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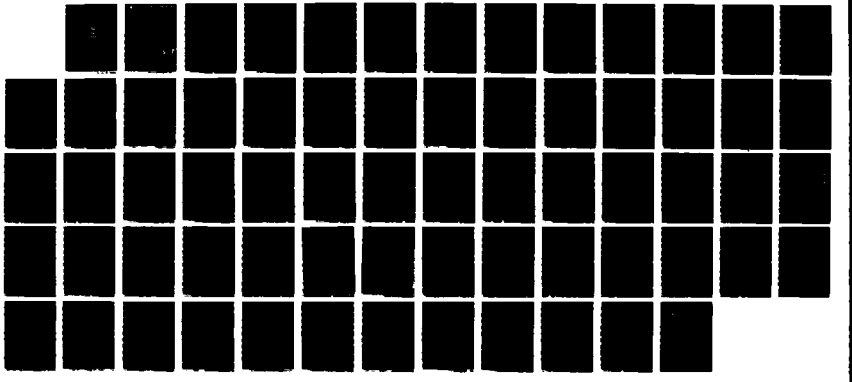

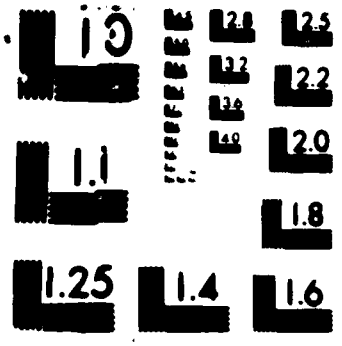
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U.S. Department of Transportation
Federal Aviation Administration

Airport and Airway Costs:

Allocation and Recovery in the 1980s

Office of Aviation Policy and Plans
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16. Abstract

This report examines the financing of the National Airport and Airway System through an allocation of system costs and an analysis of user taxes and existing cost recovery.

FAA costs for fiscal year 1985 are allocated to 10 primary user groups and to the public interest. Cost shares are projected to 1997 with full account given to changes in aviation activity and the effects of FAA modernization efforts. Aviation user taxes are projected for 1988 and 1989 and compared with allocated costs. Keywords:

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A

Executive Summary

This report examines Federal financing of the National Airport and Airway System. It estimates the Federal costs of providing airport and airway system services to 10 user groups in three major categories--air carriers, general aviation, military and government--and evaluates potential taxes to efficiently and equitably recover these costs. User group cost shares are projected through 1997. Current cost and revenue estimates are based on FY 1985 data, the last complete year of information available at the time the estimates were computed. Projections utilize forecasts prepared in the fall of 1986 and published in FAA Aviation Forecasts, Fiscal Years 1987-1998 [5].

Background

Fundamental responsibilities of the Federal Aviation Administration are the assurance of aviation safety and the promotion, encouragement, and development of civil aeronautics. To accomplish these responsibilities, the FAA regulates aviators and aviation operations and provides air traffic control and navigation services by establishing, operating and maintaining the National Airspace System. The FAA also administers the Airport Improvement Program, which makes grants for airport development, and conducts research and development activities. The totality of these facilities and services henceforth is referred to as the National Airport and Airway System.

At present, the system is largely financed through taxes levied on system users, with the remainder obtained from general tax revenues. Air carrier related taxes consist of an eight percent passenger ticket tax, a five percent tax on the value of freight waybills, and three dollar per passenger international departure fee. General aviation pays a fuel tax of 12-cents per gallon on aviation gasoline and a 14-cents per gallon on jet fuel.

An FAA study in 1978 which estimated cost responsibilities for the three major user groups reported that air carriers were responsible for 58 percent of FAA costs compared to 27 percent for general aviation and 15 percent for the public sector. The 1978 study concluded that air carrier passengers and shippers reimburse the Federal government for approximately 88 percent of the cost of services provided to them, while general aviation taxes returned between 14 and 25 percent of their allocated costs.

Approach

In the present study, two estimating techniques are used to attribute cost responsibility. The primary method allocates the full cost of operating the system among the various aviation user groups. The method attributes both the direct cost of providing FAA services and an appropriate share of indirect or overhead costs to user groups. The second method assigns a minimum (lower bound) estimate of costs attributable to general aviation

users. The minimum general aviation cost estimate excludes joint service costs shared with air carriers and government users.

The present study also estimates cost recovery. For 1985, actual revenue collections from user groups are compared with allocated costs. For 1988 and 1989, projected tax revenues from users, (assuming continuation of existing taxes) are compared with projected expenditures allocated by user group.

Findings

Cost Shares. Table E.1 presents estimates of cost responsibility for three major aviation user groups prepared using the full cost allocation method. Despite substantial changes in the aviation industry and FAA programs, the share of user cost responsibility has not significantly changed since 1978. Moreover, future projections of cost shares are relatively stable. The projected air carrier cost share for FY 1989 is one percentage point higher than the 1985 share, 61 percent, and the general aviation cost share declines one percentage point, while the public sector share is expected to remain unchanged. By 1997, after implementation of the NAS Plan and given projected changes in aircraft activity, the air carrier cost share is expected to rise slightly to 63 percent, while the general aviation and public sector cost should decline to 26 and 11 percent, respectively, in 1997.

Table E.1
Percent of FAA Costs by Major User

User Group	1978	1985	1989	1992	1997
Air Carrier	58 %	60 %	61 %	62 %	63 %
General Aviation	27	27	26	26	26
Public Sector[1]	15	13	13	12	11

[1] Public sector costs consist of about 92 percent military costs with the remaining 8 percent resulting from civil government use of the system and certain other public interest costs such as subsidies to low activity towers, and services provided to non-aviators.

The minimum cost allocation for general aviation share is 11 percent of federal airport and airway system costs. This is 16 percentage points less than the full cost allocation estimate which apportions general aviation a share of joint costs.

Cost Recovery

Presuming that existing aviation user taxes remain at their present level, aviation user tax revenues are expected to rise from $2.9 billion in FY 1985 to $3.7 billion in FY 1989. Table E.2 reports tax revenues from

private sector user groups along with the group's cost responsibility as well as the public sector costs and general fund appropriations. Air carrier taxes, which account for more than 96 percent of all aviation tax revenues in 1985, reimbursed 88 percent of the costs air carriers imposed on the system. By 1989, tax collections from air carriers are expected to recover all costs imposed by these users.

General aviation users--including air taxis, small piston aircraft, and business jets--repay only 7 percent of their cost responsibility through user taxes. Even if a minimum allocation of costs is attributed to general aviation, cost recovery only increases to 17 percent. Cost recovery for general aviation is expected to remain at about this same level through 1989.

Cost recovery from the public sector is derived from the General Fund. In 1985, General Fund appropriations to the FAA were more than twice the costs attributed to the public sector.

Table E.2
Projected Cost Recovery By Major User Groups:
(Millions of Current Dollars)

User Group	1985	1988	1989
Full Cost Allocation			
Air Carrier			
Cost	$3133.1	$3499.2	$3510.8
Taxes	2751.2	3343.2	3607.1
Percent Recovery	87.8%	95.5%	102.7%
General Aviation			
Cost	$1398.8	$1516.5	$1510.0
Taxes	100.2	106.9	108.0
Percent Recovery	7.2%	7.0%	7.2%
Public Sector			
Cost	$703.8	$766.5	$751.3
Appropriation	1591.0	870.1	890.6
Percent Recovery	226.1%	113.5%	118.5%
Minimum General Aviation Allocation			
General Aviation			
Cost	$579.9	$609.4	$627.9
Taxes	100.2	106.9	108.0
Percent Recovery	17.3%	18.0%	17.2%

Total private sector--air carriers and general aviation combined--cost recovery including Trust Fund contributions and interest revenues as well as current user group taxes through 1989 is reported in Table E.3. In 1985, private sector user contributions accounted for 70 percent of FAA costs. This contrasts with an 85 percent recovery expected in 1988 and 1989.

Table E.3
Total Cost Recovery
(Millions of Current Dollars)

	1985	1988	1989
FAA Expenditures	$5235.6	$5803.0	$5943.0
Private Sector User Contributions:			
Taxes	$2851.4	$3450.1	$3715.1
Trust Fund Interest	746.3	750.4	767.7
Reduction in Trust Fund Balance	85.8	762.4	598.8
Total [1]	$3683.5	$4962.9	$5081.6
Percent Recovery	70%	85%	85%

1 Total may not equal sum of parts due to rounding.

Evaluation of Existing Taxes

Aviation user taxes are evaluated with regard to safety, economic efficiency, administrative efficiency, and equity or fairness. Both air carrier and general aviation taxes do not impact aviation safety because they are indirect taxes and do not constitute charges for individual safety services. However, indirect taxes do not promote efficiency by linking payments to service consumption.

Existing air passenger ticket taxes and international enplanement taxes are easy to administer. They are based on observable transactions, the amount of tax due is easily determined, and the responsibility for paying the tax is clear. Administration of the freight waybill tax and the general aviation fuel taxes is somewhat more difficult because of ambiguity about which transactions are subject to tax and splintered responsibility for tax payments.

Existing air carrier related taxes are equitable and recover 88 percent of the cost of service provided to the groups. On the other hand, general aviation taxes yield only 7 percent of the costs of services. Given the depressed state of the general aviation industry, no immediate increase is proposed in the taxes imposed on this group.

