U.S. Department of Transportation
Federal Aviation Administration

A Plan for the Future

10-Year Strategy for the Air Traffic Control Workforce
2012–2021

This is the FAA's seventh annual update to the controller workforce plan. The FAA issued the first comprehensive controller workforce plan in December 2004. This 2012 report incorporates changes in air traffic forecasts, controller retirements and other factors into the plan. In addition, it provides staffing ranges for all of the FAA's air traffic control facilities and actual onboard controllers as of September 24, 2011.

This report is required by Section 221 of Public Law 108-176 (updated by Public Law 111-117) requiring the FAA Administrator to transmit a report to the Senate Committee on Commerce, Science and Transportation and the House of Representatives Committee on Transportation and Infrastructure that describes the overall air traffic controller staffing plan, including strategies to address anticipated retirement and replacement of air traffic controllers.

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Executive Summary

Safety is the top priority of the Federal Aviation Administration (FAA) as it manages America's National Airspace System (NAS). Thanks to the expertise of people and the support of technology, tens of thousands of aircraft are guided safely and expeditiously every day through the NAS to their destinations.

Workload

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

Traffic

Air traffic demand has declined significantly since 2000, the peak year for traffic. For the purposes of this plan, air traffic includes aircraft that are controlled, separated and managed by air traffic controllers. This includes commercial passenger and cargo aircraft as well as general aviation and military aircraft. In the past decade, volume has declined by 23 percent and is not expected to return to 2000 levels in the near term.

Headcount

System-wide controller headcount is slightly higher than in 2000. We continue to hire in advance of need to allow sufficient training time for our new hires to replace retiring controllers. On a per-operation basis, the FAA has more fully certified controllers on board today than in 2000.

Retirements

Fiscal year 2011 retirements were above projections, and higher than FY 2010 actuals, while 2012 retirements are trending close to plan. In the last five years, 3,151 controllers have retired. The FAA carefully tracks actual retirements and projects future losses to ensure its recruitment and training keep pace.

Hiring

In the last five years, the FAA has hired more than 7,500 new air traffic controllers. We plan to hire 6,200 new controllers over the next five years to keep pace with expected attrition and traffic growth.

Training

As the FAA continues to bring these new employees on board, we must carefully manage the process to ensure that our trainees are hired in the places we need them and progress in a timely manner to become certified professional controllers (CPC). The FAA will also continue to take action at the facility level should adjustments become necessary due to changes in traffic volume, retirements or other attrition.

As the agency brings thousands of new air traffic controllers on board, the training of these new employees continues to be closely monitored at all facilities.

The trainee percentage of the FAA's national controller workforce has averaged 26 percent over the last 40 years, but has ranged from 15 to 50 percent. With the large number of new hires since 2005, the national average grew to 27 percent in 2009, but then receded and is expected to stay below 20 percent for the next few years. This figure may be higher at some individual facilities; the FAA reviews this information along with other indicators so we can manage training and daily operations at each facility.

While the agency is focused on a small subset of facilities with particular staffing needs, the FAA reached the following critical milestones in FY 2011. The agency:

- Redesigned initial training courses at the FAA Academy.
- Initiated the Flight Deck Training (FDT) program, designed to improve understanding and communication between controllers and pilots.
- Expanded the Automated Radar Terminal System Color Display (ACD) lab at the FAA Academy. Students use the simulation lab to practice air traffic concepts and complexities such as multiple arrivals with various types of aircraft.
- Established a yearly refresher training course for senior controllers who serve as field instructors.

In FY 2011, the FAA also convened an Independent Review Panel that focused on air traffic controller selection, assignment and training. The panel, part of a nationwide Call to Action on air traffic control safety and professionalism, delivered its comprehensive set of recommendations to the agency in September for review and implementation. The FAA is reviewing the report and has begun to develop action plans to address the recommendations.

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

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

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1 Introduction

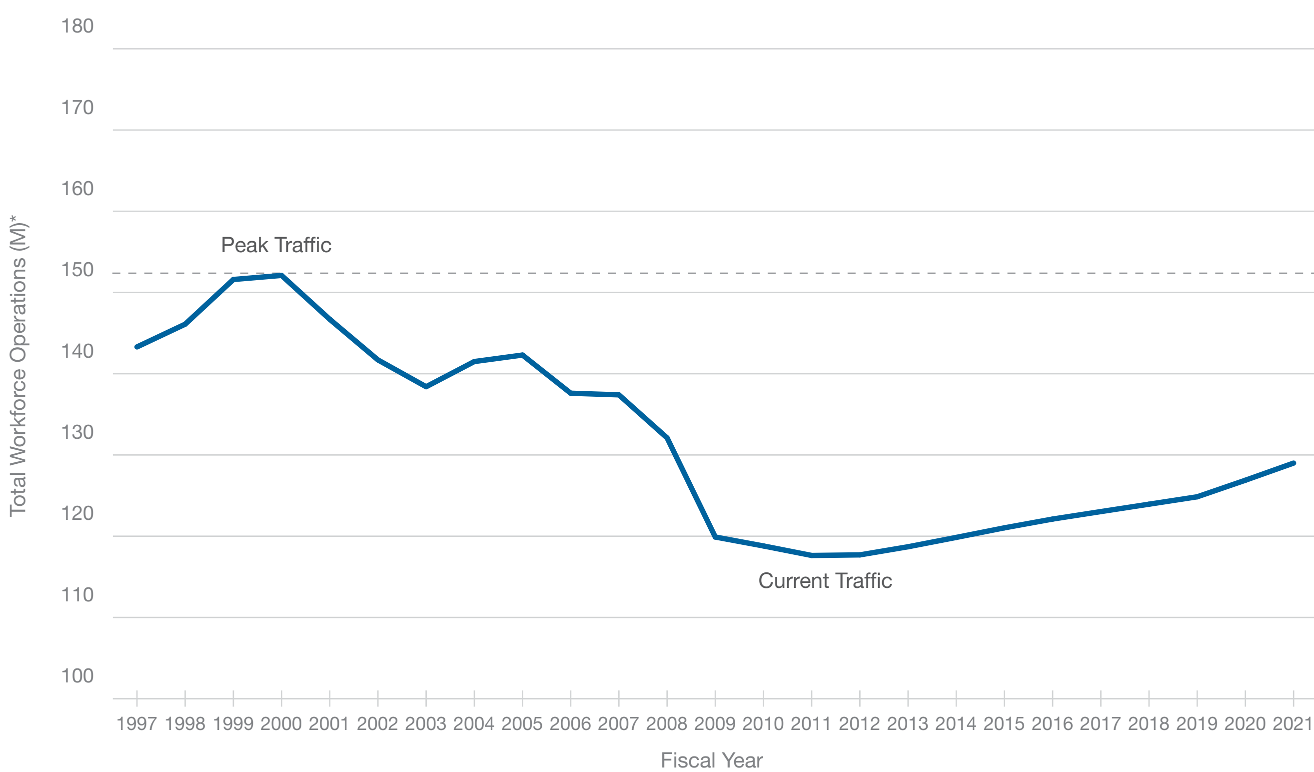
Staffing to Traffic

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

Adequate numbers of controllers must be available to cover the peaks in traffic caused by weather and daily, weekly or seasonal variations, so the FAA continues to "staff to traffic." This practice gives us the flexibility to match the number of controllers at each facility with traffic volume and workload. This also means that we staff to satisfy expected needs two to three years in advance, in order to ensure sufficient training time for new hires.

System-wide, air traffic has declined by 23 percent since 2000. Figure 1.1 shows that air traffic volume is not expected to return to peak levels in the near term.

Figure 1.1 Traffic Forecast

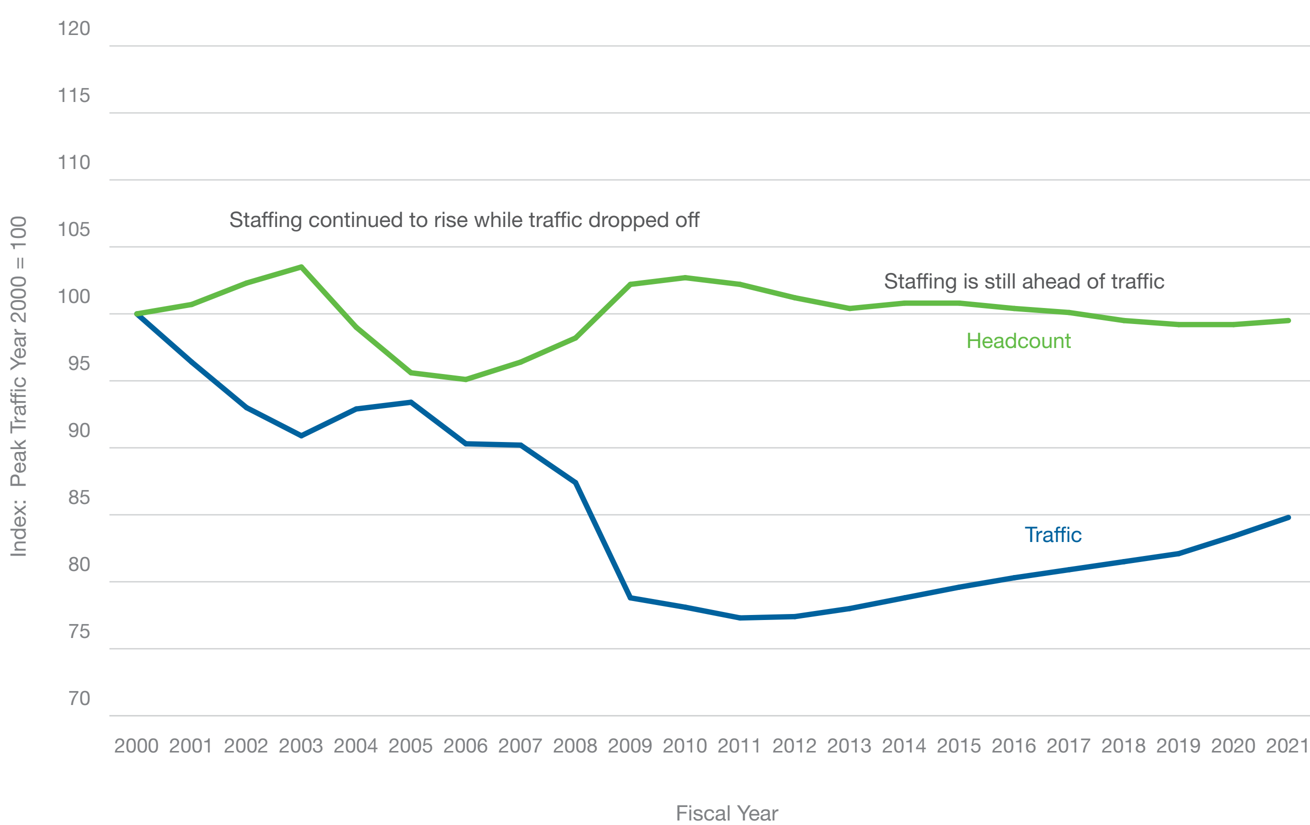


*Total Workforce Operations = Tower + TRACON + Aircraft Handled by En Route Centers

Despite the decline in air traffic, "staffing to traffic" requires us to anticipate controller attrition, so that we plan and hire new controllers in advance of need. This advance-hire trainee wave is one reason that staffing remains well ahead of traffic.

The chart below shows system-wide controller staffing and traffic, indexed from 2000 and projected through 2021. Due to continued advance hiring, the current total headcount exceeds the level in 2000.

Figure 1.2 System-wide Traffic and Total Controller Trends



Meeting the Challenge

The FAA has demonstrated over the past several years it can handle the long-predicted wave of expected controller retirements. Since 2005, the agency has hired more controllers than the number who retired each year. In the last five years, the FAA has hired 7,564 controllers. There were 3,151 retirements for the same period.

The FAA hires in advance to reflect all attrition, not just retirements. The FAA's current hiring plan has been designed to phase in new hires as needed over time. This will avoid creating another major spike in retirement eligibility in future years like the current one resulting from the 1981 controller strike. We are now entering a steady-state period in which we expect new hires to mirror losses for the next several years.

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

To address these challenges, the FAA:

- Convened an Independent Review Panel that focused on air traffic controller selection, assignment and training.
- Procured a commercially available off-the-shelf resource management tool (RMT) that provides a common toolset for FAA facilities to effectively develop and maintain optimal schedules based on traffic, staffing, work rules and qualifications.

Effective and efficient training, properly placing new and transferring controllers, and efficient scheduling of controllers are all important factors in the agency's success.

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

2 Facilities and Services

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

More than 15,000 federal air traffic controllers in airport traffic control towers, Terminal radar approach control facilities and air route traffic control centers guide pilots through the system. An additional 1,375 civilian contract controllers and more than 9,500 military controllers also provide air traffic services for the NAS.

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

Terminal and En Route Air Traffic Services

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

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

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

FAA Air Traffic Control Facilities

As of October 1, 2011, the FAA operated 315 air traffic control facilities and the Air Traffic Control System Command Center in the United States. Table 2.1 lists the type and number of these FAA facilities. More than one type of facility may be collocated in the same building.

Each type of FAA facility has several classification levels based on numerous factors, including traffic volume, complexity and sustainability of traffic. To account for changes in traffic and the effect of investments that reduce complexity, as well as to compensate controllers that work the highest and most complex volume of traffic, facilities are monitored for downward and upward trends.

Table 2.1 Types and Number of FAA Air Traffic Control Facilities

Type	Name	Number of Facilities	Description
1	Tower without Radar	1	An airport traffic control terminal that provides service using direct observation primarily to aircraft operating under visual flight rules (VFR). This terminal is located at airports where the principal user category is low-performance aircraft.
2	Terminal Radar Approach Control (TRACON)	23	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	131	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. This terminal is divided into two functional areas: radar approach control positions and tower positions. These two areas are located within the same facility, or in close proximity to one another, and controllers rotate between both areas.
4	Combination Non-Radar Approach Control and Tower without Radar	2	An air traffic control terminal that provides air traffic control services for the airport at which the tower is located and without the use of radar, approach and departure control services to aircraft operating under Instrument Flight Rules (IFR) to and from one or more adjacent airports.
6	Combined Control Facility	4	An air traffic control facility that provides approach control services for one or more airports as well as en route air traffic control (center control) for a large area of airspace. Some may provide tower services along with approach control and en route services.
7	Tower with Radar	129	An airport traffic control terminal that provides traffic advisories, spacing, sequencing and separation services to VFR and IFR aircraft operating in the vicinity of the airport, using a combination of radar and direct observations.
8	Air Route Traffic Control Center (ARTCC)	21	An air traffic control facility that provides air traffic control service to aircraft operating on IFR flight plans within controlled airspace and principally during the en route phase of flight. When equipment capabilities and controller workload permit, certain advisory/ assistance services may be provided to VFR aircraft.
9	Combined TRACON Facility	4	An air traffic control terminal that provides radar approach control services for two or more large hub airports, as well as other satellite airports, where no single airport accounts for more than 60 percent of the total Combined TRACON facility's air traffic count. This terminal requires such a large number of radar control positions that it precludes the rotation of controllers through all positions.
-	Air Traffic Control System Command Center	1	The Air Traffic Control System Command Center is responsible for the strategic aspects of the NAS. The Command Center modifies traffic flow and rates when congestion, weather, equipment outages, runway closures or other operational conditions affect the NAS.

