

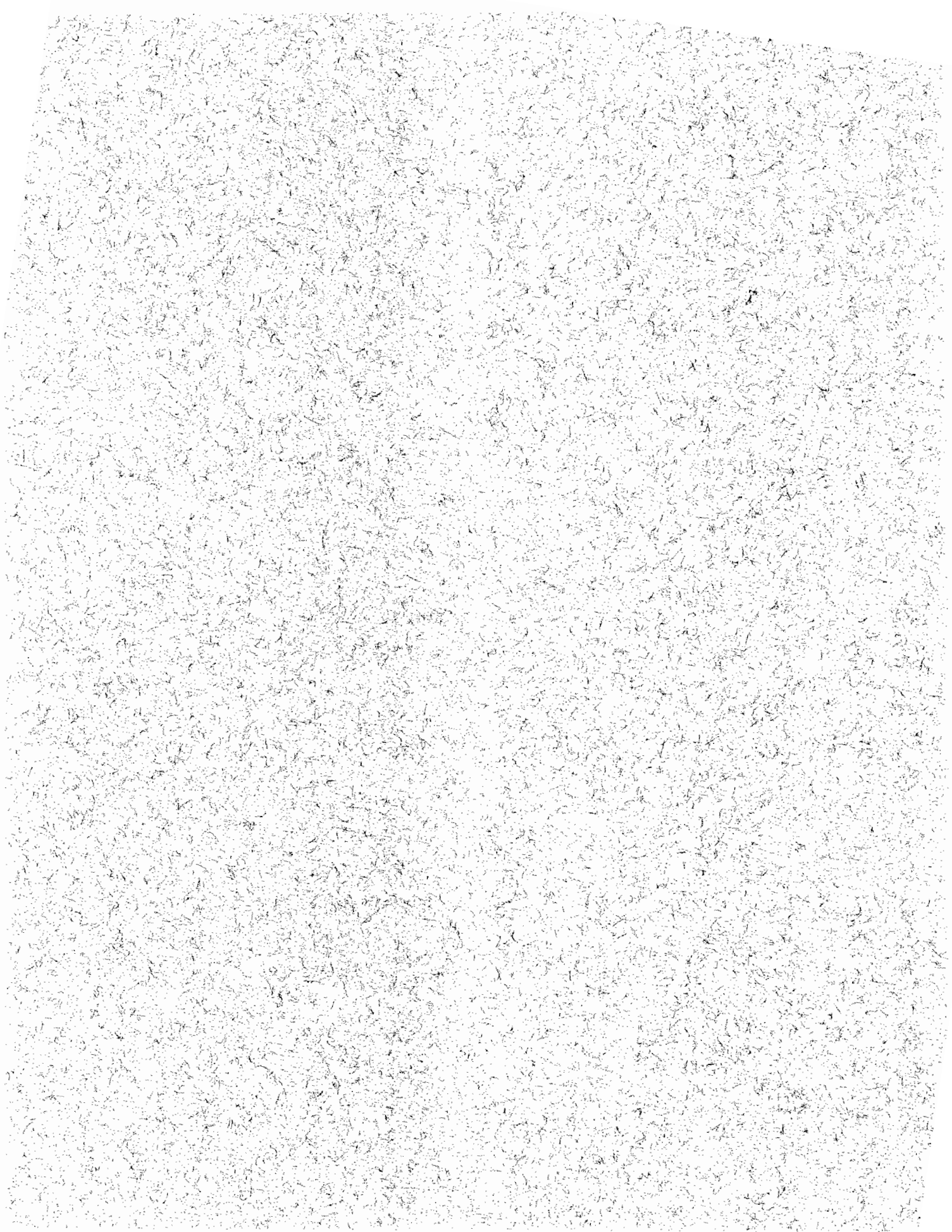
# **THE WINDFALL PROFITS TAX: A COMPARATIVE ANALYSIS OF TWO BILLS**

*Staff Working Paper*

November 1979



Congressional Budget Office  
Congress of the United States  
Washington, D.C.



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**The Congress of the United States  
Congressional Budget Office**

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**NOTE:** Unless otherwise indicated, all years in this report are calendar years.

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## PREFACE

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In June 1979, the House of Representatives passed a windfall profits tax on the increased revenues U.S. oil producers will receive as a result of the decontrol of domestic oil prices and rising world prices. On November 1, the Senate Finance Committee reported its version of such a tax, and the full Senate is expected to consider this bill shortly. This paper, prepared at the request of the Senate Budget Committee, analyzes these windfall profits tax proposals. It compares the producer revenues, tax receipts, and production responses anticipated under the two bills, and examines the various tax credits proposed in the Senate Finance Committee bill. In keeping with CBO's mandate to provide objective analysis, this report contains no recommendations.

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Alice M. Rivlin  
Director

November 1979



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## SUMMARY

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Two bills establishing a "windfall profits tax" on domestically produced crude oil are currently before the Congress. The House of Representatives passed its bill in late June 1979, and the Senate Finance Committee recently reported a substantially different bill which the full Senate is expected to consider soon. The President had proposed such a tax, properly an excise tax, last April when he announced his decision to phase out price controls which have restrained the price of domestic crude oil since 1971. Decontrol will allow the price of domestic oil to rise to the world price, which will stimulate domestic production and decrease demand, thereby reducing U.S. dependence on imported oil. The price increases will, however, generate large new revenues for U.S. oil producers, with much of the gain attributable to oil that would have been produced even if price controls had been continued. The windfall profits tax would capture for public use a larger portion of these new revenues than would be collected by the existing corporate income tax.

The rationale for a windfall profits tax is that the additional producer revenues may represent unanticipated profits arising from decontrol or increases in world oil prices, which are set by the Organization of Petroleum Exporting Countries (OPEC), an international cartel. It has also been argued that a windfall profits tax could divert a large portion of the new producer revenues to the public sector. Increased public spending has been advocated to subsidize energy conservation, to stimulate the production of alternative energy sources, and to ease the burden of higher energy prices on low-income families.

While a windfall profits tax would reduce the large revenue gains received by U.S. oil producers, it could also curtail the producers' incentives to explore and produce more oil. Consequently, such a tax should strike the appropriate balance between tax receipts that could be used for public investment or redistribution and industry incentives to increase domestic oil production. By placing relatively high tax rates on oil that would have been produced under controlled prices and relatively low rates on oil that is only marginally profitable at world prices, this balance may be achieved.

