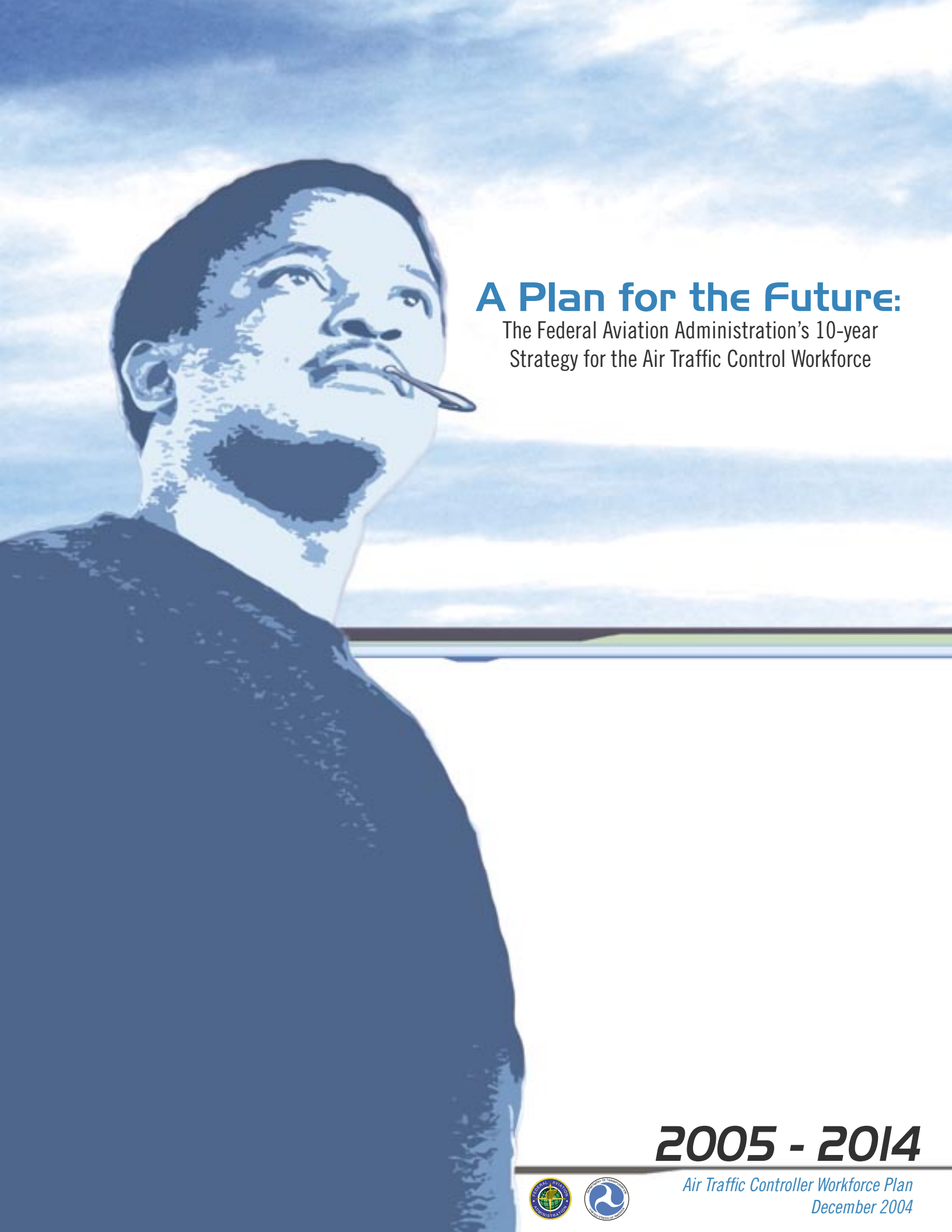


A Plan for the Future:

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

2005 - 2014

Air Traffic Controller Workforce Plan
December 2004

I. Introduction: Preparing for the Future

Operating the national airspace system involves managing a myriad of complexities from radar to regulations, from technology to takeoffs. The Federal Aviation Administration's (FAA) air traffic control workforce is a key element that makes the system go.

Over the next 10 years, 73 percent of the agency's nearly 15,000 controllers will become eligible to retire. Total losses over the next 10 years are expected to be over 11,000. This report, *A Plan for the Future: The FAA's 10-Year Strategy for the Air Traffic Control Workforce,* is a blueprint that contemplates both retirements and appropriate staffing levels. Congress enacted Vision 100, the agency's four-year reauthorization, in 2003. Vision 100 required that a plan to ensure adequate staffing for air traffic control be completed by December 2004. This plan outlines the agency's plan to hire, staff, and train controllers as well as details efficiencies from cost savings to productivity improvements that will enable the agency to reduce our staffing requirements by 10 percent from existing requirements despite expected traffic growth. As we move forward, we will update this plan on an annual basis and make adjustments accordingly. With the approach outlined here, we are confident that we will be able to reach our goals.

II. Background: How We Got Here

In 1981, following a period of labor unrest, an overwhelming majority of the air traffic control workforce went on strike on August 3. President Reagan ordered those controllers to return to duty within 48 hours. When those 10,438 striking controllers did not return to work, President Ronald Reagan fired them on August 5. About 4,700 controllers remained on duty. Thereafter, the agency hired 5,643 controllers in 1982 and another 3,062 in 1983. From 1982 through 1991, the agency hired an average of 2,655 controllers per year. This hiring wave created the potential for a large portion of the controller workforce to reach retirement age at roughly the same time.

We are now entering that period.

The agency currently employs some 15,000 controllers. Even though historical trends indicate that only about 25 percent of controllers retire in their first year of eligibility, we know that about 73 percent of these men and women are likely to retire by 2014. The agency must hire 12,500 controllers over the next 10 years in order to have enough recruits in the pipeline to meet backfill needs. Coupled with normal attrition rates, it's clear that the agency's recent hiring policy for controllers – one retirement, one hire – will not be adequate to meet the challenge because of the time to train a new recruit and the fact that the system can only handle so many on-the-job trainees at any one time. We will monitor our hiring to ensure an appropriate ratio between fully certified controllers and those in training. It is essential that the FAA put a long-term solution in place that will effectively address the needs for staffing.

Following September 11, 2001, passenger numbers dropped markedly. Since then, passenger confidence in the safety and security of the system has been restored. The system continues to get busier by the day as traffic levels continue to rise. In fact, at 13 of the nation's 35 busiest airports, traffic levels already have exceeded pre-9/11 activity. Overall, more than 649 million passengers flew last year, and industry forecasts expect that number to increase considerably.

FAA controllers now staff some 315 federally operated facilities throughout the country, ranging from small towers to large air route traffic control centers. They guide aircraft that use 600 commercial airports and 3,300 smaller public-use airports. Since America's aviation system continues to expand, there's no question that we need to provide an adequate number of air traffic controllers to make it flow smoothly. But it's not a simple case of hiring to fill a slot. The plan contemplates new ways to make the best use of the taxpayer's investment. Each of the efforts described in this plan provides workforce flexibility, enhanced productivity and greater efficiency. Our current workforce will also benefit from greater job advancement opportunities, flexible work schedules, and better training.

The FAA intends to meet the needs of the system, staffing the right number of controllers in the right places at the right time.

III. Meeting the Challenge

Bringing aboard new controllers is a complex process. Controllers are highly skilled professionals and it takes several years to train a controller, so the pipeline must be filled with recruits and trainees in a deliberate, continuous fashion. Filling the job of a controller who retires today is the culmination of many steps that must by necessity have begun several years in advance. In the past, the process required three to five years. Through improvements in classroom training, increased use of high-technology simulators and more efficient on-the-job training, we expect to compress that process to two to three years. For the record, the agency's air traffic control academy can train approximately 2,000 controllers per year. Some 5,000 applications for controller positions are pending at the time of this report.

Hiring and Training

We're taking action to increase hiring efficiency. By improving the screening process, a nine-week screen has been reduced to an eight-hour test. Previously, screening cost the FAA about $10,000 per candidate, and the agency's air traffic control training academy experienced a 57 percent pass rate. Today, it costs the agency about $800 per candidate to administer the test. The new screening test combined with the academy's multi-path training referenced in Chapter 7 has reduced the failure rate for academy training to less than 5 percent, saving the agency money and establishing a more encouraging process for new recruits.

We're also using refined metrics to ensure a continuous flow in the controller trainee pipeline. By developing a national training database to monitor the training pipeline at each facility, we are ensuring that we have an acceptable ratio of trainees to certified professional controllers. Too few trainees means that the pipeline isn't full enough; too many and a backlog is created.

Greater efficiency in training procedures enhances our ability to staff appropriately. In light of the need to hire 12,500 controllers over the next 10 years, it's clear that we need to speed the training process.

The use of high-fidelity simulation plays a key role in our effort to optimize controller training time both at the FAA Academy and field facilities. When combined with enhanced training methods, simulation will increase student performance and reduce overall training time. We are committed to providing the most efficient and effective training possible to reduce cost, meet our staffing needs sooner, and advance the careers of our employees.

Staffing Efficiencies

While this plan is not a facility-by-facility projection of hiring needs, the FAA has established loss data at the facility level.

We will put in place better metrics to ensure that our facilities are staffed appropriately and that we have better estimates of staffing needs at each facility. The agency must establish the flexibility to move staffing for its control facilities to match the workload as it shifts from location to location. This will enable us to align staffing with workload much more precisely.

The agency also is staffing facilities according to peak traffic periods. Having too many controllers on duty during off-peak times makes little sense. In addition to right-sizing staffing, we're also reducing the hours of operation at our facilities where there is low or no activity, especially during the midnight to 5 a.m. shift. Newer approaches to staffing – such as split shifts and part time employment – also show promise. For example, split shifts allow controllers to work three or four hours to cover a peak workload, then leave and return later in the day, offering significant resource savings.

Better Management

Managing sick leave usage is important as well. Controllers typically use a greater percentage of sick leave as compared to other government employees. By 2006, the FAA's goal is to reduce sick leave usage by 8 percent by addressing sick leave abuse. This is equivalent to 73 controller positions.

The FAA has adopted a much more proactive approach to return disabled and temporarily medically restricted personnel to work. We're managing injury claims more closely, and we've increased training to managers and supervisors who oversee these claims. We've also put in place a system to track claims, the nature of the injury, and associated costs that result. As a result of these efforts to date, we've already reduced our worker's

compensation costs by $1.8 million, while the rest of the government's costs continue to rise.

We're also tracking official time (hours spent by bargaining unit representatives on the clock to conduct union business) much more closely. The FAA established an Official Time Task Force to identify strategies to reduce the use of official time FAA-wide. Further, the agency implemented the Office of Personnel Management's (OPM) newest official time reporting requirements. Senior FAA management monitors official time usage on a monthly basis.

Following industry best practices, the FAA also is reclassifying several facilities with reduced traffic, which will allow us to pay new controllers a starting salary commensurate with activity levels at that facility.

IV. Challenges Ahead

There are a number of challenges ahead:

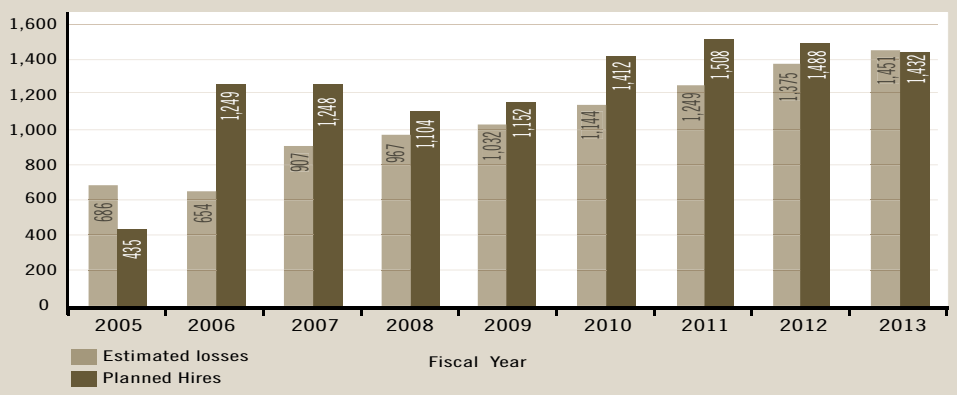
- Approximately 75 percent of the FAA's operational budget goes to payroll and benefits.
- The declining Aviation Trust Fund. Comprised largely of revenues from ticket taxes, this is the agency's primary funding mechanism. As the airlines move to smaller jets that carry fewer passengers paying lower fares, trust fund revenue shrinks while increasing the workload on controllers.
- The ability to deploy new technology. The FAA must continue to deploy new equipment to the field to accommodate this growth.
- Upcoming contract negotiations. The FAA will be negotiating a new contract with the National Air Traffic Controllers Association (NATCA) in 2005.

V. Conclusion

The FAA will hire new controllers at a faster rate to offset the wave of retirements projected over the next 10 years. (*Planned hires in FY 2005 reflect actual appropriated funds for this fiscal year.)

This is the first in a series of annual reports to outline what will be evolving methodologies and management strategies to ensure the FAA has an adequate air traffic control workface to meet its future requirements. Many of the initiatives described in this report are currently being piloted or are in the initial phases of implementation. As a result, future annual reports will reflect revisions to the staffing requirements illustrated in this report and outline expanded initiatives by the FAA to improve productivity as the Air Traffic Organization (ATO) continues to evolve into a performance based organization. The FAA expects that many of the initiatives begun in 2004 and 2005 may have a significant impact on staff requirements outlined in its 2006 report.

By utilizing better methods to recruit, hire, train, and increase productivity, the agency will be able to staff its facilities to meet the needs of the national airspace system. We will have the right number of controllers in the right place at the right time.



Controller Planned Hires versus Estimated Losses

2005-2014

Air Traffic Controller Workforce Plan

Executive Summary 03

Chapter 1 - Introduction 10

Chapter 2 – Air Traffic Control Services and Control Facilities 15

Chapter 3 – Air Traffic Controller Staffing Requirement 19

Chapter 4 – Air Traffic Controller Losses 34

Chapter 5 – Air Traffic Controller Hiring Plan 43

Chapter 6 – Air Traffic Controller Hiring Process 49

Chapter 7 – Air Traffic Controller Training 59

Chapter 8 – Air Traffic Controller Workforce Funding 84

Chapter 9 – Key Assumptions 87

References 93

Appendix A – Government Accountability Office (GAO) Recommendations 94

Appendix B – Office of Inspector General (OIG) Recommendations 95

Appendix C – List of Air Traffic Collegiate Training Initiative Schools 96

Over the next 10 years, approximately 73 percent of the existing controller workforce will become eligible to retire. This Air Traffic Controller Workforce Plan, prepared pursuant to Section 221 of Public Law 108-176, presents the actions that the Federal Aviation Administration (FAA) is taking to ensure adequate controller staffing levels will be available for the balance of this decade and beyond. The plan will be updated annually.

1.1 Background

The Federal Aviation Act of 1958 (as amended), authorizes the FAA to prescribe air traffic rules and regulations governing the flight of aircraft, the navigation, protection, and identification of aircraft, the protection of persons and property on the ground, and for the safe and efficient utilization of the navigable airspace. The FAA employs air traffic control specialists, commonly referred to as air traffic controllers, and assigns them to various air traffic control facilities as a primary means of providing a safe and efficient aviation system. Their responsibility is to ensure the separation of aircraft on the airport surface and in-flight from other aircraft and obstacles.

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 strike with the expectation that it would strengthen their bargaining position. President Ronald 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. 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. The fired controllers were not eligible to seek reemployment with the FAA in the air traffic control job series.

Following the strike, the FAA began a large-scale recruitment and selection process to rebuild the controller workforce. The process consisted of two stages. The first stage was the recruiting and assessing of the potential of candidates to succeed in the air traffic controller discipline. The second stage involved screening and training at the FAA's academy in Oklahoma City, Okla.

The United States federal civil service laws and regulations governed the first stage process. The regulatory agency overseeing these laws and regulations was the U.S. Office of Personnel Management (OPM). Extensive recruitment was necessary because potential controllers had to meet eligibility requirements such as U.S. citizenship and not having reached their 31st birthday prior to initial appointment. Applicants also had to pass the OPM civil service examination for air traffic control specialists and meet education or experience requirements. The first stage process then continued with interviews and a medical examination. The medical exam included vision and hearing standards, as well as a mental health screen. Finally, the applicants had to pass a background investigation. This investigation was used for two purposes. One was to determine if the person should

receive a security clearance. The other was to determine the person's general suitability for federal employment.

Applicants who met the first stage requirements were usually selected to report to the FAA Academy screening program in Oklahoma City. These individuals were officially appointed to the civil service at the FAA Academy, becoming paid employees of the FAA. They spent the first several weeks of their employment in the screening program. The FAA Academy program was considered to be initial training, but was conducted with an emphasis on screening out those unlikely to be successful in further FAA controller training. Those who failed the FAA Academy program usually had their employment terminated. Those that passed the FAA Academy program were assigned to air traffic control facilities where their training continued in the operational environment. Upon being assigned to an air traffic control facility, these individuals were referred to as developmentals. Training at the air traffic control facility consisted of classroom instruction followed by on-the-job training that led to the achievement of Certified Professional Controller (CPC) status.

Figure 1.1 shows the number of persons selected to enter the screening program during the post-strike recovery period.

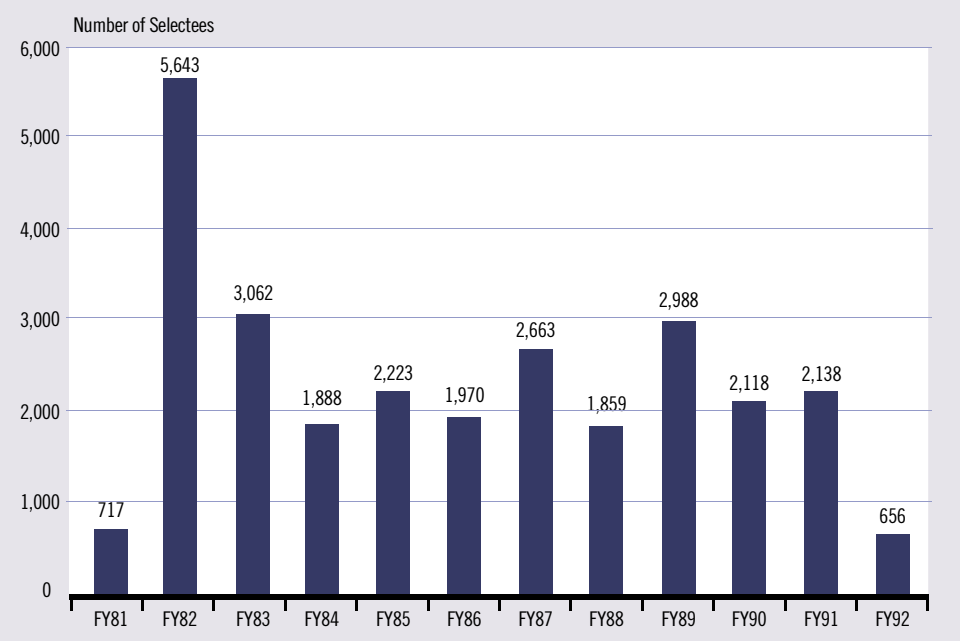


Figure1.1 Selectees Entering the FAA Academy

Between FY 1981 and FY 1992, close to 28,000 individuals entered the 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 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 remainders resigned or were dismissed from the agency.

The controller strike recovery had been completed by the end of FY 1992 and hiring was at a minimum at that time. Based on lessons learned from the large-scale controller staff recovery, the FAA developed a new screening method (discussed in Chapter 6) and dismantled the old screening program in FY 1992. Since 1994, the FAA Academy controller training pass rate has exceeded 95 percent.

Most controller candidates during the post-strike recovery period had limited, if any, aviation experience. In the mid-1980's, to expand the pipeline of controller candidates, the FAA established two programs designed to attract college students to air traffic control (ATC) related careers: the College Cooperative Education Program and the Airway Sciences Program. These early programs provided training in rudimentary ATC skills in preparation for more in-depth training at the FAA Academy. In 1988, two external studies reviewed the FAA's system for training air traffic controllers. These studies recommended that non-federal, post-secondary institutions (two- and four-year colleges and universities), be selected to develop and test academic programs related to air traffic control. In response to congressional interest in collegiate ATC programs, the FY 1990 appropriations bill directed the FAA to provide funding to the Mid-America Aviation Resource Consortium (MARC). A grant was also provided to Hampton University in 1990. In January 1991, the FAA formally established the Air Traffic Collegiate Training Initiative (AT-CTI) Program. The AT-CTI Program has been expanded since its inception and, for the past 10 years, has been a primary source of air traffic controller candidates.

1.2 The Aging Post-Strike Controller Workforce

The Federal Retirement System contains a special provision for air traffic controllers (5 USC 8336(e), 5 USC 8412 (e), and 5 CFR 842.207). An air traffic controller at age 50 with 20 years good time (as defined in Public Law (PL) 92-297) or at any age with 25 years good time is eligible for retirement. Controllers in the post-strike workforce began reaching retirement eligibility in 2001. The age distribution of the controller workforce is shown in Figure 1.2.

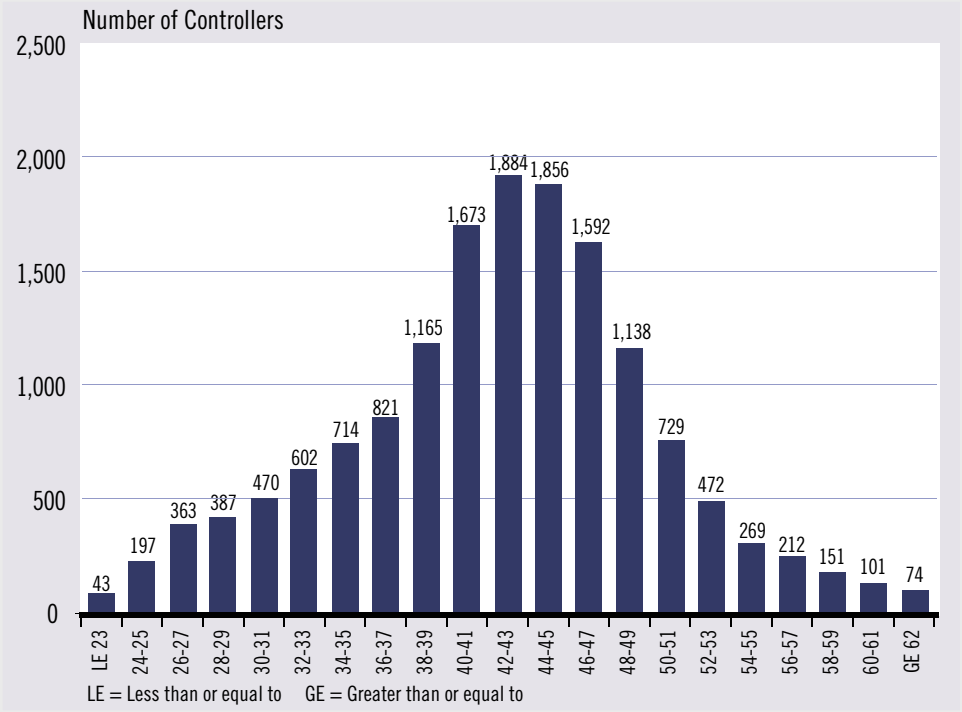


Figure 1.2 Controller Workforce Age Distributions (September 2004)

There are currently 2,008 controllers age 50 or greater.

