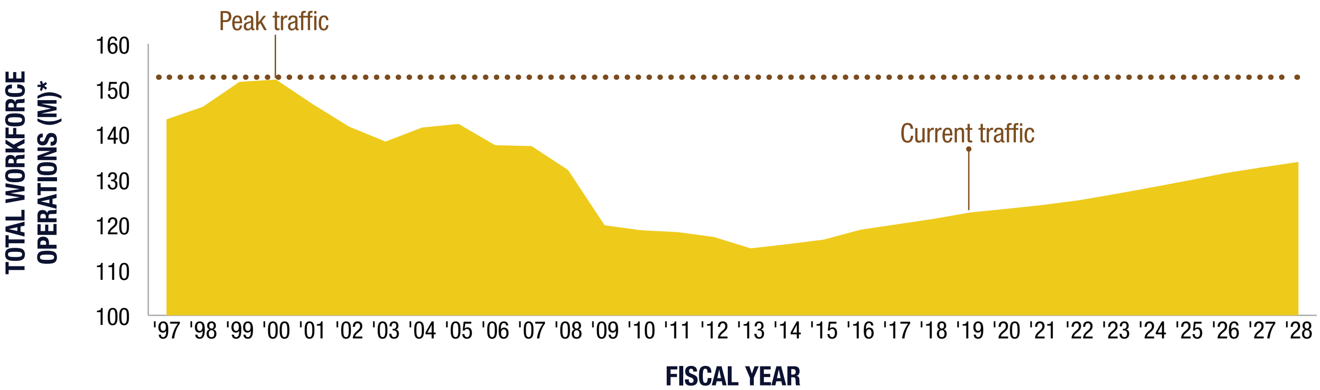
Air traffic controller workload and traffic volume are dynamic, and so are the FAA's staffing needs. A primary factor affecting controller workload is the demand created by air traffic, encompassing both commercial and non-commercial activity. Commercial activity includes air carrier and commuter/air taxi traffic. Non-commercial activity includes general aviation and military traffic.

Unmanned Aircraft Systems (UAS) have operated on a limited basis in the National Airspace System (NAS) and mainly supported public operations, such as military and border security operations. In recent years, UAS operations have significantly increased in number, technical complexity and application. The list of uses has rapidly expanded to encompass a broad range of activities, including aerial photography, surveying, communications and broadcast, as well as hobby and recreation. In December 2015, the FAA began registration of all UAS. As policy and technology updates allow widespread use of UAS for commercial applications, the impact on the air traffic control workload will be incorporated into our models and forecasts. Oversight of UAS is aided by the FAA's new compliance program, which is designed to help identify and correct potential hazards before they result in an incident or accident.

Adequate numbers of controllers must be available to cover the peaks in traffic caused by weather and daily, weekly or seasonal variations, so we continue to "staff to traffic." Although the FAA generally staffs to traffic counts, it is not a one-to-one relationship. Safety rules and hours of operation require watch schedules that establish staffing during low-volume periods or in facilities with low traffic counts. This practice gives us the flexibility throughout each day to match the number of controllers at each facility with traffic volume and workload.

Although air traffic has grown slowly each of the last 5 years, system-wide, air traffic has declined by 20 percent since peak year 2000. The chart in Figure 1.1 shows that air traffic volume is not expected to return to peak levels in the near term. Although there have been decreases year over year for system-wide traffic counts, there are some facilities that have experienced traffic increases. The FAA's staffing standards incorporate location-specific traffic counts and forecasts to account for these changes.

FIGURE 1.1 TRAFFIC FORECAST

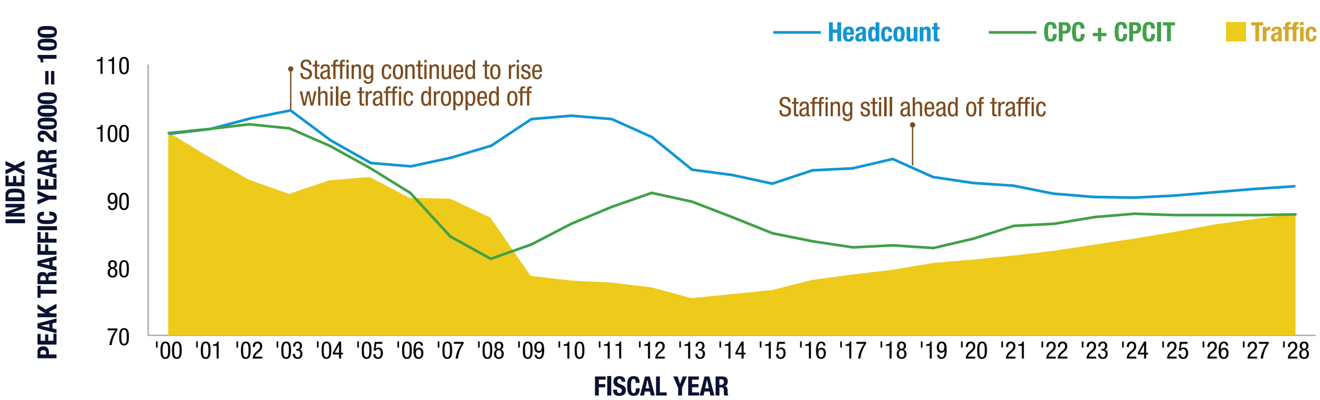


*Total Workforce Operations = Tower + TRACON + Aircraft Handled by En Route Centers

Figure 1.2 shows system-wide controller staffing and traffic, indexed from FY 2000 and projected through FY 2028. Indexing is a widely used technique that compares the change over time of two or more data series (in this case, total controller headcount, Certified Professional Controllers (CPC) and Certified Professional Controllers in Training (CPC-IT) and traffic). The data series are set equal to each other (or indexed) at a particular point in time (in this case, FY 2000, a high mark for traffic) and measured relative to that index point in each successive year. This way we know how much growth or decline has occurred compared with the base value.

Staffing to traffic not only applies on a daily basis, but also means that we staff to satisfy expected needs two to three years in advance. We do this to ensure sufficient training time for new hires. Despite the decline in air traffic shown in Figure 1.2, "staffing to traffic" requires us to anticipate controller attrition so that we plan and hire new controllers in advance of need. This is one reason that staffing remains well ahead of traffic. The gap between the blue line (Headcount) and the green line (CPC and CPC-IT staffing) is the advance hire trainee pipeline and is projected to close significantly by 2022. The headcount and CPC+CPCIT lines converge due to reduced retirements and other losses.

FIGURE 1.2 SYSTEM-WIDE TRAFFIC AND TOTAL CONTROLLER TRENDS



MEETING THE CHALLENGE

The FAA's hiring plan is designed to phase in new hires as needed over time. To do so, the FAA plans its hiring vacancy announcement strategy to provide a sufficient pipeline to meet the hiring need. The hiring process is prolonged from announcement to onboarding, as it includes various screening activities that can take time (e.g., medical, security, aptitude). The primary goal of the agency's hiring pipeline strategy is to ensure the pipeline of in-process candidates is sufficient to replace controllers that retire and leave due to other sources of attrition. Annual retirements are leveling off and still well below those experienced in 2007 when the long-anticipated wave of retirements peaked. Retirements are expected to fall and remain at relatively low levels for the next decade.

The overall controller headcount in Figure 1.2 shows the impact of several external and internal challenges to controller hiring in the last few years. Through FY 2015, the FAA missed its controller hiring target for several years due to a series of internal and external factors. The primary drivers were:

- The sequestration in 2013 and subsequent hiring freeze resulted in the FAA not hiring any new controllers for nearly 9 months across FY 2013 and FY 2014. The effects of this disruption on the hiring pipeline, as well as the FAA Air Traffic Academy's operations, were substantial.
- Another contributing factor was a security breach at the Office of Personnel Management in FY 2015. This shut down the automated ability to process clearances to applicants for a brief period and resulted in disruption to the controller hiring pipeline.

In order to catch up from these challenges, the FAA increased its hiring plan from FY 2016 to FY 2018 to near-capacity levels. The FAA met or exceeded these elevated hiring targets in each year from FY 2016 to FY 2018. By the end of FY 2018, the FAA had essentially caught up from the prior disruptions and projected a more steady-state hiring target for the next 10 years.

However, the FAA Extension, Safety and Security Act (FESSA) of 2016 introduced a new challenge to controller pipeline management. FESSA established hiring tracks for candidates with 52 weeks of relevant air traffic control experience (Track 2), and for those without experience (Track 1). Within Track 1, two pools were established: Pool 1 for Collegiate Training Initiative (CTI) candidates and certain other military veterans; and Pool 2 for general public. The FESSA law required that the selection of candidates from these pools be balanced within 10 percent of each other. In FY 2018 and particularly in FY 2019, the limited size of Pool 1 candidates prevented the FAA from selecting a substantial number of otherwise well-qualified candidates from Pool 2.

Recognizing this challenge, the FAA began implementing an aggressive plan to maintain the hiring pipeline, including additional hiring announcements and other measures. However, the disruptions caused by the limited government shutdown in early FY 2019 limited the agency's abilities to implement the mitigations before FY 2019 hiring was impacted.

Hiring, however, is just one part of the challenge. Other challenges involve controller placement, controller training and controller scheduling. It is important that newly hired and transferring controllers are properly placed in the facilities where we will need them. Once they are placed, they need to be effectively and efficiently trained, and assigned to efficient work schedules.

To address these challenges, the FAA has:

- Revamped its placement process for air traffic controller trainees allowing increased flexibility for the agency and improved efficiency in both hiring and initial training of air traffic controllers;
- Introduced a collaborative and centralized process to balance the controller ranks by revamping the employee requests for reassignments, matching employee requests with the agency's needs and establishing a national release policy aimed at expediting requests into facilities with the greatest staffing needs; and
- Targeted recruitment for the New York TRACON (N90) to address specific recruiting challenges to that area.

Effective and efficient training, as well as properly placing new and transferring controllers, are two important factors in the agency's success.

Systematically replacing air traffic controllers where we need them, as well as ensuring the knowledge transfer required to maintain a safe NAS, is the focus of this plan.

Ch. 2 Facilities & Services

En Route controllers use surveillance methods to maintain safe distances among aircraft.

America's NAS is a network of people, procedures and equipment. Pilots, controllers, technicians, engineers, inspectors and supervisors work together to make sure millions of passengers move through the airspace safely every day.

More than 14,000 federal air traffic controllers in airport traffic control towers, terminal radar approach control facilities and air route traffic control centers guide pilots through the system. An additional 1,300 civilian contract controllers and over 9,700 military controllers also provide air traffic services for the NAS.

These controllers provide air navigation services to aircraft in domestic airspace, in addition to 24.6 million square miles of international oceanic airspace delegated to the United States by the International Civil Aviation Organization.

TERMINAL AND EN ROUTE AIR TRAFFIC SERVICES

Controller teams in airport towers and radar approach control facilities watch over all aircraft traveling through the Terminal airspace. Their main responsibility is to organize the flow of aircraft into and out of airports. Relying on visual observation and radar, they closely monitor each aircraft to ensure safe distances among all aircraft and to guide pilots during takeoff and landing. In addition, controllers keep pilots informed about changes in weather conditions.

Once airborne, the aircraft quickly departs the Terminal airspace surrounding the airport. At this point, controllers in the radar approach control notify En Route controllers, who take charge in the vast airspace between airports. There are 21 air route traffic control centers around the country. Each En Route center is assigned a block of airspace containing many defined routes. Aircraft fly along these designated routes to reach their destination.

En Route controllers use surveillance methods to maintain a safe distance between aircraft. En Route controllers also provide weather advisory and traffic information to aircraft under their control. As an aircraft nears its destination, En Route controllers transition it to the Terminal environment, where Terminal controllers guide it to a safe landing.

FAA AIR TRAFFIC CONTROL FACILITIES

As of October 1, 2018, the FAA operated 313 air traffic control facilities, plus the Air Traffic Control System Command Center. Table 2.1 lists the type and number of these FAA facilities. More than one type of facility may be co-located in the same building.

TABLE 2.1 TYPES AND NUMBER OF FAA AIR TRAFFIC CONTROL FACILITIES

NAME	NUMBER OF FACILITIES	DESCRIPTION
Tower	132	An airport traffic control tower that provides traffic advisories, spacing sequencing and separation services to visual flight rules (VFR) and instrument flight rules (IFR) aircraft operating in the vicinity of the airport, using a combination of radar and visual observations.
Approach Control*	25	An air traffic control facility that provides approach and departure services to IFR and VFR aircraft arriving or departing an airport and to aircraft transiting the terminal airspace using radar and/or non-radar separation. *These facilities are also known as Terminal Radar Approach Control or TRACON
Tower and Approach Control	131	An airport traffic control facility divided into two functional areas, tower and approach and departure control, that provides services to IFR and VFR aircraft, including aircraft traffic advisories, spacing sequencing and separation services to aircraft operating in the vicinity of the airport, arriving or departing an airport, and transiting the terminal airspace using radar and/or non-radar separation.
Combined Control Facility	4	An air traffic control facility that provides approach control services for one or more airports, as well as en route air traffic control (center control) for a large area of airspace. Some may provide tower services along with approach control and en route services. Also includes Combined Center/Radar Approach (CERAP) facilities.
Air Route Traffic Control Center (ARTCC)/En Route	21	An air traffic control facility that provides service to aircraft operating on IFR flight plans within controlled airspace and principally during the en route phase of flight. When equipment capabilities and controller workload permit, certain advisory/assistance services may be provided to VFR aircraft.

313 Total Facilities

FAA ATC facilities are also classified based on numerous factors, including traffic volume, complexity and sustainability of traffic. To account for changes in traffic and the effect of investments that reduce complexity, as well as to compensate controllers who work the highest and most complex volume of traffic, facilities are monitored for downward and upward trends.

Ch. 3 Staffing Requirements

The FAA issued the first comprehensive controller workforce plan in December 2004. "A Plan for the Future: 10-Year Strategy for the Air Traffic Control Workforce" detailed the resources needed to keep the controller workforce sufficiently staffed. This report is updated each year to reflect changes in traffic forecasts, retirements and other factors.

"Staffing to traffic" requires the FAA to consider many facility-specific factors. They include traffic volumes based on FAA forecasts and hours of operation, as well as individualized forecasts of controller retirements and other non-retirement losses. In addition, staffing at each location can be affected by unique facility requirements such as temporary airport runway construction, seasonal activity and the number of controllers currently in training. Staffing numbers will vary as the requirements of the location dictate.

Proper staffing levels also depend on the efficient scheduling of employees, so the FAA tracks a number of indicators as part of its continuous staffing review. Some of these indicators are overtime, time on position, leave usage and the number of trainees. Time on position is defined as the amount of cumulative time controllers spend while "plugged in" to their position controlling live traffic. When not on position, controllers are on periodic breaks, in training or performing other assigned duties.

In FY 2018, the system average for overtime was 3.9 percent, a slight increase from the FY 2017 level. Meanwhile, cumulative average time on position per 8-hour shift was 4 hours and 1 minutes, a decrease from the past two fiscal years.

FIGURE 3.1 PROJECTED CONTROLLER TRENDS

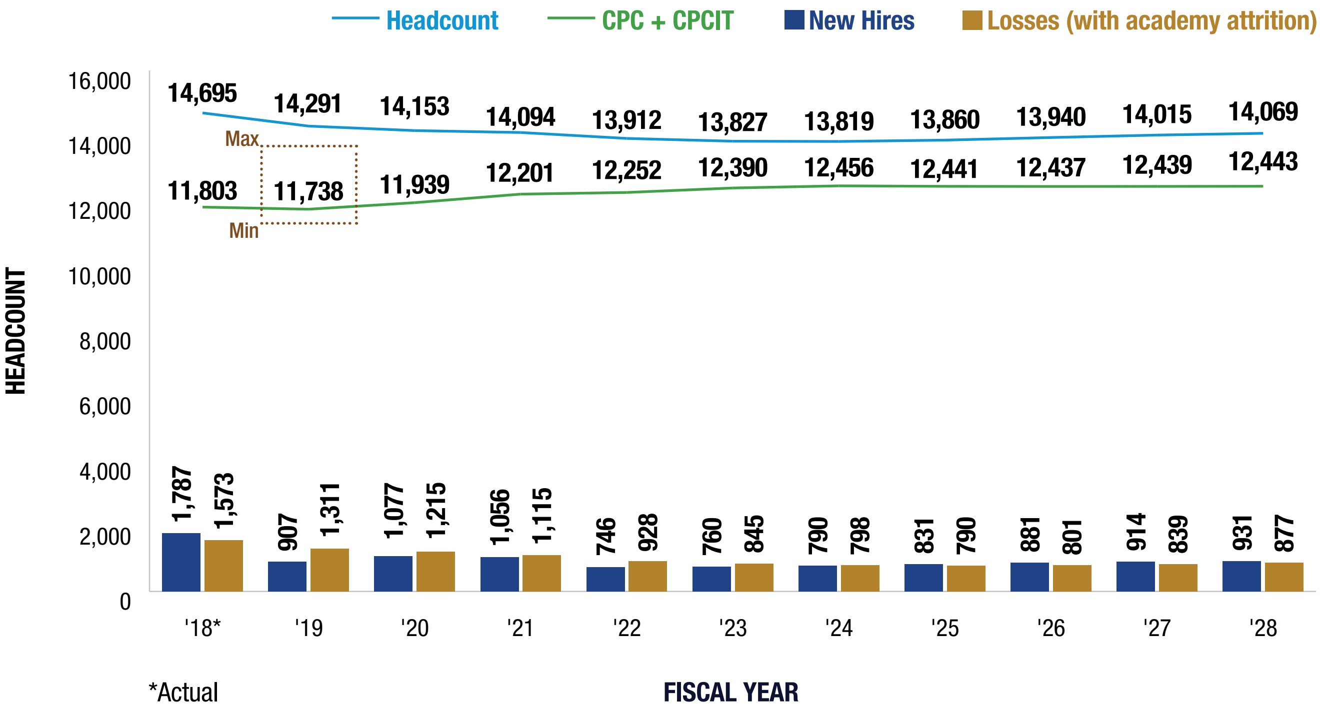


Figure 3.1 shows the expected end-of-year total headcount (blue line), CPC & CPC-IT headcount (green line), and new hires and losses (blue and gold bars) by year through FY 2028.

Figures for FY 2018 represent actual end-of-year headcount, losses and hires. Losses include retirements, promotions and transfers, resignations, removals, deaths, developmental attrition, and academy attrition. The FAA ended FY 2018 with 198 controllers above the 2018 headcount plan. Because the FAA is targeting CPC + CPC-ITs headcount to be in the middle of the staffing range, the annual headcount forecast should not be viewed as a "target". It is rather a byproduct of the number of CPC + CPC-ITs in the system, as well as the developmental pipeline hired in advance of future needs.

