Federal Aviation Administration

A Plan for the Future

The Federal Aviation Administration's 10-Year Strategy for the Air Traffic Control Workforce

2008-2017

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FRONT COVER: At the FAA Academy in Oklahoma City, students first get a taste of what it is like to be an air traffic controller. The academy uses lecture, computer-based instruction, and medium- and high-fidelity simulation equipment to teach controllers the fundamentals of air traffic control. Photo: FAA

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Executive Summary

America's National Airspace System (NAS) is the safest airspace in the world because of the combined expertise of people (controllers, pilots, technicians, engineers, inspectors and supervisors), the support of technology (equipment and research), and the application of standardized procedures. Thanks to this network, every day more than 50,000 aircraft are guided safely and expeditiously through the NAS to their destinations. This carefully coordinated movement of people and goods contributes significantly to the economic well-being of the United States.

Safety is the number one priority of the Federal Aviation Administration (FAA) as it carries out its mission to manage the NAS. A well-trained and staffed air traffic control workforce plays an essential role in fulfilling this responsibility.

As with much of the federal government, a significant percentage of the air traffic control workforce will become eligible to retire within the next decade. To address this challenge, the FAA will hire and train nearly 17,000 new air traffic controllers over the next 10 years. As the FAA brings these new employees on board, the FAA must carefully manage the process to ensure that trainees progress in a timely manner.

Simultaneously, the agency must manage today's air traffic while integrating new technologies into air traffic operations. Even as the agency moves to a more automated future, air traffic controllers will continue to be an integral part of aviation safety. The FAA is working diligently to ensure well-trained controllers continue to uphold the highest safety standards.

Fiscal Year 2007 was long projected to be a peak year for retirements of controllers hired in the years following the strike of 1981. The FAA carefully tracks actual retirements and projects future losses to make sure its recruitment and training keeps pace. Although FY 2007 retirements were about 100 above projections, more than 100 retired controllers became contract training instructors in 2007. Their expertise is now being used to train the next generation of controllers.

The transition period will be challenging. New hiring initiatives, simulator use and facility tracking are helping the FAA meet its goals. While the agency is focused on a small subset of facilities with particular staffing needs, the FAA achieved critical hiring and training milestones in FY 2007.

Hiring Milestones

- By exceeding controller hiring targets for FY 2007, the FAA's controller workforce reaches 14,874. Of the 1,815 hired in FY 2007, 1,019 were graduates of Collegiate Training Initiative (CTI) schools while an additional 666 had previous air traffic control experience, either gained in the military or at the FAA.
- Adding state-by-state vacancy announcements to the national military recruitment effort allows the agency to recruit experienced personnel into targeted facilities.

- Instituting a recruitment bonus of up to $20,000 for eligible new hires helps bring on board hundreds of civilian and military recruits with previous air traffic control experience.
- Participating in recruitment fairs in Seattle, Baltimore, Charlotte, the District of Columbia, Groton, Ft. Rucker, and Ft. Benning brings in former military controllers. The FAA also participated in the National Association for the Advancement of Colored People Diversity Job Fair and the Congressional Black Caucus Diversity Job Fair.
- Adding personnel in St. Louis, Atlanta, and Oklahoma City expedites the clearance, medical and interview processes, greatly reducing hiring timeframes.
- Instituting pre-employment processing centers, where final interviews are conducted and medical and security screenings performed, allows the FAA to get qualified applicants into training at a faster pace.

Training Milestones

- Adding 21 classes to the FAA's Air Traffic Controller Academy in Oklahoma City enables thousands more new FAA hires to be trained.
- Adding nine new CTI schools provides more qualified controller applicants for the FAA. Twenty-three colleges and universities are now accredited to teach air traffic control as part of a college degree.
- Awarding a contract to add six new tower simulators at the FAA Academy and 18 new tower simulators in the field provides better on-the-job training support to new terminal recruits.
- Installing a new En Route Training Simulation System (ERTSS) simulator at the FAA Academy and six new ERTSS simulators in the field helps en route controllers in training learn additional skills.
- Adding a new radar-based course for terminal controllers at the FAA Academy helps improve the quality of training for terminal recruits before they arrive at facilities.
- Adopting a new controller competency training model increases proficiency at much faster rates.

As the agency brings thousands of new air traffic controllers on board, the training of these new employees will be closely monitored at all facilities. The FAA will also continue to take action at the facility level should adjustments become necessary due to changes in volume, unanticipated retirements or other attrition.

The FAA's goal is to ensure that the agency has the flexibility to match the number of controllers at various facilities with traffic volume and workload. This third update to the FAA's original 2004 controller workforce plan provides the authorized staffing ranges for all of the FAA's air traffic control facilities.

Chapter 1: The Challenge

Twenty-five years after the air traffic controller strike of 1981, the FAA faces a long-predicted wave of controllers eligible for retirement. Systematically replacing those employees, as well as ensuring the knowledge transfer required to maintain a safe NAS, is the focus of this plan.

NOTE: The Federal Retirement System allows air traffic controllers to retire at age 50 with 20 years of "good time" service or at any age with 25 years of "good time" service. Fiscal Year 2007 was correctly projected to be a peak year for retirements of the post-strike workforce. "Good time" is service in a covered position, as defined in Public Law 92-297.

How We Got Here

On August 3, 1981, 10,438 members of the Professional Air Traffic Control Organization (PATCO), in violation of federal law and their employment contract, went on an illegal strike. President Reagan ordered the striking controllers to return to work within 48 hours or their employment would be terminated. On August 5, 1981, President Reagan fired over 10,000 controllers who had not returned to work.

Developmental controllers achieve certifications in various positions as they move through the different stages of training. Photo: Jon Ross

Operational supervisors, who had been previously recertified as part of the FAA's contingency plan, joined with non-striking controllers to provide air traffic control services. In a period of 48 hours, the controller workforce was reduced to less than 4,700.

Following the strike, the FAA began a large-scale recruitment and selection process to rebuild the controller workforce. Between FY 1981 and FY 1992, close to 28,000 individuals entered the FAA Academy screening program. Of these, 16,000 or 57 percent successfully completed the program, 33 percent of the individuals did not pass, and 10 percent left the program for other reasons.

Not all of the 16,000 controller developmentals were successful in the air traffic control facility-training program. Approximately 72 percent of those assigned to Air Route Traffic Control Centers (ARTCC) achieved Certified Professional Controller (CPC) status, while 84 percent assigned to terminal facilities achieved CPC status. Many of those not successful in the facility-training program were reassigned to less demanding facilities and achieved CPC status. Some secured other jobs within the FAA, and the remainder resigned or were dismissed from the agency.

By 1992, recovery of the controller workforce was complete, and it was no longer necessary for the FAA to conduct a large-scale hiring program. During the following decade, most of the trainees reached CPC status and the FAA enjoyed a high percentage of CPCs-to-total-controllers with most controllers nowhere near retirement eligibility. In 2005, the agency began hiring again in anticipation of the retirements expected this decade. That year, the FAA began hiring more controllers than the number that retired each year, in order to make sure enough trained controllers were on board when the retirement wave began to swell.

The long expected retirement wave hit in 2007, and retirements will continue to hit record numbers in 2008 and 2009. As veteran controllers retire, controllers hired in 2005, 2006, and 2007 will join the workforce as CPCs, and controllers hired in the 1990s may move from mid-level facilities into the higher-paying, higher-workload facilities. The transition through the ranks will continue to provide increased career growth opportunities for the workforce.

Chapter 2: Facilities and Services

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

Nearly 15,000 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 1,250 civilian contract controllers, and more than 9,000 military controllers, also provide air traffic services for the NAS.

These controllers provide air navigation services to aircraft in domestic airspace, and in 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 planes traveling through the "terminal" airspace. Their main responsibility is to organize the flow of aircraft into and out of an airport. Relying on visual observation and radar, they closely monitor each plane to ensure a safe distance between all aircraft and to guide pilots on the ground during take-off and landing. In addition, controllers keep pilots informed about changes in weather conditions.

Once airborne, the plane quickly departs the terminal airspace surrounding the airport. At this point controllers in the radar approach control notify "en route" controllers who will next take charge in the vast airspace between airports.

There are 21 air route traffic control centers located around the country. Each en route center is assigned a block of airspace, which contains many defined routes. Airplanes fly along these designated routes to reach their destination.

The en route airspace is further divided into smaller, more manageable blocks of airspace called sectors. A sector is operated by a sector team, consisting of one to three controllers depending on traffic.

En route controllers use radar to ensure that a safe distance is maintained between aircraft. En route controllers also provide weather advisory and traffic information to aircraft under their control. As the aircraft nears its destination, en route controllers transition the aircraft to the terminal environment, where terminal controllers guide the aircraft to a safe landing.

FAA Air Traffic Control Facilities
The FAA operates 314 air traffic control facilities and the Air Traffic Control System Command Center in the United States. 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

Type	Name	Number	Description
1	Tower Without Radar	1	An airport traffic control terminal that provides service using direct observation primarily to aircraft operating under Visual Flight Rules (VFR). These terminals are located at airports where the principal user category is low performance aircraft.
2	Terminal Radar Approach Control (TRACON)	22	An air traffic control terminal that provides radar-control service to aircraft arriving or departing the primary airport and adjacent airports, and to aircraft transiting the terminal's airspace.
3	Combination Radar Approach Control and Tower with Radar	137	An air traffic control terminal that provides radar control services to aircraft arriving or departing the primary airport and adjacent airports, and to aircraft transiting the terminal's airspace. This terminal is divided into two functional areas: radar approach control positions and tower positions. These two areas are located within the same facility, or in close proximity to one another, and controllers rotate between both areas.
4	Combination Non-Radar Approach Control and Tower without Radar	2	An air traffic control terminal that provides air traffic control services for the airport at which the tower is located and without the use of radar, approach and departure control services to aircraft operating under Instrument Flight Rules (IFR) to and from one or more adjacent airports.
6	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.
7	Tower with Radar	123	An airport traffic control terminal that provides traffic advisories, spacing, sequencing and separation services to VFR and IFR aircraft operating within the vicinity of the airport using a combination of radar and direct observations.
8	Air Route Traffic Control Center (ARTCC)	21	An air traffic control facility that provides air traffic control 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.
9	Combined TRACON Facility	4	An air traffic control terminal that provides radar approach control services for two or more large hub airports, as well as other satellite airports, where no single airport accounts for more than 60 percent of the total Combined TRACON facility's air traffic count. This terminal requires such a large number of radar control positions that it precludes the rotation of controllers through all positions.
-	Air Traffic Control System Command Center	1	The Air Traffic Control System Command Center is responsible for the strategic aspects of the NAS. The Command Center modifies traffic flow and rates when congestion, weather, equipment outages, runway closures, or other operational conditions affect the NAS.

In 1998 the FAA re-classified the types of facilities that provide air traffic services. Each type of facility has several classification levels that are based on numerous factors, including traffic volume, complexity and sustainability of traffic. In an effort to capitalize on investments that reduce complexity, as well as to compensate controllers at facilities that work the highest and most complex volume of traffic, facilities are monitored continuously for downward and upward trends.

As of September 29, 2007, 26 facilities were evaluated for reclassification based on traffic counts and other factors in order to better allocate human and fiscal resources.

Of these, two facilities were reclassified to a higher level, 17 facilities were reclassified to a lower level, three facilities have reclassifications pending, and four facilities were examined, but had no change in classification.

Table 2.2 Facility Reclassifications

Action	FY 2006	FY 2007
Reclassified Higher	6	2
Reclassified Lower	60	17
Reclassifications Pending	24	3
No change in Classification	11	4

Air Traffic Control Services at Airports

Air traffic control services are provided from a variety of sources (federal air traffic controllers, contract controllers, military controllers and others) at public- and private-use airports. There are 20,542 airports within the NAS, including civil, military, joint-use civil-military airports, heliports, short takeoff and landing ports, and seaplane bases in the U.S. and its territories. Of this total, 5,247 are public-use airports, with the rest classified as private-use airports. The majority of the private-use airports receive no air traffic control services.

Table 2.3 summarizes the various providers of air traffic control services at public-use and private-use airports.

FAA Air Traffic Control Services

The FAA provides air traffic control services at 262 public-use airports (FAA facility types 1, 3, 4 and 7) and at Andrews Air Force Base. FAA also provides services at 51 non-towered facilities (FAA facility types 2, 6, 8 and 9).

Federal Contract Air Traffic Control Services

In 1982, Congress authorized the FAA to begin a pilot program to contract for air traffic control services for five Visual Flight Rule (VFR) towers that were closed as a result of the controller strike in August 1981. Since then, the contract tower program has been expanded to include additional FAA-operated VFR towers and to include towers at airports that never had an FAA-operated tower.

Contract controllers providing air traffic control services in towers that are in the contract tower program must meet the same controller certification requirements as FAA controllers and are certified by the FAA. There are 240 contract towers providing air traffic control services by contract controllers.

Table 2.3 Air Traffic Control Service							
	FAA	Federal Contract	Military	City, County or other	Remote FAA	None	**TOTAL**
Public-Use	262	239	22	21	2,135	2,568	**5,247**
Private-Use	1	1	143	5	28	15,117	**15,295**
Total	263	240	165	26	2,163	17,685	**20,542**

Congress added a cost-sharing provision to the program in FY 1999. This provision allowed airports that would not normally qualify to be in the FAA's Contract Tower Program to enter the program by paying for a portion of the tower's operating cost.

Military Air Traffic Control Services
There are 165 military towers located at military installations throughout the United States or where there is a heavy military presence at a combination civilian and military airport. Military controllers provide air traffic control services to civilian aircraft as well as military aircraft at those airports. Military controllers must meet the same qualification criteria as FAA controllers.

City, County or other Air Traffic Control Services
There are 26 non-federal towers located at 21 public-use and five private-use airports. Controllers operating in these towers must meet the same qualification criteria as FAA controllers. The FAA does not provide funding or air traffic control services at these towers.

Remote FAA Air Traffic Control Services
FAA towers, approach controls, and en route centers also provide terminal approach and departure control services to 2,163 non-towered airports using remote communications services and radar.

No Air Traffic Control Services
There are 17,685 airports with no air traffic control services.

Chapter 3: Staffing Requirements

The FAA issued the first comprehensive controller staffing plan in December 2004. *A Plan for the Future: a 10-Year Strategy for the Controller 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.

Air traffic controller workload and traffic volume are dynamic, so are staffing needs. By "staffing to traffic" the FAA exercises the flexibility to match the number of controllers at various facilities with traffic volume and workload.