3 Staffing Requirements

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

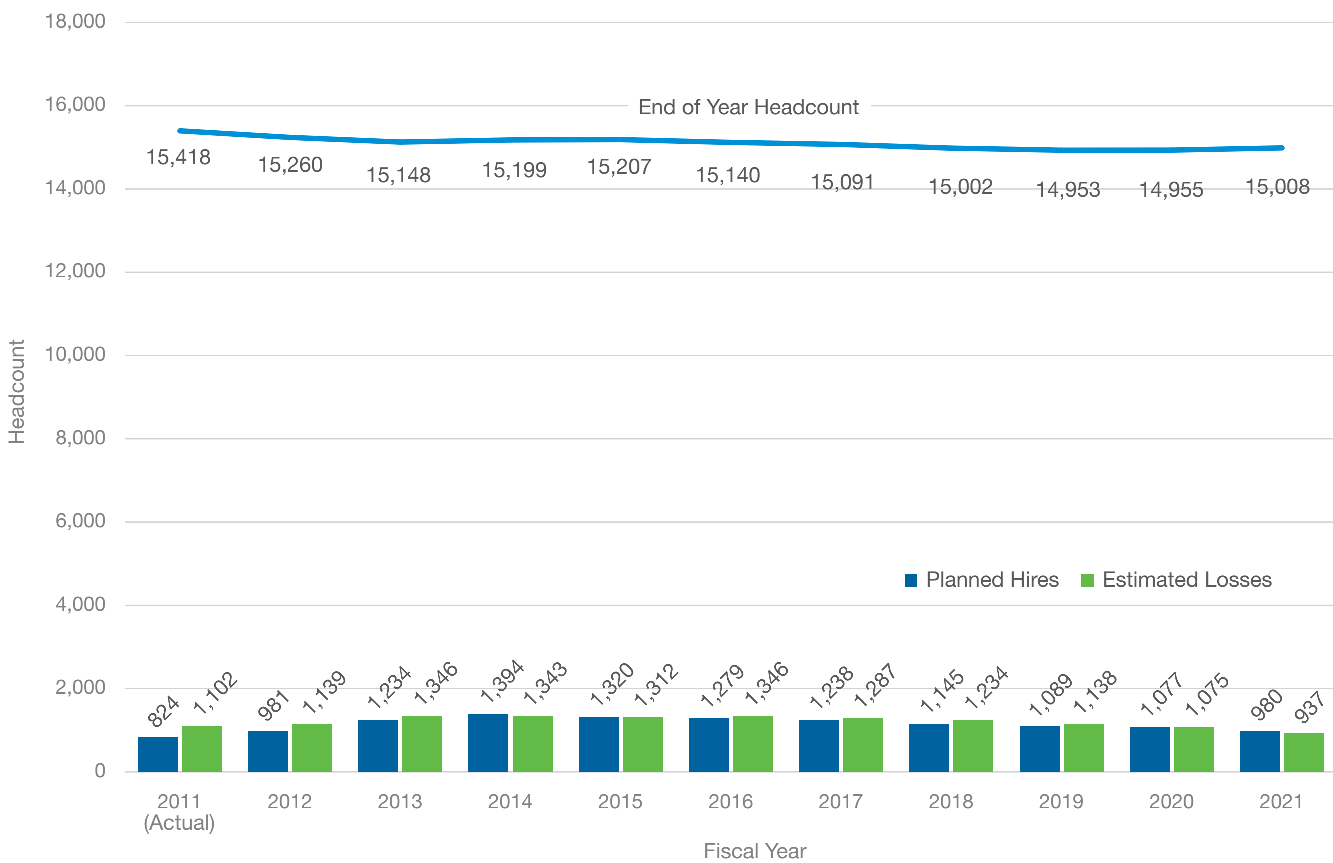
"Staffing to traffic" requires the FAA to consider many facility-specific factors. They include traffic volumes based on FAA forecasts and hours of operation, as well as individualized forecasts of controller retirements and other non-retirement losses. In addition, staffing at each location can be affected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

Proper staffing levels also depend on the efficient scheduling of employees, so the FAA tracks a number of indicators as part of its continuous staffing review. Some of these indicators are overtime, time on position, leave usage and the number of trainees. For example, in FY 2011, the system average for overtime was 2 percent, a slight decrease from the FY 2010 level.

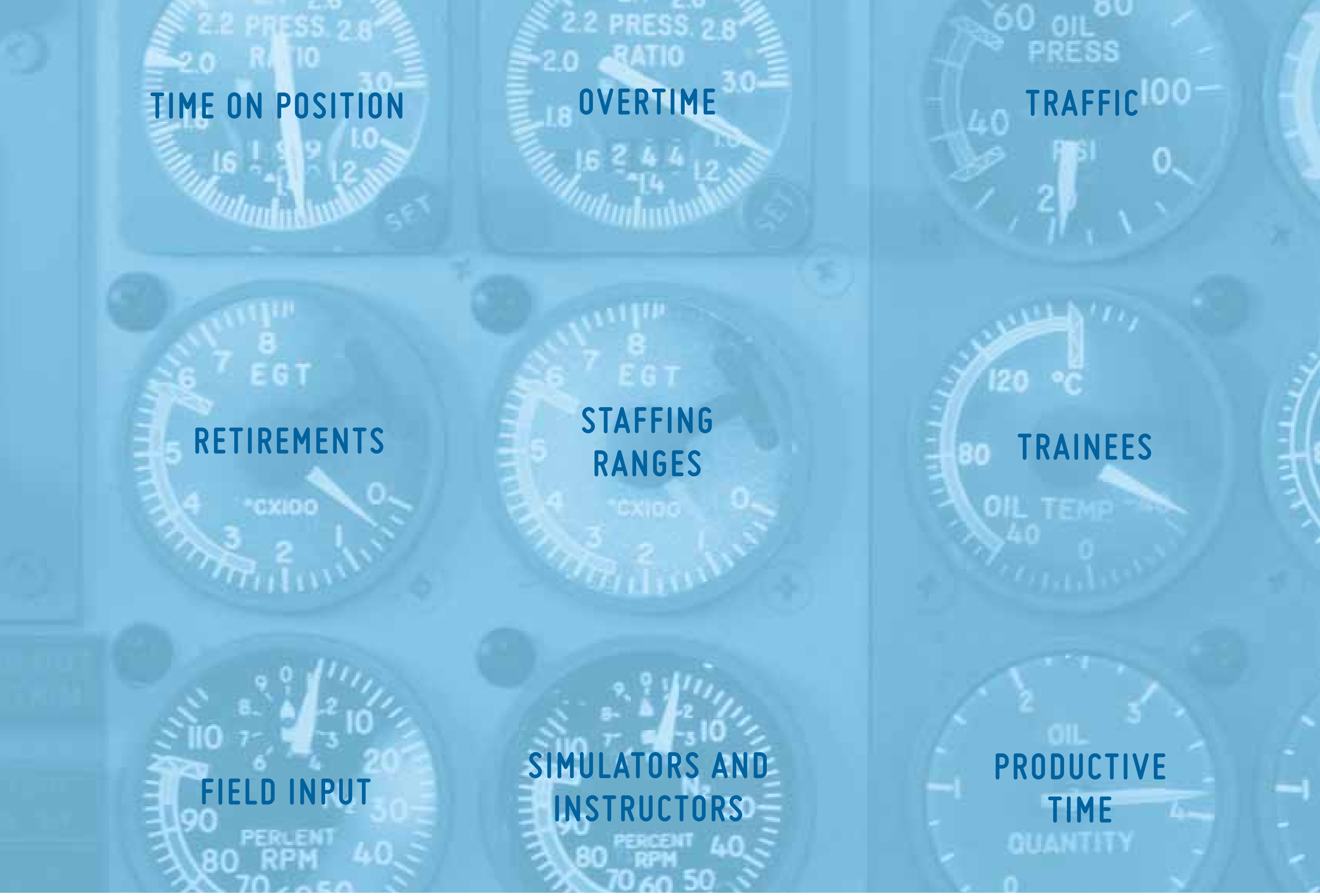
Figure 3.1 shows the expected end-of-year headcount, losses and new hires by year through FY 2021. Figures for FY 2011 represent actual end-of-year headcount, losses and hires. Losses include retirements, promotions and transfers, resignations, removals, deaths, developmental attrition and academy attrition.

There is a slight increase in the projected FY 2012 end-of-year headcount from last year's plan. Because we expect a slight increase in attrition over the next few years, and the need for proper training for new-hire controllers, we plan a corresponding increase in advance hiring.

Figure 3.1 Projected Controller Workforce



Note: Annual hires and losses are a relatively small proportion of the total controller workforce.



➔ The FAA uses many metrics to manage its facilities.

Staffing Ranges

Because traffic and other factors are dynamic at individual facilities, the FAA produces facility-level controller staffing ranges. These ranges ensure that there are enough controllers to cover operating positions every day of the year.

The process for establishing controller ranges by facility involves the use of several data sources. In developing these ranges, the FAA considers past facility performance, the performance of other similar facilities, productivity improvements, staffing standards and recommendations from the National Academy of Sciences, along with input from managers in the field, overtime trends, time-on-position data and expected retirements and other losses. Each facility is reviewed to evaluate headcount, operational activity and productivity trends. Productivity trends are then compared with facility-specific history as well as appropriate peer facilities. These peers are determined by the facility type and level.

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

1. Staffing standards – mathematical models used to relate controller workload and air traffic activity.
2. Service unit input – the number of controllers required to staff the facility, typically based on past position utilization and other unique facility operational requirements. The service unit input is validated by field management.
3. Past productivity – the headcount required to match the historical best productivity for the facility. Productivity is defined as operations per controller. Facility productivity is calculated using operations and controller data from the years 1999 to 2011. If any annual point falls outside +/- 5 percent of the 1999 to 2011 average, it is thrown out. From the remaining data points, the highest productivity year is then used.
4. Peer productivity – the headcount required to match peer group productivity. Like facilities are grouped by type and level and their corresponding productivity is calculated. If the facility being considered is consistently above or below the peer group, the peer group figure is not used in the overall average and analysis.

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

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

The agency's hiring and staffing plans consider all of these inputs as well as other considerations such as time on position and overtime. All of these data points are reviewed collectively and adjustments are made to facility staffing plans during the year as necessary.

In this report we present staffing ranges for each of the FAA's 315 air traffic control facilities. Facilities typically staff open positions with a combination of certified professional controllers (CPC), certified professional controllers in training (CPC-IT) and position-qualified developmental controllers who are proficient, or checked out, in specific sectors or positions. Developmental controllers have always handled live traffic and, in fact, this is a requirement to maintain proficiency as they progress toward CPC status.

In many facilities, the current Actual on Board (AOB) number is higher than the range maximum. This is because many facilities' current AOB (all controllers at the facility) numbers include larger numbers of developmental controllers in training to offset expected future attrition. Facilities may also be above the range based upon facility-specific training and attrition forecasts.

Individual facilities can be above the range maximum due to advance hiring. The FAA hires and staffs facilities so that trainees are fully prepared to take over responsibilities when senior controllers retire.

In the longer term, the number of new hires and total controllers will decline as the current wave of developmental controllers become CPCs, and the long-expected retirement wave has passed. At that point, the vast majority of the controllers will be CPCs and CPC-ITs, and more facilities will routinely fall within the ranges.

The staffing ranges for 2012 are published in the Appendix of this report.

Figure 3.2 Controller Staffing Range

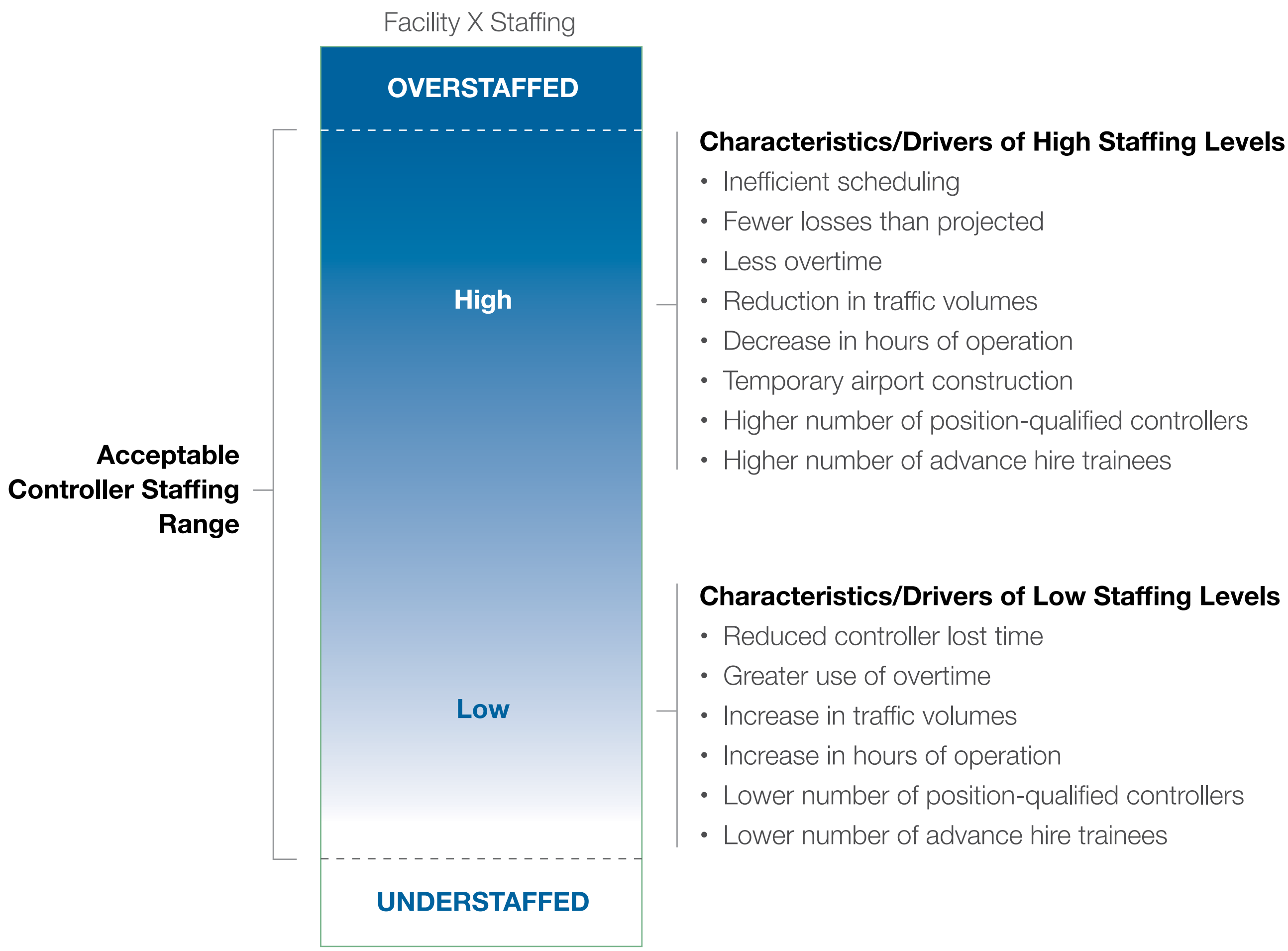


Figure 3.3 depicts an example of a large, Type 3 FAA facility. This Combination Radar Approach Control and Tower with Radar facility is one in which controllers work in the tower cab portion and in the radar room (also known as a TRACON). To be a CPC in these types of facilities, controllers must be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

