

AD-A188 685 ALLOCATION OF FUTURE FEDERAL AIRPORT AND AIRWAY COSTS

1/2

(U) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC

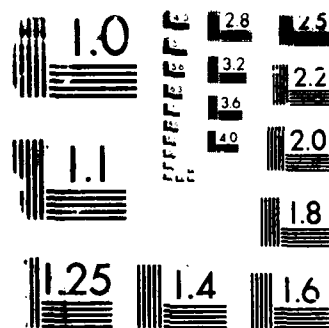
OFFICE OF AVIATION POLICY AND PLANS D E TAYLOR ET AL

DEC 86 FAA-APO-87-12

F/G 5/1

ML

[illegible]



RESOLUTION TEST CHART



US Department
of Transportation

**Federal Aviation
Administration**

Office of Aviation Policy
and Plans

Washington, D.C. 20591

2

DTIC FILE COPY

AD-A188 685

Allocation of Future Federal Airport and Airway Costs

DTIC
ELECTE
DEC 08 1987
S D

DISTRIBUTION STATEMENT A

Approved for public release;
Distribution Unlimited

FAA-APO-87-12

December 1986

This document is available to the
public from the National Technical
Information Service, Springfield,
Virginia 22161.

87 11 30 131

1. Report No. FAA-APO-87-12	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle Allocation of Future Federal Airport and Airway Costs		5. Report Date December 1986	
		6. Performing Organization Code FAA (APO-220)	
7. Author(s) Daniel E. Taylor, Frank J. Berardino, Richard S. Golaszewski, and Ira R. Greenstein		8. Performing Organization Report No.	
9. Performing Organization Name and Address Office of Aviation Policy and Plans Federal Aviation Administration Department of Transportation Washington, D.C. 20591		10. Work Unit No. (TRAIS)	
		11. Contract or Grant No.	
12. Sponsoring Agency Name and Address		13. Type of Report and Period Covered Final Report	
		14. Sponsoring Agency Code	
15. Supplementary Notes			
16. Abstract This document was prepared under the supervision of the Office of Aviation Policy and Plans of the Federal Aviation Administration (FAA). It provides technical documentation for the FAA's report, "Airport and Airway Costs: Allocation and Recovery in the 1980s," (FAA-APO-87-7). This volume focuses on the methods used to make future allocations of projected FAA costs. It presents projected cost allocation estimates for the period 1988 through 1997. The results reflect the full implementation of the National Air Space Plan (FAA's capital expenditure plan) and the staffing and productivity changes that will result from its implementation.			
17. Key Words Public Finance; Airport and Airway System, Cost Allocation, Cost Recovery; Aviation User Taxes		18. Distribution Statement Document is available to the public through the National Technical Information Service, Springfield, Virginia	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 113	22. Price

TABLE OF CONTENTS

	<u>Page</u>
SECTION 1.0 INTRODUCTION	1
1.1 Purpose	1
1.2 Overview and Summary of Results . . .	1
1.3 Reference to Other Volumes.	8
1.4 Organization of the Remainder of This Volume	11
SECTION 2.0 METHODOLOGY.	12
2.1 Projection and Allocation of Major Budget Categories	12
2.2 1992 Cost Functions	12
2.3 Amortization of F&E	17
SECTION 3.0 REVIEW OF RESULTS.	22
3.1 Comparison of 1985 and 1997 Allocations	22
3.2 Detailed User Allocations for 1985, 1992 and 1997	26
3.3 Minimum GA Allocations.	37
SECTION 4.0 DETAILED RESULTS	39
NOTES	88
APPENDIX A AMORTIZATION OF F&E	



ion For	
CRA&I	☒
TAB	☐
educed	☐
ation	
tion/	
Availability Codes	
Dist	Avail and/or Special
A-1	

LIST OF TABLES AND FIGURES

	<u>Title</u>	<u>Page</u>
Table 1.1	Inflation Rate Assumptions.	3
Table 1.2	Indices of Future Activity.	4
Figure 1.1	FAA Budget Projections.	7
Figure 1.2	Allocation of FAA Costs - Users	9
Figure 1.3	Allocation of FAA Costs - Public.	10
Table 2.1	Projection and Allocation of Major Budget Categories.	14
Table 2.2	Comparison of 1984 and 1992 Operating Site Costs.	18
Table 2.3	Key Components of Amortization Analysis	20
Table 3.1	Allocation of Major FAA Cost Centers. 1985 and 1997	24
Figure 3.1	Allocation of FAA Costs - Users	28
Figure 3.2	Allocation of FAA Costs - Public.	29
Figure 3.3	Allocation of FAA Costs - Users	32
Figure 3.4	Allocation of FAA Costs - Public.	33
Figure 3.5	Allocation of FAA Costs - Users	35
Figure 3.6	Allocation of FAA Costs - Public.	36
Figure 3.7	Minimum GA Allocation	38
Table 4.1	1986 Allocation Regulatory Costs Allocated to Users.	41
Table 4.2	1986 Allocation Regulatory Costs Allocated to Public	42
Table 4.3	1986 Minimum GA Allocation.	43
Table 4.4	1987 Allocation Regulatory Costs Allocated to Users.	45

LIST OF TABLES AND FIGURES (Continued)

	<u>Title</u>	<u>Page</u>
Table 4.5	1987 Allocation Regulatory Costs Allocated to Public.	46
Table 4.6	1987 Minimum GA Allocation	47
Table 4.7	1988 Allocation Regulatory Costs Allocated to Users	49
Table 4.8	1988 Allocation Regulatory Costs Allocated to Public.	50
Table 4.9	1988 Minimum GA Allocation	51
Table 4.10	1989 Allocation Regulatory Costs Allocated to Users	53
Table 4.11	1989 Allocation Regulatory Costs Allocated to Public.	54
Table 4.12	1989 Minimum GA Allocation	55
Table 4.13	1990 Allocation Regulatory Costs Allocated to Users	57
Table 4.14	1990 Allocation Regulatory Costs Allocated to Public.	58
Table 4.15	1990 Minimum GA Allocation	59
Table 4.16	1991 Allocation Regulatory Costs Allocated to Users	61
Table 4.17	1991 Allocation Regulatory Costs Allocated to Public.	62
Table 4.18	1991 Minimum GA Allocation	63
Table 4.19	1992 Allocation Regulatory Costs Allocated to Users	65
Table 4.20	1992 Allocation Regulatory Costs Allocated to Public.	66
Table 4.21	1992 Minimum GA Allocation	67

LIST OF TABLES AND FIGURES (Continued)

	<u>Title</u>	<u>Page</u>
Table 4.22	1993 Allocation Regulatory Costs Allocated to Users.	69
Table 4.23	1993 Allocation Regulatory Costs Allocated to Public	70
Table 4.24	1993 Minimum GA Allocation.	71
Table 4.25	1994 Allocation Regulatory Costs Allocated to Users.	73
Table 4.26	1994 Allocation Regulatory Costs Allocated to Public	74
Table 4.27	1994 Minimum GA Allocation.	75
Table 4.28	1995 Allocation Regulatory Costs Allocated to Users.	77
Table 4.29	1995 Allocation Regulatory Costs Allocated to Public	78
Table 4.30	1995 Minimum GA Allocation.	79
Table 4.31	1996 Allocation Regulatory Costs Allocated to Users.	81
Table 4.32	1996 Allocation Regulatory Costs Allocated to Public	82
Table 4.33	1996 Minimum GA Allocation.	83
Table 4.34	1997 Allocation Regulatory Costs Allocated to Users.	85
Table 4.35	1997 Allocation Regulatory Costs Allocated to Public	86
Table 4.36	1997 Minimum GA Allocation.	87
Table A.1	User Taxes to Fund the Project.	7
Table A.2	Alternative F&E Amortization Methods: An Example.	8
Table A.3	Alternative F&E Amortization Methods: The Two Period Case	11

SECTION 1.0

INTRODUCTION

1.1 Purpose

The purpose of the cost allocation study is to allocate current and future costs among users of the FAA's airport and airway systems. These cost allocations provide information useful in analyzing user taxes to cover the period 1988-1997.

The results presented in this volume are based upon FAA plans for NASP implementation as of the Fall of 1985. These plans included projected changes in staffing and productivity which are reflected in future operating costs, and user allocations.

The present volume reports the results of the allocation of future FAA costs among users. Volume 1 presents an extensive discussion of the methodologies employed in this study, together with detailed presentation of the results for the year 1985.

1.2 Overview and Summary of Results

The allocations of future FAA costs are based upon the same methodologies presented in Volume 1. FAA airport and airway costs are allocated to users by applying the concept of avoidable costs. These are the costs that would be avoided by the FAA if a user group discontinued its use of all or part of the FAA airport and airway systems. Any costs which are jointly attributable to

users are allocated among them based upon Ramsey Pricing which minimizes the distortion in aviation markets resulting from the allocation of joint costs.

This study presents two types of allocations: a full cost allocation of the entire FAA budget, and an estimated minimum general aviation allocation. The main distinction between the two types of allocations is that in the latter case, general aviation users are not assigned a share of joint costs. Otherwise, the methodologies employed are nearly identical.

In developing these allocations for the future, there are four major issues that had to be addressed: inflation, changes in activity, the effect of the National Airspace System Plan (NASP) on productivity, and the amortization of facilities and equipment (F&E). Each of these issues is briefly addressed below.

1.2.1 Inflation

Future inflation will affect not only the size of FAA budgets, but also the allocation of costs among users. This is true because not all users consume the same mix of FAA services. For example, general aviation users of the airport and airway system consume relatively more air traffic control services than facilities and equipment services. Higher inflation in the cost of operating ATC sites would have a more immediate impact on general aviation's share of the FAA budgets than an increase in the cost of F&E. The reverse would be true of air carriers, which consume a relatively large share of F&E.

Shown in Table 1.1 are the inflation assumptions used for future cost projections.

Table 1.1
INFLATION RATE ASSUMPTIONS

	<u>1985-1992</u>	<u>1993-1997</u>
Labor	3.5%	4.6%
Other Cost Centers	FAA Projections	4.6%

The 3.5 percent annual inflation rate for the period 1985-1992 is consistent with the most recent 1986 Economic Report of the President. For the years following 1992, the producers price index projections made by Wharton Econometric Forecasting Associates¹ were employed. This latter set of projections was selected because government labor costs seem to closely correspond to changes in this index. For example, over the period 1975 through 1985, general government salaries increased by a rate almost identical to the producers price index.

The FAA budget office makes projections of the other FAA cost centers--F&E, R&D, and airport grants, as well as the total O&M budget. These projections were used to govern planned spending levels for these cost centers for the period 1985 through 1992. Thereafter, projections were unavailable, and future costs were assumed to increase at the same rate as FAA labor.

1.2.2 Activity

The FAA makes projections of activity at its operating sites. These projections were used in the present study, and are summarized in Table 1.2.

Table 1.2

INDICES OF FUTURE ACTIVITY
(1985=100)

	<u>1992</u>	<u>1997</u>
ARTCCs	125.4	139.1
FSSs	114.5	123.3
TRACONs	121.8	135.7
Towers	134.3	150.3

As can be seen, the most dramatic growth is projected to take place at FAA towers, where activity will increase by 50 percent by the year 1997 over 1985 levels. Thirty-nine percent increases are forecast at ARTCCs while TRACONs should see increases of nearly 36 percent. FSS services are predicted to grow 23 percent during the same time period.

1.2.3 Effect of NASP Productivity

By the year 1992, new technologies contemplated under the National Airspace System Plan should be initiated.² The new technologies put into place will affect both air traffic control labor productivity, and also the productivity of those FAA personnel performing maintenance at ATC facilities. In order to identify the impacts of NASP productivity, cost functions for the

year 1992 were developed for ARTCCs, FSSs, TRACONs and towers. These cost functions show the relationship between projected cost and activity, and more specifically identify future marginal costs.

The result of this analysis shows that for the most part new technologies will lower unit costs of production at FAA facilities. For users of each type of facility, the cost savings (in constant dollars) would approximate the following:

ARTCCs:	22-25 percent
FSSs:	36 percent
TRACONs:	5 percent
Towers:	9-34 percent

Details of these results can be found in Section 2.2.

1.2.4 Amortization of F&E

One methodological change for future years (as opposed to those presented in Volume 1) pertains to the amortization of F&E. The 1978 FAA cost allocation study did not amortize F&E; instead, expenditures were expensed in a single year. Expensing may lead to a misidentification of actual attributable costs because capital is consumed over time and not in a single year. For example, suppose the FAA spends money on capital equipment at a certain site in one year and then spends nothing on capital in the next three years. If users pay for that capital in the same year, then all future users would enjoy its benefits free of charge. Arguably, such a treatment is inequitable if it does not reflect the actual consumption of the capital services produced.

In the present study, future FAA F&E budgets are amortized over a 13 year period, which corresponds to the average

replacement rate of airway capital equipment. Near-term F&E costs are relatively large by historic standards. The amortized F&E results were, therefore, accumulated in such a way as to estimate a constant annual F&E budget over the period. This was done to estimate future revenues to accommodate relatively high F&E costs attributable to near-term NASP expenditures. Details on this procedure can be found in Section 2.3 and in Appendix A of this volume.

1.2.5 Summary of Results

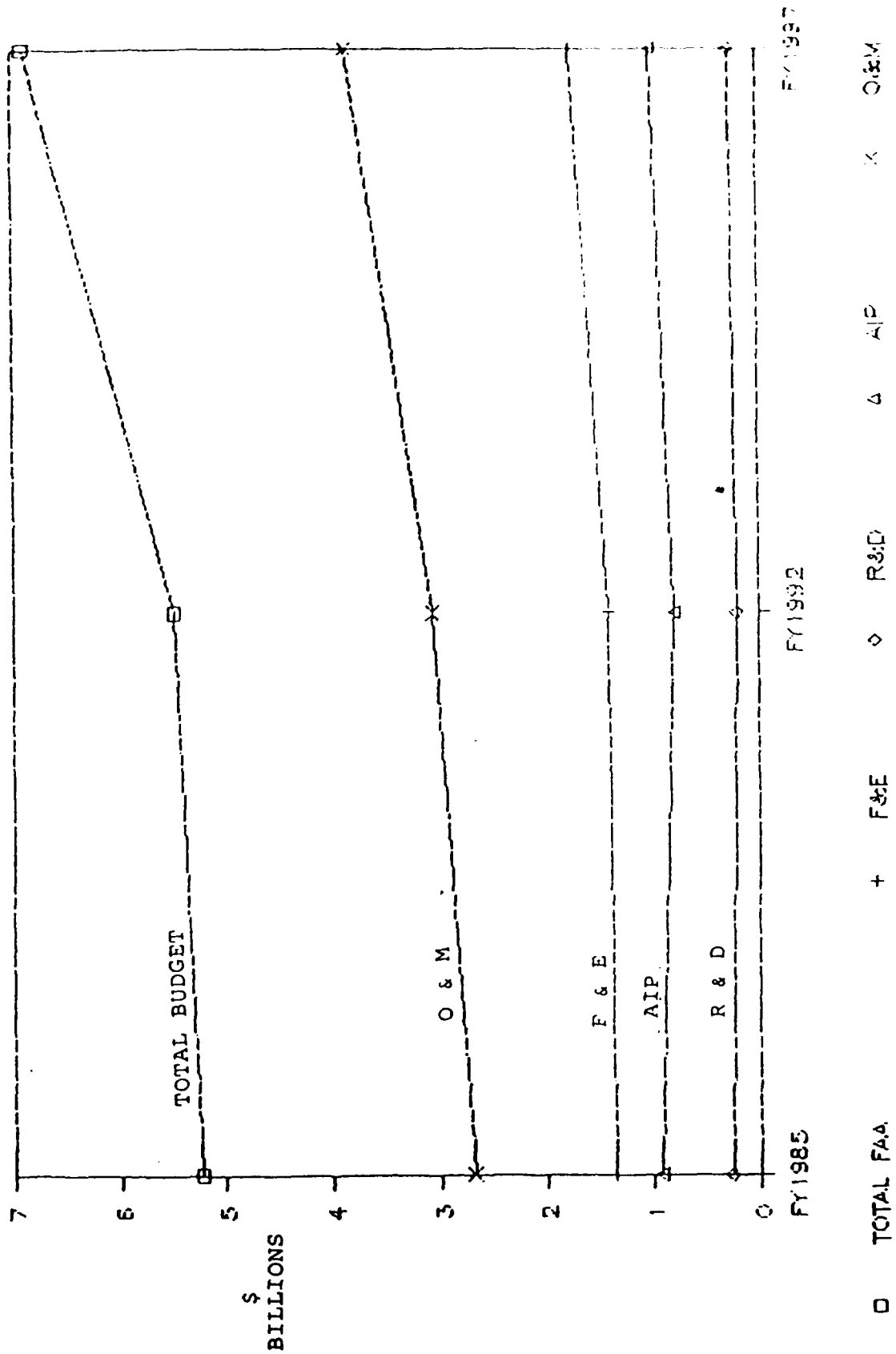
Shown in Figure 1.1 are the projections of the major FAA cost centers over the period 1985 through 1997. During that time period, these budgets are projected to grow at the following annual rates:

O&M	3.1 percent
F&E	2.3 percent
R&D	0.0 percent
Airport Grants	0.7 percent

During that same time period, the shares of air carriers and general aviation users are projected to increase slightly, while the shares of public sector users are projected to fall. The relative decline in the public sector's share of the FAA budget reflects the projected constancy of military activity at FAA operating sites.³ During the period 1985 through 1997, air carrier and general aviation operators will increase activity at all FAA operating sites. As a result, the relative share attributable to the public sector, which is dominated by the military, declines.

Figure 1.1

FAA BUDGET PROJECTIONS



The actual allocations for the years 1985, 1992, and 1997 are shown in Figures 1.2 and 1.3. The former chart pertains to the case where regulatory costs are allocated to users, while the latter pertains to the situation where these costs are allocated to the public. The relative decline in public sector shares is evident in both charts.

Finally, the minimum general aviation allocation is projected to increase from approximately 11 percent to approximately 14 percent in the time period 1985 through 1997. This occurs for two reasons: first, because of the relative decline in military activity, and second because the increase in general aviation activity causes a relative increase in the size of the minimum GA allocation over time. The latter occurs because general aviation consumes a relatively large share of air traffic services (ATC) relative to other services produced by the FAA. ATC services are projected to grow more rapidly than other demands on FAA resources.

1.3 References to Other Volumes

Descriptions of the databases which form the basis for the cost allocations reported in this volume can be found in Volume 6. Detailed discussions of the methodology are presented in Volume 1. User tax options based on results in Volumes 1 and 2 are reported in Volume 4.

Separate volumes have also been developed on public sector cost categories and on econometric cost estimation techniques. These are Volumes 3 and 5 respectively.

Figure 1.2

ALLOCATION OF FAA COSTS REGULATORY COSTS ALLOCATED TO USERS

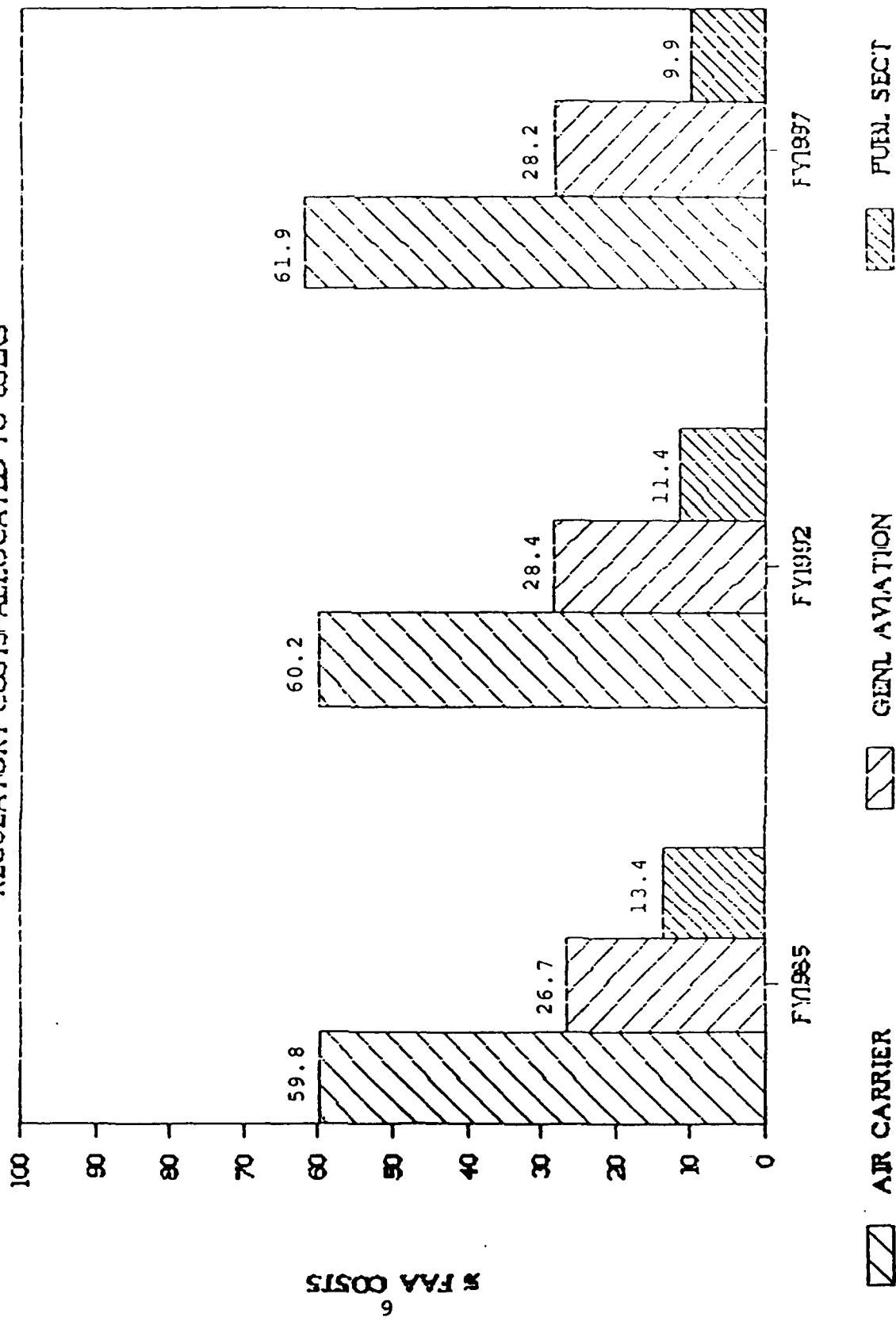
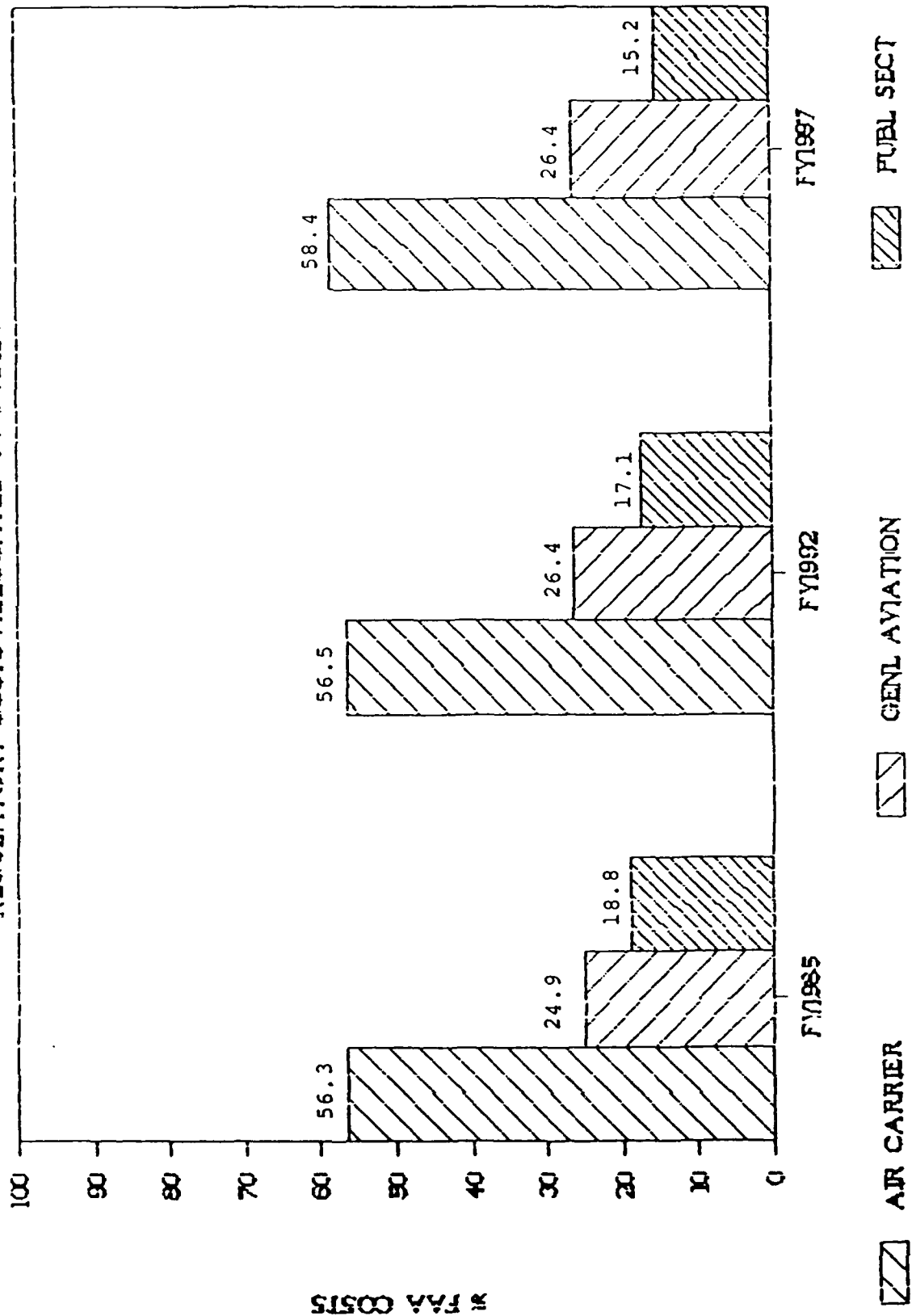


Figure 1.3

ALLOCATION OF FAA COSTS REGULATORY COSTS ALLOCATED TO PUBLIC



1.4 Organization of the Remainder of This Volume

Section 2 reviews the methodologies used to project FAA budgets and allocations in the future. Included are discussions of the 1992 cost functions, and the method for amortizing F&E. Section 3 presents a review of future allocations for the entire budget, and subcategories of the budget. Detailed presentations of results for each of the years from 1986 through 1997 are found in Section 4. Included here are the allocations of both direct and indirect cost to each of the ten user groups included in this study, as well as a detailed presentation of the minimum general aviation allocation.

Also included in this volume as Appendix A is a more rigorous examination of the reasons and methods for amortizing F&E.

Section 2.0

METHODOLOGY

This section reviews the methodology of the allocations of the FAA budgets for the years 1985 through 1997. The focus in this report is on the methods for projecting budgets and allocations into the future. Details of the the other aspects of the methodology are presented in Volume 1.

The discussion begins with a general overview of methodologies. This is then followed by a discussion of the 1992 econometric results, and the methodology employed to amortize FAA F&E. Further details of the last topic are presented in Appendix A.

2.1 Projection and Allocation of Major Budget Categories

Shown in Table 2.1 is a summary of the methods for projecting and allocating major FAA budget categories in the future. The allocation method for future years is the same as in the base year 1985. Included in this chart are the definitions of each budget category, the allocation methodology employed, and the projection methods for two time periods: 1986-1992, and 1993-1997.

The FAA budget is divided into four general budget categories:

- o Operations and Maintenance (O&M),
- o Facilities and Equipment (F&E),
- o Research and Development (R&D),
- o Airport Grants.

Each of these general budget categories is projected in the same manner as in the base year 1985. For the period 1986 through 1992, FAA budget projections were employed. For the period 1993 through 1997, a 4.6 percent annual inflation rate was assumed. The latter corresponds to the projected increase in the producer's price index in the same period.⁴

The O&M budget contains a variety of activities which have been segregated into subcategories: operating sites, safety regulation, NAVAID maintenance, and indirect costs. The projection methods for these O&M categories are also discussed in Table 2.1. As was noted previously, labor costs are assumed to increase at a 3.5 percent annual rate in the earlier time period, and then at the 4.6 percent rate between 1993 and 1997. Other notable aspects of the projection of these budget subcategories are as follows:

- o Operating Sites: Future costs of operating sites depend upon the realization of efficiency benefits of the NASP. These efficiency benefits are identified through the estimation of 1992 cost functions for each type of operating site. These cost functions are discussed in greater detail in Section 2.2. The efficiencies are assumed to begin in FY86, and are phased in evenly until they are fully realized in 1992.⁵
- o NAVAID Maintenance: This subcategory is affected by reductions in the cost of maintaining air traffic control systems attributable to new technologies being put in place.

Table 2.1

PROJECTION AND ALLOCATION OF MAJOR BUDGET CATEGORIES

Budget Category	Definition	Projection Method 1986-1992	Projection Method 1993-1997	Allocation Methodology
Total O&M	Includes operating sites, regulatory activities, maintenance and overhead items	FAA budget projections	4.6% annual inflation	Subcategories are allocated individually
o Operating Sites	Includes labor cost of operating and maintaining ARTCCs, FSSs, Towers and TRACONS	Based on 1984 and 1992 cost functions, FAA activity forecasts, and projected annual inflation of 3.5%	Based on 1992 cost functions, FAA activity forecasts, and 4.6% annual inflation	Variable costs allocated as the product of marginal costs and user group activity. Site joint costs allocated based on Ramsey pricing
o Safety Regulations	Includes aviation standards inspection and airport security, and the regulation of airports	Projected annual inflation of 3.5%	4.6% annual inflation	Allocated as a joint cost, or to the public sector depending on the scenario
o Navaid Maintenance	All maintenance labor not attributable to operating sites	Projected annual inflation of 3.5%, and effect of NASP on maintenance costs	4.6% annual inflation	Allocated as a joint cost
o Indirect Cost	Headquarters and regional administration, procurement and other indirect items	A residual based on (Total O&M - operating sites - safety regulations - Navaid maintenance)	A residual based on (Total O&M - operating sites - safety regulations - Navaid maintenance)	Allocated to other cost centers based on allocation statistics; and then to users as a joint cost
F&E	Airway capital costs	FAA budget projection; amortization schedule	4.6% annual inflation	Allocated to categories of users based on purpose of projects; amortized; and then allocated as a joint cost
R&D	Applied research to improve ATC services, or safety	FAA budget projections	4.6% annual inflation	Allocated to categories of users based on purpose of projects and then allocated as a joint cost
Airport Grants	Grants made to airports primarily for capital improvements	FAA budget projections.	4.6% annual inflation	Allocated to categories of users based on purpose of projects, and then allocated as a joint cost

- o F&E: As was noted previously, future F&E budgets are affected by the amortization techniques developed for this project.