In general, the FAA strives to keep the number of CPCs and CPC-ITs near the middle of the calculated staffing range. Figure 3.1 shows that FY 2019 staffing values are within the calculated staffing range shown by the "min" and "max" dotted lines. However, a facility's total staffing levels are often above the defined staffing range because new controllers are typically hired two to three years in advance of expected attrition to allow for sufficient training time. The total expected end-of-year staffing number shown in Figure 3.1 reflects this projected advanced hiring.

The FAA hires and staffs facilities so that trainees, once fully certified, are prepared to take over responsibilities when senior controllers retire.

THE FAA USES MANY METRICS TO MANAGE ITS FACILITIES

TIME ON POISITION

PRODUCTIVE TIME

STAFFING RANGES

TRAINEES

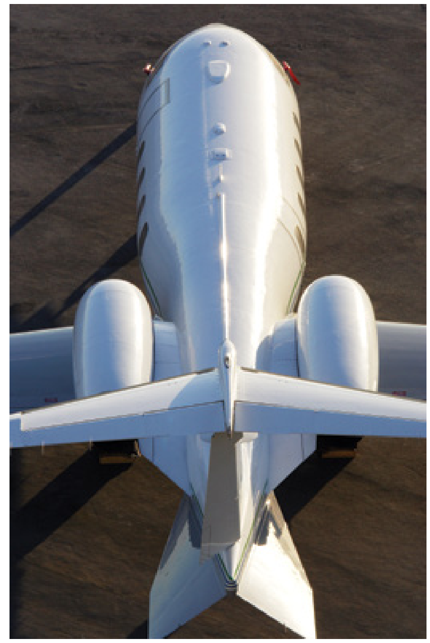
OVERTIME

RETIREMENTS

FIELD INPUT

TRAFFIC

SIMULATORS & INSTRUCTORS



STAFFING RANGES

Each of the FAA's air traffic facilities typically staffs open positions with a combination of certified controllers or developmentals, who are proficient, or checked out, in specific sectors or positions. Because traffic and other factors are dynamic at these facilities, the FAA produces facility-level controller staffing ranges. These ranges are calculated to ensure that there are enough controllers to cover operating positions every day of the year.

Ensuring that we have enough controllers is not only important on a daily basis, but also means that we staff to satisfy expected needs two to three years in advance. We do this to ensure sufficient training time for new hires. The uptick caused by hiring two to three years ahead of time is one reason that staffing remains well ahead of traffic.

The FAA uses four inputs to calculate staffing ranges. Three are data driven; the other is based on field judgment. They are:

1. Staffing standards – output of mathematical models used to relate controller workload to air traffic activity.
2. Service unit input – the number of controllers requested to staff the facility, typically based on past position utilization and other unique facility operational requirements. The service unit input is provided by field management.
3. Past productivity – the headcount required to match the historical best productivity for the facility. Productivity is defined as operations per controller. Facility productivity is calculated using operations and controller data from the 10-year period of 2009 to 2018. If any annual point falls outside +/- 5 percent of the 2009 to 2018 average, it is eliminated from the analysis. From the remaining data points, the highest productivity year is then used.
4. Peer productivity – the headcount required to match peer group productivity. Like facilities are grouped by type, level and part-time or full-time status, and their corresponding productivity is calculated. If the facility being considered is consistently above or below the peer group, the peer group figure is not used in the overall average and analysis.

The average of this data is calculated, multiplied by +/- 10 percent and then rounded to determine the high and low points in the staffing range.

Exceptional situations or outliers are removed from the averages (for example, if a change in the type or level of a facility occurred over the period of evaluation). By analyzing the remaining data points, staffing ranges are generated for each facility.

FIGURE 3.2 CONTROLLER STAFFING

FACILITY STAFFING

CHARACTERISTICS/DRIVERS OF HIGH STAFFING LEVELS

- Inefficient scheduling
- Fewer losses than projected
- Less overtime
- Reduction in traffic volume
- Decrease in hours of operation
- Temporary airport construction
- Higher number of position-qualified controllers
- Higher number of advance hire trainees

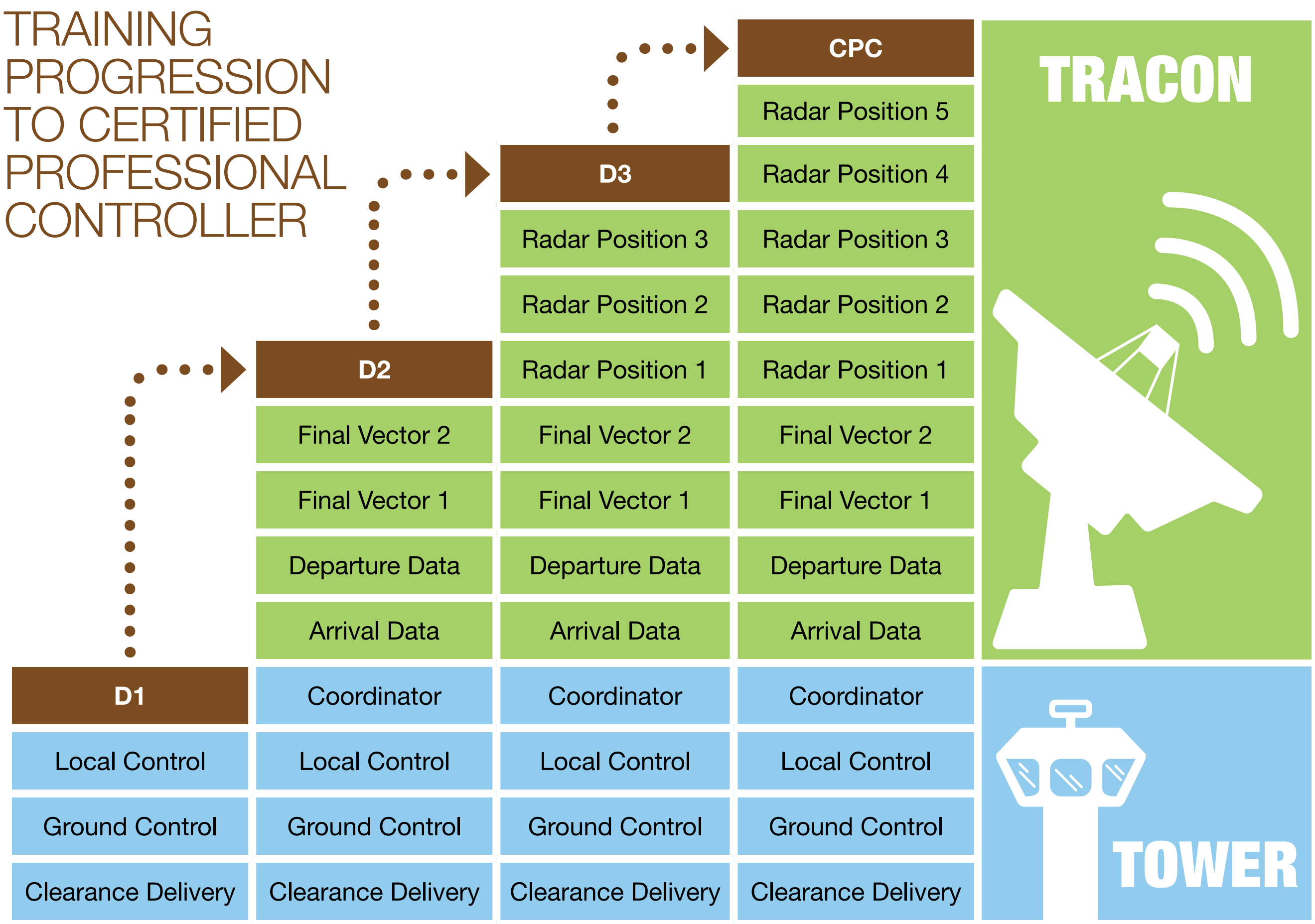
CHARACTERISTICS/DRIVERS OF LOW STAFFING LEVELS

- Higher than expected attrition
- Greater use of overtime
- Increase in traffic volume
- Increase in hours of operation
- Temporary airport construction
- Lower number of position-qualified controllers
- Lower number of advance hire trainees

The 2019 staffing ranges for controllers are published by facility in the appendix of this report. In many facilities, the current Actual on Board (AOB) number may appropriately exceed the range. This is because many facilities' current AOB numbers (all controllers at the facility) include larger numbers of developmental controllers in training to offset expected future attrition. Individual facilities can be above the range due to advance hiring. Facilities may also be above the range based upon facility-specific training and attrition forecasts.

In the longer term, the number of new hires and total controllers will decline. This is because the surge of developmental controllers that were hired to replace the long-expected retirement wave over the past decade will have become CPCs. In the future, the vast majority of the controllers will be CPCs and CPC-ITs, and more facilities will routinely fall within the ranges.

FIGURE 3.3 EXAMPLE OF CONTROLLER TRAINING PROGRESSION



NOTE: All ATC facilities have individualized training progression to CPC based upon their type and level of complexity

Figure 3.3 depicts an example of a large Tower and Approach Control facility. This facility is one in which controllers work in the tower cab portion and in the approach control or radar room (also known as a TRACON). To be a CPC in these types of facilities, controllers must be checked out on all positions in both the tower and the TRACON.

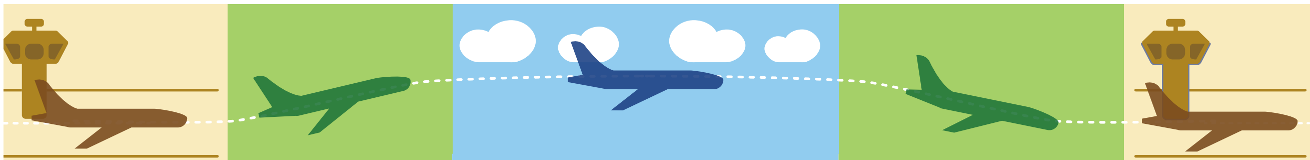
Trainees are awarded "D1" status (and the corresponding increase in pay) after being checked out on several positions. The levels of responsibility (and pay) gradually increase as the trainees progress through training. Once developmental controllers are checked out at the D1 level, they can work several positions in the tower independently and without training supervision (Clearance Delivery, Ground Control and Local Control). Once checked out on the Runway Crossing Coordinator position, developmental controllers would be tower-certified and able to work any position in the tower cab independently and without training supervision. They would still not be a "D2" however, as there are also several positions in the TRACON to be checked out on (Arrival Data, Departure Data, Final Vector 1 and Final Vector 2). A controller in Figure 3.3 must be certified on all positions in the tower and TRACON to become a CPC.

The levels of responsibility continue to increase as one progresses toward CPC status, but trainees can and do control traffic much earlier in the training process. Historically, the FAA has used these position-qualified controllers to staff operations and free up CPCs for more complex positions, as well as to conduct training.

Having the majority of the workforce certified as CPCs makes the job of scheduling much easier at the facility. CPCs can cover all positions in their assigned area, whereas position-qualified developmentals require the manager to track who is qualified to work which positions independently. This task becomes much easier with a scheduling tool.

Trainees include both developmental controllers and CPC-IT. A CPC-IT is a controller who moves to another area within a facility or to a new facility and must be trained to the qualifications of that new environment. CPC-ITs are different from developmentals in that developmentals have never been fully checked out and certified as a CPC anywhere.

FIGURE 3.4 AIR TRAFFIC CONTROL POSITION AND FACILITY OVERVIEW



PREFLIGHT + TAKEOFF	DEPARTURE	EN ROUTE	DESCENT / APPROACH	POST FLIGHT + LANDING
AIRPORT TRAFFIC CONTROL TOWER	TERMINAL RADAR APPROACH CONTROL	AIR ROUTE TRAFFIC CONTROL CENTER	TERMINAL RADAR APPROACH CONTROL	AIRPORT TRAFFIC CONTROL TOWER
Ground Controller Issues approval for push back from gate and issues taxi instructions and clearances. **Local Controller** Issues takeoff clearances, maintains prescribed separation between departure aircraft, provides departure aircraft with latest weather/field conditions. **Clearance Delivery** Issues IFR and VFR flight plan clearance. **Flight Data** Receives and relays weather information and Notices to Airmen.	**Departure Controller** Assigns headings and altitudes to departure aircraft. Hands off aircraft to the En Route Radar Controller. **Flight Data-Radar** Issues IFR flight plan clearances to aircraft at satellite airports, coordinates releases of satellite departures.	**Radar Controller** Ensures the safe separation and orderly flow of aircraft through En Route center airspace (includes oceanic airspace). **Radar Associate** Assists the Radar Controller **Radar Associate (Flight Data)** Supports the En Route Radar Controller by handling flight data.	**Arrival Controller** Assigns headings and altitudes to arrival aircraft on final approach course.	**Local Controller** Issues landing clearances, maintains prescribed separation between arrivals, provides arrival aircraft with latest weather/ field conditions. **Ground Controller** Issues taxi instructions to guide aircraft to the gate.

AIR TRAFFIC STAFFING STANDARDS OVERVIEW

The FAA has used air traffic staffing standards to help determine controller staffing levels since the 1970s, and they are periodically updated to reflect changes in workload, equipment and procedures.

FAA facilities are currently identified and managed as either Terminal facilities where airport traffic control services are provided, including the immediate airspace around an airport, or En Route facilities where high-altitude separation services are provided using computer systems and surveillance technologies. Terminal facilities are further designated as tower cabs or TRACONs. These Terminal facilities may be co-located in the same building, but because of differences in workload, their staffing requirements are modeled separately. Figure 3.4 provides an overview of FAA facilities and air traffic control positions.

Ch. 3 Staffing Requirements

The dynamic nature of air traffic controller workload coupled with traffic volume and facility staffing needs are all taken into account during the development of FAA staffing models and standards.

All FAA staffing models incorporate similar elements:

- Controller activity data is collected and processed quarterly, commensurate with the type of work being performed in the facilities.
- Models are developed that relate controller workload to air traffic activity. These requirements are entered into a scheduling algorithm.
- The modeled workload/traffic activity relationship is forecast for the 90th percentile (or 37th busiest) day for future years for each facility. Staffing based on the demands for the 90th percentile day assures that there are adequate numbers of controllers to meet traffic demands throughout the year.
- Allowances are applied for off-position activities such as vacation, training and additional supporting activities that must be accomplished off the control floor.

All staffing models go through similar development processes. Some components of the model-development phase vary as a function of the work being performed by the controllers. For example, a crew-based approach was used to model tower staffing requirements because the number and type of positions in a tower cab vary considerably as traffic changes, compared with those of a single sector in a TRACON or En Route center. All staffing models reflect the dynamic nature of staffing and traffic. Controller staffing requirements can vary throughout the day and throughout the year.

FAA FACTOID

The RIGHT Angle

Air traffic control towers need to have constant visibility of the airfield at all times. To that end, the glass in tower windows is angled precisely at **15°**, which prevents glare and reflections from blocking a controller's view of the runways.

TOWER CAB OVERVIEW

Air traffic controllers working in tower cabs manage traffic within a radius of a few miles of the airport. They instruct pilots during taxiing, takeoff and landing, and they grant clearance for aircraft to fly. Tower controllers ensure that aircraft maintain minimum separation distances between landing and departing aircraft, transfer control of aircraft to TRACON controllers when the aircraft leave their airspace, and receive control of aircraft for flights coming into their airspace.

- There are a variety of positions in the tower cab, such as Local Control, Ground Control, Flight Data, Coordinator. Depending on the airport layout and/or size of the tower cabs (some airports have more than one tower), there can be more than one of the same types of position on duty.
- As traffic, workload and complexity increase, more or different positions are opened; as traffic, workload and complexity decrease, positions are closed or combined with other positions. In practice, minimum staffing levels may be determined by hours of operation and work rules.

Important factors that surfaced during the tower staffing model development included the availability, accessibility and increased reliability of traffic data and controller on-position reporting systems. The FAA is now able to analyze much larger quantities of tower data at a level of granularity previously unattainable. Staffing data and traffic volumes are collected for every facility.

The tower cab staffing models were updated in early 2008. The revised tower cab staffing models were developed using regression analysis as the primary method for modeling the relationship between staffing and workload drivers. The models relate observed, on-position controllers to the type and amount of traffic they actually handle. Regression analysis allows us to relate modeled controller staffing requirements with traffic activity and then use this relationship to predict future staffing requirements (standards) based on traffic projections.

TRACON OVERVIEW

Air traffic controllers working in TRACONs typically manage traffic within a 40-mile radius of the primary airport; however, this radius varies by facility. They instruct departing and arriving flights, and they grant clearance for aircraft to fly through the TRACON's airspace. TRACON controllers ensure that aircraft maintain minimum separation distances between landing and departing aircraft, transfer control of aircraft to tower or En Route center controllers when the aircraft leave their airspace, and receive control of aircraft for flights coming into their airspace.

- TRACON airspace is divided into sectors that often provide services to multiple airports. Consolidated or large TRACONs in major metropolitan areas provide service to several primary airports. Their airspace is divided into areas of specialization, each of which contains groups of sectors.
- Controllers are assigned to various positions such as Radar, Final Vector and Departure Data to work traffic within each sector. These positions may be combined or de-combined based on changes in air traffic operations.
- As traffic, workload and complexity increase, the sectors may be subdivided (de-combined) and additional positions opened, or the sector sizes can be maintained with an additional controller assigned to an assistant position within the same sector.
- Similarly, when traffic, workload and complexity decline, the additional positions can be closed or the sectors recombined. In practice, minimum staffing levels may be determined by hours of operation and work rules.

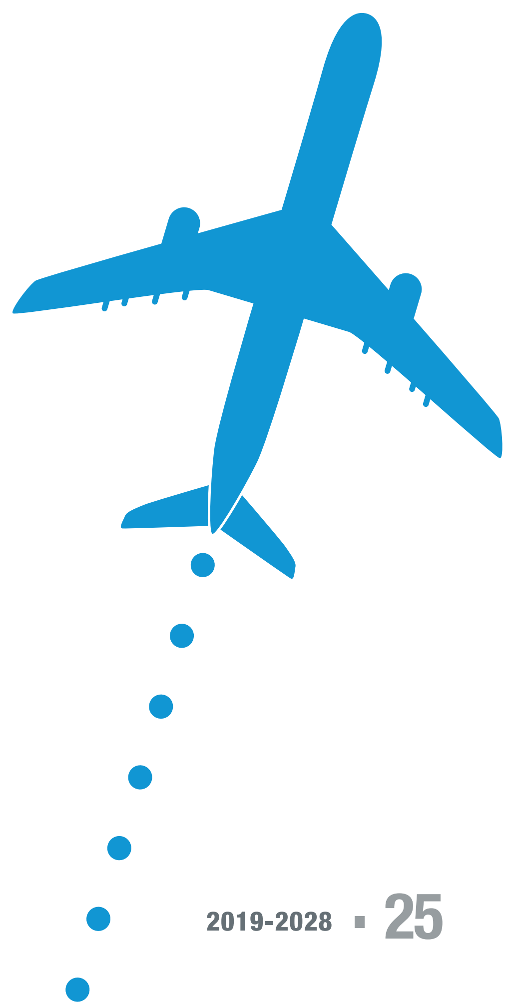
Like the tower analysis, the FAA is able to analyze much larger quantities of TRACON data at a level of granularity previously unattainable. Important factors surfaced during the TRACON staffing model review, including the availability, accessibility and increased reliability of traffic data and controller on-position reporting systems. Staffing data and traffic volumes were collected for every facility.

