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Issues in the Reauthorization of the Federal Aviation Administration (FAA)

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Summary

The funding authorization for the Federal Aviation Administration (FAA), included in the FAA Modernization and Reform Act of 2012 (P.L. 112-95), expires on September 30, 2015. In addition to setting spending levels, FAA authorization acts typically set policy on a wide range of issues related to civil aviation. This report considers topics that are likely to arise as the 114th Congress debates reauthorization.

Most FAA programs are financed through the Airport and Airway Trust Fund (AATF), sometimes referred to as the Aviation Trust Fund. The financial health of the AATF, which is funded by a variety of taxes and fees on air transportation, has been a growing concern. Although the trust fund balance is projected to grow in the near term—as AATF revenue continues to rise and airport capital needs are projected to decline—reductions in general fund appropriations to FAA have increased the proportion of FAA funding that is derived from the trust fund. In addition, changes in airline business practices pose a risk to the AATF revenue structure: trust fund revenue is largely dependent on airlines' ticket sales, and airlines' increasing use of fees charged for options that may once have been included in the base ticket price, such as checked bags and onboard meals, has reduced the amount of money flowing into the fund.

Other major issues likely to arise during the reauthorization debate include the following:

- **Unmanned aerial vehicles.** FAA has failed to issue rules for commercial and government use of drone aircraft within the time directed by the 2012 law, frustrating potential commercial operators. Meanwhile, large numbers of drones have come into use, and there have been numerous reports of near-collisions between drones and manned aircraft.
- **Air traffic control privatization.** Many commissions over the years have recommended moving responsibility for air traffic control from FAA, a government agency, to either an independent government-owned corporation or a private entity controlled by aviation stakeholders. Delays in implementing the satellite-based NextGen air traffic control system have renewed interest in this possibility.
- **Essential Airline Service (EAS).** In 2012, Congress attempted to limit the number of localities eligible to participate in this program to subsidize flights to communities that would otherwise lose all commercial airline service, as well as to limit the amount of subsidies per passenger. These efforts were largely unsuccessful.
- **Airfare disclosure.** The House of Representatives approved a bill in 2014 that would reverse an FAA regulation requiring airlines and website operators to give greater prominence to the final price, including fees and taxes, than to the "base airfare" charged by the carrier. The Senate did not approve this legislation, but the issue is likely to reappear in the context of FAA reauthorization.

This report does not attempt to be comprehensive. Many issues debated prior to passage of the FAA Modernization and Reform Act of 2012 are not discussed unless further congressional consideration appears probable. Additional issues, not discussed in this report, may arise as Congress moves forward with reauthorization.

Contents

Figures

Tables

Contacts

Introduction

The funding authorization for the Federal Aviation Administration (FAA), included in the FAA Modernization and Reform Act of 2012 (P.L. 112-95), expires on September 30, 2015. In addition to setting spending levels, FAA authorization acts typically set policy on a wide range of issues related to civil aviation. This report considers topics that are likely to arise as the 114th Congress debates reauthorization. It does not attempt to be comprehensive. Many issues debated prior to passage of the FAA Modernization and Reform Act of 2012 are not discussed unless further congressional consideration appears probable. Additional issues, not discussed in this report, may arise as Congress moves forward.

Aviation Funding

Most FAA programs are financed through the Airport and Airway Trust Fund (AATF), sometimes referred to as the Aviation Trust Fund. The AATF 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. Since FY2009, the AATF has provided between 66.6% and 71.4% of FAA's total annual funding, with 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**).

Table 1. Aviation Taxes and Fees

(CY2014 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)	$4.00
Cargo Waybill Tax	6.25%
Frequent Flyer Tax	7.5%
General Aviation Gasoline[a]	19.3 cents/gallon
General Aviation Jet Fuel[a] (Kerosene)	21.8 cents/gallon
Commercial Jet Fuel[a] (Kerosene)	4.3 cents/gallon
International Departure/Arrivals Tax (indexed annually to Consumer Price Index) (prorated Alaska/Hawaii to/from mainland United States)	$17.70 (Alaska/Hawaii = $8.90)
Fractional Ownership Surtax on general aviation jet fuel	14.1 cents/gallon

Source: Federal Aviation Administration, Current Aviation Excise Tax Structure, updated January 2015.

a. 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 Essential Air Service (EAS) program.[2]

[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.

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

In 2013, the AATF had revenues of almost $12.9 billion and maintained a cash balance of more than $13 billion. However, the uncommitted balance has declined considerably since 2001, when it exceeded $7 billion. Following the onset of the global economic crisis in 2008, the AATF uncommitted balanced dropped to $299 million at the end of FY2009, but has since rebounded; it was estimated to be $1.3 billion at the end of FY2014.[3] The trust fund balance is projected to grow in the near term, as AATF revenue continues to rise and airport capital needs are projected to decline over the next five years. In the longer term, however, the vitality of the AATF remains a concern, as reductions in general fund appropriations to FAA have increased the proportion of FAA funding that is derived from the trust fund.

Changes in airline business practices pose a risk to the AATF revenue structure. Trust fund 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. In addition, airlines increasingly impose fees for a variety of options and amenities, such as checked bags and onboard meals, rather than including them in the base ticket price. Generally, fees not included in the base ticket price are not subject to federal excise taxes. The U.S. 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.[4]

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 nonairline users pay a reasonable share given the relatively small incremental costs arising from their flights. Proposals in 2012 to increase the general aviation jet fuel tax were not adopted. The Clinton, George W. Bush, and Obama Administrations all proposed per-flight user charges; President Barack Obama has proposed a $100-per-flight charge on commercial and general aviation jets and turboprops that fly in controlled airspace each year since 2011. In the 110th Congress, the Senate voted to impose a $25-per-flight fee on all commercial and general aviation flights (see S. 1300, 110th Congress) as an additional revenue source for the AATF.[5] None of those proposals has been enacted into law.

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, receiving 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

[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. See U.S. Government Printing Office, *Balances of Budget Authority: Budget of the U.S. Government (Fiscal Year 2014)*, available at http://www.gpo.gov/fdsys/pkg/BUDGET-2014-BALANCES/pdf/BUDGET-2014-BALANCES.pdf.

[4] 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.

[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.

technologies related to the federal air traffic system. The Research, Engineering, and Development account finances research on improving aviation safety and operational efficiency and on reducing environmental impacts of aviation operations. Authorizations and appropriations for these accounts are shown in **Table 2**.

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	9,148	9,651	9.741
Airport Improvement Program (AIP)						
Authorized Levels	—	—	3,350	3,350	3,350	3,350
Appropriated/Requested Amounts	3,515	3,515	3,350	3,343	3,480	3,350
Facilities and Equipment (F&E)						
Authorized Levels	—	—	2,731	2,715	2,730	2,730
Appropriated/Requested Amounts	2,936	2,736	2,731	2,588	2,600	2,600
Research, Engineering, and Development						
Authorized Levels	—	—	168	168	168	168
Appropriated/Requested Amounts	191	170	168	159	133	157
TOTALS						
Authorized Levels	—	—	15,902	15,772	15,814	15,901
Appropriated/Requested Amounts	15,992	15,439	15,902	15,238	15,864	15,848

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), P.L. 113-6 (FY2013 Appropriations), P.L. 113-76 (FY2014 Appropriations), and P.L. 113-235 (FY2015 Appropriations).

Note: FY2014 amounts are reported post-sequester operating amounts.

Airport Financing[6]

The federal government supports the development of airport infrastructure in three different ways. First, the AIP provides federal grants to airports for planning and development, mainly of capital projects related to aircraft operations such as runways and taxiways. Second, Congress has authorized airports to assess a local passenger facility charge (PFC) on each boarding passenger, subject to specific federal approval. PFC revenues can be used for a broader range of projects than AIP funds, including "landside" projects such as passenger terminals and ground access improvements. Third, federal law grants investors preferential income tax treatment on interest income from bonds issued by state and local governments for airport improvements (subject to compliance with federal rules). Airports may also draw on state and local funds and on operating revenues such as lease payments and landing fees.

[6] For a more extensive discussion of airport financing issues, see CRS Report R43327, *Financing Airport Improvements*, by (name redacted) and (name redacted)

Different airports use different combinations of AIP funding, PFCs, tax-exempt bonds, state and local grants, and airport revenues to finance particular projects. Small airports are more likely to be dependent on AIP grants than large or medium-sized airports. Larger airports are much more likely to issue tax-exempt bonds or finance capital projects with the proceeds of PFCs. Each of these funding sources places various legislative, regulatory, or contractual constraints on airports that use it. The availability and conditions of one source of funding may also influence the availability and terms of other funding sources. In a 2007 study, GAO found that bonds financed 50% of airports' capital spending, AIP 29%, PFCs 17%, state and local contributions 4%, and airport revenue 4%.[7]

Evaluating Capital Needs

The assessment of airport capital needs is fundamental to determining the appropriate federal support needed to foster a safe and efficient national airport system.[8] The federal government's interest goes beyond capacity issues to include implementation of federal safety and noise policies.

The U.S. passenger airline industry has seen a wave of bankruptcies and several major airline mergers since 2000, including the merger of American Airlines and U.S. Airways in 2013. Consolidation led to a reduction in the number of commercial flights between 2005 and 2009. Since that year, the number of commercial flights has been fairly steady, but at a level 15% to 18% lower than in 2005, as carriers have consolidated operations and eliminated some duplicative hubs and routes.[9] Government data indicate that domestic airlines have shown considerable capacity discipline; instead of adding flights, they have been flying fuller planes, with an average load factor over 83% in the first 10 months of 2014.[10] The reduced number of flights may ease the pressure on airport and air traffic control facilities. On the other hand, airlines' on-time performance does not appear to have improved with industry consolidation, suggesting that capacity issues continue to affect carrier performance in some geographic areas.[11]

Both FAA and the Airports Council International-North America (ACI-NA) have issued projections of airports' long-term financial needs. FAA estimated in its report that the national system's capital needs for FY2013-FY2017 will total $42.5 billion (an annual average of $8.5 billion). The ACI-NA capital needs survey resulted in an estimate of $71.3 billion over the same years (an annual average of $14.3 billion).[12] The main reason for the widely differing estimates was disparate views on what kinds of airport projects to include.

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[7] U.S. Government Accountability Office, *Airport Finance: Observations on Planned Airport Development Costs and Funding Levels and the Administration's Proposed Changes in the Airport Improvement Program*, GAO-07-885, 2007, p. 8.

[8] 49 U.S.C. §47103. See FAA, *Report to Congress: National Plan of Integrated Airport System (NPIAS) 2013-2017*, http://www.faa.gov/airports/planning_capacity/npias/.

[9] U.S. Government Accountability Office, *Airline Competition, The Average Number of Competitors in Markets Serving the Majority of Passengers Has Changed Little in Recent Years, but Stakeholders Voice Concerns about Competition*, GAO-14-515, June 2014, http://www.gao.gov/products/GAO-14-515.

[10] U.S. Department of Transportation, Bureau of Transportation Statistics (BTS), "Load Factor—"passenger-miles as a proportion of available seat-miles in percent (%)," http://www.transtats.bts.gov/Data_Elements.aspx?Data=5. Note: data for 2014 not complete.

[11] U.S. DOT, BTS, "On-Time Performance—Flight Delays at a Glance," http://www.transtats.bts.gov/HomeDrillChart.asp. Note: data for 2014 not complete.

[12] Airports Council International, *Airport Capital Development Needs: 2013-2017*, http://www.aci-na.org/sites/default/files/2013_capital_needs_survey_report.pdf.

The FAA estimate was based on information taken from airport master plans and state system plans, but FAA planners screened out planned projects not justified by aviation activity forecasts or not eligible for AIP grants. Only designated airports were included in the FAA study. Implicit in this methodology is that the planning has been carried through to the point where financing is identified. The ACI-NA study casts a substantially wider net. It includes projects funded by PFCs, bonds, or state or local funding; airport-funded air traffic control facilities; airport or Transportation Security Administration (TSA)-funded security projects; "necessary" AIP-ineligible projects such as parking facilities, hangars, revenue portions of terminals, and off-airport roads/transit facilities; and AIP-eligible projects for which AIP funding was not requested. These additions cause the ACI-NA estimate of capital needs to be far higher than the FAA estimate.

FAA has devoted particular attention to evaluating capital needs at the largest airports, which handle the vast majority of commercial passenger boardings. The agency has undertaken three studies to determine which improvements at major airports are most critical to increasing system capacity. The most recent such study, called FACT3, was released in January 2015.[13] FACT3 concluded that the nationwide air traffic system is more reliable and that congestion has been reduced, due to the combined effects of structural change in the airline industry as well as the addition of 18 new runways and 7 extended runways at the busiest hub airports since 2000. FACT3 indicated that while NextGen is helping to manage delays caused by airport congestion, new capacity and other solutions are still necessary to address traffic growth and reduce delays at some of the largest and busiest airports. The study also projects interim airport capacity needs in 2020 and long-term needs in 2030 among the nation's busiest airports. While it found that capacity constraints across the aviation system may not be as dire as in previous analyses, even with the latest improvements, several of the busiest airports would continue to be capacity-constrained in the near term, including all the New York City-area airports, Philadelphia International Airport, and Hartsfield-Jackson Atlanta International Airport.[14]

Airport Improvement Program (AIP)

The AIP provides federal grants to airports for airport development and planning. Participants range from very large publicly owned commercial airports to small general aviation airports that may be privately owned but are available for public use.[15] AIP funding is usually limited to construction of improvements related to aircraft operations, such as runways and taxiways. Commercial revenue-producing facilities are generally not eligible for AIP funding, nor are operating costs.[16] The structure of AIP funds distribution reflects congressional priorities and the objectives of assuring airport safety and security, increasing airport capacity, reducing congestion, helping fund noise and environmental mitigation costs, and financing small state and community airports.

[13] FACT3 is short for Future Airport Capacity Task, study 3. The previous reports are called FACT1 and FACT2.

[14] FAA, *FACT3: Airport Capacity Needs in the National Airspace System*, January 2015, http://www.faa.gov/airports/planning_capacity/media/FACT3-Airport-Capacity-Needs-in-the-NAS.pdf.

[15] General aviation airports do not serve military (with a few Air National Guard exceptions) or scheduled commercial service aircraft but typically do support one or more of the following: business/corporate, personal, instructional flying; agricultural spraying; air ambulances; on-demand air taxies; charter aircraft.

[16] For detailed guidance on allowable costs under the AIP, see Chapter 3 of the *AIP Handbook*, at http://www.faa.gov/airports/resources/publications/orders/media/aip_5100_38c.pdf.

The main financial advantage of the AIP to airports is that as a grant program, it can provide funds for capital projects without the financial burden of debt financing, although airports are required to provide a modest local match to the federal funds. Limitations on the use of AIP grants include the range of projects that the AIP can fund and the requirement that recipients adhere to all program regulations and grant assurances.

Federal law requires the Secretary of Transportation to publish a national plan for the development of public-use airports in the United States. This appears as a biannual FAA publication called the *National Plan of Integrated Airport Systems (NPIAS)*.[17] For an airport to receive AIP funds, it must be listed in the NPIAS.

AIP Funding

The AIP program structure and authorizations are set in FAA authorization acts. AIP spending authorized and the amounts made available for grants since FY1992 are illustrated in **Table 3**.

[17] According to FAA, 3,355 of the 19,786 airports in the United States are listed in the NPIAS.

Table 3. Annual AIP Authorizations and Amounts Made Available for Grants, FY1992-FY2013

($ millions)

Fiscal Year	Authorization	Grant Amounts Available
1992	$1,900	$1,900
1993	$2,025	$1,800
1994	$2,970	$1,690
1995	$2,161	$1,450
1996	$2,214	$1,450
1997	$2,280	$1,460
1998	$2,347	$1,700
1999	$2,410	$1,950
2000	$2,475	$1,851
2001	$3,200	$3,140
2002	$3,300	$3,223
2003	$3,400	$3,295
2004	$3,400	$3,294
2005	$3,500	$3,384
2006	$3,600	$3,424
2007	$3,700	$3,402
2008	$3,675	$3,471
2009	$3,900	$3,385
2010	$3,515	$3,378
2011	$3,515	$3,378
2012	$3,350	$3,199
2013	$3,350	$3,192
2014	$3,350	$3,194
2015	$3,350	

Sources: FAA, *AIP Annual Report of Accomplishments, 2009*, and data from FAA Airports Branch. Amounts made available for grants do not include obligations used for administration expenses, the Small Community Air Service Program, and some research funding.

After trending upward from FY1982 to FY1992, grant funding approved in annual appropriations declined through the mid-1990s as part of federal deficit reduction efforts, leaving large gaps between authorized AIP spending levels and the amounts the program was actually allowed to expend. This occurred despite provisions in place since 1976 designed to ensure that federal capital spending for airports is fully funded at the authorized level (see **Text Box**, "Current AIP Funding Guarantees").

The Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (AIR-21; P.L. 106-181), enacted in 2000, provided major increases in the AIP's authorization, starting in FY2001. During FY2001-FY2006, the AIP was funded near its fully authorized levels. The amount

available for grants peaked at $3.47 billion in FY2008. From FY2008 through FY2011, when the AIP was authorized by a series of authorization extension acts, appropriators set the program's annual obligation limitation at $3.515 billion.[18] The FAA Modernization and Reform Act of 2012 authorized funding through FY2015 at an annual level of $3.35 billion.

Current AIP Funding Guarantees

Historically, FAA authorization acts have included provisions designed to compel appropriators to both fully expend annual trust fund revenues and fully fund FAA's capital programs: the AIP and Facilities and Equipment (F&E).[19]

The current guarantee requires that total budget resources made available from the trust fund in any year (including appropriations and obligation limitations) for the AIP, F&E, research and development, and the trust fund share of FAA operations must be equal to the sum of 90% of the revenues for the year plus the amount calculated by subtracting the amount made available from the trust fund from the actual revenues received, based on the data from the fiscal year two years prior to the current fiscal year.

This guarantee is enforced by making it out of order in both the House and the Senate to consider any provision that does not adhere to the guarantees. Point-of-order enforcement provisions have had limited success in the past. This is largely because points of order may be waived by the Rules Committee in the House, and points of order are rarely raised against conference reports in the Senate.

Funding Distribution

The distribution system for AIP grants is complex. It is based on a combination of formula grants (also referred to as apportionments or entitlements) and discretionary funds.[20] Each year, the entitlements are first apportioned by formula to specific airports or types of airports. Once the entitlements are satisfied, the remaining funds are defined as discretionary funds. Airports apply for discretionary funds for projects in their airport master plans. Formula grants and discretionary funds are not mutually exclusive, in the sense that airports receiving formula funds may also apply for and receive discretionary funds. Grants are generally awarded directly to airports.

Entitlements (Formula Funds)

Entitlements are funds that are apportioned by formula to airports, and may generally be used for any eligible airport improvement or planning project. These funds are divided into four categories: primary airports, cargo service airports, general aviation airports, and Alaska supplemental funds. Each category distributes AIP funds by a different formula.

Most airports have up to three years to use their apportionments. Nonhub commercial service airports have up to four years. The formula distributions are contingent on an annual AIP obligation limitation of $3.2 billion or more. If this threshold is not met in a particular fiscal year, most formulas revert to prior authorized funding formulas.

Primary Airports. The apportionment for airports that board more than 10,000 passengers each year is based on the number of boardings (also referred to as enplanements) during the prior

[18] The obligation limitation or limitation on obligations is used to control annual AIP spending in place of an appropriation. The obligation limitation is a limit on the total amount of AIP contract authority that can be obligated in a single fiscal year. For practical purposes, the obligation limitation is analogous to an appropriation.

[19] See CRS Report RL33654, *Aviation Spending Guarantee Mechanisms*, by (name redacted)

[20] See U.S.C. 49 Chapter 471 and FAA, *Airport Improvement Program Handbook*, http://www.faa.gov/airports/resources/publications/orders/media/aip_5100_38c.pdf.

calendar year.[21] The amount apportioned for each fiscal year is equal to double the amount that would be received according to the following formulas:

- $7.80 for each of the first 50,000 passenger boardings;
- $5.20 for each of the next 50,000 passenger boardings;
- $2.60 for each of the next 400,000 passenger boardings;
- $0.65 for each of the next 500,000 passenger boardings; and
- $0.50 for each passenger boarding in excess of 1 million.

The minimum allocation to any primary airport is $1 million. The maximum is $26 million.[22]

Cargo Service Airports. Some 3.5% of AIP funds subject to apportionment are apportioned to airports served by all-cargo aircraft with a total annual landed weight of more than 100 million pounds. The allocation formula is the proportion of the individual airport's landed weight to the total landed weight at all cargo service airports.[23]

General Aviation Airports. General aviation, reliever, and nonprimary commercial service airports are apportioned 20% of AIP funds subject to apportionment. From this share, all airports, excluding all nonreliever primary airports, receive the lesser of the following:

- $150,000 or
- one-fifth of the estimated five-year costs for airport development for each of these airports as listed in the most recent NPIAS.

Any remaining funds are distributed according to a state-based population and area formula. FAA makes the project decisions on the use of these funds in consultation with the states. Although FAA has ultimate control, some states view these funds as an opportunity to address general aviation needs from a statewide, rather than a local or national, perspective.[24]

Alaska Supplemental Funds. Funds are apportioned to airports in Alaska to assure that Alaskan airports receive at least twice as much funding as they did under the Airport Development Aid Program in 1980.[25]

Forgone Apportionments. Large and medium hub airports that collect a passenger facility charge of $3 or less have their AIP formula entitlements reduced by an amount equal to 50% of their projected PFC revenue for the fiscal year until they forgo or give back 50% of their AIP formula grants. In the case of PFC above the $3 level, the percentage forgone is 75%. A special small airport fund, which provides grants on a discretionary basis to airports smaller than medium hub, gets 87.5% of these forgone funds. The discretionary fund gets the remaining 12.5%.

[21] Passenger enplanements are the total number of passengers boarding aircraft, including originating passengers as well as those changing aircraft.

[22] In a year in which the amount made available is below $3.2 billion, the amounts apportioned to primary airports are not doubled, the minimum apportionment returns to $650,000, and the maximum apportionment is $22 million.