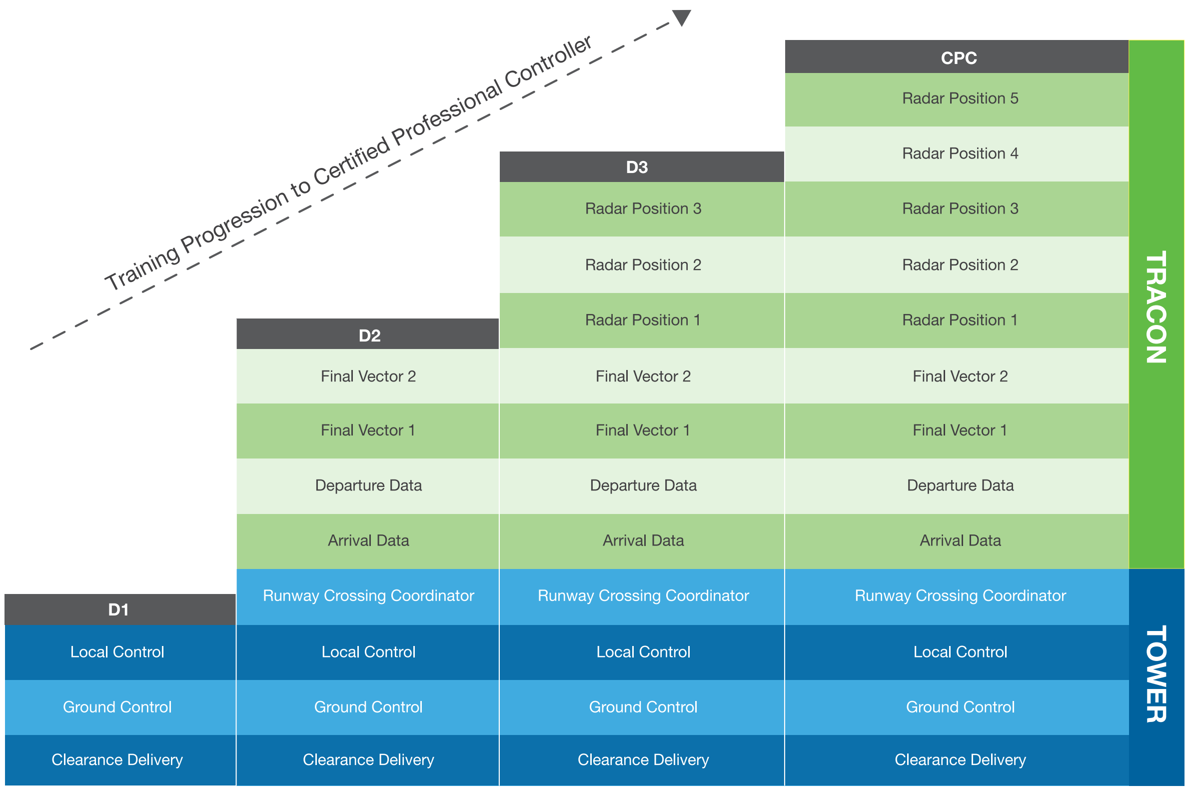
Trainees are awarded “D1” status (and the corresponding increase in pay) after being checked out on several positions. The levels of responsibility (and pay) gradually increase as trainees progress through training.

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

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

Having the majority of the workforce checked out as CPCs makes the job of scheduling much easier at the facility. CPCs can cover all positions in their assigned area, while position-qualified developmentals require the manager to track who is qualified to work which positions independently. This task will be easier once the FAA’s resource management tool (RMT) is fully implemented.

Figure 3.3 Controller Training Progression



Trainees are defined as the number of developmental and certified professional controllers in training.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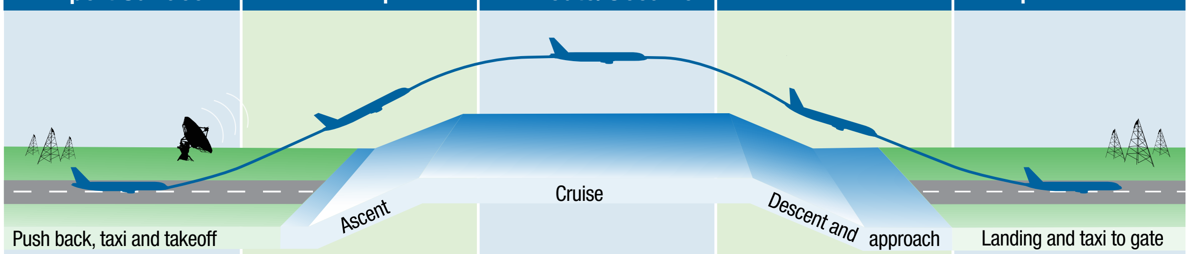
Air Traffic Staffing Standards Overview

The FAA has used air traffic staffing standards to help determine controller staffing levels since the 1970s.

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

Figure 3.4 Air Traffic Control Position and Facility Overview



Airport Surface	Terminal Departure	En Route/Oceanic	Terminal Arrival	Airport Surface
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)**
Ground Controller Issues approval for push back from gate and issues taxi instructions and clearances. **Local Controller** Issues takeoff clearances, maintains prescribed separation between departure aircraft, provides departure aircraft with latest weather/field conditions. **Clearance Delivery** Issues IFR and VFR flight plan clearances. **Flight Data** Receives and relays weather information and Notice to Airmen.	**Departure Controller** Assigns headings and altitudes to departure aircraft. Hands off aircraft to the En Route Radar Controller. **Flight Data - Radar** Issues IFR flight plan clearances to aircraft at satellite airports, coordinates releases of satellite departures.	**Radar Controller** Ensures the safe separation and orderly flow of aircraft through En Route center airspace (includes oceanic airspace). **Radar Associate** Assists the Radar Controller. **Radar Associate (Flight Data)** Supports the Center Radar Controller by handling flight data.	**Arrival Controller** Assigns headings and altitudes to arrival aircraft to establish aircraft on final approach course.	**Local Controller** Issues landing clearances, maintains prescribed separation between arrivals, provides arrival aircraft with latest weather/field conditions. **Ground Controller** Issues taxi instructions and clearances to guide aircraft to the gate.

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

All FAA staffing models incorporate similar elements:

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

In 2005, the FAA began an air traffic staffing standard review and assessment with the expectation of developing staffing ranges at the facility level. In 2007, the FAA revised the standards models for towers and En Route centers and, in 2009, completed revised standards models for TRACON facilities.

The FAA incorporated recommendations found in the Transportation Research Board special report “Air Traffic Control Facilities, Improving Methods to Determine Staffing Requirements.” These recommendations included significantly expanding the amount of input data and improving the techniques used to develop the standards.

All staffing models went through similar development processes. Some components of the model-development phase varied as a function of the work being performed by the controllers. For example, a crew-based approach was used to model tower staffing requirements because the number and type of positions in a tower cab vary considerably as traffic changes, compared to those of a single sector in a TRACON or

The staffing standards models were updated in 2008–2009. The standards produced by the models are updated annually to account for changes in traffic and other factors.

En Route center. All staffing models reflect the dynamic nature of staffing and traffic. Controller staffing requirements can vary throughout the day and throughout the year.

Tower Cab Overview

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

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

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

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

TRACON Overview

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

- TRACON airspace is divided into sectors that often provide services to multiple airports. Consolidated or large TRACONs in major metropolitan areas provide service to several primary airports. Their airspace is divided into areas of specialization, each of which contains groups of sectors.

- Controllers are assigned to various positions like Radar, Final Vector, Departure Data, etc., to work traffic within each sector. These positions may be combined or de-combined based on changes in air traffic operations.
- As traffic, workload and complexity increase, the sectors may be subdivided (de-combined) and additional positions opened, or the sector sizes can be maintained with an additional controller assigned to an assistant position within the same sector.
- Similarly, when traffic, workload and complexity decline, the additional positions can be closed or the sectors recombined.

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

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

En Route Overview

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

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

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

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

The FAA's staffing models incorporate the input data provided by MITRE, run it through a shift scheduling algorithm, apply traffic growth forecasts, and then apply factors to cover vacation time, break time, training, etc., to provide the staffing ranges presented in this plan for each En Route center.

In September 2010 the National Academy of Sciences completed a review at the FAA's request of MITRE's workload modeling capabilities. The review "concludes that the model is superior to past models because it takes into account traffic complexity when estimating task load. It recommends obtaining more operational and experimental data on task performance, however, to establish and validate many key model assumptions, relationships and parameters." The FAA is working with MITRE to address the National Academy of Sciences recommendations, while remaining cognizant of the current tight fiscal environment.

Resource Management Tool

Optimizing controller schedules is a critical aspect of efficient workforce planning, since inefficient facility schedules can lead to excess staffing and/or increased overtime. Currently, the FAA's air traffic facilities do not have access to a standardized, automated tool to assist them in developing optimal schedules and analyzing long-term workforce planning requirements. FAA facilities currently use a variety of non-standard methods that do not fully incorporate the complex resource management requirements that exist in today's environment.

To address this need, the FAA has procured a commercially available "off-the-shelf" system that has been configured to FAA-specific requirements (e.g., national labor contract terms, FAA policy, etc.). The FAA's resource management tool (RMT) will provide a common toolset for FAA facilities to effectively develop and maintain optimal schedules based on traffic, staffing, work rules and employee qualifications. Similar systems are being used by air navigation service providers worldwide and are commonplace in best-practice companies.

More specifically, RMT will be used to create and analyze optimized schedules over variable blocks of time, with viewing capability in days, weeks, months, years or seasons. The system is able to:

- Generate optimal schedules for a given period of time (day, month, year) based on demand, business rule constraints, employee qualification requirements and available resources.
- Calculate optimal shift start times and length in support of national and local bargaining evaluations.
- Distribute employees across various shifts in the most efficient way.
- Calculate projected time on position (signed on and controlling traffic) to staff an area by shift, line and/or person.
- Run what-if analyses.
- Recommend optimal utilization of overtime and other time outside shift.
- Automate shift requests, bid process and other scheduling-related tasks.

Technological Advances

The Next Generation Air Transportation System (NextGen) is taking shape. Recent efforts to expand the use of Performance Based Navigation are already paying off in fuel savings and increased capacity in key parts of the National Airspace System. Infrastructure that was committed to in recent years, including Automatic Dependent Surveillance-Broadcast (ADS-B) and the modernization of major automation systems, is being deployed and creating the tangible foundation for NextGen. And the FAA continues to mature the next wave of NextGen capabilities, including Data Communications, the next generation of voice switches and new concepts for weather management.

These investments, over time, are expected to drive substantial benefits for the FAA and its stakeholders. For air carriers, NextGen aims to create a more predictable, efficient environment that saves their customers time and allows for better decision-making about resources, including crew scheduling and fuel usage. For the FAA, NextGen should lead to a range of benefits, including increased productivity from a workforce using a full suite of modern tools.

This increased productivity, and its ultimate impact on the size and composition of the FAA's workforce, depends on many factors. Over time, the relationship between pilots and air traffic controllers will evolve. The relationship between controller, and automated systems will similarly evolve. These evolutions will occur gradually and require much testing and analysis to ensure the safety of the system.

Accordingly, the 2012 controller workforce plan does not factor NextGen-related staffing changes into out-year projections. The staffing projections in this workforce plan are based on the current concept of operations for air traffic control, pending such time that NextGen staffing can be more accurately projected.

4 Losses

In total, the FAA expects to lose over 1,100 controllers due to retirements, promotions and other losses this fiscal year. Other controller losses include transfers, resignations, removals, deaths, developmental attrition and academy attrition.

Fiscal year 2011 attrition came in at 1,102 losses, representing 99.5 percent accuracy with the forecast of 1,108 losses. We have incorporated this updated attrition into our forecasts.

Controller Loss Summary

Table 4.1 shows the total estimated number of controllers that will be lost, by category, over the period FY 2012 through FY 2021.

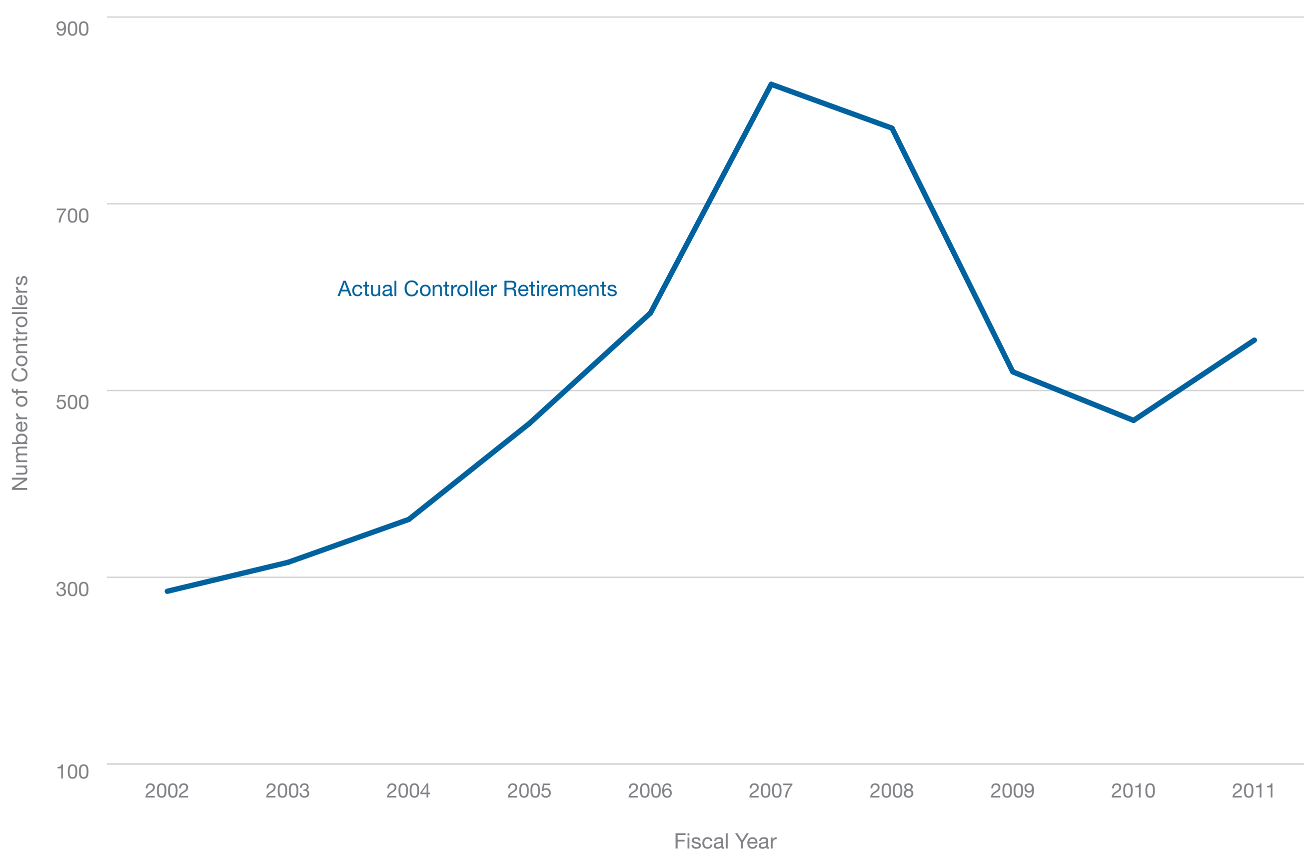
Table 4.1 Controller Loss Summary

Loss Category	Losses: 2012-2021
Retirements	5,827
Resignations, Removals and Deaths	581
Developmental Attrition	1,398
Promotions/Transfers	3,572
Academy Attrition	779
Total	**12,157**

Actual Controller Retirements

Fiscal year 2007 was correctly projected to be a peak year for retirements of controllers hired in the early 1980s.

