United States Government Accountability Office

Report to Congressional Requesters

December 2014

COMMERCIAL AVIATION

Raising Passenger Facility Charges Would Increase Airport Funding, but Other Effects Less Certain

GAO-15-107

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GAO Highlights

Highlights of GAO-15-107, a report to congressional requesters

Why GAO Did This Study

About $2.8 billion in Passenger Facility Charges (PFCs) were collected in 2013. PFCs are federally authorized fees paid by passengers at the time of ticket purchase to help pay for capital development at commercial service airports and have been capped at $4.50 per flight segment since 2000. Airports are seeking an increase in the PFC cap to $8.50. Airlines, which collect PFCs at the time of purchase and remit the fees to airports, oppose an increase because it could potentially reduce passenger demand. Some airports have suggested that alternative PFC collection methods could allow the PFC cap to be raised without adversely impacting demand.

GAO was asked to examine these issues. This report discusses (1) the potential effects of PFC cap increases, (2) how well the current PFC collection process works, and (3) alternative PFC collection methods. GAO developed a model to assess the potential effects of PFC cap increases on funds for airport investment and the aviation system. GAO interviewed 26 stakeholders, including airports and airlines representing a range of sizes, as well as consumer groups, to discuss PFC collection methods.

What GAO Recommends

GAO recommends that FAA review the extent to which airline independent audits of PFC collections follow FAA guidance and take additional steps to educate airports about their right to review these audits. The Department of Transportation (DOT) agreed to review the extent to which airline audits use FAA guidance, but noted they may not be able to require airlines to respond; and agreed to take additional steps to educate airports about their rights. DOT also provided technical comments which GAO incorporated as appropriate.

View GAO-15-107. For more information, contact Gerald Dillingham at (202) 512-2834 or dillinghamg@gao.gov.

What GAO Found

Increasing the Passenger Facility Charges (PFC) cap would significantly increase PFC collections available to airports under the three scenarios GAO modeled but could also marginally slow passenger growth and therefore the growth in revenues to the Airport and Airway Trust Fund (AATF). GAO modeled the potential economic effects of increased PFC caps for fiscal years 2016 through 2024 as shown in the table below. Under all three scenarios, AATF revenues, which totaled $12.9 billion in 2013 and fund Federal Aviation Administration (FAA) activities, would likely continue to grow overall based on current projections of passenger growth; however, the modeled cap increases could reduce total AATF revenues by roughly 1 percent because of reduced passenger demand. These projected effects depend on key assumptions regarding consumers' sensitivity to a PFC cap increase, whether airlines would pass on the full increase to consumers, and the rate at which airports would adopt the increased PFC cap.

Estimated PFC Collections Available to PFC Approved Airports and Associated Changes to Airport and Airway Trust Fund Revenues, 2016-2024 (Dollars in millions)

Scenario	Year	2016	2017	2018	2019	2020	2021	2022	2023	2024
Current PFC collections baseline estimate										
$4.50 cap	PFC	3,073	3,149	3,225	3,301	3,373	3,437	3,498	3,561	3,628
Estimated changes to PFC baseline and AATF revenues										
$6.47 cap ($4.50 cap adjusted for CPI)	PFC	+1,341	+1,375	+1,409	+1,444	+1,476	+1,505	+1,533	+1,561	+1,592
	AATF	-90	-93	-95	-97	-99	-100	-102	-103	-105
$8.00 cap (President's budget)	PFC	+2,364	+2,424	+2,485	+2,546	+2,604	+2,655	+2,705	+2,756	+2,810
	AATF	-161	-164	-168	-172	-175	-178	-180	-183	-186
$8.50 cap, CPI adjusted (ACI/AAAE proposal)	PFC	+2,696	+2,886	+3,093	+3,316	+3,551	+3,787	+4,033	+4,291	+4,562
	AATF	-184	-196	-210	-225	-240	-255	-271	-287	-304

Source: GAO analysis of DOT data. | GAO-15-107

Note: Model assumptions are (1) an elasticity rate of -0.8; (2) airlines would pass the total fee increase to passengers through higher ticket prices; and (3) airports that currently impose a PFC would raise it to the maximum allowed in the first year. ACI/AAEE proposal does not specify which inflation index so we used the CPI as it is the federal inflation index standard.

Stakeholders said that the current PFC collection method generally works well, but airport officials said that transparency over PFC collections could be enhanced. Stakeholders universally said that the current method is preferred because the PFC is paid at the time of purchase. Airlines are required to have audits of their PFC collections and FAA provides audit guidance to help provide assurance that collections are accurate. However, the guidance is voluntary and FAA does not know if airlines' auditors use it. FAA relies on airports to alert them of discrepancies but some airports may not be aware they can review audits. FAA could take additional steps beyond what is stated in the guidance to inform airports about their rights, and thus provide reasonable assurance to Congress, airports, and airline passengers about the reliability of those audits and PFCs remitted to airports.

Stakeholders GAO interviewed generally said that alternative methods to collect PFCs, such as airport kiosks or online or mobile payments, are technologically feasible but they would impose additional steps for passengers, costs for airports, and changes in business processes. Therefore, stakeholders said that that the current collection method is better than the identified alternatives.

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Abbreviations

AAAA	American Association of Airport Executives
AATF	Airport and Airway Trust Fund
ACI-NA	Airports Council International-North America
A4A	Airlines for America
AIP	Airport Improvement Program
CPI	Consumer Price Index
DOT	Department of Transportation
GDS	Global Distribution System
FAA	Federal Aviation Administration
NFC	near field communication
NPR	National Priority Rating
PFC	Passenger Facility Charge
TAF	Terminal Area Forecast
TSA	Transportation Security Administration

U.S. GOVERNMENT ACCOUNTABILITY OFFICE
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December 11, 2014

The Honorable Bill Shuster
Chairman
Committee on Transportation and Infrastructure
House of Representatives

The Honorable Frank A. LoBiondo
Chairman
The Honorable Rick Larsen
Ranking Member
Subcommittee on Aviation
Committee on Transportation and Infrastructure
House of Representatives

We have previously found that funding for planned airport development from Airport Improvement Program (AIP)[1] grants and Passenger Facility Charges (PFC) will not be sufficient to fund planned airport development eligible for this support.[2] Other airport revenues may not be available to fund any shortfall, as they are often committed to projects not eligible for federal grants like parking garages, airport concessions, and operating costs. AIP grants have declined in recent years, and the amount of PFCs that airports can collect per passenger has not changed since 2000, when it was capped at $4.50.[3] Airports are seeking an increase in the PFC cap to help fund their planned development projects, such as terminal rehabilitation and expansion. However, airlines—which collect PFCs at the time of purchase and remit to airports—oppose an increase, because they believe that airports have adequate access to outside funding sources. Airline representatives also assert that an increase in the PFC cap could lead to a higher cost of travel, thereby reducing passenger demand and airline revenues. While many aviation stakeholders believe that the current system of collecting PFCs as part of the ticket purchase is

[1]AIP grants are provided to public agencies and in some cases to private owners and entities for the planning and development of public-use airports that are included in the National Plan of Integrated Airport Systems.

[2]GAO, *Airport Funding: Aviation Industry Changes Affect Airport Development Costs and Financing*, GAO-14-658T (Washington, D.C.: June 18, 2014).

[3]49 U.S.C. § 40117(b)(4); C.F.R. §§ 158.5, 158.17.

the most efficient means possible, some airports have suggested that alternative PFC collection methods could be used, which could allow the PFC cap to be raised without greatly affecting demand.

In February 2013, we issued a correspondence report, "Alternative Methods for Collecting Airport Passenger Facility Charges," in response to a requirement in the 2012 Federal Aviation Administration (FAA) Reauthorization that we examine the potential for collecting PFCs outside of the airline ticket process.[4] The report identified three basic alternatives but found that each faces considerable challenges to implement. You asked us to do follow-up work on this topic. This report addresses the following questions: (1) What are the potential effects of raising the PFC cap on airport and federal aviation revenues? (2) How well does the current PFC collection process work? and (3) What is known about alternative PFC collection methods and how well they might work?

We developed an economic model to assess the potential effects of increasing the PFC cap on funds for airport investment and the aviation system, taking into account their effect on passenger demand and consequently on aviation taxes that contribute to Airport and Airway Trust Fund (AATF) revenues which help fund the FAA, AIP, and other aviation programs and activities. To develop this model, we collected and summarized the most recently available data from FAA on (1) PFC collections by airport hub[5] category from 2009 to 2013 and (2) FAA passenger boardings (i.e., enplanement) forecasts from 2016 to 2024. We determined that the data were sufficiently reliable for our purposes by reviewing documentation and interviewing knowledgeable FAA officials.

[4]GAO, *Alternative Methods for Collecting Airport Passenger Facility Charges*, GAO-13-262R (Washington, D.C.: Feb, 14, 2013).

[5]FAA categorizes commercial service airports into four primary hubs—large, medium, small, and nonhub. Large hubs are defined by statute as having at least 1 percent of total passenger traffic in the most recent year (approximately 7.4 million passengers in 2013), while medium hubs have between 0.25 and 1 percent (approximately 1.85 million to 7.4 million passengers in 2013) of total passenger traffic. Small hub airports are those with at least .05 percent but less than .25 percent of total passenger traffic and non-hub airports are at least 10,000 enplanements but less than .05 percent of enplanements. Non-primary commercial service airports that have scheduled air service and process at least 2,500 enplanements annually are eligible to collect PFCs. 49 U.S.C. § 40102(a)(29), (32).

We conducted a literature search on elasticity rates[6] for air travel, interviewed a non-generalizable sample of industry experts selected for their knowledge of airline passenger demand modeling to discuss our research, and selected a spectrum of rates to show the potential effects of PFC changes on passenger demand. With these results, we estimated the effects on anticipated taxes and fees that fund the AATF. To assess how well the current PFC collection process works and alternatives, we updated work from our February 2013 report through a literature review and interviews with key FAA and industry stakeholders, including the principal airline and airport trade associations, technology companies, airline passenger consumer representatives, and four airlines and five airports. We selected the airlines based on airline size measured by the number of departures and passengers and type of carrier (legacy, low cost, and regional carrier). We selected the airports based on airport size, amount of PFC charged, and percentage of originating versus connecting passenger traffic. We interviewed representatives from companies that have developed or installed technologies that could be used in potential alternative collection systems. We reviewed applicable statutes and regulations on FAA's authority to audit collections and interviewed FAA officials on their role in auditing airlines' PFC collections and remittances. To understand how another federal agency audits its passenger fee collections and modeled increases to its security fee, we interviewed officials from the Transportation Security Administration (TSA). Additional information on our methodology is provided in appendices I and II.

We conducted this performance audit from April to December 2014 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient and appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

[6]Price elasticity of demand is a measure used in economics to show the responsiveness of consumers in terms of the quantity demanded of a good or service to a change in its price.

Background

PFCs are federally authorized fees which were established in 1990 to help pay for capital development at commercial service airports.[7] PFCs are currently capped at $4.50 per flight segment with a maximum of two PFCs charged on a one-way trip or four PFCs on a round trip, for a maximum of $18 total. About $2.8 billion in PFCs was collected by airlines on behalf of airports in 2013. Certain categories of passengers and flights are exempt from paying PFCs. For example, passengers flying on frequent-flier award coupons are exempt from paying a PFC.[8] The intent of the PFC program is to further airport development that (1) preserves or enhances airports' safety, security, or capacity; (2) reduces noise generated by airport activities; or (3) enhances airline competition.[9] PFCs give airports a source of funding for airport development over which they have greater local control because airlines have more limited say regarding how PFCs are used than they may have regarding the use of airport terminal rents or landing fees. This way, if an airport wants to build additional gates to attract new competition, an incumbent airline cannot block the project by refusing to fund it. PFCs can be applied to FAA approved eligible projects,[10] and can be used as a match for AIP grants or to finance the debt on approved projects.