The number of controllers currently eligible and those that will become retirement eligible over the next 10 years, as of September 2004, is shown in Figure 1.3.

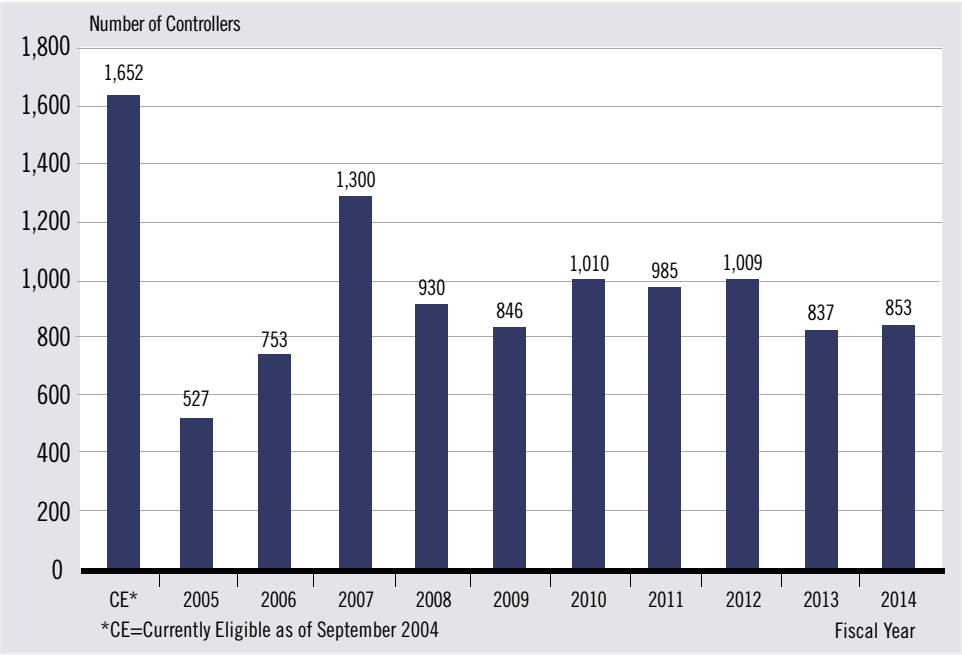


Figure 1.3 Current and Projected Controller Retirement Eligibility

Through FY 2014, more than 10,700 air traffic controllers will be eligible to retire. However, not all controllers retire within the first year of eligibility. Retirement figures from the three years spanning January 2001 and December 2003 indicate that approximately 55 percent of the controllers retire within the first six years of eligibility.

Based on this historical data, the FAA estimates that approximately 8,265 controllers will retire by FY 2014. In addition to retirements, controllers are also lost due to resignations, promotions, removal and death. Removals include the 10 percent of developmentals that typically do not succeed in the facility training program. These loses amount to approximately 2,759 through FY 2014. All categories of controller losses are included in the FAA's hiring estimate and workforce plan. The total number of controllers that the FAA will lose over the next 10 years is estimated to be 11,024.

Experience gained from large-scale recruitment, screening, and training in the post-strike period led the FAA to improve these processes. The FAA implemented significant improvements in the hiring process, the academy training program, and the facility training program. No longer will the FAA need to hire nearly double the number of applicants actually needed because of a 57 percent pass rate at the academy. Currently, the academy pass rate exceeds 95 percent and the facility training program has a 90 percent pass rate.

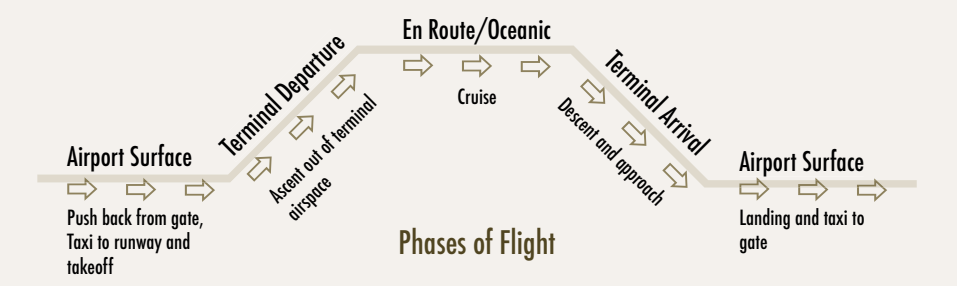
Clearly, managing the upcoming wave of controller losses poses significant management challenges due to:

- Budget realities
- Controller workforce issues as the FAA seeks to achieve improved controller utilization and efficiency over the next five years
- Recognition that three generations of controllers were lost in 1981 that were replaced by a single generation controller workforce. This resulted in the loss of a normally distributed experience base that now has to be rebuilt. To reach a steady state experience base similar to that existing prior to the strike will take about 10 to 12 years if hiring proceeds at the appropriate levels.
- A heavier than normal training workload in the en route centers and terminals

This document provides the FAA's initial strategy for managing the controller retirements projected over the next 10 years.

In general, FAA provides air traffic control services at airports that meet FAA's Service Establishment Criteria or where it is directed by Congress to establish and provide ATC services. At those airports, FAA provides ATC services from gate-to-gate. Air traffic controllers assigned to airport traffic control towers (ATCT) assist pilots with landings and takeoffs and direct traffic on runways, taxiways and in the immediate vicinity of the airport. Controllers assigned to terminal radar approach control (TRACON) facilities use radar to control the aircraft generally within 40 miles of the airport. Controllers assigned to air route traffic control centers (ARTCC) ensure separation between aircraft by issuing instructions, and clearances to aircraft flying between airports. In some cases controllers, where there is a combined ATCT and radar approach control, may work both the tower cab and the terminal radar approach control facility. ATCTs and TRACONs are collectively referred to as terminals.

The controller positions and the generic air traffic control facilities that support these activities are best described as occurring within the various phases of flight as summarized in Figure 2.1.



Facility	Airport Traffic Control Tower (ATCT)	Terminal Radar Approach Control (TRACON)	Air Route Traffic Control Center (ARTCC)	Terminal Radar Approach Control (TRACON)	Airport Traffic Control Tower (ATCT)
Controller Position	• **Ground Controller** - Issues flight plan clearance and issues approval for push back from gate - Issues taxi instructions to each pilot • **Local Controller** - Issues clearance for take off and maintains proper spacing between airplanes during take off • Flight Data	• **Departure Controller** - Directs aircraft departing from all airports to a cruise altitude - Instructs the pilot to change radio frequency when reaching cruise altitude - Hands off aircraft to the Center Controller	• **Radar Controller** - Ensures the safe sepearation and orderly flow of aircraft through en route center airspace (includes oceanic airspace) • **Radar Associate** - Assist the Radar Controller • **Assistant Controller (Flight Data)** - Supports the Center Radar Controller by handling flight data	• **Approach Controller** - Establishes each aircraft's final approach course	• **Tower Controller** - Updates each pilot with latest weather conditions - Issues landing clearance - Monitors proper spacing between aircraft • **Ground Controller** - Issues taxi instructions to guide aircraft to gate

Figure 2.1 Air Traffic Controller Position and Facility Overview by Flight Phases

2.1 FAA Air Traffic Control Facilities

As of September 2004, the FAA operated 315 air traffic control facilities in the United States. Table 2.1 lists the type and number of these FAA facilities.

Type	Name	Number	Description
1	Tower without Radar	4	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)	21	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	139	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.
5	Combined Control Facility	6	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.
6	Tower with Radar	118	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.
7	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.
8	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.

Table 2.1 Types and Number of FAA Air Traffic Control Facilities

2.2 Airports

Within the national airspace system there are 19,581 airports. Of this total, approximately 5,450 are public use airports with the remainder classified as private use airports. The FAA certificates public use airports that serve air carrier operations with aircraft seating 10 or more passengers. As of June 2004 there were 628 certificated airports. Of these, there are 263 FAA towers located at public use airports and there are an additional 227 Federal Contract Towers (described below) at low-level activity airports. The FAA also provides air traffic control services to approximately 3,300 non-towered public use airports from remote FAA air traffic control facilities. Table 2.2 summarizes the number of airports at which ATC services are provided.

Airports	Number*	Air Traffic Control Service
Private Use Airports	19,554	None
Private Use Airports	27	ATC services provided by Non-Federal Towers
Public Use Airports (FAA towered)	263	FAA ATC Services
Public Use Airports (Military towered)	164	ATC services provided by military air traffic controllers
Public Use Airports (Federal towered)	227	Contractor Provided ATC Services
Public Use Airports (Non-towered)	3,300	Remote FAA ATC Services
Public Use Airports (Non-towered)	1,496	None

* **Approximate**

Table 2.2 Air Traffic Control Services Provided to Airports

2.3 Federal Contract Towers

In 1982, the United States 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. 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. Contract controllers providing ATC 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. As of September 2004, there are 227 contract towers providing ATC services by contract controllers.

2.4 Military Towers

There are 164 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 ATC services to civilian aircraft as well as military aircraft at those airports. Military controllers must meet the same qualification criteria as FAA controllers.

2.5 Non-Federal Towers

There are 27 non-federal towers located at private-use airports. Controllers operating in these towers must meet the same qualification criteria as FAA controllers. The FAA does not provide funding or ATC services at these towers.

This chapter presents the air traffic controller staffing projection the FAA estimates it will need annually through FY 2014 to manage traffic demands derived from the most recent traffic workload forecast.

These staffing levels will be updated annually to reflect changes in the traffic workload forecasts, previous year hiring, and other factors. Throughout the rest of this document references are made to two distinct modeling instruments. The Air Traffic Staffing Standards model discussed in Section 3.1 and the Hiring Model discussed in Chapter 5, which is a tactical instrument, was developed for the purposes of analyzing various hiring scenarios.

3.1 Air Traffic Staffing Standards

The FAA has used air traffic staffing standards to determine national controller staffing levels since the 1970's. On July 11, 1995, the House Committee on Appropriations directed the FAA to study the development of a comprehensive methodology whereby the FAA could determine the required number of controllers at each of its facilities. The Committee further directed that the study be conducted by the National Academy of Sciences. The National Academy of Sciences study concluded:

> *"The headquarters process is useful for developing national budget requests and allocating resources to the regions. The regional process uses expert opinion and negotiation among those who are knowledgeable about individual facilities and their needs to make the final staffing decisions.*
>
> *The committee does not believe that the current staffing standards can be used to provide highly accurate estimates of staffing requirements for individual facilities. The headquarters models could be improved, but it is unlikely that they could be modified sufficiently to provide stand-alone estimates of individual facility staffing requirements. Even if a better model could be developed, the committee believes that the current staffing process, which combines quantitative estimates with expert judgment, has considerable merit. In fact, it is doubtful that modeling alone could provide an acceptable basis for establishing facility-level requirements."*

The staffing allocation procedure in use at the time of the National Academy of Sciences review remained in use for several years. The allocation procedure established quotas that could sometimes lead to staffing imbalances between regions and between facilities. This procedure is not adequate for meeting future staffing requirements. Starting in FY 2005 it will be replaced by a procedure that specifically targets facilities within each Service Area.

FAA Order 1380.55, December 20, 1998, provides policy, responsibilities, guidance, and procedures for the development, application, and use of staffing standards, models, and guides.

FAA air traffic staffing standards are planning tools consisting of mathematical models that are used to compute the number of persons required to perform a job or set of tasks. They are developed using industrial engineering techniques, statistics, and operations research analysis. Their primary use is to determine national and regional staffing requirements for budget justification, resource allocation, planning, and evaluating the impact of proposed program changes.

The air traffic staffing standards consist of three staffing models that cover all working controllers in towers, radar approach control and en route centers who are available to work traffic. The models have several layers. The first model layer is a set of formulas that relate controller requirements to air traffic activity in 15-minute time intervals by sector. These models are based on industrial engineering work measurement techniques. Samples of facilities are chosen and each is visited for a period of several days. Numerous busy time intervals are selected during which engineers measure all of the controller work activities (to hundredths of seconds) and collect various traffic activity measures. The data is then analyzed and correlated to produce the formulas.

The second layer involves collecting detailed sector data in 15-minute increments for various days during the year. The work measurement formulas are applied to determine sector staffing by time interval. The sector staffing requirements then are combined to produce area or facility staffing by time interval. These requirements are input into a scheduling algorithm to determine daily staffing requirements. Lunch and breaks are accounted for by the scheduling model, as well as shift lengths and start times. A regression model is then developed that relates daily staffing requirements to daily activity and other factors, such as number of sectors, hours of operation, traffic mix, etc.

The third layer is the application process used to determine the staffing standard for a facility for some future year. The latest aviation forecasts and the past year's activity data are used to predict the 90th percentile day for that facility. Then the regression model is applied to determine the staffing need for that day. All the input data including traffic activity, sectors, hours, etc., are updated annually.

The fourth layer is the controller availability factor (currently 1.76) that accounts for seven-day coverage, controller leave and off-position activities such as physical exams, union activities, training, etc. The 90th percentile day staffing is multiplied by this factor to produce the annual staffing requirement.

Note that adequate staffing does not imply that there is no requirement for overtime. There may be instances when overtime is needed to provide adequate staffing because of unexpected leave, fielding new equipment, weather, etc. To set standards which eliminate or severely reduce overtime would cause significant overstaffing much of the year.

The strategies used for sampling, data collection, and model designs are geared to the development of national staffing estimates. Thus, staffing standards are not expected to be exactly equal to the actual staffing requirement at the individual facility level. However, in the absence of any better method, staffing standard estimates at the facility level have been used as the starting point for negotiations and for an indication of staffing imbalances.

3.1.1 Air Traffic Staffing Standard Review and Reassessment

During FY 2005, the FAA will begin a reassessment of its air traffic staffing models for terminal and en route operations. The reassessment will focus on the use of the 90th percentile workload day, the current controller availability factor (1.76), the applicability of the staffing standards given a move towards more efficient shift-based scheduling, and the model representations of the current technology used in the terminal and en route environments. The reassessment will also examine whether other criteria are more appropriate to determine staffing at the facility level.

At the time the staffing standards were developed in the 1970's, it was deemed appropriate to forecast air traffic control staffing requirements on the basis of workload expected to occur on the 90th percentile busy day (i.e., the 37th busiest day of the year). This approach assured an adequate number of controllers to meet traffic demands during peak periods throughout the year. Because there is a small difference in traffic workload between a 70th percentile busy day and a 90th percentile busy day, the use of a lower percentile busy day (for example, the 70th percentile busy day) yields no appreciable staffing reductions. However, there is no evidence available that indicates the use of the 90th percentile busiest day had been seriously questioned or rigorously developed. The 90th percentile day staffing is multiplied by a controller staffing adjustment factor of 1.76 to account for off-position activities such as training, performance reviews, workgroup activities, and seven-day facility coverage.

Since the models were last updated in 1996, new technology and functionality has been implemented in the field such as User Request Evaluation Tool (URET), Advanced Technologies & Oceanic Procedures (ATOP), Airport Movement Area Safety System (AMASS)/Airport Surface Detection Equipment (ASDE-X), Traffic Management Advisor (TMA), and Terminal Modernization. The FAA will also begin to field En Route Automation Modernization (ERAM) equipment for en route centers. The technology changes will be reflected in the updated staffing standards.

The staffing standard reassessment will be conducted with a view towards achieving a staffing estimating methodology - either a revised staffing standard model or another estimating model - that yields high confidence staffing estimates at the national and facility levels.

3.2 Air Traffic Controller Annual Staffing Targets

This section presents the annual controller staffing levels that will be needed through FY 2014 to handle the current traffic workload forecast. The annual staffing targets were developed through a three-step iterative process:

- The existing Air Traffic Staffing Standards were used to generate a 10-year controller staffing projection using the most recent traffic workload forecast.
- An ongoing management review identified initiatives that have the potential to yield controller staff savings of approximately 10 percent over the next five years relative to the existing staffing standard projection. The staff savings was estimated to be 3 percent in FY 2005, an additional 2 percent in FY 2006 through FY 2008, and a 1 percent savings in FY 2009.
- These percentages were then applied to the staffing standard projection to arrive at the annual staffing targets. The annual staffing targets were computed as follows:
    1. FY 2005 staffing target = 3 percent below the existing FY 2005 staffing standard projection
    2. FY 2006 staffing target = 5 percent below the existing FY 2006 staffing standard projection
    3. FY 2007 staffing target = 7 percent below the existing FY 2007 staffing standard projection
    4. FY 2008 staffing target = 9 percent below the existing FY 2008 staffing standard projection
    5. FY 2009 staffing target = 10 percent below the existing FY 2009 staffing standard projection
    6. FY 2010 to FY 2014 staffing targets = 10 percent below the existing FY 2010 to FY 2014 staffing standard projections

Figure 3.1 compares the staffing standard projections with the annual controller staffing targets and the actual on board incorporating the hiring profile in Chapter 5.

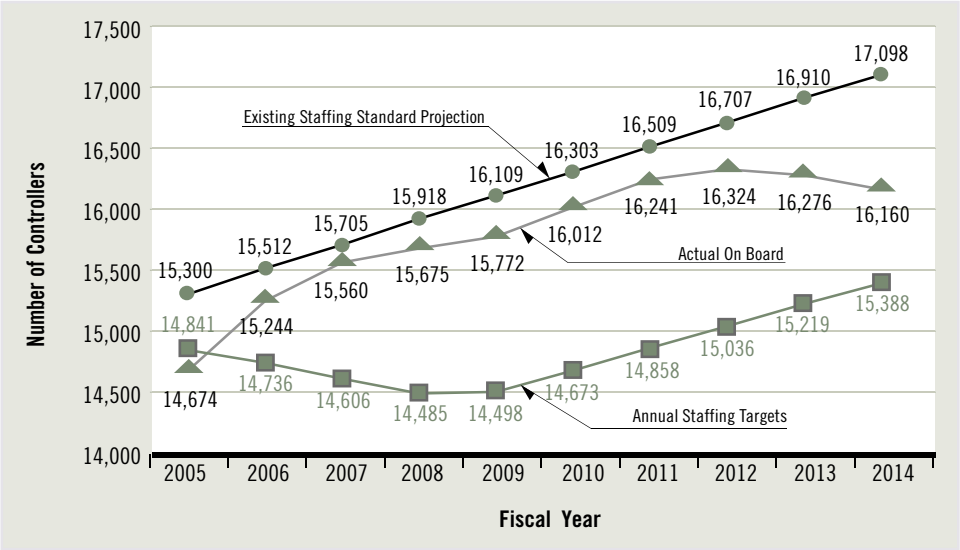


Figure 3.1 Annual Staffing Targets versus Staffing Standard Projections

The 10 percent staff savings fall into two categories. The first is efficiency gains that will be achieved by absorbing traffic increases through FY 2009 without adding additional staffing. The second category is staff savings that will be achieved through the implementation of several initiatives discussed in Section 3.3. Figure 3.2 shows the controller staff savings associated with each category through FY 2009.

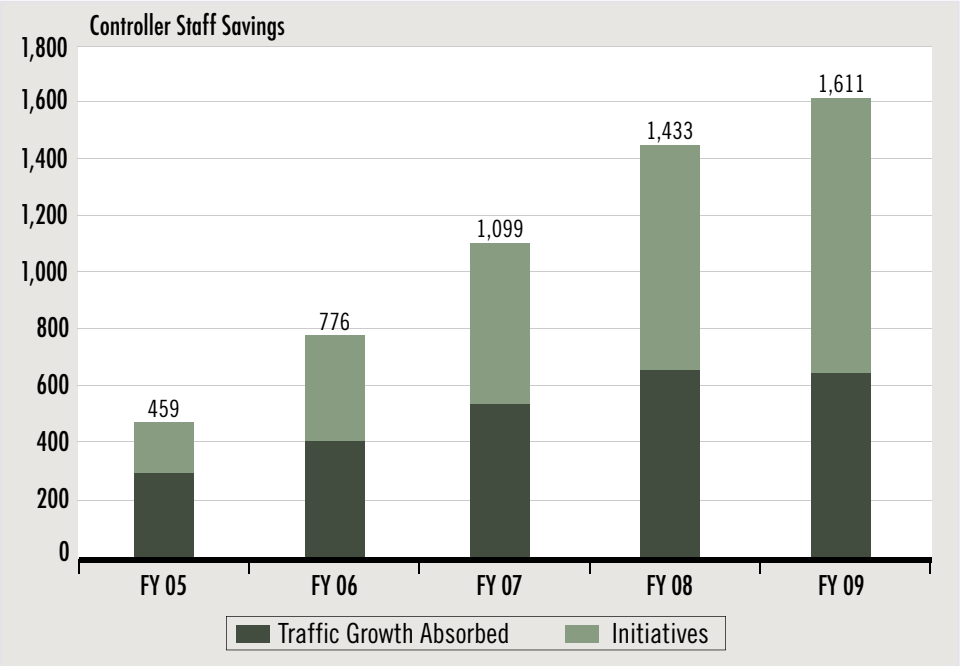


Figure 3.2 Controller Staff Savings

The annual staffing targets shown in Figure 3.1 include both terminal and en route controllers. Since these staffing targets reflect forecasted traffic workloads, they are updated annually, usually in April, following publication of the revised traffic workload forecasts around March.

Changes in the annual staffing targets resulting from revised traffic workload forecasts will also require adjustments in the hiring numbers presented in Chapter 5. This Controller Staffing Plan will be updated annually and submitted to Congress as part of the FAA's budget submission.

3.3 Achieving Controller Staff Savings

The FAA is undertaking several initiatives designed to achieve improved controller productivity. Implementation of the initiatives described below will facilitate achievement of the controller staff targets discussed in Section 3.1.

While each of the initiatives described can be implemented as stand-alone elements and contribute to achieving staff savings, it is the synergy of all of these initiatives acting together that will achieve the most significant gains.

3.3.1 Increased Work Effifiency

The FAA has established a goal to achieve a controller staff savings of 10 percent by FY 2010. Increasing efficiency involves better matching of staffing to traffic workload. Routine traffic activity at most facilities occur with ebbs and flows during the day/night shifts. All operating positions are required to be open during peak traffic. However during slower periods, positions are combined and controllers are usually provided with breaks. Therefore, these maximum staffing levels typically are not required at all times during the work shift. Currently, FAA management assigns other duties to controllers not actively providing air traffic control (ATC) services. These duties include but are not limited to proficiency training, computer based instruction (CBI), etc., in order to fully utilize human resources during the complete eight-hour shift period. As more developmentals are added to the field facilities there may be decreased opportunities for controllers to participate in non-traffic control activities because of the need for fully certified controllers to assist in on-the-job training.

The ebb and flow of the traffic that is referenced above leads to a level of unused shift capacity, as illustrated in Figure 3.3. Figure 3.3 is a snapshot of a combined ATCT/TRACON facility over a period of 24 hours that shows, in the columns, the number of controllers working traffic and those that are in developmental training. Also plotted on this graph is the number of certified professional controllers (CPC) on duty. The gap between the CPC on duty and the number of controllers working traffic or in training represents unused shift capacity. This implies that additional traffic can be accommodated without increasing the staffing levels.