Table of Contents

I. INTRODUCTION

Fundamental responsibilities of the Federal Aviation Administration are the assurance of aviation safety and the promotion, encouragement, and development of civil aeronautics. To accomplish these responsibilities, the FAA regulates aviators and aviation operations and provides air traffic control and navigation services by establishing, operating and maintaining the National Airspace System. The FAA also administers the Airport Improvement Program, which makes grants for airport development, and the agency conducts research and development activities. The totality of these facilities and services henceforth is referred to as the Federal Airport and Airway System. The system is largely financed through taxes levied on system users, with support for the remainder coming from general tax revenues. The purpose of this study is to estimate the current costs of providing Federal airport and airway system services to various user groups--air carriers, general aviation, military and government--and to evaluate potential taxes to efficiently and equitably recover these costs during 1988 and 1989.

Costs and revenue projections contained in this report are based on forecasts prepared in the fall of 1986 and presented in FAA Aviation Forecasts: Fiscal Years 1987-1998 [5]. Results reported here are based upon research conducted during early 1986 and documented in seven volumes:

Volume 1, Allocation of Federal Airport and Airway Costs for FY 1985 [6].

Volume 2, Allocation of Future Federal Airport and Airway Costs [7].

Volume 3, Airport and Airway Costs Allocated to the Public Sector 1985-1997 [8].

Volume 4, FAA Cost Recovery Options [9].

Volume 5, Econometric Cost Functions for FAA Cost Allocation Model [10].

Volume 6, Users Manual for FAA Cost Allocation Model [11].

Volume 7, Certification, Surveillance, and Registration User Fees [12].

The reader is cautioned to note that cost and revenue projections contained in the documents cited above are based on earlier aviation forecasts and are superseded by projections contained in this paper.

A. Background

The Federal Airport and Airway System is financed from both the General Fund and the Airport and Airway (Aviation) Trust Fund. The contribution of each fund is established by Congress. During 1982 through 1987, approximately 57 percent of system costs were obtained from the Aviation Trust Fund. The Trust Fund receives revenues collected from a set of taxes levied on system users. The taxes include an 8 percent tax on domestic airline passenger tickets, a $3 tax on international passenger enplanements, a 5 percent tax on air freight waybill and a 12 and 14 cent per gallon tax on aviation gasoline and jet fuel, respectively. User taxes are paid into the Aviation Trust Fund which funds Airport Grants, Facilities and Equipment (F&E) purchases, Research and Development (R&D), and a portion of system operations and maintenance (Operations) expenditures.[1/] The remaining portion of system operation and

1/ The Airport and Airway Trust Fund was established by the Airport and Airway Revenue Act of 1970 [1] and reauthorized in 1982 by Airport and Airway Improvement Act [3].

maintenance expenditures are paid from general tax revenues. A summary of the revenues and expenditures for FY 1985 is presented in Figure I-1.

When Congress established the Aviation Trust Fund and user taxes in 1970, it directed that a study be conducted to allocate the costs of operating the National Airport and Airway System among various user groups. Specifically, Congress charged the Department of Transportation as follows.

> The Secretary of Transportation shall conduct a study respecting the appropriate method for allocating the cost of the airport and airway system among the various users, and shall identify the cost to the Federal Government that should appropriately be charged to the system and the value to be assigned to any public benefit, including military, which may be determined to exist.[2/]

To fulfill this requirement, in 1973 the Department of Transportation conducted a comprehensive cost allocation study that estimated the share of costs attributable to major user groups.[3/] Cost allocation estimates were updated in 1978 and incorporated certain conceptual and definitional

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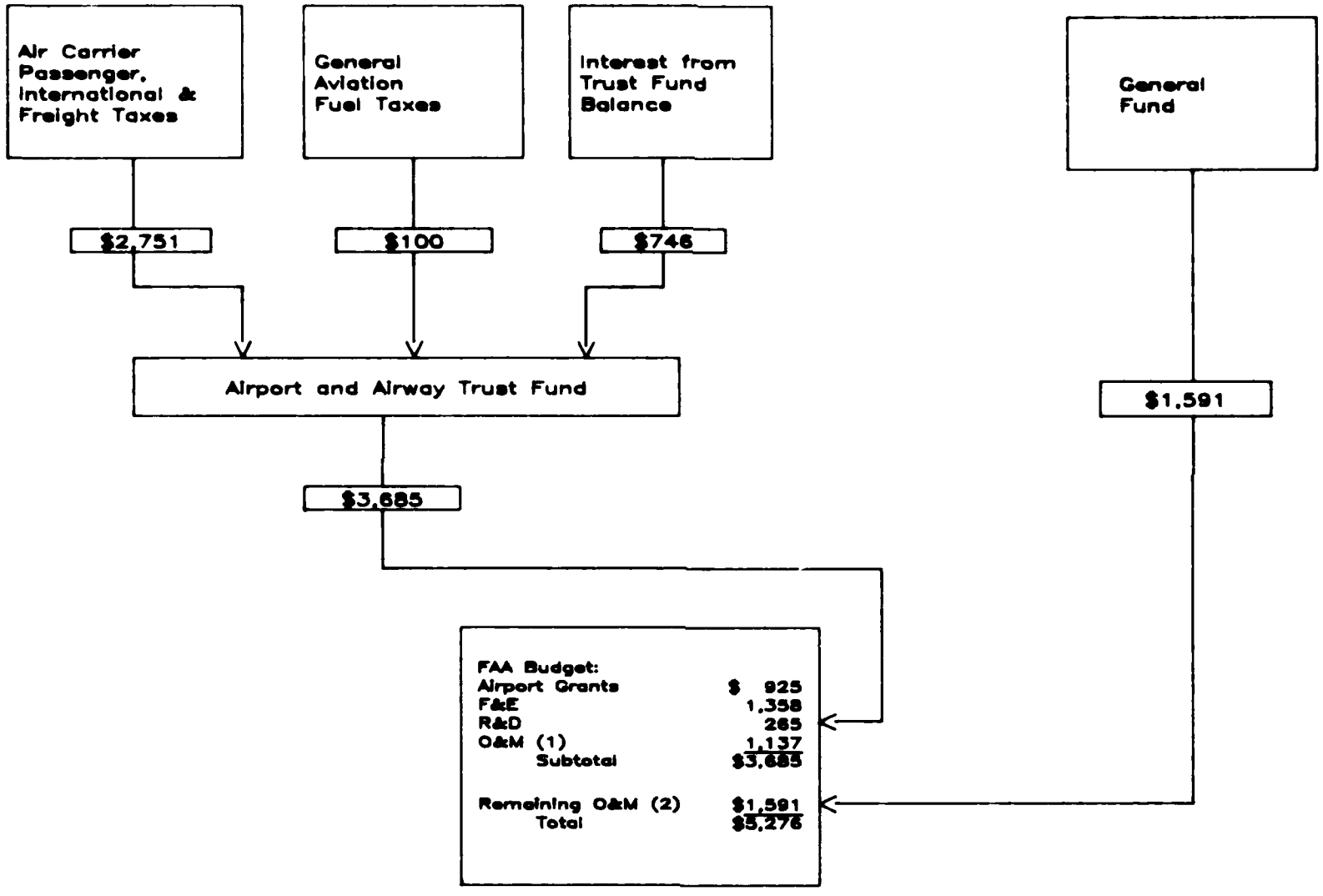
2/ Airport and Airway Development Act of 1970, [1].

3/ Airport and Airway Cost Allocation Study: Determination Allocation and Recovery of System Costs [19].

Figure I-1

Financing the Federal Airport & Airway System FY 1985
(Million)



Notes
(1) Includes $27 transfer to National Oceanic & Atmospheric Administration
(2) Excludes Metropolitan Washington Airports

revisions.[4/] The cost shares of major aviation user groups estimated by these studies adjusted to be conceptually compatible are shown in Table I-1.

Table I-1
Estimated User Shares of Federal Airport and Airway Systems Costs [5/]
(Percent)

User Group	1973	1978
Air Carriers	50	58
General Aviation	30	27
Military and Government	20	15
Total Cost	100	100

Since the completion of the 1978 study, significant changes have occurred within the aviation industry and FAA including economic deregulation, a decline in certain segments of general aviation activity, and major capital investments made by FAA under the National Airspace System Plan (NAS Plan). Because these changes impact the level and nature of system usage, as well as the production characteristics of FAA services, they have the potential to shift the allocation of costs among system users. In anticipation of new legislation to replace the Airport and Airway Improvement Act of 1982 (program authority expires September 30, 1987 and taxes expire December 31, 1987), a reexamination of user cost shares and the recovery of costs was undertaken.

4/ Financing the Airport and Airway System: Cost Allocation and Recovery [15].

5/ The 1978 study initially assigned regulatory costs to the public interest, which has the effect of decreasing the military and government shares and increasing air carrier and GA shares, while the 1973 study generally allocated a share of these costs to system users.

B. Organization of Report

The remainder of this report is organized in the following manner. Section II outlines the cost allocation method and summarizes estimates of current and projected user cost responsibility through 1997. Section III discusses the nature of existing aviation user taxes and the Aviation Trust Fund. This discussion of financial structure provides a framework for consideration of user cost responsibility, aviation user taxes and cost recovery. Section IV outlines and analyzes cost recovery for each aviation user group under existing user taxes. Section V evaluates existing taxes. Conclusions of the study are presented in Section VI.

II. COST ALLOCATION

A. Overview

A major objective of this study was to attribute recent (1985) Federal Airport and Airway System costs to users and make projections of future cost responsibility. Following precedent of the 1973 and 1978 studies, alternative methods were used. The first--the full-cost allocation method--allocated all airport and airway system costs to system users (including government users). The costs estimated under this method approximate the long-run marginal cost of providing services to each group. The second--the minimum general aviation allocation method--provides an alternative estimate of the costs that could be attributed to general aviation (GA). It assumes that the overall character of FAA services produced are primarily determined by other user groups and assigns to general aviation only the additional costs of specific services. Under this method, costs generated jointly by general aviation and other groups are not considered the responsibility of general aviation.

