

GAO

Report to the Committee on Commerce,
Science, and Transportation, U.S.
Senate

January 2012

AIRPORT AND AIRWAY TRUST FUND

Factors Affecting Revenue Forecast Accuracy and Realizing Future FAA Expenditures



G A O

Accountability * Integrity * Reliability

Highlights of [GAO-12-222](#), a report to the Committee on Commerce, Science, and Transportation, U.S. Senate

Why GAO Did This Study

Established in 1970, the Airport and Airway Trust Fund (trust fund) is the primary source of funding for the Federal Aviation Administration's (FAA) investments in the airport and airway system. Trust-fund revenues come largely from taxes on airline tickets and aviation fuel. The financial health of the trust fund is important to ensure sustainable funding for FAA without increasing demands on general revenues. Current law authorizes appropriations from the trust fund equal to forecast trust-fund revenues. However, if forecasts overestimate actual revenues and Congress appropriates the forecast level, the trust fund's uncommitted balance—that is, the balance in excess of what has been appropriated from the fund or authorized as contract authority—is drawn down.

Among its objectives, GAO was asked to examine (1) the accuracy of the trust-fund revenue forecasts and factors affecting forecast accuracy, (2) different options for determining appropriations from the trust fund that would reduce the risk of overcommitting the fund, and (3) the extent to which trust-fund revenues might cover planned FAA expenditures through fiscal year 2021. GAO reviewed the Department of the Treasury's (Treasury) and FAA's forecasting methods, analyzed trust-fund revenue and forecast data, and interviewed federal officials and aviation-industry and forecasting experts. The Departments of Transportation and Treasury and the Office of Management and Budget provided technical comments, which GAO incorporated into the report as appropriate.

View [GAO-12-222](#). For more information, contact Susan Fleming at (202) 512-2834 or flemings@gao.gov.

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What GAO Found

Actual trust-fund revenues fell short of FAA's revenue forecasts for 9 of the past 11 years, contributing to a decline in the trust fund's uncommitted balance from over \$7 billion in fiscal year 2000 to \$770 million in fiscal year 2010. Inaccurate forecasts for the taxes related to domestic passenger tickets, which account for over 70 percent of trust-fund revenues, drove the aggregate overforecast, but inaccurate forecasts for other taxes also had an effect. This inaccuracy is largely attributable to unexpected events affecting aviation, such as the terrorist attacks of September 11, 2001, and the recession in 2009; the budget process requiring the forecasts to be developed over a year in advance of the fiscal year; and lags in recognizing structural changes in the airline industry, such as airlines' increased reliance on ancillary fees for which excise taxes for the trust fund are not collected. Changes in the methodology for forecasting trust-fund revenues and the assumption of forecasting responsibility by Treasury, begun in fiscal year 2011, may also affect the future accuracy of forecasts, but it is too soon to tell what effect the changes will have after just 1 fiscal year.

Alternative options for how Congress determines available resources for appropriation from the trust fund could provide for substantially greater protection against overcommitting trust-fund resources—that is, help ensure that trust-fund revenues would be sufficient to cover FAA's expenditures—or requiring additional general-revenue contributions than the current approach outlined in law. To this end, Congress could limit budget resources available for appropriation from the trust fund to less than the forecast revenues—for example, the current House FAA Reauthorization bill has a provision that would make only 90 percent of forecast revenues available for appropriation from the trust fund as well as any prior year differences between actual trust-fund revenues and appropriations from the trust fund. Other options would make only actual revenues from the prior year available, or base appropriations on the maintenance of a target level for the trust fund's balance. However, unless a sufficiently large minimum balance is established, there would still be some risk of overcommitting trust-fund resources under these options. The alternatives could also result in greater swings in trust-fund appropriations, requiring varying levels of general revenues to maintain overall stable spending levels for FAA.

The extent to which trust-fund revenues might cover FAA's future expenditures will depend on whether trust-fund revenue and FAA expenditure forecasts are realized. Under current revenue and expenditure forecasts, between 8 percent and 32 percent of FAA's annual expenditures for fiscal years 2013 through 2021 could have to be paid for by general revenues unless spending is reduced or additional taxes are paid into the trust fund. However, congressional decisions, including the level of FAA's appropriations; unexpected events affecting trust-fund revenues and FAA expenditures; and FAA's implementation and management of programs could significantly change forecast revenues and expenditures in future years. For example, FAA's modernization of the air traffic control system, called the Next Generation Air Transportation System (NextGen), is currently estimated to cost FAA \$15 billion to \$22 billion, and an additional \$5 billion to \$7 billion for equipping aircraft with NextGen technology, but those costs could change depending upon the speed of implementation and other factors.

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Abbreviations

AIP	Airport Improvement Program
AIR-21	Wendell H. Ford Aviation Investment and Reform Act for the 21st Century
ADS-B	Automatic Dependent Surveillance System Broadcast
CBO	Congressional Budget Office
DOT	Department of Transportation
ERAM	En Route Automation Modernization
FAA	Federal Aviation Administration
IRS	Internal Revenue Service
NextGen	Next Generation Air Transportation System
OMB	Office of Management and Budget
SWIM	System Wide Information Management
Treasury	Department of the Treasury
trust fund	Airport and Airway Trust Fund

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Accountability * Integrity * Reliability

United States Government Accountability Office
Washington, DC 20548

January 23, 2012

The Honorable John D. Rockefeller IV
Chairman
The Honorable Kay Bailey Hutchison
Ranking Member
Committee on Commerce, Science, and Transportation
United States Senate

Established in 1970, the Airport and Airway Trust Fund (trust fund) finances nearly all of the Federal Aviation Administration's (FAA) capital investments in the airport and airway system, such as construction and safety improvements at airports and technological upgrades to the air traffic control system.¹ The trust fund also provides a substantial portion—between 43 and 84 percent over the last 10 years—of FAA's operations spending, which includes the maintenance and operation of the air traffic control system and safety inspections. The trust fund is principally funded by a variety of excise taxes paid by users of the national airspace system, and its financial health is important to ensure sustainable funding for a safe and efficient aviation system without increasing demands on general revenues. Current law requires that all of the forecast trust-fund revenues—that is, the projected amount contained in the President's annual budget request—be made available each fiscal year for appropriation.² However, in recent years, forecasting errors—particularly, several years of overestimated revenues—have contributed to a

¹Airport and Airway Revenue Act of 1970, Pub. L. No. 91-258, § 208, 84 Stat. 236, 250 (1970).

²Starting with the Wendell H. Ford Aviation Investment and Reform Act of the 21st Century (AIR-21) in 2000, Pub. L. No. 106-181 § 106, 114 Stat. 61, 72 (2000), and continuing with Vision 100—Century of Aviation Reauthorization Act (Vision 100), Pub. L. No. 108-176, § 104, 117 Stat. 2490, 2496 (2003), codified at 49 U.S.C. § 48114, Congress has based FAA's fiscal year appropriation from the trust fund on the forecast level of trust fund revenues, including interest on trust fund balances, as set forth in the President's baseline budget projections for the budget year. Under current law, total budget resources made available from the trust fund are to be appropriated to equal to the sum of annual obligation limitations and other budget authority, which in turn is equal to the forecast level of receipts plus interest credited to the trust fund for that fiscal year. 49 U.S.C. § 48114(a)(1), (b)(1).

drawdown of the trust fund's uncommitted balance.³ As the uncommitted balance approaches zero, the trust fund could become overcommitted—that is, revenues could be insufficient to cover all of the funding that Congress has committed. This risk of overcommitting funds could create budgetary challenges for FAA and require larger general-revenue appropriations to fund FAA's operations spending. For example, as we have previously reported to this committee, Congress increased the general-revenue appropriation for FAA's operations by nearly \$1 billion in fiscal years 2009 and 2010. If these actions had not occurred, the trust fund would have been overcommitted.⁴

In this context, you asked us to examine the trust-fund revenue-forecasting process. To address your request, we examined (1) how trust-fund revenues are forecast for the budget year; (2) the accuracy of past trust-fund revenue forecasts and the factors affecting forecast accuracy; (3) how different options for estimating appropriations from the trust fund might reduce the risk of overcommitting the trust fund; and (4) the extent to which trust-fund revenues might cover planned FAA expenditures in fiscal years 2012 through 2021.

To determine how trust-fund revenues are forecast for the President's budget, we interviewed FAA and Department of the Treasury (Treasury) officials on the forecasting methods used and the forecasts developed for fiscal years 2000 through 2011. To determine the accuracy of trust-fund revenue forecasts, we obtained FAA's forecasts of excise tax receipts and interest revenue for fiscal years 2000 through 2010, which we compared to the sum of trust-fund tax receipts, as certified by the Internal

³FAA considers the committed balance of the trust fund to include amounts that have been appropriated from the trust fund (directly or to liquidate prior contract authority) and authorized contract authority (contract authority up to the annual obligation limitation), whether or not an actual obligation has been incurred. The uncommitted balance is the revenue that would remain in the trust fund after subtracting the committed balance. The financial condition of the trust fund generally can be evaluated by looking at the uncommitted balance and the cash balance. The uncommitted balance is used to evaluate FAA's ability to enter into future commitments as provided in authorization and appropriations acts. The cash balance reflects all cash on hand in the trust fund—both that which may be required to satisfy outstanding obligations and funds for which no commitments may have been made. This balance is used to evaluate the trust fund's ability to pay outstanding bills as they become due.

⁴GAO, *Commercial Aviation: Airline Industry Contraction Due to Volatile Fuel Prices and Falling Demand Affects Airports, Passengers, and Federal Government Revenues*, [GAO-09-393](#) (Washington, D.C.: Apr. 21, 2009).

Revenue Service (IRS), and interest revenue data from FAA.⁵ We reviewed academic literature and interviewed aviation-industry and forecasting experts to identify factors affecting forecast accuracy.⁶ To evaluate different options for estimating appropriations from the trust fund, we identified four options based on our previous trust-fund work⁷ and analyzed these options using actual and forecast trust-fund tax-receipt data for fiscal years 2000 through 2010. One of these options includes a provision in the current House FAA reauthorization bill that would limit the budget resources made available for appropriation from the trust fund to 90 percent, rather than 100 percent, of forecast revenues and apply any differences between actual trust-fund revenues and appropriations from the trust fund to a subsequent year.⁸ The other options include using a prior year's actual trust-fund revenue amount as the basis for the appropriation and setting a target level for the trust fund's uncommitted balance—such as \$2 billion or \$3 billion. Through analyzing these options, we determined how they might have affected the total amount of budget resources made available from the trust fund for appropriation and the trust fund's uncommitted balance, if the options had been followed in fiscal years 2000 through 2010. For this report, our analysis assumes that obligations against the trust fund will equal the amounts authorized and that FAA's outlays in a given year to liquidate obligations equal the amounts appropriated for that purpose.⁹

⁵For fiscal year 2000, IRS was able to provide documentation for only one quarter of refunds and credits. However, because refunds and credits pertain only to fuel and gasoline, we inferred that the difference between FAA's aggregate tax receipts and the aggregate tax receipt data we compiled from IRS documentation was wholly attributable to fuel and gasoline.

⁶Through a review of the literature on trust fund revenue forecasting, we identified individuals with expertise on federal government revenue forecasting, aviation-activity forecasting, or the trust fund, or a combination of these subjects. We selected a group of these individuals to provide perspectives on our engagement objectives. While others with expertise in the area may have provided different opinions, our process resulted in a group of experts—three from academia, three from the private sector, and one from the airport industry—that we believe provided a balanced set of perspectives.

⁷[GAO-09-393](#).

⁸FAA Reauthorization and Reform Act of 2011, H.R. 658, 112th Cong. (as passed by the House of Representatives on Apr. 1, 2011).

⁹For simplicity, this analysis does not consider accrued interest.

To determine the extent to which trust-fund revenues might cover FAA expenditures in fiscal years 2012 through 2021, we examined Treasury's trust-fund revenue forecasts and the Office of Management and Budget's (OMB) budget authority forecasts for FAA for fiscal years 2012 through 2021 from the President's fiscal year 2012 budget request and mid-session review (the latest available forecast). We reviewed OMB budget guidance and interviewed OMB, Treasury, and FAA officials to understand the basis of these forecasts and potential factors affecting forecast accuracy. We also reviewed FAA's fiscal year 2012 appropriation¹⁰ and the House and Senate FAA reauthorization bills¹¹ and drew from our previous work on FAA's program and acquisition management to identify potential factors affecting forecast accuracy.¹² We assessed the reliability of the FAA, IRS, OMB, and Treasury data by (1) performing electronic testing of required data elements, (2) reviewing existing information about the data and the systems that produced them, and (3) interviewing agency officials knowledgeable about the data. We determined that the data were sufficiently reliable for the purposes of this report. We conducted this performance audit from April 2011 to January 2012 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

¹⁰Consolidated and Further Continuing Appropriations Act, 2012, Pub. L. No. 112-55, div. C, 125 Stat. 552, 644-649 (2011).

¹¹H.R. 658; FAA Air Transportation Modernization and Safety Improvement Act, S. 223, 112th Cong. (as passed by the Senate on Feb. 17, 2011 and incorporated by the Senate in H.R. 658).