Airports must apply to the FAA for authority to collect PFCs for use on approved projects, and if approved by FAA, airlines are required to collect PFCs and remit them to appropriate airport recipients. Each airport's application must list specific eligible projects that PFCs will fund and the total amount to be collected. Once PFC applications are approved,

[7]Aviation Safety and Capacity Expansion Act of 1990. Pub.L. No. 101–508, §§ 9110-9112, (1990), recodified as amended at 49 U.S.C. § 40117.

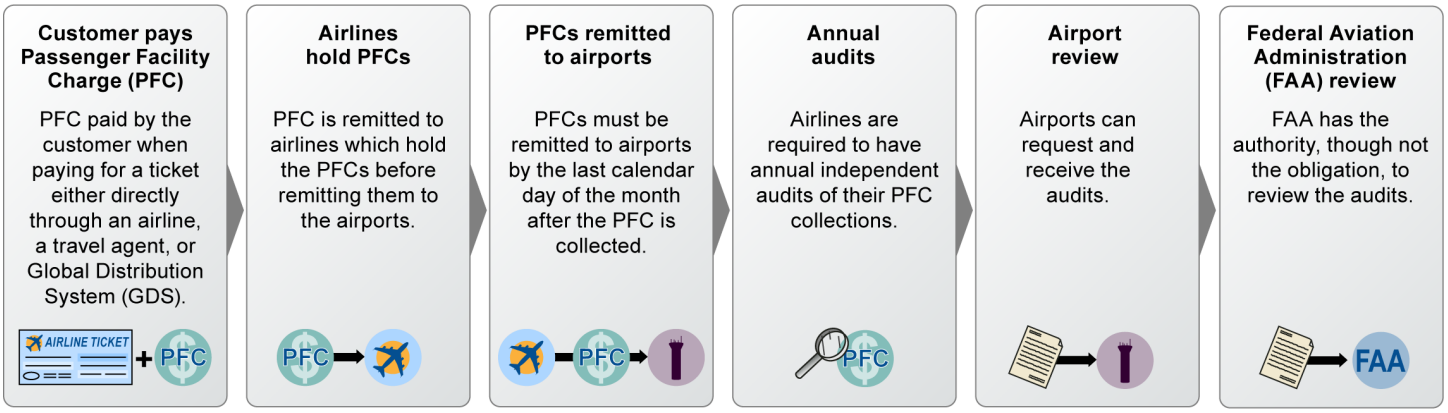
[8]In addition, passengers on flights which receive Essential Air Service, flights in Alaska on aircraft with a seating capacity of less than 60 passengers, and flights between two or more points within Hawaii are also exempted from paying PFCs. 14 C.F.R. § 158.9. Essential Air Service (EAS) flights are federally subsidized flights to small communities. The EAS program was established to guarantee that small communities that were served by air carriers before airline deregulation in 1978 maintain a minimum level of scheduled air service.

[9]14 C.F.R. § 158.15(a); various restrictions may apply, see 14 C.F.R. § 158.15(b).

[10]Large and medium hub airports that want to impose a $4 or $4.50 PFC are subject to additional requirements under the PFC statute and regulations. Namely, these airports must demonstrate that the proposed PFC-funded project will make a significant contribution to improving air safety and security, increasing competition among air carriers, reducing current or anticipated congestion, or reducing the impact of aviation noise on people living near the airport among other things. 49 U.S.C. § 40117(b)(4)(A).

airlines must add any approved PFC to the base fare (along with other federal taxes and fees) at the point of sale on the ticket by an airline, a travel agent, or Global Distribution Systems (GDS).[11] Airlines must remit PFCs to airports on a monthly basis. Airlines are able to keep the "float"—that is, interest accumulated on the fees between the time they are collected and remitted—as well as 11 cents per PFC collected for administration costs.[12] Airlines that annually collect at least 50,000 PFCs are required to have annual independent audits of their PFC collections, and airports can request and receive the results of audits.[13] FAA has the authority, though not an obligation, to review the audits.[14] (See fig. 1).

Figure 1: PFC Collection, Remittance, Auditing, and Review Process



Source: GAO. | GAO-15-107

Note: Airlines that annually collect at least 50,000 PFCs are required to have annual independent audits of their PFC collections.

From 1990 through August 2014, FAA approved airports' requests to collect a total of around $89 billion in PFCs. This amount includes future approved collections—with about a third of collecting airports approved to collect PFCs to at least 2024 or later. Of the $89 billion, about 34 percent has been committed for "landside" projects such as terminals; 34 percent

[11]GDS are computerized centralized services that provide travel-related transactions.

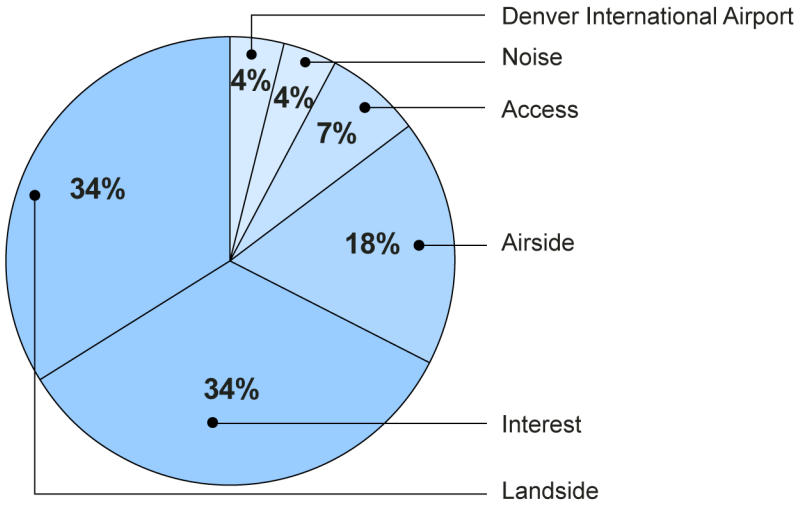
[12]14 C.F.R. § 158.53(a).

[13]14 C.F.R. § 158.69(b), (c).

[14]14 C.F.R. § 158.71(b).

for interest on debt used to pay for projects either in development or completed; 18 percent for “airside” projects such as runways and taxiways; 7 percent for airport access such as roads and rail connecting to airports; 4 percent for noise reduction; and 4 percent for the construction of Denver International Airport.[15] (See fig. 2).

Figure 2: FAA-Approved Passenger Facility Charges by Type of Project Category as of August 1, 2014



Source: GAO analysis of FAA data. Percentages do not add to 100 because of rounding. | GAO-15-107

Most airports that are eligible to collect PFCs do so at the maximum rate $4.50 per flight segment. As of October 1, 2014, according to FAA data, 358 out of 538 eligible airports were collecting PFCs, and 351 of the 390 approved airports chose to collect at the maximum rate.[16] In all, 98 of the top 100 airports have been approved to collect PFCs, with approximately 90 percent of all PFCs (by amount) collected by large and medium hubs. Airports that impose a PFC may become ineligible to receive up to 50

[15]FAA reports PFCs separately for the new Denver International Airport given it is a large stand-alone project that represents a significant percentage of PFC approvals.

[16]An additional 32 commercial service airports beyond the ones currently collecting have been approved to collect PFCs since the program started in 1992; however, these airports may have reached their approved collection amounts and not reapplied for additional approvals.

percent (if collecting PFCs at the $1, $2, or $3 level) or 75 percent (if collecting PFCs at the $4 or $4.50 level) of the formula AIP grants that they would otherwise receive.[17] The vast majority of the funding reduction (87.5 percent) is then made available to smaller airports through AIP discretionary grants through the Small Airport Fund,[18] with the remainder available to any airport under FAA's AIP discretionary grant program.[19]

The President's 2015 Budget proposes an increase of the PFC cap to $8.00, while the airport trade associations have proposed an increase in the PFC cap to $8.50 but also periodically adjusted for inflation thereafter. Some airports have advocated for a complete lifting of any cap on PFCs, and while one airport trade association previously advocated for alternative collection methods to collecting the PFC on the ticket as a way to increase the PFC cap; the association is no longer doing so. As part of the last FAA reauthorization process, legislation was introduced that would have allowed up to six airports to impose an unlimited PFC collected directly from passengers by the airport, if the fee were not collected on the ticket; [20] however, this proposal was not part of the final Act.[21]

In addition to PFCs, there are federal taxes and fees that support aviation activity, including the 7.5 percent ticket tax and a $4.00 per-flight segment

[17] 49 U.S.C. § 47114(f)(1).

[18] The Small Airport Fund distributes funds to small hub, nonhub, non-primary and general aviation airports primarily for the construction of new runways and airport development among other activities. Funds are distributed as follows: 1/7th of funds to small hubs; 4/7th of funds to nonhub and non-primary airports, and 2/7th of funds to general aviation airports which includes reliever as well as certain public use airports with restrictions. 49 U.S.C.§ 47116.

[19]AIP formula grants are apportioned by formula or percentage and are divided among four types of airport categories—primary airports, cargo service airports, general aviation airports, and Alaska supplemental funds. Discretionary funds are those not distributed by formula grants as well as the foregone PFC revenues that were not deposited into the Small Airport Fund. Hub designations under the primary airports category establish some rules for AIP formula grants, and discretionary funds may be based on eligibility for various types of projects. The hub designations are also one factor used in the calculation of the National Priority Rating (NPR) for various project types, and the NPR is itself one of many factors in how the FAA manages AIP grant funds. 14 C.F.R. §§ 158.93, 158.95.

[20]S.223, §202, 112th Cong.(2011).

[21]FAA Modernization and Reform Act of 2012, Pub. L. No. 112-95, 126 Stat. 11 (2012).

fee for domestic flights and an international arrival and departure tax of $17.50 per segment for international flights which are deposited into the AATF, as well as security and customs and border protection taxes, among others which are distributed to their respective agencies. All these taxes and fees are part of the ticket purchase transaction and together make up to 13.7 percent of the total cost of a ticket on average, with PFCs representing about 2.9 percent of the total ticket cost. In Fiscal Year 2013, aviation taxes contributed almost $12.9 billion to the AATF, with roughly $11.7 billion (91 percent) from passenger-related taxes and the rest from fuel-based or cargo taxes.

Increasing the Cap on PFCs Would Significantly Increase Airport Funding but Could Also Have Other Effects

Increasing the PFC Cap Would Significantly Increase Airport PFC Collections, but Key Assumptions Influence These Estimates

To estimate the potential amount of funding available to airports, as well as associated effects on passenger demand and ticket tax revenues from increasing the PFC cap, we developed an economic demand model. The general approach of this analysis was to model airport collections and passenger traffic under various PFC cap levels. We modeled three different increases in the PFC cap amount each starting in 2016.[22] Those three scenarios are:

- PFC cap of $6.47 (which is the 2016 equivalent of $4.50 indexed to the Consumer Price Index (CPI) starting in 2000 when the cap was first instituted);
- PFC cap of $8 based on the President's 2015 budget proposal; and

[22]As noted earlier, under current law, the maximum of two PFCs can be charged on a one-way trip or four PFCs on a round trip. Thus, the maximum total that could be charged to a passenger in our scenarios would be $25.88 with a $6.47 cap; $32 with an $8 cap; and $34 with an $8.50 cap.

- PFC cap of $8.50 that would be indexed to inflation based on the airports' trade associations' legislative proposal.[23]

Assuming that the PFC increase is fully passed on to consumers and not absorbed through a reduced lower base (before tax) fares, the higher cost of air travel could reduce passenger demand according to economic principles. Economic principles and past experience dictate that any increase in the price of a ticket—even if very small—will have an effect on some consumers' decisions on whether to take a trip or not. For example, an increase in the price by a few dollars may not affect the decision of a business flyer going for an important business meeting but could affect the decision of a family of four going on vacation. An increase in the price will also have different effects depending on the type of air travel, for example, on short-haul and long-haul flights, and the availability of substitutes such as driving or taking a train instead of flying. Thus, the extent to which people decide whether to fly depends on the extent of consumer sensitivity to changes in the cost of air travel and is referred to as the "elasticity of demand"—the more elastic the demand, the more passenger air traffic is reduced by increases in price.[24] For our base model analysis, we assumed a demand price elasticity of -0.8. In addition, to show the potential funding available to airports, we assumed that airports would adopt the maximum possible PFC cap at the start of 2016, but in reality, adoption of higher PFC levels would likely be a gradual process undertaken by individual airports according to their financial needs. Accordingly, model results in this report should be considered upper bound estimates of the funds available to airports that were approved to collect PFCs as of July 31, 2014. A full description of the model, data sources, and key assumptions appears in appendix II.

