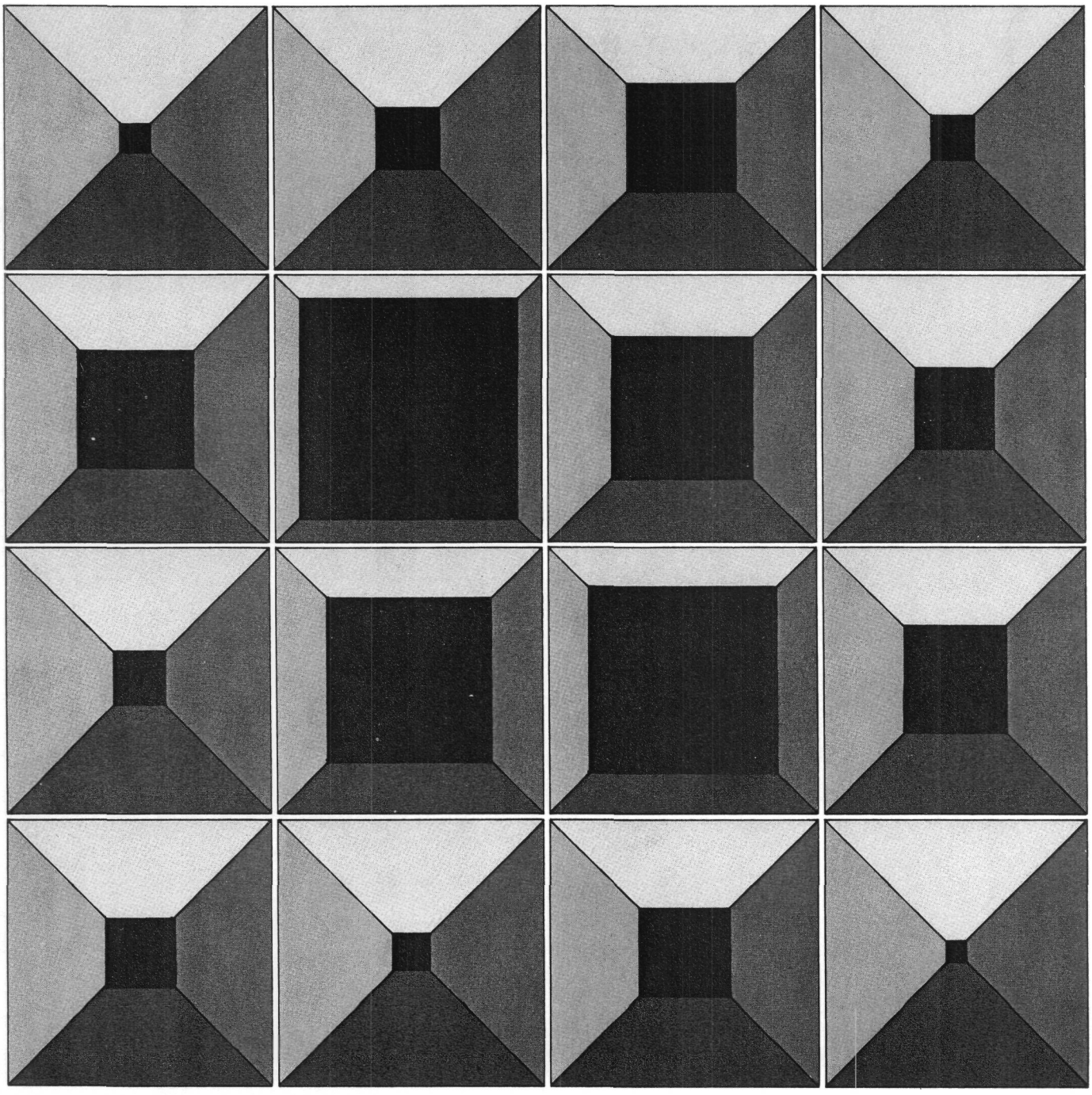
A CBO Study

Charging for Federal Services

December 1983

Congress of the United States
Congressional Budget Office



CHARGING FOR FEDERAL SERVICES

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Washington, D.C. 20402

NOTES

Except for historical dates, such as those marking the passage of legislation, all dates referred to in this study are fiscal years.

All dollars are current-year dollars unless stated otherwise.

Errata

CHARGING FOR FEDERAL SERVICES

TABLE 11. POSSIBLE COAST GUARD USER FEES, 1984

User Category	Type of Fee	Size of Fee (In dollars per vessel) Average	Size of Fee (In dollars per vessel) Range	Annual Receipts (In millions of dollars)
	ANNUAL SYSTEMWIDE FEES			
Recreational Boats	Prorated for vessel size	18	4-600	287
Fishing Fleets (Foreign and Domestic)	Prorated for tonnage capacity	1,488 a/	1,350-40,000	300
Commercial, Domestic Inland Shipping	Prorated for horsepower (tugs/towboats) or gross cargo tonnage	1,300	800-10,000	48
Commercial, Domestic Coastal and Shipping	Prorated for horsepower (tugs/towboats) or gross cargo tonnage	3,817	800-40,000	282
	SPECIFIC FEES			
Personnel and Vessel Services b/	At each use of service	—	77-210,000 c/	70
Facilities Services	Annual and one-time	—	100-14,400 c/	64
Total	—	--	--	1,051

SOURCE: Congressional Budget Office from data prepared by the Coast Guard for 1982.

a. Domestic fishing vessels only.

b. Documentation, licensing, and inspection.

c. Dollars per transaction.

PREFACE

Over many years, the federal government has initiated programs that provide services and facilities of benefit to private individuals and enterprises. Some of these programs, such as the Federal-Aid highway network and the nation's airport and air traffic control system, are now financed mostly by their users through taxes and other charges; others are still supported by the general taxpayer. Concern with a wide federal deficit and the cost-effectiveness of federal spending has already focused Congressional attention on the issue of user financing for public services, leading to recent enactment of several important pieces of legislation. This study, undertaken at the request of Chairman Pete V. Domenici of the Senate Committee on the Budget, examines prospects for new or increased user fees in seven areas of federal service. In keeping with the Congressional Budget Office's mandate to provide impartial analysis, this study offers no recommendations.

The study was prepared in CBO's Natural Resources and Commerce Division, under the supervision of David L. Bodde and Everett M. Ehrlich. Richard R. Mudge was principal author, and David Lewis, Kenneth Rubin, Suzanne Schneider, and Philip Webre prepared individual chapters. Johanna Zacharias assisted in drafting the manuscript and edited it in cooperation with Nancy H. Brooks. Other CBO staff members who contributed to preparing the study include Debra Goldberg, Kathleen Kelly, Mary Maginniss, Patrick McCann, Mark Mussell, Jeffrey Nitta, and Pearl Richardson. Important contributions also were made by Damian Kulash, Barry Holt, and Larry Oppenheimer, all formerly with CBO. Reviewers outside CBO include G. William Hoagland of the Senate Budget Committee, Joseph Hopkins of the U.S. Postal Service, William R. Riedel of the U.S. Coast Guard, Kenneth G. Maxey of the Bureau of Reclamation, and Kenneth Frederick of Resources for the Future.

The authors owe special thanks to Kathryn Quattrone, Philip Willis, Deborah Dove, and Angela McCollough for their skill in typing the many drafts and preparing the manuscript for publication.

Rudolph G. Penner
Director

December 1983

CONTENTS

(A brief summary appears on the opening pages of Chapters II through VIII.)

CONTENTS (continued)

TABLES

28-917 O - 84 - 2

TABLES (continued)

CHAPTER I. FEDERAL SUBSIDIES AND USER FINANCING

The federal government supports a variety of economic activities out of general revenues, providing facilities and services to specific groups without charge or substantially below cost. Though the Congress created such subsidies to pursue national objectives, many original goals have now been met, and federal priorities have shifted. When this is the case, continued subsidization distorts federal spending, encouraging inefficient use of resources, widening the budget deficit, and creating economic inequities. Increased reliance on reimbursement from the recipients of federal services could mitigate these problems. This paper deals with fees for federal services--where new or increased levies might be considered, where they are inappropriate, and what transitional difficulties might ensue.

Recent Congressional actions demonstrate a growing interest in user financing for federal services. The revenue increases legislated in the Inland Waterway Revenue Act of 1978, the Airport and Airway Development Act of 1982, and the Surface Transportation Assistance Act of 1982 are part of a long-term reorientation toward more efficient and equitable federal investment and provision of services.

PLAN OF THE PAPER

This chapter introduces general principles for the application of federal fees. Chapters II through VIII present studies of seven programs that seem likely candidates for new or increased government charges: ports and harbors, inland waterways, U.S. Coast Guard activities, aviation services, certain postal services, irrigation water, and the Strategic Petroleum Reserve. In each program area, new or increased fees to users appear to offer good prospects for improved cost effectiveness in federal investment and reduced federal borrowing. Their potential benefits seem to outweigh by far their administrative costs to the government--an essential criterion of an effective financial mechanism. Because the list includes several off-budget items, reduced subsidies in these areas would not directly narrow the federal budget deficit. Nonetheless, all reduced subsidies would lessen the federal government's borrowing needs. Each chapter outlines the present federal program and describes how user charges could operate, taking account of the administrative problems that might influence decisionmaking and possible hardships caused by the transition.

The seven program areas considered in this paper illustrate the range of programs over which the federal government could attempt to recover its costs from users. Some of the subsidies are small, in that they either involve relatively small amounts of federal money (see Table 1), serve small and distinct populations, or constitute minor fractions of the total costs of the private concerns using them. For example, of the $13 billion in total public and private deep-draft port transactions in 1984, the 4.2 percent that is federally supported seems relatively small (see Table 2). Others are large, in costing sizable federal sums, in serving broad populations, or in furnishing major shares of the costs of private enterprises. Special appropriations for the U.S. Postal Service, for instance, benefit small, clearly identified groups, though at $715 million in 1984, they entail considerable expense. Subsidies for inland waterways, costing some $577 million in 1984, absorb a major part of the costs of barge freight shipping. The Strategic Petroleum Reserve's subsidy is large both in terms of dollar commitment--$2.3 billion in 1984--and in terms of the population it stands to benefit, though it is small in terms of the cost to each potential payor.

This list is by no means comprehensive. Other federal programs not analyzed here might also be considered for user financing. These include the satellite-launching services provided by the National Aeronautics and Space Administration and the low-cost electricity provided by the Federal Power Marketing Administrations. 1/

The $6 billion in total 1984 federal subsidies considered here cannot all be regarded as immediately recoverable. In some program areas, abrupt transition from public to private support could inflict debilitating hardship on an economic sector or population group. Many current beneficiaries of federal support may need time to adjust their operations to accommodate a changed order of federal priorities. This suggests that a measured approach, with cost recovery instituted in phases, might be appropriate.

ORIGINS OF SUBSIDY PROGRAMS AND EMERGING PROBLEMS

Various goals have motivated the formation of subsidized programs, including regional development, establishment of the capital-intensive infrastructure for economic activity, assistance for nascent industries, and relief for sufferers of special hardships. For example, the economic development of the West was fostered by federal grants of land to railroads, by construction of a toll-free canal and river system, and by provision of

1. See also President's Private Sector Survey on Cost Control, Report on User Fees (September 1983), and forthcoming CBO analysis of it.

low-cost irrigation water. The airline industry, though self-supporting today, got its start with the help of guaranteed postal service contracts during the 1920s and 1930s. And in more recent years, a wide range of development aid has been provided to the chronically impoverished Appalachian region.

Many federal services continue to be subsidized, however, even though their original goals have been met, and new national priorities have emerged. For example, agriculture in the West today is a mature industry. Indeed, the early need to promote farming on arid land has long since been overtaken by problems of agricultural overabundance, and appreciable national resources now go toward dealing with excess production. 2/ This suggests that the need to encourage western agricultural development through federally subsidized water might be reevaluated. Similarly, freight shipping on inland waterways is a mature business. Yet federal subsidies still cover about one-fourth of the cost of barge shipment--many times the subsidies to railroads, trucks, or pipelines (the latter have never received federal financial support).

Such subsidies can encourage overuse of facilities and waste of resources. Services or commodities that are provided cheaply or even free discourage conservation. For example, the almost 90 percent federal subsidy for irrigation water leaves farmers with little incentive to conserve. Overuse, in turn, leads to exaggerated estimates of water resource investment needs. In addition, federal subsidies can distort markets. Where subsidized facilities compete with others that are not, the subsidized set enjoys an artificial advantage. For example, barge shippers, using heavily subsidized waterways, have an advantage over truckers and rail shippers, who move freight on largely self-supporting road and rail networks. Similarly, federal construction and maintenance subsidies to ocean ports draw traffic away from more efficient ports to less efficient ones. Because such inefficiencies impose avoidable losses on the economy, they warrant reexamination of the fees the federal government charges for its facilities and services.

PAST AND CURRENT EXPERIENCE WITH USER FEES

User fees--most generally, any tax or other levy designed to recover the costs of government services from identifiable beneficiaries--are by no

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2. See Congressional Budget Office, "Review of Federal Farm Programs," Staff Memorandum (May 1983), and Farm Revenue Insurance: An Alternative Risk-Management Option for Crop Farmers (August 1983).

TABLE 1. PROFILE OF SEVEN CURRENT FEDERAL SUBSIDY PROGRAMS (In millions of dollars)

Program	1984 Program Costs	Revenues Forgone 1984	Revenues Forgone 1984-1988	Subsidy as a Percent of Total 1984 Program Costs
Deep-Draft Ports and Harbors	570	570	3,200	100
Inland Waterways	630	577	2,800	91
Coast Guard Services	2,520	1,051	5,600	42
Civilian Aviation Services	4,100	940	4,900	23
U.S. Postal Service	24,400	715	3,900	3
Irrigation Water a/	350	17	300	90
Strategic Petroleum Reserve	2,300	2,300	10,500	100
Total	34,870	6,170	31,200	18

SOURCE: Congressional Budget Office.

a. Current federal spending for irrigation water is substantially higher than the revenues forgone, since existing contracts with farmers inhibit rate increases. Receipts from current user payments equal about 10 percent of estimated Bureau spending on construction and operation of irrigation facilities.

TABLE 2. FEDERAL SUBSIDIES AND COSTS RECOVERED RELATIVE TO ENTERPRISE SIZE, AS OF 1984

Program and Principle Beneficiaries of Subsidies	Total Enterprise Transactions a/ (In billions of dollars)	Percent of Enterprise Costs Subsidized b/	Percent of Federal Costs Recovered
Deep-Draft Ports and Harbors			
Cargo shipping	13.7	4.2	0
Inland Waterways			
Barge freight shippers	2.5	23.0	9
Coast Guard Services			
Recreational boaters,	9.2	3.1	1
Fishermen,	2.9	10.2	0
Commercial shippers	15.5	3.0	1
Civilian Aviation Services			
General aviation	10.2	9.2	15
U.S. Postal Service			
Not-for-profit organizations	67.1	0.7	69
Irrigation Water			
Western farmers	7.7	4.5 c/	10
Strategic Petroleum Reserve			
Oil consumers	183.3	1.3	0

SOURCE: Congressional Budget Office.

a. Data are estimates for 1982 inflated to 1984 dollars. For recreational boaters and general aviation, data reflect total associated private plus unrecouped federal spending. Otherwise, data reflect activities' total value in the economy, calculated as the sum of private revenues and unrecouped federal spending.

b. Value of federal subsidy divided by total enterprise transactions.

c. For some farmers, subsidy may amount to a much higher fraction of costs.

28-917 O - 84 - 3

means new in public finance. The Bureau of Reclamation, for example, has collected partial fees for irrigation water for nearly a century. And since 1956, most federal highway spending has been paid for by special taxes earmarked for the Highway Trust Fund. Like the highway program, commercial aviation services are virtually self-supporting, as is most of the mail handling done by the U.S. Postal Service. In other areas, however, the government has imposed no charges; the deep-draft harbor dredging carried out by the U.S. Corps of Engineers, for example, is done without reimbursement. In such cases, general revenues are the sole source of support for the government's services.

In some areas of service, state and local authorities have also applied user fees to good advantage. Many states have used public authorities to build, finance, and operate harbors, airports, roads and bridges, water supply systems, and wastewater treatment plants. User fees are the most common means of financing these services.

Even where the government now imposes user fees high enough to cover most program costs, however, problems remain in the form of "cross-subsidies." A cross-subsidy occurs when one class or regional group pays fees that reflect more than its share of program costs, while another group pays fees that reflect less than its share. In such cases, the source of the subsidy is the high-paying user, not the general taxpayer. Cross-subsidies are particularly conspicuous in the highway and aviation programs. As federal highway taxes are constructed, operators of light trucks tend to subsidize operators of heavy trucks. 3/ Similarly, in aviation, commercial airline passengers pay a disproportionately large share of the costs of airports and air traffic control, while owners of small private aircraft pay disproportionately little. Even when the overall receipts are sufficient to pay for the service, such cross-subsidies raise issues of efficiency and fairness among users.

ADVANTAGES OF USER FEE FINANCING

A desire to improve efficiency in the economy, coupled with concerns about fairness and the federal deficit, could motivate reconsideration of the subsidies to users of federal services.

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3. At present, the heaviest class of trucks pays about 70 percent of its share of federal costs, while light trucks overpay by about 20 percent. For further treatment, see Congressional Budget Office, testimony of Alice M. Rivlin before the Senate Committee on Environment and Public Works, August 18, 1983, and Public Works Infrastructure: Policy Considerations for the 1980s (April 1983), Chapter II.

Economic Efficiency

Four gains in efficiency could derive from user fees: more cost-effective federal programs, better allocation of private resources, better use of facilities now in place, and assured funding for the most economic projects. First, federal fees give the users of services an incentive to demand suitable choices of federal investment. Faced with the prospect of having to pay, beneficiaries will want to see the government invest in the most useful services. Thus, fees give users a means to signal the government about what are likely to prove productive investments. In turn, adequate fee collections support economically correct levels and types of service; insufficient collections, conversely, discourage unneeded or overbuilt projects. Thus, for example, if the construction of the Tennessee-Tombigbee waterway had been financed by barge operators, projected collections would not have produced the money needed.

Second, if the relative costs of competing services are not distorted by selective public subsidies, improved allocation of private resources follows. Federal support of freight shipment on inland waterways offers a case in point. If barge operators had to pay for government expenditures made on their account, shippers of freight might be encouraged to seek a more cost-effective mode of transport--possibly truck or rail.

Third, user fees applied properly can encourage efficient use of existing capacity, thus helping to reduce the need for new construction. Surcharges for airport use during peak periods, for example, though still only rarely applied, have been demonstrated to reduce congestion and delay, encouraging use of available and convenient airport space and reducing the need for new airport construction. The same principle could be applied to inland waterways.

Fourth, financing backed by user fees can be critical to the start of needed new projects. New deep-draft ports, for example, appear to offer long-term cost savings for coal exports. To date, however, dredging has not proceeded, stalled by disagreements among officials at all levels of government and private port authorities regarding the size and type of user fees best suited to finance this work. As a result, the potential savings in coal exports continue to go unrealized.

Deficit Reduction

In fiscal year 1984 alone, the seven subsidies considered in this paper will together claim $6.2 billion worth of federal resources, and over the coming five years, that sum could reach $31 billion. By supporting the total

costs of Coast Guard services, for example, the federal budget will forgo some $1.05 billion over the course of 1984 (see Table 1). Roughly half that sum will also be forgone for deep-draft navigation services, and roughly the same amount again will go toward the inland waterway system. Obviously, recovery of such outlays would help narrow the federal deficit, which is now projected to stand at about $185 billion at the end of fiscal year 1984. Federal borrowing (though not the budget deficit) would likewise be curbed by recovery of the $2.0 billion to be spent this year to fill the Strategic Petroleum Reserve. 4/

LIMITATIONS OF USER FEES

User fees apply only in programs with identifiable beneficiaries of federal services. When services provide public goods--benefits shared by the entire nation, such as national defense--funding from general revenues is appropriate. Within this general principle, several other limitations to user fees bear consideration.

Existing Subsidies to Competitors--"Second Best" Solutions

If competing industries all receive subsidies or other assistance on a comparable footing, then continued subsidies may not be harmful from an economic standpoint. Indeed, continuing subsidies on this so-called "second best" basis may cause less economic distortion than requiring one industry to support itself while its competitors receive public help. For example, federal aid to mass transit can be supported on grounds that users of its prime competitors--private cars--underpay, since drivers do not pay for the road congestion and delay they cause for other travelers. Similarly, barge industry representatives argue that federal aid to railroads justifies federal construction and operation of locks and dams.

Infant Industries

New industries that face high initial costs, either because of technological changes or because of the lack of a supporting infrastructure, may need temporary public help until they become self supporting. For example, federal aid was provided during the start of the commercial aviation industry. These subsidies have now been eliminated in favor of a program financed by user taxes. Currently, below-cost rates for space

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4. Expenditures for filling the SPR are not included in the federal budget.

shuttle services is one way that the federal government might encourage the commercial use of space.

Previously Invested Capital

Much federal spending for public services long predates the current Congressional interest in user fee financing. A major share of that past investment still serves economic activity today. For example, about one-third of all Bureau of Reclamation dams are more than 50 years old, yet they still provide irrigation water to farm communities. Economists generally do not favor attempting to recover such "sunk costs"--that is, both past capital investment and operating expenditures. Inclusion of sunk costs could force fees so high as to depress use of a facility capable of providing additional service at low economic cost. With sunk costs included in fees, the extreme result could be abandonment of a formerly serviceable resource--in the end, eradicating the economic value of the initial investment.

Legal Constraints

In some cases, legal constraints might inhibit the immediate imposition of user fees. For example, many farmers hold long-term contracts with the Bureau of Reclamation under which they receive irrigation water at very low rates. Based on interest-free repayment of the Bureau's capital costs, these terms effectively subsidize all but perhaps one-tenth of the water's cost. Should the federal government wish to eliminate this subsidy, it would encounter the legal barrier of the contracts--some with terms as long as 40 years--under which it has agreed to furnish water at stipulated prices. Thus, increased water rates might have to wait for such contracts to expire. Alternatively, however, other policy changes might offer economic incentives for contract holders to renegotiate terms. For example, farmers now receiving subsidized irrigation water could be allowed to resell that water if they entered into new contracts providing for full-cost recovery. When the market price is well above cost, this could provide a strong incentive not only to conserve water but also to pay higher rates.