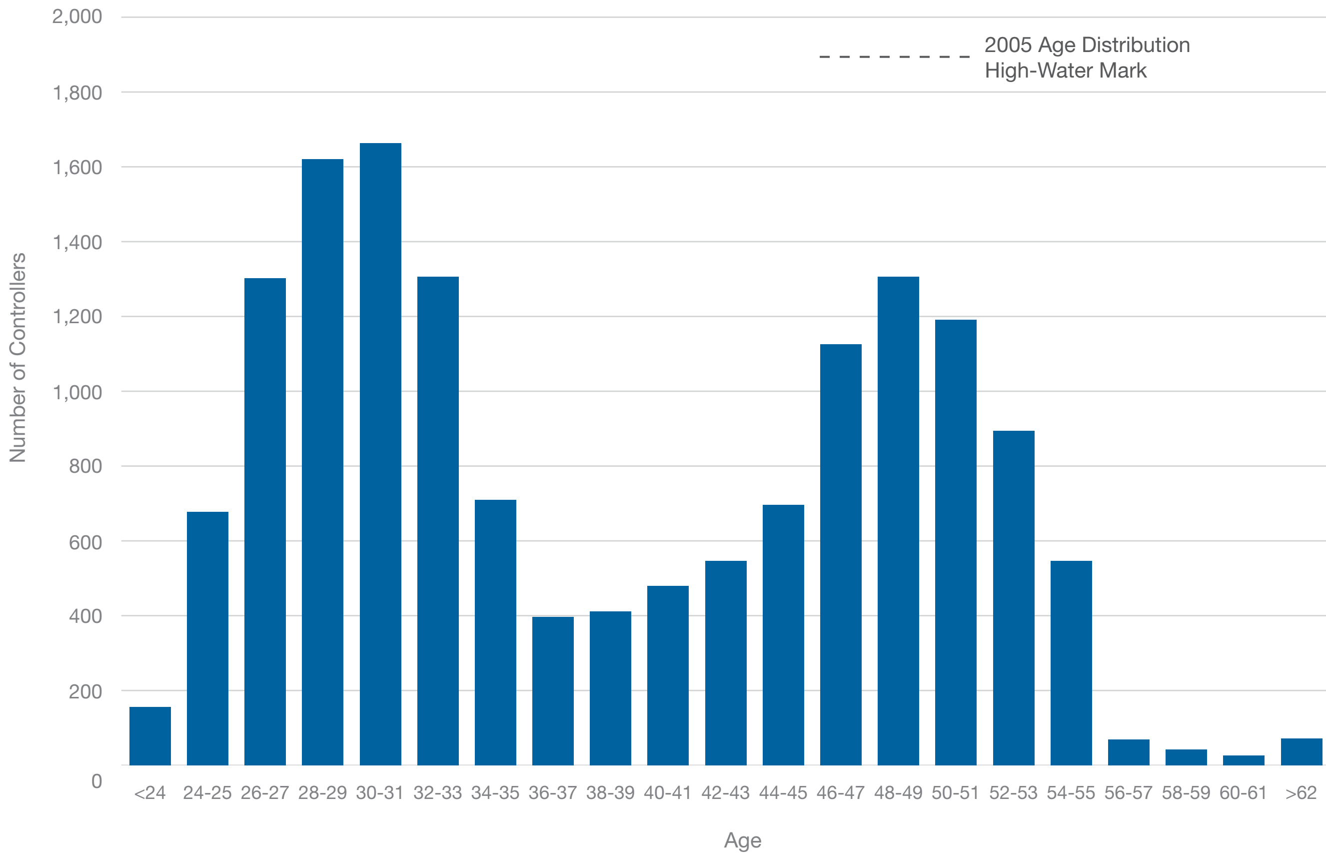
Figure 4.1 Actual Controller Retirements



Controller Workforce Age Distribution

The agency hired a substantial number of controllers in the years immediately following the 1981 strike. This concentrated hiring wave created the situation whereby a large portion of the controller workforce would reach retirement age in roughly the same time period. In September 2005, the age distribution peak on the right side of Figure 4.2 was greater than 1,900 controllers. Today, the magnitude of that remaining peak is down to about 1,300 controllers.

Figure 4.2 Controller Workforce Age Distribution as of September 24, 2011



Today's hiring plans are designed to gradually phase in new hires as needed. This will also spread out the retirement eligibility of the current wave of new hires and reduce the magnitude of the retirement eligibility peak in future years.

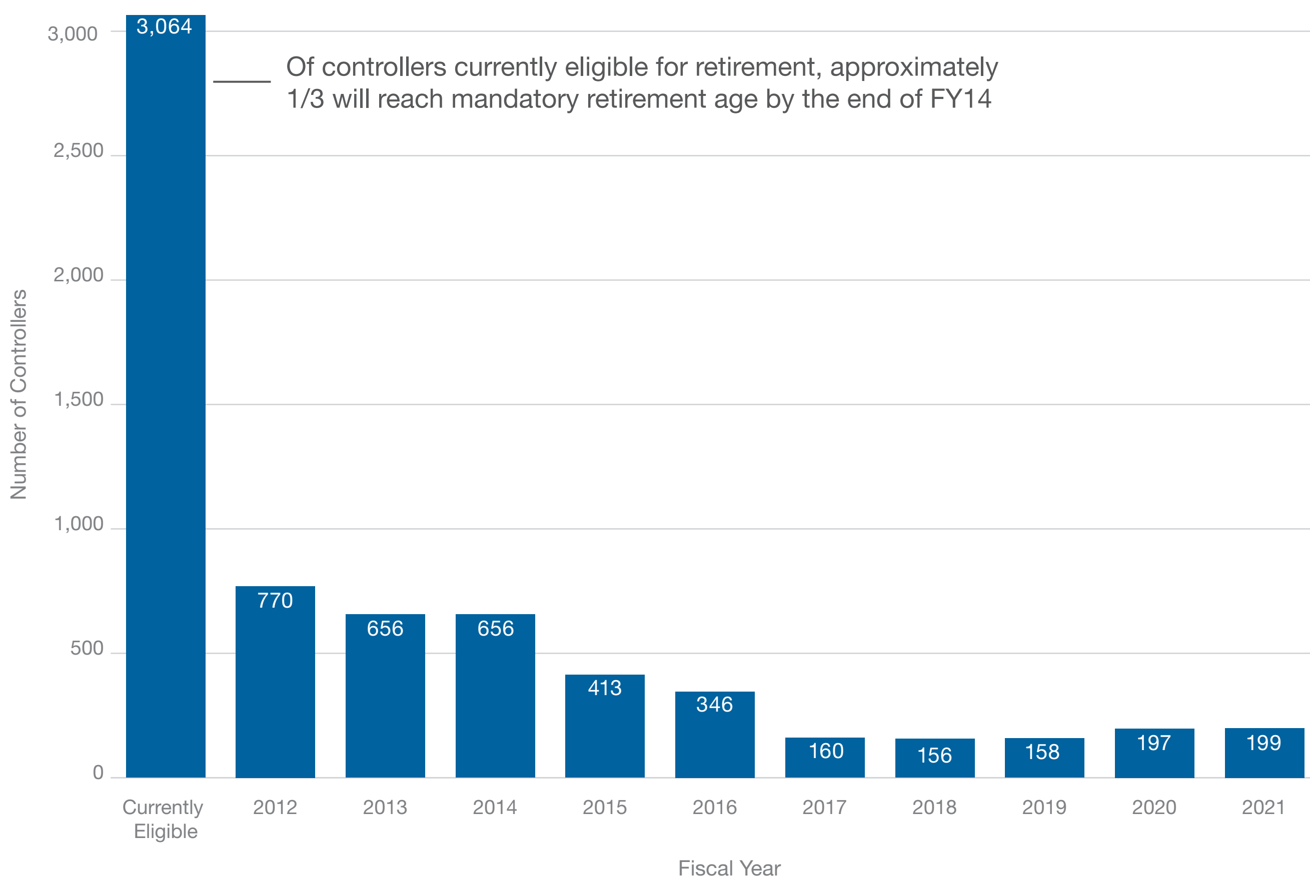
Controller Retirement Eligibility

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

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

Figure 4.3 shows the number of controllers who are currently retirement eligible as of September 2011 and those projected to become retirement eligible each fiscal year through FY 2021. Agency projections show that an additional 770 controllers will become eligible to retire in FY 2012.

Figure 4.3 Retirement Eligibility



Controller Retirement Pattern

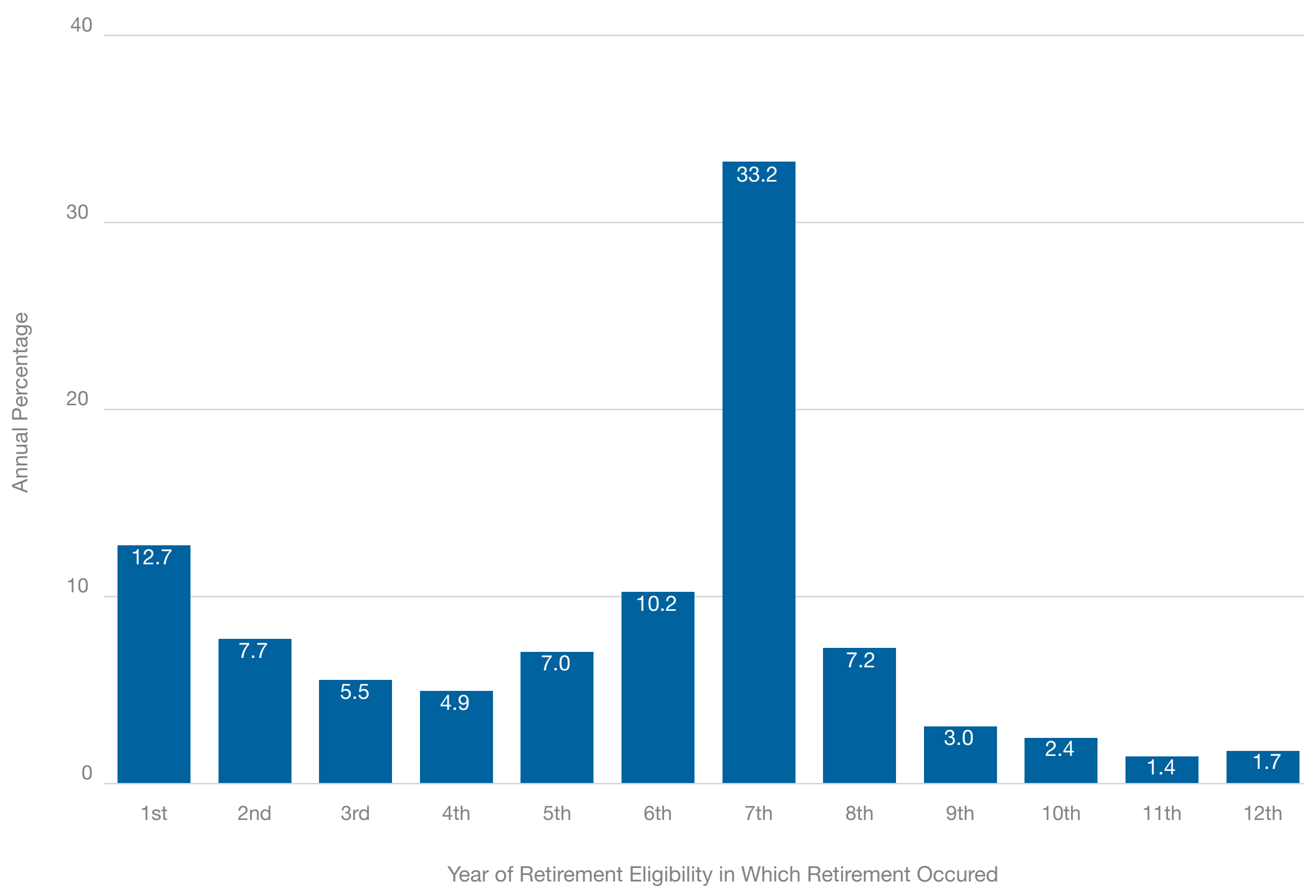
History shows that not all controllers retire when they first become eligible. In 2011, only 13 percent of controllers who first became eligible actually retired. This compares to 16 percent in the previous year's plan.

Since the economic downturn began in 2008, the FAA has observed that many controllers are delaying retirement until they get closer to the mandatory retirement age of 56. Because most controllers first become retirement eligible at age 50, they typically reach mandatory retirement age in their seventh year of eligibility.

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

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

Figure 4.4 Percent of Controllers Retiring in their Nth Fiscal Year of Their Eligibility



Controller Losses Due to Retirements

For the current plan, the agency incorporated FY 2011 retirement data into the retirement histogram used for future retirement.

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

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

In FY 2011, there were 554 controller retirements, a small increase of 39 versus a plan of 515. Year-to-date retirements for 2012 are trending slightly above FY 2011 and are in line with the FY 2012 forecast below.

Figure 4.5 Retirement Projection

Controller Losses Due to Resignations, Removals and Deaths

Estimated controller losses due to resignations, removals (excluding developmental attrition) and deaths are based on historical rates and shown in Table 4.6.

Table 4.6 Controller Losses Due to Resignations, Removals and Deaths

2011*	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
57	57	57	57	58	58	58	59	59	59	59

Developmental Attrition

Estimated losses of trainees who terminate from the FAA while still in developmental status are shown in Table 4.7. The agency has incorporated historical developmental attrition rates into the latest FAA forecasts.

Table 4.7 Developmental Attrition

2011*	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
129	115	125	157	162	156	152	143	134	130	124

Academy Attrition

Estimated loss figures from new hires who are not successful in the FAA Academy training program, before they ever reach an air traffic control facility, are based on historical rates and shown in Table 4.8.