The TRACON staffing models were updated in early 2009. These revised TRACON models were developed using regression analysis as the primary method for modeling the relationship between staffing and workload drivers. The models relate observed, on-position controllers to the type and amount of traffic they actually handled. Regression allows us to relate modeled controller staffing requirements with traffic activity and then use this relationship to predict future staffing requirements (standards) based on traffic projections.

EN ROUTE OVERVIEW

Air traffic controllers assigned to En Route centers guide aircraft flying outside of Terminal airspace. They also provide approach control services to small airports around the country where no Terminal service is provided. As aircraft fly across the country, pilots talk to controllers in successive En Route centers.

- En Route center airspace is divided into smaller, more manageable blocks of airspace called areas and sectors.
- Areas are distinct and rarely change based on changes in traffic. Within those areas, sectors may be combined or de-combined based on changes in air traffic operations.
- Controllers are assigned to positions within the sectors (e.g., Radar, Radar Associate, Tracker). As traffic increases, sectors can be de-combined and additional positions opened, or the sector sizes can be maintained but additional controllers added to assistant positions within the sectors.
- Similarly, when traffic declines, the additional positions can be closed or the sectors recombined. In practice, minimum staffing levels may be determined by hours of operation and work rules.



The FAA's Federally Funded Research and Development Center (FFRDC) developed a model to generate data needed for the FAA's En Route staffing models. Like the tower and TRACON standards models, this approach incorporated actual traffic and more facility-specific data.

The modeling approach reflects the dynamic nature of the traffic characteristics in a sector. It estimates the number of controllers, in teams of one to three people, necessary to work the traffic for that sector in 15-minute intervals. Differences in traffic characteristics in a sector could require different numbers of controllers to handle the same volume of traffic. For example, at one time most traffic might be cruising through a sector toward another location requiring minimal controller intervention. At another time, traffic might be climbing and descending through the same sector, a more complex scenario requiring more controllers. The same modeling techniques were applied uniformly to all sectors, providing results based on a common methodology across the country.

During FY 2013 and FY 2014, the FFRDC collaborated with the FAA and the National Air Traffic Controllers Association (NATCA) to conduct an evaluation of the En Route on-position staffing model at the request of the National Academy of Sciences to validate its core assumptions and parameters via empirical data collection. The evaluation, completed in the field and in a controlled laboratory setting, established values for model parameters, identified additional controller tasks for coverage by the model, and informed other enhancements to the model. In FY 2015, these updates were made and the on-position staffing model was recalibrated. The evaluation results were shared with the FAA, NATCA and the National Academy of Sciences. In FY 2016, the evaluation results were incorporated into the on-position staffing model.

SUMMARY

The FAA's staffing models incorporate output provided by the Tower, TRACON and En Route workload models, which is run through a shift scheduling algorithm. Next, factors are applied to cover vacation time, break time, training, etc. Lastly, traffic growth forecasts are applied to provide the annual staffing standards that are incorporated into the staffing ranges presented in this plan for each facility.

AIR TRAFFIC CONTROLLER SCHEDULING

Optimizing controller schedules is a critical aspect of efficient workforce planning because inefficient facility schedules can lead to excess staffing and/or increased overtime. FAA facilities currently use a variety of nonstandard methods that do not fully incorporate the complex resource management requirements that exist in today's environment.

To address this need, the FAA has implemented a commercially available off-the-shelf system configured to FAA-specific requirements (e.g., national labor contract terms, FAA policy) at its largest facilities. The FAA's Operational Planning and Scheduling (OPAS) tool provides a common tool set for FAA facilities to effectively develop and maintain optimal schedules based on traffic, staffing, work rules and employee qualifications. Similar systems are in use by air navigation service providers worldwide and are commonplace in best-practice companies.

Currently, management at 34 FAA facilities use OPAS to support local schedule and annual leave negotiations based on traffic, workload and staffing levels. These 34 facilities represent approximately 50 percent FAA's total CPC headcount, 66 percent of total overtime hours, and 75 percent of total overtime dollars.

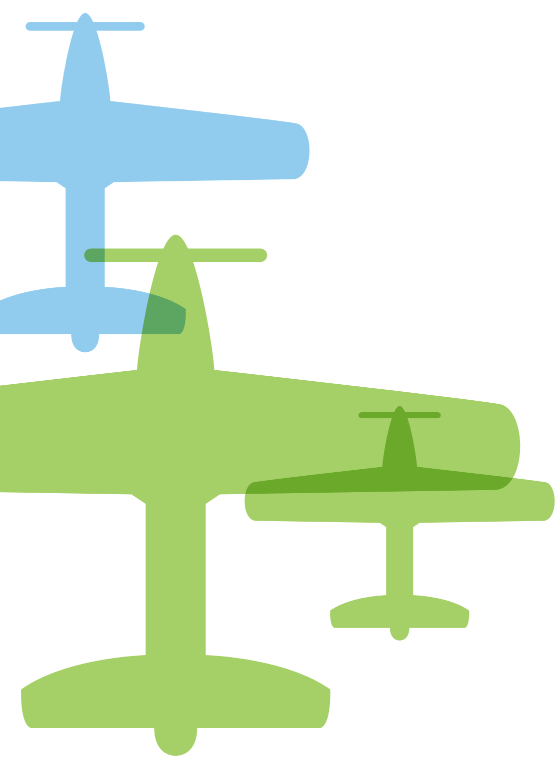
TECHNOLOGICAL ADVANCES

A new foundational infrastructure along with transformational programs continue to modernize the NAS as part of the Next Generation Air Transportation System (NextGen). These contribute to the NextGen goal of Trajectory Based Operations (TBO), which will manage traffic with the knowledge of where an aircraft will be at critical points during its flight.

En Route Automation Modernization (ERAM), Automatic Dependent Surveillance-Broadcast (ADS-B) and System Wide Information Management (SWIM) have been fully implemented and are being used by controllers. ERAM and SWIM will continue to evolve with technology refreshes and enhancements. Standard Terminal Automation Replacement System (STARS), Terminal Flight Data Manager (TFDM) and Data Communications (Data Comm) are in various stages of implementation.

Two examples of advances for terminal controllers come from the Data Comm and Terminal Automation Modernization and Replacement (TAMR) programs. Data Comm's departure clearance service was delivered to the initial commitment of 55 airport towers 29 months ahead of schedule and significantly under budget. Program underrun funds were used to deploy tower services to an additional seven airports, all of which are now operational. The TAMR program completed the installation of STARS at the 11 large TRACON facilities ahead of schedule. In all, the FAA has deployed STARS to more than 70 percent of all U.S. TRACONS.

Air navigation service providers "in other countries including Australia, Canada, and Germany have replaced their legacy scheduling tools with sophisticated software capable of incorporating all constraints while generating efficient controller schedules." – National Academy of Sciences



Data Comm provides a digital data communication link between air traffic controllers and pilots. As of December 2018, about 50,000 Data Comm operations were conducted per week. This continues to grow as more aircraft become equipped. The portion of departures using Data Comm, averaged across all equipped airports, is 33 percent. The FAA is realizing the benefits of reduced taxi-out delays, reduced gate delays, fewer communication errors, and improved pilot and controller efficiency credited to less time spent communicating over voice. According to one FAA analysis across two months of data collection at four airports, Data Comm on average resulted in taxi-out time savings between 0.2 and 8.5 minutes per rerouted flight. Pilots have reported the system working so well that they have been able to continue taxiing to the runway without stopping. During severe weather, some aircraft have saved more than 90 minutes of delay time.

With tower service in full operation, initial en route Data Comm is the next program component slated for implementation. En Route services will enable controllers to reroute, hand off aircraft to the next center and send messages to change altitude. Pilots also will be able to send requests to controllers using the data link. Full En Route services will provide an even more robust message set, including full holding instructions, crossing restrictions, direct-to-fix messages, controller-initiated routes and advisory messages. Data Comm also enables future NextGen services, including TBO.

TAMR upgrades multiple legacy air traffic control systems to a single, state-of-the-art platform: STARS. This platform, along with the ERAM system, form the FAA foundational technology supporting NextGen. They enable ADS-B and other NextGen capabilities, giving air traffic controllers a more complete airspace picture that will be necessary for TBO.

STARS offers new features that make the system easier for controllers to use than the aging systems it is replacing. Keyboard backlighting is adjustable to improve visibility for easier data entry, while flat-panel LED displays increase the traffic picture quality. Controllers can assign a color to an aircraft to make it easier to follow. With a recall capability, individual controllers can save and retrieve their preferred workstation settings at the touch of a button.

Weather displays show six different levels of weather intensity to provide better situational awareness for controllers as they work with pilots to steer aircraft around hazardous weather. Using multiple radars and ADS-B, STARS can track 3,000 aircraft in a 512x512 nautical mile area to provide controllers with a clearer view of overall operations.

STARS also assists with terrain avoidance and conflict alerts. The Automatic Terminal Proximity Alert tool gives controllers significant visual cues to enable maximum landing rates while still maintaining

safety margins. A minimum separation capability enables controllers to select two aircraft and ensure the required separation is maintained. A data block feature automatically lists the number of aircraft in a formation — a function that previously had to be performed manually.

Reliability should improve as STARS includes designed-in redundancy with automatic switching between redundant resources. At large facilities, there is further redundancy provided via multiple parallel systems that are selectable by site personnel. The STARS infrastructure will be easier for technicians to maintain because a common system will be present at all TRACONs.

ADS-B Out, which will be mandatory by January 1, 2020, for aircraft operating in most controlled U.S. airspace, has been integrated into automation platforms at all En Route air traffic control facilities and major terminal radar facilities. Full TRACON deployment is slated for completion by 2020. The FAA completed the nationwide deployment of ADS-B ground stations in 2014, and ADS-B traffic and weather broadcasts are available nationwide. As of February 1, 2019, more than 66,000 aircraft have been equipped with properly installed ADS-B avionics.

SWIM streamlines shared information for improved planning and execution. Airlines and other users are able to access more efficiently the most current information affecting their areas than they were able to using legacy systems, thereby improving decision-making. The SWIM Visualization Tool (SVT) is in use at 15 air traffic control facilities across the country and was enhanced to include traffic flow management data, specifically gate assignment information that airline partners started to publish into SWIM.

SVT deployment is supporting early implementation of TFDM. Another component of TFDM early implementation is the prototype Advanced Electronic Flight Strips (AEFS) system, which replaces traditional paper flight strips and manual tracking of incoming and outgoing flights with an electronic flight data display. The prototype AEFS was implemented in the Phoenix, Charlotte and Cleveland towers to provide feedback and lessons learned into the TFDM design and implementation. Phoenix is set to receive TFDM in January 2020, the first of 89 sites scheduled to receive the production electronic flight strip system along with additional surface management capabilities.

For other decision-support systems, the FAA continues to develop future concepts for Traffic Flow Management System modeling and predicting capabilities, and a seven-day FAA Academy course for controllers at the FAA Mike Monroney Aeronautical Center in Oklahoma City, Oklahoma, has been effective in reducing the national Time Based Flow Management training shortfall. Most of the workforce has completed the training, which has improved the skills and knowledge level of our air traffic management staff. TBO is a time-based management system, so a solid understanding and use of TBFM in conjunction with Performance Based Navigation (PBN) are at the core of TBO's success.

The NextGen Advisory Committee (NAC) identified a fifth focus area called the Northeast Corridor (NEC) in 2017. The NEC is looking to improve operations in the busy airspace between Washington, D.C., and Boston. This focus area joins the other high-priority, high-readiness NextGen capabilities identified in 2014 of increasing the use of PBN, making multiple runway operations more efficient, improving surface operations and data sharing, and implementing Data Comm. The FAA has met 180 of 184 planned commitments in the five NextGen Priorities focus areas as of the end of FY 2018.

Increased productivity and efficiency, and their ultimate impact on the size and composition of the FAA's workforce, depend on many factors. The scope and precise impact of NextGen enhancements are unknown as they are still under development. Final impacts are still to be determined given the complex nature of the interaction of controllers and their tools.

The relationship between pilots and air traffic controllers, as well as the relationship between controllers and automated systems, will evolve. These changes will occur gradually and require continued testing and analysis to ensure the safety of the NAS. Implementing TBO in the NAS will require the integration of multiple systems and training, and a culture change by controllers and pilots.

Ch. 4 Losses

In total, the FAA expects to lose over 1,300 controllers due to retirements, promotions and other losses this fiscal year. Other controller losses include transfers, resignations, removals, deaths, developmental attrition and academy attrition.

The FAA hires and staffs facilities so that trainees, once fully certified, are prepared to take over responsibilities when senior controllers leave.

CONTROLLER LOSS SUMMARY

Table 4.1 shows the total estimated number of controllers that will be lost, by category, over the 10-year period FY 2019 through FY 2028.

TABLE 4.1 CONTROLLER LOSS SUMMARY

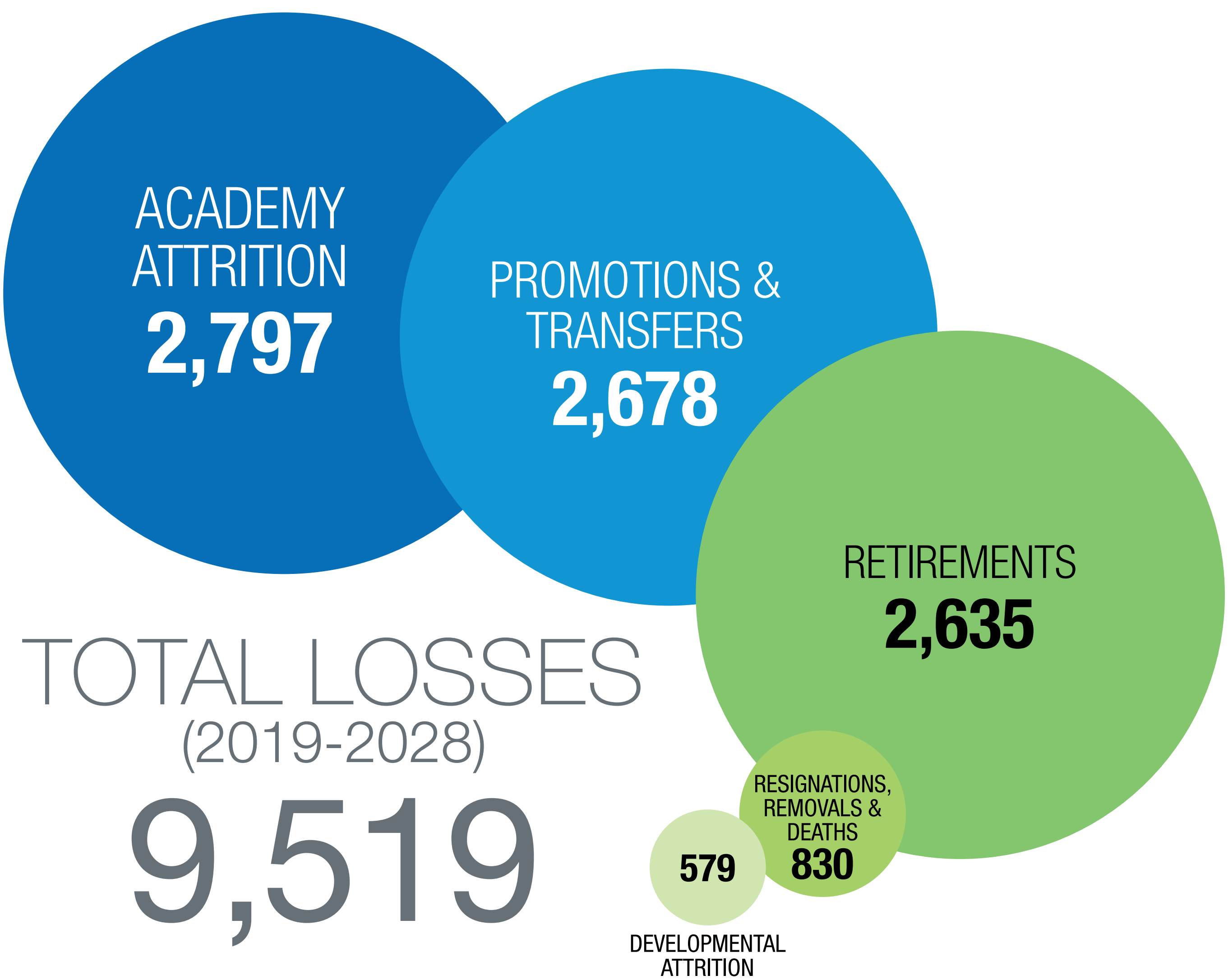
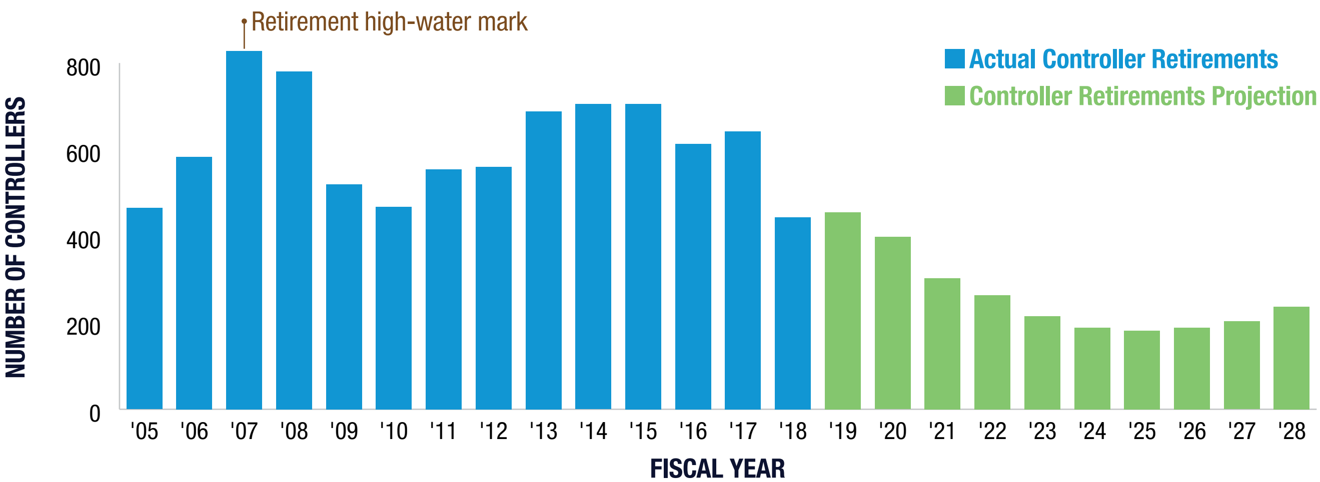


FIGURE 4.1A ACTUAL CONTROLLER RETIREMENTS



ACTUAL CONTROLLER RETIREMENTS

FY 2007 was correctly projected to be a peak year for retirements of controllers hired in the early 1980s. The long-anticipated retirement wave has passed. Annual retirements decreased for a few years then increased during FY 2010 to FY 2015, but still below the 2007 peak, and are declining through FY 2025. In the last five years, 3,110 controllers have retired. FY 2018 retirements were lower than projected, and future retirements are expected to fall over the next decade and remain at relatively low levels.