## THE TWO WINDFALL PROFITS TAX BILLS

In general, the House bill assigns greater weight to raising revenues for purposes of public investments, while the Senate Finance Committee bill emphasizes stimulating additional production. The major differences between the two bills are that the Senate Finance Committee bill exempts certain categories of oil from a windfall profits tax: specifically, new discoveries (those made after January 1979), incremental oil from tertiary recovery techniques (technologies that use heat or chemical compounds to produce additional oil from a reservoir), heavy oil (a highly viscous oil that generally requires additional effort to produce), and the first 1,000 barrels per day of "stripper" oil (oil from wells that have produced 10 or fewer barrels per day for at least a year) produced by independent producers. The House bill, on the other hand, imposes a windfall profits tax on each of these oil categories. Both bills tax the additional revenues from oil discovered between 1973 and January 1979 at a 60 percent rate. Finally, the Senate Finance Committee bill applies a 75 percent rate to the additional revenues from oil discovered before 1973, while the House applies a 60 percent rate to these revenues. In the Senate Finance Committee bill, all windfall profits taxes start to phase out when the cumulative net receipts received under the bill reach \$127.1 billion.<sup>1/</sup> A portion of the House bill tax continues indefinitely.

Thus, the two bills strike different balances between domestic oil production in the private sector and tax receipts that could be used by the public sector. By allowing producers to receive higher prices on new oil discoveries and other oil that is expensive to produce, the Senate Finance Committee bill stimulates more total production than does the House version. This production advantage increases over time, primarily because the House bill stimulates production from known oil reserves during the early 1980s and thus depletes these reserves faster, while the Senate Finance Committee bill stimulates exploration and development of new reserves. On the other hand, because it exempts no oil production, the House bill generates significantly greater tax receipts than the Senate Finance Committee bill.

### New Producer Revenues

Under decontrol with no windfall profits tax, producers will receive a revenue gain of \$649.7 billion from higher prices for oil that would have

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<sup>1/</sup> Net tax receipts equal the gross tax receipts from the windfall profits tax plus corporate tax liability on revenues after deducting gross windfall taxes less what would have been taxed under the corporate income tax.

been produced even under continued controls over the 1980-1990 period. <sup>2/</sup> In addition, decontrol without a windfall profits tax will result in new supplies valued at \$182.1 billion over this period, leading to total producer revenues of \$831.8 billion (see the Summary Table). Under the Senate Finance Committee bill, the revenue gain would be \$638.7 billion, and new supply revenues would be \$154.4 billion from 1980 to 1990, yielding total new producer revenues of \$793.2 billion. Under the House bill, the revenue gain would be \$631.2 billion over this period, while revenues from new supplies would be \$91.7 billion, leading to total new producer revenues of \$722.9 billion.

### Tax Liabilities

If there were no windfall profits tax, the existing federal corporate income tax liabilities on producer revenues would total \$197.5 billion over the 1980-1990 period. Liabilities incurred under the two bills can be compared to this total. Under the Senate Finance Committee bill, total federal tax liabilities over this period would be \$315.5 billion, of which \$208.7 billion would be from the windfall profits tax and \$106.7 billion from corporate taxes after deduction for the windfall profits tax. Therefore, when compared to decontrol with no windfall tax, the Senate Finance Committee bill would increase producer liabilities by \$118.0 billion over the 1980-1990 period.

Estimates of tax liabilities made over this time period are uncertain. The major sources of uncertainty are prices, production levels, and the costs of investment, exploration, and production. Higher prices or production levels in the future would increase both the gross and net liabilities created by windfall profits taxes. Higher investment exploration and production costs would reduce corporate income tax liability and increase the net liabilities created by windfall taxes. CBO has assumed a high rate of industry reinvestment and a high rate of inflation in drilling equipment costs. This may understate corporate tax liabilities both with and without

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<sup>2/</sup> All the producer revenue and tax estimates in this paper assume that the world price for oil is \$30.00 per barrel as of the fourth quarter of 1979 and that it increases by 2 percent a year in real terms over the 1980-1990 period. This is the same price assumption used by the Joint Committee on Taxation (JCT) and the Department of Treasury. The estimates of the Congressional Budget office (CBO) are lower than those of the Joint Committee on Taxation and the Department of the Treasury mainly because CBO projects lower domestic oil supplies.

SUMMARY TABLE. COMPARISON OF THE AGGREGATE EFFECTS OF THE HOUSE AND SENATE FINANCE COMMITTEE WINDFALL TAX BILLS, 1980-1990

	Total New Producer Revenues (billions of current dollars)	Tax Liabilities		Total Taxes <u>b/</u> as Percent of Total New Revenues	Production (millions of barrels per day)	
		Total Federal <u>a/</u> (billions of current dollars)	Total State and Local (billions of current dollars)		1985	1990
House Bill	722.9	442.8	99.1	75	7.9	7.1
Senate Finance Committee Bill	793.2	315.5	112.3	54	8.2	7.6
No Windfall Profits Tax	831.8	197.5	115.1	38	8.3	7.9

NOTE: Attempts have sometimes been made to calculate the price per barrel implicit in the production and tax receipt figures. To perform this calculation accurately, however, it is necessary to use the cumulative production over the entire productive life of the oil wells; to use estimates only through 1990 would be misleading.

a/ Includes windfall profits tax liabilities and additional corporate income tax liabilities.

b/ Includes federal, state, and local taxes.

windfall taxes and, to a lesser extent, overstate net liabilities created by a windfall profits tax.

Under the House bill, the total federal tax liability would be \$442.8 billion between 1980 and 1990, of which \$399.6 billion would be from the windfall tax and \$43.3 billion would be from the corporate tax after deduction of the windfall profits tax. Federal tax receipts under this bill would be \$245.3 billion greater than with no windfall profits tax.

State and local taxes, severance taxes, and royalties will total \$115.1 billion under decontrol with no windfall profits tax, \$112.3 billion under the Senate bill, and \$99.1 billion under the House bill. When combined with total federal tax liabilities, taxes paid to all levels of government represent 38 percent of the total producers' revenues under decontrol with no windfall profits tax, 54 percent under the Senate Finance Committee bill, and 75 percent under the House bill.