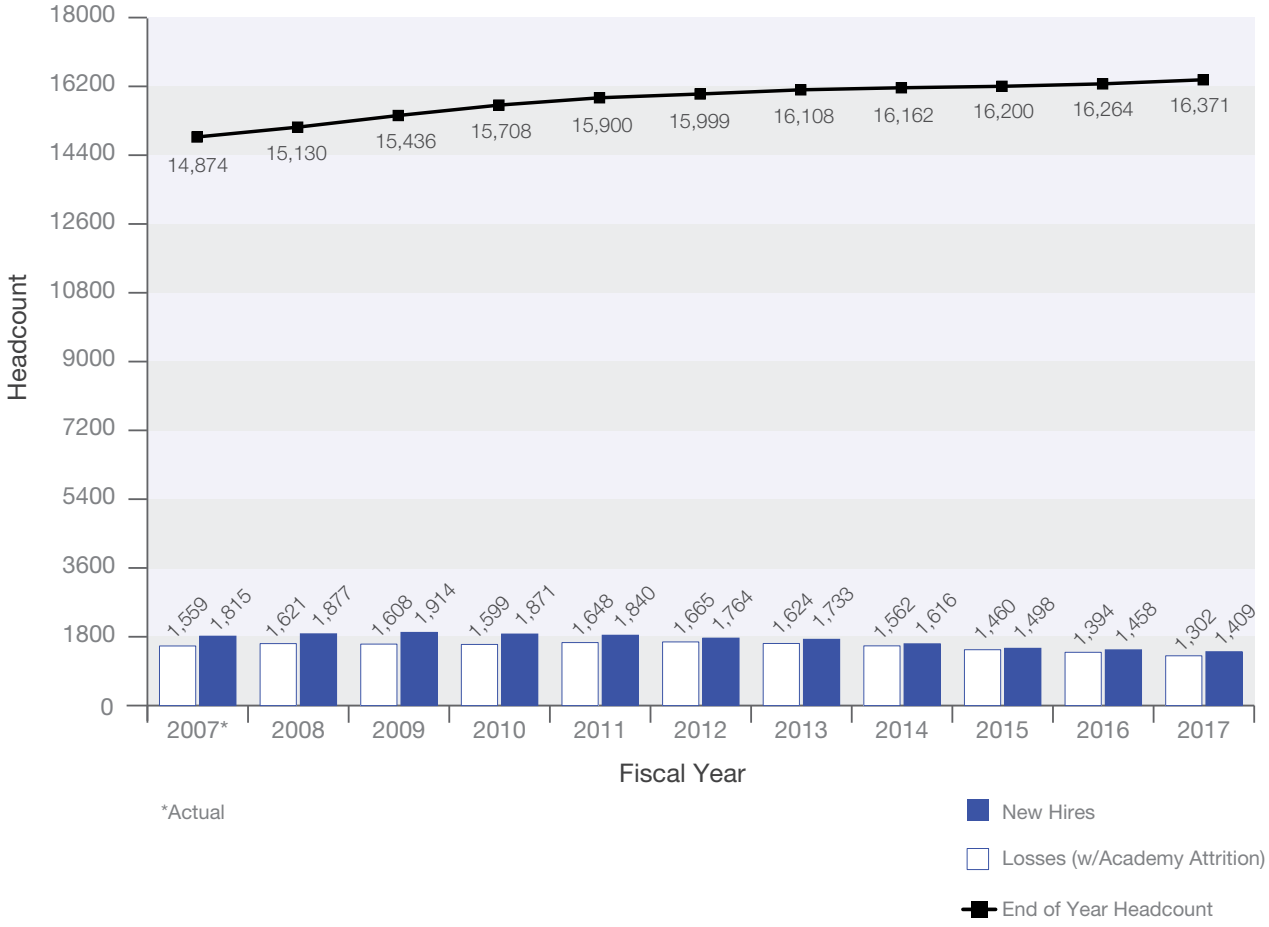
Staffing to traffic requires the FAA to consider many facility-specific factors. They include traffic volumes based on FAA forecasts and hours of operation, as well as individualized forecasts of controller retirements and other attrition losses.

Proper staffing levels also depend on the efficient scheduling of employees, so the FAA tracks a number of indicators as the agency reviews staffing levels. Some of these indicators are overtime, time on position, leave usage, and the number of trainees. For example, in FY 2007, the system average for overtime was 1.7 percent, a slight increase from the FY 2006 level of 1.1 percent.

Figure 3.1 shows the expected end-of-year headcount, losses and new hires by year through FY 2017. Figures for FY 2007 represent actual end-of-year headcount, losses and hires.

The FAA uses a variety of methods to determine controller staffing requirements. 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.

Figure 3.1 Projected Controller Workforce



NOTE: *Annual hires and losses are a relatively small proportion of the controller workforce.*

Authorized Staffing Ranges

In the 2007 staffing report we presented authorized staffing ranges for each of the FAA's 314 air traffic control facilities across the country. These ranges include the number of controllers needed to perform the work. While most of the work is accomplished by CPCs, work is also being performed in facilities by Certified Professional Controllers in Training (CPC-ITs) and position qualified developmentals who are proficient, or "checked-out" in specific sectors or positions, and handle workload independently.

The authorized ranges for 2008 are published in Appendix A of this report.

Most facilities will be in a period of transition over the next few years and will be staffing with a combination of CPCs, CPC-ITs, and a large number of developmental controllers who are proficient, or checked out in specific sectors or positions. Developmentals have always handled live traffic, and in fact, this is a requirement to maintain proficiency as they progress towards CPC status.

Figure 3.2 Controller Staffing Range

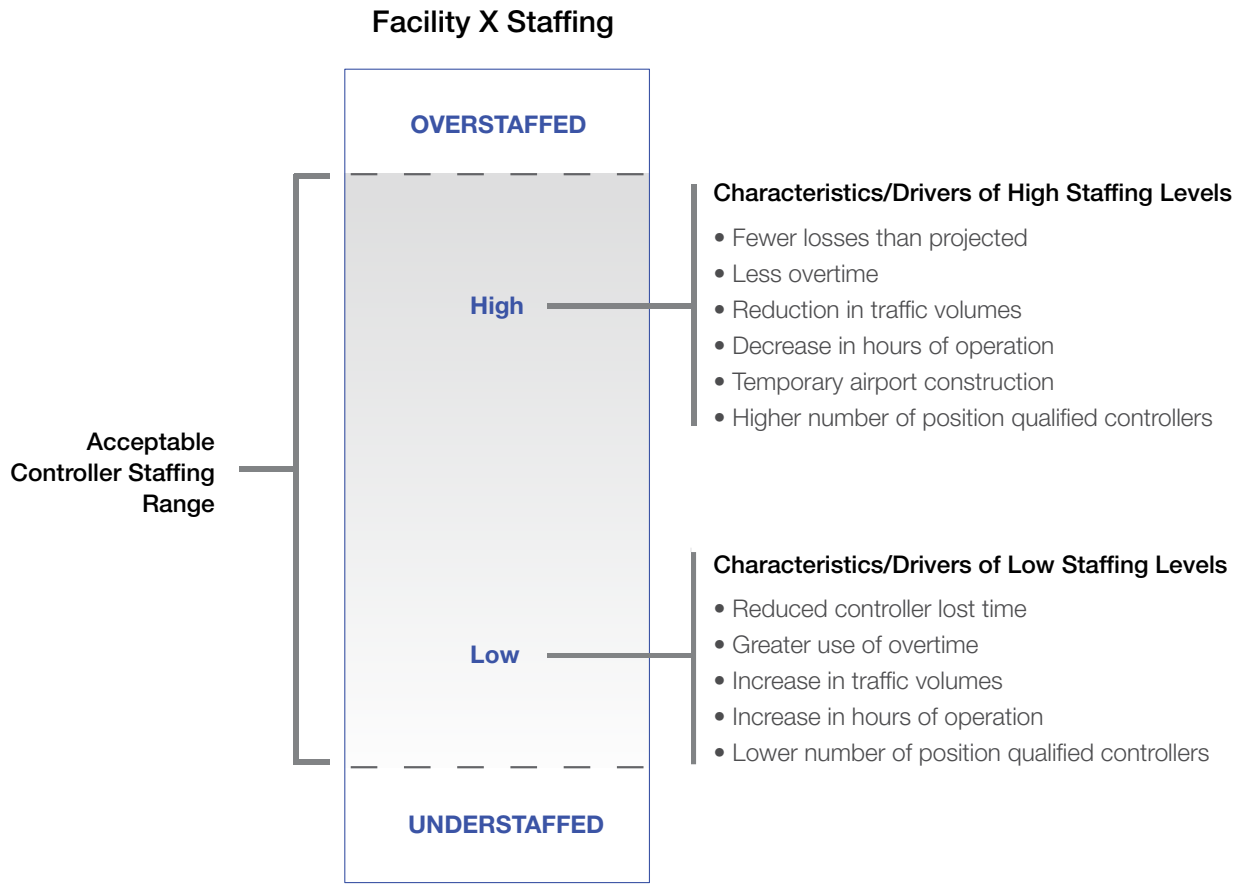


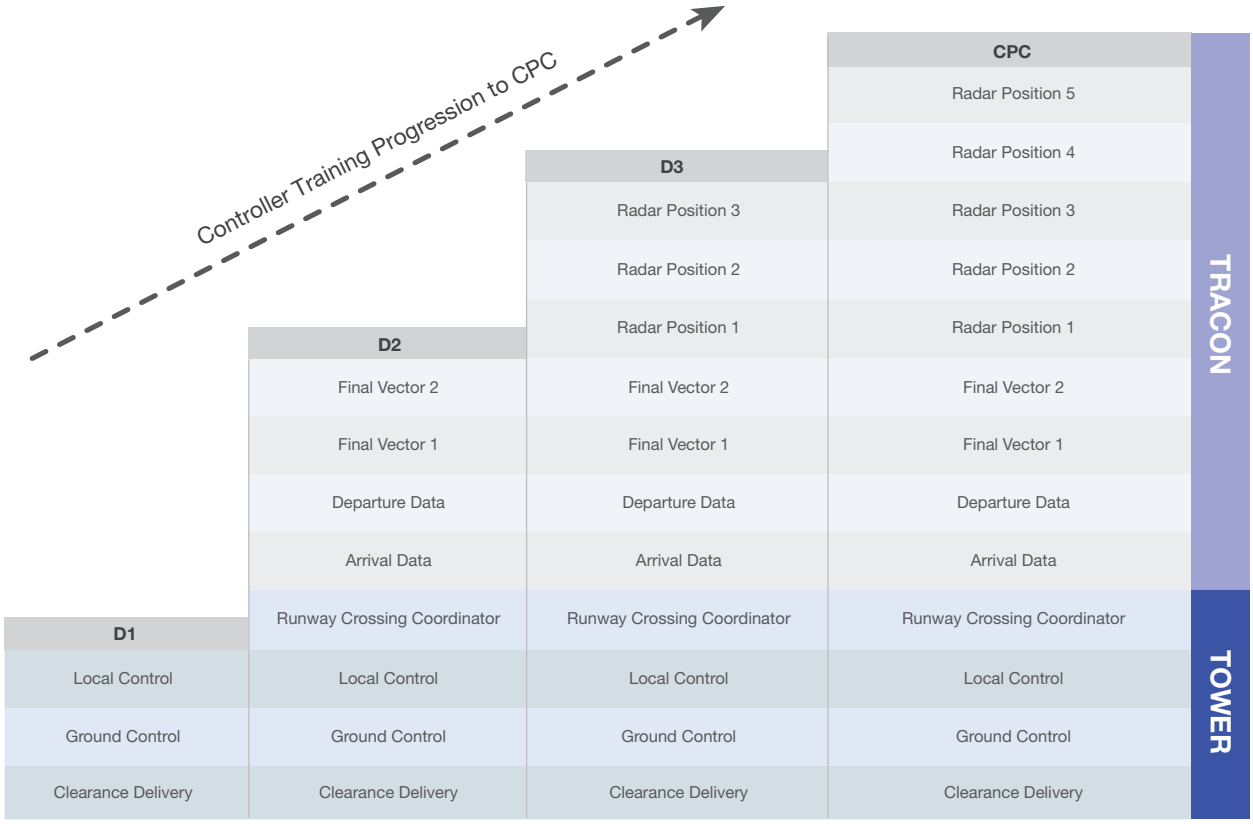
Figure 3.3 depicts an example of a large, Type 3 FAA facility. This Combination Radar Approach Control and Tower with Radar facility is one in which controllers work in the tower cab portion and in the radar room (also known as a "TRACON"). In order to be a CPC in these types of facilities, the controllers must be checked out on all of the 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 one progresses through training.

Once controllers are checked out at the D1 level, they can work several positions in the tower (Clearance Delivery, Ground Control and Local Control). For example, once checked out on the Runway Crossing Coordinator position, the controller would be considered tower certified, but still not a CPC, as CPCs in this type of facility must also be certified on positions in the radar room.

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

Figure 3.3 Controller Training Progression



One key benefit of having the majority of the workforce checked out as a CPC is that it makes the job of scheduling much easier at the facility. CPCs can cover all positions in their assigned area, while position qualified developmentals require the manager to track who is qualified to work which positions independently.

Air Traffic Staffing Standard Review and Assessment

The FAA has used air traffic staffing standards to determine controller staffing levels since the 1970s. In 2005, the FAA began an air traffic staffing standard review and reassessment with the expectation of developing staffing ranges at the facility level.

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.

Figure 3.4 Air Traffic Control Position and Facility Overview

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 standards.

All FAA staffing models incorporate similar elements:

- Controller activity data is collected and processed 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 input into a scheduling algorithm.
- The modeled workload/traffic activity relationship is forecasted 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, etc.

In 2007, FAA completed its efforts to revise the standards for towers and en route centers.

The FAA incorporated recommendations found in the Transportation Research Board special report *Air Traffic Control Facilities, Improving Methods to Determine Staffing Requirement*s as a part of the agency's staffing standards review and assessment. These recommendations included significantly expanding the amount of input data and improving the techniques used to develop the standards.

Both the tower and en route center standards reviews went through similar processes, but some components of the model development phase varied 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 when compared to those of a single sector in an en route center.

Terminal Progress

In 2007, the FAA completed a comprehensive review of its current tower cab staffing standards. An important part of this review was identifying factors that changed since the standards were last updated in order to improve the model's predictive capabilities at the facility level.

One of the most important factors that surfaced during the comprehensive review was the availability, accessibility and increased reliability of traffic data and controller on-position reporting systems. The FAA was able to utilize and analyze much larger quantities of tower data at a level of granularity that was previously unattainable. In the prior study, the agency collected data from a sample of facilities, then simulated the workload for the rest of the population.

This latest update improved upon the previous study by:

- expanding the number of data collection site visits, (direct observation of controller functions in 52 tower cabs nationwide);
- interviewing operational personnel (over 70 managers and supervisors);
- collecting extensive data samples (over 46,000 work sampled observations) and
- accessing new data systems enabling the agency to incorporate actual 90th percentile busy day data from 259 facilities.

The revised tower cab standards were developed using regression analysis as the primary method for modeling the relationship between staffing and workload drivers while cluster analysis techniques were used to group facilities based on level of difficulty. These synergistic efforts enabled the agency to incorporate more facilities than previously possible.

Review and assessment work is also in progress on the TRACON facility staffing models. Preliminary findings will be included in the FY 2009 Controller Workforce Plan.

En Route Progress

En route airspace is divided into smaller, more manageable blocks of airspace called centers, areas and sectors. As described in the 2007 version of this plan, efforts have been underway to improve modeling of the controller tasks performed in the more than 750 sectors of the 20 continental United States en route centers to provide better input data for the FAA's staffing models.