A TYPOLOGY OF USER FEES. As used in this paper, the term user fee encompasses the four types of federal and nonfederal charges described below. In terms of who pays them and when, they range from universal to very precise; the descriptions are ranked in that order.

SYSTEMWIDE FEES. Taking the form of a federal **tax** or a **tariff** on a service or commodity, a systemwide fee raises money from a universal levy to finance an entire network of services under one program. Also called a **benefit tax**, the systemwide fee is levied at a uniform rate and does not reflect different costs of different parts of a system. Examples include the ticket tax that finances aviation services and the motor fuel tax that pays for federal highways. Though easy to administer, systemwide fees may entail a cross-subsidy, such as payment for construction and maintenance of locks and dams along the Tennessee-Tombigbee waterway from fees collected from users of the Mississippi and Ohio Rivers.

SPECIFIC FEES. These **taxes** or **tolls** are varied to reflect the particular costs of separate facilities within a system. Collections from a given set of facilities go only to that set, avoiding the problems of both general taxpayer subsidization and of user cross-subsidization. Examples include the tolls commonly collected at bridge and tunnel approaches. Such specific fees permit rates to be low at low-cost waterways and high at high-cost ones, yielding a good indication of users' willingness to pay and thus of the soundness of a federal investment.

SPECIAL FACILITY OR SERVICE FEES. Refinements of the above, special levies or **surcharges** can recover the specific costs associated with a particular facility or service from only those parties who use it. In being imposed at the occasion of each use of certain facilities, **incident-specific fees** can assure that users pay in precise proportion to the costs they impose on a system. These instruments, levied commonly by nonfederal managers such as port authorities, could be applied effectively for such federal investments as Coast Guard safety inspection services or the deep-draft dredging that would benefit the large coal-carrying ships that require extra-deep harbor channels.

TWO-TIER FEES. These would superimpose on a systemwide fee a specific charge for the extraordinary costs of any particularly expensive service or facility. Two-tier fees are commonly used by such private-sector enterprises as utilities. Electric service, for instance, is paid for by a **fixed rate** for consumers' access to service, plus **metered rates** for power actually used. Public-sector applications could include **peak-hour surcharges** for use of crowded airports at the busiest times of day over and above the flat-rate tax imposed on all commercial tickets, or **congestion fees** on top of normal fuel taxes for use of particularly heavily trafficked inland waterways.

ISSUES AND CHOICES IN THE ADMINISTRATION OF USER FEES

Several difficult issues arise in the course of designing user fees to suit different situations.

- **Systemwide versus specific fees**--Should fees be uniform throughout a system or tailored to reflect the costs of separate segments?

- **Market pricing versus cost recovery**--On what basis should correct fee levels be calculated?

- **Cash-flow versus amortized financing**--Should capital investments be financed on a cash-flow basis or extended over the anticipated life of a project?

- **Financial linking versus fiscal control**--How can the possible conflict between earmarked receipts channeled through trust funds and Congressional control of spending be resolved?

The forms of user fees possible range from a uniform tax for an entire system, termed a "systemwide" charge, to a toll on a single facility, termed a "specific" charge (*see text box at left*). The current 9 cents per gallon tax on motor fuel that supports the federal highway system is an example of a systemwide fee; it is levied at a uniform rate and is unadjusted for disparities of cost or use among roads in the system. Specific fees, in contrast, can reflect differences among parts of a system. The toll for a road or bridge is an example. Both approaches can be combined in a two-tier system in which one fee covers systemwide costs and a second accommodates a recurring special situation.

Systemwide Versus Specific Fees

Imposition of user fees can force a tradeoff between the greater efficiency of specific fees and ease of administration of systemwide fees. A broader fee can be simpler to administer, because it avoids the difficulty of identifying the various users and establishing separate charges for the components of a complex system. Thus it allows low administrative costs. At the same time, though, it permits the low-cost components of the system to subsidize the high-cost ones, thus sacrificing some of the gains in fairness and efficiency.

Conversely, specific fees are often more difficult and costly to administer. But by linking user payments directly to particular projects or system segments, they encourage more cost-effective investment in and

economic use of those services. Further, in allocating costs to individual users, they can safeguard against the inequities of cross-subsidies.

Three interrelated factors appear particularly important in managing the tradeoff between ease of administration and economic efficiency: sizes of fees, cost variations within a system, and numbers of component parts.

Fee Size. If fees are small relative to other costs that users face, then achieving a precise match between costs and fee payments may not be an overriding concern. For example, the motor fuel tax is small compared to the costs of operating a vehicle. In such cases, systemwide fees may be acceptable in the interest of administrative ease, even though cross-subsidies among segments of the highway system certainly exist.

Cost Variation. If a program finances a relatively small number of projects with sharply different cost characteristics, then direct project-specific charges could be both appropriate and feasible. In such cases, specific fees could be tailored to reflect the costs of particular facilities. Users of high-cost facilities would pay their full share of program costs, and users of low-cost ones would do likewise, leading to elimination of cross-subsidies. In extreme cases, fees for high-cost services might discourage use to the point that the service would close. Demand might be diverted to low-cost alternatives, in turn reducing the cost per user still further. In economic terms, this represents a gain in efficiency. Moreover, if the number of projects were small, such a specific fee system might not pose extraordinary administrative costs.

For example, the cost of constructing, operating, and maintaining the nation's ports varies widely. Heavily used ports with deep natural channels (such as Los Angeles, New York, and Seattle) incur dredging costs of only a few pennies per ton of cargo, while costs at less heavily used ports with naturally shallow channels (such as Savannah, or Portland, Oregon) incur costs of more than $0.75 per ton. Were a uniform fee imposed across the nation's entire harbor system, users of low-cost ports would pay more than their share of total costs, the excess going to subsidize users of high-cost ports. But if the costs were recovered from users on a project-specific basis, then each facility would pay its own way. Although the charges at low-volume high-cost ports could be very high, forcing some to close, the effect would be to route traffic through the more efficient ports, offering a net gain for the economy as a whole.

Number of Components. The number of components on a given system can influence the choice between the efficiency advantages of specific fees and the administrative ease of systemwide fees. A system with numerous separate facilities can make the imposition of specific fees

cumbersome. If the cost disparities among those facilities are not great, the gains inherent in specific fees may be overwhelmed by the administrative burdens of collecting those fees. Numerousness of facilities may be less problematic, however, in areas of service in which nonfederal authorities also impose their own levies. Local governments already have an administrative structure for collecting landing fees at airports, docking fees at water ports, and safety inspections for recreational boaters, for example. Thus, imposing specific federal fees on users of such services would require little new administrative structure.

Market Pricing Versus Cost Recovery

New or increased user fees can be guided by one of two basic approaches: market pricing, or full recovery of federal costs. Many federal services have clear counterparts in the private marketplace. For example, the Federal Reserve collects and sorts checks for commercial banks much as those banks do for their customers. Similarly, the government leases federal land for cattle grazing and mineral exploration much as private landowners lease property for the same purposes. In such cases, market prices can suggest the economically correct level of federal fees. But more federal services lack private-sector counterparts than have them; for such programs, full recovery of the government's cost would be the appropriate gauge.

Full-cost recovery would include construction costs, operating and maintenance costs, and interest charges at the government's cost of capital. Sunk costs would not be included.

Cash-Flow Financing Versus Amortized Capital Costs

A decision to pay for new projects out of user fee collections would raise a choice between payments over the life of the project with costs amortized, or payments as the actual expenditures are made. Cash-flow financing of capital costs is most practicable in a program with a systemwide fee collected over a broad network of numerous parts. The present highway and airport systems offer good examples. Both pay for new investment on a cash basis (through trust funds) from user fee collections. In both, current income pays for current investment, with one year's receipts approximately covering the same year's construction outlays. The process is usually one of cross-subsidization. Current users of highways and airports benefit from facilities paid for by previous drivers and airline passengers. These current users, in turn, pay for facilities that succeeding generations will use. Similarly, some regions may be net donors to the

28-917 O - 84 - 4

system, while others are net recipients. For example, Florida pays more in federal highway taxes than the highway aid it usually receives, while Wyoming receives more than it usually pays.

Specific fees cannot, as a practical matter, support such a cash-based system for financing of capital investment. Money must be available long before services can be provided and user fees charged. In addition, a concern with fairness suggests that spreading costs over the useful life of a project--thus dividing the burden over time among all users--is appropriate. The amount to be invested must be generated over the life of the project, much as though fees were dedicated to amortizing a bond. For public projects, the capital to be invested would come initially from general tax revenues or government borrowing with repayment to come from user fees over time. 5/ Private firms, such as utility companies, amortize capital costs, as do public authorities that finance such projects as toll roads with revenue bonds. In general, the more capital-intensive and long-lived a project, the more suitable it is for an amortized-cost approach. Thus, many irrigation and navigation projects appear to be good candidates.

The annual collections required to defray a project's capital costs would depend on the length of time over which the initial costs were to be amortized, and on the interest rate applied. Recent Administration proposals for user fees for ports and inland waterways call for amortizing costs over 50 years, charging interest at the prevailing Treasury rate. Though lower than rates available in private financial markets, these terms are nonetheless far closer to market rates than those applied to many previous government investments, notably power and irrigation projects.

Interest rates set too low effectively continue subsidies and thus can defeat the purpose of user fees. For example, amortizing a project over 40 years at zero interest is current practice for the Bureau of Reclamation irrigation projects. Even though users eventually repay all construction costs, the federal government must borrow at the market rate to provide the up-front cash for construction. Thus, total federal costs are far greater than the construction costs alone. At a 10 percent cost of capital, the actual cost to the federal government over the 40 years would be four times the costs of construction. Thus, if project-specific user fees were based on amortization of capital costs, full-cost recovery would require that government borrowing costs be reflected in the fees. Otherwise, the fees would still mask substantial federal subsidies.

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5. Such an approach was originally proposed for the Interstate Highway System in the 1950s, but the Congress selected the more fiscally conservative cash-flow approach embodied in the Highway Trust Fund.

Financial Linking Versus Fiscal Control

Two considerations dominate management of user fee collections: linking receipts to the area of expenditure that occasioned them, and Congressional control of spending.

From the standpoint of users themselves, linking collections to specific types of services, or even to specific facilities, can be particularly important. Commercial enterprises and individuals, if required to pay for services they had once received cheaply or even free, would reasonably hope to see their payments go for the services they use and not for other federal purposes. This link can be important from the perspective of sound federal investment as well. A direct correspondence between receipts and expenditures can clarify signals about the types and levels of service that are valued. Collections that cover the costs of a particular service can both finance that service and verify that it is economically desirable; inadequate collections can do the opposite. This link is strong with project-specific fees and weak with systemwide fees.

Trust funds are a common way to establish this linkage. The federal government already maintains trust funds in two of the areas studied in this paper (aviation services and inland waterways), and most states finance their highway programs through trust funds. Strictly applied, this financial mechanism can ensure not only the direct dedication of user fee receipts but also their adequacy for full recovery of program costs. Though these assurances can help improve the acceptability of user fees to parties likely to pay them, trust funds also limit the government's budgetary control and its ability to direct fiscal policy. 6/

Newly created trust funds could hamper the Congress' efforts to reorder federal priorities when setting budgetary policy. 7/ They could also

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6. For discussion of the pros and cons of different types of trust fund financing versus the use of general revenues, see Congressional Budget Office, Transportation Finance: Choices in a Period of Change (March 1978).

7. Language in the Congressional Budget Act of 1974 placing limits on the establishment of new trust funds would not proscribe the creation of such funds as are considered here. Indeed, the Budget Act provides that trust funds that receive 90 percent or more of their revenues from user fees may create contract authority and thus be exempt from prior appropriations--as are the highway and the airport and airway trust funds.

place more federal spending outside the reach of fiscal policy, increasing the government's difficulty in controlling overall economic conditions. Thus, the advantages of trust funds must be balanced against the need for spending budgetary control.

Achieving such a balance is difficult but possible. One compromise could take the form of a trust fund subject to normal Congressional appropriations. Money from such a trust fund could be held unavailable for spending each year until it was appropriated. (This would differ from practice in the Highway Trust Fund, under which contract authority to spend is granted by the authorizing legislation, and funds are normally apportioned to the states without any appropriation.) A trust fund subject to appropriation would not guarantee that any particular year's spending follow a planned course, inasmuch as annual appropriations could adjust the amounts to reflect prevailing budgetary and fiscal conditions--possibly at odds with program demands. Nevertheless, by separating the accounts for receipts and expenditures for each special service and its associated user payments, any temporary dislocation of expenditures caused by broader budgetary or fiscal concerns could be corrected later, as budgetary or fiscal conditions changed. Thus, a long-term balance between receipts and payments could be achieved while the Congress retained fiscal control.

Intergovernmental Cooperation in Fee Collections

The federal government need not be the sole provider of services nor the sole collector of user fees. Nor must the agency providing a service be, by definition, the only suitable collector of fees. Already, one federal agency--the Internal Revenue Service--is the collector of the funds going to support most other agencies' services.

Convention, more than law or practicality, has established the pattern in which, for example, the Corps of Engineers, operates and finances inland waterway and certain harbor services, the Bureau of Reclamation its irrigation services, and the Coast Guard its safety inspection services. Each of these functions, though provided by federal agencies, actually operates within a local sphere, and not uncommonly, in areas in which nonfederal and private authorities also offer services. At ports, for example, the Corps' dredging services complement the landside facilities furnished by local port authorities and private firms. Many of the same ports also have representatives of the U.S. Customs service present to collect duties on incoming cargo. Thus, an administrative structure to collect reimbursement for the Corps' dredging services is already largely in place--in some cases, in several forms. Use of these nonfederal authorities might be particularly appropriate for the collection of specific fees. These could be linked most

directly with their purposes by being gathered at the site of each facility and on the occasion of each use.

In some instances, nonfederal administrative agencies might serve in the collection of systemwide levies. Most states, for example, charge fees to license and inspect the boats used for recreation. Federal fees designed to cover the costs of the Coast Guard's search and rescue operations could conceivably be collected by the same state agents. In fact, a federal portion could be built directly into the states' licensure and inspection charge, permitting one-time collection of a dual fee and keeping additional administrative overhead to a minimum. Any additional costs incurred in separating collections and passing on the federal share could be incorporated in the fee itself.

Where benefits are local in character, nonfederal governments could be required to pay a larger share of total project costs. This would give them flexibility either to impose user fees of their own or to furnish local subsidies in return for local economic benefits provided by a project. This approach closely resembles a proposal for deep-draft ports now before the Senate, S. 1739, which would require a substantial nonfederal match for ports of more than 45 feet in depth while authorizing local authorities to collect user fees from ocean-going vessels. A higher nonfederal cost share would have wide application to many projects of a local nature. 8/

THE TRANSITION FROM SUBSIDY TO USER FEE FINANCING

Any change in user fees could impose significant costs on whole industries or individual classes of users of public services. Thus, the Congress would face questions of just how great the difficulties of transition would be and what steps it could take to ameliorate them.

The Costs of Transition

Many of the user fees considered in this paper would not add greatly to the cost burden of users. To cover the costs of Coast Guard expenditures

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8. See Congressional Budget Office, Public Works Infrastructure (April 1983), Current Cost-Sharing and Financing Policies for Federal and State Water Resources Development (July 1983), and Efficient Investments in Water Resources: Issues and Options (August 1983).

for the benefit of recreational boaters, average annual fees of less than $20 for each boat would suffice. In other cases, fees would be low relative to other operating costs. Compared to the multimillion-dollar purchase price of a small jet plane, for instance, a tax equivalent to roughly $1 per gallon of fuel to cover each general aviation users' share of the costs of air services would seem small. Likewise, in the context of the overall costs of a coal-carrying ship, a fee of $1.70 per ton of coal toward financing deep-draft port dredging would add only marginally to coal shipping costs--in this case, an investment likely to be offset by savings. Even the largest sum considered here, the $2.3 billion to be raised from oil users to finance the Strategic Petroleum Reserve, would translate into only a little more than a penny per gallon of motor fuel.

For some groups, however, the burden of user fees would be harder to bear. In the areas considered here, for example, the fishing and barge industries would face among the highest percentage increases in costs attributable to user fees--10 percent and 23 percent respectively. Neither industry is now operating at peak profitability, and both would face transition difficulties if full-cost recovery were imposed immediately. Similarly, many individuals are likely to face hardships substantially worse than implied by the industry-wide averages discussed here. Some farmers, for example, depend on federal irrigation water more than others do and may have fewer options for changing their farming practices.

In addition, many private-sector investment decisions are based on the existence of public subsidies, and user fees to reduce these past subsidies could create special difficulties. Such may be the case for farmers receiving subsidized irrigation water. While some of these farmers have continuously received subsidized water for long periods, others have purchased their farms only recently and may have paid premium prices to obtain land with an allotment of low-cost water. To enact a higher user fee for the water at this stage would, in effect, charge such farmers twice: once when they paid the premium purchase prices for their land, and again when they actually used the water. Though the government has no legal obligation to ensure citizens against policy changes, such situations appear unfair in imposing hardship on particular users--in this case, recent purchasers of farms. Similarly, increased user fees for ports or inland waterways could create hardships for the shippers and carriers who have invested in docks, warehouses, or loading facilities on the expectation that these subsidies would continue.

Easing Special Transition Problems

Gradual rather than abrupt imposition of user fees could help such users adjust to new cost conditions. Fees phased in over a period of years

could allow users to accommodate new operating costs. The federal government has already applied this concept in the new waterway and truck taxes. For adaptations that would require private capital investments with long-term economic benefits to follow--such as water-conserving crops and farming methods--the federal government could offer special financial assistance. To avoid perpetuation of the subsidy, however, such aid could be made temporary, with users sharing costs.

Another approach for easing transition difficulties could take the form of so-called "grandfather provisions" exempting current or long-time users from fees. As of a fixed effective date, only new users would be charged for the government's services. Over time, however, the newcomers would come to dominate the population of users, and thus, full-cost recovery would gradually be realized. While this approach would mitigate the cash-flow problems of current users, it could also reduce the value of past investments they have made. For example, the rise in the price of irrigated farmland would slow to reflect the reduced value of the federal water to new purchasers.

The drawback to this and other measures designed to ease the burden of transition is the delay they imply for recovering federal costs and realizing gains in equity and economic efficiency. The Congress could decide, however, that delays may be a worthwhile short-term price to pay for a net long-term gain for the economy.

CHAPTER II. DEEP-DRAFT PORTS AND HARBORS

A systemwide fee of 27 cents per ton of cargo paid by commercial shippers could defray the U.S. Army Corps of Engineers' 1984 outlays of $570 million on routine port construction and maintenance. Covering the additional costs of adapting certain harbors to the special deep-draft needs of large coal-carrying vessels could require further annual Corps expenditures of $100 million to $200 million. These latter amounts could be recovered by a specific fee to operators of colliers averaging $1.66 per ton. At coal ports, the result would be a two-tier fee system, with all shippers paying the systemwide fee and coal shippers paying a surcharge to finance the service only they require.

In 1984, the U.S. Army Corps of Engineers (the Corps) will spend some $570 million on building and maintaining the nation's 200 deep-draft ports--harbors with depths of 14 feet or more. The Corps' responsibilities include construction and maintenance of jetties and breakwaters, channel deepening and widening, and construction of anchorages. But by far the largest share of the Corps' resources goes for maintenance dredging. The cost of this dredging varies considerably from port to port, ranging from less than one cent per ton of cargo to hundreds of dollars per ton, with a nationwide average of about 22 cents per ton.

The Corps performs construction work and maintenance dredging without reimbursement, and its activities are financed by the general taxpayer. The Corps began providing these services in 1826, to promote economic development and provide for national defense. Today, associated expenditures represent roughly one-half of total port costs. Most landside facilities, such as docks and storage installations, are provided--for fees--by private firms or local port authorities.

Continued maintenance of the nation's port system remains essential to the economic well-being of the country. Between 1972 and 1981, foreign commerce increased at an annual average rate of 3.9 percent. Over the same ten years, total foreign and domestic cargo passing through U.S. ports

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increased at an average annual rate of 3.2 percent. In 1979, the value of all U.S. exports totaled $182 billion, of which 55 percent ($100 billion) passed through U.S. ports. In 1981, the latest complete year of record, about 1.3 billion tons of cargo, valued at about $106 billion, passed through the nation's deep-draft harbors, with the ten most active ports in terms of cargo tonnage accounting for 40 percent of the total. 1/ In addition, port commerce contributes to local and regional economies.

THE POTENTIAL FOR FULL-COST RECOVERY

Conditions that might justify institution of federal fees for Corps services seem to exist. The shippers who benefit from the federally subsidized navigation services constitute a readily identifiable group engaged in commerce. Because users--that is, shippers--would be unlikely to support projects requiring fees higher than the expected savings in shipping costs, federal fees would help promote more effective selection of new dredging or construction projects. Equity would also be promoted: users, not general taxpayers, would pay the cost of the services to commercial enterprises.

If fees, taking the form of tonnage taxes, were set on a uniform, systemwide basis and not tailored to reflect the varied costs of different port operations, a levy of about $0.27 per ton of cargo would defray the Corps' full $570 million 1984 outlay. By the end of 1988, these collections would total about $3.2 billion, assuming the volume of tonnage shipped continues to grow at 2.5 percent annually, somewhat below the historical rate of 3 percent to 4 percent a year (see Table 3). 2/ This sum would suffice to cover the costs of Corps maintenance and construction services if no new projects were undertaken. Of the total, 84 percent would go for operation and maintenance and 16 percent for the Corps' ongoing construction activities. If capital costs were amortized, user fees could be somewhat smaller over this period, though larger in later years. Fees set to cover the costs of operation and maintenance only and not construction

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1. These ten ports, in descending order of tonnage, are Baton Rouge, New York, Houston, New Orleans, Sabine (Texas), Los Angeles, San Francisco, Tampa, Corpus Christi, and Duluth. For additional detail, see U.S. Army Corps of Engineers, "Deep Draft Navigation Cost Recovery Analysis," Office of the Chief of Engineers (September 1982).

2. In 1978, total shipping volume through U.S. ports came to roughly 1.84 billion tons. Since that year, total tonnage has risen at an annual rate of 3.4 percent.