[23] In a year in which the amount made available is below $3.2 billion, not more than 8% of cargo service apportionment may be apportioned to any one airport. Landed weight is the weight of the aircraft and its contents at landing.

[24] In any year in which the amount made available under Section 48103 is less than $3.2 billion, the formula reverts back to the amounts determined by the area and population formula set forth in Section 47114 (d) (1) and (2).

[25] In any year in which the amount made available under Section 48103 is less than $3.2 billion, Alaska Supplemental funds will be apportioned based on the way in which amounts were apportioned in the fiscal year ending September 30, 1980.

Discretionary Funds

The discretionary fund includes the money not distributed under the apportioned entitlements, as well as the forgone PFC revenues that were not deposited into the small airport fund. AIP discretionary funding for FY2014 was about 15% of total AIP funding. Discretionary grants are approved by FAA based on project priority and other selection criteria. **Figure 1** illustrates the composition of both apportioned and discretionary grants, based on FY2014 data.

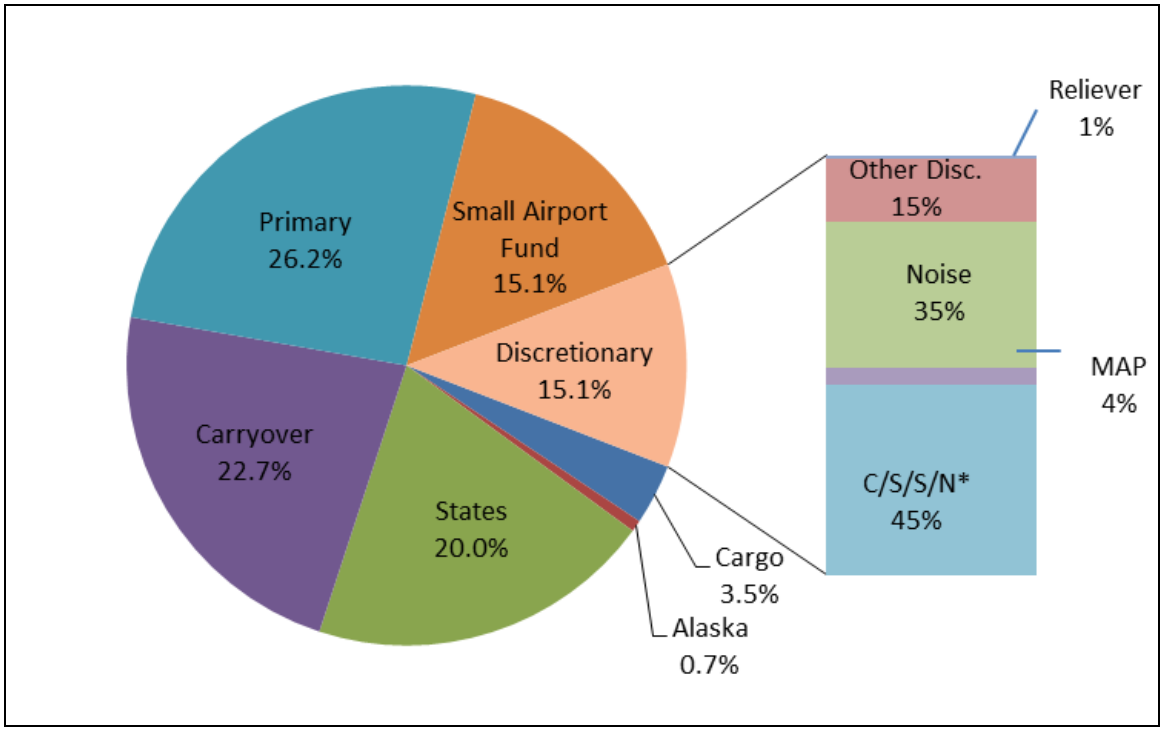
Despite its name, the discretionary fund is not allocated solely at FAA's discretion. Allocations are subject to the following three set-asides and certain other spending criteria:

- **Airport Noise Set-Asides.** At least 35% of discretionary funds are set aside for noise compatibility planning and for carrying out noise abatement and compatibility programs.
- **Military Airport Program.** At least 4% of discretionary funds are set aside for conversion and dual use of up to 15 current and former military airports. The program allows funding of some projects not normally eligible under the AIP.[26]
- **Grants for Reliever Airports.** There is a set-aside of two-thirds of 1% of discretionary funds for reliever airports in metropolitan areas suffering from flight delays.[27]

[26] The program is commonly referred to as MAP; see http://www.faa.gov/airports/aip/military_airport_program/.

[27] Reliever airports are high-capacity general aviation airports meant to provide general aviation pilots with alternatives to using congested hub airports. Reliever airports must have 100 or more based aircraft or 25,000 annual itinerant operations. These airports average 230 based aircraft. In total, 28% of the general aviation fleet in the United States is based at reliever airports.

Figure 1. FY2014 AIP Distribution: Entitlement and Discretionary Grants



Source: Data from FAA Airports Branch.

Notes: Carryover is also referred to as Protected Entitlement Funds. C/S/S/N = Capacity, Safety, Security, and Noise Abatement. Amounts may not add to 100% due to rounding.

The Secretary of Transportation is also directed to see that 75% of the grants made from the discretionary fund are used to preserve and enhance capacity, safety, and security at primary and reliever airports, and also to carry out airport noise compatibility planning and programs at these airports. From the remaining 25%, FAA is required to set aside $5 million for the testing and evaluation of innovative aviation security systems.

Subject to these limitations and the three set-asides, the Secretary of Transportation, through FAA, has discretion in distribution of grants from the remainder of the discretionary fund.[28]

State Block Grant Program[29]

Under this program, FAA provides funds directly to participating states for projects at airports classified as other than primary airports. Each participating state receives a block grant made up of the state's apportionment (formula) funds and available discretionary funds. A block grant program state is responsible for selecting and funding AIP projects at the small airports in the state. In making the selections, the participating states are required to comply with federal priorities. Each block grant state is responsible for project administration as well as most of the inspection and oversight roles normally assumed by FAA. The states that currently participate in

[28] For a description of FAA's process for selecting projects, see *26th AIP Annual Report of Accomplishments*, http://www.faa.gov/airports/aip/grant_histories/media/26th_AIP_Annual_Report_of_Accomplishments.pdf.

[29] 49 U.S.C. §47128. For program requirements, see 14 C.F.R. Part 156.

the state block grant program are Georgia, Illinois, Michigan, Missouri, New Hampshire, North Carolina, Pennsylvania, Tennessee, Texas, and Wisconsin.

The Federal Share of AIP Matching Funds

For AIP projects, the federal government share differs depending on the type of airport.[30] The federal share, whether funded by formula or discretionary grants, is as follows:

- 75% for large and medium hub airports (80% for noise compatibility projects);
- 90% for other airports;
- "not more than" 90% for airport projects in states participating in the state block grant program;
- 70% for projects funded from the discretionary fund at airports receiving exemptions under 49 U.S.C. Section 47134, the pilot program for private ownership of airports;
- 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;
- certain economically distressed communities receiving subsidized air service may be eligible for up to a 95% federal share of project costs.

This cost-share structure means that smaller airports pay a lower share of AIP-funded project costs than larger airports. The airports themselves must raise the remaining share from other sources.[31]

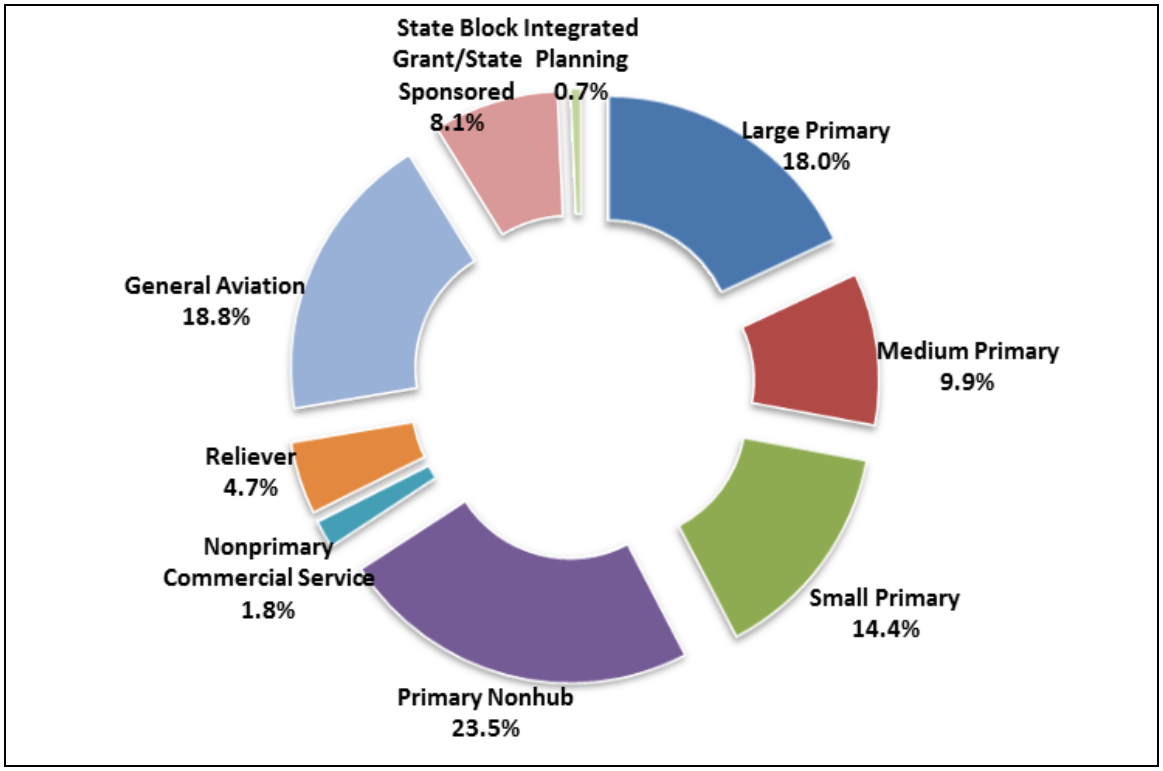
Distribution of AIP Grants by Airport Size

Although smaller airports' individual grants are of much smaller dollar amounts than the grants going to large and medium hub airports, the smaller airports are much more dependent on the AIP to meet their capital needs. This is particularly the case for noncommercial airports, which received over 30% of AIP grants distributed in FY2012. **Figure 2** shows the share of AIP grants awarded in FY2014, by value, broken out by airport type.

[30] 49 U.S.C. §47109.

[31] Higher federal shares are available to airports in states with large amounts of federal land; see 49 U.S.C. §47109(b).

Figure 2. FY2014 AIP Grant Distribution by Airport Type



Source: Data from FAA Airports Branch.

Grant Assurances

Airports' grant applications are conditioned on assurances regarding future airport operations. Examples of such assurances include making the airport available for public use on reasonable conditions and without unjust economic discrimination (against all types, kinds, and classes of aeronautical activities); charging air carriers making similar use of the airport substantially comparable amounts; maintaining a current airport layout plan; making financial reports to FAA; and expending airport revenue only on capital or operating costs at the airport.[32] Within the AIP context, assurances are a means of guaranteeing the implementation of federal policy.

Obligations derived from airports' assurances extend beyond the formal closure of AIP grant-supported projects. Obligations related to the use, operation, and maintenance of an airport remain in effect for the expected life of the improvement, up to 20 years. In the case of the purchase of land with AIP funds, the federal obligations do not expire.[33] Airports may request that FAA release them from their AIP contractual obligations. Typically, as a condition of the release, the airport sponsor must either reimburse the federal government for the AIP grants (in the case of

[32] 49 U.S.C. §47107. The layout plan must be approved by the Secretary of Transportation, as must any revision or modification. This, in effect, means that any AIP project must be written into the airport's plan. The nondiscrimination provision protects a wide variety of users including, for example, nighttime users and cargo carriers.

[33] Assurances that no carrier will receive exclusive rights, that airport revenue will be used at the airport, and that the airport will comply with civil rights protections continue in perpetuity.

land grants, the federal share of the fair market value of the land) or reinvest the amount in an approved AIP project.[34]

Decisions about which airport expansion projects are most justified have implications for the reauthorization of the AIP in 2015. Large runway projects can require long lead times—10 or more years from concept to initial construction is not unusual. At large and medium hub airports, runway projects are usually paid for, in part, by AIP funds. Therefore, some projects needed by 2025 may require AIP funding in earlier years. Because large and medium airports must forgo either 50% or 75% of their AIP formula entitlement funds if they levy passenger facility charges (see below), most federal funding for their runway projects will probably need to take the form of AIP discretionary funds. If the AIP budget is constrained in the future, either under a reauthorization bill or during the annual appropriations process, and the entitlement formulas remain as they are, the discretionary portion of the AIP budget may be squeezed, limiting large airports' ability to draw on AIP funds for major capacity expansion projects.

There are several ways Congress might shift AIP funds if it wishes to give priority to enhancing capacity at large and medium hub airports. One would be to eliminate the requirement that large and medium hub airports that impose the maximum PFCs forgo 75% of their entitlement. This change would give larger airports a greater share of entitlement funding, but at the cost of depleting the discretionary small airport fund and reducing AIP grants to small airports. Alternatively, changes in the statutory set-asides of discretionary funds could give FAA more flexibility to use that money for capacity enhancement, but might reduce funding for noise mitigation and other purposes.

Changes in the last several FAA authorization acts increased entitlements and broadened the range of landside projects eligible for AIP grants. These changes generally benefitted airports smaller than medium hub size. In particular, the increased amount of apportioned funds has limited the availability of funds for discretionary grants, such as those for operational evolution plan projects at major airports. Further changes giving airports increased flexibility in the use of their entitlements might benefit smaller airports not served by commercial aviation, in line with the national goal of having an "extensive" national airport system,[35] but this use of funds might conflict with the goal of reducing congestion at major commercial airports.

One way to reduce the amount of trust fund revenue needed for the AIP would be to allow large and medium hub airports to opt out of the AIP and rely exclusively on PFCs to finance capital projects. This would require raising or eliminating the federal cap on PFCs. These "defederalized" airports could then be released from some or all of the AIP grant assurances under which they now operate, such as land use requirements and airport revenue use restrictions.[36] If airports exit the program, AIP spending could be reduced or redirected to other airports.

[34] For a listing of the grant assurances, see http://www.faa.gov/airports/aip/grant_assurances/.

[35] *NPIAS*, p. 4. The NPIAS includes the attribute that "the airport system be extensive, providing as many people as possible with convenient access to air transportation, typically by having most commuters with no more than 20 miles of travel to the nearest NPIAS airport." Also see http://www.faa.gov/airports/planning-capacity/ga_study/.

[36] This approach is backed by the American Association of Airport Executives, *Eliminate Federal Cap on Local Passenger Facility Charges*, http://www.aaae.org/?e=showFile&l=GRSRWZ.

Passenger Facility Charges

In 1990, concerns that existing sources of funds for airport development would be insufficient to meet national needs led to authorization of a new user charge, the passenger facility charge (PFC). The PFC was seen as a complementary funding source to the AIP. The Aviation Safety and Capacity Expansion Act of 1990[37] allowed the Secretary of Transportation to authorize public agencies that control commercial airports to impose a fee on each paying passenger boarding an aircraft at their airports. Initially, there was a $3 cap on each airport's PFC and a $12 limit on the total PFCs that a passenger could be charged per round trip.

The PFC is a state, local, or port authority fee, not a federally imposed tax deposited into the Treasury.[38] Because of the complementary relationship between the AIP and PFCs, PFC provisions are generally folded into the sections of FAA reauthorization legislation dealing with the AIP. The money raised from PFCs must be used to finance eligible airport-related projects. Unlike AIP funds, PFC funds may be used to service debt incurred to carry out projects.[39]

Legislation in 2000 raised the PFC ceiling to $4.50, with an $18 limit on the total PFCs that a passenger can be charged per round trip. To impose a PFC above $3, an airport has to show that the funded projects will make significant improvements in air safety, increase competition, or reduce congestion or noise impacts on communities, and that these projects could not be fully funded by using the airport's AIP formula funds or AIP discretionary grants. Large and medium hub airports imposing PFCs above the $3 level forgo 75% of their AIP formula funds. PFCs at large and medium hub airports may not be approved unless the airport has submitted a written competition plan to FAA, which includes information about the availability of gates, leasing arrangements, gate-use requirements, controls over airside and ground-side capacity, and intentions to build gates that could be used as common facilities.

The FAA Modernization and Reform Act of 2012 included minor changes to the PFC program. The act made permanent the pilot program that authorized nonhub small airports to impose PFCs. The act also required GAO to study alternative means of collecting PFCs without including the PFC in the ticket price.[40]

Unlike AIP grants, of which over 70% in FY2014 went to airside projects (runways, taxiways, aprons, and safety-related projects), PFC revenues are heavily used for landside projects such as terminals and transit systems on airport property, and for interest payments. **Table 4** shows the AIP grant awards and PFC approvals by project type in FY2014. Annual system-wide PFC collections grew from $85.4 million in 1992 to $2.9 billion in 2014.[41]

[37] P.L. 101-508, Omnibus Budget Reconciliation Act of 1990, Title IX.

[38] Air carriers collect the PFCs for airports and are paid a small administrative fee.

[39] 49 U.S.C. §40117.

[40] GAO identified three alternative means of collecting PFCs, but found that none of the alternative methods was better than the existing collection method. See GAO-13-262R, *Alternative Methods for Collecting Airport Passenger Facility Charges*, February 14, 2013, http://www.gao.gov/products/GAO-13-262R.

[41] For PFC collections by year, see http://www.faa.gov/airports/pfc/monthly_reports/media/stats.pdf.

Table 4. Distribution of PFC Approvals and AIP Grants by Project Type, FY2014

Type of Project	Percentage of PFC	Percentage of AIP
Airside	13.7	72.9
Landside	30.2	11.0
Noise	0.5	3.8
Roads/Access	12.8	1.0
Interest on Bonds	42.8	—
Unclassified, State Block Grants, Misc.	—	11.3
Total	100.0	100.0

Source: FAA, Airports Branch.

The PFC statutory language lends itself to a broader interpretation of "capacity enhancing" projects, and the implementing regulations are less constraining than those for AIP funds. Air carriers, which historically have preferred funding to be dedicated to airside projects, must be notified and provided with an opportunity for consultation about airports' proposals to fund projects with PFC revenues. They are generally less involved in the PFC project planning and decision-making process than is the case with AIP projects. The difference in the pattern of project types may also be influenced by the fact that larger airports, which collect most of the PFC revenue, tend to have substantial landside infrastructure, whereas smaller airports that are much more dependent on AIP funding have comparatively limited landside facilities.

The central legislative issue related to PFCs is whether to raise the $4.50 per enplaned passenger ceiling or to eliminate the ceiling altogether. In general, airports argue for increasing or eliminating the ceiling, whereas most air carriers and some passenger advocates oppose higher limits on PFCs. A GAO study released in January 2015 modeled several scenarios of higher PFCs, and found that raising the cap would significantly increase PFC collections available to airports. However, the GAO report suggests that higher PFCs could also marginally slow passenger growth, and therefore the growth in revenues to the Airport and Airway Trust Fund.[42]

The permissible uses of revenues are an ongoing point of contention. Airport operators, in particular, would like more freedom to use PFC funds for off-airport projects, such as transportation access projects, and want the process of obtaining FAA approval to be streamlined. Carriers, on the other hand, often complain that airports use PFC funds to finance proposals of dubious value, especially outside airport boundaries, instead of high-priority projects that offer meaningful safety or capacity enhancements. The major air carriers are also unhappy with their limited influence over project decisions, as airports are required only to consult with resident air carriers instead of having to get their agreement on PFC-funded projects.

Airport Privatization[43]

Almost all commercial service airports in the United States are owned by local and state governments, or by public entities such as airport authorities or multipurpose port authorities.[44] In

[42] *Commercial Aviation: Raising Passenger Facility Charges Would Increase Airport Funding, but Other Effects Less Certain*, GAO-15-107, December 2014, http://www.gao.gov/products/GAO-15-107.

[43] For more complete discussion of this subject, see CRS Report R43545, *Airport Privatization: Issues and Options for Congress*, by (name redacted).

1996, Congress established the Airport Privatization Pilot Program (APPP)[45] to explore the prospect of privatizing publicly owned airports and using private capital to improve and develop them. In addition to reducing demand for government funds, privatization has been promoted as a way to make airports more efficient and financially viable.

Participation in the APPP has been limited. Two airports have completed the privatization process, and one of them later reverted to public ownership. Owners of other airports considered privatization, but eventually chose not to proceed. The lack of interest in privatization among U.S. airports could be the result of (1) readily available financing sources for publicly owned airports; (2) barriers or lack of incentives to privatize; (3) the potential implications for major stakeholders; and (4) satisfaction with the status quo.

Privatization refers to the shifting of governmental functions, responsibilities, and sometimes ownership, in whole or in part, to the private sector. With respect to airports, "privatization" can take many forms up to and including the transfer of an entire airport to private operation and/or ownership. In the United States, most cases of airport privatization fall into the category of "partial privatization"; full privatization, either under or outside the APPP, has been rare.

Types of Airport Privatization

Airport privatization has taken four generic forms:

- **Service Contracts.** Many U.S. airports outsource some noncore operations to private firms that specialize in those functions. Examples of operations that are frequently outsourced are cleaning and janitorial services, airport landscaping, shuttle bus operations, and concessions in airport terminals. Outsourcing of service contracts is probably the most common type of privatization among U.S. airports.
- **Management Contracts.** Some airports engage the management expertise of the private sector by contracting out specific facilities or responsibilities such as parking, terminal concessions, terminal operations, airfield signage, fuel farms, and aircraft refueling. In a few cases, a private management company has been awarded a contract to manage an entire airport for a specified term.
- **Developer Financing/Operation.** A wide range of contracts has been used to involve the private sector in providing financing, development, operation, and maintenance services. This is also known as the Design-Build-Finance-Operate-Maintain (DBFOM) model. Airport DBFOM examples include passenger terminals (notably Terminal 5 at Chicago O'Hare International Airport and Terminal 4 at New York John F. Kennedy International Airport), parking garages, and rental car facilities.[46]
- **Long-Term Lease or Sale.** Full privatization involves the sale or long-term lease of an airport to a private owner or operator. Under a long-term lease or concession agreement, the airport owner grants full management and

(...continued)

[44] Commercial service airports are publicly owned airports that receive scheduled passenger service and board at least 2,500 passengers a year. Branson Airport in Branson, MO, is the only privately funded, privately developed, and privately operated commercial passenger airport in the United States.