¹²GAO, *Next Generation Air Transportation System: FAA Has Made Some Progress in Implementation, but Delays Threaten to Impact Costs and Benefits*, [GAO-12-141T](#) (Washington, D.C.: Oct. 5, 2011) and *NextGen Air Transportation System: FAA's Metrics Can Be Used to Report on Status of Individual Programs, but Not of Overall NextGen Implementation or Outcomes*, [GAO-10-629](#) (Washington, D.C.: July 27, 2010).

Background

Source of Trust-Fund Revenues

In 1970, almost a decade before airline deregulation, Congress created the trust fund to provide a dedicated source of funding for the aviation system. The trust fund is funded principally by a variety of excise taxes paid by users of the national airspace system, as well as by interest revenue.¹³ The excise taxes are imposed on airline ticket purchases and aviation fuel, as well as the shipment of cargo. Disbursement of revenues deposited in the trust fund is subject to congressional appropriations. These taxes are classified in six categories or “tax lines,” as shown in table 1.

Table 1: Trust-Fund Excise Tax Lines, Revenue Sources, and Current Rates

Tax line	Revenue source	Rate effective as of January 1, 2011
Transportation of Persons by Air	Domestic passenger ticket tax	7.5 percent
	Domestic flight segment ^a tax (excluding flights to or from rural airports)	\$3.70 per passenger per segment; indexed to the Consumer Price Index
	Tax on mileage awards (frequent flyer awards tax)	7.5 percent of value of miles
Transportation of Property by Air	Tax on domestic cargo or mail	6.25 percent of the price paid for transportation of domestic cargo or mail
Use of International Air Facilities	Tax on international arrivals and departures	\$16.30 per passenger; indexed to the Consumer Price Index
	Tax on flights between the continental United States and Alaska or Hawaii (or between Alaska and Hawaii)	\$8.20 per passenger; indexed to the Consumer Price Index
Aviation Fuel Commercial Use	Domestic commercial fuel tax	\$0.043 per gallon
Aviation Fuel Other than Gas ^b	Domestic general aviation jet fuel tax	\$0.218 per gallon
Aviation Gasoline	Domestic general aviation gasoline tax	\$0.193 per gallon

Source: FAA and IRS data.

Note: In addition to the excise taxes deposited into it, the trust fund accrues interest.

^aA flight segment consists of one takeoff and one landing.

^bPub. L. No. 109-59 § 11161, 119 Stat. 1144, 1969 (2005) requires that taxes collected on kerosene used in aviation—previously deposited directly into the trust fund—be initially deposited in the Highway Trust Fund and then transferred by accounting adjustments to the trust fund.

¹³The trust fund accrues interest on its cash balance.

Use of Trust-Fund and General Revenues for FAA

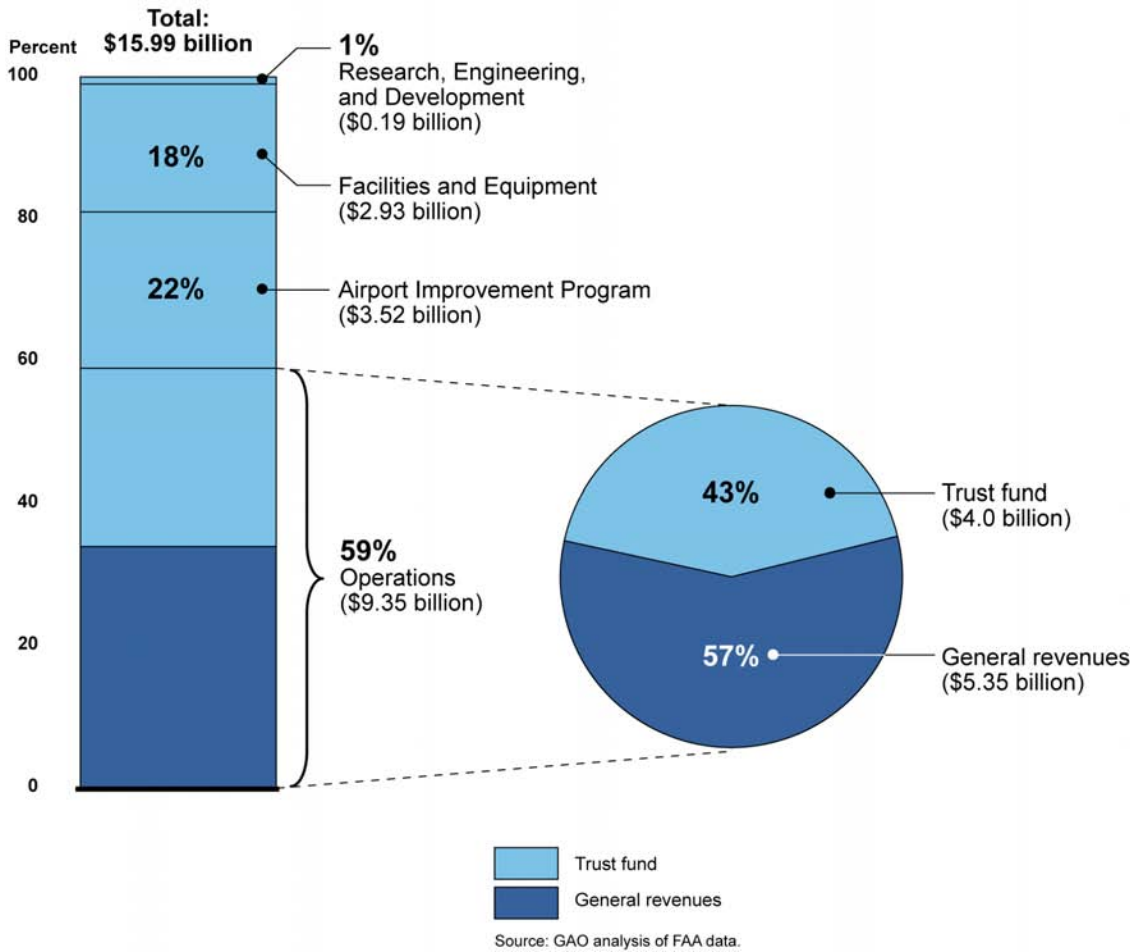
The trust fund finances capital improvements of the airport and airway system, and to the extent funds are made available, it funds the government's operation and maintenance of that system.¹⁴ Figure 1 shows how trust-fund revenues were appropriated to FAA's operations and capital accounts for fiscal year 2010, which generally represents the breakout of trust-fund revenue use for recent years.¹⁵ FAA's three capital accounts include (1) the Facilities and Equipment account, which funds technological improvements to the air traffic control system, including the modernization of the air traffic control system called the Next Generation Air Transportation System (NextGen); (2) the Research, Engineering, and Development account, which funds research on issues related to aviation safety, mobility, and NextGen technologies; and (3) the Airport Improvement Program (AIP), which provides grants for airport planning and development. In addition, the trust fund has provided all or some portion of the funding for FAA's operations account, which funds the operation of the air traffic control system and safety inspections, among other activities.¹⁶ General revenues from the U.S. Treasury have been used to supplement trust-fund revenues for operations and have funded about 16 to 57 percent of FAA's operation appropriation—or 8 to 33 percent of FAA's total appropriation—during fiscal years 2001 through 2010.

¹⁴Since 1976, the trust fund has been used to fund both capital and operations expenses. Before that, however, the fund was restricted to capital funding. Specifically, in 1971, Congress amended the original 1970 law establishing the trust fund to eliminate the provision permitting the use of the trust fund to finance FAA operations. Pub. L. No. 92-174, 85 Stat. 491, 492 (1971). The trust fund continued to serve as a capital funding mechanism until the Airport and Airway Development Act Amendments of 1976 (Pub. L. No. 94-353, § 6, 90 Stat. 871 (1976)) established that trust-fund revenues could be used for some maintenance and operations costs. As the Congressional Research Service (CRS) has reported, there has been general acceptance that there is a public interest component to the operation of the national aviation system, which is appropriated from the Treasury's general revenues. This compensates for what the military, government, and nonuser beneficiaries (also known as societal users) might have contributed if they had actually paid into the trust fund. See GAO, *Whether the Airport and Airway Trust Fund was created solely to finance aviation infrastructure*, B-281779 (Feb. 12, 1999) and CRS, *Aviation Finance: Federal Aviation Administration (FAA) Reauthorization and Related Issues* (Washington, D.C.: Apr. 21, 2008).

¹⁵The trust fund also funds the Essential Air Service (EAS) program, which was established when the airline industry was deregulated in 1978 to subsidize air service to eligible communities that would otherwise not have scheduled air service. See 49 U.S.C. §§ 41731–48. In fiscal year 2010, the appropriation for EAS was \$150 million, with \$50 million funded from overflight fees.

¹⁶General revenues are held in general fund accounts, which are U.S. Treasury accounts holding all federal money not allocated by law to any other fund account.

Figure 1: FAA Appropriations by Account for Fiscal Year 2010



Annual Budget Process and Appropriations from the Trust Fund

From the trust fund’s creation in 1970 through the late 1990s, appropriations from the trust fund were consistently lower than revenues deposited into the trust fund, resulting in a growing uncommitted balance. To ensure that revenue collected from persons and businesses paying taxes into the trust fund are used for aviation purposes, AIR-21 and Vision 100, which reauthorized FAA investments in the airport and airway system, added certain provisions. These provisions require that the total budget resources made available each fiscal year from the trust fund—

that is, the appropriation from the trust fund¹⁷—equal the President’s baseline budget projection, or forecast, for excise taxes and interest credited to the trust fund for the coming fiscal year (budget year).¹⁸ Since 2000, appropriations from the trust fund have generally followed the forecast amounts, but they can, and have, varied—a point we discuss in more detail later in this report.

The budget-year trust-fund revenue forecast, and accordingly FAA’s appropriation, is based on information available in the first quarter of the preceding fiscal year and more than 2 years before the final accounting for the forecast year is certified by IRS. Figure 2 shows the timeline for the fiscal year 2010 budget process, which generally reflects a typical budget cycle for recent years.¹⁹ Because the President’s budget is released about 8 months before the beginning of the fiscal year, the revenue forecast for the fiscal year 2010 budget submission to Congress was developed in the first quarter of fiscal year 2009—October through December of calendar year 2008—or about a year before the start of the

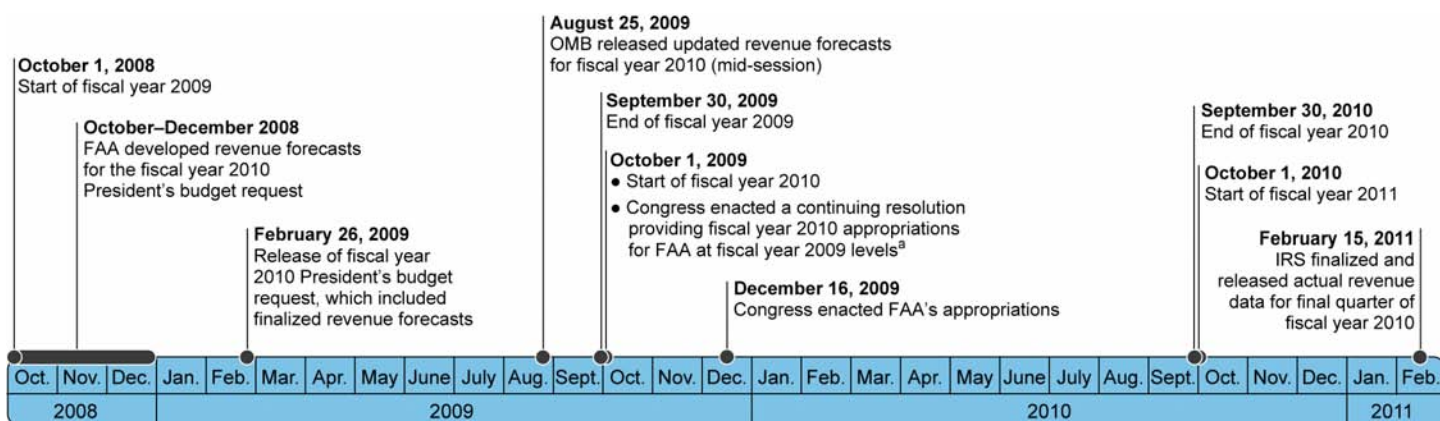
¹⁷Appropriations from the trust fund includes contract authority up to the annual obligation limitation.

¹⁸The legislative objective in FAA’s authorizing legislation, which seeks to mandate that annual spending from the trust fund be equal to annual trust-fund receipts, is enforced by two spending guarantees. One makes it out-of-order in the House or Senate to consider legislation that fails to use all forecast trust-fund revenues each year. The second makes it out-of-order to consider any bill that provides funding for research, engineering, and development or operations and maintenance if it fails to fully fund the FAA’s two capital programs, AIP and facilities and equipment, at their authorized levels. The authorized level equals total budget resources, which FAA’s authorizing legislation defines “as the total amount made available from the Airport and Airway Trust Fund for the sum of obligation limitations and budget authority made available for a fiscal year for the ... budget accounts that are subject to the obligation limitation on contract authority provided [in title 49, U.S.C.] and for which appropriations are provided pursuant to [title 49] authorizations” for airport grants-in-aid, facilities and equipment, research and development, and trust fund share of operations. 49 U.S.C. § 48114(b)(1). The guarantees are only enforceable if a point of order is raised and if it has not been waived. While these procedural guarantees have not been employed, appropriations from the trust fund have generally reflected the President’s baseline projection for trust fund revenues (tax receipts plus interest). Also, according to a 2008 CRS report, the history of these guarantees indicates that broader budget policy goals or spending priorities of the appropriators can trump these guarantees. For more information, see CRS, *Aviation Spending Guarantee Mechanisms* (Washington, D.C.: Mar. 25, 2008) and *Aviation Spending Guarantee Mechanisms* (Washington, D.C.: Oct. 6, 2006).

