
Office of Inspector General
Audit Report

**FAA LACKS THE METRICS AND DATA NEEDED TO
ACCURATELY MEASURE THE OUTCOMES OF ITS
CONTROLLER PRODUCTIVITY INITIATIVES**

Federal Aviation Administration

Report Number: AV-2014-062

Date Issued: July 9, 2014





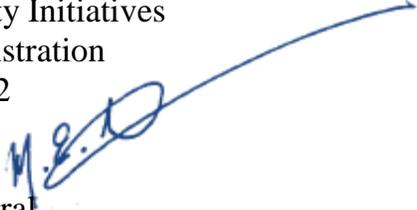
Memorandum

U.S. Department of
Transportation

Office of the Secretary
of Transportation
Office of Inspector General

Subject: **ACTION:** FAA Lacks the Metrics and Data
Needed To Accurately Measure the Outcomes of
Its Controller Productivity Initiatives
Federal Aviation Administration
Report No. AV-2014-062

Date: July 9, 2014

From: Matthew E. Hampton 
Assistant Inspector General
for Aviation Audits

Reply to
Attn. of: JA-10

To: Federal Aviation Administrator

The Federal Aviation Administration (FAA) employs more than 15,000 air traffic controllers at 315 facilities to guide pilots and separate aircraft in the National Airspace System (NAS). While FAA expects air travel to steadily increase over the next 20 years, total air traffic operations declined 23 percent between fiscal years 2000 and 2012. Despite this recent decrease, the number of air traffic controllers remained relatively constant and controller costs increased.

Citing concerns about whether controllers remained as productive as possible during a period of reduced air traffic, the Chairmen of the House Committee on Transportation and Infrastructure and its Aviation Subcommittee requested that we assess FAA's plans to enhance controller productivity. The Chairmen also asked that we assess the factors that impact the achievement of expected benefits and determine the estimated cost savings that could be realized with improved controller productivity.

Accordingly, we (1) assessed FAA's initiatives to improve controller productivity in terms of expected benefits and cost savings to the Agency and (2) identified opportunities to measure the effectiveness of its productivity initiatives. We conducted our work in accordance with generally accepted Government auditing standards. Exhibit A details our scope and methodology, and exhibit B lists the organizations we visited or contacted.

In response to the same congressional request, we initiated an audit in February to assess the relative efficiency of FAA air traffic control towers in order to determine the factors affecting air traffic control tower productivity.¹

RESULTS IN BRIEF

Since 1998, FAA has implemented 51 initiatives intended to increase controller productivity, reduce operating costs, and improve training and hiring practices. However, FAA's controller productivity initiatives are not yet achieving expected benefits or cost savings. According to FAA, only two of these initiatives resulted in measurable cost savings totaling approximately \$4.5 million, while six initiatives actually increased Agency costs due to rising overtime, salary, and training costs. For example, despite implementing an initiative to reduce operational overtime costs, FAA officials noted that overtime costs doubled due to operational needs and costs associated with training controllers on new equipment. The remaining 43 initiatives consist of 9 that are ongoing, 5 that were abandoned, and 29 that have been completed; however, FAA has not demonstrated whether those completed have resulted in cost savings or productivity gains.

FAA has been unable to demonstrate the results of its controller productivity initiatives largely because it has missed opportunities to assess their effectiveness. For example, FAA did not establish detailed baseline metrics or quantifiable cost and productivity goals for 43 (84 percent) of its 51 initiatives. A lack of baseline goals creates substantial challenges for FAA to ensure these initiatives are effective. In addition, FAA is not maximizing operational and financial data regarding its controller workforce. The Agency does not systematically collect or analyze these data to reduce cost or improve productivity due to a number of barriers. These include a lack of requirements and guidance for facility managers on analyzing existing data, FAA's inability to reach consensus on which metrics should be used to measure controller productivity, and data control and entry weaknesses with controllers' time recording system. As a result, FAA cannot demonstrate whether many of its initiatives have had the desired efficiency gains. However, FAA has taken steps to improve data collection by issuing guidance to clarify procedures for recording employee time and plans to make further changes to improve how it tracks and allocates controller time in the system.

We are making recommendations to improve the effectiveness of FAA's controller productivity initiatives, as well as data collection at air traffic control facilities.

¹ OIG Audit Announcement, "Audit Initiated of the Productivity of FAA's Air Traffic Control Towers," February 20, 2014. OIG reports and announcements are available on our Web site at <http://www.oig.dot.gov/>.

BACKGROUND

FAA generally defines controller productivity as the average number of operations handled per controller at terminal facilities, or the average number of instrument flight hours handled per controller at en route facilities. Controller productivity and efficiency can also be evaluated by measuring controller unit cost per activity² or controller time-on-position.³ Further, while the volume of air traffic is the primary driver of how productive controllers are, many factors can directly impact controller productivity, including controller scheduling practices, training new and existing controllers, airspace and airport runway configurations, and evolving Next Generation Air Transportation System (NextGen) technologies.

Between fiscal years 2000 and 2012, air traffic operations dropped 23 percent, while FAA's controller workforce remained relatively constant (see table 1).

Table 1. Percentage Changes in Total Controller Workforce and Air Traffic Operations, Fiscal Years 2000 Through 2012

Fiscal Year	Controller Workforce		Air Traffic Operations	
	Total	Percentage Change	Total	Percentage Change
2000	15,153	--	151,582,863	--
2001	15,233	1%	146,641,693	(3%)
2002	15,478	2%	141,499,671	(4%)
2003	15,691	1%	138,150,912	(2%)
2004	14,934	(5%)	141,314,126	2%
2005	14,540	(3%)	142,166,569	1%
2006	14,618	1%	137,441,579	(3%)
2007	14,874	2%	137,316,956	0%
2008	15,381	3%	133,111,523	(3%)
2009	15,770	3%	120,288,553	(10%)
2010	15,696	0%	118,875,108	(1%)
2011	15,418	(2%)	118,390,567	0%
2012	15,211	(1%)	117,324,105	(1%)
Total Difference	58	0%	(34,258,758)	(23%)

Source: OIG analysis of FAA data

² Controller unit cost per activity is defined as the total amount of certified controllers and controllers-in-training costs (personnel compensation and benefit costs) divided by the total number of activities (operations in the terminal environment and instrument flight hours in the en-route environment).

³ Controller time-on-position is the average number of hours a controller works monitoring and directing air traffic during an 8-hour shift.

Between fiscal years 2008 and 2012, controllers' average total productive time decreased by 17 minutes (see table 2).

Table 2. Average Productive Time Worked by Controllers per 8-Hour Shift, Fiscal Years 2008 Through 2012

Fiscal Year	Time-On-Position ^a	Time Spent on Other Duties ^b	Productive Time ^c
2008	4:53	0:49	5:43
2009	4:39	1:08	5:47
2010	4:30	1:08	5:39
2011	4:28	1:03	5:32
2012	4:22	1:04	5:26
Time Change	-31 minutes	+15 minutes	-17 minutes

^a Time-on-position is the time a controller spends "on-scope" separating air traffic.