### Production Effects

Total domestic oil production in 1990 is estimated to be approximately 7.9 million barrels per day under decontrol with no windfall profits tax. This is 1.2 million barrels per day above what would have been produced under a continuation of price controls. Under the Senate Finance Committee bill, total production is estimated to be 7.6 million barrels per day in 1990, or about 300,000 barrels per day less than under no windfall profits tax and about 900,000 barrels per day more than under extended controls. Production under the House bill would total approximately 7.1 million barrels per day in 1990, or about 800,000 barrels per day less than under total decontrol with no windfall profits tax and about 400,000 barrels per day more than under extended controls.

### EXPENDITURE ISSUES

The House bill establishes a trust fund into which the gross receipts from the windfall profits tax would flow, but it does not specify the use of these funds. The Senate Finance Committee bill, on the other hand, establishes three trust funds. One-fourth of the net windfall profits tax receipts up to \$15 billion would go into a Transportation Trust Fund; one-half of the net receipts would go into a Low-Income Energy Assistance Trust Fund; and an unspecified amount would go into a fund to be used for general tax relief. The Senate Finance Committee bill also provides additional tax credit incentives for residential and business energy conservation and for the production of alternative energy sources.

## Trust Fund Financing

The primary advantage of a trust fund as a financing mechanism is that it provides a built-in, self-adjusting device for channeling the revenues of a special tax into programs that are closely related to that tax. A trust fund is less desirable, however, if uncertainty about the amount and timing of the tax receipts that will enter the fund in future years inhibits careful planning and leads to program inefficiency. This is a potentially serious problem for the proposed trust funds since annual tax receipts are extremely sensitive to future OPEC prices, which are very difficult to project. Since the Senate Finance Committee bill begins to phase out the tax after the cumulative receipts reach \$127.1 billion, however, there is less uncertainty about the total revenues that would be available to its trust funds. Nevertheless, the timing of the revenues available to the trust funds remains a major problem for both bills.

Each of the proposed trust funds would be subject to the normal Congressional authorizing and appropriating processes. In principle, this would permit the Congress to adjust expenditures from the funds to fit changing energy and fiscal policies, changing national needs, and evolving legislative priorities. But by earmarking the revenues that enter the trust fund for specific program purposes, the Congress would reduce its flexibility to redirect revenues toward emerging priorities. Consequently, decisions about yearly expenditures might be based largely on the amount of revenues available in the trust fund rather than on the importance of the specific programs.

### Transportation Trust Fund

The Senate Finance Committee bill does not specify exactly how the transportation funds would be spent, although one possibility would be the transit program proposed by the Administration. This program would cost \$15.5 billion between 1980 and 1990 for two major initiatives—the public transportation investment program and the auto use management program. By 1990, these two initiatives could yield energy savings of 65,000 to 158,000 barrels per day of petroleum. These estimates are upper limits, because they are based upon optimistic assumptions about local spending and additional patronage.

### Low-Income Energy Assistance Trust Fund

Two separate energy assistance programs would be financed from the Low-Income Energy Assistance Trust Fund in the Senate Finance Committee

bill. The first would provide direct payments to low-income households to offset higher energy prices, while the other would provide tax credits to low- and middle-income families to offset higher energy prices for home heating.

Low-Income Energy Assistance. Over the period from fiscal year 1980 to 1982, about \$3 billion a year would be allocated to states for cash payments to reduce energy prices for low-income households. These payments would be made through current welfare programs or block grants to states. States choosing the block grant option could design state programs similar to welfare programs or provide direct subsidies to vendors. In 1982, the average energy assistance payment for a welfare family would be \$275 annually; this payment would offset 18 percent of oil expenditures by families in the lowest fifth of the income distribution. The major advantage of the Senate Finance Committee proposal is that it utilizes the current welfare system, which has experience dealing with the low-income population and can provide immediate relief to a large segment of the needy population. On the other hand, a primary disadvantage of direct cash assistance is that, while it would temporarily mitigate the effects of rising energy prices, it would not solve the longer-term problem, which is that the low-income population generally lives in the most energy-inefficient housing. Therefore, over the long run, policies to encourage conservation improvements in low-income housing units could promise substantial energy savings and effectively raise the real incomes of the poor more than direct cash subsidies.

Tax Credits for Residential Energy Use. The Senate Finance Committee proposal would also use trust funds to provide low- and middle-income taxpayers with a nonrefundable tax credit to offset energy expenditures for home heating. This credit would cost the government about \$2 billion in 1981, the last year the credit would be available. By 1981, taxpayers with incomes as high as \$22,000 a year could qualify for some credit. The maximum credit for taxpayers with incomes below \$20,000 would be \$200; the minimum credit would be \$30. Since the credit is nonrefundable, however, many low-income households with small tax liabilities would not benefit significantly from the credit. Credits would be based on actual heating expenditures and would vary according to changes in the relative prices of particular home heating fuels. A major disadvantage of these credits is that subsidizing heating expenditures does not encourage conservation.

#### Residential Tax Credits

The Senate Finance Committee bill proposes to extend and expand the current tax credits for residential conservation investments to include such

items as heat pumps, backup solar systems, and the like. In addition, it would increase the tax credit on renewable energy sources (primarily solar) to 50 percent. It is estimated that by 1990 these credits would save an additional 110,000 barrels per day over savings that would have occurred even under current policy and would reduce federal revenues by \$8.3 billion over the 1980-1990 period. Most of the investment or production credits would be used by high-income households.

#### Business Tax Incentives

Current law provides both a 10 percent tax credit on new investment and an additional 10 percent credit for investment in certain types of energy facilities. Several provisions in the Senate Finance Committee bill expand the scope of eligibility for the energy credit, increase the credit, or establish new investment and production credits. By 1990, these business tax incentives will stimulate additional energy production and conservation of 200,000 to 400,000 barrels per day of oil equivalent at a cost to the government of \$15 billion over the 1980-1990 period.