[45] 49 U.S.C. §47134; Section 149 of the Federal Aviation Reauthorization Act of 1996; P.L. 104-264.

[46] Airport Cooperative Research Program (ACRP) Report 66, "Considering and Evaluating Airport Privatization," p. 4.

development control to the private operator in exchange for capital improvements and other obligations such as an up-front payment and/or profit-sharing arrangements. Under a full sale, ownership and full responsibility for operation, capital improvements, and maintenance would be transferred to a private buyer. Several airports in Europe have been privatized in this way, but there have been no sales of commercial service airports in the United States.

The Interests at Stake

Airport privatization, especially in the case of long-term lease or sale, involves four major stakeholders: airport owners, which in the United States are mostly local or regional governments or public entities; air carriers; private investors; and the federal government. These stakeholders ultimately decide whether a privatization deal goes forward, but they tend to have different objectives and, in many cases, divergent interests. Airline passengers may experience the effect of privatization via, for example, airport concession offerings, operational efficiency, and changes in prices and fees, but passenger interests are usually not represented formally in discussions of privatization.

Airport owners, who are usually local governments, might embrace privatization as a source of revenue, but federal regulations generally require that lease or sale revenue from airport privatization be used only for airport purposes (unless the majority of airlines agrees otherwise, under the APPP). On the other hand, privatization involves surrendering control of an economically important facility. Reducing or eliminating responsibilities of the public agency or authority that owns the airport may lead to the loss of public-sector jobs. Hence a public-sector owner may see few benefits from selling or leasing an airport to a private operator unless the facility is losing money—and in that case, private investors might not find the airport an attractive investment. The APPP encourages privatization by granting certain exemptions to public-sector owners with regard to revenue diversion and other obligations.

Air carriers, including both scheduled passenger airlines and cargo airlines, would like to keep their costs low. They also want to have some control over how airport revenues are used, especially to ensure that the fees paid by themselves and their customers are used for airport-related purposes. Their interest in low landing fees and low rents for ticket counters and other facilities may be contrary to the interest of potential private operators in increasing revenue. At the same time, however, air carriers have an interest in ensuring that the airports they use are well maintained and carefully managed. They might have reason to support a proposed privatization if they thought it would result in lower charges, better airport services, or increased efforts to promote the airport.

Private investors and operators expect a financial return on their investments. They will be looking above all at growth potential such as opportunities to bring additional flights to the airport, to earn additional lease revenue by improving amenity offerings such as shopping and dining for passengers, or to draw more freight traffic by offering lower fees or improved facilities. If they attempt to increase profitability by raising landing fees or rents, that may bring them into conflict with air carriers using the airport.

The federal government, represented by FAA, has been directed by Congress to engage private capital in aviation infrastructure development and reduce reliance on federal grants and subsidies. However, FAA also has statutory mandates to maintain the safety and integrity of the national air transportation system and to enforce compliance with commitments, known as "grant assurances," that airports have made to obtain grants under the AIP. Thus FAA is likely to carefully examine privatization proposals that might risk closures of runways or airports or

otherwise reduce aviation system capacity, or that appear to favor certain airport users over others.

The divergent interests of stakeholders are a significant issue in privatization. Striking a balance among these interests while facilitating privatization is one of the purposes of the APPP.

The Airport Privatization Pilot Program (APPP)

Section 149 of the Federal Aviation Reauthorization Act of 1996 (49 U.S.C. §47134; P.L. 104-264) authorizes the FAA Administrator to exempt participating airports from all or part of the requirements to use airport revenue for airport-related purposes, to repay federal grants, or to return airport property acquired with federal assistance upon the lease or sale of the airport deeded by the federal government.[47] The law originally limited participation in the APPP to no more than five airports. The FAA Modernization and Reform Act of 2012 (P.L. 112-95) increased the number of airports that may participate from 5 to 10. Only one large hub commercial airport may participate in the program, and that airport may only be leased, not sold. Only general aviation airports can be sold under the APPP.

Table 5 provides a comparison of the requirements and regulations governing airport privatization under and outside the APPP.

Table 5. Full Airport Privatization Under the APPP vs. Outside the APPP

	Full Privatization Under APPP	Full Privatization Outside APPP
Eligible Airports	A maximum of 10 airports may participate, among which only one may be a large hub airport. One slot is reserved for a general aviation airport. Commercial airports may only be leased; general aviation airports may be sold.	No restrictions on number or type of airports.
Use of Sale/Lease Proceeds	Airports can request U.S. Department of Transportation (DOT) approval to use sale/lease proceeds for nonairport purposes. For commercial service airports, this also requires consent of 65% of airlines. For general aviation airports, this requires consultation with owners of aircraft based at the airport.	Sale/lease proceeds are considered airport revenue, and must be used for airport purposes.
Grant Repayment	DOT may grant exemptions from existing repayment obligations. Airports must abide by other grant assurance obligations.	DOT cannot grant exemptions from grant assurance obligations or existing repayment obligations.
AIP Formula Grants	Private operator is eligible for grants from AIP formula funds, but at a lower federal share.	Private operator may be eligible for grants from AIP formula funds under certain conditions such as when a privately owned airport is used for public purpose as a reliever or provides at least 2,500 passenger boardings a year.

[47] For a primary airport, the use of airport revenue for airport-related purposes requires approval by 65% of the scheduled air carriers serving the airport and by the scheduled and unscheduled air carriers representing 65% of the total landed weight of all aircraft serving the airport in the preceding calendar year. For more information about the APPP, see http://www.faa.gov/airports/airport_compliance/privatization/.

	Full Privatization Under APPP	Full Privatization Outside APPP
Rates or Charges on Airlines	Rates on airlines may not rise faster than the inflation rate without consent of 65% of airlines. Rate increases for general aviation aircraft owners may not exceed percentage rate increase for airlines.	Rates and charges must be reasonable and not unjustly discriminatory, pursuant to grant assurances.
Charges on Passengers	Private operator is authorized to impose, collect, and use revenue from passenger facility charges (PFCs).	Private operator is authorized to impose charges on passengers (subject to reasonableness and nondiscrimination requirements of the grant assurances), but not to impose, collect, or use PFCs.

Source: Federal Aviation Administration.

Participation in APPP

The APPP has had limited success in increasing the number of privately run airports. Since its inception, 10 airports have applied to enter the APPP; two have completed the entire privatization process. One of these later reverted to public ownership. **Table 6** lists the APPP applicants and their status.

Table 6. Participation in the APPP

(as of December 2014)

Status	Airport	Location	Application Results
Inactive	Brown Field Municipal Airport	San Diego, CA	Application withdrawn in 2001.
Inactive	Chicago Midway International Airport	Chicago, IL	Application withdrawn in 2013.
Inactive	Gwinnett County Briscoe Field Airport	Lawrenceville, GA	Application withdrawn in 2012.
Active*	Hendry County Airglades Airport	Clewiston, FL	In August 2014, FAA approved management contract between county and private operator, pending submission of final APPP application by the county.
Inactive	Louis Armstrong New Orleans International Airport	New Orleans, LA	Application withdrawn in 2010.
Privatized*	Luis Muñoz Marín International Airport	San Juan, Puerto Rico	Preliminary approved in December 2009; final application approved in February 2013. Privatized under long-term lease.
Inactive	New Orleans Lakefront Airport	New Orleans, LA	Application terminated in 2008.
Inactive	Niagara Falls International Airport	Niagara Falls, NY	Application withdrawn in 2001.
Inactive	Rafael Hernandez Airport	Aguadilla, Puerto Rico	Application withdrawn in 2001.
Inactive	Stewart International Airport	Newburgh, NY	Airport privatized in 2000 after FAA approval; reverted to public operation in 2007.

Source: Federal Aviation Administration; U.S. Government Accountability Office, *Airport Privatization*, GAO-15-42, November 2014.

Notes: The rows marked with an asterisk represent the two active participants as of December 2014. FAA terminated New Orleans Lakefront Airport's application when the airport missed the deadline to submit additional materials.

Stewart International Airport

In 2000, Stewart International Airport in Newburgh, NY, became the first commercial service airport privatized under the APPP. National Express Group PLC, a U.K.-based transportation company, made an initial $35 million up-front payment to the owner, the State of New York, for a 99-year lease, and agreed to pay the state 5% of the airport's gross income on the lease's 10th anniversary or after 1.38 million passengers used the airport, whichever occurred first. National Express Group also made $10 million in capital contribution during its operation of the airport.[48] Unable to obtain airline approvals to use airport revenue for general purposes, the airport owner, the State of New York, agreed to use the lease payments for airport purposes and to recoup past subsidies for Stewart Airport and other state-owned airports in accordance with FAA's revenue use policy.[49]

National Express apparently was unsuccessful in increasing passenger traffic at Stewart; according to FAA data, the airport registered 274,126 enplanements in 2000, the year National Express assumed management, but only 156,638 six years later.[50] The company's attempt to make the airport more attractive to passengers going to and from New York City by renaming it "New York-Hudson Valley International Airport" was abandoned amid local opposition.[51]

In 2006, National Express decided to focus its U.S. efforts on school bus operations, and moved to dispose of its lease on Stewart.[52] The following year, the Port Authority of New York and New Jersey purchased the remaining term of the lease for $78.5 million. Although National Express never disclosed the profitability of its operation at Stewart, the Port Authority reported a $0.8 million loss in 2007, when it ran the airport for part of the year, and a $5.5 million loss in 2008, its first full year of operation.[53] This suggests that the operation may not have been profitable for the private owner. However, National Express booked a profit of £16.2 million (approximately $33 million at the time) on the sale to the Port Authority, suggesting that it earned a significant return on its investment.[54]

Luis Muñoz Marín International Airport

Luis Muñoz Marín International Airport, a medium hub airport in San Juan, Puerto Rico, is the only commercial service airport operating under private management after privatization under the APPP. FAA approved the final privatization contract in February 2013.

[48] Airport Cooperative Research Program (ACRP) Report 66, "Considering and Evaluating Airport Privatization," pp. 43-44 and pp. 86-87. FAA, *Report to Congress on the Status of the Airport Privatization Pilot Program, 49 U.S.C. §47134*, August 2004, p. 7.

[49] New York Department of Transportation, "Governor Pataki Hands Stewart Airport Keys to National Express (Orange County)," press release, March 31, 2000.

[50] See http://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger/.

[51] See http://ulstercountyny.gov/sites/default/files/documents/143-06.pdf.

[52] National Express Group, *Interim Report 2006*, p. 6.

[53] Port Authority of New York and New Jersey, *Annual Report 2007*, p. 94, and *Annual Report 2008*, p. 90.

[54] National Express Group, *Annual Report and Accounts 2007*, p. 66.

The private operator, Aerostar Airport Holdings,[55] paid $615 million in up-front proceeds to the Puerto Rico Ports Authority, and is to pay a further $600 million from revenue sharing over the 40-year lease. Aerostar also agreed to a $1.2 billion capital plan including a $200 million terminal reconfiguration within the first two years.

Hendry County Airglades Airport

The only airport currently seeking approval for privatization under the APPP is Hendry County Airglades Airport in Clewiston, FL. This general aviation airport received preliminary approval from FAA in October 2010. In August 2014, FAA approved a management contract between Hendry County and Airglades International Airport LLC, pending Hendry County's submission of the final APPP application. Airglades International Airport LLC is controlled by owners of adjacent sugar plantations who intend to build an additional runway and construct a perishable air cargo complex, factories, warehouses, and housing on land near the airport.[56]

Chicago Midway Airport

The APPP slot reserved for a large hub commercial airport was once taken by Chicago Midway Airport, but its privatization efforts never materialized. The City of Chicago received airline approval to lease its city-owned Midway International Airport to private investors. On October 3, 2006, FAA authorized the city to select a private operator, negotiate an agreement, and submit a final application under the pilot program.[57] On October 8, 2008, the Chicago City Council agreed to a $2.52 billion, 99-year lease with Midway Investment and Development Corporation (MIDCo), a consortium led by Citigroup Inc., John Hancock Life Insurance Co., and a unit of Vancouver (British Columbia) International Airport. The deal was delayed due to the inability of the consortium to secure financing during the global economic crisis. The lease agreement was terminated when the group missed the April 6, 2009, payment deadline. MIDCo had to pay a $126 million penalty to the city.[58]

A renewed effort to lease Midway was abandoned in 2013 after one of the two bidding groups dropped out. The city then announced that it would suspend plans to lease the airport. On September 9, 2013, the City of Chicago withdrew its preliminary privatization application. This opened up the APPP slot reserved for a large hub airport.

Why Has the APPP Not Stimulated Privatization?

Over its 18-year history, the APPP has not been successful in stimulating wide interest in airport privatization. The program's modest results appear to have several causes.

[55] Aerostar Airport Holdings LLC is jointly owned by Aeropuerto de Cancún S.A. de C.V. and Highstar Capital. Aeropuerto de Cancún S.A. de C.V. is a subsidiary of Grupo Aeroportuario del Sureste S.A.B. de C.V. of Mexico. It operates the Cancún Airport. For more information on the lease, see FAA Docket 2009-1144, "Record of Decision for the Participation of Luis Muñoz Marín International Airport, San Juan, Puerto Rico, in the Airport Privatization Pilot Program," February 25, 2013.

[56] http://www.airgladesea.com/wp-content/uploads/2013/08/Display-Boards-Airglades-EA-Scoping-Meeting.pdf.

[57] See FAA, "Fact Sheet: Chicago Midway Airport Pilot Privatization Program," *FAA News*, April 2008.

[58] Airport Cooperative Research Program (ACRP) Report 66, *Considering and Evaluating Airport Privatization*, p. 44.

APPP Application Process

Applying to privatize an airport under the APPP, as reported by FAA, makes the transfer from public to private ownership too "time consuming" and presents risks that could cause a potential deal to fail.[59] The process may take years to complete. In the cases of Luis Muñoz Marín International Airport and Hendry County Airglades Airport (see "Application Results" in **Table 6**), more than three years will have elapsed from preliminary application to final FAA approval, and informal discussions with FAA may have consumed additional time prior to the filing of the preliminary applications.

The application process begins with an airport filing a preliminary application for FAA approval, upon which one of the 10 slots available under the APPP is reserved for that airport. The preliminary application must include a summary of privatization objectives, a description of the process and a timetable, current airport financial statements, and a copy of the airport owner's request for potential private operators to submit proposals. FAA has 30 days to review the preliminary application.

Once an airport receives preliminary approval, it then may select a private operator from among those offering proposals, negotiate an agreement, and submit a final application to FAA. There is no timeline as to how quickly FAA must complete its review of the final application. After FAA gives notice of its proposed approval of the final application and lease agreement in the *Federal Register*, there is a 60-day public review and comment period. After that, FAA completes its review and prepares its Findings and Record of Decision (ROD), in which it addresses the public comments and publishes the details of its decision.[60]

Regulatory Conditions and Obligations

Airport privatization under the APPP has a number of regulatory requirements. These requirements may have lessened airport owners' and/or investors' interest in privatization. They include the need for 65% of air carriers serving the airport[61] to approve a lease or sale of the airport; restrictions on increases in airport rates and charges that exceed the rate of increase of the Consumer Price Index (CPI); and a requirement that a private operator comply with grant assurances made by the previous public-sector operator to obtain AIP grants.[62] In addition, after privatization, the airport will be eligible for AIP formula grants to cover only 70% of the cost of improvements, versus the normal 75%-90% federal share at publicly owned airports. This serves as a disincentive to privatize an airport because it will receive less federal money after privatization.

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[59] U.S. Department of Transportation, Federal Aviation Administration, *Report to Congress on the Status of the Airport Privatization Pilot Program, United States Code, Title 49, Section 47134*, August 2004, p. 1; Matthew Hummer, "Airport Privatization: A Plan to Help Fill a $50 Billion-Plus Investment Gap," Bloomberg Government, December 20, 2011, p. 13.

[60] For details of the APPP application procedures, see http://www.faa.gov/airports/resources/publications/federal_register_notices/media/obligation_private97.pdf.

[61] Approval must be granted both by 65% of the air carriers using the airport and by carriers collectively accounting for 65% of the landed weight during the previous year.

[62] Examples of grant assurances include making the airport available for public use on reasonable conditions and without unjust economic discrimination (against all types, kinds, and classes of aeronautical activities); charging air carriers making similar use of the airport substantially comparable amounts; maintaining a current airport layout plan; making financial reports to FAA; and expending airport revenue only on capital or operating costs at the airport. For a listing of the AIP grant assurances, see http://www.faa.gov/airports/aip/grant_assurances/.

Adequate Access to Funding

In surface transportation, a key purpose of privatization is to attract private capital to supplement public spending that is insufficient to provide the desired level of construction and maintenance.[63] In general, lack of resources has been a far less important issue for airport operators than for highway and public transportation agencies.

Publicly owned airports have access to five major sources of funding. The AIP provides federal grants to airports for planning and development, mainly of capital projects related to aircraft operations, such as runways and taxiways.[64] Local passenger facility charges of up to $4.50 per boarding passenger, imposed pursuant to federal law, can generate revenue for a broad range of projects including "landside" projects on airport property such as passenger terminals and ground access improvements, and for interest payments. Tax-exempt bonds, often secured by airport revenue, offer less costly financing than is generally available to private entities. Tenant leases, landing fees, and other charges are important revenue sources at some airports. Many airports, especially smaller ones, also benefit from state and local grants.[65]

These financing arrangements have important implications for airport privatization.

- If a publicly owned airport were to be privatized outside the APPP, its private operator may not be eligible to receive AIP formula funds and may have to draw on its own resources to improve runways and taxiways. The operator would not be entitled to issue bonds with federal tax-exempt status, and would therefore have to pay higher interest rates on its bonds than a public-sector operator. On the other hand, the private operator would have relative freedom to impose passenger usage fees and to increase landing fees, rents, and other charges, so long as this was not done in a discriminatory fashion.
- An airport privatized under APPP would continue to have access to federal AIP grants, although the private operator would have to provide a 30% match, considerably more than the 10%-25% matches required of publicly owned airports. The operator would not be entitled to issue bonds with federal tax-exempt status, and would therefore have to pay higher interest rates on its bonds than a public-sector operator. It could continue to collect passenger facility charges, but could not impose charges higher than those authorized by federal law. Its ability to raise fees paid by air carriers would be constrained.

These limitations are largely the consequence of federal laws. They may explain why airport privatization has been less attractive in the United States than in Europe and Canada.

Several European countries and Canada have undertaken notable steps in airport privatization. Two factors that have facilitated privatization in other countries do not exist in the United States. First, many of the major airports that have been privatized in Europe and Canada were previously owned by national governments, not by local or provincial governments, so the decision to privatize did not need to be taken at multiple levels of government. Second, the tax-favored status

[63] See CRS Report R43410, *Highway and Public Transportation Infrastructure Provision Using Public-Private Partnerships (P3s)*, by (name redacted).

[64] For more discussion of the AIP and airport financing, see CRS Report R43327, *Financing Airport Improvements*, by (name redacted) and (name redacted)

[65] U.S. Government Accountability Office, *Airport Finance: Observations on Planned Airport Development Costs and Funding Levels and the Administration's Proposed Changes in the Airport Improvement Program*, GAO-07-885, 2007, p. 8.

of debt issued by U.S. state and local governments has no analogue in most other countries, so the shift from public to private ownership did not necessarily entail higher borrowing costs, as it would in the United States.

Policy Issues Related to Privatization

Congress has been interested in airport privatization as a way to save money by making airports less dependent on federal assistance while also, in the long run, increasing the nation's aviation capacity to meet growing demand for air travel. However, under current federal law, privatization has struggled to achieve these goals.

Privatization outside the framework of the APPP is generally unattractive to both airport owners and potential investors, as it is likely to result in higher financing costs and loss of federal AIP grants, and will not provide the public-sector owner with revenues that can be used for other purposes. Privatization within the framework of the APPP may generate minor reductions in federal outlays due to the requirement for a privately run airport to match a larger share of federal AIP grants, but it is not clear that privatization serves the interests of public-sector owners or air carriers, except in cases where the airport is losing money or the owner can channel the proceeds of privatization into capital projects at other airports. Private investors' ability to earn money from an airport privatized under the APPP is limited by restrictions on passenger facility charges and limitations on increases in other airport fees.

Streamlining the APPP application and review process might make privatization somewhat more attractive by reducing the risks arising from a long application period, such as changes in economic and capital market conditions. However, significantly increasing interest in airport privatization is likely to require structural change to the existing airport financing system. Options might include the following:

- **Offering the same tax treatment to private and public airport infrastructure bonds.** This could be done by eliminating the current federal income tax exemption of interest on bonds issued by public-sector airport owners or by extending tax-exempt or tax-preferential treatment to airport infrastructure bonds issued by private investors. Either change would eliminate a major disincentive to shift airports from public to private ownership. On the other hand, removing the tax exemption on public-sector airport bonds would raise airports' financing costs, while extending it to private-sector bonds could have consequences for federal revenues.
- **Changing AIP requirements.** Reducing the percentage match private operators must provide to obtain AIP grants to the level of comparable public operators would make privatization more attractive to private investors, but would increase their share of federal funding.
- **Relaxing AIP grant assurances.** If private investors were freed from some of the requirements agreed to by the public owner in order to obtain AIP funding, privatization might become more attractive to investors. However, some of the changes that might be most attractive to investors, such as allowing the sale of airport property, might interfere with the federal interest in maintaining aviation system capacity and safety.
- **Liberalizing rules governing fees.** Allowing privatized airports more flexibility to impose passenger facility charges and to raise rents and landing fees would make privatization more attractive to investors. However, this might increase

airline opposition to privatization and could lead to higher costs for passengers and air cargo shippers.

- **Easing limits on the use of privatization revenue.** Reducing the obstacles for public-sector owners to use privatization revenue for nonairport purposes would stimulate local and state government interest in privatization. On the other hand, it could potentially lead to a lower level of investment in aviation infrastructure.