2.1.1 Allocation

Also shown in Table 2.1 are the allocation methodologies employed in the study. The methods employed are exactly the same as those used in the FY1985 allocation, except for the amortization of F&E. For example, the variable costs at ATC operating sites are allocated by estimating the marginal cost for each user group, multiplying that cost by the group's activity, and summing over all user groups. Joint costs at these sites are allocated using Ramsey Pricing. Funds for research and development are allocated to user categories to the extent made possible by the stated purposes of the projects. Projects which cannot be allocated in this way are treated as joint costs. Detailed descriptions of these methodologies, and the others listed in the table can be found in Volume 1 of this study. The methodology for amortizing F&E expenditures is detailed in Section 2.3 of this volume.

The discussion now turns to two issues that are important in understanding the future allocations. The first is the 1992 cost functions for FAA operating sites; the second pertains to the reasons and methods for the amortization of F&E.

2.2 1992 Cost Functions

In order to evaluate the impact on labor productivity of the installation of new equipment, it was necessary to estimate cost

functions for ARTCCs, FSSs, TRACONS, and towers which reflected the impact of the new technology. The same techniques were used to estimate these cost functions as those developed in Volume 1. Only new datasets were required to develop these cost functions.

The data required to develop these cost functions are briefly described below:

- o ATC Labor: As part of the planning process for the NASP, FAA has developed new staffing standards for the new facilities. These staffing standards were used to derive estimates of air traffic control labor at each operating site.
- o Airway Facility Labor: As part of the planning process for the NASP, FAA has developed a forecast of the Facility Master File which identifies the location of all equipment at ATC operating sites. The number of labor hours to maintain each piece of equipment in the forecast FMF was used to develop approximations of the full-time equivalent personnel required to maintain each ATC operating site.
- o Labor Costs: FAA labor costs were assumed to increase at a 3.5 percent annual rate in the period 1985 through 1992, and 4.6 percent in the latter period.
- o Leased Telecommunications: One of the effects of the NASP will be to reduce the FAA's dependence on leased telecommunications. The relatively minor costs exhibited in 1984 should decline by 1992. No data were available on these costs in the future.

- o Activity: FAA projections of future activity were employed; adjustments to these forecasts were made in the same manner as described in Volume 1.

The results of the econometric analysis are shown in Table 2.2 together with a comparison of the results for 1984. All of the estimates are expressed in 1986 dollars. In general, the effect of the new technology will be to reduce the unit cost of FAA output. In part, the reduced unit cost may be due to the "larger size" of each facility. For example, FSS locations are scheduled to be reduced in number, and increased in size by 1992. The combination of improved technology, and larger sized facilities may account in part for the reduced unit costs. It also may be reflected in the increases in joint costs at each site reflected in the 1992 results.⁶

It should be noted that the econometric results for 1992 are used in both the 1985-1992 time period, and the 1993-1997 time period. In the former, it is assumed that one-seventh of the circa 1992 equipment is installed in each of the years from 1986 through 1992.⁷ A proportional increase in labor productivity is assumed to coincide with installation. In the latter time period, the 1992 econometric results are used exclusively, and the marginal costs are increased each year to account for inflation.

2.3 Amortization of F&E

The F&E cost category in the FAA budget includes virtually all of the capital expenditures made for the air traffic control system each year. By definition, capital assets are those which

Table 2.2

COMPARISON OF 1984 AND 1992 OPERATING SITE COSTS
(1986 Dollars)

	ARTCCs (Handles)		FSSs (Services)		TRACONS (TSOs) *		Towers (Operations)	
	1984	1992	1984	1992	1984	1992	1984	1992
Marginal Costs								
- Air Carrier	\$14.42	\$10.86	\$6.69	\$4.27	\$13.25	\$12.55	\$8.19	\$8.48
- Commuters	\$14.42	\$10.86	\$6.69	\$4.27	\$13.25	\$12.55	\$1.93	\$1.75
- General Aviation	\$13.07	\$10.86	\$6.69	\$4.27	\$3.56	\$4.72	\$1.49	\$1.16
- Military	\$22.05	\$17.29	\$6.69	\$4.27	\$13.25	\$12.55	\$4.61	\$3.05
Joint Costs Per Site	\$4,225,062	\$5,865,511	\$93,066	\$477,317	\$880,073	\$1,308,847	\$400,155**	\$519,151**
R-Squared	.896	.872	.929	.897	.867	.804	.555	.763

* TSO's equal operations, seconds and overs at TRACON's.

** Level 1 Tower joint costs are \$85,133
lower in 1984 and \$252,713 lower in 1992.

are not fully consumed by users in a single year. It is desirable to identify how much capital is consumed in a year by each user group in order to evaluate both the varying consumption patterns exhibited by users over time, and the impact of F&E expenditure patterns on user group consumption.

In the present study, future users will be allocated the costs of capital projects as they use them. This is a departure from traditional financial reporting, which is typified by historic depreciation schedules. The approach proposed here is more consistent with the problem faced by the FAA: to account for the consumption of capital in such a way that it can be replaced as it wears out.

It is important to focus on two key components of capital consumption: depreciation and the cost of capital. The former represents the value of capital consumed in a particular time period. Depreciation should be valued to reflect the replacement cost the asset. If an existing asset put in place in year one must be replaced in year three, the cost of that replacement would be affected by both technological change and by the rate of inflation. If replacement costs are not considered, insufficient funds may be set aside to replace the capital as it wears out.

The cost of capital represents the opportunity cost of employing the capital in FAA facilities instead of employing it elsewhere. The time value of money embedded in a capital project is a real cost since there are alternative uses of those funds. Therefore, capital consumption should include not only depreciation, but also the cost of capital.

Finally, since user taxes will be based in part upon the amortization schedule to be developed in this study, it is desirable that the pattern of payments made for recovery be relatively even. It would be difficult to administer taxes which vary year-to-year.

In order to accommodate these concerns, the following amortization procedures were employed in this study.

- o Step 1: Projected future F&E expenditures were amortized in the future.
- o Step 2: The resulting yearly allocations were discounted back to the present time.
- o Step 3: A "mortgage" payment schedule was derived in order to make the annual F&E allocations even.

The effect of this procedure is to recognize the future consumption patterns of F&E, and to take specifically into account the replacement costs of capital, and the cost of capital. In order to allow for an even tax schedule over time, the amortization schedules are discounted back to the present time, and then an even schedule of F&E allocations is derived.

The key assumptions in this analysis are shown below in Table 2.3.

Table 2.3

KEY COMPONENTS OF AMORTIZATION ANALYSIS

Amortization Schedule	13 years
Cost of Capital	10 percent
Replacement Costs	FAA Future F&E Projections
"Mortgage" Rate	10 percent
Duration of Mortgage	1986-1997

The amortization schedule selected was 13 years. This is the approximate average useful life of FAA airway facilities and equipment, as evidenced by expenditure patterns over time.⁸ The cost of capital utilized in the analysis is 10 percent, which is the standard OMB discount rate. Replacement costs are based on projected FAA F&E budgets. The mortgage rate of interest is 10 percent, which was selected in order to be equal to the OMB discount rate, which is the opportunity cost of money to the government. The duration of the mortgage was for the period 1986 through 1997--the period of time over which the amortization technique is employed.

Details of the amortization procedure can be found in Appendix A of this volume. The discussion now turns to specific results for major FAA cost categories over the period 1985 through 1997.

SECTION 3.0

REVIEW OF RESULTS

This section of the report briefly reviews the changes in the allocation of major FAA budget categories and in the allocations to users over time. The purpose of this discussion is two-fold. First, user groups consume different amounts of the services produced by FAA cost centers. Examining these differences provides additional insight into the allocation of all FAA costs to user groups. Second, there are some changes in the distribution of costs among user groups forecast for the future. These changes are highlighted in the discussion below.

3.1 Comparison of 1985 and 1997 Allocations

The allocations for the major cost categories for 1985 and 1997 are shown in Table 3.1. Costs are allocated in each category to air carriers, general aviation, and the public sector. In those cases where ranges of results are shown, the allocations depend upon whether regulatory costs are allocated to users, or to the public sector. Air carrier and general aviation allocations are higher when regulatory costs are allocated to users; public sector allocations are higher when regulatory costs are allocated to the public sector.

One trend is apparent in the table. The public sector share of costs is declining over time. As noted in Section 1.0, this

occurs because military operations are forecast to remain almost constant in the future, while general aviation and air carrier operations will increase. The result is a relative decline in the costs attributable to the military, and therefore to the public sector.

What follows is a brief discussion of each of the major cost categories.

- o ARTCCs: The majority of these costs are attributed to air carriers who are the most intensive users of ARTCC facilities. Over time, the public sector shares decline, with the remainder being split approximately equally between air carriers and general aviation.
- o FSSs: The major beneficiaries of FSS services are general aviation users who are allocated the vast majority of these costs. Over time, air carriers' shares remain relatively constant. General aviation utilization of FSS services is forecast to grow in the future with the result that its share increases directly with the decline of the public sector's share.
- o Towers: The majority of tower costs are attributable to general aviation in both 1985 and 1997. The decline in the public sector's share is approximately evenly split between air carriers and general aviation.
- o TRACONS: The majority of TRACON costs are attributable to air carriers. By 1997, there is forecast to be a relative increase in the cost of serving general aviation at TRACON facilities, and an increase in general aviation activity at these

Table 3.1
ALLOCATION OF MAJOR FAA COST CENTERS
1985 and 1997

	-----1985-----			-----1997-----		
	<u>Air Carrier</u>	<u>GA</u>	<u>Public Sector</u>	<u>Air Carrier</u>	<u>GA</u>	<u>Public Sector</u>
<u>O&M</u>						
o ARTCCs	53.6%	24.0%	22.4%	57.0%	26.3%	16.7%
o FSSs	10.9	76.5	12.7	10.8	79.5	9.7
o Towers	17.3	65.9	16.8	20.8	67.9	11.3
o TRACONS	62.9	20.9	16.2	61.9	28.1	10.0
o NAVAID Maintenance	52.8	26.9	20.4	56.6	29.3	14.1
o Regulations	0-62.4	0-31.7	5.9-100.0	0-63.6	0-32.0	4.4-100
o Indirect Costs	46.8-51.3	27.3-29.1	19.6-25.9 25.9	50.1-54.9	29.1-31.1	13.9-20.8
<u>F&E</u>	71.3	16.3	12.4	78.6	13.7	7.7
<u>R&D</u>	83.7-88.1	5.1-7.5	4.4-11.3	70.8-75.6	14.8-17.3	7.1-14.4
<u>Airport Grants</u>	65.6	33.0	1.5	66.0	32.8	1.2

facilities. The result of these two trends is an increase in general aviation's share of TRACON costs, while the shares of both air carriers and the public sector users decline.

- o NAVAID Maintenance: The majority of these maintenance costs are attributable to air carriers. As the public sector's share declines over time, the shares of both air carriers and general aviation increase about equally.
- o Regulations: In the case where regulatory costs are allocated to users, the majority is attributable to air carriers. There is only a modest decline in the public sector's share over time which is split about equally between air carriers and general aviation. Under the scenario when regulatory costs are deemed to be in the public interest, the total budgets in both 1985 and 1997 are allocated to the public sector.
- o Indirect Costs: Indirect costs are allocated to other cost categories based upon allocation statistics, and then to users as a joint cost. The changes shown in the table are due to the expected constancy of military operations over the time period.
- o F&E: The key distinction between 1985 and 1997 results is that future F&E is amortized, while the 1985 results are not. This factor together with the expected decline in the public sector's share by 1997 results in a large increase in air carrier share of F&E in 1997. General aviation's share also declines by 1997.

- o R&D: The results shown in the table are due to the changes in the composition of R&D over time. Most near-term R&D projects are attributable to the air carriers. In the long run, however, a greater share is attributable to general aviation, and to the public sector (despite the expected decline in military operations).
- o Airport Grants: The allocations for airport grants are relatively constant over time. This is expected because the distribution of grants is assumed to be constant over time.

While reviewing the results in Table 3.1, it should be borne in mind that four of the cost categories account for most of the FAA budget: ARTCCs, TRACONS, F&E, and Airport Grants. The relative stability in these budgets accounts for the stability of the shares among the user groups over time.

3.2 Detailed User Allocations for 1985, 1992 and 1997

Allocations were made to ten user groups in the cost allocation study. In addition to the public sector costs attributable to the use of the airport and airway system by civil government and military users, some costs were also allocated to the public interest. These latter costs are also allocated to the public sector in the study. In this section, the allocations to the ten user groups and the public interest are shown for three years: 1985, 1992, and 1997.

The presentation is made through a series of bar charts.

Separate charts are presented for each of the three major user categories: air carriers, general aviation, and the public sector. Also shown with these charts are the total allocation to the major user categories, presented in the form of pie charts.

Two sets of charts are needed for each major user category. In all cases, the first chart pertains to the case where regulatory costs are allocated to users, while the second chart pertains to the scenario when regulatory costs are allocated to the public sector.

What follows is a discussion of the trends in the allocations to user groups over time.

3.2.1 Air Carriers

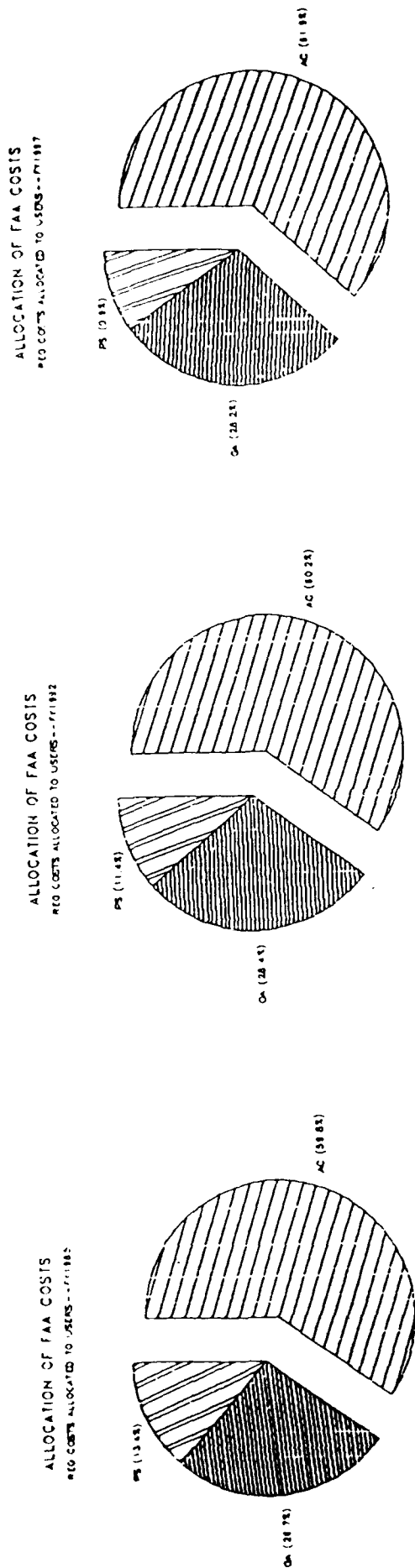
There are four air carrier user groups included in this study:

- o AC-D: domestic air carriers,
- o AC-I: international air carriers,
- o AC-F: freight air carriers,
- o COM: commuters.

The allocations for the three years of interest are shown in Figures 3.1 and 3.2. It is apparent in both charts that there is a substantial increase in the allocation of FAA costs to commuters over time. This trend is consistent with the expected rapid growth in commuter operations in the future, and is part of a longer secular trend in commuter growth which began with the deregulation of the airline industry.

Another obvious result in both Figures 3.1 and 3.2 is the dominance of total FAA costs attributable to domestic air carriers. This result is expected because these carriers are the

Figure 3.1



AIR CARRIER SHARES OF TOTAL FAA BUDGET

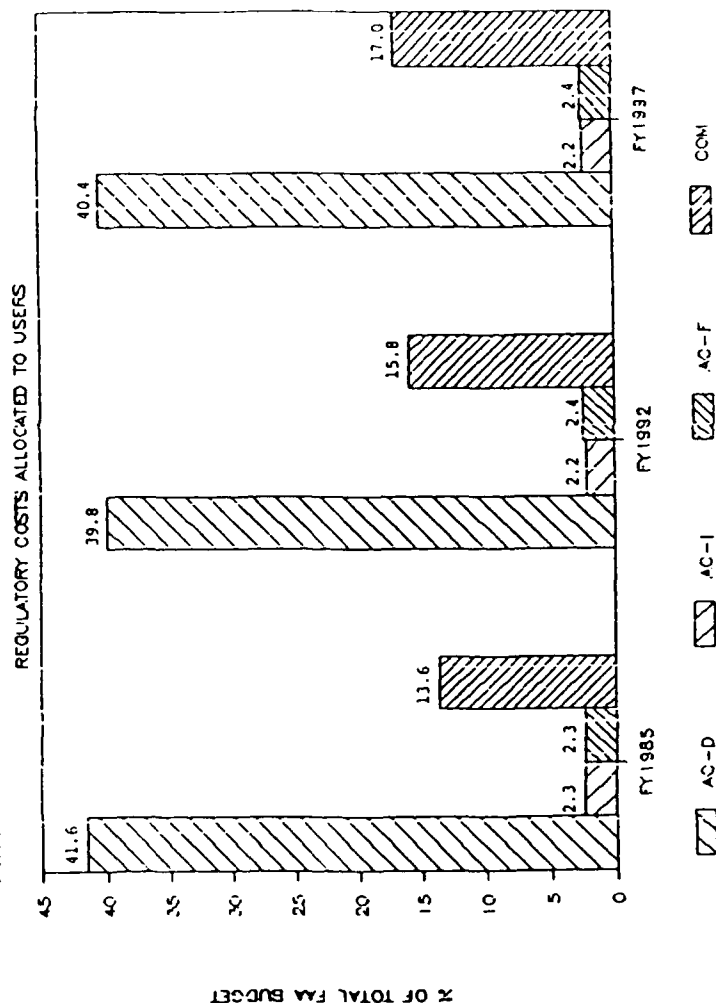
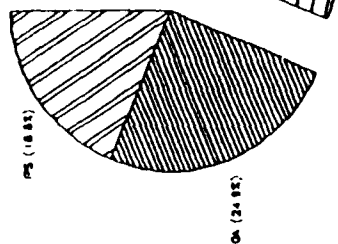
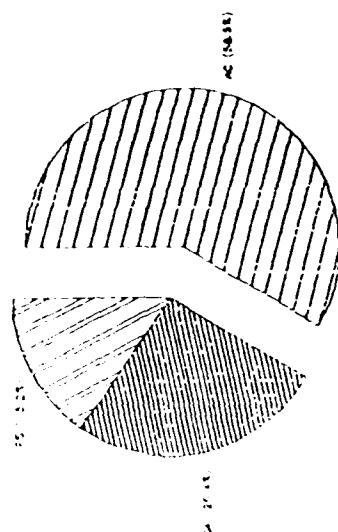
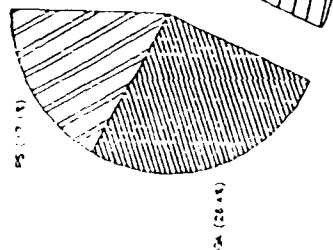


Figure 3.2

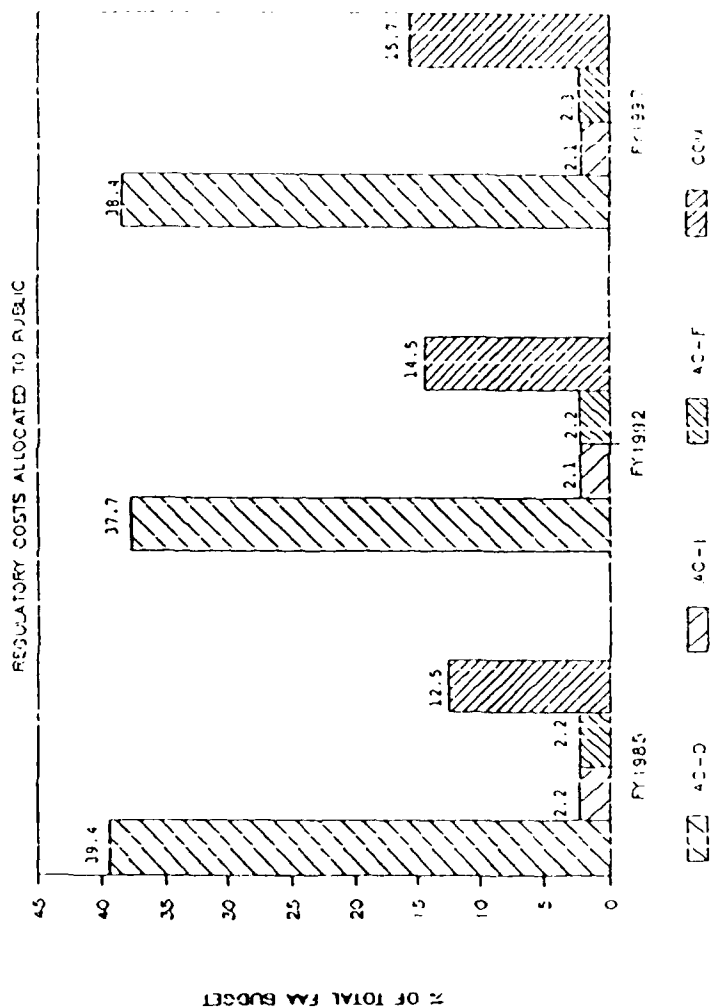
ALLOCATION OF FAA COSTS
REG COSTS ALLOCATED TO PUBLIC - FY 1985



ALLOCATION OF FAA COSTS
REG COSTS ALLOCATED TO PUBLIC - FY 1992



AIR CARRIER SHARES OF TOTAL FAA BUDGET



largest operators at ARTCCs and TRACONS--the two largest operating site cost centers. In addition, they are the chief beneficiaries of substantial portions of the F&E, R&D, and airport budgets. It is also interesting to note that the allocations for domestic air carriers remain relatively constant over time despite more rapid growth in operations by other user groups.

The allocations for international air carriers and freight air carriers are approximately equal, and remain approximately constant over time. Both groups exhibit relatively low levels of operations at FAA facilities. In addition, unlike domestic air carriers and commuter airlines, the avoidable costs of F&E, R&D, and airport projects are far less likely to be attributable to these two user groups.

As a group, air carriers account for between 60 and 62 percent of total FAA costs over the 1985 through 1997 time period under the assumption that regulatory costs are allocated to users. If the alternative scenario where regulatory costs are allocated to the public is examined, air carriers as a group account for between 56 and 58.5 percent of total FAA costs.

3.2.2 General Aviation

There are four user groups in the general aviation category:

- o AT: air taxis
- o GA-P: general aviation piston operators
- o GA-T: general aviation turboprop or turbo-jet operators
- o Rotor: operators of rotorcraft.

As a group, general aviation operators account for between 26.5 and 28 percent of total FAA costs under the scenario that regulatory costs are allocated to users. If, instead, regulatory costs are allocated to the public sector, general aviation as a group accounts for between 25 and 26.5 percent of FAA costs.

The results for the individual general aviation user groups for 1985, 1992, and 1997 are shown in Figures 3.3 and 3.4. It is obvious that more than half of general aviation's share of the total FAA budget is attributable to piston operators. This result is expected because piston operators account for the vast majority of total operations by general aviation users. The share of piston operators increases over time primarily because of the expected increase in operations by this user group.

Operators of turboprop and turbo-jet aircraft also account for an appreciable share of the total FAA budget. The more detailed allocations shown in Section 4.0 indicate that this user group's share of ATC operation costs will grow over time, even though its total share will fall slightly.

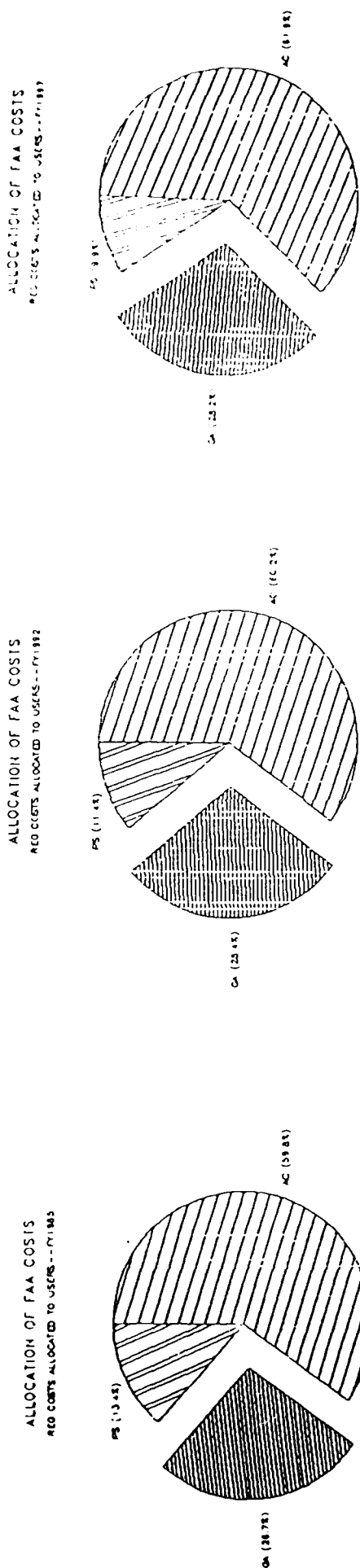
The share of FAA costs attributable to air taxi operators is expected to increase over time due to the relatively high growth rate in operations expected for this user group.

The relatively low share for operators of rotorcraft is due primarily to the fact that these aircraft use relatively modest amounts of FAA resources per flight. This is expected to continue in the future.⁹

3.2.3 Public Sector

The costs attributable to the public sector are divided into three categories:

Figure 3.3



GA SHARES OF TOTAL FAA BUDGET

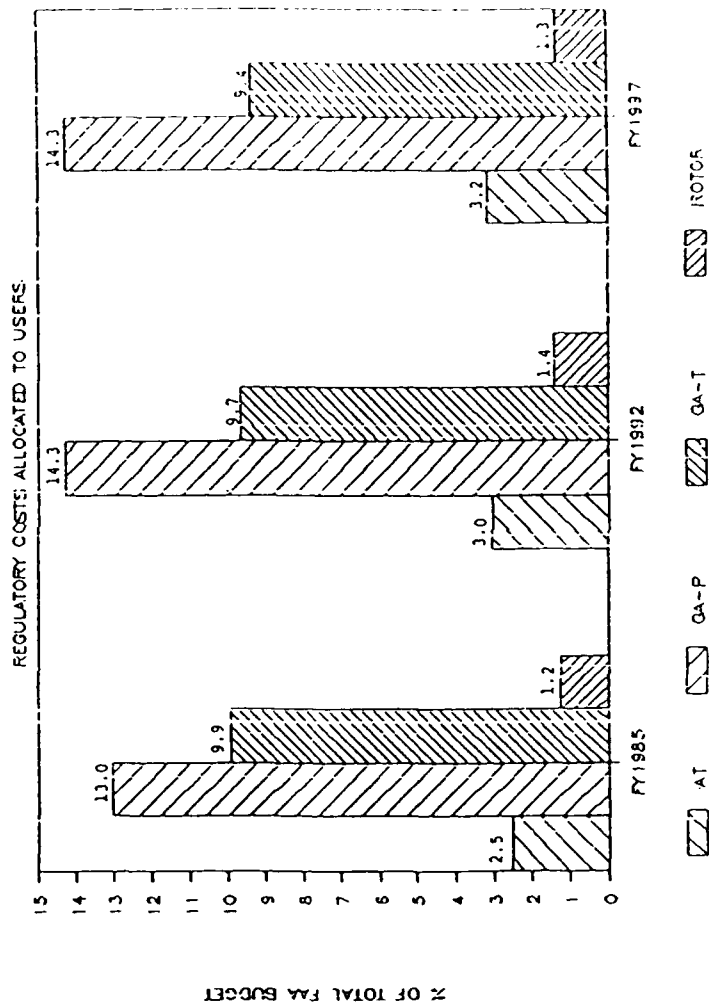
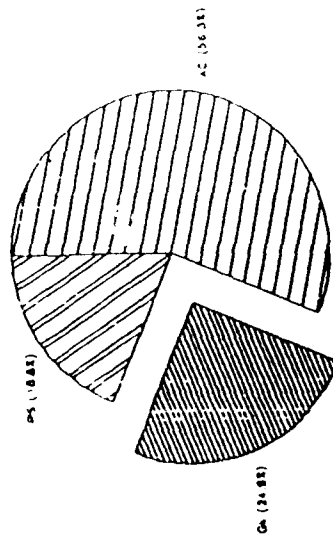
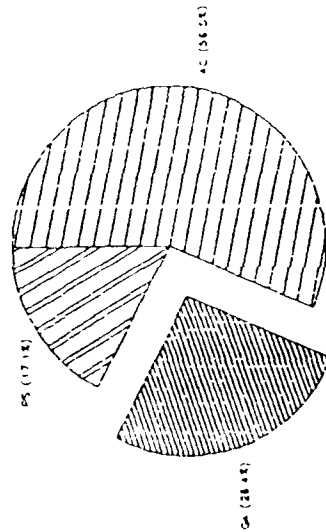


Figure 3.4

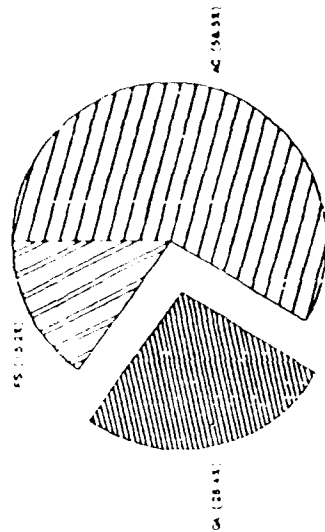
ALLOCATION OF FAA COSTS
REG COSTS ALLOCATED TO PUBLIC--FY1985



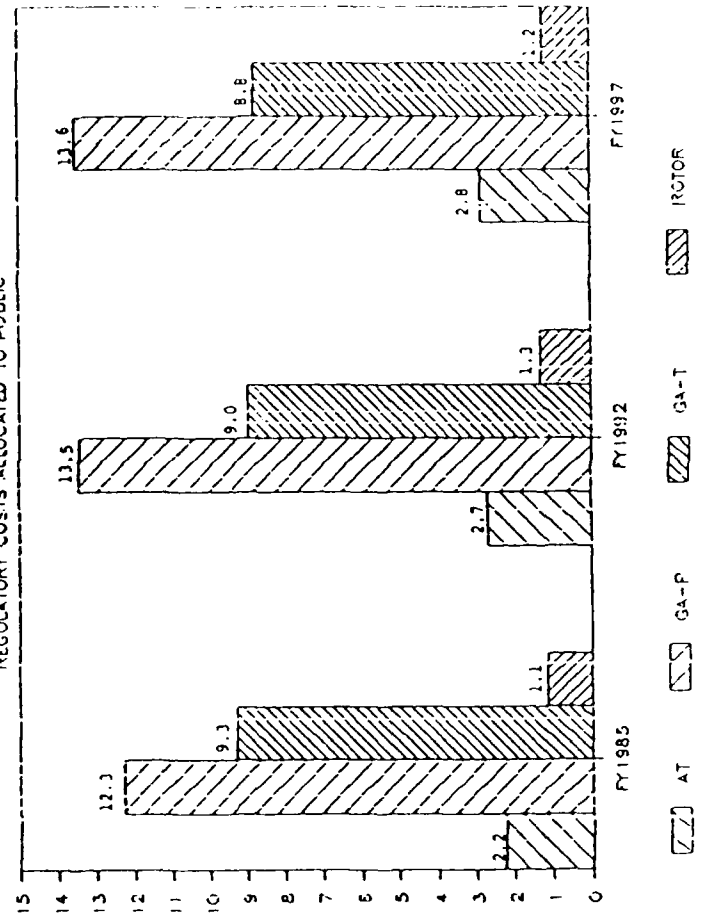
ALLOCATION OF FAA COSTS
REG COSTS ALLOCATED TO PUBLIC--FY1992



ALLOCATION OF FAA COSTS
REG COSTS ALLOCATED TO PUBLIC--FY1997



GA SHARES OF TOTAL FAA BUDGET REGULATORY COSTS ALLOCATED TO PUBLIC



- o GOVT: operators of civil government aircraft,
- o MIL: operators of military aircraft,
- o PI: costs attributable to the public interest.