In April 1979, the President announced his decision to phase out price controls on domestic crude oil between June 1979 and October 1, 1981. Allowing the price of domestic oil to rise to the world price will stimulate domestic production and decrease demand, thereby reducing U.S. dependence on imported oil. The price increases will, however, generate large new revenues for U.S. oil producers, with much of the gain attributable to oil that would have been produced even if price controls has been continued. Thus, the President also proposed an excise tax, popularly referred to as the windfall profits tax, to capture a larger portion of the additional producer revenues than would be taxed through the existing corporate income tax. In late June 1979, the House passed its version of such a tax; the Senate Finance Committee reported its bill on November 1, and the full Senate is expected to consider this bill within the next few weeks.

The windfall profits tax has been advocated on several grounds. Some have argued that the additional producer revenues may represent unanticipated profits arising from decontrol or from increases in world oil prices, which are set by the Organization of Petroleum Exporting Countries (OPEC), an international cartel. As such, the additional producer revenues might be viewed as unjustified and therefore subject to special taxation. The windfall profits tax could also divert a large portion of the new producer revenues to the public sector. These public revenues could then be used, for example, to enhance the conservation of energy, to stimulate the production of alternative energy sources, and to ease the burden of high energy prices on low- and middle-income families.

While a windfall profits tax would transfer a part of the large revenue gains from producers to these public uses, it could also reduce industry incentives to explore for and produce more oil. Consequently, the policy issue is to strike the appropriate balance between the tax receipts that could be used for public purposes and the incentives needed by the oil industry to increase domestic production. By placing a high tax rate on oil that would have been produced even under the controlled price and low or zero rates on oil that becomes profitable only at world prices, this balance may be achieved.

This paper analyzes the two windfall profits tax bills. It compared the producer revenues, tax receipts, and production responses expected under current law with those anticipated under the bill passed by the House and

that reported by the Senate Finance Committee. Congressional Budget Office (CBO) estimates suggest that the House bill would generate higher tax receipts, whereas the Senate bill would stimulate a higher production response. The two bills also differ substantially in how the tax receipts would be used. The House bill establishes a trust fund for the windfall profits tax receipts but does not specify how the funds will be used; this is left to subsequent authorization. The Senate Finance Committee bill establishes three separate trust funds; for mass transit, for energy assistance to low- and middle-income families, and for general tax relief. In addition, the Senate Finance Committee bill provides several tax credits for residential and business conservation and for the production of alternative energy sources.

Chapter II of this report provides background information on the sources of higher producer revenues, including the current system of oil price controls, the President's decontrol decision, and OPEC price increases. Chapter III discusses the two tax bills and provides estimates of the aggregate producer revenues, tax receipts, and production responses under the bill passed by the House and that reported by the Senate Finance Committee. Chapter IV presents detailed estimates of the effects of the two bills on producer revenues, tax receipts, and supply responses by specific categories of domestically produced oil--for example, Alaskan, old oil, stripper, and so on. Possible alternatives to the proposed tax schemes are also presented for each category of oil. The final chapter analyzes the appropriateness of trust funds as a financing mechanism and the potential effectiveness of the expenditure and tax credit provisions of the Senate Finance Committee bill. Since CBO's production estimates and thus its tax receipt estimates are lower than those of the Joint Committee on Taxation or the Treasury Department, the methodology used to derive CBO's estimates is presented in the appendix.

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## CHAPTER II. BACKGROUND: DECONTROL AND RISING OPEC PRICES

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Domestic oil producers will receive higher revenues than in the past because of the confluence of two events: the phased decontrol of domestic oil prices and the rapid increases of OPEC prices. This chapter provides information on these price changes as background for the discussion of policy responses to the increased producer revenues.

### EARLY PRICE CONTROLS AND OPEC PRICE INCREASES

Price controls on domestic crude oil were first imposed on August 15, 1971, when President Nixon froze wages and prices throughout the economy. Portions of the regulations implementing the last of four phases of the economic stabilization program applied only to the U.S. petroleum industry. In August 1973, the Cost of Living Council published a comprehensive set of regulations to govern the pricing of petroleum and its products for each segment of the industry from producers to retailers.

Following the October 1973 Yom Kippur War and the Arab embargo on the sale of oil to the United States, the price of oil rose significantly, from an average wellhead price of \$3.39 per barrel in 1971 to \$13.93 in 1975. The Congress responded with two pieces of energy legislation, the Emergency Petroleum Allocation Act of 1973 (EPAA) and the Energy Policy and Conservation Act of 1975 (EPCA). EPCA stipulated that price controls would be mandatory until June 1, 1979; after that date, they would be discretionary and would expire on September 30, 1981. The EPCA controls maintained price ceilings on several categories of domestically produced oil. Without these ceilings, the price of U.S. oil would have risen to the world market level set by OPEC.

### THE PRESENT SYSTEM OF PRICE CONTROLS

Currently, EPCA controls apply to about 7.1 million barrels of oil per day, out of total domestic production of 8.5 million barrels per day. These controls create a significant price difference between domestic and imported crude: as of August 1979, the average barrel of domestic crude purchased by a refiner cost \$15.73, while the average barrel of imported crude cost \$23.98 and has since risen.

The regulatory system that existed until June 1, 1979, divided all domestic crude oil into three classifications, or tiers:

- o Old oil, or lower-tier oil, which is oil from properties that began producing before 1973.
- o New oil, or upper-tier oil, which is oil from properties that began producing during or after 1973, including Alaskan North Slope oil.
- o Uncontrolled oil, or third-tier oil, which is oil that earns as much as refiners are willing to pay for it. Two types of oil are allowed this treatment: Naval Petroleum Reserve (NPR) oil and "stripper" oil--oil from wells that have produced 10 or fewer barrels per day for at least a year.

Old Oil. About 2.7 million barrels per day of old oil (32 percent of current domestic production) are now produced. Old oil is allowed a price of about \$5.98 per barrel at the wellhead, so that with transportation refiners pay an average of \$6.58 before "entitlements" treatment. <sup>1/</sup> The volume of oil classified as old decreases over time, as reservoirs are gradually depleted and their production levels fall. The Department of Energy (DOE) assigns every old well a "base period control level" (BPCL), which is an adjusted approximation of this natural rate of decline, and tells the producer how much an old well should be capable of producing. If a well produces, say, 100 barrels in one month, and if its historical decline rate has been 1.3 percent per month, then its BPCL for the following month would be 98.7 barrels. Any production from that well in excess of 98.7 barrels is considered new, or upper-tier, oil for pricing purposes. This procedure gives the producer an incentive to keep production above the BPCL, in order to receive the higher price for the reclassified new oil.