[23]The FAA and the airports trade associations—Airports Council International-North America (ACI-NA) and the American Association of Airport Executives (AAAE)—used construction cost indices to calculate their proposed cap amounts. FAA used the Bureau of Labor Statistics' BHWY and BONS indices, whereas ACI-NA and AAAE used the Construction Cost Index. FAA, ACI-NA and AAAE told us they used these indices, given that planned development costs are aligned with construction costs. The trade associations have not proposed an inflation rate so we used the CPI to adjust for inflation as this is a federal inflation-index standard.

[24]In air travel, "demand elasticity" measures the percentage change in tickets sold as a result of percent change in price of the tickets. For example, an elasticity of minus one would imply that a 10 percent increase in price of the ticket would lead to a 10 percent reduction in tickets sold. The higher the elasticity, the more responsive or sensitive the demand is to a change in price.

Increasing the PFC cap under the three different scenarios that we modeled would significantly increase the potential amount of PFC collections in comparison to what could be available without an increase in the PFC cap. (See table 1).

Table 1: Estimated Passenger Facility Charge (PFC) Collections Available to PFC Approved Airports, 2016-2024 (Dollars in millions)

Scenario	2016	2017	2018	2019	2020	2021	2022	2023	2024
Current baseline estimate for PFC collections available to PFC approved airports									
$4.50 cap[a]	3,073	3,149	3,225	3,301	3,373	3,437	3,498	3,561	3,628
Estimated changes to the baseline estimate for PFC collections available to PFC approved airports under various cap scenarios									
$6.47 cap[b] ($4.50 cap adjusted for CPI)	+1,341	+1,375	+1,409	+1,444	+1,476	+1,505	+1,533	+1,561	+1,592
$8.00 cap[c] (President's budget)	+2,364	+2,424	+2,485	+2,546	+2,604	+2,655	+2,705	+2,756	+2,810
$8.50 cap, CPI adjusted[d] (ACI-NA/AAAE proposal)	+2,696	+2,886	+3,093	+3,316	+3,551	+3,787	+4,033	+4,291	+4,562

Source: GAO analysis using DOT data. | GAO-15-107

Notes: These projections assume: 1) 100% adoption of maximum allowable PFCs in 2016 by airports approved to collect a PFC as of July 31, 2014; 2) a -0.8 elasticity rate and 3) 100% pass through of the cost of the PFC increase to passengers.

Results are reported in nominal dollars.

[a]Baseline PFC revenues under current cap ($4.50).

[b]Change in PFC revenues relative to baseline under $6.47 PFC cap. This cap was developed by using the CPI to adjust for inflation between 2000 and 2016.

[c]Change in PFC revenues relative to baseline under $8 PFC cap. This cap was proposed in the President's 2015 budget.

[d]Change in PFC revenues relative to baseline under $8.50 PFC cap which is adjusted for inflation using the Congressional Budget Office's projected CPI for each calendar year in our analysis. This amount was proposed by Airports Council International-North America (ACI-NA) and American Association of Airport Executives (AAAE). The trade associations have not proposed an inflation rate so GAO has used the CPI to adjust for inflation as this is a federal inflation index standard.

As with any modeling exercise, these projections depend on assumptions about participants' behavior, in this case the behavior of consumers, airlines, and airports. The results presented above reflect three key assumptions about these behaviors.

- *Elasticity of demand.* There is uncertainty associated with demand analysis, because the estimated reductions in air travel are highly dependent on the assumptions about consumers' sensitivities to changes in price. As noted above, to account for this uncertainty, we used an elasticity rate of -0.8, meaning that a 1 percent increase in price would result in a 0.8 percent reduction in the quantity of air travel.[25] This rate is based on the assumption that PFC increase will affect all routes across the nation and will affect all routes equally. If PFC increases occur at fewer airports, demand would be more elastic because consumers could substitute their routing to some extent and the elasticity rate might be greater. As a result, we modeled three different elasticity rates drawn from economic literature to test the sensitivity of our results to these rates and found that for small price increases, small differences in the elasticity rate have very little impact.[26] We discussed the selection of this elasticity rate with experts who have published on aviation economics, and they generally agreed with the selection. The model results from all three elasticity rates are shown in appendix II (table 5).

- *PFC pass-through.* We assumed that the entire PFC increase would be fully passed on to consumers and not absorbed by the airlines by adjusting of their base fares downward. Airline statements and experts with whom we spoke largely support our assumption that airlines would attempt to pass the PFC increase on to consumers. However, consumers' response may vary from market to market and may not happen all at once, as airlines adjust capacity to respond to higher fares. For example, in the immediate period when airlines have fixed capacity, airlines' may have to absorb all or some of this

[25]This estimate is based on the national level estimate presented in *Estimating Air Travel Demand Elasticities*, InterVISTAS Consulting Inc. (December 2007)

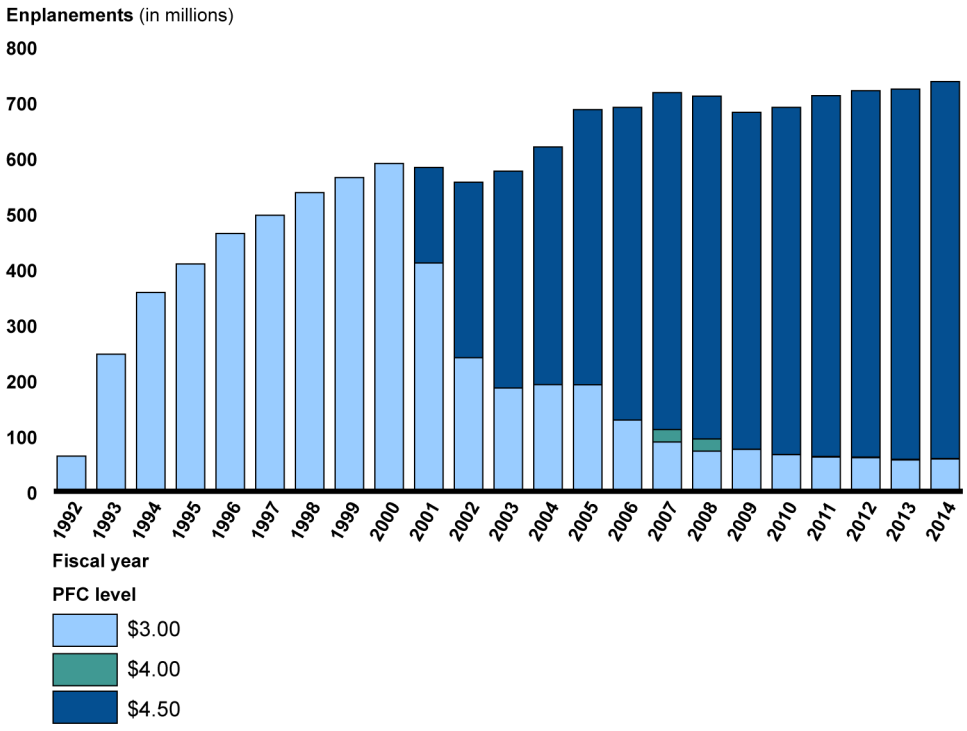
[26]We modeled -.65 as suggested by *Estimating Air Travel Demand Elasticities*, InterVISTAS Consulting Inc. (November 2014); -.8 as estimated in *Estimating Air Travel Demand Elasticities*, InterVISTAS Consulting Inc. (December 2007); and -1.122 as estimated in *Air Travel Demand Elasticities: Concepts, Issues and Measurement*, D.W. Gillen, W.G. Morrison and C. Stewart, Department of Finance, Government of Canada (January 2003).

increase in order to maximize their revenues.[27] In the following years, as airlines adjust their capacity, they may gradually pass on the PFC increase to passengers. In addition, funding airport projects through PFCs instead of through airline rates and charges could reduce airline costs in the long run. If such conditions occur, airlines may adjust their airfares downward so that an increase in the fee is not fully passed onto consumers. The more the airlines absorb, the less the increase in the cost of travel for passengers and the lower the adverse effect on passenger demand. We consider the effect of different pass-through rates in appendix II.

- *Airport adoption.* We assumed that airports that currently impose a PFC would raise it to the maximum allowed amount in the first year. While it is unrealistic to assume that all airports would immediately raise their PFC level in the first year, based on near universal adoption of the current maximum by nearly all of the largest airports, it is not unrealistic to expect that most airports would be at the maximum by 2024. Following the introduction of the PFC in 1991 and the increase in the level in 2000, airports quickly moved to the higher PFC level as indicated in figure 3 below. If fewer airports increase their PFC level that would proportionally reduce PFC collections and the associated changes to the AATF and allow some consumers to avoid the PFC making the consumer response more elastic as noted above. The results of using a scenario with a reduced PFC adoption rate by airports are shown in appendix II (table 6).

[27]While airlines may pass the full amount of the PFC increase onto advertised fares, they may have to sell more lower priced tickets to keep planes full and maximize profit, thus lowering the average fare.

Figure 3: Airport Adoption of Passenger Facility Charges for Fiscal Years 1992 through 2014



Source: GAO analysis of FAA data. | GAO-15-107

Notes: This figure is a representation of the total number of enplanements that took place at PFC-collecting airports by PFC level and fiscal year. The PFC level was derived from PFC approval data, and this figure is not a representation of the number of enplanements that were actually charged a PFC during those fiscal years.

Fiscal Year 2014 enplanements are forecasts.

Increasing the PFC Cap Could Marginally Slow Growth in Revenues to the Airport and Airway Trust Fund

Increasing the PFC cap under the three different scenarios that we modeled could marginally slow the growth of AATF revenues compared to what it could have been without the PFC increase. About 91 percent of AATF revenues in 2013 were derived from taxes and fees on passengers.[28] Under all our cap scenarios, AATF revenues from passengers would likely continue to grow overall based on current projections of passenger growth; however, passenger growth could be slower with a PFC cap increase if it results in a higher total cost of air travel and thus reduces passenger demand. As a consequence of fewer anticipated passengers flying, the tax base on which these taxes are levied would be reduced compared to the tax base with no PFC increase. If the PFC increase is not passed on to consumers but absorbed by airlines through their adjustment of base fares downward, it would still reduce the trust fund's revenues from the ad valorem tax that is levied as 7.5 percent on the base fare. Similarly, when airlines introduced ancillary fees for such services as checked baggage, there is some evidence that airlines adjusted their base fares downward to lessen the effect on passenger demand but not by as much as the amount of the fees.[29] Because ancillary fees are not taxed, both reduced passenger demand and reduced base fares resulting from the introduction of fees would have reduced trust fund revenues. We did not include ancillary fees as part of our base fare calculation due to the lack of comprehensive ancillary fee data;[30] but including ancillary fees would result in higher air-travel costs thereby making any PFC increase a smaller percentage of the total price and therefore resulting in a smaller loss of passenger demand. Under an $8 PFC cap and the entire PFC increase passed on to consumers, AATF revenues could be lower by $161 million to $186 million annually, as compared to what they could be without a PFC increase, assuming a demand elasticity of -0.8. This potential loss in AATF passenger revenues is small relative to total AATF passenger revenues—for example,

[28]The taxes that we modeled are the passenger ticket tax, passenger segment tax, and the international arrival and departure tax. There are other aviation taxes and fees that do not go into the AATF including fees for security, customs and border protection, health and plant inspection, among others. Those fees go to their respective federal agencies—the U.S. Department of Homeland Security's Transportation Security Administration and Customs and Border Protection and the U.S. Department of Agriculture.