¹⁹These dates reflect the actual dates for the fiscal year 2010 budget process. Specific dates, such as those for the budget submission and passage of the fiscal year appropriation, can vary from year to year.

fiscal year. Furthermore, the most recent available data on actual trust-fund revenues (IRS-certified tax-receipt data) for preparing this forecast were from the first three quarters of fiscal year 2008, or through June 30, 2008.²⁰ Likewise, the accuracy of the fiscal year 2010 revenue forecasts could not be assessed against IRS-certified data until February 2011, which was 5 months after the end of the fiscal year. In addition to the budget-year forecast, the President's budget includes revenue forecasts for the 9 years beyond the budget year (referred to as out-year forecasts), which are then updated during roughly the middle of the calendar year as part of the mid-session review.

Figure 2: Timeline of the Budget Process for FAA for Fiscal Year 2010



Sources: FAA, OMB, and IRS.

^aCongress enacted another continuing resolution providing appropriations for FAA on October 30, 2009.

²⁰IRS collects taxes and currently takes over 4 months after the end of each quarter to certify tax receipts for that quarter. Before fiscal year 2007, IRS took about 6 months after the end of each quarter to certify tax receipts for that quarter. In addition, IRS certifies tax receipts collected each quarter but does not track whether the tax receipts collected correspond to tax liability incurred during that quarter. Thus, for any given quarter, the taxes collected may or may not correspond to tax liability incurred during that quarter. However, IRS officials stated that the vast majority of taxes reported for any given quarter likely reflect taxes paid on liability incurred during that quarter. Though this is an imperfect measure of actual receipts, FAA used IRS-certified tax receipts in a review of its forecast accuracy in 2006 because although these receipts are estimates, these data are expected to be a more accurate reflection of tax receipts generated by aviation activity in a given fiscal year.

Through fiscal year 2010, FAA generated the trust-fund revenue forecast for the President's annual budget request. Starting with fiscal year 2011, the responsibility for forecasting trust-fund revenues shifted from FAA to Treasury. According to Treasury officials, Treasury assumed this responsibility so that it would have responsibility for all federal excise-tax forecasts, including the revenues for other trust funds such as the Highway Trust Fund.

In addition to budget-year and out-year revenue forecasts, the President's annual budget request includes forecasts of FAA's budget authority for the same period.²¹ Budget authority forecasts represent the estimated amount that may be requested for FAA to enter into obligations that will result in outlays of federal funds; in this report, we refer to FAA's forecast budget authority as its forecast expenditures. According to OMB budget guidance, OMB forecasts the out-year budget-authority levels for agencies based on proposed changes in legislation along with the administration's overall policy goals and forecasts of economic growth. As this guidance indicates, these forecasts are developed to allow an analysis of the long-term consequences of proposed program or tax-policy initiatives. FAA works with OMB to develop the proposed expenditures for a given budget year and then works to align its programs and plans with OMB's out-year budget-authority targets.²² After the President submits his budget to Congress, Congress begins deliberations on the appropriate level of federal revenues and expenditures for a given fiscal year.

Status of the Trust Fund

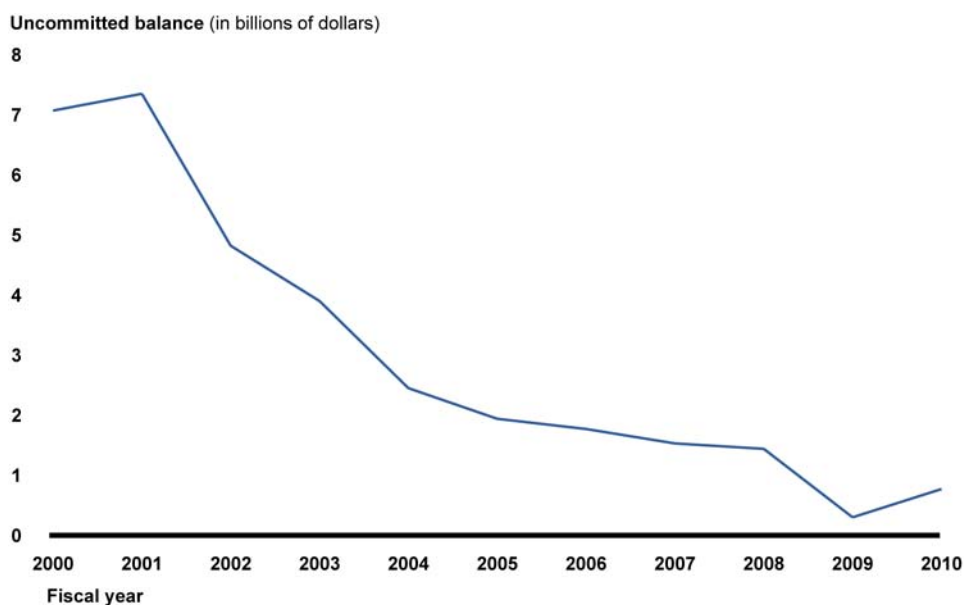
Since the AIR-21 spending provisions were introduced in 2000, the trust fund's uncommitted balance—that is, the revenues in the trust fund that remain after funds have been appropriated from the trust fund and a

²¹Budget authority is the authority provided by federal law to incur financial obligations. It includes both appropriations and contract authority.

²²FAA's planned capital improvements, which are funded through the Facilities and Equipment account, are outlined in the agency's Capital Improvement Plan while its planned research and development projects are detailed in FAA's National Aviation Research Plan. FAA updates both of these plans annually.

limitation on obligations established²³—has generally declined because it has been used to offset shortfalls in forecast trust-fund revenues. As we previously reported, the trust fund’s uncommitted balance, which exceeded \$7 billion at the end of fiscal year 2001, declined to \$299 million at the end of fiscal year 2009—the lowest balance over the past decade—before slightly rebounding in fiscal year 2010 (fig. 3).²⁴

Figure 3: End-of-Year Trust-Fund Uncommitted Balance, Fiscal Years 2000 through 2010



Source: GAO analysis of FAA data.

²³Limitations of obligations limit the exercise of contract authority. Contract authority is the authority to incur an obligation in advance or in excess of an appropriation. A subsequent appropriation is needed to liquidate (pay off) the obligations incurred using contract authority. Budget authority is the authority provided by federal law to incur financial obligations. It includes both appropriations and contract authority. FAA considers the committed balance to include amounts that have been appropriated from the trust fund and authorized contract authority, whether or not obligated.

²⁴GAO, *Airport and Airway Trust Fund: Declining Balance Raises Concerns over Ability to Meet Future Demands*, [GAO-11-358T](#) (Washington, D.C.: Feb. 3, 2011). The trust fund’s uncommitted balance was recently estimated at about \$1.4 billion at the end of fiscal year 2011.

The largest decline in the uncommitted balance in the past decade occurred in 2002 following the sudden drop-off in aviation activity after the terrorist attacks of September 11, 2001. This decline occurred because revenue forecasts, which had been developed many months before the September 11 attacks and the subsequent decline in air travel, were considered in determining the level of appropriations from the trust fund. In addition, declines in passenger traffic, aircraft operations, and fuel consumption in 2009 resulted in actual revenues to the trust fund that fell well below forecast levels and an uncommitted trust-fund balance that approached zero. As previously reported, if the trust fund's uncommitted balance approaches zero, FAA officials noted that they might be required to delay obligations for capital programs if they do not have adequate revenues in the trust fund to cover them—unless additional general revenues are first authorized and appropriated.²⁵

Planned NextGen Costs

As we have previously reported, NextGen will transform the way in which the air transportation system operates today, in part by

- using satellite-based surveillance as opposed to ground-based radar,
- using performance-based navigation instead of cumbersome step-by-step procedures,
- replacing routine voice communications with data transmissions, and
- organizing and merging the disjointed data that pilots, controllers, airports, airlines, and others currently rely on to operate the system.²⁶

Because of the potential benefits of modernizing the air transportation system and the substantial costs of modernization, NextGen implementation has been a top congressional priority. FAA has been planning and developing NextGen since 2003 and is now implementing near-term (through 2012) and midterm (through 2018) capabilities. According to FAA, approximately \$2.9 billion was appropriated for NextGen for fiscal years 2004 through 2011—most of which was funded from the trust fund. FAA recently estimated the cost for NextGen for the agency to be between \$15

²⁵[GAO-09-393](#).

²⁶[GAO-12-141T](#).

billion and \$22 billion, and another \$5 billion to \$7 billion for equipping aircraft with NextGen technology, for fiscal years 2012 through 2025—much of which will be funded from the trust fund.²⁷ In FAA’s latest Capital Improvement Plan—which outlines FAA’s planned facilities and equipment expenditures for the next 5 years—about one-third, or \$4.8 billion of the \$14.3 billion, in planned capital improvements for fiscal years 2012 through 2016 is for NextGen or NextGen-related projects. In addition, given the incremental rollout of NextGen technology, FAA has stated that significant levels of investment—including those that rely on trust-fund revenues—will continue to be allocated to sustaining current infrastructure to prevent failures and maintain the reliability and efficiency of current operations.

Treasury’s Demand-Based Approach to Forecasting Revenues Somewhat Differs from FAA’s Previous Approach

Revenue Forecasts Now Used for Trust-Fund Budgeting Are Based on Treasury’s Model Estimates of Aviation Demand

Beginning in fiscal year 2011, when the administration transferred the responsibility for developing trust-fund revenue forecasts from FAA to Treasury, Treasury has been forecasting trust-fund revenues (tax receipts) for both the budget year and out-years using a demand-based econometric model.²⁸ Specifically, according to Treasury officials,

²⁷Statement of the Honorable Michael P. Huerta, Deputy Administrator, Federal Aviation Administration, before the Committee on Transportation and Infrastructure, Subcommittee on Aviation, on the Benefits of the Next Generation Air Transportation System (Oct. 5, 2011).

²⁸Econometric techniques are applied to estimate, based on historical values, the relationships used to project future values of a key variable. Treasury’s approach to forecasting aviation trust-fund revenues is largely similar to its approach to forecasting revenues for the Highway Trust Fund. FAA forecasts interest revenues earned on the trust-fund balance based on the administration’s economic assumptions for the President’s budget.

Treasury begins its forecast by estimating activity measures that reflect aviation demand, such as domestic enplanements, international enplanements, revenue-ton miles,²⁹ and purchased gallons of fuel and gasoline.³⁰ For example, in estimating aviation demand as measured by domestic enplanements, Treasury assumes these enplanements grow with the economy and population and are a function of ticket prices and certain other factors, which is consistent with economic theory. Similarly, according to Treasury officials, Treasury forecasts all other aviation activity measures for future years based on elements of the economy that are likely to affect growth in those activities. In addition, Treasury estimates average ticket prices. Treasury uses these activity and pricing estimates, along with applicable tax rates, to forecast revenues for seven of the nine trust-fund-related tax sources listed in table 1 on page 5.

FAA's Previous Revenue Forecasts Were Based on Estimates of Aviation Capacity

Prior to the fiscal year 2011 budget, FAA was responsible for developing the trust-fund revenue forecasts used in the budget process. According to FAA officials, FAA developed its budget-year revenue forecast using airlines' schedules for the upcoming several months to estimate airline capacity—most notably, available seat miles (the number of available seats and scheduled distance). These capacity measures, along with historical and economic data and professional judgment, enabled FAA to forecast several activity measures, such as revenue passenger miles³¹ and enplanements for both mainline and commuter carriers,³² as well as cargo and mail revenue-ton miles. For example, FAA used its estimate of available seat miles together with its estimate of average load factors (the percentage of seats that are filled) to forecast revenue passenger miles. Other capacity measures, such as available seat miles on international

²⁹A revenue-ton mile is 1 ton of revenue freight transported 1 mile.

³⁰Treasury forecasts these aviation activities using a demand-driven model that assumes growth in demand in future years will be unimpeded by any limitations on aviation infrastructure capacity.

³¹Revenue passenger miles are the number of miles revenue-paying passengers are transported.