Summary results for 1985 obtained under the full cost allocation method are reported in Table II-1 together with estimates of cost responsibility in 1978. Despite significant changes in the aviation industry and FAA operating policies over this period, relative cost shares attributed to each major user group have remained stable.

Table II-1
Percent of FAA Costs by Major User
(Percent)

User Group	1978	1985
Air Carriers	58	60
General Aviation	27	27
Military & Public	15	13

Alternatively the minimum general aviation allocation assigns approximately 11 percent of total costs to general aviation. This is lower than the full cost estimate because costs shared with other user groups are not assigned to general aviation. The magnitude of this estimate is similar to the minimum general aviation estimate of 13 percent for 1978.

B. Method

Cost allocation assigns cost responsibility to various classes of system users. Previous studies divided users into three categories--air carriers, general aviation, and the public sector. The present study subdivides these three categories into ten user groups and public interest expenditures:

- o Airlines
  - Domestic Air Carriers
  - International Air Carriers
  - Freight Air Carriers
  - Commuter Air Carriers
- o General Aviation
  - Air Taxis
  - Piston Aircraft
  - Turbo Aircraft
  - Rotorcraft
- o Public Sector
  - Civil Government
  - Military
  - Public Interest

The increased number of groups permits more accurate assessment of cost recovery by recognizing differences in the cost of providing service within each of the three major categories.

System costs may be divided into direct and indirect categories. Direct costs are those linked directly to the production of services rendered to system users. Costs of air traffic control services such as controller salaries are an example. Indirect costs are those incurred in supporting the production of services. An example of indirect costs are the costs of recruiting and training air traffic controllers. Direct costs may be further divided into the cost of a service rendered to one user group (such as a control tower cost at an airport used only by general aviation) exclusively and the cost of services rendered jointly to several user groups (such as enroute air traffic control services). Direct costs incurred to provide services to only one group are considered solely the responsibility of that group. Joint costs (and sometimes indirect costs) must be further divided between various classes of users.

1. Full Cost Allocation

The full cost allocation method distributes all direct and indirect costs to system users using the process outlined in Figure II-1. The first step separates the FAA budget into six cost centers:

Operating site costs: labor, maintenance and leased communications costs at ARTCCs, FSSs, towers and TRACONs.

F&E: capital expenditures to replace or improve Federal airport and airway facilities or equipment.

R&D: expenditures made by the FAA on research and development programs to build and maintain a safe and efficient airport and airway system.

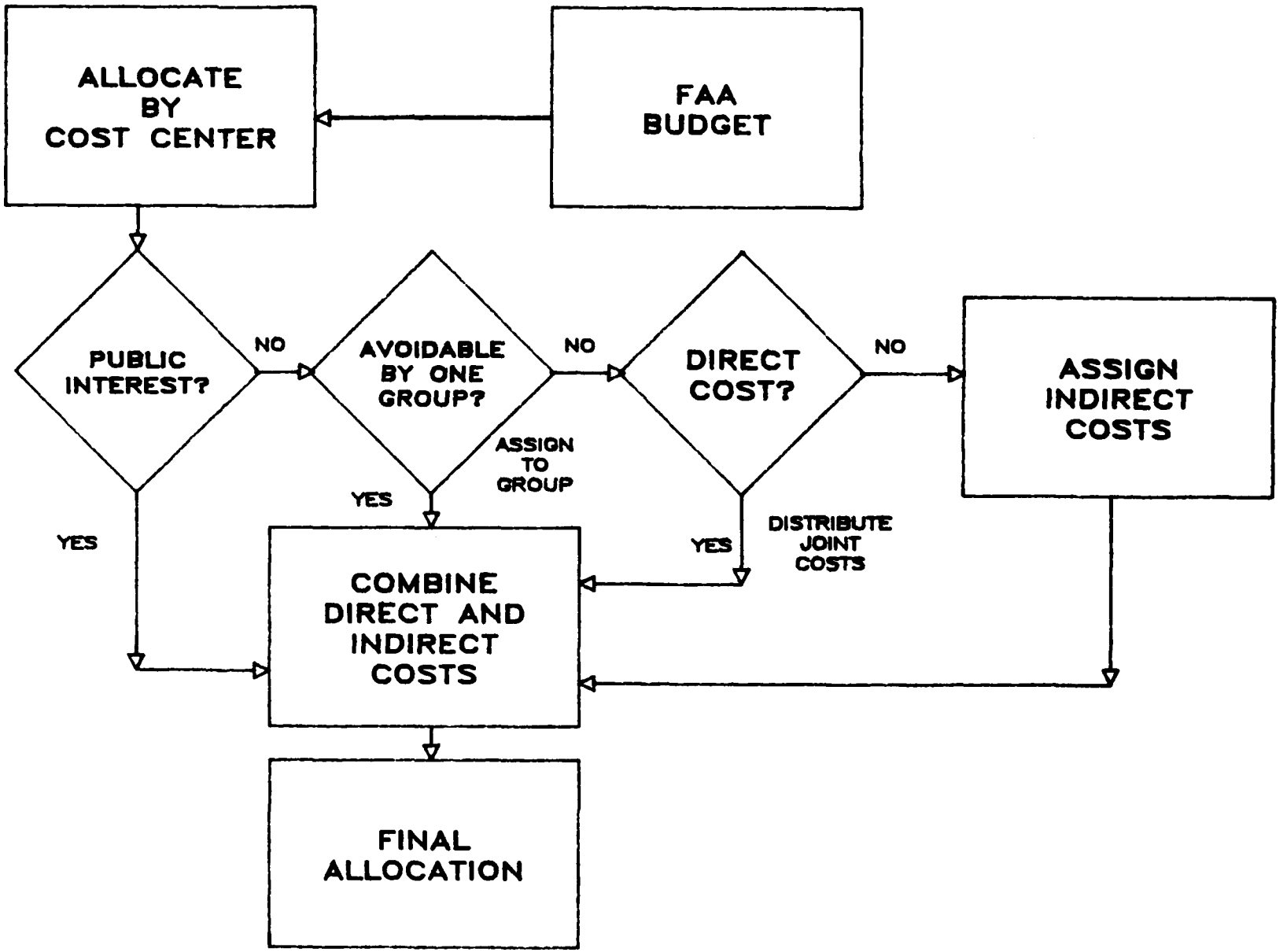
Airport grants: development grants made to sponsors of primary, commercial service, reliever and general aviation airports.

NAVAID Maintenance and Regulatory Costs: costs incurred by the FAA in providing and maintaining navigation equipment not located at operating sites and of regulating airmen, aircraft operations and manufacturing, and airports.

Overhead: Costs of headquarters and regional administration, and procurement.

Figure II-1

ALLOCATION METHODOLOGY



The second step is to identify resources expended in the public interest. These are comprised of expenditures to produce public services or services which primarily benefit non-aviators.[1/] Because these expenditures do not primarily benefit aviation users, they are assigned to the public sector. All costs remaining after this step are attributable to aviation system users.

The third step is to identify costs solely attributable to a group--those that would be avoided in the absence of a single user group ("avoidable costs")--and assign them to that group. All costs remaining after this step are either direct joint or indirect costs. The fourth step is to determine direct joint costs--those costs that could be avoided if two or more user groups did not exist. These joint costs are then distributed to individual user groups based on system usage, marginal costs, and relative price elasticities (Ramsey pricing technique). User fees based on the Ramsey pricing tend to be less burdensome on users and minimize changes in the use of services.[2/]

1/ Public services are usually subsumed in the broader category of "public goods." A public good is defined as a commodity or service that meets two criteria. These are: if at least one person can consume some of the good, it must not be possible to exclude others from consuming it; and consumption of a unit of the good by one person must not prevent others from consuming the exact same unit [13] [16] [17].

2/ A full discussion of the Ramsey pricing techniques is provided in Allocation of Federal Airport and Airway Costs for FY 1985 [6].

In step 5, remaining indirect costs are allocated to other cost centers using standard cost accounting techniques, and then to users of those cost centers in the same manner as other joint costs.[3/] The end result of this procedure is to assign each user group two components of cost for each cost center--avoidable direct costs and a share of indirect costs.

Specific techniques used for the various cost centers are summarized below:

Operating Site Costs: Cost functions were developed using econometric techniques for four different types of operating sites: terminal radar approach control towers (TRACONs), air route traffic control centers (ARTCCs), non-radar towers, and flight service stations (FSSs). The cost functions estimate the marginal costs of providing service to each user group. They also estimate the value of shared or joint costs for each site category. Joint costs were allocated to each user group using the Ramsey pricing technique.

F&E: Project descriptions of each F&E project in the FAA budget were examined to determine the cost responsibility associated with each user group. Responsibility for a project's cost was assigned specifically to a user group or jointly to more than one user group if that project could be avoided or would not be necessary if the group (or groups) were not a user of the system. If responsibility was assigned jointly to more than one

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3/ Among these costs are those related to aviation safety. These could alternatively be assigned directly to the public interest. Here, however, they are treated as indirect costs and allocated to system users. A discussion of these costs is contained in Airport and Airway costs Allocated to the Public Sector, 1985-1997 [8].

group, allocation[4/] to specific user groups was made using the Ramsey pricing technique. The cost share for each year related to each user group for the period 1984 through 1992 was determined and averaged. The average cost share over the period was used in lieu of using the data for any particular year. This was done because F&E user group cost responsibility varies substantially from year to year as the composition of projects changes and use of one of any single year would be unrepresentative and might seriously distort the cost allocation.