Under the scenario where regulatory costs are allocated to users, the public sector accounts for approximately 13.5 percent of total FAA costs in 1985, but only 9.3 percent in 1997. The decline is almost wholly attributable to the expected constancy of military operations, while the operations of other user groups are expected to increase.

The same trend is evident when regulatory costs are allocated to the public sector. In this case, the public sector's share in 1985 is 18.7 percent, but declines to 15.2 percent in 1997.

Detailed results are shown in Figures 3.5 and 3.6. It is obvious in both charts that military operations dominate the public sector allocation. It is the expected relative decline in costs attributable to the military that results in the decline in the public sector's share over time.

The share attributable to civil government aviation is expected to remain constant over time. This is consistent with the assumption that civil government fleets and operations will grow in proportion with those of other civilian operators.

Finally, the share of the FAA budget attributable to the public interest is relatively constant under the scenario where regulatory costs are allocated to users. However, the public interest share does vary somewhat in the scenario where regulatory costs are allocated to the public. This is due to the variance in regulatory costs over time.

Figure 3.5

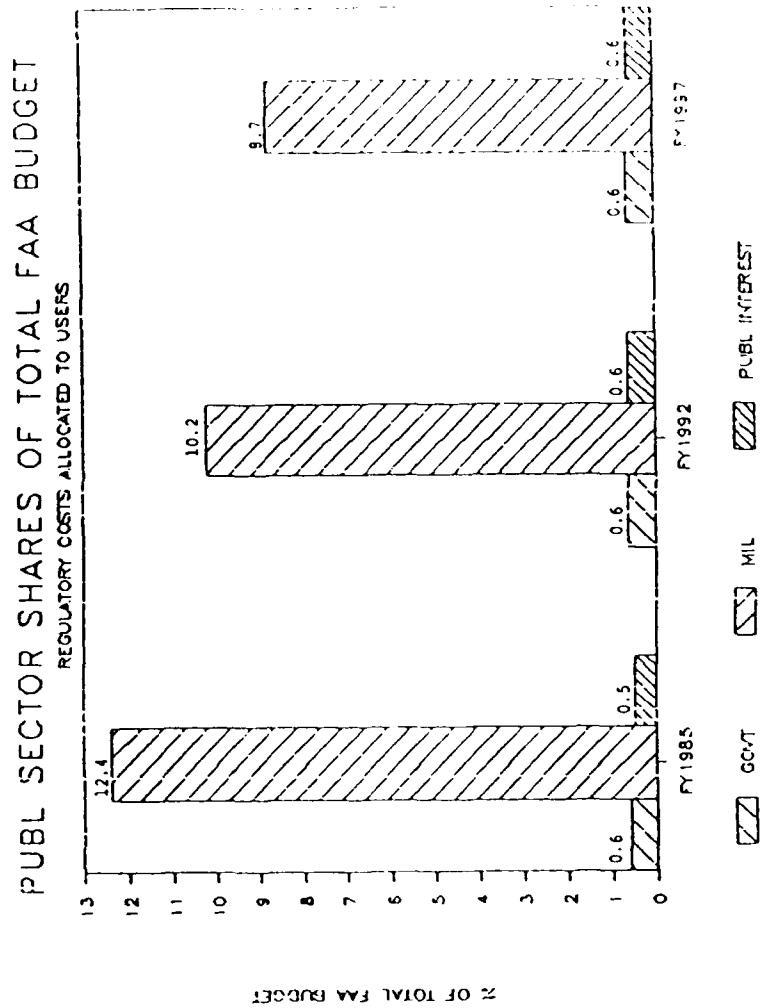
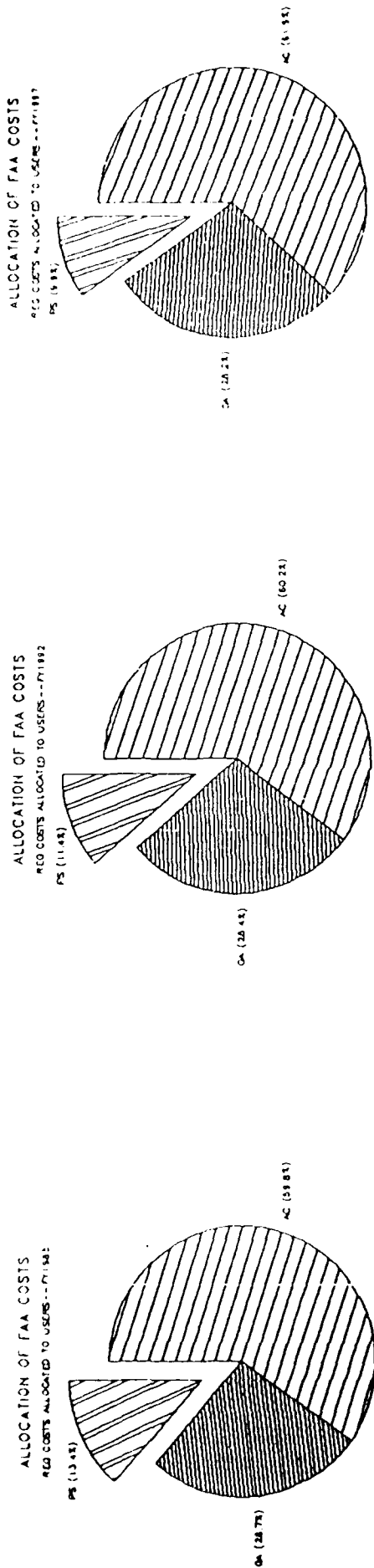
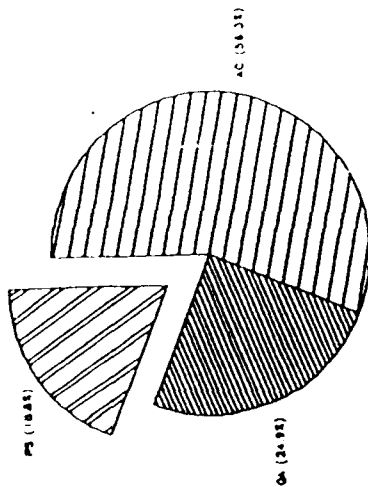
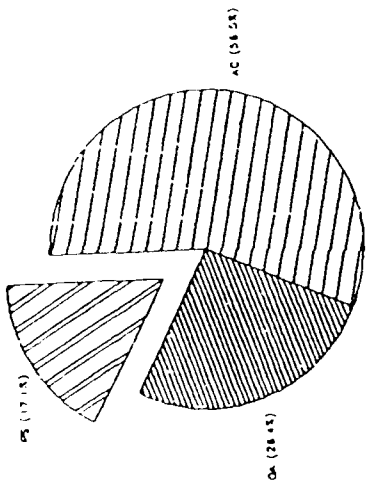


Figure 3.6

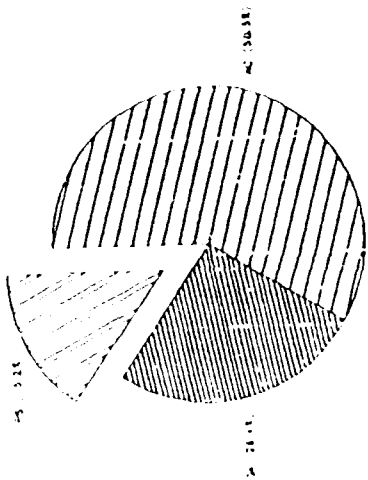
ALLOCATION OF FAA COSTS
REG COSTS ALLOCATED TO PUBLIC - FY 1985



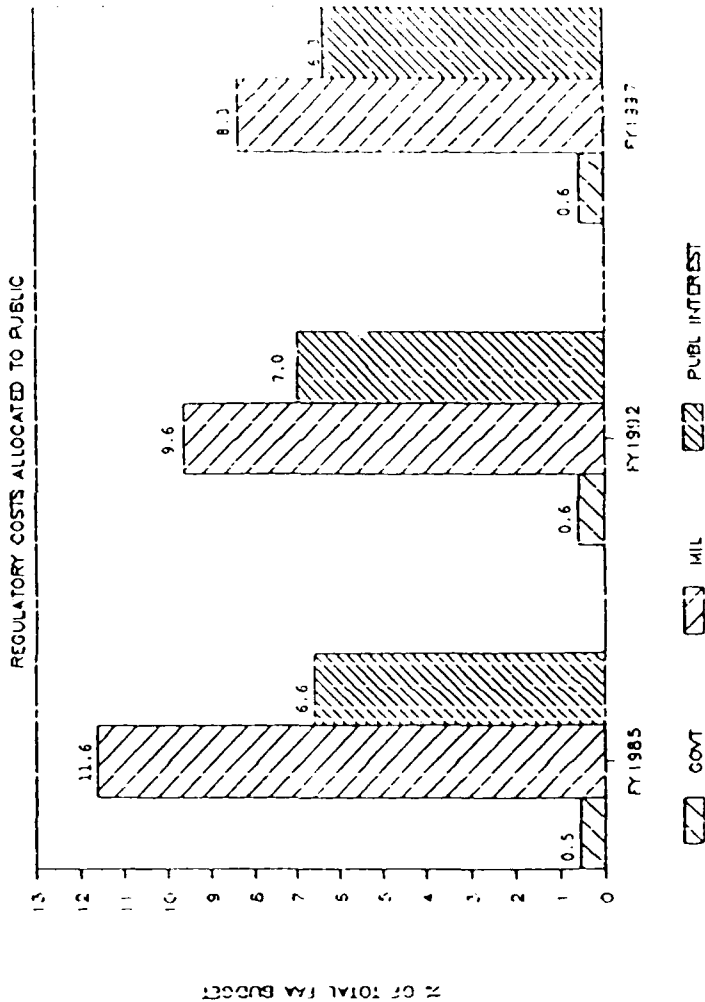
ALLOCATION OF FAA COSTS
REG COSTS ALLOCATED TO PUBLIC - FY 1992



ALLOCATION OF FAA COSTS
REG COSTS ALLOCATED TO PUBLIC - FY 1997



PUBL SECTOR SHARES OF TOTAL FAA BUDGET



3.3 Minimum GA Allocations

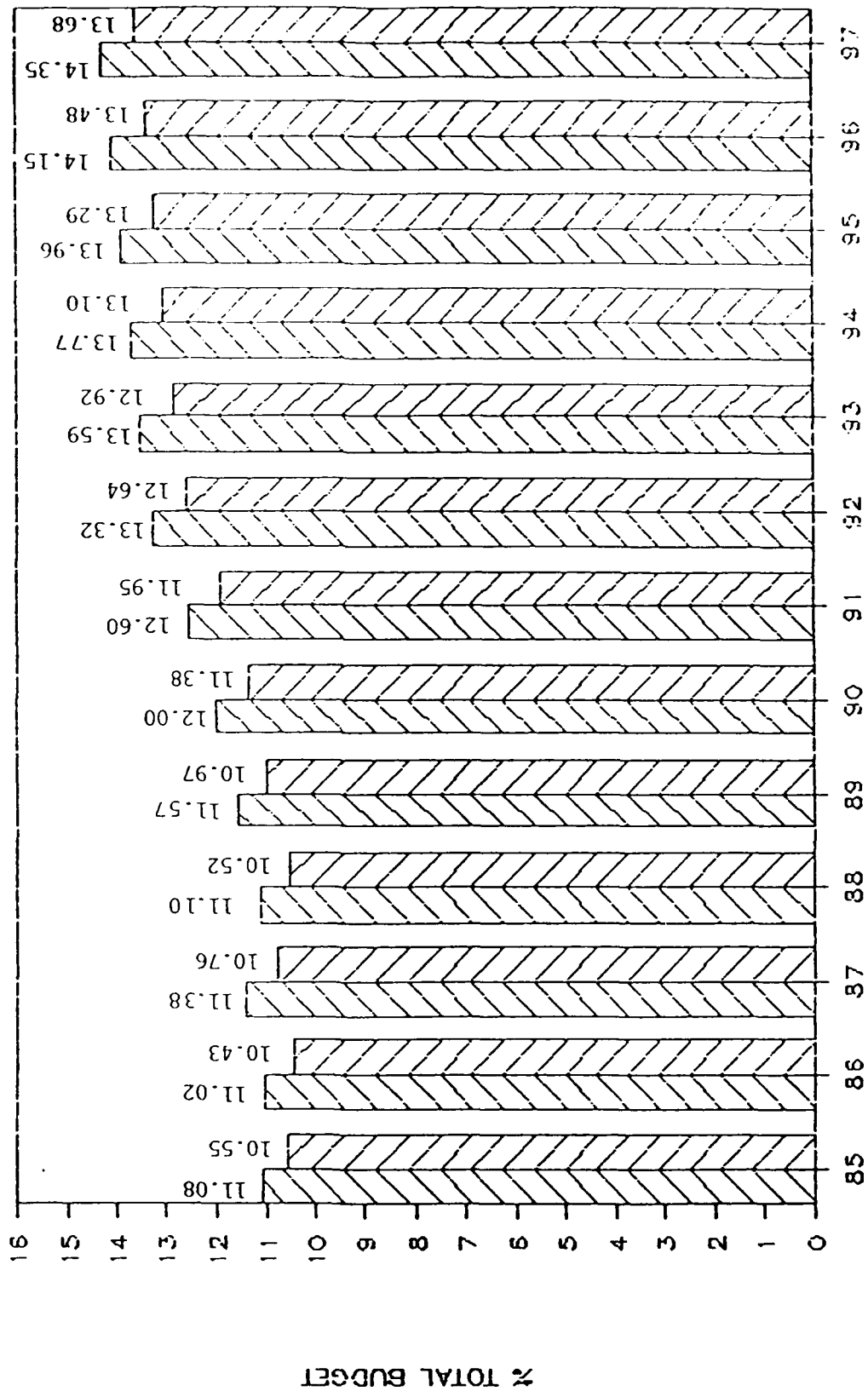
Shown in Figure 3.7 are the minimum general aviation allocations for the period 1985 through 1997. Section 3 of Volume 1 describes in detail the methodology used to develop the minimum general aviation allocation. Since this method relies heavily on FAA establishment criteria as they stood in 1985, it cannot be repeated exactly for future years. As traffic grows, the criteria are bound to change, but these changes cannot be predicted. Thus, the sites identified in the 1985 allocation are assumed to comprise the minimum system in all future years. However, the activity levels and marginal costs are assumed to change as described earlier in this volume. Consequently, the minimum system allocations for 1986-1997 are generated by applying projected activity levels and marginal costs to the sites identified in the base-year analysis.

As the table shows, the minimum general aviation allocation is projected to increase from approximately 11 percent to approximately 14 percent of the total budget over the period 1985-1997. This increase is attributable primarily to the relatively high growth rate in general aviation operations as projected by the FAA.

Figure 3.7

MINIMUM GA ALLOCATION

FY1985 - FY1997



REGULATORY COSTS TO PUBLIC

REGULATORY COSTS TO USERS

SECTION 4.0

DETAILED RESULTS

This section of the report provides detailed information on the allocations to all users groups for the period 1986 through 1997. The allocations of both direct and indirect costs for all major cost categories are included for each user group.

For each year, there are three tables. The first shows the full cost allocation assuming that regulatory costs are allocated to users. The second shows the full cost allocation assuming that regulatory costs are allocated to the public sector. The third table presents the results of the minimum general aviation allocation for each year.

The tables in this section provide a more detailed picture of the year-by-year changes which result in the broad trends depicted in Figures 1.1 - 1.3. The percentage of the FAA budget devoted to air carriers rises slightly, as does the share of general aviation. However, FAA expenditures allocated to the public sector fall. These trends can be identified under either of the alternative assumptions as to the allocation of regulatory costs.

1986

100

41

S. M. ZHAROV AND V. V. ZHAROVA

1986 ALLOCATION

42

Table 4.3

MINIS

1986 MINIMUM GA ALLOCATION

COST CATEGORY	VARIABLE COST	JOINT COST	AIR TRAIL	GA-PISTON	GA-TURBO	ROTORCRAFT	TOTAL COST
OPERATIONS OVERHEAD							
GRANT ADMINISTRATION	40	\$5,255,051	\$642,837	\$2,278,249	\$2,077,371	\$274,594	\$5,255,051
AVIATION STANDARDS	40	\$38,020,824	\$3,789,741	\$12,431,661	\$12,232,778	\$1,584,653	\$38,020,824
TOTAL OVERHEAD	40	\$35,285,875	\$4,432,578	\$14,763,910	\$14,310,149	\$1,859,247	\$35,285,875
CAPITAL PROJECTS							
BENEFITING GA:							
CS GRANTS	40	\$6,115,114	40	\$688,971	\$5,426,143	40	\$6,115,114
GA GRANTS	40	\$79,932,999	\$1,798,888	\$47,607,089	\$38,447,031	40	\$79,932,999
F&E GA PROJECTS	40	\$21,173,786	\$2,612,841	\$9,448,192	\$7,982,004	\$1,210,749	\$21,173,786
R&D GA PROJECTS	40	\$2,077,073	\$252,526	\$943,819	\$763,712	\$117,016	\$2,077,073
TOTAL CAPITAL PROJECTS	40	\$109,298,972	\$4,564,246	\$58,768,078	\$44,538,890	\$1,327,765	\$109,298,972
FLIGHT SERVICE STATIONS							
AIR ROUTE TRAFFIC CONTROL CENTERS	\$165,940,379	\$27,430,286	\$15,765,274	\$138,923,811	\$28,320,076	\$18,337,424	\$193,346,585
TERMINAL NAVIGATION FACILITIES	\$121,927,571	40	\$12,672,393	\$33,561,910	\$75,693,268	40	\$121,927,571
TERMINAL CONTROL FACILITIES	40	\$8,002,913	\$979,359	\$3,448,349	\$3,164,662	\$418,343	\$8,002,913
TOWERS	\$14,274,840	\$14,106,212	\$2,753,686	\$19,114,330	\$4,130,129	\$2,462,908	\$28,461,052
TROOPS	\$65,949,795	\$1,217,515	\$5,264,834	\$58,578,466	\$6,483,128	\$3,631,367	\$67,004,788
TOTAL MINIMUM GA ALLOCATION	\$368,060,585	\$195,429,693	\$46,452,371	\$319,142,847	\$176,640,192	\$28,037,053	\$563,327,677
FULL GA SHARE OF BUDGET							
--DOLLARS			\$128,982,375	\$672,486,926	\$498,265,008	\$62,773,524	\$1,354,584,633
--PERCENTS			2.52%	13.16%	9.59%	1.23%	26.58%
MINIMUM GA ALLOCATION AS PERCENT OF BUDGET							
			0.91%	6.24%	3.46%	0.39%	11.82%
FULL GA SHARE OF BUDGET IF REGULATORY COSTS ARE ALLOCATED TO THE PUBLIC							
--DOLLARS			\$111,345,968	\$631,038,378	\$453,782,866	\$56,467,557	\$1,252,633,970
--PERCENTS			2.18%	12.34%	8.87%	1.18%	24.58%
MINIMUM GA ALLOCATION AS PERCENT OF BUDGET IF REGULATORY COSTS ARE ALLOCATED TO THE PUBLIC							
			0.84%	6.00%	3.22%	0.36%	10.43%

1987

Table 4.4

1987 ALLOCATION REGULATORY COSTS ALLOCATED TO USERS

	TOTAL	AIR CARRIER DOMESTIC	AIR CARRIER INT'L	AIR CARRIER FREIGHT	COMPUTER	AIR TRAIL	BEAL AVIATION PISTON	BEAL AVIATION TURBINE	ROTOR	GOVERNMENT	MILITARY	PUBLIC INTEREST
DIRECT COSTS												
Public Interest	\$26,832,065	14	14	14	14	14	14	14	14	14	\$5,728,565	\$29,383,448
Naval Maintenance	\$79,845,644	\$134,183,690	\$6,786,685	\$9,785,365	\$58,973,545	\$13,863,167	\$43,228,843	\$41,175,279	\$6,354,836	\$2,984,136	\$69,986,968	14
Safety Regulation	\$142,961,843	\$49,515,293	\$2,475,758	\$3,588,592	\$33,786,797	\$9,241,621	\$18,279,713	\$15,615,854	\$2,357,687	\$1,881,866	\$7,885,742	14
AIRTOCs	\$611,492,616	\$247,459,438	\$13,498,731	\$16,945,782	\$52,711,586	\$16,549,383	\$38,881,851	\$95,185,834	18	\$3,382,488	\$127,674,564	14
Towers	\$124,645,324	\$9,576,725	\$688,822	\$1,852,829	\$11,931,828	\$18,584,986	\$46,371,814	\$15,755,835	\$9,395,633	\$2,688,195	\$16,679,546	14
TRACONS	\$684,289,857	\$223,595,391	\$9,729,645	\$17,197,788	\$121,655,887	\$13,558,838	\$181,666,978	\$16,685,534	\$9,345,997	\$2,715,816	\$88,867,679	14
FSRs	\$248,864,773	\$18,327,755	\$457,898	\$883,263	\$14,278,953	\$14,862,538	\$18,947,161	\$28,888,863	\$18,685,731	\$3,174,378	\$25,731,841	14
TOTAL OPS BUDGET	\$2,128,495,262	\$674,658,293	\$33,556,658	\$49,284,738	\$285,329,628	\$78,573,644	\$386,573,559	\$285,238,397	\$38,135,884	\$15,949,999	\$348,895,917	\$29,383,448
F&E	\$1,343,698,566	\$784,777,841	\$35,867,396	\$58,434,727	\$244,278,683	\$22,565,558	\$52,534,914	\$93,162,885	\$6,833,928	\$4,682,599	\$129,352,925	14
RID	\$134,588,088	\$66,138,451	\$3,355,725	\$4,741,523	\$23,295,684	\$2,764,744	\$4,288,475	\$18,249,831	\$931,884	\$575,959	\$14,156,685	14
AIP GRANTS	\$712,888,888	\$267,622,538	\$27,367,193	\$585,855	\$71,632,471	\$4,149,542	\$126,688,116	\$98,928,795	\$5,227,149	\$3,834,796	\$6,331,254	14
TOTAL DIRECT COSTS	\$4,318,645,828	\$1,813,197,114	\$188,146,964	\$184,966,835	\$624,536,386	\$184,853,488	\$574,885,864	\$487,583,188	\$58,331,166	\$24,243,352	\$491,379,881	\$29,383,448
INDIRECT COSTS												
Public Interest	\$6,811,998	14	14	14	14	14	14	14	14	14	\$682,859	\$6,129,948
Naval Maintenance	\$158,184,421	\$55,347,321	\$2,766,382	\$4,883,213	\$21,825,276	\$5,719,825	\$19,655,385	\$16,983,743	\$2,628,876	\$1,199,531	\$28,867,827	14
Safety Regulation	\$45,716,899	\$16,526,263	\$826,216	\$1,195,141	\$9,773,139	\$2,522,146	\$5,612,463	\$4,729,497	\$717,663	\$329,123	\$3,484,446	14
AIRTOCs	\$165,694,291	\$71,887,741	\$3,873,428	\$4,862,518	\$15,125,488	\$4,748,796	\$5,155,568	\$27,314,436	14	\$978,572	\$36,635,832	14
Towers	\$33,248,665	\$2,714,899	\$195,216	\$298,151	\$3,381,546	\$2,977,151	\$11,865,583	\$4,465,294	\$2,662,776	\$761,858	\$4,727,879	14
TRACONS	\$161,178,463	\$64,868,362	\$2,822,367	\$4,988,717	\$35,289,582	\$3,938,581	\$15,393,482	\$4,848,126	\$2,711,879	\$787,578	\$25,546,598	14
FSRs	\$63,449,181	\$4,816,538	\$177,765	\$312,394	\$5,358,866	\$5,788,137	\$24,142,334	\$8,892,398	\$4,155,758	\$1,234,536	\$18,887,279	14
TOTAL OPS BUDGET	\$638,299,119	\$214,472,316	\$18,661,287	\$15,688,135	\$98,145,817	\$25,677,835	\$81,824,657	\$66,425,486	\$12,868,144	\$5,283,181	\$189,351,122	\$6,129,948
F&E	\$11,738,215	\$4,878,918	\$283,467	\$294,445	\$1,546,453	\$428,646	\$1,548,819	\$1,249,189	\$192,771	\$88,228	\$2,123,289	14
RID	\$5,397,919	\$1,871,285	\$93,528	\$135,348	\$718,861	\$193,359	\$714,134	\$574,218	\$88,611	\$48,556	\$976,817	14
AIP GRANTS	\$18,948,382	\$5,825,847	\$424,745	\$32,867	\$2,983,744	\$285,722	\$4,975,115	\$3,982,689	\$134,424	\$96,188	\$339,918	14
TOTAL INDIRECT COSTS	\$674,375,635	\$228,248,358	\$11,383,827	\$16,121,995	\$95,326,875	\$26,497,563	\$88,262,725	\$72,231,582	\$13,283,951	\$5,588,153	\$113,398,246	\$6,129,948
GRAND TOTAL	\$4,993,021,463	\$2,041,439,472	\$199,530,801	\$201,088,830	\$719,862,261	\$211,351,042	\$662,267,789	\$559,794,618	\$71,615,117	\$29,751,505	\$684,729,347	\$35,513,396
USER GROUP PERCENTS	100.00%	40.85%	2.23%	2.43%	14.42%	2.69%	13.26%	9.61%	1.27%	0.64%	12.11%	0.53%

Table 4.5

1987 ALLOCATION
REGULATORY COSTS ALLOCATED TO PUBLIC

	TOTAL	AIR CARRIER DOMESTIC	AIR CARRIER INT'L	AIR CARRIER FREIGHT	COMPUTER	AIR TAIL	GEN. AVIATION PISTON	GEN. AVIATION TURBINE	PICTOR	GOVERNMENT	MILITARY	PUBLIC INTEREST
DIRECT COSTS												
Public Interest	628,832,845	14	14	14	14	14	14	14	14	14	15,724,565	629,383,448
Naval Maintenance	4379,845,644	61,341,183,698	66,796,645	19,785,365	658,973,545	613,865,167	643,226,643	641,175,279	66,354,036	62,988,136	669,946,948	14
Safety Regulation	6277,040,292	14	14	14	14	14	14	14	14	14	14	6277,040,292
ARTCAs	6611,482,616	613,498,731	616,945,782	652,711,566	616,549,383	638,881,951	675,189,834		14	63,382,488	6127,674,564	14
Towers	6124,645,324	69,576,725	6688,822	61,652,829	611,331,828	618,594,986	646,371,814	615,755,835	69,395,633	62,648,195	616,679,546	14
TRACONS	6694,299,857	6223,595,391	65,729,645	617,197,748	6121,655,087	613,558,838	6181,666,978	616,645,534	69,345,997	62,715,816	648,867,679	14
PIRs	6244,868,773	618,327,755	6457,098	6883,263	614,278,953	614,862,538	6138,947,161	629,888,863	618,685,731	63,174,378	625,731,841	14
TOTAL OPS BUDGET	62,262,581,711	6625,142,999	631,888,892	645,784,138	6251,542,031	669,332,824	6368,293,846	6189,614,544	635,781,397	614,868,133	6333,669,175	6297,351,732
FILE	61,343,698,566	6794,777,841	635,867,396	658,434,727	6244,278,643	622,565,558	652,534,914	693,162,885	66,833,928	64,682,599	6129,352,925	14
RII	6134,508,888	662,145,656	63,156,162	64,452,728	621,778,826	62,352,169	66,829,887	69,824,612	6742,812	6489,424	612,876,859	611,462,855
AIP GRANTS	6712,888,888	6367,622,538	627,367,193	6595,855	671,632,471	64,149,542	6126,648,116	698,329,795	65,227,149	63,834,796	66,931,554	14
TOTAL DIRECT COSTS	64,652,772,278	61,759,649,426	697,471,643	6181,897,448	6589,232,731	698,399,284	6254,256,963	6398,722,835	647,784,487	623,874,951	6482,229,713	6388,813,977
INDIRECT COSTS												
Public Interest	65,867,222	14	14	14	14	14	14	14	14	14	6587,361	64,559,861
Naval Maintenance	6116,185,214	641,227,236	62,868,569	62,981,922	615,661,355	64,268,888	614,914,357	612,658,869	61,952,244	6493,589	621,583,133	14
Safety Regulation	648,415,949	14	14	14	14	14	14	14	14	14	14	648,415,949
ARTCAs	6148,125,117	658,587,159	63,195,887	64,811,973	612,479,691	63,918,142	64,367,294	622,536,638	14	6888,881	638,227,548	14
Towers	627,825,843	62,142,117	6154,875	6235,317	62,668,983	62,349,732	69,517,666	63,524,257	62,181,618	6681,294	63,738,872	14
TRACONS	6131,885,789	652,538,774	62,286,199	64,841,886	628,585,585	63,183,885	612,922,286	63,928,642	62,196,852	6637,954	628,633,485	14
PIRs	6419,614,139	63,885,677	6136,567	6239,995	64,263,887	64,448,557	619,481,512	66,216,933	63,192,631	6948,425	67,688,835	14
TOTAL OPS BUDGET	6511,359,274	6157,588,962	67,833,297	611,518,213	663,659,348	618,152,316	661,123,836	648,849,258	69,442,538	63,881,984	684,358,426	644,975,818
FILE	64,731,674	63,827,636	6151,324	6218,986	61,158,135	6312,845	61,153,569	629,853	6143,368	665,617	61,579,142	14
RII	64,815,335	61,391,864	669,566	6188,672	628,748	6143,821	6331,538	6427,184	665,989	638,166	6725,963	14
AIP GRANTS	618,894,899	65,568,321	6485,511	638,237	62,794,864	6196,287	64,757,367	63,888,294	6128,213	691,863	6321,992	14
TOTAL INDIRECT COSTS	6542,281,182	6167,568,783	68,459,699	611,868,188	668,133,878	618,885,189	667,565,581	654,813,882	69,788,859	64,869,638	646,977,522	644,975,818
GRAND TOTAL	64,994,973,459	61,927,249,889	6185,931,341	6112,957,556	6657,365,809	6117,284,474	6621,822,465	6444,735,837	657,564,545	627,144,581	658,297,235	6333,789,887
USED GROUP PERCENTS	100.0%	38.58%	2.12%	2.26%	13.16%	2.35%	12.45%	8.98%	1.15%	8.54%	11.48%	7.88%

