Federal Civil Aviation Programs: An Overview

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Introduction

Federal Aviation Administration (FAA) programs and activities are funded under four broad budget accounts: operations and maintenance (such as air traffic control and aviation safety functions); facilities and equipment (such as control towers and navigation beacons); grants for airport improvements under the airports improvement program (AIP); and civil aviation research and development conducted or sponsored by FAA. Additionally, aviation programs fund aviation programs administered by the Department of Transportation (DOT) Office of the Secretary, including the Essential Air Service Program that subsidizes airline service to certain small and isolated communities. These programs are funded primarily through a special trust fund, the airport and airways trust fund (AATF), and, in part, through general fund contributions.

Other federal entities also play significant roles in civil aviation. These include the National Aeronautics and Space Administration, which conducts extensive research on civil aeronautics; the National Oceanic and Atmospheric Administration, which provides research and operational support to FAA regarding aviation weather forecasting; the Transportation Security Administration in the Department of Homeland Security, which has authority over civil aviation security; and the National Transportation Safety Board, which investigates aviation accidents and makes safety recommendations to FAA. These programs are not considered in this report. This report focuses on FAA and DOT civil aviation programs addressed in the FAA Modernization and Reform Act of 2012 (P.L. 112-95), enacted on February 14, 2012, which authorizes AATF taxes and revenue collections and civil aviation program expenditures through FY2015.

The Airport and Airways Trust Fund

The AATF, sometimes referred to as the aviation trust fund, was established in 1970 under the Airport and Airway Development Act of 1970 (P. L. 91-258) to provide for expansion of the nation's airports and air traffic system. It has been the major funding source for federal aviation programs since its creation. Since FY2009, the AATF has provided between 66.6% and 71.4% of FAA's total annual funding, the remainder coming from general fund appropriations.[1] Revenue sources for the trust fund include passenger ticket taxes, segment fees, air cargo fees, and fuel taxes paid by both commercial and general aviation aircraft (see **Table 1**).

[1] Federal Aviation Administration, *Airport and Airway Trust Fund (AATF) Fact Sheet*, http://www.faa.gov/about/office_org/headquarters_offices/apl/aatf/media/AATF_Fact_Sheet.pdf.

Table 1. Aviation Taxes and Fees

(CY2012 rates)

Tax or Fee	Rate
Passenger Ticket Tax (on domestic ticket purchases and frequent flyer awards)	7.5%
Flight Segment Tax (domestic, indexed annually to Consumer Price Index)	$3.80
Cargo Waybill Tax	6.25%
Frequent Flyer Tax	7.5%
General Aviation Gasoline*	19.3 cents/gallon
General Aviation Jet Fuel* (Kerosene)	21.8 cents/gallon
Commercial Jet Fuel* (Kerosene)	4.3 cents/gallon
International Departure/Arrivals Tax (indexed annually to Consumer Price Index) (prorated Alaska/Hawaii to/from mainland United States)	$16.70 (Alaska/Hawaii = $8.40)
Fractional Ownership Surtax on general aviation jet fuel	14.1 cents/gallon

Source: Federal Aviation Administration, Current Aviation Excise Tax Structure, updated March 2012.

Note: * Does not include 0.1 cents/gallon for the Leaking Underground Storage Tank (LUST) trust fund.

In addition to excise taxes deposited into the trust fund, FAA imposes air traffic service fees on flights that transit U.S.-controlled airspace but do not take off from or land in the United States. These overflight fees partially fund the EAS program.[2]

In 2012, the AATF has maintained a cash balance of more than $10 billion. However, the uncommitted balance has declined considerably since 2001, when it exceeded $7 billion.[3] After falling to about $300 million at the end of FY2009,[4] the uncommitted balance climbed back to about $1 billion at the end of FY2012, but the long-term vitality of the AATF remains a concern. AATF revenue is largely dependent on airlines' ticket sales, and the spread of low-cost air carrier models has held down ticket prices and therefore AATF receipts.

Airlines have long contended that general aviation operators, particularly corporate jets, should provide a larger share of the revenues supporting the trust fund. General aviation interests dispute this, arguing that the air traffic system mainly supports the airlines and that non-airline users pay a reasonable share given the relatively small incremental costs arising from their flights. Proposals to increase the general aviation jet fuel tax in the FAA Modernization and Reform Act failed.