Aircraft Noise Issues

Noise from aircraft taking off and landing is an issue at many airports. Under the National Environmental Policy Act (NEPA), FAA and airport operators are required to assess environmental impacts, including noise impacts, associated with federally funded airport projects and airspace redesigns. Noise has been a contentious issue in the redesign of airspace in the New York City, New Jersey, and Philadelphia region. Similarly, noise concerns have been raised regarding a number of airport expansion projects, including the completion of a new runway at Chicago's O'Hare International Airport in 2013.

The number of residents in the United States exposed to significant amounts of aircraft noise has declined precipitously, from about 7 million in 1975 to an estimated 320,000 in 2012.[66] Major reductions in aircraft noise levels have been achieved over the past 30 years. Louder Stage 2 airliners over 75,000 pounds were phased out in the 1990s, and a provision in the FAA Modernization and Reform Act of 2012 required that all jet airplanes, regardless of size, meet quieter Stage 3 or Stage 4 noise standards by the end of 2015. Newly introduced aircraft types must meet Stage 4 noise standards, and FAA plans to issue rules for even more stringent Stage 5 noise standards.[67] Noise reductions have been achieved through quieter engine technologies, greater use of lightweight aircraft materials, and advances in aerodynamics. FAA, in cooperation with the National Aeronautics and Space Administration and industry, has invested in the research and development of quiet aircraft technologies.

While reducing aircraft noise emissions has been highly successful and new aircraft are significantly quieter than their predecessors, the volume of air traffic, particularly around major airports, has increased over the past 30 years. Historically, Congress has addressed airport noise concerns by setting aside 35% of discretionary funding under the AIP for noise mitigation and abatement. Generally, these funds may be used only within the Day Night Average Sound Level (DNL)[68] 65 decibel (dB) noise impact area around an airport. Proposals to grant FAA the flexibility to fund noise mitigation projects in areas with lower DNL levels would enable it to support additional abatement projects, but could divert resources from capacity and safety projects. A related issue is whether to make the planning for noise-mitigating air traffic control procedures at individual airports eligible for AIP funding.

[66] https://www.faa.gov/about/office_org/headquarters_offices/apl/noise_emissions/airport_aircraft_noise_issues/.

[67] https://www.faa.gov/about/office_org/headquarters_offices/apl/noise_emissions/airport_aircraft_noise_issues/levels/.

[68] Day Night Average Sound Level (DNL) is the standard federal metric for determining cumulative exposure to noise. DNL is the 24-hour average sound level in decibels (dB), with a 10-dB adjustment (penalty) added to each aircraft operation occurring during nighttime hours (10 p.m. to 7 a.m.).

The Next Generation Air Transportation System (NextGen)

NextGen refers to the Next Generation Air Transportation System, a large-scale modernization of air traffic technologies and procedures intended to expand national airspace system capacity to meet future demand. 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. Initiated in legislation in 2003 (see P.L. 108-176), the NextGen system targets full-scale implementation by 2025.

With regard to air traffic management, the goals of NextGen include

- reduced air traffic separation;
- flexible spacing and sequencing of aircraft, both in the air and on the ground;
- increased utilization of airspace, airports, and runways, particularly those that are currently underutilized;
- improved and tailored weather forecasts; and
- reductions in environmental impacts of noise and emissions.[69]

In 2003, Vision 100—Century of Aviation Reauthorization Act (P.L. 108-176) established an interagency Joint Planning and Development Office (JPDO) within FAA to develop and implement an integrated plan for the Next Generation Air Transportation System (NGATS, now known as NextGen) capable of meeting the needs associated with projected air traffic demands in 2025. The act also established a senior policy committee to consult with industry stakeholders and advise the Secretary of Transportation on goals and strategic objectives for transforming the national airspace system to meet future needs and provide policy guidance to the JPDO.

In 2004, the JPDO released its first iteration of the Integration National Plan for NextGen. The NextGen integrated plan, as envisioned, seeks to ensure that the NextGen system meets air transportation safety, security, mobility, efficiency, and capacity needs by 2025. It contends that if steps are not taken to alleviate air travel congestion through NextGen in concert with airport capacity expansion, the annual cost to consumers related to air traffic delays and flight cancellations could be as high as $20 billion by 2025.[70]

The FAA Modernization and Reform Act of 2012 refined and expanded several facets of NextGen implementation. It established the position of Chief NextGen Officer within FAA, and redesignated the JPDO director as Associate Administrator for NextGen Planning and Development and Interagency Coordination. The act required the NextGen Senior Policy Committee to submit annual progress reports to Congress. It also ordered a U.S. Department of Transportation Office of Inspector General (DOT OIG) review of the Automated Dependent Surveillance (ADS-B) ground system installation and deployment of ADS-B services, and a National Research Council review of the enterprise architecture for NextGen. The act directed FAA to accelerate the deployment of NextGen technologies and procedures at airports with implementation schedules to complete the process by July 2015 at the nation's busiest airports, and by July 2016 at other airports. The legislation defined specific national airspace performance

[69] U.S. Department of Transportation. *Integrated National Plan for the Next Generation Air Transportation System*, December 12, 2004.

[70] Ibid.

metrics that FAA must track. Other provisions required FAA to evaluate the role of airport surveillance technologies in the implementation of NextGen airport surface operations management; authorized the establishment of a NextGen research and development center of excellence; and authorized public-private partnerships to leverage and maximize private-sector capital for the purpose of equipping general aviation and commercial aircraft with NextGen avionics. FAA is to report to Congress on its initiatives to encourage NextGen equipage, including policies that give priority handling to ADS-B-equipped aircraft.

The Consolidated Appropriations Act of 2014 (P.L. 113-76) defunded the JPDO for FY2014 and directed FAA to absorb the JPDO's functions into its operations account under the NextGen and operations planning activity. In May 2014, FAA moved the JPDO functions into a newly created NextGen Interagency Planning Office.

NextGen Evolution

A report by the Ash Center for Democratic Governance and Innovation at Harvard University described NextGen as "one of the most significant efforts of cross-boundary transformation ever contemplated by the United States government and its industry partners."[71] The report observed that the NextGen concept eliminates the historical delineation between air traffic control infrastructure and aircraft navigation and communications devices by integrating certain elements of the underlying infrastructure into cockpit instrumentation.[72]

The genesis of core NextGen technological concepts was the effort of the cargo airline industry to develop low-cost collision avoidance and aircraft tracking technologies. In the 1990s, cargo airlines were exempted from regulations requiring transport-category aircraft to be equipped with traffic collision avoidance systems (TCAS). The cargo airlines' initiatives to develop a low-cost alternative to TCAS that could also provide airline fleet tracking capabilities using Global Positioning System (GPS) technology led to the initial development of core NextGen cockpit technologies.

In 1999, express cargo carrier UPS received accolades for its role in developing ADS-B technology, now considered the backbone of the NextGen system. Its subsidiary, UPS Aviation Technologies, played a major part in developing ADS-B avionics that were flight-tested by UPS airplanes under FAA's Ohio River Valley demonstration project, a component of its Safe Flight 21 research-and-development program in the 1990s. UPS Aviation Technologies was subsequently acquired by Garmin Ltd. in 2003. Garmin has since positioned itself as a major supplier of GPS navigation devices, ADS-B equipment, and advanced avionics, primarily for small to midsized general aviation aircraft.

Also, in 1999, FAA initiated the Capstone Program in Alaska to explore the potential safety benefits of GPS, ADS-B, advanced avionics, and flight information service broadcasts for general aviation operations. The research program served as a test bed for technologies that came to form the core of the NextGen initiative.

Extensive delays and numerous flight cancellations at commercial airports in summer of 2000 led FAA, in collaboration with aviation industry partners, to closely examine the aviation system's future capacity needs and develop a systematic strategy for addressing those needs. In 2001, FAA

[71] Stephen Goldsmith, Zachary Tumin, and Fred Messina, *Assuring the Transition to the Next Generation Air Transportation System: A New Strategy for Networked Governance*, Ash Center for Democratic Governance and Innovation, Harvard Kennedy School, March 2010, p. 3, http://www.ash.harvard.edu/extension/ash/docs/nextgen.pdf.

[72] Ibid., p. 9.

created an Operational Evolution Plan (OEP, now known as the Operational Evolution Partnership) to define airport infrastructure and technology needs to meet future capacity requirements, with a particular focus on the nation's busiest airports and airspace. The technology solutions proposed in the OEP, including area navigation (RNAV) procedures, augmentation of GPS signal accuracy through the Wide Area Augmentation System (WAAS), controller-pilot data link technologies, and reduced vertical separation, came to be regarded as components of a more comprehensive plan for expanding air traffic control system capacity. This was later reflected in the NextGen initiative.

In some regards, NextGen is an evolutionary extension of FAA's earlier initiatives to develop air traffic management technologies to provide controllers and pilots with increased operating flexibilities and fewer restrictions, thus allowing for more efficient routing of aircraft. In other regards, it is transformative in its approach. Specifically, it differs significantly from past air traffic modernization initiatives in that it is predicated on replacing radar-based tracking of aircraft and ground-based navigational infrastructure with a system that relies on precision navigation and aircraft tracking using the satellite-based GPS.

Elements and Funding

Funding for NextGen programs totals more than $1 billion annually. The funds primarily come through FAA's Facilities and Equipment (F&E) account (**Table 7**).

Table 7. Funding for NextGen Programs

($ in millions)

Account	FY2013	FY2014	FY2015
Operations and Maintenance (O&M)	12	15	14
Facilities and Equipment (F&E)	814	828	774
Research, Engineering, and Development (RE&D)	57	58	48
TOTALS	883	901	836

Source: U.S. Department of Transportation, Budget Estimates Fiscal Year 2015, 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 onboard navigation systems such as a 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 web. As envisioned, SWIM will consist of an extensive, scalable data network to share real-time operational information such as flight

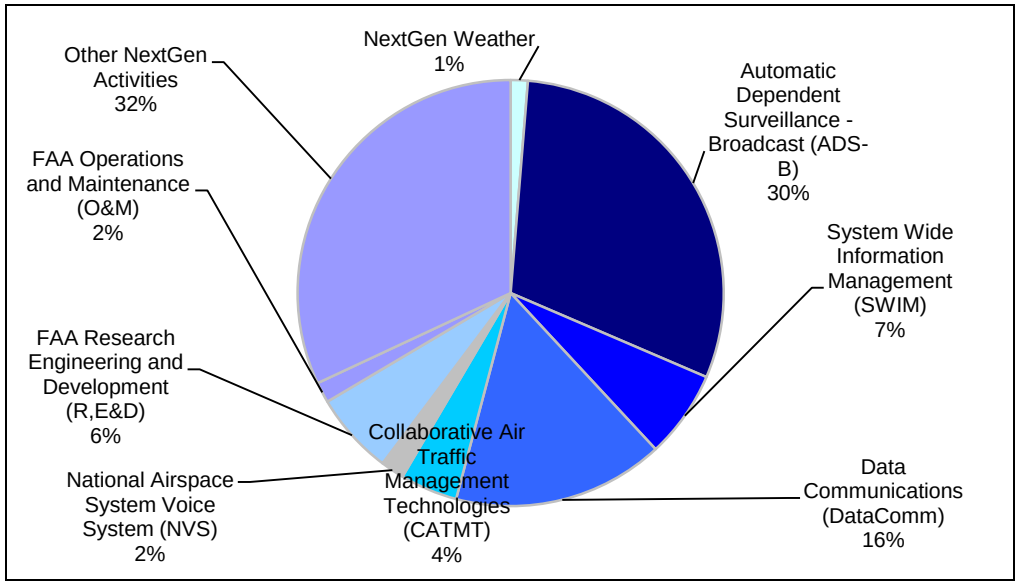
plans, flight trajectories, weather, airport conditions, and temporary airspace restrictions across the entire airspace system.

- **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.
- **National Airspace System Voice System (NVS).** Upgraded digital voice communications infrastructure that will replace existing analog equipment.
- **NextGen Weather.** An integrated platform for providing a common weather picture to air traffic controllers, air traffic managers, and system users.

Additionally, NextGen is dependent upon other ongoing modernization initiatives to upgrade FAA facilities and equipment to make them NextGen-capable. Most significantly, completion of the Enroute Modernization (ERAM) program, an upgrade to automated air traffic systems at FAA's en route centers, is considered by FAA and aviation experts as a necessary milestone toward giving the centers that direct high-altitude traffic the necessary data-handling capabilities to support NextGen.

Funding allocations for these various core NextGen components are presented in **Figure 3**.

Figure 3. Allocation of NextGen Funding, FY2013-FY2015



Source: CRS analysis of U.S. Department of Transportation Budget Estimates, Fiscal Year 2015, Federal Aviation Administration.

Note: Does not include related funding for National Aeronautics and Space Administration and National Oceanic and Atmospheric Administration for research and development and NextGen Weather.

Current Status

The network of ADS-B ground receiver stations in the contiguous 48 states has largely been deployed. FAA has implemented performance-based navigation (PBN) procedures including departures, arrivals, and instrument approaches that improve airport access and operational efficiency. A large majority of the air carrier fleet is equipped with PBN navigation equipment allowing utilization of NextGen procedures such as area navigation (RNAV). A smaller but growing percentage of the airline fleet is ADS-B equipped. In contrast, it is generally believed that a comparatively small percentage of the general aviation fleet is equipped for NextGen, although CRS has been unable to obtain detailed data regarding NextGen equipage.

Aircraft Equipage

One of the greatest challenges to FAA in implementation of NextGen 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.

In May 2010, FAA published a notice informing aircraft operators that most aircraft operating in controlled airspace would be required to equip with approved ADS-B Out equipment by 2020.[73] In adopting this rule, FAA rejected the no-action alternative, finding that the existing radar-based aircraft system is becoming operationally obsolete and incapable of accommodating projected increases in air traffic. FAA examined alternative technologies as well as exemptions for certain classes of operators, but determined that a uniform equipment mandate was the only alternative that could provide seamless surveillance capabilities to air traffic controllers and the most cost-effective solution.

A cost-benefit analysis of the final rule identified benefits, including the dollar values of time and fuel savings, carbon dioxide (CO_2) emissions reductions, and increased system capacity, totaling $6.8 billion to $8.5 billion over the period from 2009 through 2035. In comparison, the analysis identified costs, including avionics equipage costs incurred by the industry and infrastructure costs incurred by FAA, ranging from $3.3 billion to $7.0 billion over the same period. Of this, equipage costs were estimated to fall between $2.5 billion and $6.2 billion, with a midpoint of $4.4 billion.

The rulemaking process also examined impacts to small businesses operating aircraft. FAA found that "small U.S. business operators may bear a disproportionate impact," and noted that it would be difficult for small operators to recover their compliance costs.[74] It estimated that more than 1,500 small operators would incur costs greater than 1% of annual revenues, and, in addition, more than 1,000 would incur costs greater than 2% of annual revenues. FAA estimated that costs to general aviation (i.e., nonairline civil operators) would total $1.2 billion to $4.5 billion.

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 would reap some of the benefits of those capabilities through, for example, preferential treatment with respect to flight routing and arrival and departure queuing. In addition,

[73] Federal Aviation Administration, "14 CFR Part 91, Automatic Dependent Surveillance-Broadcast (ADS-B) Out Performance Requirements to Support Air Traffic Control (ATC) Service; Final Rule," 75 *Federal Register* 30160-30195, May 28, 2010.

[74] Ibid., p. 30191.

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 potential benefits, in conjunction with equipment mandates for ADS-B, to encourage more users to adopt NextGen technologies in the near term. FAA has not adopted a formal policy with regard to how it would implement best-equipped best-served practices, indicating that practices may vary from region to region and from airport to airport.

Anticipated Benefits

In addition to the potential benefits specifically tied to ADS-B equipage, FAA anticipates that the suite of NextGen technologies would provide substantial benefits to both commercial and general aviation operators by improving efficiency and safety, and thereby reducing time, fuel burn, and environmental impacts associated with aviation operations.

Benefits for Commercial Airlines

Under NextGen, commercial airlines are expected to benefit significantly from more direct routing and reduced flight delays, which are expected to result in fuel savings. For commercial operators, FAA has implemented a best-equipped best-served model, providing early adopters of NextGen technologies with priority access to certain airports and flight routes. The benefit of NextGen equipage can thus be realized through fuel cost savings, as well as indirect benefits that may include improved customer satisfaction, reduced operational costs due to more efficient operations, and environmental payoffs associated with reduced emissions and noise that could potentially help better market the airline to increasingly environmentally conscious consumers.

Benefits for General Aviation

FAA argues that general aviation operators will also benefit from improved airspace and airport access available to NextGen-equipped aircraft.

One element of improved system access for general aviation is procedures that utilize NextGen technologies to increase navigational accuracy and provide procedures to improve access to thousands of airports under a wider variety of weather conditions.

To meet the navigational accuracy, integrity, and availability requirements for civil aviation, FAA developed a system for correcting errors in GPS signals over the entire National Airspace System (NAS). It began working on the Wide Area Augmentation System (WAAS) in 1995. WAAS, which was first activated in 2003 for use by general aviation aircraft, consists of ground reference stations that compute GPS signal corrections. These signal corrections are continuously transmitted to satellites which, in turn, broadcast them to WAAS-enabled GPS devices aboard aircraft. Beginning in 2004, FAA began approving avionics systems and developing procedures that allow aircraft to fly instrument approaches to airports using WAAS and GPS to provide both lateral and vertical guidance.

WAAS enables general aircraft to access additional airports in poor weather conditions. FAA has published more than 3,000 approach procedures that use this technology, and plans to publish more than 5,000 in total by 2016. Depending on terrain considerations, these procedures allow instrument-qualified pilots to descend to as low as 200 feet above the ground, in conditions as poor as 1.5-mile visibility, before establishing visual contact with the runway. This can reduce weather-related diversions and associated fuel costs for general aviation operators, and improve accessibility and system capacity.

Whereas the annual airport maintenance cost for a precision instrument landing system (ILS) that provides similar capabilities is estimated at $85,000 annually, a WAAS approach can be maintained for less than $3,000 every two years.[75] With WAAS, there is no ground equipment to maintain. The main costs to airports consist of the upkeep of runway lighting and markings required for certification of the approach, and any costs incurred from working with local planners to address possible impacts of newly constructed towers and buildings near the approach path. While WAAS is not considered a core NextGen technology, it provides an enabling capability for implementing precision NextGen airport approach procedures.

In addition to WAAS-enabled navigation equipment, ADS-B In functionality may provide benefits to general operators that install equipment with this capability. FAA ADS-B ground stations transmit Traffic Information Services-Broadcast (TIS-B) and Flight Information Services-Broadcast (FIS-B). These broadcasts of air traffic, textual and graphical weather data, and aeronautical information, such as temporary flight restrictions and other notices, are provided free of charge to appropriately equipped aircraft with ADS-B In capability. This information is anticipated to enhance safety by improving pilot situation awareness.

The FAA Modernization and Reform Act of 2012 established a general aviation equipage fund through which private lenders were to make money available to general aviation operators to install NextGen equipment. While the fund is still awaiting federal approvals to release money to general aviation entities, the fund manager, NEXA Capital Partners, anticipates it will initially make available $550 million in capital, including private equity from aerospace companies and debt provided by private financial institutions. It expects to support about $1.3 billion in general aviation equipage financing over the next 10 years. Funds will be made available to qualified general aviation aircraft owners in the form of low-cost loans.

Policy Concerns

An overarching policy concern is FAA's ability to manage the NextGen program and implement technologies and procedures that would allow industry stakeholders to realize anticipated operational benefits. For general aviation, delivery of promised safety improvements is an important consideration in justifying large initial costs associated with equipping aircraft with NextGen avionics. Interagency coordination and collaboration on NextGen initiatives remains a significant policy concern, particularly given the current organizational changes shifting JPDO functions to FAA's newly created Interagency Planning Office.

Providing suitable funding mechanisms for both Next Gen infrastructure and industry equipage remains a significant challenge in the current budgetary climate. Rough estimates indicate that the total cost to develop NextGen infrastructure will be $14 billion to $22 billion. In addition, the cost to upgrade the civilian aircraft fleet with NextGen avionics could be between $14 billion and $20 billion. The Aerospace Industry Association cites estimates by some industry experts that the cost to equip aircraft may be significantly less than $12 billion, and could drop substantially once manufacturers begin mass-producing NextGen equipment.[76] However, others caution that costs could run much higher, especially if schedules slip and timely decisions are not made regarding technical specifications. The DOT OIG cautioned that some NextGen capabilities may not be

[75] Aircraft Owners and Pilots Association, "Air Traffic Services Brief: Wide Area Augmentation System (WAAS)," April 23, 2010, http://www.aopa.org/Advocacy/Air-Traffic-Services-,-a-,-Technology/Air-Traffic-Services-Brief-Wide-Area-Augmentation-System-WAAS.aspx.

[76] Aerospace Industries Association, *Civil Aviation Growth in the 21st Century: Meeting Capacity and Environmental Challenges*, September 2010.

implemented until 2035 or later, and the total cost to the government and airspace users could far exceed the total projected cost estimate of $40 billion.[77]

Other policy concerns include achieving global harmonization regarding equipment and procedural standards, particularly with ongoing air traffic management initiatives in Europe; appropriately measuring progress and results stemming from NextGen initiatives; and identifying reliable backup systems to supplement core NextGen technologies and provide adequate safeguards and redundancies.

FAA Organizational Issues

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 airport tower/approach control 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. Remaining 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 OIG 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.[78]

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 of 2012 (P.L. 112-95) required 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

[77] U.S. Department of Transportation, Office of Inspector General. *Timely Actions Needed to Advance the Next Generation Air Transportation System*, AV-2010-068, June 16, 2010.

[78] U.S. Department of Transportation, 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*, AV-2012-151, July 17, 2012.

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 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 list has not yet been released.

The Federal Contract Tower (FCT) Program

Of U.S. airports with control towers, 252 (slightly less than half) are operated by private firms and staffed with contract employees under the FCT program. Sixteen of the 252 contract towers are funded under arrangements in which local governments or entities pay up to 20% of the costs. Regardless of funding and operation, FAA maintains responsibility for the regulation and oversight of operations and safety at all civil air traffic control towers in the United States. Contract towers and contract controllers must be certified by FAA and must follow FAA directives.[79]

The cost-share program is provided as an option to communities that wish to retain an operating air traffic control tower after FAA determines that the costs to the federal government outweigh the tower's benefits related to safety and efficiency of flight operations. With the exception of these 16 cost-share towers, towers in the FCT program are fully funded by FAA. In recent years, the budget for the FCT program has been about $140 million annually, including approximately $10 million for the federal share of cost-share towers.