³²FAA defines mainline carriers as the commercial airlines that use jets over 90 seats and regional carriers as the commercial carriers that use smaller piston, turboprop, and regional jet aircraft with up to and including 90 seats. According to FAA officials, FAA generated separate yield forecasts for mainline and regional carriers because regional carriers, which generally travel shorter routes, have higher yields.

flights³³ and the size and usage patterns of the general aviation fleet, enabled FAA to develop other aviation activity forecasts, such as international enplanements and gallons of purchased aviation fuels, respectively. In addition, FAA forecast pricing factors—such as mainline and commuter passenger yields³⁴ as well as cargo yields—based largely on recent fares, cargo transport prices, trends, and professional judgment. In forecasting activity measures for the out-years (the 9 years beyond the budget year)—which are not used to determine the budget year’s appropriation—FAA used a demand-based econometric approach similar to Treasury’s current approach, both of which assume no limits on capacity that would prevent demand from being met.³⁵ FAA officials told us they used a capacity-based approach for the budget-year forecast because they viewed the airlines’ recent and near-term planned capacity as a more accurate basis for projecting aviation activity in the near term than the demand-based econometric model they used for out-year forecasts.³⁶

FAA used these activity and pricing forecasts to calculate its revenue forecasts for all nine trust-fund-related individual tax sources listed in table 1. One notable difference from Treasury’s current approach is that FAA separately forecast enplanements involving an airport in Alaska or Hawaii, which are taxed at a different rate from other enplanements.

³³As it does for domestic enplanements, FAA forecasts international enplanements by using carrier schedule information to estimate the level of committed capacity for flights between the United States and other countries. FAA performs this analysis by region (e.g., Pacific, Atlantic, and Latin America), as well as by individual country for 6 or 7 countries in each region that have the most U.S. air traffic.

³⁴Yield is a measure of revenue per revenue passenger mile flown.

³⁵For years further into the future, the use of an unconstrained demand forecast may become increasingly unrealistic. Many airports in the United States are facing or are expected to face significant capacity issues by 2015, so as demand grows, airport capacity may become a more limiting factor that would hold demand to a level less than the unconstrained forecast. However, if this were to occur, the effect on aviation tax revenue is difficult to predict. While this would likely mean that fewer passengers would be handled and thus fewer tickets on which taxes are levied, it could also mean that ticket prices would grow faster than assumed under an unconstrained demand forecast, so the passenger ticket tax revenues could rise.

³⁶FAA continues to produce aviation-activity forecasts for its annual aerospace forecast. Treasury officials responsible for forecasting trust-fund revenues told us that they do not use FAA’s aviation-activity data because they do not have access to FAA’s detailed and up-to-date activity data on a timely basis for developing their revenue forecasts.

Additionally, because tickets sold through frequent-flyer programs are not assessed passenger ticket taxes, FAA used estimates of the sales of frequent-flyer mileage awards to augment its forecast for the domestic passenger ticket tax for these sales and reduce estimates of all segment taxes.³⁷

It Is Too Soon to Compare the Accuracy of FAA's and Treasury's Budget Year Forecasting Approaches

After just 1 year and without certified receipts for the fourth quarter of 2011, it is too soon to tell whether Treasury's demand-based econometric approach will provide more accurate revenue forecasts for the budget year than FAA's more detailed, capacity-based approach.³⁸ According to forecasting experts that we interviewed, neither approach is necessarily better given the inherent uncertainty associated with forecasting. Despite these differences in Treasury's and FAA's approaches, several years of Treasury forecasts and corresponding actual revenues would be needed to meaningfully compare the results of the two agencies' methodologies and gauge the efficacy of their approaches. Furthermore, comparing forecast methods, even with several years of data, can be inconclusive. Forecasting is inherently uncertain, and, as one forecasting expert noted, luck can be a factor in accurate forecasting. Specifically, if forecasts for model components err, even slightly, in the same direction, the aggregate error can be considerable. However, if forecasts for model components err in opposite directions, even forecasts that are wildly inaccurate for individual components can be accurate in the aggregate.

³⁷FAA began making these adjustments in fiscal year 2007 after a 2005 study of FAA's revenue forecasting model by GRA Inc., a private transportation-consulting firm, reported that the adjustments would improve the accuracy of FAA's revenue estimates.

³⁸Since 2006, the Congressional Budget Office (CBO) has independently forecasted trust fund revenues. In 2009, CBO reported that its recent forecasts at that time had been very similar to those produced by FAA, suggesting that the historical track record may have been similar.

Overforecasting of Revenues Due to Aviation Shocks and Other Factors Has Contributed to a Significant Decline in the Trust Fund's Uncommitted Balance

Overforecasting of Revenues for 9 of the Past 11 Years Has Contributed to a Decline in the Trust Fund's Uncommitted Balance

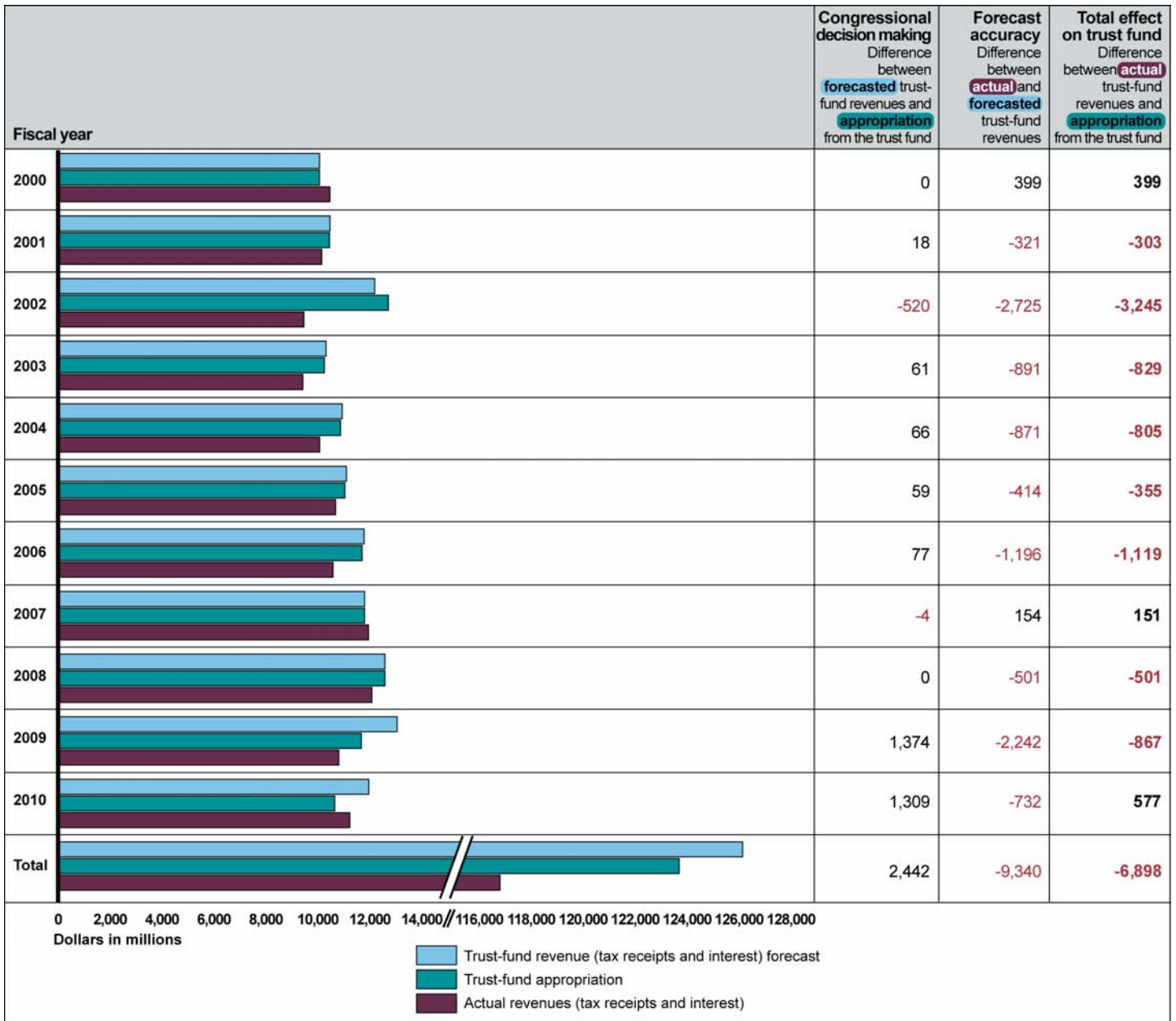
During the past 11 years, FAA overforecasted trust-fund revenues by a net total of \$9.34 billion, with overforecasts in 9 of the 11 years. Because Congress considers forecast trust-fund revenues in its appropriation from the trust fund, this overforecasting has contributed to the decline in the trust fund's uncommitted balance. However, the effect of this inaccuracy on the overall difference between appropriations and actual revenues—and ultimately, the trust fund's uncommitted balance—was smaller than it would otherwise have been because, for fiscal years 2000 through 2010, Congress appropriated \$2.4 billion less from the trust fund than the forecast revenues (fig. 4). More specifically, Congress can choose to appropriate more or less than the forecast trust-fund revenues—which include forecasts of tax receipts and interest revenue and serve as the basis for the authorized level of funding—and actual revenues may be higher or lower than forecast.³⁹ For example, for fiscal year 2005,

³⁹Beginning with the enactment of AIR-21, the revenue forecast has served as the basis for the authorized level of funding, and trust-fund appropriation levels have closely tracked the authorized level of funding in most years. However, Congress may choose not to appropriate the amount of funding it authorized.

Congress appropriated \$59 million less than the forecast revenues, and the revenue forecast was \$414 million higher than the actual revenues. Together, these effects netted a \$355 million decline in the trust fund's uncommitted balance. For fiscal years 2009 and 2010, the amount Congress appropriated from the trust fund was substantially less than the forecast revenues—\$2.7 billion—which prevented the trust fund's balance from being overcommitted. To help offset declining revenues in 2009 and 2010, Congress increased FAA's appropriations from general revenues in these years.⁴⁰ The net outcome of these two effects varied during fiscal years 2000 through 2010, but together, appropriations from the trust fund were \$6.9 billion greater than actual revenues over this period.

⁴⁰The 2009 appropriation excludes the general revenues provided under the American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, Title XII, 123 Stat. 115 (2009).

Figure 4: Effects of Congressional Decision Making and Forecast Accuracy on the Trust Fund, Fiscal Years 2000 through 2010



Source: GAO analysis of FAA and IRS data.

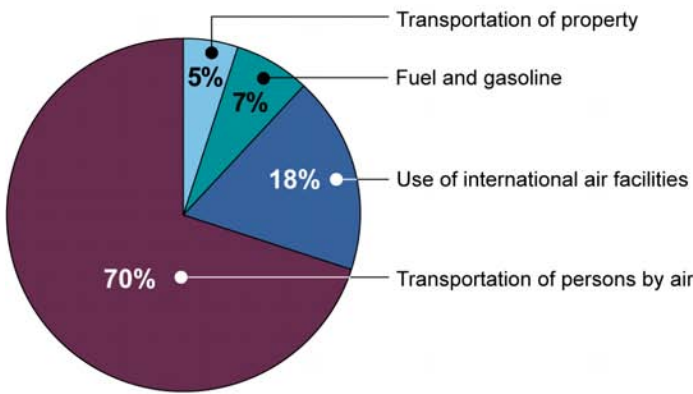
Note: These data include forecast and actual (IRS-certified) tax receipts and interest revenue. Because FAA calculates the trust fund's end-of-the-year uncommitted balance using income-statement data, our calculation of the total effect on the trust fund does not precisely match the year-over-year change in the trust-fund balance, as reported by FAA. We excluded the fuel and gasoline data for fiscal year 2006 in our analysis because, according to FAA officials, the initial 2006 financial statements for the trust fund did not accurately account for the provisions of Pub. L. No. 109-59 requiring that taxes collected on kerosene used in aviation be initially deposited in the Highway Trust Fund and then transferred by accounting adjustments to the trust fund; these errors were addressed in the fiscal year 2006 financial statements and during the fiscal year 2007 processing activities, but the fiscal year 2006 certified numbers were not revised.

Inaccurate forecasts of taxes on the transportation of persons by air—the tax line composed of the domestic passenger ticket tax, the domestic segment tax, and the mileage award tax—was the major factor affecting the aggregate forecast inaccuracy, as shown in figure 5. These taxes account for 70 percent of trust-fund tax receipts and 73 percent of FAA's forecast error for fiscal years 2000 through 2010. Inaccuracy in forecasting both gasoline and fuel taxes⁴¹ and taxes on the transportation of property by air accounted for a disproportionate amount of the aggregate forecast inaccuracy. Taxes on gasoline and fuel accounted for 7 percent of total tax receipts for fiscal years 2000 through 2010, yet forecasts for them accounted for 20 percent of the total forecast inaccuracy. Similarly, taxes on the transportation of property by air accounted for 5 percent of total tax receipts for the same period, but forecasts for them accounted for 13 percent of the total forecast inaccuracy. Furthermore, the effects of these overforecasts were offset somewhat by underforecasts of taxes on the use of international air facilities. For fiscal years 2000 through 2010, these taxes accounted for 18 percent of total trust-fund tax receipts, yet the forecasts for these taxes were less than the actual revenues.

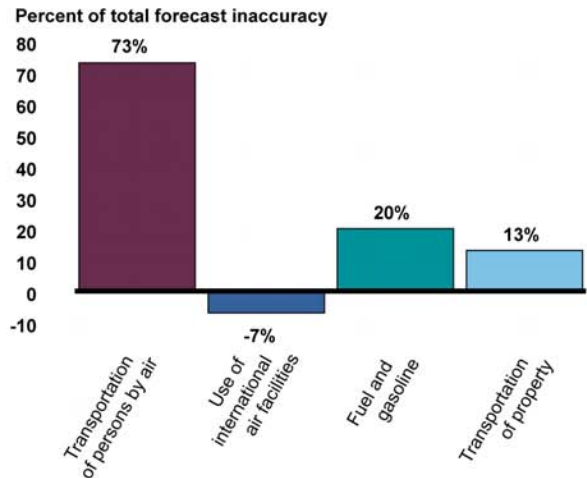
⁴¹For the purposes of our analysis, we combined all taxes on fuel and gasoline into one category.