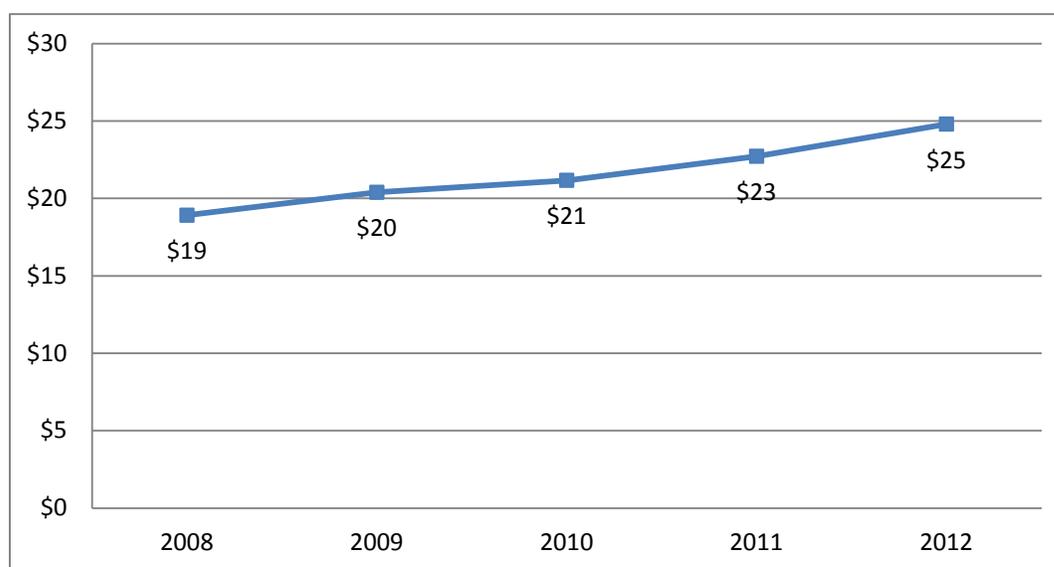
^b Time spent on other duties—the time a controller spends "off-scope" performing required collateral duties, such as training, attending briefings, performing quality assurance and technical support functions, and other related duties.

^c Productive time is time-on-position plus the time spent on other duties and illustrates the total amount of time a controller spends performing their duties during an 8-hour shift.

Source: FAA

During this same period, controller payroll cost per air traffic activity increased approximately 32 percent from \$19 in fiscal year 2008 to \$25 in fiscal year 2012 (see figure 1).

Figure 1. Controller and Controller-in-Training Payroll Cost per Air Traffic Activity, Fiscal Years 2008 Through 2012



Source: FAA

Exhibit C provides additional charts detailing controller productivity measurements.

Since 1998, FAA has introduced a series of initiatives intended to increase productivity and reduce operating costs, including efforts to reduce operational overtime and sick leave and achieve controller staffing cost savings through more efficient processes. Some of these initiatives were negotiated between FAA and the National Air Traffic Controllers Association (NATCA) in their 1998 collective bargaining agreement (CBA). In 2003, FAA created the Air Traffic Organization (ATO)—a performance-based organization intended to make FAA operate more like a business. As a result of the reorganization, FAA developed many of its cost-saving and productivity initiatives in its early Controller Workforce Plans (CWP)⁴ beginning in 2004.

FAA'S CONTROLLER PRODUCTIVITY INITIATIVES ARE NOT ACHIEVING EXPECTED BENEFITS OR COST SAVINGS

We identified 51 initiatives that FAA introduced to increase controller productivity, reduce operating costs, or improve training and hiring practices (see exhibit D for a full list of the initiatives we identified and their status). According to FAA, only two of its initiatives have resulted in measurable cost savings of approximately \$4.5 million:

- **Worker's Compensation/Return to Work Program.** Initiated in FAA's 2005 and 2006 CWPs, this program aims to ensure that Office of Workers' Compensation Program benefits are used appropriately and to help return disabled and medically restricted personnel to work. According to FAA, the program achieved cost savings of \$2.45 million between fiscal years 2004 and 2013 by re-assigning a total of 82 employees to permanent positions such as Administrative Support Assistant, Management and Program Analyst, Management and Program Assistant, and Flight Data Communications Specialist.
- **Terminal Radar Training Simulators.** According to FAA, the Agency has installed 166 SimFast radar training simulators since fiscal year 2010—which provide scenario-based radar training for trainees at their assigned facilities without using expensive radar equipment. FAA reported cost savings of over \$2 million by reducing the labor costs associated with training.

However, six initiatives intended to reduce operational costs actually increased Agency costs. For example, FAA data indicate that despite implementing an initiative to reduce air traffic controller operational overtime costs, these costs doubled between fiscal years 2006 and 2012—from \$33 million to \$66 million.

⁴ In December 2004, FAA issued its first annual CWP detailing its strategy for hiring and training new air traffic controllers as required by Section 221 of Public Law 108-176 (updated by Public Law 111-117).

According to FAA officials, the increase was due to the operational needs at facilities, costs associated with training controllers on new equipment,⁵ and increased salary rates due to the 2009 CBA. Initiatives to reduce costs associated with training, new hire compensation, and sick leave abuse also instead resulted in increases (see table 3).

Table 3. Controller Productivity Initiatives That Resulted in Increased Costs

Initiative and Source	Goal/Savings Promised	Result
New Hire Pay 2005 CWP	Control salary costs for newly hired controllers through renegotiated pay rules with NATCA.	In FY 2006, the average Personnel, Compensation and Benefit (PC&B) cost for new trainees was about \$112,000. By FY 2009, the average cost had dropped 31 percent to about \$78,000. By 2012, the average cost rose to about \$106,000.
Overtime Management 1998 CBA, 2005 & 2006 CWP	Reduce operational overtime costs.	Overtime rates and costs have doubled from \$33 million in 2006 to \$66 million in 2012.
Sick Leave Use 1998 CBA, 2005 & 2006 CWP	Reduce sick leave by 8 percent by addressing sick leave abuse (equal to 73 controller salaries)	From 2006 to 2012, average controller sick leave increased from 97 to 100 hours per controller.
Initial FAA Academy Training Costs 2005 & 2006 CWP	Change compensation and benefits for new trainees to reduce the average cost per trainee by \$20,000.	In FY 2006, average developmental PC&B cost was \$112,000. By FY 2009, it had dropped 31 percent to \$78,000. In 2012, it was \$106,000, which is 37 percent higher than in 2009, but still 5 percent lower than in FY 2006.
Web-Based Training 2005- 2007 CWP	Save up to \$20 million over 10 years by eliminating salary and per diem during 5 weeks of Academy training.	Overall, average costs for Academy students have risen 10 percent over the past 6 years.
Work Efficiency 2005- 2007 CWP	Achieve controller staff savings of 10 percent by FY 2010 through increased work efficiency.	Based on FAA data, between fiscal years 2005 and 2010, operations per controller decreased by 23 percent.