New Oil. About 4.3 million barrels per day (51 percent of current domestic production) are new oil and are allowed a price of about \$13.06 per barrel at the wellhead. The volume of new oil increases over time, through both new discoveries and the transfer of old oil to new through the BPCL mechanism.

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<sup>1/</sup> Under the entitlements system, all domestic refineries are entitled to equal proportions of lower-tier, upper-tier, and uncontrolled oils, so that their average crude oil costs are nearly equal. This system will be eliminated as the tiers are merged and brought to the world price.

Uncontrolled Oil. Finally, about 1.5 million barrels per day (17 percent of current domestic production) are uncontrolled and today receive a price of about \$27.50 at the wellhead. <sup>2/</sup> The price of this oil--Naval Petroleum Reserve and stripper--is determined by the cost of imports.

With minor technical adjustments, the prices of lower-tier, upper-tier, and uncontrolled oils were combined into a weighted average, called the domestic composite price of crude oil. Until June 1, 1979--the date on which controls became discretionary--EPCA allowed the President to increase this domestic composite price by no more than 10 percent annually, with the price increase distributed between the upper-tier and the lower-tier. (Uncontrolled oil is not subject to regulation, and thus it cannot be "awarded" price increases.)

#### THE PRESIDENT'S DECONTROL DECISION

In April 1979, the President announced that, using the discretionary power granted him by EPCA, he would phase out crude oil price controls between June 1, 1979, and October 1, 1981, the date of EPCA's expiration. Several mechanisms will be used to implement this decision:

- o Reclassify all old oil as new oil between June 1, 1979, and October 1, 1981, by releasing specific volumes of old oil to the upper-tier.
- o Simultaneously, release specific volumes of new oil (including the reclassified old oil) to the world price so that by October 1, 1981, all new oil will be decontrolled.
- o Immediately decontrol "new discoveries" (oil discovered since January 1, 1979).
- o Immediately decontrol "heavy oil" (very viscous oil that is difficult and expensive to produce).

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<sup>2/</sup> This price is somewhat higher than current world prices, which range from \$18 per barrel to more than \$26 per barrel, would suggest. The reason for this is that domestic spot prices, like foreign ones, are somewhat inflated because of potential shortfalls in supply in 1980.

Reclassify Old Oil. Old oil will be decontrolled by allowing producers to sell more old oil at upper-tier prices than historic decline rates would allow. Beginning in January 1980, all old oil wells will be given an imputed decline rate of 3.0 percent per month. Historic decline rates have averaged 1.3 percent per month. In addition to this accelerated decline rate, old oil classified as "marginal" will be transferred to the upper tier.

Marginal wells are "almost stripper" wells--that is, their production ranges from 10 to 35 barrels per day. Collectively, these wells produce about 700,000 barrels per day of old oil. Eighty percent of this oil, or approximately 560,000 barrels per day, was transferred to the upper tier on June 1, 1979. The remaining 20 percent will be moved into the upper tier on January 1, 1980.

Tertiary recovery is a technology that injects either heat or chemical compounds into an oil reservoir to loosen the oil so that it flows more freely. If a tertiary recovery project has been certified as such by the Department of Energy, it is already allowed to receive the world price. Under the decontrol plan, a limited number of barrels of old or new oil will be released to world prices. It is hoped, that this will provide additional investment funds needed to finance the more costly tertiary projects.

Through the transfer of marginal oil, the oil released to finance tertiary production, and the accelerated decline rate of old oil, all old oil will have been reclassified as new oil by October 1, 1981.

Phase Out New Oil. While all old oil is being moved into the new oil classification, the proportion of new oil remaining under controls will decline in equal monthly increments, beginning in January 1980. By October 1, 1981, no new oil, and hence no domestic oil, will be controlled; decontrol will have been accomplished.

Decontrol Newly Discovered Oil. As of June 1, 1979, all oil discovered since January 1, 1979 was released from price controls. Thus, newly discovered oil joined stripper and Naval Petroleum Reserve oil in the uncontrolled category.

Decontrol Heavy Oil. In August 1979, the President announced the immediate decontrol of heavy oil. About 250,000 barrels of heavy oil are produced daily, mostly in California.

## THE BENEFITS AND COSTS OF DECONTROL

### Benefits

The President's decontrol plan will provide a number of benefits. 3/ First, increasing domestic oil prices to the world level will encourage consumers to reduce their demand for oil through both the substitution of alternative fuels and outright conservation. Increased oil prices will encourage investment in new forms of energy such as solar and synthetic fuels whose costs will become more competitive as oil prices rise. By 1990, it is estimated that decontrol will decrease demand for oil by approximately 900,000 barrels per day. 4/ The potential savings are expected to be substantially greater during the 1990s since energy is used primarily in conjunction with capital goods, such as industrial boilers and automobiles, which wear out and therefore are replaced infrequently.

Second, decontrol will stimulate additional supplies. Assuming no windfall profits tax, these new supplies should provide an additional 1.2 million barrels per day by 1990 over an extension of controls. This would bring total domestic production to 7.9 million barrels per day in 1990. 5/

Third, decontrol will reduce U.S. dependence on foreign oil. Assuming no windfall profits tax, the demand reductions and supply increases from decontrol will decrease oil imports by approximately 2.1 million barrels a day by 1990, or about 15 percent of total projected U.S. oil imports in that year, reducing the 1990 U.S. oil import bill by \$52 billion. In later years, as the growth in demand continues to slow, the magnitude of the oil import savings would continue to increase.

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- 3/ The decontrol plan is compared to a base case that assumes an indefinite continuation of controls and OPEC prices of \$30.00 per barrel during the fourth quarter of 1979, with real increases of 2.0 percent annually over the next 10 years.
- 4/ This estimate, like all others presented in this paper, presumes that the full increase in the cost of crude is passed on to consumers. If refiners have to absorb a percentage of the increase, the demand response will be proportionately lower.
- 5/ In either case--with or without controls--domestic production will be lower than the 8.5 million barrels per day currently produced.