The FAA's Federally Funded Research and Development Center, operated by The MITRE Corporation, developed a model to generate data needed as input to the FAA's staffing models. Like the tower standards, this approach incorporated actual traffic and more facility specific data as recommended in the Transportation Research Board special report *Air Traffic Control Facilities, Improving Methods to Determine Staffing Requirements*.

MITRE's modeling approach reflects the dynamic nature of the traffic characteristics in a sector to estimate 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, a sector might at one time have most of its traffic "cruising" through the sector towards another location with few conflicts between the aircraft. At another time, the same sector may have traffic that is climbing and descending making it more complex and needing more controllers to handle the traffic. The same modeling techniques were applied to all sectors uniformly, providing results based on a common methodology across the country.

The modeling techniques and data provided by MITRE were validated through site visits, interviews with operational personnel, extensive data collection and detailed analysis of a year's worth of aviation traffic data. The FAA used this data as input to its staffing models to calculate how many controllers were needed by facility. The FAA's staffing models incorporate the input data provided by MITRE, run it through shift scheduling algorithms, apply traffic growth forecasts, and then apply factors to cover vacation time, break time, training, etc., to provide the staffing ranges presented in this plan for each en route center.

Changing NAS Technologies

The FAA is laying the foundation for the Next Generation Air Transportation System (NextGen) with new satellite-based technologies. When possible, NextGen capabilities are being integrated into existing systems to improve operations today.

The FAA is also expanding the use of current advanced aircraft capabilities to provide safer and more efficient operations. For example, the agency recently deployed a new oceanic air traffic control system that uses satellites and electronic reporting of aircraft positions. The FAA also reduced the separation requirements in the West Atlantic for aircraft equipped with advanced avionics and established satellite-based routes on the West Coast.

This evolutionary approach provides for a smooth transition for pilots and controllers. This approach also allows for improvements throughout the NextGen investment period rather than waiting until 2025 to see benefits.

The FAA expects that new technologies will result in a more automated system that will, over time, change the role of controllers. The phase-in of these new technologies and the phase-out of older technologies is a long term gradual process currently under development. The FAA is still determining how the changes in technology will change the controller workload and so the 2008 controller workforce plan does not factor in these changes in determining staffing requirements.

For staffing purposes, the FAA expects to continue to increase staffing as described in this plan in order to meet the expected increases in air traffic activity.

Global Positioning Satellite. Graphic: FAA

The FAA is expanding the use of satellite-based technologies and advanced aircraft capabilities to provide safer and more efficient operations.

Chapter 4: Losses

Twenty-five years after the strike of 1981, FY 2007 was correctly projected to be a peak year for retirements of controllers hired in the early 1980s. A little more than 800 controllers retired in FY 2007. Agency projections show that an additional 868 controllers will become eligible to retire in FY 2008. In total, the FAA expects to lose around 1,600 controllers due to retirements, promotions and other losses this fiscal year.

Controller Loss Summary
In addition to retirements, the agency loses controllers to resignations, removals, deaths, training failures, promotions, transfers and academy attrition.

Table 4.1 shows the total estimated number of controllers that will be lost, by loss category, over the period FY 2008 through FY 2017.

Table 4.1 Controller Loss Summary

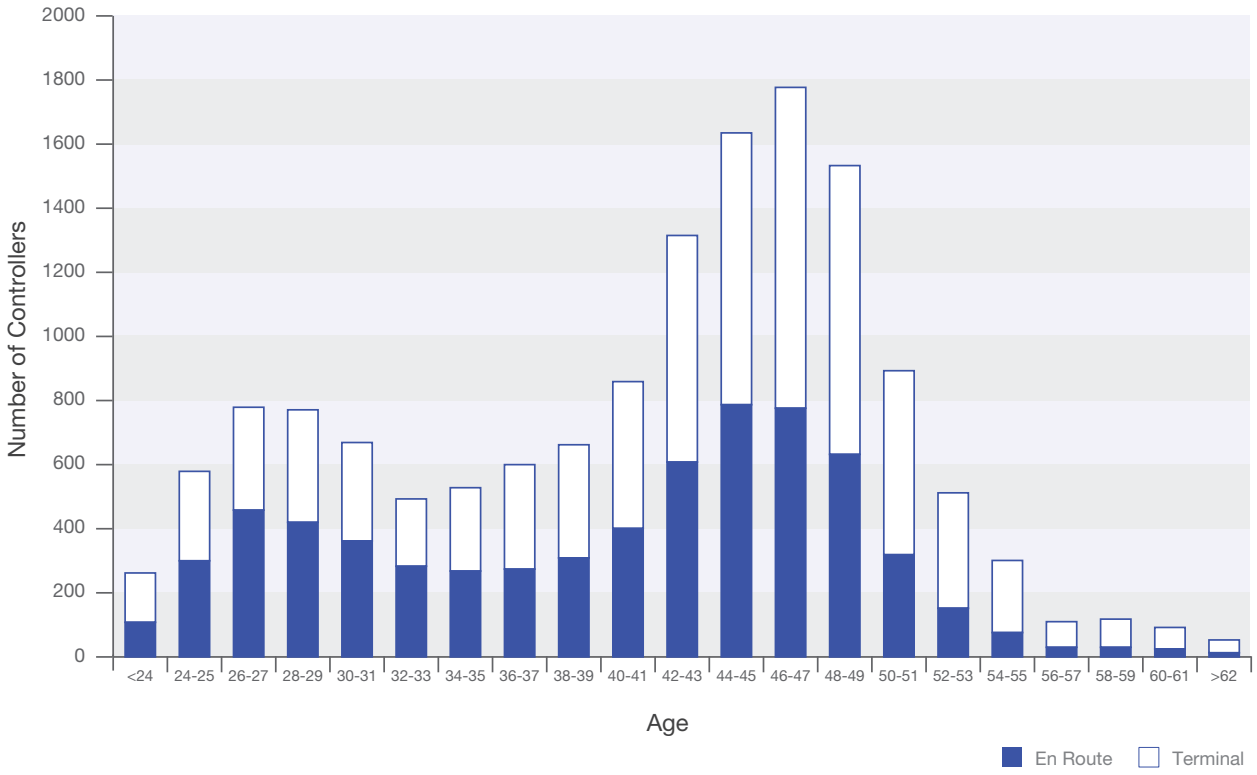
Loss Category	Losses: 2008 - 2017
Retirements	7,068
Resignation, removal & death	1,035
Developmental Losses	2,538
Promotions/Transfers	4,281
Academy Attrition	561
TOTAL	**15,483**

Controller Workforce Age Distribution

After the strike, from 1982 through 1991, the agency hired an average of 2,655 controllers per year. This hiring wave created the situation whereby a large portion of the controller workforce would reach retirement age in roughly the same period of time.

Figure 4.2 shows the controller workforce age distribution as of the pay period ending September 29, 2007.

Figure 4.2 Controller Workforce Age Distribution as of September 29, 2007



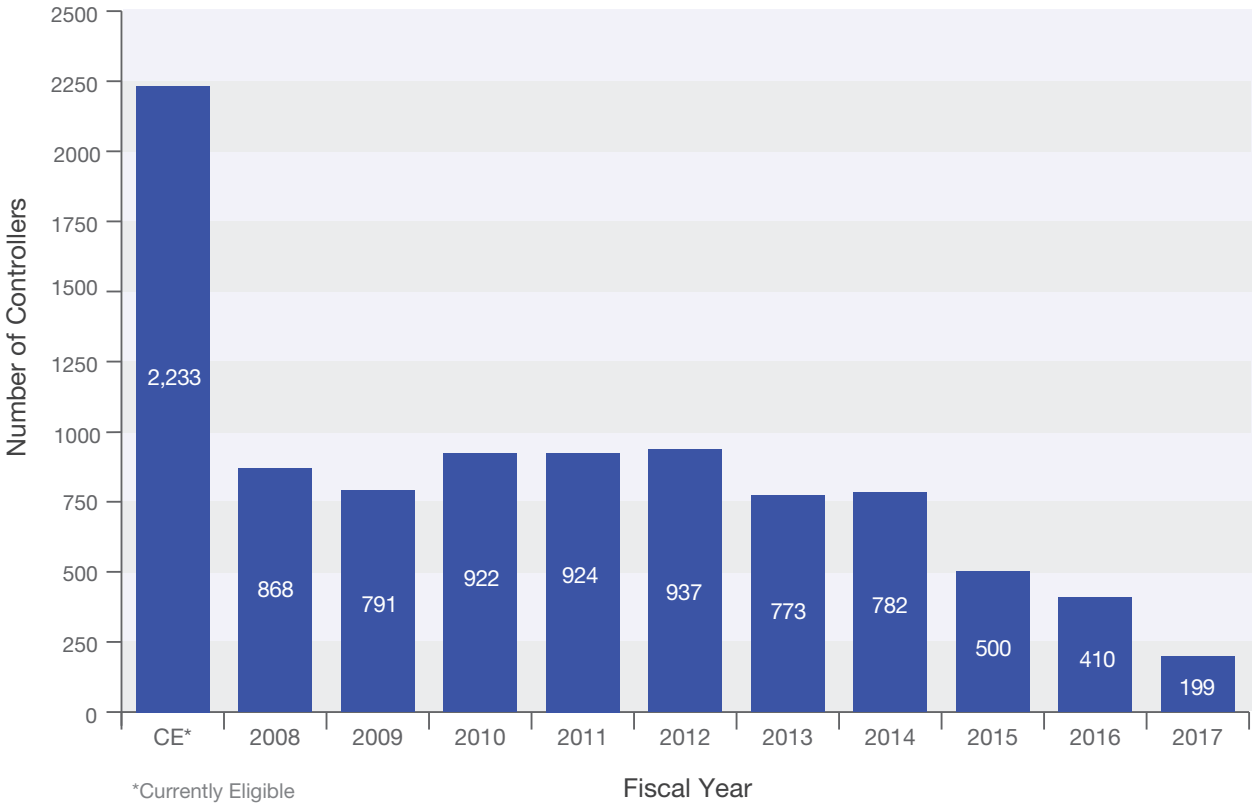
Controller Retirement Eligibility

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

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 2007 and those projected to become retirement eligible through FY 2017.

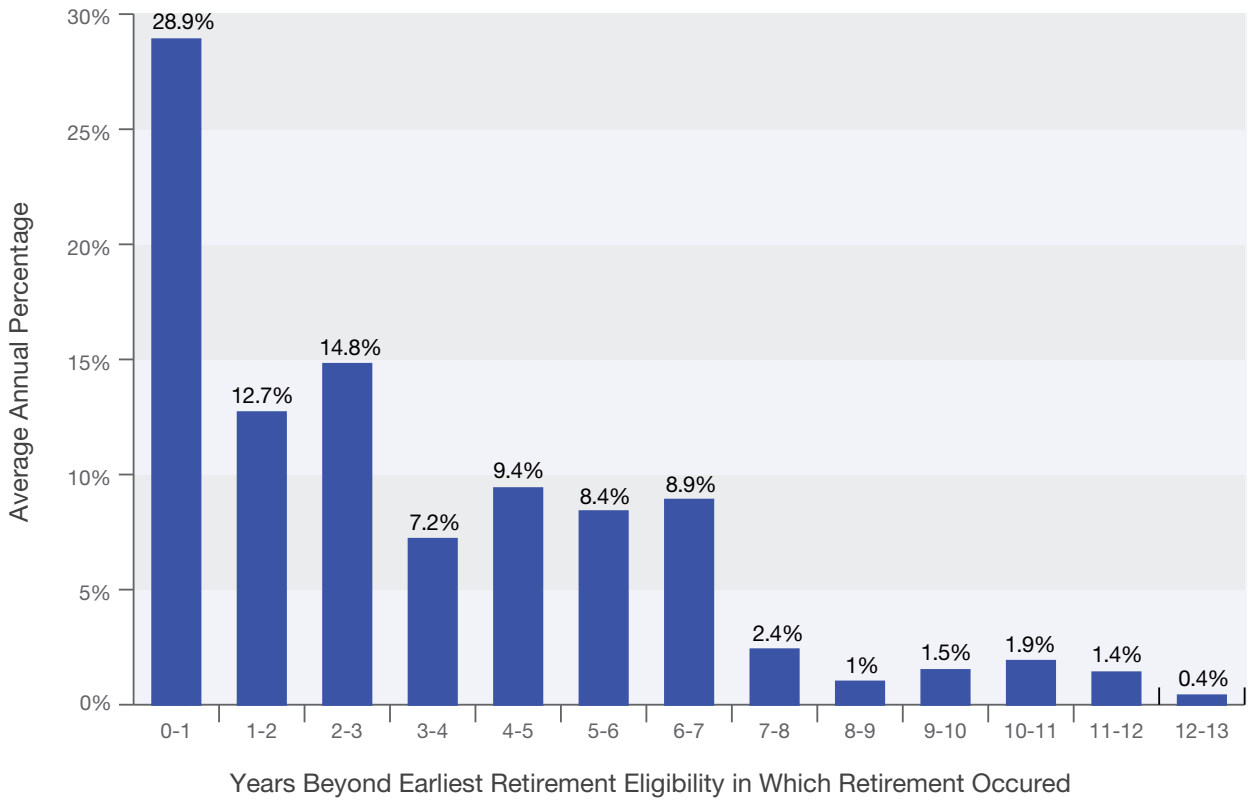
Figure 4.3 Retirement Eligibility



Controller Retirements

History shows that not all controllers retire when they first become eligible. Figure 4.4 shows the controller retirement pattern used to generate current controller estimates.