[2] See CRS Report R41666, *Essential Air Service (EAS): Frequently Asked Questions*, by Rachel Tang.

[3] The uncommitted balance consists of funds that have not been expended or obligated through current or prior year activities, whereas the cash balance includes funds that have been obligated but not expended.

[4] U.S. Government Accountability Office, *Airport and Airways Trust Fund: Declining Balance Raises Concerns over Ability to Meet Future Demands*, GAO-11-358T, February 3, 2011.

In 2011, the Obama Administration proposed a per-flight user charge of $100 on commercial and general aviation jets and turboprops that fly in controlled airspace as an additional revenue source for the AATF.[5] The proposal, estimated to generate roughly $1.1 billion annually, was opposed by general aviation interests who depicted this as a first step toward funding the air traffic control system wholly or substantially through user charges. This approach is already used in Canada, Australia, and Europe, and general aviation interests raise concerns over the high cost of air traffic services under those models. Proposals by the Clinton Administration and the George W. Bush Administration to establish user charges for air traffic services also failed to gain congressional support. In the 110th Congress, a Senate proposal to impose a similar $25-per-flight fee was not adopted (see S. 1300, 110th Congress).

Another concern regarding AATF revenues centers on the recent trend among airlines to impose fees for a variety of add-on services and amenities such as checked bags, onboard Wi-Fi access, or seats with additional leg room. Generally, fees not included in the base ticket price are not subject to federal excise taxes. The Government Accountability Office (GAO) estimated that the trust fund could have received $186 million in FY2009 from untaxed baggage fees alone had these fees been subject to the 7.5% excise tax.[6] If airlines continue to seek additional revenue from ancillary fees as an alternative to increasing base ticket prices, federal aviation programs and activities may become more dependent on contributions from the general fund.

FAA Funding Accounts

In recent years, FAA funding has totaled between $15 billion and $16 billion annually. FAA funding is divided among four main accounts. Operations and Maintenance (O&M) makes up the largest portion of the FAA budget, comprising slightly more than 60% of total FAA appropriations. It is the only FAA account that is funded, in part, by general fund contributions. The O&M account principally funds air traffic operations and aviation safety programs. The Airport Improvement Program (AIP) provides federal grants-in-aid for projects such as new runways and taxiways; runway lengthening, rehabilitation, and repair; and noise mitigation near airports. The Facilities and Equipment (F&E) account provides funding for the acquisition and maintenance of air traffic facilities and equipment, and for engineering, development, testing, and evaluation of technologies related to the federal air traffic system. The Research, Engineering, and Development account finances research on improving aviation safety and operational efficiency and reducing environmental impacts of aviation operations. Authorizations and appropriations for these accounts are shown in **Table 2**.

[5] Office of Management and Budget, *Living Within Our Means and Investing in the Future: The President's Plan for Economic Growth and Deficit Reduction*, September 2011, pp. 22-23.

[6] U.S. Government Accountability Office, *Commercial Aviation: Consumers Could Benefit from Better Information about Airline-Imposed Fees and Refundability of Government-Imposed Taxes and Fees*, GAO-10-785, July 2010.

Table 2. Reauthorization Funding Levels for FAA Accounts

($ in millions)

Account	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015
Operations and Maintenance (O&M)						
Authorized Levels	—	—	9,653	9,539	9,596	9,653
Appropriated/Requested Amounts	9,350	9,533	9,653	9,718(R)	—	—
Airport Improvement Program (AIP)						
Authorized Levels	—	—	3,350	3,350	3,350	3,350
Appropriated/Requested Amounts	3,515	3,000	3,350	3,350(R)	—	—
Facilities and Equipment (F&E)						
Authorized Levels	—	—	2,731	2,715	2,730	2,730
Appropriated/Requested Amounts	2,936	2,736	2,731	2,850(R)	—	—
Research, Engineering, & Development						
Authorized Levels	—	—	168	168	168	168
Appropriated/Requested Amounts	191	170	168	168(R)	—	—
TOTALS						
Authorized Levels	—	—	15,902	15,772	15,814	15,901
Appropriated/Requested Amounts	15,992	15,439	15,902	15,146(R)	—	—

Source: CRS analysis of P.L. 112-95, P.L. 111-8 (FY2010 Appropriations), P.L. 112-10 (FY2011 Appropriations), P.L. 112-55 (FY2012 Appropriations), and the FY2013 Budget Request.