TABLE 3. PROJECTED COLLECTIONS OF USER FEES SET TO RECOVER FULL FEDERAL COSTS OF DEEP-DRAFT PORT CONSTRUCTION AND MAINTENANCE, TO 1988 (In millions of current dollars)

Cost Item	1984	1985	1986	1987	1988	Five-Year Total
Construction	90	100	106	112	119	527
Operation and Maintenance	480	508	538	571	605	2,702
Total	570	608	644	683	724	3,229

SOURCE: Congressional Budget Office.

would net about $480 million in 1984 from a fee of about $0.22 per ton. By 1988, tonnage fees would increase to about $0.31 per ton for full-cost recovery, or $0.26 per ton for recovery of operation and maintenance expenditures only (see Table 4).

TABLE 4. PROJECTED SYSTEMWIDE USER FEES SET TO RECOVER FULL FEDERAL COSTS OF DEEP-DRAFT PORT CONSTRUCTION AND MAINTENANCE TO 1988 (In current cents per ton of cargo)

Cost Item	1984	1985	1986	1987	1988	Five-Year Average
Construction	4.4	4.6	4.7	4.9	5.0	4.7
Operation and Maintenance	22.3	23.1	23.9	24.7	25.6	23.9
Total	26.7	27.7	28.6	29.6	30.6	28.6

SOURCE: Congressional Budget Office.

New projects, such as port deepening for coal shipping, would ultimately require additional receipts, but if construction costs were amortized, receipts would fall short of outlays during the construction period. For example, if the total project cost of deepening the port of Baltimore--estimated at about $361 million 3/--were amortized over 50 years at 10 percent interest, annual revenues from user fees would increase by about $36 million. On the other hand, outlays during the typical seven-year construction period could total about $52 million each year (not reflecting inflation). For three other deepening projects--Mobile, Norfolk, and New Orleans--additional annual user fees paid to the federal government would total about $37 million, $42 million and $44 million, respectively.

RECENT PROPOSALS

Several proposals introduced in the 97th and 98th Congresses have been superseded by omnibus water resources bills, introduced subsequently both in the Senate (as S. 1739) and in the House (as H.R. 3678).

S. 1739

Under the Senate bill (Title X of S. 1739), local sponsors of port construction or deepening projects (states, cities, or port authorities) would pay a portion of total expenses, depending on port depth and anticipated defense-related use. The nonfederal share of the cost of construction of general cargo harbors (less than 45 feet deep) would be 30 percent. This share would have to be met with an annual cash contribution during the period of construction. The value of land, easements, and rights-of-way provided by the local sponsor would be credited toward the nonfederal share. In addition, the nonfederal payments would be reduced if part of the project benefitted national defense.

Nonfederal interests would pay 100 percent of costs for deepening a harbor beyond 45 feet, though they would not be asked to provide investment capital for such projects. Sponsors would have a 50-year period to repay the federal government, with a market rate of interest applied. These payments would be virtually the same as paying for a 50-year bond to finance the port deepening. One way to raise local payments would be with user fees. If fees were paid only by the very large colliers that required the

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3. In 1982 dollars. See Report of the Senate Committee on Environment and Public Works to accompany S. 1692, National Harbors Improvement and Maintenance Act of 1981 (December 15, 1981).

deeper draft, those ships would initially pay the following additional user fees: in Baltimore, $1.12 per ton, in Mobile, $3.91 per ton, in Norfolk, $0.93 per ton, and in New Orleans, $0.67 per ton. As the volume of deep-draft traffic grew, fees could be reduced by about two-thirds over 50 years.

Another provision of the Senate bill would allow the federal government to guarantee local loans or bond issues to help nonfederal interests secure repayment at the start of a project, rather than over time. As with general cargo harbors, the local share of deep-draft port construction might be met in part with the value of land, easements, and rights-of-way, and might be offset by that portion of project costs allocated to meeting national defense needs.

The Senate bill would also establish a National Commission on Harbor Maintenance, which within two years would recommend a plan for dividing port and harbor operation and maintenance costs among the federal government and nonfederal interests. Until such a recommendation were made, the bill would limit operation and maintenance obligations by the Corps to $350 million each year. 4/ Over this period, the federal government would pay the full cost of maintenance for all harbors with depths of less than 45 feet. Nonfederal interests would pay half of the incremental maintenance costs for deep-draft harbors beyond 45 feet. These annual incremental costs would range from about $1.9 million for the port of Baltimore to about $145 million for New Orleans. 5/ Under the Senate proposal, coal traffic at four deep-draft ports would pay the following additional fees to cover incremental operation and maintenance costs: $8.43 per ton in New Orleans, 6/ $0.34 per ton in Mobile, $0.06 per ton in Norfolk, and $0.03 per ton in Baltimore.

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4. This sum is roughly equal to the Corps' historic spending level for deep-draft port maintenance if considered on a current dollar basis.

5. For details, see U.S. Department of Energy, Port Deepening and User Fees: Impact on U.S. Coal Exports (May 1983). Similarly, annual incremental operation and maintenance costs for Mobile and Norfolk would run about $3.2 million and $7.1 million, respectively.

6. This fee is high relative to the fee in other coal ports, because the volume of coal traffic in New Orleans is low--only about 5 percent of total traffic. If all traffic paid incremental operation and maintenance costs, the fee at New Orleans would be reduced to $0.36 per ton.

H.R. 3678

The House has also taken up port development in Title I of H.R. 3678. For harbors less than 45 feet, this bill would not impose any user fees--either for construction or for operation and maintenance. For deep-draft ports in excess of 45 feet, however, the bill would authorize nonfederal interests to levy user fees sufficient to pay 50 percent of the additional construction or operation and maintenance costs incurred in dredging beyond 45 feet. Such fees could be applied only to users that required such depths.

The House bill would authorize construction of six deep-draft ports and 27 general cargo harbors at an estimated total cost of about $2.6 billion (1982 dollars). Federal outlays for these 33 projects could total about $260 million between 1984 and 1988. The total nonfederal share over this period could come to about $100 million. 7/

ISSUES IN APPLICATION

Key issues that would arise in evaluating user fees to recover Corps expenditures for ports include provision of local flexibility to levy fees, the merits of port-specific versus systemwide fees, and the treatment of small ports versus large ones.

Local Flexibility

User fees could be implemented most efficiently if they were administered by local port authorities, and if they took account of local economic conditions, traffic volume, and commodity mixes. For example, a port authority could levy fees on the basis of tonnage, value of cargo, mooring time, or any other measure of facilities' use or accrual of benefits. Such specific fees would allow each port to choose the fee basis best suited to its peculiar traffic and regional economic conditions. If certain local industries received particular benefits from healthy port activity, they too could share in the burden of maintaining the ports. If port activity benefitted mainly local economies, local taxpayers could be asked to help pay for port maintenance with dedicated local tax payments.

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7. For details on this estimate, see Congressional Budget Office, "Cost Estimate for H.R. 3678," prepared for the House Committee on Public Works and Transportation (November 1, 1983).

A two-tier fee would be well suited to the recovery of deep-draft port expenditures. All users could pay a uniform fee to cover annual operation and maintenance costs. The cost of deepening a port to accommodate large coal-carrying ships could be repaid with a second-tier fee. Just those ships requiring specially deepened channels--primarily super colliers--would be charged the extra fee.

Port-Specific Fees

Project-specific fees, as noted in Chapter I, are best suited to systems with relatively small numbers of facilities and wide variations in costs. Such is the case with deep-draft ports.

Though port-specific fees would promote economic efficiency and equity, large ports could benefit to the detriment of some small and medium-sized ports. The current situation regarding deepening for coal ports illustrates this point. Deepening to 55 feet to accommodate super colliers could result in savings of about $6 per ton of coal in transatlantic shipping costs. Projections of U.S. port capacity and world coal demand indicate, though, that only a few such deep ports would be necessary to satisfy future demand for U.S. coal exports. 8/ If all 13 major U.S. coal ports handling more than 10 million tons a year were to expand their export capacity by deepening, capacity would exceed projected demand by about 2.5 times. Only a few of the large ports would be able to offer fees low enough to permit expansion, while smaller ports (that is, those handling less than 100,000 tons a year) might find themselves unable to compete in the coal exporting market. Ultimately, some smaller ports could be forced out, but the result could be a more efficient port system.

This suggests that port-specific fees would better suit large ports, while medium-sized and small ports might fare better with a uniform national fee schedule. Under a uniform fee, shippers would pay the same tonnage fee regardless of their port of entry. This means that large ports with typically low actual costs per ton of cargo would, in effect, cross-subsidize smaller ports with higher costs per ton. An additional drawback, however, is that uniform fees would provide little economic guidance for selecting the most cost-effective ports for new construction or deepening. At some price to the general economy, however, some local economic benefits would result from forestalling the closure of small ports.

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8. See for example Robert C. Major, "U.S. Steam Coal Exports: Who Will Benefit?" Data Resources, Inc. (November 1981).

ECONOMIC EFFECTS

Impacts on shippers, on regional economies, and on the U.S. position in world trade would vary considerably with the level and form of fee imposed. As illustrated above, full-cost recovery using port-specific fees would affect ports of different size unequally. Small ports would have to charge fees far higher than would either medium-sized ports or large ports. On average, small ports would require about $10 per ton to recover all operation and maintenance costs. Medium-sized ports could charge an average of about $0.59 per ton, while large ports could charge an average rate of only $0.12 per ton.

Such fees would have to be assessed in the context of other charges now paid by shippers and carriers. These include payments for wharfage, dockage, stevedoring, and harbor transfers. Nationwide, these charges in 1981 averaged $16 a ton for containerized cargo, $4.26 a ton for grain, and $2.20 a ton for coal. For small ports, user fees would mean a very large increase over any of these current fees--enough to force many to close. For medium-sized ports, an additional $0.59 would represent a 4 percent increase per ton of containerized cargo, a 14 percent increase per ton of grain, and a 27 percent increase per ton of coal. For large ports, an average user fee of $0.12 per ton would add less than 1 percent to current port fees for containerized cargo, 3 percent for grains, and 5 percent for coal. The increase in costs of delivered cargo would be much smaller. For medium-sized ports, for example, a $0.59 per ton fee would add only about 1 per cent to the cost of coal delivered to European ports.

Within each size class, some ports would have to charge fees significantly higher than the average for their class (see Table 5). Accordingly, these ports would be affected more than would other ports in the same class. The large ports identified in Table 5 would pay fees substantially higher than their class' average of $0.12 a ton--though at less than a dollar a ton, rates would still be less than at most medium-sized ports. Similarly, some medium-sized ports listed would have to levy user fees higher than $3 a ton, many times the class average of $0.59 a ton. In addition, six small ports would face charges of more than $1,000 a ton to recoup all operation and maintenance costs. Under full-cost recovery with port-specific fees, many small ports, including those listed, would have to forgo the benefits of Corps expenditures and limit traffic to small vessels, possibly sacrificing commercial operations altogether.

One way to preserve some of the benefits of port-specific fees but avoid certain economic hardships they could impose would be to cap user

TABLE 5. FEES TO RECOVER FULL CORPS OPERATING AND MAINTENANCE COSTS AT SELECTED PORTS IN THREE SIZE CLASSES

Class Averages and High-Cost Ports	Tonnage 1978	Fee in 1982 Dollars per Ton
AVERAGES		
National Average (281 ports) a/	6,578,683	0.18
Large Ports (47 ports)	34,564,026	0.12
Medium Ports (139 ports)	1,603,228	0.59
Small Ports (50 ports)	25,042	9.87
LARGE PORTS (more than 10 million tons a year)		
Savannah Harbor (GA)	10,633,400	0.95
Portland (OR)	16,525,000	0.79
Cleveland Harbor (OH)	19,583,600	0.71
Calcasieu River (LA)	13,562,949	0.55
MEDIUM-SIZED PORTS (100,000 to 10 million tons a year)		
Lake Washington Ship Canal (WA)	101,731	38.11
Umpqua River (OR)	195,985	12.79
Yaquina Bay and Harbor (OR)	168,545	8.17
Georgetown Harbor (SC)	558,842	4.89
Rochester Harbor (NY)	201,138	4.25
Sheboygan Harbor (WI)	264,100	3.19
Crescent City Harbor (LA)	235,268	3.02
SMALL PORTS (Less than 100,000 tons a year)		
Cape Vincent Harbor (NY)	9	54,478
Ontonagon Harbor (MI)	22	19,809
South Haven (MI)	9	6,700
Michigan City Harbor (IN)	66	5,952
Santa Barbara Harbor (CA)	172	4,117
Grand Marias Harbor (MI)	31	3,445
Napa River (CA)	350	548
Atchafalaya River (LA)	10,002	377

SOURCE: Congressional Budget Office from U.S. Army Corps of Engineers, Office of the Chief of Engineers, "Deep Draft Navigation Cost Recovery Analysis" (September 1982).

a. Of 281 ports for which the Corps of Engineers maintains records, 45 had zero tonnage in 1978.

fees at some maximum rate. 9/ If user fees were capped at $0.15 a ton, for example, receipts between 1984 and 1988 would be reduced to about $1.7 billion (about one-half the sum required for full-cost recovery). This would benefit roughly half (129) of all ports by reducing fees on about 22 percent of all U.S. cargo. Of these ports, 32 are small (64 percent of all small ports), 52 are medium-sized (37 percent of all medium-sized ports), and 13 are large (28 percent of all large ports).

Under the Senate proposal, major capital improvements, such as port deepening to accommodate large coal vessels, could more than double total user fees, but cost savings resulting from use of the larger vessels would appear to warrant the higher fee. For example, the estimated cost for deepening the Port of Norfolk to 55 feet is about $480 million. If these costs were shared according to the Senate proposal, the resulting additional user fee on traffic using the deeper draft would average about $0.70 a ton over the 50-year payback period. Similar proposals for deepening other coal ports would result in additional user fees over a 50-year span, ranging from $0.46 per ton (New Orleans) to $2.70 per ton (Mobile). But deepening coal ports would allow loading of large colliers, reducing the overseas transport costs of steam coal, with estimated savings of around $6 a ton in moving coal from East Coast ports to Europe.

Concluding Notes on Current Inaction

Despite the apparent prospect of favorable economic return from many port projects, little progress is likely without a firm national policy on port cost recovery. The Port of Norfolk, for example, has considered self-financing of dredging projects through revenue bonds, but Norfolk authorities have made clear that they will wait until user fee legislation defines federal and nonfederal roles in port development. New York City has also considered going ahead on its own with a deep-draft coal port on Staten Island. Portland (Oregon) would like to dredge its main channel deeper than the current 40-foot level, but the city claims that the project would be uneconomic without a federal subsidy and would prefer at least a 50/50 split.

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9. The cap concept was a major provision in two Senate bills introduced early in the 98th Congress. S. 865, introduced by Senator Mark Hatfield would have limited user fees to the lesser of 6 percent of the value of a ship's cargo or 44 percent of the Corps expenditures. S. 970, introduced by Senator Daniel Patrick Moynihan, would limit fees to 50 percent of Corps expenditures, or a cap of about 15 cents per ton in 1988.

Spokesmen for one small port, for example, have expressed their willingness to pay 100 percent of new construction costs over time through collection of user fees, but can offer no "up-front" capital contribution. Again, no agreement has been reached, because the port could not be assured of the legality of assessing user fees in the absence of federal user fee policy. Because of such uncertainties, no port authority has been willing to enter into a cost-sharing agreement with the Corps at this time.

CHAPTER III. INLAND WATERWAYS

The existing federal barge tax--8 cents per gallon of motor fuel--recovers only $54 million of the $631 million spent annually on inland waterways by the U.S. Army Corps of Engineers. Recovery of all federal costs would require a systemwide fee equal to 3 mills per ton-mile (the current tax is equivalent to 0.25 mills per ton-mile). The alternative of a segment-specific fee would range from 0.6 mill per ton-mile for low-cost waterways to $1 for the most expensive ones. A uniform fee would raise shipping costs by roughly one-third, in turn, increasing prices of goods shipped by barge and/or reducing farm incomes. Another outcome would be a diversion of freight traffic from barge to rail.

The U. S. Army Corps of Engineers (the Corps) began construction and maintenance of the nation's inland waterway system in 1824, when the General Survey Act directed the Corps to clear snags and sandbars from the Ohio and Mississippi rivers. Today, the Corps maintains a navigation system of 25,000 miles of improved channels and 210 locks and dams. In 1982, this system carried about 13 percent of all intercity freight traffic, most of it consisting of barges carrying commodities and bulk goods of low value per ton. This freight included coal, petroleum and petroleum products, grains, sand and gravel, and chemicals. Inland waterway traffic has increased at an average rate of about 3.4 percent a year over the last decade. 1/ Except for a small user fee enacted in 1978, spending by the Corps has been financed by the general taxpayer.

CURRENT POLICY

The Inland Waterways Revenue Act of 1978 (Public Law 95-502) instituted the first user fee for this service in more than a century, but it left a major share of funding for waterways to come from general federal

1. See U. S. Army Corps of Engineers, Waterborne Commerce of the United States, Calendar Year 1981 (February 1983), p. 27.

revenues. 2/ The 1978 act established a fuel tax of 4 cents per gallon of fuel in 1980, with two-cent increases scheduled for 1982, 1984, and 1986, respectively. Tax receipts are paid by commercial carriers into the Inland Waterways Trust Fund and are dedicated to construction or rehabilitation of the inland waterways. Even when the tax rate levels off at 10 cents per gallon, however, fee collections will amount to only 12 percent of the Corps' projected 1986 waterway expenditures, though they will cover more than one-third of planned capital spending (see Table 6).

In 1984, for example, the federal costs for inland waterways will total some $631 million, of which users will contribute about $54 million. Between 1984 and 1988, the Corps will spend nearly $3.1 billion on inland navigation facilities, of which only about $325 million--roughly 10 percent--will be recovered through user fees. Of these funds, more than three-fifths will go for maintenance dredging and operation of navigation works, with the balance available for new construction and major rehabilitation of existing structures.

Effects of the Changed Federal Role. The Corps' original role in the inland waterway system stemmed from the need to link major, established population centers with burgeoning agricultural and industrial regions in the Midwest. As economic activity moved westward, inland waterways served critically in encouraging and serving this new growth. Now, however, the nation's freight transport network has matured, and it includes a trucking industry using a system of user-financed interstate highways, a network of private railroads, and numerous pipelines. The federal role in providing inland waterway navigation services is no longer one of ensuring a basic transportation service to an expanding region. Rather, today, all modes of transport face one another in a competitive environment.

Thus, a key federal objective is to encourage the most effective use of all modes at the least economic cost to the nation. This goal is difficult to achieve with one mode—the barge industry--receiving a disproportionate share of federal dollars devoted to transportation. As a share of its total costs, the waterway transport industry received almost six times more federal support in 1982 than did railroads and 40 times more than did

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2. During the 19th century, user fees were collected on some federal canals, but these were eliminated in 1871. User fees have also been applied in the past for nonfederal public and private canals. Today, for example, user fees support New York State's Erie Canal and the joint U.S./Canandian St. Lawrence Seaway.

TABLE 6. PROJECTED WATERWAY SPENDING BY THE U.S. ARMY CORPS OF ENGINEERS AND EXPECTED RECEIPTS FROM EXISTING USER FEES, TO 1988
(In millions of dollars)

Expenditures and Receipts	1984	1985	1986	1987	1988	Five-Year Total
Construction a/	292	225	201	214	252	1,184
Operation and Maintenance b/	339	359	381	404	428	1,911
Total Spending	631	584	582	618	680	3,095
Receipts from Current Taxes (-) c/	-54	-55	-70	-72	-74	-325
Potential User Fee Receipts to Recover Full Costs d/	577	529	512	546	606	2,770

SOURCE: Congressional Budget Office from data supplied by the U.S. Army Corps of Engineers.

a. Projected construction expenditure schedule for ongoing projects only.

b. Assumes a constant program level in real terms based on fiscal year 1983 expenditures.

c. Eight cents per gallon of fuel in 1984 and 1985 and ten cents in later years.

d. Assumes cost recovery based on cash flow; amortization of construction costs would reduce this sum by roughly one-third for these years.

trucks. 3/ Pipelines receive no federal financial support. Federal subsidies to the waterway industry effectively lower the costs of barge shipping by

3. See Table 8 (below) and Congressional Budget Office, testimony of Alice M. Rivlin before Senate Committee on Environment and Public Works, March 10, 1982.

nearly 25 percent, causing shippers to shift from other modes to the waterways, as well as causing competing modes to offer lower rates than otherwise. This preference in turn artificially stimulates demand for continued federal investments in locks, dams, dredging, and the like. The result is a spiral of economic inefficiency.

THE PROSPECT FOR FULL-COST RECOVERY

Economic distortions caused by this large subsidy could be significantly corrected if inland waterway users were charged federal fees in proportion to the costs those users impose. Besides promoting equity among waterway users and general taxpayers, user fees would improve the allocation of the nation's economic resources. Barge operators and shippers alike would support waterway projects—system expansions or facility improvements--only if they judged that the value of potential savings from the projects exceeded the fees assessed.

Because many waterway projects serve various purposes, costs relating to commercial transport must be separated from costs devoted to such other purposes as water quality, flood control, irrigation, recreation, and fish and wildlife preservation. This process of cost allocation grows in importance as full-cost recovery is approached. Recognizing this, the Corps has developed a cost allocation formula that first subtracts all specific non-navigation costs on a segment-by-segment basis before estimating navigation expenditures. 4/

If user fees to recover full inland waterway costs were implemented in 1984, about $630 million would be collected--an increase of about $580 million over receipts from the existing tax. Between 1984 and 1988, revenue from a user fee set to recover full costs would total about $3 billion (see Table 6). If construction costs were amortized over the expected life of the facilities, rather than collected on a cash-flow basis, revenues for the first five years would be reduced by about $1 billion. The difference would be collected later over the remaining life of the improvements. As noted in Chapter I, paying for the construction of a facility over time (with appro-

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4. This procedure, developed for legislation introduced in the 97th Congress, uses a Corps cost allocation convention known as, "separable costs, remaining benefits" or SCRB. For details on SCRB and its use see U.S. Army Corps of Engineers, Digest of Water Resources Policies and Authorities, Office of the Chief of Engineers (March 27, 1981), and see U.S. Army Corps of Engineers, Office of the Chief of Engineers "Shallow Draft Navigation Cost Recovery Analysis" (September 1982).

priate interest charges) is more equitable than cash-based financing, particularly if the fees are assessed on a project-by-project basis.

Recent Proposals

Since the passage of the Inland Waterway Revenue Act of 1978, the Congress has considered numerous proposals for additional waterway user fees. Most of these proposals have been subsumed by omnibus water resources legislation recently introduced both in the Senate (S. 1739) and in the House (H.R. 3678).