Figure 4.4 Air Traffic Controller Retirements



Controller Losses Due to Retirements

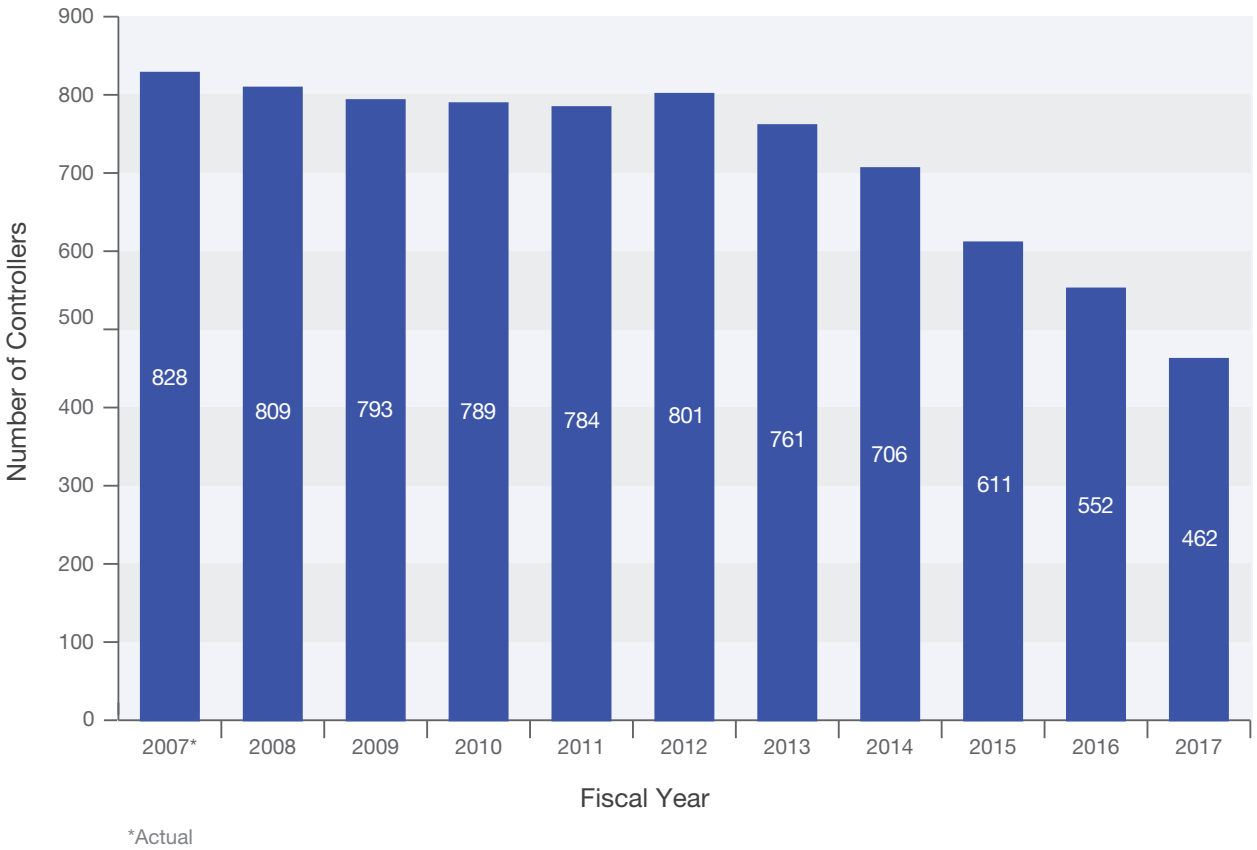
As in prior years, the FAA projected future retirements by analyzing both the eligibility criteria of the workforce (Figure 4.3) and the pattern of retirement based on eligibility (Figure 4.4).

In FY 2007, there were 828 controller retirements, versus a plan of 700. Some of the increase resulted as eligible controllers retired and began working for the agency's training contractors. More than 100 retired controllers became contract training instructors in FY 2007, allowing the FAA to retain their valuable expertise to train the next generation of controllers.

For each eligibility class (the year the controller first becomes eligible to retire), the agency applied the histogram percentage to estimate the retirements for each class by year.

For the FY 2008 plan, the agency incorporated the most recent year of retirement data into the retirement histogram used for FAA projections.

Figure 4.5 Retirement Projection



*Actual

Controller Losses Due to Resignation, Removal and Death
The estimated controller losses due to resignations, removals (excluding developmental attrition), and deaths are shown in Table 4.6 below.

Table 4.6 Controller Losses Due to Resignation, Removal and Death										
2007*	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
100	99	98	100	101	102	104	105	107	109	110

*Actual

Developmental Attrition
The large number of new hires since FY 2005 represented a first recent opportunity to observe developmental attrition rates, and the agency has incorporated this information into the latest FAA forecasts.

Table 4.7 Developmental Attrition										
2007*	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
164	256	282	273	277	268	261	250	234	222	215

*Actual

Academy Attrition
Estimated loss figures from new hires who are not successful in the FAA Academy training program, before they ever reach an air traffic control facility, are shown in the table below.

Table 4.8 Academy Attrition										
2007*	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
60	62	63	62	61	58	57	53	50	48	47

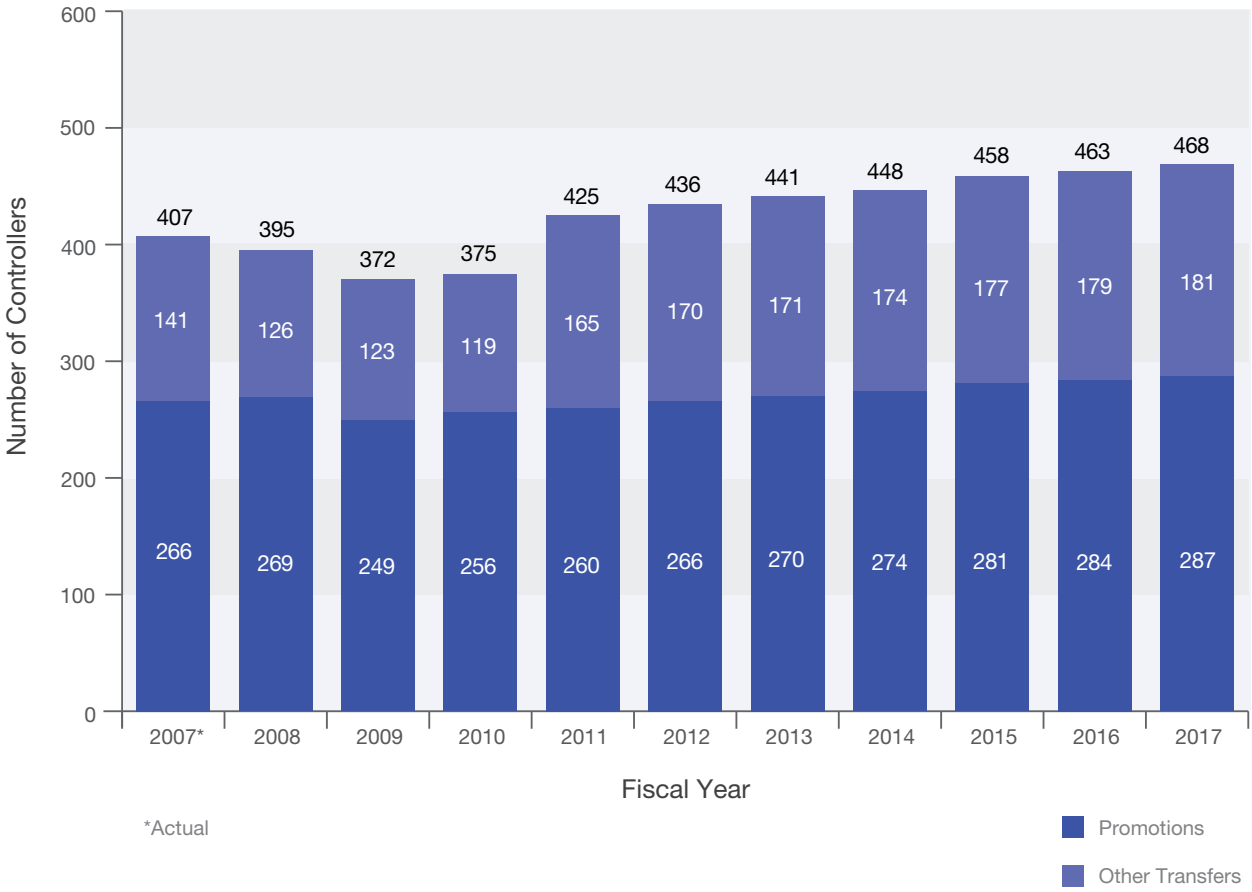
*Actual

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 operational supervisor.

In addition to backfilling for supervisory attrition (retirements, promotions, etc.) the FAA expects that the supervisor workforce will likely grow along with the controller workforce, and these additional supervisors will also come from the controller population.

FAA's estimates for FY 2007 controller losses due to promotions and other transfers were less than actual losses. For the FY 2008 plan, the agency has incorporated the most recent year of attrition data into FAA projections.

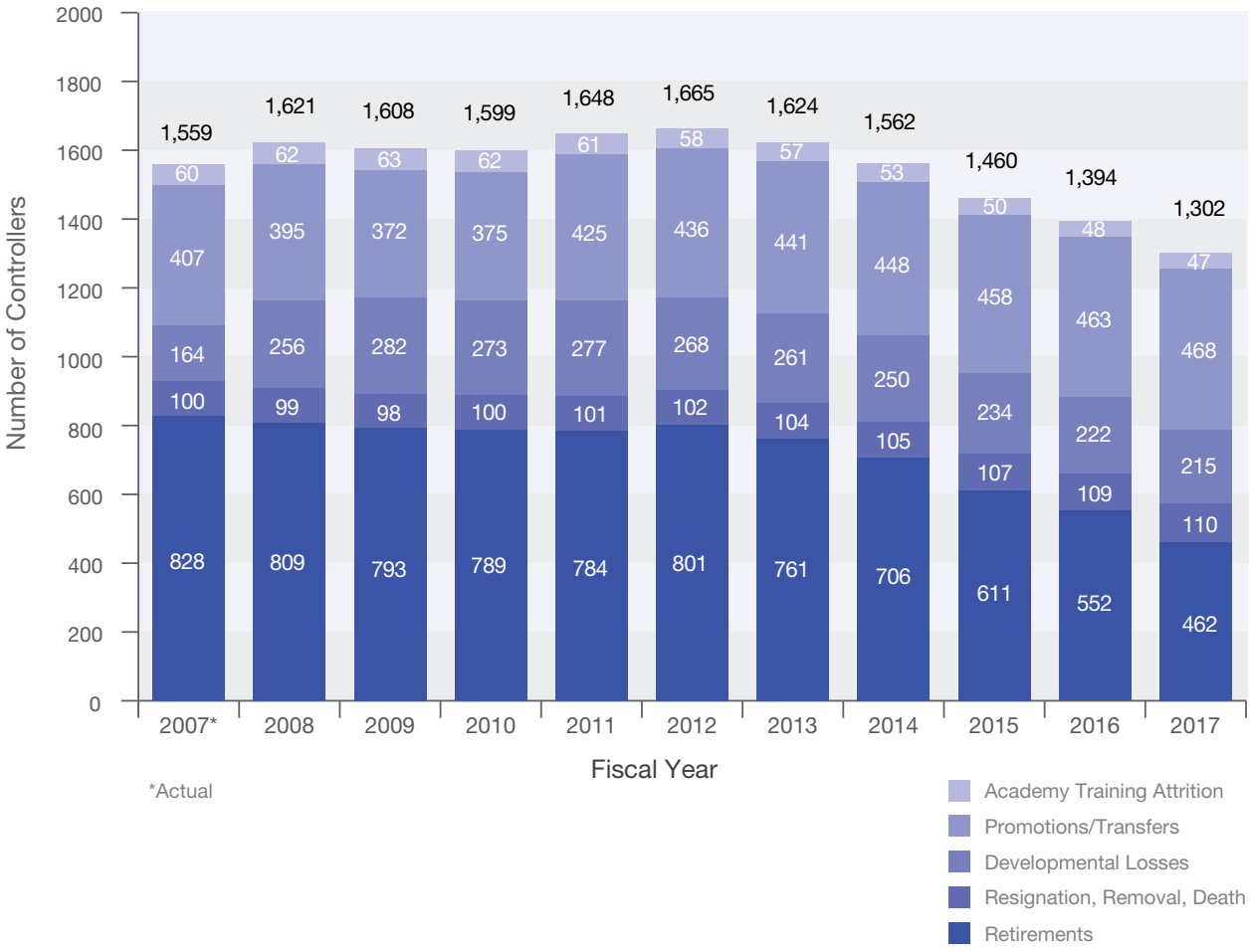
Figure 4.9 Controller Losses Due to Promotions and Other Transfers



Total Controller Losses
The FAA projects a total loss of 15,483 controllers over the next 10 years, as follows.

Should losses outpace projections for FY 2008 the FAA will hire additional controllers to reach the end-of-year goal of 15,130 air traffic controllers on board.

Figure 4.10 Projected Total Controller Losses



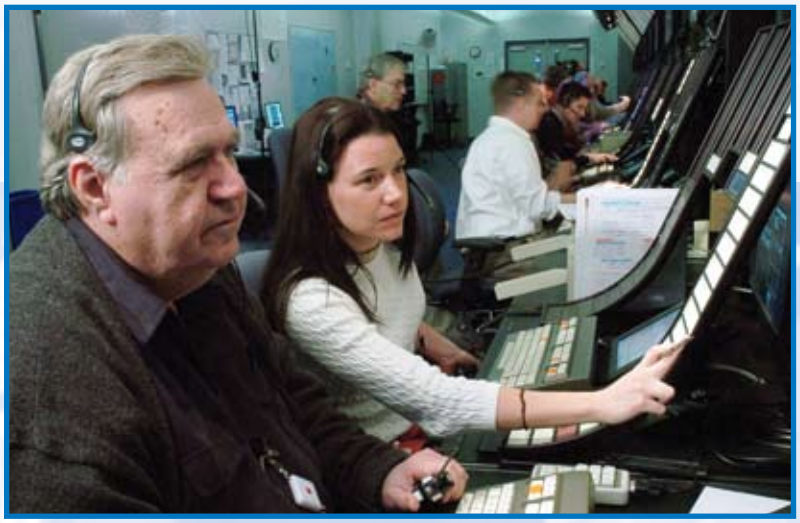
Chapter 5: Hiring Plan

America's NAS is the safest airspace in the world because of the combined expertise of its people, the support of technology, and the application of standardized procedures. Every day more than 50,000 aircraft are guided safely and expeditiously through the NAS to their destinations.

Deploying a well trained and staffed air traffic control workforce plays an essential role in fulfilling this responsibility. In order to staff the right number of people in the right places at the right time, the FAA is responsive to changes in traffic or changes in the number of losses from the controller workforce.

Staffing is and will continue to be monitored at all facilities, and the agency will continue to take action at the facility level should adjustments become necessary due to changes in volume, anticipated retirements or other attrition. The FAA demonstrated this flexibility by proactively increasing the hiring pipeline in FY 2007, in order to compensate for increased losses.

By hiring 1,815 new controllers in FY 2007, the FAA increased the total number of controllers on board at the end of the fiscal year to 14,874, nearly 70 more than the target. There are thousands of qualified controller candidates eager to be hired. Through various hiring sources, the FAA will maintain a sufficient number of applicants to achieve this hiring plan.