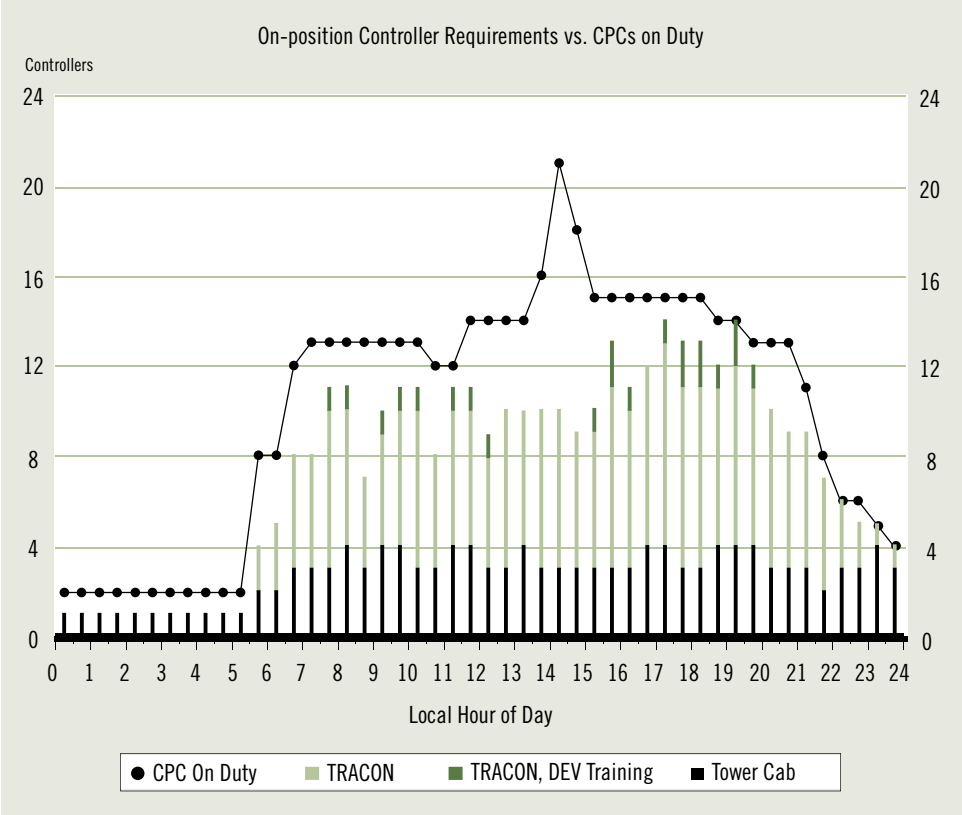


Figure 3.3 Sample Combined ATCT/TRACON Traffic and Training Workload and Staffing for a 24-Hour Period

A work group has been established and is collecting baseline data; creating automated reports on hours available versus traffic handled; and creating educational briefings for use at the facility level to review and improve efficiency. Collecting accurate measurement data poses a challenge and is currently labor intensive. One of the goals of the focus group is to reduce the amount of work required to collect this data through an automated collection process ensuring the data is readily available to management.

3.3.2 Part-Time/Job Sharing

Use of part-time/job sharing during peak traffic periods has potential to save on staffing costs and, in some instances, encourage retention of employees by providing them with additional job flexibility.

New part-time/job-sharing hires achieving CPC status would be a challenge due to reduced training time. Headquarters could reduce the barrier to part-time by not counting part-time against the manager's full time equivalent (FTE) count to encourage its use. All of these factors are considerations to implementing part-time/job-sharing

employment. However, the FAA intends to pursue part-time/job-sharing if it determines efficiencies can be achieved.

3.3.3 Split Shifts

A change in work assignments in field facilities has the potential to save resources by better matching of staffing to traffic. If controller personnel were permitted to work three or four hours to cover a peak in workload, then leave and return later in the day, when traffic returns, to complete their workday, the need for additional personnel on specific shifts could be reduced. In the terminal option where airports serve hub/spoke operations by a major service provider, the utilization of split shifts offers significant resource savings. In the en route environment when areas of specialization are primary feeder sectors or departure sectors, improvements to staffing could also be realized through the use of split shifts.

Following a one-year trial period, the FAA will evaluate the results of the use of split shifts and, if successful, would then begin planning on future staffing requirements utilizing the number of requests for split shifts that have been requested and approved.

3.3.4 Management of Overtime

Several years ago, the FAA established a goal to reduce operational overtime costs. While this effort to reduce operational overtime costs was successful, it also had an unintended consequence of increasing staffing costs. Air traffic managers develop their staffing estimates based on the number of hours that the various controller positions are anticipated to be active which, in turn, is based on traffic demand scheduling. The current practice at many facilities is to divide the number of hours the position is open by eight hours (length of a work shift) and round up to the nearest whole number. Using this method, the use of overtime can be avoided. The new method that the FAA will implement in FY 2005 will truncate any fraction less than or equal to 0.5 and round up to the next whole number for fractions greater than 0.5. Table 3.1 contains an illustration of the present practice of deriving a staffing estimate versus a practice that utilizes overtime.

Facility Level Staffing Estimate Illustration			Present Practice Without Use of Overtime		Practice With Use of Overtime	
Facility	Position	Hours Open	Staffing Estimate	Overtime Estimate	Staffing Estimate	Overtime Estimate
Tower	Local Control	16	2	0	2	0
	Ground Control	10	2	0	1	2 Hr.
	Flight Data	9	2	0	1	1 Hr.
TRACON	Radar – 1	16	2	0	2	0
	Radar – 2	13	2	0	2	0
	Flight Data	9	2	0	1	1 Hr.
		Total =	12	**0**	**9**	**4 Hr.**
		Applying the staffing standard multiplier (1.76) to the total staffing estimate =	22	**0**	**16**	**4 Hr.**

Table 3.1 Illustrations of Two-Facility Staffing Estimating Procedures

In Table 3.1 the alternative practice shows a substantial reduction in the controller-staffing estimate (six less) at the cost of four hours overtime daily. All facilities will not realize this type of savings, since at each facility there may be variations in the actual methodology employed. During FY 2005, the FAA began a facility-level review of control position hours. This review is expected to result in savings in both costs and staffing.

3.3.5 Sick Leave Usage

An OIG report, AV-2004-081, dated September 9, 2004, entitled Report on the FAA's Actions To Address Allegations of Leave and Overtime Abuse at Five Locations, found that FAA management "had taken effective actions to determine if allegations were valid and to address them as appropriate." While encouraged by management actions at these facilities, the OIG recommended that the FAA provide better information on leave usage to all agency managers. The agency currently has a labor distribution collection system called Cru Support that provides this information. The next generation of labor distribution collection is addressed in Section 3.3.12. In addition, the FAA established a goal to be accomplished by FY 2006 to reduce sick leave usage by 8 percent by addressing sick leave abuse Should the FAA be able to achieve that goal, the equivalent savings would amount to approximately 73 controllers.

3.3.6 Worker's Compensation

With regard to worker's compensation, the FAA strives to ensure that Office of Workers' Compensation Program (OWCP) benefits are used appropriately. The FAA has adopted a proactive approach to help return disabled and temporarily medically restricted personnel to work and more effectively manage new cases by:

- More aggressively managing traumatic injury claims involving Continuation of Pay (COP)
- Providing initial and continuing education to managers, supervisors, and support staff on appropriate actions surrounding employee claims, including how to better controvert claims when appropriate
- Maintaining an active return-to-work (RTW) program
- Creating and maintaining a reporting system to track the number of claims, nature of injury and related costs associated with traumatic injury claims and COP costs as recommended by the OIG in report AV-2003-011, dated January 17, 2003

Currently, all new claims from the FAA's Southern and Great Lakes Regions and Washington Headquarters are being proactively managed under this approach. Thirty-eight percent of the FAA population and 45 percent of the FAA's OWCP costs are now being managed centrally under this program. This revised management approach will be implemented agency-wide by FY 2007.

To date, we have received and reviewed just under 1,000 new claims from the Southern Region and Headquarters and have begun managing all new claims from the Great Lakes Region effective November 1, 2004. The agency has facilitated over 80 returns to work on new claims and has also improved the number of questionable claims that were denied by the Department of Labor. The agency has also provided more extensive supervisory training in the centrally managed Regions. Over 15 training sessions have been provided to supervisors and managers, including several national satellite broadcasts. During FY 2004 the agency realized a one year cost avoidance of $3.1 million in OWCP Program support costs and has already accomplished $1.8 million in avoided costs during FY 2005.

Staffing efficiencies will increase as a result of the early RTW program within the controller workforce, particularly considering reductions in absences due to short-term OWCP injuries and use of overtime to cover operational needs will diminish.

3.3.7 Official Time

OIG report, AV 2004-033, dated February 10, 2004 observed that the FAA includes both time granted for traditional representational activities such as time spent as a facility representative, as well as time granted for bargaining unit employees to work on the FAA task forces and work groups. In response, FAA established an Official Time Task Force to identify strategies to facilitate the recording, monitoring and reduction of official time used FAA-wide for union representational duties. The Task Force will make recommendations to the Administrator by the end of March 2005.

FAA has taken initial steps regarding the use of official time: 1) issued comprehensive guidance that ensures accurate reporting; 2) developed new labor distribution reporting (LDR) codes for tracking official time; and 3) implemented an automated collection system to aid managers in tracking official time. To further complement focusing on reducing official time usage, the agency reduced the number of full-time union representatives (liaisons) at FAA headquarters that were involved with technology work groups and related initiatives and are holding managers and supervisors accountable for consistent management of official time.

3.3.8 Controller Participation in Workgroups, Meetings and Conferences

Each year, air traffic controllers attend workgroups, meetings, conferences or other activities where management decides their expertise is needed. Though it is recognized that their contribution to such projects is valuable, the time air traffic professionals spend on non-traffic controlling activities affects staffing and costs.

When controllers are participating in workgroups, meetings and conferences, backfill overtime is used to provide coverage of their traffic control responsibilities. A more judicious use of controller participation in non-traffic control activities will also result in decreased backfill overtime costs.

The FAA has developed a plan to ensure that requests for labor representation are assessed for benefit, financial impact, and return on investment. Each organization is required to validate use of union representatives on a monthly basis. A database is being used to collect and track personnel, and costs, for participation in workgroups and projects. This has reduced liaison participation from 55 air traffic controllers to 39. The agency will continue monitoring this program to assist in achieving our efficiency goal.

Table 3.2 shows the effects of this initiative on time and cost for controllers to attend meetings and workgroups instead of controlling traffic over the period from FY 2001 to FY 2004:

CONTROLLER PARTICIPATION IN WORKGROUPS, MEETINGS, CONFERENCES				
DIRECT LABOR HOURS/COST				
Year	Hours	% Decrease	Cost	% Decrease
FY 2002	99,744	N/A	$4,483,922	N/A
FY 2003	83,648	16.14%	$3,973,735	11.4%
FY 2004	61,016	27.05%	$3,150,847	20.70%
BACKFILL OVERTIME LABOR HOURS/COST				
FY 2002	32,600	N/A	$2,516,715	N/A
FY 2003	23,533	27.81%	$1,938,839	23.0%
FY 2004	14,011	40.46%	$1,260,706	34.98%

Table 3.2 Costs of Controllers Participating in Meetings and Workgroups

3.3.9 Processing of Unsuccessful Developmentals

Federal Aviation Personnel Manual (FAPM) Letter 330-1, Employment Program for Developmental Air Traffic Control Specialists, provides guidance for making employment and placement decisions about controllers who fail to progress to the CPC level. Continued employment in all air traffic control specialist options is contingent upon satisfactory progression to CPC. Achievement of CPC requires an extended period of time including formal training, job performance evaluation, and demonstrated proficiency in the working environment.

The provisions of FAPM Letter 330-1 permit management officials to place developmental controllers who are unsuccessful in the training program into lower level facilities provided they meet the requirements of the following criteria:

1. This is the developmental's first training failure and reassignment
2. How far the developmental progressed in training before failure
3. There is a vacancy in a lower-level facility
4. A valid recommendation from the losing manager
5. Acceptance by the receiving manager
6. Voluntary acceptance by the employee

Over the past several years, executing the provisions outlined above has contributed to staffing imbalances within the system. Currently, terminal is overstaffed relative to the staffing standards while en route remains below the staffing standards. While en route training failures do not account for the entire staffing imbalance, they are a significant contributor to the problem. The FAA will strictly enforce the provisions of this policy and prohibit movement from the en route to terminal option when vacancies do not exist.

3.3.11 Facility Imbalances

The agency will restrict movements not directly leading to maintaining balanced staffing. FAA management has the right, which is non-negotiable, to direct the reassignment of any employee from one position to another, within or outside of the local commuting area, when we determine that the directed reassignment is in the FAA's best interest. In making such decisions, we consider the fiscal implications (relocation benefits), training period for the controller to be fully certified at the newer facility, and the impact on the losing facility. Additionally, should an employee fail to accept a directed reassignment, separation from federal service occurs. For this reason, the FAA offers employees the oppurtunity to submit applications for voluntary reassignments. Our experience with voluntary reassignments is positive; therefore, the agency will examine the use of increased voluntary reassignments to address understaffed facilities. While management can execute directed reassignments, the FAA has not routinely engaged in directed reassignments because of the increased cost.

3.3.11 Scheduling Tool

The FAA is developing a request for proposal toward use of an advanced, computer-based, shift-scheduling tool that can accommodate part-time and split shifts to improve controller utilization. The goal is to develop shift-staffing schedules that match controller staffing to traffic workload demands. This will enable air traffic managers to determine cost-effective controller scheduling with much greater accuracy than is presently possible using manual methods.

3.3.12 Deployment of Cru-X/ATO Resource Tool (ART)

Cru-X/ART is a computer-based tool used to record time, attendance, and labor distribution for operational controllers and supervisors. It is currently implemented in six terminal facilities with plans to deploy system-wide in four phases. Phase 1 consists of implementation in 27 terminal facilities and has begun in December 2004. Phase 2 consists of implementation at 40 additional terminal control facilities and will start by January 2005. Phase 3 deployment targets the remaining terminal facilities and will be completed by April 2005. Phase 4 implementation targets en route centers and will start by June 2005. Use of this tool provides information on controller time and activity distribution that, in turn, can be used to determine more efficient controller utilization.

3.3.13 Changing National Airspace System Technologies

Since the mid 1990s, the FAA has fielded a number of modern communications, display and weather systems for controller use. The underlying automation system was updated

to cope with Y2K concerns. Availability, reliability and maintainability of critical systems have been improved. More information, especially related to weather, is now available to aid in the controller's decision-making process.

Between 2005 and 2009, the ATO will continue to field the Advanced Technologies & Oceanic Procedures (ATOP) for oceanic air traffic control, the User Request Evaluation Tool (URET), Traffic Management Advisor (TMA), Airport Movement Area Safety System (AMASS)/Airport Surface Detection Equipment (ASDE-X), and new terminal automation. The FAA will begin to field En Route Automation Modernization (ERAM) equipment for en route centers. Further, the FAA plans to pilot an automated flight strip program in select terminals. These systems will improve timely availability of data to support increased air traffic. Partly because of the training time required and because there is insufficient experience operating these new systems, the FAA cannot currently claim any decrease in controller staffing from these improvements in the near term. However, new technologies will be analyzed as part of any longer-term staffing standard reassessment. As experience is gained with new automation, the FAA will adjust staffing practices accordingly.

The Joint Planning and Development Office (JPDO), formed to define the future global air transportation system, published in December 2004 an end-state description of the next generation air transportation system. In comparing today's system with the system envisioned in 2025, several distinctions emerge that will increase controller efficiency. The future system will rely heavily on automation for routine tasks, and the role of pilots, controllers, flow managers, and dispatchers will be transformed from routine tasks to managing exceptions and the unexpected. Human performance and efficiency enhancements will enable the same number of decision-makers to accommodate a larger number of operations. Automation aids will use intelligent agents and other computer decision support techniques to augment the role of decision-makers. In addition, air traffic management operational procedures will be tailored to aircraft system performance and less tied to geographical airspace differences.

3.3.13 Other Efficiencies

The hiring targets outlined in this plan can be accomplished through the implementation and execution of the initiatives outlined in this chapter, the training initiatives outlined in Chapter 7, and by using better analysis in determining appropriate staffing levels for individual facilities. These are initiatives that we believe we can achieve. In addition, as stated above, the FAA expects that new automation technologies and changes supported by the JPDO will result in a more automated system over time that may decrease the number of controllers the FAA plans to hire and train. However, we do not yet have enough data to factor the technologies into our hiring and staffing targets.

Further, there are other initiatives that have not yet been developed which may also impact the number of controllers that the FAA plans to hire as outlined in this plan. These initiatives include facility consolidations and the expansion of the Contract Tower

Program. The FAA intends to study these options and work with its customers and owners if it finds that any or all of the options will significantly assist the FAA in meeting its future requirements and lowering its operating costs.

3.3.13.1 Facility Co-locations and Consolidations

As the FAA examines modernization efforts at its smaller terminal sites, there may be opportunities for the FAA to co-locate the terminal radar approach control positions into a larger TRACON facility where staffing can be flexibly employed and the system can operate more efficiently.

Co-locating several facilities of differing grade levels will allow our employees to progress to higher-grade levels without having to relocate. This has the dual benefit of providing our employees better opportunities for career progression while dramatically decreasing the agency's operating, maintenance, infrastructure and permanent change of station costs.

Other potential areas of air traffic control consolidation could include ATO area offices and en route air traffic control centers, and other functions, all of which would lower future operating costs, decrease overhead, and return more controllers to the facilities.

3.3.13.2 Contract Tower Program

For more than 20 years, the FAA's Contract Tower Program has provided safe and efficient air traffic control services at towered airports throughout the continental United States as well as in Alaska, Hawaii, Guam, Puerto Rico and Saipan. The Contract Tower Program is a key component of our nation's aviation system and provides important air traffic services to communities, businesses, and travelers. Without the program, many communities would not be able to afford these services.

The most recent report issued by the Department of Transportation's Office of the Inspector General on the Contract Tower Program (dated September 4, 2003) found that a sample of 12 contract towers, on average, cost over $900,000 less on a per tower basis to operate annually than 12 FAA-staffed towers, even though they had comparable levels of aircraft operations. In light of the program's success, Congress previously directed the FAA to study whether additional cost savings could be achieved by expanding the Contract Tower Program to other FAA-operated air traffic control towers "without radar capability." The FAA operates 71 level 5 to level 9 towers employing over 900 controllers that were previously classified as visual flight rule (VFR) towers that may fit this description. While the FAA has developed no specific plans, conversion of some or all of these towers would likely lower the FAA's operating costs. It would also allow the FAA to use these controllers at other facilities to meet staffing needs.

In order to develop a long-range projection of controller hiring needed to maintain the annual staffing targets, the FAA first needed the capability to forecast the numbers of controllers that could be lost not only through retirements but also resignations, removals, deaths, and internal transfers.

4.1 Air Traffic Controller Gain/Loss Categories

In 1999, the FAA implemented a system for tracking controller gains and losses. The system was designed to yield data that could be used to improve the agency's ability to accurately estimate controller hiring needs.

The categories that were established for collection of controller gain and loss data are defined below:

- Attrition Losses – Controller losses due to retirements, resignations, removals, and deaths. Removals also include those developmentals that were not successful and separated from the agency.
- Non-Attrition Losses – These are controller losses to other positions in the agency. More specifically they are losses to positions such as operational supervisors (OS), traffic manager coordinators (TMC) and positions in the other facility workforce (OFWF), headquarters/regions (HQ/RO), flight service station (FSS), Technical Center, and the academy.
- Non-Attrition Gains – Just as there are controller non-attrition losses as described above, there are also gains to the controller ranks from other positions as employees transfer back to CPC positions. Comparison of non-attrition gains and losses yields an important net result not only in estimating controller losses but also in tracking patterns of movements between controllers and other positions.

4.2 Controller Attrition Losses

This category of controller losses pertains to retirements, resignations, removals and deaths. The basis for estimating each component of the controller attrition loss category is described in the following sub-sections.

4.2.1 Controller Retirements

Controller retirement eligibility data and historical controller retirement patterns were used to estimate future controller retirements. Controllers are eligible to retire either by qualifying for regular retirement or special retirement. In addition, most controllers must stop working live traffic when they reach age 56. This is generally referred to as the mandatory retirement age. Although most of the controllers do retire at age 56 (or before) they are eligible to compete for another position with the agency where the Age-

56 rule does not apply. Those controllers hired before May 27, 1972 are exempted from the mandatory retirement provision. There are also other situations where controllers are exempted from mandatory retirement. The total number of controllers who are age 56 or older currently controlling live traffic is 538 as of September 30, 2004.

Figure 4.1 shows the number of controllers currently eligible to retire and those that will become eligible annually through 2014.

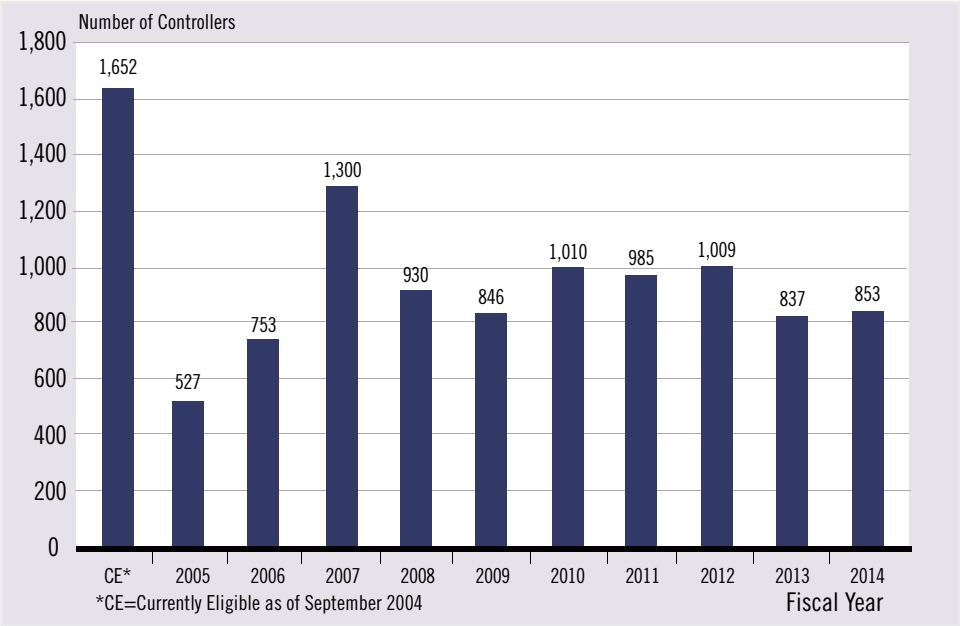


Figure 4.1 Air Traffic Controller Retirement Eligible Projection

The large number of controllers that presently qualify to retire results from the fact that not all controllers retire when they first become eligible. Three years of controller retirement data was analyzed to determine a retirement pattern that is described in the next subsection.

Figure 4.2 shows the controller retirement pattern that was derived by averaging actual controller retirements and their year of eligibility over the period January 2001 through December 2003.