[29]Jan Brueckner, Darin Lee, Pierre Picard, and Ethan Singer, *Product Unbundling in the Travel Industry: The Economics of Baggage Fees* (February 2014).

[30]Airlines report revenues from checked baggage and cancellation and change fees but do not separately report on other ancillary fees.

between -0.58 and -1.68 percent of the total in 2024 depending on the size of the cap increase. The extent to which the AATF is affected will depend on the extent of the reduction in passenger traffic (elasticity assumption) as well as the extent to which the increase is passed on to consumers under each scenario (pass through rate). (See table 2.)

Table 2: Estimated Changes to Airport and Airway Trust Fund (AATF) Baseline Revenues from 2016 to 2024 under Various Scenarios for an Increase in the Passenger Facility Charge Cap (Dollars in millions and as percentage of total passenger AATF revenues)

Scenario	2016	2017	2018	2019	2020	2021	2022	2023	2024
Estimated Changes to Baseline AATF Revenues (Dollars in millions and as percentage of total passenger AATF revenues)									
$6.47 cap[a]	-$90	-$93	-$95	-$97	-$99	-$100	-$102	-$103	-$105
($4.50 cap adjusted for CPI)	-0.71%	-0.69%	-0.67%	-0.65%	-0.64%	-0.62%	-0.61%	-0.59%	-0.58%
$8.00 cap[b]	-$161	-$164	-$168	-$172	-$175	-$178	-$180	-$183	-$186
(President's budget)	-1.26%	-1.22%	-1.19%	-1.16%	-1.13%	-1.11%	-1.08%	-1.05%	-1.03%
$8.50 cap, CPI adjusted[c]	-$184	-$196	-$210	-$225	-$240	-$255	-$271	-$287	-$304
(ACI-NA/AAAE proposal)	-1.44%	-1.46%	-1.49%	-1.52%	-1.56%	-1.59%	-1.62%	-1.65%	-1.68%

Source: GAO analysis using DOT data. | GAO-15-107

Notes: These projections assume: 1) 100% adoption of maximum allowable PFCs in 2016 by airports approved to collect a PFC as of July 31, 2014; 2) a -0.8 elasticity rate and 3) 100% pass through of the cost of the PFC increase to passengers. Passenger demand effects on AATF passenger excise, segment, and international arrival and departure taxes were calculated and presented as a percentage of total passenger taxes. Although the impacts of raising the PFC cap on the AATF passenger revenues are negative, AATF passenger revenues will likely continue to grow overall because of an increase in enplanements.

Results are reported in nominal dollars.

[a]Change in AATF revenues relative to baseline under $6.47 PFC cap. This cap was developed by using CPI to adjust for inflation between 2000 and 2016.

[b]Change in AATF revenues relative to baseline under $8 PFC cap. This cap was proposed in the President's 2015 budget.

[c]Change in PFC revenues relative to baseline under $8.50 PFC cap which is adjusted for inflation using the Congressional Budget Office's projected CPI for each calendar year in our analysis. This amount was proposed by Airports Council International-North America (ACI-NA) and American Association of Airport Executives (AAAE).The trade associations have not proposed an inflation rate so we used the CPI to adjust for inflation as this is a federal inflation index standard.

A PFC Cap Increase Could Benefit Airports, but the Effects Differ Depending on Their Size

Because passenger traffic is highly concentrated at larger airports, that is, large and medium hub airports, PFC collections are similarly concentrated. Thus, larger airports could benefit most from an increase in the PFC. A hub level analysis of a PFC cap increase shows that large hub airports could receive nearly three-quarters of all PFCs, while large and medium hubs together could account for nearly 90 percent of total

PFCs, similar to what they do now. For example, under an $8 PFC, large hub airports could receive additional PFC revenues of $1.74 to $2.08 billion annually and medium hubs could receive additional PFC revenues of $372 to $435 million annually from 2016 to 2024. Small and non-hub airports could receive up to $212 million and $82 million in additional annual PFC revenues respectively from 2016 to 2024. (See table 3.)

Table 3: Estimated Passenger Facility Charge (PFC) Collections Available to PFC Approved Airports and Associated Changes to Airport and Airway Trust Fund Revenues by Airport Hub Type from 2016 to 2024 with $8 PFC Cap (Dollars in millions)

Hub type	Revenue type	2016	2017	2018	2019	2020	2021	2022	2023	2024
Current baseline estimate for PFC collections available to PFC approved airports under $4.50 PFC cap										
All hub types	PFC revenue	3,073	3,149	3,225	3,301	3,373	3,437	3,498	3,561	3,628
Total estimated changes to PFC baseline and AATF revenues after PFC cap increase to $8										
All hub types	PFC revenue[a]	+2,365	+2,425	+2,486	+2,547	+2,605	+2,656	+2,705	+2,756	+2,810
	AATF revenue[a]	-159	-163	-167	-170	-174	-176	-179	-182	-184
Estimated changes to PFC baseline and AATF revenues by hub type after PFC cap increase to $8										
Large hubs[b]	PFC revenue	+1,743	+1,788	+1,834	+1,880	+1,924	+1,964	+2,002	+2,041	+2,083
	AATF revenue	-112	-115	-117	-120	-122	-124	-126	-128	-130
Medium hubs[c]	PFC revenue	+372	+381	+390	+399	+407	+414	+420	+427	+435
	AATF revenue	-28	-29	-30	-30	-31	-31	-32	-32	-33
Small hubs[d]	PFC revenue	+181	+185	+190	+194	+198	+202	+205	+209	+212
	AATF revenue	-14	-14	-14	-15	-15	-15	-15	-16	-16
Non-hubs & Non-primary[e]	PFC revenue	+70	+72	+73	+75	+76	+78	+79	+80	+82
	AATF revenue	-6	-6	-6	-6	-6	-6	-6	-6	-6

Source: GAO analysis using DOT data. | GAO-15-107

Notes: These projections show changes in revenue for an $8.00 PFC cap scenario relative to the baseline assuming 100% airport adoption of maximum allowable PFCs in 2016, a -0.8 elasticity rate and a 100% pass-through of the cost of the PFC increase to passengers.

Results are reported in nominal dollars.

[a]Due to rounding, annual revenue totals for all hubs may not exactly match the sum of annual revenues at the four hub categories. In addition, annual revenue totals for all hubs may not match totals for the same scenario in tables 1 and 2 because additional assumptions needed for the hub analysis cause the results to vary slightly.

[b]Large hubs are airports with at least 1% of total U.S. passenger boardings.

[c]Medium hubs are airports with at least 0.25% but less than 1% of total U.S. passenger boardings.

[d]Small hubs are airports with at least 0.05% but less than 0.25% of total U.S. passenger boardings.

[e]Non-hubs are airports with at least 10,000 passenger boardings annually but less than 0.05% of total U.S. passenger boardings. Some non-primary airports (i.e., those with less than 10,000 annual passenger boardings) that are approved to collect PFCs as of July 31, 2014, are included in this category.

While an increase in PFCs could largely flow to the larger airports, smaller airports could also benefit from increased PFC collections, especially under the President's proposed budget for 2015. As previously noted, under current rules, large and medium hubs' apportionment of AIP formula funds may be reduced, which in fiscal year 2014, resulted in a redistribution of approximately $553 million. The majority of this funding (87.5 percent) goes to the Small Airport Fund for redistribution among small airports. The remaining 12.5 percent became available as AIP discretionary funds, which FAA uses to award grants to eligible projects regardless of airport size. Under the President's 2015 budget proposal, all AIP formula grants for large hub airports, which FAA estimates to be $80 million in fiscal year 2015, would be eliminated in return for an $8 PFC.[31] In addition, the President's 2015 budget proposal calls for a decrease in the total amount of AIP funds, a decrease that under current law would result in automatic changes in how AIP grants are allocated.

Increasing PFCs also could affect the dynamics of how airports and airlines can influence airport investment decisions. Airports rely on several funding mechanisms in order to pay for airport development projects. These include PFCs, non-aeronautical revenues (e.g., parking and concession revenue), AIP grants, rates and charges agreements with airlines, and state and local funds. Generally, PFCs offer airports relative independence over investment decisions at their airports. While airports must notify and consult with the airlines on how they spend PFCs, as long as FAA approves, airlines cannot block these decisions. Airlines can choose to serve other airports, however, so airports have an incentive to listen to airline concerns. Airport representatives said that one of the reasons airports want an increased PFC cap is because airports have already committed a significant portion of their current PFCs to past and current projects and have relatively fewer PFC-approved funds available with the $4.50 cap in place. According to FAA, $30 billion in PFCs was approved from1992 to September 2014 to pay interest on debt, with some airports scheduled to service debt for as long as 2058. Some airports have indicated that an increased PFC would allow them to reduce their debt costs, which could limit revenues available to those airports to secure new debt financing. Conversely, airline representatives told us that in their view, airports have many sources of revenue available and ready

[31] FAA's estimate assumes the statutory provision that doubles entitlements for primary airports and the Alaska supplement functions as written.

access to debt markets, so there is no need to increase the PFC cap. All else being equal, lower PFCs can provide airlines with more influence over airport infrastructure decisions and higher PFCs can provide airports more control over local capital-funding decisions, including the ability to decide how to apply PFC revenues to support capital projects and thus how those revenues might influence airline rates and charges.

Stakeholders Reported That the Current PFC Collection Method Works Well but Lacks Some Transparency for Airports

Stakeholders Said That the Current PFC Collection Method Works Well

In order to evaluate the current PFC collection method, we used the following factors that we identified as key considerations for evaluating passenger fee collection methods in our February 2013 report: passenger experience, costs to administer, legal issues, customer transparency, and technology readiness.[32]

Passenger Experience

Industry experts and representatives from airports, airlines, trade associations, and consumer groups universally said that the current method of PFC collection has the least impact on passenger experience, because the PFC is paid as part of the total ticket price and at the time of purchase. Airlines and travel agencies use computerized reservation networks that facilitate payments for fares and required taxes and fees (including the PFC) as part of one transaction. Passengers therefore do not need to determine which taxes and fees they must pay in accordance with their itinerary, as this is done automatically through the ticketing process. In addition, passengers are only required to pay one time, a method that saves passengers time, provides transparency, and reduces

[32]GAO-13-262R.

confusion. Including taxes and fees as part of the ticket purchase is also the standard globally for collecting government and airport fees, such as the PFC.

Costs to Administer

Both airport and airline representatives that we spoke with agreed that the administrative and infrastructure costs of the current collection method system are relatively low, as the method is integrated into existing infrastructure and business processes. As we mentioned previously, airlines currently keep 11 cents per PFC to cover their costs—which include costs for transactions such as credit card fees, legal and audit fees, and maintenance and upgrades of information systems—as well as the "float" (interest accumulated on the fees between the time they are collected and remitted). Airline representatives told us that they do not regularly track their administrative costs associated with collecting PFCs and therefore could not immediately say whether the administrative fee covers these costs. The administrative fee was last raised from 8 to 11 cents per PFC in 2004.

Legal Issues

The statute that authorizes the PFC program[33] provides an exemption to the Anti-Head Tax Act which generally prohibits states, local governments, and airport authorities from levying or collecting any tax, fee, head charge, or other charge, directly or indirectly on individuals traveling by air.[34] The statute authorizing PFCs also authorizes the Secretary of Transportation to require airlines to collect the fee and remit it to airports.[35] Given the statute's clarity that a PFC can be collected by an airline, we did not identify any legal issues associated with the current collection method as part of this work.

Customer Transparency

Representatives from consumer groups that we spoke with said that the current collection system provides transparency to the customer in terms of total travel costs. Current DOT policy requires that fares be advertised with PFCs and other taxes and fees, and included at the time of purchase. However, one airline representative with whom we spoke told us that there could be greater transparency for customers in terms of other factors, such as how fees are used for airport projects. Some

[33]49 U.S.C. § 40117.

[34]49 U.S.C. § 40116.