The FCT program came into existence in 1982—initially as a pilot program at five airports—in an effort to provide air traffic services at low-activity towers in the wake of the nationwide air traffic controller strike and subsequent dismissal of striking FAA controllers. For the first 12 years, the program remained relatively small, growing to 27 towers by 1993. Nonetheless, it gained the attention of Vice President Albert Gore's National Performance Review—later known as the National Partnership for Reinventing Government—which endorsed the program in 1993 and recommended its expansion.[80] FAA developed a plan to close or contract out all low-activity towers, and the number of contract towers grew to 160 by the end of FY1997.[81]

In FY1999, Congress first funded the cost-sharing program, allowing airports that would not otherwise have met FAA's threshold benefit-to-cost ratio to maintain contract tower operations with nonfederal funds to supplement federal expenditures. Subsequently, Congress has limited the local share to not more than 20% of a tower's costs. Currently, 16 towers are funded through this program at a cost of roughly $10 million annually. While this could expand program eligibility, it could also have the effect of triggering tower closures in communities that are unwilling or unable to contribute additional funding for tower operations.

In a 2012 audit, the DOT OIG concluded that the FCT program provided air traffic services to low-activity airports at lower costs than FAA-staffed towers could. The audit found that on average, contract towers required six fewer controllers and cost almost $1.5 million less annually

[79] Federal Aviation Administration (FAA) Contract Tower (FCT) Program. Contract Services Branch (ATO-310).

[80] Vice President Albert Gore's National Performance Review, *From Red Tape to Results: Creating a Government that Works Better and Costs Less* (Washington, DC: GPO, 1993), p. 150.

[81] U.S. Department of Transportation, Office of Inspector General. *Federal Contract Tower Program, Federal Aviation Administration*, AV-1998-047, May 18, 1998.

than FAA-staffed towers at airports with comparable levels of flight activity.[82] These savings were achieved through lower staffing levels and lower controller pay at contract towers compared to FAA towers. The audit found that contract towers had a lower rate of reported safety incidents than comparable FAA towers. Also, a survey of aircraft operators, conducted as part of the audit, found similar levels of satisfaction with the services provided by contract towers and FAA towers handling similar numbers of aircraft.

In March 2013, provisions of the Budget Control Act of 2011 (P.L. 112-25) providing for automatic reductions to most federal discretionary spending, referred to as sequestration, went into effect. Among the cost-cutting measures proposed by FAA was the complete closure of up to 238 control towers at airports that have fewer than 150,000 flight operations or fewer than 10,000 commercial operations per year.[83] Towers listed as candidates for closure included 195 run by contractors under the FCT program and 43 staffed by FAA controllers. On March 22, 2013, FAA announced it would close 149 FCT program towers over four weeks beginning April 7, 2013.

On May 1, 2013, following a week of FAA air traffic controller furloughs that contributed to some isolated air traffic system delays, Congress enacted the Reducing Flight Delays Act of 2013 (P.L. 113-9). The act gave FAA authority to transfer up to $253 million to FAA operations using available monies from unspent airport funds, which were not subject to sequestration, and from other available sources within FAA.[84] On May 2, 2013, a bipartisan group of 25 Senators transmitted a letter to Secretary of Transportation Ray LaHood and FAA Administrator Michael Huerta stating the following: "Congressional intent is clear: the FAA should prevent the slated closure of 149 contract towers by fully funding the contract tower program."[85] The following week, FAA canceled the planned closures. The FCT program has been fully funded since then, and FAA has not moved forward with its tower closure plans.

Technological Developments Affecting Potential Safety Impacts of Possible Future Tower Closures or Facility Consolidations

The potential safety impacts of long-term tower closures could be mitigated by technologies now under development. These technologies fall into two broad categories: (1) in-cockpit situation awareness technologies and (2) remote air traffic services.

In-cockpit situation awareness technologies include capabilities such as moving maps and cockpit displays of traffic information. While commercial passenger aircraft are equipped with traffic collision avoidance systems (TCAS), such systems are not affordable for typical general aviation aircraft, which make up the majority of traffic at most small and mid-sized airports. The ADS-B technology used in NextGen may provide a means for general aviation aircraft to be equipped with situation awareness capability. FAA will require most aircraft to be equipped with ADS-B capability to broadcast precise location information, a capability known as ADS-B Out, by 2020. However, at present there is no mandate to equip aircraft with the capability to receive and

[82] U.S. Department of Transportation, Office of Inspector General, *Contract Towers Continue to Provide Cost-Effective and Safe Air Traffic Services, But Improved Oversight of the Program Is Needed*, AV-2013-009, November 5, 2012.

[83] See Federal Aviation Administration, "FAA Planning for $600 million in 2013 Spending Cuts," available at http://www.faa.gov/news/updates/?newsId=71078.

[84] For further discussion, see CRS Report R43065, *Sequestration at the Federal Aviation Administration (FAA): Air Traffic Controller Furloughs and Congressional Response*, by (name redacted), (name redacted), and (name redacted)

[85] Letter from the Honorable Richard Blumenthal, the Honorable Jerry Moran, and the Honorable Kelly Ayotte, United States Senate et al. to the Honorable Ray LaHood, Secretary, U.S. Department of Transportation, and the Honorable Michael Huerta, Administrator, Federal Aviation Administration, May 2, 2013.

display information about other traffic, a capability known as ADS-B In. Greater participation may be needed to obtain a comparable level of situation awareness and traffic avoidance in the air terminal environment than is currently provided by manned air traffic control towers.

The services currently provided by airport towers could be offered from remote locations. Some air traffic services are already provided in this way; for example, an aircraft on an instrument approach to a nontowered airport can remain under the control of an en route or approach control facility until it descends below radar coverage. Remote or virtual towers are seen as a potential next step in air traffic facility consolidation, and could provide a comparatively low-cost alternative to manned towers by using data from systems such as ADS-B and surface radar capabilities. Pooling of resources at these consolidated facilities could potentially allow for significantly reduced staffing compared to stand-alone towers currently in operation. However, initial start-up costs may be high.

Facility Security

On September 26, 2014, an act of arson at FAA's Chicago air traffic control center temporarily shut down air traffic into Chicago's two commercial airports and disrupted flights across much of the country. The incident highlighted the potential physical security risks posed by contractors and employees with access to facilities. It also illustrated the importance of redundancy, as controllers working at other locations, not in the Chicago area, were able to return the system to normal operation within a couple of days. The physical and cybersecurity measures in place at FAA's air traffic control facilities have been criticized in the past, most notably in a 2005 GAO report.[86]

Air Traffic Control Privatization

For almost four decades, Congress has intermittently debated whether the public would be better served if air traffic services currently provided by FAA were instead provided by an independent entity. The many proposals and bills on this subject put forth over the years have distinguished two main alternatives to continued operation of the air traffic control system by a federal agency:

- **corporatization**, which, in this context, generally refers to establishing air traffic services as a wholly owned government corporation or quasi-governmental entity; and
- **privatization**, which would entail creating some form of private ownership and control of an air traffic services corporation.

Many other countries have moved their air traffic control operations into either private entities or government-controlled corporations. In the United States, however, privatization proposals have stumbled on two obstacles. One is funding. Most proposals have envisioned that the air traffic control entity would be a self-sustaining organization that would cover its costs with fees charged on aircraft using the system. User fees have been strongly opposed by general aviation interests, and Congress has repeatedly refused to permit them. The other obstacle has been the proposed organization's borrowing costs. Although the ability to borrow in the financial markets to modernize the air traffic system is often cited as an advantage of an independent entity, such an

[86] U.S. Government Accountability Office, *Information Security: Progress Made, but Federal Aviation Administration Needs to Improve Controls over Air Traffic Control Systems*, GAO-05-712, August 2005.

entity would face higher borrowing costs than the federal government, unless the federal government's full faith and credit were to back the entity's debt obligations.

FAA has taken modest steps toward privatizing certain functions. Air traffic control operations at 252 airports without radar control are provided by private operators under the FCT program, discussed above, and since 2006, FAA has contracted out the work performed at automated flight service station facilities that provide preflight and in-flight weather briefings and flight planning services, mostly to general aviation operators. FAA also has made increased use of design-build-maintain contracts that make contractors, rather than FAA personnel, responsible for installing and maintaining air traffic control equipment.[87]

Controller Selection and Hiring

Recent changes in FAA's controller selection and hiring process have proven controversial, and may be debated during reauthorization.

Historically, FAA has advertised job openings to specific categories of applicants, using separate evaluation processes for each category. In February 2014, it switched to a single, nationwide vacancy announcement with a uniform evaluation process that was open to all qualified U.S. citizens between the ages of 18 and 31. FAA also changed its process for selecting among eligible candidates in response to recommendations from two reports undertaken to examine barriers to workplace diversity in the air traffic control hiring process.

These changes were substantial. While the new process retained legally required veterans preferences, FAA otherwise evaluates all applicants—regardless of background, education, or experience—using a single set of evaluation tools and assessment criteria. FAA required all prior applicants who had not received tentative offers of employment prior to February 2014 to reapply, including candidates who had already passed the Air Traffic Selection and Training Exam (AT-SAT), a measure of skills and abilities important for air traffic control. Under earlier hiring practices, qualified candidates achieving a specified score on the AT-SAT were chosen to interview with a selection panel that would make provisional hiring decisions.

Under FAA's new hiring process, a biographical assessment is administered as a first step to assess applicants' experience and aptitude for air traffic control. Research indicated that the questionnaire, developed by FAA, is a valid predictor of air traffic controller job performance, and is fair and unbiased with respect to gender and ethnicity. Under the February 2014 job announcement, only applicants who scored above a specified level on the biographical assessment and satisfied other job requirements were invited to complete the AT-SAT. Those getting sufficiently high scores on the AT-SAT were given conditional offers of employment, pending medical evaluations and background investigations. FAA received approximately 28,000 applications in response to the February 2014 announcement. About 2,200 applicants, or 8% of the applicant pool, made it past the new biographical assessment, and roughly 1,600 received conditional employment offers.

In addition to addressing workforce diversity concerns, FAA asserts that the biographical assessment effectively identifies those applicants most likely to succeed in training and as fully certified air traffic controllers. Moreover, FAA claims that the revised selection process streamlined hiring and reduced related costs by more than $7 million. However, the new hiring and selection process has raised concerns among the 36 colleges and universities that have

[87] For more extensive discussion, see CRS Report R43844, *Air Traffic Inc.: Considerations Regarding the Corporatization of Air Traffic Control*, by (name redacted).

developed curricula tailored to careers in air traffic control under an FAA program known as the Air Traffic Collegiate Training Initiative (AT-CTI). Students and graduates of AT-CTI programs applying in February 2014 were three times more likely to receive conditional offers than other applicants. However, not all AT-CTI students were found eligible under the new selection process, and some deemed eligible under prior job announcements did not receive sufficiently high scores on the biographical assessment.

While AT-CTI schools do offer students a measurable advantage in the hiring process, historical FAA data indicate that AT-CTI graduates have only a slightly higher success rate in completing FAA training than other hires. These data do not necessarily suggest that the AT-CTI is not valuable preparation for aspiring controllers. Rather, the findings may reflect the effectiveness of FAA's historical selection process in weeding out candidates unlikely to succeed, regardless of source. FAA has indicated that it intends to continue the AT-CTI program, but may seek to work with the schools to modify AT-CTI curricula.

Aviation Safety Issues

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, effective in January 2014, set duty limits based on time of day, number of flight segments, and number of time zones crossed, and established 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.[88] In addition, FAA has issued new requirements regarding qualification standards for first officers, generally requiring that they meet the same certification minimum training and experience requirements as airline captains.[89] FAA has revised 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.[90]

[88] 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.

[89] Federal Aviation Administration, "Pilot Certification and Qualification Requirements for Air Carrier Operations; Final Rule," 78(135) *Federal Register* 42324-42380, July 15, 2013.

[90] U.S. Department of Transportation, *Report on DOT Significant Rulemakings*, November 2013, http://www.dot.gov/sites/dot.dev/files/docs/NOV%202013%20Internet%20Report.docx.

Pilot Fatigue

The Airline Safety and Federal Aviation Administration Extension Act of 2010 (P.L. 111-216) mandated changes to airline pilot flight time and rest requirements. Specifically, Section 212 of the act required FAA to "issue regulations, based on the best available scientific information, to specify limitations on the hours of flight and duty time allowed for pilots to address problems relating to pilot fatigue." It also required all airlines to submit fatigue risk management plans. Section 216 of the act required FAA to issue rules to ensure that within three years of enactment, all airline flight crewmembers have obtained an airline transportation pilot certificate. These mandates were enacted amid concerns over regional air carrier operations following the February 12, 2009, crash of Colgan Air (Continental Connection) flight 3407 near Buffalo, NY.

In response, FAA published its final rule on Flightcrew Member Duty and Rest Requirements on January 4, 2012.[91] This added 14 C.F.R. Part 117, which prescribes passenger airline flight crew flight time, duty time, and rest requirements based on crew size, time of day, time and distance away from home base, and other factors. The regulation also requires airlines to implement a fatigue risk management system. The rules went into effect on January 14, 2014. While these regulations are mandatory for passenger airlines, complying with them is optional for all-cargo carriers that operate under 14 C.F.R. Part 121. Pilot labor organizations have long argued for uniform fatigue regulations under an umbrella "single level of safety" approach, although FAA and the airline industry maintain that air cargo operations are sufficiently unique that separate regulatory requirements are appropriate.

Airline Pilot Qualifications and Pilot Supply

The Airline Safety and Federal Aviation Administration Extension Act of 2010 required that FAA amend regulations to require that pilots attain the airline transportation pilot rating prior to being hired as airline first officers. Section 217 of the act required FAA to "conduct a rulemaking ... to modify requirements for the issuance of an airline transport pilot certificate," and specified that "the total flight hours required by the Administrator … shall be at least 1,500 flight hours." On July 15, 2013, FAA issued a final rule on Pilot Certification and Qualification Requirements for Air Carrier Operations.[92] It required, effective August 1, 2013, that all pilots and first officers operating under 14 C.F.R. Part 121 (air carrier revenue operations) hold an airline transportation pilot certificate. It also required those serving as an air carrier pilot-in-command (captain) to have at least 1,000 flight hours in air carrier operations.

Previously, pilots could be hired as airline first officers with a commercial pilot certification that required a minimum of 250 hours total flight time. Some regional airlines and communities served by regional carriers have complained that the change has limited the supply of qualified first officers. The merit of these claims, however, has been disputed, particularly by pilot labor organizations that contend that low wages make regional airline first officer jobs undesirable.[93]

FAA data indicate that the number of certificated airline transport pilots in the United States has grown by more than 5% over the past decade. However, it remains unclear whether this growth

[91] http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgFinalRule.nsf/0/681787AC6E53DF238625797C005321DE?OpenDocument.

[92] https://www.federalregister.gov/articles/2013/07/15/2013-16849/pilot-certification-and-qualification-requirements-for-air-carrier-operations.

[93] See House Committee on Transportation and Infrastructure, 113th Congress, Hearing: Air Service to Small and Rural Communities, April 30, 2014, http://transportation.house.gov/calendar/eventsingle.aspx?EventID=376943.

can keep pace with the demand of the aviation industry, and in particular the regional airlines. GAO found mixed evidence regarding the supply of qualified pilots available to meet airline needs, which it estimated to be 1,900 to 4,500 newly hired pilots annually over the next decade.[94] GAO pointed out that pilots' employment and earnings have decreased since 2000, suggesting that demand for pilots does not exceed available supply. However, GAO observed that fewer students are entering pilot training programs, and that opportunities overseas, in the military, or in corporate aviation may steer pilots away from positions with lower-paying regional carriers.

Commercial Aircraft Tracking and Flight Data Recorders

Two 2014 incidents renewed concern about the deployment of tracking technologies aboard passenger aircraft. The whereabouts of Malaysia Airlines Flight 370, which disappeared in March 2014, remained uncertain as of early 2015, and the crash site of Indonesia AirAsia Flight 8501, which went down in the Java Sea on December 28, 2014, took several days to locate, despite the widespread availability of tracking technologies using GPS. While most transoceanic airliners are equipped with GPS, air traffic control continues to rely predominantly on ground-based radar to track aircraft. Tracking of aircraft based on GPS position is envisioned under FAA's NextGen initiative, but this system is to rely on a network of ground-based receivers within the United States, and, like the existing radar infrastructure, would be incapable of tracking aircraft beyond the coverage area of the network.

Transoceanic flights, flights along polar routes, and flights passing over other remote areas journey beyond the range of ground-based radars and tracking stations. During these portions of flight, pilots use their radios to provide periodic position reports to air traffic facilities. Such reports can also be entered manually or generated automatically by an onboard communication system known as the Aircraft Communication Addressing and Reporting System (ACARS). ACARS is a satellite-based radio frequency messaging system that provides global coverage. While many planes flying transoceanic routes have ACARS, it is not required. Moreover, airlines can configure ACARS communications differently, so some transmissions may not include aircraft position data.

One possible option could be to utilize more frequent position reports or continuous streaming of aircraft position information for flights over oceans and remote regions. The existing ACARS system may be able to provide some of this capability. However, challenges associated with the approach include possible bandwidth limitations of available satellite communications channels and the costs of developing such a capability.

Satellite Tracking

In May 2014, Inmarsat, a global satellite communications provider that supports ACARS and other aircraft communications links, began to offer, at no cost, global tracking of aircraft using Automated Dependent Surveillance-Contract (ADS-C) signals relayed by appropriately equipped aircraft. ADS-C broadcasts, however, are received at 15-minute intervals, compared to ADS-B, which can update as frequently as once per second. Given the speed at which commercial airliners travel, 15-minute updates may still leave considerable uncertainty regarding aircraft location between updates or after transmissions cease.

[94] U.S. Government Accountability Office, *Aviation Workforce: Current and Future Availability of Airline Pilots*, GAO-14-232, February 2014, http://www.gao.gov/assets/670/661243.pdf.

Aireon, a joint venture by NAV CANADA, the air traffic control provider for Canadian airspace, and Iridium Communications Inc. may offer another potential solution in a few years. The proposed system endeavors to provide global air traffic surveillance using low-orbit communications satellites to track aircraft. The company expects this capability to be available worldwide by 2017, and NAV CANADA intends to use it to track flights in remote regions of Canadian airspace. Once available, the service may be marketed to other air navigation service providers, airlines, and aircraft operators to provide real-time global flight tracking. To use the Aireon system, aircraft would need to be outfitted with ADS-B equipment, which transmits aircraft position based primarily on GPS data.

In addition to aircraft position tracking, it may be possible to adapt ACARS, ADS-B, and other aircraft communications links to transmit critical aircraft status information or other flight data that could aid first responders in locating a downed aircraft and could assist investigators in reconstructing an incident. This might be particularly helpful in a case such as that of Malaysia Airlines Flight 370, in which searchers have so far been unable to locate the flight data recorder, or "black box," that contains information regarding the status of aircraft systems during the final stages of the flight.

Deployable Recorders

Some U.S. military aircraft are equipped with deployable flight recorders that eject from the aircraft prior to impact, facilitating the work of accident investigators. Legislation introduced in the 108th (H.R. 2632), 109th (H.R. 3336), and 110th (H.R. 4336) Congresses sought to require deployable recorders on commercial aircraft performing extended-range operations. Under these proposals, the deployable recorder would have consisted of a single unit combining both cockpit voice and flight data recording capabilities that was to be carried in addition to the existing fixed recorders. The proposals would have required the U.S. Department of Transportation (DOT) to reimburse carriers the cost of purchasing and installing the devices. None of these proposals was enacted.

Oversight of Maintenance and Repair Stations[95]

In order to contain costs, U.S. air carriers increasingly are outsourcing aircraft maintenance, repair, and overhaul (MRO), either domestically or to foreign countries.[96] MRO includes four major types of activities:[97]

- **Airframe Heavy Maintenance.** A detailed inspection of the airframe and certain components, including any applicable corrosion prevention programs and comprehensive structural inspection and overhaul of the aircraft. Heavy maintenance is comparatively labor-intensive.
- **Engine Repair and Overhaul.** Off-wing repair and replacement of parts to restore the engine to designed operational condition, following guidelines established by the engine manufacturer. Typically, the engine is disassembled and inspected; parts are repaired or replaced as necessary; and the engine is

[95] For more extensive discussion of this subject, see CRS Report R42876, *Offshoring of Airline Maintenance: Implications for Domestic Jobs and Aviation Safety*, by (name redacted) and (name redacted)

[96] In this report, MRO (maintenance, repair, and overhaul) and maintenance are used synonymously.

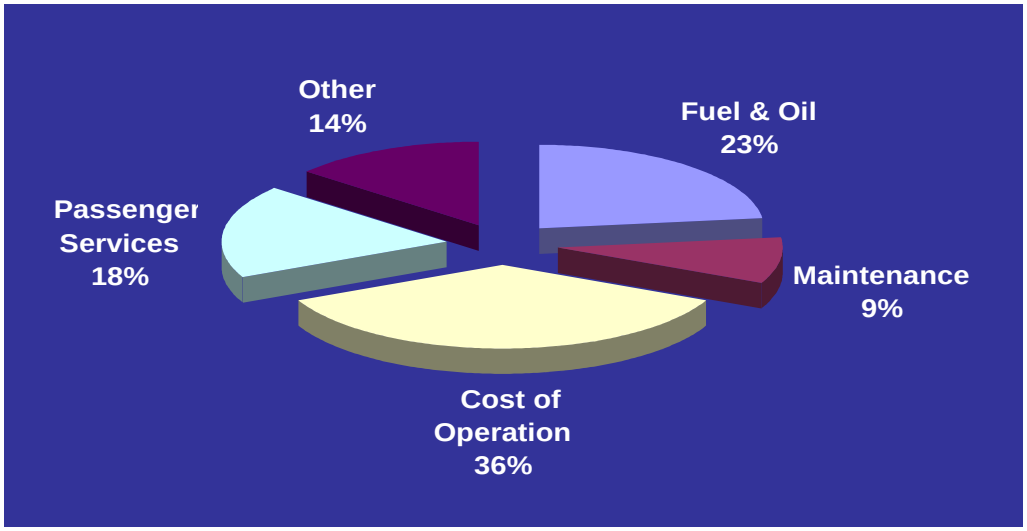
[97] Aeronautical Repair Station Association (ARSA), "Global MRO Market Economic Assessment," August 21, 2009; Infosys, "Tenets of MRO Strategy for Airlines," December 2007.

reassembled and tested. Engine MRO requires considerable technological sophistication.