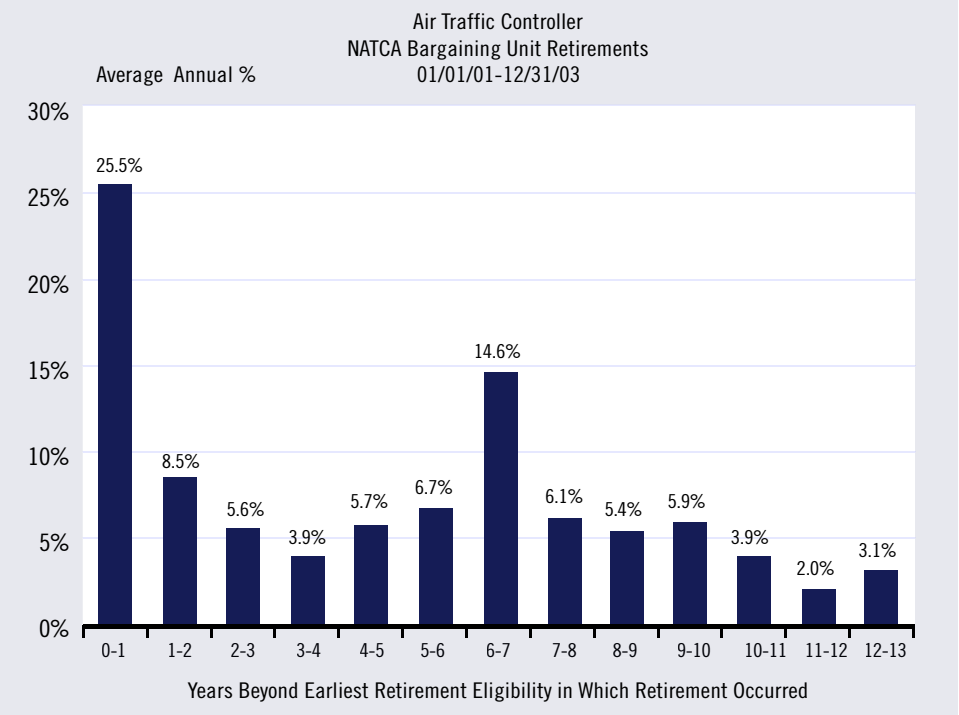


Figure 4.2 Controller Retirement Pattern

Figure 4.2 also indicates that 25.5 percent of the controllers retire during their first year of eligibility. Over the next five years another 30.3 percent retire for a yearly average of about 6.1 percent. At the end of six years the percentage is just over 55 percent. On the average, six years after becoming eligible to retire, 45 percent of the controllers are still working.

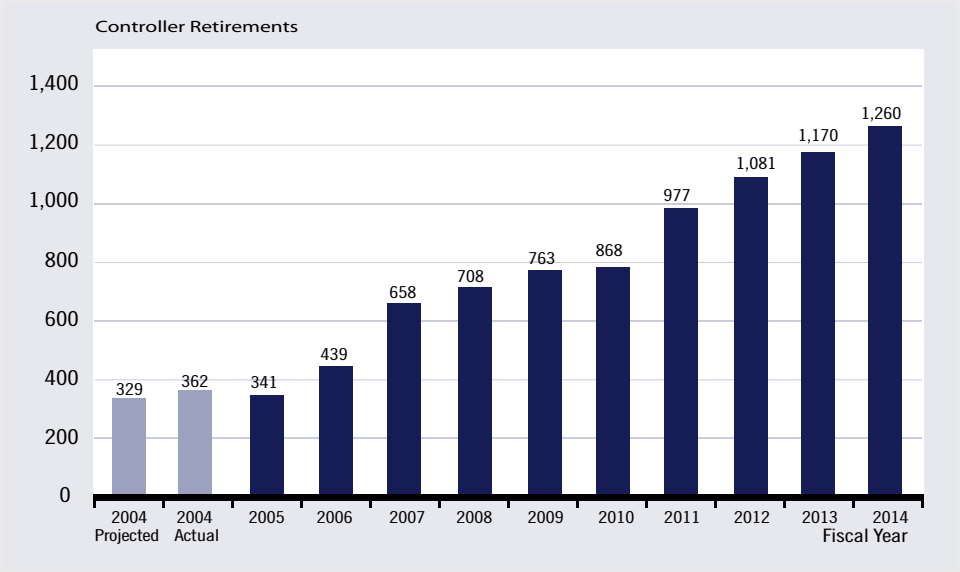


Figure 4.3 Annual Controller Retirement Estimates

Annual estimates of controller retirements were calculated by applying yearly retirement percentages from Figure 4.2 to the yearly retirement eligibility data in Figure 4.1. As can be seen from Figure 4.3, retirements are projected to have an upward trend through FY 2014. The total number of projected retirements through FY 2014 is 8,265. Retirements are projected to approximately double between FY 2005 to FY 2007 and triple by FY 2014.

4.2.2 Controller Losses Due To Resignations, Removals and Deaths

The remaining components of the attrition loss category are resignations, removals (including developmentals that were unsuccessful in achieving certified professional controller status and subsequently separated from the agency), and deaths. To estimate the future controller losses due to these reasons, five years of historical data were analyzed.

The projected controller losses were estimated by first calculating the percentage of actual losses compared to on-board controller staffing for each year from FY 1999 through FY 2003. These percentages were then used to calculate a five-year average. The resulting percentage was then applied to the projected national staffing levels to derive estimated annual losses. The results are shown in Figure 4.4.

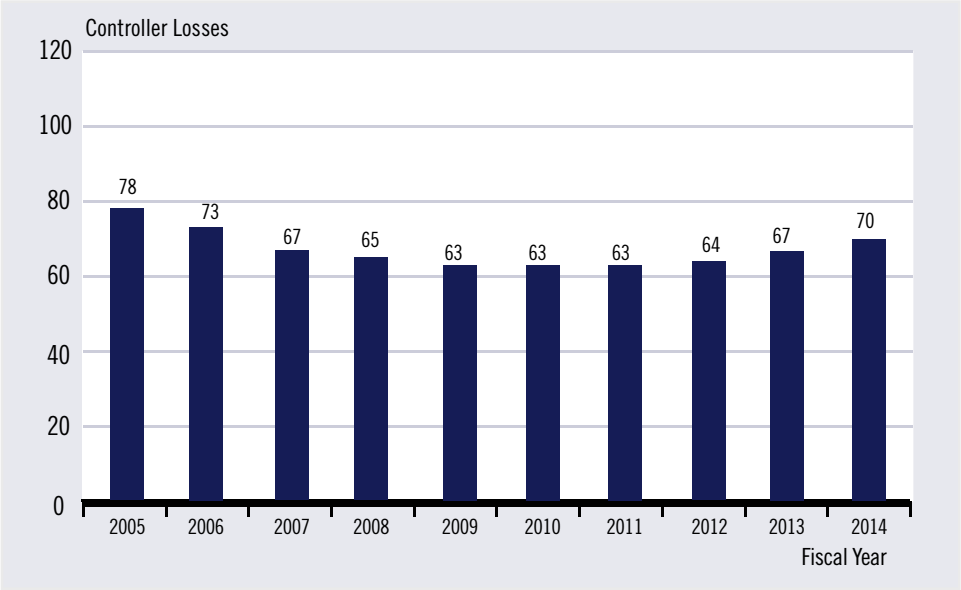


Figure 4.4 Projected Controller Losses Due to Resignations, Removals and Deaths

4.3 Controller Non-Attrition Losses/Gains

This category of controller losses is associated with controllers moving to other positions in the agency. More specifically, they are losses to positions such as operational supervisors (OS), traffic management coordinators (TMC) and positions in the other facility workforce (OFWF), headquarters/regions (HQ/RO), flight service station (FSS), the FAA Technical Center, and the academy. At the same time, there are people leaving other positions in the agency and moving back to the controller workforce that act to offset the controller losses to other jobs.

These losses are difficult to estimate because they are impacted from year to year by policies, hiring and position freezes, and congressional guidance. Most importantly, staffing in these areas has been decreasing because as positions become vacant, they have not always been backfilled. Backfilling these positions would eventually, if not immediately, impact controller losses. For example, to fill a support specialist position the replacement would most likely come from the controller ranks but in filling a manager vacancy, the replacement could come from a subordinate management position that would then be backfilled from the controller ranks.

The estimated controller non-attrition losses were computed in two parts. The first part was controller losses to other positions in the agency excluding promotions to the operational supervisor (OS) position. For the first part, historical data was used to compute an annual average loss. For the second part, the OS retirement pattern was applied to a projection of OS retirement eligible. The subsections below present the derivation of the total controller non-attrition losses.

4.3.1 Estimated Controller Non-Attrition (Excluding OS) Losses

The difference between the historical non-attrition controller losses and the historical controller gains were averaged to arrive at an average number of the controller workforce lost due to internal transfers to other positions. An average of 74 is the projection for controller losses in this category.

4.3.2 Estimated Controller Non-Attrition Losses Due To Promotions to OS

Over the years, several different factors influenced both the policies associated with OS staffing and the various actual levels of OSs. In 1998 the agency entered into a union agreement to achieve a goal of a ratio of one OS to every 10 controllers. At that time the actual on-board ratio was about one to seven. From 1998 through 2003, the OS ranks dropped as the agency moved toward the goal of one to 10 reaching one to 9.95 in September FY 2003. The FY 2003 report language accompanying the agency's appropriation stated that the OS level should be raised to 1,726, which was the level at the end of FY 2001. However, primarily because of budget constraints, the agency continued to allow the OS ranks to drop in FY 2003. In FY 2004, the FAA began raising OS staffing levels and reached 1,727 OS consistent with congressional direction.

The FY 2005 Omnibus appropriations bill directs the FAA to raise the level of operational supervisors to 1,846. The bill provides $4 million for recruitment and pay-related costs. Because virtually all OS hires come from the controller staffing numbers, the significant issue with filling OS vacancies is the impact it has on the controller staffing levels. Therefore it is important to have some understanding of how the controller workforce will be impacted as OS retire from the system.

To obtain an estimate of the number of OS that will retire, the following historical OS retirement pattern shown in Figure 4.5 was developed from 2001 to 2003 retirement data.

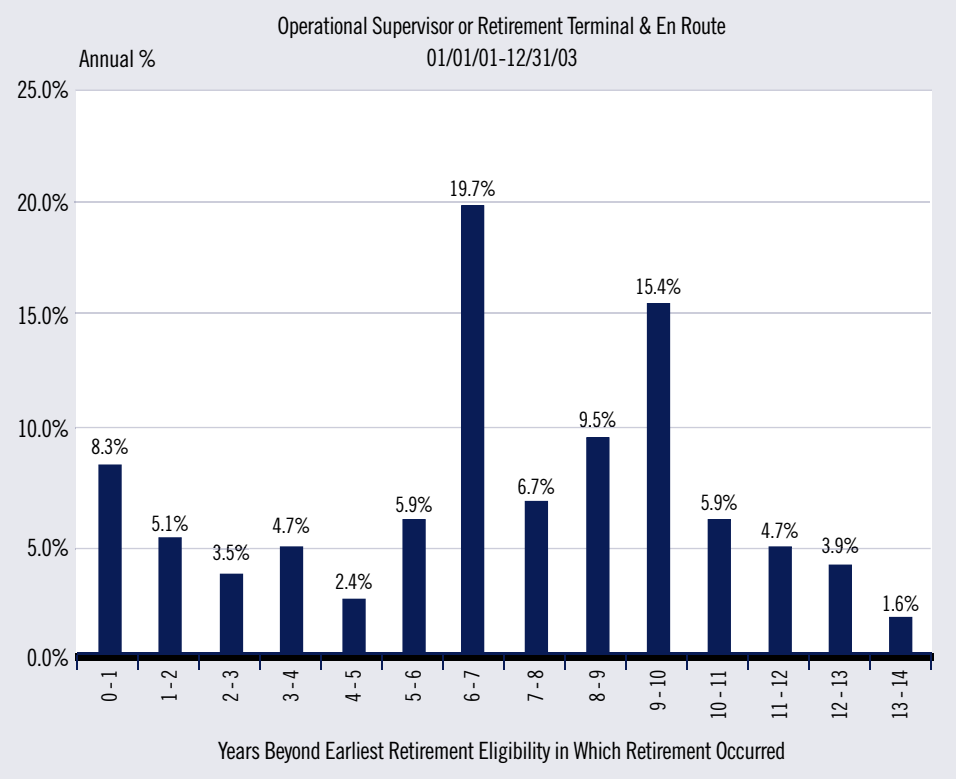


Figure 4.5 Operational Supervisor Retirement Pattern

The OS retirement pattern differs from the controller retirement pattern due to the fact that those entering the OS workforce from the controller ranks have varying years of service. By way of contrast, the new hires entering the controller workforce have little or no previous service time that counts toward retirement eligibility. The FAA does not expect major variations in the OS work group.

The estimated controller non-attrition losses are shown in Table 4.1. The FY 2005 figure for 'Promotions to OS' reflects recent congressional direction to increase the number of OS from 1,726 to 1,846.

Fiscal Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Promotions to OS	193	68	108	120	132	139	135	156	140	155
Other Losses	74	74	74	74	74	74	74	74	74	74
Non-Attrition Loss Total=	267	142	182	194	206	213	209	230	214	229

Table 4.1 Total Controller Non-Attrition Loss Projections

4.5 Estimated Total Controller Losses

Figure 4.6 shows the projected number of personnel that will be leaving the controller workforce over the period FY 2005 to FY 2014 due to retirements, resignations, removals, deaths and internal transfers.

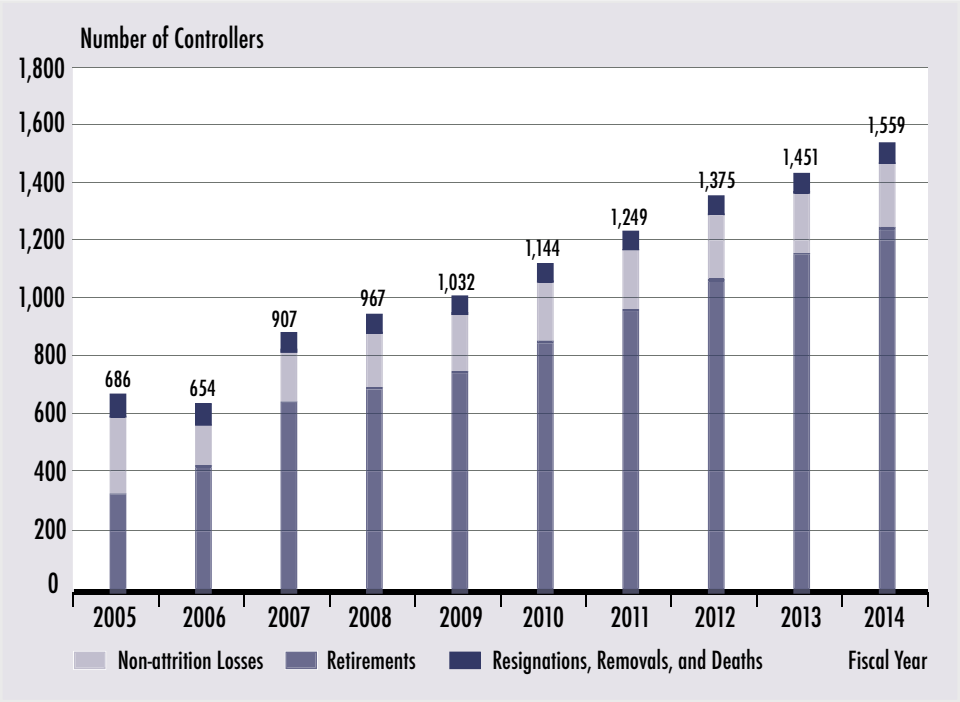


Figure 4.6 Estimated Total Controller Losses

4.6 Controller Retirements At Facility Level

The FAA has established a facility-by-facility retirement loss model and will use that data to create annual hiring targets for each facility. We will be refining this model and placing more emphasis on developing accurate facility level data.

4.7 Controller Loss Summary

Table 4.2 shows the total estimated number of controllers that will be lost by loss category over the period FY 2005 – FY 2014.

Controller Loss Summary	
Loss Category	Total Controller Losses (FY 2005 – FY 2014)
Retirements	8,265
Resignations, Removals and Deaths	673
Internal Job Transfers	2,086
Total =	11,024

Table 4.2 Controller Loss Summary

This chapter presents the FAA's controller hiring plan. The FAA analyzed several scenarios with the aid of a hiring model. The hiring model is not a substitute for the air traffic staffing standards. It was developed to analyze the implications of each hiring scenario in terms of meeting the annual staffing targets without adversely impacting academy training capacity and the on-the-job portion of facility training. The hiring model took into account the key differences between the current status of the terminal and en route controller groups.

The key differences between the terminal and en route controller groups are:

- Present staffing status of each group is not the same; low for en route and high for terminals.
- Academy training capacity for terminal controllers is 840 annually and for en route controllers the capacity is 1,240 annually.
- Planned facility training time to reach CPC status is two years for terminal controllers and three years for en route controllers.

Assumptions common to both controller groups include:

- Model is based on achieving the annual staffing targets versus staffing standard shown in Figure 3.1.
- The planned efficiency gains are achievable.
- Hiring is uniform throughout the year.
- Developmental facility assignments are based on the joint consideration of facility need and capacity to train to maintain a steady-state training pipeline. CPCs at each facility provide the on-the-job portion of facility training. If the ratio of developmentals to CPCs exceeds 35 percent, the training time to reach certification status is greatly extended. Hiring scenarios that exceeded a developmental to CPC ratio of 35 percent were deemed highly undesirable.
- Controller losses are normally distributed by quarter for the planning period.
- Terminal and en route inputs are made based on academy-specific class size.
- CPCs in training (CPC-IT) applied as a constant across 16 years.

5.1 Controller Hiring Profile

Several controller hiring scenarios were analyzed. The selected controller hiring profile has the following attributes:

- Provides for training lead-time.
- Maintains developmental to CPC ratio at an acceptable level..
- The projected actual on board (AOB) remains below the staffing standard projection for each fiscal year of the plan's duration.
- Does not exceed the academy training capacity for the duration of the plan.

The selected hiring profile is shown in Figure 5.1 compared to the estimated controller losses.

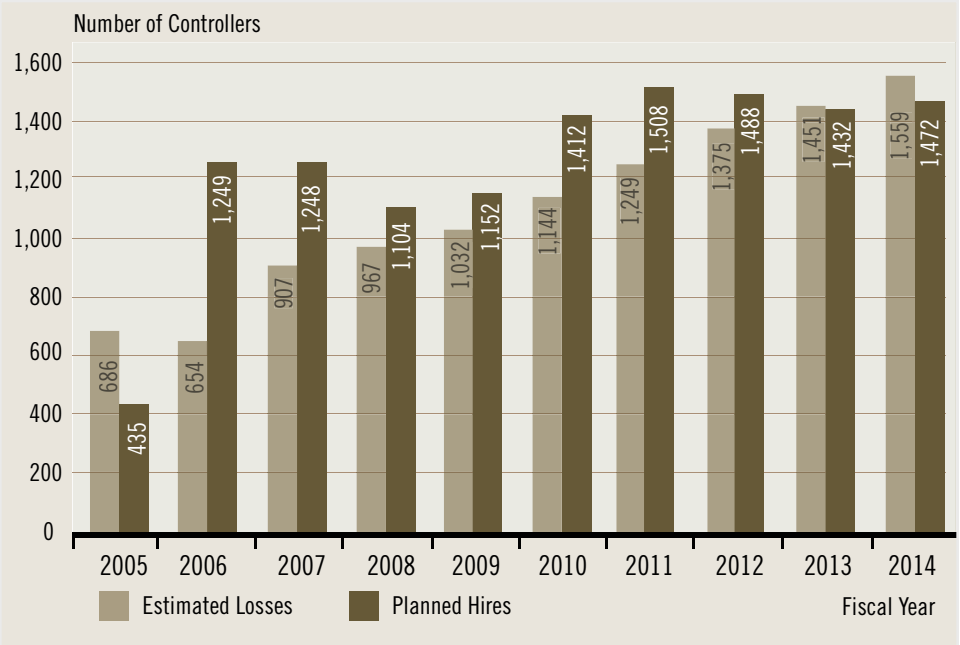


Figure 5.1 Controller Planned Hires versus Estimated Losses

With the exception of FY 2005, the hiring profile exceeds the estimated losses through FY 2012 to provide training lead-time while maintaining an acceptable ratio of developmentals to CPCs. The developmental/CPC ratios for both en route and terminal options remain below 35 percent for the duration of the plan. While these values appear to be high relative to recent years where ratios fluctuated between 15 percent and 20 percent, our modeling indicates that values approximating 35 percent are normal mathematical outcomes from even flow hiring based upon a routine attrition of 10 percent, two to three years time-to-certification, and a steady forecasted traffic growth. An attempt to control hiring in the model to maintain a low developmental percentage to CPC staffing produced unacceptable results regarding total staffing levels and essentially precluded any effort to maintain productivity targets. Basically, this means that an approximate 35 percent developmental/CPC ratio should be expected in a steady-state hiring system. While precise data from the pre-1981 years is unavailable, the anecdotal evidence indicates that this percentage was a normal outcome. The lower ratios experienced during the recent years is a function of low hiring volumes.

Thus, the projected actual on board (AOB) staffing will exceed the annual staffing targets because hiring is being done in advance of when the controllers will actually be needed to allow time for training and to keep the ratio of developmental/CPC controllers below 35 percent.

Figure 5.2 compares the existing staffing standard projection with the annual staffing targets (assuming efficiency gains are realized) and the actual on board each fiscal year through FY 2020.

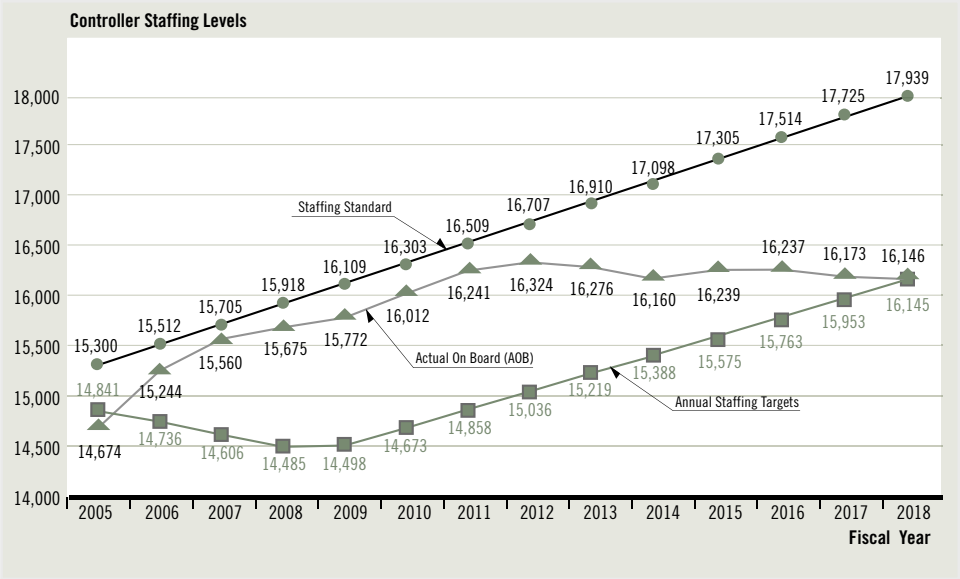


Figure 5.2 Actual On Board Staffing

Under this hiring plan, the AOB staffing remains below the existing staffing standard projection and starts to decrease in FY 2013 until it reaches the annual staffing target level in FY 2018. The controller hiring profile will be updated annually as actual data is added to the loss and hiring models and projections are revised.

The developmental to CPC ratio for terminal and en route controller groups achieved with this hiring plan is shown in Figure 5.3. The ratios include not only the new hires but also internal transfers who are also in training.