Fourth, decontrol will eliminate the complex regulatory system that has constrained the U.S. petroleum market for the past six years. Extensive reporting requirements, subsidies for the least efficient refiners, and regulatory administration and enforcement costs will be abolished with the removal of crude oil price controls.

Finally, adoption of the world price could improve U.S. relations with member nations of both the Organization for Economic Cooperation and Development (OECD) and OPEC, which view the subsidy to domestic energy consumption created by price regulation as evidence of U.S. unwillingness to address the energy problem.

### Costs

The President's plan will also impose several costs. First, the price increases under decontrol will transfer what has been a benefit for consumers, who have been paying less than the world price for oil, to a revenue gain for producers, who will be receiving higher prices for oil that would continue to be produced even at controlled current prices. Compared to an indefinite continuation of controls and assuming no windfall profits tax, these additional producer revenues would total approximately \$650 billion before corporate income tax between 1980 and 1990.

Second, the price increases for domestic oil will increase inflation, and could slow economic activity and increase unemployment. Decontrol is estimated to raise the price level by 1.9 to 2.1 percent by 1985 with most of this effect occurring by the end of 1981. If the full effect of decontrol is not passed through to consumers, the inflationary impact will be smaller.

Third, rising oil prices and decontrol will cause families to increase the share of income they devote to energy expenditures. This burden will be disproportionately large for low-income families. For example, by 1982 the average household would spend about 17 percent of its income on direct and indirect oil expenditures under a continuation of controls.<sup>6/</sup> With decontrol, the average household would spend an additional 2.7 percent of family income on oil. Those families in the lowest income quintile, however, would spend 27.5 percent of their income on oil with an extension of controls and an additional 4.5 percent with decontrol.

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<sup>6/</sup> Direct expenditures are the retail costs paid by households for gasoline, heating oil, and propane; indirect expenditures are the costs paid by households reflecting the value of petroleum in other consumer products.



The benefits and costs summarized above are all relative to an indefinite continuation of EPCA controls. If the President had decided to maintain EPCA controls until October 1, 1981, when the legislation expires, rather than phasing in decontrol over the 28-month period, most of the benefits and costs would have taken place suddenly at that time. Compared with such an all-at-once decontrol, the President's program has the advantage of phasing the price increases over a longer period of time, allowing consumers to adjust gradually, and providing for an earlier supply response. By 1985, however, the effects of a phased or a sudden decontrol would be very similar.

#### DECONTROL AND THE RECENT OPEC PRICE INCREASES

When the President announced his decontrol decision, the OPEC price was about \$14 per barrel. In the aftermath of the revolution in Iran, OPEC raised its price to \$23.50 per barrel, with many nations charging more. Because the decontrol decision allows domestic oil to sell at world market prices that have risen dramatically--from \$12.70 per barrel to more than \$23.50 in less than a year--domestic producers will receive much greater revenues than they would have under continued controls. The issue of disposition of these revenues is addressed in the following chapter.



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## CHAPTER III    ALTERNATIVE WINDFALL PROFITS TAXES

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This chapter summarizes the major effects of the windfall profits tax bills passed by the House and reported by the Senate Finance Committee. The first section provides a brief summary of the major provisions of each of the two bills while the next section discusses the resulting producer revenues, production responses, and tax liabilities. Finally, some general tax issues are discussed, including the effect of the windfall profits taxes on other taxes. A more detailed discussion of each of the specific provisions found in both the Senate Finance and House bills is presented in Chapter IV.

### WINDFALL PROFITS TAXES: AN OVERVIEW

Both the Senate Finance Committee and House bills (which are summarized in Figure 1) are, in reality, a series of excise taxes placed on the differences between future decontrolled oil prices and base prices defined under the two bills. The House bill would tax both the revenue gains from decontrol and those from OPEC price increases at approximately the same rate. Thus, the tax on lower- and upper-tier oil would be levied on the difference between the decontrolled price and the base price that would have been assigned these oils under an indefinite extension of controls. The taxes on stripper, tertiary, and newly discovered oil would be levied on the difference between their future decontrolled prices and their prices before the 1979 OPEC price increases. <sup>1/</sup>

In effect, the Senate Finance bill would tax the revenue gains from decontrol more heavily than the gains from OPEC price increases. It would do so by (1) using a higher tax rate for lower-tier oil, which was assigned the lowest controlled price and thus receives the largest gain from decontrol; and (2) by exempting from windfall taxation tertiary and newly discovered oil, which were assigned the highest prices under controls and thus reap their gains from OPEC price increases. In addition, the Senate

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<sup>1/</sup> Although neither the House nor Senate Finance bill is a tax on net income, both include provisions to limit the windfall tax payment from any production to a portion of the net income from that production. The House bill limits the windfall tax base to 100 percent of net income, while the Senate Finance Committee's version lowers this ceiling to 90 percent of net income.

FIGURE 1. COMPARISON OF HOUSE AND SENATE FINANCE COMMITTEE WINDFALL PROFITS TAX BILLS

Category	House Bill	Senate Finance Committee Bill
Old Oil	Rate: 60 percent rate Base: \$6/barrel base price, plus inflation	Rate: 75 percent rate Base: \$6/barrel base price, plus inflation
Marginal Oil	Rate: 60 percent rate Base: \$13/barrel base price, plus inflation	Rate: 60 percent rate Base: \$13/barrel base price, plus inflation
New Oil	Rate: 60 percent rate Base: \$13/barrel base price, plus inflation	Rate: 60 percent rate Base: \$13/barrel base price, plus inflation
New Discoveries	Rate: 50 percent rate on first \$9/barrel over base price; 60 percent on higher amounts Base: \$17/barrel base price, plus inflation and 2 percent/year	Exempted
Incremental Tertiary	Rate: Same as for new discoveries Base: Same base as new discoveries on oil above a level determined by decline curve of 1 percent per month until project starts; 2.5 percent per month once begun	Exempted
Stripper	Rate: 60 percent rate Base: \$16/barrel base price, plus inflation and quality and location differentials	Rate: 60 percent Base: Same base as House bill; exempts first 1,000 barrels per day of stripper oil produced by independent producers
Alaskan North Slope	Rate: 50 percent rate Base: \$7.50/barrel base price, plus inflation; exempts newly discovered North Slope oil	Rate: 60 percent rate Base: Same as new oil base; exempts newly discovered North Slope oil
Heavy Oil	Taxed in tier of origin	Exempted