- **Component MRO.** Repair and overhaul of components that provide the basic functionality for air flight, including aircraft control and navigation, communications, cabin air conditioning, electrical power, and braking.
- **Line Maintenance.** Light, regular maintenance checks carried out to ensure that an aircraft is fit for flight. Line maintenance includes troubleshooting, defect rectification, and overnight maintenance.

According to data reported to DOT, aircraft maintenance typically accounts for nearly 10% of U.S. passenger airlines' operating costs (see **Figure 4**). The 10 major U.S. passenger airlines reported collective maintenance expenses of $10.2 billion in 2008 and $10.1 billion in 2009.[98]

Figure 4. Major Components of Airline Operating Costs



Source: *U.S. DOT Form 41 Airline Operational Cost Analysis Report*, International Air Transport Association (IATA), March 2011, p. 12.

Notes: This cost breakdown is based on FY2009 data reported by 10 major U.S. airlines (passenger airlines with annual revenue over $1 billion). The total operating costs of these major airlines was $107.5 billion in FY2009.

Prior to 2001, most U.S. airlines performed the majority of their aircraft maintenance work in-house. The percentage of work outsourced, in terms of maintenance dollars, has increased from approximately 20% in 1990 to over 44% in 2011, according to the Bureau of Transportation Statistics (BTS). According to press reports, Northwest Airlines (before it was acquired by Delta), United Airlines, Delta Airlines, and U.S. Airways (prior to its merger with American Airlines) all eliminated their in-house heavy maintenance capabilities through bankruptcy restructurings.[99] According to a consultancy attached to a major MRO provider,[100] aircraft engine work that is

[98] International Air Transport Association (IATA), *U.S. DOT Form 41 Airline Operational Cost Analysis Report*, March 2011, p. 12. The 10 major reporting airlines, in alphabetic order, were Airtran Airways, Alaska Airlines, American Airlines, Continental Airlines, Delta Airlines, Jet Blue Airways, Northwest Airlines, Southwest Airlines, United Airlines, and U.S. Airways.

[99] *USA Today*, "American Airlines to Outsource Some Tulsa Work," October 10, 2011.

[100] TeamSAI Consulting Services, "Outsourcing Trends in the USA," November 2009.

outsourced tends to be performed in North America or Western Europe, whereas heavy maintenance, which is more labor-intensive, is often done in Asian and Pacific countries including China.

Safety and Reliability Issues

All airlines outsource some of their aircraft maintenance. Some newer carriers have outsourced a large part of their maintenance. Airframe heavy maintenance, which tends to be labor-intensive and requires substantial investments in facilities and equipment, appears more likely to be outsourced. The share of passenger carrier MRO that is outsourced seems likely to grow, although much of this work may continue to be performed by service providers within the United States.

Foreign repair stations have been the subject of safety concerns at least since 1995, when the crash of a U.S. passenger plane was attributed to faulty repair work undertaken abroad. The issues raised have included quality control procedures; the level of regulatory oversight; mechanic pay, skill, training, and experience; the degree of qualified supervision; the lack of English language skills or requirements to read and comprehend maintenance manuals; and the absence of drug and alcohol testing programs on par with those required at U.S. repair stations.

Airlines have an interest in making sure that outsourced maintenance is of the highest quality to avoid costly delays and cancellations. Airlines and aircraft repair service providers assert that the high economic value placed on safety in the airline industry is by itself sufficient incentive to promote high-quality performance among foreign repair stations that maintain U.S. air carrier aircraft. Airlines for America, the advocacy organization for major U.S. air carriers, cited NTSB data showing that as U.S. airlines have increased their maintenance outsourcing to global providers, "maintenance as a probable cause [of accidents] declined from 0.05 per 100,000 departures to absolute zero in recent years."[101] The group has released data showing that maintenance-related accidents have declined since 1997 despite increased outsourcing of maintenance. An academic study also failed to find any relationship between airline maintenance outsourcing rates and aircraft accident and incident rates from 1996 to 2008, although the study did not differentiate between domestic outsourcing and offshoring.[102]

Setting regulatory standards regarding the total numbers and ratios of FAA-certified mechanics and repair workers to uncertified maintenance workers as a condition of 14 C.F.R. Part 145 approval may be a means to address concerns about the lack of FAA-certificated mechanics at some foreign repair facilities. Such standards might need to take into consideration both the overall volume and the percentage of repair station work that is performed on U.S. airline aircraft to ensure that any additional regulatory requirements are appropriately directed at those repair stations where extensive work on U.S. air carrier aircraft is performed. More extensive reporting requirements for air carriers could be helpful in allowing FAA to better assess where the numbers of FAA-approved mechanics may be insufficient, as well as where regulatory oversight activities may need to be targeted.

[101] Airlines for America, "ATA Testimony by CEO Jim May before the Senate Aviation Subcommittee on FAA Reauthorization," May 13, 2009, http://airlines.org/Pages/ATA-Testimony-by-CEO-Jim-May-before-the-Senate-Aviation-Subcommittee-on-FAA-Reauthorization.aspx.

[102] Kari M. Monaghan, "Examining the Relationship Between Passenger Airline Aircraft Maintenance Outsourcing and Aircraft Safety," (PhD Dissertation, Northcentral University, Prescott Valley, AZ, 2011).

Regulatory Oversight

Maintenance of U.S. air carrier aircraft at both foreign and domestic locations is subject to regulation and oversight by FAA. Repair stations are regulated under Title 14 of the *Code of Federal Regulations*, Part 145, and thus FAA-certificated repair stations are sometimes referred to as Part 145 repair stations. To be certified under Part 145, a repair station must develop FAA-approved documentation and processes including quality control procedures and training programs. FAA may also approve foreign repair stations based on a foreign certification issued by a country that has a bilateral aviation safety agreement with the United States.

Airframe and engine manufacturers have themselves become MRO providers on a global basis. This may eventually lead to the emergence of large specialty centers for MRO and greater standardization of global services. This could have broad implications for U.S. air carrier maintenance, including the potential for increased offshoring if maintenance practices and quality of service become increasingly standardized throughout the world. These ongoing changes in the MRO industry will likely have important implications for the role of regulators. For example, FAA now focuses on airlines' maintenance activities in conjunction with its oversight of their air carrier certificates. If airlines continue to outsource both maintenance and the management of that maintenance, FAA's focus on airline practices may not be the most appropriate model.

From a regulatory standpoint, FAA reviews and recertifies foreign repair stations annually, or in some cases every two years, whereas domestic repair stations can retain their certification indefinitely unless FAA is prompted to suspend or revoke it based on specific safety concerns. While FAA establishes requirements for foreign repair stations, much of the direct oversight to ensure compliance is conducted by foreign regulatory entities under bilateral agreements and a multilateral agreement with the European Union (EU). A summary of key differences in FAA regulatory requirements for domestic and foreign repair stations is presented in **Table 8**.

Table 8. Regulatory Differences Between Domestic and Foreign Repair Stations

Regulatory Requirement	Domestic	Foreign
Certification	Indefinite unless suspended or revoked.	Renewed annually, or in some cases, every two years if FAA determines that the facility has operated in compliance with regulations over the preceding year.
Certification, Renewal, and Inspection Fees	No fees.	Fees (2012 rate is $157 per inspector per hour).
Certificated Mechanics	Certain personnel, including supervisory personnel and individuals authorized to approve an aircraft's return to service, must be FAA-certificated mechanics.	No FAA certification requirement for personnel. However, supervisors must meet minimum experience requirements, and the repair station must have an FAA-approved training program. Foreign countries may have separate certification requirements for mechanics.
Drug and Alcohol Testing Programs	Required.	Under development, as required by P.L. 112-95.

Regulatory Requirement	Domestic	Foreign
Security Regulations	Repair stations on commercial airport property are subject to Transportation Security Administration (TSA) regulation. Security regulation of repair facilities at noncommercial airports and off-airport facilities is being developed by TSA as required by P.L. 108-176.	Security regulation being developed. Foreign repair stations are subject to security reviews and audits under P.L. 108-176. No new foreign repair stations can be certified by FAA until the required regulations are finalized. This does not affect renewals of existing repair station certificates.

Source: U.S. Department of Transportation, Office of Inspector General, *Aviation Safety: FAA Oversight of Foreign Repair Stations*, Statement of the Honorable Calvin L. Scovel III, Inspector General, Before the Committee on Commerce, Science, and Transportation, Subcommittee on Aviation Operations, Safety, and Security, United States Senate, June 20, 2007; CRS analysis of the *Code of Federal Regulations*, *U.S. Code*, and existing law.

Thus, regulatory requirements for foreign repair station certification are somewhat more stringent than those for domestic repair stations, although foreign repair stations do not have the same requirements as U.S. repair stations with respect to certification of supervisors and individuals authorized to sign off on work performed and return aircraft to service.

There are concerns that FAA's resources and capabilities to inspect foreign repair stations are spread thin. FAA has 10 international field offices and units; two (Frankfurt and Singapore) are physically located outside the United States. Collectively, these 10 offices house about 100 inspectors who have primary oversight responsibility for almost 700 foreign repair stations, in addition to overseeing foreign air carriers that operate flights to the United States. In total, FAA employs about 4,100 inspectors, so the number of inspectors dedicated full time to oversight of foreign entities, including foreign repair stations, constitutes a small percentage of the total FAA inspector workforce.

Realigning the FAA inspector workforce to allow for increased oversight of repair stations located in foreign countries may help respond to the increased utilization of foreign repair facilities by U.S. air carriers. This may involve selecting and assigning FAA inspectors based on proficiency in specific foreign languages and familiarity with foreign cultures. Despite a congressionally mandated examination of FAA's inspector staffing model by the National Research Council, which was completed in 2007,[103] further action may be needed to more specifically address realignment of the FAA inspector workforce to better reflect changes in airline maintenance practices.

FAA inspectors who oversee air carrier maintenance are also responsible for ensuring that work contracted to third parties, including foreign repair stations, adheres to applicable regulations and FAA-approved air carrier procedures. In 2008, the DOT OIG found that FAA's system for determining where to target inspections was inadequate, relying too heavily on incomplete voluntary air carrier reporting of maintenance outsourcing and air carrier audits that varied considerably in their quality and completeness.[104] In particular, the DOT OIG found that FAA was over-reliant on air carriers' initial audits of repair stations to approve substantial maintenance providers for use by air carriers.

[103] National Research Council, *Staffing Standards for Aviation Safety Inspectors*, ed. William C. Howell and Susan B. Van Hemel (Washington, DC: National Academies Press, 2007).

[104] U.S. Department of Transportation and Office of Inspector General, *Review of Air Carriers' Outsourcing of Aircraft Maintenance*, AV-2008-090, September 30, 2008.

In April 2012, the DOT OIG reported that while FAA had implemented a new risk-based system for targeting its repair station surveillance activities following the DOT OIG's 2007 report, the system was being applied inconsistently by FAA inspectors, and surveillance at foreign repair facilities lacked the rigor needed to identify deficiencies and subsequently verify that corrective actions had been taken. The DOT OIG also found persistent systematic problems including inadequacies in mechanic training, outdated tool calibration checks, and inaccurate work documentation.[105] These concerns are not unique to foreign repair stations, as they were observed at domestic repair stations as well.

The Role of Foreign Regulatory Agencies

Foreign regulatory agencies serve a crucial role in the oversight of maintenance performed on U.S. air carrier aircraft overseas. Under reciprocal bilateral aviation safety agreements, FAA delegates some routine inspection functions to the foreign regulator, and FAA is granted negotiated rights to review the foreign regulator's audit and inspection findings. The United States currently has in place about 28 bilateral aviation safety agreements, mostly with European countries. In addition, the United States has entered into a comprehensive multilateral agreement with the EU that took effect in May 2011, and includes a detailed annex that provides a structure for coordination of maintenance oversight between the United States and EU member countries. Similarly, the United States and Canada have had formal procedures governing the coordination of repair station oversight in place since 2000.

Provisions in the FAA Modernization and Reform Act of 2012 (P.L. 112-95) addressed concerns over bilateral aviation safety agreements with respect to FAA inspection authority. Specifically, the act required FAA to ensure that foreign repair stations are subject to appropriate inspections consistent with existing U.S. requirements, and that agreements with foreign aviation authorities or other foreign government agencies provide an opportunity for FAA to conduct independent inspections of foreign repair stations when warranted by safety concerns. Additionally, the act required FAA to conduct annual inspections at all foreign repair stations consistent with obligations under international agreements.

English Language Concerns

FAA requires demonstrated English proficiency for certificated mechanics and repairmen. As part of its certification testing, applicants are required to demonstrate that they can read, speak, and write, as well as comprehend spoken English. Repair stations are required to ensure that supervisors and inspection personnel who review repairs and maintenance understand, read, and write English, but there is no formal requirement that these workers have any specific English-language skills. However, FAA certification is not required to work at a repair station, and FAA has no formal regulations regarding the number of certificated personnel at foreign repair stations. Repair stations have no obligation to require or report English language proficiency, except among their FAA-certificated mechanics who exercise inspection authority and sign off on repairs to U.S.-registered aircraft.

Increasingly, maintenance manuals issued by airframe and engine manufacturers worldwide are published solely in English, and computerized aircraft systems with English-only interfaces, including maintenance interfaces, require a working knowledge of technical English to diagnose

[105] U.S. Department of Transportation, Office of Inspector General, *The State of Aviation Safety and FAA's Oversight of the National Airspace System, Statement of Jeffrey B. Guzzetti, Assistant Inspector General for Aviation and Special Programs*, CC-2012-018, April 25, 2012, pp. 6-7.

and repair advanced avionics. That said, aircraft maintenance also involves many less technical tasks, such as interior refurbishing and airframe painting, which may not require English-language skills. It is often these less skilled jobs for which foreign repair stations offer the greatest cost savings compared to domestic repair stations. Consequently, limited English language skill among workers at these facilities may not, by itself, be cause for significant concern.

Drug and Alcohol Testing and Substance Abuse Programs

Many foreign countries impose their own drug and alcohol testing programs at foreign repair stations, as the International Civil Aviation Organization (ICAO) specifically defines inclusion of all safety-related positions in drug and alcohol testing programs in its aviation safety standards. ICAO has been working with countries around the world to achieve greater harmonization with respect to the administration of drug and alcohol testing programs throughout the aviation industry.[106] Despite international efforts to achieve global harmonization with respect to drug and alcohol testing and substance abuse prevention across the aviation industry, privacy laws and other limiting factors may contribute to differences between drug and alcohol testing programs and policies in the United States and those in countries where foreign repair stations are located. The FAA Modernization and Reform Act of 2012 directed FAA to issue rules requiring controlled substance testing of some employees working in repair stations outside the United States. FAA published an advance notice of proposed rulemaking in March 2014 and accepted comment through May. The agency has not issued a final rule, citing the need for "additional coordination."[107]

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 aircraft 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 Engineered Materials Arresting Systems (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 required 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. FAA's Strategic Runway Safety Plan, published in November 2012, indicated that FAA is using a number of data collection and analysis tools to identify and mitigate safety risks in airport surface

[106] International Civil Aviation Organization (ICAO), Aviation Medicine (MED) Section, *Related ICAO Resolutions: A33-12: Harmonization of drug and alcohol testing programmes*, available at http://legacy.icao.int/icao/en/med/MED_resolutions.html.

[107] DOT December 2014 Significant Rulemaking Report, http://www.dot.gov/regulations/report-on-significant-rulemakings.

movements and terminal area operations.[108] FAA also committed to specific actions including the installation of runway status lights at 23 large airports by 2016 and the installation of EMAS at additional airports that do not have standard runway safety areas to mitigate risks of runway overruns.

Delays in implementing NextGen have potential implications for addressing technology needs to alert controllers and pilots of potential runway incursions. Moreover, key business decisions regarding technology approaches and technology integration are still pending. In the context of FAA reauthorization, Congress may wish to revisit the issue to more specifically address how surface movement safety is addressed in the development and deployment of NextGen.

Integration of Unmanned Aircraft Operations

The FAA Modernization and Reform Act of 2012 required FAA to develop a plan for integrating unmanned aircraft systems (UASs), commonly referred to as drones, into the national airspace, and begin implementing that plan by October 2015. The plan has progressed slowly, in part because implementation faces many complex safety issues. For example, drones would need the ability to sense and avoid other air traffic and to land safely if radio links to their operators are lost.

The law mandated a test site program to study integration issues under operational conditions in airspace shared with manned flights. FAA selected six test sites in December 2013, and test flights have commenced. The test sites must provide data to FAA, but receive no funding from the agency. Also, under a provision of the act, FAA set up a demonstration project in the Arctic that included the certification of two commercial UAS systems. Although not mandated by the act, FAA is in the process of selecting universities to form a Center of Excellence for UAS research. FAA intends to provide the center with grant support of at least $500,000 annually over 10 years, which would have to be matched dollar for dollar with nonfederal funding.

The 2012 act required FAA to issue final rules covering civilian drones that weigh less than 55 pounds within 18 months after submitting a comprehensive plan to Congress, which occurred in November 2013. FAA publication of a proposed rule on small UASs is still pending, and would require time to receive and evaluate public comments before publishing a final rule. Issuance of a proposed rule followed by a final rule by the May 2015 deadline appears ambitious.

In the absence of regulation, FAA has approved a limited number of exemptions to small UAS operators conducting videography for movie and television productions, aerial surveying, construction site monitoring, and oil rig flare stack inspections under authority established by a provision in the act.[109] Several additional applications for exemption are pending. According to news reports, some FAA staff members have claimed the agency is undermining rigorous safety oversight by pressuring its inspectors to approve applications and by working closely with industry to streamline the approval process.[110] Regulation is further complicated by a separate provision of the 2012 act prohibiting FAA from regulating small model aircraft used strictly for recreational purposes, as these aircraft may be identical to drones flown by commercial, scientific, or government users.[111]

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[108] Federal Aviation Administration, *The Strategic Runway Safety Plan*, November 2012, http://www.faa.gov/airports/runway_safety/news/congressional_reports/media/The%20Strategic%20Runway%20Safety%20Plan.pdf.

[109] See P.L. 112-95, §333.

[110] Craig Whitlock, "FAA Staff Overruled on Drone Safety Fears," *Washington Post*, December 22, 2014, p. A1.

[111] Federal Aviation Administration, "Interpretation of the Special Rule for Model Aircraft; Final Rule," 79 *Federal* (continued...)

In November 2014, FAA released a list of 150 incidents in 2014 in which drones flew close to airports or manned aircraft including commercial jets, general aviation craft, and air ambulances. Meanwhile, potential civilian users, eyeing unmanned aircraft for a myriad of potential applications, appear to be growing more impatient with FAA. Model aircraft and small UASs have become increasingly commonplace, and several devices are available from retailers at a relatively low cost.

Enforcement Authority

Enforcing its policies with respect to unmanned aircraft has proven to be challenging for FAA, despite having at its disposal a number of enforcement tools including verbal and written warnings and fines. In 2012, the agency fined an operator using a drone to film a promotional video at the University of Virginia, finding that the craft was flown in a careless and reckless manner. In March 2014, a National Transportation Safety Board (NTSB) administrative law judge dismissed FAA's action, ruling that the operator's craft was a "model aircraft" and that FAA had no applicable, binding regulations for model aircraft in place at the time to serve as the basis for its action. In November 2014, the ruling was reversed by the full NTSB.[112] Nonetheless, the great commercial interest in small drones suggests that FAA may have a difficult time imposing its authority on commercial drone operators until final regulations are in place.

Oversight of Commercial Space Activities

Commercial space launches in the United States have comprised about 17% of worldwide totals over the past decade. Significant global competition exists in this niche market, with Russia, France, and increasingly China vying for commercial space launch business. FAA's Office of Commercial Space Transportation regulates and licenses commercial space launch providers and is also charged with promoting private-sector space launches. This parallels FAA's former dual role as a safety regulator and an industry promoter of the commercial aviation industry; concern about the potential conflicts this created led to a provision in the FAA Reauthorization Act of 1996 (P.L. 104-264) that directed FAA to focus on safety and transferred its promotional role to DOT. GAO has noted that FAA's dual mandate with regard to commercial space activity may pose a potential conflict of interest.[113]

FAA's authority encompasses launch and reentry of space vehicles, but does not extend to orbital activities and operations. Currently, there are nine active launch site licenses, with several additional launch sites and spaceports proposed. Since 1989, FAA has licensed over 230 space launches, including three suborbital human spaceflights in 2004 by SpaceShipOne. Its successor, SpaceShipTwo VSS Enterprise, was involved in a fatal test flight accident on October 31, 2014. The accident occurred three days after a launch accident involving the unmanned Orbital Sciences CRS Orb-3 Antares rocket at the Mid-Atlantic Regional Spaceport, Wallops Island, VA.

(...continued)

Register 36172-36176, June 25, 2014. The law provides that the model aircraft provision should not be construed to limit FAA authority to pursue enforcement action against model aircraft operators who "endanger the safety of the national airspace system."

[112] National Transportation Safety Board, *Michael P. Huerta v. Raphael Pirker*, NTSB Order No. EA-5730, November 18, 2014, http://www.ntsb.gov/legal/alj/OnODocuments/Aviation/5730.pdf.

[113] Government Accountability Office, *Commercial Space Transportation: Development of the Commercial Space Launch Industry Presents Safety Oversight Challenges for FAA and Raises Issues Affecting Federal Roles*, GAO-10-286T, December 2, 2009.

FAA is responsible for regulation and oversight of both the launch site and launch activities and the experimental test flight activities surrounding these two mishaps.

Issues that may arise during FAA reauthorization include the liability of commercial space operations and the regulation and oversight of human spaceflight endeavors, particularly those involving space tourism participants.