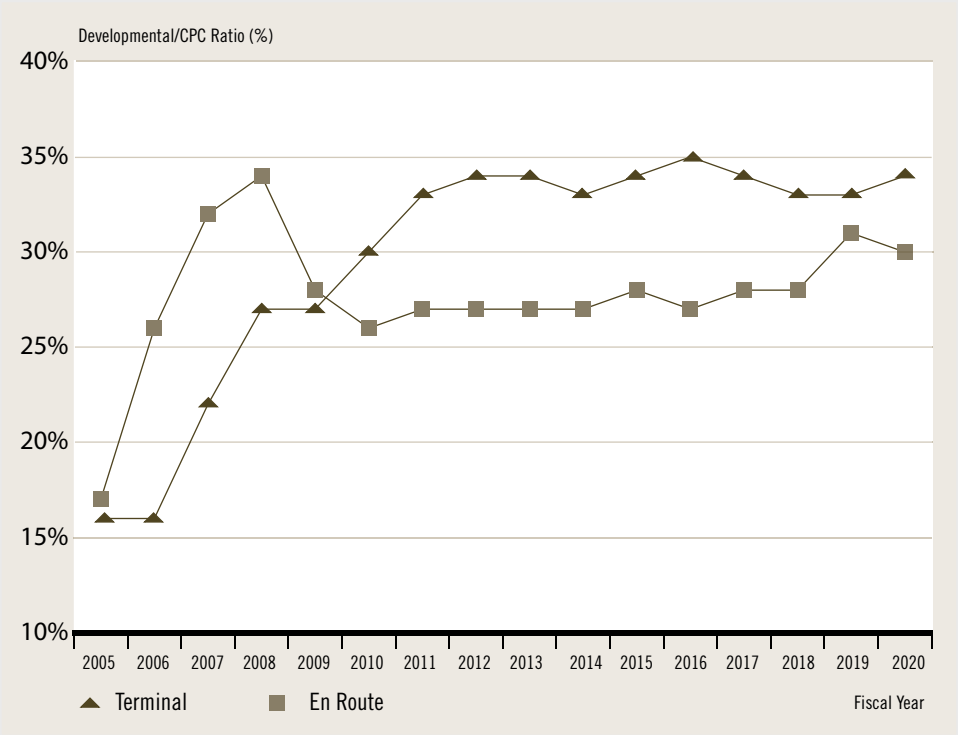


Figure 5.3 Developmental/CPC Ratios

5.2 Potential Adjustments to Controller Hiring Targets

In addition to the various initiatives and management reforms being considered, the controller hiring numbers may be adjusted downward due to mandatory age-56 rule waivers and the potential movement of qualified personnel from Flight Service to the controller ranks. These two ongoing activities are discussed in the following subsections.

5.2.1 Flight Service Station Personnel

There are currently 199 flight service station employees that are qualified terminal controllers. Depending on the outcome of the ongoing A-76 Flight Service Station study, some of these employees may reenter the controller workforce. If this occurs, the FAA will adjust the number of its hires in future hiring plans to indicate these gains to the controller workforce.

5.2.2 Age-56 Rule

The FAA believes that waivers to the Age-56 rule may be of value for targeted locations where there may be a critical staffing shortage and where the ratio of CPCs to developmentals is such that training would be impacted.

Section 8335 of Title 5 of the United States Code provides that:

> *"An air traffic controller shall be separated from the service on the last day of the month in which he becomes 56 years of age or completes the age and service requirements for an annuity under section 8336, whichever occurs later. The Secretary, under such regulations as he may prescribe, may exempt a controller having exceptional skills and experience as a controller from the automatic separation provisions of this subsection until that controller becomes 61 years of age."*

The law passed in 1971 (Public Law 92-297, codified at 5 USC § 8335) was based on testimony that the inherent stress of the controller job, along with the cumulative fatigue resulting from rotating shifts, and the inevitable decline in performance with age, led to burnout of the controller, thereby creating a safety risk. In addition to air traffic controllers, early retirements based on stress were also provided for federal law enforcement and firefighters in parallel legislation. However, incumbent controllers at the time were exempted from mandatory separation; in general, the law only applies to controllers hired on or after May 16, 1972. Controllers exempt from mandatory separation include:

- Controllers first appointed to an operational position prior to May 16, 1972;
- Controllers first appointed to an operational position in the Department of Defense (DoD) prior to September 12, 1980;
- Controllers under the Federal Employee Retirement System (FERS) who have not met the minimum criteria for retirement; they may remain in the service until reaching minimum eligibility, and then must retire immediately.

Staffing data were extracted from the FAA's Consolidated Personnel Management Information System (CPMIS) to determine how many controllers in the terminal and en route domains were exempt from mandatory separation at age 56. Of the 15,134 non-supervisory terminal and en route controllers on board as of FY 2004 Q3, just 116 have an entry-on-duty date before May 16, 1972. Of the 107 Traffic Management Coordinator and 1,830 Operations Supervisors, just 119 had an entry-on-duty date before May 16, 1972. In other words, the vast majority of incumbent controllers and their supervisors are covered by the mandatory separation provision of 5 USC § 8335 at age 56.

Since passage of the law, in 1971, the FAA's Civil Aerospace Medical Institute (CAMI) has conducted substantial research on controller stress, anxiety, health, and performance. In the fall of 2003, the Air Traffic Service requested CAMI to determine the scientific

basis for mandatory separation. CAMI was also asked to identify factors that might be used to assess requests for waivers under 5 USC § 8335.

CAMI's recent review of the scientific basis for the law concluded that (a) the studies available in 1971 were not entirely convincing, with a variety of weaknesses, (b) studies of controller stress, anxiety performance since 1971 do not clearly support the rationale given for the law, and (c) studies of controller age and performance suggest some concerns about declines in abilities with age. Overall, the scientific literature did not provide a "firm foundation" for either retaining the age-56 requirement or seeking a legislative change. A supplemental study found that the likelihood of an en route operational error declined with age as a function of experience.

CAMI also conducted a survey of operations supervisors to identify the factors distinguishing "exceptional" controllers from other controllers. Overall, factors such as technical skill, personal reliability, technical knowledge, and work capacity were identified by operations supervisors as important in distinguishing "exceptional" from other controllers.

The FAA began a rule-making action in early 2004 as directed by the Congress in the FY 2004 appropriations bill to set forth the procedure for requesting a waiver from mandatory separation at age 56. Based on the number of waivers granted, the FAA will adjust its hiring numbers accordingly. The FAA also established a set of factors based on the CAMI research and other operational factors for the evaluation of waiver requests. Supervisors in the CAMI survey estimated (a) that just 10 to 15 percent of current controllers could be considered "exceptional," and (b) that 30 to 40 percent of controllers might be expected to request waivers. Based on these estimates, it might be expected that 5 to 10 percent of current controllers might be granted waivers. The waivers would be granted in one-year increments with the Secretary of Transportation having the authority to grant waivers up to age 61.

5.3 Annual Adjustments To Controller Hiring Targets

Prior to the start of the agency's budget year, and after the agency has received an indication of its likely budget authorization, an annual controller hiring plan is developed that takes into account the end-of-year controller staffing level, the projected appropriations, the staffing level target for the upcoming fiscal year, and any internal adjustments such as the Internal Placement Program and hardships.

The annual hiring projection for the upcoming fiscal year is then determined for the Terminal and En Route Business Units. Hiring proceeds with the issuance of hiring authority that authorizes each of the business units to reach the end of year controller staffing level targets. Several factors come into play regarding the distribution of hiring authority. First is the staffing level of the business units at the beginning of the fiscal year versus their target goal and their controller loss rate. In anticipation of receiving hiring authority, the Terminal and En Route Business Units decide the placement of the new hires. To assist the business units in determining where retirement losses may occur, the agency has developed a process that takes the national retirement eligibility data, breaks it down to the facility level, and then develops estimates of facility level retirements. This information is then passed on to the business units for use in the placement of new hires. The process of hiring

controllers must be efficient, effective, and have the capacity to handle the amount of hiring anticipated in the coming years. Moreover, the FAA must select the right people to enter the controller training process. If the individuals who enter training do not have the ability to be successful in the training and on the job, then the training program must carry the double burden of training and weeding out those who cannot be successful. The FAA has a long history of world leadership in the research and methods for selecting air traffic controllers. Based on that work, the FAA Academy no longer has the role of screening candidates. A computer-based test instrument called Air Traffic Selection and Training (AT-SAT) replaced the academy screen program. At the same time, the FAA must recruit as necessary to meet its hiring goals and must examine all parts of the hiring process, making any changes necessary to ensure it will meet requirements outlined in this plan.

6.1 Background

During the years following the air traffic controller strike, the FAA used a combination of a written test, known as the Office of Personnel Management (OPM) test, and the FAA Academy screening program (the nine-week screen) in order to help ensure that new hires had the ability to succeed as air traffic control specialists. Under this process, individuals who applied to become air traffic controllers were screened for basic eligibility as they are now, and took the written test. Those who scored high enough on the written test then had to pass the medical examination and the background investigation, just as they do today. Candidates who passed all these steps were hired and sent through the nine-week screen, which was used to further assess their ability to be air traffic controllers. The OPM written test had been found to be insufficient when used alone, so the nine-week screen was necessary to eliminate students unlikely to succeed in facility training. Students who were unsuccessful had their employment terminated.

The process of testing with the written test, hiring individuals, and then screening them at the academy was very effective, but there were also problems. The process was long (the academy screen took nine weeks) and entailed hiring trainees, only to fire many of them within a few weeks. Moreover, it was expensive. The OPM test cost less than $30 per person to administer but was not an effective enough screen by itself. The FAA nine-week screen was generally estimated at the time to cost about $10,000 per person, including students' salaries, travel, and living expenses for the nine weeks.

In 1992, the FAA was able to replace the nine-week screen with a second-stage screening test called the Pre-Training Screen (PTS). The PTS was a computer-based examination and, like the nine-week screen, was administered to candidates who scored well on the OPM test. However, the PTS took only one week to administer and was a step in the pre-hire process rather than a post-hire process. This enabled the FAA Academy to concentrate on training candidates rather than screening them. Even though the PTS testing program still required the FAA to pay candidates to travel to the FAA's testing site in Oklahoma City in order to take the examination, it was far less expensive than the

nine-week screen. Candidates' travel costs at the time were estimated at $600 to $1200 per person. Because they had not yet been hired, candidates from the general public were not paid a salary for taking the test.

With the decline in controller hiring during the mid-1990s, the agency decided to suspend testing with the PTS. At the same time, the FAA had been working on the next generation of computer-based examination for screening controllers, which eventually became known as Air Traffic Selection and Training (AT-SAT). AT-SAT has the advantage of taking only one day to administer instead of a full week like the PTS. Additionally, it is a one-step testing solution, eliminating the OPM test and subsuming the second-stage screening previously needed. Further, the administration process for AT-SAT differs from the PTS in that it does not require candidates to travel to one national testing location. The FAA has been able to conduct AT-SAT testing sessions in a variety of locations, including Nantucket Island, Mass., Dayton Ohio, Oakland, Calif., Memphis, Tenn., and New York City, N.Y. This mobility provides a potential advantage in recruitment outreach. Finally, the test administration costs for AT-SAT are comparable to that for the PTS, estimated at approximately $800 per person, depending on the cost of travel to the location.

6.2 Controller Hiring Process

Today, the FAA utilizes a multi-path approach to hiring and training controller applicants. This approach is necessary to accommodate the varying levels of experience and education of applicants for the position. As can be seen from Figure 6.1, the controller hiring and the training processes are very closely interrelated and many of the factors impacting hiring also impact training. This chapter focuses on controller hiring and Chapter 7 provides detailed information on controller training.

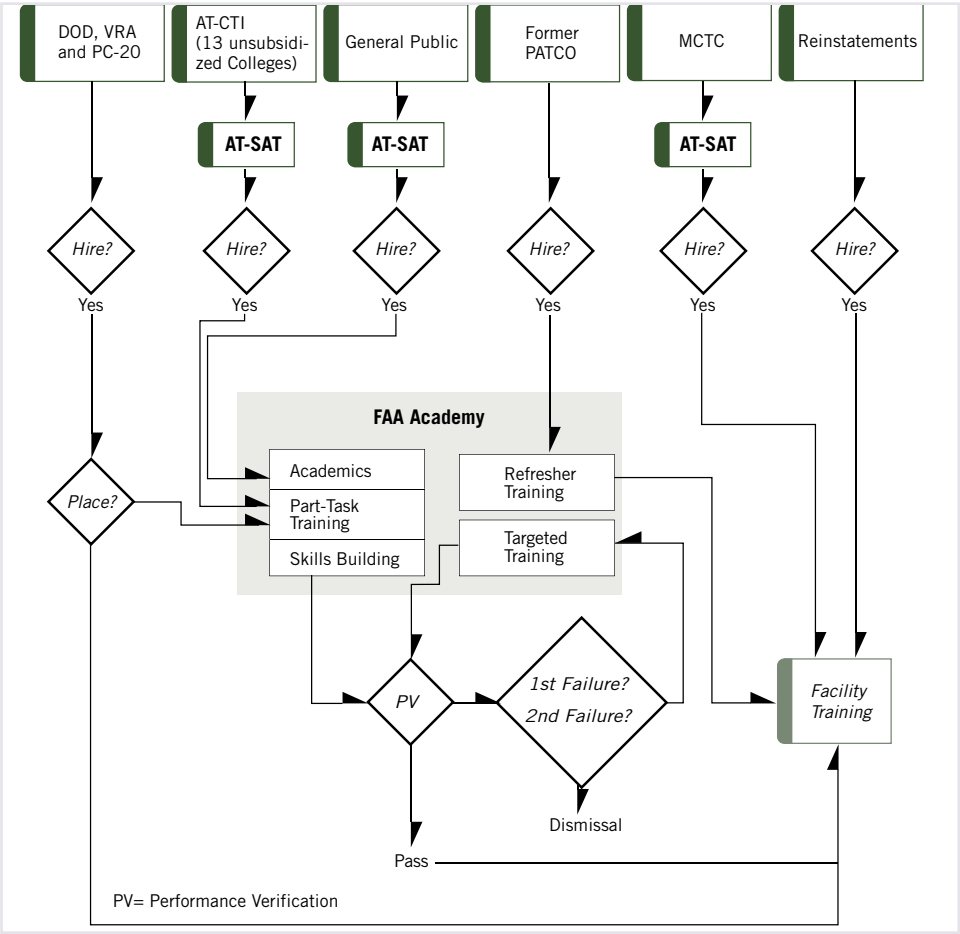


Figure 6.1 Controller Multi-Path Hiring and Training Model

In the multi-path hiring and training process, there are several paths that individuals can use to apply to become controllers. Applicants under all paths are first evaluated for basic eligibility. All applicants must be U.S. citizens and be able to speak English clearly enough to be understood over radios, intercoms, and similar communications equipment. All applicants, except those under the retired military controller path, must be under age 31 prior to initial appointment. Only the general public path does not require prior experience or education in air traffic control as a basic eligibility requirement. Applicants from the general public must have either three years of progressively responsible work experience, completed a four-year course of study leading to a bachelor's degree, or possess an equivalent combination of work experience and college credits.

There are separate application paths for individuals with occupation-related backgrounds, such as former military controllers, former FAA controllers who desire to return to the occupation, retired military controllers, Air Traffic Collegiate Training Initiative

students, etc. Applicants under these paths are evaluated to determine if they have the requisite background to be considered eligible.

Applicants who meet the basic eligibility requirements described above are evaluated based on their AT-SAT scores or their experience and training, depending on the path. They may be tentatively selected as a controller based on this evaluation. Final selection does not occur until the applicant has successfully completed an interview and passed both a background investigation and a medical examination (which includes drug screening). Figure 6.2 shows the steps involved in the controller hiring process.

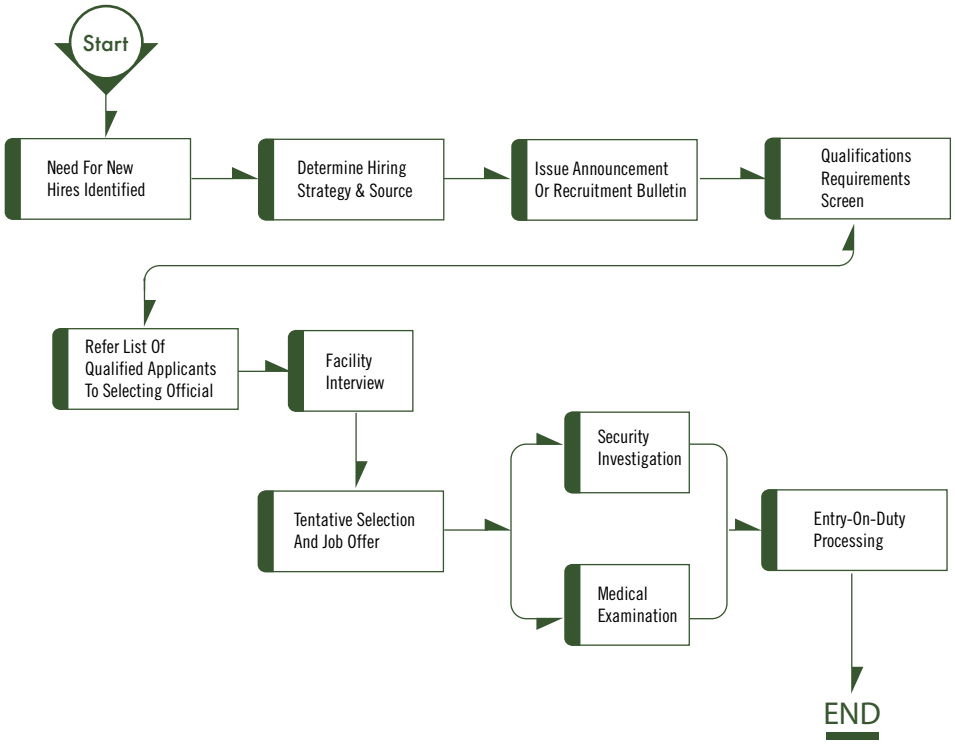


Figure 6.2 Controller Hiring Process Steps

6.3 Controller Hiring Sources

The FAA has three categories of controller hiring sources.

Previous Controllers: These individuals have prior FAA or DOD (civilian or military) air traffic control experience.

Graduates of FAA-Accredited Collegiate Programs: These individuals have successfully completed an aviation related program of study from one of two sources: 1) A school under the FAA's collegiate training initiative program (CTI); or 2) The specialized en route training program at the Minneapolis Community and Technical College. See Appendix C for a list of the CTI schools.

General Public: Individuals may apply for vacancies announced by the FAA or are already on a list of candidates from prior OPM announcements.

The specific hiring sources within each of these categories and their current and projected capacity are provided in Table 6.1.

Hiring Source	Abbreviation	Current # of Available Candidates*
Previous Controllers		
Veterans Readjustment Appointment	VRA	552
Department of Defense Civilian Controllers	DOD	10
Retired Military Controllers	DOD Retired	200
Former Professional Air Traffic Controllers Organization Controllers	PATCO	3,653
Reinstatements		21
Graduates of FAA-Accredited Programs		
Air Traffic Collegiate Training Initiative	CTI	801
Minneapolis Community & Technical College Air Traffic Control Training Program	MCTC	98
OPM		
Former Applicants through the Office of Personnel Management	OPM	44
TOTAL		**5,379**
General Public		Unlimited

Table 6.1 Hiring Sources and Current Number of Available Candidates

*Includes applicants waiting for their names to be issued to the FAA Human Resource Offices from the central inventories and those already under consideration in FAA Regions as of October 31, 2004. There are currently over 5,000 applicants from numerous sources that have expressed an interest in becoming an air traffic controller.

6.4 Controller Hiring Strategies

The agency plans to continue improving the hiring process to ensure its ability to hire at the magnitude required over the next decade. Detailed information about each strategy follows.

6.4.1 Recruitment

The FAA will continue to engage in recruitment and outreach efforts that seek to expand the pool of qualified minority and female candidates. The FAA's goal is to have the best-qualified workforce; expansion of the applicant pool increases our chance of achieving that goal. The creation of an inclusive environment where all employees and applicants are respected and valued for their differences and similarities will enable us to create an effective Model Equal Employment Program where there are no barriers to equal employment opportunity for any applicant or employee. An inclusive environment will also assist us in attracting, hiring, and retaining the best-qualified individuals for the FAA's workforce.

In accordance with the FAA Flight Plan, the FAA will continue to develop and distribute corporate recruiting materials to encourage highly skilled applicants to apply for jobs with the agency. Additionally, recruitment pamphlets used in AT-SAT efforts describing the nature of the work of air traffic controllers, the qualifications required to become a controller, the medical clearance process, and the background investigation process have already been developed and placed on the Internet.

The FAA will conduct some recruitment as necessary to reach its hiring goals. The FAA will also engage in targeted recruiting in communities served by hard-to-staff facilities. Given the salaries controllers receive, the FAA does not envision any problems finding qualified applicants from all sources to meet the increased need for controller personnel. In the unlikely event that an overall shortage of qualified candidates does develop, the FAA will recruit for applicants nationwide.

Finally, the FAA will be developing a single process that candidates from different sources can access on the Internet to apply.

6.4.2 Examine the Clearance Process

It is important to ensure that the hiring process can effectively manage the number of people needing to be hired in the coming years. The FAA will examine that process to look for ways to make it more efficient, i.e., reducing the time needed to obtain medical clearances and background investigations.

In FY 2003, the median time to hire new controllers was 151 days. The FAA relies on the Federal Burea of Investigation (FBI) and the Office of Personnel Management (OPM) to perform background investigations for all potential controllers and on the Office of Aviation Medicine's Regional Flight Surgeons and Aviation Medical Examiners for medical clearances. The agency relies on similar resources for drug screening for all potential controllers. In FY 2003, the median time required for completing the background investigation on controller candidates was 67 days, and the median time was 97 days to obtain medical clearances. As a result, the FAA has formed a team from the Air Traffic Organization, the Office of Aerospace Medicine, the Office of Security and Hazardous Materials, and the Office of Human Resource Management, to review each step of the clearance process. The team will determine if a more efficient process will reduce the overall clearance time. Their recommendations for reducing the time needed for the clearances will be submitted by March 2005. At the present time, there are approximately 500 applicants in process.

6.4.3 Track Applicants

A new controller applicant tracking system is under development at the FAA. The agency will work to develop and roll out an integrated system that will be an effective automated tracking tool for referral, selection, pre-hire activities, and placement. The FAA expects to complete this effort by the end of fiscal year 2005. This will enable the agency to monitor the progress of individual candidates up to the point of hire; identify sources of delay in the hiring process; and provide the feedback necessary to help the agency make the process more efficient.

6.4.4 Institute Even Flow Hiring

In the past, the FAA's strategy for replacing controllers has generally been to hire new controllers only when current, experienced controllers leave. Additionally, hiring was often delayed until the end of the fiscal year due to budget constraints. Because the FAA must now hire a large number of controllers, the agency cannot wait until the end of the fiscal year. Doing so would choke the hiring and training pipelines. One of the key strategies for improving the hiring process is to even out the flow of new hires. This will eliminate the existing issue of staffing requirements maximizing virtually overnight. These spikes are costly to the human resources organization and to the facilities. The even flow hiring strategy will allow the FAA to systematically plan for human resource staffing and facility support requirements.

The FAA will institute even flow hiring in concert with even flow training. Each summer, the FAA will identify the number of controllers to be hired in the coming fiscal year. These new hires will be spread out over the fiscal year with a target number of new hires set for each quarter. These targets will be provided to the human resources support staff, field managers, and training staff who will ensure that they have sufficient resources on hand to acquire and train the new hires anticipated each quarter.