[35]49 U.S.C. § 40117(i).

airports provide information about their PFC-funded projects through their websites, signage at the airport, and community outreach, and all airports are required to distribute a notice locally to the public, with general information about PFC projects, amounts, and timing, in advance of submitting an application to impose or use PFCs. FAA does not publish information on specific PFC-funded projects at airports on its website but does provide aggregated information for the entire PFC program on PFC approval amounts and project categories, such as landside, airside, and noise reduction, and subcategories. According to FAA, airports' PFC applications and the FAA's decisions are public documents that airports may release to the public. In addition, the FAA provides information on applications and decisions upon request if they are not under deliberation. FAA does not require airports to track each fee paid to a specific project at an airport, only to an approved application which may be for many projects. Thus, a passenger may not have readily accessible information about the use and intended purpose of their fee payment at the time of payment but could obtain some additional information if desired.

Technology Readiness

The current collection method has been in place since the inception of the PFC program in 1992 and relies on widely used and accepted ticketing technologies for both online and in-person transactions. Technology company representatives whom we interviewed generally indicated that PFC collection is not constrained by current technology. However, implementing new fee rules could be problematic. For example, according to media reports, instituting the TSA security fee increase in July 2014, which uses the same ticketing technologies as PFCs, resulted in inaccurate collections while the programming code was being updated. According to an airline industry representative, that problem was subsequently fixed.

The Accuracy of PFC Collections Is Not Transparent to Airports

Airport officials with whom we spoke generally told us that the PFC collection process by airlines is not adequately transparent to them, and therefore, they cannot be sure they are receiving all of PFC collections they are due. While airports receive monthly remittances, quarterly reports, and in some cases, annual audit reports from airlines, airport officials told us it can be very difficult for airports to ensure the accuracy of the remittances because they cannot be reconciled to passenger enplanements at the airport. Passengers flying on frequent flyer coupons as well as flight segments beyond the first two, Essential Air Service flights, and some Alaska and Hawaii flights are exempt from paying PFCs. In addition, airlines and airports have different fee-collection and remittance systems, and airline code shares mean that the airline

collecting and remitting PFCs may not be the airline transporting the passenger. Furthermore, airport officials told us that the timing of collections and remittances can hinder their efforts to track and verify the accuracy of PFC remittances. Airlines receive PFCs with ticket payments, while airports receive remittances on a monthly basis. Passengers, however, may fly on a later date well outside the monthly window.

To help ensure that airports receive the full amount of the collections they are due, FAA requires that all airlines that annually collect at least 50,000 PFCs have an annual independent audit of their PFC accounts and processes.[36] Airports can request a copy of the independent auditor's report, but airlines are not required to provide audit reports absent a request.[37] In addition, FAA may periodically audit or review the collection and remittance of airline PFC collections under the FAA's federal oversight responsibility.[38] To assist airlines, FAA has developed audit guidance for airlines' auditors to follow in conducting their audits. This guidance is comprehensive and includes testing procedures to ensure that airline systems are properly recording PFC collections. While adherence to the guidance is voluntary, FAA has determined that using the guidance will provide sufficient assurance that the airline has met its PFC regulatory requirements and that additional reports, a government audit, or other investigations will not normally be needed. FAA's guidance expressly underscores the importance of the assurance that using the guidelines provides, stating that it is reflected in FAA's approach to resolving alleged collection and remittance discrepancies raised by airports to estimate local PFC collections. In cases where the airlines' auditors did not use the guidance, any allegation of a discrepancy by airports could trigger additional FAA activities, including additional reporting or an audit by the Department of Transportation's Office of Inspector General.

FAA officials told us they do not know to what extent airlines' auditors use the audit guidance and only review the audit reports if questions are raised by airports about possible discrepancies. FAA officials also told us that they generally do not receive airline audits and do not know how

[36]14 C.F.R. § 158.69(b).

[37]14 C.F.R § 158.69(b)(3).

[38]14 C.F.R. § 158.71(b).

many airlines' auditors follow the audit guidelines. FAA officials also do not know how many airports are receiving the audit reports, but explained that disputes over the accuracy of collections have been rare and have been generally limited to collections by smaller airlines or those in bankruptcy.[39] However, as noted above, it would be very difficult for an airport to know if its PFC remittances were not accurate, and in some cases, airports are not receiving audit reports and may not be aware they can be requested. Moreover, although airports have the right to review audits, our interviews with a limited number of airport officials raise questions about the extent to which airports are aware of their rights to review the audits. Three of the five airport managers whom we interviewed told us that they have received unsolicited copies of audits in the past, whereas two other airport managers had not received copies. Absent a request, there is no requirement for airlines to give airports or FAA the audits, even if there is a qualified or adverse audit opinion.[40] FAA officials told us that while airports' rights to review the audits are set forth in FAA guidance that is available to all airports,[41] they could consider additional steps to ensure that all airports understand their right to request copies of the airline's audits as well as FAA's reliance on airports to identify discrepancies. Doing so would be consistent with *Standards for Internal Control in the Federal Government*, which call for agencies to ensure that there are effective means of communicating with, and obtaining information from, external stakeholders' that may have a significant impact on the agencies achieving its goals.[42] Given that FAA relies on airports to alert it to potential inaccuracies in PFC collections and those airports have difficulty determining the accuracy of PFC collections for the reasons discussed earlier in this report, it is important

[39]Airlines operating under bankruptcy protection are subject to 14 C.F.R. § 158.49(c).

[40]14 C.F.R. § 158.69. A qualified opinion is a limitation in scope such that, except for the effects of the matter(s) to which the qualification relates, the financial statements present fairly, in all material respects, the financial position, results of operations, and cash flows of the entity in conformity with generally accepted accounting principles. An adverse opinion states that the financial statements do not present fairly the financial position, results of operations, or cash flows of the entity in conformity with generally accepted accounting principles.

[41]FAA Order 5500.1, Section 5, 7-27(d). "Upon request, a copy of the audit shall be provided [by the air carrier] to each public agency for which a PFC is collected." In addition, according to FAA, every PFC decision document includes auditing requirements.

[42]GAO, *Standards for Internal Control in the Federal Government*, GAO/AIMD-00-21.3.1 (November 1999).

that airports are aware of their right to request copies of airline PFC audit reports and to ask for additional follow-up by FAA, such as an audit by the Department of Transportation's Office of Inspector General if the audits or other information indicate discrepancies. By taking actions to better educate airports about the importance of obtaining and reviewing airline PFC audits, such as through notifications or posting this on the FAA's website, FAA would better position airports to understand their rights including the potential for requesting further investigations, as needed. Thus, both FAA and airports could be better informed about the accuracy of PFC remittances.

Standards for Internal Control in the Federal Government call for agencies to design their internal controls to assure that ongoing monitoring occurs in the course of normal operations.[43] However, as previously discussed, FAA does not know the extent to which airlines use its audit guidance or generally review the airlines' audit reports. Thus, FAA is not well positioned to provide a reasonable assurance to Congress, the airports, or airline passengers who pay the PFCs about the reliability of those audits or the PFCs collected. Determining the extent to which airlines' independent auditors use FAA's guidance could provide FAA with additional assurance about the reliability of those audits. Moreover, if the guidance is not being extensively used, then taking additional actions to assess the soundness of existing airline audits and the associated costs of airlines following the guidance would better position FAA to determine if it should make its guidance mandatory.

Similar to PFCs, TSA imposes a security fee on passengers which is collected by the airlines; however, unlike PFCs, security fee revenues are remitted directly to one entity—the TSA.[44] TSA charges $5.60 per one-way trip on passengers on each ticket. TSA conducts direct audits of its fee collections through which it has found remittance discrepancies. This process suggests that, without adequate assurance that airlines are following FAA's audit guidance, some PFCs may not be collected or, if collected, not accurately remitted to airports. TSA has a compliance office that performs its own on-site audits of approximately 20 airlines annually. TSA officials stated that they regularly identify additional funds that should

[43]GAO/AIMD-00-21.3.1.

[44]Prior to the security fee increase effective July 21, 2014, the fee was based on a per-flight-segment basis like the PFC.

have been collected and remitted to TSA, though these unremitted funds are relatively small when compared to overall collections. According to TSA officials, the agency identified and collected $2 million in unremitted funds in fiscal year 2013 from its audits compared to its $2-billion annual fee collections. TSA's audit findings have been upheld in court when challenged by an airline. For example, a TSA audit of Alaska Airlines found that the airline owed an additional $1 million in security fee remittances for flights between 2002 and 2006, which Alaska Airlines unsuccessfully challenged. TSA officials stated that the agency used to require that all airlines that collect the security fee from at least 50,000 passengers provide an annual audit to TSA. However, this audit requirement was waived on January 23, 2003, because according to the federal registry announcement, TSA initiated its own audits of air carriers, and according to TSA, air carriers have demonstrated a high level of compliance with TSA's collection and remittance rules and thus find it unnecessary for air carriers to expend resources for independent audits.[45]

Alternative Methods of PFC Collection Are Feasible but Would Impose Additional Steps and Costs

Stakeholders Identified Three Alternatives to the Current Ticket-Based PFC Collection but Said They Could Diminish Passenger Experience

Stakeholders we interviewed identified three general alternatives to the current method of PFC collection, alternatives that could be used in combination or independently.

Kiosks/Counter Payments

An alternative collection method that has been used at a few airports internationally is the use of a self-service kiosk or payment counter to pay for airport fees. Departing passengers pay the fee at the airport using a

[45]68 Fed. Reg. 3192 (Jan. 23, 2003).

kiosk or payment counter as part of the check-in process. Connecting passengers could pay the fee at a facility within the terminal between departure gates. Payment could be verified prior to departure at check-in, security, or the boarding gate. We identified few airports around the world that currently use this method. Those that do include Blackpool Airport in the United Kingdom, which required passengers to purchase an airport-development fee ticket at a kiosk or retail outlet at the airport. In addition, Ireland West Airport Knock in the Republic of Ireland requires passengers to pay a development fee that can be done at a dedicated desk at the airport. Both of these are relatively small regional airports and Blackpool Airport closed on October 15, 2014. Other airports have instituted kiosk and payment counters but later abandoned the method in favor of imposing the fee on the ticket at time of purchase. For example, Vancouver International Airport, Calgary International Airport, and Montréal–Pierre Elliott Trudeau International Airport (all in Canada) initially used payment counters to collect airport-improvement fund fees from passengers following airport privatization in Canada in the 1990s. However, the payment counter approach was abandoned, and the fee was added back onto the ticket after payments at the airport became cumbersome and inconvenient for passengers, according to a Canadian airport trade association representative. There is some evidence, however, that in-airport kiosks and payment counters can work. Airlines use self-service kiosks and counters for their airline check-in processing and ancillary fee purchases, such as for checked baggage. Some airports, such as McCarran International Airport in Las Vegas, have implemented common use self-service kiosks in which passengers can check in to any airline that operates at the airport and make ancillary fee purchases. Such kiosks could also be configured to collect PFCs.

Online Payments

Another alternative collection method that the Airports Council International-North America (ACI-NA), an airport trade association, identified more than 10 years ago is online payments in which a passenger would pay the PFC fee through a dedicated website at the time of ticket purchase or at some point before check-in. Individual airports or a group of airports would directly operate or contract with a third party provider to manage a website to collect required fees directly from the passenger who would pay via credit card or debit card. Passengers could also be automatically directed to the website to pay PFCs after paying for a ticket online, a process that would require airline and travel agent cooperation. Passengers could go directly to the website at any time before check-in to pay the fee. In all these cases, airports would have to establish or contract with a clearinghouse that would collect and distribute PFCs or perform that function. Payments could be

verified at the airport at a check-in counter, security checkpoint, or the boarding gate. We did not identify any airports currently using this method, but clearinghouses collect and distribute other aviation taxes and fees on tickets purchased online through GDSs.