Source: FAA and OIG analysis of FAA data

FAA HAS MISSED OPPORTUNITIES TO ASSESS THE EFFECTIVENESS OF ITS PRODUCTIVITY INITIATIVES

FAA has not fully leveraged opportunities to assess controller productivity and the effectiveness of its initiatives. Specifically, FAA did not establish detailed baseline metrics or quantifiable cost and productivity goals for 43 (84 percent) of its 51 initiatives. Data analysis and collection deficiencies further limit FAA's efforts to assess its initiatives' effectiveness. As a result, FAA cannot demonstrate whether many of its initiatives have had the desired efficiency gains.

⁵ For example, controllers must receive training on the Agency's new En Route Automation Modernization (ERAM) system, a multibillion dollar system for processing flight data at en route air traffic control facilities.

FAA Did Not Develop Baseline Metrics With Quantifiable Productivity and Cost Goals for Most of Its Initiatives

FAA lacks quantifiable baseline productivity and cost goals for 43 (84 percent) of its 51 controller productivity initiatives. (These 43 initiatives consist of 9 that are ongoing, 5 that were abandoned, and 29 that have been completed). Without predefined goals, FAA will face challenges to ensure the effectiveness of these initiatives. For example:

- **Facility Realignment.** The 2005 and 2006 CWPs included an initiative for co-locating and realigning operations at its air traffic control facilities to improve staffing efficiency and decrease operating, maintenance, infrastructure, and permanent change-of-station moving costs. Even though FAA subsequently completed seven small air traffic facility realignments, the Agency could not provide data showing whether the realignments resulted in cost savings or improved productivity.
- **Expanded Use of Simulators.** Since 2005, FAA's CWPs have included an initiative to expand the use of simulators at field facilities to reduce training costs and the time required to attain certification. However, this initiative did not include a predefined goal or baseline metric, such as expected cost savings or projected decrease in training time, which would have enabled FAA to determine whether the initiative achieved expected benefits. And while FAA acknowledges in several CWPs that the use of simulators can reduce training time and costs, to date FAA has not analyzed available data or quantified the actual cost savings.

Data Analysis and Collection Deficiencies Limit FAA's Efforts To Assess the Effectiveness of Its Controller Productivity Initiatives

Data analysis and collection deficiencies have further limited FAA's ability to assess whether its initiatives are meeting their intended goals. For example, FAA does not regularly analyze the substantial operational and cost data generated by its numerous databases to determine if it could reduce costs or improve productivity. These databases include the Federal Personnel Payroll System; FAA's cost accounting system; and ATO's time recording system, Cru-X/ART, which allows the Agency to measure elements of productivity, such as facility cost per operations, controller time-on position, controller productive time, and controller participation in workgroups.

We identified several barriers to the collection and analysis of existing data:

- **Lack of Requirements and Guidance.** Facility managers stated that while FAA provides them with some data on controller productivity and cost for their facilities, they are not required to use the data to identify possible productivity improvements or cost reductions. Similarly, while managers have the ability to extract operational data from systems, such as Cru-X/ART, they are not required

to analyze the data. According to facility managers, FAA Headquarters has not provided adequate guidance on how to evaluate or increase controller productivity.

- **Inability To Reach Consensus on Metrics.** Other FAA divisions disagree with ATO on which metrics are appropriate to measure controller productivity. For example, FAA’s Shared Services Division⁶ collects and summarizes operational and financial data for all air traffic facilities and measures factors such as unit cost per activity, controller time-on-position, and controller productive time. However, controllers and ATO officials we spoke with indicated that they resist using these data due to concerns over whether some metrics, such as time-on-position, are appropriate measures for controller productivity. Several ATO officials stated that time-on-position was not an appropriate measure of productivity because it does not include the time spent performing other required duties, such as training and briefings.
- **Data Control and Entry Weaknesses.** While FAA’s systems could provide the Agency with data for analyzing controller productivity and costs, several data control and entry weaknesses may limit the data’s usefulness. For example, some off-scope time codes in Cru-X/ART, such as “duty time—other” or “training—other,” are too broad to track controllers’ time to specific collateral duties, such as redesigning air routes and procedures, attending briefings and training, and NextGen-related workgroup activities. We also found that, per a 2010 National Memorandum of Understanding between FAA and NATCA, operations supervisors are responsible for maintaining time-on-position records in Cru-X/ART for all controllers. However, because time entry in Cru-X/ART is secondary to providing safe operations, a supervisor may inadvertently overlook a controller going on break or switching positions if a flight emergency arises. These deficiencies limit the usefulness of Cru-X/ART—which FAA uses to account for and distribute its controller workforce labor costs. We identified other data control lapses that could limit data usefulness. For example, night shift supervisors at one facility were allowed to certify the time and tasks completed by day shift controllers, even though the supervisors were not on duty to verify the duties the controllers actually performed.

Some of these data weaknesses have been longstanding. For example, in 2005, the Agency implemented an initiative to track and analyze controller participation in meetings, conferences, and workgroups to assess the benefits, financial impacts, and return on investment of the controllers’ involvement. However, these data were not consistently tracked at the facility level, and FAA only analyzed the data on an ad hoc basis. During this fiscal year, FAA plans to improve some of these concerns by adding more specific task codes to Cru-X/ART and has issued guidance to clarify procedures for recording employee time. According to ATO officials, the new process

⁶ FAA’s Shared Service is a division within FAA’s Office of Finance and Management.

will help the Agency take advantage of existing tools and information to allow better planning and ensure the proper levels of participation in workgroups.

CONCLUSION

Maximizing controller productivity is critical to achieve operational efficiencies and control costs. While FAA's controller productivity initiatives are a positive step, the Agency has yet to accurately measure the outcome of those initiatives, which limits its ability to further improve productivity and reduce operating costs. Until FAA takes action to establish sound baseline metrics and leverage its existing data, it will be difficult to measure the success of any efforts to improve controller efficiencies.

RECOMMENDATIONS

To improve the effectiveness of FAA's controller productivity initiatives and its data collection at air traffic control facilities, we recommend that FAA:

1. Assess current controller productivity initiatives to determine whether they will achieve anticipated cost savings or productivity gains and document the results of this assessment.
2. Develop a process to ensure future controller productivity initiatives include measurable milestones and cost and productivity goals.
3. Analyze its operational and financial data to identify opportunities to increase controller productivity and reduce operating costs.
4. Require controllers to maintain their own time-on-position records by signing in and out in Cru-X/ART.
5. Ensure that all facilities implement and use new Cru-X/ART task codes designed to better differentiate the tasks that controllers are completing.

AGENCY COMMENTS AND OFFICE OF INSPECTOR GENERAL RESPONSE

We provided FAA with our draft report on May 22, 2014, and received its formal response on June 20, 2014, which is included in its entirety as an appendix. In its response, FAA fully concurred with all five of our recommendations and proposed reasonable timeframes for completing the appropriate action plans. Based on FAA's response, we consider all five recommendations resolved but open pending completion of the planned actions.

We appreciate the courtesies and cooperation of FAA representatives during this audit. If you have any questions regarding this report, please contact me at (202) 366-0500, or Robert Romich, Program Director, at (202) 366-6478.