Expected outcomes from even flow hiring include the following:

- Allow for more effective and efficient use of resources
- Eliminate choked hiring and training pipelines
- Allow for annual and/or multi-year planning

6.4.5 Leverage and Expand Hiring Sources

The FAA plans to leverage the existing inventory of potential candidates in FY 2005 and FY 2006 to meet the demand for new hires. These include: applicants with previous military experience, the Collegiate Training Initiative (CTI), the Minneapolis Community and Technical College (MCTC), the Office of Personnel Management (OPM), and the former Professional Air Traffic Controllers Organization (PATCO).

The FAA expects that the CTI schools will increase their enrollment in anticipation of increased controller hiring. The CTI schools will most likely become an even more important source of candidates between the years 2007 and 2014. The Office of Personnel Management list will be depleted by then and it is unlikely that the FAA will be permitted to cause a critical drawdown of military controllers to meet the peak hiring needs in those years. The CTI schools have several advantages. They produce candidates with college degrees and a broad knowledge of the aviation industry. These candidates have at least a basic level of training in air traffic control and have shown a sincere interest in the career field by the investment they have made in their own training. Additionally, four of the CTI schools are Hispanic-serving institutions and one is a historically Black university.

Depending on need, the agency will also supplement its hiring through vacancy announcements open to the general public in the 2007 to 2014 time period. Along with this, the FAA will provide opportunities for current employees who meet the qualifications requirements to apply for controller positions through internally announced vacancies. Current FAA employees who meet all of the qualifications requirements for entry into the occupation can apply through vacancy announcements open to the general public. However, internally announced vacancies may be used to provide career opportunities to current employees and help the agency rebalance its mix of skills to make better use of the talent within the agency already.

The FAA is currently determining if the services provided by the air traffic controllers in the Flight Service option should be contracted out, in accordance with OMB Circular A-76. Should this effort potentially result in displacement of controllers in the Flight Service option, the FAA will also consider a special effort to provide opportunities for those employees who qualify to apply for terminal and/or en route positions. Some of these controllers are fully certified in the terminal or en route options and may provide a ready source of candidates in the near term.

Additionally, there may be a number of flight service controllers who were previously military controllers who are now older than the maximum entry age for terminal and en route positions in the FAA and, therefore, would not be eligible for terminal or en route positions. However, for a few years after the controllers strike, the FAA temporarily raised the maximum entry age to 35 for individuals with experience in direct separation and control of air traffic or certain other kinds of aviation experience. The FAA will consider a change to the age rules, similar to the temporary change that existed for a time after the strike, to permit AFSS employees with prior experience in the direct separation and control of air traffic to apply for terminal and route positions after reaching age 30.

As part of its barrier elimination efforts in compliance with the Equal Employment Opportunity Commission's Management Directive 715, the FAA will examine the option of expanding the FAA Intern and Student Career Experience Programs to include the air traffic control occupation. Continuing to partner with the employee groups and the Aviation Education Program to provide aviation career education awareness to high school and college students may provide an additional source of persons interested in becoming controllers. This includes students attending historically Black colleges and universities, Hispanic-serving institutions, tribal colleges and universities, and higher education institutions that are traditionally non-coed.

The FAA will revisit the use of these sources in the coming years and modify this plan as appropriate.

6.4.6 Build Central Inventory

As noted above, the FAA expects to supplement its applicant pool using vacancy announcements to recruit potential candidates from the general public and from among its own employees. The agency will use these announcements to build an inventory of candidates who have passed AT-SAT from which it can issue lists for local hiring. It will also combine existing ATCS inventories into its current central inventory system. Individuals will still compete and be referred by source, but the agency will have better control and tracking over the numbers of available candidates and will be able to create a more efficient and uniform job application process. The FAA expects to complete the creation of the general public inventory system by the end of fiscal year 2005.

6.4.7 Fully Implement AT-SAT

The FAA plans to begin administering the AT-SAT examination to all potential candidates except those whose hiring program is based on prior air traffic experience. The AT-SAT will help improve the hiring decision-making process, ensuring that the FAA invests its training resources in those candidates with the greatest potential. Use of the test needs to be expanded soon to include the AT-CTI students. The FAA anticipates testing about 800 CTI students a year, at a cost of $640,000. Additionally, since AT-SAT has been used infrequently over the course of the last few years, there will be some costs involved in preparing for the expansion, including costs for additional equipment and replacement equipment in future years as upgrades to AT-SAT become available. These costs had previously been expected, but were not yet funded since the test had not been used enough to justify the expenditure. There will also likely be a need to fund refresher training for examiners due to limited use of the test in the last few years. An initial estimate of the combined costs during FY 2005 is $1,000,000.

6.4.8 Evaluate the Effectiveness of the AT-SAT for Placement

The Uniform Guidelines on Employee Selection Procedures (29 CFR 1607) require that the FAA evaluate the effectiveness of AT-SAT over the long-term. The Civil Aerospace Medical Institute (CAMI) has launched a study to meet this requirement. As part of this, the FAA is studying the use of the AT-SAT examination to aid in placement of newly hired controllers. For example, the test might be used to determine whether individuals are better placed in the terminal or en route options or at facilities of higher or lower levels of complexity. This study will help the FAA determine if this examination might be used to more accurately predict a candidate's success for the various levels of complexity across facilities.

In a profession where human error or lack of judgment in a complicated air traffic control situation can have tragic consequences, the importance of an effective training program cannot be overemphasized. The FAA safely conducts millions of operations daily by having a highly skilled controller workforce. Effective training is a key factor in the replacement of large numbers of controllers retiring over the next decade. This chapter will demonstrate that the FAA has the capability to efficiently and effectively train the Certified Professional Controllers (CPCs) needed over the next decade. It will also describe the FAA's plan for effectively managing controller training time.

7.1 Background

After the controller's strike in 1981, the FAA faced the unprecedented challenge of rebuilding a highly skilled workforce in an occupation directly responsible for the safety of millions of lives on a daily basis. 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. Of those, 16,002 successfully completed the screen and were placed in training programs in facilities throughout the country. During those strike recovery years, approximately 72 percent of en route developmental controllers reached full certification, and approximately 84 percent of terminal developmental controllers reached full certification. It has been demonstrated that the FAA can successfully hire and train the substantial numbers of controllers necessary to replace those that leave the profession.

As a result of this experience, the FAA recognized that the selection, screening and training of air traffic controllers was a very costly process both fiscally and in terms of human impact. Many of the 27,925 individuals that attended the lengthy academy screening program during the strike recovery years quit their jobs and left their families for a chance at becoming an air traffic controller. Only about 57 percent of those made it through the screening program.

In 1992, the FAA dismantled the nine-week screen to lessen the fiscal and human impact and to improve the training process. The old nine-week screen was eventually replaced with an eight-hour computer-based exam called Air Traffic Selection and Training (AT-SAT). AT-SAT was developed to assess if job applicants have certain characteristics needed to perform effectively as air traffic controllers. Some of the aptitudes assessed by AT-SAT include:

- Prioritization
- Tolerance for high intensity
- Composure
- Planning
- Execution
- Thinking ahead
- Taking charge
- Decisiveness
- Problem solving
- Visualization
- Working cooperatively
- Numeric ability
- Working with angles
- Movement detection

It was determined that AT-SAT had very high validity in predicting job performance of incumbent controllers and could be administered in a much shorter period of time. The FAA Academy program was then redeveloped from a screen into a comprehensive, option specific, training curriculum. The resulting training program is called the Multi-Path Hiring and Training Model. With this new program, the failure rate at the FAA Academy has been reduced to less than 5 percent. This change also resulted in a significant cost savings for the FAA. The cost to deliver the old nine-week screen was approximately $10,000 per applicant as compared to approximately $800 per applicant to deliver AT-SAT.

7.2 Overview of the Air Traffic Controller Training Program

Controller training consists of three major components that include screening, initial qualification training, and certification training. Figure 7.1 depicts an overview of the controller training process.

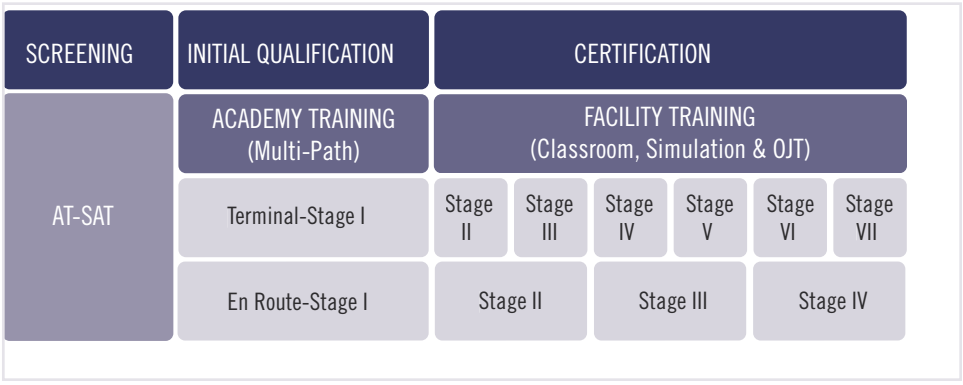


Figure 7.1 Overview of the Air Traffic Controller Training Program

7.2.1 Screening

Qualified applicants for controller positions are screened using a computer-based exam called AT-SAT. AT-SAT is a cognitive test designed to measure the aptitude requisite to becoming a successful air traffic controller. A thorough description of AT-SAT is contained in Chapter 6 of this document.

7.2.2 Initial Qualification Training

Initial Qualification Training is generally conducted at the FAA Academy and provides a standardized foundation for facility training. Initial Qualification Training is specific to either en route or terminal options and provides students with the skills necessary to begin training at their facility.

7.2.3 Certification Training

Certification training is conducted at the facility and consists of a combination of classroom, simulation and on-the-job training (OJT). Each stage of training represents different control positions depending upon the facility type. A detailed description of each stage is contained in section 7.5. Controllers achieve certification on each position as they move through the stages of training. The final result at the end of training is achieving full certification on all positions, or Certified Professional Controller (CPC).

7.3 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. At the FAA Academy, developmental controllers must demonstrate the necessary academic knowledge and actual controller skills demanded in the air traffic control profession.

As described in Chapter 6, 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.

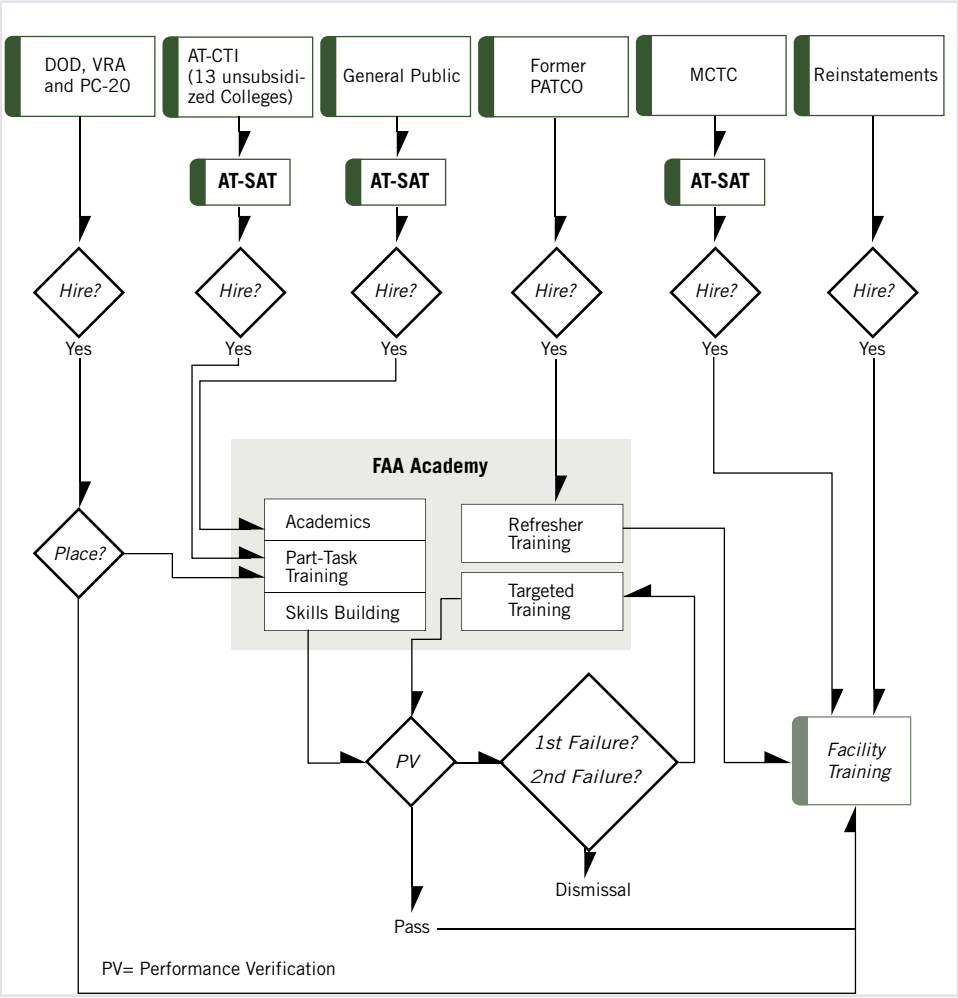


Figure 7.2. Multi-Path Hiring and Training Model

Table 7.1 provides a quick reference of the training requirements for each hiring source. Some new employees are required to attend the entire initial qualification training program at the academy while others are required to attend only a portion of academy training.

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

Hiring Source	Training Requirement
General public	Academy training required. Candidates must attend the entire initial qualification training: Air Traffic Basics and Task/Skill Academy training for either the tower or en route option.
Veterans Recruitment Appointment (VRA) military controllers	Terminal Option – No academy training required. Enter appropriate stage of field training as determined by the receiving facility. En Route Option – Academy training required. Candidates by-pass Air Traffic Basics and begin Task/Skill training.
Air Traffic Collegiate Training Initiative (AT-CTI)	Academy training required. Candidates by-pass Air Traffic Basics and begin Task/Skill training.
Minneapolis Community & Technical College Air Traffic Control Training Program. This program is commonly known as MARC.	No academy training required. Candidates enter appropriate stage of field training as determined by the receiving facility. (This program is not currently operational.)
Department of Defense (DOD) civilian controllers	Terminal Option – No academy training required. Candidates enter appropriate stage of field training as determined by the receiving facility. En Route Option – Academy training required. Candidates by-pass Air Traffic Basics and begin Task/Skill training.
Retired military controllers	Terminal Option – No academy training required. Enter appropriate stage of field training as determined by the receiving facility. Candidates are only considered for the terminal option.
Former Professional Air Traffic Controllers Organization (PATCO) controllers	Academy training required in specific courses developed for former PATCO controllers. These courses are option specific and are approximately five weeks long.
Reinstatements	No academy training required. Candidates enter appropriate stage of field training as determined by the receiving facility.

Table 7.1 Training Requirements for Controller Applicants

7.4 Initial Qualification Training

For most newly hired controllers, the first step in the multi-path training process is to successfully complete Initial Qualification Training. Initial Qualification Training is pass/fail and consists of four different phases, which include Air Traffic Academics, Part-Task Training, Skills Building and Performance Verification. As detailed in the Multi-Path Hiring and Training Model, new controllers may be required to complete all or part of Initial Qualification Training depending on their education and/or experience. Air Traffic Academics is common to both en route and terminal controllers while Part-Task Training, Skills Building and Performance Verification are specific to either the en route or terminal options. Figure 7.3 depicts the timeline and structure of Initial Qualification Training.

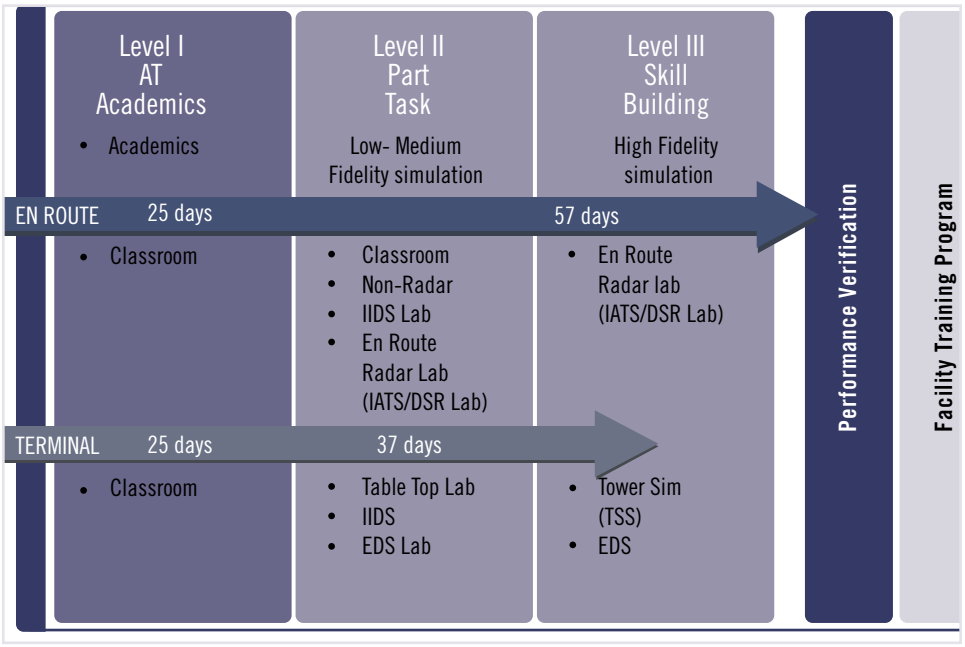


Figure 7.3 FAA Academy Initial Qualification Training

7.4.1 Air Traffic Academics

This phase of training provides fundamental aeronautical knowledge essential to both en route and terminal controllers. Examples of subject areas include:

- Principles of Flight
- Federal Air Regulations
- Meteorology
- Aircraft Performance and Characteristics
- Procedures

7.4.2 Part-Task Training

In this phase of training, students progress from classroom lecture to applying basic controller skills using low and medium-fidelity simulation. These skills are specific to their specialty, either en route or terminal. Part-task training is based on a "chunk and apply" learning theory. Students learn individual controller skills in the classroom and then apply them in the laboratory in simple scenarios. As students learn multiple

individual skills, the scenarios get more complex, requiring the integration of several skills.

7.4.3 Skills Building

In this phase of training, students progress from practicing individual skills to integrating the various aspects of air traffic control in scenarios with increasing complexity. This phase of training uses high-fidelity simulation technology that closely mirrors actual control room environments.

7.4.4 Performance Verification

Student performance is verified at the end of Skills Building to ensure developmental controllers are ready to proceed to a facility for on-the-job training. Academy personnel do not conduct Performance Verification. Instead, current operational supervisors brought in from the field perform the final evaluations. This process separates training from assessment and allows academy instructors the freedom to teach without concern for potential bias during the final evaluations. It also allows field personnel to provide direct feedback on the training program in order to keep academy training current and relevant.

Students that pass Performance Verification then report to their facility to begin training. Students that fail Performance Verification are provided additional training targeted to the deficiencies noted. Students are then given one additional opportunity to demonstrate their skills. Two subject matter experts evaluate the second Performance Verification. If the student passes, they report to their facility. Students who fail a second time are generally dismissed.

7.5 Facility Training

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 OJT. Each stage of training represents a different control position, or group of control positions, depending upon whether the facility is en route or terminal. Table 7.2 details the stages of facility training.

Terminal Facility Training					
Stage II Flight Data	Stage III Clearance Delivery	Stage IV Ground Control	Stage V Local Control/ Cab Coordinator	Stage VI Non-Radar Terminal Control	Stage VII Radar Control
1. Classroom 2. OJT 3. Certification	1. Classroom 2. OJT 3. Certification	1. Classroom 2. OJT 3. Certification	1. Classroom 2. OJT 3. Certification	*(if applicable)* 1. Classroom 2. Simulation 3. OJT 4. Certification	*(if applicable)* 1. Classroom 2. Simulation 3. OJT 4. Certification

Note: The order of Stages III through VII may be changed at the discretion of the facility manager.

Average training time to CPC:

High Level Terminal (ATC Level 9-12) = 36 months
Mid Level Terminal (ATC Level 6-8) = 24 months
Low Level Terminal (ATC Level 4-5) = 8 months

En Route Facility Training		
Stage II Assistant Controller (Flight Data)	Stage III Non-Radar and Radar Associate (RA)	Stage IV Radar Controller
1. Classroom 2. OJT 3. Certification	1. Classroom 2. OJT 3. Simulation 3. Certification ***Note:*** *Certification on two (2) positions qualifies a developmental to work independently and to proceed to Stage IV training.*	1. Classroom 2. OJT 3. Simulation 3. Certification ***Note:*** *Certification on two (2) positions qualifies a developmental to work independently.* ***Note:*** *Developmentals continue training on remaining RA and radar positions until they reach Certified Professional Controller (CPC).* ***Note:*** *Average training time to CPC equals 36-60 months.*

Table 7.2. Facility Training

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 OJT on an operational position. OJT 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 OJT hours allotted for training. Based upon the recommendation of the training team, a developmental can be certified by his/her supervisor on a control position anywhere between the minimum and maximum number of OJT hours.

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 full certification on all positions, or CPC. If a developmental controller fails to certify, they can be

removed from government service, or reassigned to a less complex facility in accordance with agency procedures.

The OJT process is designed to provide developmental controllers sufficient seasoning time or opportunities to develop their skills as they progress towards becoming certified professional controllers. In the en route option, a developmental controller cannot work without an OJT instructor until he/she certifies on a specific number of control positions. After he/she achieves the minimum certifications, developmentals can then work independently before they achieve CPC. Oftentimes, facilities allow developmental controllers to work independently in order to gain experience (seasoning) and to supplement staffing. The lengthy OJT process is partly due to this seasoning time.

7.6 Challenges to Training the Required New Hires

The FAA faces many training challenges to having the right number of controllers in the right facilities when we need them. Our ability to train the number of controllers required in this plan is dependent upon several factors, including even flow hiring (discussed in Chapter 6), reducing the time it takes to hire a controller, and reducing the length of time it takes to train a controller. Currently, the FAA must hire en route controllers an average of three years in advance of when we need them because training takes so long. We believe that optimizing the controller training program in order to reduce the time to CPC is a key factor in responding to facility staffing needs in a timely manner.

7. 7 Strategies to Optimize Training

While the FAA currently has the capacity to train the number of controllers required in this plan, we continually look for ways to ensure that training is as effective and efficient as possible. As detailed above, the FAA has made significant improvements to the training process over the past 12 years. The Multi-Path Hiring and Training Model was designed to replace the old nine-week screen and move the agency from a 43 percent failure rate into a more efficient and effective training program with a failure rate of less than 5 percent.

Although the FAA has implemented increasingly effective methods of screening and training controllers, more remains to be done. As detailed above, the facility training process is the longest part of controller training. Therefore, facility training is where the greatest gains in efficiency can be made. Several of the strategies described in this section work toward the goal of optimizing the time it takes to reach the Certified Professional Controller (CPC) level while providing the highest quality training possible. Reducing the time to CPC will provide several benefits, including:

- Reduced costs
- More rapid response to facility staffing needs

- Increased flexibility in scheduling
- Reduced stress on training resources (contract support and OJT instructors)

The FAA intends to reduce the average time to CPC from three to five years to two to three years.

Additional strategies detailed in this section are targeted to developing more effective and efficient training methods. Table 7.3 below provides a high level overview of the strategies that will be employed to ensure that controller training is high quality, efficient, and meets the needs of the system. Additional detailed information about each strategy follows the table.