Mobile Payments

Another alternative collection method technology company representatives identified are mobile payments. Passengers would pay the PFC at the airport using a mobile technology—such as a smartphone or tablet, or a credit, debit or prepaid card—with payment functionality embedded or added through an application. Departing passengers could scan their mobile device or card at kiosks, payment counters, or other payment stations. Connecting passengers could also use this method to pay at kiosks or payment counters and stations as they move through the airport to their next departure gate. Like the other alternative collection methods, airports could individually or as a group develop and implement information systems and infrastructure to collect and distribute PFCs on their own or contract through a third party. Airports could also use an existing clearinghouse such as those used by airlines which could collect and distribute PFCs to airports. We did not identify any airports using this method, but technology company representatives told us that they are being used in other sectors such as retail. In addition, technology company representatives with whom we spoke said that airport kiosks used for check-in could be modified or configured to accept additional forms of payment, including near-field communication (NFC)-enabled devices, chip-and-PIN or magnetic strip, or mobile wallets.[46] Many airlines also have mobile applications for check-in and boarding processes, which could be modified to transmit payment of PFCs. Airlines also use handheld devices to collect ancillary fee payments for additional services like carry-on luggage, and in-flight meals and beverages. NFC payment through mobile phones has been implemented by MasterCard, mobile phone providers such as Verizon, and retailers such as Office Max® and Toys “R” Us®. Some transit systems have also begun to pilot NFC payments for passenger travel, such as the Metropolitan Transit Authority

[46]NFC is a form of short-wave wireless communication that can enable mobile devices such as smartphones to make payments. Chip-and-PIN and magnetic strip cards are embedded in credit, debit, and ATM cards. Chip-and-pin cards have a computer chip embedded that is used in conjunction with a personal identification number (PIN) to make a payment. Magnetic stripe cards have a magnetic reading head that when swiped can make a payment. Mobile wallets allow consumers to use NFC-enabled mobile devices to make a payment by opening an application on the device.

in New York City and the Washington Metropolitan Area Transit Authority in Washington, D.C.

Though the Technology Exists, Alternatives Would Impose Additional Steps and Costs

We evaluated these alternative methods relative to the current ticket-based PFC collection method using the same factors that we identified as key considerations for evaluating alternative passenger-fee collection methods—passenger experience, costs to administer, legal issues, customer transparency, and technology readiness. Stakeholders including airports and airlines and their respective domestic and international associations, and industry experts that we interviewed said that the current collection method is better than the identified alternatives. Stakeholders told us that the technology to support alternative PFC collection methods is ready to be implemented, though it would require additional steps and costs and changes to business processes.

Passenger Experience

All three alternative-collection methods introduce additional steps to the ticketing and boarding process, which could potentially diminish the passenger experience. Payment at kiosks or payment counters introduces an additional requirement at check-in, which could increase check-in time for passengers. Technology company representatives told us that it can take between 2 and 4 minutes for a passenger to interact with a standard airport kiosk. Additionally, a technology company representative told us that only about 50 percent of eligible passengers at one large airport use check-in kiosks, and unfamiliar passengers may need additional time or assistance to complete transactions. Connecting passengers could be required to pay the fee between flights, a step that could lead to missed connections or flight delays.

Online payments introduce an additional step to online ticket purchases and potentially additional costs. Customers who are not aware of the required PFC purchase could be confused or suspicious of additional websites. Technology company representatives suggested that additional steps for online payment may cause consumers to abandon their purchase. Required mobile payments could present challenges for customers who do not use enabling devices. While 91 percent of individuals in the United States currently use mobile phones, only 50 percent of cell phone owners download applications, according to a 2013 nationwide survey.[47] This would require the airport to create enforcement

[47]Pew Research Center, Internet & American Life Project, *Cell Phone Activities 2013* (Washington, D.C.: Sept. 16, 2013).

and backup collection systems to ensure that it is collecting all required PFCs.

Airport and airline trade association representatives whom we spoke to reported that the industry is focused on reducing customer check-in times, and expressed concern that PFC payments at airports could delay these efforts. The International Air Transport Association is developing international standards for mobile check-in to streamline the passenger experience with a goal of moving the passenger from curb to gate in 10 minutes. Other airlines are increasing the use of mobile applications and automatic check-in. For example, Air New Zealand terminals in Auckland, Wellington, and Christchurch in New Zealand allow passengers to drop off their checked baggage and proceed directly to security and then to the gate, where passengers can also scan their boarding pass for domestic flights. JetBlue has introduced automatic check-in processes for select passengers, where boarding passes are emailed 24 hours before flight, and Air France introduced an NFC-enabled boarding pass and check-in process pilot in Toulouse, France.

Costs to Administer

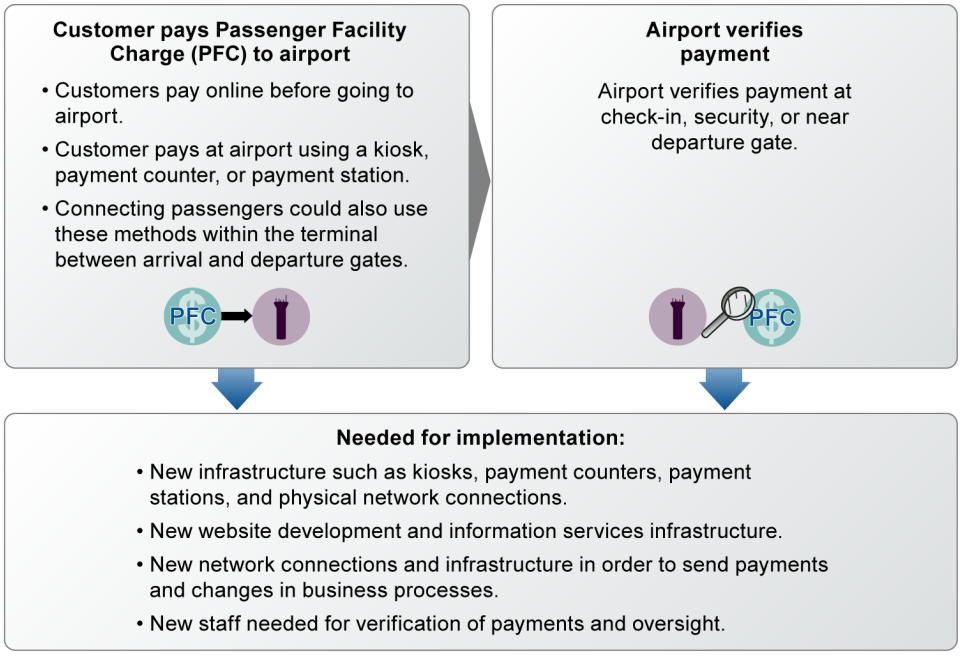
Airports would incur greater administrative and infrastructure costs if they implemented an alternative PFC collection method. A technology company representative told us that electronic payment kiosks can cost from $10,000 for a computer screen and magnetic credit card reader to $60,000 for a payment kiosk that incorporates additional methods of fee collection and higher-end design standards and elements. Technology company representatives also told us that electronic kiosks require network connections and infrastructure in order to send payment to banks through payment networks. Kiosks would require additional terminal space, increasing the need for terminal modifications at a time when pre-departure areas of terminals are shrinking. However, as we discuss later, existing airport kiosks could be reconfigured to allow for PFC collections.

Technology company representatives told us that online payments would require website development and information service infrastructure and that all methods could require additional staff to verify collections and provide oversight to payments. An airport representative expressed concern that in order to collect PFCs from all eligible passengers when using alternative collection methods, airport operators would need to establish new systems. For example, in an airport which establishes a mobile payment system, customers that do not own NFC-enabled mobile phones would need to pay using a credit card or other means. Passengers who could not pay using a credit card would require a cash transaction. This process could increase financial security risk and

associated costs related to securing and accounting for cash transactions.

Mobile payments present additional difficulties, as NFC standards have not been created. The two dominant forms of mobile phones—Subscriber Identity Module and Global System for Mobile Communications—have different readers, and a kiosk or mobile payment station utilizing NFC-based payment would require two separate scanners. In addition, an industry survey has shown that only 12 percent of mobile phone owners in the United States have utilized their phones as payment devices[48] and some stakeholders we interviewed cited lack of awareness, difficulty and unfamiliarity of use, as well as security and privacy concerns, as barriers to mobile payment adoption. Alternative collection methods would thus require additional steps and costs and changes to business processes. (See fig. 4).

Figure 4: Potential Passenger Facility Charges Alternative Collection Methods



Source: GAO. | GAO-15-107

[48]Pew Research Center, Internet and American Life Project, *The Future Money: Smartphone Swiping in the Mobile Age* (Washington, D.C.: Apr. 17, 2012).

Legal Issues

All alternative methods would require legal modifications to enable airports to collect the PFC directly. As discussed above, the Anti-Head Tax Act prohibits local and state governments, and airport authorities from collecting user fees or taxes on travelers. The Anti-Head Tax Act was enacted in response to significant public concern and objection to local and state governments that imposed a tax on enplaning or departing passengers. Any alternative collection method implemented by an airport would require an exemption to the Anti-Head Tax Act or express statutory authority in order to collect fees. Furthermore, current DOT regulations require airlines to disclose the total price of airfare, including all taxes and fees; and would need to be revised if airports directly collect the fee from passengers.[49] Also, airlines cannot be required to publicly disclose proprietary business information, including individual airfare transactions and passenger itineraries, which airports would need to determine whether a particular passenger is required to pay a PFC and to ensure that the total PFC imposed does not exceed the statutory maximum (currently $18).

Customer Transparency

All alternative collection methods could decrease transparency to the customer because individuals may not be aware of the need to pay the PFC until after the ticket has been purchased. In addition, since payment of the PFC is not verified until check-in or departure, passengers may not be prepared to pay an unexpected fee. In this way, customers may not know the full cost of travel at the time of ticket purchase, which raises questions about transparency. An industry expert and representatives from consumer groups that we spoke to noted the importance of informing customers of all mandatory fees and taxes at the time of ticket purchase to ensure that customers are aware of the full cost of their travel. Similarly, we have recommended that the Department of Transportation (DOT) require airlines to consistently disclose optional fees at the time of purchase.[50] DOT has a *Notice of Proposed Rulemaking* that proposes to require airlines and ticket agents to disclose optional fees at the time of purchase.[51]

[49]14 C.F.R. § 399.84(a); cf 14 C.F.R. § 158.45.

[50]GAO, *Commercial Aviation: Consumers Could Benefit from Better Information about Airline-Imposed Fees and Refundability of Government-Imposed Taxes and Fees,* GAO-10-785 (Washington D.C.: July 14, 2010).

[51]*Transparency of Airline Ancillary Fees and Other Consumer Protection Issues* , 79 Fed.. Reg. 29970 (May 23, 2014).

Technology Readiness

Stakeholders such as technology company representatives told us that all the alternative collection methods discussed above are feasible, have been implemented for other applications by airports or retailers, and could be adapted for use in the airport environment. For example, kiosks could be adapted to collect PFCs. Technology company representatives we spoke to said that existing common-use self-service and airline kiosks could be modified, if not already enabled, to have a magnetic stripe card reader and an NFC reader. Technology company representatives also stated that airlines have online websites and mobile applications for passenger ticketing, check-in, and ancillary fees payments that could automatically link a passenger to an airport or third-party website to pay the fee as well as handheld devices that are used to accept ancillary fee payments that could also be used at the gate to collect PFCs. However, some means of verifying payment would still be needed before boarding the flight. Retailers in the United States have accepted online payments for decades and have begun to integrate mobile payments into their business practices. Some merchants have established "tap and pay" NFC terminals alongside traditional magnetic stripe readers, allowing customers to use credit cards as well as NFC-enabled mobile devices.

Conclusions

As part of any consideration of an increase in the PFC cap, it is paramount that FAA and airports have confidence that airlines are accurately collecting and remitting existing PFCs. Ensuring the accuracy of PFC collections and remittances to airports depends on audits conducted by airlines' auditors and oversight by FAA and airports to identify possible inaccuracies. However, while FAA has promulgated comprehensive audit guidance for airlines' auditors' use, it is voluntary and FAA does not know to what extent airlines' auditors' use the guidance, if at all. Thus, FAA is not well positioned to provide reasonable assurance to Congress, airports, or passengers who pay PFCs on the reliability of those audits and the PFCs collected. Further, some airports may not be aware that they can request and review airline audits and ask for an investigation if they suspect PFC remittances are inaccurate. As a result, FAA does not have sufficient assurance that PFC collections and remittances to airports meet its own regulatory requirements.