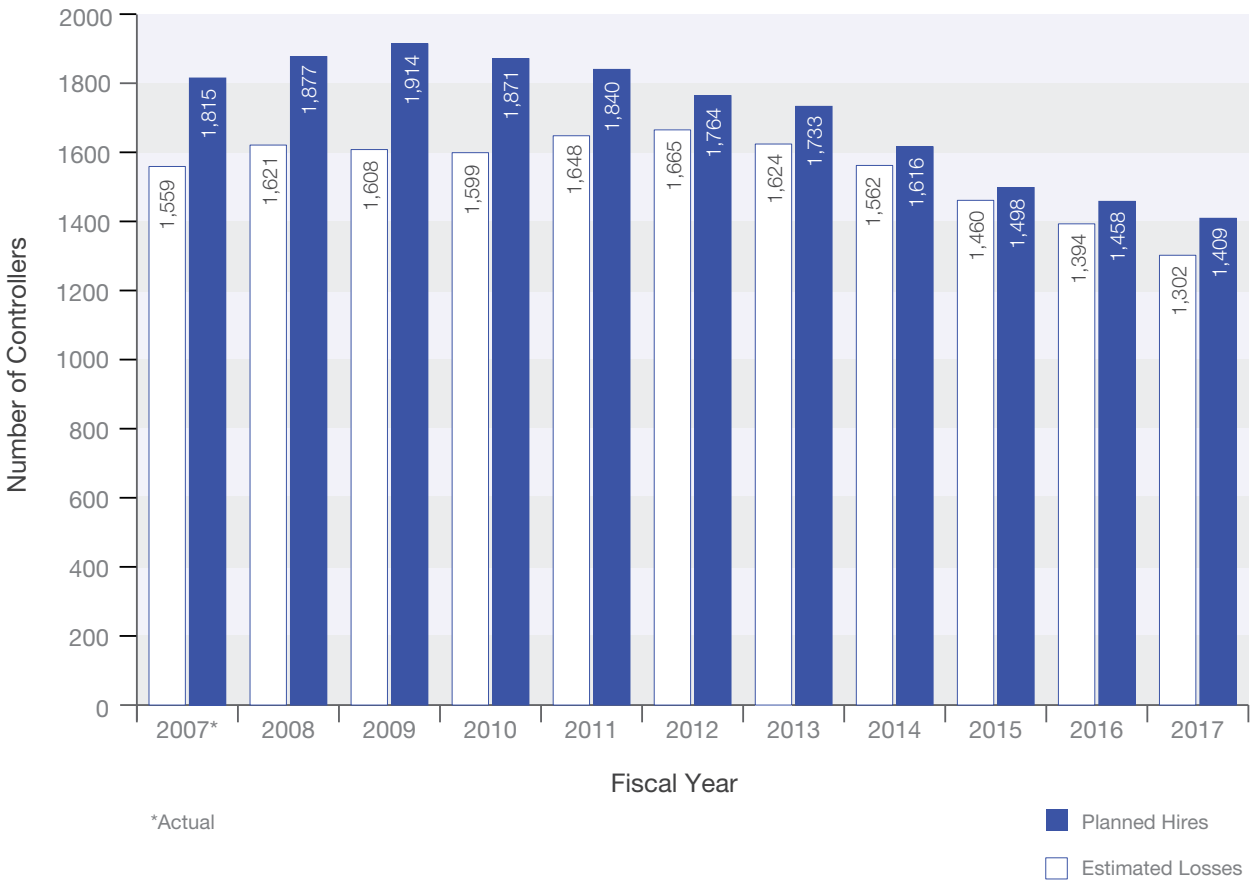


Training at the FAA Academy in Oklahoma City. Photo: FAA

Controller Hiring Profile

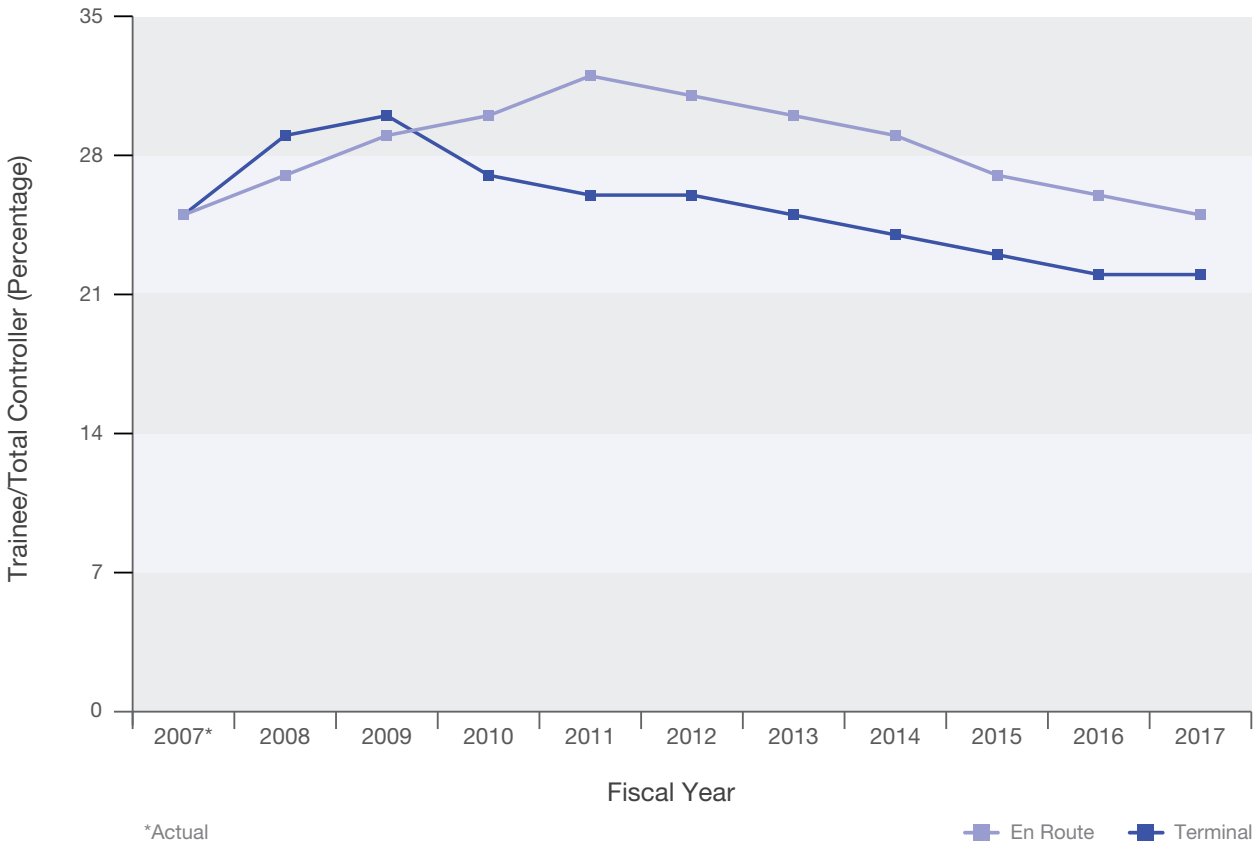
The controller hiring profile is shown in the chart below. The number of controllers projected to be hired through FY 2017 is 16,980.

Figure 5.1 Controller Hiring Profile



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 hiring plan strives to keep trainees below 35 percent of the controller workforce. The agency is monitoring this percentage as a part of the facility indicator review efforts.

Figure 5.2 Trainee to Total Controller Percentage



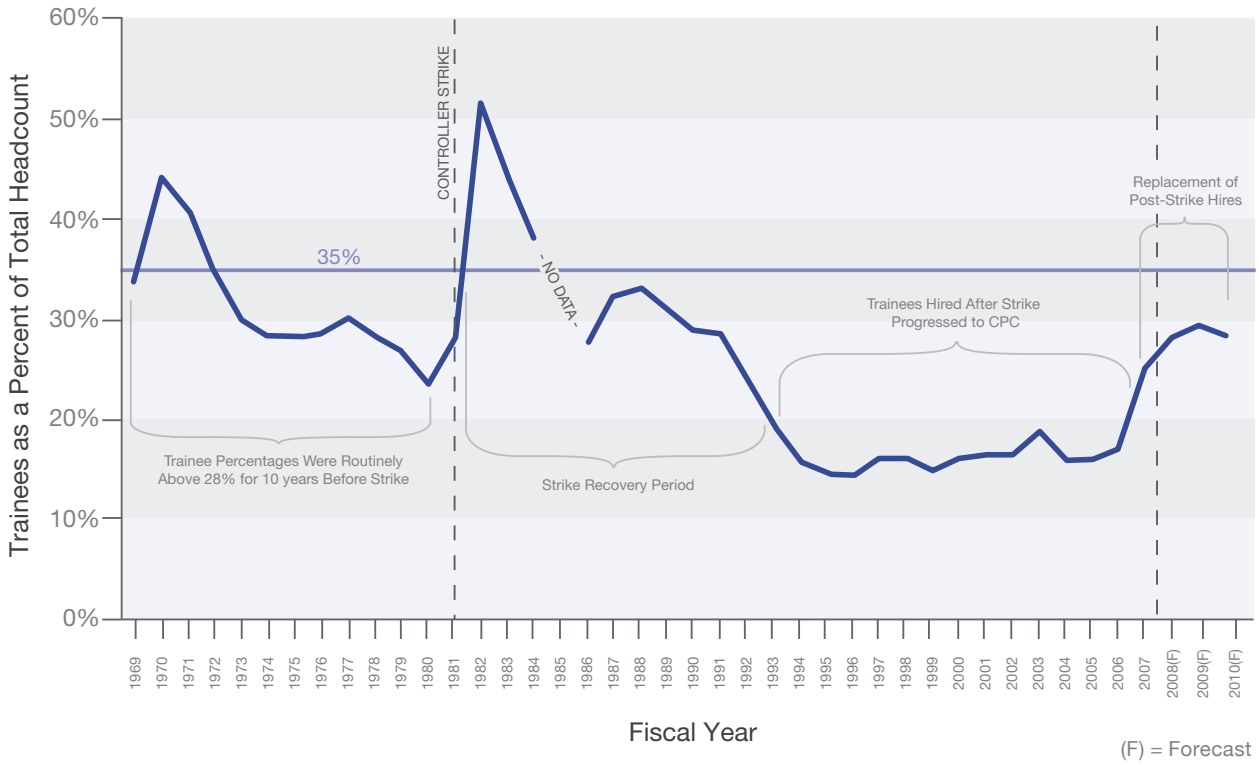
Before the 1981 strike, the FAA experienced trainee percentages ranging from 23 to 44 percent. Following the strike, through the end of the hiring wave in 1992, the trainee percentage ranged from 24 to 52 percent.

Because of mass hiring throughout the 1980s, hiring and training in recent decades have been at low levels. As such, the percentage of developmentals to controllers has also been unusually low.

The significant increase in hiring since 2004 has driven the percentage up again, but still well below the levels experienced by the agency following the strike. While the FAA's goal is to keep the number below 35 percent, the agency has operated safely above 35 percent.

Figure 5.3 shows historical trainee percentages from 1969 to present.

Figure 5.3 Historical Trainee Percentage



Chapter 6: Hiring Process

The agency continues to recruit high-quality candidates into the controller workforce. Of the 1,815 hired in FY 2007, 1,019 were graduates of CTI schools while an additional 666 had previous air traffic control experience, either gained in the military or at the FAA. Seven percent of FY 2007 recruits were hired directly from the public sector. Approximately one-third of new hires were military veterans.

In October 2007, the FAA chose nine new colleges and universities to be part of the Air Traffic Collegiate Training Initiative (AT-CTI) program. It is the first expansion of the AT-CTI program in more than a decade and it is expected to produce a significant number of prospective air traffic controllers. Thirty-three institutions, including those already in the program, submitted applications in May 2007. Currently there are 23 schools in the program including the nine new schools. Additional new schools will be given an opportunity to apply to the program. The partnership between the FAA and the colleges and universities in the AT-CTI program will contribute to meeting air traffic controller hiring goals in the coming years.

The number of AT-CTI graduates hired into controller positions has rapidly increased from 195 of 519 total hired in FY 2005; to 541 of 1,116 total hired in FY 2006; and 1,019 of 1,815 total hired in FY 2007. By FY 2010, the agency anticipates up to 35 AT-CTI schools in the program graduating 2,000 to 2,500 students per year. This is a hiring source of growing significance for the controller workforce.

A trainer provides over-the-shoulder instructions to a trainee while a classmate works the radar associate position during an en route simulation at the FAA Academy. Photo: Jon Ross

Streamlined Hiring Process
In January 2006, the FAA centralized the controller hiring process — streamlining it — while enabling individual facilities to identify vacancies and select prospective new controllers as much as one year in advance. The agency was also able to improve the security and medical clearance process.

To augment the centralized hiring activities regularly conducted in Oklahoma City, the FAA implemented Pre-Employment Processing Centers (PEPCs) to reduce the time it takes to complete pre-hire screenings such as medical examinations, psychological and drug testing, fingerprinting and security clearance application processes. Some recruits may now receive final offer letters from the FAA in as little as one month after their interview — a process that previously could take up to six months.

Before the FAA began using PEPCs for controller hiring, individuals were provided a package of instructions with tentative offer letters, but had to make separate trips and appointments for each of the tests. Using the PEPC system, controller candidates complete the pre-hire screening in one day.

Individuals chosen by FAA selection panels are invited to come to the PEPCs. At the PEPC, the FAA conducts the job interview, then candidates provide information for security clearances and are fingerprinted. The FAA also conducts the medical examination, drug testing, and psychological evaluation at these centers the same day.

Controller Hiring Sources
The FAA has three categories of controller hiring sources.

- Previous controllers: These individuals have prior FAA or Department of Defense (civilian or military) air traffic control experience.
- CTI students: These individuals have successfully completed an aviation-related program of study from a school under FAA's AT-CTI program.
- General public: These individuals may apply for vacancies announced by the FAA.

There continues to be thousands of applicants interested in air traffic controller jobs. In FY 2007, the FAA opened up controller jobs to the general public, resulting in many thousands of applications. The number of people in the hiring pool varies during the year as the agency recruits applicants, evaluates them, and draws from the pool. However, the overall goal is to maintain a pool of between 3,000 and 5,000 candidates available for consideration by selection panels at any one time. During FY 2007, the agency's recruitment and advertising activities enabled the FAA to successfully maintain this pool in the target range.

General Public Hiring Process
In order to be hired as an air traffic controller, applicants from the general public must achieve a qualifying score on the Air Traffic Selection and Training (AT-SAT) examination. The AT-SAT tests for characteristics needed to perform effectively as an air traffic controller. Some of these include numeric ability, prioritization, planning, tolerance for high intensity, decisiveness, visualization, problem solving and movement detection.

Applicants must also meet the following requirements:

- Three years of progressively responsible work experience, and/or
- A full four-year course of study leading to a bachelor's degree, or an equivalent combination of work experience and college credits.
- Must be U.S. citizens.
- Be able to speak English clearly enough to be understood over radios, intercoms, and similar communications equipment.
- The maximum entry age is 30.

In addition to passing the specialized aptitude test, recruits must also pass rigid medical and psychological exams, an extensive security background investigation and an interview.

Complete details can be found on the FAA's Web site at http://www.faa.gov/jobs.

Recruitment
The FAA ensures that controller hiring pools contain thousands of qualified applicants available for hire. Based on the agency's hiring needs, vacancy announcements are issued to recruit candidates from the general public, retired military controllers, veterans eligible under the Veterans' Recruitment Appointment authority, and current and former civilian air traffic controllers.

The FAA is also making use of the professional social-networking Web site *LinkedIn*, and featured promotional videos on *YouTube*. These initiatives were designed to utilize a broad range of outlets in order to reach the widest population of candidates. For example, the FAA posted air traffic controller job openings on national internet sites such as *Careerbuilder*, *Monster*, and *Craigslist*.