#	Strategy	Expected Impacts	Implementation Action
7.7.1	Establish National OJT Data Tracking System	Allows analysis of OJT performance at a national level Provides data to identify where efficiencies can be gained Identifies areas where the process is broken and where it is currently efficient	**Jan 05** – Finalize the snapshot of OJT baseline data **Mar 05** – Define requirements for development of the National OJT Data Tracking System **Jan 06** – Complete development of the National OJT Data Tracking System **Mar 06** – Make best practice recommendations based on snapshot study **May 06** – Implement best practices
7.7.2	Expand Simulation to Enhance OJT Process	Completes the upgrade of academy simulation systems to allow for more effective and realistic training Expands use of simulation in the field to reduce time to CPC and provide for an efficient use of resources Reduces ground and airborne delays by allowing development, testing and training on new procedures through simulation Expected reduction of runway incursions as evidenced by Air Force simulation program	**Academy Simulation:** **Nov 04** – Tower simulation upgrade complete **Mar 05** – Complete installation of en route simulation (DSR) **Sept 05** – Initial Academy Training System (IATS) lab ready for students **Jan 05** – Develop proposal to acquire URET at the Academy **En Route Facility Simulation:** **Ongoing** – Research into options to acquire and deploy interim high-fidelity training simulation **2008** – Scheduled deployment of ERAM that includes high-fidelity training simulation **Terminal Facility Simulation (Tower Cab):** Implementation timelines subject to FY 05 appropriation language Subject to funding, installation in the field will begin in FY 05
7.7.3	Convert Air Traffic Academics to Web-Based Delivery	Eliminates salary and per diem costs for five weeks of training at the academy Improves student preparedness even when they are eligible to bypass academics Provides an objective measure of student knowledge prior to reporting to the academy	**Jan 05** – Develop Project Plan **Apr 05** – Establish infrastructure and resources to support web-based curriculum deliveries **Jul 05** – Convert curriculum into web delivery format **Jul 05** – Incorporate those aspects of course conduct inappropriate for web delivery into current later resident phases of academy training **Dec 05** – Finalize testing procedures and standards

#	Strategy	Expected Impacts	Implementation Action
7.7.4	Redesign Academy Airspace for En Route	Updates old Aero Center to reflect current airspace Replicates actual airspace to allow for more realistic training Potentially raises the performance level of students at the end of training	**Mar 05** – Complete airspace redesign **Apr 05** – Complete sector procedures **Jun 05** – Complete nonradar, radar and PV scenarios for new airspace **Jul 05** – Establish metrics to calculate student performance improvement **Dec 05** – Collect and analyze data from First Course Conduct
7.7.5	Evaluate and Redesign Facility Training Program	Eliminates overlap between academy training and facility training Recognizes the higher performance level of academy students Streamlines OJT process to take advantage of existing research and emerging technologies	**Jan 06** – Initiate baseline review to identify current overlaps **Mar 06** – Implement changes as a result of baseline review **Mar 06** – Identify where the training process can be streamlined regardless of academy training **Jul 06** – Coordinate effort with Academy Airspace Redesign team to anticipate and prepare for student performance improvement **Dec 06** – Evaluate first course conduct data from Airspace Redesign and adjust facility training plan as required
7.7.6	Implement Academy Instructor Recruitment & Retention Plan	Increases number of controller applicants for instructor positions Ensures effectiveness of initial qualification training program	Form working group to identify and evaluate alternatives for providing incentives to attract and retain the needed academy instructors
7.7.7	Leverage Training Sources	Reduces the drain on internal resources as trainers Reduces cost of delivering training	**Mar 05** – Communicate Comprehensive Workforce Plan to contract support personnel and other training providers for planning purposes

Table 7.3. Strategies for Optimized Training

7.7.1 Establish a National OJT Data Tracking System

Expected Impacts	Implementation Action
Allows analysis of OJT performance at a national level Provides data to identify where efficiencies can be gained Identifies areas where the process is broken and where it is currently efficient	**Jan 05 – Complete the snapshot of OJT baseline data** **Mar 05 – Define requirements for development of the National OJT Data Tracking System** **Jan 06 – Complete development of the National OJT Data Tracking System** **Mar 06 – Make best practice recommendations based on snapshot study** **May 06 – Implement best practices**

The first step in making efficiency gains is a thorough understanding of where the system is currently inefficient. At this time, detailed OJT data is maintained at the facility level. The FAA is taking steps to collect, maintain, and analyze this data at a national level.

An effort is underway to take a snapshot of the current training process and examine relationships between facilities and regions. National baseline data will provide statistics for the time it takes a controller to certify, delays in the on-the-job training processes, where and when training failures occur, differences between hiring sources, and differences between regions and facilities.

This study will provide the foundation for ongoing tracking of the OJT process. These statistics will help us understand how well the OJT process is performing and determine its cost. We expect to identify specific areas where efficiencies can be gained while ensuring that developmental controllers have the requisite skills and seasoning before becoming certified.

7.7.2 Expand Simulation

Expected Impacts	Implementation Action
Completes the upgrade of academy simulation systems to allow for more effective and realistic training	**Academy Simulation:** **Nov 04** – Tower simulation upgrade complete **Mar 05** – Complete installation of en route simulation (DSR)
Expands use of simulation in the field to reduce time to CPC and provide for an efficient use of resources	**Sept 05** – Initial Academy Training System (IATS) lab ready for students **Jan 05** – Develop proposal to acquire URET at the academy
Reduces ground and airborne delays by allowing development, testing and training on new procedures through simulation	**En Route Facility Simulation:** **Ongoing** – Research into options to acquire and deploy interim high-fidelity training simulation **2008** – Scheduled deployment of ERAM that includes high-fidelity training simulation
Expected reduction of runway incursions as evidenced by Air Force simulation program	**Terminal Facility Simulation (Tower Cab):** Implementation timelines subject to FY 05 appropriation language Subject to funding, installation in the field will begin in FY 05

The FAA, military, and the aviation community have been using simulation to aid in the development of pilots and air traffic controllers for years. As technology improves, the FAA looks for ways to leverage these improvements and increase the fidelity of simulation. Currently, the use of simulation is woven throughout both initial qualifications training at the academy and training at field facilities. This section will summarize the FAA's current use of simulation and our plan for expansion at both the academy and in the facilities.

7.7.2.1 Current Simulation Capabilities

The FAA currently uses simulation at the FAA Academy and in field training programs. Table 7.4 summarizes the simulation technology in use today.

FAA Academy Simulation		
Simulation Technology	Description	Use
Tabletop Labs	Large table-size replica of an airport surface area	Initial training of tower cab controllers; familiarizes them with basic surface operations and local terminology/techniques
Interactive Instructional Delivery Systems Labs (IIDS)	High-end networked PCs	Variety of venues; includes delivery of academic material, instructional video, basic scenarios, automated testing and critiques
Tower Simulation Systems Labs (TSS)	Replicate tower cab environment; complete with voice-recognition hardware/software	Skill-building phase of tower cab training. Training for local and ground control positions simultaneously
Enhanced Debrief Systems Lab (EDS)	Complements TSS technology	Review/repeat TSS training sessions
Terminal Radar (ARTS) Labs	Focal point for terminal radar training	Replicates the ARTS control room environment
Terminal Radar (STARS) Labs	State-of-the-art technology replicating new systems currently being used in some terminal field facilities	Cadre training for specialists conducting AT Coach Cadre Training for STARS equipped field facilities
En Route (PVD) Labs	Legacy systems, populated with PVDs no longer in use in en route facilities	Until DSR labs (discussed below) become operational, serve as principal en route training systems
Initial Academy Training System (IATS)	A Display Systems Replacement (DSR) Lab that essentially replicates the current en route operational environment	Will replace the existing legacy en route labs

Facility Simulation		
Simulation Technology	Description	Use
Terminal Radar (ETG's)	Enhanced Target Generators (ETGs) simulators located in many terminal radar facilities	This system is used at most non-STARS facilities. ETG is a component within the Automated Radar Tracking System (ARTS). ETG allows an instructor to provide simulated radar traffic in a training environment, using the actual ATC equipment, but independent of actual air traffic control operations.
TRACON PRO	Networked computer system used for radar simulation in terminal facilities	This is a PC-based simulation system that emulates ARTS. TRACON Pro is a commercially produced software package that functions within a computer network to simulate the tasks performed by ATCS's using ARTS-IIA/-IIIA. Due to the deployment of STARS, and upgrading of other tracking systems to ARTS-IIE/-IIIE, TRACON Pro is becoming obsolete.
ATCOACH	Networked computer system used for radar simulation in terminal facilities	This system is used only at STARS facilities. ATCOACH is a component of STARS that functions much the same as ETG does within ARTS.
En Route DSR Dynamic Simulation (DYSIM)	DSR DYSIM lab located in all en route facilities	Allows for local scenario generation and simulation training on local traffic and procedures

Table 7.4 Current FAA Simulation Capabilities

7.7.2.2 Future Simulation Initiatives

The expanded use of simulation is being proposed for use both at the academy and in field facilities. The goal of increased simulation is to reduce the time to CPC by providing developmentals the opportunity to practice seldom-used skills and to take advantage of low traffic levels by practicing complex scenarios in the simulator. This section will describe the future simulation initiatives at the FAA Academy and in field facilities.

7.7.2.3 FAA Academy Simulation

- **Terminal Simulation (Tower Cab)**

In November 2004, the installation of four new tower simulators was completed at the academy. These simulators will double the training capacity from the previous simulation technology. These simulators provide a realistic tower environment in which to teach new controllers. These high-fidelity simulators, combined with existing medium-fidelity simulation and practitioner instruction, are expected to produce a developmental controller better prepared to begin training in the facility.

• **En Route Simulation**

In March 2005, the installation of an Initial Academy Training System (IATS) lab will be complete. This 20-sector Display System Replacement (DSR) lab is state-of-the-art, reflecting the current technology in the field as well as possessing unique training characteristics. The commissioning of the DSR lab will coincide with completely new airspace and procedures for the en route option (discussed in section 7.3.5). The new DSR lab and airspace will be ready for students in September 2005. We expect that this significant change to en route initial qualification training will increase student performance and will contribute to a reduced time to CPC. Future simulation initiatives include the acquisition and implementation of User Request Evaluation Tool (URET) at the academy.

7.7.2.4 Facility Simulation

Reducing the time required to attain CPC and achieving increasing levels of certification will reduce training costs as well as provide for other benefits such as increased flexibility in scheduling, more rapid response to facility staffing needs, and reduced stress on training resources, such as OJT instructors. The enhanced process and inherent simulation capabilities also provide for more standardized instruction, unbiased assessment of performance, mitigation of weaknesses, and useful remedial and proficiency training.

• **Terminal Simulation (Tower Cab)**

The FAA has initiated an effort to expand the use of tower simulations to field facilities. This effort is unprecedented in the FAA but has been proven to reduce training time and increase safety in the Air Force. The FY 2005 Omnibus appropriations bill includes $4 million for the procurement of simulators. The FAA is identifying airports and developing an implementation plan in anticipation of this funding.

• En Route Facility Simulation

Facility training for en route controllers is the longest portion of any air traffic-training program. The average length of time to reach full certification for an en route controller is over three years and can vary up to five years or more depending upon many variables including:

- Facility complexity
- Staffing requirements and instructor availability
- Using qualified developmentals for staffing rather than training
- Scheduling of classes in order to have a core number of students
- Traffic level and complexity to get effective and quality OJT time
- Developmental aptitude and motivation
- Seasoning time

Research indicates that increased use of high-fidelity simulation has the potential to reduce training time. The FAA intends to explore the use of high-fidelity simulation in en route facilities as a key strategy to reduce training time. This strategy includes a long-term solution and an interim proposal.

The long-term solution to high-fidelity simulation capability is included within the En Route Automation Modernization (ERAM) program. ERAM is scheduled for deployment in 2008 and will replace the current Host Computer System software/hardware, Direct Access Radar Channel (DARC) software/hardware and other associated interfaces, communications and support infrastructure. ERAM also includes an enhanced, combined, test and training system that replicates the ERAM system and operates independent of the live operational system. Upon ERAM completion, every en route facility will have state-of-the-art training capability on full-fidelity simulators. This training system will allow scenario generation from actual radar data. The enhanced training capability provided by ERAM will make significant contributions to reduced training time.

While ERAM provides a long-term solution for high-fidelity simulation in the en route environment, the FAA believes interim steps are needed to insure adequate resources exist to train the number of controllers required in this plan. The FAA is researching viable methods to meet this need. Examples of interim solutions include:

- Development and deployment of a PC-based, stand-alone simulator proposed by the FAA's federally funded research and development center (CAASD)
- Acquisition and deployment of the Initial Academy Training System (IATS) for field use
- Early deployment of the ERAM Test and Training system

While high-fidelity simulation is important to this plan, it is only one tool in the delivery of meaningful and effective training. The success of any simulation solution will be dependent upon concurrent development and validation of training concepts and policies. The FAA is committed to sound instructional practices that take full advantage of available technology.

7.7.3 Convert Air Traffic Academics to Web-Based Delivery

Expected Impacts	Implementation Action
Eliminates salary and per diem costs for five weeks of training at the academy	**Jan 05** – Develop Project Plan ***Apr 05*** – Establish infrastructure and resources to support web-based curriculum deliveries **Jul 05** – Convert curriculum into web delivery format **Jul 05** – Incorporate those aspects of course conduct inappropriate for web delivery into current later resident phases of academy training **Dec 05** – Finalize testing procedures and standards.
Improves student preparedness even when they are eligible to bypass academics	
Provides an objective measure of student knowledge prior to reporting to the academy	

As depicted in the Multi-Path Hiring and Training Model, only newly hired controllers without any previous experience or specialized education are required to attend the first five weeks of Initial Qualification Training at the FAA Academy. The first five weeks of academy training, called Air Traffic Academics, provides the fundamental aeronautical knowledge essential to both en route and terminal controllers.

It has been determined that most of this course could be redeveloped for web-based delivery. The portions of the course inappropriate for web-based delivery (teamwork scenarios, etc.) would be incorporated into the resident part-task training and skills building courses.

Delivering the Air Traffic Academics course on the Internet provides several advantages including:

- Cost reduction to the FAA for five weeks of resident training
- Can be made available to those students eligible to bypass the academics course, thereby allowing them to be more prepared to begin academy training
- Online final examination can be used to evaluate an individual's readiness to bypass the academics course.

The Air Traffic Academics course consists of 200 classroom hours and covers a wide variety of topics and objectives. This course is the equivalent of six college courses. It is envisioned that a blended approach to methods and media would provide the student not only the same curriculum, but in an interesting and challenging manner. Methods and media may include online computer based instruction, video streaming, correspondence course and others.

7.7.4 Redesign Academy Airspace for En Route

Expected Impacts	Implementation Action
Updates old Aero Center to reflect current airspace	**Mar 05** – Complete airspace redesign **Apr 05** – Complete sector procedures **Jun 05** – Complete nonradar, radar and PV scenarios for new airspace **Jul 05** – Establish metrics to calculate student performance improvement **Dec 05** – Collect and analyze data from First Course Conduct
Replicates actual airspace to allow for more realistic training	
Potentially raises the performance level of students at the end of training	

A key component to optimizing the time to CPC is providing field facilities with high quality developmentals prepared to begin training. The ability to provide high-fidelity, realistic training at the FAA Academy is critical to this goal. The Initial Qualification Training program at the academy has undergone significant change in the past 12 years in terms of both curriculum and simulation. Another major change currently underway is the conversion of the airspace used to train en route controllers.

"Aero Center" is the fictitious name of the airspace used to train controllers at the academy since before the strike in 1981. The recent installation of new controller displays (DSR) at the academy has allowed this airspace to be changed to real, operational airspace built upon an actual sector in Memphis Center. The airspace redesign is currently underway and requires a complete rewrite of every scenario and procedure used over the three-month training period. Final evaluation scenarios are also being rewritten with an emphasis on increased developmental performance expected to be realized with this major change.

The cost for this project was incorporated in the FY 2004 Air Traffic Technical Training budget. Program maintenance is already accounted for in future Technical Training budget requests. This project does not require any new funding. The potential savings for this project may be realized in increased student performance at the end of en route initial qualification training. Future analysis will assist the FAA in determining actual savings from this transition.

7.7.5 Evaluate and Redesign Facility Training Program

Expected Impacts	Implementation Action
Eliminates overlap between academy training and Facility training	**Jan 06** – Initiate baseline review to identify current overlaps
Recognizes the higher performance level of academy students	**Mar 06** – Implement changes as a result of baseline review
Streamlines OJT process to take advantage of existing research and emerging technologies	**Mar 06** – Identify where the training process can be streamlined regardless of academy training
	Jul 06 – Coordinate effort with Academy Airspace Redesign team to anticipate and prepare for student performance improvement
	Dec 06 – Evaluate first course conduct data from Airspace Redesign and adjust facility training plan as required

A seamless training program from start to finish is vital to reducing controller training time. It is important to insure that training curriculum and objectives flow smoothly from initial qualification training at the academy to certification training at the facility. It is also important that facility training programs are designed to take full advantage of the skills and abilities attained by developmental controllers at the FAA Academy.

Considering the magnitude of changes to the Initial Qualification Training program, facility training has changed little. Facility managers have the latitude to modify portions of the field training programs to meet local needs, but more can be done. The FAA will conduct a thorough review of facility training to insure that it begins where the academy ends. This review will take into consideration other efficiency gains identified in this plan and will result in facility training programs tailored to meet the needs of developmental controllers of the future. This effort will contribute to the agency's goal to reduce the time to CPC.

In addition to linking academy training and facility training, it is equally important to insure that the OJT process itself is designed to maximize efficiency and to take advantage of the most effective teaching methods possible. The evaluation of the facility training programs will also explore whether or not the OJT process could be better structured to take advantage of current research regarding training in highly complex, risky technology environments such as a control room.

Current Workforce Development staff will lead this effort. New funding is required for a cross section workgroup that will be convened to conduct a complete review of both the current academy training program and facility training programs. Overlaps will be identified and recommendations for efficiencies will be made. The potential savings for this project may be realized in reduced controller training time.

7.7.6 Implement Academy Instructor Recruitment and Retention Plan

Expected Impacts	Implementation Action
Increases number of controller applicants for instructor positions	An initiative is underway to explore pay setting alternatives to mitigate the impact of pay issues on FAA's ability to attract highly qualified instructors
Ensures effectiveness of initial qualification training program	

In 1998, the FAA restructured controller pay resulting in the current AT pay plan. The controllers at the FAA Academy were not included in that plan. As a result, the number of controller applicants for academy instructor positions has reduced 90 percent since 1998.

The FAA must ensure that the academy retains a highly skilled cadre of instructors from among the current controller workforce. Controllers selected for instructor positions are provided training in basic instructional techniques and are placed in an intern program that will ultimately qualify them to become air traffic instructors. These instructors bring current experience into the training environment and assure that students are exposed to current operational practices and procedures. This is a key factor in reducing controller training time.

The Multi-Path Model is an excellent training program that is far more efficient than the nine-week screen it replaced. It can operate with a much smaller staff as evidenced by the reduction of academy instructor staffing from 215 positions in 1992 to 88 positions today. However, it needs experienced, current air traffic controllers (practitioners) as instructors to maintain its credibility and assure its continued efficiency. The workload proposed by this plan is nearly the same magnitude the academy experienced during the post-strike recovery period. It is crucial that the FAA have the infrastructure and policies in place to recruit and retain qualified instructors.

7.7.7 Leverage Training Sources

Expected Impacts	Implementation Action
Reduces the drain on internal resources as trainers	**Mar 05** – Communicate Comprehensive Workforce Plan to contract support personnel and other training providers for planning purposes
Reduces cost of delivering training	

The FAA will ensure that it makes the most effective use possible of its existing partners who provide air traffic control training programs. To further enhance its ability to train the necessary volume of air traffic controllers, the agency will expand its use of contractor instructors at the academy and in the field.

The FAA already partners with the academic community to leverage undergraduate education in the field of aviation. As noted previously, individuals who complete collegiate requirements under the Air Traffic Collegiate Training Initiative (AT-CTI)

bypass the first five weeks of initial training required for controllers. The agency currently has agreements with 13 schools for the AT-CTI program.

The FAA has established two contracts to support training new hires, reducing the number of on-board air traffic controllers that must be pulled from operations to serve as instructors.

- The University of Oklahoma provides support to the FAA Academy for instructional services, curriculum development and revision, and distance learning support and maintenance.
- The Washington Consulting Group (WCG) provides support to field facilities for classroom and simulation instructional services and administrative support for record maintenance and reporting.

The FAA is working with these contractors to ensure they are prepared to handle the upcoming wave of new hires. The FAA expects to increase the number of instructors provided by these contractors over the next 10 years to meet the increased demand. This should work to the FAA's advantage as well as provide recently retired controllers a bridge to full retirement.

This initiative requires no new funding. Leveraging training sources allows all contributors to the training pipeline to be prepared to address the requirements to hire and train the controllers required in this plan.

7.8 The Training Plan

This plan assumes that the strategies outlined above are effectively implemented and have the anticipated impacts in the expected year. Any savings resulting from future actions as well as any changes to training content will be taken into consideration as this plan is reviewed and updated.

7.8.1 FAA Academy Training

As explained above, the length of training varies based on the type of facility the newly hired controller is assigned to support. Table 7.5 shows the total number of required new hires as detailed in Chapter 3. As discussed in Chapter 6, the flow of new hires into training must be even. It is assumed that the total number requiring training each year will be spread evenly over all four quarters of the fiscal year.

Fiscal Year	FY-05	FY-06	FY-07	FY-08	FY-09	FY-10	FY-11	FY-12	FY-13	FY-14	Total
Total Hiring	435	1,249	1,248	1,104	1,152	1,412	1,508	1,488	1,432	1,472	**12,500**

Table 7.5 Number of Controllers to be Hired

Training the number of controllers required in the next decade will require close coordination between hiring sources, the academy, the air traffic facilities and the contractors who support the controllers training program. Table 7.6 details the capacity of the FAA Academy per fiscal year. Table 7.7 describes the current number of instructors and support personnel at the FAA Academy.

FAA Academy Capacity				
	Day Shift	Night Shift	Mid Shift	Total Capacity
Terminal	336	336	168	840
En Route	496	496	248	1,240
Total	832	832	416	2,080

Table 7.6 Current Academy Capacity per Fiscal Year

ORGANIZATION	MANAGEMENT SUPERVISION	OA	Support - (ISS/ISD, Training Specs, Training Techs, Editor Specs, Computer Techs)	2152 Series (Instructors, Developers SMEs)
Division Management (AMA-500)	2	2	3	
Initial Qualifications Branch (AMA-510)	1			
En Route Section (AMA-511)	1	1	2	10
Tower Section (AMA-512)	1		2	11
Terminal Radar Section (AMA-513)	1			5
FSS Section (AMA-514)	1		2	6
Specialized Training Branch (AMA-520)	1		1	
Staff Training Section (AMA-521)	1			6
Technical Training Section (AMA-522)	1		1	10
Systems Support Branch (AMA-530)	1	1	9	5
Totals =	11	4	20	53
Organizational Staffing Total =	88			
Annual Total Adjusted Salary =	$8,024,122			

Table 7.7 Current Academy Staffing

The FAA Academy staff is supplemented by an Air Traffic Instructional Services contract. This contract provides support for classroom instructional services, curriculum development and revision, and distance learning support and maintenance. The flexibility

of this contract allows the academy to maintain a core number of FAA instructors and supplement them with contractor personnel as training requirements change.

Table 7.8 details the number of FAA instructors and contract instructors required to train the planned number of new hires.