Recommendations for Executive Action

To ensure the accuracy of Passenger Facility Charge collections and remittances to airports, we recommend that the Secretary of Transportation should require the FAA to take the following two actions:

- Review the extent to which airlines' auditors use FAA's audit guidance and, if found to be minimal, evaluate whether airlines' auditors should be required to use the FAA's audit guidance by considering the soundness of existing airline audits and the associated costs of airlines' having to follow the guidance.

- Better educate airports that collect PFCs, such as through notifications or the FAA's website, about airports' rights to review airline audits and ask for additional investigation if the audits reveal issues or inaccuracies are suspected.

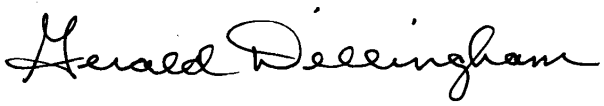
Agency Comments and Our Evaluation

We provided a draft of this report to DOT, ACI-NA, AAAE, and Airlines for America (A4A) for their review and comment. In an email received on November 24, 2014, the Deputy Director of Audit Relations at DOT provided us with the Department's comments. Specifically, in response to our recommendations, DOT partly concurred with the first recommendation to review the extent to which airlines' auditors use the FAA's audit guidance. DOT noted that responses by the airlines will be voluntary, as FAA's PFC oversight authority may not be sufficient to compel responses. However, based on the responses FAA does receive, if airlines' auditors' usage is found to be minimal, FAA stated that it will evaluate whether the auditors should be required to use the guidance pursuant to regulation or policy. GAO believes that this will fully address the intent of our recommendation. DOT fully concurred with the second recommendation to better educate airports about their rights to review airline audits and noted that it planned to better educate airports by including notification on its website. GAO believes that this will fully address the intent of our recommendation. DOT also provided technical comments that we incorporated as appropriate. In an email received on November 19, 2014, an Executive Vice President at ACI-NA provided us with the association's comments, principally noting that the model estimations of future collections under various PFC caps could be misconstrued by some readers to be the actual amounts that airports will be collecting rather than the PFC-funding capacity of airports. They also noted that they believe -0.65 is a more appropriate elasticity rate than the -0.8 that we used in our base model. We disagree for two reasons. First, our report clearly notes that depending on the assumptions applied, the model could provide different results and indicates that the base model reflects the funding capacity of airports under each cap scenario and not the likely outcome. Second, we believe -0.8 is a more appropriate elasticity rate based on our economic literature review of air traffic demand elasticity rates and discussions with experts who have published

on aviation economics. Nonetheless, we also modeled -.65 and found very little difference in the model results, as demonstrated in appendix II. ACI-NA and AAAE provided technical comments that we incorporated as appropriate. A4A reviewed the draft and did not have any comments.

As agreed with your offices, unless you publicly announce the contents of this report earlier, we plan no further distribution until 30 days from the report date. At that time, we will send copies to the appropriate congressional committees, the Secretary of Transportation and other interested parties. In addition, the report will be available at no charge on GAO's website at http://www.gao.gov.

If you or your staff have any questions about this report, please contact me at (202) 512-2834 or dillinghamg@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. Contact information and major contributors to this report are listed in appendix III.



Gerald L. Dillingham, Ph.D
Director, Physical Infrastructure Issues

Appendix I: Objectives, Scope, and Methodology

The objectives of this report were to examine (1) what are the potential effects of raising the PFC cap on airport and federal aviation revenues? (2) how well does the current PFC collection process work? and (3) what is known about alternative PFC collection methods and how well they might work?

To assess potential impacts of increasing the PFC cap, we developed an economic demand model, including a series of scenarios that vary the amount of the cap and various assumptions. The development of this model is discussed in detail in appendix II.

To determine how well the current PFC-collection process works and alternative fee-collection methods, we updated GAO's report *Alternative Methods for Collecting Airport Passenger Facility Charges* issued in February 2013 in response to a congressional mandate.[1] In summary, we identified three basic alternative methods to the current airline-ticket-based method of PFC collections. These methods are not mutually exclusive and could be used by either individual airports or a group or airports—methods such as kiosk/payment counter; online payment; and mobile payments. We evaluated these alternative methods relative to the current ticket-based collection method using factors that we identified as key considerations for evaluating alternative passenger-fee- collection methods—the factors: passenger experience, customer transparency, administrative costs, technology readiness, and legal effects. For this study, we conducted additional work by interviewing 17 aviation stakeholders and we interviewed or collected responses from officials representing airports and airlines that we had interviewed in our February 2013 report to obtain any additional views on the current collection method.[2] We selected the airlines based on airline size measured by the number of departures and passengers and type of carrier (legacy, low cost, and regional carrier). We selected the airports based on airport size, amount of PFC charged, and percentage of originating versus connecting passenger traffic. Our interviews with these airlines and airports provided qualitative information that is non-generalizable to all airlines and airports.

[1]GAO, *Alternative Methods for Collecting Airport Passenger Facility Charges*, GAO-13-262R (Washington, D.C.: Feb. 14, 2013).

[2]We interviewed officials from five airports and four airlines as part of our work on the February 2013 report. Two of the airports that we previously interviewed did not respond to our follow up questions.

Given that work, we examined issues regarding the verification of airline PFC collection and remittance amounts with airlines and airports and their trade associations and consumer groups. We reviewed the FAA's *Passenger Facility Charges Audit Guide for Air Carriers* to identify audit requirements and recommended internal controls audit procedures for airline collection, handling, remittance, and reporting of PFCs. We reviewed an airline's independently conducted audit of PFC collections for an airport. We reviewed applicable statutes and regulations regarding FAA's role and authority to audit airline PFC collections and remittances and discussed with the agency its efforts to revise the PFC FAA Order 5500.1, which provides guidance and procedures for FAA's airports' offices to administer the PFC program. We also interviewed Transportation Security Administration officials to discuss the agency's procedures and processes for audits of its security fee collections.

For this study, we also conducted additional work looking at alternative collection methods by conducting a review of literature on changes that have occurred since February 2013 that could support alternative collection methods. We spoke with technology company representatives, including those companies that have implemented kiosks for passenger check-in and customs and border protection processing at airports, to obtain their views on the applicability of using kiosks to collect payments at airports. We interviewed officials from technology companies that develop emerging technology systems and devices to obtain their views on the applicability of using online and mobile payment systems to collect payments. We interviewed FAA, principal airport and airline trade associations and airline-passenger consumer representatives, and interviewed or collected responses to our follow-up questions from five airports and four airlines to obtain their views on the use of alternative methods to collect PFCs. As we did for our February 2013 report, we evaluated these alternative methods relative to the current ticket-based collection method using factors that we identified as key considerations for evaluating alternative passenger-fee-collection methods—passenger experience, customer transparency, administrative costs, technology readiness, and legal effects. For a list of interviewees and airports and airlines from which we collected responses to our follow-up questions, see table 4.

Table 4: List of Interviewees and Airports and Airlines from Which We Collected Responses to Follow-up Questions

Interviews
Trade associations
American Association of Airport Executives (AAAE)
Airports Council International-North America (ACI-NA)
Airports Council International-World
Airlines for America® (A4A)
International Air Transport Association (IATA)
Technology companies
Rockwell Collins
SITA
Google
MasterCard
Accenture
Industry experts
InterVISTAS
GRA, Inc
Mr. Joakim Karlsson, Senior Operations Research Analyst, MCR Federal, LLC
Consumer groups
Travelers United
Consumers Union
Government agencies
Federal Aviation Administration
Transportation Security Administration
Airlines
JetBlue Airways
Airports
Los Angeles World Airports
Metropolitan Washington Airports Authority
Port Authority of New York and New Jersey
Spokane International Airport

Airports and airlines from which we collected responses
Airports
Dallas/Fort Worth International Airport
Airlines
Alaska Airlines
Delta Air Lines
Southwest Airlines

Source: GAO. | GAO-15-116

Appendix II: Economic Demand Model

The model described in this appendix is designed to estimate the potential impact of increases in the PFC cap on funds available for airport investment and federal aviation revenues between 2016 and 2024. This model presents results for three PFC-cap level scenarios in addition to a baseline scenario representing no change in the current PFC cap. The first scenario is a $6.47 cap, which is the 2016 equivalent of the $4.50 cap indexed to the Consumer Price Index starting in 2000 when the cap was first instituted. The second scenario is taken from the President's budget proposal for 2015, which sets the cap at $8. A hub level analysis of this scenario was also conducted to illustrate the distributional effects of the PFC increase. The third scenario is the airport trade associations' proposal of $8.50 annually adjusted for inflation using the CPI. The following sections describe the 1) model's structure and data sources; 2) key assumptions; and 3) sensitivity analysis.

Model's Structure and Data Sources

The general approach of the model was to use passenger enplanement forecasts from 2016 through 2024 to project changes in PFC revenue under the four scenarios outlined above for the 362 airports that had approval to collect PFCs as of July 31, 2014. Passenger enplanement data for these airports were taken from FAA's Terminal Area Forecast (TAF) enplanement projections. Enplanements were separated into international enplanements (i.e., enplanements originating in the U.S. with a foreign destination) and domestic enplanements (i.e., enplanements originating in the U.S. with a U.S. destination). We used projections from FAA Aerospace forecasts, which indicate that international enplanements will gradually rise from 12 percent of total enplanements in 2014 to 14 percent in 2024. The remaining enplanements were considered to be domestic.

Due to several exemptions to PFC collection, including for segments beyond the first two and nonfare (e.g., frequent flyer) passengers, a PFC is not collected for all enplanements at airports that charge a PFC. Thus, we reduced international enplanements by 4 percent and domestic enplanements by 10 percent for each year in order estimate the total number of chargeable enplanements. The 4 percent exemption rate for international enplanements is based on the percentage of passengers using frequent flyer miles to purchase international tickets. The 10 percent exemption rate for domestic enplanements is a 5-year average calculated using data from 369 airports that collected PFCs between 2009 and 2013. To calculate the domestic exemption rate, PFC revenues from international enplanements (estimated assuming the 4 percent international exemption rate) were first subtracted from total PFC

collections to get domestic PFC collections. These domestic PFC collections were then divided by the average PFC level for that calendar year in order to estimate how many enplanements were charged a PFC. This estimate was compared to the total enplanements from the TAF data, and the gap between the two was considered to be the number of domestic TAF enplanements that were not charged a PFC (10 percent on aggregate).

The model assumes that all increases in PFC are passed onto the consumers and not absorbed by the airlines. When these PFC increases are passed onto the consumers, it increases their air travel costs. Our model thus takes into account these effects of raising the total cost of air travel on passenger demand and the resulting secondary impacts on PFC and trust fund revenues. Generally an increase in the cost of air travel will convince some number of passengers to seek other travel arrangements or to not travel at all. In order to model this potential decrease in passenger demand, we calculated the increase in the PFC level as a percentage of both international roundtrip and domestic average gross fares per enplanement. Data on average gross fares were collected and summarized from Department of Transportation Origin and Destination survey data for average annual fares from calendar year 2013.[1] Fares were adjusted for inflation annually from 2014 onwards using the CPI. In order to calculate the fare per enplanement, we divided the domestic fare by the average number of flights per ticket (1.37), which is derived from U.S. DOT's non-directional data from calendar year 2013. International trips are assumed to have only one flight per ticket because other domestic flights that may be part of the ticket are captured in the domestic category. We also use roundtrip fares for international enplanements as that is the relevant cost of travel to which PFCs should be compared since incoming international flights do not have to pay a PFC. The increase in the PFC was added to the domestic ticket price per enplanement and international roundtrip ticket price to calculate the percentage change resulting from the change in the PFC cap.

[1]Our average fare estimates exclude ancillary fees that many passengers pay for checked or carry-on baggage, seat assignments, early boarding, etc. Since airlines are not required to provide data to DOT on some of these fees, we did not have data to include these in our calculations. Including ancillary fees as part of the total travel costs would lessen the demand effect of a PFC increase because the PFC would represent a smaller percentage of the overall travel costs.