Notes: Table does not reflect amounts specified in short-term extension acts or continuing appropriations measures. (R) is the requested amount.

Airport Financing

AIP provides federal grants for airport development. AIP funding is usually limited to capital improvements related to aircraft operations and is usually tied to improvements related to safety, capacity, and environmental concerns. Commercial revenue-producing portions of airports and airport terminals are generally not eligible for AIP funding. AIP money cannot usually be used for airport operational expenses or bond repayments. AIP funds are distributed either as formula grants or as discretionary grants.[7] They may be spent only on public-use airports identified in FAA's National Plan of Integrated Airports Systems, which currently lists about 3,400 airports across the United States considered significant to national air transportation.

In general, the federal share of costs for AIP projects is capped at the following levels:

- 75% for large and medium hub airports (80% for noise compatibility projects); and

[7] For a detailed description of the AIP program, see CRS Report R40608, *Airport Improvement Program (AIP): Reauthorization Issues for Congress*, by Robert S. Kirk. See also Federal Aviation Administration, *Overview: What Is AIP?*, http://www.faa.gov/airports/aip/overview/.

- 90% or 95% for other airports, depending on statutory requirements.

Under a provision in P.L. 112-95, airports reclassified as medium hubs due to increased passenger volumes may retain eligibility for up to a 90% federal share for a two-year transition period. Additionally, certain economically distressed communities and communities receiving EAS-subsidized air carrier service may be eligible for up to a 95% federal share of project costs.

The Passenger Facility Charge (PFC) program provides a source of non-federal funds intended to complement AIP spending. The PFC is a local tax imposed, with federal approval, by an airport on each boarding passenger. PFC funds can be used for a broader range of projects than AIP grants and are more likely to be used for "ground-side" projects such as improvements to passenger terminals and ground transportation facilities. PFCs can also be used for bond repayments. Currently, PFCs are capped at $4.50 per boarded passenger, with a maximum charge of $18 per round trip flight. PFCs are collected by the airlines and remitted to the airports. A provision in P.L. 112-95 instructed GAO to study alternative means for collecting PFCs.

Airports also raise funds for capital projects from bonds, state and local grants, landing fees, on-airport parking, and lease agreements.

FAA Management and Organizational Issues

FAA is a large organization with over 46,000 full-time equivalent (FTE) positions. Over 33,000 of these are in the Air Traffic Organization (ATO), including more than 15,000 air traffic controllers, 5,000 air traffic supervisors and managers, and 7,000 engineers and maintenance technicians. ATO was established under Executive Order 12/07/00 in December 2000 as a functional unit within FAA but with a completely separate management and organizational structure and a mandate to employ a business-like approach emphasizing defined performance goals and metrics related to operational safety and system efficiency. Employee pay and advancement are based, in part, on meeting annual organizational goals. Creation of the ATO as a distinct entity within FAA also had the effect of more clearly separating operational components related to air traffic control from components concerned with regulation and safety oversight of aircraft operators, repair stations, flight schools, pilots and mechanics, and other entities.

Air Traffic Controller and Technical Workforce

Controller and technician staffing has been an ongoing issue of concern. FAA's strategy for controller staffing has focused on accelerated hiring and training through FY2014. Total controller hiring over the 10-year period ending in FY2014 is expected to total about 12,500.

P.L. 112-95 requires that FAA ensure sufficient numbers of instructors, classrooms, and simulators are available at air traffic facilities to accommodate increased numbers of controllers. The act also requires FAA to distribute certified controllers and trainees across facilities in a manner that avoids training bottlenecks. It directs FAA to carry out an analysis of controller scheduling and overtime practices. Additionally, it requires FAA to give priority to controllers-in-training when filling staffing vacancies, and to assess training at facilities with below average success rates to evaluate conformance with training standards. The act directs FAA to carry out a study of front-line manager staffing at air traffic control facilities.