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

EXHIBIT A. SCOPE AND METHODOLOGY

We conducted our work from January 2013 to May 2014 in accordance with generally accepted Government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

To determine the initiatives introduced by FAA to increase controller productivity, reduce operating costs, or improve training and hiring practices, we interviewed FAA officials from Shared and Management Services, the Air Traffic Organization (ATO) Terminal & En Route Offices, and the National Air Traffic Controllers Association's (NATCA) Headquarters. We also requested a list of initiatives from FAA; however, no list was provided. As a result we analyzed eight annual FAA CWPs between 2005 and 2012, the House fiscal year 2002 Transportation Appropriation Bill, and four FAA/NATCA (1998, 2003, 2006, and 2009) collective bargaining agreements (CBA). We identified 51 controller productivity initiatives.

To determine the status of each initiative we provided ATO officials a list of the 51 initiatives we identified and requested a status update. We also conducted site visits to 18 out of 315 FAA air traffic facilities, including 5 Terminal Radar Approach Controls (TRACONs), 3 Air Route Traffic Control Centers (ARTCCs), and 10 towers. We selected the facilities based on similar activity levels, type, complexity and geographic/metropolitan layout of the surrounding area. During the site visits we interviewed air traffic managers to determine what initiatives have been implemented and the effectiveness of the initiatives. We also determined if the managers measure controller productivity and how and what guidance they received from FAA Headquarters. Lastly we discussed local controller productivity initiatives and weaknesses in the Cru-X/ART time and attendance system.

We also gathered and analyzed productivity data such as Labor Obligations, Controller Payroll, Certified Professional Controller (CPC) and Certified Professional Controller in Training (CPC-IT) combined Payroll, etc. for all 315 air traffic facilities and 5 fiscal years (2008 to 2012) from FAA's Shared Service officials. The data also included facility type, level, number of activities, number of direct employees and number of CPCs and CPC-ITs, time on position (TOP), productive time, activities per CPC and CPC-IT, CPC payroll per activity and CPC and CPC-IT payroll per activity. We tested the reliability of FAA's data by randomly selecting 70 facility-fiscal year combinations from a universe of 1,573. We then extracted pay information from DOT's Financial Reporting System (Delphi), and DOT's Federal Pay and Personnel System (FPPS) for the 70 facilities-fiscal year combinations in our sample. We compared the Delphi and FPPS data to the FAA reported data for Labor Obligations, Controller Payroll, CPC/CPC-IT Payroll and CPC/CPC-IT Controllers On Board, and

concluded that FAA's data were reliable enough for the purpose of this audit. In addition, we were unable to verify the time on position (TOP) and productive time data because we did not have access to the Cru-X/ART database. However, during the site visits to the air traffic facilities, we asked the air traffic managers to validate the TOP and productive time data we received from FAA Headquarters. The air traffic managers stated the data were very close to their numbers and we concluded the data to be reasonable for the purpose of this audit.

EXHIBIT B. ORGANIZATIONS VISITED OR CONTACTED

FAA Headquarters, Washington, DC

Air Traffic Organization (ATO)

- Chief of Staff
- Terminal Services
- En Route and Oceanic Services
- Terminal Safety & Operations Support
- Management Services
- Safety and Technical Training
- Strategic Planning and Performance Group
- Mission Support Services

Office of Financial Services

- Office of Labor Analysis
- Office of Financial Analysis

FAA Air Route Traffic Control Centers (ARTCC)

- Atlanta ARTCC (ZTL)
- Chicago ARTCC (ZAU)
- Oakland ARTCC (ZOA)

FAA Terminal Radar Approach Control Facilities (TRACON)

- Atlanta TRACON (A80)
- Chicago TRACON (C90)
- Dallas-Fort Worth TRACON (D10)
- Northern California TRACON (NCT)
- Southern California TRACON (SCT)

FAA Air Traffic Control Towers (ATCTs)

- Atlanta (ATL)
- Chicago O'Hare (ORD)
- Dallas-Fort Worth (DFW)
- Dallas Love Field (DAL)
- Indianapolis (IND)
- Los Angeles (LAX)
- Chicago Midway (MDW)
- San Antonio (SAT)

- San Francisco (SFO)
- New Orleans (MSY)

FAA Service Area

- Office for Eastern Terminal Operations, Southern Skies District

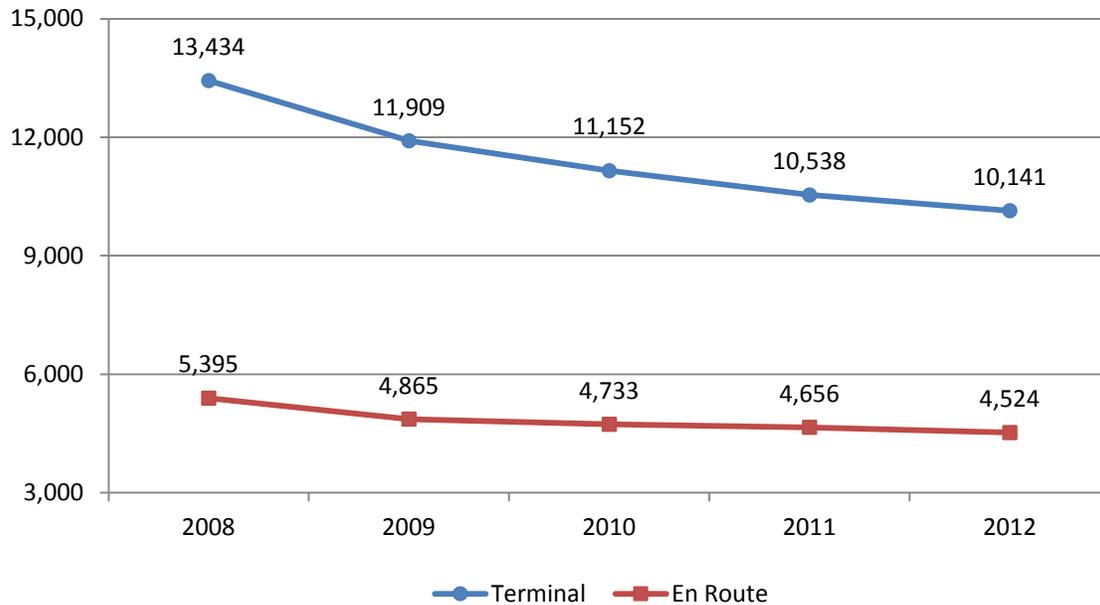
Industry Groups

- National Air Traffic Controllers Association (NATCA) Headquarters Office, Washington, DC

EXHIBIT C. DATA ON CONTROLLER ACTIVITIES AND COST

Between fiscal years 2008 and 2012, FAA data show that the number of activities per controller dropped 25 percent at terminal facilities and 16 percent at en route facilities (see figure 2).

Figure 2. Activities per Controller at En-Route^a and Terminal Facilities,^b Fiscal Years 2008 Through 2012



^a Activities at terminal facilities are measured by the number of take offs and landings controllers [monitor].

^b Activities at en route facilities are measured by the number of instrument flight rule hours.