The agency participated in military job fairs in Seattle, Baltimore, Charlotte, the District of Columbia, Groton, Ft. Rucker, and Ft. Benning. *Monster* is also including the FAA's air traffic control listing in the newsletter it distributes throughout the military community.

In addition to job announcements in *USA Today*, the FAA also advertised in special interest newspapers and magazines such as *Native American Times*, *Asian Week*, *Latina*, *Minority Careers*, and *Aviation Week & Space Technology*. Further, the FAA participated in the NAACP Diversity Job Fair, the Congressional Black Caucus Diversity Job Fair, and the League of United Latin American Citizens Job Fair in FY 2007.

In FY 2008, the FAA plans to release a comprehensive aviation outreach plan to successfully promote aviation occupations to a broad-based pool of applicants.

Additional Outreach Efforts

The FAA has created retention and job enhancement strategies to attract and retain controllers. The FAA also offers a recruitment bonus of up to $20,000 for terminal and en route new hires who have at least 52 consecutive weeks of experience within the last two years as a certified air traffic controller with control tower operator or radar certification, and current controllers may be eligible for relocation and reassignment bonuses when appropriate for certain facility vacancies.

Recruitment initiatives allowed the FAA to hire more than 1,800 controllers last year, a third of them with previous air traffic control experience from the military. The FAA continues to build up staffing through a number of initiatives targeted towards selectively retaining retirement-eligible controllers (retention bonuses), attracting veteran controllers (recruitment and relocation bonuses), and bringing on board qualified new hires.

Controllers work a variety of positions including this en route radar position at Miami center. The three primary hiring sources for controllers are: former controllers, CTI graduates and the general public. Photo: Jon Ross

Recruitment initiatives allowed the FAA to hire more than 1,800 controllers last year, a third of them with previous air traffic control experience from the military.

Chapter 7: Training

Effective training is a key factor in the replacement of large numbers of controllers retiring over the next decade. The FAA has the capability to efficiently and effectively train the controllers needed.

Today, the FAA is making training more effective by gearing it towards the skills needed for successful career-long development, and by ensuring continued alignment to the mission of the FAA as a premier air traffic service provider. Recruits are better situated to become certified professional controllers, due to better screening methods and advanced simulation training.

The Training Process

The training process begins at the FAA Academy in Oklahoma City. Developmental controllers learn the fundamentals of air traffic control for their particular option: en route, tower, or terminal radar. After successfully completing academy training, developmental controllers report to their assigned field facility to continue their training.

During the training process at field locations, developmental controllers achieve certification on each position as they move through the stages of training. The ultimate goal of the training program is for the controller to achieve certification on all positions and attain CPC status.

Developmental controllers who fail to certify may be removed from service or reassigned to a less complex facility in accordance with agency procedures.

The on-the-job training process is designed to provide developmental controllers sufficient seasoning time as well as opportunities to develop their skills as they progress towards becoming CPCs.

A developmental controller learns airport traffic control tower procedures in the FAA Academy's medium-fidelity tower simulation lab. The simulator provides a realistic tower environment for new controllers to learn tower fundamentals. Photo: FAA

Developmental controllers who have certified on control positions can work independently on those positions without an on-the-job training instructor. However, facilities often allow developmental controllers to work under the direction of a supervisor in order to gain experience and to supplement staffing. This results in a more-seasoned trainee.

However, no developmental works live traffic independently until the controller has been certified to work that traffic position. Safety is the FAA's number one priority.

Lessons Learned

After the strike of 1981, the FAA faced the unprecedented challenge of rebuilding a highly skilled workforce. Between 1981 and 1992, the FAA screened 27,925 potential controllers in resident programs at the FAA Academy in Oklahoma City, a program that took two to three months to complete. About 57 percent successfully completed the screening and were placed in training programs in facilities throughout the country. Approximately 72 percent of en route developmental controllers reached certification as a CPC, while approximately 84 percent of terminal developmental controllers reached certification as a CPC.

The experience demonstrated that the FAA can successfully hire and train substantial numbers of controllers. Since the post-strike years, the agency has made numerous improvements to the training environment.

Reduced Training Time

The FAA continues to make progress toward the established goals to reduce training time for terminal and en route controllers. It no longer takes from three to five years to train an air traffic controller. Depending on the complexity of the facility, controllers are now being trained in two to three years. The FAA achieved this reduction not by cutting training time, but by improving the training and scheduling processes, and increased use of simulators.

Table 7.1 Years to Certify

Fiscal Year	En Route	Terminal	Overall
FY 2005	4.1 yrs	3.1 yrs	3.9 yrs
FY 2006	3.7 yrs	2.7 yrs	3.6 yrs
FY 2007	3.1 yrs	1.9 yrs	2.8 yrs

The FAA continues to increase capacity at the FAA Academy and improve basic courses. As a result controller developmentals complete training faster. At the academy, developmental controllers must demonstrate the necessary academic knowledge and controller skills demanded by the air traffic control profession.

Simulators in air traffic facilities are also reducing on-the-job training time. This also frees instructors to control traffic.

National Training Data Tracking System
The FAA's national training database for en route and terminal training provides training histories of developmentals as well as reports on completions, developmentals in training, and failures. The database tracks controller training through certification and provides a timely picture of FAA's controller training progress. The database is used by multiple organizations within the FAA for monthly training and failure reports.

Developmental controllers go through various stages of training at their facilities with a maximum number of days allotted for each stage. The FAA's goal is to have 90 percent of controller developmentals on track with training. Developmental controllers are considered to be on track when they progress through the required stages at or below the allotted number of days. Developmentals who exceed the allotment are closely tracked by both the facility and headquarters.

Changes in Training Progression
Prior to the strike of 1981, controller pay was governed under rules established by the Office of Personnel Management. There was a "time in grade" provision in the general schedule pay system that covered air traffic control specialists which was based on elapsed time and not performance. So regardless of when any trainee attained certification for the next level, their pay could not be adjusted until they had been at the current level for one year.

Typically developmentals finished their certifications in the first couple of months of training and then worked positions at that level for the remainder of the year. They then certified on the next positions which qualified them for the next higher grade, and then worked those positions for the remainder of that year. In the largest facilities, controllers typically progressed from entry level to CPC (GS-07 through GS-09/11/12/13/14) in five years due largely to the pay rules.

Following the strike, the FAA obtained a waiver to the "time in grade" provision and the agency could then establish grade progression commensurate with training progression. Today the FAA expects controllers to progress to CPC in two to three years.

Knowledge Transfer
Today, the FAA brings in retired FAA air traffic controllers as contractors to train the new workforce. More than 100 retired controllers became contract training instructors in FY 2007, allowing FAA to retain their valuable expertise to train the next generation of controllers. These experts focus solely on training the next generation of controllers, rather than moving back and forth between working traffic and on-the-job training.

With these improvements and our comprehensive focus on training, the FAA is confident that the agency will be able to successfully train the number of controllers needed to staff the NAS.

Multi-Path Hiring and Training Model

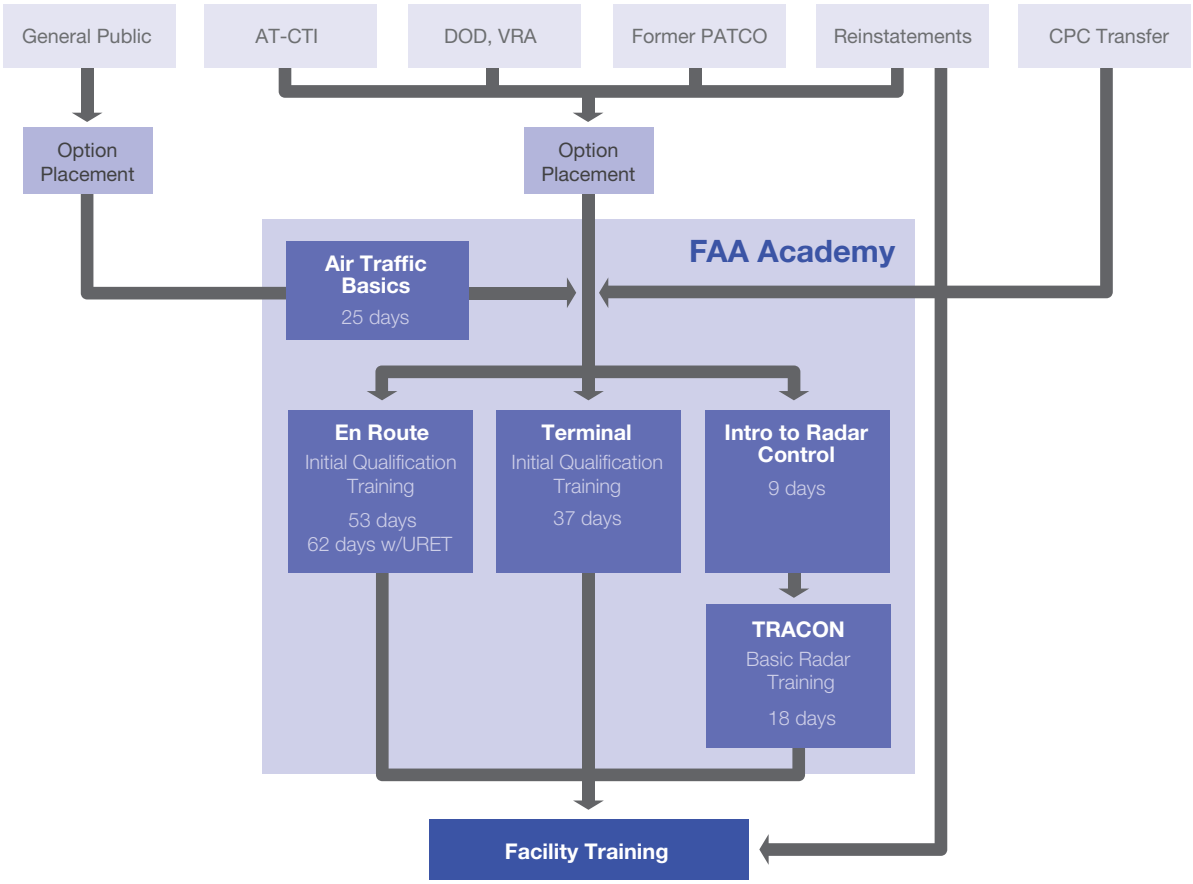
The multi-path hiring and training model provides a comprehensive view of how controller applicants move through the hiring, screening and training process.

The multi-path training program was designed to accommodate newly hired individuals with a variety of education and experience. The goal of this training program is to provide air traffic facilities with developmental controllers prepared to begin training at the facility.

The FAA can hire controllers from a variety of sources. The training process for newly hired controllers differs depending on applicant qualifications and the type of facility assignment. Figure 7.2 provides a high level overview of the training process, outlining the multiple paths of training for new hires.

The amount and type of training required depends on the applicant's education, experience, and type of facility the new hire will be assigned to support.

Figure 7.2 Multi-Path Model for Air Traffic Controller Training



Academy Training

The FAA Academy trains developmental controllers using lecture, computer based instruction, medium-fidelity simulation, and high-fidelity simulation. The academy lays the foundation for developmental controllers by teaching fundamental air traffic control procedures that are used across the country. The focus of the academy is to improve the efficiency of the training by using proven adult learning concepts with the latest in simulation technology. When developmental controllers graduate from the academy, they are prepared to adapt to their assigned facility and successfully complete the training required to reach CPC status.

Facility Training

After graduating from the FAA Academy, facility training begins in the classroom where developmental controllers learn facility-specific rules and procedures. Often times, these rules and procedures are practiced in simulation. After classroom and simulation training is complete, a developmental will begin on-the-job training on an operational position. This training is conducted by a CPC who observes and instructs a developmental controller as they work the control position.

Each control position has a minimum and maximum number of on-the-job training hours allotted. Based upon the recommendation of the training team, a developmental can be certified by the supervisor on a control position anywhere between the minimum and maximum number of hours.

A controller practices radar handoffs at Potomac Consolidated TRACON's simulation laboratory, where the equipment is identical to the systems used on the control room floor. Photo: Jeff Bruzdzinski

Developmental controllers achieve certification on each position as they move through the stages of training. The final result at the end of training is achieving certification on all positions, or CPC. If a developmental controller fails to certify, they can be removed from service, or reassigned to a less complex facility in accordance with agency procedures.

The on-the-job training process is designed to provide developmental controllers sufficient seasoning time or opportunities to develop their skills as they progress towards becoming CPCs.

FAA Order 3120.4

All controller-training requirements are standardized and detailed in FAA Order 3120.4, *Air Traffic Technical Training*. Facility training is conducted in stages and consists of a combination of classroom, simulation, and on-the-job training. Each stage of training represents a different control position, or group of control positions, depending upon whether the facility is en route or terminal. Certification is required at the end of every training stage. Developmentals cannot work live traffic until they have been certified on the appropriate position.

The agency is currently rewriting the technical training order to incorporate checklists of controller tasks into the on-the-job training program. These checklists will be used to make sure on-the-job training is done consistently across the nation.

Academy Simulators
In 2006, the FAA doubled the terminal simulation capability at the FAA Academy by installing four new high-fidelity tower simulators, providing a realistic tower environment in which to teach new controllers. The agency also installed a state-of-the-art en route training lab at the FAA Academy. The lab simulates the air traffic control technology currently in use in FAA en route facilities and provides unique training opportunities. In 2007, the FAA awarded a contract to add six new tower simulators and one en route simulator at the FAA Academy.

Tower Simulators
Controllers learn three things in the tower simulator, all of which must become second nature: (1) innate knowledge of the particular airport — runways, taxiways, restrictions, and weather patterns; (2) how to use the correct phraseology; and (3) application of procedures, such as separations, size restrictions, etc. The problems in the simulators are designed to be more difficult than the most challenging occurrence at the particular airport.

The tower simulator program augments on-the-job-training by placing developmentals in a real-time tower-traffic environment. The systems are capable of providing high-fidelity site-specific simulation training with 360-degree imagery of the airfield, simulated traffic, obstacles, and weather. The simulators are programmed with scenarios and occurrences exclusive to those airports, using actual aircraft with their respective call signs. Trainers can program departure and arrival paths and even include airport construction, new runways, weather patterns and other situations particular to the location.

The FAA has been using tower simulators for training in Chicago, Miami, Phoenix and Ontario since 2006. In December 2007, the FAA awarded a contract to provide another 24 simulators. The new simulators are tentatively scheduled for deployment at key locations such as Los Angeles, New York, Dallas Fort Worth, and Atlanta.

High-fidelity tower simulation systems simulate operations for a “hub” facility but can provide training for multiple facilities. Select satellite facilities within commuting distance of the hub will have a database on file ready to provide site-specific training. This feature allows one simulator to train developmental controllers from many nearby airports.

The tower simulator program seeks to augment on-the-job-training with additional training resources to ensure that tower cab students obtain efficient and consistent quality training. In the absence of a simulator, towers must depend solely on live air traffic to train. This training method is dependent on several inconsistent or unpredictable live external variables (traffic, weather, unusual situations, etc.).