To allocate 1985 F&E costs, current 1985 F&E expenditures were multiplied by the average cost share for each user group, a treatment consistent with 1978 cost allocation estimates. For projections to future years, an amortization procedure was utilized. A detailed discussion of this procedure is contained in Allocation of Future Federal Airport and Airway Costs [7].

R&D: These costs were allocated in a manner similar to that used for F&E except that future projections did not use an amortization procedure.

4/ A full description of this avoidable cost concept and the manner in which it was applied to FAA F&E can be found in Allocation of Federal Airport and Airway Costs for FY 1985 [6].

Airport grants: Different methods were used to allocate primary airport grants and all other airport grants. The Airport and Airway Development Act of 1982 specifies that primary airport grants be allocated among primary airports--commercial services airports enplaning .01 percent or more of total enplanements annually—according to their enplanements. Accordingly, estimates of domestic, international, and commuter airline enplanements were used to allocate primary airport grants among these users. The second category of grants were made to other commercial service, reliever, and general aviation airports. These grants were analyzed as to the users of the facility purchased with the grant and total grant costs were allocated accordingly.

NAVAID Maintenance and Regulatory Costs: Navigational aids are used by all aircraft under instrument flight rules (IFR). The maintenance costs associated with these facilities are joint costs and were divided among user groups using the Ramsey pricing algorithm.

Each user group is furnished with a variety of regulatory services by the FAA [12]. Ideally the cost of these services would be allocated to user groups in proportion to those units of service delivered to them. However, sufficient information was not available to allocate all of regulatory costs in this manner. Therefore, the remaining costs were treated as indirect costs and allocated in the same manner as overhead costs.

Overhead: Overhead costs were distributed by an iterative process to direct cost categories such as operating sites. The cost of each overhead item was allocated either to a direct cost category or to another overhead area and the process was repeated until all indirect costs were ultimately distributed to a direct cost category which was in turn allocated to users groups. Thus, direct costs was increased by an appropriate amount to include overhead costs. For example, in the first iteration of this process, the cost of the budget office at headquarters is distributed to all other FAA functions including air traffic administration. In the next iteration, air traffic administration cost was apportioned to operational sites.

2. Minimum General Aviation Allocation

The minimum general aviation allocation is similar to the full cost method in that it divided the FAA budget into cost centers and then used the avoidable cost concept to identify those costs for which general aviation is responsible. It differs significantly, however, in that while the full cost allocation assigns general aviation a portion of joint costs shared with other users, the minimum general aviation allocation assigns none of these joint costs to general aviation. 5/ This approach to the

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5/ A detailed explanation of this method is contained in Allocation of Federal Airport and Airway Costs for FY 1985 [6].

minimum cost of general aviation service is different from that used for 1978 which estimated the costs associated with a hypothetical new system designed solely to meet the needs of general aviation.

C. Detailed Cost Allocation Results

1. Full Cost Allocation

Table II-2 displays the allocated cost shares to ten user groups and the public interest for 1985. The largest share of Federal Airport and Airway System costs--42 percent--is attributable to domestic air carriers. The next largest are shares attributed to the military, operators of GA-piston aircraft, and commuters, with each accounting for between 12 and 14 percent of total costs.

Table II-2
1985 Allocation By User Group

User Group	Share (Percent)	Cost ($Million)
Air Carrier		
Air Carrier Domestic	41.6%	$2,176
Air Carrier International	2.3	121
Air Carrier Freight	2.3	123
Commuter	13.6	713
Total	59.9%	$3,133
General Aviation		
Air Taxi	2.5%	132
General Aviation Piston	13.0	683
General Aviation Turbine	9.9	520
Rotorcraft	1.2	64
Total	26.7%	$1,399
Public Sector		
Civil Government	0.6	31
Military	12.4	648
Public Interest	.5	25
Total	13.5%	$704
Grand Total	100.0%	5,236 a/

a/ Total excludes Metropolitan Washington Airports Appropriations and about $11 million in costs that were allocated to the administration of those airports.

A detailed allocation of the $5.2 billion FY-1985 budget subdivided into operating, capital (F&E), research (R&D), and airport grant expenses is presented in Table II-3a. The table shows the amount of each cost category allocated to each user group. Direct operations costs amounted to $2.0 billion or 38 percent of the total FAA budget. F&E, R&D, and Airport grants made up 26, 5, and 18 percent, respectively, of the budget.

Table II-3a

Cost Allocation by Detailed User Group and Expenditure Category--1985

($Million)

Category	Total[1]	A/C Domestic	A/C Int'l	A/C Freight	A/C Commuter	Air Taxi	GA Piston	GA Turbine	Rotor-craft	Govern-ment	Mili-tary	Public Interest
Direct Costs												
Public Interest	24.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.7	19.1
Navaid Maintenance	388.3	138.1	7.0	10.0	50.0	13.5	42.7	41.7	6.3	2.9	76.1	0.0
Safety Regulation	126.8	44.3	2.2	3.2	29.3	8.0	16.1	13.9	2.1	1.0	6.6	0.0
ARTCCs	566.1	229.5	12.5	15.6	45.4	14.0	35.1	86.9	0.0	3.1	123.8	0.0
Towers	113.0	8.0	0.6	0.9	10.1	9.4	42.5	14.1	8.4	2.4	16.6	0.0
TRACONs	525.7	201.6	8.8	15.6	104.9	10.4	79.4	12.8	7.2	2.1	83.1	0.0
FSSs	239.5	10.5	0.5	0.8	14.2	14.7	137.6	20.4	10.5	3.1	27.3	0.0
Total Operations	1984.1	632.1	31.5	46.1	254.0	70.0	353.5	189.8	34.5	14.6	339.1	19.1
F&E	1358.0	671.4	34.3	47.9	215.3	27.6	67.8	117.3	8.1	6.0	162.2	0.0
R&D	265.0	158.0	7.9	11.4	56.1	2.4	7.9	8.6	0.9	0.5	11.3	0.0
AIP Grants[2]	924.7	477.5	35.5	0.7	92.5	5.2	164.0	129.1	6.8	4.0	9.5	0.0
Total Direct Costs	4531.9	1939.0	109.2	106.1	617.8	105.2	593.1	444.9	50.3	25.1	522.0	19.0
Indirect Costs	703.7	237.0	12.0	16.8	95.2	26.5	89.8	75.2	13.5	5.7	125.8	6.1
Total Costs[1]	5235.6	2176.0	121.2	122.8	713.0	131.7	682.9	520.1	63.8	30.7	647.8	25.2

[1]Total may not equal sum of parts due to rounding.

[2]By law AIP grants cannot be allocated directly for military purposes, however, the allocation method used in this study assigned certain funds to the military when it also benefited from an AIP project designed for others.

Table II-3b indicates the percent of each cost category allocated to each group. Table II-3c contains the percent of each user group's total allocated cost accounted for by each cost category. Taken together these Tables indicate the variation of cost responsibility for each user group within and between FAA cost categories.

Table II-3b reports that domestic and international air carriers account for significantly less of the operations budget than their share of the overall budget. These two groups are allocated 34 percent of the operations costs compared with a 44 percent share of total costs. In contrast, piston powered aircraft, air taxis, and the military use significantly higher shares of the operations budget than of total costs.

The F&E and R&D budgets are dominated by the air carriers with the sum of all the air carrier groups accounting for 71 and 86 percent, respectively, of these budget categories. On the other hand, general aviation uses relatively little of the F&E and R&D budgets. The groups which account for relatively large shares of the Airport Improvement Program (AIP) budget are domestic and international air carriers and piston and turbine powered aircraft.

The Table II-3c indicates that while operations costs account for a little over a third of domestic and international air carrier costs, they account for between two-thirds and three-fourths of the costs of air taxis, piston aircraft, rotorcraft, and civilian government and military aircraft. The major contributing factor in the high operations costs for the general

Table II-3b

Cost Allocation by Detailed User Group and Expenditure Category--1985

(Horizontal Percent Distribution)

Category	Total[1] ($M)	A/C Domestic	A/C Int'l	A/C Freight	A/C Commuter	Air Taxi	GA Piston	GA Turbine	Rotor-craft	Govern-ment	Mili-tary	Public Interest	Total[1]
Direct Costs													
Public Interest	24.7	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	23.1%	77.3%	100.0%
Navaid Maintenance	388.3	35.6%	1.8%	2.6%	12.9%	3.5%	11.0%	10.7%	1.6%	.7%	19.6%	.0%	100.0%
Safety Regulation	126.8	34.9%	1.7%	2.5%	23.1%	6.3%	12.7%	11.0%	1.7%	.8%	5.2%	.0%	100.0%
ARTCCs	566.1	40.5%	2.2%	2.8%	8.0%	2.5%	6.2%	15.4%	.0%	.5%	21.9%	.0%	100.0%
Towers	113.0	7.1%	.5%	.8%	8.9%	8.3%	37.6%	12.5%	7.4%	2.1%	14.7%	.0%	100.0%
TRACONs	525.7	38.3%	1.7%	3.0%	20.0%	2.0%	15.1%	2.4%	1.4%	.4%	15.8%	.0%	100.0%
FSSs	239.5	4.4%	.2%	.3%	5.9%	6.1%	57.5%	8.5%	4.4%	1.3%	11.4%	.0%	100.0%
Total Operations	1984.1	31.9%	1.6%	2.3%	12.8%	3.5%	17.8%	9.6%	1.7%	.7%	17.1%	1.0%	100.0%
F&E	1358.0	49.4%	2.5%	3.5%	15.9%	2.0%	5.0%	8.6%	.6%	.4%	11.9%	.0%	100.0%
R&D	265.0	59.6%	3.0%	4.3%	21.2%	.9%	3.0%	3.2%	.3%	.2%	4.3%	.0%	100.0%
AIP Grants	924.7	51.6%	3.8%	.1%	10.0%	.6%	17.7%	14.0%	.7%	.4%	1.0%	.0%	100.0%
Total Direct Costs	4531.9	42.8%	2.4%	2.3%	13.6%	2.3%	13.1%	9.8%	1.1%	.6%	11.5%	.4%	100.0%
Indirect Costs	703.7	33.7%	1.7%	2.4%	13.5%	3.8%	12.8%	10.7%	1.9%	.8%	17.9%	.9%	100.0%
Total Costs[1]	5235.6	41.6%	2.3%	2.3%	13.6%	2.5%	13.0%	9.9%	1.2%	.6%	12.4%	.5%	100.0%

[1]Total may not equal sum of parts due to rounding.

aviation groups is the cost of FSS services. The high operations costs for military aircraft are partly due to the cost of ARTCC services by this group resulting from Special Use Areas designated for military maneuvers.