Table 4.6

MINES

1987 MINIMUM GA ALLOCATION

COST CATEGORY	VARIABLE COST	JOINT COST	AIR TRAIL	GA-PISTON	GA-TURBO	ROTORCRAFT	TOTAL COST
OPERATIONS OVERHEAD							
GRANT ADMINISTRATION	10	\$4,917,638	\$688,858	\$2,123,775	\$1,927,715	\$257,283	\$4,917,638
AVIATION STANDARDS	10	\$38,922,969	\$3,875,695	\$12,886,888	\$12,522,736	\$1,637,737	\$38,922,969
TOTAL OVERHEAD	10	\$43,840,599	\$4,564,553	\$15,010,574	\$14,450,451	\$1,895,020	\$43,840,599
CAPITAL PROJECTS							
BENEFITTING GR:							
CS GRANTS	10	\$4,919,738	0	\$554,291	\$4,365,439	0	\$4,919,738
GA GRANTS	10	\$64,387,679	\$1,447,234	\$38,365,286	\$24,495,238	0	\$64,387,679
FAC GR PROJECTS	10	\$22,861,641	\$2,758,531	\$9,846,959	\$8,191,958	\$1,264,161	\$22,861,641
RID GR PROJECTS	10	\$2,816,112	\$347,885	\$1,279,233	\$1,838,735	\$159,868	\$2,816,112
TOTAL CAPITAL PROJECTS	10	\$94,185,162	\$4,552,858	\$58,845,688	\$38,883,482	\$1,423,221	\$94,185,162
FLIGHT SERVICE STATIONS							
AIR ROUTE TRAFFIC CONTROL CENTERS	\$165,497,366	\$28,422,535	\$15,986,413	\$139,838,533	\$28,681,398	\$18,373,557	\$193,919,981
TERMINAL NAVIGATION FACILITIES	\$126,530,428	0	\$13,682,195	\$34,698,229	\$78,238,884	0	\$126,530,428
TERMINAL CONTROL FACILITIES:	10	\$8,857,359	\$1,188,128	\$3,889,268	\$3,483,186	\$464,873	\$8,857,359
TOWERS	\$15,725,267	\$16,394,161	\$3,179,176	\$21,328,482	\$4,768,382	\$2,843,468	\$32,119,428
TRACONS	\$75,968,198	\$1,558,353	\$6,863,974	\$58,246,468	\$7,467,198	\$4,182,565	\$77,175,235
TOTAL MINIMUM GA ALLOCATION	\$383,713,259	\$185,178,169	\$48,889,282	\$322,169,235	\$175,891,853	\$21,182,784	\$568,548,111
FULL GA SHARE OF BUDGET							
—DOLLARS	\$134,551,842	\$662,267,789	\$479,794,618	\$63,615,117	\$1,348,228,558		
—PERCENTS	2.69%	13.26%	9.61%	1.27%	26.84%		
MINIMUM GA ALLOCATION AS PERCENT OF BUDGET							
—DOLLARS	0.98%	6.45%	3.51%	0.42%	11.39%		
FULL GA SHARE OF BUDGET IF REGULATORY COSTS ARE ALLOCATED TO THE PUBLIC							
—DOLLARS	\$117,284,474	\$621,822,465	\$444,735,837	\$57,564,545	\$1,241,327,321		
—PERCENTS	2.35%	12.45%	8.98%	1.15%	24.85%		
MINIMUM GA ALLOCATION AS PERCENT OF BUDGET IF REGULATORY COSTS ARE ALLOCATED TO THE PUBLIC	0.98%	6.19%	3.25%	0.39%	18.76%		

1988

Table 4.7

1988 ALLOCATION REGULATORY COSTS ALLOCATED TO USERS

	TOTAL	AIR CARRIER DOMESTIC	AIR CARRIER INT'L	AIR CARRIER FREIGHT	COMPUTER	AIR TRAIL	GEN. AVIATION PISTON	GEN. AVIATION TURBINE	ROTOR	GOVERNMENT	MILITARY	PUBLIC INTEREST
DIRECT COSTS												
Public Interest	\$27,862,972	14	14	14	14	14	14	14	14	14	14	14
Manned Maintenance	\$346,448,254	\$122,869,810	\$6,899,834	\$8,831,916	\$17,537,739	\$12,863,578	\$48,629,400	\$37,781,380	\$5,876,136	\$2,678,732	\$61,941,617	14
Safety Regulation	\$147,258,698	\$58,727,369	\$2,535,837	\$3,669,398	\$35,172,521	\$9,613,965	\$18,897,647	\$16,842,734	\$2,448,869	\$1,115,644	\$7,834,784	14
ARTTCs	\$633,314,945	\$255,834,837	\$13,955,559	\$17,519,184	\$56,555,745	\$17,932,876	\$39,514,676	\$99,322,923	14	\$3,329,278	\$129,151,475	14
Towers	\$138,478,512	\$10,443,546	\$751,178	\$1,147,251	\$12,938,959	\$11,041,429	\$48,261,361	\$16,568,548	\$9,875,541	\$2,825,491	\$16,625,264	14
TRACONS	\$645,797,395	\$234,478,184	\$18,283,285	\$18,834,827	\$138,446,664	\$15,379,939	\$114,328,168	\$18,938,887	\$18,688,158	\$3,881,674	\$98,297,698	14
FSSs	\$238,858,294	\$18,183,317	\$458,813	\$792,163	\$14,283,469	\$14,984,925	\$138,693,436	\$28,868,574	\$18,718,258	\$3,183,926	\$24,851,414	14
TOTAL OPS BUDGET	\$2,169,955,871	\$683,735,482	\$33,956,416	\$49,994,731	\$256,853,098	\$81,835,983	\$488,321,287	\$269,514,958	\$39,518,322	\$16,414,738	\$335,788,153	\$22,856,463
FEE	\$1,414,688,000	\$738,414,563	\$37,575,193	\$52,853,552	\$362,693,664	\$24,335,259	\$55,656,536	\$98,677,132	\$6,428,418	\$4,968,162	\$132,797,222	14
RIO	\$214,000,000	\$185,237,246	\$5,286,439	\$7,598,681	\$39,964,535	\$4,585,781	\$15,281,849	\$14,477,278	\$1,886,444	\$943,484	\$18,826,431	14
RIP BONDS	\$688,000,000	\$413,838,428	\$38,748,533	\$567,865	\$88,717,405	\$4,748,428	\$142,478,295	\$118,632,382	\$5,884,885	\$3,482,882	\$7,591,466	14
TOTAL DIRECT COSTS	\$4,594,555,871	\$1,946,425,639	\$107,646,582	\$111,886,829	\$688,238,782	\$115,697,282	\$613,668,967	\$433,591,961	\$53,717,789	\$25,728,385	\$494,923,271	\$22,856,463
INDIRECT COSTS												
Public Interest	\$9,235,417	14	14	14	14	14	14	14	14	14	14	14
Manned Maintenance	\$188,512,328	\$63,861,990	\$3,151,231	\$4,562,658	\$24,558,439	\$6,697,181	\$22,543,911	\$19,518,172	\$3,835,667	\$1,383,858	\$31,999,387	14
Safety Regulation	\$59,461,886	\$21,386,998	\$1,869,882	\$1,547,147	\$12,847,359	\$3,314,262	\$7,342,436	\$6,119,145	\$948,475	\$429,591	\$4,434,672	14
ARTTCs	\$219,326,415	\$91,788,135	\$5,882,611	\$6,288,854	\$28,273,385	\$6,428,863	\$6,468,479	\$35,684,828	14	\$1,265,128	\$46,296,588	14
Towers	\$43,256,746	\$3,797,594	\$273,148	\$417,176	\$4,785,883	\$4,815,883	\$13,368,974	\$6,421,921	\$3,591,835	\$1,427,435	\$6,845,457	14
TRACONS	\$214,118,482	\$45,263,889	\$3,718,182	\$6,557,988	\$47,434,282	\$5,592,593	\$28,832,738	\$6,886,738	\$3,857,435	\$1,128,586	\$32,834,867	14
FSSs	\$78,788,285	\$5,836,563	\$222,967	\$391,796	\$7,824,889	\$7,371,822	\$29,223,657	\$18,321,381	\$5,381,148	\$1,574,737	\$12,291,253	14
TOTAL OPS BUDGET	\$894,662,597	\$278,254,368	\$13,429,142	\$19,756,811	\$116,843,277	\$33,418,844	\$99,794,147	\$84,581,369	\$16,725,752	\$6,881,336	\$134,784,619	\$8,432,932
FEE	\$15,476,952	\$5,254,652	\$267,574	\$387,419	\$2,885,288	\$568,657	\$2,863,788	\$1,657,386	\$257,761	\$117,585	\$2,717,891	14
RIO	\$18,756,395	\$3,728,354	\$185,987	\$269,174	\$1,448,838	\$395,897	\$1,437,828	\$1,151,478	\$179,898	\$81,641	\$1,487,885	14
RIP BONDS	\$25,185,345	\$7,775,838	\$565,634	\$46,386	\$3,872,928	\$284,611	\$6,561,878	\$5,238,848	\$184,558	\$127,578	\$463,581	14
TOTAL INDIRECT COSTS	\$658,881,289	\$287,184,412	\$14,448,257	\$28,459,798	\$124,258,387	\$34,683,288	\$189,855,953	\$92,548,281	\$17,343,161	\$7,128,851	\$139,775,816	\$8,432,932
GRAND TOTAL	\$5,253,437,160	\$2,233,610,051	\$122,094,839	\$140,346,627	\$812,497,169	\$150,381,570	\$803,524,920	\$526,140,242	\$71,068,950	\$32,857,237	\$634,699,087	\$31,289,395
USER GROUP PERCENTS	100.00%	42.64%	2.34%	2.68%	14.75%	2.75%	13.26%	9.64%	1.38%	0.62%	11.64%	0.56%

Table 4.8

1988 ALLOCATION
REGULATORY COSTS ALLOCATED TO PUBLIC

DIRECT COSTS	TOTAL	AIR CARRIER DOMESTIC	AIR CARRIER INT'L	AIR CARRIER FREIGHT	COMPUTER	AIR TRAIL	BOL AVIATION PISTON	BOL AVIATION TURBINE	ROTOR	GOVERNMENT	MILITARY	PUBLIC INTEREST
Public Interest	927,862,972	14	10	10	10	10	10	14	10	14	15,086,510	922,856,463
Naval Maintenance	9346,440,254	1122,869,810	16,879,834	16,831,916	117,337,739	112,963,378	140,629,000	137,781,300	15,876,136	12,678,732	161,941,817	14
Safety Regulation	9317,519,365	14	10	10	10	10	10	14	10	14	14	9317,519,365
ANTCS	1633,314,945	1253,634,837	113,935,559	117,519,184	156,555,745	117,932,876	179,514,676	199,322,923	14	13,529,278	1129,151,475	14
Towers	1134,478,512	118,443,546	1751,178	11,117,251	112,234,799	111,441,429	148,261,361	116,560,548	19,75,241	12,835,491	116,625,264	14
TRECOM	1645,797,395	1234,478,184	118,283,285	116,834,827	1138,446,664	115,379,339	1114,328,164	118,938,887	118,688,158	13,841,674	198,297,690	14
FSR	1238,658,294	118,183,317	1154,813	1792,163	114,281,469	114,994,925	1138,693,136	128,868,574	118,718,258	13,183,926	124,451,414	14
TOTAL OPS BUDGET	12,348,223,737	1633,868,893	131,168,568	146,325,341	1261,642,576	172,221,318	1381,426,648	1193,472,224	137,878,854	115,299,894	1328,673,349	1329,575,827
FILE	11,414,680,000	1738,414,563	137,575,193	152,853,552	1262,693,664	124,335,259	153,656,536	198,677,432	16,428,418	14,968,162	1132,797,222	14
RIP	1214,000,000	190,872,278	14,968,379	17,138,164	137,405,401	13,989,744	112,990,568	112,587,261	11,508,848	1003,728	115,596,675	118,277,258
AIP BUDGETS	1400,000,000	1413,838,428	138,748,533	1567,865	188,717,485	14,748,428	1142,478,295	1118,832,342	15,884,885	13,482,862	17,991,446	14
TOTAL DIRECT COSTS	14,768,823,737	11,843,333,254	1184,752,685	1186,876,122	1642,579,447	1185,487,366	1592,478,879	1415,489,218	158,978,524	124,473,866	1484,658,722	1357,813,146
INDIRECT COSTS												
Public Interest	14,866,164	14	10	10	14	10	14	14	14	14	1596,615	14,859,549
Naval Maintenance	1134,999,236	147,841,425	12,358,678	13,483,533	118,319,198	14,995,338	117,161,859	114,559,684	12,264,472	11,632,296	123,878,853	14
Safety Regulation	152,382,575	14	10	10	14	14	14	14	14	14	14	152,382,575
ANTCS	1188,673,825	175,472,643	14,116,977	15,168,269	118,684,299	15,218,875	15,499,837	129,388,884	14	11,841,157	138,188,494	14
Towers	135,858,588	12,977,747	1214,179	1327,113	13,489,258	13,148,228	111,618,384	14,721,872	12,815,781	1885,626	14,748,327	14
TRECOM	1172,531,115	168,881,224	12,993,852	15,291,828	138,276,814	14,512,823	117,585,974	15,557,188	13,112,674	1984,233	126,495,793	14
FSR	161,448,545	13,848,372	1178,366	1299,366	15,367,625	15,632,712	123,618,328	17,866,432	14,858,531	11,283,236	19,291,344	14
TOTAL OPS BUDGET	1644,979,977	1198,141,418	19,846,853	114,498,189	182,336,694	123,578,568	175,483,574	162,825,972	112,213,459	14,986,549	143,194,446	158,652,123
FILE	111,586,495	13,979,981	1198,881	1287,959	11,549,937	1422,649	11,536,742	11,231,625	1191,568	187,338	12,815,547	14
RIP	17,996,958	12,765,455	1138,191	1288,886	11,876,964	1293,688	11,865,587	1455,136	1133,123	168,686	11,443,264	14
AIP BUDGETS	123,771,278	17,358,828	1535,824	143,113	13,678,347	1285,884	14,221,195	14,959,115	1178,598	1128,724	1435,346	14
TOTAL INDIRECT COSTS	1688,254,781	1212,237,666	118,718,149	115,421,267	188,633,929	124,568,928	144,311,898	149,472,851	112,738,759	15,255,287	1187,852,624	158,652,123
GRAND TOTAL	15,457,078,518	12,995,571,920	1115,478,833	1121,897,389	1731,213,386	1189,968,294	1676,781,136	1484,962,849	163,799,283	129,728,363	1591,711,355	1416,465,389
USER GROUP PERCENTS	100.000	38.485	2.178	2.278	13.488	2.385	12.488	8.885	1.175	0.545	18.845	7.678

Table 4.9

1988 MINIMUM GA ALLOCATION

KINSYS

COST CATEGORY	VARIABLE COST	JOINT COST	AIR TAXI	GA-PISTON	GA-TURBO	ROTORCRAFT	TOTAL COST
OPERATIONS OVERHEAD							
GRANT ADMINISTRATION	00	\$6,244,746	\$785,179	\$2,697,978	\$2,433,110	\$328,487	\$6,244,746
AVIATION STANDARDS	00	\$31,852,244	\$4,849,596	\$13,308,185	\$12,888,274	\$1,694,189	\$31,852,244
TOTAL OVERHEAD	00	\$38,096,990	\$4,834,774	\$15,998,156	\$15,241,384	\$2,022,676	\$38,096,990
CAPITAL PROJECTS							
BENEFITTING GA:							
CS GRANTS	00	\$5,527,787	00	\$622,799	\$4,984,988	00	\$5,527,787
GA GRANTS	00	\$72,255,819	\$1,626,186	\$43,186,973	\$27,522,748	00	\$72,255,819
F&E GA PROJECTS	00	\$23,226,718	\$2,943,747	\$18,369,387	\$4,579,319	\$1,334,344	\$23,226,718
R&D GA PROJECTS	00	\$6,878,674	\$868,626	\$3,111,715	\$2,588,228	\$398,185	\$6,878,674
TOTAL CAPITAL PROJECTS	00	\$107,888,997	\$5,438,488	\$57,218,793	\$43,515,275	\$1,724,449	\$107,888,997
FLIGHT SERVICE STATIONS							
AIR ROUTE TRAFFIC CONTROL CENTERS	\$164,536,477	\$29,441,265	\$16,815,787	\$138,733,918	\$28,824,895	\$18,383,949	\$193,977,742
TERMINAL NAVIGATION FACILITIES	\$131,239,931	00	\$14,598,762	\$35,833,257	\$88,815,912	00	\$131,239,931
TERMINAL CONTROL FACILITIES:	00	\$9,883,032	\$1,235,964	\$4,219,989	\$3,838,082	\$517,878	\$9,883,032
TOWERS	\$17,383,867	\$18,933,784	\$3,676,512	\$23,758,538	\$5,514,234	\$3,288,288	\$36,237,571
TRACONS	\$87,357,887	\$1,987,284	\$6,973,799	\$66,985,631	\$8,587,558	\$4,818,187	\$88,754,425
TOTAL MINIMUM GA ALLOCATION	\$488,437,363	\$286,113,272	\$52,758,877	\$342,768,274	\$186,328,451	\$22,746,548	\$685,998,689
FULL GA SHARE OF BUDGET							
--DOLLARS	\$158,368,491	\$723,516,919	\$526,842,163	\$71,868,958	\$1,478,988,522		
--PERCENTS	2.76%	13.26%	9.64%	1.30%	26.97%		
MINIMUM GA ALLOCATION AS PERCENT OF BUDGET							
0.97%	6.28%	3.42%	0.42%	11.11%			
FULL GA SHARE OF BUDGET IF REGULATORY COSTS ARE ALLOCATED TO THE PUBLIC							
--DOLLARS	\$129,968,294	\$676,781,136	\$484,562,869	\$63,789,283	\$1,355,828,783		
--PERCENTS	2.38%	12.48%	8.88%	1.17%	24.83%		
MINIMUM GA ALLOCATION AS PERCENT OF BUDGET IF REGULATORY COSTS ARE ALLOCATED TO THE PUBLIC							
0.89%	6.84%	3.18%	0.39%	18.52%			

1989

Table 4.10
1989 ALLOCATION
REGULATORY COSTS ALLOCATED TO USERS

	TOTAL	AIR CARRIER DOMESTIC	AIR CARRIER INT'L	AIR CARRIER FREIGHT	COMPUTER	AIR TRAIL	BOAL AVIATION PISTON	BOAL AVIATION TURBINE	ROTOP	GOVERNMENT	MILITARY	PUBLIC INTEREST
DIRECT COSTS												
Public Interest	428,595,489	14	10	10	14	14	10	10	10	14	14	422,671,310
Naval Air Intermittence	4316,547,673	6118,996,883	45,544,965	48,833,728	444,332,577	112,127,983	138,141,896	134,668,635	15,138,444	42,668,484	154,794,967	14
Safety Regulation	4151,668,219	451,951,786	42,596,338	43,759,338	436,610,948	118,085,489	119,542,154	116,476,339	42,528,126	11,154,565	17,439,191	14
ARTCs	4655,396,493	4264,126,489	114,487,986	118,887,818	668,596,477	119,428,494	148,976,529	1183,583,282	14	13,668,632	1138,317,785	14
Towers	4136,443,825	411,388,978	4819,172	11,251,118	114,829,882	111,591,568	158,165,534	117,385,638	118,387,541	42,966,289	816,518,922	14
TACOMs	4698,818,985	4245,611,791	118,687,678	118,491,165	1139,715,835	117,489,891	1128,291,468	121,437,598	112,887,746	13,484,253	192,478,166	14
FSNs	4236,943,883	418,814,815	9443,431	1779,125	114,898,454	114,987,411	1137,984,328	128,873,223	118,722,198	13,184,952	123,736,144	14
TOTAL OPS BUDGET	42,215,654,488	4694,889,861	434,499,483	458,881,498	1399,398,573	185,461,948	1415,181,986	1214,424,646	141,863,987	116,939,177	1331,218,877	422,671,310
FILE	41,414,688,088	4734,481,231	437,368,695	452,586,182	1268,314,318	125,338,962	156,371,637	199,238,632	16,594,229	15,885,288	1129,392,965	14
REB	4222,888,088	4188,591,273	45,453,579	47,835,262	142,388,222	14,877,531	115,923,199	195,481,769	11,988,838	1966,386	118,962,828	14
AIP REPORTS	4888,888,088	4413,813,872	138,747,143	1565,438	188,947,961	14,821,842	1142,728,616	1118,588,824	15,895,616	43,394,248	17,394,848	14
TOTAL DIRECT COSTS	44,652,294,488	41,958,174,637	1188,868,899	1111,788,388	1788,961,874	1128,497,483	1638,117,358	1439,245,892	153,444,663	128,324,939	1468,964,731	422,671,310
INDIRECT COSTS												
Public Interest	44,818,816	10	10	10	10	10	10	10	10	10	4691,277	44,118,769
Naval Air Intermittence	4152,828,138	452,848,189	42,648,183	43,825,865	421,187,983	15,774,451	119,471,836	116,586,646	42,589,386	11,175,318	128,889,321	14
Safety Regulation	4155,889,598	419,693,378	4884,877	41,425,158	412,868,993	13,112,138	16,834,842	15,684,678	4876,792	1398,778	43,981,588	14
ARTCs	4284,886,132	445,928,468	44,686,898	45,883,722	419,712,862	16,317,496	16,215,835	133,695,663	14	11,197,318	142,457,463	14
Towers	4411,836,861	43,688,576	1265,387	1485,288	44,543,633	43,754,186	113,888,749	15,638,735	13,357,768	1964,693	15,354,823	14
TACOMs	4287,449,371	481,168,427	43,531,987	46,213,817	416,172,825	15,753,232	121,833,681	17,884,541	13,968,234	11,152,774	138,561,653	14
FSNs	4711,495,587	44,496,578	1199,113	1349,849	46,338,597	16,693,841	127,868,882	19,372,636	14,814,528	11,138,132	118,748,388	14
TOTAL OPS BUDGET	4741,955,716	4247,815,128	112,387,486	118,132,883	4189,935,212	131,485,336	194,495,344	177,974,912	115,686,691	16,315,884	119,849,848	44,118,769
FILE	414,242,118	44,911,832	1245,338	1255,453	11,961,588	1536,684	11,924,812	11,533,918	1248,625	1189,218	12,424,418	14
REB	418,248,213	43,359,866	1176,839	1256,218	11,413,847	1386,784	11,389,341	11,185,646	1173,442	178,724	11,747,512	14
AIP REPORTS	428,772,288	47,832,885	4512,818	418,682	43,338,795	1257,654	15,975,838	14,742,831	1163,697	1115,389	1482,886	14
TOTAL INDIRECT COSTS	4789,238,248	4263,298,183	113,241,783	118,784,268	4116,841,354	132,586,378	1183,784,526	185,356,587	116,184,455	16,616,336	1124,423,848	44,118,769
GRAND TOTAL	45,441,492,735	42,213,472,741	1121,318,682	1139,572,568	4817,882,428	1153,883,862	1733,981,884	1524,601,599	171,629,118	132,943,275	1611,384,579	468,790,079
USER GROUP PERCENTS	100.00%	48.68%	2.23%	2.48%	15.83%	2.81%	13.49%	9.64%	1.32%	6.61%	11.24%	6.57%

Table 4.11

1989 ALLOCATION REGULATORY COSTS ALLOCATED TO PUBLIC

	TOTAL	AIR CARRIER DOMESTIC	AIR CARRIER INT'L	AIR CARRIER FREIGHT	COMPUTER	AIR TAXI	SEA AVIATION PISTON	SEA AVIATION TURBINE	ROTOR	GOVERNMENT	MILITARY	PUBLIC INTEREST
DIRECT COSTS												
Public Interest	424,375,499	14	14	14	14	14	14	14	14	14	14	422,671,218
Naval Maintenance	1316,547,673	15,544,965	46,833,728	144,332,577	112,127,983	138,141,896	134,668,635	15,438,444	42,468,444	154,794,967	154,794,967	14
Safety Regulation	1384,766,298	14	14	14	14	14	14	14	14	14	14	1384,766,298
ARTCs	1455,296,493	119,487,986	118,887,848	164,596,477	119,428,494	148,976,529	118,583,282	14	13,688,632	1138,317,785	1138,317,785	14
Towers	1136,443,825	111,388,978	119,172	11,251,118	114,829,882	158,165,534	117,385,658	118,387,541	42,966,289	816,518,922	816,518,922	14
TRCOWs	1498,818,985	1245,611,791	118,687,678	118,891,165	1139,715,835	117,489,891	128,291,468	121,437,598	13,468,255	192,479,166	192,479,166	14
FSSs	1236,943,883	118,814,815	1443,431	1779,125	114,898,454	1137,984,326	128,873,223	118,722,878	13,184,952	123,336,848	123,336,848	14
TOTAL OPS BUDGET	42,372,682,559	6642,137,275	131,983,152	147,842,168	1272,771,625	1395,559,752	1197,948,387	138,535,828	15,788,612	1321,171,786	1321,171,786	1331,377,648
FILE	11,414,688,888	1734,481,231	137,368,695	152,586,182	1268,314,318	125,336,962	156,371,637	199,238,652	16,594,229	15,885,288	1129,392,963	14
RII	1222,888,888	1182,888,888	15,124,722	17,358,884	139,678,988	14,158,254	113,825,669	11,658,291	1639,987	115,712,298	115,712,298	114,919,129
AIP BUDGETS	1488,888,888	1413,813,872	138,747,143	1555,438	188,947,961	14,821,842	1142,728,616	1118,588,821	15,895,616	13,394,248	17,394,848	14
TOTAL DIRECT COSTS	44,889,298,559	11,891,639,985	1187,552,584	1661,712,883	1189,772,797	1688,167,553	1428,712,652	152,593,965	125,827,975	1476,671,841	1476,671,841	1358,696,729
INDIRECT COSTS												
Public Interest	16,352,954	14	14	14	14	14	14	14	14	14	14	16,352,954
Naval Maintenance	1113,615,528	139,489,423	11,968,755	12,852,394	115,748,398	14,386,872	114,766,825	112,389,198	11,938,934	1876,442	119,455,897	14
Safety Regulation	148,451,847	14	14	14	14	14	14	14	14	14	14	148,451,847
ARTCs	1165,458,815	178,583,828	13,858,296	14,833,489	116,193,496	15,189,835	15,253,528	127,681,852	14	1983,599	134,878,892	14
Towers	133,171,197	12,887,543	1287,691	1317,284	11,556,911	12,938,986	11,298,196	14,487,932	12,628,578	1752,863	14,184,181	14
TRCOWs	1167,731,488	165,328,666	12,842,745	15,824,737	137,161,884	14,638,538	118,323,198	15,782,844	13,193,861	1927,818	121,597,925	14
FSSs	155,731,774	13,435,199	1152,114	1287,278	14,836,322	15,113,825	121,784,769	17,164,333	13,678,188	11,892,563	14,211,277	14
TOTAL OPS BUDGET	1594,719,916	1181,644,659	19,821,682	113,295,894	177,489,811	122,179,168	171,438,588	157,264,558	11,431,465	14,632,445	191,845,547	154,449,825
FILE	118,593,358	13,652,828	1182,442	1284,328	11,458,645	1399,839	11,432,158	11,148,679	1178,937	141,219	11,882,882	14
RII	17,637,546	12,632,542	1131,512	1198,539	11,851,455	1287,645	11,434,472	1622,251	158,986	158,546	11,299,597	14
AIP BUDGETS	121,825,881	16,872,544	1486,857	137,946	13,357,859	1244,235	15,684,433	14,518,884	1555,231	1189,576	1377,917	14
TOTAL INDIRECT COSTS	1634,586,613	1194,681,773	19,821,613	113,787,987	183,356,171	123,118,887	179,582,563	163,734,284	111,894,619	14,481,828	195,325,943	154,449,825
GRAND TOTAL	65,443,879,172	12,886,241,757	1314,965,326	1121,348,112	1745,869,855	1132,882,884	1687,758,117	1484,446,937	164,488,584	129,989,881	1571,997,744	1484,786,553
USER GROUP PERCENTS	100.00%	36.32%	2.11%	2.23%	13.69%	2.44%	12.63%	8.9%	1.18%	6.55%	18.51%	7.44%