With simulators, training no longer depends on the density or complexity of actual air traffic operations. Simulating the real-time tower-traffic environment provides a uniform training format for trainees to develop the necessary skills and experience that would take much longer solely through on the job training. Through the use of tower simulation systems students will benefit from consistent delivery of simulated traffic, weather, and unusual situations.

The system provides significant improvements to existing training operations. It eliminates the need for preemptive intervention on the part of an instructor to avoid a possible hazardous situation, allowing the student to “work through” the scenario until they can consistently generate a successful outcome. The simulator system does not interact with actual air traffic control operational systems and poses no threat

to service. It realistically replicates operations that enable training in an absolutely safe environment.

In addition to initial training, the simulator system provides for refresher training to heighten awareness of controllers by generating seldom seen operations and airport conditions. Controllers who have recently been assigned to a new facility can also use the system to train in their new operational environment, reducing their training time.

En Route Simulators

Upgraded simulation technology has been installed at six en route control facilities as part of the FAA's effort to improve and expedite new controller training.

The En Route Training Simulation System (ERTSS) was installed last year at four en route centers in Albuquerque, Denver, Miami and Salt Lake City. Two more facilities in Atlanta and Jacksonville had the equipment installed recently. ERTSS is designed to supplement the dynamic simulation radar controller training laboratory, more commonly referred to as "DYSIM" (in place at all centers). That equipment has been in place since the late 1970s and lacks many of the advantages built into ERTSS.

Among those advantages is the ability to stop and restart training problems, giving instructors the opportunity to discuss issues with their students as they occur. ERTSS also has more realistic depiction of weather and its effect on air traffic. Remote pilot operator positions are also much easier to incorporate, making the simulation more realistic for students.

The base of the radar coverage using ERTSS is also more realistic. It is possible to mask what is going on below the altitudes of a facility's radar coverage, replicating what a controller can and cannot see in real life. ERTSS also includes enhanced weather simulation capabilities which allow weather to "move" and also lets upper winds be introduced. With ERTSS, students learn exactly what happens to the speed and position of an aircraft when they turn it into the wind.

Emergencies can be scripted into problems in such a way that the software automatically cues remote pilot operators to communicate everything that needs to be said. Instructors, using their own link to the remote operators, can also spontaneously adjust elements within a problem.

Controller trainees take remote pilot operator positions in the ERTSS lab at Miami Center. Photo: Jon Ross

ERTSS capabilities are similar to those incorporated into the En Route Automation Modernization (ERAM) system which is replacing the 40-year-old Host computer software. The current Host system is increasingly difficult to maintain and reliability of service will be improved as ERAM provides a system with four levels of redundancy.

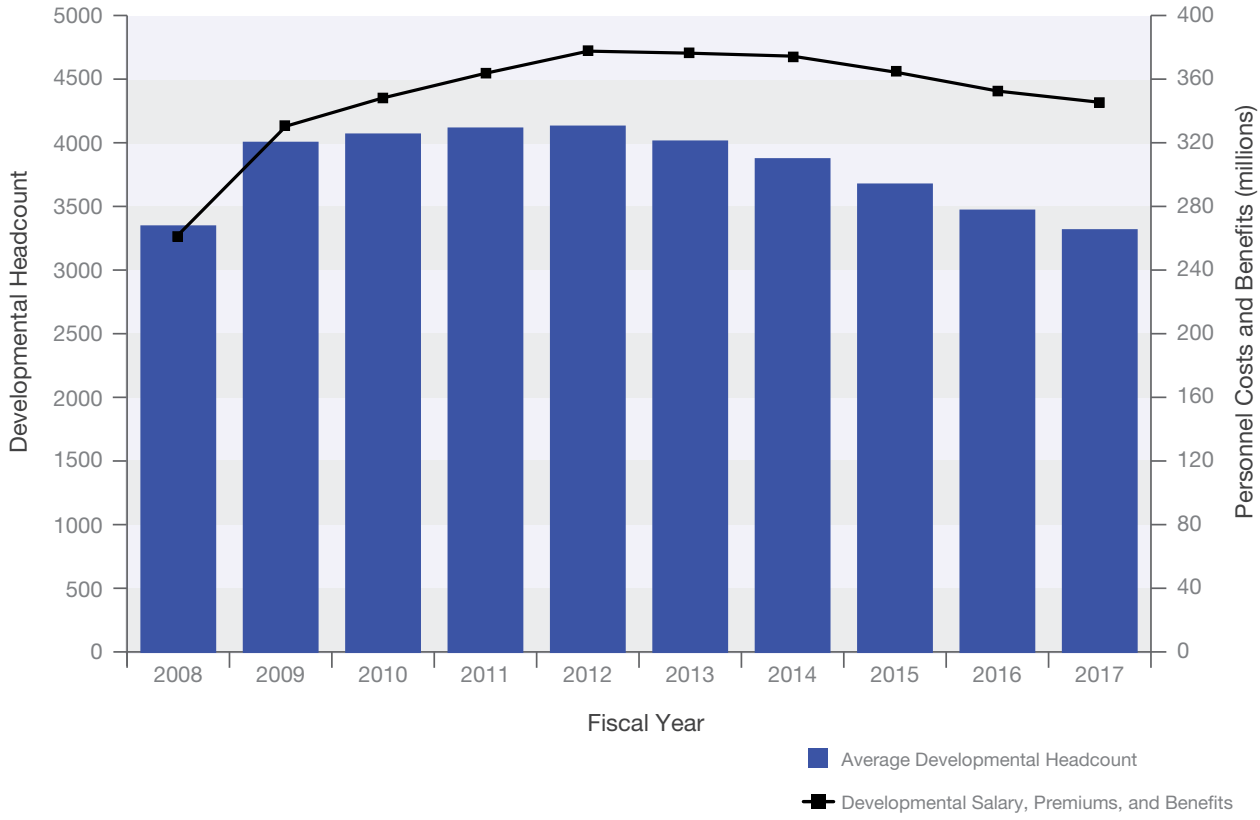
ERTSS is portable, so when ERAM is made available at a facility, the simulator can be moved to another center that is still awaiting ERAM installation. ERAM comes on-line at individual centers through FY 2009.

Chapter 8: Funding Status

In addition to direct training costs, the FAA will incur salary and other costs of developmentals before they certify. The average cost of a developmental in FY 2008 is projected to be $78,095.

Figure 8.1 below depicts expected annual compensation costs of developmentals, as well as the expected number of developmentals by year through 2017. As training takes two to three years, the chart depicts a rolling total of hires and costs from the current and previous years. In later years, costs do not decrease as quickly as headcount due to unit costs (salaries, etc.) rising as developmentals progress to CPC.

Figure 8.1 Estimated Cost of Developmentals Before Certification



Appendix A: 2008 Facility Staffing Ranges

The following presents controller staffing ranges, by facility, for en route and terminal air traffic control facilities for FY 2008. These ranges include the number of controllers needed to perform the work. While most of the work is accomplished by CPCs, work is also being performed in facilities by CPC-ITs and position qualified developmentals who are proficient, or "checked-out" in specific sectors or positions, and handle workload independently. These position qualified controllers are the focus of our staffing to traffic efforts.

En Route Facility Controller Staffing Ranges

ID	Facility Name	Staffing Range Low	Staffing Range High	Actual On Board as of 09/29/07
ZAB	ALBUQUERQUE ARTCC	185	227	275
ZAN	ANCHORAGE ARTCC	79	97	111
ZAU	CHICAGO ARTCC	312	382	422
ZBW	BOSTON ARTCC	208	254	292
ZDC	WASHINGTON ARTCC	276	338	360
ZDV	DENVER ARTCC	243	297	291
ZFW	FORT WORTH ARTCC	222	272	345
ZHU	HOUSTON ARTCC	246	300	328
ZID	INDIANAPOLIS ARTCC	315	385	378
ZJX	JACKSONVILLE ARTCC	274	334	328
ZKC	KANSAS CITY ARTCC	228	278	327
ZLA	LOS ANGELES ARTCC	242	296	318
ZLC	SALT LAKE ARTCC	140	172	201
ZMA	MIAMI ARTCC	207	253	303
ZME	MEMPHIS ARTCC	246	300	320
ZMP	MINNEAPOLIS ARTCC	203	248	313
ZNY	NEW YORK ARTCC	226	276	320
ZOA	OAKLAND ARTCC	211	257	264
ZOB	CLEVELAND ARTCC	312	382	430
ZSE	SEATTLE ARTCC	130	158	204
ZSU	SAN JUAN	46	56	55
ZTL	ATLANTA ARTCC	288	352	432
ZUA	GUAM	14	18	13

Terminal Facility Controller Staffing Ranges

ID	Facility Name	Staffing Range Low	Staffing Range High	Actual On Board as of 09/29/07
A11	ANCHORAGE TRACON	25	31	27
A80	ATLANTA TRACON	86	105	101
A90	BOSTON TRACON	50	62	63
ABE	LEHIGH VALLEY INTERNATIONAL ARPT	23	28	29
ABI	ABILENE REGIONAL ARPT	20	24	25
ABQ	ALBUQUERQUE INTL SUNPORT ARPT	33	41	37
ACK	NANTUCKET MEMORIAL ARPT	10	12	12
ACT	WACO REGIONAL ARPT	14	17	13
ACY	ATLANTIC CITY INTERNATIONAL ARPT	23	28	27
ADS	ADDISON ARPT	11	13	12
ADW	ANDREWS AFB	10	12	10
AFW	FORT WORTH ALLIANCE ARPT	10	12	15
AGC	ALLEGHENY COUNTY ARPT	10	12	13
AGS	AUGUSTA RGNL AT BUSH FIELD ARPT	13	15	13
ALB	ALBANY INTERNATIONAL ARPT	22	26	27
ALO	WATERLOO MUNICIPAL ARPT	10	12	11
AMA	AMARILLO INTL ARPT	15	19	21
ANC	TED STEVENS ANCHORAGE INTL ARPT	23	28	23
APA	CENTENNIAL ARPT	16	20	24
APC	NAPA COUNTY ARPT	7	9	8
ARB	ANN ARBOR MUNICIPAL ARPT	6	8	9
ARR	AURORA MUNICIPAL ARPT	7	9	9
ASE	ASPEN PITKIN COUNTY / SARDY FIELD ARPT	11	13	11
ATL	THE WILLIAM B HARTSFIELD ATLANTA INTL ARPT	42	52	53
AUS	AUSTIN-BERGSTROM INTL ARPT	37	45	41
AVL	ASHEVILLE REGIONAL ARPT	15	19	15
AVP	WILKES-BARRE / SCRANTON INTL ARPT	20	24	20
AZO	KALAMAZOO / BATTLE CREEK INTERNATIONAL ARPT	16	20	22
BDL	BRADLEY INTL ARPT	12	14	16
BED	LAURENCE G HANSCOM FLD ARPT	10	12	12
BFI	BOEING FIELD / KING COUNTY INTL ARPT	16	20	20
BFL	MEADOWS FIELD ARPT	16	20	19
BGM	BINGHAMTON REGIONAL / EDWIN A LINK FIELD ARPT	11	13	11
BGR	BANGOR INTL ARPT	16	20	20
BHM	BIRMINGHAM INTL ARPT	28	34	31
BIL	BILLINGS LOGAN INTL ARPT	15	19	20

ID	Facility Name	Staffing Range Low	Staffing Range High	Actual On Board as of 09/29/07
BIS	BISMARCK MUNI ARPT	10	12	13
BJC	JEFFCO ARPT	10	12	13
BNA	NASHVILLE INTL ARPT	40	48	42
BOI	BOISE AIR TERMINAL / GOWEN FLD ARPT	23	28	29
BOS	GENERAL EDWARD LAWRENCE LOGAN INTL ARPT	28	34	40
BPT	SOUTHEAST TEXAS REGIONAL ARPT	10	12	13
BTR	BATON ROUGE METROPOLITAN, RYAN FIELD ARPT	19	23	21
BTV	BURLINGTON INTL ARPT	17	21	21
BUF	BUFFALO NIAGARA INTL ARPT	24	30	31
BUR	BURBANK - GLENDALE-PASADENA ARPT	14	17	22
BWI	BALTIMORE-WASHINGTON INTL ARPT	23	28	29
C90	CHICAGO TRACON	82	100	93
CAE	COLUMBIA METROPOLITAN ARPT	21	25	22
CAK	AKRON CANTON REGIONAL ARPT	22	26	23
CCR	BUCHANAN FIELD ARPT	7	9	10
CDW	ESSEX COUNTY ARPT	8	10	11
CHA	LOVELL FIELD ARPT	17	21	20
CHS	CHARLESTON AFB / INTL ARPT	21	25	27
CID	THE EASTERN IOWA ARPT	14	18	17
CKB	HARRISON / MARION REGIONAL ARPT	12	14	13
CLE	CLEVELAND HOPKINS INTL ARPT	50	62	62
CLT	CHARLOTTE / DOUGLAS INTL ARPT	68	84	80
CMA	CAMARILLO ARPT	8	10	9
CMH	PORT COLUMBUS INTL ARPT	38	46	46
CMI	UNIVERSITY OF ILLINOIS-WILLARD ARPT	18	22	20
CNO	CHINO ARPT	9	11	16
COS	CITY OF COLORADO SPRINGS MUNI ARPT	24	30	33
CPR	NATRONA COUNTY INTL ARPT	9	11	11
CPS	ST. LOUIS DOWNTOWN ARPT	8	10	13
CRP	CORPUS CHRISTI INTL ARPT	39	47	38
CRQ	MC CLELLAN-PALOMAR ARPT	10	12	11
CRW	YEAGER ARPT	16	20	21
CSG	COLUMBUS METROPOLITAN ARPT	5	7	6
CVG	CINCINNATI / NORTHERN KENTUCKY INTERNATIONAL ARPT	59	73	77
D01	DENVER TRACON	53	65	53
D10	DALLAS - FORT WORTH TRACON	80	98	87
D21	DETROIT TRACON	47	57	51