Proposals in the 97th Congress. Early in 1981, the Senate considered two bills--Amendment 1637 to S. 810 (the Administration bill) and Amendment 32 to S. 810 (the Domenici Amendment)--that would sharply reduce waterway subsidies by means of user fees. The Administration bill called for phasing in fees to recover all federal expenses with capital costs amortized over 50 years. The Domenici amendment called for phasing in fees to recover 75 percent of federal operation and maintenance (O&M) expenditures and 50 percent of construction expenditures in the year they are incurred. Neither bill specified the type of fee to be applied. Another amendment to S. 810 (Number 1342) called for uniform fees to recover full federal O&M expenses and segment-specific fees to recover full federal construction outlays. A second Administration plan, S. 1554 proposed in 1983, called for uniform fees to recover 70 percent of federal O&M spending and segment-specific fees to recover 70 percent of federal construction spending.

S. 1739. This current proposal--already passed by the Senate Committee on Environment and Public Works--would limit annual federal obligations for waterway construction and O&M to $646 million--the 1983 level of federal expenditures for these projects. The bill would also create an Inland Waterway Users Board composed of users and shippers from all regions. Each year the board would recommend to the Congress spending levels for the following year. If the recommended level were less than $646 million, the Congress would authorize that level of appropriations from both general revenues and the existing Inland Waterways Trust Fund. The remainder would be available for obligation in any future year. Spending in excess of $646 million would require federal user fees unless there were an unobligated balance from prior years.

A federal obligation cap of $646 million a year would seem adequate to cover projected annual O&M spending plus construction spending for all projects under way. Inflation plus a projected need for new construction projects, however, would probably result in additional user fees in future

28-917 O - 84 - 7

years. Inflation aside, estimates of construction and major rehabilitation needs range from about $300 million a year 5/ to about $600 million a year. 6/ In 1988, if the Users Board recommended construction spending midway between these two estimates, a uniform user fee of about 1 mill per ton-mile of traffic could be imposed to collect some $232 million from waterway users. A user fee of 1.6 mills per ton-mile could finance $600 million of construction in 1988.

H.R. 3678. Though no new federal user fees are proposed in this current bill (already passed the House Committee on Public Works and Transportation), H.R. 3678 would redistribute the local share of the cost of construction projects. Current policy requires that state or local interests contribute all land, easements, and rights-of-way necessary to construct inland waterway projects. Traditionally, the local costs of doing so have accounted for about 5 percent of the average waterway construction project. 7/ H.R. 3678 would dispense with this requirement, providing instead that two-thirds of all construction costs (including land, easements, and rights-of-way) be paid out of general federal revenues and one-third be appropriated from the Inland Waterway Trust Fund.

Because it would require that one-third of construction funding come from user fees, the House bill could also limit future federal construction outlays in future years. By the end of 1985, the Inland Waterway Trust Fund will accumulate an estimated $209 million--the fund's projected unobligated cash balance. On the basis of the $0.10 per gallon maximum fee in 1986, annual receipts would be about $70 million, increasing thereafter at perhaps 2 percent to 3 percent a year. If waterway construction needs averaged the low estimate of $300 million a year for the next 20 or so years, construction spending could deplete the trust fund by 1990, limiting future construction spending to about $240 million a year (three times annual waterway fuel tax receipts). If waterway construction needs averaged the high estimate of $600 million a year and user fees were not increased, the trust fund could be depleted as early as 1986, again, limiting spending for waterway construction in future years to just triple annual waterway fuel tax receipts.

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5. See Congressional Budget Office, Public Works Infrastructure, p. 79.

6. See U.S. Army Corps of Engineers, National Waterways Study--A Framework for Decision Making--A Summary (January 1983).

7. See U.S. Water Resources Council, Options for Cost Sharing Implementation and OM&R Cost Sharing for Federal and Federally Assisted Water and Related Land Programs—Part 5A (November 1975).

EFFICIENCY AND EQUITY IMPLICATIONS

Two basic approaches could be applied in collecting waterway user fees, with significantly different implications for general economic efficiency and regional effects. First, with uniform systemwide fees, all waterway costs would be lumped together and all waterway users charged uniform rates. Second, fees could be segment-specific, based on the costs and levels of traffic peculiar to each of the roughly 30 major parts of the system.

Uniform systemwide user fees would result in cross-subsidization. Traffic on low-cost segments would pay more than the costs they impose, while traffic on high-cost segments would pay less than their share. In 1984, for example, a uniform fee that recovered all Corps spending would have to be set at about 3 mills (0.3 cents) per ton-mile. At that rate, traffic on the low-cost Ohio River, for example, would pay more than triple the actual costs on that segment--0.9 mills per ton-mile. On a high-cost segment such as the Kentucky River, costs would equal about 100 mills (10 cents) per ton-mile--more than 33 times the uniform fee of 3 mills per ton-mile.

Uniform fees would be unlikely to force any waterway segments to close. This would provide substantial assurance for regional economies that depend on barge traffic. The inherent cross-subsidies would be so large, however, that most of the potential efficiency gains from user fees would be lost.

Segment-specific fees would affect both waterway operations and other industries very differently. Charges set segment-by-segment to recover all federal O&M costs would range from 0.6 mills per ton-mile on the lower Mississippi River to more than $1 per ton-mile on the Pearl River. The higher rate would be five to ten times the cost of moving goods by truck. For some segments, these charges would be so high that existing traffic could not afford them, and those segments might close, providing a graphic example of how user fees can focus spending on the more cost-effective parts of a system. Four segments would face charges greater than 40 mills per ton-mile—more than four times the average shipping rate on waterways: the Kentucky River, the Appalachicola/Flint Rivers, the Pearl River, and the North Atlantic Coast Waterway (see Table 7). If the Corps did not operate these four segments, its overall costs would be somewhat lower than the totals cited above in the discussion of current expenditures.

In other places, segment-specific fees might divert some traffic to other routes, which in turn would increase fees for remaining traffic. How much diversion resulted would depend on the rates charged not only by

competing waterways but also by railroads and trucks. Because traffic diversion would mean that the costs are borne by a smaller volume of traffic, the cost per unit of traffic would increase and fees could, on average, end up about 24 percent higher than the full-cost recovery levels shown in Table 7. 8/

Some perverse consequences could result from segment-specific fees collected on a pay-as-you-go basis. For example, use of the Tennessee-Tombigbee waterway by coal traffic from Illinois, Kentucky, and Tennessee could relieve congestion problems on the current route down the Ohio and Mississippi Rivers. Under full-cost segment-specific fees, however, the Ohio-Mississippi route would be considerably cheaper and thus could remain congested, while the higher-cost Tennessee-Tombigbee would be underused. If the problems on the Ohio and Mississippi became severe enough, however, congestion fees might provide some relief.

Waterway User Fees in the Context of Federal Transportation Subsidies

Fees for waterways would function most effectively as part of a general federal policy of charging users the full costs of federally provided transportation services. Under such a broad policy, user fees would not disadvantage waterborne transport relative to competing modes--trucks and railroads. Rather, they could help correct the distortions created by the current nonuniformity of federal support.

In 1982, domestic inland waterway transport received the highest federal subsidy of any freight mode--3.3 mills per ton-mile, or enough to cover more than one-fourth of the costs of all inland waterway shipping (see Table 8). As stated above, this was more than six times the portion of freight movement costs covered by federal rail subsidies and more than 40 times truck subsidies. In 1982, the Congress increased truck taxes (part of the user fees for the highway system) by 55 percent, but spending

8. See U.S. Department of Transportation, Inland Waterway User Taxes and Charges, Report to the Secretary of Transportation to the U.S. Congress pursuant to Section 205 of P.L. 95-502 (February 1982).

TABLE 7. HIGH- AND LOW-COST WATERWAYS UNDER SEGMENT-SPECIFIC USER FEES, FOR SELECTED SEGMENTS

Waterway Segments	Average O&M Costs (In millions of 1982 dollars) a/	Millions of Ton-Miles Carried in 1981	Fees per Ton-Mile (In cents)
	HIGH-COST SEGMENTS		
Average Segment	3.3	27.8	11.8
Pearl River	0.2	0.1 b/	126.6
Kentucky River	3.1	14.9	20.5
Appalachicola/Flint	7.7	62.5	12.3
North Atlantic Coast c/	2.1	33.8 b/	6.2
	LOW-COST SEGMENTS		
Average Segment	12.6	12,515.3	0.10
Ohio	29.0	39,602.1	0.07
Tennessee	4.9	4,842.2	0.10
Gulf Inland Waterway-West d/	25.1	16,248.3	0.15
Green/Barren	1.4	768.6	0.18
Gulf Inland Waterway-East e/	2.5	1,115.1	0.23

SOURCE: Congressional Budget Office from U. S. Army Corps of Engineers, "Shallow Draft Navigation Cost Recovery Analysis," Office of the Chief of Engineers (September 1982) and Waterborne Commerce of the United States, Calendar Year 1981, National Summaries (February 1983).

a. Average 1977 through 1982 in 1982 dollars.

b. 1979 ton-miles.

c. North Atlantic Coastal Waterway, Virginia through Maine, including New York State Waterways.

d. Gulf Intercoastal Waterway, Texas, and Louisiana.

e. Gulf Intercoastal Waterway and New Orleans through Key West, Florida.

TABLE 8. COMPARISON OF FEDERAL SUBSIDIES FOR INTERCITY FREIGHT TRANSPORT IN 1982

Mode	Mills per Ton-Mile	Subsidy as a Percent of Total Enterprise Costs
Truck	1.3	0.6
Railroad a/	1.4	4.2
Inland Waterway	3.3	28.5

SOURCE: Congressional Budget Office.

a. Does not include indirect aid to the railroad industry owing to changes in federal tax temporarily allowing railroads to write off the value of most fixed assets.

increased by 69 percent, so that subsidies to large trucks remain. 10/ Pipelines have never received federal financial aid.

Such comparisons of subsidy levels have several limitations. First, as national averages, they may not reflect the situation of any one region or company. Second, the costs of joint investments are difficult to allocate precisely to diverse user groups because they benefit several groups at once.

10. Truck subsidies consist of the difference between tax payments by combination (usually five-axle) trucks, and their estimated share of federal highway spending, including both trust fund and general fund expenditures. The most important railroad subsidies were Federal Railroad Administration programs and federal payments to the Railroad Retirement Board, including benefits from the tax-free nature of railroad pensions. Inland waterway subsidies include the navigation-related portions of spending by the Corps of Engineers on construction and operation of inland locks and dams. For a discussion of federal subsidies to intercity rail passenger service, see Congressional Budget Office, Federal Subsidies for Rail Passenger Services: An Assessment of Amtrak (July 1982).

Highway projects, for instance, serve both trucks and cars. Finally, there is some uncertainty about what constitutes a subsidy and how it should be calculated. Nevertheless, these simple, aggregate statistics show that inland waterways now receive by far the largest federal subsidy of any mode of freight transportation.

PRICE EFFECTS

Any level of user fee will increase the operating costs of shippers, and in turn, may increase the prices of consumer goods or decrease producers' revenues. For example, a user fee set to recover 75 percent of federal O&M expenditures and 50 percent of capital expenditures would increase total costs for the average inland waterway carrier by about 24 percent. Carriers would probably bear part of the increase, but they could pass a substantial portion back to producers or forward to domestic or foreign consumers. The amount actually passed along would depend on reactions of competing modes of transport--most importantly, railroads--and on market conditions for specific commodities.

Coal, soybeans, and grain would be among the commodities most affected by increased user fees. Most coal shipped on the waterways for domestic use is delivered to electric utilities, which would probably pass the added costs on to consumers in the form of higher electric bills. Nevertheless, because the average coal shipment uses inland waterways for relatively short distances, even full-cost recovery user fees would add less than $1 per ton to the purchase price of coal. Coal, in turn, accounts for about one-half the price of generating power; electricity consumers thus would pay only about 1 percent more for electric power.

Coal shipped for export would also be affected. Full recovery of inland waterway costs could add up to the same $1 per ton to the price of steam coal delivered to Europe from East and Gulf Coast ports. Compared with the current delivered price of about $60 per ton for U.S. coal to European ports (or $52 per ton for Western coal delivered to Japan), this represents less than a 2 percent increase in the delivered price. Though the net increase would be small compared with the delivered price, the U.S. share of the world coal market would probably decline somewhat.

User fees set to recover half of all federal waterway expenditures would increase the cost of waterborne grain shipments by about 9 cents per bushel in 1990. However, an increase in grain prices caused by higher user fees would probably have only a small impact on the U.S. export position in wheat, corn, and soybeans. The United States exports about one-third of these domestically grown crops--in 1982, about 125 million tons out of a

total crop of about 400 million tons. The United States is a "residual supplier" of grain to the world market, meaning that competing countries are generally able to sell their available supplies at prices below U.S. prices, with the remaining demand filled by the United States. Considering this and the fact that a price increase of 9 cents per bushel represents about a 3 percent increase over the export price of corn and about a 1.5 percent increase over the export price of wheat or soybeans, U.S. exports would probably not be significantly affected.

Existing trading arrangements would help to mitigate any loss of U.S. market shares in world grain trade. To protect its own domestic market, the European Community—which purchases about 10 percent of U.S. grain exports—uses a system of import levies to raise the prices of imported grain to its internal price levels. If, because of U.S. transport subsidies, the landed prices for U.S. grains are lower than they would otherwise be, then these subsidies would result in higher import levies in the European Community and no price advantage for U.S. agriculture. User charges would result in a higher landed price of U.S. grain imported by the European Community, but as long as that price remained below the European internal price for grain, import levies would simply be reduced accordingly. If the United States were not undersold by cheaper grain from other grain-exporting countries, demand would be unaffected.

Other nations also have trade and agricultural policies that result in U.S. grains' being sold internally at prices higher than international market prices. For example, Japan, which purchases about 10 percent of U.S. wheat exports, discourages the substitution of wheat for rice, which Japan produces in surplus. It does this through a system whereby U.S. wheat is resold at about a 50 percent markup over import prices paid by the Japanese government trading agency. Policies such as these mean that much export grain is already sold in markets that are not highly sensitive to U.S. prices, and that the small increases in U.S. export prices that could result from user fees would not have substantial effects on the volume sold.

Even so, U.S. grain farmers might bear part of the burden of increased waterway user fees. Depending on export demand, domestic grain production, and the responses of other truck and rail haulers to higher barge rates, user fees could be passed back to farmers, or they could be absorbed in part by intermediate handlers between farm and port. When the market for grain is slack—as it is now—many waterway carriers have excess capacity; thus, competitive pressures would force them to absorb part of any increase in waterway user fees.

Though the amount of the user fee borne by grain consumers, farmers, carriers, and middlemen would vary from place to place and time to time, if

half of the 9 cents per bushel cost increase were borne by farmers, they would absorb a loss of about 1.5 percent in gross revenue for corn and wheat and about 1 percent for soybeans. For a typical commercial farm producing 400 acres of corn and soybeans each year, this would mean a loss of gross annual revenue of about $1,300. For smaller family farms that augment their incomes with nonfarm earnings, annual gross incomes could decline by about $225.

CHAPTER IV. U. S. COAST GUARD SERVICES

Assorted user fees, mostly systemwide, could recover the U.S. Coast Guard's now almost entirely subsidized 1984 cost of more than $1 billion to provide services for commercial mariners and recreational boaters. These services include search and rescue operations, navigational aids, marine safety, and environmental protection. Almost one-third of collections would come from recreational boaters, at an average rate of $18 per boat. Fishing fleets (an average of $1,500 per boat) and inland ($1,300) and coastal shippers ($13,800) would pay according to a measure of vessel size, power, or carrying capacity. Remaining receipts would derive from specific fees for licensing, documentation, and safety inspection activities.

The U.S. Coast Guard, a unit within the Department of Transportation, spends about $2.5 billion a year on a wide range of services, including military preparedness, drug enforcement, and a host of safety- and navigation-related undertakings. Four Coast Guard services, together entailing more than $1 billion in costs in 1984, provide direct benefits to commercial mariners and recreational boaters. These activities are search and rescue, aids to navigation, marine safety, and marine environmental protection. Though widely varied in what they do and whom they benefit, these four activities seem good candidates for consideration of user financing. Although user fees have been proposed in the past, at present the general taxpayer supports all but a minor fraction of these and other Coast Guard activities.

Search and Rescue

Search and rescue operations, among the Coast Guard's oldest functions, take priority over all its other peacetime missions. 1/ Both

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1. See U.S. Department of Transportation, Coast Guard Roles and Missions, Report (March 1982), p. 11. The Coast Guard was officially established in 1915, when the Congress merged the Life-Saving Service (first authorized in 1837) and the Revenue Cutter Service (the forerunner of the Coast Guard, dating back to 1789-1790 and charged with collecting customs and tonnage duties).

commercial mariners and recreational boaters benefit from services provided by the world's largest search and rescue organization, which includes 184 shore facilities operating roughly 2,100 small boats, 26 air stations with 139 aircraft, and 79 patrol vessels. Total search and rescue costs, including both capital investment and operations and maintenance, are estimated at $398 million for 1984 (see Table 9). For 1980, the Coast Guard estimates that recreational boaters accounted for three-fourths of its search and rescue missions and three-fifths of their costs. 2/ Commercial marine operations and some defense rescues account for the rest. (About one-fourth of Coast Guard spending for search and rescue goes for non-marine activities--mostly aircraft searches--and thus have been excluded from this analysis.)

In considering application of user fee financing to recover this sum, these services appear comparable to fire and police protection, which remain perpetually available to property owners though not regularly or predictably used. Just as property owners pay fees, in the form of property taxes, for these emergency services, so might commercial and recreational boaters operating in waters under Coast Guard jurisdiction pay fees to defray the costs of the Coast Guard's constant readiness and intermittent search and rescue missions.

Aids to Navigation

These aids mark channels, warn of hazards, and help navigators identify their vessels' location. Without them, all maritime activity in U.S. coastal and inland waters would be far more dangerous, difficult, and costly than it is. For 1984, recoverable costs associated with these activities are estimated at about $335 million. Though used by all vessels, these aids are designed mostly to meet the needs of commercial marine users.

The Coast Guard's navigational aids fall into four categories. **Short-range aids** include buoys, lighthouses, daybeacons, fog signals, and

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2. Distribution of costs among nongovernmental marine user groups is based upon the Coast Guard's analysis and estimates in its document, U.S. Coast Guard Cost Distribution System, which supported the U. S. Department of Transportation-Coast Guard User Fee presentation of September 11, 1981. The Coast Guard's percentages of cost distribution are applied as provisional estimates for the purposes of this study. The Search and Rescue (SAR) Data System, in existence since 1971, permits accurate accounting of costs for Coast Guard activity in each search and rescue case, and identifies for each operation the kind of vessel or craft assisted.

TABLE 9. COAST GUARD OUTLAYS FOR PROGRAMS CONSIDERED FOR FULL USER FEE FINANCING
(In millions of dollars)

Program	1984	1985	1986	1987	1988	Five-Year Total
Search and Rescue	398	411	422	433	439	2,103
Aids to Navigation	335	349	358	367	373	1,782
Marine Safety	152	158	163	167	170	810
Marine Environmental Protection	166	171	176	181	181	875
Total Costs a/	1,051	1,089	1,119	1,148	1,163	5,570
Other Programs b/	1,467	1,514	1,563	1,611	1,622	7,777
Total Spending	2,518	2,603	2,682	2,759	2,785	13,347

SOURCE: Congressional Budget Office from U. S. Department of Transportation, "Coast Guard User Fee Proposal; Supplemental Data" (September 11, 1982) and "Demonstration Fee Schedules" (December 23, 1981).

a. Includes outlays for operations and maintenance; acquisition, construction, and improvement; and research and development related to commercial marine activities and recreational boaters. Excludes polar region ice-breaking costs, which already are largely reimbursed by government agencies that benefit from this service.

b. Includes defense-related activities, marine research, drug enforcement, and pension payments, as well as nonmarine search and rescue activities and pollution clean-up from nonmarine sources. These are not considered as costs that are recoverable from maritime users.

radar reflectors along the Great Lakes and seacoasts. About 98 percent of recoverable program costs in this area goes for aids to commercial users, primarily fishing and other vessels operating in coastal waters. The Coast Guard considers recreational boaters the lowest category of navigational aid users and assigns them only 2 percent of recoverable costs for the following reasons: ". . .(1) for the most part, the recreational boater is a fair weather sailor who sails familiar waters; and (2) statistics indicate the recreational boater on the average actually uses his boat only a day or two per year. . . ." 3/ **Radionavigational aids** serve long-range navigational needs. These were originally developed to serve the U.S. military, and they include LORAN-C and marine radiobeacon services, which provide an accurate, continuous all-weather position-fixing capability and now serve large numbers of commercial vessels (coastal, Great Lakes, and international). 4/ **Domestic ice-breakers** operate on the Great Lakes and in coastal waters. Since 1936, the Coast Guard has operated a fleet of ice-breakers to facilitate winter passage of commercial vessels over ice-covered domestic waters. In addition, since 1967, the Coast Guard has had responsibility for administering bridges over navigable U.S. waters, to ensure safe, unobstructed ship navigation. A major part of this assignment entails removing or rebuilding bridges that hinder commercial vessels operating on inland waters.

Marine Safety

In 1984, the Coast Guard will spend about $152 million for marine safety programs benefiting both commercial and recreational users. Roughly 70 percent of this spending benefits commercial vessels. Major activities fall into three categories. **Commercial vessel safety** assures safe operation for merchant ships. Accordingly, the Coast Guard approves plans for commercial vessels and monitors their construction, conducts safety inspections of merchant marine vessels and offshore oil platforms for certification, and licenses seamen. Vessel documentation and admeasurement support the program's secondary objective, facilitation of waterborne commerce. Approximately 1 percent of costs is assignable to recreational boaters for yacht documentation. This service functions essentially ". . . as a convenience for those few yacht owners who sail internationally and seek

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3. See U.S. Coast Guard Cost Distribution System (September 1981), p. 12.

4. The Coast Guard also operates certain long-range aids, such as the LORAN radionavigation system, that benefit ships in international waters and thus are not good candidates for user fee financing.

preferred mortgages," and fees are charged--such as $100 for initial yacht documentation, and $50 for any change thereafter. **The recreational boating safety** program, authorized by the Federal Boating Safety Act of 1971, sets safety standards for recreational boat manufacture, administers the Volunteer Coast Guard Auxiliary, educates the boating public, and provides support for state boating safety programs and law enforcement activities. Finally, in providing **port safety and security,** the Coast Guard enforces regulations governing waterfront facility safety, the movement and anchorage of vessels, and the transport and stowage of dangerous cargo.