To translate the increase in ticket price into an impact on passenger demand, an elasticity rate was applied. The elasticity rate is a ratio representing the percentage change in quantity to a percentage change in price. Air travel elasticity thus shows the percentage change in trips demanded by customers as result of percentage change in air fare. Applying the elasticity rate provides an estimate of the reduction in passenger demand for enplanements due to the increase in price per enplanement, which is used to calculate net chargeable enplanements. The net enplanements are then used to estimate PFC revenues. PFC revenues are estimated by multiplying these demand- adjusted enplanements by the maximum allowable PFC under each scenario less an 11-cent administrative fee kept by the airlines. PFC revenues thus reflect the collections that the airports would expect to receive if all 362 airports adopted the maximum rate starting in 2016. It is important to note that adoption of the maximum rate is likely to be a gradual process, and thus actual collections are likely to be lower than these estimates, especially in earlier years. The reduction in enplanements due to higher ticket costs also affects trust fund revenues as it reduces the passenger tax base that contributes to the trust fund. Our model results show the projected change in trust fund revenues from passengers under the various cap scenarios relative to the baseline. Negative estimated changes in trust fund revenue would likely represent a marginal slowing of growth in trust fund revenues from passengers rather than an absolute decline. The impact on the trust fund is calculated by multiplying the change in domestic enplanements due to demand effects by the $4 segment tax and the change in international enplanements by the $17.50 international arrival and departure tax.[2] We also calculate the loss from the ad valorem tax based on the fewer number of trips that are taken as a result of the higher PFC.

Key Assumptions

Elasticity of Demand

As indicated above, elasticity rates are a measure of the demand response of passengers to changes in price, and thus, they can have an impact on passenger demand projections. The higher the demand

[2]Both taxes are indexed to inflation using the CPI.

elasticity, the more sensitive the demand is to a change in price, and hence the higher the reduction in enplanements due to a PFC increase. The elasticity rate we chose for our base model analysis was -0.8, which was drawn from a 2007 study conducted by InterVISTAS consulting for IATA[3] and is based on a universal price increase at a national level. We also examined different elasticity rates of -0.65 and -1.122 to see how it affected our results. The -0.65 elasticity is drawn from a November 2014 study of demand elasticity also conducted by InterVISTAS Consulting Inc. for ACI-NA.[4] The -1.122 elasticity comes from a study completed by D.W. Gillen et al. in 2003.[5]

PFC Pass-Through

Assuming that airports adopt higher PFC rates, passenger demand and airline capacity decisions will determine how much of the cost of the PFC increase is passed on to passengers or absorbed in the form of lowered base fares. For our base model, we assumed that the entire PFC increase would be fully passed on to consumers. Airline statements and experts with whom we spoke largely support that airlines would attempt to pass the PFC increase on to consumers, at least in the longer run. However, consumers' response may vary from market to market and may not happen all at once, as airlines adjust capacity to respond to higher fares. For example, in the immediate period when airlines have fixed capacity, airlines' may have to absorb all or some of this increase to keep planes full. In the following years, as airlines adjust their capacity, they may have greater ability to pass on more of the PFC increase to passengers. One paper, which examined the change in ticket price after PFCs were introduced at individual airports, suggests that ticket prices may increase by more or less than the fee depending on the characteristics of the route.[6] In addition, it is not clear that airlines oppose all PFCs, as many of the projects that PFCs have funded in the past have been supported by airlines. For example, one airline representative told us that the airline supports many PFC projects at a local level, but airlines

[3]InterVISTAS Consulting Inc., *Estimating Air Travel Demand Elasticities* (Dec. 28, 2007).

[4]InterVISTAS Consulting Inc., *Estimating Air Travel Demand Elasticities* (November 2014).

[5]D.W. Gillen, W.G. Morrison, and C. Stewart, *Air travel demand elasticities: concepts, issues and management*, Department of Finance, Government of Canada (January 2003).

[6]Edward Huang and Adib Kanafani, *Taxing for Takeoff: Estimating Airport Tax Incidence through Natural Experiments* (January 2010).

and their industry's trade association generally oppose PFC increases at a national policy level. However, if funding airport projects through PFCs instead of through airline rates and charges would reduce airline costs, then it would increase the ability and likelihood of airlines absorbing some of the PFC increase by lowering fares instead of making consumers pay for it. The more the airlines absorb, the less the increase in travel costs and the lower the adverse effect on passenger demand. However, under any PFC increase and pass-through scenario, trust fund revenues from passengers will be reduced relative to the baseline because even if airlines lower fares enough to absorb the entire PFC increase, the lower fares will result in less revenue from the 7.5% excise tax on fares.

Airport Adoption

We assumed that airports that were approved to impose a PFC as of July 31, 2014, would raise their PFC to the maximum allowed amount in the first year and that airports that do not currently have approval to collect a PFC would not obtain approval to impose one. Interviews with FAA and airport representatives indicate that the number of airports charging PFCs is not expected to change significantly in the future. While it is unrealistic to assume that all airports that are currently collecting a PFC would immediately raise their PFC in the first year, based on near universal adoption of the current maximum by nearly all of the largest airports, it is not unrealistic to expect that airports would be at or near the maximum by 2024. Following the introduction of the PFC in 1991 and the increase in 2000, airports quickly moved to the higher PFC level as indicated in figure 3 in the report. However, the extent to which airports continually have projects that fall under the PFC-eligibility criteria and gain FAA approval will also influence the adoption of higher PFCs by airports over time. Small airports in particular may not have as many PFC-eligible projects to justify moving to a higher PFC. If a significant number of airports that currently collect a PFC do not move to the maximum under a new cap, it would offer passengers more alternatives as passengers could avoid paying the higher PFC by substituting a nearby airport that does not charge at the higher rate. This would result in a higher overall rate of demand elasticity. Thus the final effect would depend on the specific pattern of airports that do or do not adopt a higher PFC.

Sensitivity Analysis

In order to test the sensitivity of the results to changes in the key assumptions about elasticity and pass-through, changes to PFC and trust fund revenue from passengers were modeled using a -0.65 and a -1.122 elasticity rate, and a 50 percent pass-through rate. The results are presented below in table 5. Under these alternative elasticity scenarios and the $8 cap, estimated changes to PFC revenues vary by less than

1.5 percent from the standard scenario estimated using a -0.8 elasticity. Similarly, under a scenario that uses an $8 PFC cap, an elasticity rate of -0.8, and a 50 percent pass-through rate, estimated changes to PFC revenues varied by less than 2 percent relative to the standard scenario. Changes in trust fund revenues from passengers showed greater sensitivity to changes in elasticity rate and pass-through in percentage terms as these are the only variables in the calculations of these changes.

Table 5: Estimated Changes in Passenger Facility Charge Collections Available to PFC Approved Airports and Associated Changes in Airport and Airway Trust Fund Revenues under Alternate Elasticity and Pass-Through Scenarios from 2016 to 2024 (Dollars in millions)

Elasticity	Pass-through	Revenue	2016	2017	2018	2019	2020	2021	2022	2023	2024
Current baseline estimate for PFC collections available to PFC approved airports under $4.50 cap											
N/A	100%	PFC[a]	3,073	3,149	3,225	3,301	3,373	3,437	3,498	3,561	3,628
Estimated changes to PFC baseline and AATF revenues after increase to $8 PFC cap											
-0.8	100%	PFC[b]	+2,364	+2,424	+2,485	+2,546	+2,604	+2,655	+2,705	+2,756	+2,810
		AATF[b]	-161	-164	-168	-172	-175	-178	-180	-183	-186
Estimated changes to PFC baseline and AATF revenues after increase to $8 PFC cap											
-0.65	100%	PFC[c]	+2,380	+2,440	+2,501	+2,562	+2,620	+2,671	+2,720	+2,771	+2,825
		AATF[c]	-131	-134	-137	-139	-142	-144	-146	-149	-151
-1.122	100%	PFC[d]	+2,330	+2,390	+2,451	+2,512	+2,570	+2,621	+2,671	+2,722	+2,776
		AATF[d]	-225	-231	-236	-241	-245	-249	-253	-257	-260
-0.8	50%	PFC[e]	+2,407	+2,467	+2,528	+2,589	+2,647	+2,697	+2,747	+2,797	+2,851
		AATF[e]	-138	-141	-145	-148	-151	-153	-155	-157	-160

Source: GAO analysis using DOT data. | GAO-15-107

Note: Results are reported in nominal dollars.

[a]Baseline PFC revenues under current cap ($4.50).

[b]Change in PFC and AATF revenues relative to baseline under standard scenario (presented in the body of the report) using an $8 PFC cap, 100% pass-through of cost to passengers and 100% adoption of maximum PFC level in 2016 by PFC-approved airports.

[c]Change in PFC and AATF revenues relative to baseline under alternative scenario using an $8 PFC cap, a -0.65 elasticity, 100% pass-through of cost to passengers, and 100% adoption of maximum PFC level in 2016 by PFC-approved airports.

[d]Change in PFC and AATF revenues relative to baseline under alternative scenario using an $8 PFC cap, a -1.122 elasticity, 100% pass-through of cost to passengers, and 100% adoption of maximum PFC level in 2016 by PFC-approved airports.

[e]Change in PFC and AATF revenues relative to baseline under alternative scenario using an $8 PFC cap, a -0.8 elasticity, 50% pass-through of cost to passengers, and 100% adoption of maximum PFC level in 2016 by PFC-approved airports.

To test the sensitivity of our results to key assumptions about airport adoption, we developed an alternative adoption scenario based on airport adoption behavior after the previous increase in the PFC cap in 2000. For the results located in Table 6, we assume that 50% of airports charge the maximum rate of $8 from 2016 to 2018, 75% of airports from 2019 to 2021 and 90% of airports from 2022 to 2024. The results show that additional revenue from the increase in the cap varies proportionally to the percentage of airports that adopt the higher cap. The impact on trust fund revenues from passengers is lower relative to the standard scenario because fewer passengers are affected by the PFC cap increase if fewer airports adopt it.

Table 6: Estimated Changes in Passenger Facility Charge Collections Available to PFC Approved Airports and Associated Changes in Airport and Airway Trust Fund Revenues under Alternative Airport Adoption Scenarios from 2016 to 2024 (Dollars in millions)

Elasticity	Pass-through	Category	2016	2017	2018	2019	2020	2021	2022	2023	2024
Current baseline PFC collections available to PFC approved airports under $4.50 PFC cap											
N/A	100%	PFC Revenue[a]	3,073	3,149	3,225	3,301	3,373	3,437	3,498	3,561	3,628
Estimated changes to PFC baseline and AATF revenues after increase to $8 PFC cap											
-0.8	100%	Percent of Enplanements at $8 cap[b]	50%	50%	50%	75%	75%	75%	90%	90%	90%
		PFC Revenue[c]	+1,182	+1,212	+1,243	+1,910	+1,953	+1,991	+2,434	+2,480	+2,529
		AATF Revenue[d]	-80	-82	-84	-129	-131	-133	-162	-165	-167

Source: GAO analysis using DOT data. | GAO-15-107

Note: Results are reported in nominal dollars.

[a]Baseline PFC revenues under current cap ($4.50).

[b]This represents the percentage of enplanements that would charge the maximum allowable PFC under this alternative scenario. All other enplanements continue collecting at the previous cap of $4.50.

[c]Change in PFC revenues relative to baseline under $8 PFC cap. This cap was proposed in the President's 2015 budget.

[d]Change in AATF revenues relative to baseline under $8 PFC cap.

Appendix III: GAO Contacts and Staff Acknowledgments

GAO Contact

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Staff Acknowledgments

In addition to the contact named above, the following individuals made important contributions to this report: Paul Aussendorf, Assistant Director; Namita Bhatia Sabharwal; Benjamin Emmel; Bert Japikse; Delwen Jones; Maureen Luna-Long; Josh Ormond; Madhav Panwar; and Reed Van Beveren.