CUMULATIVE RETIREMENT ELIGIBILITY

The table below shows historical and forecasted Controller Retirement Eligibility from FY 2005 to FY 2028. Each bar shows the number of controllers in the entire controller workforce that were eligible to retire for each year shown. Because controllers spend more than one year as eligible before they retire, the same individual controllers are counted in multiple years. Data shows a significant decline in the number of controllers eligible to retire from the peak in FY 2012 to FY 2025. At the end of FY 2018, only 25 controllers remain from those who were hired before 1984. **This clearly demonstrates that the controller retirement wave is over**.

FIGURE 4.1B CUMULATIVE RETIREMENT ELIGIBILITY

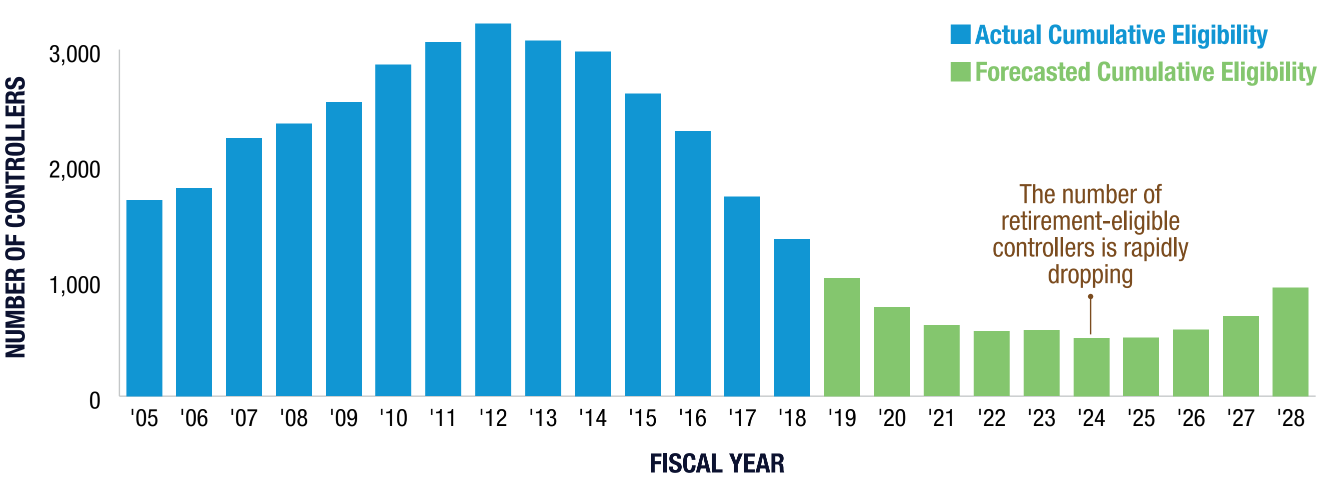
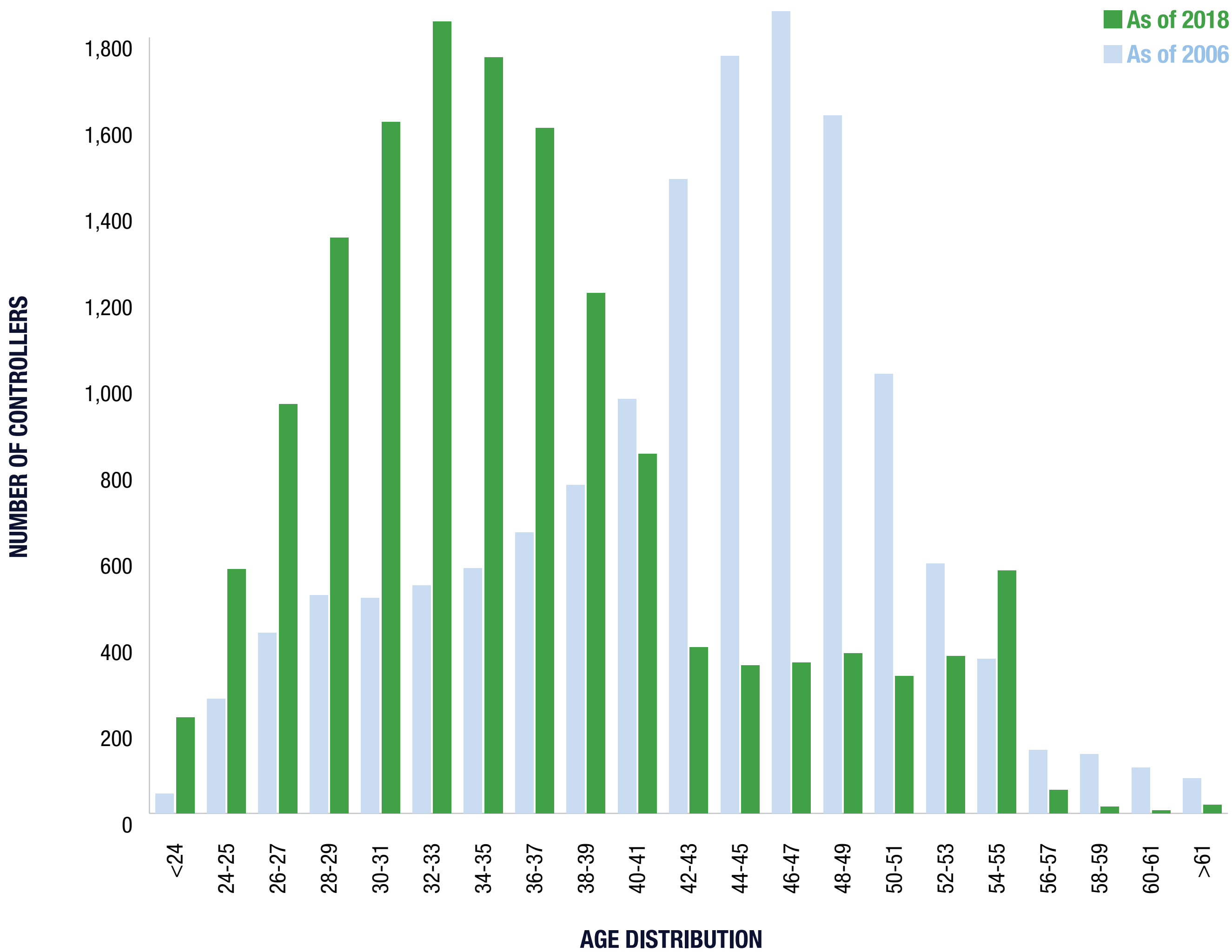


FIGURE 4.2 CONTROLLER WORKFORCE AGE DISTRIBUTION AS OF SEPTEMBER 29, 2018



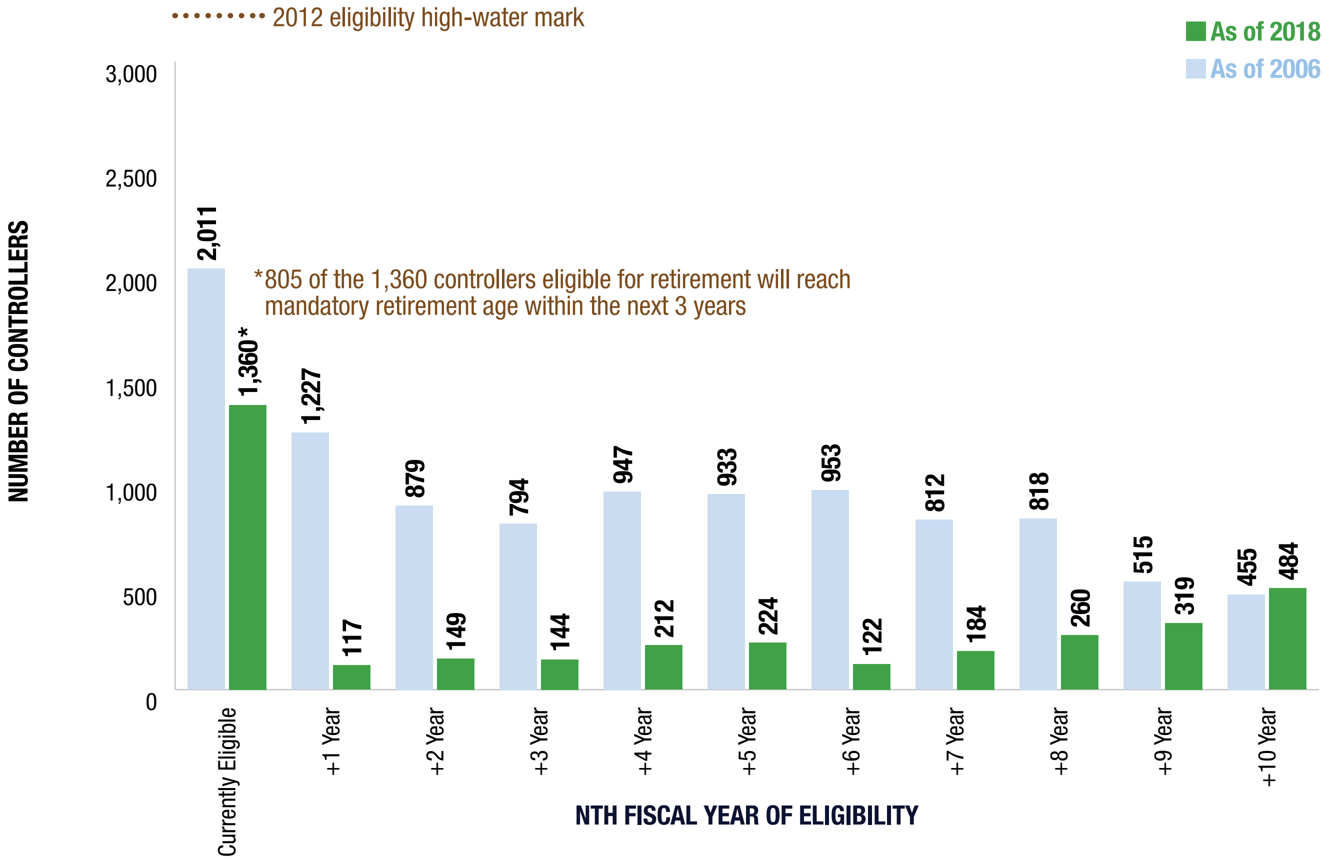
CONTROLLER WORKFORCE AGE DISTRIBUTION

The agency hired a substantial number of controllers in the years immediately following the 1981 strike. This concentrated hiring wave meant a large portion of the controller workforce would reach retirement age in roughly the same time period. In September 2006, the blue shaded age distribution peak on the right side of Figure 4.2 was greater than 1,900 controllers. Today, the magnitude of that remaining peak is down to 350 controllers because the majority of the controllers hired shortly after the 1981 strike have already retired and been replaced. As Figure 4.2 shows, the current FAA controller workforce is substantially younger on average than it was in 2006. This was driven by relatively high levels of hiring within the last several years.

The FAA's hiring plan is designed to phase in new hires as needed. Figure 4.2 shows that the majority of the FAA controller workforce has been hired in the last 10-15 years and are ages 24-37. There are a relative small number of controllers approaching mandatory retirement at age 56 over the next 15 years.

The FAA's hiring plan is designed to phase in new hires as needed.

FIGURE 4.3 RETIREMENT ELIGIBILITY



CONTROLLER RETIREMENT ELIGIBILITY

In addition to normal civil service retirement criteria, controllers can become eligible under special retirement criteria for air traffic controllers (age 50 with 20 years of "good time" service or any age with 25 years of "good time" service). "Good time" is defined as service in a covered position in Public Law 92-297. Under Public Law 92-297, air traffic controllers are usually required to retire at age 56.

After computing eligibility dates using all criteria, the FAA assigns the earliest of the dates as the eligibility date. Eligibility dates are then aggregated into classes based on the fiscal year in which eligibility occurs.

Figure 4.3 shows the number of controllers who are currently retirement-eligible as of September 2018 and those projected to become retirement-eligible each fiscal year for the next 10 fiscal years. Agency projections show that an additional 117 controllers will become eligible to retire in FY 2019. The number of retirement-eligible controllers has been in decline in recent years from the peak and should continue to decline for the next few years. Figure 4.3 also clearly shows that the current number of retirement-eligible controllers is substantially below the level in 2006. It further shows that, based on the profile of the current controller workforce, that the number of additional controllers becoming retirement-eligible in each of the next few years is substantially below those incremental values from 2006.

Due to advance hiring, we have sufficient new hires in place to replace controllers currently eligible to retire when they do retire. The FAA strives to minimize retirement, hiring and training spikes through the process of examining trends and proactively planning years in advance of expected activity.

CONTROLLER RETIREMENT PATTERN

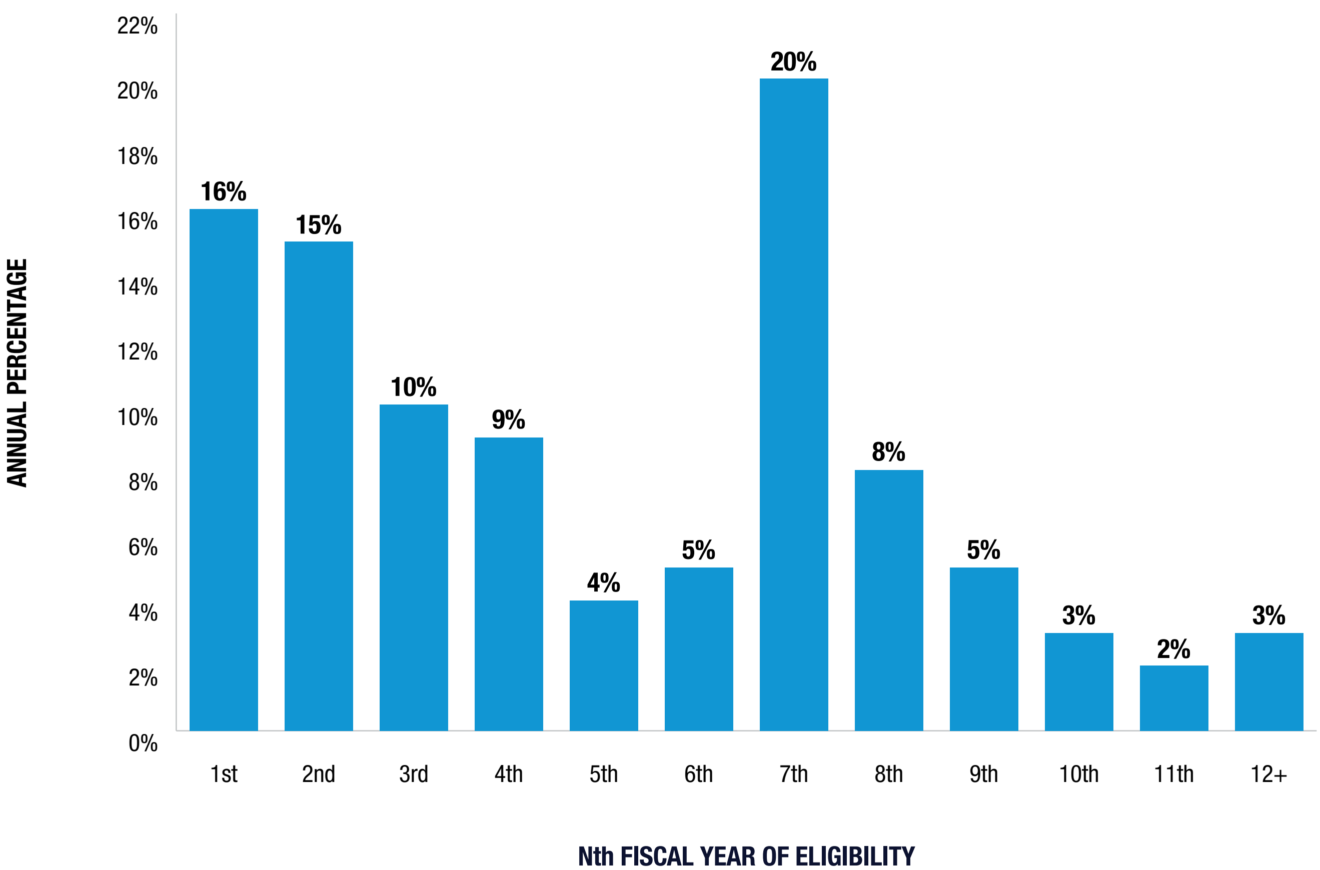
History shows that not all controllers retire when they first become eligible. In recent years, 16 percent of controllers who first became eligible actually retired that year.

The FAA has observed that many controllers delay retirement until they get closer to the mandatory retirement age of 56. Because most controllers are retirement-eligible at the age of 50, they typically reach mandatory retirement age in their seventh year of eligibility.

These trends are seen in Figure 4.4 below, which shows fewer controllers are retiring earlier in their eligibility and are waiting until closer to their mandatory retirement age.

Despite the increased likelihood of delayed retirement, the majority of controllers still leave the controller workforce prior to reaching the mandatory age.

FIGURE 4.4 PERCENT OF CONTROLLERS RETIRING IN THE NTH FISCAL YEAR OF THEIR ELIGIBILITY



FY 2007 was the high-water mark for controller retirements. Annual retirements are expected to continue to decline for the next decade.