Marine Environmental Protection

The Coast Guard's environmental protection responsibilities grew out of national concern about potential dangers to the marine ecology posed by waterborne transportation. The Coast Guard's activities in this area include investigation and clean-up of pollution discharges, inspection and monitoring of liquid bulk transfers and facilities, and surface and aerial surveillance activities. These activities result largely from commercial shipping movements and related onshore facilities. Total spending is estimated at $215 million for 1984, of which $166 million potentially is recoverable, since it relates directly to marine pollution (though not all of it from identifiable sources).

THE PROSPECT FOR FULL-COST RECOVERY

As the Coast Guard's peacetime responsibilities have grown, its resources have been stretched thin. In recent years, many new regulatory functions, notably in drug law enforcement and marine environmental protection, have supplemented its older missions of search and rescue and aids to navigation. With this expanding array of missions, the Coast Guard has faced increasing budgetary pressures. User fees could help in two ways: by financing existing programs of benefit to marine users, and by promoting the efficient use of Coast Guard resources. The user fees considered here would not be so large as to jeopardize existing programs or to weaken any Coast Guard operations significantly.

The Pros and Cons of User Fees

As with the other user fees analyzed in this study, Coast Guard fees could give rise to two types of controversy--on grounds of tradition and on economic grounds. The first, looking to the Coast Guard's 200-year tradition of "free" (that is, taxpayer-supported) service, would oppose any institution of fees as an unwarranted departure from historical precedent.

In response, one could argue that Coast Guard services are not qualitatively different from other, user-supported federal services (aviation services and highways, for example). Indeed, when the Congress imposed inland waterway charges in 1978, it reversed a tradition of more than a century of free service. 5/ Further, equity concerns would also argue in favor of such a break with tradition. Imposition of Coast Guard user fees would correct the now inequitable system of all taxpayers' supporting services that benefit only finite groups of maritime users, including many commercial concerns. Thus Coast Guard user fees could improve the equity of cost allocations for Coast Guard services and facilities, while also producing the revenues to pay for these services. Improved economic efficiency could also result from a system of Coast Guard user fees, as parties paying for services would have compelling reasons to insist--through the efforts of representative organizations--on cost-effective services of high quality and elimination of operations that are too costly or of only marginal use.

Finally, with regard to the Coast Guard's life-saving functions, opponents of user fees could argue that these are in the public interest and are therefore indispensable and priceless. To counter this view, advocates of user fees would point to firefighting and police services--both as humanitarian as the Coast Guard's rescue services but effectively financed by tax levies.

Recovering Coast Guard Costs

User fees would be appropriate for those Coast Guard programs that help specific groups operating commercial and recreational vessels. The wide variety of Coast Guard activities--a hallmark of the multimission Coast Guard--means that a fee schedule would have to isolate recoverable costs on a program-by-program basis and then to allocate these costs as accurately as possible among the particular user groups affected. 6/

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5. In the Inland Waterway Revenue Act of 1978.

6. Not considered in this study as entailing recoverable costs are activities that serve the general public interest (such as drug enforcement, interdiction of illegal aliens, and marine science activities), activities that benefit nonmarine users (search and rescue over land or for missing aircraft, pollution clean-up of spills from pipelines and other nonmarine sources), operations conducted for the Department of Defense or in support of the Coast Guard's military readiness (for example, portions of the radionavigational aids and domestic ice-breaking programs), and pension payments to retired Coast Guard employees.

The Coast Guard has already estimated the level of recoverable costs by program and by user group. 7/ Its analysis only includes operating expenses, because these form the bulk of the Coast Guard's spending, and because of the desire to avoid the technical problems of setting and collecting fees for capital spending that has multiyear lives. Nonetheless, the Coast Guard's cost allocations appear reliable enough to be applied to the capital account (acquisition, construction, and improvements), and to research and development costs as well. Adding these latter two categories to operations and maintenance would increase the estimate of recoverable costs by about 15 percent. Some of the practical administrative problems of paying for capital programs are discussed below as well as in Chapter I.

On the basis of Coast Guard determinations adjusted by the Congressional Budget Office, recoverable costs--including operation, capital costs, and research and development--would total approximately $1.1 billion, or about 42 percent of all 1984 Coast Guard outlays. Most of these costs could be recovered from annual fees exacted from three groups of users: recreational boaters ($287 million), commercial fishermen ($300 million), and commercial coastal and international ship operators ($282 million). Table 10 displays the composition of these collections. Inland barge operators make much more limited use of Coast Guard services, and they would pay annual fees amounting to $48 million. 8/ An additional $134 million would be recovered in direct fees for various Coast Guard services to maritime personnel, vessels, and facilities.

Types of User Fees

Two types of Coast Guard user fees could be imposed--project-specific and uniform systemwide fees--aimed at recovering about 13 percent and 87 percent, respectively, of total recoverable costs.

Project- or service-specific fees would be applied to particular services or facilities, assessed each time the service is furnished or the facility used. These are classic user fees, like the toll on a toll road or the charge for using the Panama or Erie canals. Vessel documentation and admeasurement, inspection of vessels and other regulated facilities for conformance to safety and environmental protection standards, and licensing of merchant seamen all lend themselves to direct fees. The

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7. In U.S. Coast Guard Cost Distribution System (September 1981).

8. See Chapter III for a discussion of user fees for the Corps of Engineers' services for the barge industry.

TABLE 10. POTENTIAL USER FEE COLLECTIONS FOR COAST GUARD SERVICES, BY USER GROUP, IN 1984
(In millions of dollars)

User Group	Search and Rescue	Aids to Navigation a/	Marine Safety	Marine Environmental Protection	Total Fee Payments
		SYSTEMWIDE FEES			
Recreational Boating	227	7	43	10	287
Commercial Fishing	139	161	None	None	300
Inland Shipping	None	37	1	10	48
Coastal and International Shipping	32	130	25	95	282
		SPECIFIC FEES			
Personnel and Vessel Services	None	None	70	None	70
Facilities Services	None	None	13	51	64
Total Collections	398	335	152	166	1,051

SOURCE: Congressional Budget Office from data prepared by the Coast Guard for 1982.

a. Includes domestic ice-breaking costs for commercial vessels.

charges would be based on the actual costs to the Coast Guard to perform these services and could be collected directly by the person or office performing the service.

Systemwide fees would be best suited to services for which no charge for each use is practicable. For example, to charge for each rescue mission would be dangerous, since this would encourage boaters to wait until the last possible minute before calling for help from the Coast Guard. Most proposals have been for an annual fee per vessel, similar to existing state registration fees for boats and automobiles. Indeed, indirect fees have a close parallel in the existing federal user fees for highways and airports and airways, for which taxes are levied based on the types and amounts of federal services consumed by each major user group.

Each of the four major groups of private marine users--recreational boats, fishing fleets, commercial inland vessels, and commercial vessels engaged in coastal or international trade--uses a peculiar mix of Coast Guard services and facilities. Thus, the overall level of the charge would vary according to the combination and level of Coast Guard resources needed and the costs of providing those services. An annual fee appears a logical choice, with the fee schedules prorated to reflect different vessel lengths, gross tonnages, or other measures that represent the costs of providing Coast Guard services (see Table 11). 9/ When appropriate, the annual fee might be supplemented in a two-tier fee system by a surcharge for especially expensive services affecting small groups of users (winter ice-breaking on the Great Lakes, for example).

The fees need not be collected by a single agency, but rather could be handled by agencies that already have existing fee-collecting mechanisms or that have working relationships with the marine user group concerned--such as the U.S. Customs Service for vessels engaged in international trade, and the National Marine Fisheries Service for the foreign fishing fleet. Because of the large numbers of recreational boaters in the United States, annual registration fees for recreational boating might best be handled by the U.S. Postal Service. Since most states already have existing boat-numbering

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9. In some cases, a combination of such indicators might more accurately predict level of cost. Also, adjustments should be possible for subgroups within each user category whose level of use of Coast Guard services differs markedly from that of the group as a whole. For example, recreational boaters using inland waters are much less likely to need Coast Guard search and rescue services than are salt-water sailors.

systems and recreational boating-safety programs, user fees might also be administered by the states with federal supervision and financial assistance.

RECENT PROPOSALS

The Administration has proposed user fees for selected Coast Guard services for 1983 and 1984. The original proposal, submitted in February 1982, called for $800 million in user fee collections to recover operating costs. This plan was quite similar to the full-cost recovery approach analyzed here, though in excluding capital costs and research and development work, it would have recovered about $250 million a year less. Later in 1982, the Coast Guard proposed a less ambitious plan that lowered the costs to be recovered from recreational boaters. The lack of Congressional response to these initial proposals resulted in a still further scaled-down plan for the 1984 budget. 10/ This revised plan is quite different in that it proposes fees only for particular Coast Guard services provided to commercial mariners--safety inspections and the like. As a result, it dropped fees for recreational boaters and for fishermen and called for initial fees of only about $50 million. The Congress has not yet acted on this plan.

ISSUES IN APPLICATION

Two administrative objectives would be of major concern in implementing Coast Guard user fees:

- Identification of feasible, cost-effective ways to administer the different fees; and
- Establishment of an equitable allocation of costs among the various groups of marine users.

Collection of Fees. No major difficulties in administering and enforcing user fees appear likely for the three categories of commercial users: fishing fleets, domestic inland vessels, and domestic coastal and international vessels (see Table 11). Collection of fees might prove trickier for the approximately 8-9 million recreational boats sailing on inland and coastal waters under Coast Guard jurisdiction. One way to handle this large group of boaters would be to use the U.S. Postal Service as a collection agency in a manner analogous to the annual issuance of duck-hunting stamps to renew duck hunters' licenses. This appears to be a simple, relatively

10. The Administration's proposals for fiscal year 1983 failed to find a sponsor in either house of the Congress.

TABLE 11. POSSIBLE COAST GUARD USER FEES, 1984

User Category	Type of Fee	Size of Fee (In dollars per vessel) Average	Size of Fee (In dollars per vessel) Range	Annual Receipts (In millions of dollars)
	ANNUAL SYSTEMWIDE FEES			
Recreational Boats	Prorated for vessel size	18	4-600	287
Fishing Fleets (Foreign and Domestic)	Prorated for tonnage capacity 40,000	1,488 a/	1,350-	300
Commercial, Domestic Inland Shipping	Prorated for horsepower (tugs/towboats) or gross cargo tonnage	1,300	800-10,000	48
Commercial, Domestic Coastal and Shipping	Prorated for horsepower (tugs/towboats) or gross cargo tonnage	3,817	800-40,000	282
	SPECIFIC FEES			
Personnel and Vessel Services b/	At each use of service	—	77,000-210,000 c/	70
Facilities Services	Annual and one-time	—	1,000-14,400 c/	64
Total	—	--	--	1,051

SOURCE: Congressional Budget Office from data prepared by the Coast Guard for 1982.

a. Domestic fishing vessels only.

b. Documentation, licensing, and inspection.

c. Dollars per transaction.

economical means of collecting an annual recreational boating fee. Another approach would be to let the states handle the job. All but three states currently have numbering systems for vessels not documented by the federal government, and the states have primary responsibility for on-the-water enforcement of recreational boating safety laws and regulations. 11/

For power boats, a tax on motor boat fuel is, of course, an option for part of the fees. By itself, however, such a tax presents some problems: it represents only a fraction of the needed revenues, it excludes sailboats, and evasion would be encouraged so long as automotive fuel was taxed at a lower rate. Recreational boaters already pay the 9 cents per gallon federal tax on motor fuel, with payments made to the existing National Recreational Boating Safety and Facilities Improvement Fund. Under current law, these funds are restricted to the states, once they have satisfied certain minimum requirements. 12/ The revenues from the existing tax are not large (projected to produce receipts of $67 million in 1984), and the potential for any increase is limited by the ease of obtaining automotive gasoline. Such funds could be used, however, to defray the state costs of collecting annual fees.

Equitable Allocation of Costs. A second administrative objective is to achieve an equitable allocation of costs among user groups. The variety of Coast Guard functions and the multimission use of individual resources complicate this task, but improved Coast Guard information systems have made available a quantity of resource- and client-specific data concerning use of Coast Guard services and facilities by marine user groups. 13/ Phasing in full user fees over several years would permit evaluation of public comments and appeals, correction of any inequities, and assessment of any unanticipated adverse effects.

Capital Costs. Recovery of the Coast Guard's capital expenditures could be handled in one of two ways:

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11. See Coast Guard Roles and Missions, Report (March 1982), pp. 28-31.

12. These requirements include establishment of a state vessel numbering system (federally approved or administered), operation of a cooperative boating safety assistance program with the Coast Guard, existence of a state boating safety education program, and existence of adequate patrols and safety activities to ensure enforcement of state boating safety laws.

13. See U. S. Coast Guard Cost Distribution System (September 1981).

- o On a pay-as-you-go cash financing basis, just as federal highway and airport costs are treated; or

- o Amortized over the expected life of the equipment, as the Administration has proposed for ports and harbors (see Chapter II).

A pay-as-you-go approach, with income and outgo to occur in the same year, is clearly easier to administer. Since capital spending is a relatively small portion of the recoverable part of Coast Guard spending (about 20 percent), including these expenditures along with the operations subsidies might be appropriate for practical reasons. Also, to assign equipment such as planes or cutters to a single function is very difficult. The second approach, amortizing capital costs, would be most useful for capital-intensive projects with long economic lives, such as locks and dams and irrigation systems, and for facilities that are used by a geographically concentrated group of users. Most of the capital spending by the Coast Guard, however, goes for cutters and planes that are used for a wide variety of purposes over all the territory served by the Coast Guard.

ECONOMIC EFFECTS

Recreational boaters and fishermen have been particularly concerned about the economic impacts of these user fees. Recreational boaters, for example, point out that the average American boat-owner is not a "wealthy yachtsman" but rather a person with an income between $15,000 and $20,000 a year who operates a small craft not 16 feet long. 14/ On the other hand, the fees as proposed originally by the Coast Guard would be quite small for the majority of recreational boaters--on average, only $6 per boat for the ten million boats used on inland waters. (These represent almost 75 percent of all recreational boats.) Overall, the fees would be small relative to total spending on boating. The National Marine Manufacturers Association estimates total 1982 retail expenditures on boating of $8.1 billion. 15/ With user fees set to recover full federal costs, all recreational boaters together would pay approximately $287 million in user fees in 1984, or about 3.3 percent of estimated total retail expenditures. The increase in total

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14. Testimony of Michael Sciulla, Government Affairs Director, Boat Owners Association of the U.S., before the House Subcommittee on Coast Guard and Navigation (May 19, 1981), p. 72.

15. See "Boating 1982: A Statistical Report on America's Top Family Sport," prepared by MAREX for the National Marine Manufacturers Association.

costs suggests that any dislocations felt by recreational boaters would be trivial. Thus, in contrast to many other user fee proposals considered in this study, phasing in these Coast Guard user fees over time seems an unwarranted caution.

Commercial mariners and fishermen, unlike recreational boaters, depend on the sea for their livelihoods, and thus for them, any negative economic impacts from fees could be more serious. In recent years, the U.S. fishing industry has not fared well, owing in large part to an overexpansion of fleets and harvesting capacity, with an accompanying trend of declining productivity. 16/ Accordingly, the Administration originally proposed to recover less than one-third its estimate of costs related to the fishing industry--only $50.5 million of the $165 million in costs allocated to the fishing fleets. This reduction elicited protests from other commercial mariners, who felt that such favored treatment of the fishing industry was inequitable.

Although statistics for the fishing industry may not be reliable, the National Marine Fisheries Service estimates that total 1982 commercial landings by U.S. fishermen yielded $2.4 billion worth of fish. 17/ Thus, under full-cost recovery, fees on domestic fishing vessels would represent about 10 percent of the value of total domestic landings, but a much higher percentage of total earnings for the industry--especially in light of the decline in productivity, increases in repair costs and fuel prices, and recent weak markets for fish. Though no industrywide data are available, an example to consider is that of the New England groundfish industry, which showed a profit margin of only 4 percent in 1980. 18/ To avoid imposing too sudden a financial burden on this sagging industry, the related portion of Coast Guard fees could be phased in over several years.

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16. See National Marine Fisheries Service, Fisheries Economic Task Force Report (August 25, 1980), p. 62.

17. See National Marine Fisheries Service, Fisheries of the United States, 1982 (April 1983), p. iv. There was an additional $176 million in landings by U.S. fishermen in ports outside the U.S. or transferred (through joint ventures) to foreign vessels in the Fishery Conservation Zone. Foreign catches in the zone totaled 3.1 billion pounds.

18. See National Marine Fisheries Service, "Productivity Trends in the New England Fish Otter Trawl Fleet" (April 1982), p. 46.

CHAPTER V. AVIATION SERVICES

Realignment of current systemwide user fees, already adequate to finance most of the 85 percent of federal aviation outlays considered recoverable ($3.2 billion of $4.1 billion in 1984), would correct the cross-subsidy to general aviation business planes now coming mainly from commercial airline passengers. With fee differentials adjusted to reflect the actual costs imposed by different classes of aviation service users, the burden of cost recovery would shift significantly. Current levels of recovery could be sustained and taxes on airline tickets, international departures, and freight lowered if taxes on general aviation jet fuel and gasoline were increased roughly ten-fold. Similar adjustments could be effected by sales taxes to general aviation on new aircraft or avionics equipment purchases.

Although air transportation accounts for a small share of all domestic U.S. travel--about 14 percent of all intercity passenger miles--it nonetheless draws heavily on the nation's economic resources. In 1982 alone, the public and private sectors together spent $49 billion and employed 1.1 million workers in the manufacture and delivery of air transportation goods and services.

User fees to pay for federal aviation-related expenses are already in effect. These are collected as taxes and other charges levied on users of commercial airlines and general aviation (planes owned by firms and individuals for business and recreation). Channeled into the Airport and Airway Trust Fund, receipts help to finance federal investments in airports and in the air traffic control system, which is equipped and run entirely by the federal government. User fee collections of some $3.2 billion in 1984 will go far toward covering federal aviation outlays of $4.1 billion. Of the remaining $0.9 billion, roughly $0.6 billion is attributed to military aviation; this latter expenditure is regarded by many analysts as inappropriate for recovery from users.

Although recovery of nearly four-fifths of civilian aviation costs means that the level of federal receipts is quite well matched to outlays, a

misalignment of fees to different classes of users has given rise to a problematic cross-subsidy. Though travelers on commercial airlines and many general aviation flyers pay large shares of the costs they incur, some users--principally, business jets--do not. Thus, an inequitable situation leads in turn to inefficiency, taking the form of wasted capital, labor, and energy. Were this imbalance righted, conservation of these resources, hence improved economic efficiency, would follow.

THE CURRENT FEDERAL AVIATION PROGRAM

To help accommodate growth in air travel, the Federal Aviation Administration (FAA) of the U.S. Department of Transportation provides funds for the construction and rehabilitation of the nation's airports and for the construction and operation of the air traffic control system. 1/ Since 1970, FAA spending has totaled just less than 40 percent of the $15 billion in total nationwide airport spending. Capital investment in air traffic control since 1970 has come to $8.5 billion, almost all of it federally funded.

The Cross-Subsidy to General Aviation

While commercial airlines carry the bulk of passenger traffic (about 94 percent of all passenger miles flown), general aviation uses a disproportionate share of FAA services. In 1981, the general aviation fleet of 211,000 planes (84 times the size of the commercial fleet of 2,500 airliners) accounted for half of all takeoffs and landings assisted by FAA airport control tower instruments (see Table 12) and nearly one-third of all aircraft handled by en route traffic control centers. 2/ In 1981, about two-

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1. Economic regulation of the domestic air industry by the federal government ended in 1978, and the Civil Aeronautics Board is scheduled to be abolished in 1985. Nonetheless, the FAA still regulates many aspects of air travel and also provides such special services as flight plans, pilot briefings, navigation services to military aircraft, and general weather information.

2. In 1982, general aviation's share of takeoffs and landings, and of operations at air routes traffic control centers, slipped to 45 percent and 27 percent, respectively. A result of economic recession, this indicates that general aviation users are more sensitive to economic conditions than commercial airline passengers (though the number of commercial airline passengers traveling also fell sharply during 1982).

TABLE 12. AIR TRAFFIC CONTROL TOWER INSTRUMENT OPERATIONS, SELECTED YEARS 1978-1994 (In millions)

Years	Military	Air Carrier a/	General Aviation	Total	General Aviation as a Percent of Total
1978	3.7	13.5	16.3	33.5	48.7
1981	3.9	14.8	18.5	37.2	49.7
1982	3.6	13.9	14.1	31.6	44.6
Forecast 1994 b/	3.9	21.0	28.9	53.8	53.7

SOURCE: Congressional Budget Office from Federal Aviation Administration, FAA Forecasts of Aviation Activity, Fiscal Years 1982-1993 (February 1983).

a. Includes air taxis and commuter airlines.

b. For an appraisal of FAA's accuracy in long-term projections, see Congressional Budget Office, Improving the Air Traffic Control System: An Assessment of the National Airspace System Plan (August 1978). In general, the FAA has been too high in its projections, although it has been relatively more accurate in projecting the mix of commercial and general aviation traffic.

thirds of all general aviation hours was business-related travel. The 50,000 business-owned aircraft make more than eight million flights each year--more flights than all the commercial airlines make together. (One in two of the 1,000 largest U.S. industrial companies operates at least one plane.) This trend is anticipated to continue. By 1994, the FAA expects general aviation to account for more than half of all control tower takeoffs and landings and nearly 40 percent of the workload at en route control centers.

Current Policy

Under current policy, the FAA will spend $21.9 billion between 1984 and 1988--about $4.4 billion a year (see Table 13). These funds are to be

TABLE 13. PROJECTED FEDERAL AVIATION ADMINISTRATION OUTLAYS UNDER CURRENT POLICY, TO 1988 (In billions of dollars)

	1984 a/	1985	1986	1987	1988	Five-Year Total
Air Traffic Control Operations and Maintenance	2.7	2.6	2.7	2.7	2.7	13.4
Capital Improvements and Research and Development	1.4	1.4	1.8	1.9	2.0	8.5
Gross Outlays	4.1	4.0	4.5	4.6	4.7	21.9
Receipts from User Fees (-) b/	-3.2	-3.6	4.0	4.4	4.8	20.0
Net Outlays c/	0.9	0.4	0.52	0.2	-0.1	1.9

SOURCE: Congressional Budget Office.