Table 4.12

1989 MINIMUM GA ALLOCATION

MINIS

COST CATEGORY	VARIABLE COST	JOINT COST	AIR TAIL	GA-PISTON	GA-TURBO	ROTORCRAFT	TOTAL COST
OPERATIONS OVERHEAD							
GRANT ADMINISTRATION	00	\$5,759,831	\$734,464	\$2,495,615	\$2,225,257	\$384,494	\$5,759,831
AVIATION STANDARDS	00	\$32,889,461	\$4,231,587	\$13,735,626	\$13,887,916	\$1,754,332	\$32,889,461
TOTAL OVERHEAD	00	\$38,569,292	\$4,966,051	\$16,231,242	\$15,313,174	\$2,858,826	\$38,569,292
CAPITAL PROJECTS							
BENEFITING GA:							
CS GRANTS	00	\$5,527,787	00	\$622,799	\$4,984,988	00	\$5,527,787
GA GRANTS	00	\$72,253,819	\$1,626,186	\$43,186,973	\$27,522,748	00	\$72,253,819
F&E GA PROJECTS	00	\$23,228,868	\$2,981,935	\$18,384,912	\$8,524,858	\$1,337,163	\$23,228,868
R&D GA PROJECTS	00	\$7,127,819	\$984,933	\$3,238,286	\$2,546,818	\$485,791	\$7,127,819
TOTAL CAPITAL PROJECTS	00	\$108,139,493	\$5,512,974	\$57,344,969	\$43,538,596	\$1,742,954	\$108,139,493
FLIGHT SERVICE STATIONS							
AIR ROUTE TRAFFIC CONTROL CENTERS	\$162,966,314	\$38,495,572	\$16,889,253	\$138,826,321	\$28,988,537	\$18,365,774	\$193,461,886
TERMINAL NAVIGATION FACILITIES	\$136,851,839	00	\$15,648,581	\$36,988,786	\$43,421,832	00	\$136,851,839
TERMINAL CONTROL FACILITIES:	00	\$18,849,669	\$1,388,716	\$4,677,728	\$4,207,431	\$575,734	\$18,849,669
TOWERS	\$19,818,268	\$21,853,189	\$4,259,327	\$26,414,188	\$6,388,373	\$3,889,561	\$48,871,448
TRACONS	\$188,325,297	\$2,526,888	\$8,889,863	\$76,929,687	\$9,862,376	\$5,524,171	\$188,938,871
TOTAL MINIMUM GA ALLOCATION	\$418,360,989	\$212,433,214	\$55,865,885	\$356,612,848	\$191,712,379	\$24,877,819	\$629,872,898
FULL GA SHARE OF BUDGET							
—DOLLARS			\$153,883,862	\$733,981,884	\$524,681,599	\$71,629,118	\$1,483,216,463
—PERCENTS			2.81%	13.49%	9.64%	1.32%	27.26%
MINIMUM GA ALLOCATION AS PERCENT OF BUDGET							
—DOLLARS			1.83%	6.55%	3.52%	0.44%	11.58%
FULL GA SHARE OF BUDGET IF REGULATORY COSTS ARE ALLOCATED TO THE PUBLIC							
—DOLLARS			\$132,882,884	\$687,758,117	\$484,446,937	\$64,488,584	\$1,369,568,521
—PERCENTS			2.44%	12.63%	8.98%	1.18%	25.16%
MINIMUM GA ALLOCATION AS PERCENT OF BUDGET IF REGULATORY COSTS ARE ALLOCATED TO THE PUBLIC							
—PERCENTS			0.95%	6.38%	3.28%	0.41%	10.97%

1990

Table 4.13
1990 ALLOCATION
REGULATORY COSTS ALLOCATED TO USERS

OBJECT COSTS	TOTAL	AIR CARRIER DOMESTIC	AIR CARRIER INT'L	AIR CARRIER FREIGHT	COMPUTER	AIR TRAIL	GEN. AVIATION PISTON	GEN. AVIATION TURBINE	ROTOR	GOVERNMENT	MILITARY	PUBLIC INTEREST
Public Interest	629,543,631	14	14	14	14	14	14	14	14	14	14	14
Manned Maintenance	629,543,631	61,061,875,953	61,061,875,953	61,061,875,953	61,061,875,953	61,061,875,953	61,061,875,953	61,061,875,953	61,061,875,953	61,061,875,953	61,061,875,953	61,061,875,953
Safety Regulation	6156,218,265	653,167,289	653,167,289	653,167,289	653,167,289	653,167,289	653,167,289	653,167,289	653,167,289	653,167,289	653,167,289	653,167,289
AMTCA	6677,676,461	6272,266,927	614,853,852	614,853,852	664,838,477	621,821,978	612,464,967	6107,972,406	14	13,836,615	6131,764,184	14
Tomars	6142,645,773	612,429,968	6493,379	61,364,476	615,289,746	612,154,389	652,875,939	610,829,699	610,878,666	63,118,275	616,356,184	14
TRACONs	6737,858,496	6256,969,228	611,182,762	619,766,258	6149,176,269	619,554,958	6143,674,288	624,283,194	613,556,832	63,938,265	694,648,489	14
FRNs	6234,279,183	619,818,314	6434,877	6164,828	613,952,781	614,865,668	6136,769,465	620,815,938	610,694,121	63,176,528	622,987,543	14
TOTAL OPS BUDGET	62,266,674,988	6785,578,671	635,858,837	651,695,331	622,939,151	649,467,269	6438,971,582	6219,351,851	642,779,128	617,524,168	627,291,684	623,417,316
FILE	61,414,686,000	6738,295,645	637,147,842	652,382,941	6274,874,136	626,178,746	657,115,289	699,819,236	66,565,274	65,844,125	6126,837,266	14
RLD	6229,888,000	6111,376,396	65,591,662	68,839,379	644,539,485	65,168,925	616,595,515	615,621,781	62,869,481	61,825,685	610,979,938	14
RIP BUDGETS	6488,000,000	6412,982,731	638,745,478	6563,448	681,176,947	64,984,297	6142,984,626	6118,149,611	65,980,885	63,386,418	67,198,334	14
TOTAL DIRECT COSTS	64,718,274,988	61,968,233,443	6188,543,811	6112,681,131	6722,729,939	6125,711,238	6647,666,933	6445,542,398	657,341,989	626,984,388	6479,587,215	623,417,316
INDIRECT COSTS												
Public Interest	64,597,262	14	14	14	14	14	14	14	14	14	14	14
Manned Maintenance	6132,398,133	615,798,885	62,286,696	63,315,623	618,765,831	65,153,513	617,333,131	614,441,234	62,286,683	61,833,837	621,992,328	14
Safety Regulation	652,992,843	618,859,832	6942,892	61,365,486	611,798,425	63,848,224	66,621,288	65,466,969	6851,826	6385,251	63,669,889	14
AMTCA	6288,785,285	643,397,238	64,549,258	65,718,935	619,856,564	66,438,784	66,149,834	633,878,263	18	61,175,895	648,357,314	14
Tomars	644,344,787	613,737,818	6268,819	6418,689	64,577,842	63,657,575	613,877,738	65,485,831	63,271,358	6935,978	64,822,813	14
TRACONs	6288,481,813	648,895,346	63,485,389	66,168,589	646,586,964	66,125,831	623,466,636	67,543,368	64,225,238	61,227,431	629,486,135	14
FRNs	666,985,842	64,156,677	6184,189	623,458	65,987,818	66,293,523	625,784,178	68,812,626	64,527,459	61,344,813	69,731,996	14
TOTAL OPS BUDGET	6718,456,445	6236,836,958	611,716,313	617,286,541	6187,443,835	638,789,369	682,352,718	674,828,284	615,161,728	66,181,598	6118,773,638	67,983,511
FILE	613,561,818	64,658,825	6232,616	6337,284	61,988,966	6524,244	61,856,758	61,469,844	6232,612	6185,866	62,237,183	14
RLD	618,886,848	63,463,484	6172,982	6258,788	61,419,415	6389,883	61,382,728	61,892,318	6172,959	678,137	61,663,461	14
RIP BUDGETS	621,648,583	66,661,918	6485,324	617,752	63,364,538	6248,181	63,687,563	64,491,558	6155,575	6189,243	6367,827	14
TOTAL INDIRECT COSTS	6755,648,918	6258,829,377	612,687,214	617,912,365	6114,176,746	631,871,517	6181,279,744	681,873,196	615,722,874	66,394,865	6115,841,389	67,983,511
GRAND TOTAL	65,465,923,818	62,211,053,828	6121,158,224	6138,513,496	6836,986,685	6157,582,755	6748,946,677	6527,415,595	673,864,863	633,374,373	6594,548,523	631,408,827
USER GROUP PERCENTS	100.00%	48.45%	2.22%	2.39%	15.31%	2.68%	13.78%	9.65%	1.34%	8.61%	10.88%	8.57%

Table 4.14

1990 ALLOCATION REGULATORY COSTS ALLOCATED TO PIRLIC

DIRECT COSTS	TOTAL	AIR CARRIER DOMESTIC	AIR CARRIER INT'L	AIR CARRIER FREIGHT	COMPUTER	AIR TRAIL	GEN. AVIATION PISTON	GEN. AVIATION TURBINE	ROTOR	GOVERNMENT	MILITARY	PUBLIC INTEREST
Public Interest	629,583,531	0	0	0	0	0	0	0	0	0	66,886,316	623,417,316
Naval Maintenance	6289,261,091	6100,875,953	65,837,610	67,304,347	641,341,207	611,353,234	635,771,090	631,814,162	65,837,530	62,275,790	648,449,271	0
Safety Regulation	6366,627,221	0	0	0	0	0	0	0	0	0	0	6366,627,221
ARTCs	6677,676,461	6272,266,927	614,853,852	610,645,856	664,830,477	621,821,970	642,464,967	6107,972,406	0	63,836,615	6131,764,104	0
Towers	6142,645,773	612,420,960	6093,399	61,364,476	615,209,746	612,154,309	632,075,939	610,229,699	610,870,866	63,110,275	616,356,104	0
TACCOMs	6737,650,496	6256,909,228	611,182,762	619,766,250	6149,476,269	619,654,990	6143,674,200	624,203,194	613,556,832	63,938,265	694,600,489	0
FSRs	6234,279,183	69,810,314	6434,877	6764,828	613,952,701	614,865,668	6136,769,465	620,815,930	610,694,121	63,176,520	622,987,543	0
TOTAL OPS BUDGET	62,417,003,856	6652,391,302	632,401,700	647,844,964	6204,810,400	619,850,170	6410,756,470	6203,835,400	640,159,357	616,337,473	6320,251,906	6330,444,537
FAE	61,414,600,000	6730,295,645	637,147,042	652,302,941	6274,074,436	626,170,746	657,115,209	699,819,236	66,505,274	65,044,125	6126,837,266	0
BLD	6229,000,000	6104,611,274	65,253,821	67,549,522	641,766,902	64,399,535	614,079,770	613,400,123	61,731,645	6072,902	615,730,739	619,515,670
AIP BUDGETS	6000,000,000	6412,902,731	630,745,470	6563,400	601,176,947	64,904,297	6142,904,620	6110,149,611	65,900,005	63,306,410	67,190,324	0
TOTAL DIRECT COSTS	64,664,643,856	61,900,201,032	6105,540,032	6100,260,907	6601,820,765	6114,532,756	6624,936,172	6426,492,370	654,304,362	625,640,999	6469,210,246	6349,560,214
INDIRECT COSTS												
Public Interest	66,396,360	0	0	0	0	0	0	0	0	0	6456,631	65,939,737
Naval Maintenance	690,909,201	634,143,241	61,705,060	62,472,205	613,992,606	63,042,702	613,111,405	610,760,063	61,705,044	6770,201	616,390,500	0
Safety Regulation	646,610,113	0	0	0	0	0	0	0	0	0	0	646,610,113
ARTCs	6164,746,609	660,393,090	63,730,793	64,603,471	616,204,135	65,200,306	65,194,029	627,120,536	0	6963,602	633,096,560	0
Towers	632,540,372	62,920,510	6210,003	620,026	63,576,231	62,857,813	611,235,502	64,206,305	62,556,040	6731,312	63,445,771	0
TACCOMs	6164,000,910	664,300,406	62,790,005	64,945,635	637,399,990	64,917,015	619,622,059	66,025,007	63,392,013	6905,301	623,671,700	0
FSRs	652,195,172	63,173,276	6144,532	6246,913	64,509,500	64,004,570	620,640,067	66,727,703	63,456,336	61,026,653	67,429,563	0
TOTAL OPS BUDGET	6589,454,833	6172,530,610	64,504,400	612,669,169	675,762,550	621,703,213	669,003,061	654,950,414	611,109,433	64,477,300	604,090,725	652,557,650
FAE	610,009,995	63,464,043	6173,030	6290,006	61,419,972	6309,956	61,303,260	61,092,739	6173,027	670,160	61,664,114	0
BLD	67,504,020	62,576,429	6120,643	6106,557	61,055,000	6209,960	61,029,763	6012,552	6120,662	650,125	61,237,422	0
AIP BUDGETS	620,570,150	66,334,276	6461,627	635,390	63,204,936	6235,671	65,420,157	64,200,396	6147,033	6103,943	6345,922	0
TOTAL INDIRECT COSTS	6607,610,990	6105,306,157	69,347,000	613,142,003	601,443,346	622,610,000	677,636,241	661,144,100	611,550,955	64,717,544	600,146,193	652,557,650
GRAND TOTAL	65,464,302,853	62,005,507,189	6114,095,033	6121,402,910	6763,272,111	6137,151,565	6702,572,413	6407,636,470	665,943,317	630,350,544	6557,364,439	6402,110,004
USER GROUP PERCENTS	100.00%	30.14%	2.10%	2.22%	13.96%	2.51%	12.85%	8.92%	1.21%	0.56%	10.19%	7.35%

Table 4.15

1990 MINIMUM GA ALLOCATION

MINSYS

COST CATEGORY	VARIABLE COST	JOINT COST	AIR TRAIL	GA-PISTON	GA-TURBO	ROTORCRAFT	TOTAL COST
OPERATIONS OVERHEAD							
GRANT ADMINISTRATION	\$0	\$5,516,975	\$713,611	\$2,358,156	\$2,111,725	\$293,443	\$5,516,975
AVIATION STANDARDS	\$0	\$33,795,454	\$4,421,761	\$14,195,864	\$13,368,115	\$1,818,513	\$33,795,454
TOTAL OVERHEAD	\$0	\$39,312,429	\$5,135,371	\$16,553,220	\$15,479,841	\$2,111,956	\$39,312,429
CAPITAL PROJECTS							
BENEFITTING GA:							
CS GRANTS	\$0	\$5,527,787	\$0	\$622,799	\$4,984,988	\$0	\$5,527,787
GA GRANTS	\$0	\$72,255,819	\$1,626,106	\$43,106,973	\$27,522,748	\$0	\$72,255,819
F&E GA PROJECTS	\$0	\$23,229,421	\$3,821,854	\$18,482,265	\$8,465,632	\$1,348,478	\$23,229,421
R&D GA PROJECTS	\$0	\$7,352,888	\$946,239	\$3,335,238	\$2,651,563	\$419,855	\$7,352,888
TOTAL CAPITAL PROJECTS	\$0	\$108,365,914	\$5,553,399	\$57,467,267	\$43,544,922	\$1,768,326	\$108,365,914
FLIGHT SERVICE STATIONS							
AIR ROUTE TRAFFIC CONTROL CENTERS	\$168,722,608	\$31,586,667	\$16,122,268	\$136,888,562	\$29,862,477	\$18,315,967	\$192,389,267
TERMINAL NAVIGATION FACILITIES	\$148,957,538	\$0	\$16,753,789	\$38,153,958	\$46,849,863	\$0	\$194,957,538
TERMINAL CONTROL FACILITIES:	\$0	\$12,088,847	\$1,568,395	\$5,188,376	\$4,617,548	\$641,735	\$12,088,847
TOWERS	\$28,875,697	\$25,287,816	\$4,944,863	\$29,382,884	\$7,415,376	\$4,421,991	\$46,843,513
TRACONS	\$115,873,826	\$3,281,368	\$9,186,452	\$88,238,895	\$11,312,216	\$6,336,263	\$116,914,513
TOTAL MINIMUM GA ALLOCATION	\$437,629,654	\$219,682,248	\$59,295,658	\$371,752,362	\$197,474,235	\$25,588,278	\$655,951,213
FULL GA SHARE OF BUDGET							
--DOLLARS							
			\$157,582,755	\$748,946,677	\$527,415,595	\$73,864,843	\$1,587,889,878
--PERCENTS							
			2.88%	13.78%	9.65%	1.34%	27.57%
MINIMUM GA ALLOCATION AS PERCENT OF BUDGET							
			1.88%	6.88%	3.61%	0.47%	12.88%
FULL GA SHARE OF BUDGET IF REGULATORY COSTS ARE ALLOCATED TO THE PUBLIC							
--DOLLARS							
			\$137,151,565	\$782,572,413	\$487,636,478	\$65,943,317	\$1,393,343,764
--PERCENTS							
			2.51%	12.85%	8.92%	1.21%	25.48%
MINIMUM GA ALLOCATION AS PERCENT OF BUDGET IF REGULATORY COSTS ARE ALLOCATED TO THE PUBLIC							
			1.88%	6.54%	3.37%	0.43%	11.38%

1991

Table 4.16

1991 ALLOCATION REGULATORY COSTS ALLOCATED TO USERS

	TOTAL	AIR CARRIER DOMESTIC	AIR CARRIER INT'L	AIR CARRIER FREIGHT	COMPUTER	AIR TOLL	GEN. AVIATION PISTON	GEN. AVIATION TURBINE	BOAT	GOVERNMENT	MILITARY	PUBLIC INTEREST
DIRECT COSTS												
Public Interest	638,743,441	10	10	10	10	10	10	10	10	10	66,337,143	624,426,298
Naval Maintenance	6264,317,884	931,685,387	14,572,634	46,636,293	138,538,963	118,631,987	133,578,376	129,189,534	14,669,159	12,898,673	142,884,877	10
Safety Regulation	163,467,341	655,299,858	12,761,438	14,885,188	110,336,684	111,823,821	121,251,362	117,639,353	12,759,284	11,243,567	17,148,483	10
AMTCA	1711,233,337	1294,722,394	115,531,398	119,497,421	178,354,367	123,186,611	144,678,486	1114,284,815	10	14,864,888	1134,997,726	10
Tomars	1151,435,748	113,762,284	1989,876	11,511,824	116,749,674	112,929,378	154,841,218	119,392,198	111,564,898	13,388,615	116,346,688	10
TRACONS	1799,616,387	1272,688,582	111,874,266	128,988,337	1162,298,597	122,488,887	1163,161,185	127,692,868	115,511,483	14,546,892	198,221,896	10
FSM	1234,455,544	19,747,448	1431,849	1758,641	113,982,424	115,818,374	1137,143,864	121,819,742	118,888,288	13,287,948	122,353,374	10
TOTAL OPS BUDGET	12,353,289,553	1728,817,866	136,161,422	153,397,096	1342,252,389	195,198,257	1454,646,484	1229,217,725	145,384,385	118,425,782	1328,258,858	124,426,298
FILE	11,414,688,888	1725,886,833	136,987,396	152,888,571	1278,959,511	127,858,983	157,993,155	1188,447,977	146,678,528	15,884,282	1122,711,653	10
ALB	1237,888,888	1114,568,968	15,749,243	18,272,988	117,844,617	15,481,485	117,368,888	116,232,955	12,178,599	11,878,268	119,844,485	10
ALP BUDGETS	1488,888,888	1412,947,162	134,743,588	1561,175	181,483,642	14,998,128	1143,277,139	1189,775,284	15,921,464	13,378,633	17,881,888	10
TOTAL DIRECT COSTS	14,886,889,553	11,981,331,221	1189,561,591	1114,232,638	1758,668,888	1132,728,365	1673,285,578	1455,633,948	168,866,889	127,958,965	1177,811,997	124,426,298
INDIRECT COSTS												
Public Interest	18,888,168	10	10	10	10	10	10	10	10	10	1519,358	17,488,882
Naval Maintenance	1188,885,879	137,429,858	11,868,374	12,711,584	115,746,987	14,344,221	114,682,677	111,926,819	11,987,814	1857,516	117,498,836	10
Safety Regulation	148,671,882	117,219,948	1459,881	11,247,285	118,993,628	12,835,168	16,119,722	15,812,395	1788,188	1354,964	13,239,692	10
AMTCA	1187,817,692	177,376,758	14,228,847	15,298,662	119,119,659	16,279,584	15,873,266	131,858,886	10	11,183,596	136,647,282	10
Tomars	137,981,373	13,598,719	1258,844	1395,329	14,379,896	13,388,921	112,722,735	15,878,898	13,823,918	1465,174	14,284,955	10
TRACONS	1288,558,576	175,547,858	13,287,393	15,818,681	114,334,188	16,226,853	124,347,613	17,666,775	14,294,358	11,247,513	127,192,754	10
FSM	159,949,787	13,652,763	1161,831	1284,294	15,239,634	15,624,999	123,483,135	17,876,954	14,847,348	11,282,149	14,376,728	10
TOTAL OPS BUDGET	1651,856,478	1214,825,128	118,657,891	115,747,835	1188,489,982	128,691,165	187,149,348	168,611,919	114,861,198	15,638,912	197,798,796	17,488,882
FILE	112,189,853	14,167,224	1288,814	1381,892	11,753,179	1483,641	11,686,984	11,327,863	1212,485	195,471	11,947,248	10
ALB	19,382,489	13,286,939	1168,888	1232,325	11,349,181	1372,287	11,384,351	11,821,874	1163,459	173,471	11,498,523	10
ALP BUDGETS	119,415,666	15,968,889	1435,218	12,693	13,837,534	1225,757	15,132,197	14,831,957	1139,778	197,891	1313,847	10
TOTAL INDIRECT COSTS	1692,844,398	1228,168,896	111,468,395	116,314,745	1186,549,886	129,778,789	195,278,888	174,993,613	114,577,124	15,897,745	1181,558,486	17,488,882
GRAND TOTAL	15,498,933,951	12,209,499,313	1121,821,986	1138,547,375	1187,899,965	1162,493,155	1768,564,378	1538,627,553	174,644,812	133,856,718	1578,562,483	131,917,180
USER GROUP PERCENTS	100.00%	48.18%	2.28%	2.37%	15.59%	2.95%	13.98%	9.65%	1.36%	8.62%	18.32%	8.54%

Table 4.17

REGULATORY COSTS ALLOCATED TO PUBLIC

DIRECT COSTS	TOTAL	AIR CARRIER DOMESTIC	AIR CARRIER INT'L	AIR CARRIER FREIGHT	COMPUTER	AIR TARI	BOAL INVENTION PISTON	BOAL INVENTION TURBINE	ROTOR	GOVERNMENT	MILITARY	PUBLIC INTEREST
Public Interest	130,763,481	10	10	10	10	10	10	10	10	10	10	10
Naval Maintenance	1254,317,684	191,640,387	14,572,634	16,636,293	138,530,963	110,631,987	133,578,376	129,189,534	14,669,159	12,898,673	142,884,877	10
Safety Regulation	130,129,817	10	10	10	10	10	10	10	10	10	10	10
ARTCOs	9711,233,337	1284,722,394	115,531,396	119,497,421	178,254,367	123,186,611	144,678,486	1114,284,815	10	14,864,688	1134,997,725	10
Towers	6151,435,748	613,762,284	989,876	61,511,824	616,749,674	612,929,378	154,841,218	619,392,190	611,564,898	13,308,615	616,346,648	10
TRACONS	1799,616,387	1272,888,582	611,874,266	128,948,537	1162,298,597	122,448,687	6163,161,185	127,692,668	615,511,483	14,586,892	198,221,896	10
FSSs	1234,455,544	69,747,448	6431,819	9758,641	113,982,824	115,818,374	6137,143,864	121,819,742	118,888,288	13,287,948	122,353,374	10
TOTAL OPS BUDGET	12,493,851,229	1672,718,888	133,488,822	149,392,715	1301,915,625	184,167,236	1433,395,842	1211,578,372	142,545,821	117,182,216	1321,191,656	1229,655,316
FILE	11,414,688,000	1725,886,833	136,947,396	152,888,571	1279,959,511	127,858,983	157,993,155	1188,487,977	16,678,528	15,884,282	1122,711,653	10
AID	1237,888,000	9187,591,171	15,481,334	97,768,866	144,112,381	14,672,158	114,727,846	114,812,878	11,815,370	1918,398	115,791,597	128,197,448
AID BOUNTS	1688,888,000	1412,947,162	138,743,588	156,117,5	181,483,642	14,998,128	1143,277,139	1189,775,284	15,921,464	13,378,633	17,881,888	10
TOTAL DIRECT COSTS	14,944,651,229	11,919,862,374	1186,452,253	1189,722,527	1787,391,159	1128,888,489	1649,393,183	1435,773,782	156,952,352	126,553,721	1466,686,786	1343,852,764
INDIRECT COSTS												
Public Interest	15,954,888	10	10	10	10	10	10	10	10	10	10	10
Naval Maintenance	181,289,365	127,988,472	11,392,699	12,821,233	111,737,914	13,238,212	111,818,889	18,898,334	11,422,898	1639,198	113,137,195	10
Safety Regulation	142,796,146	10	10	10	10	10	10	10	10	10	10	10
ARTCOs	1133,245,982	163,349,595	13,455,674	14,338,898	115,653,566	65,141,129	14,948,191	125,427,743	18	1983,531	138,834,453	10
Towers	138,561,453	12,889,288	1282,862	138,687	13,419,893	12,639,268	118,813,714	13,958,587	12,368,565	1675,384	13,344,979	10
TRACONS	1151,371,657	168,586,355	12,632,985	14,653,838	135,985,817	14,986,586	128,249,178	16,148,393	13,479,392	1999,145	121,778,936	10
FSSs	146,621,622	12,789,841	1123,565	1217,878	14,888,685	14,294,927	118,777,774	16,814,291	13,898,293	1917,892	16,395,984	10
TOTAL OPS BUDGET	1521,848,224	1157,354,742	17,886,985	111,538,839	178,796,275	128,388,834	165,829,866	158,431,369	118,312,349	14,135,158	174,988,874	148,363,621
FILE	99,872,117	13,188,824	1154,783	1224,637	11,384,537	1259,891	11,261,357	1988,861	1158,878	171,848	11,448,938	10
AID	16,982,718	12,386,378	1119,128	1172,888	11,883,965	1276,978	1971,597	1768,486	1121,635	154,672	11,115,895	10
AID BOUNTS	118,557,836	15,699,559	1415,784	138,839	12,984,875	1215,389	14,989,092	13,857,326	1331,391	193,527	1297,463	10
TOTAL INDIRECT COSTS	1556,452,994	1168,541,473	18,496,513	111,967,195	176,889,652	121,152,284	172,963,711	156,837,161	118,725,425	14,354,389	177,841,578	148,363,621
GRAND TOTAL	15,501,104,224	12,087,683,847	1114,948,765	1121,689,723	1783,488,811	1142,848,694	1722,356,894	1491,618,864	167,677,776	138,918,118	1544,448,353	1394,216,385
USER GROUP PERCENTS	100.00%	37.95%	2.89%	2.21%	14.24%	2.58%	13.13%	8.94%	1.23%	0.56%	9.96%	7.17%

Table 4.18

MINSYS

1991 MINIMUM GA ALLOCATION

COST CATEGORY	VARIABLE COST	JOINT COST	AIR TAXI	GA-PISTON	GA-TURBO	PGTORCRRAFT	TOTAL COST
OPERATIONS OVERHEAD							
GRANT ADMINISTRATION	\$0	\$5,853,368	\$652,874	\$2,285,889	\$1,913,928	\$278,751	\$5,853,368
AVIATION STANDARDS	\$0	\$35,365,478	\$4,693,727	\$14,914,372	\$13,848,228	\$1,917,152	\$35,365,478
TOTAL OVERHEAD	\$0	\$40,418,836	\$5,356,601	\$17,120,180	\$15,751,146	\$2,187,903	\$40,418,836
CAPITAL PROJECTS							
BENEFITTING GA:							
CS GRANTS	\$0	\$5,527,787	\$0	\$622,799	\$4,984,988	\$0	\$5,527,787
GA GRANTS	\$0	\$72,253,819	\$1,626,186	\$43,186,973	\$27,522,748	\$0	\$72,253,819
F&E GA PROJECTS	\$0	\$23,238,918	\$3,868,352	\$18,424,541	\$8,482,828	\$1,343,989	\$23,238,918
R&D GA PROJECTS	\$0	\$7,618,183	\$982,729	\$3,455,925	\$2,725,482	\$435,968	\$7,618,183
TOTAL CAPITAL PROJECTS	\$0	\$108,624,618	\$5,679,187	\$57,618,237	\$43,555,238	\$1,779,957	\$108,624,618
FLIGHT SERVICE STATIONS							
AIR ROUTE TRAFFIC CONTROL CENTERS	\$168,247,882	\$33,236,826	\$16,366,375	\$137,288,132	\$29,521,849	\$18,394,151	\$193,484,788
TERMINAL NAVIGATION FACILITIES	\$148,276,253	\$0	\$18,218,114	\$39,952,336	\$98,185,884	\$0	\$148,276,253
TERMINAL CONTROL FACILITIES:	\$0	\$13,298,137	\$1,752,988	\$5,759,718	\$5,861,424	\$716,887	\$13,298,137
TOWERS	\$23,247,248	\$29,519,885	\$5,841,251	\$32,939,685	\$8,761,829	\$5,224,448	\$52,766,325
TRACONS	\$133,938,586	\$4,111,075	\$18,692,444	\$182,784,448	\$13,166,697	\$7,375,885	\$136,881,828
TOTAL MINIMUM GA ALLOCATION	\$465,789,962	\$229,288,571	\$63,986,959	\$393,286,848	\$285,928,186	\$27,677,464	\$692,941,981
FULL GA SHARE OF BUDGET							
--DOLLARS							
	\$162,493,155	\$758,564,378	\$538,627,553	\$74,644,812	\$1,536,329,898		
--PERCENTS							
	2.95%	13.98%	9.65%	1.36%	27.94%		
MINIMUM GA ALLOCATION AS PERCENT OF BUDGET							
	1.16%	7.15%	3.74%	0.58%	12.68%		
FULL GA SHARE OF BUDGET IF REGULATORY COSTS ARE ALLOCATED TO THE PUBLIC							
--DOLLARS							
	\$142,848,694	\$722,355,894	\$491,818,864	\$67,677,776	\$1,423,886,228		
--PERCENTS							
	2.58%	13.13%	8.94%	1.23%	25.88%		
MINIMUM GA ALLOCATION AS PERCENT OF BUDGET IF REGULATORY COSTS ARE ALLOCATED TO THE PUBLIC							
	1.88%	6.88%	3.49%	0.47%	11.95%		