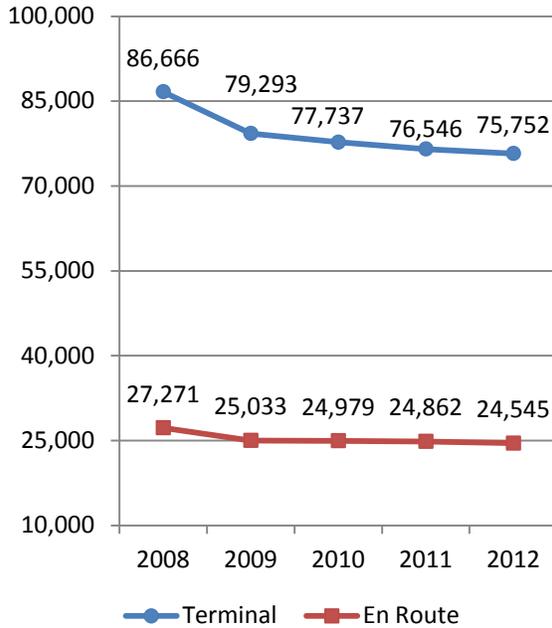
Source: FAA

Between fiscal years 2008 and 2012, terminal air traffic activity decreased approximately 13 percent and en route activity decreased 10 percent. However, during this same time period, controller payroll cost per activity⁷ increased 35 percent at terminal facilities and 25 percent at en route facilities (see figure 3).

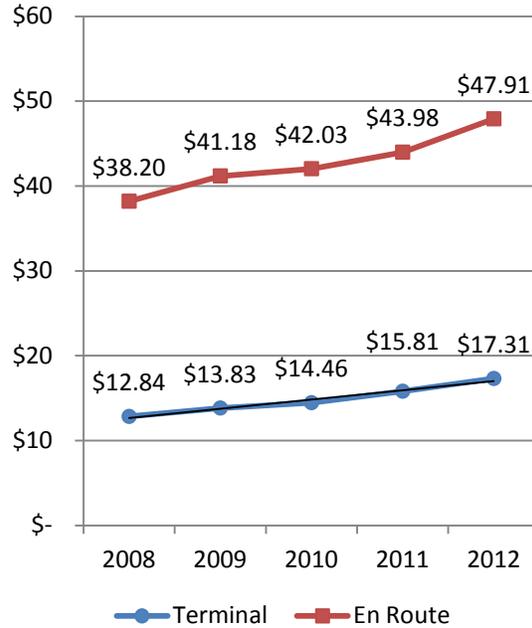
⁷ Controller payroll cost per activity is calculated by dividing the total personnel compensation and benefits paid to controllers by the total operations in the operating environment in a given year.

Figure 3. Air Traffic Activities and Controller and Controller-in-Training Payroll Cost per Activity at En-Route and Terminal Facilities, Fiscal Years 2008 Through 2012

Air Traffic Activities at En-Route and Terminal Facilities, in Thousands



Controller and Controller-in-Training Payroll Cost Per Activity



Source: FAA

EXHIBIT D. STATUS OF FAA'S CONTROLLER PRODUCTIVITY INITIATIVES

Initiative, Source	Expected Benefits	Goals Defined	Outcomes/Status
Savings Achieved, as Reported by FAA			
Worker's Compensation/ Return to Work Program 2005 & 2006 CWPs	Increase staffing efficiencies by adopting a proactive approach to help return disabled and temporarily medically restricted personnel to work.	X	From FY 2004 through FY 2013, the program saved the Agency \$2.45 million.
Install SimFast Radar Simulator Capability 2011 CWP	Increase technical proficiency and improve the training program.	X	FAA saved more than \$2 million due to the reduction of scenario generation labor.
Savings Not Achieved, as Reported by FAA			
New Hire Pay 2005 CWP	Control salary costs for new hires through renegotiated pay rules with NATCA.	X	Between FY 2006 and 2009, the average developmental PC&B cost dropped 31% from roughly \$112,000 to \$78,000, then increased 37% by FY 2012 to about \$106,000.
Management of Overtime 1998 CBA; 2005 & 2006 CWPs	Reduce operational overtime costs.	X	Controller overtime costs doubled from \$33 million in 2006 to \$66 million in 2012.
Address Sick Leave Abuse 1998 CBA; 2005 & 2006 CWPs	Reduce sick leave by 8 percent, which is equivalent to a savings of approximately 73 controllers.	✓	From 2006 to 2012, average controller sick leave increased slightly from 97 to 100 hours per controller per year.
Reduce Costs of Initial Training at FAA Academy 2005 & 2006 CWPs	Change the compensation level and benefits for new trainees to reduce the average cost per trainee by \$20,000.	✓	Although the average salary of developmental controllers has decreased five percent since FY 2006, the average costs for Academy students have risen 10% over the same timeframe.
Convert Air Traffic Academics to Web-Based Delivery 2005-2007 CWPs	Reduce costs by eliminating salary and per diem costs during 5 weeks of training at the Academy. The Agency estimated it could save up to \$20 million over 10 years.	✓	Overall, average costs for Academy students increased 10% over the past 6 years.
Work Efficiency 2005-2007 CWPs	Achieve a controller staff savings of 10% by FY 2010 through increased work efficiency.	✓	Between FY 2005 and FY 2010 operations per controller decreased by 23%.
Completed			
Evaluate the Effectiveness of the AT-SAT for Placement 2005-2006 CWPs	Determine if AT-SAT examinations can be used to more accurately predict a candidate's success for the various levels of complexity across facilities.	X	In November 2012, the Civil Aerospace Medical Institute (CAMI) completed its evaluation of the validity, utility, and fairness of the AT-SAT test to be used for placement. CAMI suggested that AT-SAT is an effective predictor of job performance, but should not be used to guide placement decisions.
Reduce Time to Certification 2007-2012 CWPs	Reduce training time to CPC to 2 years for terminal controllers and 3 years for en-route controllers.	✓	Terminal met its 2 year goal; however, en route has not met its 3 year goal. Based on the data from the National Training Database (NTD), the average time to CPC for terminal controllers is under 2 years, while the average time to CPC for en-route controllers is slightly higher than 3 years. FAA officials blame the en-route delay on training controllers on new equipment such as En Route Automation Modernization (ERAM).