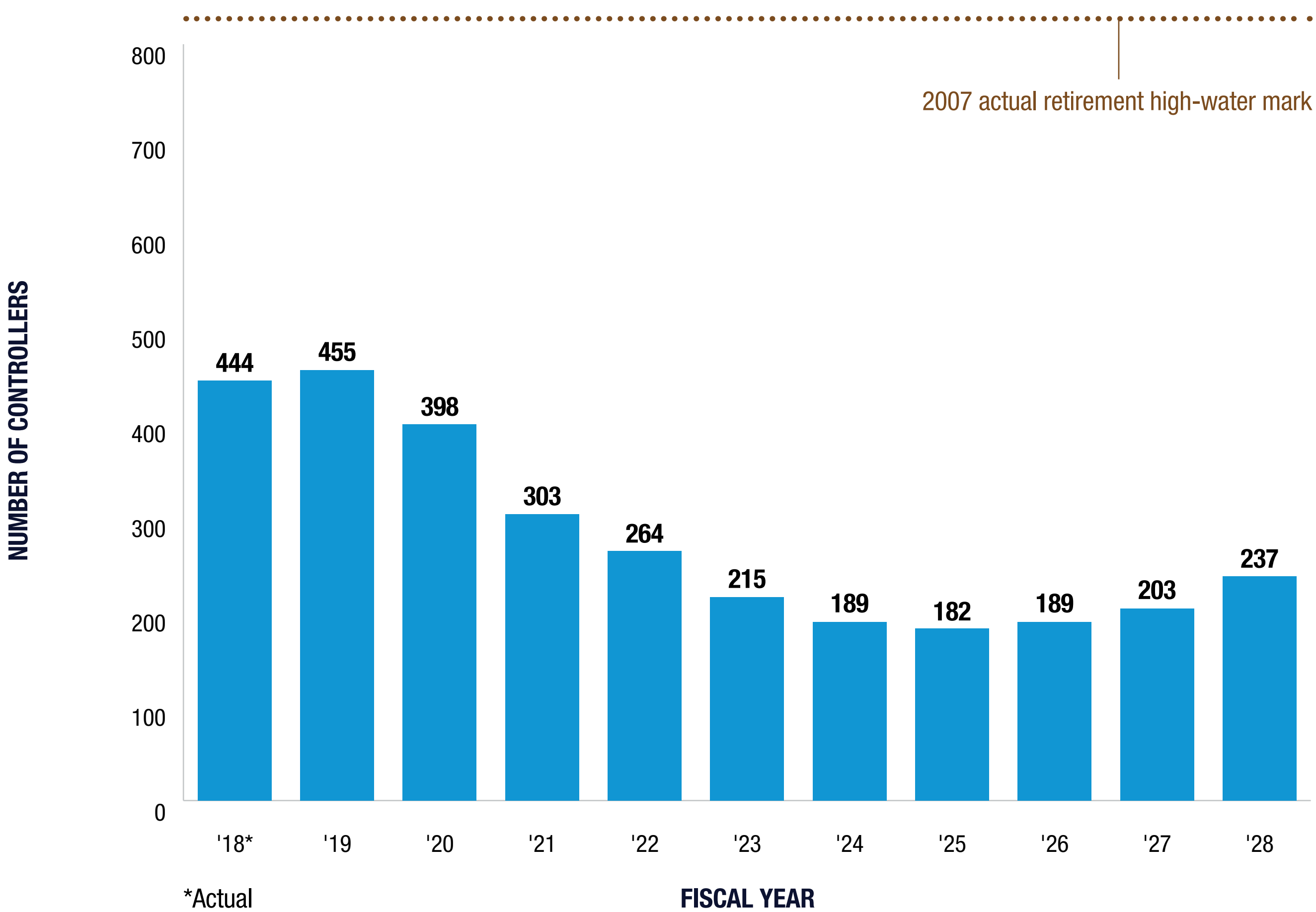
CONTROLLER LOSSES DUE TO RETIREMENTS

For the current plan, the agency incorporated FY 2018 retirement data into the retirement histogram used for future retirement.

As in prior years, the FAA projected future retirements by analyzing both the eligibility criteria of the workforce (Figure 4.3) and the pattern of retirement based on eligibility (Figure 4.4).

For each eligibility class (the fiscal year the controller first becomes eligible to retire), the agency applied the histogram percentage in Figure 4.3 to the retirement pattern in Figure 4.4 to estimate in Figure 4.5 the retirements for each class by year.

FIGURE 4.5 RETIREMENT PROJECTION



CONTROLLER LOSSES DUE TO RESIGNATIONS, REMOVALS AND DEATHS

Estimated controller losses due to resignations, removals (excluding developmental attrition) and deaths are based on historical rates and shown in Table 4.2.

TABLE 4.2 CONTROLLER LOSSES DUE TO RESIGNATIONS, REMOVALS AND DEATHS

Fiscal Year	2018 (actual)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Number of Controllers	91	79	80	83	83	83	84	84	84	85	85

DEVELOPMENTAL ATTRITION

Estimated losses of trainees who terminate from the FAA while still in developmental status are shown in Table 4.3. Hiring from FY 2013 to FY 2015 was lower than projected, which caused the need for increased hiring at near-capacity levels from FY 2016 through FY 2018. Correspondingly, this plan incorporates an increased number of developmental failures through 2022 as hires from these years progress through their training program.

TABLE 4.3 DEVELOPMENTAL ATTRITION

Fiscal Year	2018 (actual)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Number of Controllers	91	83	72	78	64	50	44	43	45	48	52

ACADEMY ATTRITION

Estimates of losses from new hires that are not successful in the FAA Academy training program are based on both historical rates and projections, and are shown in Table 4.4. The FAA will continue to monitor academy failure rates moving forward for the impact of these changes and adjust future projections accordingly.

TABLE 4.4 ACADEMY ATTRITION

Fiscal Year	2018 (actual)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Number of Controllers	604	330	309	333	250	240	249	255	266	284	281

CONTROLLER LOSSES DUE TO PROMOTIONS AND OTHER TRANSFERS

This section presents FAA estimates of controller losses due to internal transfers to other positions (staff support specialists, traffic management coordinators, etc.) and controller losses due to promotions to operations supervisor (OS) or other air traffic management/supervisory positions.

Over the past five years, we've observed an average of 155 net promotions each year from CPC to supervisory positions. The majority of these promotions replace retiring supervisors. We expect total net transfers and promotions to increase slightly, to peak at 365 in FY 2019 and to slightly fall in future years as seen in Figure 4.6.

FIGURE 4.6 CONTROLLER LOSSES DUE TO PROMOTIONS AND OTHER TRANSFERS

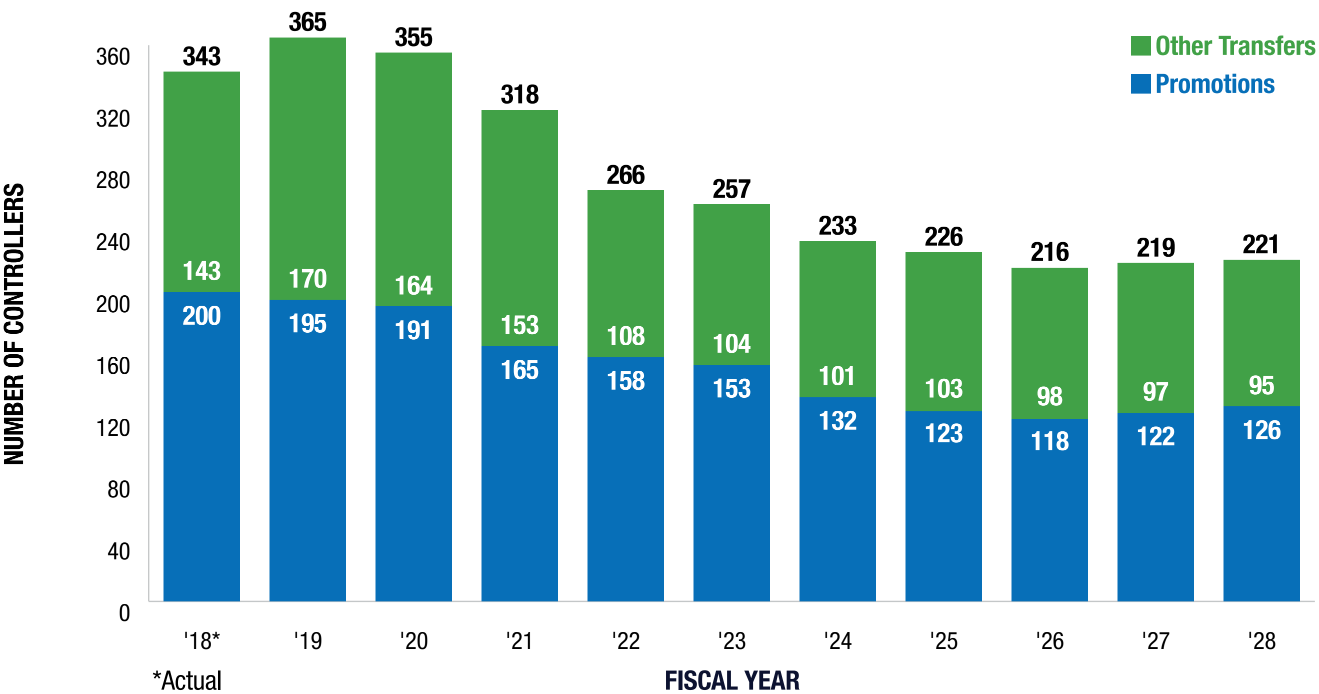
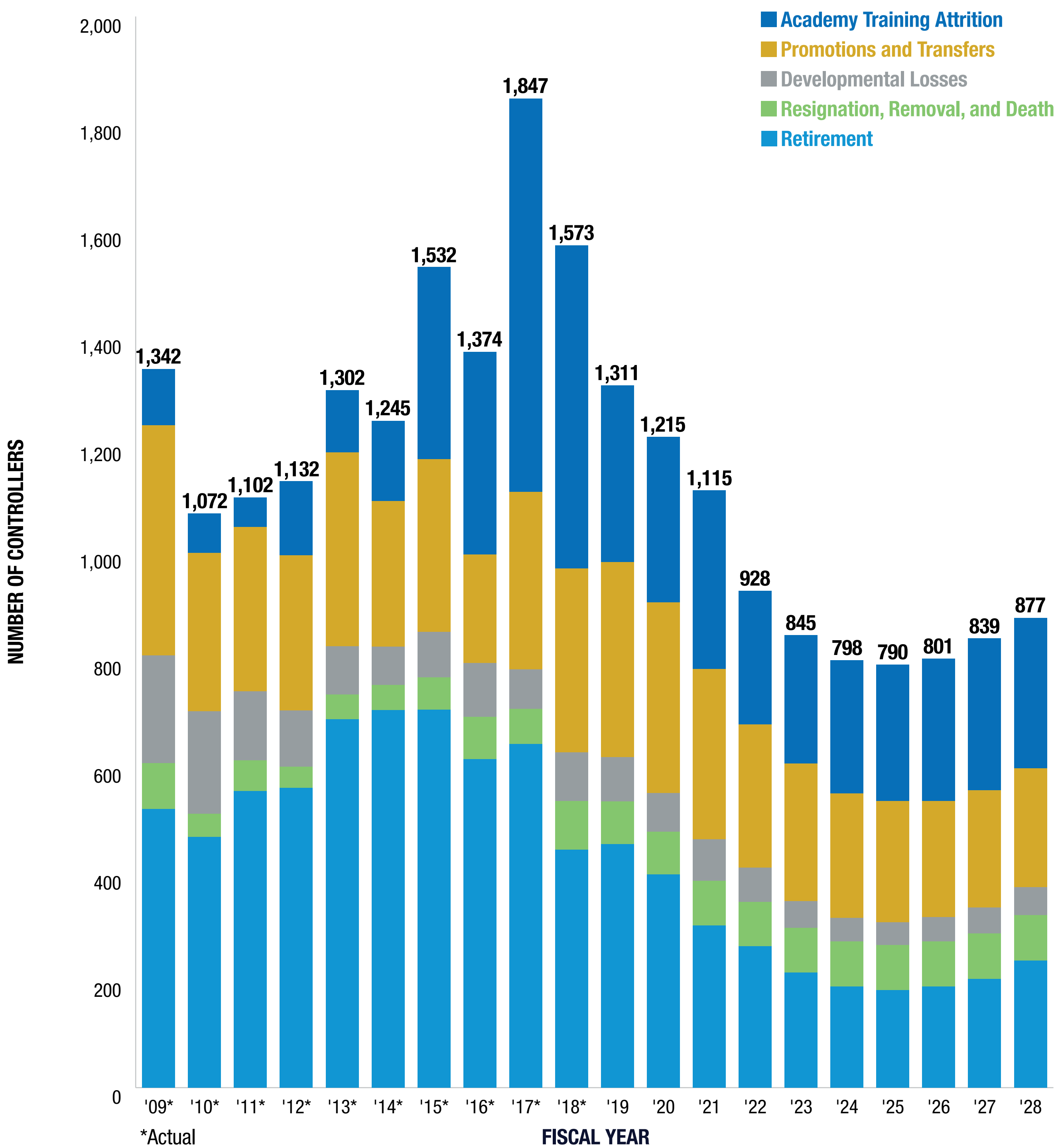


FIGURE 4.7 TOTAL CONTROLLER LOSSES



TOTAL CONTROLLER LOSSES

The FAA projects a total loss of 9,519 controllers over the next 10 years. Should losses outpace projections for FY 2019, the FAA will hire additional controllers to reach the end-of-year forecast of 14,291 air traffic controllers on board.

Ch. 5 Hiring Plan

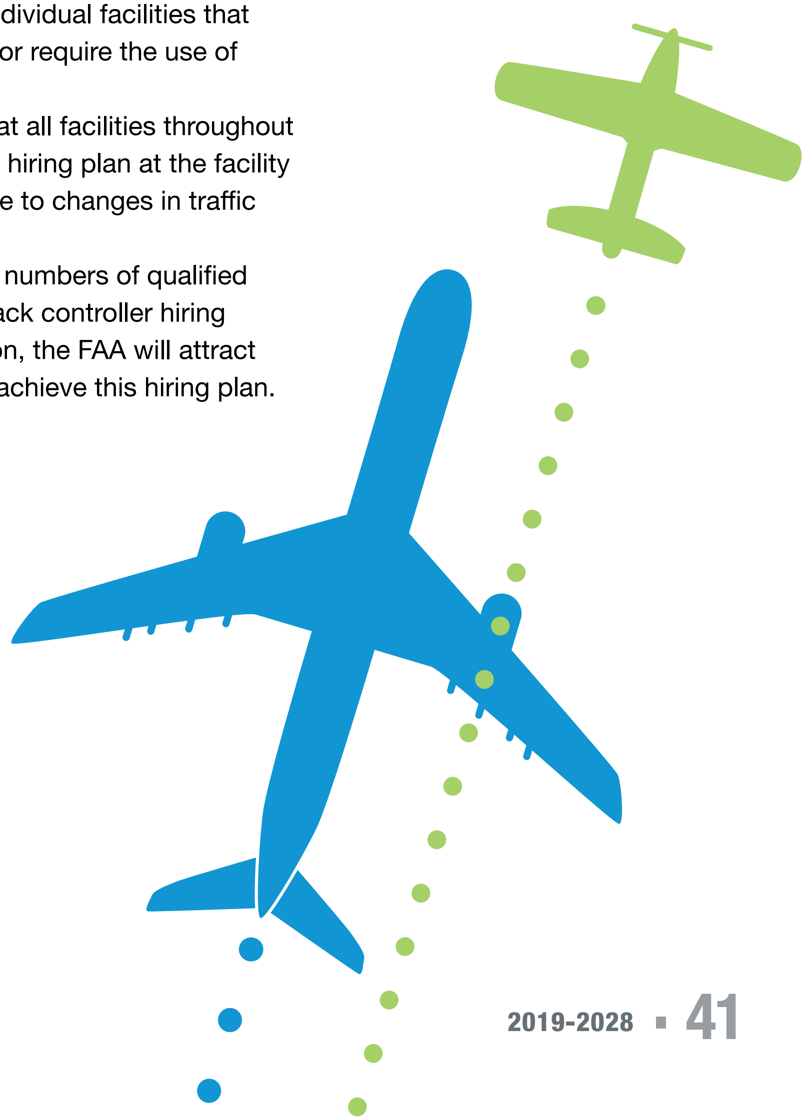
The FAA safely operates and maintains the NAS because of the combined expertise of its people, the support of technology and the application of standardized procedures. Every day tens of thousands of aircraft are guided safely and expeditiously through the NAS to their destinations.

Deploying a well-trained and well-staffed air traffic control workforce plays an essential role in fulfilling this responsibility. The FAA's current hiring plan has been designed to phase in new hires as needed. To staff the right number of people in the right places at the right time, the FAA develops annual hiring plans that are responsive to changes in traffic and in the controller workforce.

The FAA hires new developmental controllers in advance of the agency's staffing needs in order to have ample time to train them to offset future attrition, including retirements, promotions, etc. Proper execution of the hiring plan, while flexibly adapting to the dynamic nature of traffic and attrition, is critical to the plan's success. If the new developmentals are not placed correctly or if CPCs are not transferred from other facilities, shortages could occur at individual facilities that may affect schedules, increase overtime usage or require the use of more developmentals on position.

Staffing is and will continue to be monitored at all facilities throughout the year. The agency will continue to modify the hiring plan at the facility level should adjustments become necessary due to changes in traffic volume, retirements or other attrition.

The FAA continues to be able to attract large numbers of qualified controller candidates. Through a revised two-track controller hiring process, and management of staffing distribution, the FAA will attract and recruit a sufficient number of applicants to achieve this hiring plan.



CONTROLLER HIRING PROFILE

The controller hiring profile is shown in Figure 5.1. The FAA hired 1,787 controllers compared with the plan of 1,701 controllers in FY 2018. Missed hiring goals in prior years created a significant backlog and subsequently increased the need for new controller hiring for several fiscal years. We have largely recovered from prior hiring disruptions, and a more steady-state hiring pattern of 750-1,100 controllers hires is planned for the next several years. The number of controllers projected to be hired through FY 2028 is 8,893.

