

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	<u>--</u>	<u>--</u>	<u>5</u>	<u>16</u>	<u>21</u>
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

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 <u>a/</u>	--	1	2	15	37	55
Construction Foregone <u>b/</u>	<u>17</u>	<u>37</u>	<u>62</u>	<u>71</u>	<u>82</u>	<u>269</u>
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,

17. See Bureau of Reclamation Acreege 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

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 <u>a/</u>)						
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	<u>0.3</u>	<u>0.3</u>	<u>0.3</u>	<u>0.3</u>	<u>0.3</u>	<u>1.5</u>
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

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.