The relative importance of F&E and R&D costs to the air carriers is seen by the much larger share of their allocated costs made up of these budget categories. For example, F&E and R&D make up 31 and 7 percent, respectively, of domestic air carrier costs whereas these cost categories make up 10 and 1 percent, respectively, of piston aircraft costs. AIP costs account for about one-fourth of the costs of domestic and international air carriers and piston and turbine powered general aviation aircraft. AIP costs are significantly less important to other users.

Table II.4 presents greater detail for costs allocated to the public sector which includes military and civilian government users as well as costs which are strictly in the public interest. The table indicates that 92 percent of all public sector costs results from the military use of FAA operational facilities. Other categories include the provision of services to civil government aviation (such as municipally owned aircraft), subsidized or low activity airport towers, and FAA weather observations used by the National Oceanographic and Atmospheric Administration (NOAA) to formulate weather forecasts for the general public.

Table II-3c

Cost Allocation by Detailed User Group and Expenditure Category--1985

(Vertical Percent Distribution)

Category	Total[1] ($M)	Total (%)	A/C Domestic	A/C Int'l	A/C Freight	A/C Commuter	Air Taxi	GA Piston	GA Turbine	Rotor-craft	Gover-nment	Mili-tary	Public Interest
DIRECT COSTS													
Public Interest	24.7	.5%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.9%	75.8%
Navaid Maintenance	388.3	7.4%	6.3%	5.8%	8.1%	7.0%	10.3%	6.3%	8.0%	9.9%	9.4%	11.7%	.0%
Safety Regulation	126.8	2.4%	2.0%	1.8%	2.6%	4.1%	6.1%	2.4%	2.7%	3.3%	3.3%	1.0%	.0%
ARTCCs	566.1	10.8%	10.5%	10.3%	12.7%	6.4%	10.6%	5.1%	16.7%	.0%	10.1%	19.1%	.0%
Towers	113.0	2.2%	.4%	.5%	.7%	1.4%	7.1%	6.2%	2.7%	13.2%	7.8%	2.6%	.0%
TRACONs	525.7	10.0%	9.3%	7.3%	12.7%	14.7%	7.9%	11.6%	2.5%	11.3%	6.8%	12.8%	.0%
FSSs	239.5	4.6%	.5%	.4%	.7%	2.0%	11.2%	20.1%	3.9%	16.5%	10.1%	4.2%	.0%
Total Operations	1984.1	37.9%	29.0%	26.0%	37.5%	35.6%	53.2%	51.8%	36.5%	54.1%	47.6%	52.3%	75.8%
F&E	1358.0	25.9%	30.9%	28.3%	39.0%	30.2%	21.0%	9.9%	22.6%	12.7%	19.5%	25.0%	.0%
R&D	265.0	5.1%	7.3%	6.5%	9.3%	7.9%	1.8%	1.2%	1.7%	1.4%	1.6%	1.7%	.0%
AIP Grants	924.7	17.7%	21.9%	29.3%	.6%	13.0%	3.9%	24.0%	24.8%	10.7%	13.0%	1.5%	.0%
Total Direct Costs	4531.9	86.6%	89.1%	90.1%	86.4%	86.6%	79.9%	86.9%	85.5%	78.8%	81.8%	80.6%	75.4%
Indirect Costs	703.7	13.4%	10.9%	9.9%	13.7%	13.4%	20.1%	13.1%	14.5%	21.2%	18.6%	19.4%	24.2%
Total Costs[1]	5235.6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

[1] Total may not equal sum of parts due to rounding.

Table II-4
Allocation To Public Sector

Category	Percent
Military Share of:	
ARTCC'S	3.1
Towers	0.4
TRACONS	2.1
FSS	0.7
F&E + R&D	3.4
Navaid Maintenance	2.1
Other	0.6
Total Military	12.4
Non-Aviator Weather Data	0.3
Civil Government Users	0.6
Low Activity Towers	0.2
Total	13.5

2. Minimum General Aviation Cost Allocation

The total additional cost of providing service specifically to general aviation (exclusive of joint cost activities) was $580 million in 1985 (see Table II-5). Piston powered aircraft were the largest users with costs of service almost double that of turbine powered aircraft. While the cost of service attributed to each of the four general aviation groups is substantially less under this procedure than under the full cost allocation method, the greatest relative differences are experienced by the more sophisticated aircraft--turbo powered aircraft, air taxis and rotorcraft--because they tend to more frequently use more sophisticated joint cost facilities along with air carriers. It is the cost of joint facilities which are excluded by this procedure.

Table II-5
Minimum General Aviation System
(Millions of 1985 Dollars)

	Air Taxi	GA Piston	GA Turbo	Rotor-Craft	Total
Operations					
Navaid Maintenance	0.9	3.1	2.9	0.4	7.2
Regulatory Costs	3.3	11.4	11.2	1.4	27.4
ARTCC's	11.7	32.3	72.8	0.0	116.9
Towers	2.3	17.0	3.6	2.1	25.0
TRACON's	4.5	43.6	5.6	4.1	57.8
FSS's	15.5	137.8	27.9	10.2	191.4
Operations a/	38.2	245.2	124.0	17.2	425.7
F&E	6.7	23.2	20.7	3.2	53.7
R&D	0.6	2.3	1.9	0.3	5.1
AIP Grants	2.6	52.8	39.7	0.2	95.4
Total a/	$48.3	$323.6	$186.1	$21.0	$579.9

a/ Total may not equal sum of parts due to rounding.

The cost allocated to general aviation is less for each component under the minimum-cost allocation (see Table II-6). However, even under the minimum allocation FSS's account for nearly 4 percent of costs, very near the level under full allocation. This results because it is assumed that FSS's would not exist without general aviation. Accordingly, all non-governmental FSS joint costs are assigned to general aviation whereas previously they had been allocated among all user groups.

Table II-6
GA Full Cost VS. GA Minimum Allocation FY 1985
(Percent)

Cost Category	Minimum Allocation	Full Allocation
Operations		
Navaid Maintenance	0.1	2.9
Safety Regulations	0.5	1.0
ARTCC's	2.2	3.3
Towers	0.5	1.8
TRACON's	1.1	2.5
FSS's	3.7	4.4
Operations a/	8.1	15.9
F&E	1.0	4.3
R&D	0.1	0.4
AIP Grants	1.8	6.0
Total a/	11.1	26.7

a/ Total may not equal sum of parts due to rounding.

D. Projected Cost Allocation

The Administration's FY 1988 Budget proposes a two year reauthorization--FY-1988 and FY-1989--for the FAA.[5/] This proposal embodies several major goals which include continued funding for the National Airspace System Plan, increased aviation safety, increased airport capacity, and an increased level of air traffic control service. Proposed expenditures for 1988 and 1989 are summarized in Table II-7.

Table II-7
Proposed Expenditures FY 1988 AND 1989 a/
(Millions of Current Dollars)

Category	1988	1989
Airport Improvement Program	$1017	$1017
Facilities & Equipment b/	1350	1500
Research, Engineering, & Development	150	150
Operations	3286	3276
Total	$5803	$5943

a/ From FAA FY 1988 Congressional budget submission, December 1986.

b/ A separate $200 million risk reserve is proposed for the FY 1988-9 period. This reserve is intended to cover potential cost overruns on NAS Plan projects.

5/ Proposed Airport and Airway Enhancement Act of 1987 [18].

Figure II-2 presents projections of future cost responsibilities to 1989, 1992, and 1997. The projections incorporate the expected impact of productivity improvements--labor saving--resulting from capital investments being made under the FAA's National Airspace Plan. The share of air carrier costs increases from 60 percent to 61 percent in 1989, while the general aviation cost share decreases by one percentage point to 26 percent and the public share remains constant. Over the entire projection period, the air carrier cost share increases from 60 to 63 percent. The public and general aviation shares decline by 1 and 2 percent, respectively. These changes reflect forecast changes in activity for each of the groups.