Table 4.8 Academy Attrition

2011*	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
55	76	80	91	86	84	81	75	71	70	65

*Actual

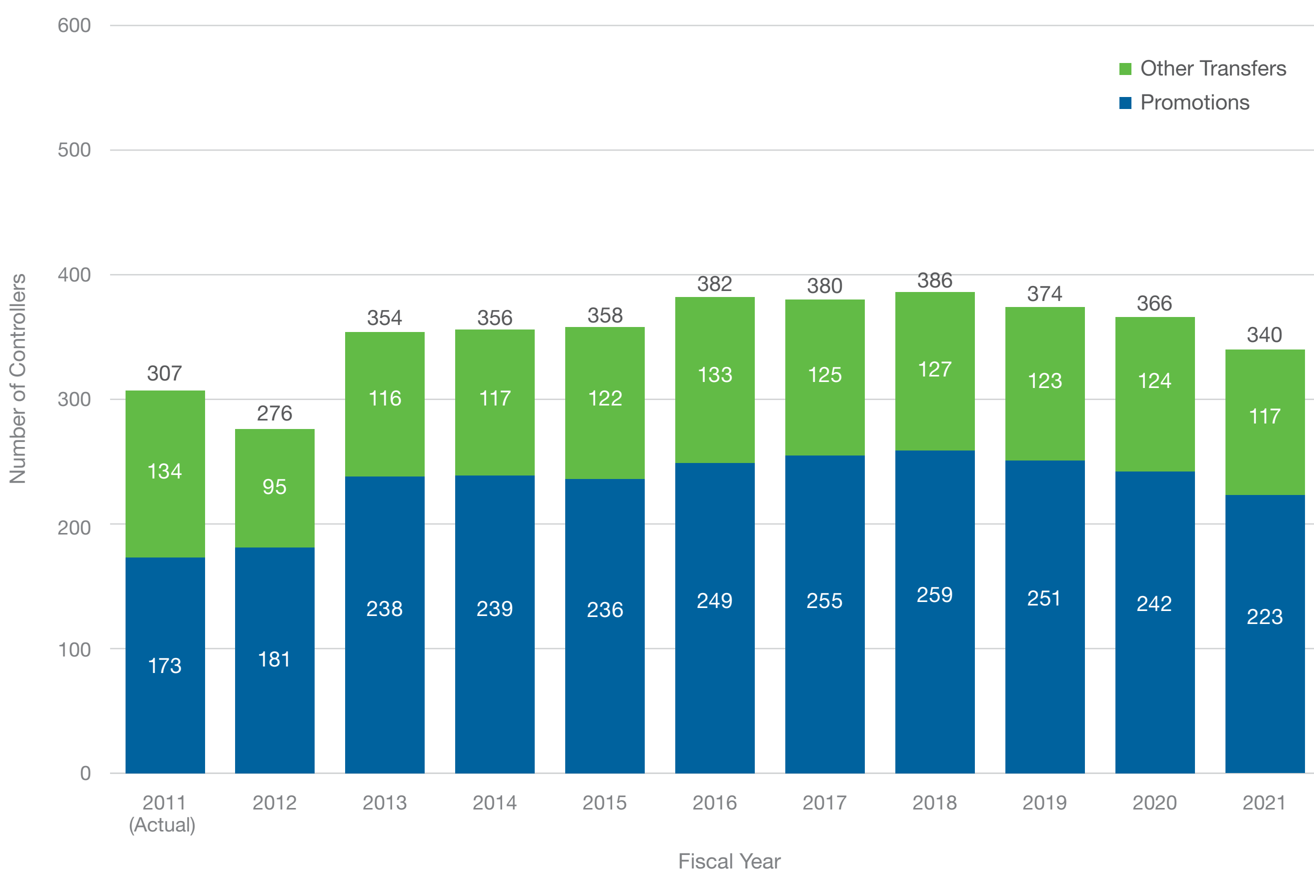
Controller Losses Due to Promotions and Other Transfers

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

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

This forecast is also driven by the shifting demographics of these groups. In short, an increasing number of supervisors and other air traffic personnel will become retirement eligible after 2012, creating additional opportunities for current controllers to be promoted.

Figure 4.9 Controller Losses Due to Promotions and Other Transfers

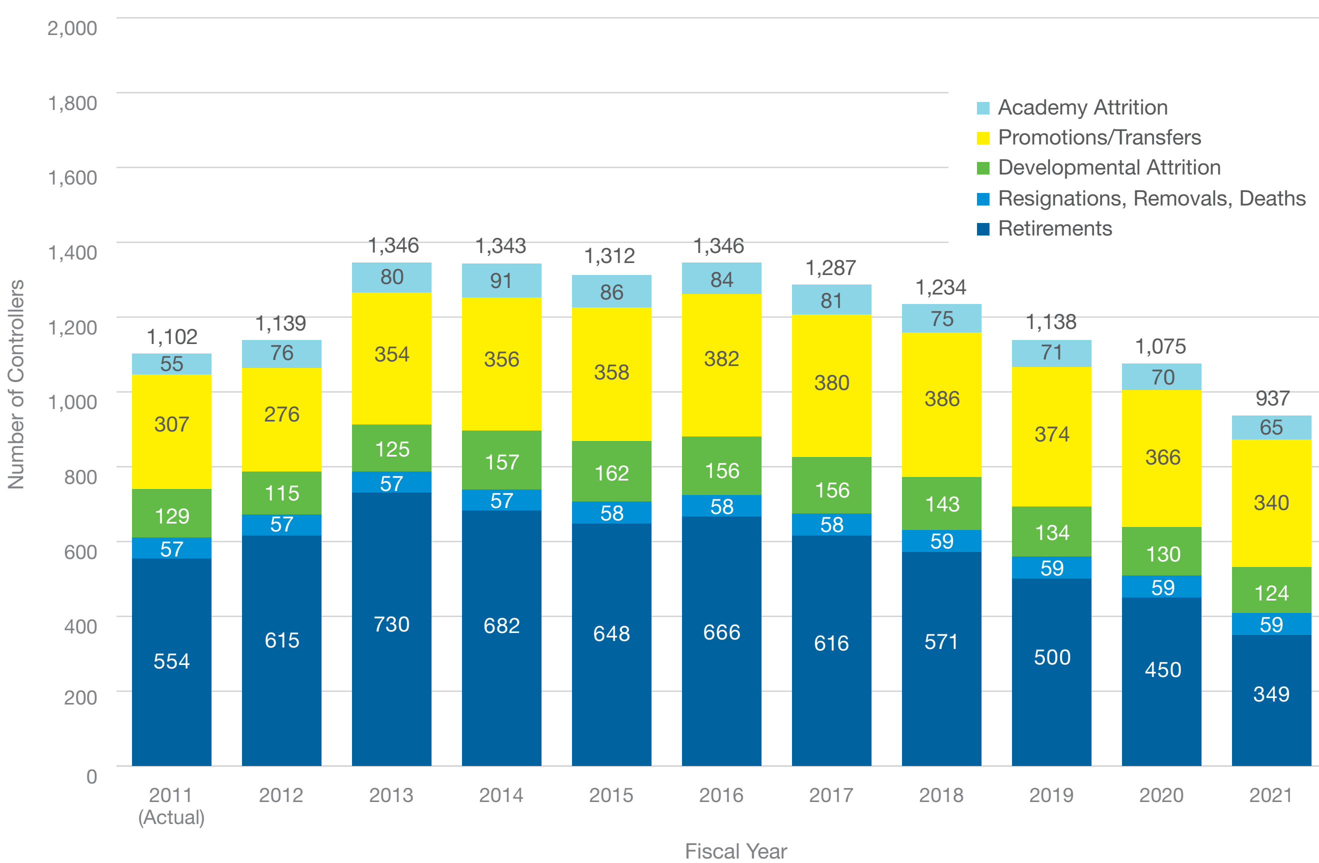


Total Controller Losses

The FAA projects a total loss of 12,157 controllers over the next 10 years.

Should losses outpace projections for FY 2012, the FAA will hire additional controllers to reach the end-of-year goal of 15,260 air traffic controllers on board. However, based on FY 2012 data to date, overall losses appear to be trending in line with these projections.

Figure 4.10 Projected Total Controller Losses



5 Hiring Plan

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

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

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

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

There are thousands of qualified controller candidates eager to be hired. The FAA has again been able to attract large numbers of qualified controller candidates in FY 2011 without the need to advertise a general public announcement. Through the various hiring sources, the FAA will maintain a sufficient number of applicants to achieve this hiring plan.

Controller Hiring Profile

The controller hiring profile is shown in Figure 5.1. The number of planned hires is lower than the number of expected losses in the near term due to above-plan hiring from 2006 to 2008. The number of controllers projected to be hired through FY 2021 is 11,747.

The FAA hired 824 new controllers in FY 2011, and has hired more than 7,500 controllers over the last five years.

Figure 5.1 Controller Hiring Profile

Trainee-to-Total-Controller Percentage

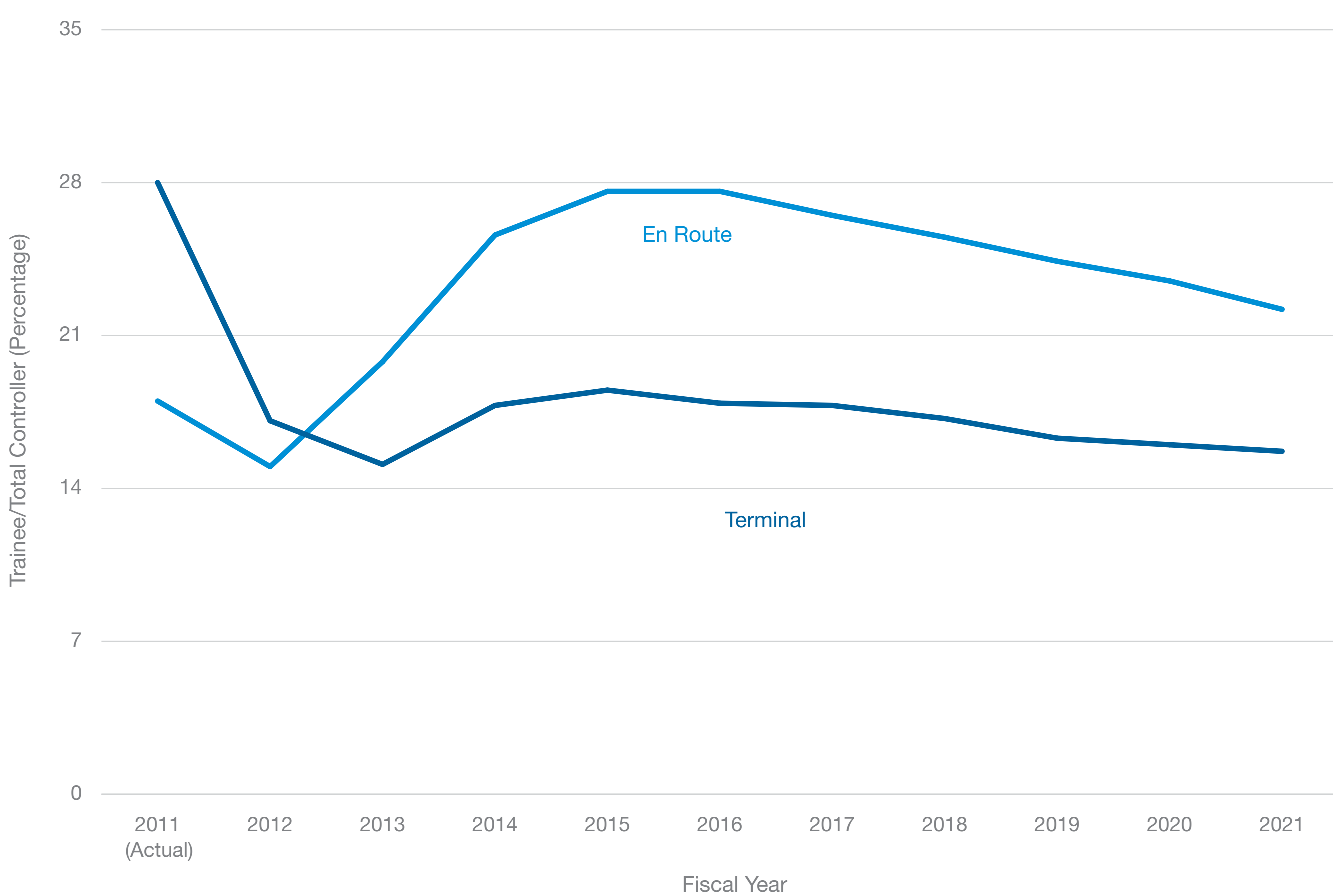
The hiring plan allows the FAA to maintain an appropriate number of trainees (developmental and CPC-IT) in the workforce. While the FAA strives to keep trainees below 35 percent for both Terminal and En Route controllers, it is not the only metric used by the agency to measure trainee progress.

Figure 5.2 shows the projected trainee-to-total-controller percentages by year to 2021.

The percentage shown is calculated as the sum of CPC-ITs plus developmentals divided by all controllers.

The general trend observed in Figure 5.2 shows the trainee percentage reaching a low point in the next one to two years as controllers in the current developmental pipeline become fully certified. The trainee percentage for both En Route and Terminal grows and reaches another peak, well below 35 percent, around 2015 and 2016 as new controllers are hired to account for expected attrition. Note the rate of growth and peak level for the En Route trainee ratio exceeds the Terminal ratio primarily because of the longer times to certify (on average) in En Route facilities. Additionally, a portion of future year hiring

Figure 5.2 Trainee-to-Total-Controller Percentage



requirements have shifted from Terminal to En Route as developmental failures in En Route are given the opportunity to transfer and certify at lower-level Terminal facilities.

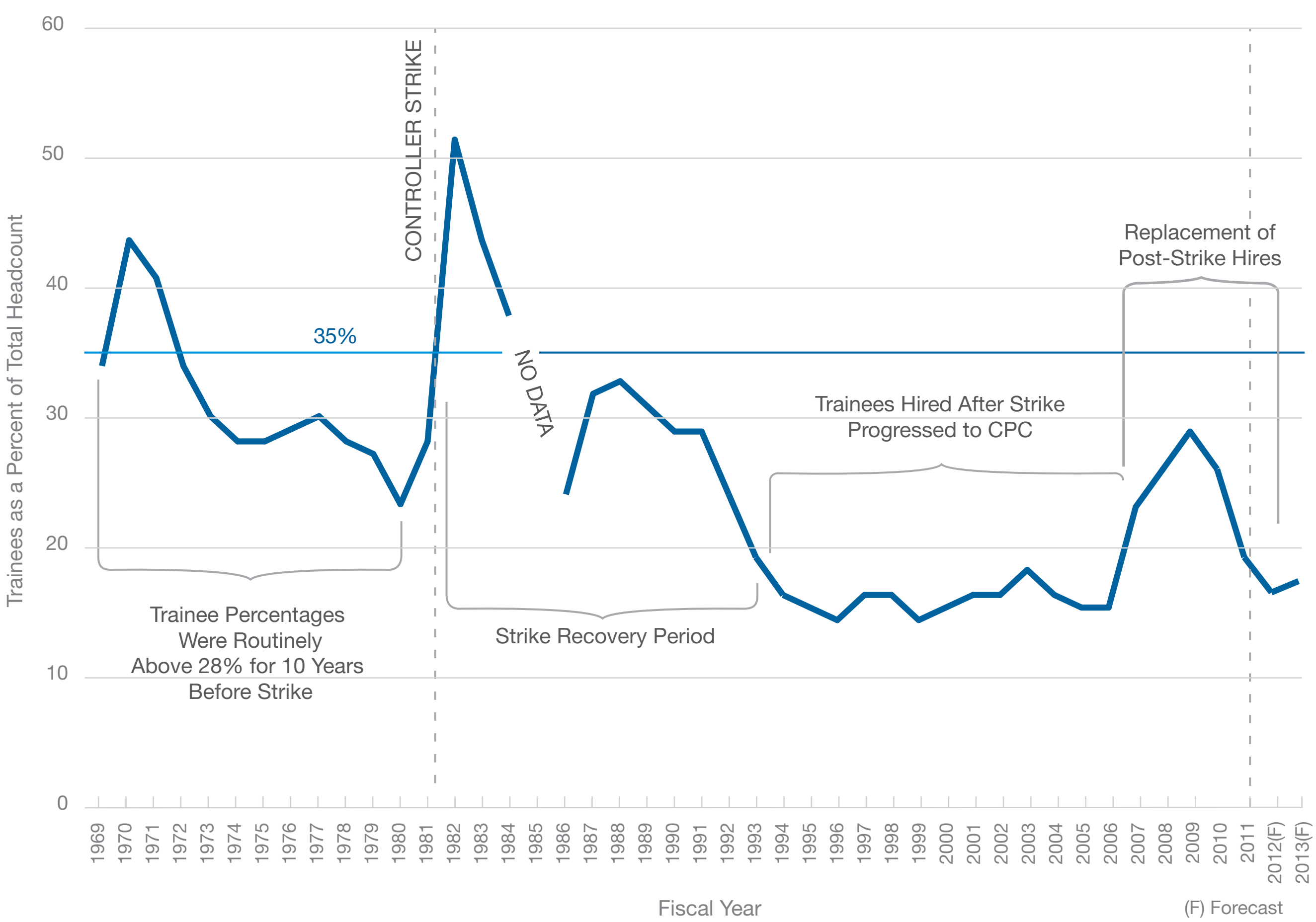
Before the 1981 strike, the FAA experienced trainee percentages ranging from 23 to 44 percent. Following the strike, through the end of the hiring wave in 1992, the trainee percentage ranged from 24 to 52 percent. When the post-strike hires became fully certified by the end of decade, the trainee percentage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

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

By phasing in new hires as needed, the FAA will level out the significant training spikes and troughs experienced over the last 40 years. Even though there was a long-expected peak in 2009, the percentage continues to drop as thousands of trainees become certified controllers.