In addition to air traffic controllers, Congress has identified staffing of airway transportation system specialists that maintain air traffic technologies as a critical issue. P.L. 112-95 specifically directs FAA to assess the adequacy of training provided to systems specialists. The act also directs the National Academy of Sciences to carry out a study of staffing needs for system specialists to ensure proper maintenance and certification of the national airspace system.

Facility Consolidation

Consolidation of FAA air traffic facilities and functions is viewed as a means to control operational costs, replace outdated facilities, and improve air traffic services. Consolidation efforts to date have primarily focused on terminal radar approach control (TRACON) facilities. TRACON consolidation has been ongoing for many years, but in the past has been limited to nearby and overlapping terminal areas in major metropolitan areas such as New York/Northern New Jersey, Washington/Baltimore, and Los Angeles/San Diego. More recently, FAA has sought to decouple combined tower/TRACON facilities and merge approach control functions across larger geographical areas.

These consolidation projects have been coupled with airport control tower replacements. Replacements for outdated combined tower/TRACON facilities are being designed to house tower functions only, and TRACON components are being relocated to consolidated facilities that may be at some distance from the airport. Operations at low-activity towers that lose their TRACON components are more likely to be outsourced under the federal contract tower (FCT) program, an issue of particular concern to FAA labor unions. Currently, about half of all airport control towers in the United States are operated under the FCT program.

Facility consolidation has been particularly controversial because FAA's system-wide plan for realignment and consolidation is still evolving. The plan calls for more comprehensive integration of TRACONs and en-route centers into large integrated facilities. The DOT Office of Inspector General cautioned in 2012 that FAA is still in the early stages of planning for this comprehensive effort and has not made key decisions or developed metrics to assess these plans.[8]

FAA plans are politically sensitive, as consolidation initiatives could result in job losses in specific congressional districts even if they do not result in an overall decrease in jobs for air traffic controllers, systems specialists, and other supporting personnel. Rather, realignment and consolidation coupled with airspace modernization under the NextGen system are anticipated to change the nature of these job functions and consolidate them in fewer physical facilities.

Provisions in the FAA Modernization and Reform Act (P.L. 112-95) require FAA to develop a report providing a comprehensive list of its proposed recommendations for realignment and consolidation of services and facilities. The report is to include a justification, projected cost savings, and a timeline for each proposed action. FAA is required to subsequently provide Congress with formal consolidation and realignment recommendations, along with public comments received. Congress would then have the opportunity to, within 30 days, pass a joint resolution formally disapproving any recommendation included in the FAA plan. If Congress

[8] Office of Inspector General, Audit Report: *The Success of FAA's Long-Term Plan for Air Traffic Facility Realignments and Consolidations Depends on Addressing Key Technical, Financial, and Workforce Challenges*, Department of Transportation, AV-2012-151, Washington, DC, July 17, 2012.

disapproves, FAA would not be able to implement that specific recommendation, although the law is silent with respect to FAA's recourse to subsequently propose alternative approaches.

The Next Generation Air Transportation System (NextGen)

NextGen is a multiyear initiative to modernize and improve the efficiency of the national airspace system, primarily by migrating to technologies and procedures using satellite-based navigation and aircraft tracking. Funding for NextGen programs totals more than $1 billion annually, primarily funded through FAA's F&E account (see **Table 3**).

Table 3. Funding for NextGen Programs

($ in millions)

Account	FY2011	FY2012	FY2013 Request
Operations and Maintenance (O&M)	12	12	12
Facilities and Equipment (F&E)	812	863	956
Research, Engineering, and Development (RE&D)	59	60	67
TOTALS	883	935	1,034

Source: U.S. Department of Transportation, Budget Estimates Fiscal Year 2013, Federal Aviation Administration.

Note: Columns may not sum to totals due to rounding.