Controller Participation in Workgroups, Meeting, and Conferences 2005-2006 CWPs	Develop a plan to ensure requests for labor representation are assessed for benefit, financial impact, and return on investment. Each organization is required to validate the use of union representatives on a monthly basis. The goal of this plan is to increase efficiency by reducing backfill overtime hours and costs.	X	FAA implemented a database to collect and track personnel and costs associated with controller participation in workgroups and projects. However, FAA officials stated that analyses of this data were done on an ad-hoc basis. FAA is putting a new process in place for FY 2014 to better track and authorize workgroup participation.
Completed but Impact Not Quantified			
New Hire Interview Process 2007 CWP	Institute a new hire interview process to help with placement decisions by validating the experience of candidates and placing them based on their skill level.	X	In 2007, FAA instituted an Air Traffic Control Specialist new hire interview process to validate the experience of all new hires. However, FAA provided no data to support the initiative's success or failure.
Reclassification of Air Traffic Control Facilities 2005-2007 CWP	Evaluate air traffic control facilities for reclassification based on traffic counts and other factors in order to save costs by starting new controllers at lower salary levels.	X	Between January 2012 through April 2013, FAA downgraded 127 facilities and upgraded 8 facilities. FAA officials stated that the downgrades resulted in minimal cost savings because controller pay remained unchanged. However, FAA did not provide the cost information.
Track Applicants 2005-2006 CWPs	Better monitor the progress of individual candidates from referral to placement.	X	FAA has implemented a comprehensive system to track new hires through the hiring process. However, FAA did not provide data to support the effectiveness of the initiative.
Institute Even-Flow Hiring 2005-2006 CWPs	Improve controller hiring and training and maintain more effective and efficient use of resources.	X	FAA centralized and streamlined their hiring process in 2006. However, FAA did not provide data to support the effectiveness of the initiative.
Leverage and Expand Hiring Sources 2005-2006 CWPs	Supplement hiring between FY 2007 and FY 2015 by opening vacancy announcements to the general public. Also, examine the option of expanding the FAA Intern and Student Career Experience Program to include the air traffic control occupation.	X	Vacancy announcements were opened to the general public between 2007 and 2009. In addition, FAA established an internship program between facilities and Collegiate Training Initiative (CTI) schools at the local level. However, FAA did not provide data to support the effectiveness of the initiative.
Build Central Inventory 2005-2006 CWPs	Build a central inventory to track the numbers of available candidates and create a more efficient and uniform job application process.	X	FAA has implemented an electronic application system called the Automatic Vacancy Information Access Tool for Online Referral (AVIATOR). However, FAA did not provide data to support the effectiveness of the initiative.
Fully Implement AT-SAT 2005-2006 CWPs	Improve the hiring decision process by administering the AT-SAT examination to all potential candidates, except those whose hiring program is based on prior air traffic experience.	X	The AT-SAT test was administered to the CTI applicants in 2002 and to the general public applicants in 2004. However, FAA did not provide data to support the effectiveness of the initiative.
Multi-Path Hiring and Training Models 2005-2010 CWPs	Implement multi-path hiring and training models which varies the amount and type of training on the applicant's education, experience, and type of facility he/she will be assigned to in order to provide air traffic facilities with developmental controllers prepared to begin training at the facility.	X	FAA has implemented the multi-path training approach that distinguishes the amount of training needed based on the applicant's aviation experience. However, FAA did not provide data to support the effectiveness of the initiative.
Facility Co-Locations and Realignments 2005-2006 CWPs	Decrease FAA's operating, maintenance, infrastructure and permanent change of station costs.	X	FAA has completed the realignment of seven small TRACONS into larger TRACONS. However, FAA did not provide data to support the cost effectiveness of the initiative.

Exhibit D. Status of FAA's Controller Productivity Initiatives

Official Time 1998 and 2009 CBAs; 2005-2006 CWP	Reduce official time usage for union representation duties that is not authorized by statute or contract.	X	Article 2 of the 2009 NATCA/FAA CBA includes a provision that established the number of official hours controllers are allowed to use for union representation and a database to track official time was instituted. However, FAA did not provide data to support the effectiveness of the initiative.
Deployment of Cru-X/ART 2005-2006 CWP	Fully deploy Cru-X/ART by the end of FY 2005. Cru-X/ART is a computer based tool used to record time, attendance, and labor distribution for operational controllers and supervisors with the goal of more efficiently utilizing staff.	✓	Cru-X/ART was fully deployed 8 years ago in 2005, but due to changes in Windows operating systems, is reaching the end of its useful life. FAA is collaborating with NATCA, the Air Traffic Supervisor's Committee, and other operational and financial stakeholders to identify the business needs for a replacement system. However, FAA did not provide data to support the original system was effective.
Contract Tower Program 2005-2008 CWP	Lower FAA operating costs by expanding the contract tower program.	X	As of November 2012, the Contract Tower Program was expanded to 251 towers. However, none of the additions were formally FAA-operated towers and no cost savings assessment was provided.
Flight Service Station Personnel 2005-2006CWP	Reduce outside hiring by transitioning Flight Service Station personnel into air traffic control and place at terminal facilities under the Preferred Placement Program.	X	Between 2006 and 2007, former Flight Service Station personnel who applied for FAA vacancy announcements were given priority consideration under a Special Placement Program. However, FAA did not provide data to support the effectiveness of the initiative.
Age 56 Rule Waivers 2005-2006 CWP	Retain qualified controllers at targeted locations by granting waivers to age 56 air traffic controllers, who would otherwise be required to retire.	X	FAA has implemented the Age 56 Waiver and the waiver was documented in Title 5, United State Code (USC), Section 8335(a) and the agency policies. However, FAA did not provide data to support the effectiveness of the initiative.
Controller Credentialing 2009 CWP	Increase safety through regulated standards for training, testing, currency, and proficiency.	X	FAA issued credentials to every controller who is medically qualified and current. However, no productivity or safety enhancement statistics were provided.
Flexible Work Schedule, Increase Use of Part-time Controllers & Implementation of Split Shift 1998 CBA & 2006 CWP	Save on labor costs and increase employee retention by offering additional job flexibility.	X	Article 34 Section 4 of the 2009 NATCA/FAA CBA includes a provision that covers alternative work schedules, flexible work schedules and compressed work schedules. However, FAA did not provide data to support the effectiveness of the initiative.
Facility Imbalances 2005 CWP	Restrict the movement of any employee from one position to another, within or outside of the local commuting area if it is in the best interest of the Agency. The goal of this initiative is to maintain balanced staffing.	X	FAA has implemented policy 5 USC 2301 and 2302 that create equal job opportunity and prevent managers from holding an Air Traffic Control Specialist for any period greater than 2 years. However, FAA did not provide data to support the effectiveness of the initiative.
FAA Academy Simulation 2005-2010 CWP	Expand use of simulators at the FAA Academy. The goal is to reduce the time to CPC by providing developmental the opportunity to practice seldom-used skills and practice complex scenarios.	X	FAA installed tower simulation systems at the Academy in 2007 to train developmental controllers. However, FAA did not provide data to support the effectiveness of the initiative.