1992

1992 ALLOCATION
REGULATORY COSTS ALLOCATED TO USERS

DIRECT COSTS											PUBLIC INTEREST
TOTAL	AIR CARRIER DOMESTIC	AIR CARRIER INT'L	AIR CARRIER FREIGHT	COMPUTER	AIR TRAI	GENL AVIATION PISTON	GENL AVIATION TURBINE	ROTOR	GOVERNMENT	MILITARY	
Public Interest	632,427,289	10	10	10	10	10	10	10	10	66,647,613	625,779,677
Naval Maintenance	624,527,337	94,147,981	135,922,763	19,962,829	431,474,763	626,704,439	94,331,675	11,936,394	937,798,817	94	
Safety Regulation	171,853,727	62,868,529	142,675,966	111,660,942	622,348,798	618,387,541	62,987,641	61,383,328	67,254,618	94	
ARTCCs	1745,859,118	6297,286,264	116,216,748	629,357,779	176,236,289	625,387,921	146,982,224	6128,916,081	14	64,296,572	1138,178,588
Towers	168,618,756	91,896,559	118,441,215	113,734,864	157,678,935	629,688,383	112,284,521	13,514,738	916,317,253	94	
TROCKs	6657,169,569	6289,428,518	112,594,341	1176,885,171	625,662,238	6184,916,732	631,688,521	117,798,265	15,141,934	1181,658,548	94
FSSs	6233,744,584	19,645,477	1427,441	113,965,654	115,186,997	1136,925,242	621,156,231	118,671,891	63,229,899	621,665,719	94
TOTAL OPS BUDGET	62,452,488,372	1752,228,471	137,351,599	1363,246,979	181,523,775	1488,326,675	6239,445,836	148,895,994	619,422,865	6329,751,257	625,779,677
FPE	11,414,688,088	1721,853,618	136,652,884	151,681,764	6285,977,387	158,983,338	1181,821,655	96,761,714	15,126,678	1119,437,778	94
RID	6218,888,888	1188,121,349	15,857,318	142,531,987	14,982,588	115,636,451	114,432,133	11,949,846	1955,868	116,346,848	94
AIP GRANTS	6888,888,888	1412,986,265	138,741,232	1558,516	1143,592,393	1189,383,538	1189,383,538	15,935,747	13,378,949	16,885,674	94
TOTAL DIRECT COSTS	64,877,888,372	11,987,881,695	1189,882,232	1114,768,798	1773,385,446	1139,568,988	1464,283,154	162,742,581	628,875,553	1172,341,548	625,779,677
INDIRECT COSTS											
Public Interest	67,398,884	10	10	10	10	10	10	10	10	6429,673	66,961,218
Naval Maintenance	687,783,885	629,949,429	61,494,288	112,948,218	13,588,848	612,837,161	19,648,381	11,568,371	1697,534	113,616,017	94
Safety Regulation	113,798,127	115,395,297	1768,299	118,842,145	62,591,591	65,542,683	14,588,394	1715,269	1328,417	62,799,886	94
ARTCCs	178,656,134	678,253,882	13,832,254	118,815,728	15,999,536	15,581,331	628,574,484	14	11,815,343	632,633,616	94
Towers	135,855,941	13,389,547	1413,799	14,188,852	13,853,684	112,148,241	14,588,883	62,731,228	1781,435	13,634,521	14
TROCKs	1189,188,837	169,732,859	13,834,392	142,485,442	16,182,876	124,738,862	17,613,686	14,264,577	11,238,861	124,541,878	14
FSSs	152,378,728	13,129,698	1138,782	14,331,757	14,982,115	128,953,521	16,865,849	13,527,853	11,847,828	17,838,374	14
TOTAL OPS BUDGET	1386,846,548	1191,858,184	19,511,645	114,876,896	126,318,643	148,985,719	161,781,917	112,799,297	15,181,418	184,784,366	66,961,218
FPE	118,732,326	13,649,265	1182,865	1284,513	1437,291	11,512,828	11,175,632	1198,127	184,993	11,659,878	14
RID	17,319,624	12,488,325	1124,144	11,888,364	1298,176	11,832,987	1081,628	1129,642	157,954	11,131,276	14
AIP GRANTS	117,869,353	15,231,365	1381,888	127,578	12,683,138	14,532,684	13,541,384	1122,833	145,825	1261,892	14
TOTAL INDIRECT COSTS	1621,168,451	1283,219,858	118,199,654	114,549,351	197,378,342	147,984,138	167,388,561	113,241,988	15,338,182	187,756,613	66,961,218
GRAND TOTAL	65,498,168,423	12,198,228,753	1129,881,886	1129,318,149	1478,755,787	1786,443,887	1531,583,715	175,984,481	134,285,735	1564,898,161	632,744,887
USER GROUP PERCENTS											8.68%
											1.38%
											9.67%
											14.38%
											3.83%
											15.84%
											2.35%
											2.18%
											39.84%
											104.88%

Table 4.20

1992 ALLOCATION
REGULATORY COSTS ALLOCATED TO PUBLIC

	TOTAL	AIR CARRIER DOMESTIC	AIR CARRIER INT'L	AIR CARRIER FREIGHT	COMMUTER	AIR TRAI	BOAL AVIATION PISTON	BOAL AVIATION TURBINE	ROTOR	GOVERNMENT	MILITARY	PUBLIC INTEREST
DIRECT COSTS												
Public Interest	\$2,427,209	00	00	00	00	00	00	00	00	00	\$6,647,612	\$25,779,677
Naval Maintenance	\$241,527,337	\$83,141,273	\$4,147,981	\$6,826,411	\$25,922,763	\$19,982,829	\$31,474,763	\$26,784,439	\$4,331,675	\$1,936,394	\$37,798,817	00
Safety Regulation	\$294,722,681	00	00	00	00	00	00	00	00	00	00	\$294,722,681
ARTCOs	\$743,859,118	\$297,286,268	\$16,216,748	\$28,351,779	\$76,236,209	\$25,387,921	\$46,982,224	\$128,916,081	00	\$4,296,572	\$138,178,568	00
Towers	\$164,618,756	\$15,245,587	\$1,096,559	\$1,674,768	\$18,441,215	\$13,734,864	\$57,678,935	\$24,680,383	\$12,284,521	\$3,514,738	\$16,347,353	00
TRACONS	\$467,189,569	\$289,428,518	\$12,594,341	\$22,261,316	\$176,885,171	\$25,662,238	\$184,916,732	\$31,688,521	\$17,788,265	\$5,141,934	\$181,858,548	00
FSSs	\$233,744,584	\$9,645,477	\$427,441	\$758,832	\$13,963,654	\$15,186,997	\$136,925,242	\$21,156,231	\$18,871,891	\$3,229,899	\$21,665,719	00
TOTAL OPS BUDGET	\$2,576,863,326	\$694,747,835	\$34,483,878	\$51,871,898	\$288,571,812	\$89,854,833	\$457,977,897	\$221,858,295	\$45,188,353	\$18,118,737	\$322,496,638	\$329,582,328
F&E	\$1,414,688,000	\$721,853,618	\$36,652,884	\$51,681,764	\$285,977,387	\$27,984,816	\$58,983,338	\$181,821,655	\$6,761,714	\$5,126,678	\$119,437,778	00
R&D	\$218,000,000	\$94,686,478	\$4,751,244	\$6,839,813	\$39,883,228	\$4,247,447	\$13,239,444	\$12,455,749	\$1,629,418	\$812,985	\$13,557,729	\$17,896,472
AIP SHORTS	\$884,880,000	\$412,986,265	\$38,741,232	\$558,516	\$81,627,173	\$5,878,521	\$143,592,393	\$189,383,538	\$5,935,747	\$3,378,949	\$6,885,674	00
TOTAL DIRECT COSTS	\$5,088,683,326	\$1,923,393,388	\$186,627,638	\$118,151,198	\$728,858,792	\$127,164,816	\$673,713,864	\$443,919,238	\$59,515,231	\$27,429,342	\$462,297,811	\$338,398,831
INDIRECT COSTS												
Public Interest	\$5,581,844	00	00	00	00	00	00	00	00	00	\$319,853	\$5,181,991
Naval Maintenance	\$65,434,381	\$22,317,648	\$1,113,444	\$1,617,672	\$9,642,768	\$2,674,323	\$9,849,897	\$7,189,756	\$1,182,753	\$519,787	\$18,146,349	00
Safety Regulation	\$34,449,585	00	00	00	00	00	00	00	00	00	00	\$34,449,585
ARTCOs	\$139,683,822	\$57,424,373	\$3,132,457	\$3,932,347	\$14,725,929	\$4,983,978	\$4,687,452	\$23,356,516	00	\$829,534	\$26,698,835	00
Towers	\$26,118,768	\$2,645,842	\$198,249	\$298,565	\$3,199,486	\$2,382,951	\$18,259,868	\$3,574,881	\$2,131,322	\$689,795	\$2,836,289	00
TRACONS	\$151,811,242	\$53,726,638	\$2,424,918	\$4,286,199	\$33,888,888	\$4,941,812	\$28,458,189	\$6,884,372	\$3,488,813	\$998,829	\$19,611,878	00
FSSs	\$44,679,531	\$2,398,761	\$185,947	\$186,184	\$3,461,575	\$3,744,472	\$16,681,558	\$5,243,856	\$2,694,744	\$888,376	\$5,378,139	00
TOTAL OPS BUDGET	\$469,639,884	\$148,584,454	\$6,967,815	\$18,312,887	\$64,917,838	\$18,646,737	\$81,848,876	\$45,448,581	\$9,396,832	\$3,749,928	\$64,975,256	\$43,671,496
F&E	\$7,989,394	\$2,716,128	\$135,589	\$196,875	\$1,173,551	\$325,473	\$1,127,244	\$875,814	\$141,518	\$63,268	\$1,234,839	00
R&D	\$5,448,798	\$1,852,133	\$92,484	\$134,258	\$888,249	\$221,941	\$769,469	\$596,675	\$96,496	\$13,137	\$842,842	00
AIP SHORTS	\$16,389,394	\$5,819,845	\$366,395	\$26,192	\$2,577,386	\$192,648	\$4,355,151	\$3,482,754	\$117,793	\$42,377	\$249,748	00
TOTAL INDIRECT COSTS	\$499,446,671	\$158,891,753	\$7,561,324	\$18,678,284	\$69,468,936	\$19,386,791	\$67,299,948	\$38,323,824	\$9,752,632	\$3,938,694	\$67,381,878	\$43,671,496
GRAND TOTAL	\$5,588,130,000	\$2,082,285,141	\$194,189,000	\$136,829,482	\$798,327,728	\$146,551,607	\$741,013,812	\$482,243,062	\$69,267,863	\$31,368,036	\$529,599,689	\$382,070,327
NET GROUP PERCENTS	100.00%	37.29%	2.80%	2.28%	14.58%	2.65%	13.47%	8.99%	1.26%	0.57%	9.63%	6.95%

Table 4.21

MINSYS

1992 MINIMUM GA ALLOCATION

COST CATEGORY	VARIABLE COST	JOINT COST	AIR TAXI	GA-PISTON	GA-TURBO	ROTORCRAFT	TOTAL COST
OPERATIONS OVERHEAD							
GRANT ADMINISTRATION	10	\$4,536,665	\$687,418	\$1,989,932	\$1,638,226	\$245,809	\$4,536,665
AVIATION STANDARDS	10	\$37,008,621	\$4,981,641	\$15,642,221	\$14,321,378	\$2,823,381	\$37,008,621
TOTAL OVERHEAD	10	\$41,545,286	\$5,585,059	\$17,672,153	\$16,019,604	\$2,869,170	\$41,545,286
CAPITAL PROJECTS							
BENEFITTING GR:							
CS GRANTS	10	\$5,527,787	10	\$622,799	\$4,984,988	10	\$5,527,787
GA GRANTS	10	\$72,255,819	\$1,626,186	\$43,186,973	\$27,522,748	10	\$72,255,819
FILE GR PROJECTS	10	\$23,232,388	\$3,188,463	\$18,448,487	\$8,335,486	\$1,348,832	\$23,232,388
R&D GR PROJECTS	10	\$6,743,555	\$891,168	\$3,869,184	\$2,395,829	\$387,462	\$6,743,555
TOTAL CAPITAL PROJECTS	10	\$107,759,548	\$5,617,728	\$57,247,362	\$43,158,963	\$1,735,494	\$107,759,548
FLIGHT SERVICE STATIONS							
AIR ROUTE TRAFFIC CONTROL CENTERS	\$158,963,924	\$34,978,985	\$16,568,178	\$137,823,733	\$29,985,798	\$18,437,281	\$197,934,989
TERMINAL NAVIGATION FACILITIES	\$155,986,389	10	\$19,798,758	\$41,818,644	\$94,296,907	10	\$155,986,389
TERMINAL CONTROL FACILITIES:	10	\$14,789,186	\$1,969,875	\$6,398,688	\$5,541,656	\$797,774	\$14,789,186
TOWERS	\$25,856,982	\$34,543,879	\$6,914,439	\$36,938,582	\$18,378,655	\$6,184,384	\$68,399,988
TRACONS	\$155,694,624	\$5,265,826	\$12,429,249	\$119,387,824	\$15,385,482	\$8,572,949	\$158,185,869
TOTAL MINIMUM GA ALLOCATION	\$436,421,759	\$238,793,829	\$68,882,486	\$416,478,898	\$214,598,986	\$29,998,192	\$732,448,288
FULL GA SHARE OF BUDGET							
--DOLLARS		\$166,823,943	\$786,443,887	\$531,583,715		\$75,984,401	\$1,568,835,865
--PERCENTS		3.83%	14.38%	9.67%		1.38%	28.39%
MINIMUM GA ALLOCATION AS PERCENT OF BUDGET							
		1.25%	7.57%	3.90%		0.55%	13.32%
FULL GA SHARE OF BUDGET IF REGULATORY COSTS ARE ALLOCATED TO THE PUBLIC							
--DOLLARS		\$146,551,687	\$741,813,884	\$494,242,254		\$69,267,863	\$1,451,874,729
--PERCENTS		2.66%	13.47%	8.99%		1.26%	26.38%
MINIMUM GA ALLOCATION AS PERCENT OF BUDGET IF REGULATORY COSTS ARE ALLOCATED TO THE PUBLIC							
		1.16%	7.29%	3.64%		0.51%	12.64%

1993

Table 4.22

1993 ALLOCATION
REGULATORY COSTS ALLOCATED TO USERS

DIRECT COSTS	TOTAL	AIR CARRIER DOMESTIC	AIR CARRIER INT'L	AIR CARRIER FREIGHT	COMPUTER	AIR TRAIL	GEN. AVIATION PISTON	GEN. AVIATION TURBINE	ROTOR	GOVERNMENT	MILITARY	PUBLIC INTEREST
Public Interest	613,911,916	14	14	14	14	14	14	14	14	14	14	14
Naval Maintenance	622,734,205	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254
Safety Regulation	617,990,628	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254
ARTCCs	618,971,324	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254
Towers	616,121,439	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254
TRODns	619,683,949	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254
FSSs	621,281,325	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254
TOTAL OPS BUDGET	62,590,915,218	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254
FILE	61,440,237,448	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254
RID	6219,744,000	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254
AIP SHORTS	6437,120,000	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254
TOTAL DIRECT COSTS	65,120,016,658	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254
INDIRECT COSTS												
Public Interest	67,394,236	14	14	14	14	14	14	14	14	14	14	14
Naval Maintenance	687,722,486	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254
Safety Regulation	613,657,319	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254
ARTCCs	6172,371,289	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254
Towers	634,985,624	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254
TRODns	6191,424,957	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254
FSSs	652,913,441	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254
TOTAL OPS BUDGET	6598,665,382	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254
FILE	610,731,585	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254
RID	67,318,983	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254
AIP SHORTS	617,075,426	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254
TOTAL INDIRECT COSTS	6425,791,297	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254
GRAND TOTAL	65,753,807,955	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254	14,369,254
USER GROUP PERCENTS	100.000	39.950	2.190	2.360	16.860	3.860	14.310	9.620	1.370	8.620	9.880	8.390

Table 4.23

1993 ALLOCATION
REGULATORY COSTS ALLOCATED TO PUBLIC

	TOTAL	AIR CARRIER DOMESTIC	AIR CARRIER INT'L	AIR CARRIER FREIGHT	COMPUTER	AIR TRAIL	GEN. AVIATION PISTON	GEN. AVIATION TURBINE	ROTOR	GOVERNMENT	MILITARY	PUBLIC INTEREST
DIRECT COSTS												
Public Interest	633,911,916	14	14	14	14	14	14	14	14	14	14	14
Navalid Maintenance	6252,734,265	147,726,130	14,369,254	14,362,293	138,378,931	118,511,915	132,738,036	127,821,132	14,995,641	12,818,597	138,326,218	14
Safety Regulation	1383,566,070	14	14	14	14	14	14	14	14	14	14	14
ARTCCs	789,971,324	1315,814,149	117,183,791	121,571,761	143,887,191	127,985,864	119,798,189	1127,691,961	14	14,537,316	1142,469,183	14
Towers	1164,121,839	115,431,575	11,189,942	11,695,248	119,284,394	114,343,895	161,582,449	121,512,561	112,828,526	13,678,384	116,717,672	14
TROCOM	1919,883,989	1312,476,975	113,597,264	124,834,883	1188,392,518	126,783,299	1194,482,589	132,882,385	118,418,278	15,354,515	1183,626,248	14
FSSs	1217,281,325	118,216,169	1452,497	1795,881	114,867,726	115,981,398	1145,214,883	122,377,258	111,494,994	13,414,513	122,436,366	14
TOTAL OPS BUDGET	12,715,498,668	1748,859,598	136,712,765	154,458,338	1314,726,761	195,445,482	1483,678,826	1232,285,198	147,237,398	118,983,215	1338,561,633	1338,541,924
FEE	11,488,237,448	1753,762,889	138,266,545	154,952,682	1383,649,855	129,986,579	161,483,835	1185,254,146	17,824,812	15,336,739	1121,565,118	14
RAD	1219,744,088	199,864,678	14,963,158	17,159,994	142,289,853	14,583,878	113,772,983	112,965,272	11,693,667	1445,697	113,762,759	118,726,869
ATP GRANTS	1437,128,088	1432,134,941	132,178,354	158,956,656	165,887,586	15,382,254	1158,174,579	1114,182,768	16,287,278	13,318,113	16,964,359	14
TOTAL DIRECT COSTS	15,252,592,188	12,825,817,218	1112,112,823	1116,268,789	1775,473,975	1135,257,393	1789,828,624	1464,683,683	162,163,139	128,675,783	1472,849,888	1349,264,793
INDIRECT COSTS												
Public Interest	15,581,622	14	14	14	14	14	14	14	14	14	14	14
Navalid Maintenance	165,436,944	122,585,713	11,126,987	11,632,327	19,846,682	12,696,965	18,994,135	17,137,916	11,153,483	1515,821	19,833,876	14
Safety Regulation	138,581,337	14	14	14	14	14	14	14	14	14	14	14
ARTCCs	1148,379,767	158,813,876	13,164,614	13,972,715	115,434,164	15,139,221	14,665,963	123,316,185	18	1835,685	126,237,584	14
Towers	128,888,771	12,354,823	1183,782	1288,566	13,191,827	12,373,873	118,434,595	13,588,445	12,123,282	1687,472	12,771,846	14
TROCOM	1153,644,835	157,362,957	12,496,121	14,412,857	134,584,154	14,985,841	129,464,588	16,036,384	13,381,134	1982,221	119,823,186	14
FSSs	141,096,292	12,417,193	1187,657	1188,098	13,317,566	13,781,851	116,955,397	15,294,252	12,719,689	1887,842	15,384,236	14
TOTAL OPS BUDGET	1473,221,589	1142,853,782	87,872,481	118,485,755	166,573,514	118,893,151	161,514,671	145,545,121	19,377,348	13,748,968	163,493,687	143,763,119
FEE	17,985,873	12,739,421	1136,448	1198,649	11,198,548	1288,278	11,118,789	1868,835	1148,394	162,786	11,156,883	14
RAD	15,448,578	11,868,843	993,845	1135,488	1487,298	1223,856	1763,653	1592,469	195,736	142,815	1416,175	14
ATP GRANTS	116,428,359	15,831,843	1367,228	126,498	12,595,694	1195,379	14,359,928	13,399,855	1117,864	181,943	1244,142	14
TOTAL INDIRECT COSTS	1583,175,579	1152,493,869	87,669,195	118,846,438	171,185,845	119,648,664	167,757,833	158,486,288	19,731,342	13,936,585	163,758,898	143,763,119
GRAND TOTAL	15,755,771,687	14,178,318,287	1119,782,017	1127,187,218	1847,659,828	1154,898,558	1776,785,657	1515,889,963	191,894,481	132,612,288	1538,648,786	1393,031,912
USEE GROUP PERCENTS	100.00%	37.85%	2.88%	2.21%	14.73%	2.69%	13.58%	8.95%	1.25%	8.57%	9.36%	6.63%

Table 4.24

MINSYS

1993 MINIMUM GA ALLOCATION

COST CATEGORY	VARIABLE COST	JOINT COST	AIR TAIL	GA-PISTON	GA-TURBO	ROTORCRAFT	TOTAL COST
OPERATIONS OVERHEAD							
GRANT ADMINISTRATION	\$0	\$4,570,282	\$617,043	\$2,002,036	\$1,704,525	\$246,598	\$4,570,282
AVIATION STANDARDS	\$0	\$38,728,556	\$5,290,107	\$16,395,547	\$14,928,737	\$2,114,165	\$38,728,556
TOTAL OVERHEAD	\$0	\$43,298,758	\$5,907,150	\$18,397,583	\$16,633,262	\$2,360,763	\$43,298,758
CAPITAL PROJECTS							
BENEFITTING GA:							
CS GRANTS	\$0	\$5,784,276	\$0	\$451,696	\$5,132,579	\$0	\$5,784,276
GA GRANTS	\$0	\$75,648,489	\$1,781,557	\$45,107,136	\$28,799,795	\$0	\$75,648,489
F&E GA PROJECTS	\$0	\$24,311,853	\$3,289,198	\$18,918,627	\$8,785,346	\$1,486,682	\$24,311,853
R&D GA PROJECTS	\$0	\$7,056,849	\$945,578	\$3,204,267	\$2,582,611	\$404,393	\$7,056,849
TOTAL CAPITAL PROJECTS	\$0	\$112,761,466	\$5,936,333	\$69,073,727	\$45,140,332	\$1,811,074	\$112,761,466
FLIGHT SERVICE STATIONS							
AIR ROUTE TRAFFIC CONTROL CENTERS	\$169,444,585	\$36,213,115	\$17,562,520	\$145,270,853	\$31,375,958	\$11,040,249	\$205,257,620
TERMINAL NAVIGATION FACILITIES	\$166,548,917	\$0	\$21,899,746	\$44,432,072	\$100,289,100	\$0	\$166,548,917
TERMINAL CONTROL FACILITIES:	\$0	\$16,279,853	\$2,213,295	\$7,068,005	\$6,114,022	\$884,532	\$16,279,853
TOWERS	\$27,671,419	\$35,700,618	\$7,164,968	\$39,132,388	\$18,746,399	\$6,408,370	\$63,452,838
TRACONS	\$166,375,137	\$5,451,659	\$13,997,265	\$130,930,888	\$17,236,268	\$9,654,472	\$174,631,425
TOTAL MINIMUM GA ALLOCATION	\$529,631,979	\$249,785,471	\$74,681,268	\$445,121,349	\$227,455,372	\$32,159,461	\$782,222,878
FULL GA SHARE OF BUDGET							
--DOLLARS							
	\$175,859,526	\$823,466,955	\$553,291,272	\$78,732,970	\$1,631,358,764		
--PERCENTS							
	3.06%	14.31%	9.62%	1.37%	28.35%		
MINIMUM GA ALLOCATION AS PERCENT OF BUDGET							
	1.30%	7.74%	3.95%	0.56%	13.59%		
FULL GA SHARE OF BUDGET IF REGULATORY COSTS ARE ALLOCATED TO THE PUBLIC							
--DOLLARS							
	\$154,898,858	\$776,785,657	\$515,089,963	\$71,894,481	\$1,518,668,159		
--PERCENTS							
	2.69%	13.50%	8.95%	1.25%	26.39%		
MINIMUM GA ALLOCATION AS PERCENT OF BUDGET IF REGULATORY COSTS ARE ALLOCATED TO THE PUBLIC							
	1.21%	7.45%	3.69%	0.52%	12.92%		

1994

Table 4.25

**1994 ALLOCATION
REGULATORY COSTS ALLOCATED TO USERS**

	TOTAL	AIR CARRIER DOMESTIC	AIR CARRIER INT'L	AIR CARRIER FREIGHT	COMPUTER	AIR TRAFFIC CONTROL	GEAR AVIATION PISTON	GEAR AVIATION TURBINE	ROTOR	GOVERNMENT	MILITARY	PUBLIC INTEREST
DIRECT COSTS												
Public Interest	175,566,356	14	14	14	14	14	14	14	14	14	17,278,823	14,227,533
Naval Maintenance	626,461,873	192,536,133	14,681,258	16,715,861	148,991,424	111,891,748	134,839,389	128,887,625	14,664,848	12,486,693	138,846,682	14
Safety Regulation	1187,295,745	162,884,539	13,128,351	14,562,786	147,588,565	112,858,585	124,381,784	119,996,596	13,156,442	11,416,824	17,498,192	14
ARTCCs	4837,822,797	1333,822,666	118,289,782	122,859,744	192,136,326	138,675,698	152,767,899	1134,856,238	14	14,791,886	1146,983,174	14
Towers	1176,818,158	115,619,548	11,123,468	11,715,845	128,157,239	114,977,873	165,573,152	122,464,636	113,396,274	13,632,823	117,157,358	14
TRACONS	1976,389,827	1337,458,691	114,684,883	125,954,938	1281,785,369	127,793,812	1284,382,656	134,225,356	119,178,582	15,563,839	1185,452,678	14
FSRs	4261,631,854	118,823,834	1479,873	1841,857	115,829,728	116,988,186	1154,875,838	123,671,242	112,155,884	13,618,954	123,236,866	14
TOTAL OPS BUDGET	12,738,325,658	1453,136,572	142,226,218	162,651,823	1118,328,819	1114,385,814	1535,139,918	1264,181,685	152,542,351	121,387,418	1346,365,677	142,227,533
FLE	11,544,288,457	1787,895,278	139,940,822	156,528,538	1322,388,988	132,886,939	163,989,327	1189,628,827	17,295,971	15,553,664	1123,493,818	14
RLO	1229,944,122	118,462,968	15,823,927	17,998,635	147,861,685	15,593,385	116,913,377	115,623,572	12,184,173	11,833,473	116,832,927	14
RIP SHORTS	1475,962,368	1452,258,298	133,665,863	1622,858	198,281,191	15,785,658	1157,854,859	1119,198,539	16,491,891	13,654,874	17,117,145	14
TOTAL DIRECT COSTS	15,393,147,997	12,283,753,188	1121,364,838	1127,793,837	1878,772,626	1157,611,788	1773,897,473	1588,535,822	168,433,585	131,549,429	1494,888,766	142,227,533
INDIRECT COSTS												
Public Interest	17,368,987	14	14	14	14	14	14	14	14	14	1427,935	16,133,852
Naval Maintenance	187,481,715	138,339,396	11,588,689	12,281,899	113,439,689	13,636,688	111,854,419	19,471,282	11,529,188	1684,155	112,736,457	14
Safety Regulation	143,756,972	115,419,746	1767,882	11,118,987	118,238,391	12,618,733	15,488,978	14,458,557	1787,345	1317,131	12,629,669	14
ARTCCs	1173,498,122	171,448,336	13,897,454	14,892,698	119,728,853	16,565,543	15,635,238	128,863,389	14	11,825,611	131,441,886	14
Towers	134,815,786	13,142,713	1226,845	1345,235	14,855,724	13,813,613	112,593,698	14,519,982	12,695,389	1771,181	13,452,134	14
TRACONS	1193,125,947	173,594,894	13,282,446	15,684,532	143,998,887	16,861,575	124,758,453	17,464,235	14,188,918	11,214,556	122,998,258	14
FSRs	153,268,187	13,183,387	1148,918	1247,616	14,656,889	14,973,217	121,624,576	16,982,439	13,575,184	11,862,882	16,834,676	14
TOTAL OPS BUDGET	1593,211,556	1197,128,472	19,742,546	114,466,878	196,188,436	126,861,383	181,955,345	161,739,855	112,688,888	15,874,726	188,528,534	16,133,852
FLE	118,649,113	13,696,744	1183,828	1288,293	11,637,575	1443,186	11,483,951	11,154,838	1186,325	183,362	11,551,891	14
RLO	17,298,816	12,528,771	1125,351	1182,946	11,116,645	1382,158	11,813,114	1786,926	1127,853	156,843	11,858,218	14
RIP SHORTS	117,815,524	15,221,871	1388,837	127,975	12,782,978	1285,255	14,511,552	13,511,253	1122,898	144,325	1244,187	14
TOTAL INDIRECT COSTS	1628,286,289	1288,567,858	118,432,562	114,946,893	1181,557,626	127,811,813	188,963,963	167,192,872	113,123,484	15,295,256	183,379,238	16,133,852
GRAND TOTAL	16,121,354,286	14,112,328,166	1131,797,392	1142,739,129	1988,338,252	1185,423,602	1882,861,436	1575,727,694	181,557,868	136,848,685	1577,387,996	135,164,585
USER GROUP PERCENTS	100.00%	88.86%	2.19%	2.37%	16.28%	3.88%	14.32%	9.56%	1.35%	8.61%	9.59%	8.58%