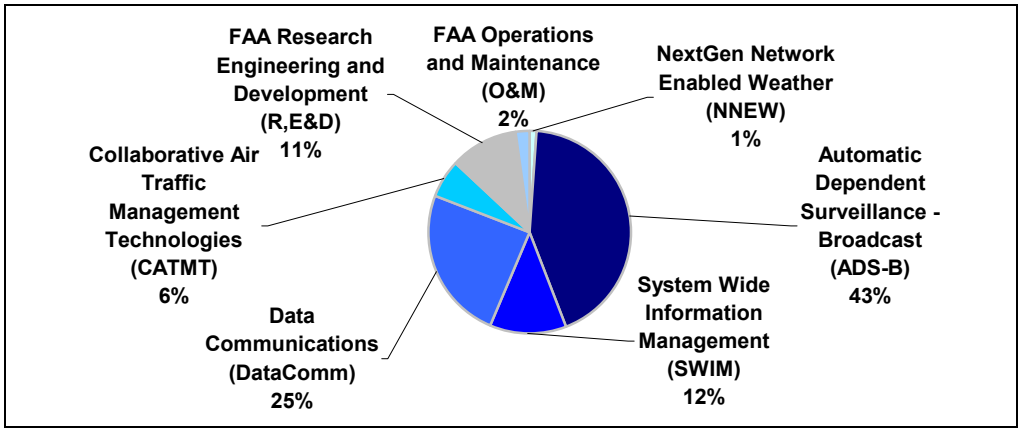
Core components of the NextGen system include the following:

- **Automatic Dependent Surveillance—Broadcast (ADS-B):** A system for broadcasting and receiving aircraft identification, position, altitude, heading, and speed data derived from on-board navigation systems such as a Global Positioning System (GPS) receiver. "ADS-B Out" functionality refers to a basic level of aircraft equipage that transmits position data. "ADS-B In" incorporates aircraft reception of ADS-B signals from other air traffic and/or uplinks of traffic, weather, and flight information from ground stations. FAA funds support the installation, operation, and maintenance of the ground network and associated infrastructure to receive ADS-B transmissions and relay them to air traffic facilities and other aircraft. Most aircraft will be required to have "ADS-B Out" capability by 2020.
- **System Wide Information Management (SWIM):** A system being developed for aviation system data sharing, consisting of a seamless infrastructure for data exchange, similar to the World Wide Web. As envisioned, SWIM will consist of an extensive, scalable data network to share real time operational information, such as flight plans, flight trajectories, weather, airport conditions, and temporary airspace restrictions across the entire airspace system.
- **Data Communications (DataComm):** A digital voice and data network, similar to current wireless telephone capabilities, to transmit instructions, advisories, and other routine communications between aircraft and air traffic service providers.

- **Collaborative Air Traffic Management Technologies (CATMT):** A suite of technologies, including various automation and decision support tools, designed to enhance existing aircraft flow management functions by exploiting other NextGen technologies and capabilities such as SWIM.
- **NextGen Network Enabled Weather (NNEW):** An integrated platform for providing a common weather picture to air traffic controllers, air traffic managers, and system users.

Funding allocations for these various core NextGen components are presented in **Figure 1**.

Figure 1. Allocation of NextGen Funding, FY2011-FY2013



Source: CRS Analysis of U.S. Department of Transportation, Budget Estimates Fiscal Year 2013, Federal Aviation Administration.

Note: Does not include NASA and NOAA funding for research and development and NNEW.

Development and implementation of NextGen pose a number of unique challenges to FAA. One of the greatest is overcoming stakeholder reluctance to adopt NextGen technologies. This reluctance is fueled in large part by perceived uncertainties about the technical details and the potential benefits of particular technologies. Users fear that early investments may not yield near-term benefits and may prove costly if technical specifications change as NextGen evolves.

FAA has proposed a "best-equipped best-served" concept to encourage airlines and business jet operators to invest in NextGen technologies. Under this concept, those that equip early with NextGen capabilities will reap some of the benefits of those capabilities, through preferential treatment with respect to flight routing and arrival and departure queuing, for example. In addition, ADS-B may provide some intrinsic benefits, particularly to small general aviation aircraft, by providing pilots with robust traffic and weather data that may enhance safety. FAA plans to promote these benefits, in conjunction with equipment mandates for ADS-B, to encourage more users to adopt NextGen technologies in the near term.