Figure 5.3 shows historical trainee percentages from 1969 to present.

Figure 5.3 Historical Trainee Percentage



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

In itself, the actual number of trainees does not indicate the progress of each individual in the training program or the additional utility they provide that can help to supplement other on-the-job training instruction and support operations. A key facility measure of training performance is whether trainees are completing their training within the agency's facility benchmarks. The goal ranges from one and one-half years at our lower-level Terminal facilities to three years at our En Route facilities.

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

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

6 Hiring Process

Controller Hiring Sources

The FAA has three major categories of controller hiring sources.

Previous controllers: These individuals have prior FAA or Department of Defense (civilian or military) air traffic control experience.

Air Traffic Collegiate Training Initiative (AT-CTI) students: These individuals have successfully completed an aviation-related program of study from a school under the FAA's AT-CTI program.

General public: These individuals are not required to have prior air traffic control experience and may apply for vacancies announced by the FAA.

Recruitment

The agency continues to attract and recruit high-quality applicants into the controller workforce to meet staffing requirements. Of the 824 controllers hired in FY 2011, 245 were graduates of AT-CTI schools while an additional 188 had previous air traffic control experience.

In fiscal year 2011, the FAA continued to hire a significant number of applicants from the general public. We expect this trend to reverse going forward because of the number of available applicants from our AT-CTI and military sources.

Due to the thousands of qualified air traffic controller applicants available from previously advertised general public announcements, the agency did not offer a vacancy announcement to this pool in FY 2011. The FAA did, however, issue an open, continuous announcement for AT-CTI graduates. Announcements were also opened for retired military controllers, veterans eligible under the Veterans' Recruitment Appointment Authority, Control Tower Operators, as well as current and former civilian air traffic controllers. The number of people in the hiring pool varies during the year as the agency recruits applicants, evaluates them and draws from the pool. However, the overall goal is to maintain a pool of between 2,000 and 3,000 applicants available for consideration by selection panels at any one time. During FY 2011, the agency's recruitment and advertising activities enabled the FAA to far exceed this pool's target range. At the conclusion of FY 2011, the FAA's pool totaled over 5,000 applicants.

As an added recruitment incentive, the agency also can offer eligible developmental controllers Montgomery GI Bill education benefits. This flexibility enables us to increase the size of the pool, which helps us meet our controller hiring goals.

General Hiring Process

Applicants from the general public must achieve a qualifying score on the Air Traffic Selection and Training (AT-SAT) examination. The AT-SAT tests for characteristics needed to perform effectively as an air traffic controller. The characteristics include numeric ability, prioritization, planning, tolerance for high intensity, decisiveness, visualization, problem solving and movement detection.

Additionally, all applicants must also meet the following requirements:

- Complete three years of progressively responsible work experience, or a full four-year course of study leading to a bachelor's degree, or an equivalent combination of work experience and college credits.
- Be a U.S. citizen.
- Be able to speak English clearly enough to be understood over radios, intercoms and similar communications equipment.
- Be no older than age 30.
- Pass stringent medical and psychological exams, an extensive security background investigation and an interview.

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

7 Training

One of the primary goals of the FAA's technical training and development programs is to ensure that our air traffic controllers have all the necessary skills and abilities to perform their jobs effectively and maintain the safety of the NAS.

The FAA's technical training framework is designed to provide controllers with training to meet the challenges of today and prepare them for the next generation of air traffic management. Hiring continues to keep pace with forecasted attrition rates, allowing the FAA to maintain its focus on the quality and pace of training.

In early 2012, the FAA completed an organizational restructuring designed to improve the integration of safety into all aspects of air traffic services. The new Office of Safety and Technical Training in the Air Traffic Organization is helping the agency firmly instill FAA's safety mission in controllers from the start of their careers. The powerful combination of safety, training and quality assurance under the same leadership structure enhances the FAA's ability to identify, mitigate and manage risks, and integrate lessons learned into the technical training curriculum.

FAA's Call to Action

The FAA convened an Independent Review Panel (IRP) in 2011 to review air traffic controller selection, assignment and training as part of a nationwide Call to Action on air traffic control safety and professionalism. The panel produced 49 recommendations that can be found at the following link: http://www.faa.gov/news/press_releases/news_story.cfm?newsId=13132

In line with the IRP's recommendations, the FAA continues to improve processes for hiring and training the controller workforce. Many of these efforts were under way before the IRP began its review (e.g., professional standards, organizational structure and refresher training). The Office of Safety and Technical Training is evaluating the IRP's recommendations.

The Training Process

Training begins at the FAA Academy where students gain foundational ATC knowledge. Later at the facilities, they receive the necessary training to become certified professional controllers (CPC). All controllers have periodic refresher training to maintain proficiency.

The FAA has transitioned from a competency-based training development approach to an outcome-based one. The competency-based approach referred to our overall curriculum, looking at the collection of job tasks, knowledge, skills and abilities for a controller. The outcome-based approach refers to the strategy used to design individual courses and is based on the performance requirements found in the competency model. The newer approach includes mapping curriculum to job tasks, knowledge, skills and training methods. The techniques apply to new course development, redesigns and updates. A quarterly review process has been initiated to update the training order and courses are reviewed regularly to ensure technical accuracy and compliance.

The FAA continues to invest in making its training more effective by gearing it toward the skills needed for successful career-long development.

FAA Academy Training

The FAA Academy trains new controllers using lecture, computer-based instruction, medium-fidelity simulation and high-fidelity simulation. The Academy lays the foundation for controller development by teaching fundamental air traffic control procedures that are used throughout the country.

In 2011, the FAA redesigned initial courses at the FAA Academy, expanding the required level of knowledge and increasing students' proficiency. Enhanced training content ensures the FAA can bridge the gap between the FAA Academy training and field requirements at the higher-level facilities. This effort achieves the goals of improving quality and minimizing the time it takes to become a CPC.

Facility Training

After graduating from the FAA Academy, developmental controllers begin facility training in the classroom, where they learn facility-specific rules and procedures. Often, these rules and procedures are practiced in simulation. The FAA is increasing the use of simulators – technology that allows instructors to duplicate and play back actual operating events to give students opportunities for improvement in a safe environment. Simulators enable students to not only see the cause and effect, but also to avoid mistakes in the future. Until recently, controllers working in airport traffic control towers trained solely on live air traffic. Since live traffic is inconsistent and unpredictable due to weather and system delays, a controller may have to wait days or weeks for an opportunity to learn a particular procedure, and even longer to become proficient at it. The FAA uses simulation to help compress the training timeline while also improving the students' learning experience and reducing training costs.

After classroom and simulation training are complete, developmental controllers begin on-the-job training on operational positions. This training is conducted by CPCs who observe and instruct developmental controllers working the control position. Once they are certified on control positions, developmental controllers often work independently on those positions under the direction of a supervisor to gain experience and to supplement staffing.

For current controllers, the recently initiated Flight Deck Training (FDT) program is designed to improve understanding and communications between controllers and pilots. It gives controllers a perspective from the cockpit during flight. As part of supplemental training at FAA field facilities, it focuses on specific outcomes that complement the overall controller training curriculum.

Refresher Training

In the field, the FAA has a renewed emphasis on refresher training for current CPCs. Refresher Training 2012 is a new training initiative designed to promote a safety culture and move facilities to the next level of safety. It is a combination of cadre-led and computer-based instruction for air traffic controllers that delivers innovative recurrent

training and incorporates lessons learned from Air Traffic Safety Action Program (ATSAP), Quality Assurance and Quality Control activities.

The Office of Safety and Technical Training has also established a yearly refresher training course for senior controllers who serve as field instructors. It is especially important for field instructors to maintain proficiency on all of the latest skills, new procedures and technologies coming into the system through NextGen improvements.

Infrastructure Investments

The FAA is investing in its infrastructure to ensure facilities are equipped with the computers, bandwidth and technology required to deliver enhanced technology-based training. Facility training has improved with the deployment of dedicated training computers, upgraded bandwidth and Internet Protocol (IP) connectivity, redesigned stage training courses at both En Route and Terminal facilities, and changes to FAA Order 3120.4, Air Traffic Technical Training.

Activities already under way include:

- Increased use of simulators in all phases of training during a controller's career. Simulators allow students to obtain practical learning experience and effectively move from theory to application. Simulator training better prepares junior controllers for the transition to live traffic. By increasing the use of simulators for refresher training, controllers have the opportunity to practice seldom-used procedures and increase technical proficiency. It also reduces time to certification for CPC controllers who transfer to new facilities.

  Simulators are located at the FAA Academy and at the En Route and Terminal facilities that are used to support training. We are currently exploring the feasibility of deploying mobile simulator labs to reduce the distance and travel time for controllers at smaller facilities without their own simulators.

- Expansion of the FAA Academy's Automated Radar Terminal System Color Display (ACD) lab in Oklahoma City. Students use the ACD lab terminal radar simulation to practice air traffic concepts and complexities, such as multiple arrivals involving various types of aircraft and sequencing departures within arrivals.

- Increased facility access to the SimFast Terminal radar simulator, a scenario generation tool and low-cost simulation software that provides radar simulation training capability via the personal computer (PC). SimFast enables smaller facilities without requiring expensive radar equipment to provide PC-to-PC simulations involving a pilot operator and a trainee. SimFast installation coincided with Computer Based Instruction (CBI) upgrades at the facilities.

Time to Certification

The FAA continues to meet its overall goals for time to certification and number of controllers certified. Implementation of NextGen platforms such as En Route Automation Modernization (ERAM) and new training requirements are factors that affect overall time to CPC. Depending on the type of facility, facility level (complexity), and the number of candidates to certify, controllers are generally completing certification in one and one–half to three years.

Table 7.1 shows the FAA's training targets by facility type as well as actual training times for controllers who reached CPC between FY 2009 and FY 2011.

Table 7.1 Years to Certify

Facility Type	Facility Level	Training Target	FY 2009	FY 2010	FY 2011
En Route	All	3.0	2.62	2.62	2.79
Terminal	4-6	1.5	1.08	1.39	1.34
	7-9	2.0	1.48	1.82	2.01
	10-12	2.5	1.65	2.01	2.39

Note: Average training times have increased slightly for large facility types, as many new hires from the peak hiring years (2006-2008) have recently become certified. Training times are projected to decrease slightly as smaller hiring classes (2009+) move through the training process.

Developmental controllers who fail to certify at a facility may be removed from service or reassigned to a less complex facility in accordance with agency policies and directives. The ultimate goal of the training program is for the controller to achieve certification on all positions at a facility and attain CPC status while maintaining the safety of the NAS.

Preparing for NextGen

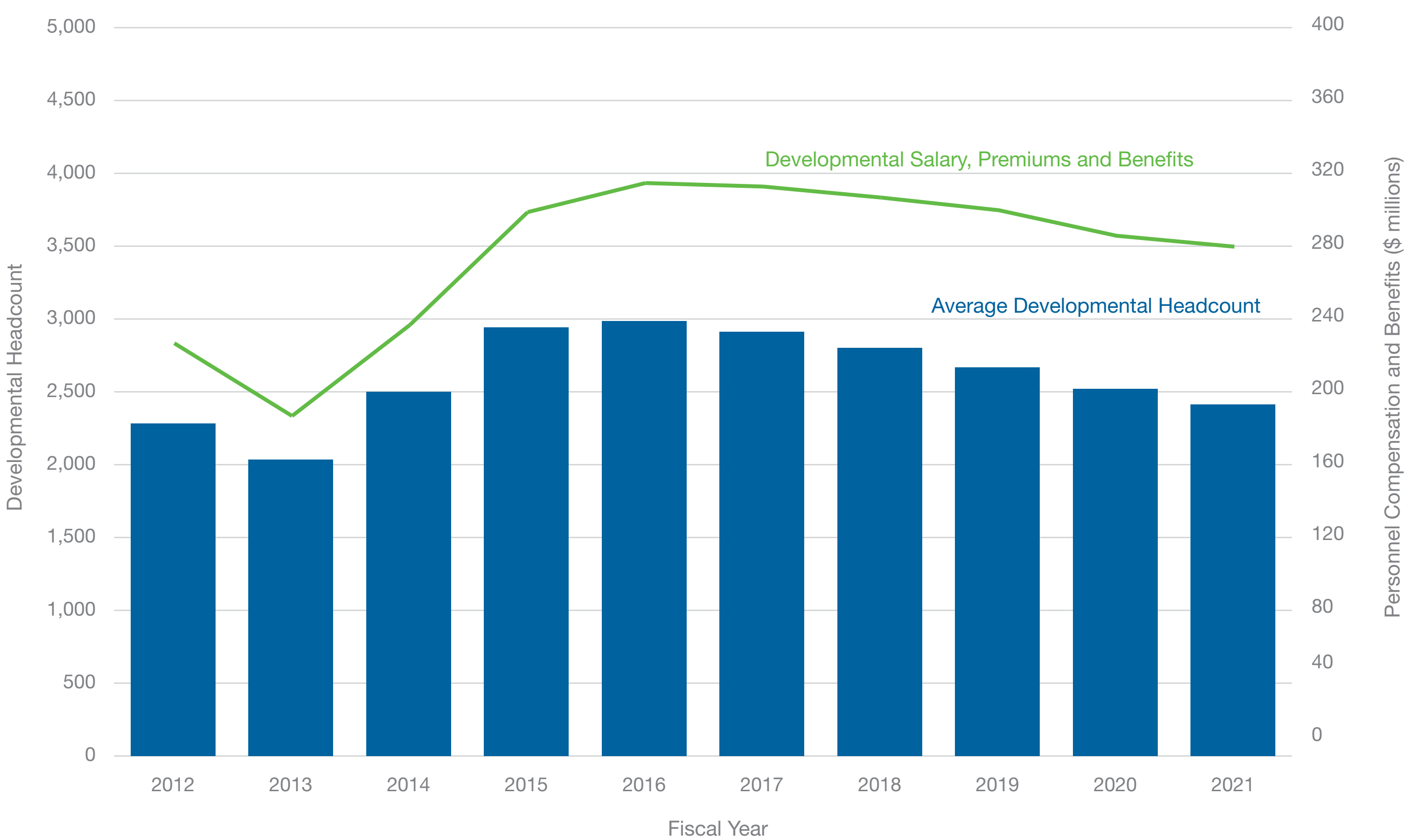
The Office of Safety and Technical Training provides critical input to support implementation of NextGen. Training professionals are part of an FAA team that evaluates how NextGen will change the air traffic work environment and what competencies will be required for the future workforce. The FAA is incorporating what it learns from this evolving and ongoing process into training programs as new systems are implemented.