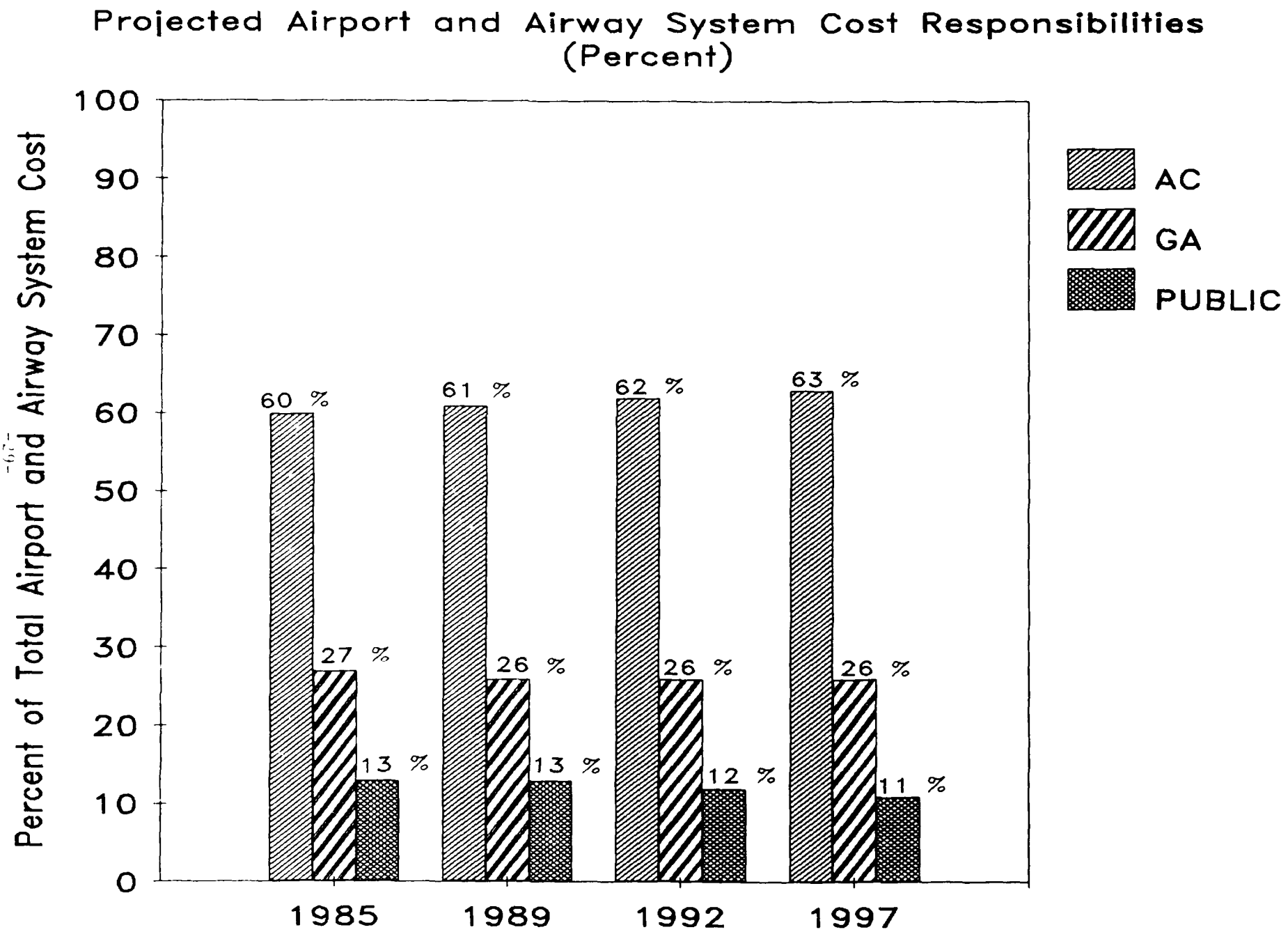
As indicated in II-8, strong growth is expected for air carriers, substantially less growth is seen for the military, and general aviation activity is expected to decline slightly.

Table II-8
Projected Aviation Activity (1985-1997)[a/]
(Thousands of Hours Flown)

	1985	1989	1992	1997	Annual Average Percent Change 1985/1992
Air Carriers	7,739	9,811	10,594	12,038	5.3
General Aviation	36,200	33,700	34,800	36,600	-0.6
Military	5,782	6,354	6,664	7,113	2.2

a/ Source. FAA Aviation Forecasts: Fiscal Years 1987-1998 [5].

Figure II-2


Projected Airport and Airway System Cost Responsibilities
(Percent)
Percent of Total Airport and Airway System Cost
100
90
80
70
60
50
40
30
20
10
0
60 %
27 %
13 %
61 %
26 %
13 %
62 %
26 %
12 %
63 %
26 %
11 %
1985
1989
1992
1997
AC
GA
PUBLIC

III. REVENUE COLLECTIONS

This section addresses actual revenue collections for 1985 and projected revenues for 1988 and 1989. Projections are based on retaining the current tax structure through 1989, as provided for in the Administration's Post 1987 FAA reauthorization legislative proposal.[1/] Revenue projections are compared with user cost responsibilities in Section IV.

Current user taxes are provided for by the Airport and Airway legislation (1982).[2/] These taxes on airport and airway system users are summarized in Table III-1. All of the taxes are indirect in nature. That is, payment is not directly linked with the use of specific services but rather with overall use of the system. These taxes will expire in 1987.

1/ Proposed Airport and Airway Enhancement Act of 1987 [18].

2/ Tax Equity and Fiscal Responsibility Act of 1982 [2].

Table III-1

Summary Description Of Present
Aviation User Tax Structure

Type of Tax	Tax Base	Present Rate
Domestic Passenger Ticket Tax	Passenger Transportation Charges	8 Percent
International Air Passenger Enplanement Tax	Passenger Enplanements	$3 Per Person
Domestic Air Cargo Waybill Tax	Cargo Transportation Charges	5 Percent
Aviation Gasoline	Fuel Purchases	12 Cents-Per-Gallon
Jet Fuel	Fuel Purchases	14 Cents-Per-Gallon

Revenue collections from specific taxes for 1985 and projected revenues for 1988 and 1989 are reported in Table III-2. In 1985, air carriers accounted for about 96 percent of total tax revenues. By 1989, taxes on air carriers are forecast to yield about 97 percent of total tax collections.

Table III-2
Airport And Airway User Tax Revenues
(Millions of Current Dollars)

Payer	1985	1988	1989
Air Carrier			
Domestic (Ticket Tax)	2,419.0	2,915.7	3,142.7
International (Departure Tax)	108.3	105.9	109.6
Freight (Waybill Tax)	134.1	186.0	201.0
Commuters (Ticket Tax)	89.8	135.6	153.8
Subtotal a/	2,751.2	3,343.2	3,607.1
General Aviation (Fuel Tax)			
Air Taxi	12.7	13.5	13.7
GA-Piston	23.6	25.2	25.4
GA-Turbine	60.9	65.0	65.6
Rotorcraft	3.0	3.2	3.2
Subtotal a/	100.2	106.9	108.0
Total a/	2,851.4	3,450.1	3,715.1

a/ Total may not equal sum of parts due to rounding.

The airline passenger ticket tax imposes an eight percent charge on the price of each passenger ticket. The tax applies to all passenger carriers including commuters and for-hire air taxis. Airlines collect and remit the tax proceeds to the Internal Revenue Service which places these funds in the Airport and Airway Trust Fund. In 1989, this tax will account for about 89 percent of total aviation tax revenues.

The international departure tax imposes a $3 fee on passengers leaving the U.S. and on flights to Alaska and Hawaii. However, passengers on international flights with stopovers in the United States of less than 12 hours are not subject to the tax. In 1985, the international departure tax accounted for about 4 percent of total aviation user fees. By 1989, this tax is expected to yield about 3 percent of tax revenues.

Revenues derived from the freight waybill tax are based on the total value of freight, net of ancillary fees such as delivery or storage charges. Revenues for private carriage of U.S. mail are also subject to this tax. The five percent rate is not charged, however, to any freight going overseas, even if part of the transportation of the freight occurs within the U.S. For example, if a manufacture ships a product from New York to California and then to Japan, the portion of the trip within the U.S. would not be subject to this tax. In 1985, proceeds from the freight waybill tax amounted to about 5 percent of all Trust Fund tax revenues. About 80 percent, or $107 million, of this came from freight, per se, and the remaining amount from mail. In 1989, revenues from this tax are expected to account for approximately $201 million, about 5 percent of user tax revenues.

The $.12 per gallon tax levied on aviation gasoline and the $.14 per gallon on jet fuel are collected primarily from fixed based operators at airports. Certain GA users may obtain exemptions from paying this tax provided that their aircraft is used for certain commercial purposes such as resource extraction or crop dusting. In 1985, the aviation gasoline

tax accounted for about 1 percent of total tax revenues. Revenues from this tax are expected to remain at about 1 percent of tax revenues in 1989. Jet fuel tax collections in 1985 accounted for about 2 percent of total tax revenues and are forecast to yield about 2 percent of total revenues in 1992.

Table III-3 summarizes projected FAA tax revenues, Aviation Trust Fund balances, and interest earned on these balances along with projected FAA expenditures to be taken from the Trust Fund. The combined impact of Trust Fund increases from tax revenue and interest on the Trust Fund balance and decreases from proposed expenditures to be taken from the Trust Fund is to reduce the Trust Fund balance from about $5.6 billion at the end of 1987 to $4.3 billion at the end of FY 1989.