Figure 5: Total Trust-Fund Tax Receipts and Forecast Accuracy by Tax Line, Fiscal Years 2000 through 2010

Total tax receipts by tax line, fiscal years 2000–2010



Portion of forecast inaccuracy by tax line, fiscal years 2000–2010



Source: GAO analysis of FAA data.

Note: The fuel/gasoline category includes the domestic commercial fuel tax, the general aviation jet fuel tax, and the general aviation gasoline tax as well as related refunds and credits. The percentage totals may not equal 100 percent because of rounding. We excluded the fuel and gasoline tax data for fiscal year 2006 in our analysis because, according to FAA officials, the initial 2006 financial statements for the trust fund did not accurately account for the provisions of Pub. L. No. 109-59 requiring that taxes collected on kerosene used in aviation be initially deposited in the Highway Trust Fund and then transferred by accounting adjustments to the trust fund; these errors were addressed in the fiscal year 2006 financial statements and during the fiscal year 2007 processing activities, but the fiscal year 2006 certified numbers were not revised.

A Variety of Factors Affect the Accuracy of Trust-Fund Revenue Forecasts

Several factors make forecasting trust-fund revenues a challenge including: (1) unexpected events that rapidly shift the demand for aviation services, (2) the timing of the forecasts, and (3) the difficulty of recognizing when apparent changes in the industry are transitory or permanent. These factors can affect the accuracy of both activity and pricing forecasts used to generate the revenue forecasts.

- **Unexpected events** causing changes in aviation demand or airline capacity can considerably affect trust-fund revenues and the accuracy of trust-fund revenue forecasts. For example, geopolitical events, such as the terrorist attacks of September 11, 2001, which substantially reduced the demand for air travel and led to lower trust-fund revenues, could not have been foreseen. In fiscal year 2002, when the attacks had their greatest effect on aviation activity, revenue forecasts exceeded actual revenues by \$2.7 billion, or 22 percent. Additionally, rapid changes in the economy can lead to forecast

inaccuracy. In fiscal year 2009, when the effects of the recent recession were greatest, revenues were overforecast by nearly \$2.2 billion, or 17 percent. In response to high fuel prices and a weakening economy, the airline industry reduced its domestic capacity (the number of scheduled seats) in 2008, mostly by removing older, less-fuel-efficient aircraft from service. In fiscal year 2009, fuel and gasoline tax receipts were overforecast by 37 percent as the reduction in capacity led to a 13 percent decrease in fuel consumption from fiscal year 2008 to fiscal year 2009.

According to an industry expert, the effects of certain exogenous events—events caused by factors outside the aviation industry—on demand for air travel are such that it is common for demand to drop much more quickly in response to a negative shock than it will build in response to overall good economic conditions. Thus, the likelihood that there will be years when revenues are considerably overforecast may be higher than the likelihood that there will be years when revenues are considerably underforecast. This pattern held for fiscal years 2000 through 2010. In fiscal years 2000 and 2007, revenues were underforecast by \$399 million and \$154 million respectively. In all other years during that decade, yearly revenues were overforecast by between \$321 million and \$2.7 billion. Similarly, other factors external to the industry and economy—such as health issues like an outbreak of a contagious virus—can cause rapid shifts in demand.

- **The timing of budget forecasts** exacerbates the potential for inaccurate trust-fund revenue forecasts, particularly in the face of unexpected events. Developed over a year in advance, the forecasts often cannot account for the effects of unexpected events, such as the September 11 attacks or changes in economic conditions. For example, the revenue forecast for fiscal year 2002 was developed in the final months of calendar year 2000, almost a full year before September 11, 2001. Additionally, because of the timing of the budget process, the revenue forecasts incorporate early forecasts of changes in gross domestic product (GDP), which is a critical exogenous factor affecting airline revenues and thus forecasts. Studies have found that predictions of, for example, recessions, are not very accurate more than a year in advance, and so the sharp drops in demand that occur as a result of rapidly changing macroeconomic conditions are likely to

be missed in the relevant forecast.⁴² For example, OMB's fiscal year 2009 forecast for real GDP growth from February 2008 was 3.0 percent, but real GDP actually declined by 3.5 percent, according to the Bureau of Economic Analysis.⁴³

- **The difficulty of recognizing when apparent changes in the industry are transitory or permanent** affects forecast accuracy because long-term structural changes require adjustments to forecast models. As we have previously reported, the airline industry has experienced significant structural changes over the last decade, but they were not usually apparent until well after they had occurred.⁴⁴ Examples of apparent structural changes include the following:
 - Short-distance markets (less than 250 miles between airports) have lost a large share of passenger traffic, likely because of the increased time required for aviation security measures implemented since September 11, 2001, has made driving a more viable option for short-distance routes.⁴⁵

⁴²Grace Juhn and Prakash Loungani, "Further Cross-Country Evidence on the Accuracy of the Private Sector's Output Forecasts," *IMF Staff Papers*, vol. 49, no. 1 (2002); Pew Center on the States and the Nelson A. Rockefeller Institute of Government, *States' Revenue Estimating: Cracks in the Crystal Ball* (Washington, D.C., and Albany, N.Y.: March 2011).

⁴³The types of challenges faced by aviation forecasters mirror those of other revenue forecasters. For example, states need to estimate revenues a little more than a year ahead of a budget year, and these estimates underlie planned spending. According to a recent study on state revenue forecasting, during the recent recession most state revenues were overforecast, with a median error in 2009 of about 10 percent over actual revenues. This study examined the causes of forecasting problems and identified key issues: (1) apparent changes in the linkage of certain state tax revenues to economic cycles, (2) inaccurate forecasts of GDP before the recession began, and (3) the inability to know when natural disasters, such as floods or tornados, will strike, potentially placing unexpected demands on state revenues.

⁴⁴GAO, *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) and *Airline Deregulation: Reregulating the Airline Industry Would Likely Reverse Consumer Benefits and Not Save Airline Pensions*, [GAO-06-630](#) (Washington, D.C.: June 9, 2006).

⁴⁵As reported in [GAO-06-630](#), the number of short-distance flights (under 250 miles) fell 26 percent between 2000 and 2005, while the number of flights of over 1,000 miles increased by 15 percent during that time.

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- Over the past 10 years the use of the Internet for ticket purchases has become ubiquitous and appears to have contributed to a reduction in fare dispersion and helped to suppress average fares. In particular, there appear to be fewer tickets that are high-priced tickets compared to average-priced tickets on a given route.⁴⁶
 - Passenger load factors (the percentage of seats that are filled) have risen to levels previously thought not possible, according to industry experts.
 - Increasingly, airlines are charging fees for a number of optional services, such as checked baggage, in-flight food and beverages, and ticket change or cancellation fees, for which separate fees did not previously exist. This change in pricing structure enables airlines to keep airfares lower while bringing in additional revenue through fees, which are not subject to excise taxes for the trust fund.⁴⁷

These various factors—exogenous shocks, the timing of forecasts, and lags in recognizing structural changes to the airline industry—affect forecast accuracy for key activity and pricing measures, such as enplanements and ticket prices. In particular, experts told us that estimating how these factors may affect ticket prices is particularly hard because prices are closely tied to individual airline business decisions as well as to aggregate demand. For example, one airline’s decision to reduce fares may easily lead to a fare war, in which competing airlines attempt to undersell each other. Forecasters are unable to predict when these fare wars may occur and how they may affect on ticket prices. Similarly, forecasters are unable to predict changes airlines make to their business models, such as the addition of baggage checking and other

⁴⁶[GAO-06-630](#).

⁴⁷As we previously reported, although fares have decreased, airlines have imposed fees for a variety of passenger services, most notably for checked bags, for which separate charges did not previously exist. Fees have also been imposed for early boarding, seat selection, and meals, among other services. Under governing Treasury regulations and IRS guidance, the 7.5 percent excise tax is not collected on amounts paid by passengers for these optional airline services, and consequently, those revenues are not deposited into the trust fund. If baggage fees alone had been subject to the 7.5 percent excise tax in fiscal year 2010, the trust fund would have received approximately an additional \$248 million in revenues. This potential amount of trust fund revenues from fees is expected to grow in future years if airlines continue to shift toward more fee revenue relative to fare revenue. See [GAO-10-785](#).

ancillary fees. FAA's analysis of forecast accuracy for key activity measures illustrates this difficulty in forecasting ticket prices. Specifically, for fiscal years 2003 through 2009, near-term forecasts of average ticket prices for mainline carriers were in error by an average of 3.4 percent, compared with errors that averaged 1.6 percent for forecasts of revenue passenger miles and 1.1 percent for enplanement forecasts.⁴⁸

Options Exist to Reduce, but Not Eliminate, the Risk of Overcommitting Trust-Fund Resources

Although the trust fund's uncommitted balance was used to offset lower-than-forecast trust-fund revenues in the past, the current trust-fund balance provides less protection against overcommitting trust-fund resources. This means that trust-fund revenues could be insufficient to cover all of the obligations that FAA has the authority to incur if actual trust-fund revenues continue to fall below forecast levels and Congress appropriates funds from the trust fund at the forecast levels. The trust fund's uncommitted balance was about \$1.4 billion at the end of fiscal year 2011—up from \$770 million at the end of fiscal year 2010. Despite the lapse in collecting certain taxes from July 23 through August 7, 2011, according to FAA, the trust fund's uncommitted balance grew due to higher-than-expected revenues in fiscal year 2011.⁴⁹

A substantial decline in the trust fund's uncommitted balance could lead to budgetary challenges for FAA, if commitments from the trust fund exceed revenues deposited into the trust fund. As we have previously reported, a decline in the trust fund's uncommitted balance toward zero

⁴⁸This average refers to the mean absolute error—that is, the average value of the difference between forecast and actual revenues, regardless of whether the difference was positive or negative.

⁴⁹FAA's authority to collect trust fund revenues and expend money from the trust fund expired on July 22, 2011. In response to the lapse in program expenditure and revenue collection authority, FAA halted work on a number of construction projects at airports and air traffic control facilities and furloughed almost 4,000 employees effective July 23, 2011. On August 5, 2011, the Senate reached an agreement and passed H.R. 2553 without amendment by unanimous consent. The measure was signed by the President later that day, becoming the Airport and Airway Extension Act of 2011, Part IV, Pub. L. No. 112-27, 125 Stat. 270. Although this law retroactively reinstated the taxes as though they never expired, IRS granted relief for airlines and taxpayers who purchased tickets during the two week lapse. Tax collection for the trust fund started up again on August 8, 2011, thus ending the partial shutdown of FAA and the lapse in trust-fund revenue collection authority, including passenger ticket taxes. FAA estimated the lapse to have resulted in approximately \$200 million of foregone trust fund revenues each week—or roughly \$400 million for the tax lapse.

signals to FAA that revenues available to incur future obligations could be limited, which could affect FAA's ability to move forward with planned projects and programs.⁵⁰ OMB, the Department of Transportation (DOT), and FAA budget officials noted that if the trust fund were to become overcommitted, there would be some time to determine what actions, if any, FAA might have to take and to address this issue through the appropriations process, given capital programs are paid for—or outlayed—over several years and because the trust fund maintains a cash balance (\$9.4 billion as of the end-of-fiscal-year 2010), for which revenues are continually paid into the trust fund. However, as we have previously reported, in the short term, FAA officials have noted a risk of overcommitting trust-fund resources might require them to delay obligations for capital programs if they do not have adequate revenues in the trust fund to cover those obligations—unless additional funding was authorized and appropriated from general revenues.⁵¹

While appropriating less-than-forecast revenues from the trust fund in recent years has helped to keep the trust fund from being overcommitted, we and others have recommended the development of an alternative approach to guiding appropriations from the trust fund that could help reduce the risk of overcommitting budget resources from the trust fund.⁵² Given the inherent uncertainty of forecasting and the deteriorating

⁵⁰ [GAO-09-393](#). We have also made recommendations to help DOT reduce the likelihood of a funding shortfall in the Highway Account of the Highway Trust Fund, including identifying changes to existing solvency mechanisms designed to make annual adjustments to this account. See GAO, *Highway Trust Fund: Improved Solvency Mechanisms and Communication Needed to Help Avoid Shortfalls in the Highway Account*, [GAO-09-316](#) (Washington, D.C.: Feb. 6, 2009).

⁵¹ According to FAA officials, they would start by deferring or deobligating some existing capital-program obligations so they could continue to first fund operating expenses, such as air-traffic control and safety inspections. These actions would ensure that the agency did not improperly incur obligations in excess of the trust fund's cash balance, which could potentially lead to a violation of the Antideficiency Act. This act prohibits an officer or employee of the federal government from making or authorizing an obligation or expenditure in advance or in excess of an appropriation or fund. 31 U.S.C. § 1341(a)(1). FAA would have to stop making payments if the fund were to be exhausted for any reason before all outstanding obligations were discharged. However, FAA's aviation programs are partly funded with contract authority, to which section 1341(a)(1) does not apply and which allows FAA to incur obligations in advance or in excess of an appropriation. However, FAA must receive an appropriation from the trust fund in order to liquidate the contract-authority obligations.