Aviation Safety Programs

FAA's regulatory functions are focused on the safety of civil aviation operations. FAA's office of aviation safety consists of almost 7,500 full-time equivalent positions including regulators, safety inspectors, safety engineers, and support personnel who are responsible for all federal civil

aviation safety standards and compliance with those standards. FAA's role in aviation safety includes certification of aircraft and aircraft components, regulation and oversight of airlines and other aircraft operators, and initiatives to reduce safety risks associated with airport operations. Although the United States achieves extremely high levels of aviation safety and has one of the safest aviation systems in the world, Congress has expressed particular concern in recent years about safety regulation and oversight of smaller regional air carriers; the safety of air ambulances; regulation of outsourced air carrier maintenance; airport surface movement safety; and, most recently, the integration of unmanned aircraft (drones) into the national airspace system.

Airline Safety

In response to concerns over regional airline safety following the February 12, 2009, crash of a Continental Connection flight from Newark, NJ, to Buffalo, NY, Congress enacted the Airline Safety and Federal Aviation Administration Extension Act of 2010 (P.L. 111-216) on August 1, 2010. The act required FAA to make substantive regulatory changes addressing airline pilot fatigue; airline pilot qualifications; FAA pilot records; airline flight crew and dispatcher training; FAA oversight and surveillance of air carriers; pilot mentoring, professional development, and leadership; and flight crewmember pairing and crew resource management techniques.

In response to these mandates, FAA issued rulemaking to significantly change flight time and duty time limits and rest requirements for passenger airline flight crews in December 2011. The new regulations, which go into effect in 2014, set duty limits based on time of day, number of flight segments, and number of time zones crossed, and establish a minimum 10-hour rest period between duty periods, two hours more than currently required. FAA also requires air carriers to implement fatigue risk management programs to aid airlines and flight crews in ensuring that pilots are fit for duty.[9] In addition, FAA has issued proposed rules to increase qualification standards for first officers, requiring that they meet the same certification requirements as airline captains.[10] FAA is revamping regulations regarding airline training programs for flight crews and dispatchers, and air carrier safety management systems to provide comprehensive, process-oriented programs for managing safety throughout an airline organization. It also plans to require modifications to air carrier training programs to address mentoring, leadership, and professional development of less experienced pilots, as mandated in P.L. 111-216.[11]

Air Ambulance Safety

The safety of air ambulances, particularly helicopter emergency medical service (HEMS) flights, has been in the spotlight over the past few years in response to accidents in this growing industry. NTSB and other aviation safety experts advocate mandatory use of formal flight dispatch procedures and risk management practices among helicopter air ambulance operators as well as

[9] Federal Aviation Administration, "Flightcrew Member Duty and Rest Requirements," 77(2) *Federal Register* 330-403, January 4, 2012; Federal Aviation Administration, "Flightcrew Member Duty and Rest Requirements; Correction," 77(95) *Federal Register* 28763-, May 16, 2012.

[10] Federal Aviation Administration, "Pilot Certification and Qualification Requirements for Air Carrier Operations; Proposed Rule," 77(40) *Federal Register* 12374-12406, February 29, 2012.

[11] Department of Transportation, *Report on DOT Significant Rulemakings*, Washington, DC, September 2012, http://www.dot.gov/sites/dot.dev/files/docs/September%202012%20Report%20on%20DOT%20Significant%20Rulemakings.PDF.

mandatory installation of terrain warning systems on HEMS aircraft. NTSB found that many air ambulance accidents have occurred when patients were not on board, and, therefore, operations were permitted to be conducted under less stringent rules regarding weather and pilot duty times.

Provisions in P.L. 112-95 require air ambulances to comply with more stringent commercial operating requirements pertaining to weather conditions and crew flight and duty times whenever medical personnel are on board. FAA is mandated to establish regulations addressing flight dispatch procedures, pilot training standards, and safety technologies (including helicopter terrain awareness warning systems, radar altimeters, and cockpit voice and data recording devices). The act also requires FAA to collect detailed data on HEMS operators and their safety records.