8 Funding Status

In addition to direct training costs, the FAA will incur salary and other costs for developmentals before they certify. The average cost of a developmental in FY 2012 is projected to be $97,500.

Figure 8.1 depicts expected annual compensation costs of developmentals, as well as the expected number of developmentals by year through 2021. As training takes one and one-half to three years, the chart depicts a rolling total of hires and costs from the current and previous years. It also incorporates the effect of the controller contract.

Figure 8.1 Estimated Cost of Developmentals before Certification



Appendix:
2012 Facility Staffing Ranges

The following presents controller staffing ranges, by facility, for En Route and Terminal air traffic control facilities for FY 2012. These ranges include the number of controllers needed to perform the work. While most of the work is accomplished by CPCs, work is also being performed in facilities by CPC-ITs and position-qualified developmentals who are proficient, or checked out, in specific sectors or positions and handle workload independently. These position-qualified controllers are the focus of staffing-to-traffic efforts.

En Route Facility Controller Staffing Ranges

Total Controller Staffing Ranges include CPCs and trainees (CPC-ITs and Developmentals)

		Actual on Board as of 09/24/11				Total Controller Staffing Ranges	
ID	**Facility Name**	**CPC**	**CPC-IT**	**Developmental**	**Total**	**Low**	**High**
ZAB	Albuquerque ARTCC	193	2	50	245	160	196
ZAN	Anchorage ARTCC	91	0	14	105	83	101
ZAU	Chicago ARTCC	353	8	37	398	282	345
ZBW	Boston ARTCC	241	7	41	289	199	243
ZDC	Washington ARTCC	260	11	88	359	258	315
ZDV	Denver ARTCC	246	3	69	318	235	287
ZFW	Fort Worth ARTCC	271	11	37	319	218	266
ZHU	Houston ARTCC	243	8	40	291	196	240
ZID	Indianapolis ARTCC	324	0	39	363	254	310
ZJX	Jacksonville ARTCC	256	11	71	338	231	283
ZKC	Kansas City ARTCC	252	2	36	290	195	239
ZLA	Los Angeles ARTCC	232	7	49	288	231	282
ZLC	Salt Lake ARTCC	182	2	29	213	137	167
ZMA	Miami ARTCC	231	8	67	306	186	228
ZME	Memphis ARTCC	252	1	57	310	223	273
ZMP	Minneapolis ARTCC	277	3	13	293	210	257
ZNY	New York ARTCC	246	5	70	321	238	290
ZOA	Oakland ARTCC	160	12	46	218	186	228
ZOB	Cleveland ARTCC	354	4	33	391	269	329
ZSE	Seattle ARTCC	166	1	13	180	135	165
ZSU	San Juan CERAP	36	3	12	51	46	56
ZTL	Atlanta ARTCC	343	8	93	444	290	354
ZUA	Guam CERAP	14	0	3	17	17	20

Terminal Facility Controller Staffing Ranges

Total Controller Staffing Ranges include CPCs and trainees (CPC-ITs and Developmentals)

		Actual on Board as of 09/24/11				Total Controller Staffing Ranges	
ID	Facility Name	CPC	CPC-IT	Developmental	Total	Low	High
A11	Anchorage TRACON	21	2	10	33	21	26
A80	Atlanta TRACON	74	25	11	110	79	96
A90	Boston TRACON	57	8	3	68	50	62
ABE	Lehigh Valley International Airport	17	4	8	29	20	24
ABI	Abilene Regional Airport	18	0	8	26	17	21
ABQ	Albuquerque International Sunport Airport	36	0	6	42	27	34
ACK	Nantucket Memorial Airport	12	0	3	15	9	11
ACT	Waco Regional Airport	12	1	9	22	16	20
ACY	Atlantic City International Airport	20	2	6	28	23	28
ADS	Addison Airport	8	1	5	14	9	11
ADW	Andrews AFB	15	0	4	19	12	15
AFW	Fort Worth Alliance Airport	13	1	4	18	11	13
AGC	Allegheny County Airport	12	1	4	17	12	15
AGS	Augusta Regional at Bush Field Airport	14	1	4	19	13	16
ALB	Albany International Airport	20	1	8	29	23	28
ALO	Waterloo Municipal Airport	15	0	2	17	13	15
AMA	Amarillo International Airport	14	0	5	19	16	20
ANC	Ted Stevens Anchorage International Airport	20	2	5	27	22	27
APA	Centennial Airport	20	1	1	22	19	23
APC	Napa County Airport	9	0	3	12	7	8
ARB	Ann Arbor Municipal Airport	10	0	1	11	6	8
ARR	Aurora Municipal Airport	10	0	3	13	7	8
ASE	Aspen Pitkin County/Sardy Field Airport	8	1	4	13	12	14
ATL	William B. Hartsfield Atlanta International Airport	46	5	4	55	45	56
AUS	Austin-Bergstrom International Airport	27	1	12	40	36	45
AVL	Asheville Regional Airport	15	0	4	19	14	17
AVP	Wilkes-Barre/Scranton International Airport	21	0	2	23	16	20
AZO	Kalamazoo/Battle Creek International Airport	17	0	4	21	14	18
BDL	Bradley International Airport	15	0	4	19	12	15
BED	Laurence G. Hanscom Field Airport	12	0	7	19	11	13
BFI	Boeing Field/King County International Airport	21	2	1	24	22	26
BFL	Meadows Field Airport	14	3	7	24	21	25
BGM	Binghamton Regional/Edwin A. Link Field Airport	8	2	6	16	13	16

ID	Facility Name	Actual on Board as of 09/24/11 CPC	CPC-IT	Developmental	Total	Total Controller Staffing Ranges Low	High
BGR	Bangor International Airport	14	0	8	22	18	23
BHM	Birmingham International Airport	24	1	8	33	23	28
BIL	Billings Logan International Airport	13	1	6	20	17	20
BIS	Bismarck Municipal Airport	12	0	5	17	13	15
BJC	Jeffco Airport	14	0	2	16	9	11
BNA	Nashville International Airport	33	3	10	46	34	42
BOI	Boise Air Terminal/Gowen Field Airport	19	8	4	31	20	25
BOS	General Edward Lawrence Logan International Airport	31	3	0	34	26	32
BPT	Southeast Texas Regional Airport	11	0	1	12	9	11
BTR	Baton Rouge Metropolitan, Ryan Field Airport	14	1	8	23	17	21
BTV	Burlington International Airport	14	2	4	20	16	20
BUF	Buffalo Niagara International Airport	21	2	16	39	25	31
BUR	Burbank-Glendale-Pasadena Airport	12	5	5	22	15	18
BWI	Baltimore-Washington Thurgood Marshall Int'l Airport	24	2	4	30	21	26
C90	Chicago TRACON	67	15	12	94	76	93
CAE	Columbia Metropolitan Airport	24	1	6	31	20	24
CAK	Akron Canton Regional Airport	19	1	7	27	20	25
CCR	Buchanan Field Airport	11	0	1	12	7	9
CDW	Essex County Airport	11	0	4	15	8	10
CHA	Lovell Field Airport	14	2	6	22	17	21
CHS	Charleston AFB/International Airport	22	1	7	30	21	26
CID	Eastern Iowa Airport	15	0	3	18	14	17
CKB	Harrison/Marion Regional Airport	14	0	4	18	14	17
CLE	Cleveland Hopkins International Airport	36	11	12	59	40	49
CLT	Charlotte/Douglas International Airport	51	15	19	85	75	92
CMA	Camarillo Airport	7	2	3	12	9	11
CMH	Port Columbus International Airport	45	10	4	59	39	48
CMI	University of Illinois-Willard Airport	15	1	7	23	15	18
CNO	Chino Airport	8	1	6	15	10	12
COS	City of Colorado Springs Municipal Airport	27	0	7	34	26	32
CPR	Natrona County International Airport	12	0	3	15	13	16
CPS	St. Louis Downtown Airport	14	0	0	14	8	10
CRP	Corpus Christi International Airport	25	5	16	46	35	43
CRQ	McClellan-Palomar Airport	15	0	3	18	9	12
CRW	Yeager Airport	21	1	3	25	19	23
CSG	Columbus Metropolitan Airport	6	0	3	9	5	7
CVG	Cincinnati/Northern Kentucky International Airport	58	6	13	77	42	51

ID	Facility Name	Actual on Board as of 09/24/11			Total	Total Controller Staffing Ranges	
		CPC	CPC-IT	Developmental		Low	High
D01	Denver TRACON	43	17	8	68	65	79
D10	Dallas - Fort Worth TRACON	55	13	22	90	73	90
D21	Detroit TRACON	36	15	15	66	46	56
DAB	Daytona Beach International Airport	40	5	11	56	44	54
DAL	Dallas Love Field Airport	20	4	4	28	18	22
DAY	Ames M. Cox Dayton International Airport	13	0	2	15	11	14
DCA	Ronald Reagan Washington National Airport	26	2	5	33	24	29
DEN	Denver International Airport	42	0	3	45	37	45
DFW	Dallas/Fort Worth International Airport	56	6	0	62	46	56
DLH	Duluth International Airport	17	1	3	21	16	20
DPA	DuPage Airport	9	2	6	17	11	13
DSM	Des Moines International Airport	20	0	8	28	20	24
DTW	Detroit Metropolitan Wayne County Airport	31	7	2	40	29	36
DVT	Phoenix Deer Valley Airport	17	2	4	23	16	20
DWH	David Wayne Hooks Memorial Airport	14	2	1	17	11	13
E10	High Desert TRACON	15	3	11	29	26	32
ELM	Elmira/Corning Regional Airport	9	2	6	17	13	16
ELP	El Paso International Airport	13	1	11	25	18	22
EMT	El Monte Airport	10	0	6	16	6	8
ERI	Erie International/Tom Ridge Field Airport	13	0	8	21	16	19
EUG	Mahlon Sweet Field Airport	17	0	8	25	17	21
EVV	Evansville Regional Airport	17	3	10	30	14	18
EWR	Newark Liberty International Airport	26	6	2	34	31	38
F11	Central Florida TRACON	30	23	3	56	45	55
FAI	Fairbanks International Airport	12	2	4	18	19	24
FAR	Hector International Airport	17	1	4	22	16	20
FAT	Fresno Yosemite International Airport	20	3	9	32	25	30
FAY	Fayetteville Regional/Grannis Field Airport	17	3	6	26	20	25
FCM	Flying Cloud Airport	12	2	1	15	8	10
FFZ	Falcon Field Airport	9	3	3	15	12	15
FLL	Fort Lauderdale/Hollywood International Airport	26	1	2	29	21	26
FLO	Florence Regional Airport	11	2	3	16	13	15
FNT	Bishop International Airport	19	1	1	21	14	17
FPR	St. Lucie County International Airport	10	0	4	14	9	11
FRG	Republic Airport	12	0	6	18	11	14
FSD	Joe Foss Field Airport	16	2	2	20	14	17
FSM	Fort Smith Regional Airport	24	2	5	31	18	23

ID	Facility Name	Actual on Board as of 09/24/11				Total Controller Staffing Ranges	
		CPC	CPC-IT	Developmental	Total	Low	High
FTW	Fort Worth Meacham International Airport	13	2	3	18	11	13
FWA	Fort Wayne International Airport	20	0	6	26	17	21
FXE	Fort Lauderdale Executive Airport	15	1	3	19	13	16
GCN	Grand Canyon National Park Airport	6	0	3	9	9	12
GEG	Spokane International Airport	25	0	6	31	24	30
GFK	Grand Forks International Airport	19	1	3	23	17	21
GGG	East Texas Regional Airport	12	2	6	20	14	17
GPT	Gulfport Biloxi International Airport	13	1	11	25	16	19
GRB	Austin Straubel International Airport	23	1	5	29	16	20
GRR	Gerald R. Ford International Airport	21	0	3	24	17	21
GSO	Piedmont Triad International Airport	22	2	9	33	23	28
GSP	Greenville-Spartanburg International Airport	18	0	5	23	16	20
GTF	Great Falls International Airport	10	1	3	14	17	21
HCF	Honolulu Control Facility CERAP	72	5	20	97	79	97
HEF	Manassas Regional/Harry P. Davis Field Airport	10	0	3	13	9	11
HIO	Portland Hillsboro Airport	13	0	2	15	12	15
HLN	Helena Regional Airport	6	2	6	14	8	10
HOU	William P. Hobby Airport	23	3	2	28	17	21
HPN	Westchester County Airport	10	3	9	22	14	18
HSV	Huntsville International - Carl T. Jones Field Airport	14	1	11	26	16	20
HTS	Tri-State/Milton J. Ferguson Field Airport	14	0	6	20	18	22
HUF	Terre Haute International-Hulman Field Airport	15	2	5	22	18	22
HWD	Hayward Executive Airport	9	1	3	13	9	11
I90	Houston TRACON	66	18	12	96	78	96
IAD	Washington Dulles International Airport	32	2	2	36	28	34
IAH	George Bush Intercontinental Airport/Houston Airport	35	2	0	37	34	41
ICT	Wichita Midcontinent Airport	35	3	3	41	28	35
ILG	New Castle County Airport	12	1	2	15	9	11
ILM	Wilmington International Airport	14	1	6	21	14	17
IND	Indianapolis International Airport	35	12	12	59	34	42
ISP	Long Island MacArthur Airport	13	2	4	19	11	14
ITO	Hilo International Airport	10	1	8	19	14	18
JAN	Jackson International Airport	16	1	2	19	15	19
JAX	Jacksonville International Airport	34	3	13	50	37	46
JFK	John F. Kennedy International Airport	25	5	7	37	29	36
JNU	Juneau International Airport	12	0	0	12	11	13
K90	Cape TRACON	19	0	7	26	22	27