Table 4.26

1994 ALLOCATION REGULATORY COSTS ALLOCATED TO PUBLIC

DIRECT COSTS	TOTAL	AIR CARRIER DOMESTIC	AIR CARRIER INT'L	AIR CARRIER FREIGHT	COMPUTER	AIR TRAIL PISTON	BOUL AVIATION TURBINE	ROTOR	GOVERNMENT	MILITARY	PUBLIC INTEREST
Public Interest	635,506,356	60	60	60	60	60	60	60	60	60	60
Naval Maintenance	4264,461,073	60	60	60	60	60	60	60	60	60	60
Safety Regulation	6312,317,447	60	60	60	60	60	60	60	60	60	60
AMTCA	6437,022,797	60	60	60	60	60	60	60	60	60	60
Towers	6176,010,150	60	60	60	60	60	60	60	60	60	60
TRACONS	6976,349,027	60	60	60	60	60	60	60	60	60	60
FSS	6651,631,054	60	60	60	60	60	60	60	60	60	60
TOTAL OPS BUDGET	62,863,366,753	60	60	60	60	60	60	60	60	60	60
F&E	61,540,900,457	60	60	60	60	60	60	60	60	60	60
R&D	6229,940,122	60	60	60	60	60	60	60	60	60	60
AIP GRANTS	6075,902,360	60	60	60	60	60	60	60	60	60	60
TOTAL DIRECT COSTS	65,510,109,699	60	60	60	60	60	60	60	60	60	60
INDIRECT COSTS											
Public Interest	65,400,097	60	60	60	60	60	60	60	60	60	60
Naval Maintenance	665,106,033	60	60	60	60	60	60	60	60	60	60
Safety Regulation	630,527,974	60	60	60	60	60	60	60	60	60	60
AMTCA	6141,066,706	60	60	60	60	60	60	60	60	60	60
Towers	627,939,290	60	60	60	60	60	60	60	60	60	60
TRACONS	6154,901,020	60	60	60	60	60	60	60	60	60	60
FSS	641,360,442	60	60	60	60	60	60	60	60	60	60
TOTAL OPS BUDGET	6475,342,451	60	60	60	60	60	60	60	60	60	60
F&E	67,957,015	60	60	60	60	60	60	60	60	60	60
R&D	65,427,260	60	60	60	60	60	60	60	60	60	60
AIP GRANTS	616,349,130	60	60	60	60	60	60	60	60	60	60
TOTAL INDIRECT COSTS	6505,116,656	60	60	60	60	60	60	60	60	60	60
GRAND TOTAL	66,423,306,356	60	60	60	60	60	60	60	60	60	60
USER GROUP PERCENTS	100.00%	37.99%	2.09%	2.22%	14.96%	2.72%	13.52%	1.24%	0.56%	9.09%	6.70%

Table 4.27

KMSYS

1994 MINIMUM GA ALLOCATION

COST CATEGORY	VARIABLE COST	JOINT COST	AIR TRAI	GA-PISTON	GA-TURBO	ROTORCRAFT	TOTAL COST
OPERATIONS OVERHEAD							
GRANT ADMINISTRATION	\$0	\$4,587,688	\$628,881	\$2,886,966	\$1,784,525	\$247,229	\$4,587,688
AVIATION STANDARDS	\$0	\$48,528,489	\$5,619,866	\$17,148,551	\$15,559,885	\$2,268,998	\$48,528,489
TOTAL OVERHEAD	\$0	\$45,116,889	\$6,247,936	\$19,147,517	\$17,264,489	\$2,456,227	\$45,116,889
CAPITAL PROJECTS							
BENEFITTING GAI							
CS GRANTS	\$0	\$6,852,666	\$0	\$681,935	\$5,378,731	\$0	\$6,852,666
GA GRANTS	\$0	\$79,116,722	\$1,788,518	\$47,288,188	\$38,136,185	\$0	\$79,116,722
FAE GA PROJECTS	\$0	\$25,441,523	\$3,498,567	\$11,352,264	\$9,898,919	\$1,467,773	\$25,441,523
RAO GA PROJECTS	\$0	\$7,384,713	\$1,883,647	\$3,345,114	\$2,613,922	\$422,831	\$7,384,713
TOTAL CAPITAL PROJECTS	\$0	\$117,995,624	\$6,274,723	\$62,619,428	\$47,211,678	\$1,889,884	\$117,995,624
FLIGHT SERVICE STATIONS							
AIR ROUTE TRAFFIC CONTROL CENTERS	\$179,764,342	\$37,499,414	\$18,618,471	\$154,841,223	\$32,924,555	\$11,679,587	\$217,263,756
TERMINAL NAVIGATION FACILITIES	\$177,933,314	\$0	\$24,223,684	\$47,217,858	\$186,491,972	\$0	\$177,933,314
TERMINAL CONTROL FACILITIES:	\$0	\$18,818,366	\$2,488,426	\$7,887,816	\$6,744,658	\$978,266	\$18,818,366
TOWERS	\$29,613,823	\$37,862,145	\$7,427,934	\$41,463,637	\$11,148,822	\$6,643,575	\$66,675,968
TROONS	\$177,847,614	\$5,644,987	\$14,938,271	\$139,855,711	\$18,395,817	\$18,383,522	\$186,485,699
TOTAL MINIMUM GA ALLOCATION	\$565,159,293	\$261,336,546	\$88,219,445	\$472,152,381	\$240,173,111	\$33,958,982	\$829,489,816
FULL GA SHARE OF BUDGET							
--DOLLARS							
	\$185,423,682	\$862,861,436	\$575,727,894	\$81,557,868	\$1,784,778,888		
--PERCENTS	3.88%	14.32%	9.56%	1.35%	28.31%		
MINIMUM GA ALLOCATION AS PERCENT OF BUDGET							
	1.33%	7.84%	3.99%	8.56%	13.78%		
FULL GA SHARE OF BUDGET IF REGULATORY COSTS ARE ALLOCATED TO THE PUBLIC							
--DOLLARS							
	\$163,764,656	\$814,165,287	\$536,788,991	\$74,685,424	\$1,589,236,278		
--PERCENTS	2.72%	13.52%	8.91%	1.24%	26.38%		
MINIMUM GA ALLOCATION AS PERCENT OF BUDGET IF REGULATORY COSTS ARE ALLOCATED TO THE PUBLIC							
	1.24%	7.55%	3.73%	8.53%	13.18%		

1995

Table 4.28

1995 ALLOCATION REGULATORY COSTS ALLOCATED TO USERS

DIRECT COSTS	TOTAL	AIR CARRIER DOMESTIC	AIR CARRIER INT'L	AIR CARRIER FREIGHT	COMPUTER	AIR TRAIL	GENERAL AVIATION PISTON	GENERAL AVIATION TURBINE	ROTOR	GOVERNMENT	MILITARY	PUBLIC INTEREST
Public Interest	\$37,153,851	10	10	10	10	10	10	10	10	10	17,616,561	\$29,537,291
Naval Maintenance	\$276,732,866	\$1,845,392	\$7,807,989	\$13,763,318	\$11,784,893	\$35,379,387	\$29,981,635	\$1,837,864	\$2,164,974	\$39,259,515	10	10
Safety Regulation	\$195,986,389	\$1,775,708	\$1,775,708	\$1,775,708	\$1,775,708	\$1,775,708	\$1,775,708	\$1,775,708	\$1,775,708	\$1,775,708	\$1,775,708	10
ARTCs	\$687,231,687	\$353,779,695	\$24,226,375	\$181,384,992	\$33,722,871	\$55,923,218	\$142,132,729	10	\$5,861,183	\$151,486,171	10	10
Towers	\$184,338,636	\$15,889,582	\$1,137,125	\$1,736,716	\$21,871,654	\$15,648,517	\$23,458,586	\$13,988,915	\$1,882,393	\$17,576,794	10	10
TRACONS	\$1,836,992,138	\$364,521,203	\$15,861,967	\$24,037,857	\$215,818,793	\$28,936,969	\$214,884,838	\$35,633,841	\$19,958,983	\$187,341,814	10	10
FSRs	\$276,846,323	\$11,466,469	\$587,262	\$891,567	\$16,855,728	\$17,898,588	\$163,458,123	\$25,842,656	\$12,854,117	\$3,819,892	\$24,868,429	10
TOTAL OPS BUDGET	\$2,895,272,823	\$988,954,455	\$44,917,828	\$66,755,185	\$149,125,823	\$121,188,199	\$564,879,469	\$277,396,988	\$54,927,489	\$22,321,297	\$355,856,839	\$29,537,291
FIE	\$1,628,798,366	\$823,512,887	\$41,781,577	\$59,113,948	\$342,256,819	\$34,234,772	\$66,664,114	\$114,134,829	\$7,575,339	\$5,777,577	\$125,828,191	10
RID	\$248,689,343	\$115,617,514	\$5,772,746	\$8,368,681	\$58,761,185	\$5,927,451	\$17,582,371	\$16,248,831	\$2,185,326	\$1,874,112	\$17,872,886	10
AIR GRANTS	\$916,687,822	\$473,317,899	\$35,238,839	\$657,644	\$94,818,988	\$6,858,866	\$164,246,638	\$124,415,826	\$6,787,762	\$3,885,458	\$7,276,828	10
TOTAL DIRECT COSTS	\$5,673,279,554	\$2,321,481,875	\$127,622,198	\$134,055,558	\$336,961,855	\$167,612,789	\$813,372,585	\$532,196,795	\$71,475,836	\$32,978,444	\$585,224,344	\$29,537,291
INDIRECT COSTS												
Public Interest	\$7,299,981	10	10	10	10	10	10	10	10	10	\$424,384	\$6,875,517
Naval Maintenance	\$86,781,797	\$38,336,722	\$1,586,867	\$2,283,122	\$13,684,594	\$3,637,821	\$11,683,481	\$9,319,654	\$1,583,479	\$672,827	\$12,233,989	10
Safety Regulation	\$43,469,626	\$15,335,797	\$761,572	\$1,113,538	\$18,273,196	\$2,685,467	\$5,426,949	\$4,489,838	\$698,868	\$33,458	\$2,531,759	10
ARTCs	\$173,916,993	\$71,681,328	\$3,985,888	\$4,983,166	\$28,582,266	\$6,825,158	\$5,668,835	\$28,826,982	10	\$1,824,315	\$38,659,224	10
Towers	\$34,582,252	\$3,886,247	\$216,229	\$338,244	\$4,887,249	\$2,974,114	\$12,714,138	\$4,468,739	\$2,668,868	\$761,873	\$3,342,386	10
TRACONS	\$194,188,138	\$75,146,348	\$3,269,957	\$5,779,861	\$14,532,439	\$5,965,378	\$24,822,113	\$7,345,779	\$4,114,568	\$1,195,281	\$22,128,432	10
FSRs	\$53,348,591	\$3,189,855	\$141,115	\$248,825	\$4,649,893	\$4,976,978	\$21,834,917	\$6,966,613	\$3,575,969	\$1,862,433	\$6,695,593	10
TOTAL OPS BUDGET	\$593,371,339	\$198,616,289	\$9,888,748	\$14,577,948	\$97,648,837	\$26,985,816	\$81,980,245	\$61,328,717	\$12,552,935	\$5,829,487	\$78,815,687	\$6,875,517
FIE	\$18,688,487	\$3,696,423	\$183,589	\$268,443	\$1,657,672	\$443,268	\$1,459,679	\$1,135,567	\$183,194	\$81,994	\$1,498,659	10
RID	\$7,229,519	\$2,528,586	\$125,135	\$183,851	\$1,138,364	\$382,264	\$996,168	\$774,342	\$124,919	\$55,911	\$1,816,478	10
FSRs	\$16,882,865	\$5,182,491	\$377,933	\$27,945	\$2,696,828	\$986,188	\$4,473,146	\$3,474,686	\$128,936	\$83,846	\$239,761	10
TOTAL INDIRECT COSTS	\$628,883,229	\$218,815,789	\$18,487,317	\$15,857,386	\$183,892,893	\$27,936,728	\$88,989,539	\$66,713,231	\$12,981,985	\$5,258,479	\$88,762,585	\$6,875,517
GRAND TOTAL	\$6,302,162,783	\$2,540,297,164	\$146,109,515	\$149,912,944	\$520,854,749	\$195,549,517	\$902,362,123	\$598,910,026	\$84,457,821	\$38,236,823	\$673,986,929	\$36,412,808
USER GROUP PERCENTS	100.00%	40.17%	2.19%	2.38%	16.51%	3.18%	14.32%	9.58%	1.34%	6.61%	9.38%	0.58%

1995 ALLOCATION
REGULATORY COSTS ALLOCATED TO PUBLIC

78

TABLE 4.30

1965

1965 MINIMUM GA ALLOCATION

DES. CATEGORY	WING/TALE COST	JOINT COST	AIR TAIL	GA-PISTON	GA-TURBO	ROTORCRAFT	TOTAL COST
OPERATIONS OVERHEAD							
ADMINISTRATION	10	\$1,586,453	\$438,584	\$2,083,695	\$1,637,481	\$246,856	\$4,586,453
AVIATION STANDARDS	10	\$42,412,146	\$5,969,893	\$17,918,576	\$16,215,621	\$2,388,857	\$42,412,146
TOTAL OPERATIONS	10	\$46,998,599	\$6,648,397	\$19,982,271	\$17,913,802	\$2,554,912	\$46,998,599
CAPITAL PROJECTS							
BENEFITTING GA							
IN SPORTS	10	\$6,333,510	10	\$713,577	\$5,619,933	10	\$6,333,510
GA SPORTS	10	\$82,787,738	\$1,863,125	\$49,398,193	\$31,534,421	10	\$82,787,738
FAIR GA PROJECTS	10	\$26,623,737	\$3,785,477	\$11,894,141	\$9,492,728	\$1,531,399	\$26,623,737
OLD GA PROJECTS	10	\$7,727,826	\$1,865,628	\$3,491,868	\$2,729,935	\$448,483	\$7,727,826
TOTAL CAPITAL PROJECTS	10	\$123,472,811	\$6,634,231	\$65,489,771	\$49,377,808	\$1,971,881	\$123,472,811
FLIGHT SERVICE STATIONS							
AIR ROUTE TRAFFIC CONTROL CENTERS	10	\$19,163,973	\$38,831,456	\$19,739,886	\$163,342,487	\$34,555,948	\$229,995,429
TERMINAL NAVIGATION FACILITIES	10	\$198,141,384	10	\$26,794,233	\$58,178,385	\$113,168,766	\$2
TERMINAL CONTROL FACILITIES:	10	\$19,942,566	\$2,798,444	\$8,622,811	\$7,439,389	\$1,881,923	\$19,942,566
TOWERS	10	\$31,693,151	\$34,389,287	\$7,784,127	\$43,932,554	\$11,555,873	\$6,898,684
TRACINGS	10	\$198,174,938	\$5,845,884	\$15,948,418	\$149,432,375	\$19,638,983	\$199,215,521
TOTAL MINIMUM GA ALLOCATION	10	\$683,173,366	\$273,479,646	\$86,227,727	\$588,928,492	\$35,856,692	\$879,848,591
FULL GA SHARE OF BUDGET							
--DOLLARS		\$195,549,517	\$982,282,123	\$598,910,826	\$684,457,821	\$1,781,199,487	
--PERCENTS		3.18%	14.32%	5.59%	1.34%	28.27%	
MINIMUM GA ALLOCATION AS PERCENT OF BUDGET							
		1.37%	7.95%	4.83%	8.57%	13.96%	
FULL GA SHARE OF BUDGET IF REGULATORY COSTS ARE ALLOCATED TO THE PUBLIC							
--DOLLARS		\$173,186,737	\$853,217,833	\$559,498,884	\$77,483,807	\$1,662,985,581	
--PERCENTS		2.75%	13.54%	8.07%	1.23%	26.38%	
MINIMUM GA ALLOCATION AS PERCENT OF BUDGET IF REGULATORY COSTS ARE ALLOCATED TO THE PUBLIC							
		1.27%	7.66%	3.77%	0.53%	13.29%	

1996

Table 4.31
1996 ALLOCATION
REGULATORY COSTS ALLOCATED TO USERS

DIRECT COSTS	TOTAL	AIR CARRIER DOMESTIC	AIR CARRIER INT'L	AIR CARRIER FREIGHT	COMPUTER	AIR TARI	GEN. AVIATION PISTON	GEN. AVIATION TURBINE	ROTOR	GOVERNMENT	MILITARY	PUBLIC INTEREST
Public Interest	138,877,798	40	10	10	10	10	10	10	10	10	10	10
Naval Maintenance	629,572,434	118,925,961	15,101,318	17,479,547	946,722,289	612,358,432	436,758,254	431,189,665	15,814,691	62,245,371	439,864,474	40
Safety Regulation	629,608,874	468,808,945	63,411,432	44,980,511	152,858,346	614,198,214	426,448,992	421,732,961	43,424,536	11,537,532	47,724,575	40
AMTCA	1944,433,576	1374,957,587	428,453,657	625,676,645	1111,305,237	137,875,442	459,269,567	1158,445,999	10	15,345,841	1156,223,641	40
Towers	6131,643,640	616,041,761	11,158,954	11,757,836	622,431,672	616,332,432	674,519,815	424,496,277	114,687,797	14,179,453	118,006,442	40
TRACONs	61,182,827,131	4393,876,441	117,139,344	138,294,984	4211,414,386	439,135,788	425,938,361	437,189,269	428,785,856	46,838,348	1189,294,522	40
FRNs	6292,978,825	612,149,446	6537,165	4944,310	117,958,876	118,932,882	1173,481,469	426,496,252	113,595,385	44,839,644	424,932,317	40
TOTAL OPS BUDGET	13,662,452,672	1964,712,861	447,793,662	671,151,753	1482,353,926	1129,816,788	6596,295,658	4291,398,424	157,426,265	123,386,141	1364,815,981	138,987,821
FILE	61,695,995,839	4464,673,891	443,527,573	461,813,455	1363,319,388	136,628,396	469,429,298	1118,794,825	17,653,865	16,888,647	1127,945,358	40
ADJ	6251,773,617	6121,887,812	46,832,588	48,764,171	153,829,284	46,282,271	118,272,232	116,892,131	42,268,938	11,116,887	117,344,359	40
AJP BUDGETS	1929,137,548	1495,357,238	136,868,584	4694,182	199,671,849	46,416,957	1171,763,893	1129,868,888	17,877,866	13,962,188	17,437,886	40
TOTAL BUDGET COSTS	45,965,358,916	12,445,754,194	134,222,439	1142,423,568	1999,174,359	1178,336,444	4655,761,874	1556,945,379	174,658,126	134,472,855	1516,786,785	138,987,821
INDIRECT COSTS												
Public Interest	17,243,498	40	10	10	10	10	10	10	10	10	10	10
Naval Maintenance	165,586,868	138,178,858	11,495,752	12,193,884	113,699,418	13,621,379	111,453,388	19,121,644	11,478,354	1658,364	111,688,635	40
Safety Regulation	142,973,558	115,177,387	1752,462	11,182,744	118,256,274	42,588,368	45,338,398	44,337,921	1686,993	1388,256	42,424,764	40
AMTCA	1173,544,636	871,488,261	13,894,832	14,889,397	421,218,238	17,859,998	45,675,273	428,648,269	10	11,817,967	129,748,469	40
Towers	134,829,158	42,864,956	1295,782	1314,288	43,939,188	42,828,118	44,379,753	44,379,753	42,611,766	1747,255	43,219,418	40
TRACONs	1194,222,888	676,363,218	13,322,988	15,873,456	144,865,692	15,842,648	424,369,367	17,194,599	14,829,888	11,178,682	121,189,591	40
FRNs	633,841,634	43,188,219	1148,648	1247,182	44,698,598	44,955,626	421,941,387	46,935,639	43,558,717	11,857,414	46,526,264	40
TOTAL OPS BUDGET	6598,795,441	4199,164,931	19,812,344	114,628,152	198,669,384	426,988,888	481,688,519	468,617,424	112,357,718	14,959,938	175,215,919	46,784,711
FILE	118,448,487	13,677,212	1182,253	1257,221	11,669,236	1441,255	11,428,174	11,111,448	1179,159	168,228	11,424,229	40
ADJ	87,134,838	42,987,519	1124,288	1182,228	11,138,265	1388,895	1974,889	1977,985	1122,178	154,783	1971,193	40
AJP BUDGETS	116,646,877	45,118,226	1373,171	127,736	42,675,861	1286,184	44,413,424	43,421,565	1119,172	161,373	1238,246	40
TOTAL INDIRECT COSTS	445,856,763	4218,463,887	118,492,848	115,897,338	1184,152,667	427,936,343	488,425,885	465,988,742	112,778,211	15,176,233	177,841,587	46,784,711
GRAND TOTAL	46,594,415,679	12,656,218,081	1144,714,486	1157,528,908	11,183,327,026	1286,272,747	4944,186,879	4622,854,121	187,436,336	139,649,889	1554,548,291	137,692,533
USER GROUP PERCENTS	100.000	48.281	2.195	2.394	16.735	3.135	14.325	9.455	1.335	8.685	9.425	8.575

Table 4.32

1996 ALLOCATION REGULATORY COSTS ALLOCATED TO PUBLIC

	TOTAL	AIR CARRIER DOMESTIC	AIR CARRIER INTERNATIONAL	COMPUTER	AIR TRAIL GENERAL AVIATION PISTON	GENERAL AVIATION SEAL AVIATION TURBINE	ROTOR	GOVERNMENT	MILITARY	PUBLIC INTEREST
DIRECT COSTS										
Public Interest	130,877,790	10	10	10	10	10	10	10	10	10
Aviation Maintenance	629,572,434	15,181,310	17,479,587	146,722,289	112,358,832	136,758,254	15,814,691	12,245,371	139,864,474	10
Safety Regulation	129,464,668	10	10	10	10	10	10	10	10	10
ARTCA	1940,833,576	1374,957,587	125,676,685	1111,385,237	137,875,482	1158,445,999	114,687,797	15,345,841	1156,223,601	10
FAA	1193,883,640	116,881,761	11,158,954	122,831,672	116,332,432	124,596,277	114,687,797	14,179,453	118,786,442	10
TRACON	11,182,827,131	1393,876,481	134,294,984	1231,414,386	138,135,788	1225,938,361	137,189,269	16,838,388	1189,294,522	10
FAA	1292,978,826	112,149,486	1537,165	117,958,876	118,932,882	1173,481,469	113,595,385	14,839,644	124,932,317	10
TOTAL OPS BUDGET	13,186,837,258	1499,911,116	166,153,241	1129,583,588	1114,826,536	1269,657,463	154,883,729	121,848,689	1356,291,486	1364,372,411
FAA	11,695,995,879	1468,673,891	141,813,455	1163,319,388	116,628,396	1118,794,825	117,863,865	16,888,687	1127,945,358	10
NOA	1251,773,617	1113,489,697	14,212,819	158,388,110	115,378,518	114,595,579	11,898,748	1958,251	114,365,517	121,156,475
AIP BUDGET	899,177,588	1495,357,238	1694,182	199,671,849	16,416,957	1171,763,893	1129,868,888	13,862,188	17,437,846	10
TOTAL DIRECT COSTS	16,893,743,386	12,389,251,134	1136,872,897	1942,874,919	1163,234,488	1826,558,646	178,863,399	132,789,567	1586,879,288	1381,828,956
INDIRECT COSTS										
Public Interest	15,363,291	10	10	10	10	10	10	10	10	10
Aviation Maintenance	163,886,373	122,488,384	11,114,189	118,284,726	12,697,575	18,588,626	11,895,271	1498,417	13,786,895	10
Safety Regulation	137,911,985	10	10	10	10	10	10	10	10	10
ARTCA	1161,652,481	158,323,489	13,181,499	117,325,688	15,766,969	14,728,815	123,481,381	1831,528	124,388,881	10
FAA	187,277,252	12,248,346	1161,144	13,884,626	12,286,682	118,697,174	13,429,692	1585,168	12,521,858	10
TRACON	1155,799,384	161,848,885	11,695,559	135,864,868	14,678,896	128,818,886	13,751,751	1935,986	116,948,184	10
FAA	141,335,129	12,434,838	1187,622	13,597,326	13,794,111	117,371,114	12,724,614	1889,574	14,996,618	10
TOTAL OPS BUDGET	1473,363,725	1146,327,813	118,798,463	178,888,346	119,216,234	161,394,934	144,687,682	13,652,585	157,776,554	142,863,398
FAA	17,788,198	12,777,523	1135,688	11,242,673	1228,495	11,864,895	1133,376	159,728	11,868,276	10
NOA	15,311,281	11,866,885	192,324	1847,419	1294,812	1726,199	198,953	148,729	1723,836	10
AIP BUDGET	116,189,111	14,943,642	126,567	12,587,878	1198,969	11,268,265	1115,878	178,627	1221,323	10
TOTAL INDIRECT COSTS	1982,574,625	1156,875,883	111,119,625	174,757,516	119,967,718	167,453,494	19,426,286	13,831,657	159,781,189	142,863,398
GRAND TOTAL	18,876,318,011	13,546,127,017	1300,992,522	2117,632,435	1383,202,206	2094,012,139	198,289,685	146,601,224	1746,660,477	1421,792,354
OPER GROUP PERCENTS	100.000	71.850	7.450	11.470	7.390	11.100	1.170	0.780	9.250	7.440

Table 4.33

MUSIS

1990 MINIMUM GA ALLOCATION

COST CATEGORY	AVAILABLE COST	CONST. COST	AIR TRAIL	GA-PORTION	GA-TOTAL	GA-PORTION*	TOTAL COST
OPERATIONS OVERHEAD							
GAOIT ADMINISTRATION	10	14,564,899	1645,423	11,991,890	11,682,249	1245,336	14,564,899
AVIATION STATIONS	10	144,383,426	16,344,120	118,731,815	116,896,766	12,411,524	144,383,426
TOTAL OVERHEAD	10	148,947,525	16,989,543	128,722,106	118,579,015	12,656,862	148,947,525
CAPITAL PROJECTS							
REDEFINITION OF:							
CS GAOITS	10	16,627,385	14	1746,647	15,040,638	18	16,627,385
GA GAOITS	10	186,629,049	11,949,574	151,681,898	132,997,618	18	186,629,049
FAC ON PROJECTS	10	127,668,943	11,934,904	112,417,827	19,911,368	11,597,652	127,668,943
RAD ON PROJECTS	10	14,066,897	11,131,806	13,644,728	12,858,828	1459,536	14,066,897
TOTAL CAPITAL PROJECTS	10	1129,204,315	17,816,284	168,198,139	151,648,584	12,857,188	1129,204,315
FLIGHT SERVICE STATIONS							
AIR ROUTE TRAFFIC CONTROL CENTERS	10	1281,206,506	148,218,872	120,938,864	1173,215,947	136,274,894	1281,206,506
TERMINAL NAVIGATION FACILITIES	10	1283,226,106	14	129,637,568	153,324,366	1120,284,179	1283,226,106
TERMINAL CONTROL FACILITIES:	10	122,072,290	13,147,834	19,523,295	14,204,648	11,196,553	122,072,290
TOWERS	10	133,919,042	17,763,411	17,994,354	146,547,584	111,998,371	133,919,042
TRUCKS	10	1283,425,276	16,052,194	117,833,153	1159,721,212	120,974,659	1283,425,276
TOTAL MINIMUM GA ALLOCATION	10	1286,856,970	192,749,592	1531,544,848	1267,928,229	137,884,907	1286,856,970
FULL GA SHARE OF BUDGET							
--DOLLARS		1286,272,747	1944,186,879	1622,854,121	1607,436,336	11,868,749,283	
--PERCENTS		3.13%	14.32%	9.45%	1.33%	28.22%	
MINIMUM GA ALLOCATION AS PERCENT OF BUDGET							
--DOLLARS		1.41%	8.86%	4.86%	0.57%	14.16%	
FULL GA SHARE OF BUDGET IF REBUDGETARY COSTS ARE ALLOCATED TO THE PUBLIC							
--DOLLARS		1183,282,118	1494,812,139	1582,304,171	1682,289,685	11,739,888,834	
--PERCENTS		2.78%	13.35%	8.83%	1.22%	26.38%	
MINIMUM GA ALLOCATION AS PERCENT OF BUDGET IF REBUDGETARY COSTS ARE ALLOCATED TO THE PUBLIC							
--DOLLARS		1.31%	7.77%	3.81%	0.54%	13.48%	

1997

Table 4.34

1997 ALLOCATION RESEARCH COSTS ALLOCATED TO USERS

	TOTAL	AIR CARRIER DOMESTIC	AIR CARRIER INTERNATIONAL	COMPUTER	AIR TRAIL	SEA AIRCRAFT	SEA AIRCRAFT TUGBOAT	POSTAGE	GOVERNMENT	MILITARY	PUBLIC INTEREST
DIRECT COSTS											
Public Interest	140,641,728	14	14	14	14	14	14	14	14	14,339,776	132,341,944
Research Maintenance	1,811,004,995	15,369,862	17,871,640	149,668,331	112,833,957	130,176,663	132,265,996	15,196,971	12,327,982	148,361,812	14
Safety Regulation	4214,595,799	11,562,333	15,231,673	155,779,866	114,915,288	127,523,625	122,651,533	13,566,212	11,601,771	17,441,210	14
ARTCCs	1994,043,629	1397,433,872	127,215,782	1122,442,592	140,764,477	162,817,663	1156,922,898	14	15,647,825	1161,121,518	14
Towers	4282,383,646	116,136,548	11,779,238	123,833,454	117,855,113	179,428,389	125,508,194	115,254,166	14,364,366	118,446,763	14
TRACONS	11,171,457,643	1425,721,644	118,525,872	1217,908,433	131,393,563	1237,574,349	138,658,896	121,633,394	16,294,328	1111,316,525	14
FBOs	6310,043,595	112,874,338	1568,848	119,117,428	128,836,807	1183,965,778	128,837,877	114,308,529	14,273,368	125,629,844	14
TOTAL OPS BUDGET	13,240,614,296	11,822,712,914	175,862,755	1518,213,317	1137,198,484	1629,466,397	1386,114,995	168,451,271	124,584,772	1373,256,647	132,341,944
FAC	11,774,695,299	1499,441,721	145,429,678	1385,645,997	139,174,818	172,286,732	1123,645,828	14,159,296	16,246,868	1130,867,235	14
BAU	1253,425,913	1126,644,343	16,383,654	157,875,296	16,659,175	118,983,343	117,556,226	12,353,829	11,159,148	117,541,523	14
AIP BUDGETS	11,003,641,572	1518,421,796	130,582,231	1194,771,747	16,847,882	179,621,271	1135,256,837	17,422,866	14,125,845	17,688,877	14
TOTAL DIRECT COSTS	16,282,404,999	12,377,228,714	1141,186,354	1158,485,417	111,665,786,357	1988,377,743	1582,833,878	177,987,682	136,835,877	1528,465,482	132,341,944
INDIRECT COSTS											
Public Interest	17,064,000	14	14	14	14	14	14	14	14	1418,983	16,657,185
Research Maintenance	643,933,983	129,846,374	11,476,828	113,712,599	13,584,682	111,159,778	16,873,881	11,429,272	1648,228	111,188,894	14
Safety Regulation	142,245,178	114,925,939	1739,268	118,188,952	12,557,888	15,228,813	14,243,284	1671,449	1381,383	12,388,482	14
ARTCCs	1172,253,625	178,796,643	13,861,983	141,848,868	121,818,394	15,658,339	128,389,533	14	11,045,931	128,781,326	14
Towers	133,378,810	12,786,985	1194,699	13,849,557	12,858,483	112,842,878	14,275,191	12,549,413	1729,415	13,882,988	14
TRACONS	1133,349,571	177,173,866	13,358,149	144,952,869	15,698,895	123,986,545	17,087,788	13,925,238	11,148,283	128,179,888	14
FBOs	152,086,643	13,152,317	1139,294	14,688,956	14,985,894	121,926,369	16,464,968	13,521,114	11,846,346	16,324,512	14
TOTAL OPS BUDGET	1585,095,799	1196,611,284	19,778,132	114,582,352	199,195,327	188,786,713	159,574,469	112,896,446	14,863,579	172,187,385	16,657,185
FAC	118,583,668	13,636,746	1179,949	1264,455	11,678,865	11,388,989	11,881,263	1174,155	178,818	11,352,534	14
BAU	16,999,461	12,479,959	1122,718	1188,336	11,139,391	1948,815	1737,331	1118,759	153,196	1922,316	14
AIP BUDGETS	116,361,165	15,825,582	1366,349	127,328	12,648,657	1294,874	13,358,484	1116,745	179,272	1219,628	14
TOTAL INDIRECT COSTS	1618,728,494	1299,753,413	118,439,141	1184,646,441	127,798,669	187,453,771	164,743,546	112,586,185	15,874,857	174,681,775	16,657,185
GRAND TOTAL	16,901,121,443	12,786,974,197	1151,625,495	1165,459,868	111,788,352,797	1987,831,515	1647,576,625	198,493,787	141,189,934	1683,867,258	138,999,849
USER GROUP PROPORTIONS	100.00%	48.38%	2.28%	2.48%	3.15%	14.31%	9.38%	1.31%	0.68%	8.74%	0.57%