⁵² [GAO-09-393](#).

uncommitted balance, better matching of actual revenues to the appropriation from the trust fund would better ensure that trust-fund revenues are sufficient to cover FAA's expenditures, thus reducing the potential risk of disruptions in funding for aviation projects and programs. For our analysis, we considered four alternative options for determining the amount that would be made available for appropriation from the trust fund—each of which would require a change in law to implement (table 2). First, the House of Representatives' current FAA reauthorization bill (H.R. 658) includes a provision that would limit the budget resources made available for appropriation from the trust fund to 90 percent, rather than 100 percent, of forecast revenues and apply any differences between actual trust-fund revenues and appropriations from the trust fund to a subsequent year. The second option would use a prior year's actual trust-fund revenue amount as the basis for the appropriation since this revenue amount would represent the level of actual revenues deposited into the trust fund from a prior year and therefore not make funding dependent on revenue forecasts. For example, the second preceding year's revenue amount could be used, since it would be certified by IRS in time for the development of FAA's budget. Finally, the third and fourth options would target a level for the trust fund's uncommitted balance—such as \$2 billion or \$3 billion—and base appropriations on the goal of maintaining that target level. These options would increase the likelihood that uncommitted resources would be available to FAA if actual revenues fell short of forecast revenues.

Table 2: Options for Determining Budget Resources to Be Made Available for Appropriation from the Trust Fund

Option	Description of option
Option 1: Provision in Section 104 of H.R. 658 ^a	Total budget resources made available in the first fiscal year after enactment (i.e., fiscal year 2011) equal 90 percent of the forecast trust-fund revenues for that year. In the year after enactment (i.e., fiscal year 2012) and each fiscal year thereafter, total budget resources made available during that fiscal year equal 90 percent of the forecast trust-fund revenues for that fiscal year (i.e., fiscal year 2012) in addition to the difference between the second preceding fiscal year's (i.e., fiscal year 2010) actual revenues and budget resources made available for obligation from the trust fund.
Option 2: Prior year's revenues	Total budget resources made available each fiscal year equal the amount of a prior year's revenues. The second preceding year's actual trust-fund revenue amount would be certified in time for use in developing FAA's budget.
Option 3: \$2 billion target level for the uncommitted balance ^b	Total budget resources made available each fiscal year would be based on maintaining an uncommitted balance of \$2 billion in the trust fund. Specifically, the \$2 billion target level for the trust fund's uncommitted balance would be subtracted from the total of the budget year's revenue forecast and the previous year's uncommitted balance to determine the amount available for appropriation from the trust fund.
Option 4: \$3 billion target level for the uncommitted balance ^b	Total budget resources made available each fiscal year would be based on maintaining an uncommitted balance of \$3 billion in the trust fund. Specifically, the \$3 billion target level for the trust fund's uncommitted balance would be subtracted from the total of the budget year's revenue forecast and the previous year's uncommitted balance to determine the amount available for appropriation from the trust fund.

Source: H.R. 658 and GAO analysis.

^aThis provision was also contained in section 105 of H.R. 915, the FAA Reauthorization Act of 2009, which passed the House of Representatives on May 21, 2009, as well as in the Democratic Members of the House Transportation and Infrastructure Committee recommendations to the Joint Select Committee on Deficit Reduction.

^bWe chose these levels because from fiscal year 2000 through fiscal year 2010, forecast revenues exceeded actual revenues by no more than \$3 billion, so a target of \$3 billion could help to protect the uncommitted balance. A target of \$2 billion could also help to protect the uncommitted balance because forecast revenues exceeded actual revenues by more than \$2 billion only twice in that same period—in fiscal years 2002 and 2009—and could also allow for slightly higher appropriation levels from the trust fund.

Our analysis of these options shows that although they provide for substantially greater protection to the trust fund than the provision in current law, they do not completely eliminate the risk of overcommitting revenues from the trust fund (table 3). For our analysis, we applied these four approaches to the actual and forecast trust-fund revenues for fiscal years 2000 through 2010, using the trust fund's end-of-year fiscal year 2010 uncommitted balance of \$770 million as the balance for the end of fiscal year 1999 to analyze how these options might function in starting with a low uncommitted balance.⁵³ On the basis of this analysis, we determined

⁵³Our analysis assumes that appropriation levels will equal authorization levels. Currently, FAA's authorizing legislation defines the total budget resources made available from the trust fund.

that the four options provide better protection against overcommitting resources from the trust fund when it has low uncommitted balance than the current law (which we refer to as AIR-21 method) would have provided had it been followed. However, these alternatives could still result in the trust fund being overcommitted unless Congress appropriated more general revenues because if the uncommitted balance is close to zero, there is no margin for error if the actual revenues fall significantly short of the amounts appropriated. For example, in 2002 when appropriations exceeded actual revenues by over \$3.2 billion (as previously shown in fig. 4), the H.R. 658 option and the \$2 billion target option, if in place during that time, would have been insufficient to protect the trust fund's uncommitted balance from being overcommitted.

Table 3: Estimated End-of-year Trust-Fund Uncommitted Balance under Different Options Assuming an Uncommitted Balance of \$770 Million at the Beginning of Fiscal Year 2000

Dollars in millions

Option	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Current Law: AIR-21	1,168	825	(1,765)	(2,624)	(3,263)	(3,693)	(4,935)	(4,807)	(5,262)	(7,342)	(8,015)
#1 H.R. 658	2,093	1,019	(1,775)	(592)	2,585	2,039	(1,247)	561	4,601	1,970	(1,573)
#2 Prior year's revenues ^a	2,319	1,221	165	(315)	670	2,095	2,594	3,817	5,377	4,398	3,784
#3 Target \$2 billion	2,398	1,657	(589)	1,141	1,361	1,569	759	2,128	1,544	(80)	1,327
#4 Target \$3 billion	3,398	2,657	411	2,141	2,361	2,569	1,759	3,128	2,544	920	2,327

Source: GAO analysis based on FAA and IRS data.

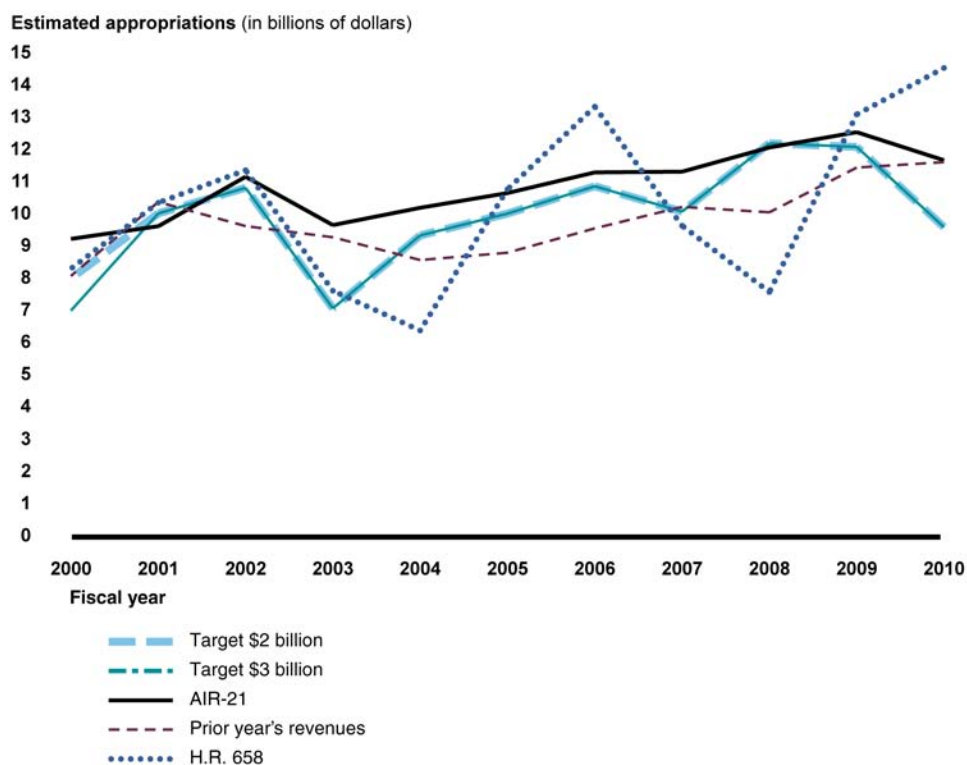
Notes: Our analysis of each option assumes the errors in forecasting that occurred in fiscal years 2000 through 2010 and that appropriations do not vary from the prescribed approach. Additionally, for simplicity, we estimated the end-of-year uncommitted balance by adding together the start-of-the-year uncommitted balance and actual revenues for a given year and subtracting the estimated appropriation from the trust fund based depending on the option.

^aUnder the prior year's revenue option, appropriating the level of actual trust-fund revenues from a prior year can lead to a growing uncommitted balance if revenues are generally increasing, because appropriations would be based on a prior year's lower trust-fund revenues. If the actual revenues from the second preceding year—which are the basis for the appropriation—are greater than the actual revenues for the year being appropriated, the uncommitted balance would decline. The balance can even become negative if, as in this case, the actual revenues from 2 years prior—which is the basis for the appropriation—are higher than the actual revenues in the budget year and the uncommitted balance is too low to make up the difference.

Our analysis of these options further shows that they—particularly the H.R. 658 provision—could also lead to greater swings in trust-fund contributions, which in turn would require greater variation in general-revenue appropriations to maintain overall stable appropriation levels for FAA. As figure 6 shows, the H.R. 658 provision, if in place during fiscal years 2000 through 2010, would have resulted in a wider variation in the

total amount available for appropriation from the trust fund than the other options and current law.⁵⁴ Because of these variations with the H.R. 658 option, general-revenue appropriations would also have to vary widely from year to year to maintain the same appropriation levels during that time frame. In addition, these options could result in the availability of fewer resources for some period of time than under current law, unless a general-revenue appropriation made up the difference.

Figure 6: Estimated Trust-Fund Appropriations under Different Options If Started in Fiscal Year 2000



Source: GAO analysis of FAA data.

⁵⁴When analyzing alternatives, including the AIR-21 method, we omitted interest revenues from all calculations because of the complexity involved in forecasting interest revenues for each of the alternatives and because interest revenues are a relatively small portion of total trust-fund revenue—about 5.1 percent of all revenue for fiscal years 2000 through 2010.

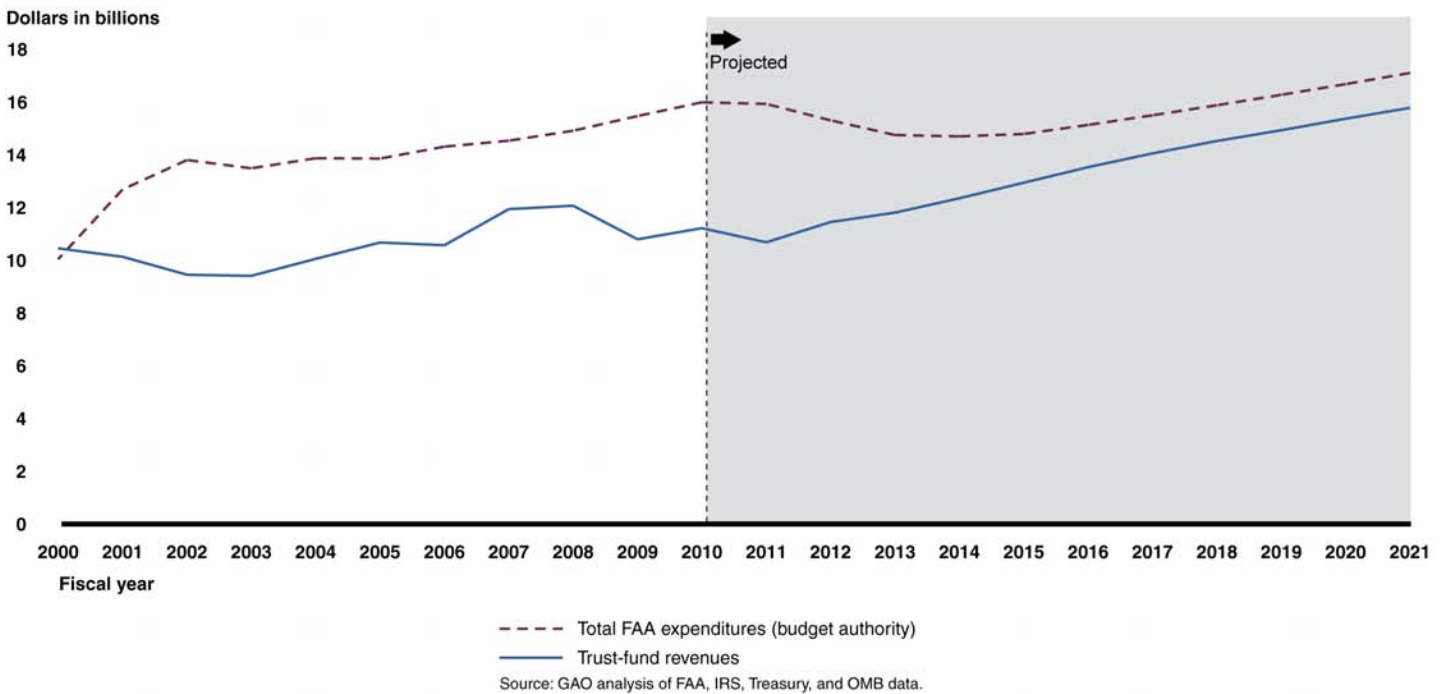
The Extent to Which Trust-Fund Revenues Might Support Future FAA Expenditures Will Depend on Differing Assumptions and Other Factors

The President's Budget Forecasts Show FAA Expenditures Continuing to Exceed Trust-Fund Revenues

According to the President's fiscal year 2012 budget request and mid-session review, FAA expenditures (as reflected by OMB's estimates of FAA's budget authority) are expected to continue to exceed forecast trust-fund revenues through fiscal year 2021 (see fig. 7).⁵⁵ FAA expenditures not covered by trust-fund revenues are projected to be paid for by general revenues.