Exhibit D. Status of FAA's Controller Productivity Initiatives

Air Traffic Facility Simulation 2005-2012 CWP	Expand the use of simulators at field facilities to reduce the time required to attain CPC and achieve increasing levels of certification. Also, reduce training costs and increase flexibility in scheduling, and reduce stress on training resources.	X	The tower simulators were deployed to over 130 air traffic facilities. While FAA initially reported the tower simulators decreased on-the-job training times for local and ground controllers by 15% to 40%, follow-up discussions with ATO officials indicated that no data analysis has been conducted and the results have not been quantified.
Voice Recognition & Response (VRR) Technology 2006-2007 CWP	Expand the use of VRR Technology into terminal and en route field simulation capabilities to reduce training resources, training time, and training costs associated with facility certification training.	X	FAA has incorporated the VRR technology into tower simulation systems. The use of VRR technology has reduced remote pilot operators (RPOs) labor hours. However, FAA did not provide data to support the effectiveness of the initiative.
Redesign Academy En-Route Airspace 2005-2006 CWP	Raise student performance levels and replicate actual airspace to allow for more realistic training.	X	FAA completed the redesign of en-route airspace at the Academy in January 2011. However, FAA did not provide data to support the effectiveness of the initiative.
Leverage Training Sources 2005-2006 CWP	Reduce costs of delivering training and the drain on internal training resources.	X	From FY 2005 -FY 2007, FAA used contract instructors to address the ebb and flow of controller training requirements at the Academy and field facilities. In 2007, the FAA expanded the AT-CTI from 13 to 31 schools which saved FAA 5 weeks of training at the Academy. However, FAA did not provide cost data to support the effectiveness of the initiative.
Knowledge Transfer 2008-2010 CWP	Hire retired FAA air traffic controllers as contractors to train new hires.	X	Raytheon, an FAA contractor, has hired retired air traffic controllers as contract instructors to train developmental controllers. However, FAA did not provide data to support the effectiveness of the initiative.
Establishing a Proficiency Program Using a Competency-Based Approach 2011 CWP	Establish a competency-based approach to training developmental controllers which includes mapping curriculum to job task information and aligning with objectives, assessments, proficiency and media.	X	FAA has updated the job task analysis for air traffic control. However, FAA did not provide data to support the effectiveness of the initiative.
FAA's Call to Action 2012 CWP	Improve processes for hiring and training the controller workforce.	X	In 2011, the FAA convened an Independent Review Panel which made 49 recommendations. However, only 14 recommendations have been implemented and are on schedule and FAA did not provide data to support the effectiveness of the initiative.
Processing of Unsuccessful Developmental 2005-2006 CWP	Reduce staffing imbalances. During FY 2005, FAA prohibited the movement of air traffic control specialists in training from en-route to terminal when vacancies did not exist.	X	FAA revised its supplement employment policy to establish a National Employee Services Team, a joint FAA/NATCA group which recommends retention and potential placement opportunities within FAA. However, FAA did not provide data to support the effectiveness of the initiative.
Ongoing			
Changing the National Airspace System Technologies 2005-2006 CWP	Increase controller efficiency and improve productivity.	X	FAA is implementing and training controllers on new systems, such as Advanced Technologies & Oceanic Procedures (ATOP), User Request Evaluation Tool (URET), ERAM, and other NextGen programs.

Exhibit D. Status of FAA's Controller Productivity Initiatives

National OJT Data Tracking System 2005-2010 CWP	Track controller training to identify specific areas where efficiencies can be gained and identify areas where the training process is broken. FAA's goal is to have 90 percent of controller developmental controllers on track with training.	✓	FAA implemented the National Training Database (NTD) in 2006. Currently, FAA continues to use the NTD database to track and obtain information regarding controller training. However, FAA did not provide data to support the effectiveness of the initiative.
Reviewing FAA's Training Order 2008-2012 CWP	Review FAA Order 3120.4 and incorporate checklists to make sure on-the-job training (OJT) is done consistently across the nation.	X	On March 15, 2011, FAA added on-the-job training checklists to the Terminal and En Route Instructional Program Guides. The checklists were added to encourage standardization for on-the-job training. However, the checklists did not become effective until September 30, 2013.
Emphasis on Refresher Training 2012 CWP	Promote safety culture and help controllers maintain proficiency.	X	The first cycle of this cadre-led and computer-based instruction training was deployed in February 2012. No results or impacts were provided.
Staffing to Traffic 2007-2012 CWP	Match the number of controllers at each facility with traffic volume and workload and staff to satisfy expected needs 2 to 3 years in advance, in order to ensure sufficient training time for new hires.	X	FAA will continue to monitor controller workload and volume and adjust hiring and training plans accordingly.
Resource Management Scheduling Tool 2012 CWP	Effectively develop and maintain optimal schedules based on traffic, staffing, work rules, and employee qualification.	X	The FAA has procured a commercially available "off-the-shelf" system called FAA's operational planning and scheduling (OPAS) tool. Management training has been completed at 16 facilities and is currently testing at Oakland En Route Center (ZOA).
Scheduling Tool 2005-2006 CWP	Improve controller utilization by developing shift-staffing schedules that match controller staffing to traffic workload demand.	X	See previous initiative.
Review/Reassess Staffing Standard Models 2005-2012 CWP	Better estimate the required controller staffing needs at the national and facility level.	X	FAA is currently working with NATCA on a collaborative workgroup to review and reassess FAA's staffing models.
Air Traffic Control Facility Hours of Operation 2005-2006 CWP	Reduce the hours of operation at air traffic facilities with low or no mid-shift activity to save money.	X	Seventy-two sites are currently under review. FAA decided not to change operating hours due to the impacts of sequestration and the government-wide shutdown. FAA will conduct an annual analysis to determine if changes are warranted.
Abandoned			
Recruitment 2005-2012 CWP	Expand the hiring pool to qualified minority and female candidates and offer eligible developmental controllers the Montgomery GI Bill education benefits.	X	Due to Ops funding reductions, a decrease of hiring needs, and the availability of qualified veteran candidates, the FAA discontinued this initiative.
Examine and Streamline the Clearance Process 2005-2007 CWP	Reduce the time needed to obtain medical clearances and background investigations.	X	In FY 2008/FY 2009 FAA implemented Pre-Employment Processing Centers (PEPCs) which reduced processing time from 6 months to 1-3 months. However, due to Ops funding reductions, the FAA discontinued this initiative.
Streamline Hiring Process 2008-2010 CWP	Centralize the controller hiring process to reduce the time it takes to complete pre-hire screening and maintain a pool of between 3,000 and 5,000 applicants.	✓	See previous initiative.

Exhibit D. Status of FAA's Controller Productivity Initiatives

Evaluate and Redesign Facility Training Program 2005-2006 CWPs	Reduce controller training time to CPC for terminal by eliminating overlap between academy and facility training through a training process called "functional training."	X	FAA discontinued functional training due to minor savings in time to certification, and the benefits of national standardization outweighed the minor advantages.
Implement Academy Instructor Recruitment and Retention 2005-2006 CWP	Ensure the effectiveness of the initial qualification training program and increase the number of controller applicants for instructor positions.	X	A draft Academy recruitment and retention plan was developed involving 'save-pay' for controllers transitioning to the Academy. However, it was not implemented by FAA.

Source: FAA and OIG analyses of FAA data

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Federal Aviation Administration

Memorandum

Date: June 20, 2014

To: Matt Hampton, Deputy Assistant Inspector General for Aviation

From: H. Clayton Foushee, Director, Office of Audit and Evaluation 

Subject: Federal Aviation Administration's (FAA) Response to Office of Inspector General (OIG) Draft Report: Outcomes of FAA's Controller Productivity Initiatives

In recent years, the FAA has leveraged its annual Controller Workforce Plan to highlight numerous ongoing and proposed projects aimed at improving internal administrative operations and enhancing air traffic services. As outlined by the OIG, these productivity initiatives have focused upon the Agency's recruitment processes, training programs, and facility realignment evaluations. Because the primary focus of many of these initiatives was not necessarily on improving controller productivity or reducing costs, the FAA has not consistently measured these impacts.