Table 4.35

REGULATORY COSTS ALLOCATED TO PUBLIC

DIRECT COSTS	TOTAL	AIR CARRIER DOMESTIC	AIR CARRIER INT'L	AIR CARRIER FREIGHT	COMPUTER	AIR TRAIL	BOAL AVIATION PISTON	BOAL AVIATION TURBINE	ROTOR	GOVERNMENT	MILITARY	PUBLIC INTEREST
Public Interest	640,641,720	640	640	640	640	640	640	640	640	640	640	640
Naval Maintenance	633,000,595	633,000,595	633,000,595	633,000,595	633,000,595	633,000,595	633,000,595	633,000,595	633,000,595	633,000,595	633,000,595	633,000,595
Safety Regulation	637,783,816	637,783,816	637,783,816	637,783,816	637,783,816	637,783,816	637,783,816	637,783,816	637,783,816	637,783,816	637,783,816	637,783,816
ARTCAs	694,003,629	694,003,629	694,003,629	694,003,629	694,003,629	694,003,629	694,003,629	694,003,629	694,003,629	694,003,629	694,003,629	694,003,629
Towers	640,303,004	640,303,004	640,303,004	640,303,004	640,303,004	640,303,004	640,303,004	640,303,004	640,303,004	640,303,004	640,303,004	640,303,004
TRMCOs	611,171,657,643	611,171,657,643	611,171,657,643	611,171,657,643	611,171,657,643	611,171,657,643	611,171,657,643	611,171,657,643	611,171,657,643	611,171,657,643	611,171,657,643	611,171,657,643
FBOs	6310,003,595	6310,003,595	6310,003,595	6310,003,595	6310,003,595	6310,003,595	6310,003,595	6310,003,595	6310,003,595	6310,003,595	6310,003,595	6310,003,595
TOTAL OPS BUDGET	61,363,722,322	61,363,722,322	61,363,722,322	61,363,722,322	61,363,722,322	61,363,722,322	61,363,722,322	61,363,722,322	61,363,722,322	61,363,722,322	61,363,722,322	61,363,722,322
FEE	61,774,649,299	61,774,649,299	61,774,649,299	61,774,649,299	61,774,649,299	61,774,649,299	61,774,649,299	61,774,649,299	61,774,649,299	61,774,649,299	61,774,649,299	61,774,649,299
RAJ	6263,455,913	6263,455,913	6263,455,913	6263,455,913	6263,455,913	6263,455,913	6263,455,913	6263,455,913	6263,455,913	6263,455,913	6263,455,913	6263,455,913
ARP GROWTH	61,003,641,572	61,003,641,572	61,003,641,572	61,003,641,572	61,003,641,572	61,003,641,572	61,003,641,572	61,003,641,572	61,003,641,572	61,003,641,572	61,003,641,572	61,003,641,572
TOTAL DIRECT COSTS	66,465,399,016	66,465,399,016	66,465,399,016	66,465,399,016	66,465,399,016	66,465,399,016	66,465,399,016	66,465,399,016	66,465,399,016	66,465,399,016	66,465,399,016	66,465,399,016
INDIRECT COSTS												
Public Interest	65,262,617	65,262,617	65,262,617	65,262,617	65,262,617	65,262,617	65,262,617	65,262,617	65,262,617	65,262,617	65,262,617	65,262,617
Naval Maintenance	662,613,274	662,613,274	662,613,274	662,613,274	662,613,274	662,613,274	662,613,274	662,613,274	662,613,274	662,613,274	662,613,274	662,613,274
Safety Regulation	637,300,146	637,300,146	637,300,146	637,300,146	637,300,146	637,300,146	637,300,146	637,300,146	637,300,146	637,300,146	637,300,146	637,300,146
ARTCAs	6140,766,443	6140,766,443	6140,766,443	6140,766,443	6140,766,443	6140,766,443	6140,766,443	6140,766,443	6140,766,443	6140,766,443	6140,766,443	6140,766,443
Towers	626,769,742	626,769,742	626,769,742	626,769,742	626,769,742	626,769,742	626,769,742	626,769,742	626,769,742	626,769,742	626,769,742	626,769,742
TRMCOs	6155,064,105	6155,064,105	6155,064,105	6155,064,105	6155,064,105	6155,064,105	6155,064,105	6155,064,105	6155,064,105	6155,064,105	6155,064,105	6155,064,105
FBOs	640,991,504	640,991,504	640,991,504	640,991,504	640,991,504	640,991,504	640,991,504	640,991,504	640,991,504	640,991,504	640,991,504	640,991,504
TOTAL OPS BUDGET	6468,777,972	6468,777,972	6468,777,972	6468,777,972	6468,777,972	6468,777,972	6468,777,972	6468,777,972	6468,777,972	6468,777,972	6468,777,972	6468,777,972
FEE	67,642,006	67,642,006	67,642,006	67,642,006	67,642,006	67,642,006	67,642,006	67,642,006	67,642,006	67,642,006	67,642,006	67,642,006
RAJ	65,211,077	65,211,077	65,211,077	65,211,077	65,211,077	65,211,077	65,211,077	65,211,077	65,211,077	65,211,077	65,211,077	65,211,077
ARP GROWTH	615,043,145	615,043,145	615,043,145	615,043,145	615,043,145	615,043,145	615,043,145	615,043,145	615,043,145	615,043,145	615,043,145	615,043,145
TOTAL INDIRECT COSTS	6497,475,000	6497,475,000	6497,475,000	6497,475,000	6497,475,000	6497,475,000	6497,475,000	6497,475,000	6497,475,000	6497,475,000	6497,475,000	6497,475,000
GRAND TOTAL	66,962,864,016	66,962,864,016	66,962,864,016	66,962,864,016	66,962,864,016	66,962,864,016	66,962,864,016	66,962,864,016	66,962,864,016	66,962,864,016	66,962,864,016	66,962,864,016
USER GROUP PERCENTS	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000

Table 4.36

KINISYS

1997 MINIMUM GA ALLOCATION

COST CATEGORY	VARIABLE COST	JOINT COST	AIR TRAIL	GA-PISTON	GA-TURBO	ROTORCRAFT	TOTAL COST
OPERATIONS OVERHEAD							
GRANT ADMINISTRATION	\$0	\$4,517,571	\$649,072	\$1,967,900	\$1,658,079	\$242,520	\$4,517,571
AVIATION STANDARDS	\$0	\$46,446,409	\$6,743,343	\$19,579,318	\$17,604,158	\$2,519,590	\$46,446,409
TOTAL OVERHEAD	\$0	\$50,963,980	\$7,392,415	\$21,547,218	\$19,262,237	\$2,762,110	\$50,963,980
CAPITAL PROJECTS							
REDEVELOPING GA:							
CS GRANTS	\$0	\$6,934,895	\$0	\$781,333	\$6,153,562	\$0	\$6,934,895
GA GRANTS	\$0	\$90,640,679	\$2,040,034	\$54,079,938	\$34,528,707	\$0	\$90,640,679
FAE GA PROJECTS	\$0	\$29,155,705	\$4,179,096	\$12,961,707	\$10,347,471	\$1,666,631	\$29,155,705
AIO GA PROJECTS	\$0	\$0,462,671	\$1,202,401	\$3,003,947	\$2,976,783	\$479,460	\$0,462,671
TOTAL CAPITAL PROJECTS	\$0	\$135,201,951	\$7,422,411	\$71,626,925	\$54,006,524	\$2,146,091	\$135,201,951
FLIGHT SERVICE STATIONS							
AIR ROUTE TRAFFIC CONTROL CENTERS	\$216,177,706	\$41,639,350	\$22,195,754	\$183,697,492	\$30,006,444	\$13,037,446	\$257,017,136
TERMINAL NAVIGATION FACILITIES	\$217,254,749	\$0	\$32,782,614	\$56,667,677	\$127,004,450	\$0	\$217,254,749
TERMINAL CONTROL FACILITIES:	\$0	\$24,429,496	\$3,541,670	\$10,517,101	\$9,047,332	\$1,323,314	\$24,429,496
TOWERS	\$36,301,979	\$41,186,417	\$4,299,475	\$49,317,027	\$12,440,000	\$7,423,006	\$77,400,396
TRACONS	\$217,672,530	\$6,266,726	\$10,190,434	\$170,779,054	\$22,409,500	\$12,532,107	\$227,505,679
TOTAL MINIMUM GA ALLOCATION	\$687,407,051	\$299,607,921	\$99,032,774	\$564,153,374	\$203,064,591	\$40,044,234	\$990,741,300
FULL GA SHARE OF BUDGET							
—DOLLARS							
		\$217,631,019	\$907,031,515	\$647,576,625	\$90,493,707	\$1,943,532,066	
—PERCENTS							
		3.15%	14.31%	9.30%	1.31%	28.16%	
MINIMUM GA ALLOCATION AS PERCENT OF BUDGET							
		1.45%	8.17%	4.10%	0.56%	14.36%	
FULL GA SHARE OF BUDGET IF REGULATORY COSTS ARE ALLOCATED TO THE PUBLIC							
—DOLLARS							
		\$193,051,265	\$936,619,227	\$606,343,176	\$83,267,663	\$1,020,001,331	
—PERCENTS							
		2.01%	13.57%	8.70%	1.21%	26.37%	
MINIMUM GA ALLOCATION AS PERCENT OF BUDGET IF REGULATORY COSTS ARE ALLOCATED TO THE PUBLIC							
		1.35%	7.09%	3.05%	0.54%	13.60%	

NOTES

¹"Wharton Long Term Forecast" (September, 1985).

²The NASP is scheduled to run through the year 2000, but detailed project and budget information was only available through 1992.

³The military allocation includes certain "reimburseables"--monies paid to FAA by DOD for certain specialized services. In 1986, this amounted to \$23 million, or about four percent of the military allocation. It is expected that these reimburseables will grow with labor costs, so that by 1997, they will be approximately \$35.6 million, or six percent of the military allocation. Net military allocations, after receipt of the reimburseables, can be derived by subtracting these monies from the military allocation:

<u>Year</u>	<u>Reimburseables (\$ Millions)</u>
1986	23.0
1987	23.7
1988	24.4
1989	25.1
1990	25.9
1991	27.1
1992	28.3
1993	29.7
1994	31.0
1995	32.5
1996	33.9
1997	35.6

⁴See Wharton Econometric Forecasting Associates Long-Term Forecasts (1986).

⁵If all efficiencies were assumed to be realized beginning in 1992, ATC operating costs would be higher in the period 1986-1991, GA and military shares would increase because ATC costs make up a relatively large share of their allocated costs.

⁶It should be noted that there are two exceptions to the reduced unit cost evidenced in 1992. The marginal costs of general aviation operations at TRACONS, and air carrier operations at towers are higher than in 1984. In both cases, the standard error of the coefficients is large relative to those for other user groups; at the same time, however, the coefficient is significantly different from zero according to the t-tests.

⁷This assumption was made to interpolate between 1985 and 1992; the actual schedule of installation will be different.

⁸This pattern has recently been documented in a study by FAA-APO.

⁹There is a possibility that with increases in IFR flying, especially by turbine rotorcraft operators that the average rotorcraft flight would consume more FAA resources. At present, there are no reliable data on this recently emerging trend.

RECEIVED

AD-A188 685

ALLOCATION OF FUTURE FEDERAL AIRPORT AND AIRWAY COSTS
(U) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC
OFFICE OF AVIATION POLICY AND PLANS D E TAYLOR ET AL.
DEC 86 FAA-AP0-87-12

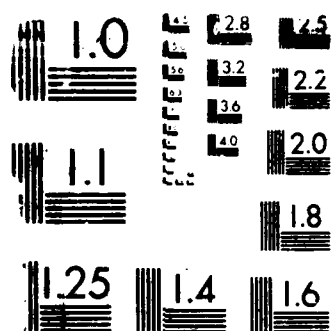
2/2

UNCLASSIFIED

F/G 5/1

NL





RESOLUTION TEST CHART

AMORTIZATION OF F&E

The F&E cost category in the FAA budget includes virtually all of the capital expenditures made for the ATC system by the FAA each year. By definition, capital assets are those which are not fully consumed by users in a single year. It is desirable to identify how much capital is consumed in a year by each user group in order to identify varying consumption patterns exhibited by users over time, and the impact of FAA F&E expenditure patterns on user group consumption.

In the present study, current and future users will be allocated the costs of capital projects as they use them. This is a departure from traditional financial reporting, but is consistent with the problem faced by the FAA of paying for current and future F&E. The reasons for this amortization method are discussed below.

Before beginning the discussion, it is appropriate to define some terms:

- o Depreciation: Allocation of costs incurred for capital assets over the useful life of the asset.
- o Amortization: The schedule of payments necessary to retire the costs of a capital asset.
- o Planning Gap: The difference between the total cost of a capital project and the sum of depreciation.

- o Cost of Capital: The opportunity cost attributable to the investment in a capital project.
- o Replacement Cost: The future cost of a current project after adjusting for inflation and technological change.

Overview of the Problem

Past FAA Cost Allocation Studies have not amortized F&E. Instead, F&E expenditures identified in the budget have been expensed in a single year. This treatment ignores the fact that capital is consumed over time and not in a single year; and under certain conditions, can result in a misidentification of the actual attributable costs to users over time. For example, suppose the FAA spends money on capital equipment in one year, and then spends nothing on capital in the next three years. If users pay for it in the same year, then all future users obtain the benefits of it free of charge. Obviously, such a treatment is inequitable, and it also does not reflect the actual consumption of the capital services produced. On the other hand, if capital expenditures are about the same every year, and are undertaken to benefit about the same mix of users, then expensing F&E would be just as accurate a measure of capital consumption as amortization.

Ideally, one would measure the consumption of capital services by estimating it in the context of a long-run marginal cost function. Such a function would include not only the variable costs of operating a particular facility, but also the maintenance, depreciation (including replacement costs) and interest consumed in the production process. Unfortunately, in the case of the FAA, it was not feasible to estimate long run

marginal cost functions which include depreciation and the cost of capital. Therefore, the F&E allocation was developed separately.

Even in the absence of complete long-run marginal cost estimates, it is important to focus on the two key components of capital consumption: depreciation and the cost of capital. The former represents the value of capital consumed in a particular time period. Depreciation should be valued to reflect the replacement cost of the asset. If an existing asset put into place in year one must be replaced in year three, the cost of that replacement would be affected by both technological change and by the rate of inflation. If replacement costs are not considered, insufficient funds may be collected to replace the capital as it wears out.

The cost of capital represents the opportunity cost of employing the capital in FAA facilities instead of employing it elsewhere. The time value of money embedded in a capital project is a real cost since there are alternative uses of those funds. Therefore, capital consumption should include not only depreciation, but also the cost of capital.

Including replacement costs and the cost of capital in an amortization schedule is not the same as reporting depreciation in a financial report. The purpose of traditional financial reporting is to identify net income, defined as income received minus costs incurred. Replacement costs and the cost of capital are not considered in measuring net income. The purpose of the amortization schedule suggested above is to insure that capital

can be replaced as it wears out. The suggested amortization schedule is a tool to help plan and control a capital budget; a depreciation schedule reported in a financial statement is part of a report on current income.

One of the difficulties of including replacement costs in amortization schedules is that it is difficult to predict both inflation and the impacts of technological change. In one set of circumstances, however, the problem can be made more tractable. If it is known that a certain piece of equipment being put in place this year is to replace another piece of equipment put into place two years ago, then the price of the equipment this year exactly identifies the impacts of inflation and technological change over the two year period. The cost of the current capital expenditure exactly identifies the replacement cost of the past capital project. Under these circumstances, it makes no difference whether the amortization schedule is based upon historic cost including replacement, or current cost--they are the same. (This proposition is demonstrated below.)

It is also interesting to note that basing amortization schedules on current capital expenditures is equivalent to identifying tax revenues in a capital budgeting problem. In the present case, tax revenues are equivalent to the future consumption of current capital expenditures. Looking at amortization in this way is also consistent with the problem faced by the FAA today: to design a set of taxes to pay for current and future F&E projects.

Finally, since taxes will be based in part upon the amortization schedule to be developed in this study, it is

desirable that the pattern of payments made for recovery be relatively even. It would be difficult to administer taxes which vary year to year. Furthermore, providing for relatively even payments to recover expenses over time reduces the possible intertemporal inequities that would occur if some users consume services during high tax years, while others consume services only in low tax years.

Amortization Examples

The following two-period examples for a single investment illustrates all of the preceding propositions. Suppose an investment was made two years ago and must be replaced today. What amortization schedule will exactly offset the current costs of the project and provide for an even payment pattern over time? To answer this question, assume the following:

- o The cost of the project two years ago was \$10.
- o The inflation rate over the past two years and the expected inflation rate in the following two years is ten percent.
- o The cost of capital (the appropriate discount rate) is ten percent.
- o The expected asset life of a project put into place this year is also two years.

There are five relevant cases which can be examined under these assumptions. They illustrate all of the propositions previously described. Those cases are:

- o Historic depreciation, which corresponds to traditional financial reporting.
- o Historic depreciation with replacement costs, which corresponds to adjustments made in the footnotes to traditional financial statements.
- o Historic depreciation with replacement and consideration of the cost of capital.
- o Amortization of current projects including replacement and capital costs.
- o Amortization of current projects with replacement and capital costs assuming an even payment stream over time.

All of these examples are shown in Table A.1, and are discussed in turn. The equations used to develop the examples in Table A.1 are shown in Tables A.2 and A.3.

Historic Depreciation

The first case shown in Table A.1 corresponds to traditional financial reporting which is designed to report annual net income. Assume an investment was made two years ago (at the beginning of year 1) and cost \$10. Today, at the beginning of year 3, the replacement cost of that project (assuming a ten percent inflation rate) is \$12.10. Assuming taxes are based on the depreciation schedule, only five dollars of user taxes are collected in each year (years 1 and 2). Historic depreciation does not reflect either the increasing cost to replace the project or the opportunity cost of the capital invested. As a result, there are insufficient funds to replace the capital at the beginning of year 3. The so-called planning gap is \$2.10.

Table A.1

USER TAXES TO FUND THE PROJECT

	<u>Year 1</u> <u>User Tax</u>	<u>Year 2</u> <u>User Tax</u>	<u>Year 3</u> <u>User Tax</u>	<u>Year 4</u> <u>User Tax</u>
Historic Depreciation	$\frac{P}{2}$	$\frac{P}{2}$	-	-
Historic with Replacement Cost	$\frac{P(1+i)}{2}$	$\frac{P(1+i)^2}{2}$	-	-
Historic with Replacement Cost and Capital Cost	$\frac{P(1+i)}{2}$	$\frac{P(1+i)^2}{2}$	-	-
Current with Replacement Cost and Capital Cost	-	-	$\frac{P(1+i)^2(1+r)}{2}$	$\frac{P(1+i)^2(1+r)}{2}$
Current Mortgage	-	-	$P(1+i)^2 \left[\frac{r(r+1)^2}{(r+1)^2 - 1} \right]$	$P(1+i)^2 \left[\frac{r(r+1)^2}{(1+r)^2 - 1} \right]$

P = Price in Year 1
 Asset Life = t = 2
 Cost of Capital = r
 Replacement Cost Rate = i

Table A.2

ALTERNATIVE P&E AMORTIZATION METHODS: AN EXAMPLE

	Year 1 Investment	Beginning of Year 3 Current Cost	Funded Thru User Taxes =	Planning GAP	User "Taxes" End of Year 1	User "Taxes" End of Year 2	User "Taxes" End of Year 3	User "Taxes" End of Year 4	Payment Pattern
Historic Depreciation	10	12.10	- (5 + 5)	= 2.10 short- fall	5	5	-	-	Even
Historic with Replacement Cost	10	12.10	- (5.5 + 6.05)	= 0.55 short- fall	5.5	6.05	-	-	Uneven
Historic with Replacement Cost & Capital Cost	10	12.10	- (6.05 + 6.05)	$\emptyset$ if $r = i$	5.5	6.05	-	-	Uneven
Current with Replacement Cost & Capital Cost	12.10	12.10	- (6.05 + 6.05)	$\emptyset$ if $r = i$	-	-	6.65	7.32	Uneven
Current Mortgage	12.10	12.10	- (6.34 + 5.76)	$\emptyset$	-	-	6.97	6.97	Even

Assumptions: Asset Life = $t = 2$ years
 Cost of Capital = $r = 0.1$
 Replacement Cost Rate = $i = 0.1$

This shortfall occurs because users in the past two years have been consuming a capital asset whose true costs are higher than the amount depreciated in each year.

If the investor (the FAA) is interested in funding current capital projects, then traditional financial reporting using historic depreciation (straight-line or otherwise) will lead to shortfalls in tax collections. It should be noted, however, that one of the desirable features of the historic straight-line depreciation method is that the annual taxes collected to amortize the investment are the same. This even payment pattern is desirable so that taxes do not have to be adjusted in each year.

Historic Depreciation with Replacement Costs

In the second example in Table A.1, depreciation payments include consideration of replacement costs. As is shown in Table A.2, this means that the first year's depreciation payment includes a replacement component $(1+i)$, as does the second year's $(1+i)^2$. The result is that the shortfall is smaller than in the first case, but still exists because there is no consideration of the cost of capital. Also, because replacement cost is considered, the user taxes are different in each year.

In sum, the planning gap is smaller because replacement costs have been considered, but the payment pattern required to fund the depreciation schedule is not even.

Historic Depreciation with Replacement and Consideration of Capital Costs

The third example in Table A.1 includes consideration of both replacement costs and the cost of capital in developing the

depreciation schedule. In Table A.2, notice that the actual taxes paid by users in the first year are the same as in the previous case. But, in calculating the planning gap in Table A.3, the first year's depreciation payment includes both a replacement cost factor $(1+i)$ and an opportunity cost of capital factor $(1+r)$. The latter represents the interest payment earned on the first year's taxes collected. In other words, users are being compensated for paying money into the system before it is required to replace the capital. This is equivalent to the opportunity cost of capital.

In calculating the planning gap in Table A.3, the second year's payment includes only the replacement cost term $(1+i)^2$. This is the case because, in this example, it is assumed that the money comes in at the end of the second year and is immediately spent at the beginning of year 3. Again, the second year's payment is the same as in the previous case.

Including the cost of capital in the analysis reduces the planning gap to zero, as long as the cost of capital and the replacement cost rate are equivalent. The annual payment pattern of taxes remains uneven, however.

Amortization of Current Projects Considering Replacement and Capital Costs

So long as the current project replaces the investment made two years ago, amortizing the current project into the future can be made equivalent to historic depreciation with consideration of replacement and capital costs. This is illustrated in the fourth case in Table A.1. The planning gap is calculated by comparing the current cost of the investment project with the present value

Table A.3

ALTERNATIVE F&E AMORTIZATION METHODS: THE TWO PERIOD CASE

	Beginning of Year 1 Investment	Beginning of Year 3 Current Cost	Funded Through User Taxes	Planning Gap	Payment Pattern
Historic Depreciation	P	$P(1+i)^2 - \left[\frac{P}{2} + \frac{P}{2} \right]$		= Shortfall	Even
Historic with Replacement Cost	P	$P(1+i)^2 - \left[\frac{P(1+i)}{2} + \frac{P(1+i)^2}{2} \right]$		= Shortfall	Uneven
Historic with Replacement Cost & Capital Cost	P	$P(1+i)^2 - \left[\frac{P(1+i)(1+r)}{2} + \frac{P(1+i)^2}{2} \right]$		= 0 if $r = i$	Uneven
Current with Replacement Cost & Capital Cost	$P(1+i)^2$	$P(1+i)^2 - \left[\frac{P(1+i)^2(1+r)}{2} + \frac{P(1+i)^2(1+r)^2}{2(1+r)^2} \right]$		= 0	Uneven
Current Mortgage	$P(1+i)^2$	$P(1+i)^2 - \left[P(1+i)^2 \left[\frac{r(r+1)^2}{(1+r)^2-1} + \frac{1}{(1+r)^2} \right] \right]$		= 0	Even

P = Price in Year 1
 Asset Life = $t = 2$
 Cost of Capital = r
 Replacement Cost Rate = i

of future payments to be made by users in years 3 and 4 to offset the depreciation of the asset. As is shown in Table A.2, users are charged higher taxes in years 3 and 4 to reflect the opportunity cost of the FAA's investment--the $(1+r)$ terms. These payments are then discounted back to the current date in Table A.3. As a result, the present value of the funded depreciation exactly offsets the current cost of the project; the planning gap is zero.¹ The pattern of user taxes remains uneven, however.

Amortization of Current Projects with Consideration of Replacement and Capital Costs and Assuming Constant Payments Each Year

The final example in Table A.1 also results in the elimination of the planning gap. Current projects are amortized into the future in such a way that the payments made by users in each year are equal. The equations used to derive the payments are shown in Table A.2 and are equivalent to deriving the mortgage payment on a house. These payments are then discounted back to the beginning of year 3 in Table A.3 to calculate the planning gap.

The key advantages of this amortization method are:

- o It considers both the cost of capital and replacement costs.
- o It eliminates the planning gap, and so ensures that current FAA projects will be fully funded.
- o It provides an amortization schedule which reflects consumption of capital services as they occur.
- o It provides an even payment pattern over time so that taxes do not have to be adjusted each year.

- o Finally, the rate of replacement cost and the cost of capital do not have to be equivalent to eliminate the planning gap. A mortgage can be computed to eliminate the planning gap under any set of assumptions regarding these variables.

Treatment of Embedded Capital

One issue remains to be resolved: how to treat the initial endowment of capital embedded in the FAA airway system. In the example in Table A.1, someone initially put up the \$10; users pay taxes to replace the project, but no consideration is given to returning the initial \$10. There are three ways to account for the initial endowment:

- o A return could be imputed to the initial endowment, and carried forward and paid for by users in the current and all future years. In effect, the return would be an annuity paid to account for the opportunity cost of the initial endowment.
- o The initial endowment can be treated as a public good provided by the government in exchange for users replacing it in perpetuity as it wears out.
- o The initial endowment is a sunk cost for which there is no necessary return because there are no alternative uses. Since there is no opportunity cost, no return is necessary.

The later two interpretations more clearly describe embedded FAA F&E. In the early years of aviation, users may not have been willing to invest in the system until one already existed.

Direct user benefits may have been insufficient to justify an

airway system, but government support indicated a belief that social benefits exceeded the costs of establishing the system. Once established, the system helped to stimulate the growth of aviation and direct benefits grew to the point where users could defray future system costs.

The last interpretation--that embedded capital is really a sunk cost--also describes FAA F&E. Salvaging and reconditioning much of the FAA's F&E would cost more than the value that could be received in alternative uses. Therefore, the costs are sunk, and, having no alternative uses, require no return.

There are some notable exceptions to the sunk cost theory, however. Land and real estate holdings of the agency and its aircraft clearly have alternative uses. However, the initial endowment of these assets can be assigned to the public good category just as can other embedded F&E.

Finally, in the past, F&E has been expensed. No return on capital has ever been imputed to the initial endowment of F&E.

For these reasons, no return is imputed to embedded F&E. Also for these reasons, paying for embedded F&E is largely irrelevant in the present study. Consideration of current and future F&E, and how it should be amortized, is the relevant problem facing the FAA.

Application of Mortgage Method to FAA Cost Allocation Problem

The problem faced by the FAA is more complex than that discussed in the previous sections. The FAA is interested in developing a set of taxes to offset the costs of current and future F&E projects. The agency is also interested in developing

a set of taxes which both reflects consumption of capital services, and provides for a relatively even payment pattern over time.

The mortgage method is ideally suited to accomplish these objectives. In order to evaluate current and future F&E projects, expected future F&E expenditures are discounted back to 1986. A mortgage can then be calculated to exactly offset the cost of those expected expenditures over the life of the assets.

Three data elements and related assumptions are necessary to implement the methodology:

- o A stream of F&E projects over time,
- o The average asset life of F&E,
- o An appropriate discount rate.

The stream of expected future F&E expenditures was provided by APO based on the best information currently available within the agency. The expected asset life was assumed to be 13 years, which is consistent with a recent internal APO study indicating that the average FAA reequipment cycle is approximately 13 years. This is the best information available on the life cycle of FAA F&E. Existing FAA records do not permit an exact tracking of the depreciation schedule for different pieces of equipment. Finally, the OMB standard ten percent discount rate was employed as the cost of capital.

It should be noted, in addition, that the FAA's expected F&E stream over time includes an estimate of inflation and the impacts of technological change. No additional explicit assumption concerning replacement costs needed to be made for the analysis.

NOTES

¹The cost of capital cancels out in the planning gap calculation because future taxes must be discounted to 1984 to compare the results with the other cases.

END

DATE

FILMD

3-88

DTIC