While FAA licensing requirements include liability insurance as required under 51 U.S.C. Section 50914, a separate provision in law (51 U.S.C. §50915) stipulates that the federal government shall pay for valid claims beyond the insured amounts up to an inflation-adjusted amount equaling $1.5 billion in 1989 dollars, subject to the availability of appropriations for such purpose. FAA considers it highly unlikely that a commercial space accident would result in any costs to the federal government because insurance amounts are set based on coverage for maximum probable losses, and average almost $100 million per launch.[114] GAO noted that the insurance market appears willing to provide additional coverage, up to about $500 million per launch, which could reduce federal government risk. GAO concluded that the effects of revising or eliminating government coverage on the international competitiveness of the U.S. commercial spaceflight industry are largely unknown, but could lead to higher launch costs for U.S.-based launches. GAO recommended that FAA periodically reassess its methods for determining commercial space launch insurance requirements.[115]

In 2006, FAA issued regulations pertaining to human spaceflight requirements as mandated by the Commercial Space Law Amendments Act of 2004 (P.L. 108-492). That law limited the regulations to encompass only design features posing high risk of serious or fatal injury to crew or spaceflight participants. The FAA Modernization and Reform Act of 2012 removes these limitations at the end of FY2015, at which point FAA is free to promulgate more comprehensive commercial human spaceflight regulations. One issue, particularly subsequent to the SpaceShipTwo crash, will be whether the human spaceflight industry has evolved to the point that a more comprehensive regulatory regime is appropriate. Under current law, FAA has broad authority to make this determination.

Aircraft and Parts Certification

FAA regulations and processes to oversee the safety certification of the design and manufacturing of aircraft and aircraft component parts are highly complex. There has been considerable interest among regulated industries in streamlining the certification process. The FAA Modernization and Reform Act of 2012 required FAA to streamline certification processes and address regional inconsistencies in the interpretation and application of certification regulations and processes.

The DOT OIG found in 2013 that issues with FAA's approvals process, limited resources, and communications between FAA headquarters and regional staff had led to considerable delays and backlogs in the certification process. Demand to certify NextGen equipment was expected to further strain FAA resources.[116] GAO found in 2014 that the FAA certification processes generally work well, but that FAA lacks performance measures to assess its progress on

[114] See Government Accountability Office, *Commercial Space Launches: FAA Should Update How It Assesses Federal Liability Risk*, GAO-12-899, July 2012.

[115] Ibid.

[116] Jeffrey B. Guzzetti, Assistant Inspector General for Aviation Audits, *FAA Can Improve the Effectiveness and Efficiency of Its Certification Processes*, U.S. Department of Transportation, Office of Inspector General, CC-2014-003, October 30, 2013, http://archives113.transportation.house.gov/sites/republicans.transportation.house.gov/files/documents/2013-10-30-Guzzetti.pdf.

certification-related initiatives, and that interpretation of regulations is inconsistent at the regional level.[117] Regulatory interpretation also raises questions regarding fair and equitable treatment among industry competitors.

FAA has sought to establish quality management systems to standardize processes across offices to minimize variations in the interpretation and application of regulations, including the establishment of a regulatory consistency committee. That committee identified three root causes of inconsistencies at FAA: unclear requirements, inadequate and nonstandard training, and a culture content with the status quo and reluctant to resolve inconsistencies. The committee recommended better guidance, training, oversight, and communications regarding certification activities. Although a number of steps have been taken to implement these recommendations, an independent assessment of the progress made or the effectiveness of revised certification practices has not been made. Moreover, comprehensive regulatory revisions to streamline certain certification processes are still pending.

Research and Development

FAA Research and Development focuses on aviation system safety, efficiency, and the reduction of environmental impacts. Historically, about half of FAA research funding has addressed efficiency and economic competitiveness, largely supporting modernization efforts like NextGen. About 37% of funding has gone toward research addressing safety issues, and the remainder has funded projects addressing energy and environmental impacts. FAA receives advice and recommendations regarding its research program from industry through the Research, Engineering, and Development Advisory Committee (REDAC), which assesses research needs in five major areas: operations, airport technology, aviation safety, human factors, and environment and energy. Forty-nine U.S.C. Section 44501(c) requires FAA to develop an annual national aviation research plan that is to be submitted to congressional oversight committees prior to the submission of the President's budget to Congress. The plan lays out the five-year research and development goals and anticipated funding requirements.

FAA's annual research funding in recent years has totaled about $300 million, and projected research needs are anticipated to rise to about $350 million annually by FY2018. The majority (roughly 56% in recent years) of FAA research funding is designated specifically through the Research, Engineering, and Development account. P.L. 112-95 authorized the Research, Engineering, and Development account at a specified level of $168 million annually through FY2015. Authorization and funding for research activities in this account encompass work performed at the William J. Hughes Technical Center in Atlantic City, NJ, as well as aeromedical and human factors research conducted at the Civil Aerospace Medical Institute in Oklahoma City, OK. Additionally, it funds academic research through a joint university program, aviation research grants, and various air transportation centers of excellence.

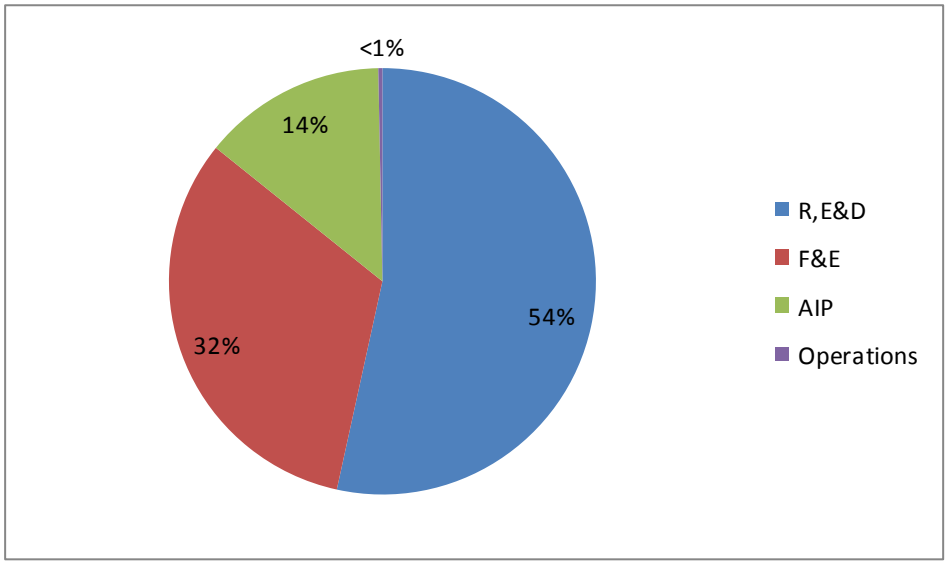
In addition to specific Research, Engineering, and Development amounts, FAA research activities are funded by FAA's other major accounts. About 29% of FAA research is funded through the Facilities and Equipment (F&E) account, including that related to advanced technology development and prototyping and NextGen system development. F&E also provides funding for the Center for Advanced Aviation System Development (CAASD), a federally funded research

[117] U.S. Government Accountability Office, *Aviation Safety: Status of Recommendations to Improve FAA's Certification and Approval Process*, GAO-14-142-T, October 30, 2014, http://archives113.transportation.house.gov/sites/republicans.transportation.house.gov/files/documents/2013-10-30-Dillingham.pdf.

and development center managed by the MITRE Corporation. Some research funding, including monies for the Airport Cooperative Research and Development program (managed by the Transportation Research Board of the National Academies) and for the Airport Technology Research Program, is derived from the AIP, which provides about 15% of all FAA research funding. The distribution of historical and projected funding for FAA research activities across major funding accounts is provided in **Figure 5**.

Figure 5. FAA Research Funding by Account

FY2013-FY2018



Source: Federal Aviation Administration, *2013 National Aviation Research Plan,* September 2013.

Notes: Data are based on annualized amounts for FY2013, requested amounts for FY2014, and estimated amounts for FY2015-FY2018.

P.L. 112-95 called for a specific research initiative on unmanned aircraft systems, continued funding of research on airfield pavements and design certification, and the creation of new centers of excellence for NextGen technologies and for aviation human resources research. The act directed FAA to coordinate with NASA to carry out interagency research on the potential effects of aviation activities on the environment. It also authorized the continued funding of research on transitioning to unleaded aviation fuels for piston aircraft, the establishment of a program on alternative jet fuel sources for civil aircraft, and a separate research program to study methods for deriving jet fuel from clean coal. It additionally directed research on wake vortices that could lead to the reduction of spacing requirements between aircraft, as well as research programs on volcanic ash avoidance, weather hazards, and cleaning and sensor technology for cabin air supplied from engines and auxiliary power supplies.

Airline Issues

Essential Air Service (EAS)[118]

The Airline Deregulation Act of 1978 (P.L. 95-504) gave airlines almost total freedom to determine which domestic markets to serve and what airfares to charge. This raised the concern that communities with relatively low passenger levels would lose service as carriers shifted their operations to serve larger and often more profitable markets. To address this concern, Congress established the EAS program to ensure a continuation of service to those small communities that were served by certificated air carriers before deregulation, with subsidies if necessary. The EAS program is administered by the Office of the Secretary of DOT, which determines the minimum level of service required at each eligible community by specifying

- a hub through which the community is linked to the national network;
- a minimum number of round trips and available seats that must be provided to that hub;
- certain characteristics of the aircraft to be used; and
- the maximum permissible number of intermediate stops to the hub.

Over the years, Congress has limited the scope of the program, mostly by eliminating subsidy support for communities within a reasonable driving distance of a major hub airport. The FAA Modernization and Reform Act of 2012 adopted additional EAS reform measures, including Section 421, which amended the definition of an "EAS eligible place"[119] to require a minimum number of daily enplanements.

Under the 2012 act, for locations to remain EAS-eligible, they must have participated in the EAS program at any time between September 30, 2010, and September 30, 2011. An EAS-eligible place is now defined as a community that, during this period, either received EAS for which compensation was paid under the EAS program or received from the incumbent carrier a 90-day notice of intent to terminate EAS following which DOT required it to continue providing service to the community (known as "holding in" the carrier). Since October 1, 2012, no new communities may enter the program should they lose their unsubsidized service.

Communities eligible for EAS in FY2011 remain eligible for EAS subsidies if[120]

- they are located more than 70 miles from the nearest large or medium hub airport;
- they require a rate of subsidy per passenger of $200 or less, unless the community is more than 210 miles from the nearest hub airport;
- the average rate of subsidy per passenger is less than $1,000 during the most recent fiscal year at the end of each EAS contract, regardless of the distance from hub airport; and

[118] For more extensive discussion, see CRS Report R41666, *Essential Air Service (EAS): Frequently Asked Questions*, by (name redacted).

[119] 49 U.S.C. §41731.

[120] The Department of Transportation Appropriations Act of 2000 (P.L. 106-69) Section 332 enacted the 70-mile rule and the $200-per-passenger subsidy rule.

- they have an average of 10 or more enplanements per service day during the most recent fiscal year beginning after September 30, 2012, unless these locations are more than 175 driving miles from the nearest medium or large hub airport, or unless DOT is satisfied that any decline below 10 enplanements is temporary.

These limitations apply only to the contiguous 48 states and Puerto Rico. EAS communities in Alaska and Hawaii are exempt from these requirements.

EAS Funding

The EAS program is funded through annual transfers of overflight fees paid to FAA by foreign aircraft that fly through U.S. airspace but do not land in the country, supplemented by annual appropriations of varying size. Section 428 of the FAA Modernization and Reform Act of 2012 authorized appropriations for the discretionary portion of EAS funding of $143 million for FY2012, $118 million for FY2013, $107 million for FY2014, and $93 million for FY2015. It also authorized all overflight fee revenues, rather than just the $50 million provided historically, to be made immediately available to the EAS program.

The Consolidated and Further Continuing Appropriations Act, 2015 (P.L. 113-235), provided $155 million in discretionary EAS funding for FY2015. It also maintained the language in the FAA Modernization and Reform Act of 2012 providing that all overflight fee revenues are to be made immediately available to the EAS program.

Subsidies

In general, DOT subsidizes two to four round trips a day with small aircraft from an EAS community to a major hub airport. DOT currently subsidizes air service to serve 160 communities that otherwise would not receive any scheduled commercial air service. As of January 1, 2014, DOT was providing subsidies of nearly $239 million for service at 117 communities in the contiguous 48 states, Hawaii, and Puerto Rico, and 43 communities in Alaska. EAS subsidies per passenger in the contiguous 48 states range from $7 to more than $980.

Policy Enforcement

On April 24, 2014, DOT issued a tentative order indicating its intention to enforce the 10-enplanement statutory criterion. This could have affected 13 communities, whose annual EAS subsidies totaled nearly $25.5 million (as of January 1, 2014), about 10.7% of the total subsidy amount. However, DOT later granted waivers to 12 out of these 13 communities, meaning these 12 communities remained EAS-eligible for FY2015.

In addition, DOT issued a Notice of Proposed Enforcement Policy regarding the $200-per-passenger subsidy cap for communities within 210 miles of the nearest medium or large hub airport. This would affect 62 out of the 114 EAS communities in the contiguous 48 states (as of January 1, 2014).

Small Community Air Service Development Program

The Small Community Air Service Development Program was established in the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (AIR-21; P.L. 106-181) to help small communities improve air service at small hubs or smaller airports. The program provides grants

to selected communities for implementing strategies to improve the availability and pricing of air service. All grants require significant local financial or other participation. Since the program first received funding in FY2002, DOT has awarded 365 grants. Although the program was authorized at $35 million annually by the Vision 100—Century of Aviation Reauthorization Act (P.L. 108-176), appropriators have funded it at a significantly lower level in recent years. In FY2014, for example, it received a $7 million appropriation.

As the program has matured, the annual number of applications for new grants has dropped, although the amount of grants sought still exceeds available funding. Recent testimony by GAO suggests that the results of the program have been mixed over the years, with fewer than half of the grants achieving their goals.[121]

Metropolitan Washington Airports Authority (MWAA)

The Metropolitan Washington Airports Authority (MWAA) was established by Congress to operate and manage the two major Washington, DC-area airports, Ronald Reagan Washington National Airport (Reagan National, known by the code letters DCA) and Washington Dulles International Airport (Dulles, known by the code letters IAD). These two airports are owned by the federal government and were transferred to MWAA under a 50-year lease authorized by the Metropolitan Washington Airports Act of 1986. The lease has been extended for 30 years, and is currently set to expire in 2067.[122] MWAA is governed by a 17-member board of directors, with 7 members appointed by the governor of Virginia, 4 by the mayor of Washington, DC, 3 by the governor of Maryland, and 3 by the President. MWAA is responsible for the operation and maintenance of the two airports and the Dulles Toll Road, a highway in Virginia, as well as the construction and funding of the Dulles Corridor Metrorail Project, which, upon completion, would extend Washington's Metrorail public transit system to Dulles Airport and beyond into Loudoun County, VA.[123]

Since the 1960s, the federal government has restricted air traffic at Reagan National to reduce congestion and to spur growth at Dulles Airport. FAA controls the number of "slots" available each hour for takeoffs and landings at Reagan National. That airport's growth also has been constrained by limiting the distance that flights are permitted to travel. Under FAA's "perimeter rule," nonstop flights from DCA could serve only airports within 1,250 miles.

Two FAA reauthorization acts, AIR-21 in 2000 and Vision 100 in 2003, increased the number of slots and established exemptions to the perimeter rule. These laws required the Secretary of Transportation to permit 44 slot-exempt operations (22 round trips) per day, of which 24 (12 round trips) must be used for beyond-perimeter flights. The FAA Modernization and Reform Act of 2012 required the Secretary of Transportation to grant eight additional beyond-perimeter slot exemptions and to consider certain criteria when granting exemptions. The specified criteria

[121] U.S. Government Accountability Office, "Commercial Aviation: Status of Air Service to Small Communities and the Federal Programs Involved," testimony, GAO-14-454T, April 30, 2014.

[122] P.L. 99-500, Title VI; U.S. Government Accountability Office, *Slot-Controlled Airports*, GAO-12-902, September 2012, p. 4.

[123] 49 U.S.C. §49106. Also see the MWAA website: http://www.metwashairports.com/.

include the benefits of increased service outside the perimeter and of service to small communities.[124]

Dulles Airport has maintained strong performance in international traffic, but its domestic traffic, which accounts for nearly 70% of IAD's passengers, has been slipping since it peaked at 22.1 million passengers in 2005. In 2013, IAD's domestic passenger count fell below 15 million.[125] Reagan National, however, has seen steady traffic growth in recent years, and surpassed 20 million total passengers in 2013 for the first time.[126] IAD's high cost per enplanement, $26, has been identified as making the airport less competitive than DCA, which has a cost per enplanement of $14.[127] In addition, DCA's proximity and convenient transportation links to central Washington, DC, have strengthened its position as the primary facility for domestic flights. MWAA officials reportedly attribute the steady erosion of domestic traffic at Dulles Airport to "Congress and its tinkering with decades-old rules that limit the number of takeoffs and landings at National as well as the distance that planes can fly."[128]

MWAA recently approved a new Use and Lease Agreement for airlines operating at DCA and IAD. The new agreement, effective January 1, 2015, includes a number of new provisions to help lower airline costs at IAD while working to keep pace with growing demand at DCA. The new agreement allows up to $300 million in revenue to be shifted from DCA to help offset operating costs at IAD over 10 years. The new agreement also includes a $1 billion capital construction program at DCA.[129]

MWAA's management and policies have been criticized by state and federal authorities. A 2012 audit report by the DOT OIG, requested by Congress, found significant issues of concern including MWAA's contracting and procurement practices, its code of ethics, its hiring and compensation practices, and the accountability and transparency of MWAA's board of directors.[130] Another report by the DOT OIG, issued in January 2014, found that a significant portion of federal grants for Phase 1 of the Dulles Corridor Metrorail Project had been spent in questionable transactions.[131]

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[124] P.L. 112-95, 126 Stat. 11.

[125] MWAA, "Washington Dulles International Airport (IAD) Air Traffic Statistics," http://www.metwashairports.com/dulles/653.htm.

[126] MWAA, "Ronald Reagan National Airport DCA) Air Traffic Statistics," http://www.metwashairports.com/reagan/1279.htm.

[127] *Aviation Daily*, "New MWAA Agreement Helps to Tackle Rising IAD Costs," December 24, 2014.

[128] *Washington Post*, "Dulles International Airport struggles to find its footing," November 27, 2014.

[129] MWAA, "Airports Authority Board Approves Use and Lease Agreement for Airlines; Addresses Regan / Dulles Imbalance," November 12, 2014; *Aviation Daily*, "New MWAA Agreement Helps to Tackle Rising IAD Costs," December 24, 2014.

[130] U.S. Department of Transportation, Office of Inspector General, MWAA's Weak Policies and Procedures Have Led to Questionable Procurement Practices, Mismanagement, and a Lack of Overall Accountability, Report No. AV-2013-006, https://www.oig.dot.gov/sites/default/files/MWAA%20Final%20Report%2010-31-2012_FINAL_signed_508_rev%2012-3-12.pdf; also see Committee on Transportation and Infrastructure, House of Representatives, hearing on November 16, 2012, "Metropolitan Washington Airports Authority: A Review of the Department of Transportation Inspector General's Findings and Recommendations," http://www.gpo.gov/fdsys/pkg/CHRG-112hhrg76706/content-detail.html.

[131] Construction of Phase 1 started in March 2009 and was completed in July 2014. Construction of Phase 2 began in 2013 and is projected to continue through 2018. U.S. Department of Transportation, Office of Inspector General, *MWAA's Financial Management Controls Are Not Sufficient to Ensure Eligibility of Expenses on FTA'S Dulles Rail Project Grant*, Report No. ZA-2014-021, January 16, 2014, https://www.oig.dot.gov/sites/default/files/MWAA%20financial%20management%20controls.pdf.

Airline Consumer Issues[132]

By and large, the rights of airline passengers are defined by Congress. Congress determines the extent to which airline consumer rights are codified in law, authorizes federal agencies to enforce those rights, and directs or authorizes federal agencies to define and enforce passenger rights that are not specifically enumerated in legislation. Over the years, Congress has intervened directly in numerous issues related to passengers' rights. One example stems from a number of incidents between 2007 and 2009 in which passengers were held aboard planes that had either departed airport gates but were not allowed to take off or had landed but were not allowed to disembark passengers. Congressional hearings ensued in 2009.[133] In the wake of this attention, DOT issued rules on tarmac delays in 2010, and language on this subject providing a firmer statutory footing for those rules was incorporated into the FAA Modernization and Reform Act of 2012.

The DOT Office of the Assistant General Counsel for Aviation Enforcement and Proceedings (OAEP), including its Aviation Consumer Protection Division, monitors airline compliance, investigates reported violations of DOT regulations, and enforces rules and regulations. It may negotiate consent orders with air carriers and fine violators. In 2012, DOT issued 49 consent orders related to aviation consumer rule violations and assessed $3,610,100 in civil penalties—both record figures.[134]

OAEP considers a number of factors in determining the civil penalty it would seek in an enforcement proceeding, such as the harm caused by the violations, the alleged violator's compliance disposition, the alleged violator's financial condition and ability to pay, how long the violations continued, and the strength of the case.[135] Currently, large air carriers are subject to a maximum civil penalty of $27,500 per violation, under 49 U.S.C. 46301 and 14 C.F.R. Part 383. Small businesses or individuals are subject to a maximum penalty of $1,100. Notwithstanding this limit, small businesses and individuals are subject to higher maximum penalties for discrimination ($11,000 per violation) and for engaging in unfair or deceptive practices ($2,500 per violation).[136]

If OAEP believes enforcement action is appropriate, it would seek a civil penalty and consent order. A consent order typically relates the facts of the case to law and regulation, sets forth the penalty the violator has agreed to pay, and incorporates language ordering the air carrier to cease and desist from further violations. If the air carrier refuses to settle, the case may go to an enforcement hearing before a DOT administrative law judge.[137] DOT also may request injunctive relief from a federal district court, although this is unusual.