Table III-3
Aviation Trust Fund Projections a/
(Millions of Current Dollars)

	1987	1988	1989
Beginning Balance	4312.5	5631.8	4869.4
Revenue:			
Taxes	3126.1	3450.1	3715.1
Interest	802.9	750.4	767.7
Total b/	3929.0	4200.5	4482.8
Trust Fund Expenditures d/	2609.8 c/	4962.9	5081.6
Ending Balance b/	5631.8	4869.4	4270.6

a/ Projected figures are based on FY 1988 FAA budget submission [14].

b/ Total may not equal sum of parts due to rounding.

c/ Includes a $13.3 million accounting adjustment.

d/ Excludes $200 million risk reserve; includes $30 million transfer to the National Oceanographic and Atmospheries Administrator.

IV. COST RECOVERY

A. Total Cost Recovery

The recovery of FAA costs from aviation system users for 1985 is reported in Table IV-1. Two comparisons are made. The first compares the annual tax collections with annual costs. This presentation follows the precedent of cost recovery comparisons in earlier studies. The second comparison relates annual costs to total private sector user contributions--the sum of tax collections, interest earned on balances in the Aviation Trust Fund, and reductions in the Aviation Trust Fund balance during the period. These additional items could be included because they are paid from private sector user provided resources held in trust by the Federal Government. As indicated, cost recovery under either alternative falls well short of total costs.

Table IV-1
Total Cost Recovery: 1985
(Dollars in millions)

	Based On Current Tax Collections	Based On Total User Contribution
FAA Expenditures	$5235.6	$5235.6
Private Sector User Contribution:		
Taxes	$2851.4	$2851.4
Trust Fund Interest	--	746.3
Draw Down on Trust Fund Balance	--	85.8
	$2851.4	$3683.5
Percent Recovery	54%	70%

Cost recovery projections based on total private sector user contributions are shown in Table IV-2. As indicated, recovery is expected to increase from the current 70 percent to about 85 percent in 1988 and 1989. The increase in recovery occurs despite spending increases and is the result of a reduction in the Trust Fund balance.

Table IV-2
Total Cost Recovery a/
(Millions of Current Dollars)

	1985	1988	1989
FAA Expenditures	$5235.6	$5803.0	$5943.0
Private Sector User Contributions:			
Taxes	$2851.4	$3450.1	$3715.1
Trust Fund Interest	746.3	750.4	767.7
Reduction in Trust Fund Balance	85.8	762.4	598.8
Total b/	$3683.5	$4962.9	$5081.6
Percent Recovery	70%	85%	85%

a/ Projected figures are based FY 1988 FAA budget submission.

b/ Total may not equal sum of parts due to rounding.

B. Current Cost Recovery by User Group

Cost recovery based on current tax collections for major user groups--air carriers, general aviation, and the public sector--and detailed user group categories under the full cost allocation method is reported in Table IV-3. The first two columns of this table indicate allocated costs and user tax revenue collected from each group. The next two columns give total and per operation surplus or deficit--tax revenues less allocated costs. The last column provides the rate of cost recovery--tax revenues divided by allocated cost--for each user group.

Table IV-3
Cost Recovery By User Group: 1985
(Dollars in Millions)

User Group	1985 Cost of Service a/	1985 Taxes	Surplus/ (Deficit) Total	Surplus/ (Deficit) Per Op b/	Percent Recovery
Air Carrier					
Domestic	$2,176.0	$2,419.0	$243.0	$26.90	111.2%
International	121.2	108.3	(12.9)	(32.33)	89.4
Freight	122.9	134.1	11.2	15.99	109.1
Commuters	713.0	89.8	(623.2)	(108.82)	12.6
Total c/	$3133.1	$2751.2	$(381.9)	($24.08)	87.8%
General Aviation					
Air Taxi	131.7	$12.7	($119.0)	($40.26)	9.6%
Piston	683.0	23.5	(659.5)	(21.64)	3.4
Turbine	520.2	60.9	(459.3)	(110.98)	11.7
Rotor	63.8	3.0	(60.8)	(28.62)	4.7
Total c/	$1398.7	$100.2	($1298.6)	($32.71)	7.2%
Public Sector	$703.8	$1591.0	$887.2	$287.42	226 1%

a/ Based on Full-Cost-Allocation method.

b/ Expressed in dollars.

c/ Total may not equal sum of parts due to rounding.

Air carrier revenues in 1985 were nearly sufficient to recover all costs--about 88 percent--allocated to this group. For general aviation, recovery was about 7 percent of allocated costs. The 226 percent recovery from the public sector results from General Fund appropriations for FAA expenditures substantially exceeding costs allocated to the public sector.

The detailed user group estimates reveal significant variation in recovery within the major groups. These estimates show that the FAA fully recovers the cost of providing service to domestic and freight air carriers and obtains nearly full recovery from international air carriers. Only about 13 percent of commuter costs are recovered, however. This occurs because commuters impose costs per flight on the airspace system comparable to those of air carriers but generate much less revenue per flight because of the small number of passengers carried and the relatively short trip lengths. This is partially offset by two factors. First, commuters use more tower services relative to ARTCC services than air carriers and tower services are cheaper to produce than ARTCC services. Second, the per mile cost of commuter tickets is much higher than for air carriers.

Costs of providing services to all general aviation groups are largely unrecovered. For general aviation piston aircraft, only about 3 percent of costs were recovered and business and other turbine engine aircraft paid only 12 percent of their cost burden. And air taxis and rotor aircraft contributed 10 and 5 percent, respectively, of their cost burden in 1985. The cost burden on a per operation basis shows considerable

variations with the deficit at $22 dollars per operation for the smaller piston aircraft compared to $111 per operation for business and other turbine aircraft.

Recovery estimates for general aviation based upon the minimum general aviation cost allocation are reported in Table IV-4. Overall recovery from general aviation remains far short of full recovery, with only about 17 percent of costs being recovered. Revenues collected from air taxis and turbine users approach one-third of their allocated costs. Piston and rotor groups pay 7 and 14 percent, respectively. Under the minimum general aviation allocation, the difference in costs from the full allocation estimate, about $820 million, would need to be reapportioned among the other groups. Percent recovery from other users would decline depending upon this reapportionment.

Table IV-4
1985 Cost Recovery: Minimum General Aviation Allocation
(Dollars in Millions)

User Group	Cost of Service	Taxes Paid	Total Deficit	Per Op Deficit a/	Percent Recovery
Air Taxi	$48.3	$12.7	($35.6)	($23.3)	26.3%
Piston	323.6	23.5	(300.1)	(9.8)	7.3
Turbine	186.1	60.9	(125.2)	(30.5)	32.7
Rotor	21.8	3.0	(18.8)	(8.5)	13.8
Total b/	$579.9	100.2	($479.7)	(12.1)	17.3%

a/ Expressed in dollars.

b/ Total may not equal sum of parts due to rounding.

C. Projected Cost Recovery By User Group

Projected full cost recovery for 1988 and 1989 for the three major user groups under the Administration's 1988 budget, assuming the current tax structure, is reported in Table IV-5 together with the 1985 full cost allocation. Recovery from air carriers is expected to increase from 88 percent to about 103 percent. For general aviation, overall recovery remains at 7 percent. Public sector recovery declines from 226 percent to about 119 percent as a result of increased air carrier recovery and a draw down on the Aviation Trust Fund. Under the alternative minimum general aviation allocation, also reported in Table IV-5, general aviation's percent recovery remains at about 17 percent.

Future cost recovery percentages are not reported by detailed user group categories. Uncertainties associated with forecasting revenues and expenditures would introduce inaccuracies into disaggregated projections.

Table IV-5
Projected Cost Recovery By Major User Groups:
(Millions of Current Dollars)

User Group	1985	1988	1989
	Full Cost Allocation		
Air Carrier			
Cost	$3133.1	$3499.2	$3510.8
Taxes	2751.2	3343.2	3607.1
Percent Recovery	87.8	95.5	102.7
General Aviation			
Cost	$1398.8	$1516.5	$1510.0
Taxes	100.2	106.9	108.0
Percent Recovery	7.2	7.0	7.2
Public Sector			
Cost	$703.8	$766.5	$751.3
Appropriation	1591.0	870.1	890.6
Percent Recovery	226.1	113.5	118.5
	Minimum General Aviation Allocation		
General Aviation			
Cost	$579.9	$609.4	$627.9
Taxes	100.2	106.9	108.0
Percent Recovery	17.3%	18.0	17.2

V. EVALUATION OF EXISTING TAXES

In addition to revenues generated, aviation user charges vary with respect to equity, aviation safety impact, and other factors. This section evaluates the current set of user taxes with respect to several criteria.

A. Evaluation Criteria

Safety--The primary role for the Federal Airport and Airway System is to promote aviation safety. Aviation user charges should not have an adverse effect on aviation safety. Specifically, they should not discourage the use of safety services or otherwise create unsafe conditions.

Economic Efficiency--Charges should encourage efficient allocation of resources. This requires that taxes closely correspond to the cost of providing services.

Administrative Efficiency--Charges should be simple to understand, easy to accurately determine, enforceable, predictable, and minimize collection and compliance costs to all parties.

It should be noted that this criterion may at times conflict with the economic efficiency criteria. For example, economic efficiency might call for a set of relatively complex taxes to be levied on a large group of users whereas administrative efficiency would argue for a simpler tax system that would be cheaper and easier to administer.

Equity--The charge should be perceived as fair. Charges should be justifiable on the grounds of benefits received or costs of services provided. Further, charges should be related to ability to pay. If a group is subsidized, consideration must be given to the trade-off between the costs of subsidizing the group and the impact of withdrawing those services from the group.