FIGURE 5.1 CONTROLLER HIRING PROFILE

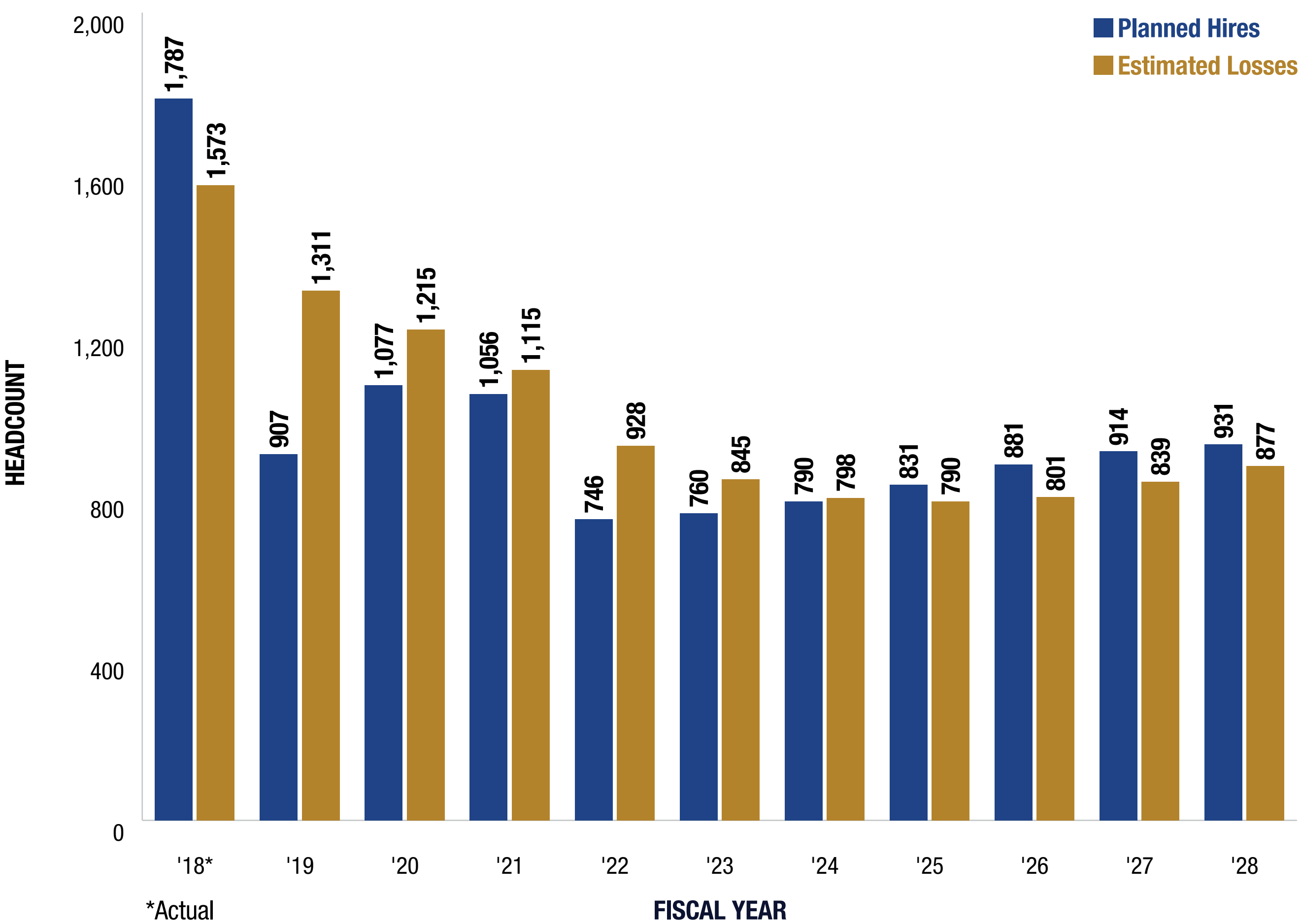
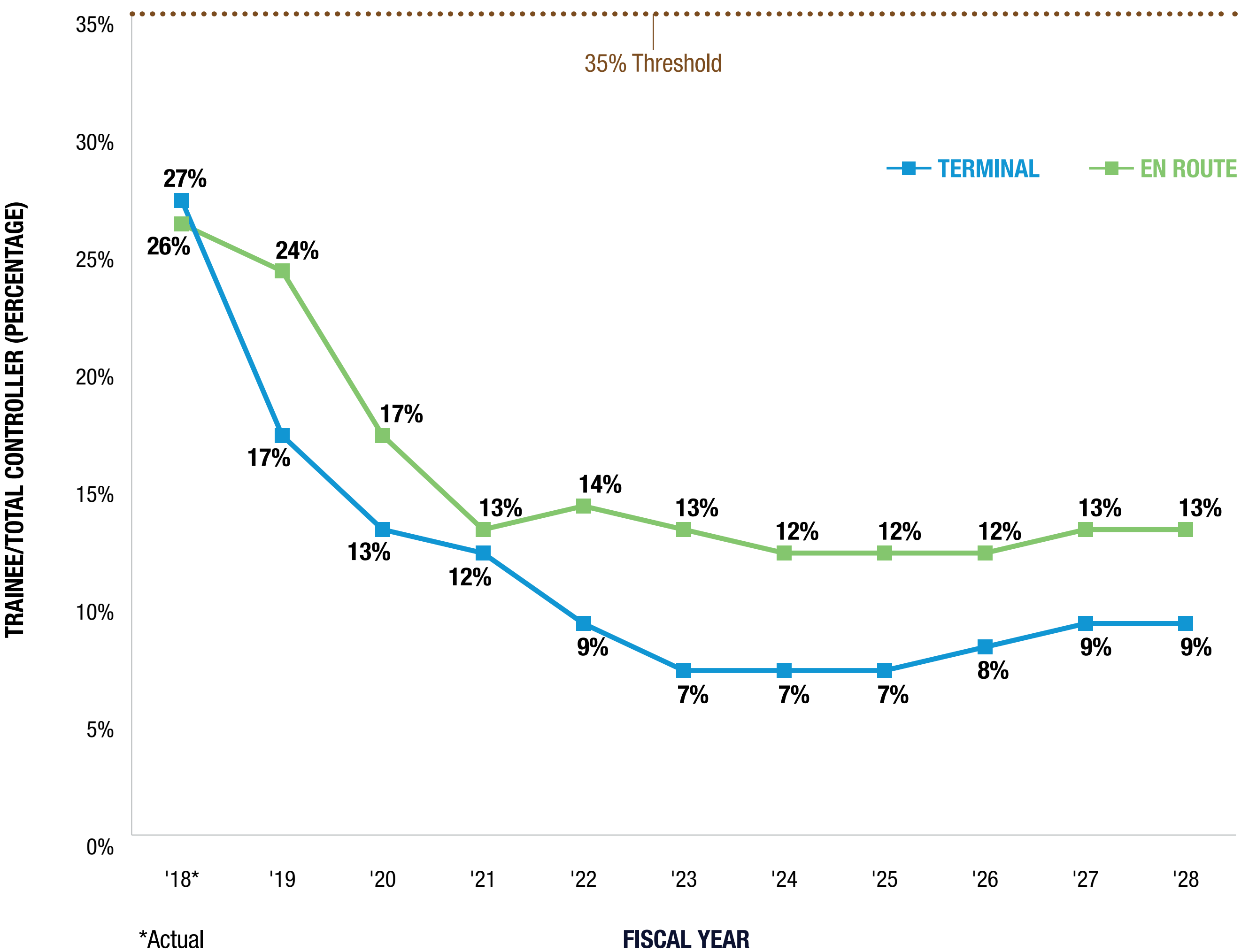


FIGURE 5.2 TRAINEE-TO-TOTAL-CONTROLLER PERCENTAGE



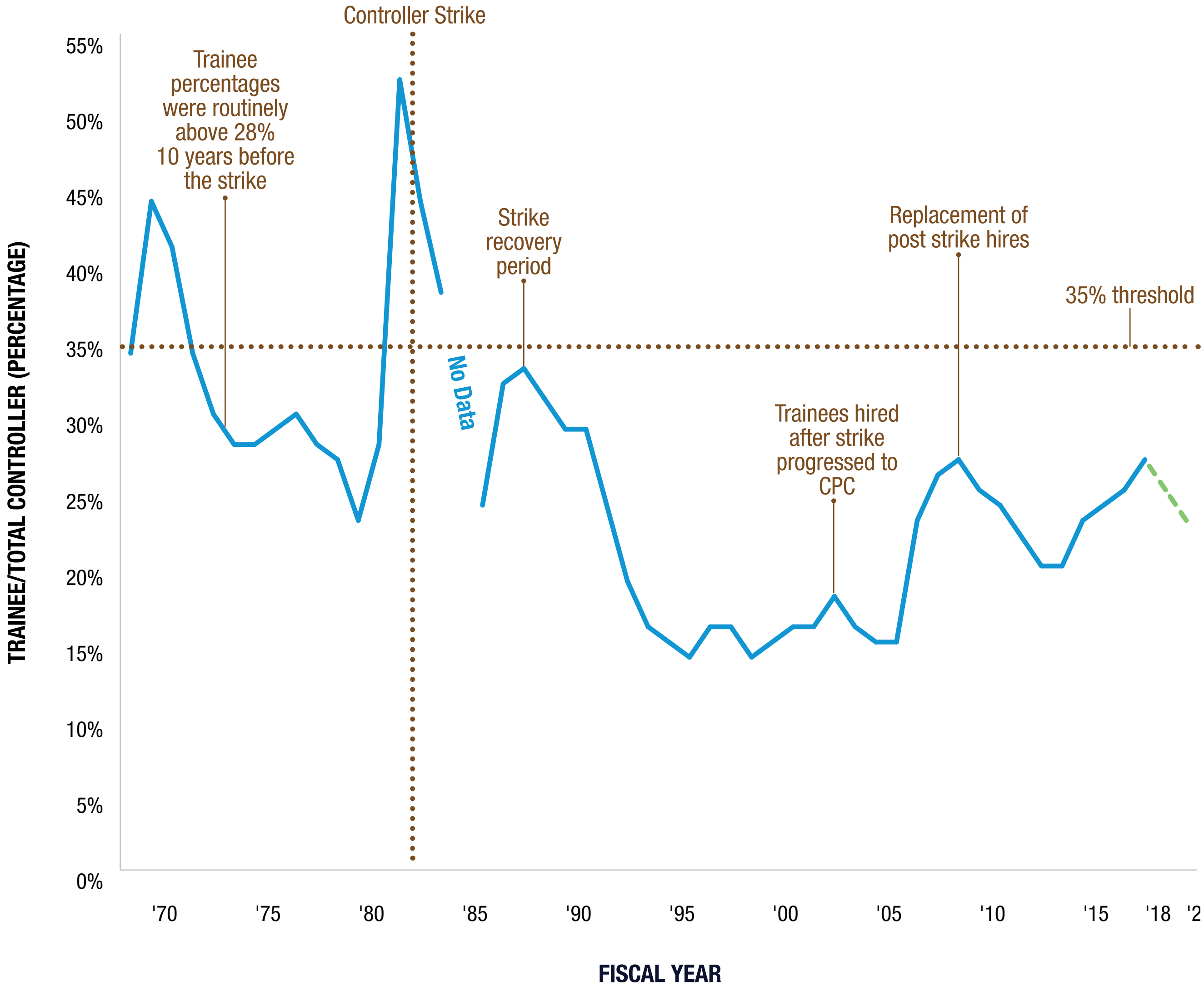
TRAINEE-TO-TOTAL-CONTROLLER PERCENTAGE

The hiring plan allows the FAA to maintain an appropriate number of trainees (developmental and CPC-IT) in the workforce. The percentage shown is calculated as the sum of CPC-ITs plus developmentals divided by all controllers. While the FAA strives to keep the trainee percentage below 35 percent for both Terminal and En Route controllers, it is not the only metric used by the agency to measure trainee progress.

Figure 5.2 shows the projected trainee-to-total-controller percentages for En Route and Terminal by year through 2028.

Note the trainee percentage for both En Route and Terminal is still well below 35 percent. In general, the En Route trainee ratio exceeds the Terminal ratio primarily because of the longer times to certify (on average) in En Route facilities.

FIGURE 5.3 HISTORICAL TRAINEE PERCENTAGE



Before the 1981 strike, the FAA experienced trainee percentages ranging from 23 percent to 44 percent. Following the strike, through the end of the hiring wave in 1992, the trainee percentage ranged from 24 percent to 52 percent. When the post-strike hires became fully certified by the end of the decade, the trainee percentage declined.

As the new controllers hired en masse in the early 1980s achieved full certification, the subsequent need for new hires dropped significantly from 1993 to 2006. This caused trainee percentages to reach unusually low levels. The FAA's current hiring plans return trainee percentages to their historical averages.

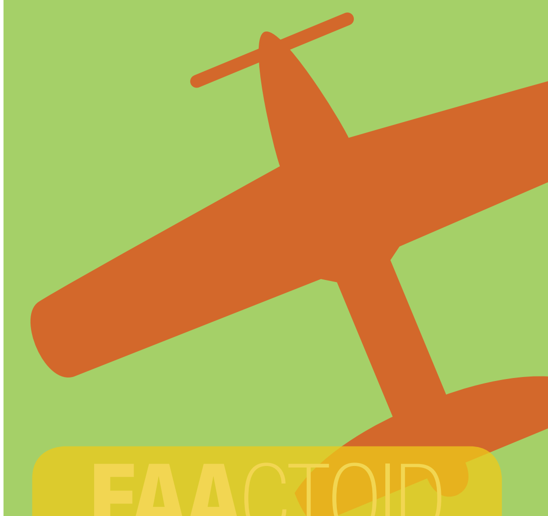
By phasing in new hires as needed, the FAA will level out the significant training spikes and troughs experienced over the last 40 years. Even though there was a long-expected trainee peak in 2009, the trainee percentage remains low as thousands of trainees hired over the past decade have become certified controllers. Figure 5.3 shows historical trainee percentages from 1969 to the present.

The FAA uses many metrics (e.g., 35 percent trainee to total controllers) to manage the flow of trainees while accomplishing daily operations. Facilities meter training to coincide with a number of dynamic factors, including technology upgrades, new runway construction and recurrent proficiency training for existing CPCs. Facility training is enabled by many factors. Examples include the use of contract instructors, access to simulators, scheduled overtime, and the seasonality and complexity of operations.

In itself, the actual number of trainees does not indicate the progress of each individual in the training program or the additional utility they provide that can help to supplement other on-the-job training instruction and support operations. A key facility measure of training performance is the measurement of trainee completion time against the goals. The goal ranges from one-and-a-half years at our lower-level Terminal facilities to three years at our En Route facilities.

The FAA is striving to meet these goals by improving training and scheduling processes through increased use of simulators and better tracking of controller training using the FAA's national training database.

The FAA will continue to closely monitor facilities to make sure trainees are progressing through each stage of training while also maintaining the safe and efficient operation of the NAS.



FAACTOID

The FAA Safely Guides approximately

26

Million Flights*

every year.

* 15.6 million instrument flight rule flights (radar assisted) + 10.4 million visual flight rule flights (low flying planes)

Ch. 6 Hiring Process

CONTROLLER HIRING SOURCES

The FAA has two primary categories of controller hiring sources.

- No prior air traffic control specialist (ATCS) experience: These individuals are not required to have prior air traffic control experience and may apply for vacancies announced by the FAA.
- Prior ATCS experience: These individuals have at least 52 weeks of certified air traffic control experience and may apply for vacancies announced by the FAA.

RECRUITMENT

The agency continues to attract and recruit high-quality applicants into the controller workforce to meet staffing requirements.

In FY 2014, the FAA instituted an interim change to the air traffic control hiring process. The changes allowed the FAA to more efficiently compare applicants across previous hiring sources to select those candidates most likely to succeed as air traffic control specialists. The new approach included: (1) single vacancy announcement for Collegiate Training Initiative (CTI) and certain veterans and general public applicants; (2) a single set of minimum qualifications/eligibility requirements; (3) a multi-hurdle selection process with increased efficiency; and (4) elimination of the Centralized Selection Panel process and interview.

In January 2015, the FAA modified the interim changes by establishing a two-track announcement process for hiring air traffic control specialists. The first track targeted candidates without operational air traffic control experience.

The second track included an announcement targeting applicants who have at least 52 weeks of certified air traffic control experience in either civilian or military air traffic control facilities. In December 2015, the FAA launched an extended announcement for applicants with previous experience.

In 2016, Public Law 114-190 (FESSA) established three separate hiring groups. FESSA requires that the first group or track, which includes individuals with previous air traffic control experience, be given priority consideration. It also increases the maximum hiring age to 35 for those meeting certain requirements. More than 1,400 applicants responded to the air traffic control experience vacancy announcement in May 2017. More than 900 were referred for employment consideration.

FESSA establishes a separate track that is then divided into two pools. The first pool includes graduates from CTI programs and also certain military veterans. The second pool is open to the general public. FESSA mandates that there be no more than a 10 percent variance between the number of applicants selected from each pool. In July 2018, the FAA posted an announcement that yielded only 240 well-qualified applicants from the CTI/veteran pool. That was a substantial drop from the 611 applicants that were selected from a similar announcement in FY 2017. Because of the 10 percent balancing requirement between the pools, FAA was only able to select 264 applicants from the general public pool, and FAA was not able to pursue 783 otherwise well-qualified candidates from that pool. If this trend continues, this will have a major impact on the FAA's ability to hire enough controllers to meet its operational needs.

Once applicants are notified of selection and have accepted the offer, they will then be required to attain medical and security clearances. Upon successful completion of clearances, the applicants will then be scheduled for FAA Air Traffic Academy training as agency needs are identified.

In FY 2019, the FAA will continue to recruit and hire air traffic control specialists to meet staffing requirements through the use of the two-track announcement process.

The agency continues to attract and recruit high-quality applicants into the controller workforce to meet staffing requirements.

Ch. 7 Training

The FAA develops the national training curriculum and learning tools that increase the knowledge of its technical workforce who serve the world's largest, most efficient and safest National Airspace System – today and for the future.

The cohort of air traffic professionals we hired in 2018 and continue to hire in 2019 are essential in our transition to the Next Generation Air Transportation System. Our controllers are increasingly using real-time information to direct aircraft more efficiently while reducing delays. Capabilities such as Performance Based Navigation and Data Communications increase controller productivity while reducing communication errors. They must also, in coming years, effectively incorporate new entrants such as unmanned aircraft systems (UAS) and commercial space into routine operations.

We are meeting the challenge of training both new and experienced controllers by streamlining the training process, refreshing course content and modernizing our technologies used for learning. The training program, directed by FAA Order 3120.4, Air Traffic Technical Training, is reviewed annually to ensure its technical accuracy. We regularly review performance metrics and work with research centers to identify areas for improvement and innovation so the training program evolves with operations.

THE TRAINING PROCESS

New hires with no previous air traffic control experience begin their federal career training at the FAA Academy, where they learn foundational aviation knowledge through classroom lectures, team exercises and computer-based instruction, and practice basic air traffic control skills using low-, medium- and high-fidelity simulation devices.

The academy lays the foundation for employee development by teaching common, fundamental air traffic control principles and procedures that are used at facilities throughout the country. After successfully completing training at the FAA Academy, developmental controllers are assigned to a field location, where they enter additional, site-specific qualification training and hone their technical abilities in the operational environment. This phase of training begins in the classroom, where students learn facility-specific equipment, rules and procedures. After students master initial learning objectives, the instruction transitions to simulators where learners can apply their knowledge and improve their skills in a hands-on, repetitive and safe environment. Finally, employees enter the on-the-job training phase working the control position, where their performance is carefully monitored by certified professional controllers who help trainees develop their techniques in a progressively more difficult live-traffic environment.

New hires with previous air traffic experience are selected directly for a field facility and usually begin their federal service in an accelerated training program customized for their prior aviation experience. They are able to bypass certain phases of training, but they are required to meet the same certification standards for each control position as new hires with no previous experience.