In the current budget climate, there is a more urgent need to identify productivity enhancements and measure all costs associated with the controller workforce, both directly and indirectly. To that end, the Air Traffic Organization's (ATO) Management Services (AJG) has undergone an internal realignment to focus additional resources on controller utilization and productivity. In addition, AJG and the FAA's Office of Finance and Management (AFN) have significantly strengthened their partnership to enhance coordination and communication on issues that impact controller staffing, pay, and productivity.

The FAA has also established a Collaborative Resource Work Group which includes representatives from ATO, AFN, Labor Relations, and the National Air Traffic Controllers Association (NATCA), the union representing air traffic controllers. Currently, this group is working to address staffing needs, hiring practices, and other significant influences on controller productivity and costs.

RECOMMENDATIONS AND RESPONSES

Recommendation 1: Assess current controller productivity initiatives to determine whether they will achieve anticipated cost savings or productivity gains and document the results of this assessment.

FAA Response: Concur. The OIG correctly noted that the FAA did not provide data to support the effectiveness of its initiative to redesign en route airspace. This was due to the lack of

sufficient data at that time to accomplish a reliable evaluation. With the realignment and improved coordination discussed above, the FAA is now better equipped to consistently and accurately examine initiatives that impact controller productivity and cost.

An example of this can be seen in the En Route Stage 1 Initial qualification training at the FAA Academy in Oklahoma City. In 2011, the Agency completed the proposed redesign and updated the corresponding academy training curriculum for En Route students. Under the previous curriculum, almost 90% of en route new hires successfully completed academy training, but then more than 20% would fail to complete training to reach full certification at their assigned facility. One of the major goals of the curriculum change was to better identify candidates that were not likely to reach full certification before they are assigned to the field.

Since the curriculum change in 2011, the FAA now has enough data to examine this initiative. The results clearly demonstrate that the new curriculum is more rigorous, and the pass rate has declined from 88.5% to 75.9%. Based upon the average annual en route new hire class of 750 over the next several years, and the average pay and benefits costs for developmental controllers, having the Academy screen out a higher percentage of trainees not likely to succeed in the field translates to savings of approximately \$6M-\$7M per year.

The Agency will continue to identify new opportunities for productivity enhancements and will provide the OIG with an update by December 31, 2014.

Recommendation 2: Develop a process to ensure future controller productivity initiatives include measurable milestones and cost and productivity goals.

FAA Response: Concur. As previously stated, the FAA has historically leveraged its annual Controller Workforce Plan to highlight a broad variety of initiatives designed to improve training, hiring, operations, and/or administrative processes. The discussions on these initiatives have been based primarily on qualitative input and information provided by various program offices and often, by design, were not fully evaluated in terms of quantifiable productivity enhancements or cost reductions.

The Agency recognizes the need for greater transparency and more detailed examinations of all projects that require the investment of personnel and financial resources. The FAA will work to implement a process that will ensure that future initiatives have measurable metrics and are evaluated to ensure that they meet productivity and/or cost saving goals. This change will be reflected in the Controller Workforce Plan scheduled for March 2015.

Recommendation 3: Analyze its operational and financial data to identify opportunities to increase controller productivity and reduce operating costs.

FAA Response: Concur. It is critical that the FAA accurately assess opportunities for improving operational efficiencies and reducing operating costs. The FAA has recently made significant strides toward better utilization of existing data resources to identify opportunities for additional productivity. Examples include:

Appendix. Agency Comments

- 1) Facility Realignment Analyses – In recent years, the Agency’s efforts to combine air traffic facilities have met resistance, in part, because they lacked defensible processes for evaluating the costs and benefits. Based upon the requirements outlined in Section 804 of the FAA Modernization and Reform Act of 2012 (P.L. 112-95), the FAA has now developed a consistent and auditable process for developing the business cases associated with facility realignment. A business case includes a full assessment of the air traffic workforce, where FAA weighs the benefits of possible operational efficiencies against the potential costs of rising facility levels, which could increase individual controller pay. This workforce assessment ties directly to FAA’s annual Controller Workforce Plan and represents a detailed and transparent review of the expected impact of facility realignment on controller productivity and staffing.
- 2) Controller Scheduling – The FAA is evaluating a new controller scheduling tool called Operational Planning and Scheduling (OPAS), which is designed to ensure a better match between controller schedules and operational requirements. OPAS includes modules to improve both day-to-day operations and to conduct higher level assessments of controller scheduling practices. This tool is currently being utilized to evaluate work schedules at a sample of air traffic facilities in order to establish a baseline from which to measure future improvements. Though still in the developmental stage, OPAS represents a significant opportunity for the FAA to leverage data and technological resources to improve controller productivity and reduce operating costs.
- 3) Controller Staffing Study – Section 608 of P.L. 112-95 required the FAA to partner with the National Academy of Sciences (NAS) to “estimate staffing needs for FAA air traffic controllers to ensure the safe operation of the national airspace system in the most cost effective manner.” FAA has worked diligently with NAS and other constituents, including NATCA, to not only review FAA’s processes and models for developing controller staffing standards, but also to conduct a broader examination of the tools that FAA uses to develop its annual staffing and hiring plans for air traffic controllers. The Agency has received the final NAS recommendations and is evaluating opportunities to improve our forecasting models to ensure enhanced controller productivity and cost effectiveness.

The FAA will provide an update to the OIG by October 31, 2014.

Recommendation 4: Require controllers to maintain their own time-on-position records by signing in and out in Cru-X/ART.

FAA Response: Concur. As the OIG states in the report, per the 2010 National Memorandum of Understanding (MOU) between FAA and NATCA, operations supervisors are responsible for maintaining time-on-position records in Cru-X/ART for all controllers. The FAA and NATCA are presently in discussions to address the current MOU regarding the signing on and signing off of position agreements and practices. The current Cru-X/ART system is being replaced with a new Air Traffic Operational Management System (ATOMS). ATOMS will include a more passive ability to sign in and out. The FAA has initiated a feasibility study for the replacement of Cru-X/ART, which will be completed by December 31, 2014. Additionally, the Agency has established a workgroup with representation from internal stakeholders to identify operational and business requirements. The FAA will provide the OIG with an update

Appendix. Agency Comments

by March 30, 2015.

Recommendation 5: Ensure that all facilities implement and use new Cru-X/ART task codes designed to better differentiate the tasks that controllers are completing.

FAA Response: Concur. The Office of Technical Safety and Training within the ATO is reviewing the task codes currently available to the controller training and safety related activities. The FAA has entered into a review of the MOU with NATCA to expand the use of codes to accurately reflect controller duties. The FAA will provide an update to the OIG by November 30, 2014, on the review and required negotiations.