NOTE: Programs under Airport and Airways Improvement Act of 1982 are authorized through September 1987. Some $650 million in 1984 authorizations for facilities and equipment was not appropriated. If the funds are appropriated in later years, outlays will rise accordingly.

a. Assumes appropriations under the Department of Transportation and Related Agencies Appropriations Act of 1984.

b. Assumes FAA forecasts of trust fund revenues. Also includes accrued interest on the cash balance.

c. Include outlays for military aviation not recoverable from user fees.

split between operation and maintenance of the air traffic control system (61 percent of outlays) and capital investment in airports and navigational equipment for air traffic control (39 percent). A large portion of the capital program will go toward implementing the National Airspace System Plan, a comprehensive scheme to modernize computer and software equipment at all en route traffic control centers. 3/ Finally, about 5 percent is to fund research and development.

The current levels of aviation user fees were established by the Tax Equity and Fiscal Responsibility Act of 1982. The commercial ticket tax, which had been 5 percent in 1981 and 1982, was returned to the 8 percent level that prevailed during the 1970s. General aviation fuel fees were increased substantially, from 4 cents per gallon to 12 cents per gallon for gasoline, and from zero to 14 cents per gallon for jet fuel. (During the 1970s, these taxes had been set at 7 cents per gallon, but they were withdrawn with expiration of 1970 legislation). Unless renewed, these rates will revert to previous levels in 1987. In addition, the trust fund collects fees from international passengers and air freight waybills (see Table 14). Between 1984 and 1987, the $4.36 billion in receipts from these several fees is projected to recover about four-fifths of total FAA outlays of $5.20 billion.

FULL-COST RECOVERY AND THE PROBLEMS OF ALLOCATING COSTS

Recognizing the uncertainties and discretionary judgments associated with most cost allocation analysis, the FAA has used two methods to estimate the range of likely cost responsibility. 4/ The two approaches reflect differences about assigning the costs of services that, though used by and probably beneficial to general aviation, may not be essential. Contentious investments include long, broad runways--larger than general aviation requires but essential for large jetliners--and sophisticated guidance systems. General aviation flyers often contend that, as they do not require these costly facilities, they ought not be charged for them.

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3. See Congressional Budget Office, Improving the Air Traffic Control System: An Assessment of the National Airspace System Plan (August 1983).

4. See Federal Aviation Administration, Financing the Airport and Airway System: Cost Allocation and Recovery (November 1978). Results partially revised by the Office of Management and Budget in 1981.

TABLE 14. AVIATION USER FEES UNDER CURRENT POLICY AND WITH FULL-COST RECOVERY

Sources of Fees	User Fees: Under Current Policy	User Fees: With Full-Cost Recovery	Percent of Total Outlays Recovered: Under Current Policy	Percent of Total Outlays Recovered: With Full-Cost Recovery a/
	As a percent of ticket price			
Commercial Airline Tickets	8	7.2	64.0	53.0
	Dollars per passenger			
International Departures	3	2.70	1.9	1.7
	As percent of waybill			
Freight	5	4.50	3.1	2.8
General Aviation Fuel	Tax in dollars per gallon			
Gasoline	0.12	1.00	3.3	27.0
Jet fuel	0.14			

SOURCE: Congressional Budget Office.

NOTE: Assumes adjusted fee rates but unchanged structure for full-cost recovery. Therefore disregards alternatives such as possible taxes on new general aviation aircraft sales or avionics equipment.

a. Data for 1983.

Overriding these concerns, the FAA's first analytic approach--termed a "marginal cost" method--attributes all federal airport and airway costs to users in rough proportion to the capital and operating costs actually incurred. Under this approach, commercial air carriers should pay about

58 percent, with general aviation users paying 27 percent of all FAA costs. 5/ According to this logic, commercial and general aviation users together should pay for about 85 percent of total FAA expenditures.

The second approach, taking account of "minimum requirements," recognizes that to permit the joint use of airports by commercial jets and general aviation aircraft, FAA services must meet the needs of the largest, most sophisticated airliners as well as simpler general aviation planes. This method of allocation holds general aviation users responsible only for the cost of the theoretical minimum level of service they require, regardless of the fact that these users benefit from the added safety and efficiency of a larger, more advanced system. Under the minimum requirements approach, commercial air carriers should still pay about 58 percent, but general aviation users should pay only about 14 percent of all FAA costs--roughly half what they would pay under the first method. The unallocated remainder is regarded as a cost of safety and operating efficiency reasonably assigned to general taxpayers, who thus shoulder 28 percent of FAA costs.

As a basis for determining user fees, the analysis in this chapter relies on the marginal cost method of cost allocation for two reasons. First, efficiency can best be promoted by fees that reflect the actual costs of services provided. Second, most general aviation business jets use FAA services by means of avionics and other equipment equal in sophistication to that of commercial jets. Were these users satisfied with a lower level of service, then presumably they would equip their planes with cheaper, more rudimentary instruments. In other words, the minimum requirements of most general aviation users are likely to approximate those of the most elaborate commercial airliners anyway.

On the basis of the FAA's marginal cost method of allocation, the CBO estimates that the FAA will spend $10.8 billion (in recoverable costs) on behalf of commercial users and $5.9 billion for general aviation over the next five fiscal years. As user fee receipts from commercial air traffic already exceed its share of costs (by about 3 percent), the ticket tax could be reduced from its current level of 8 percent to 7.2 percent (see Table 14). (The taxes on international departures and freight waybills could be set at $2.70 per passenger and 4.5 percent of waybills, respectively, down from the present $3 per passenger and 5 percent of waybills. On the other hand,

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5. This allocation is based on FAA costs for 1978, but it is expected to remain relatively unchanged over the next five years, with the possibility of an increase in general aviation's share under the newly authorized National Airspace System Plan.

revenue from general aviation would have to increase eightfold to recover fully its share of FAA expenditures. (Under the minimum requirements method of allocating costs, receipts from general aviation would have to increase fourfold.)

The Nonfederal Role and the Congestion Problem

Although the FAA is responsible for all spending on the air traffic control system, less than half of all annual airport expenditures are federal. Airport authorities, accounting for most of the remainder, support their spending through their own, local user fees. Since the structure and levels of local fees heavily influence the demand for both airport and air traffic control services, local fees cannot be disregarded in appraising the need for federal investments in the overall air transport system.

Even if all users paid their full shares of federal airport investments (as commercial airline passengers do already), the structure of local user fees could result in excessive demands for airport expansion. Traffic congestion, giving rise to pressure to expand airport capacity, occurs during daily or seasonal periods of peak demand, occurring most commonly at mid-day and late-afternoon at hub airports. 7/ In most instances, landing fees are determined on the basis of aircraft weight and do not vary by time of day. 8/ Heavy aircraft--such as large commercial airliners--do indeed cause greater wear and tear on runways than do lighter planes (such as small business jets), suggesting that weight-based landing fees are good reflections of the maintenance costs occasioned by diverse craft. But heavy and light planes, when they compete for congested runway space, add roughly equally to airport capital needs. Thus, though a light plane requires roughly the same landing time and space as a heavier one, at most airports, light planes pay about one-twentieth the amount heavy planes do, regardless of traffic conditions (see Table 15).

If, instead of flat fees, airports superimposed a second tier of fees on top of normal rates, charging higher landing fees during periods of peak congestion, many general aviation users would choose to fly into reliever airports, and some commercial airline passengers would elect to travel at

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7. See Congressional Budget Office, Public Works Infrastructure, Chapter VII.

8. Important exceptions, however, are the peak-hour surcharges established in 1968 by the Port Authority of New York and New Jersey for La Guardia and Kennedy International airports.

TABLE 15. NONFEDERAL LANDING FEES AT FIVE MAJOR AIRPORTS BY AIRCRAFT TYPE IN 1978 (In dollars)

Aircraft by Type of Use and Passenger Capacity	Atlanta	Los Angeles	La Guardia a/	Washington National	Denver
DC-10-30 (Air carrier--240-270 seats)	169	81	669	b/	111
B-727-200 (Air carrier--120-140 seats)	63	30	249	47	41
B-737-200 (Air carrier--114-120 seats)	43	21	171	33	28
Swearingen Metro (Air taxi--19-20 seats)	7	3	27	5	5
Learjet 25B (General aviation --8 seats)	6	3	25	5	3

SOURCE: Congressional Budget Office from Office of Technology Assessment, Airports and Air Traffic Control System (1980).

a. Reflects peak hour surcharge imposed by the Port of New York and New Jersey Authority.

b. Federal noise-abatement regulations prohibit DC10-30s from using Washington National Airport.

off-peak hours. Thus, all users would be encouraged to make use of airport time and space that go to waste under the current structure of local fees. Such a two-tier system, in turn, would reduce congestion and delay and relieve pressure on air carrier airports to expand capacity. Construction of

additional runways at Phoenix Sky Harbor Airport, for example, could be postponed by as long as eight years if peak-period general aviation activity were substantially reduced, by five years at Memphis International, and by three years at San Diego's Lindbergh Airport. 9/

Barriers to Change. A key reason why airports do not now tailor landing fees to the variations in hourly costs is that the fees are established in long-term contracts between airports and airline managements. In many cases, these contracts prevent airport managers from instituting peak-hour surcharges. Under the Constitution, the Congress has the power to abrogate contracts that interfere with its function, to regulate interstate commerce, however, and could, through legislation, encourage airport operators to apply peak-hour pricing. 10/

ISSUES IN APPLICATION

The application of aviation user fees to recover full federal costs would raise several institutional, administrative, economic, and societal questions. To enact such fees, established institutional practices would have to be changed. Administrative questions about alternative fee collection mechanisms would arise. Sharply increased user taxes could create transition problems for aviation users and aircraft manufacturers.

Institutional Barriers

A barrier to the full recovery of federal investment costs is the legislative cap, dating back to 1972, on the proportion of FAA operating costs to be financed from user fees. In that year, the Congress declared it unlawful for the FAA to finance any of its operating costs from the Airport and Airways Trust Fund. This restriction stemmed from a decision by the Nixon Administration to impound FAA appropriations for capital improvements while funding all FAA operating costs from the trust fund. In the belief that capital spending should be the trust fund's primary focus, the Congress responded by prohibiting user financing of operating costs. Over the years, this restriction has been somewhat relaxed; in 1983, 46 percent of operating costs was financed by user fees.

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9. See Congressional Budget Office, Public Works Infrastructure, Chapter VII.

10. See General Accounting Office, Aircraft Delays at Major Airports Can Be Reduced (September 4, 1979), p. 10.

For 1984, however, as part of a dispute between Congressional authorizing and appropriating committees over the proper level of funding for FAA facilities and equipment, none of the FAA operating costs are to come from user fees. 11/ This has led to legislative proposals in committees of both the Senate and the House to lower aviation user fees, 12/ especially since the fund already carries a large uncommitted surplus of $1.82 billion. However, while such a reduction appears justifiable for commercial airline users--who already pay more than their estimated share of FAA costs--it seems unjustified for general aviation users, who continue to pay less than their share even under the lower FAA appropriation for 1984.

Restricted application of user fees is often argued on grounds of the benefits arising from aviation use and permeating the economy. Indeed, aviation services increase employment, improve the nation's trade balance, enhance communications and postal services, and generally improve the well-being of all U.S. residents. Virtually any enterprise generates such spill-over benefits, though few generally justify government subsidy. Abandonment of the cap would therefore be an appropriate step toward full cost recovery.

Administrative Issues

Many general aviation users oppose a federal fuel tax, calling instead for a more sensitive charging mechanisms, that would allow flyers who require little or no service from the FAA to contribute proportionately little to FAA revenues. Unlike the weekend pilot, the farm crop duster, or the fish spotter, who fly according to visual flight rules, a corporate jet operates virtually all its flights according to FAA instrument flight rules, whereby FAA personnel are in constant contact with the plane from the

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11. To encourage the timely appropriation of all funds authorized for the FAA's National Airspace System Plan, the Airport and Airway Development Act of 1982 stipulates that any reduction in the authorized amounts for the plan be matched with a reduction in trust fund expenditures for operations and maintenance on a two-to-one basis. Thus the reduction of $640 million under the Department of Transportation Appropriations Act of 1984 translates into a $1.3 billion reduction in trust fund operating expenditures.

12. S. 1844, H.R. 4054, and H.R. 4055. These proposals would reduce the 8 percent passenger ticket tax to 6 or 7 percent, while user fees for general aviation jet fuel would be reduced from 14 cents per gallon to 12 cents per gallon.

moment it taxis to a runway to its arrival at its destination. Nonbusiness general aviation still draws indirectly on certain FAA services (for example, FAA-operated radar warns commercial jets of nearby general aviation airplanes), but the cost of such services is slight compared to that of the whole range of aids provided to instrument fliers.

Direct taxing methods--fees directly geared to use of the national airspace system--have been proposed as an alternative to the perceived inequity of a uniform-rate fuel tax. These would be air traffic controls equivalent to the specific fees considered in other chapters. From the point of view of efficiency, such taxes are by far the better approach, as each user would be charged only for the services he actually consumed. Although direct aviation user charges have appeared impractical in the past, under the National Airspace System Plan, the FAA would introduce a new radar system capable of identifying and monitoring each aircraft that uses the air traffic control system. 13/ Data from this system, when available in the early 1990s, could provide the needed detailed record of services provided to each aircraft, and owners could then be billed for exactly those used. (A similar system of charging for air traffic control services is already in effect in Europe.)

A sales tax on general aviation avionics equipment is another mechanism that has been proposed (by the Carter Administration) as a means to recover a proportionately greater share of FAA costs from heavy instrument users of the national airspace system. Alternatively, a tax on new plane sales would not penalize those who have already purchased planes, assuming that user fees would remain low. Either of these alternatives to a fuel tax could create administrative problems in the areas of tax evasion, safety, and privacy. By flying "outside" the airspace system (that is, by a pilot's turning off the avionics instruments in the cockpit) or by simply choosing not to equip the airplane with such instruments, users could avoid both direct user fees and instrument taxes. Such evasive practices could also compromise the national airspace system's safety (the primary responsibility of the FAA) by denying air traffic controllers crucial information regarding the whereabouts of aircraft. Also, government monitoring of individual travel activities could be opposed legally as an invasion of privacy.

On balance, the fuel tax might present the least administrative difficulty. Such a tax offers no safety-related problems. Moreover, it is not actually insensitive to the level of use of FAA services by recreational versus business general aviation users, because business planes are flown a

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13. See Congressional Budget Office, Improving the Air Traffic Control System.

greater number of hours per year and burn more fuel per hour. Thus, the fuel tax would generate revenue roughly in proportion to the consumption of FAA services, although much less precisely than would direct fees. A drawback is that recreational and certain other fliers would be charged even when not using the system. Also, full-cost recovery would require fuel taxes of about $1 a gallon--high enough to encourage tax evasion.

ECONOMIC EFFECTS

In moving to a more efficient structure of aviation user fees, higher costs and prices for aviation users could dampen production and employment in the aircraft industry. These would be transition costs in the sense that self-sustaining user fees would, in the longer term, result in a net gain for the economy as a whole.

Costs and Prices. With peak-hour surcharges at air carrier airports, all airport users would experience a major reduction in congestion and delay. The Port Authority of New York and New Jersey's 1968 decision to quintuple peak-hour minimum landing fees for general aviation, from $5 to $25, for example, brought about an immediate decline in aircraft delays of 30 minutes or more. 14/

On the other hand, higher landing fees would have distinct implications for each user group. Commercial airline passengers would likely see little effect on fares. Moreover, airlines schedule flights when they think passengers want to fly and they would probably absorb moderate increases in peak landing fees to continue providing service at those times. Even a steep increase in landing fee--say several hundred dollars--would add only about 2 percent to the total operating costs of a large jetliner. Such an expense could be passed on to the passenger as a relatively small increase in fares. Although current financial difficulties facing the airline industry could make it difficult to pass on the cost immediately, airlines could benefit from shortened delays and more available landing slots at peak periods.

General aviation users, on the other hand, would be more sensitive to increased landing fees. Relatively modest peak-hour landing fees at Kennedy and LaGuardia resulted in a 30 percent decrease in general aviation traffic at those airports. How much of that drop was attributable to trips not made, trips diverted to other means of travel (such as commercial airlines), or landings diverted to reliever airports is not known. Some

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14. See Federal Aviation Administration, Airport Quotas and Peak Hour Pricing: Theory and Practice (1976).

personal cost and inconvenience seem inevitable, particularly for recreational as opposed to business general aviation users.

Production and Employment. Literally thousands of firms--aircraft and avionics manufacturers, airframe repair shops, flight instructors, insurance companies, and banks--purvey to the owners of general aviation aircraft. Together, sales for these firms totalled $4.2 billion in 1981, a year of quite deep general economic recession. Higher general aviation user fees could dampen the economic performance of the general aviation industry, producing losses in sales, profits, and employment. Recently, though, the general aviation industry has seemed able to sustain a quite healthy condition despite fluctuations in the surrounding economy. Despite rising fuel costs, recession, and a sharp decline in recreational aircraft sales, for example, general aviation aircraft manufacturers posted record aircraft billings of $2.92 billion in 1981, up 17.5 percent from 1980, and the ninth consecutive year of unprecedented sales. Billings fell off by 32 percent in 1982, however--largely as a result of high interest rates--though sales and billings turned up again in 1983.

The pace of jet and turboprop sales mirrors the industry's performance. Increased sales in 1981 more than offset declines in the light recreational airplane market, mainly because the substantially higher price of a jet aircraft outweighs the diminished number of such aircraft. This is significant not only to the aircraft manufacturers, but also to related industries, particularly avionics manufacturers, insurance companies, and maintenance firms, since jets and turboprops account for nearly two-thirds of all hours flown by general aviation aircraft.

Recreational pilots are considerably more sensitive to economic conditions than are corporations. Thus, despite the overall health of the general aviation industry in recent years, sales of nonbusiness aircraft in 1981 were off by more than 50 percent from 1979, and manufacturing employment in that sector of the industry declined accordingly. But the bulk of the federal subsidy to general aviation is caused by corporate jets, not by the recreational fliers, so that an equitable set of federal user fees should affect this part of the industry relatively little.

The specific effects of increased user fees in the nonbusiness aircraft sector would depend on the relationship of fuel prices to overall flying costs and on the sensitivity of users to fuel price increases. At present, fuel accounts for about 20 percent of annual flying costs for the typical general aviation user. Thus, while a $1 per gallon fuel tax would increase fuel prices by about 70 percent, total flying costs would rise by only about 14 percent. Changes in general aviation activity as a result of past increases in fuel prices demonstrate that such increases have a perceptible but relatively

small influence on aircraft use, particularly corporate jets. A fuel price increase of 10 percent appears to cause a reduction in general aviation activity of about 2 percent. Accordingly, the 70 percent increase in fuel prices necessary to achieve full-cost recovery might reduce overall general aviation activity by about 14 percent.

CHAPTER VI. POSTAL SERVICES

Increased mail rates for small-circulation newspapers, educational institutions, philanthropic and religious groups, and other not-for-profit organizations could recover some 95 percent of the $760 million appropriated in 1984 for preferential Postal Service treatment. Otherwise self-supporting from stamp sales, the Postal Service still receives selective annual support out of general tax collections. Federal subsidies for certain mailers, notably the visually handicapped, would probably be continued.

In the course of a year, the U.S. Postal Service handles more than 114 billion pieces of mail, both regular mail and such special postal services as Express Mail and Special Delivery. The cost of providing these services totals $24.4 billion a year. Most of this sum is recovered by a user fee so familiar it is rarely recognized as such: the postage stamp. But several groups of Postal Service users pay less than the full costs of the services they receive. 1/ These favored users, comprising many not-for-profit organizations and small-circulation newspapers, use mailing services at rates that are subsidized by the general taxpayer through the so-called "revenue forgone" appropriations voted each year by the Congress. In approving the appropriations, the Congress explicitly identifies certain groups for special Postal Service treatment. The value of these subsidies will total about $760 million in 1984, or about 3 percent of that year's Postal Service revenues. 2/

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1. For the cost of providing unpaid mail service to individuals with franking privileges--current and past elected officials and their widowed spouses--the Postal Service is reimbursed by a lump-sum appropriation to the Legislative Branch transmitted to the Postal Service and recorded as revenue. Franked mail, therefore--though free to the immediate user--does not generate a subsidy.

2. The Postal Service also benefits from smaller, indirect subsidies to cover certain costs of compensation. These are examined in a forthcoming CBO study.

Established by the Postal Reorganization Act of 1970, the Postal Service is now an independent, self-supporting agency of the federal government. Before the reorganization, mail rates under the U.S. Post Office bore little relation to the actual costs of service, and mail delivery was heavily subsidized. Under the Post Office system, the general taxpayer was asked to support artificially low mail rates, which favored certain individuals and organizations over others and encouraged inefficient overuse of postal services. At the heart of the 1970 reorganization was the intent to transform the postal system into a fundamentally self-sufficient concern designed along the lines of a private corporation, with users paying the costs of the services they receive.

The businesslike system based on the "user pays" principle--as most of the Postal Service now is--distributes the costs of postal operations so that individuals generally pay only for the services they receive. This approach has improved the efficiency of postal operations, because users faced with paying full costs tend to tailor their demand for services to their needs. For example, the Postal Service now offers guaranteed overnight mail delivery for a substantial premium over regular first-class rates. With the selective special subsidies still in effect, however, the potential improvement in Postal Service efficiency appears incomplete, raising the possibility of even greater use of user fee financing. As the Congress considers this prospect, it will have to recognize that even partial withdrawal of postal subsidies could create difficulties for individuals or organizations that it has in the past chosen to assist.

THE CURRENT SUBSIDIES

Even though the new Postal Service was to operate essentially as a self-sustaining entity, the 1970 act designated two categories of service for continued federal subsidies: 3/

- **Public Service**, designed to assure regular and universal service; and
- **Revenue Forgone**, or reduced rates for selected groups,including religious and other not-for-profit organizations,

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3. A third category of approved subsidies was for the nonfunded liabilities of the former Post Office Department, consisting of accrued but unused annual leave and employees' compensation for injuries. No funding was authorized for the 1982-1984 period, but the amounts (totaling $197 million) that were accrued in these years are expected to be requested by the Postal Service in its 1985 authorization.

visually handicapped persons, small-circulation newspapers, and libraries.