Finance bill would exempt the first 1,000 daily barrels of stripper oil from each individual small producer. The Senate Finance bill would also give Alaskan North Slope (ANS) oil upper-tier treatment. This differs from the House bill, which would tax ANS oil on its revenues over its 1978 wellhead price, which was less than the upper-tier price it was allowed under EPCA. 2/

Both the House and Senate Finance bills would subject the producer revenue gain resulting from decontrol of production from known reserves to windfall profits taxation. In this regard, the bills are similar. The bills differ in their views of the extent to which incentives should be offered to produce various types of oil and their views of how these revenue gains should be allocated between the public and private sectors. Relative to the House bill, the Senate Finance bill would provide significant rewards to tertiary production and newly discovered oil, which are generally thought to be more sensitive to price increases, and imposes a higher tax rate on lower-tier oil, which is less price sensitive. In the aggregate, the Senate Finance bill would shift less revenue to public sector uses than the House bill. Thus, relative to the House bill, the Senate Finance bill implies that the public sector has less rightful claim to the revenue gains from both decontrol and OPEC price increases or that these gains can be used most productively in the private sector to stimulate new sources of domestic production. Relative to the Senate Finance bill, the House bill implies that the public sector can use a larger portion of these revenue gains more productively.

#### EFFECTS OF THE HOUSE AND SENATE FINANCE COMMITTEE BILLS

The estimates of additional producer revenues and windfall profits tax receipts depend upon present and future world oil prices; the production responses depend on the price incentives remaining after the revenue gains have been taxed. All of the estimates presented in this section are based on a domestic price assumption of \$30.00 per barrel at the wellhead in November 1979 and a projection that oil prices will rise at an annual rate of 2 percent above the rate of inflation. 3/

#### New Industry Revenues

Over the 11-year period 1980-1990, producers would receive revenue gains from decontrol that total \$631.2 billion under the House bill, and

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2/ This anomaly is described in Chapter IV.

3/ This is the same price assumption used by the Joint Committee on Taxation and the Treasury Department in their estimates.

\$638.7 billion under the Senate Finance Committee bill. These values are, for the most part, independent of the final form of a windfall profits tax, because they are primarily based on oil that would have been produced even if EPCA controls had been extended. 4/ In addition to these revenues from decontrol, higher world oil prices will stimulate added production that will increase further the revenues of producers. Oil producers would receive about \$91.7 billion in increased revenues from new supplies of oil under the House bill and about \$154.4 billion under the Senate Finance bill, over the 1980-1990 period. Thus, as summarized in Table 1, new producer income over this period would total \$722.9 billion under the House bill, and \$793.2 billion under the Senate Finance bill.

TABLE 1. NEW PRODUCER REVENUES RESULTING FROM DECONTROL AND INDUCED NEW PRODUCTION UNDER THE HOUSE AND SENATE FINANCE COMMITTEE BILLS, ASSUMING NO WINDFALL PROFITS TAX, 1980-1990: IN BILLIONS OF CURRENT DOLLARS

	House Bill	Senate Finance Committee Bill	No Windfall Profits Tax
Revenue Gains from Decontrol	631.2	638.7	649.7
Revenue Gains from Induced New Production	<u>91.7</u>	<u>154.4</u>	<u>182.1</u>
Total <u>a/</u>	722.9	793.2	831.8

a/ This figure is gross industry revenues. The costs of production associated with new supplies have not been subtracted.

4/ In reality, the values of these revenue gains do depend on the windfall profits tax imposed on them to a limited extent. This happens because windfall profits taxes, in selected instances, will lower production from a few sources of oil below the level that would have been produced under continued controls.

### Production Effects

If no windfall profits tax were enacted, production in 1990 would increase by 1,165,000 barrels per day when compared to continued controls. Again, when compared to continued controls, the Senate Finance bill would lead to added production in 1990 of 875,000 barrels per day by 1990, while the House bill would yield an addition of 325,000 barrels per day in that year. These results are presented in Table 2.

TABLE 2. PRODUCTION FROM NEW AND KNOWN RESERVES UNDER THE HOUSE AND SENATE FINANCE COMMITTEE BILLS, WITH NO WINDFALL PROFITS TAX, 1985 AND 1990: IN THOUSANDS OF BARRELS PER DAY

	Continued Controls	Decontrol with		
		House Bill	Senate Finance Committee Bill	No Windfall Profits Tax
Total 1985 Production	7,530	7,890	8,155	8,345
From known reserves (Increment over continued controls)	5,165 (---)	5,420 (255)	5,455 (290)	5,565 (400)
From new reserves (Increment over continued controls)	2,365 (---)	2,470 (105)	2,700 (335)	2,780 (415)
Total 1990 Production	6,750	7,075	7,625	7,915
From known reserves (Increment over continued controls)	3,545 (---)	3,230 (-215)	3,660 (115)	3,765 (220)
From new reserves (Increment over continued controls)	3,205 (---)	3,845 (640)	3,965 (760)	4,150 (945)

As compared to the House bill, the relative efficiency of the Senate Finance Committee bill in encouraging new production would result, in part, from the fact that it exempts from taxation all new discoveries and heavy oil. The Senate Finance Committee bill would also encourage more new investment by independents by exempting the first 1,000 barrels per day of stripper oil from taxation. Partly because small producers still receive the oil depletion allowance, they tend to reinvest virtually all their revenues into new exploration, and some evidence indicates that they find about 5 to 10 percent more oil per dollar invested than do the major companies. Thus, exemptions in the Senate Finance bill place incentives where they are the most effective.

Because the House bill would tax both new and existing production, its primary effect would be to accelerate production from known reserves prior to 1985. By the second half of the decade, the reserve base would become depleted, however, and production from such reserves would fall below what it would have been under continued controls. The Senate Finance bill would encourage less accelerated production from known reserves. Instead the Senate Finance Committee bill would encourage immediate investment in new exploration; the increased production resulting from this additional investment would not occur until the mid-1980s.