⁵⁵For the fiscal year 2012 mid-session review, Treasury forecast a slight decrease in revenues from fiscal year 2010 through fiscal year 2011, due in part to the lapse in FAA's authority to collect certain taxes from July 23 through August 9, 2011. Treasury then anticipated trust fund revenue growth at an annual rate of about 3 percent to 5 percent from fiscal year 2013 through fiscal year 2018 with the growth rate slowing to about 2.7 percent to 2.9 percent through fiscal year 2021. As previously noted, according to FAA, the trust fund received higher-than-expected revenues in fiscal year 2011, which is reflected in the most recent estimate of the trust fund's uncommitted balance. The updated revenue forecast for the out-years will be released as part of the President's fiscal year 2013 budget request.

Figure 7: Actual and Forecast Trust-Fund Revenues and FAA Expenditures, Fiscal Years 2000 through 2021



Notes: The actual (IRS-certified) trust fund revenues for 2000 through 2010 include interest revenues. The 2009 expenditures exclude the general revenues provided under the American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, 123 Stat. 115 (2009).

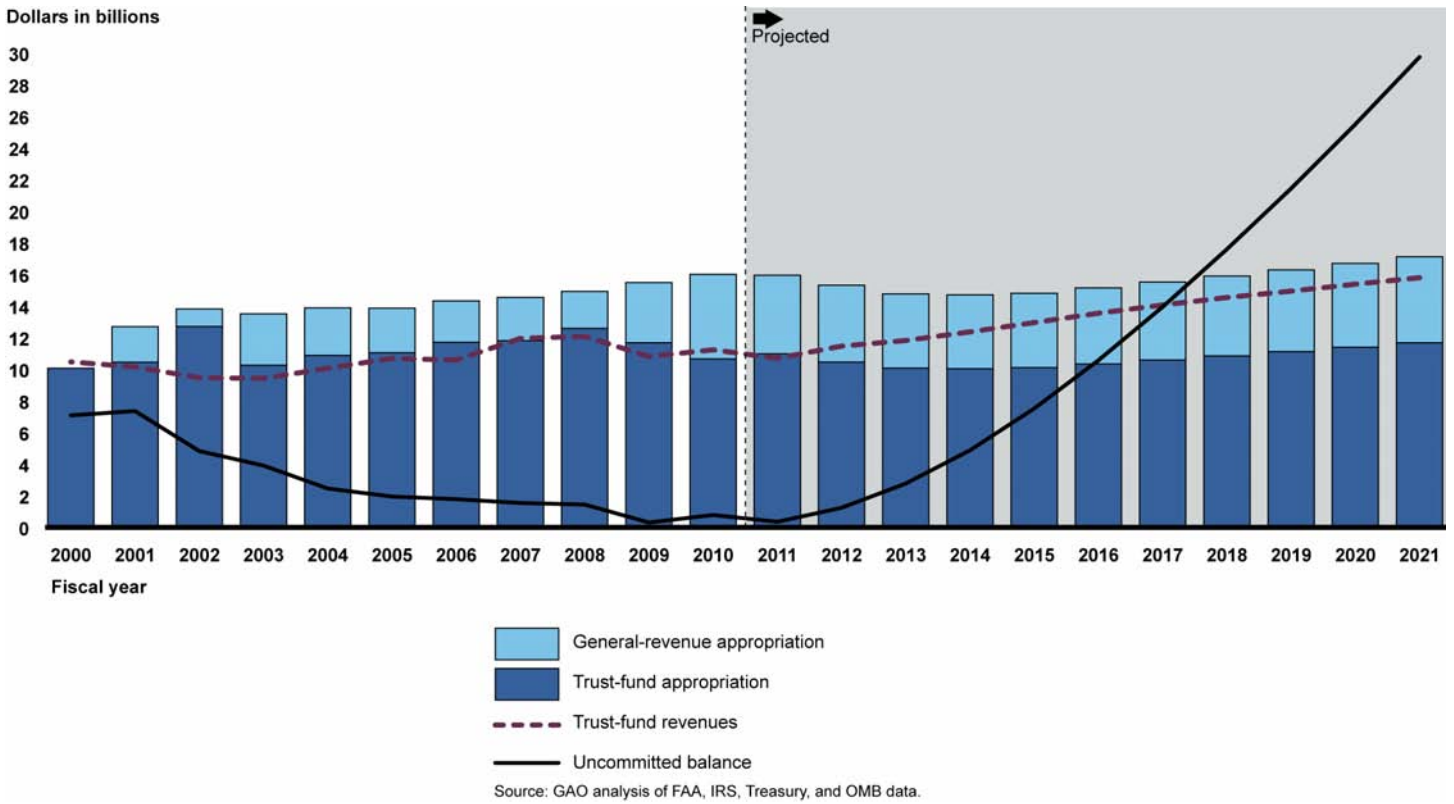
In the near term, the administration forecasts reductions in FAA’s expenditures in fiscal years 2013 through 2015, primarily because of the President’s directive to reduce discretionary spending for non-security agencies.⁵⁶ These forecasts, if realized, would reduce total FAA expenditure levels for these years below fiscal year 2008 levels, primarily because of the \$1 billion proposed reduction to AIP, according to OMB. OMB uses inflation adjustments and other factors to project out-year

⁵⁶The Budget Control Act, Pub. L. No. 112-25, 125 Stat. 240 (2011), established caps on the amount of money that could be spent through the annual appropriations process for the next 10 years and created a Joint Select Committee on Deficit Reduction that was instructed to develop a bill to reduce the federal deficit by at least another \$1.5 trillion over the 10-year period ending in fiscal year 2021. Since the joint committee did not reach an agreement before the committee’s deadline of January 15, 2012, under the act, a \$1.2 trillion automatic spending reduction process has been triggered to begin in January 2013 unless Congress and the President first act to eliminate or change the process.

expenditures, resulting in FAA's fiscal years 2016 to 2021 expenditures growing roughly at the forecast rate of GDP growth—around 2.3 percent to 2.5 percent annually. Under these assumptions, total forecast FAA expenditures would require \$20 billion in general revenues to supplement trust-fund revenues.

OMB's forecasts base future years' general-revenue contribution for FAA on the current budget year's (fiscal year 2012) proposed general-revenue proportion. Specifically, OMB assumes trust-fund revenues cover about 68 percent of FAA's estimated total expenditures, and general revenues cover the remaining 32 percent for each year of this same period. This level of general revenue funding for FAA is among the highest levels since fiscal year 2000 (see fig. 8). Since the assumptions behind the President's budget forecasts keep the general-revenue and trust-fund contributions constant in the out-years, OMB's forecasts differ from the AIR-21 approach in that they assume all forecast trust-fund revenues are not made available for appropriation. As a result, OMB projects a growing trust-fund uncommitted balance—from \$770 million at the end of fiscal year 2010 to almost \$30 billion at the end of fiscal year 2021. Although such growth does not reflect what has historically happened under the AIR-21 method—which makes the forecast level of receipts available for appropriation—OMB officials noted that this approach aligns with how OMB forecasts out-year budget authority for other agencies.

Figure 8: Actual and Forecast Trust-Fund Revenues and Uncommitted Balance and FAA Expenditures by Trust-Fund and General-Revenue Appropriations, Fiscal Years 2000 through 2021



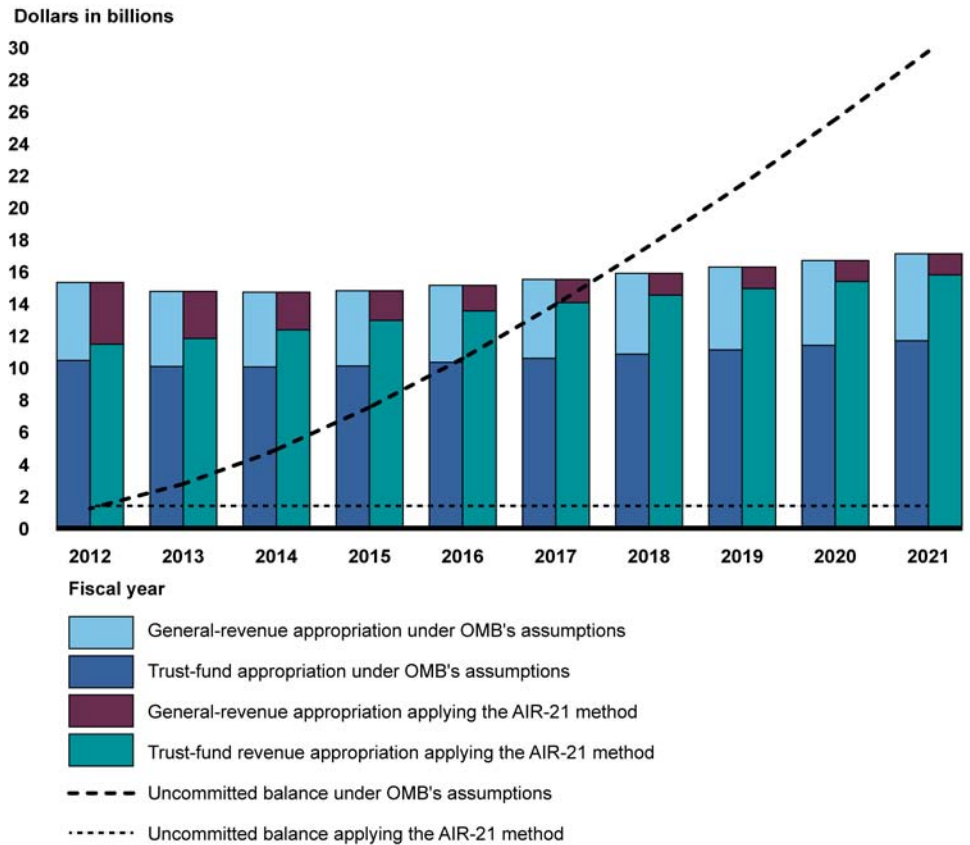
By contrast, applying the AIR-21 approach to current revenue and expenditures forecasts would reduce the amount of additional general revenues needed to cover forecast expenditures but would maintain the current uncommitted balance level and still require some level of additional general revenues or increases in aviation tax levels or sources into the trust fund to fund FAA expenditures as compared to OMB’s approach (fig. 9).⁵⁷ Specifically, applying the AIR-21 approach would make approximately \$27 billion more in trust revenues available for appropriation for fiscal years 2013 through 2021 than OMB projects. Although this approach would reduce the amount of general revenues

⁵⁷CBO also prepares forecasts of trust-fund revenue, expenditures, and uncommitted balance using both a fixed general-revenue contribution approach, similar to OMB’s approach, and the AIR-21 approach.

needed to cover forecast FAA expenditures, the assumption that all forecast trust-fund revenues would be appropriated halts the growth in the trust fund's uncommitted balance holding it at the most recent estimate of \$1.4 billion for fiscal year 2011 and providing limited protection against forecast error. Additionally, projected FAA expenditures under the AIR-21 approach would still require some level of general-revenue appropriation—specifically, 20 percent for fiscal year 2013, respectively, and then about 8 percent to 16 percent for fiscal years 2014 through 2021.⁵⁸

⁵⁸Additionally, each of the four options that we analyzed for determining budget resources for appropriations from the trust fund, if implemented, would reduce the trust fund's contribution in some years to help protect the trust-fund balance.

Figure 9: Comparison of FAA's Trust-Fund and General-Revenue Appropriations under OMB's Approach and under the AIR-21 Method, Fiscal Years 2012 through 2021



Source: GAO analysis of Treasury and OMB data.

Realizing Revenue and Expenditure Forecasts Depends on Several Factors

While these forecasts provide perspectives on future FAA expenditures and trust-fund revenues, the extent to which these forecasts are more accurately realized in future years depends on changing economic, technological, political, industry, and other factors. In particular, congressional decisions, including the level of FAA's appropriations or the trust-fund tax structure; unexpected changes affecting trust-fund revenues and FAA expenditures; and FAA's implementation and management of programs, such as NextGen, could significantly affect trust-fund revenues and FAA expenditures in future years.