The goal of all new employees is to become a certified professional controller, which is when they are finally considered to be at the full-performance level. Once developmental controllers are certified on control positions, they often work independently in those positions under the direction of a supervisor to gain experience and to supplement staffing.

All controllers are assigned periodic proficiency training and participate in both mandatory and optional supplemental training. One of the most successful uses of optional supplemental training is the Flight Deck Training (FDT) program. The program provides controllers real-time experience of air traffic control from the flight crew's perspective by observing flight operations from the flight deck in most of the nation's air carriers. Their observations enhance their awareness of effects of air traffic control instructions. An integrated, automated process for requesting, executing and reporting the controller's flight deck experience make this supplemental training informative and beneficial.

The FAA's recurrent training program is administered every six months as a combination of classroom and computer-based instruction for all operational personnel. It delivers evidence-based topics derived from a number of data sources. As contrasted with annually required refresher training on static topics, recurrent training delivers timely and relevant training based on safety trends and lessons learned from our analysis. Collaboratively developed and delivered to the controller and supervisory workforce, Recurrent Training ensures that the operational workforce is aware and prepared to mitigate the day to day risks associated with controlling traffic in the NAS.

DESIGNING AND DELIVERING EFFECTIVE TRAINING

Experienced instructors, certified professional controllers and contractors provide both classroom and simulation training at the FAA Academy and at many field locations. The FAA ensures everyone who instructs developmental controllers – whether they are federal employees or contractors – has the background and skills needed to train new employees.

The FAA utilizes a process for the design, development, delivery and maintenance of its certification and specialized air traffic training courses. The Air Traffic Basics, Enroute and Terminal certification training courses are designed to train a younger, diverse and technologically savvy workforce. Advanced technology, modern learning theory, human factors concepts, and professionalism skills are incorporated into our courses. Managers and supervisors receive training on new training approaches. Throughout each phase of the controllers' career, training is available to ensure they have the right skills at the right time.

INFRASTRUCTURE INVESTMENTS

The FAA continues to expand accessibility of the high-fidelity Tower Simulator System (TSS), a training device that has provided an interactive, realistic environment for controller training. There are 58 simulators installed at 40 locations, and these systems support training for 195 airports using a "hub and spoke" arrangement where employees at remote facilities travel to central locations to use the simulator. The FAA started the upgrade of these systems to improve the scenario generation capabilities, screen resolution, software responsiveness, and access to the system. The upgrade to all 58 systems will be complete by September 2019.

The FAA completed the installation of eight U.S. Marine Corps small-footprint simulation systems in FY 2017.

These systems complement the original procurement and provide us with a capability of installing a smaller-sized simulator at locations where it would have been cost-prohibitive for the full-sized system. An additional 26 mobile systems will be deployed by September 2019 to support multiple locations in the field.

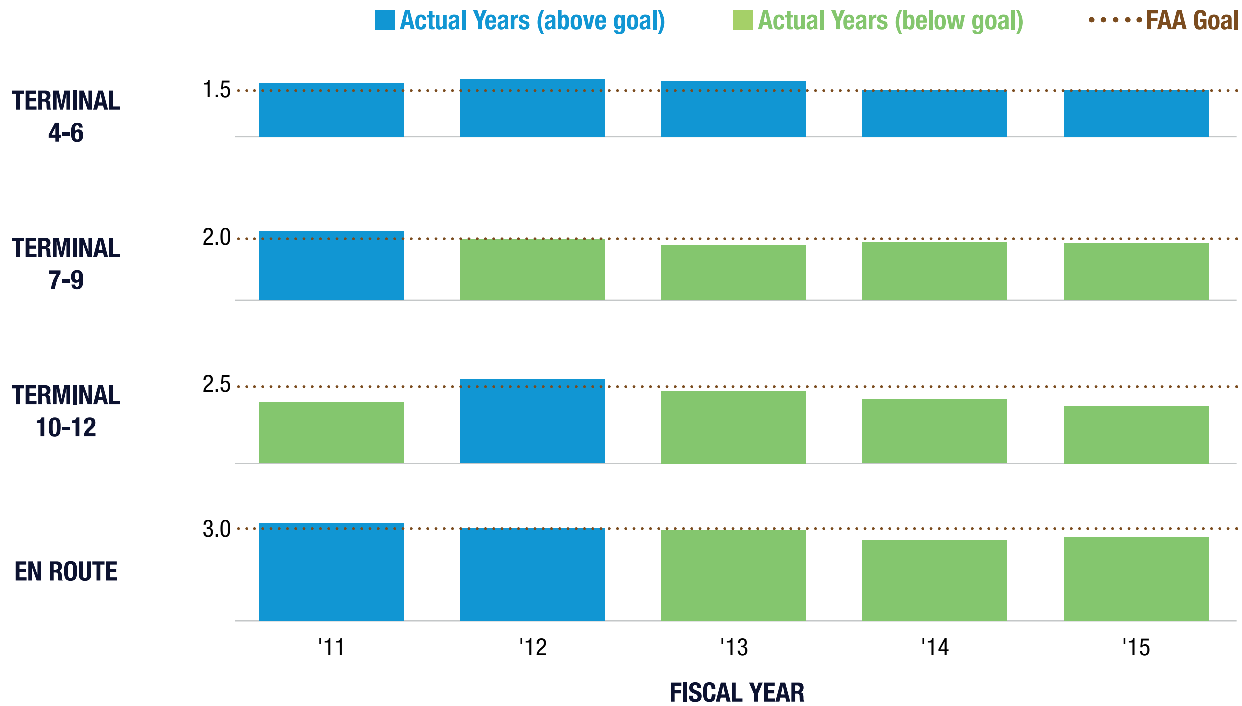
TIME TO CERTIFICATION

The FAA continues to meet its overall goals for time to certification and number of controllers certified. Implementation of foundational NextGen platforms, such as ERAM and TAMR, and new training requirements are factors that affect overall time to CPC. Depending on the type of facility, facility level (complexity) and the number of candidates to certify, controllers are expected to complete certification in one-and-a-half years to three years.

Over 86 percent of those who began training in fiscal years FY 2011 through FY 2015 successfully completed training at their first facility or a subsequent facility.

Completion means that employees achieved FAA CPC status. The remaining members of the hiring classes (14 percent) have been removed from the agency, resigned or are still in training. Developmental controllers who fail to certify at a facility may be removed from service or

TABLE 7.1 YEARS TO CERTIFY (FIRST ASSIGNED FACILITY ONLY)



reassigned to a less complex facility in accordance with agency policies and directives.

Table 7.1 shows the FAA's training targets and average training completion time by facility type for those who began training in fiscal years FY 2011 through FY 2015. Only those who achieved CPC status at their first facility assignment are included in the average training completion times displayed because incorporation of training times at additional facilities can skew the average. Training data for hiring classes after FY 2015 are not reported here because greater than 10 percent of the students are still in active phases of training, resulting in continuously changing metrics as those students certify or fail.

INVESTING FOR THE FUTURE

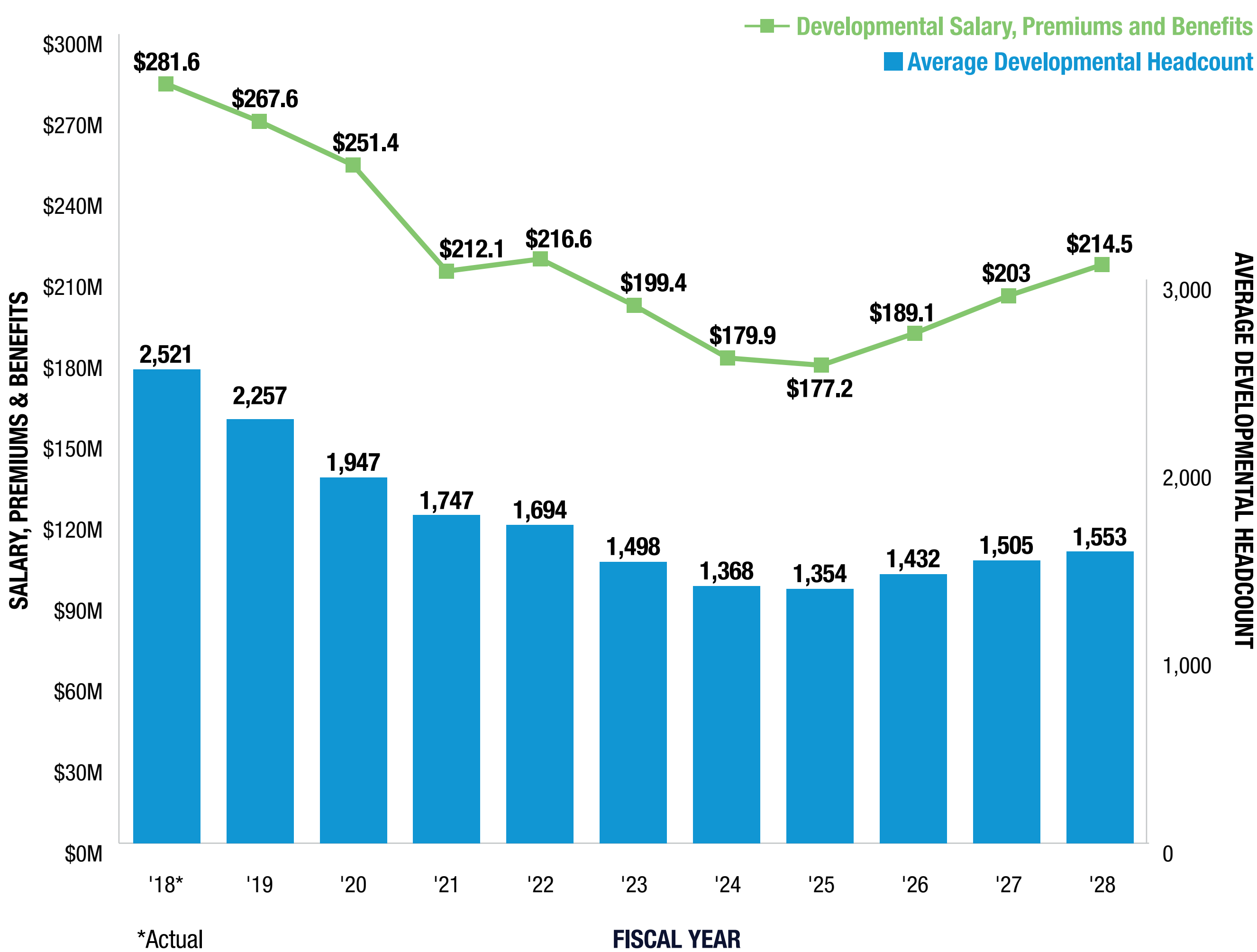
As the FAA transitions to NextGen, the key to providing safe, reliable and efficient air traffic services remains the same: highly skilled, trained and certified professionals. The FAA must maintain curricula to keep pace with the evolving NAS, modernize how it trains employees, incorporate new techniques and technologies for learning, and improve data collection and sharing. Training professionals are part of an FAA team that evaluates how NextGen will change the air traffic work environment and what competencies will be required for the future workforce. The FAA is incorporating what it learns from this evolving and ongoing process into training programs as new systems are implemented. Outcomes-based training aligns NextGen functionality with job tasks so the FAA can make predictions on how training programs will need to change as NextGen evolves.

Ch. 8 Funding Status

In addition to direct training costs, the FAA will incur salary and other costs for developmental controllers before they certify. The average compensation cost of a developmental in FY 2019 is projected to be $118,093.

Figure 8.1 depicts expected annual compensation costs of developmentals, as well as the expected number of developmentals by year through 2027. As training takes one-and-a-half to three years, the chart depicts a rolling total of hires and costs from the current and previous years. It also incorporates the effect of the controller contract.

FIGURE 8.1 ESTIMATED COST OF DEVELOPMENTALS BEFORE CERTIFICATION



Appendix

2019 FACILITY STAFFING RANGES

The Appendix below presents controller staffing ranges, by facility, for En Route and Terminal air traffic control facilities for FY 2019. Additional detail on how the staffing ranges are calculated is provided in Chapter 3.

In general, the FAA strives to keep the number of CPCs and CPC-ITs near the middle of the range. While most of the work is accomplished by CPCs, work is also being performed in facilities by CPC-IT and position-qualified developmental controllers who are proficient, or checked out, in specific sectors or positions and handle work independently.

Accordingly, facilities can safely operate even with CPC staffing levels below the defined staffing range.

Conversely, a facility's total staffing levels are often above the defined staffing range because new controllers are typically hired two to three years in advance of expected attrition to allow for sufficient training time. The total expected end-of-year staffing number shown in Figure 3.1 reflects this projected advanced hiring.

Enroute

		Actual on board as of 09/29/18				Staffing range	
ID	FACILITY NAME	CPC	CPC-IT	DEVELOPMENTAL	TOTAL	LOW	HIGH
ZAB	Albuquerque ARTCC	146	7	65	218	177	216
ZAN	Anchorage ARTCC	76	6	29	111	81	99
ZAU	Chicago ARTCC	262	25	88	375	283	346
ZBW	Boston ARTCC	187	5	25	217	179	219
ZDC	Washington ARTCC	230	20	102	352	264	323
ZDV	Denver ARTCC	227	24	11	262	229	280
ZFW	Fort Worth ARTCC	249	10	56	315	256	312
ZHU	Houston ARTCC	227	20	57	304	232	284
ZID	Indianapolis ARTCC	250	14	48	312	256	313
ZJX	Jacksonville ARTCC	213	14	18	245	246	301
ZKC	Kansas City ARTCC	185	9	73	267	207	253
ZLA	Los Angeles ARTCC	204	12	63	279	230	281
ZLC	Salt Lake City ARTCC	127	4	37	168	151	184
ZMA	Miami ARTCC	221	7	56	284	231	282
ZME	Memphis ARTCC	221	5	89	315	237	290
ZMP	Minneapolis ARTCC	213	5	89	307	221	271
ZNY	New York ARTCC	228	11	101	340	255	312

Enroute

ID	FACILITY NAME	Actual on board as of 09/29/18				Staffing range	
		CPC	CPC-IT	DEVELOPMENTAL	TOTAL	LOW	HIGH
ZOA	Oakland ARTCC	154	8	95	257	191	234
ZOB	Cleveland ARTCC	276	14	34	324	277	338
ZSE	Seattle ARTCC	141	11	28	180	141	172
ZSU	San Juan ARTCC	43	0	33	76	48	59
ZTL	Atlanta ARTCC	283	57	43	383	317	387
ZUA	Guam ARTCC	13	3	2	18	14	18
	Enroute Total	4,376	291	1,242	5,909	4,723	5,774

Note: Facility numbers do not include new hires at the FAA Academy

Terminal

ID	FACILITY NAME	Actual on board as of 09/29/18				Staffing range	
		CPC	CPC-IT	DEVELOPMENTAL	TOTAL	LOW	HIGH
A11	Anchorage TRACON	18	4	5	27	22	26
A80	Atlanta TRACON	71	47	6	124	89	109
A90	Boston TRACON	60	26	0	86	69	84
ABE	Allentown Tower	22	4	7	33	21	26
ABI	Abilene Tower	16	1	8	25	15	19
ABQ	Albuquerque Tower	19	2	5	26	26	32
ACK	Nantucket Tower	10	0	2	12	9	11
ACT	Waco Tower	17	1	4	22	16	20
ACY	Atlantic City Tower	18	2	13	33	18	23
ADS	Addison Tower	7	1	6	14	10	13
ADW	Andrews Tower	13	0	1	14	9	12
AFW	Alliance Tower	12	3	3	18	13	16
AGC	Allegheny Tower	12	2	3	17	11	14
AGS	Augusta Tower	11	1	6	18	13	15
ALB	Albany Tower	18	1	14	33	20	25
ALO	Waterloo Tower	11	0	3	14	10	12
AMA	Amarillo Tower	16	1	6	23	15	18
ANC	Anchorage Tower	15	5	1	21	23	28
APA	Centennial Tower	17	3	3	23	20	25
APC	Napa Tower	7	0	5	12	7	9
ARB	Ann Arbor Tower	10	0	0	10	8	9
ARR	Aurora Tower	10	0	4	14	8	9
ASE	Aspen Tower	13	0	1	14	11	13
ATL	Atlanta Tower	37	9	0	46	45	55
AUS	Austin Tower	29	7	0	36	38	47
AVL	Asheville Tower	15	0	3	18	13	16

Terminal

		Actual on board as of 09/29/18				Staffing range	
ID	FACILITY NAME	CPC	CPC-IT	DEVELOPMENTAL	TOTAL	LOW	HIGH
AVP	Wilkes-Barre Tower	18	0	5	23	17	20
AZO	Kalamazoo Tower	15	6	3	24	16	20
BDL	Bradley Tower	13	0	5	18	13	15
BED	Hanscom Tower	13	1	4	18	12	14
BFI	Boeing Tower	18	3	0	21	17	21
BFL	Bakersfield Tower	18	0	5	23	16	19
BGM	Binghamton Tower	11	0	6	17	11	14
BGR	Bangor Tower	18	0	8	26	17	21
BHM	Birmingham Tower	23	1	8	32	23	28
BIL	Billings Tower	17	0	9	26	17	21
BIS	Bismarck Tower	10	0	3	13	10	12
BJC	Broomfield Tower	10	2	1	13	11	14
BNA	Nashville Tower	27	12	2	41	36	45
BOI	Boise Tower	24	4	6	34	26	32
BOS	Boston Tower	27	2	0	29	31	37
BPT	Beaumont Tower	9	0	3	12	9	11
BTR	Baton Rouge Tower	21	0	7	28	15	18
BTV	Burlington Tower	20	0	10	30	16	19
BUF	Buffalo Tower	24	3	10	37	23	29
BUR	Burbank Tower	19	1	7	27	16	20
BWI	Baltimore Tower	20	2	1	23	21	26
C90	Chicago TRACON	73	25	0	98	87	106
CAE	Columbia Tower	21	0	5	26	18	23
CAK	Akron-Canton Tower	17	0	5	22	18	22
CCR	Concord Tower	8	0	3	11	10	12
CDW	Caldwell Tower	7	1	4	12	9	11
CHA	Chatanooga Tower	17	0	4	21	16	19
CHS	Charleston Tower	19	5	3	27	21	26
CID	Cedar Rapids Tower	13	1	5	19	14	17
CKB	Clarksburg Tower	14	0	4	18	13	15
CLE	Cleveland Tower	34	9	3	46	32	39
CLT	Charlotte Tower	77	7	1	85	77	94
CMA	Camarillo Tower	9	0	3	12	9	11
CMH	Columbus Tower	34	5	0	39	41	50
CMI	Champaign Tower	14	0	8	22	14	17
CNO	Chino Tower	8	1	5	14	11	13
COS	Colorado Springs Tower	20	6	0	26	23	29
CPR	Casper Tower	11	0	3	14	10	12