ID	Facility Name	Staffing Range Low	Staffing Range High	Actual On Board as of 09/29/07
DAB	DAYTONA BEACH INTL ARPT	53	65	56
DAL	DALLAS LOVE FIELD ARPT	19	23	24
DAY	AMES M COX DAYTON INTL ARPT	33	41	38
DCA	RONALD REAGAN WASHINGTON NATIONAL ARPT	21	25	30
DEN	DENVER INTL ARPT	31	37	34
DFW	DALLAS/FORT WORTH INTERNATIONAL ARPT	44	54	56
DLH	DULUTH INTL ARPT	14	17	19
DPA	DUPAGE APRT	10	12	16
DSM	DES MOINES INTL ARPT	23	29	27
DTW	DETROIT METROPOLITAN WAYNE COUNTY ARPT	28	34	33
DVT	PHOENIX DEER VALLEY ARPT	15	19	20
DWH	DAVID WAYNE HOOKS MEMORIAL ARPT	12	14	15
E10	HIGH DESERT TRACON	18	22	22
ELM	ELMIRA / CORNING REGIONAL ARPT	12	14	13
ELP	EL PASO INTL ARPT	21	25	25
EMT	EL MONTE ARPT	8	10	9
ERI	ERIE INTL / TOM RIDGE FIELD ARPT	13	15	15
EUG	MAHLON SWEET FIELD ARPT	18	22	23
EVV	EVANSVILLE REGIONAL ARPT	17	21	20
EWR	NEWARK LIBERTY INTL ARPT	30	36	34
FAI	FAIRBANKS INTL ARPT	18	22	23
FAR	HECTOR INTL ARPT	14	17	22
FAT	FRESNO YOSEMITE INTERNATIONAL ARPT	23	29	25
FAY	FAYETTEVILLE REGIONAL / GRANNIS FIELD ARPT	20	24	21
FCM	FLYING CLOUD ARPT	9	11	15
FFZ	FALCON FLD ARPT	12	14	15
FLL	FORT LAUDERDALE / HOLLYWOOD INTL ARPT	22	26	27
FLO	FLORENCE REGIONAL ARPT	12	14	14
FNT	BISHOP INTERNATIONAL ARPT	17	21	23
FPR	ST LUCIE COUNTY INTL ARPT	9	11	9
FRG	REPUBLIC ARPT	11	13	12
FSD	JOE FOSS FIELD ARPT	14	18	16
FSM	FORT SMITH REGIONAL ARPT	26	32	30
FTW	FORT WORTH MEACHAM INTL ARPT	11	13	15
FWA	FORT WAYNE INTL ARPT	19	23	25
FXE	FT. LAUDERDALE EXECUTIVE ARPT	13	15	16
GCN	GRAND CANYON NATIONAL PARK ARPT	7	9	8

ID	Facility Name	Staffing Range Low	Staffing Range High	Actual On Board as of 09/29/07
GEG	SPOKANE INTL ARPT	23	28	32
GFK	GRAND FORKS INTL ARPT	13	15	19
GGG	EAST TEXAS RGNL ARPT	16	20	20
GPT	GULFPORT BILOXI INTL ARPT	14	18	18
GRB	AUSTIC STRAUBEL INTERNATIONAL ARPT	20	24	23
GRR	GERALD R. FORD INTERNATIONAL ARPT	18	22	24
GSO	PIEDMONT TRIAD INTERNATIONAL ARPT	25	31	30
GSP	GREENVILLE-SPARTANBURG INTL ARPT	16	20	20
GTF	GREAT FALLS INTL ARPT	12	14	16
HCF	HONOLULU CONTROL FACILITY	69	85	78
HEF	MANASSAS REGIONAL / HARRY P DAVIS FIELD ARPT	9	11	10
HIO	PORTLAND HILLSBORO ARPT	10	12	14
HLN	HELENA REGIONAL ARPT	8	10	9
HOU	WILLIAM P. HOBBY ARPT	17	21	21
HPN	WESTCHESTER CNTY ARPT	13	15	15
HSV	HUNTSVILLE INTL - CARL T JONES FIELD ARPT	17	21	21
HTS	TRI-STATE / MILTON J FERGUSON FIELD ARPT	14	17	13
HUF	TERRE HAUTE INTERNATIONAL-HULMAN FIELD ARPT	14	18	18
HWD	HAYWARD EXECUTIVE ARPT	8	10	8
I90	HOUSTON TRACON	69	85	75
IAD	WASHINGTON DULLES INTL ARPT	29	35	41
IAH	GEORGE BUSH INTERCONTINENTAL ARPT / HOUSTON ARPT	34	42	38
ICT	WICHITA MIDCONTINENT ARPT	32	39	38
ILG	NEW CASTLE COUTY ARPT	9	11	11
ILM	WILMINGTON INTL ARPT	14	18	15
IND	INDIANAPOLIS INTL ARPT	42	52	45
ISP	LONG ISLAND MACARTHUR ARPT	11	13	17
ITO	HILO INTERNATIONAL ARPT	10	12	11
JAN	JACKSON INTL ARPT	16	20	16
JAX	JACKSONVILLE INTL ARPT	44	54	50
JFK	JOHN F KENNEDY INTL ARPT	29	35	36
JNU	JUNEAU INTL ARPT	8	10	11
K90	CAPE TRACON	18	22	23
L30	LAS VEGAS TRACON	43	53	46
LAF	PURDUE UNIVERSITY ARPT	9	11	9
LAN	CAPITAL CITY ARPT	20	24	22
LAS	MC CARRAN INTL ARPT	35	43	37

ID	Facility Name	Staffing Range Low	Staffing Range High	Actual On Board as of 09/29/07
LAX	LOS ANGELES INTL ARPT	39	47	46
LBB	LUBBOCK INTL ARPT	18	22	19
LCH	LAKE CHARLES REGIONAL ARPT	13	15	12
LEX	BLUE GRASS ARPT	19	23	23
LFT	LAFAYETTE REGIONAL ARPT	17	21	16
LGA	LA GUARDIA ARPT	29	35	35
LGB	LONG BEACH/DAUGHERTY FIELD ARPT	18	22	22
LIT	ADAMS FIELD ARPT	32	39	31
LNK	LINCOLN MUNICIPAL ARPT	15	19	16
LOU	BOWMAN FIELD ARPT	8	10	10
LVK	LIVERMORE MUNI ARPT	8	10	8
M98	MINNEAPOLIS TRACON	47	57	69
MAF	MIDLAND INTERNATIONAL ARPT	22	26	22
MBS	MBS INTL ARPT	14	18	19
MCI	KANSAS CITY INTL ARPT	36	44	36
MCO	ORLANDO INTL ARPT	72	88	71
MDT	HARRISBURG INTL ARPT	21	25	25
MDW	CHICAGO MIDWAY ARPT	22	26	32
MEM	MEMPHIS INTL ARPT	58	70	66
MFD	MANSFIELD LAHM REGIONAL ARPT	11	13	15
MGM	MONTGOMERY RGNL (DANNELLY FIELD) ARPT	15	19	17
MHT	MANCHESTER ARPT	10	12	15
MIA	MIAMI INTL ARPT	77	95	86
MIC	CRYSTAL ARPT	6	8	10
MKC	CHARLES B WHEELER DOWNTOWN ARPT	10	12	13
MKE	GENERAL MITCHELL INTERNATIONAL ARPT	38	46	43
MKG	MUSKEGON CNTY ARPT	17	21	20
MLI	QUAD CITY INTL ARPT	14	18	13
MLU	MONROE REGIONAL ARPT	12	14	12
MMU	MORRISTOWN MUNICIPAL ARPT	10	12	12
MOB	MOBILE REGIONAL ARPT	20	24	24
MRI	MERRILL FIELD ARPT	10	12	11
MRY	MONTEREY PENINSULA ARPT	7	9	10
MSN	DANE COUNTY REGIONAL - TRUAX FIELD ARPT	21	25	25
MSP	MINNEAPOLIS ST. PAUL INTL / WOLD-CHAMBERLAIN ARPT	32	39	46
MSY	LOUIS ARMSTRONG NEW ORLEANS INTL ARPT	26	32	33
MWH	GRANT COUNTY INTL ARPT	11	13	14

ID	Facility Name	Staffing Range Low	Staffing Range High	Actual On Board as of 09/29/07
MYF	MONTGOMERY FIELD ARPT	10	12	13
MYR	MYRTLE BEACH INTL ARPT	15	19	13
N90	NEW YORK TRACON	176	215	199
NCT	NORTHERN CA TRACON	142	174	164
NEW	LAKEFRONT ARPT	5	7	5
NMM	MERIDIAN NAS / MC CAIN FIELD / ARPT	12	14	14
OAK	METROPOLITAN OAKLAND INTL ARPT	22	26	27
OGG	KAHULUI ARPT	10	12	11
OKC	WILL ROGERS WORLD ARPT	32	39	37
OMA	EPPLEY AIRFIELD ARPT	12	14	14
ONT	ONTARIO INTL ARPT	12	14	16
ORD	CHICAGO O'HARE INTL ARPT	56	68	63
ORF	NORFOLK INTL ARPT	34	42	45
ORL	EXECUTIVE ARPT	10	12	11
P31	PENSACOLA TRACON	32	39	41
P50	PHOENIX TRACON	50	61	60
P80	PORTLAND TRACON	27	33	29
PAE	SNOHOMISH COUNTY (PAINE FLD) ARPT	8	10	11
PAO	PALO ALTO ARPT OF SANTA CLARA CO ARPT	8	10	13
PBI	PALM BEACH INTL ARPT	38	46	41
PCT	POTOMAC TRACON	151	185	177
PDK	DE KALB PEACHTREE ARPT	13	15	18
PDX	PORTLAND INTL ARPT	17	21	24
PHF	NEWPORT NEWS / WILLIAMSBURG INTERNATIONAL ARPT	11	13	12
PHL	PHILADELPHIA INTL ARPT	74	90	82
PHX	PHOENIX SKY HARBOR INTL ARPT	32	39	43
PIA	GREATER PEORIA REGIONAL ARPT	17	21	18
PIE	ST. PETERSBURG - CLEARWATER INTL ARPT	11	13	12
PIT	PITTSBURGH INTERNATIONAL ARPT	40	48	61
PNE	NORTHEAST PHILADELPHIA ARPT	9	11	12
PNS	PENSACOLA REGIONAL ARPT	9	11	10
POC	BRACKETT FIELD ARPT	7	9	14
POU	DUTCHESS COUNTY ARPT	8	10	9
PRC	ERNEST A LOVE FIELD ARPT	12	14	16
PSC	TRI-CITIES ARPT	14	17	20
PSP	PALM SPRINGS INTERNATIONAL ARPT	10	12	16
PTK	OAKLAND COUNTY INTERNATIONAL ARPT	14	18	16

ID	Facility Name	Staffing Range Low	Staffing Range High	Actual On Board as of 09/29/07
PUB	PUEBLO MEMORIAL ARPT	12	14	14
PVD	THEODORE FRANCIS GREEN STATE ARPT	29	35	36
PWK	PALWAUKEE MUNI ARPT	10	12	13
PWM	PORTLAND INTL JETPORT ARPT	16	20	20
R90	OMAHA TRACON	14	17	17
RDG	READING REGIONAL / CARL A SPAATZ FIELD ARPT	13	15	15
RDU	RALEIGH DURHAM INTL ARPT	38	46	44
RFD	GREATER ROCKFORD ARPT	19	23	25
RHV	REID HILLVIEW OF SANTA CLARA COUNTY ARPT	8	10	9
RIC	RICHMOND INTL ARPT	11	13	13
RME	GRIFFISS AIRPARK ARPT	8	10	10
RNO	RENO / TAHOE INTERNATIONAL ARPT	23	28	22
ROA	ROANOKE REGIONAL / WOODRUM FIELD ARPT	20	24	28
ROC	GREATER ROCHESTER INTERNATIONAL ARPT	21	25	28
ROW	ROSWELL INDUSTRIAL AIR CENTER ARPT	14	17	16
RST	ROCHESTER INTERNATIONAL ARPT	12	14	17
RSW	SOUTHWEST FLORIDA INTL ARPT	23	29	25
RVS	RICHARD LLOYD JONES JR ARPT	14	18	17
S46	SEATTLE TRACON	38	46	47
S56	SALT LAKE CITY TRACON	38	46	52
SAN	SAN DIEGO INTL-LINDBERGH FLD ARPT	14	18	19
SAT	SAN ANTONIO INTL ARPT	48	58	55
SAV	SAVANNAH / HILTON HEAD INTERNATIONAL ARPT	22	26	25
SBA	SANTA BARBARA MUNI ARPT	24	30	28
SBN	SOUTH BEND REGIONAL ARPT	20	24	24
SCK	STOCKTON METROPOLITAN ARPT	7	9	10
SCT	SOUTHERN CA TRACON	194	237	227
SDF	LOUISVILLE INTL - STANDIFORD FIELD ARPT	40	48	45
SDL	SCOTTSDALE ARPT	11	13	14
SEA	SEATTLE TACOMA INTL ARPT	22	26	32
SEE	GILLESPIE FIELD ARPT	11	13	15
SFB	ORLANDO SANFORD ARPT	14	18	17
SFO	SAN FRANCISCO INTL ARPT	24	30	27
SGF	SPRINGFIELD BRANSON REGIONAL ARPT	23	29	31
SHV	SHREVEPORT REGIONAL ARPT	19	23	17
SJC	NORMAN Y MINETA SAN JOSE INTERNATIONAL ARPT	13	15	20
SJU	LUIS MUNOZ MARIN INTL ARPT	14	17	16

ID	Facility Name	Staffing Range Low	Staffing Range High	Actual On Board as of 09/29/07
SLC	SALT LAKE CITY INTL ARPT	26	32	29
SMF	SACRAMENTO INTERNATIONAL ARPT	12	14	12
SMO	SANTA MONICA MUNI ARPT	9	11	13
SNA	JOHN WAYNE AIRPORT-ORNAGE COUNTY ARPT	21	25	27
SPI	CAPITAL ARPT	12	14	15
SRQ	SARASOTA / BRADENTON INTL ARPT	10	12	12
STL	LAMBERT - ST LOUIS INTL ARPT	19	23	32
STP	ST. PAUL DOWNTOWN HOLMAN FLD ARPT	10	12	15
STS	SONOMA COUNTY ARPT	7	9	8
STT	CYRIL E KING ARPT	7	9	8
SUS	SPIRIT OF ST. LOUIS ARPT	10	12	14
SUX	SIOUX GATEWAY/COL BUD DAY FIELD ARPT	11	13	8
SYR	SYRACUSE HANCOCK INTL ARPT	20	24	25
T75	ST. LOUIS TRACON	41	50	49
TEB	TETERBORO ARPT	17	21	25
TLH	TALLAHASSEE REGIONAL ARPT	19	23	17
TMB	KENDALL-TAMIAMI EXECUTIVE ARPT	11	13	15
TOA	ZAMPERINI FIELD ARPT	9	11	11
TOL	TOLEDO EXPRESS ARPT	18	22	26
TPA	TAMPA INTL ARPT	55	67	65
TRI	TRI-CITY RGNL TN/VA ARPT	15	19	17
TUL	TULSA INTL ARPT	29	35	30
TUS	TUCSON INTL ARPT	14	18	18
TVC	CHERRY CAPITAL ARPT	7	9	8
TWF	JOSLIN FIELD - MAGIC VALLEY RGNL ARPT	6	8	8
TYS	MC GHEE TYSON ARPT	23	28	25
U90	TUCSON TRACON	20	24	23
VGT	NORTH LAS VEGAS ARPT	11	13	15
VNY	VAN NUYS ARPT	18	22	21
VRB	VERO BEACH MUNICIPAL ARPT	9	11	8
Y90	YANKEE TRACON	22	26	26
YIP	WILLOW RUN ARPT	9	11	9
YNG	YOUNGSTOWN-WARREN REGIONAL ARPT	18	22	20

BACK COVER: At the FAA Academy in Oklahoma City, trainees hone the skills they first learn in the classroom environment using simulators that resemble real control operations. Instructors monitor their students' progress and discuss their performance after each training session. Photo: FAA

Our current and future success is all about our people. Their continued professional commitment to safety and performance is critical to the FAA meeting its goals.

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