The public service function, which generally involves assuring universal postal service to all communities (including six-day mail delivery, rural service, and uniform nationwide rates) has been judged by the Congress to be in the national interest, and it is thus eligible for continued subsidy. The "revenue forgone" appropriation was intended to promote the flow of news and of educational, charitable, and cultural materials. In large part, these programs reflected an effort to ease the transition from the old, heavily subsidized postal system to the "user pays" framework of the new Postal Service.

Public Service Subsidy

Originally, the public service subsidy was authorized at 10 percent of the Postal Service's 1971 budget, or $920 million (in then-year dollars). The 1970 act provided for continuation of this subsidy until 1980, at which time it was to diminish by 10 percent a year until reaching $460 million in 1984. The Carter and Reagan Administrations have significantly hastened the decline in this subsidy, however. The Congress appropriated only $12.1 million for public service costs in 1982, 4/ and no funding was provided in 1983. The Postal Service expects to absorb this cut by increased productivity, higher mail volume, and other actions, rather than by raising general mail rates. 5/ (Increased postage rates and improved productivity, together with slowed inflation growth, enabled the Postal Service to produce a net income in 1982 of $802 million, sufficient to postpone an expected 1983 postal rate increase.) Though this eliminates the federal subsidy, some public service activities will continue to receive a cross-subsidy from other postal users, who will pay rates higher than they would otherwise.

Some inequities result from the national policy of having unvaried postage rates for a single class of mail--most important is the 20-cent rate for first half-ounce of first-class matter mailed anywhere in the country--rather than rates adapted to reflect differing distances and costs.

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4. A sum of $220.8 million was originally appropriated, but a rescission of $208.6 million was enacted in P.L. 97-257, effective September 10, 1982.

5. Testimony of William F. Bolger, Postmaster General, before the House Subcommittee on Treasury, Postal Service, and General Government Appropriations, February 9, 1983.

Mail that uses short, high-density routes pays more relative to mail sent over long, low-density routes, meaning that urban mail appears to overpay relative to rural. Even users that presort their first-class mail and receive reduced rates for presorting--including many businesses--appear to pay more than the costs they impose.

Revenue Forgone Subsidies

The revenue forgone subsidies benefit four major types of subsidized mail:

- **Preferred second-class,** including in-county mailings by small-circulation newspapers, farm technology publications, not-for-profit organization periodicals, and materials for classroom use;

- **Non-profit third-class, bulk rate,** including not-for-profit organization bulk mail and bulk mailings by national and state political party committees;

- **Preferred fourth-class,** such as books, films, and other educational materials exchanged among schools or libraries, and books shipped to school bookstores; and

- **Free mail,** including free materials for use by the blind or other persons who cannot read conventional printed matter; sound reproductions, braille writers, or other devices specifically for use by a visually handicapped person; and certain free balloting material for civilian and military personnel voting overseas.

The revenue forgone subsidies include phasing appropriations and continuing appropriations. By providing for gradual reductions in postal rate subsidies, the phasing appropriation was intended to lighten the burden on groups affected by the change-over from the old subsidized system. The phasing appropriation was originally planned to extend through 1987, but under present funding schedules, it would terminate two years earlier. The subsidy reduces mailing costs for these groups by an average of about 5 percent.

The second category, called continuing appropriations, supports a permanent rate differential that benefits the same groups that receive the first category of transition subsidies. Essentially, the preferred mailer is not asked to contribute to the Postal Service's overhead costs equal to an additional 27 percent reduction in costs. The taxpayer makes up the difference between what the preferred mailer pays and the commercial rate

for the same piece of mail. In 1983, the Congress appropriated $789 million for revenue forgone subsidies (including both phasing and continuing appropriations). Projected federal outlays for 1984 will total $760 million (see Table 16). By far the largest portion of the subsidy benefits not-for-

TABLE 16. PROJECTED FEDERAL OUTLAYS AND RECOVERABLE COSTS FOR U. S. POSTAL SERVICE REVENUE FORGONE SUBSIDIES, TO 1988 (In millions of dollars)

	With No Rate Increase		With a Rate Increase			Five-Year
	1984	1985	1986	1987	1988	Total
Projected Outlays	760	798	836	871	905	4,170
Total Costs Recoverable Through User Fees a/	715	751	786	819	851	3,922

SOURCE: Congressional Budget Office.

a. Excludes subsidy for free mail for blind or otherwise visually handicapped persons and for overseas voting.

profit organizations--more than $500 million in revenue forgone appropriations in 1981. Most of this amount--about $420 million--goes for third-class bulk mail (see Table 17).

Shortcomings of the Present System

Reduced rates assist a large and diverse assortment of Postal Service users. Over time, the terms and administration of these rates have grown increasingly complex. At present, not-for-profit organizations--religious, philanthropic, educational, labor, and veterans' groups--qualify for these lower rates, as do public libraries, schools and universities, small-circulation newspapers, and national and state political party committees. Many of these postal subsidies may not be well targeted to achieve the intended

TABLE 17. REVENUE FORGONE SUBSIDIES BY CLASS OF SERVICE, 1981
(In millions of dollars)

Class of Service	Phasing Appropriation	Continuing Appropriation	Total a/
Second-Class	120	45	165
Third-Class, Bulk Non-Profit	221	199	420
Fourth-Class	26	43	69
Free for Blind and Handicapped	--	24	24
Total	367	311	678

SOURCE: Congressional Budget Office.

a. Total appropriations received for fiscal year 1981. Audit of mail volumes indicates, however, that an additional subsidy of $162 million would be necessary to reimburse the Postal Service fully for those services. Accordingly, as required by 39 U.S.C. 2401(c), the Postal Service has requested a "reconciliation adjustment" for this amount in its 1984 budget request.

circulation of news and educational, cultural, and charitable materials. The qualifications for the reduced rates seem arbitrary in some cases; for example, civic associations, such as the Rotary and Kiwanis clubs, must pay the regular commercial rates, while fraternal organizations (including college fraternities and sororities) enjoy subsidized rates. If the federal government did not subsidize postal rates for small newspapers, then the full cost of postal services ultimately would be passed on to subscribers, publishers, or advertisers.

Many preferential rates, because of their complexity and broad application, are difficult and costly to enforce. For example, rates for some preferred-rate publications, like their regular-rate counterparts, vary according to the percentage of advertising matter they contain--a cumbersome standard to apply. A final drawback of artificially low postal rates is their tendency to promote overuse of postal services. For many not-for-profit mailers, subsidized rates encourage excessive and

inefficient use of direct-mail solicitation, with poor pinpointing of potential contributors. 6/

REDUCED SUBSIDIZATION AND ITS EFFECTS

Elimination of all revenue forgone appropriations--except those supporting free mail for the blind and otherwise visually handicapped--would result in a savings to the federal government (relative to CBO's baseline) of $715 million for 1984, and a savings of $3.9 billion over the 1984-1988 period (see Table 16). (Total Postal Service revenues in 1983 were $23.6 billion.) These rates would then rise to the levels of general rates currently in effect for each subclass of mail. 7/ For example, for third-class nonprofit mail, the cost of mailing a three-quarter-ounce fund-raising letter (nationwide distribution, presorted) would rise from 5.2 cents to 10.9 cents--an increase of 110 percent. For second-class mailings within a county, the rate per piece for a weekly rural newspaper (weighing four ounces, carrying 50 percent advertising, presorted) would rise from 3.6 cents to 9.1 cents--an increase of 153 percent.

Not-for-profit organizations that rely heavily on direct mail solicitation for fundraising--notably charities--could be seriously affected by the elimination of revenue forgone subsidies. Some groups contend that even small increases in preferred-mail rates would result in severe fiscal straits for thousands of such organizations. 8/ Without adequate advance notice, adjusting to an accelerated rate-increase schedule could be difficult.

The effect on not-for-profit organizations of eliminating the revenue forgone subsidies might be extreme for certain groups, but for all groups as

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6. Information gathered by the Philanthropic Advisory Service of the Council of Better Business Bureaus supports this view. In its publication, Insight (July-August 1981), the PAS observes that ". . . for direct mail to be cost effective, the compilation of mailing lists must be more sophisticated, more selective, more specifically targeted to the most likely donor group."

7. Elimination of the authorization for continuing appropriations for revenue forgone would require changes in Title 39 of the U. S. Code, Sections 2401(c) and 3626.

8. Testimony of Robert Weymueller, on behalf of the American Lung Association and the Alliance of Third-Class Nonprofit Mailers, before the House Subcommittees on Postal Operations and Services and Postal Personnel and Modernization, March 9, 1982.

a body, it would be quite moderate. In general, not-for-profit groups appear not to depend heavily on the Postal Service. Aside from postal subsidies, not-for-profit organizations received an estimated $2.6 billion in 1982 in federal grants. In addition, tax-deductible contributions by individuals generated tax expenditures (federal revenues forgone) of $10.6 billion. Revenue forgone postal subsidies added only about 4 percent to that amount. They represented less than 1 percent of the estimated $60.4 billion in contributions received by not-for-profit organizations in 1982. 9/

In addition, evidence gathered by the Council of Better Business Bureaus' Philanthropic Advisory Service suggests that, for many not-for-profit organizations, fundraising costs constitute an unreasonably high percentage of related contributions. High percentages for fundraising are characteristic of new charities just beginning to build lists of prospective donors, but in the case of older organizations, they may indicate inefficient direct-mail solicitation techniques. 10/ Elimination of postal subsidies would encourage cost-effective use of direct-mail solicitation. At the same time, though, it could create serious problems, especially for the newer organizations that must rely heavily on initial blanket mailings to identify potential donors. An approach that could temper the effect on newer not-for-profit groups needing wide initial canvassing would be a gradual process of transition. One option would be to phase out the subsidy over a period of several years. Over five years, the savings to the federal budget would be $2.4 billion, rather than $3.9 billion if the subsidies were abruptly eliminated in 1984.

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9. See American Association of Fund-Raising Counsel, Giving USA, 1982 Annual Report.

10. The Better Business Bureau Standards for Charitable Solicitations call for fundraising costs not exceeding 35 percent of related contributions. For information on the Council of Better Business Bureaus' standards, see "Revised Standards for Charitable Solicitations Go Into Effect," Insight, January-February 1982. On direct mail solicitation costs and problems, see "Charitable Fund Raising: A Primer," Insight, January-February 1981; and "Directed to You: A Look at Direct Mail Solicitations," Parts I and II, Insight, May-June and July-August 1981. A ten-year model of "typical" annual giving is developed in Robert and Joan Blum's article, "Annual Fund Raising: Profile of Costs, Income, Expectations," from Fund Raising Management Magazine, January-February 1975.

CHAPTER VII. IRRIGATION WATER

The low fee now paid for federally provided irrigation water, recovering less than 10 percent of associated federal costs, could undergo little immediate change as a result of any new legislation. Long-term contracts between farmers and the Bureau of Reclamation, which furnishes water to farms in 17 western states, would delay until late in the century any offset of the Bureau's roughly $350 million in 1984 spending. Eventually, though, as contracts expired, rates could begin to rise from the current average of about $2 per acre-foot to perhaps $30 for new projects. Federal outlays would diminish not only as a result of higher fees but also as a consequence of increased water conservation and planned irrigation projects not undertaken.

Since the turn of the century, the federal government has provided irrigation water for farms in 17 western states. Today, the Bureau of Reclamation, an agency within the U.S. Department of the Interior, operates facilities that supply water to about one-fourth of all western land that is irrigated. 1/ Of the 30 million acre-feet of water the Bureau now delivers each year, 93 percent irrigates more than 10 million acres. 2/ Though this acreage accounts for only 3 percent of the nation's farmland, its crops are valued at some 9 percent of a year's total U.S. farm output. 3/

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1. State and private projects contribute smaller shares. The Bureau also manages the irrigation portion of U.S. Army Corps of Engineers facilities in the 17 Western states. About 55 percent to 60 percent of Western irrigation water is supplied by groundwater wells.

2. An acre-foot, the unit in which irrigation water is measured, is the amount required to cover one acre of land to a depth of one foot. It equals 325,900 gallons.

3. This acreage consumes about 1 percent of the nation's total water resource. Of the land irrigated, 20 percent produces high-value crops--such as fruits, nuts, vegetables, and seed--which account for

Farmers and other users have always paid fees for this water, but at rates far below either its federal costs or market rates. The initial purpose motivating this subsidy was promotion of the nation's westward expansion and specifically, of settlement and cultivation of arid western land. With settlement of the West now far advanced and an agricultural industry there highly productive, the appropriateness of continued subsidies for irrigation water can reasonably be questioned.

User fees that reflected the full federal costs of irrigation water would further three objectives: reduction of the federal budget deficit, improved cost effectiveness in both public- and private-sector investment, and water conservation. Supplies of water are finite, and the demands of industrial development, population growth, and agricultural expansion exert pressure on this limited resource. But low prices for water tend to discourage conservation, increasing the risks of costly water shortages in times of drought. Higher user fees would encourage the conservation efforts that could spread existing supplies among a greater number of users and increase reserves.

In dollar terms, the short-term benefits of full-cost recovery through user fees would be minor. In 1984, receipts to the U.S. Treasury, combined with savings from reduced expenditures, would probably come to just $17 million, mounting slowly to a rate of $120 million over the ensuing four years. In later years, however, combined receipts and savings would rise rapidly, by the year 2000 approaching $0.5 billion a year (in 1982 dollars)--mostly from reduced spending on unneeded new projects. Several provisions of current policy account for this tardy realization of gains.

CURRENT POLICY AND BARRIERS TO CHANGE

Several factors would complicate the task of setting fees to recover full federal costs. One is the terms under which farmers now buy federal irrigation water. Another is the multiplicity of purposes served by the dams supplying irrigation water. Still another factor likely to impede change is the fact of recent Congressional action concerning the irrigation water subsidy. In passing the Reclamation Reform Act of 1982, which amended

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56 percent of the gross value produced. The other 80 percent of the irrigated land produces cereals, forage, and miscellaneous crops equivalent to 44 percent of the gross value. See House Committee on Public Works and Transportation, Report on Amending and Supplementing Federal Reclamation Laws, Committee Print 97-458 (March 15, 1982) p. 9.

the Reclamation Project Act of 1939, the Congress reaffirmed its commitment to the established principles of Bureau pricing. 4/

The Subsidies Under Current Policy

Several provisions of current law--all reflecting Congressional intent to keep water rates from overburdening farmers--codify subsidies and limit the federal government's flexibility to raise rates. One is the duration of legal contracts under which the government agrees to provide water and the farmer to repay construction costs (plus whatever operating and maintenance costs arise). 5/ Typically, these contracts have terms of 40 or 50 years, reflecting the expected physical life of dams and irrigation canals. Only as these contracts expire could the government alter the terms under which it charges for water.

Another factor is that rates to recover construction costs cannot reflect any interest charge. This interest subsidy generates the largest share of federal irrigation costs.

A third constraint is imposed by the so-called "ability-to-pay" provision, designed to reflect farmers' particular financial circumstances at the time of contract negotiation. Set in some instances as long ago as 30 years, the current ability-to-pay rates fail to reflect the many economic changes--notably inflation--that have occurred in the intervening years. Calculated as the residual after all other expenses (including time and labor) are deducted from projected farm income, ability-to-pay may actually result in a rate lower than interest-free construction costs spread over the life of a long-term contract. In 1981, the Bureau modified its computations of ability-to-pay and stipulated that the rates be adjusted--roughly once

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4. For details, see P.L. 97-293 or Senate Report 97-568 to accompany S. 1409 (September 22, 1982). Title II addressed the issue of federal subsidies for irrigation water.

5. Except as noted, fees in this report do not include operations and maintenance expenses, because irrigators currently repay almost all of these costs. Data used in this analysis come from Water and Power Resources Service, Acreage Limitation, Draft Environmental Impact Statement (1981), pp. II-1-7, and General Accounting Office, Federal Charges for Irrigation Projects Reviewed Do Not Cover Costs (March 3, 1981) p. 26.

every five years. 6/ In practice, however, the farmer still pays either the interest-free rate for construction costs or the ability-to-pay rate, whichever is lower. Depending on circumstances, the Bureau's subsidy may consist not only of the uncharged interest but also of the difference between ability-to-pay and construction costs. 7/

Nonfederal Constraints

State-water law, limiting water transfers, can indirectly restrict the federal government's ability to charge higher fees for irrigation water. Water law in each of the 17 western states is based on the concept of "first in time, first in right." 8/ Under this concept, a party diverting water from a stream and putting it to some beneficial use (such as irrigation) may secure from the state a permit for continued use of that water in perpetuity. Most states, however, restrict such use to the original place and type of use. Some restrict water transfers from a more beneficial use to a less beneficial one, ranking municipal use as the most beneficial, then agricultural, then industrial use. Moreover, nonuse can result in forfeiture of a water right. Under such a system, water rights for irrigation are generally not transferable to other, higher-valued uses. Thus, the combination of low water prices, a "use it or lose it" convention, and legal barriers to water transfers provide farmers an incentive to use their entire allocations, regardless of the efficiency of their use or the demand for water by other parties.

To develop and distribute water for irrigation, the Bureau must first secure a water right from the state in full compliance with state law.

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6. Since 1975, Bureau policy has required periodic adjustment provisions to be included in all new water service contracts. The Reclamation Reform Act of 1982 requires an annual review and adjustment for operation and maintenance costs associated with new contracts.

7. In addition to these two subsidies, some lesser subsidies have occurred: certain costs of projects before 1926 were forgiven, and rates for incremental supplies have sometimes been set by the Congress at rates below Bureau estimates.

8. For details, see George E. Radosevich, Western Water Laws and Irrigation Return Flow, prepared for the U.S. Environmental Protection Agency (August 1978), as cited in Kenneth D. Frederick and James C. Hansen, Water for Western Agriculture, Resources for the Future (1982).

Similarly, any transfer of Bureau water among users or within river basins is also subject to state water laws that may restrict such transfers. Federal reclamation law may further limit the Bureau's ability to transfer water from one use or location to another.

Two types of changes to many western states' water laws could remove impediments to water markets. First, a revised system of temporary or permanent water-rights transfers would make possible a reallocation of water supplies to the most efficient uses. This would affect many judicial and administrative restrictions at the state level. 9/ Second, a system of well-defined water rights based on water consumption, as opposed to diversion, could give users an incentive to conserve. Rather than face forfeiture as a result of nonuse, a user could resell, at a profit, however much water he conserved. 10/

Further Complications at the Federal Level

The multipurpose function of federal dams further complicates the prospect of imposing irrigation user fees. Any one dam may supply--besides irrigation water--water for industrial or municipal uses, hydroelectric

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9. "Water banking" by local agencies could substitute for the protective benefits once attributed to restrictions on transfers written into state water laws. These banks would not actually collect water, but they would instead, arrange transfers among users. Banking would have to be classified as a beneficial use to avoid forfeiture. Such a scheme would not only encourage conservation with resale profits, but it would stimulate water transfers from low- to-high-valued uses. For a more complete discussion, see Sotirior Angelides and Eugene Bardach, Water Banking: How to Stop Wasting Agricultural Water, Institute for Contemporary Studies, (1978).

10. Consumption rights could also alleviate third party problems. Consider a diversion of 100 acre-feet of water, of which 60 acre-feet is consumed in irrigation and 40 acre-feet is returned to the river as runoff from the land. A downstream user can secure the right to use the 40 acre-feet of return flow as if it were normal stream flow. When the original diverter attempts to transfer his water right of the full 100 acre-feet, the downstream user's right can be impaired and a legal battle can ensue. If consumption rights were in effect, only 60 acre-feet could be transferred by the upstream user, thus avoiding third party conflicts. For additional details, see Terry L. Anderson, Ending the Policy Draught, Johns Hopkins University Press (1983).

power, flood control, and recreation. Assigning fair shares of a dam's costs to each of its several uses is difficult. In fact, reclamation law allows the assignment of some irrigation costs to other uses. Thus, while consumers of municipal water and power generated by Bureau and U.S. Army Corps of Engineers' facilities often pay more than the costs of producing these goods, farmers pay less than the costs of providing irrigation water. Correcting such cross-subsidies would be an important factor in setting irrigation water user fees.

ESTIMATING THE VALUE OF THE SUBSIDY

Estimates of the total value of current irrigation water subsidies depend on assumptions about interest rates and various other technicalities. Probably the most complete review is that of the Water Resources Council, which placed the subsidy at about 82 percent of full costs. 11/ The Bureau, in a sample of 18 districts, found the average total subsidy to be 78 percent of full costs. 12/ A General Accounting Office (GAO) study of six projects, either under construction or proposed for funding, determined that the subsidies would be about 92 percent of the allocated full costs of the project, assuming an interest rate of 7.5 percent. The GAO concluded that about 75 percent to 80 percent of the total subsidy was attributable to the interest subsidy. 13/ On a cash-flow basis, current payments total about 10 percent of Bureau spending on irrigation. An 80 percent subsidy means that full-cost recovery would require farmers to pay rates that were, on average, five times current fee levels.

FULL-COST RECOVERY

As with other government services, full-cost recovery for irrigation water would be based on three principles. First, capital and operating costs of multipurpose facilities would be allocated equitably among the major

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11. See U.S. Water Resources Council, Options for Cost Sharing: Implementation and OM&R Cost Sharing for Federal and Federally Assisted Water and Related Land Programs, Part 5A (November 1975).

12. See U.S. Department of Interior, Bureau of Reclamation Acreage Limitation, Draft Environmental Impact Statement (March 16, 1981), pp. II-I and II-VII.

13. See General Accounting Office, Federal Charges for Irrigation Projects, pp. 26-28.

classes of users--irrigation, power, flood control, and recreation. Second, users would pay for their allocated shares of capital costs over a reasonable period of time, roughly corresponding to the expected life of a facility. Third, no attempt would be made to recover past subsidies (see Chapter I) or to change rates as stipulated in existing contracts.

The general approach called for under these principles would amortize all allocated capital costs, charge market interest rates, eliminate the ability-to-pay provision, and continue to charge all operating and maintenance costs as they occur. 14/ Most users of Bureau water would not face cost increases for many years because of standing contracts and repayment terms. Some of these contracts have 30 or more years left, so many individual farmers might never need revised or additional contracts; only certain farmers would face increases.

The charges analyzed below could be applied to projects of four types: rehabilitation work, additions to existing systems, service contracts, and new systems.