FAA issued proposed rulemaking in October 2010 that would apply commercial operating standards to all air ambulance flights with medical personnel onboard, mandate radio altimeters and terrain awareness and warning systems for HEMS aircraft, and require HEMS operators to conduct pre-flight risk analyses and provide safety training or briefings to onboard medical personnel. Additionally, HEMS operators with 10 or more helicopters would be required to establish operations control centers staffed by FAA-approved operations control specialists.[12]

Oversight of Maintenance Repair Stations

Outsourcing of airline maintenance work to repair stations has been an issue of concern for policymakers. The issue was highlighted by the NTSB investigation of the crash of a USAirways Express flight in January 2003 while taking off from Charlotte, NC. NTSB found that the plane's elevator control system was rigged improperly, and that the maintenance work that had been performed by a contract repair facility lacked sufficient oversight and quality assurance. It recommended that FAA perform targeted surveillance and increased oversight of airline maintenance practices, require approved air carrier maintenance training programs, and require air carriers to implement comprehensive aviation maintenance human factors programs.[13]

Congress has expressed specific concern over the quality of work and oversight of maintenance performed on air carrier aircraft at maintenance facilities in foreign countries. The FAA Modernization and Reform Act requires FAA to establish and implement a safety assessment system for all certified repair stations (both in the United States and in foreign countries) by February 14, 2013. Additionally, the act requires FAA to ensure that foreign repair stations are subject to inspections consistent with existing U.S. requirements at least annually, consistent with obligations under international agreements. FAA is directed to issue an annual report describing improvements in its capabilities to identify and track where airline maintenance is performed; a staffing model regarding the number and geographic placement of FAA inspectors; maintenance inspector training; and a quality assessment of FAA and foreign authority inspections.

P.L. 112-95 also establishes specific requirements for drug and alcohol testing programs for safety-sensitive workers repairing commercial air carrier aircraft at foreign repair stations. It requires FAA to publish a proposed rule to require drug and alcohol testing programs at all

[12] Federal Aviation Administration, "Air Ambulance and Commercial Helicopter Operations, Part 91 Helicopter Operations, and Part 135 Aircraft Operations; Safety Initiatives and Miscellaneous Amendments," 75(196) *Federal Register* 62640-62674, October 10, 2010.

[13] National Transportation Safety Board, Loss of Pitch Control During Takeoff Air Midwest Flight 5481, Raytheon (Beechcraft) 1900D, N233YV, NTSB/AAR-04/01, Washington, DC, February 26, 2004.

foreign repair stations that service U.S. air carrier aircraft, consistent with the laws of the country where the work is performed, by February 14, 2013.

Airport Surface Movement Safety

The risk of on-airport collisions has been a significant safety concern since the 1977 runway collision of two Boeing 747 on the island of Tenerife, which claimed 583 lives in the deadliest aviation disaster in history. Over the past decade, FAA has addressed surface movement safety though investments in airport lighting and signage improvements, modifications to procedures and communications, and investments in such technologies as surface radar, runway status lights, final approach runway occupancy signals, and tablet devices for pilots (known as electronic flight bags) with moving map capabilities. Additionally, FAA has supported targeted installation of special pavement materials, known as the engineered materials arresting system, or EMAS, at airports where aircraft that overrun a runway could collide with structures or enter bodies of water.

P.L. 112-95 required FAA to develop a strategic runway safety plan that includes specific national goals and proposed actions as well as a review of runway safety at every commercial service airport in the United States. The act also requires FAA to develop a process for tracking and investigating runway incidents and incorporating its plan for deploying systems to alert air traffic controllers and pilots of potential runway incursions into the NextGen implementation.

The Integration of Unmanned Aircraft

P.L. 112-95 directed FAA to develop a plan to begin the safe integration of civil unmanned aircraft into the national airspace system by the end of FY2015. These aircraft, known as drones, are likely to come into use for aerial surveillance missions for homeland security, border protection, and law enforcement, as well as for commercial applications such as surveying, imaging, and advertising. Integrating drones into the national airspace system poses a number of challenges including the development of capabilities for drones to sense and avoid other aircraft, mitigation of risks to persons and property on the ground, qualification standards and training for pilots, systems operators, and other safety-critical personnel. The act requires FAA to publish a final rule regarding the operation of small drones for commercial purposes and establish a five-year test program to study unmanned aircraft system integration at six test ranges.[14]

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[14] For further reading see CRS Report R42718, *Pilotless Drones: Background and Considerations for Congress Regarding Unmanned Aircraft Operations in the National Airspace System*, by Bart Elias.