Precedent--Previous experience with specific user charges will indicate the degree to which certain taxes meet the other criteria in specific situations, thus, reducing the risk associated with adopting any particular set of charges. Moreover, charges for which there is precedent will have smaller costs associated with their administration than new charges for which new administrative systems--both for payers and the collecting authority--must be established. Precedent will also indicate the degree of user acceptance of particular types of charges.

B. Evaluation

An evaluation of existing user charges with respect to the above criteria is summarized in Figure V-1 and detailed below.

Figure V-1
Evaluation of Aviation User Taxes

	Safety	Economic Efficiency	Administrative Efficiency	Equity	Precedent
Passenger Ticket Tax (8%)	No impact--tax cannot be avoided by reduced use of safety services	Passenger revenues imperfect measure of cost burden to system	Meets criteria.	May subsidize other users to limited degree. Also, existence of cross-subsidies among carriers.	Already exists
Freight Waybill Tax (5%)	No impact--taxes cannot be avoided by reduced use of safety services	Freight Revenues imperfect measures of cost burden to system	Freight transportation charges not easily verified	May subsidize other users	Already exists
International Departure tax ($3 per flight)	No impact--taxes cannot be avoided by reduced use of safety services	Number of passengers not directly related to system costs	Meets criteria	Current Rate requires limited subsidies	Already exists
General Aviation Gasoline Tax (12 cents per gallon)	Minor impact--Users have incentive to avoid tax by using, automotive gasoline	Quantity of fuel consumed imperfect measure of cost burden to system	Fuel sales not easily verified	Current rate requires subsidies	Already exists
General Aviation Jet Fuel Tax (14 cents per gallon)	No impact--taxes cannot be avoided by reduced use of safety services or fuel substitutes	Quantity of fuel consumed imperfect measure cost burden to system	Fuel sales not easily verified	Current rate require subsidies	Already exists

1. Air Carrier Taxes

The three air carrier taxes--the passenger ticket tax, the international departure tax, and the freight waybill tax--tend to promote safety. These are indirect taxes and as such, they do not establish a price for Federal Airport and Airway System safety services and, thus, cannot be avoided by reducing the volume of safety services used. Because these taxes cannot be avoided, they encourage carriers to use safety services as required.

Passenger ticket and freight waybill taxes are indirectly related to the cost incurred by the Federal Airport and Airway System per unit of service provided. Revenue from these taxes on any given flight depends on the average fare or freight charge and the number or passengers or volume of freight. These charges are, in turn, related to trip distance. Yet, the costs incurred by the FAA to provide services for a flight are constant irrespective of the number of passengers or freight volume carried, but do vary with the distance of the flight. A more severe problem arises with respect to the international departure tax, because the tax does not vary with the average fare--it is charged on a per-passenger basis.

The passenger ticket tax and the international departure tax are administratively efficient taxes. They are based on transactions which are easily observed, the amount of tax is easily determined, they are simple to pay, and the airlines' responsibility for collecting them is clear. These conditions also hold for the freight waybill tax, but to a lesser degree, domestic air freight transportation is not an easily identifiable transaction. Revenues are frequently combined with those obtained from other services such as ground transportation and is difficult to distinguish from the domestic leg of international freight transportation which is not taxable.

For the most part, air carrier taxes are equitable. As indicated in Table IV-3, taxes paid by domestic air carriers and freight carriers produce revenues sufficient to offset the costs that these user groups impose on the FAA. And a modest increase in the departure fee would make international operations compensatory. While revenues generated by commuters are far less than the costs they impose on the system, this may be equitable if a compensating share of cost is financed by air carriers An important function of commuters is to feed passengers to the air carriers. About 85 percent of commuter passengers transfer to air carriers. Under collection of taxes from passengers on the commuter leg of trips can be covered by over collection on the air carrier portion of trips resulting in total tax collections being approximately equal to the total cost of services provided to both commuters and air carriers

The passenger ticket tax is consistent with the notion that charges should reflect the ability to pay. Airlines pursue pricing policies designed to maximize the amount of revenue collected per flight. They do this by effectively charging higher prices to passengers who are willing to pay more. This is accomplished by offering different classes of service and different types of tickets with varying types of restrictions. The ticket tax, being a percentage of the fare paid, in effect also taxes passengers based on their willingness to pay.

All three taxes, because they are currently in existence, meet the precedent criteria.

2. General Aviation Taxes

The taxes on aviation gasoline and jet fuel also tend to promote safety because like the air carrier taxes, they are indirect. They do not place a price on safety services provided by the FAA, they cannot be avoided by reducing the volume of these services which are used. Thus, they promote safety by not discouraging the use of these services.

The general aviation gasoline tax, however, has a potential side effect which affects safety. Automotive gasoline may be substituted for aviation gasoline in some cases. An incentive exists to do so because it is cheaper than aviation gasoline and is taxed at a lower rate, when intended for use in automobiles. Under certain circumstances, substitution is considered safe and is legal. The FAA has issued Supplemental Type Certificates for certain aircraft which allow the legal substitution of

automobile fuel for aviation gasoline. In all other cases, such substitution is illegal and may be unsafe.[1/] To the extent that the aviation gasoline tax encourages such illegal substitution, it has an adverse safety impact. Note that this problem does not extend to the jet fuel tax because no similar substitute exists.

Revenues produced by the fuel taxes vary directly with hours flown and weight of aircraft. Also, larger, heavier aircraft, which burn more fuel, tend to be equipped with more sophisticated avionics and make greater use of the Federal Airport and Airway System. Accordingly, the fuel taxes can be considered to approximate relative use of airport and airway services. The approximation is probably better for the jet fuel tax than the aviation gasoline tax. Besides their tendency to be heavier, services used by turbine aircraft which burn jet fuel are more likely to closely vary with aviation mileage as a result of intensive use of air route traffic control services by these users.

Administration of the fuel taxes is somewhat less efficient than for the air carrier taxes. They are collected partly at the manufacturing level but primarily at the retail level. Retail collections involve numerous sellers. Moreover, a complex set of exemptions from the tax exist for

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1/ General Aviation Accidents Involving the Use of Improper Fuel--Special Study [4].

fuel used in certain activities including the extraction of natural resources, and crop dusting. Difficulties are associated with accurately monitoring this process.

From an equity viewpoint, these taxes do not yield enough revenue to cover the costs of services provided by the FAA. As indicated in Table IV-3 and IV-4, cost recovery was 7 or 17 percent depending on the cost recovery method used. However, the depressed state of the general aviation industry suggests that general aviation users overall lack the ability to pay the significantly higher taxes that would be required to achieve full cost recovery from this group.

Both fuel taxes are in existence and, thus, meet the precedent criteria.

C. Summary

From an overall perspective existing taxes meet the evaluation criteria. Of significant importance is their role in encouraging aviation safety. In general, these taxes do not encourage unsafe behavior or reduce the utilization of necessary safety services. The air carrier taxes, which account for about 96 percent of total revenue collections, also score well with respect to administrative efficiency and equity. And because all taxes are currently in place, their continuance does not involve start up cost on the part of the public or the government.

VI. CONCLUSION

Allocated cost shares in 1985 were approximately equal to 1978 allocations. Under the full cost allocation, air carrier cost responsibility in 1985 was about 60 percent, compared to 58 percent in 1978. General aviation's cost share was 27 percent, equal to its 1978 cost share. And the public sector's cost responsibility was 13 percent, down only slightly from 15 percent in 1978. This relative stability occurred despite substantial changes in the aviation industry, including deregulation of air carriers and a prolonged depression in general aviation, and changes in FAA operating procedures. Under the minimum general aviation cost allocation, which attributed only the incremental costs of providing services to general aviation over and above the costs of serving other users, general aviation was responsible for about 11 percent of total FAA costs.

Projections of future cost responsibility also show no dramatic changes. Under full allocation the air carrier share is expected to increase to 63 percent by 1997 while the general aviation and public sector shares decline 1 percent and 2 percent to 26 percent and 11 percent, respectively. The minimum general aviation allocation also remains stable at about 11 percent. These small shifts are primarily attributable to forecast growth patterns--strong growth for air carriers (5.3 percent annually) and little or no growth for general aviation and the public sector--through 1997 and FAA productivity improvements resulting from capital investments being made under the National Airspace System Plan.

Cost recovery from the private sector in 1985, considering only revenues from user taxes, amounted to about 54 percent of FAA expenditures. When considering total user contributions--tax revenues and other trust fund expenditures--recovery came to about 70 percent. For major user group categories, considering only tax revenues, recovery under the full allocation method was about 88 percent for air carriers, 7 percent for general aviation, and 226 percent for the public sector. Under the minimum general aviation allocation method, general aviation recovery was about 17 percent.

The 1988 and 1989 expenditure proposal contained in the Airport and Airway Enhancement Act of 1987 will provide for continued aviation safety, modernization of the National Airspace System, increasing airport capacity, and expanding air traffic control services to meet growing demand for air traffic control services. These expenditures can be funded from aviation user taxes, interest accruing to the Aviation Trust Fund, existing Trust Fund balances, and General Fund appropriations. Provided that proposed expenditure levels and user taxes are in place, private sector spending will cover about 85 percent of airport and airway system costs, about the same level of the private sector cost responsibility.

The existing aviation user fees are shown to have little if any impact on safety. Also, the taxes are relatively easy to administer and are generally fair. A primary advantage of the existing taxes is that they have been tested and users are accustomed to them. Under this set of taxes, full recovery from current taxes of costs to provide services to air carriers will be achieved. Recovery of costs from current taxes to provide services to general aviation will continue to fall short, remaining at about 7 percent under the full allocation and 17 percent under the general aviation minimum allocation.

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