Rehabilitation Projects

The Bureau now supplies between two and three million acre-feet of water (less than 10 percent of its total) under "completed" contracts--contracts covering projects on which the original construction work has already been paid for. Most of these are facilities more than 50 years old. As long as farmers pay for operations, maintenance, and rehabilitation, they have rights to this water in perpetuity. Two changes from current practice, however, would be a requirement that all contracts for new rehabilitation be amortized over a reasonable period of time, and adoption of market interest rates.

Rehabilitation contracts on completed projects now total about $20 million to $30 million each year, increasing at about 25 percent a year as more facilities need new work. Most such projects are now amortized over 40 years without interest. Though the duration appears reasonable, interest at the federal long-term bond rate could be charged. The Bureau states that rehabilitation projects take at least three years to complete, so that, if the changes were made effective immediately, receipts from full-cost

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14. Several technical reforms are also assumed in this analysis. Rates would be adjusted to reflect new cost allocations, and water charges would be based on the amount of water delivered rather than the number of acres irrigated.

recovery would not occur until 1987. By 1988, receipts could increase by about $4 million a year (see Table 18). After that, growth could be rapid,

TABLE 18. INCREMENTAL RECEIPTS FROM FULL COST RECOVERY OF IRRIGATION EXPENDITURES (In millions of dollars)

Type of Project	1985	1986	1987	1988	Total
Rehabilitation of Facilities	--	--	2	4	6
Additions to Existing Systems	--	--	6	14	20
Service Contracts	1	2	2	3	8
New Systems	--	--	5	16	21
Total Fees	1	2	15	37	55

SOURCE: Congressional Budget Office.

NOTE: Receipts for irrigation water are small--totaling less than $30 million in 1980, for example, with most of this sum going for operations and maintenance.

with added receipts reaching $9 million in 1990 and perhaps exceeding $100 million a year by the year 2000.

A major unknown factor in assessing this change is the possible effect of higher fees on the number of projects undertaken. Already, new rehabilitation projects can cause substantial rate increases in some water districts, with the result that some farmers put off rehabilitation until the need is urgent. If as many as half of all proposed projects were delayed or dropped, federal outlays would be reduced further by $5 million in 1984, by more than $20 million in 1987, and by a total of almost $90 million through 1988. (These estimates are net of the reduced collections that would result from building 50 percent fewer projects).

Additions to Existing Systems

Most Bureau water is provided by dams and irrigation systems for which farmers are still paying. Supplemental contracts are often issued to cover the provision of water to new or temporary users, to improve safety, or simply to repair old systems. Under current policy, repayment of these new contracts is simply added to existing obligations on the same terms--that is, without interest and amortized over 40 years. Under full-cost recovery, new capital expenditures could be treated as business investments, with interest charged and payments calculated without regard to farmers' ability-to-pay.

Current contracts for additions have a value of about $85 million in 1983, and they are increasing by about 20 percent per year. Once this work in progress is completed--in about three years--annual repayments would total about $2 million. Full-cost recovery would raise these repayment obligations by about a factor of four. The aggregate effect on irrigators would be slight, since the value of new additions would be small relative to existing obligations. The effect on certain individuals could be significant, however. By 1988, user fee receipts from project additions could total $14 million (see Table 19), increasing to $29 million in 1990 and perhaps several hundred million dollars a year by 2000. As with rehabilitation projects, cost-based fees would be likely to cause many projects to be delayed or cancelled.

Service Contracts

The Bureau provides 6.6 million acre-feet of water a year (about 20 percent of its total) under service contracts, rather than under the more common repayment contracts. Service contracts are used either because the system is too complicated to allocate repayment obligations, or the service is temporary. 15/ Most service contracts--primarily in California's Central Valley Project--are for long periods, however, with about half the total (more than 3 million acre-feet) to expire after the year 2000. Thus, any change in fee policy would take a long time to have a significant budgetary effect. Current rates for these service contracts average between $12 and $13 per acre-foot. Full-cost recovery rates could be

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15. For example, when surplus water is available, the Bureau sells it on a short-term basis under a service contract. Much of this goes to industrial or municipal users, often at market rates.

TABLE 19. PROJECTED RECEIPT INCREASES AND BUDGETARY SAVINGS FROM HIGHER IRRIGATION USER FEES, TO 1988 (In millions of dollars)

	1984	1985	1986	1987	1988	Five-Year Total
Incremental Receipts a/	--	1	2	15	37	55
Construction Foregone b/	17	37	62	71	82	269
Total	17	38	64	86	119	324

SOURCE: Congressional Budget Office.

a. See Table 18.

b. In cases in which cost-based fees exceed benefits to farmers, projects involving new construction, rehabilitation or additions to systems may be deferred or cancelled. The size of this effect is difficult to estimate, but would be in addition to increased federal user fees. This table assumes that half of construction projects would be affected. The dollar estimate is a net figure adjusted to account for reduced user fees from the smaller number of projects built.

between $31 and $32 per acre-foot. 16/ The revenue increase from this charge would be only $3 million a year by 1988, but as major contracts expired in the early 1990s, it would rise steeply, with the potential to recoup more than $0.5 billion through the year 2000.

New Systems

Contracts for new projects or additional water from existing projects do not affect a substantial amount of irrigation water each year. The

16. No reliable estimate exists for the full-cost recovery rate for service contracts. This estimate is based on the weighted average of a sample of 18 projects evaluated by the Bureau. See Bureau of Reclamation, Acreage Limitation, Draft Environmental Impact Statement (1981), p. II-7. These rates have been converted to rates per acre-foot even when the rates charged to farmers are based on the numbers of acres under irrigation.

Bureau expects new contracts to average between 175,000 and 210,000 acre-feet each year through 1988, an annual increment of less than 1 percent in the total supply of federal irrigation water. Under full-cost recovery, rates for construction costs would increase by between $24.58 per acre-foot for projects under way and $85.21 per acre-foot for new projects. 17/ If rate increases for both types of projects averaged $54.90 per acre-foot, receipts would be about $10.6 million. Because the prospective price would be high compared with rates now under contract, this rate is assumed to defer construction of half each year's new facilities.

Summary of User Fee Potential

If the Congress were to apply a policy of full-cost recovery to all four types of contracts as they expired, total incremental receipts above current policy would be quite modest--by 1988, only about $55 million (see Table 18). In the longer term, potential revenues would be substantially greater--as much as $450 million a year (1982 dollars) by the year 2000. The gradual pace forced by the existing contracts would yield some benefits, since such a change, particularly if implemented quickly, would cause severe adjustment problems for farmers who now rely on low-cost subsidized water.

In addition to increased receipts, savings would result from the reduced construction of inefficient future projects (see Table 19). If full costs were recovered, water users would have a strong interest in minimizing costs. This does not mean that no new facilities would be built, but rather that more attention would be paid to project details and how water was used. For example, substantial savings are possible by placing plastic liners in canals to prevent seepage and by other irrigation improvements. These would result in less expensive projects.

Incentives to conserve might also permit indefinite postponement of some contracts for new construction and thus, considerable federal savings. Several factors would influence the value of such savings. These include the level of fees set--whether to achieve full-cost recovery or something less--the degree to which higher water costs encouraged farmers to switch to higher-value crops, and eventually, the degree to which the demand for these crops dropped as their prices increased. If half of all future Bureau expenditures on rehabilitation, extensions and new projects were deferred,

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17. See Bureau of Reclamation Acreage Limitation, and General Accounting Office Federal Charges for Irrigaton Projects.

outlays would be reduced by an additional $82 million in 1988 and by a total of $269 million over the following five years.

Overall, these approaches toward more complete cost recovery would save the federal budget about $120 million in 1988. By that time, these savings would be increasing rapidly, and they might exceed $400 million a year by the early 1990s. Moreover, full-cost recovery could, in time, result in fundamental changes in water use in the West and in improved allocation of this resource.

ECONOMIC EFFECTS

A change from subsidized water rates to full-cost recovery could require sizable adjustments on the part of farmers. Some would adapt far more easily than others. The end beneficiaries, however, could include both farmers and nonagricultural users of this resource as well.

On Farmland Values. Over the life of the Bureau's irrigation program, low water rates have become translated into higher land values for those farms with access to subsidized water. This means that an appropriate course would be to raise fees selectively. Specifically, higher fees would cause the least dislocation for farmers if applied only to projects that add new capacity. Abrupt or sweeping fee increases, driving farm values downward could swamp the beneficial effects of encouraging conservation and more cost-effective crop patterns.

On Crop Choices. Facing higher rates, most farmers would adapt by using less water and/or by changing crops. Some, however, might face more serious problems, either because of very large rate increases or because their farms are not adaptable to different crops. To cite one example, farmers in Northern areas are more likely to grow low-value crops, such as wheat or corn, or to use irrigation for pastures. These farmers might be inclined to avoid or delay new contracts and expenditures to avoid price increases.

For some farms, the full cost of delivered water, particularly from new systems, can exceed the income attributable to irrigation. 18/ This is most likely to be true of the roughly 60 percent of all irrigated land that is planted with relatively low-value forage crops and cereals or used for pasture. With higher water rates, the quantity of land planted with these

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18. See General Accounting Office, Federal Charges for Irrigation Projects.

crops would likely decline, and land planted in higher-valued fruits and vegetables would likely increase. Some farmers would avoid irrigation altogether and return to dry-land crops such as grains. In the aggregate, these changes would probably be small compared with the normal crop changes motivated by other economic forces. 19/

On Farm Production Costs. For high-value crops such as rice and cotton, irrigation water represents a small portion of total costs. 20/ In some districts in California, full-cost recovery could double irrigation costs to about 6 percent of total farm costs. Over the next decade, however, this increase would not affect more than one-third of all water transferred in California by the Bureau. Most Bureau water in California is covered under standing long-term contracts and would not change in price. Since contracts fix most of the capital costs of irrigation, irrigation costs decline over time as a percentage of all costs while other costs increase with inflation. This means that if full-cost recovery were phased in over time, irrigation costs would not have to be a substantially higher fraction of farm costs.

On Nonfarm Users. To whatever extent full-cost recovery stimulated appreciable water conservation, it could make more water available to new users who were willing and able to pay for it. 21/ In particular, many municipalities would be likely to use the water to support population growth and growth in other industries. For example, of 11 water districts studied by the Bureau, ten were found to have clear opportunities to conserve. Thus, as much as 55 percent of all water used under current policies could be conserved if rates reflected full costs. 22/

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19. See U.S. Department of the Interior Acreage Limitation, Draft Environmental Impact Statement (1981).

20. See U.S. Department of Agriculture, Costs of Producing Selected Crops, Committee Print for House Committee on Agriculture (August 1981).

21. Assuming that legal and administrative constraints on water rights transfers were lifted.

22. See U.S. Department of the Interior, Acreage Limitation.

CHAPTER VIII. THE STRATEGIC PETROLEUM RESERVE

Either of two systemwide fees could recover from users of petroleum the reserve's 1984 costs of $3 billion. A tariff on foreign oil paid by importers would have to be set at $ 0.60 per barrel. The alternative, a tax of $ 0.40 per barrel on domestically refined oil, would necessitate a comparable fee on imported refined oil and oil products to maintain equity between U.S. and foreign refiners. Most fees could be discontinued in the early 1990s, when construction of handling and holding facilities and filling is scheduled to be completed. A minor fee could be retained to cover the reserve's annual average maintenance costs of $150 million to $200 million.

The United States' use of oil in excess of domestic production renders the nation vulnerable to disruptions in imports. Because of this vulnerability, made vivid by the OPEC oil embargo of 1974-1975, the Congress authorized the Strategic Petroleum Reserve (SPR) as an insurance policy against the economic losses that would attend another such stoppage. At present, financing for both the construction and maintenance of the SPR and the oil it holds comes solely from the federal government. Costs in fiscal year 1984 will total roughly $2.3 billion and through 1988 to $10.5 billion (see Table 20).

By 1990, when the SPR is scheduled to be completed, it will store 750 million barrels of oil in underground salt caverns or mines equipped with surface facilities for handling the oil. For the most part, construction of surface facilities is already finished, and underground mining is in process. Although the Congress authorized a one-billion-barrel reserve, plans for the last 250 million barrels are not completed.

In 1982, the Congress enacted the Energy Emergency Preparedness Act of 1983 (Public Law 97-229), which requires a minimum daily fill rate of 220,000 barrels to reach the 500-million-barrel level, subject to the availability of appropriations. (In 1981, the Omnibus Reconciliation Act withdrew funding for SPR oil purchases from the budget and placed it in a off-budget account.) Interpreting the recent softening of energy prices as a

TABLE 20. ESTIMATED OBLIGATIONS AND OUTLAYS FOR THE STRATEGIC PETROLEUM RESERVE, UNDER CURRENT POLICY, 1984-1988 (In billions of dollars)

	1984	1985	1986	1987	1988	Five-Year Total
Oil Purchases (Off-Budget a/)						
Obligations	2.0	1.6	1.6	1.8	1.5	8.5
Outlays	2.0	2.1	1.3	1.7	1.9	9.0
Capacity Construction (On-Budget)						
Obligations	0.3	0.3	0.3	0.3	0.3	1.5
Outlays	0.3	0.3	0.3	0.3	0.3	1.5
Total Obligations	2.3	1.9	1.9	2.1	1.8	10.0
Total Outlays	2.3	2.4	1.6	2.0	2.2	10.5

SOURCE: Congressional Budget Office.

a. The Omnibus Reconciliation Act of 1981 placed funding for SPR oil purchases off-budget.

sign of the SPR's diminished urgency and seeking to accommodate budgetary constraints, the Congress slowed the fill rate to 186,000 barrels a day in 1984 and 1985. If this slack in the price of oil continues, the estimated costs of purchasing the oil for the SPR would total $9 billion through 1988. Under this plan, the reserve would reach 500 million barrels in 1986. An additional $1.5 billion would be required to develop the necessary storage capacity through 1988. Even when the SPR is completed and filled, maintenance costs will average $150 million to $200 million a year.

THE PROSPECT FOR FULL COST RECOVERY

The rationale for user fee financing for the SPR is perhaps less clear-cut than the arguments for reduced public support in the other program areas treated in this study. Strong cases can be made on both sides.

General Pros and Cons

Proponents of user fee financing would charge that oil users in the private sector create the need for the reserve. As the source of the nation's vulnerability, oil users ought to pay the premium on the insurance policy against interruptions. Further, federal support for the reserve fails to meet a standard of equity. The general tax collections that finance the reserve do not reflect the varying proportions in which diverse users consume oil. Since different industries and individuals consume oil in markedly different proportions, it is appropriate for users to bear the reserve's costs in like proportion. Thus, a fee to finance the SPR would make those parties who create a problem for society pay the price of ameliorating that problem. The price an individual pays for a barrel of oil or oil products is less than the cost of that oil to society. In this sense, an individual benefits from more than he or she pays for. A fee would ensure that at least part of these additional costs of oil imports be included in the price the oil consumer pays. The costs to society of a barrel of oil includes both the market price and the costs of exposure to potential macroeconomic losses, or reduced influence in foreign policy.

In the other camp, opponents of user fees to cover the SPR's costs would argue that, like the nation's defense program, the reserve is a public good. Since the use of oil so thoroughly permeates the economy--in the form of numerous manufactured goods as well as fuel--the ultimate beneficiary of the SPR is virtually the entire population. The reserve is also a public good in whatever measure it serves as an instrument of foreign policy. In theory, the existence of the SPR is held to function as a deterrent: oil exporting nations, perceiving U. S. vulnerability to supply interruptions to be reduced by the SPR, are thought to be dissuaded from using such disruptions as a punitive measure against the United States. These points would argue for taxpayer support of the SPR.

TWO POSSIBLE USER FEES

User fees to cover the costs of the SPR could be structured in either of two ways: an oil import tariff, or a fee for refining crude oil. Of the two, a tariff on imported oil would be more specific in directly relating the fee to the need for the SPR--that is, to the nation's vulnerability to a supply stoppage. Alternatively, a fee could be levied on crude oil processed by U. S. refiners, with an equivalent fee on imported refined products to avoid favoring foreign refiners. 1/

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1. A motor fuel tax of about 2 cents per gallon could also be used to pay for the SPR. But such a tax could create a major cross-subsidy,

In any case, since filling the SPR is a temporary program that should be completed by the early 1990s, a temporary user fee would also be appropriate. The bulk of the fee could be ended whenever the SPR was filled. Some portion of the fee would have to be continued, however, to pay for the $150 million to $200 million a year needed for maintenance costs.

The type of fee chosen would determine the fee's size. On the basis of currently projected consumption levels, a tariff on imported crude oil with an equivalent tax on imported product would have to be set at $0.60 per barrel to raise the requisite $2.3 billion a year. A refiners' fee of $0.40 per barrel on crude oil refined in the United States or on imported petroleum products would also raise sufficient funds. Though gross federal revenues would increase by $2.3 billion from either of these fees, because of the effects on the economy of the refiners' fee and the oil import tariff, net federal revenues would come to less than that amount.

Because funding for SPR oil purchases are off-budget, user fee financing would only reduce the budget deficit by the costs of creating storage capacity. Federal borrowing requirements, however, would be reduced by the full amount collected.

Though expenditures for the SPR, whether off-budget or on-budget, have the same economic impact, off-budget treatment tends to obscure from public view the actual flow of revenues and expenditures. If the SPR were treated fully on-budget, any new user fee earmarked for the SPR would register on the budget as a direct increase in revenues. If, like current SPR oil acquisition costs, however, fee collections were placed off-budget, they would not result in any direct change in revenues as measured by the unified budget. Indirectly, though, the fee, whether on- or off-budget, would affect other government revenues and expenditures; in either case, they would reduce the need for government borrowing.

Other Administrative Issues. An oil import tariff would present a special problem. If the Congress imposed an import fee, the U. S. Treasury would find its revenues increased in three ways: through collections of the tariff itself, through increased windfall profits tax collections, and through increased corporate and personal income taxes paid by domestic oil producers, who would now receive more revenue per barrel. A tariff set high enough to cover the SPR's costs entirely would therefore result in a net increase in federal revenues exceeding the amounts needed for the SPR. The tariff would have to be set so that collections, plus additional receipts

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whereby motor fuel purchasers (mostly private auto drivers) would alone support a service with critical applications in other economic sectors.

from windfall profits collections, plus additional income taxes equalled SPR financing needs. (This study makes this assumption.) Since these added revenues attributable to the tariff would be impossible to separate from ordinary windfall profit and income tax collections, no separate SPR fund with earmarked funding, similar to the Highway Trust Fund, could be established. Funding for the SPR, equal to total tax receipts, would have to be paid out of general revenues. With a refining fee, however, a dedicated fund could be set up.

A final administrative issue concerns the link between the fee and the possibly fluctuating costs of the SPR. Rather than establish a fixed amount per barrel, the Congress could set the fee as an ad valorem tax--that is, as a percentage of some market price. In the near term, this approach might produce a less certain flow of revenues because of the currently weak world prices of oil. In the long run, however, the fee would rise with oil prices. This automatic adjustment for oil price inflation would assure the continued adequacy of collections and reduce the need to reset the fee.

Economic Effects

The import tariff and refiners' fee would produce some macroeconomic effects not characteristic of more narrowly based user fees. Oil affects the price of other energy sources, such as natural gas and coal. Oil price increases thus first increase the price of energy goods and then, of all other goods in the economy. An increase in the price of energy leaves consumers with less income available for other purchases, which reduces activity in nonenergy sectors. This decline in so-called "disposable" income can be only partly compensated by the lessened taxing and borrowing needs of the government, since the price of all energy goods has risen. 2/ In addition, an oil import tariff would allow domestic producers to raise prices and reap a windfall, forcing consumers to pay more than just the SPR costs.

Ultimately, the inflationary impact of user fee financing for the SPR could reduce the federal revenue collected by the fee. Higher oil prices are known to dampen economic activity, in turn lowering personal income tax collections and increasing unemployment compensation and other entitlement payments. Furthermore, since expenditures for most federal entitlement programs are linked to price indexes, such spending generally increases with inflation. Discretionary outlays for government purchases of

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2. More detailed treatment of these effects can be found in Congressional Budget Office, Oil Import Tariffs: Alternative Scenarios and Their Effects (April 1982).

goods and services--including oil--would also rise. On the other hand, federal receipts from oil leases and royalties would be higher, though by a much smaller amount. Though inflation would move some taxpayers into higher income brackets and could increase income tax receipts, this increase would not be sufficient to compensate entirely for all the other effects.

Though the inflationary effects of an SPR tax would be small--a one-time increase of less than 2 percent in the price of oil--they could be significant for higher oil taxes. Upon withdrawal of the main SPR fee, in about 1990, many of these effects would reverse.

Effects on the Distribution of Income

The primary effect of any user fee would be increased costs to U. S. oil consumers. This of course is exactly the point of the fee: to link federal expenditures for the SPR to the oil use that makes a reserve necessary. The import fee would result in the greatest transfer of income from consumers to domestic oil producers. By contrast, the refiners' fee would allow the government to capture most of the revenues resulting from the tax.

The effects of these taxes would also vary by income class and region, suggesting possible cross subsidies. Consumption of petroleum products generally rises as incomes increase, while the percentage of incomes spent on petroleum products declines. Thus, families with higher incomes might pay more than other families in absolute terms, but their share of oil taxes relative to their incomes might be smaller. Use of petroleum products is also regionally uneven. The Northeast, for example, is the nation's most oil-dependent area and uses more oil in the form of heating fuel than does any other region. By contrast, gasoline use is relatively greater in the Southwest.

Oil Production

Energy policy considerations suggest that oil market conditions ought to be taken into account in evaluating a tariff or fee. Domestic and foreign oil producers would perceive the oil tariff and the refining fee very differently. Domestic oil producers would see an oil import tariff as increasing the price they receive, although the windfall profits tax and other taxes would offset the bulk of the increase. Consequently, they might attempt to produce more oil. Foreign producers on the other hand--especially OPEC members--would perceive an oil tariff as a threat to their ability to set prices. Consequently, they might attempt a response, such as reducing their output, although their power to do so is currently very

limited. A refiner's fee would not give domestic refiners a signal to increase oil production. (Although, since the fee would increase the price of natural gas, gas exploration might rise and result in collateral increased oil discoveries.) Since the refiners' fee would give no domestic windfall, foreign oil producers might merely view it as a financing device and choose not to respond to it.

U.S. GOVERNMENT PRINTING OFFICE : 1984 O - 28-917