Terminal

ID	FACILITY NAME	Actual on board as of 09/29/18				Staffing range	
		CPC	CPC-IT	DEVELOPMENTAL	TOTAL	LOW	HIGH
CPS	Downtown Tower	9	0	6	15	9	11
CRP	Corpus Christi Tower	27	5	8	40	29	35
CRQ	Palomar Tower	11	1	0	12	11	13
CRW	Charleston Tower	17	2	3	22	17	20
CSG	Columbus Tower	7	0	2	9	6	8
CVG	Cincinnati Tower	35	7	2	44	39	48
D01	Denver TRACON	78	9	0	87	74	91
D10	Dallas - Ft Worth TRACON	69	31	10	110	82	100
D21	Detroit TRACON	38	21	1	60	48	58
DAB	Daytona Beach Tower	42	9	7	58	49	60
DAL	Dallas Love Tower	20	4	4	28	21	26
DAY	Dayton Tower	13	1	2	16	12	14
DCA	Washington National Tower	22	2	0	24	25	31
DEN	Denver Tower	35	6	0	41	36	43
DFW	DFW Tower	46	10	0	56	50	61
DLH	Duluth Tower	13	0	9	22	16	20
DPA	Dupage Tower	15	0	6	21	12	15
DSM	Des Moines Tower	19	1	4	24	17	21
DTW	Detroit Tower	29	3	0	32	28	34
DVT	Deer Valley Tower	17	1	1	19	17	21
DWH	Hooks Tower	10	1	1	12	10	12
ELM	Elmira Tower	13	0	3	16	9	12
ELP	El Paso Tower	20	3	6	29	19	23
EMT	El Monte Tower	6	1	3	10	9	10
ERI*	Erie Tower	14	0	8	22	15	18
EUG	Eugene Tower	18	2	0	20	17	21
EVV	Evansville Tower	12	0	10	22	12	15
EWR	Newark Tower	23	10	0	33	32	39
F11	Central Florida TRACON	34	6	3	43	49	60
FAI	Fairbanks Tower	17	0	11	28	18	22
FAR	Fargo Tower	14	1	4	19	16	20
FAT	Fresno Tower	21	3	6	30	20	24
FAY	Fayetteville Tower	10	1	13	24	18	22
FCM	Flying Cloud Tower	10	0	0	10	9	11
FFZ	Falcon Tower	11	1	0	12	14	17
FLL	Fort Lauderdale Tower	23	1	3	27	25	31
FLO	Florence Tower	11	1	4	16	9	12
FNT	Flint Tower	8	0	8	16	11	14

* The TRACON portion of ERI was transferred to BUF effective 11/04/18

Terminal

ID	FACILITY NAME	Actual on board as of 09/29/18 CPC	CPC-IT	DEVELOPMENTAL	TOTAL	Staffing range LOW	HIGH
FPR	St Lucie Tower	11	1	3	15	11	13
FRG	Farmingdale Tower	9	2	4	15	12	15
FSD	Sioux Falls Tower	15	1	3	19	15	18
FSM	Fort Smith Tower	27	0	6	33	23	28
FTW	Meacham Tower	14	5	2	21	15	18
FWA	Fort Wayne Tower	18	0	8	26	18	22
FXE	Fort Lauderdale Executive Tower	9	2	6	17	14	18
GCN	Grand Canyon Tower	9	0	1	10	8	10
GEG	Spokane Tower	27	2	4	33	23	28
GFK	Grand Forks Tower	20	2	1	23	19	24
GGG	Longview Tower	14	1	12	27	14	17
GPT	Gulfport Tower	14	0	7	21	13	16
GRB	Green Bay Tower	18	1	1	20	17	20
GRR	Grand Rapids Tower	18	1	5	24	18	21
GSO	Greensboro Tower	18	4	10	32	22	27
GSP	Greer Tower	19	3	8	30	17	21
GTF	Great Falls Tower	11	1	7	19	12	15
HCF	Honolulu Control Facility	66	11	16	93	75	92
HEF	Manassas Tower	6	3	2	11	9	11
HIO	Hillsboro Tower	17	1	2	20	13	15
HLN	Helena Tower	8	0	4	12	7	9
HOU	Hobby Tower	20	3	0	23	19	23
HPN	Westchester Tower	12	3	1	16	12	14
HSV	Huntsville Tower	12	0	12	24	15	19
HTS	Huntington Tower	15	0	6	21	15	18
HUF	Terre Haute /Hulman Tower	11	1	5	17	15	18
HWD	Hayward Tower	8	1	4	13	10	12
I90	Houston TRACON	73	23	1	97	82	100
IAD	Dulles Tower	23	8	2	33	25	31
IAH	Houston Intercontinental Tower	33	3	0	36	31	38
ICT	Wichita Tower	17	5	14	36	26	32
ILG	Wilmington Tower	8	0	3	11	8	10
ILM	Wilmington Tower	16	1	9	26	16	19
IND	Indianapolis Tower	28	5	7	40	38	46
ISP	Islip Tower	10	3	9	22	13	15
ITO	Hilo Tower	13	0	2	15	11	14
JAN	Jackson Tower	12	0	12	24	13	16
JAX	Jacksonville Tower	29	16	16	61	39	47

Terminal

ID	FACILITY NAME	Actual on board as of 09/29/18 CPC	CPC-IT	DEVELOPMENTAL	TOTAL	Staffing range LOW	HIGH
JCF	High Desert TRACON	19	3	2	24	21	26
JFK	Kennedy Tower	28	8	0	36	31	38
JNU	Juneau Tower	12	0	1	13	10	13
L30	Las Vegas TRACON	34	6	0	40	42	51
LAF	Lafayette Tower	8	0	4	12	8	10
LAN	Lansing Tower	18	0	6	24	17	21
LAS	Las Vegas Tower	27	6	0	33	36	44
LAX	Los Angeles Tower	31	34	0	65	45	55
LBB	Lubbock Tower	15	0	5	20	15	19
LCH	Lake Charles Tower	14	1	5	20	12	15
LEX	Lexington Tower	22	1	2	25	20	24
LFT	Lafayette Tower	18	0	6	24	14	18
LGA	La Guardia Tower	24	12	0	36	30	36
LGB	Long Beach Tower	20	3	1	24	18	22
LIT	Little Rock Tower	22	2	6	30	22	27
LNK	Lincoln Tower	12	1	0	13	10	12
LOU	Bowman Tower	10	0	3	13	9	11
LVK	Livermore Tower	8	0	5	13	9	11
M03	Memphis TRACON	22	2	8	32	27	33
M98	Minneapolis TRACON	45	14	0	59	50	61
MAF	Midland Tower	14	0	13	27	16	19
MBS	Saginaw Tower	11	0	7	18	10	13
MCI	Kansas City Tower	36	1	2	39	31	38
MCO	Orlando Tower	27	0	0	27	25	30
MDT	Harrisburg Tower	20	0	9	29	22	27
MDW	Midway Tower	15	7	1	23	20	25
MEM	Memphis Tower	24	4	2	30	21	25
MFD	Mansfield Tower	16	0	6	22	13	15
MGM	Montgomery Tower	16	2	5	23	16	19
MHT	Manchester Tower	16	0	0	16	12	14
MIA	Miami Tower	76	26	4	106	86	105
MIC	Crystal Tower	10	1	0	11	9	11
MKC	Downtown Tower	11	2	3	16	11	14
MKE	Milwaukee Tower	33	8	1	42	34	41
MKG	Muskegon Tower	17	0	5	22	12	14
MLI	Quad City Tower	16	0	5	21	12	15
MLU	Monroe Tower	11	0	3	14	10	13
MMU	Morristown Tower	9	1	5	15	9	11

Terminal

ID	FACILITY NAME	Actual on board as of 09/29/18 CPC	CPC-IT	DEVELOPMENTAL	TOTAL	Staffing range LOW	HIGH
MOB	Mobile Tower	15	2	6	23	18	23
MRI	Merrill Tower	11	1	0	12	11	13
MRY	Monterey Tower	8	1	4	13	8	10
MSN	Madison Tower	15	0	9	24	17	21
MSP	Minneapolis Tower	31	7	1	39	30	37
MSY	New Orleans Tower	27	6	0	33	32	39
MWH	Grant County Tower	10	2	11	23	12	14
MYF	Montgomery Tower	12	2	1	15	12	14
MYR	Myrtle Beach Tower	16	2	4	22	20	24
N90	New York TRACON	133	40	36	209	173	212
NCT	Northern California TRACON	132	25	0	157	154	188
NEW	Lakefront Tower	9	0	3	12	8	9
OAK	Oakland Tower	23	2	1	26	23	28
OGG	Maui Tower	10	2	4	16	11	13
OKC	Oklahoma City Tower	17	6	14	37	27	34
OMA	Eppley Tower	13	0	4	17	11	14
ONT	Ontario Tower	11	2	5	18	14	17
ORD	Chicago O'Hare Tower	53	17	1	71	60	73
ORF	Norfolk Tower	22	6	10	38	26	31
ORL	Orlando Executive Tower	10	1	2	13	10	12
P31	Pensacola TRACON	33	5	4	42	29	35
P50	Phoenix TRACON	53	8	1	62	56	69
P80	Portland TRACON	23	3	8	34	27	32
PAE	Paine Tower	10	0	3	13	10	12
PAO	Palo Alto Tower	8	0	6	14	8	10
PBI	Palm Beach Tower	27	17	4	48	42	52
PCT	Potomac TRACON	147	27	2	176	139	170
PDK	DeKalb - Peachtree Tower	12	2	3	17	13	16
PDX	Portland Tower	22	4	5	31	22	27
PHF	Patrick Henry Tower	9	0	1	10	9	11
PHL	Philadelphia Tower	66	7	1	74	66	81
PHX	Phoenix Tower	29	1	0	30	30	36
PIA	Peoria Tower	17	0	7	24	15	18
PIE	St Petersburg Tower	9	1	4	14	10	12
PIT	Pittsburgh Tower	29	17	2	48	35	43
PNE	Northeast Philadelphia Tower	8	1	3	12	8	10
PNS	Pensacola Tower	11	0	1	12	9	12
POC	Brackett Tower	9	1	0	10	9	11

Terminal

ID	FACILITY NAME	Actual on board as of 09/29/18 CPC	CPC-IT	DEVELOPMENTAL	TOTAL	Staffing range LOW	HIGH
POU	Poughkeepsie Tower	9	2	4	15	8	9
PRC	Prescott Tower	10	3	7	20	12	14
PSC	Pasco Tower	17	0	4	21	16	19
PSP	Palm Springs Tower	11	0	1	12	9	11
PTK	Pontiac Tower	7	2	3	12	10	13
PUB	Pueblo Tower	12	1	1	14	13	15
PVD	Providence Tower	26	3	4	33	25	30
PWK	Chicago Executive Tower	9	1	2	12	10	12
PWM	Portland Tower	18	0	5	23	17	21
R90	Omaha TRACON	19	0	2	21	19	23
RDG	Reading Tower	14	0	4	18	13	16
RDU	Raleigh-Durham Tower	35	8	1	44	39	48
RFD	Rockford Tower	19	1	2	22	19	24
RHV	Reid-Hillview Tower	9	0	2	11	10	12
RIC	Richmond Tower	13	0	5	18	12	14
RNO	Reno Tower	14	0	4	18	12	15
ROA	Roanoke Tower	18	0	11	29	18	22
ROC	Rochester Tower	20	1	9	30	21	25
ROW	Roswell Tower	8	0	9	17	10	12
RST	Rochester Tower	12	0	3	15	12	15
RSW	Fort Myers Tower	19	9	2	30	25	31
RVS	Riverside Tower	9	0	9	18	12	15
S46	Seattle TRACON	32	8	3	43	47	58
S56	Salt Lake City TRACON	35	6	13	54	39	48
SAN	San Diego Tower	20	3	2	25	21	26
SAT	San Antonio Tower	33	12	3	48	38	46
SAV	Savannah Tower	15	4	10	29	20	24
SBA	Santa Barbara Tower	25	1	8	34	22	27
SBN	South Bend Tower	22	0	10	32	19	23
SCK	Stockton Tower	11	1	0	12	9	11
SCT	Southern California TRACON	186	36	4	226	203	249
SDF	Standiford Tower	35	12	5	52	37	45
SDL	Scottsdale Tower	10	0	2	12	11	13
SEA	Seattle Tower	26	3	0	29	29	36
SEE	Gillespie Tower	13	3	1	17	13	16
SFB	Sanford Tower	16	1	1	18	16	20
SFO	San Francisco Tower	23	4	0	27	31	38
SGF	Springfield Tower	25	1	12	38	24	30

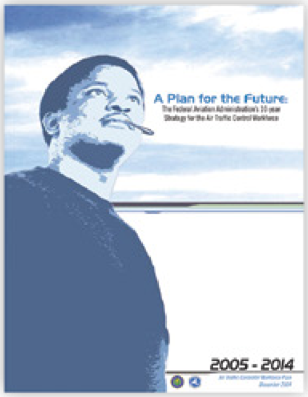
Terminal

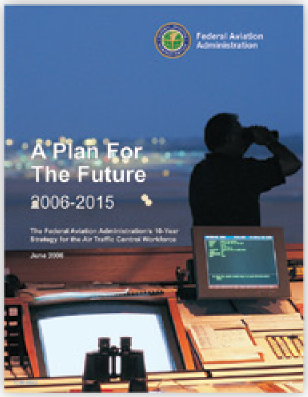
ID	FACILITY NAME	Actual on board as of 09/29/18 CPC	CPC-IT	DEVELOPMENTAL	TOTAL	Staffing range LOW	HIGH
SHV	Shreveport Tower	18	0	7	25	19	23
SJC	San Jose Tower	11	0	4	15	14	17
SJU	San Juan Tower	15	1	3	19	13	16
SLC	Salt Lake City Tower	31	4	1	36	26	32
SMF	Sacramento Tower	10	3	4	17	12	15
SMO	Santa Monica Tower	11	2	6	19	10	12
SNA	John Wayne Tower	14	7	4	25	20	25
SPI	Springfield Tower	11	0	4	15	10	12
SRQ	Sarasota Tower	11	2	1	14	11	13
STL	St Louis Tower	17	5	2	24	18	21
STP	St Paul Tower	11	1	0	12	8	10
STS	Sonoma Tower	8	0	2	10	8	9
STT	St Thomas Tower	9	0	3	12	7	9
SUS	Spirit Tower	12	0	0	12	10	12
SUX	Sioux Gateway Tower	14	0	2	16	9	11
SYR	Syracuse Tower	21	0	7	28	18	22
T75	St Louis TRACON	22	3	2	27	27	33
TEB	Teterboro Tower	18	4	2	24	22	27
TLH	Tallahassee Tower	11	0	5	16	15	18
TMB	Tamiami Tower	16	1	5	22	16	20
TOA	Torrance Tower	10	0	2	12	8	10
TOL	Toledo Tower	22	0	3	25	17	21
TPA	Tampa Tower	43	15	3	61	52	64
TRI	Tri-Cities Tower	10	1	8	19	13	16
TUL	Tulsa Tower	25	0	5	30	25	31
TUS	Tucson Tower	11	2	2	15	12	15
TVC	Traverse City Tower	6	0	3	9	7	9
TWF	Twin Falls Tower	7	0	4	11	7	8
TYS	Knoxville Tower	23	2	17	42	23	28
U90	Tucson TRACON	15	1	6	22	16	20
VGT	North Las Vegas Tower	9	2	4	15	11	13
VNY	Van Nuys Tower	19	5	0	24	18	22
VRB	Vero Beach Tower	13	0	2	15	11	14
Y90	Yankee TRACON	12	2	11	25	19	24
YIP	Willow Run Tower	14	0	1	15	10	13
YNG	Youngstown Tower	13	1	7	21	14	17
	Terminal Total	6,105	1,027	1,237	8,369	6,534	7,988

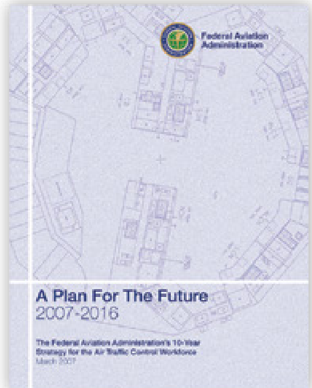
Note: Facility numbers do not include new hires at the FAA Academy

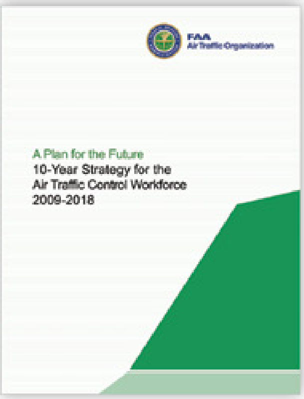
FAA Totals	Actual on board as of 09/29/18				Staffing range	
	CPC	CPC-IT	DEVELOPMENTAL	TOTAL	LOW	HIGH
En Route total	4,376	291	1,242	5,909	4,723	5,774
Terminal total	6,105	1,027	1,237	8,369	6,534	7,988
Facility total	10,481	1,318	2,479	14,278	11,257	13,762
FAA Academy Students				410		
Other*	2	2	3	7		
Total Controller Headcount	10,483	1,320	2,482	14,695		

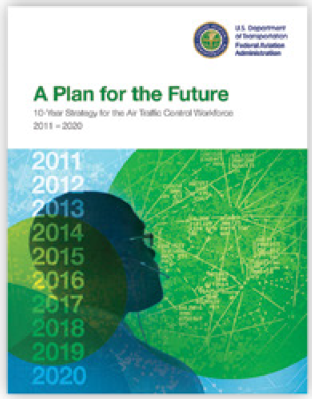
*Note: Other category indicates controllers currenty counted in the FAA total controller headcount but are on temporary detail out of an FAA ATC facility. There are not counted in facility data shown above. These controllers should return to their facilities upon completion of their details

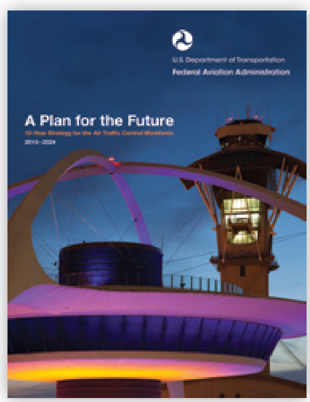


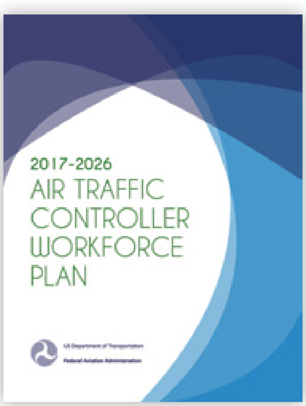












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