Congressional Decisions

In its deliberations on the appropriate level of federal revenues and expenditures for a given year, Congress decides on the level of FAA's appropriations—which could be more or less than the President's budget request—and the level of trust-fund and general revenues to fund FAA. As previously noted, in fiscal years 2009 and 2010, the level of appropriations from the trust fund was reduced and the general-revenue appropriation was increased from the President's budget request. FAA's fiscal year 2012 appropriations generally funded the President's fiscal year 2012 request, with the exception of the President's request for \$3.35 billion in general revenues for the AIP and Facilities and Equipment accounts for a proposed infrastructure initiative (table 4).⁵⁹ Additionally, FAA's fiscal year 2012 appropriations cover approximately 30 percent of FAA's total expenditures from general revenues. As CRS has reported, the House-passed FAA reauthorization bill calls for reductions to all FAA accounts, setting flat funding levels for fiscal years 2012 through 2014.⁶⁰ These levels would reduce FAA's annual budget by about \$1 billion compared with fiscal year 2010 enacted levels and, except for AIP, are slightly below the OMB's fiscal year 2012 budget forecasts for these same years.

⁵⁹As part of the administration's \$50 billion proposed infrastructure initiative, the administration requested \$3.35 billion for AIP and NextGen improvements.

⁶⁰The Senate reauthorization bill only encompassed the previous 2 fiscal years—2010 and 2011. It proposed increasing total authorized funding levels for the FAA by just under \$500 million from fiscal year 2010 to fiscal year 2011, and its proposed authorization levels for fiscal year 2011 were considerably greater than the approved amounts for fiscal year 2010 for all accounts except operations. By contrast, the House-passed H.R. 658 sought considerable budget reductions compared with the fiscal year 2010 approved amounts for all FAA accounts. Authorized totals for fiscal year 2011 would have been \$548 million below fiscal year 2010 enacted levels. For fiscal year 2011, the only year in which the House and Senate bills overlap, the House-passed bill specified a total authorization level of approximately \$2 billion below the Senate-passed amount. See CRS, *Federal Aviation Administration (FAA) Reauthorization: An Overview of Legislative Action in the 112th Congress* (Washington, D.C.: Sept. 29, 2011).

Table 4: Proposed and Actual Appropriations for FAA for Fiscal Year 2012

Dollars in millions

Budget category	President's budget request	H.R. 658, FAA authorization bill	Fiscal year 2012 omnibus appropriation
Operations	9,823	9,168	9,653
General revenues	4,865	^a	4,593
Trust-fund revenues	4,958	^a	5,060
Facilities & Equipment	3,120	2,600	2,731
Trust-fund revenues	2,870	^a	2,731
General revenues	250	^a	0
Research, Engineering, & Development	190	147	168
Trust-fund revenues	190	^a	168
AIP	5,524	3,000	3,435
Trust-fund revenues	2,424	^a	3,435
General revenues	3,100	^a	0
Budget authority for FAA	15,307 excluding general revenues to the facilities and equipment and AIP accounts 18,657 with additional general revenues to the facilities and equipment and AIP accounts	14,915	15,987
Percentage of trust-fund revenue appropriation	68 percent ^b	^a	71 percent
Percentage of general-revenue appropriation	32 percent ^b	^a	29 percent

Source: OMB, relevant legislation, and GAO analysis.

Notes: This table excludes payments to air carriers for the Essential Air Service program, which are also drawn from the trust fund. The Senate reauthorization bill only encompasses the previous 2 fiscal years—2010 and 2011—and therefore is omitted from this table.

^aThis bill does not establish the amount of trust-fund and general revenues for funding FAA.

^bThis calculation does not assume the general revenues requested through the President's proposed infrastructure initiative.

Changes in trust-fund taxes and fees, if enacted, would also affect trust-fund revenue forecasts. For example, the Senate-passed FAA reauthorization bill calls for an increase of 14.1 cents per gallon in general-aviation jet fuel taxes and a new surcharge of 14.1 cents per gallon surcharge on general-aviation jet fuel purchased for fractionally

owned aircraft.⁶¹ The Joint Committee on Taxation estimates that this provision could result in about \$50 million in additional trust-fund revenues for fiscal years 2012 through 2014. In addition, the administration has proposed a fee of \$100 per flight as part of the September 2011 deficit-reduction plan that it submitted to Congress. This fee would be deposited into the trust fund and, according to administration estimates, could generate an additional \$11 billion in trust-fund revenues over the next 10 years.

Unanticipated Changes Affecting Aviation

Unanticipated changes affecting aviation can affect the realization of trust-fund revenues and FAA expenditure forecasts. Although Treasury forecasts continuous growth in trust-fund revenues, actual revenues have fluctuated considerably from year to year.⁶² Specifically, the year-over-year change in trust-fund revenues has ranged from a 13 percent increase to an over 10 percent decline during fiscal years 2000 through 2010. As we previously described, events, such as the economic recession in 2009 and structural changes in the industry, can cause trust-fund revenues to vary from year to year. For example, in 2007, airline capacity grew more slowly than air traffic leading to growth in airline revenues and better-than-expected trust-fund revenues in that year. In addition, unanticipated events can affect FAA's expenditures, as well as trust-fund revenues. For example, major airline accidents and terrorist actions can create additional resource needs for the agency that cannot be easily forecast. Additionally, these incidents can cause passenger demand to fall with airlines responding by lowering fares—with both of these factors leading to reduced trust-fund revenues.

FAA's Implementation and Management of NextGen

FAA's capital and research plans align with OMB's expenditure forecasts for FAA, but these forecasts do not consider potential efficiency gains from improvements in the air traffic control system. As part of the forecast reduction in FAA's expenditures for fiscal years 2013 through 2015, FAA adjusted its capital plans to absorb a \$2.8 billion reduction in its capital

⁶¹Under fractional aircraft-ownership programs, aircraft owners purchase a minimum share of an aircraft and share the aircraft with others having an ownership interest in that aircraft.

⁶²Treasury forecasts growing trust fund revenues because aviation activity generally grows with the expected growth in economic activity. Long-term revenue forecasts generally show a continuous growth even though economic cycles will cause revenues to fluctuate from year to year. However, long-term forecasts, in aggregate, should reflect the total effect of economic cycles.

expenditures. Much of this proposed reduction is in NextGen and NextGen-related expenditures that are being scaled back or deferred to later years.⁶³ Although FAA also reduced its forecast operations expenditures because of budget constraints, these forecasts do not account for potential efficiency gains that may occur from the implementation of NextGen technology, which could reduce the overall cost of FAA operations.

In addition, delays in implementing capital programs could result in additional costs, which are not factored into forecasts until the delays are known. As we recently reported, some key acquisitions may soon encounter delays, which can increase the acquisitions' overall costs, as well as the costs to maintain current systems.⁶⁴ For example, due to technical problems, the En Route Automation Modernization (ERAM) program—a critical program for NextGen—has been delayed, increasing the program's estimated costs by \$330 million over 4 years, as well as adding an estimated \$20 million per year to the costs of maintaining the system that ERAM was meant to replace.⁶⁵ Moreover, because of the integrated nature of NextGen, many of its component systems are mutually dependent on one or more other systems. For example, ERAM is critical to the delivery of the Automatic Dependent Surveillance System Broadcast (ADS-B)—the satellite-based information-broadcasting system that will enable more precise air traffic management—because ADS-B requires the use of some ERAM functions. ERAM is also pivotal to the on-time implementation of two other key NextGen acquisitions—Data Communications and System Wide Information Management (SWIM)—and the delays in ERAM have, in part, resulted in delays to both of these

⁶³As we have previously reported, FAA has not detailed how the planned funding reductions or the implementation delays will affect its modernization efforts, making it difficult for Congress to understand the trade-offs in deferring, eliminating, or reducing funding for different NextGen programs. As a result, we recommended that providing such information would help Congress assess the implications of approving annual budget submissions for NextGen and NextGen-related activities that support more comprehensive efforts to modernize the national airspace system, particularly under a constrained budget environment. GAO, *National Airspace System: FAA Has Made Progress but Continues to Face Challenges in Acquiring Major Air Traffic Control Systems*, [GAO-05-331](#) (Washington, D.C.: June 10, 2005). According to an FAA official, FAA has communicated to appropriators how potential reductions in funding might affect the implementation of NextGen programs.

⁶⁴[GAO-12-141T](#).

⁶⁵ERAM is a new en route air traffic control system for high-altitude traffic.

programs.⁶⁶ Thus, looking more broadly, the implementation of NextGen—both in the midterm (through 2018) and in the long term (beyond 2018)—and FAA’s overall costs will be affected by how well FAA manages program interdependencies.

While FAA’s budget generally identifies the NextGen capabilities that FAA plans to implement in the near term to midterm (through 2018), the out-year expenditure forecasts are not tied to specific FAA programs and will be affected by decisions that have yet to be made on the long-term direction of NextGen. Specifically, although FAA estimates that it will incur total NextGen costs of between \$15 billion and \$22 billion for fiscal years 2012 through 2025, two key planning documents—the NextGen Integrated Work Plan and Enterprise Architecture—contain a wide variety of possible ideas and approaches for the long-term direction of NextGen (beyond 2018).⁶⁷ Decisions about which of these—or other—ideas and approaches will be implemented remain to be made. Additionally, FAA estimates that the avionics needed on aircraft to realize significant NextGen capabilities will cost private operators in the range of \$5 billion to \$7 billion through 2018. FAA has not determined whether they will provide financing to help aircraft operators cover these costs.

Concluding Observations

Since 1970, the trust fund has provided a stable and dependable source of funding for aviation-infrastructure investments. To ensure that taxes paid by aviation users are directed only to aviation, in 2000, Congress introduced a mechanism to fully appropriate all forecast revenues. However, the inherent difficulty in accurately forecasting revenues contributed to over a \$6 billion decline in the trust fund’s uncommitted

⁶⁶SWIM is the information-management architecture for the national airspace system. FAA pushed the Data Communications program’s start date from September 2011 to February 2012, plans to revise the original SWIM-segment 1 cost and schedule plan, and delayed the SWIM-segment 2 start date from 2010 to December 2012. The long-term result of this decision is not yet known.

⁶⁷The Enterprise Architecture, commonly referred to as the “blueprint” for NextGen, is a technical document that describes the segments, capabilities, operational activities, and identified relationships to the key target components of NextGen in the year 2025. The NextGen Integrated Work Plan is a document that describes when NextGen capabilities and potential improvements will be introduced and who will be responsible for them. Additionally, FAA’s NextGen cost estimate for 2012 through 2025 is in 2011 constant dollars. Thus, even though the present value of the cost are represented by this estimate, the actual dollars needing to be appropriated to cover those expenses in the years that they are incurred will be higher due to inflation.

balance. Deciding on the appropriate mechanism for determining the level of appropriations from the trust fund requires Congress to weigh trade-offs between the amount available for appropriations from the trust fund, the amount of general revenues in a given year, and the overall level of FAA expenditures, all while ensuring stable and sustainable funding for aviation investment. As we have previously suggested, a better mechanism may be needed to match actual revenues with trust-fund appropriations, and thereby help to protect the trust fund's uncommitted balance and provide Congress, FAA, and the larger aviation community with greater certainty about the trust fund's sustainability.

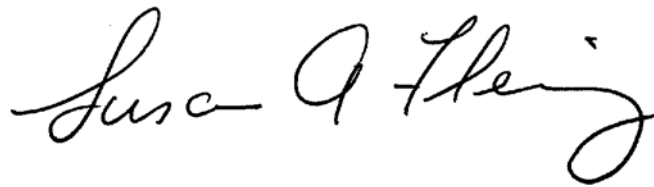
Congress will determine the future budget resources available to meet FAA's operating and capital investments, including NextGen improvements. Even within the currently constrained federal budget environment, it appears that based on the President's budget request estimates, FAA expenditures will continue to exceed trust-fund revenues in future years. As federal budget resources continue to be constrained, Congress may face some difficult choices about whether to reduce FAA's appropriations, which could increase FAA's total costs and delay the benefits associated with investments such as NextGen, or to either increase revenues going into the trust fund or increase appropriations from general revenues.

Agency Comments

We provided a draft of this report to OMB, Treasury, and DOT for review and comment. Each entity provided technical comments that we incorporated, as appropriate.

As arranged with your offices, unless you publicly announce the contents of this report earlier, we plan no further distribution until 30 days after the date of this letter. At that time, we will send copies of this report to interested congressional committees, the Director of OMB, the Secretary of Transportation, the Acting Administrator of FAA, the Secretary of the Treasury, and other parties. In addition, the report will be available at no charge on the GAO 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 flemings@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made major contributions to this report are listed in appendix I.

A handwritten signature in black ink that reads "Susan A. Fleming". The signature is written in a cursive style with a large, looping 'S' and 'F'.

Susan A. Fleming
Director, Physical Infrastructure Issues

Appendix I: GAO Contact and Staff Acknowledgments

GAO Contact

Susan Fleming, (202) 512-2834 or flemings@gao.gov

Staff Acknowledgments

In addition to the individual named above, key contributors to this report were Paul Aussendorf (Assistant Director), Heather Krause (Assistant Director), Amy Abramowitz, Lauren Calhoun, Bess Eisenstadt, Bert Japikse, Carol Henn, Hannah Laufe, Sara Ann Moessbauer, Joshua Ormond, and Rebecca Rygg.

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