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[132] For more extensive discussion of airline consumer issues, see CRS Report R43078, *Airline Passenger Rights: The Federal Role in Aviation Consumer Protection*, by (name redacted).

[133] *CQ* congressional testimony, "Airline Delays and Consumer Issues; Committee: House Transportation and Infrastructure," Aviation Subcommittee, May 20, 2009; Bill McGee, *USA Today*, "Passenger rights debate on glide path to Congress," September 30, 2009.

[134] DOT press release, "DOT Issues Two Fines Against Passenger Carriers for Tarmac Delay Violations," January 2, 2013, http://www.dot.gov/briefing-room/dot-issues-two-fines-against-passenger-carriers-tarmac-delay-violations.

[135] U.S. Department of Transportation, Office of Aviation Enforcement and Proceedings, "Answers to Frequently Asked Questions Concerning the Enforcement of the Final Rule on Enhancing Airline Passenger Protections," April 28, 2010, p. 2.

[136] 14 C.F.R. 383.2 (b).

[137] This is a simplified description of the process. Underlying this process is usually an ongoing process of negotiation between OAEP and the air carriers and OAEP and the complainants.

Since the economic deregulation of the domestic airline industry in 1978, the federal government no longer has control over airlines' prices or routes. Contracts of carriage, the legally binding rules airlines post on their websites and apply to passengers, are not subject to federal review or approval. However, a contract of carriage that conflicts with federal laws or regulations may not be enforceable by the airline.

The intense price competition of recent years has prompted airlines to respond by "unbundling" their offerings and charging separately for services that once were included in the price of a ticket. Among these charges are fees for checked baggage, early/priority boarding, and seat change on a flight. Such ancillary fees have become major causes of consumer complaints. Carriers' treatment of passengers booked on delayed or canceled flights is also a leading cause of complaints.

Ongoing Airline Passenger Rights Issues

Compensation for Delayed Baggage

Section 407 of the FAA Modernization and Reform Act of 2012 required GAO to conduct a study to (1) examine delays in the delivery of checked baggage to passengers and (2) make recommendations for establishing minimum standards to compensate passengers in the case of unreasonable delays in checked baggage delivery. Results were to be reported 180 days after enactment.[138] The resulting GAO report, released on June 14, 2012, found that DOT data do not distinguish between delayed baggage and other types of mishandled baggage such as those that are lost, damaged, or pilfered. Instead, all of these types of occurrences are categorized as "mishandled baggage." Using DOT data, GAO found that the number of mishandled-baggage reports has decreased since 2008, when airlines first began charging for the first checked bag.

Cell Phone Use Study

Section 410 of the FAA Modernization and Reform Act of 2012 required FAA to conduct a study, within 120 days of enactment, on the impact of the use of cell phones for voice communications in an aircraft during a flight in scheduled passenger air transportation where currently permitted by foreign governments in foreign air transportation.[139] FAA conducted the study and published a notice seeking public comments on cell phone use on board aircraft in September 2012. FAA is currently revising the draft study to take public comments into account.

Advisory Committee for Aviation Consumer Protection

Section 411 of the FAA Modernization and Reform Act of 2012 required the Secretary of Transportation to establish a four-member committee for aviation consumer protection to advise the Secretary in carrying out passenger service improvements.[140] This advisory committee shall terminate on September 30, 2015, unless Congress extends its life.

[138] U.S. Government Accountability Office, *Delayed-Baggage Trends and Options for Compensating Passengers*, GAO-12-804R, http://www.gao.gov/products/Gao-12-804R.

[139] The *Federal Register* notice is available at http://www.gpo.gov/fdsys/pkg/FR-2012-09-05/pdf/2012-21826.pdf.

[140] The Secretary of Transportation established this advisory committee on May 24, 2012. See http://www.gpo.gov/fdsys/pkg/FR-2012-06-13/html/2012-14456.htm.

Domestic Code-Share Agreements

Over the past two decades, major carriers have increasingly moved to joint marketing agreements, known as "code-share agreements." In these agreements, mainline carriers, such as Delta and US Airways, purchase seat capacity from independent regional airlines or contract for the services of regional carriers to fly passengers to their larger hub airports. Under code-share agreements, a mainline carrier often allows a regional carrier to (1) use the mainline carrier's flight designator code to identify flights and fares in computer reservation systems; (2) use the mainline carrier's logos and uniforms; and (3) participate in joint promotion and advertising activities.

Regional airlines now account for more than half of all scheduled passenger flights. In 2011, 61% of the advertised flights of American, Delta, United, and US Airways were operated by regional airlines under code-share agreements, up from 40% in 2000.[141]

DOT does not review most domestic code-share agreements,[142] but does require ticket sellers to disclose which airline is operating the flight prior to booking to ensure consumer transparency.[143] However, some confusion still appears to exist among passengers because air carriers, travel agencies, and advertisers may disclose this information differently. In some cases, the name of the operating carrier may not be displayed prominently. Also, some regional carriers have code-share agreements with multiple mainline carriers and use different "doing business as" names when operating on different domestic routes.[144]

Oversale/Overbooking

Oversale or overbooking is not illegal, and most airlines overbook their scheduled flights to a certain degree to compensate for "no-shows." When a flight is oversold, DOT requires air carriers to ask passengers to give up their seats voluntarily (voluntary bumping), in exchange for compensation, before bumping anyone involuntarily.

A DOT rule (14 C.F.R. Part 250) requires air carriers to properly inform and compensate passengers who are bumped involuntarily. In April 2011, DOT issued an amended final rule to address issues regarding denied boarding or involuntary bumping compensation, especially inadequate denied boarding compensation (DBC) to passengers.

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[141] U.S. Department of Transportation, Office of Inspector General, "Growth of Domestic Airline Code Sharing Warrants Increased Attention," AV-2013-045, February 14, 2013, p. 4, http://www.oig.dot.gov/sites/dot/files/Airline%20Code%20Sharing%20Report-2-14-13.pdf.

[142] Under 49 U.S.C. Section 41720, DOT's Office of the Secretary (OST) must review any agreement "between two or more major air carriers that affects more than 15 percent of the total number of available seat miles offered by the major air carriers." OST is required to assess the potential economic impact on competition of domestic code-share agreements between major carriers.

[143] In 2011, DOT added a new subsection (c) to 49 U.S.C. Section 41712 that, in addition to the existing general prohibition against unfair and deceptive practices and unfair methods of competition on the part of air carriers, foreign carriers, and ticket agents, specifically requires these entities to disclose in any oral, written, or electronic communication to the public, prior to a ticket sale, the name of the carrier providing the service of each segment of a passenger's itinerary. In addition, the amendment explicitly requires that on websites, disclosure must be made "on the first display of the Web site following a search of a requested itinerary in a format that is easily visible to a viewer." U.S. Department of Transportation, Office of the Secretary, "Guidance on Disclosure of Code-Share Service Under Recent Amendments to 49 U.S.C. § 41712," January 14, 2011, http://www.dot.gov/airconsumer/notice-codeshare.

[144] U.S. Department of Transportation, Office of Inspector General, "Growth of Domestic Airline Code Sharing Warrants Increased Attention," AV-2013-045, February 14, 2013, p. 4.

The April 2011 amendment increased DBC rates and dollar limits, with dollar limits subject to inflation-related adjustment every two years. When a passenger is bumped involuntarily and the airline arranges substitute transportation that is scheduled to reach the final destination within one hour of the original arrival time, no compensation is needed. However, if the scheduled arrival time via substitute transportation[145] is more than one hour later than the original arrival time, the following rules apply:

- If the substitute domestic transportation arranged by the air carrier is scheduled to arrive between one and two hours later than the original arrival time, the airline must pay the passenger an amount equal to 200% of the one-way fare (including all mandatory taxes and fees), with a $650 maximum. On international flights departing the United States, the threshold is set between one and four hours.
- If the substitute transportation is scheduled to arrive more than two hours later on domestic flights (four hours on international flights), or if the air carrier does not make any substitute transportation arrangements for the passenger, the compensation doubles to 400% of the one-way fare, with a $1,300 maximum.
- An air carrier must refund any unused ancillary fees for optional services paid by a passenger if he or she was denied boarding, voluntarily or involuntarily.

Ancillary Fees and Disclosure of Full Fares

An airline ticket can have many price components—some are optional fees, while others are mandatory charges. For example, on top of the base airfare, all passengers must pay a 7.5% ticket tax and a $4.00 flight segment tax; passengers departing airports in Alaska and Hawaii pay an $8.70 federal tax. International passengers must pay a $17.50 international arrival tax and a $17.50 international departure tax. Many airlines levy additional charges for checked baggage, reservation changes, premium seats, and other options. In 2014, the U.S. passenger airline industry collected more than $2.6 billion in baggage fees and over $2.2 billion in reservation cancellation/change fees.[146]

To make it easier for consumers to know how much they will have to pay for airline transportation and to ensure that airlines' fee-related practices are fair and transparent, a 2011 DOT rule requires that an airline's most prominently advertised airfare must be the full cost of the ticket, with government taxes, mandatory fees, and optional surcharges included. For both domestic and international markets, carriers must disclose the full price to be paid, including government taxes and fees and any carrier surcharges, in their advertising, on their websites, and on the passenger's e-ticket confirmation. In addition, carriers must disclose all fees for optional services through a prominent link on their home pages, and must include information on e-ticket confirmations about the free baggage allowance and applicable fees for the first and second checked bags and carry-on bags. Airlines must refund charges for lost bags.

Spirit Airlines, Allegiant Air, and Southwest Airlines challenged in federal court that portion of DOT's April 2011 rule that requires airlines and ticket agents to prominently display the total cost of a ticket, including taxes, when advertising airfares. In July 2012, the U.S. Court of Appeals for

[145] Substitute transportation may involve flights by the same or another carrier or transportation by train or bus.

[146] DOT Bureau of Transportation Statistics, "Baggage Fees by Airline 2014," http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/subject_areas/airline_information/baggage_fees/html/2014.html; and "Reservation Cancellation/Change Fees by Airline 2014," http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/subject_areas/airline_information/reservation_cancellation_change_fees/html/2014.html, as viewed on January 8, 2015.

the Washington, DC, circuit rejected the airlines' contention that the rules violate their rights to engage in commercial and political speech and are an effort by the government to conceal taxes in airfares.[147] The airlines subsequently appealed to the U.S. Supreme Court, which, on April 1, 2013, refused to consider their challenge and left the rule intact.

On July 28, 2014, the House of Representatives passed the Transparent Airfares Act of 2014 (H.R. 4156) by a voice vote. The bill would have allowed airlines' advertisements and websites to give greatest prominence to "base airfare," as long as they "clearly and separately" disclose government taxes and fees and the total cost of air transportation. While the bill would have enabled airlines to call greater attention to the many government taxes and fees on passenger aviation, it could have made price comparisons more difficult, as some advertisements or websites might display the "base airfare" most prominently while others advertise the after-tax price. The Senate did not act on the legislation.

War Risk Insurance

Following the terrorist attacks of September 11, 2001, coverage for such attacks, and for "war risks," became difficult, if not impossible, for airlines to purchase from private insurers. In response, Congress passed expansions of the FAA Aviation War Risk Insurance Program. The amended statute (49 U.S.C. §44301 et seq.) required that FAA offer war risk insurance to U.S. airlines, with the premiums based on the cost of such coverage prior to the September 11 terrorist attacks. The federal coverage under the program was relatively expansive, with coverage provided after the first dollar of losses and with a broad definition of what constitutes a war risk loss. The expansion of the program was limited in time, but was extended several times over the years, often as part of appropriations legislation. The last instance was in the Continuing Appropriations Resolution, 2015, which extended the expanded program until December 11, 2014.[148]

Up until 2014, most U.S. airlines purchased the FAA coverage and generally supported the existing program against proposed changes. In 2014, the number of air carriers purchasing insurance and the premium volumes dropped. This movement away from government insurance occurred against a backdrop of increased private insurance capacity and lower prices, despite several large aircraft losses involving war risks in 2014.

Three claims were filed by airlines under the Aviation War Risk Insurance Program, and claims payouts have been minimal. The premiums paid for the insurance were deposited in a dedicated fund at the Treasury, with the balance, over $2 billion, invested in U.S. Treasury securities. While this may seem a large sum, according to FAA, the statutory cap on premiums resulted in past premium amounts insufficient to cover the full risks assumed by the government. For example, the September 11 attacks are estimated to have caused approximately $5.6 billion in aviation hull and liability losses, adjusted for inflation. A much smaller event could have caused losses large enough to deplete the fund and require general fund revenue to cover claims.

Several presidential budgets in recent years called for changes to the program to reduce government exposure. On March 31, 2014, the Secretary of Transportation submitted a draft legislative proposal to Congress that would have made the program permanent but reduced its scope. Specifically, the Administration proposal would have created permanent coverage for war

[147] *Spirit Airlines v. U.S. DOT*, 402 U.S. App. D.C. 70.

[148] P.L. 113-164, §148(a).

risk losses from nuclear, chemical, biological, and radiological events, while giving the Secretary the authority to offer full war risk coverage for 90 days after a widespread disruption in the insurance market, such as that following the September 11 attacks. Congress did not accept the Administration proposal. In the Consolidated and Further Continuing Appropriations Act, 2015, it terminated the expanded program effective December 11, 2014.[149]

International Aviation Issues

Customs and Immigration Preclearance Facilities

Customs and immigration preclearance facilities are inspection stations operated in foreign airports by the U.S Customs and Border Protection (CBP) Office of Field Operations. Established via a formal agreement between the United States and the host country, preclearance allows CBP to staff offices at host airports and complete customs and immigration clearance for airline passengers prior to their departure for the United States. The presence of a preclearance facility makes an airport more attractive to U.S.-bound travelers, as they are not delayed by the need to pass through immigration and customs controls upon arrival in the United States.

Since the first U.S. air passenger preclearance facility was established at Toronto Pearson International Airport in 1952, additional locations have been opened in Canada, Ireland, the Caribbean, and the United Arab Emirates (UAE). Currently, CBP has 15 airport preclearance locations in operation.[150]

The program has generally not been controversial. However, the newest location in Abu Dhabi International Airport in the UAE, which began operation in January 2014, was strongly opposed by some U.S. air carriers, labor unions, and Members of Congress. Etihad Airways, owned by the government of Abu Dhabi, is the only airline that operates nonstop flights from Abu Dhabi to the United States. Opponents were concerned that U.S. carriers, which rely on code-sharing partners to serve Abu Dhabi via connections in Europe, would be competitively disadvantaged because those passengers are not eligible for preclearance.[151]

"Open Skies" Agreements

Since 1992, the United States has reached 114 "open skies" agreements governing international air passenger and air freight services. These agreements typically allow any airline based in either signatory jurisdiction to offer service between the two jurisdictions, and let the airlines determine their flight routes, frequencies, fares, and aircraft types according to market demand.[152]

An application by Norwegian Air International (NAI) for a foreign air carrier permit under the U.S.-EU Open Skies agreement has proven controversial. NAI is a subsidiary of Norwegian Air

[149] P.L. 113-235, Division L, §102.

[150] For a full list, see http://www.cbp.gov/border-security/ports-entry/operations/preclearance.

[151] *Wall Street Journal*, "U.S. Preclearance Customs Post Opens in Abu Dhabi," January 26, 2014; *Washington Post*, "Congressman concerned about TSA's Abu Dhabi pre-clearance program," February 13, 2014; *Reuters*, "Homeland Security chief grilled over Abu Dhabi travel clearance," February 26, 2014. Also see written testimony of CBP Acting Deputy Commissioner Kevin McAleenan before the House Committee on Foreign Affairs, Subcommittee on Terrorism, Nonproliferation, and Trade, July 10, 2013, available at http://www.dhs.gov/news/2013/07/10/written-testimony-cbp-house-foreign-affairs-subcommittee-terrorism-nonproliferation.

[152] See U.S. State Department, "Open Skies Partnership," http://www.state.gov/documents/organization/159559.pdf.

Shuttle, the third-largest discount carrier in Europe. Norwegian Air Shuttle and its intercontinental arm, Norwegian Long Haul, hold FAA-issued airline certificates under Norwegian license and provide nonstop services to several U.S. destinations from several European countries, including Norway. These services are authorized under the U.S.-EU agreement, which has applied to Norway, not an EU member state, since 2011.

On December 3, 2013, Norwegian Air Shuttle submitted an application for NAI, which is registered in Ireland, to operate transatlantic flights to U.S. destinations.[153] NAI's application has been pending before DOT for nearly a year. In general, DOT approves most EU carriers' application within weeks, making the delay unprecedented. At issue is NAI's plan to operate with an Irish air operator certificate, using not only Norwegian, EU, and U.S. citizens as crew members, but also contracting for crew members from other countries.

Opponents, including labor groups, some airlines, and many Members of Congress, allege that NAI violates Article 17 bis of the U.S.-EU open skies agreement, which states that "opportunities created by the Agreement are not intended to undermine labour standards.... "[154] They contend that NAI's plan would create precedent for using low-wage crew members from third countries aboard flights to the United States. On the other side of the argument, several former U.S. secretaries of transportation, as well as EU officials and the Irish Aviation Authority, say the application is valid under the terms of the U.S.-EU open skies agreement, and would encourage competition and bring lower fares.[155]

On September 2, 2014, DOT issued an order dismissing NAI's request for a temporary exemption from the rules so that it could begin flights to the United States while DOT considers its application for a foreign air carrier permit. This dismissal is not for a ruling on the merits of NAI's permit application.[156]

In the Consolidated and Further Continuing Appropriations Act, 2015, Congress adopted two provisions related to the NAI issue. Section 419(a) of Division K prohibits any expenditure of funds to approve a foreign air carrier permit that would contravene Article 17 bis. The section immediately following, Section 419(b), provides that the language of Section 419(a) does not bar issuance of a foreign air carrier permit that is consistent with the U.S.-EU open skies agreement and U.S. law. Neither section binds DOT to reach any particular conclusion with respect to the NAI application.

Norwegian Air Shuttle is one of the few European discount carriers now flying to the United States. However, other low-fare airlines in Europe are known to be interested in offering transatlantic service, making it possible that the controversy raised by the NAI application will reappear in other contexts in the future.

[153] U.S. Department of Transportation Docket ID: DOT-OST-2013-0204. See the documents related to the NAI application at http://www.noticeandcomment.com/DOT-OST-2013-0204-fdt-21019.aspx.

[154] http://www.state.gov/documents/organization/143930.pdf.

[155] *Wall Street Journal*, "Norwegian Air's Fight for Expansion Intensifies," November 25, 2014; *Roll Call*, "U.S., EU Officials Meet On Norwegian Air Controversy," November 25, 2014; *Irish Times*, "Norwegian Air boss rejects criticism over budget airline plan," November 20, 2014; *The Hill*, "188 House members urge Norwegian Air rejection," November 25, 2014.

[156] See DOT order dismissing NAI's application for exemption at http://www.regulations.gov/#!documentDetail;D=DOT-OST-2013-0204-0173.

Foreign Ownership in U.S. Carriers

Current U.S. law requires that to operate as an air carrier in the United States, a carrier must be a "citizen of the United States." To be considered a citizen for civil aviation purposes, an entity must be owned by an individual U.S. citizen, a partnership of persons who are each U.S. citizens, or a corporation (1) whose president and at least two-thirds of whose directors and other managing officers are U.S. citizens, (2) that is under the actual control of U.S. citizens, and (3) has at least 75% of its voting stock owned or controlled by U.S. citizens.[157]

This limits foreign ownership of any U.S. airline to 25%, considerably lower than the 49% limit set by the EU. The citizenship requirements can be altered only through changes to the statute. However, DOT initiated a rulemaking proceeding in 2005 and 2006 in which it proposed exercising its discretionary authority to interpret the statue's requirement of "actual control" in a manner that would have increased opportunities for foreign investment in U.S. airlines. After receiving extensive comments, DOT did not proceed with the proposed change of regulations. Legislative proposals to keep DOT from proceeding with its rulemaking were introduced in the 109th Congress, but were not enacted.[158]

The restrictions on foreign ownership have been an issue with respect to some U.S. carriers. Virgin America, which is closely related to Virgin Atlantic Group, is based in the United Kingdom, but is now 49.9% owned by Delta Airlines. Virgin has stated that no more than 24.9% of its voting shares are owned by non-U.S. citizens, and that provisions in its charter limit voting and share ownership by non-U.S. citizens.[159] German-based carrier Lufthansa holds 16% of the shares of U.S. carrier JetBlue, according to JetBlue's financial reports.[160] Following the 2007-2009 recession, as many U.S. carriers experienced extreme financial distress, increased foreign ownership was advanced as a way of injecting additional capital into the industry.[161] Calls for greater foreign ownership have diminished as the industry's financial position has stabilized, but the issue may reemerge if U.S. ownership limits become an obstacle to foreign acquisitions by U.S. airlines.[162]

[157] 49 U.S.C. §40102(a)(15)(a)-(c).

[158] See CRS Report RL33698, *Reauthorization of the Federal Aviation Administration (FAA): Background and Issues for Congress*, coordinated by (name redacted); U.S. Government Accountability Office, *Issues Relating to Foreign Investment and Control of U.S. Airlines*, GAO-04-34R, October 30, 2003.

[159] Virgin America, "Prospectus," November 13, 2014, pp. 33-38.

[160] JetBlue Airways Corp., Form 10-K for the year ended December 31, 2013, p. 12; Peter Elkind, *Fortune*, "Branson's Virgin America gets grounded," January 25, 2007.

[161] See, for example, Shaun Read, "US airlines hurt by lack of foreign cash," *Financial Times*, February 12, 2013. For more detailed information and a timeline about the U.S. airlines industry restructuring and consolidations, see GAO, *Airline Competition: The Average Number of Competitors in Markets Serving the Majority of Passengers Has Changed Little in Recent Years, but Stakeholders Voice Concerns about Competition*, GAO-14-515, June 11, 2014, pp. 4-6, http://www.gao.gov/assets/670/664060.pdf.

[162] Ibid., "The U.S. Airline Industry's Profitability Has Improved since 2009," p. 10; *Bloomberg Businessweek*, "U.S. Airlines Are packing Planes and Rolling in Record Profits," October 2014; U.S. Bureau of Transportation Statistics press release BTS 59-14, "3rd Quarter 2014 Airline Financial Data," December 15, 2014.

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