	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14
Air Traffic Academics										
FAA Instructors	1	1	1	1	1	1	2	2	2	2
Contract Instructors	3	3	3	3	3	3	5	5	5	5
Terminal Level II & III										
FAA Instructors	8	12	15	15	15	17	17	17	17	17
Contract Instructors	11	14	56	56	56	80	77	80	17	17
En Route Level II & III										
FAA Instructors	10	24	18	16	17	17	19	18	18	18
Contract Instructors	54	125	76	69	68	68	76	68	68	68
Total FAA Insturctors	19	37	34	32	33	35	38	37	37	37
Total Contract Instructors	68	142	135	128	127	151	158	153	150	150
Total Instructors =	87	179	169	160	160	186	196	190	187	187
Student Input Total=	435	1,249	1,248	1,104	1,152	1,412	1,508	1,488	1,432	1,472

Table 7.8 Academy Instructor Training Resources Required by Fiscal Year

Differences in the FAA Academy's current staff versus required staff will be corrected by the use of contract instructors. It is desirable to have a core FAA staff to insure field currency and promote the concept of a practitioner-delivered training program. It has been difficult to recruit and retain qualified FAA instructors due to the pay discrepancies between the academy and field facilities. Table 7.9 details the academy contract costs for the controller hiring plan.

Fiscal Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total Hiring	435	1249	1,248	1,104	1,152	1,412	1,508	1,488	1,432	1,472
Total Academy Cost ($000)	$4,261	$12,858	$11,592	$10,343	$11,261	$13,770	$15,220	$15,185	$15,317	$16,259

Table 7.9 Academy Contract Costs for Hiring Plan

A review of existing FAA Academy training facilities and equipment did not uncover any significant need for additional facilities or equipment to meet the upcoming demand for training.

7.8.2 Facility Training

The majority of facility training is on-the-job training (OJT) that is conducted by fully certified controllers. If the facility training programs receive new controllers in an even flow manner, facilities do not require additional resources to conduct OJT.

Currently, 54 air traffic facilities utilize contract support to deliver the classroom and simulation portion of facility training. The FAA has an Air Traffic Instructional Services Contract in place to support the classroom/simulation training needs of all en route facilities and many large terminals. This contract is extremely cost effective when their hourly rate is compared to CPC pay. Table 7.10 details the resources required to support the number of new hires required for the next several years. This table reflects the current level of support with expected annual increases. It does not reflect any efficiency gained through the implementation of this plan.

Projected Developmental Training Costs (Completion of Field Training to Attain Certified Professional Controller Status) Utilizing Air Traffic Instructional Services (ATIS) Contractor Instructors ($000)								
		ATIS Instructor $/hr	Estimated Annual ATIS Training Cost Per Student	Estimated New Hires in Fiscal Year	Projected CUMULATIVE Developmentals In Training for 36 Months	Projected Annual INCREASE in ATIS Field Training Costs due to New Hires	TOTAL ATIS FIELD REQUIREMENT $$	
FY05		$36.90	$12.878	435	1369	$1,739	$22,515	FY05
FY06	$/hr Esc@1.3%	$37.37	$13.042	1249	2318	$12,377	$34,891	FY06
FY07	$/hr Esc@1.3%	$37.85	$13.209	1248	2802	$10,739	$45,630	FY07
FY08	$/hr Esc@1.3%	$38.34	$13.380	1104	2986	($1,940)	$43,690	FY08
FY09	$/hr Esc@1.3%	$38.83	$13.551	1152	2890	($1,301)	$42,392	FY09
FY10	$/hr Esc@1.3%	$39.33	$13.726	1412	3198	$4,228	$46,619	FY10
FY11	$/hr Esc@1.3%	$39.84	$13.904	1508	3554	$4,950	$51,569	FY11
FY12	$/hr Esc@1.3%	$40.35	$14.082	1488	3630	$1,070	$52,639	FY12
FY13	$/hr Esc@1.3%	$40.87	$14.263	1432	3554	($1,084)	$51,555	FY13
FY14	$/hr Esc@1.3%	$41.40	$14.448	1472	3538	($231)	$51,324	FY14

Table 7.10 Field Air Traffic Instructional Services > Contract Resources Required by Fiscal Year

The FAA will continue to look for ways to improve the training process and will adjust this training plan accordingly.

Declining aviation trust fund receipts require that the FAA find ways to operate more efficiently. As we move forward, we anticipate increasing difficulties maintaining the current level of services at likely appropriated levels.

We expect continued salary growth for the next decade. The cost of pay and benefits has been growing by approximately 4 percent per year primarily due to pay increases and the increased cost of benefits, particularly healthcare. With 76 percent of the operations budget linked to payroll and benefits, controlling this is critical to the long-term sustainability of operations.

Non-payroll costs have also grown significantly over the last decade as new systems capabilities have come on line. The current capital investment portfolio has the potential to continue driving up operating costs over the short term as new functionality to improve system safety and efficiency is implemented in the field.

8.1 Funding Required For Controller Hiring

To be able to sustain the hiring necessary to meet the plan over the long term, the FAA is aggressively managing to control its cost. We believe it will be challenging to sustain the long-term hiring required to meet the plan. The ATO has been covering funding shortfalls for the last three years by reducing staffing through attrition. This is not a strategy that can be sustained permanently.

In FY 2005, the ATO expects to be able to hire only 435 controllers, resulting in a net decrease of 260 controllers. Attrition of 1,200 Air Traffic Organization employees in FY 2005 will free up enough payroll funding to cover the cost of the unfunded-portion of the pay raise approved by Congress and pay for a significant portion of needed hiring. Continuation of the hiring into FY 2006 is dependent on receiving additional funding to support a higher staffing level.

The FAA will work with Congress to maintain adequate funding levels to support this controller staffing plan. Without additional funding, the ATO will need to continue to reduce staff, including the controller workforce. Reduced staffing levels in operational segments of the workforce will inevitably lead to significant service reductions.

8.2 Funding Required For Hiring and Training Initiatives

The FY 2004 expenditure for all air traffic controller training was $47.4 million. In FY 2005, at the planned 435 hiring level, the ATO will need to increase funding for training by approximately $22.8 million to allow us to successfully implement the multi-year plan. The FAA will manage incremental costs above this level in future years as academy throughput changes.

8.3 Cost Savings

Several of the initiatives that the FAA is undertaking are expected to result in a cost savings to help fund part of this hiring plan. The subsections below discuss those initiatives and provide an estimate of the cost savings.

8.3.2 Converting Air Traffic Academics to Web-Based Delivery

The FAA estimates 30 percent of the total projected new hires will attend the Air Traffic Academic course (Level I). This course is an introductory course for new trainees who are not graduates of CTI programs, or former military controllers. It is currently provided in a classroom setting. By converting the Air Traffic Academic course to web-based delivery, we believe we can save up to $20 million in travel and per diem costs over the next 10 years. Our goal is to develop the web-based program by FY 2007.

8.3.3 Reduce FAA Cost of Initial Air Traffic Controller Training at Academy

The hiring plan indicates that the FAA will be recruiting and training large numbers of candidates at the academy in Oklahoma City, potentially resulting in substantial increases in training costs. Currently, when new trainee air traffic controllers attend the academy for the initial qualifications training (Levels I, II, and III), all of their expenses are paid by the FAA. This includes room and board that averages $68 per day, travel costing an average of $450, and all costs associated with classroom instruction. In addition, trainees are paid a full salary currently $138 per day. The FAA expects to change the way these trainees are appointed and compensated while at the academy, eliminating the requirement to provide full salaries. By reducing the average total cost per trainee, the FAA will produce substantial savings over the term of this plan. Given the long-term salary and career benefits of the air traffic control profession, the FAA does not believe this change will impact its ability to select candidates from a diverse pool of highly qualified applicants. However, we will monitor the impact of this change on our applicant flow and adjust our recruitment efforts if necessary.

8.3.4 Reclassification of Air Traffic Control Facilities

The current classifications of some of our air traffic control facilities are outdated because traffic patterns have changed. Therefore, the FAA will reclassify 12 terminal facilities to a lower facility level. The controllers will retain their present pay level for two years and then their salaries will be transitioned into the pay bands for the new facility classification level. Immediate savings begin to accrue as new controllers are brought in at the lower salary level.

8.3.5 New Hire Pay Initiative

The FAA recently renegotiated several pay rules with the National Air Traffic Controllers Association (NATCA) that will help us control salary costs. For example, previous pay rules allowed some newly hired controllers, with previous experience, to earn high base salaries while in training. The new rules allow the FAA to set their pay at levels that are more commensurate with an entry-level position.

8.3.6 Air Traffic Control Facility Hours of Operation

Terminal air traffic control facilities with low or no mid-shift (midnight to 5 a.m.) activity are being reviewed for possible reduction in hours of operation. The FAA has identified 34 control towers at which the mid-shift activity levels may not support the need to staff the towers at those times. Any flight activity that does occur during a period where the tower is unmanned is handled by the appropriate en route center or TRACON.

8.3.7 Decommissioning of Navigational Aids

The FAA and industry have invested hundreds of millions of dollars in satellite navigation and space-based augmentation systems such as the Wide Area Augmentation System (WAAS). Satellite navigation through the global positioning system (GPS) provides more precise navigation and enhanced safety to all sectors of the aviation community. The emergence of the European Galileo system confirms the benefits and future of satellite navigation.

As the FAA and its aviation customers transition to satellite navigation as a principal means of navigation, the FAA intends to begin decommissioning some of its legacy land-based navigational aids, beginning in fiscal year 2005. Doing so will lower future operating costs and allow the FAA to focus on procedures for these new capabilities. The FAA will involve industry leaders and Congress as it moves forward with these plans.

8.3.8 Other Cost Savings

As outlined in Chapter 3, Section 3.3.13, should the FAA be able to pursue co-location and consolidation of facilities (or offices) or expand the Contract Tower Program, the cost savings from those initiatives will help reduce the costs associated with this controller hiring plan.

This chapter presents the key assumptions that underlie the controller hiring plan. FAA's intended action is listed for each assumption should the validity of the assumption become problematic.

9.1 Ratio of Developmentals to CPC Not to Exceed 35 Percent

The Plan assumes that the ratio of developmentals to CPCs in the field facilities depends upon three factors.

1. *Time to CPC as a function of training time.* The model assumes an improvement in the agency's time to CPC occurring at three years in the en route environment and two years in the terminal environment.
    a. Improvement in this area will be initially achieved as a result of an increased management focus on the execution of on-the-job training (OJT) within the control room environment. This will be done by establishing OJT as a scheduled priority, not to be interrupted except around critical operational necessities. This would include the exclusion of suspending OJT for backfilling for spot leave, annual leave, details of CPCs out of facilities, etc.
    b. The agency is developing a training-tracking program to establish a national database on training. It is scheduled for implementation in January 2006. This process is expected to greatly facilitate the tracking of facility performance regarding timely certifications of CPCs.
    c. The agency will continue to pursue high-fidelity training simulation systems to assist facilities in accelerating the certification process where applicable. The Agency recognizes the asset value of high-fidelity simulation in providing enhanced training for positions where high performance in complex technological environments is critical. However, for this type of technology to be successful it must be integrated into a training regimen designed to produce those expected levels of performance.

2. *The ability of the agency to place employees into the training pipeline.* The critical staffing issues at a facility can be overly complicated by the assignment of more developmentals than they have the capacity to train. Therefore, it is essential that new hires be assigned to facilities based upon their capacity to begin facility training in a timely manner and upon the facility's demonstrated performance in CPC certifications. This approach will provide additional incentive for facility management to focus on OJT as a priority.

3. *The assumption that developmental to CPC ratios greater than 35 percent should be avoided except only for relatively short periods of time.* This is based upon the opinion that effective resource utilization, operational scheduling, and optimum facility performance is achieved when the CPC population constitutes approximately 65 percent of a facility's operational staffing. Front loading of hiring during the early phases of the Plan assures that CPCs are created sooner, thereby increasing the facility's ability to absorb more new hires later during the period when attrition begins to increase.

The FAA's ability to hire with a two-to-three year lead-time is instrumental to the success of this plan. If this approach fails, the system response will likely include air traffic system delays as one possible means of mitigating the risk associated with this assumption. Once the pipeline is full, the only recourse is to slow down the hiring to assure the training capacity in the field is not exceeded. This would have the resulting effect of lengthening the time to CPC. Other initiatives that could be considered to maintain, or increase the level of the certified workforce include, 1) targeted facility retention initiatives, which could include age-56 waivers for facilities with a shortage of OJT instructors, and 2) retention bonuses.

9.2 Reduce Facility Training Time to Achieve CPC

To reduce the on-the-job portion of facility training, developmentals need continuous, uninterrupted access to facility training opportunities and resources. However, management practices within the operational environment can have a detrimental effect on these opportunities and may serve to greatly extend this time-to-certification. These practices include, but are not limited to, canceling or delaying OJT to use the developmental to work positions previously certified as staffing backup behind spot leave, annual leave, work group assignments, and a variety of other activities that remove CPCs from the operational environment.

Another issue that has an immediate and pervasive effect on time-to-certification is the assignment of new hires to facilities that may be critically staffed but do not have the capacity within their training pipeline to immediately accept new developmentals into their training program. This can be for a variety of reasons but is typically the result of an overstaffed population of developmentals.

The FAA will develop, implement and enforce a policy that assigns facility training as a priority second only to operations. This will be accomplished by taking the following initiatives:

1. Facility assignment for new developmentals will be accomplished by placement only at facilities that have available capacity in their training pipeline.
2. Require facility management establish OJT training as a priority and only allow suspension of training for critical operational necessities.
3. Establish nominal time-to-certification metrics for en route and terminal training programs and hold managers accountable for achieving those targets.

9.3 Controller Loss Model and Hiring Models

a. Controller Loss Model

- Attrition Losses:

    1. The retirement and other controller losses were based on historical data. Only 25 percent of controllers are currently retiring in the first year of eligibility. If this does not hold true for future years the hiring numbers would need to be adjusted to account for a different loss rate.

  The FAA will continue its tracking of actual retirements and other losses against the model projections both monthly and annually and make adjustments to the controller loss model as appropriate.

- Non-Attrition Losses:

    1. These losses were based on reaching and maintaining an operational supervisor number of 1,846
    2. Historical data for controller moves to other positions

  The FAA will continue tracking OS staff changes and make adjustments to the loss model as appropriate.

b. The Controller Hiring Model

The controller hiring model takes into account the controller staffing targets along with the training lead-time for en route and terminal controllers, the academy training capacity in terms of class size, the numbers of terminal and en route controllers that can be trained, and even flow hiring. To have the most efficient academy training program possible, the following was assumed for each of the elements described below:

- Class size:

  The modeling is based on hiring in blocks of classes with en route at 16 students per class and terminal at 12 students per class. Decreases from these numbers will result in less than optimal throughput at the academy.

- Optimal Split:

  The academy can train a maximum of 2,080 students per year if it maintains an optimal split between terminal and en route. Those numbers are a maximum of 1,240 for en route and a maximum of 840 students for terminal. The size of the

labs is the determining factor for class size. Any adjustment in hiring which deviates from these maximums decreases the academy's efficiency. This maximum is also based on triple shift scheduling. The model adjusts hiring to maximize the hiring by classes, options splits, and shifts.

- Even Flow Hiring:

  The model constrains the hiring profiles to not exceed class capacity. Should there be an interruption in hiring due to a Continuing Resolution (CR) or other such budgeting issue, the hiring profiles would have to be adjusted. The staffing targets cannot be met if hiring does not continue uninterrupted throughout the year. Any delay or interruption would cause an immediate impact to the total numbers we would be able to hire.

9.4 Funding Availability

The plan assumes that the FAA will be able to fund the hiring profiles shown in Chapter 5. If funding availability is insufficient, the FAA will have to make cuts in other less critical systems' support, delay the implementation of new programs, or reduce services in order to provide funding for controller hiring. The financial elements within the FAA are developing options to ensure adequate funding.

9.5 Workforce Assignments

The plan assumes that the FAA will not use AT-SAT test scores to place students in locations. It has been our experience that people who were forced into locations that they did not desire to be in accepted those jobs and spent the greater part of the next few years trying to get out of those locations. The FAA believes the current screen and training program, which was revamped following the wave of new hires after the strike of 1981, will prove that the candidates who pass the screen and training will have a high success rate regardless of their placement. The FAA will continue to gather data with respect to the AT-SAT screen as experience is gained through hiring and certification data in the national training database.

9.6 AT-SAT Performance

The plan assumes that the AT-SAT pass rate of 67 percent will continue in the future and that AT-SAT will be upward-compatible with later versions of Microsoft Windows. The FAA intends to take the following actions with respect to AT-SAT performance:

- Track AT-SAT pass rates and make adjustments in the hiring profile as appropriate.
- Continue upgrades to AT-SAT that are currently under development now and

when they are completed will require new equipment and operating system software. FAA intends to fully fund this activity.

9.7 Clearance Process Capacity

The plan assumes that the clearance process has sufficient capacity to handle the number of applicants dictated by the controller hiring plan resulting in applicants being cleared in time to be hired on an even-flow basis.

The FAA intends to take these actions with respect to the clearance process:

- Conducting a study of clearance process and providing the necessary funding to implement recommendations, including any automation required
- Developing a hiring tracking system to help determine effectiveness of the pipeline, find bottlenecks and problem areas
- Creating alternate sources of candidates, e.g., potential AFSS candidates, who need minimal additional clearances

9.8 AT-SAT Testing Success

The training program contained in the plan is predicated on the availability and success of AT-SAT testing. If adequate funding is not provided for AT-SAT testing, general public candidates will not be a controller hiring source.

The FAA intends to fully fund AT-SAT expansion and testing.

9.9 Recruitment and Retention of Academy Qualified Instructors

The plan assumes that there will be sufficient qualified instructors at the academy to handle the large numbers of terminal and en route controllers over the next 10 years. Because the retention and recruitment of qualified and experienced instructors is an important issue, the FAA will establish a workgroup to study this issue.

9.10 Adequate Staffing of Facilities

If the FAA is not able to adequately staff its air traffic control facilities, the system response will be observed in the area of system capacity not system safety. Managers and supervisors are responsible for maintaining safety first and system efficiency second. Therefore, inadequate staffing levels will result in air traffic control system delays.

The FAA, however, mitigates this risk by assigning controllers who are being used to support off-position work to support operations. An example of this is the controller at Potomac whose additional job is to implement necessary Washington D.C. area airspace changes. He spends four days a week doing the airspace work and one day a week working live traffic. If the operation requires him, he would delay the airspace work and work the traffic. In other words, other projects would be reduced in priority to support air traffic control operations.

9.11 Traffic Workload Forecast

The air traffic staffing standards projections are based on traffic workload forecasts. The FAA publishes these forecasts annually around March. Controller hiring numbers will be adjusted if traffic grows faster (or slower) than the traffic forecast of March 2004 that was used as the basis for this plan.

References

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[10] Department of Transportation, Office of Inspector General, Report AV-2004-081, *Report on FAA's Actions To Address Allegations Of Leave and Overtime Abuse At Five Locations*, September 9, 2004.

[11] Department of Transportation, Office of Inspector General, Report AV-2004-060, *Report On Opportunities To Improve FAA's Process For Placing And Training Air Traffic Controllers In Light Of Pending Retirements*, June 2, 2004.

[12] Government Accounting Office (GAO), *Report To The Chairman And Ranking Democratic Member Of The Subcommittee on Aviation*, House Committee On Transportation And Infrastructure, Air Traffic Control, FAA Needs To Better Prepare For Impending Wave Of Controller Attrition, GAO-02-591, June 2002.

[13] Department of Transportation, Office of Inspector General, Report AV-2003-057, *Safety, Cost, and Operational Metrics of the Federal Aviation Administration's Visual Flight Rule Towers*, September 4, 2003.

Appendix A ›› Government Accounting Office (GAO) Recommendations

Report to the Chairman and Ranking Democratic Member of the Subcommittee on Aviation, House Committee on Transportation and Infrastructure, Air Traffic Control, *FAA Needs to Better Prepare for Impending Wave of Controller Attrition*, GAO-02-591, June 2002

GAO recommendations for FAA action; Develop a comprehensive workforce plan that includes strategies for:

Number	GAO Recommendation	Air Traffic Controller Plan
1	Identifying the number and timing of hires necessary to ensure that facilities have an adequate number of certified controllers available to perform needed duties. As part of this effort, FAA should determine and plan for the expected attrition levels and timing at each facility;	Section 4.6 describes retirement attrition by facility. It is based on historical data and will be adjusted annually to improve the controller model. The facility level data will be used to establish controller placement priorities.
2	Evaluating the newly developed screening test to determine whether it is identifying the most successful candidates;	Section 6.4.8 Evaluate the Effectives of the AT-SAT for Placement. The effectiveness of AT-SAT is being evaluated over the long term.
3	Addressing the resource and equipment needs at the training academy to help ensure that FAA is in a position to successfully train a growing number of controller candidates; and	Training resources are addressed in detail in Chapter 7.
4	Assessing the safety and equity issues associated with exempting potentially large numbers of controllers from the mandatory age-56 separation requirement.	Section 5.4.2, Age 56-waiver rulemaking has been approved by OST & OMB. CAMI studies do not clearly support the rational for the 1971 law. This law cited stress, anxiety performance as reasons for the age 56 mandatory retirements. FAA intends to employ this waiver process as a means to reduce staffing issues in targeted locations.

Report on Opportunities To Improve FAA's Process for Placing and Training Air Traffic Controllers in Light of Pending Retirements, AV-2004-060, June 2, 2004

OIG Recommendations to FAA Management:

Number	OIG Recommendation	Air Traffic Controller Plan
1	Establish a system to uniformly estimate controller attrition by location and adjust national attrition and hiring estimates accordingly.	Section 4.6 describes retirement attrition by facility. It is based on historical data and will be adjusted annually to improve the controller model. The facility level data will be used to establish controller placement priorities.
2	Develop an assessment process for identifying new controller's potential to certify at a certain facility level and use this information in placing newly hired controllers.	Section 6.4.8 – the effectiveness of AT-SAT for placement will be evaluated.
3	Compile national statistics and establish a baseline to better manage the time and costs associated with the controller OJT process and include these in developing a tracking system for training.	Section 7.7.1 – Establish National OJT Data Tracking System.
4	Require the ATIS contractor to maintain and provide supporting documentation for hours worked and services provided.	Addressed outside this Plan.

Appendix C ›› List of Air Traffic Collegiate Training Initiative Schools (AT-CTI)

1. College of Aeronautics
   Flushing, New York

2. School of Aviation
   Dowling College
   Brookhaven, Long Island, New York

3. Community College of Beaver County
   Aviation Science Center
   Beaver Falls, Pennsylvania

4. Aviation Division
   Daniel Webster College
   Nashua, New Hampshire

5. Aeronautical Science
   Embry-Riddle Aeronautical University
   Daytona Beach, Florida

6. Aviation Department
   Miami-Dade Community College
   Homestead, Florida

7. Department of Aviation
   Hampton University
   Hampton, Virginia

8. School of Aeronautics
   Bayamon Campus
   Inter American University of Puerto Rico
   Bayamon, Puerto Rico

9. Aerospace Department
   Middle Tennessee State University
   Murfreesboro, Tennessee

10. Aeronautics & Transportation
   Mt. San Antonio College
   Walnut, California

11. Department of Aviation Technology
   Purdue University
   West Lafayette, Indiana

12. Department of Aviation Technology
   University of Alaska Anchorage
   Anchorage, Alaska

13. University of North Dakota
   Grand Forks, North Dakota