ID	Facility Name	Actual on Board as of 09/24/11				Total Controller Staffing Ranges	
		CPC	CPC-IT	Developmental	Total	Low	High
L30	Las Vegas TRACON	32	20	6	58	50	62
LAF	Purdue University Airport	7	0	3	10	7	9
LAN	Capital City Airport	18	1	6	25	18	22
LAS	McCarran International Airport	30	12	3	45	34	42
LAX	Los Angeles International Airport	37	14	0	51	41	50
LBB	Lubbock International Airport	14	1	9	24	17	21
LCH	Lake Charles Regional Airport	9	0	11	20	14	17
LEX	Blue Grass Airport	17	2	5	24	22	26
LFT	Lafayette Regional Airport	18	2	6	26	14	17
LGA	LaGuardia Airport	22	8	6	36	30	36
LGB	Long Beach/Daugherty Field Airport	18	3	0	21	17	21
LIT	Adams Field Airport	21	6	8	35	25	30
LNK	Lincoln Municipal Airport	15	0	0	15	8	10
LOU	Bowman Field Airport	9	2	2	13	8	10
LVK	Livermore Municipal Airport	7	0	6	13	8	10
M03	Memphis TRACON	26	6	5	37	34	42
M98	Minneapolis TRACON	47	10	1	58	45	56
MAF	Midland International Airport	16	3	9	28	21	25
MBS	MBS International Airport	12	0	6	18	14	17
MCI	Kansas City International Airport	33	5	7	45	30	37
MCO	Orlando International Airport	26	3	0	29	22	26
MDT	Harrisburg International Airport	19	3	6	28	22	27
MDW	Chicago Midway Airport	27	3	7	37	18	22
MEM	Memphis International Airport	29	1	6	36	27	34
MFD	Mansfield Lahm Regional Airport	10	2	5	17	13	16
MGM	Montgomery Regional (Dannelly Field) Airport	16	1	2	19	16	20
MHT	Manchester Airport	13	0	2	15	11	13
MIA	Miami International Airport	70	13	17	100	77	94
MIC	Crystal Airport	16	0	1	17	7	9
MKC	Charles B. Wheeler Downtown Airport	12	0	3	15	12	15
MKE	General Mitchell International Airport	37	4	13	54	38	47
MKG	Muskegon County Airport	16	0	6	22	15	19
MLI	Quad City International Airport	14	0	4	18	12	15
MLU	Monroe Regional Airport	8	0	5	13	11	14
MMU	Morristown Municipal Airport	13	0	3	16	10	12
MOB	Mobile Regional Airport	24	1	5	30	21	25
MRI	Merrill Field Airport	11	0	2	13	9	11

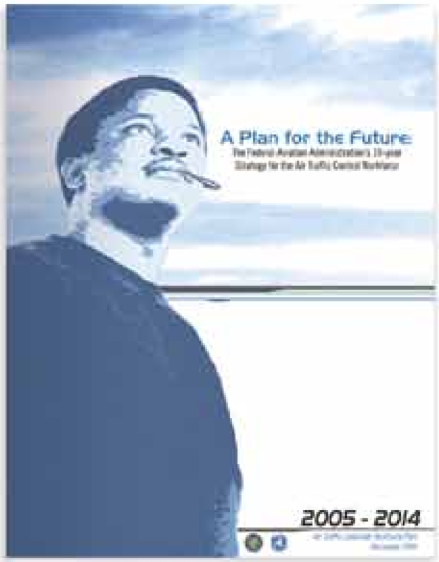
ID	Facility Name	Actual on Board as of 09/24/11				Total Controller Staffing Ranges	
		CPC	CPC-IT	Developmental	Total	Low	High
MRY	Monterey Peninsula Airport	8	1	3	12	6	8
MSN	Dane County Regional - Truax Field Airport	20	2	6	28	16	20
MSP	Minneapolis St. Paul Int'l/Wold-Chamberlain Airport	35	5	0	40	29	35
MSY	Louis Armstrong New Orleans International Airport	31	2	5	38	29	36
MWH	Grant County International Airport	9	0	8	17	14	17
MYF	Montgomery Field Airport	11	0	6	17	11	14
MYR	Myrtle Beach International Airport	18	0	9	27	17	21
N90	New York TRACON	164	22	17	203	178	218
NCT	Northern California TRACON	138	30	26	194	145	177
NEW	Lakefront Airport	8	0	2	10	6	8
NMM	Meridian NAS/McCain Field Airport	14	0	3	17	12	14
OAK	Metropolitan Oakland International Airport	22	7	0	29	21	26
OGG	Kahului Airport	10	0	5	15	9	11
OKC	Will Rogers World Airport	25	5	9	39	29	35
OMA	Eppley Airfield Airport	11	0	8	19	11	14
ONT	Ontario International Airport	16	0	7	23	12	15
ORD	Chicago O'Hare International Airport	51	17	0	68	52	63
ORF	Norfolk International Airport	29	3	11	43	33	41
ORL	Executive Airport	11	1	1	13	9	12
P31	Pensacola TRACON	26	6	8	40	29	36
P50	Phoenix TRACON	54	7	1	62	52	63
P80	Portland TRACON	20	9	3	32	22	26
PAE	Snohomish County (Paine Field) Airport	12	0	3	15	9	11
PAO	Palo Alto Airport of Santa Clara County Airport	8	0	6	14	9	11
PBI	Palm Beach International Airport	32	4	8	44	37	45
PCT	Potomac TRACON	137	19	40	196	141	173
PDK	DeKalb Peachtree Airport	12	2	1	15	12	15
PDX	Portland International Airport	20	4	2	26	19	23
PHF	Newport News/Williamsburg International Airport	15	0	1	16	9	11
PHL	Philadelphia International Airport	70	8	13	91	73	89
PHX	Phoenix Sky Harbor International Airport	29	3	0	32	29	36
PIA	Greater Peoria Regional Airport	13	1	8	22	17	21
PIE	St. Petersburg-Clearwater International Airport	16	0	1	17	10	12
PIT	Pittsburgh International Airport	45	0	6	51	34	41
PNE	Northeast Philadelphia Airport	7	0	3	10	9	11
PNS	Pensacola Regional Airport	10	1	4	15	10	12
POC	Brackett Field Airport	9	1	3	13	8	10

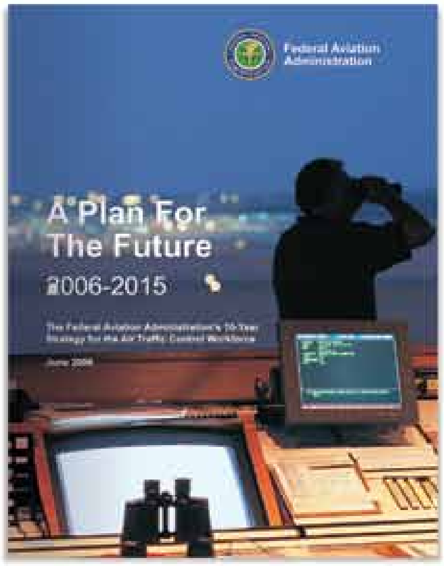
ID	Facility Name	Actual on Board as of 09/24/11 CPC	CPC-IT	Developmental	Total	Total Controller Staffing Ranges Low	High
POU	Dutchess County Airport	8	0	4	12	7	9
PRC	Ernest A. Love Field Airport	8	1	8	17	13	15
PSC	Tri-Cities Airport	15	0	5	20	13	16
PSP	Palm Springs International Airport	8	2	3	13	8	10
PTK	Oakland County International Airport	14	1	1	16	9	11
PUB	Pueblo Memorial Airport	14	0	2	16	12	15
PVD	Theodore Francis Green State Airport	24	2	5	31	24	29
PWK	Palwaukee Municipal Airport	17	1	3	21	8	10
PWM	Portland International Jetport Airport	16	2	7	25	18	23
R90	Omaha TRACON	20	1	2	23	17	21
RDG	Reading Regional/Carl A. Spaatz Field Airport	11	0	7	18	13	16
RDU	Raleigh-Durham International Airport	40	5	9	54	35	43
RFD	Greater Rockford Airport	21	0	7	28	17	21
RHV	Reid Hillview of Santa Clara County Airport	9	0	4	13	9	12
RIC	Richmond International Airport	17	0	1	18	12	15
RNO	Reno/Tahoe International Airport	14	3	5	22	11	14
ROA	Roanoke Regional/Woodrum Field Airport	24	0	10	34	22	27
ROC	Greater Rochester International Airport	23	1	4	28	20	24
ROW	Roswell Industrial Air Center Airport	9	0	8	17	13	15
RST	Rochester International Airport	14	1	5	20	12	15
RSW	Southwest Florida International Airport	20	3	6	29	23	28
RVS	Richard Lloyd Jones Jr. Airport	16	0	1	17	13	16
S46	Seattle TRACON	41	13	7	61	41	50
S56	Salt Lake City TRACON	32	8	2	42	35	43
SAN	San Diego International-Lindbergh Field Airport	20	2	10	32	17	21
SAT	San Antonio International Airport	33	5	16	54	41	50
SAV	Savannah/Hilton Head International Airport	22	1	5	28	21	26
SBA	Santa Barbara Municipal Airport	19	6	12	37	21	26
SBN	South Bend Regional Airport	13	1	11	25	17	21
SCK	Stockton Metropolitan Airport	9	0	3	12	7	8
SCT	Southern California TRACON	198	51	21	270	188	230
SDF	Louisville International-Standiford Field Airport	29	2	10	41	36	44
SDL	Scottsdale Airport	12	0	4	16	9	11
SEA	Seattle-Tacoma International Airport	28	0	0	28	22	26
SEE	Gillespie Field Airport	13	0	3	16	11	14
SFB	Orlando Sanford Airport	15	1	3	19	13	16
SFO	San Francisco International Airport	24	8	0	32	27	33

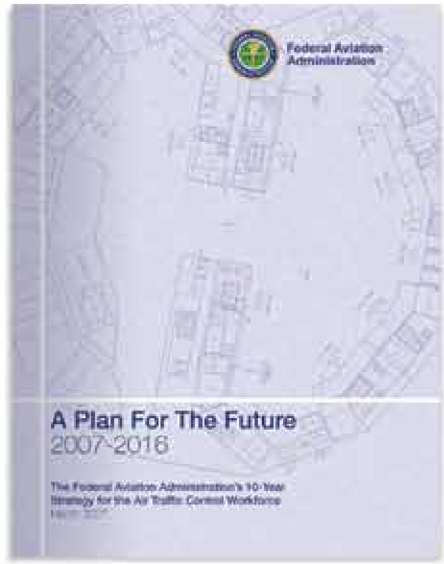
*RNO TRACON services were transferred to NCT 10/26/10

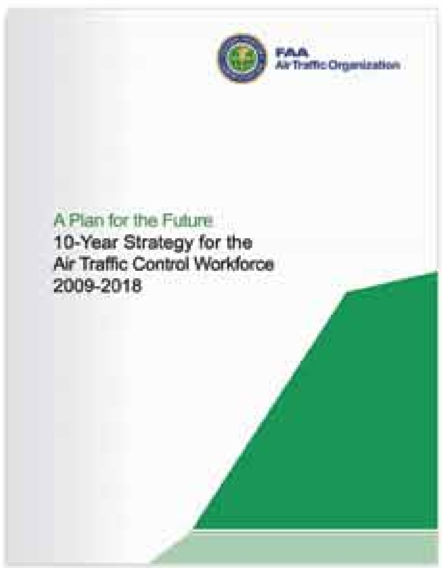
ID	Facility Name	Actual on Board as of 09/24/11				Total Controller Staffing Ranges	
		CPC	CPC-IT	Developmental	Total	Low	High
SGF	Springfield-Branson National Airport	29	2	1	32	23	28
SHV	Shreveport Regional Airport	12	1	13	26	20	25
SJC	Norman Y. Mineta San Jose International Airport	14	2	1	17	12	15
SJU	Luis Munoz Marin International Airport	15	0	4	19	16	20
SLC	Salt Lake City International Airport	30	4	2	36	25	31
SMF	Sacramento International Airport	11	0	3	14	11	14
SMO	Santa Monica Municipal Airport	11	0	4	15	9	11
SNA	John Wayne Airport-Orange County Airport	22	6	2	30	19	23
SPI	Capital Airport	11	1	7	19	11	14
SRQ	Sarasota/Bradenton International Airport	14	0	1	15	9	11
STL	Lambert-St. Louis International Airport	21	1	5	27	16	20
STP	St. Paul Downtown Holman Field Airport	13	2	1	16	8	10
STS	Sonoma County Airport	8	0	2	10	7	9
STT	Cyril E. King Airport	9	0	2	11	7	9
SUS	Spirit of St. Louis Airport	13	1	2	16	9	11
SUX	Sioux Gateway/Col. Bud Day Field Airport	6	0	7	13	12	15
SYR	Syracuse Hancock International Airport	16	4	10	30	20	24
T75	St. Louis TRACON	40	1	2	43	26	32
TEB	Teterboro Airport	16	4	7	27	17	20
TLH	Tallahassee Regional Airport	18	2	3	23	16	20
TMB	Kendall-Tamiami Executive Airport	11	2	4	17	11	13
TOA	Zamperini Field Airport	9	1	8	18	8	10
TOL	Toledo Express Airport	18	0	6	24	18	22
TPA	Tampa International Airport	47	7	16	70	47	58
TRI	Tri-City Regional TN/VA Airport	14	0	8	22	16	19
TUL	Tulsa International Airport	28	2	7	37	27	33
TUS	Tucson International Airport	13	1	5	19	15	18
TVC	Cherry Capital Airport	8	2	1	11	7	9
TWF	Joslin Field/Magic Valley Regional Airport	6	1	5	12	8	10
TYS	McGhee Tyson Airport	23	0	4	27	22	26
U90	Tucson TRACON	15	4	1	20	18	22
VGT	North Las Vegas Airport	13	3	4	20	11	14
VNY	Van Nuys Airport	18	3	5	26	21	25
VRB	Vero Beach Municipal Airport	8	1	7	16	9	11
Y90	Yankee TRACON	24	2	2	28	19	24
YIP	Willow Run Airport	12	0	4	16	11	13
YNG	Youngstown-Warren Regional Airport	16	2	4	22	18	23

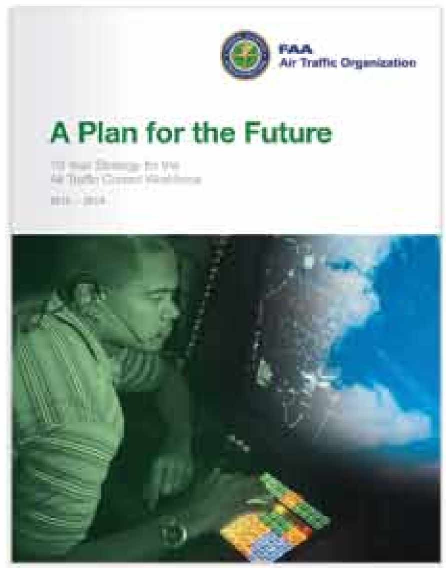
Notes

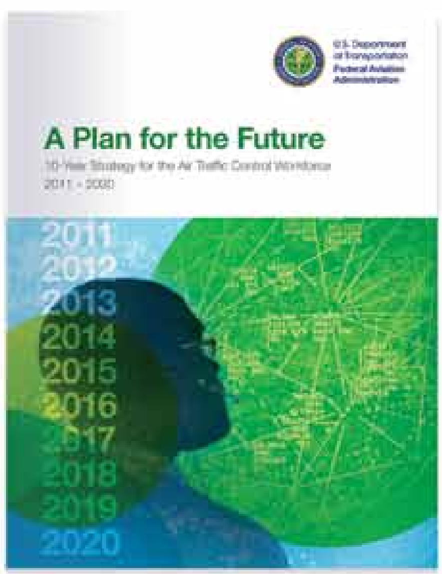












U.S. Department of Transportation
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