Under neither the House nor the Senate Finance bill, however, can current production levels be sustained. Supply is projected to decline because each year the nation will continue to find fewer reserves than it consumes. In order to maintain production, discoveries would have to more than double. Although it might be conceivable that drilling for oil could double in six to ten years as a result of higher prices, a less than proportionate increase in supply is likely because of rapid inflation in the drilling equipment and support industries, and a persistent decline in discoveries per foot of exploration. Consequently, even if no windfall profits tax were enacted, future additions to reserves should not be expected to compensate for the reserves withdrawn through 1990.

#### Net Producer Tax Liabilities

Over the period 1980-1990, the net increase in government tax receipts from windfall profits taxes would be \$245.3 billion under the House



bill, and \$118.0 billion under the Senate Finance Committee bill. <sup>5/</sup> This net increase would be less than the total (gross) liability incurred under either tax bill because of two ways in which the windfall tax affects the corporate income tax. First, each dollar paid in windfall profits taxes is deductible and this reduces by a dollar the income base on which corporations pay taxes. Second, imposition of a windfall profits tax would reduce the potential new production on which corporate taxes would have to be paid. Under the House bill, gross windfall profits taxes would be \$399.6 billion over the 1980-1990 period. Under the Senate Finance Committee bill, this total would equal \$208.7 billion. After adding the additional corporate income taxes that domestic producers will pay on revenue gains from decontrol, the House bill would raise a total of \$442.8 billion, and the Senate Finance bill \$315.5 billion over the 1980-1990 period. If there were no windfall profits tax, producers' corporate income tax liability would rise by approximately \$197.5 billion over the 1980-1990 period. <sup>6/</sup> Figure 2 and Table 3 summarize these estimates.

Tax liabilities, like production levels, vary in their distribution over time. In the early 1980s, the Senate bill would impose proportionately more

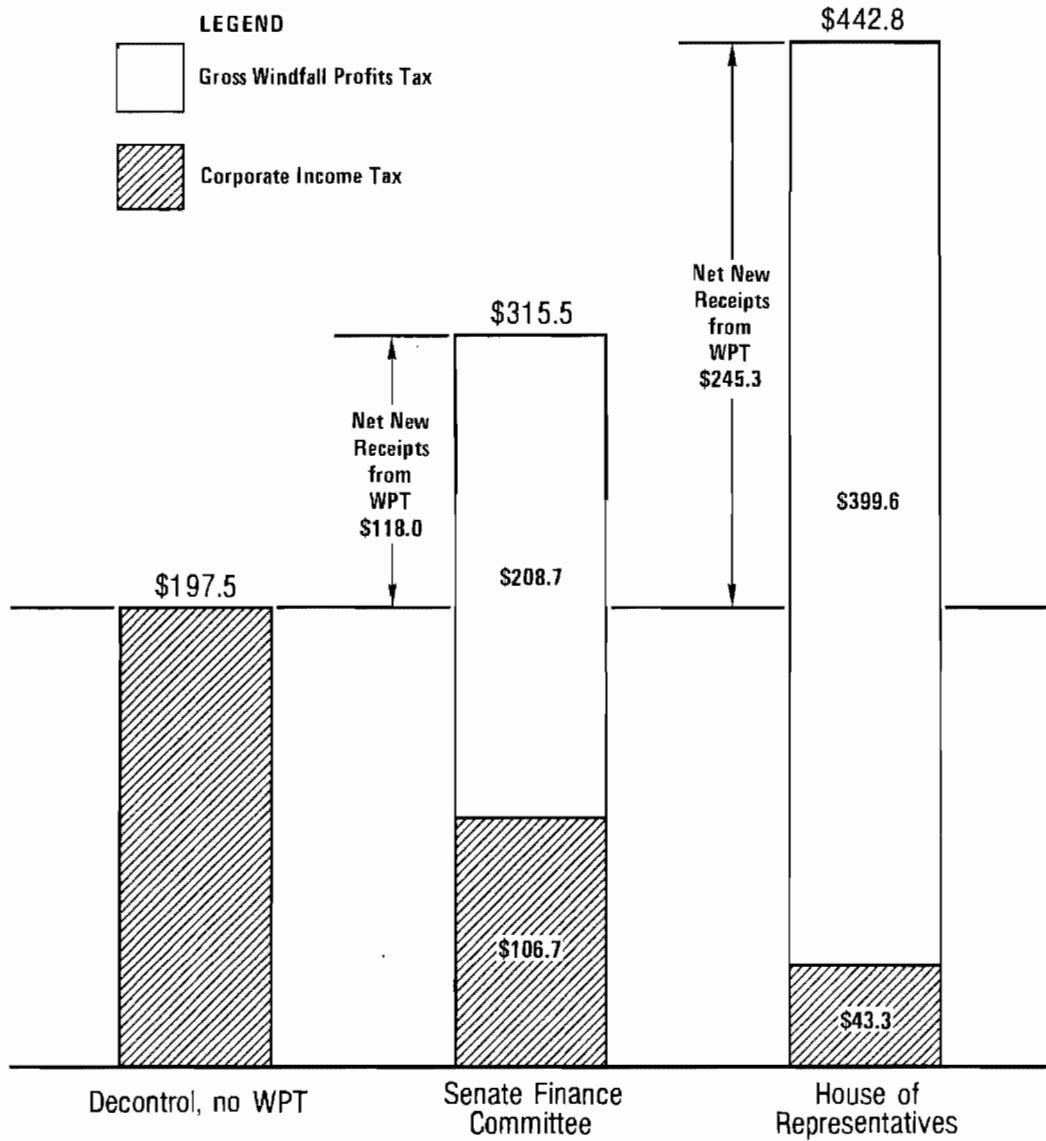
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<sup>5/</sup> The Senate Finance Committee has included a provision in its bill to repeal the "carryover basis" provision of the Tax Reform Act of 1976. Before the Tax Reform Act, all gains made between the time of purchase and the time of inheritance were exempt from the capital gains tax. In order to end this exemption, the Congress required inheritances to be subject to capital gains tax from the time of original acquisition by the benefactor--that is, technically, the heir must "carryover" the "basis" of the donor. The Congress delayed the effective date of the provision until December 31, 1979. Repealing the provision would reduce federal receipts by a small amount in fiscal year 1980, but would cost \$4 billion over the 11-year period. This total loss in federal receipts is not included in these estimates.

<sup>6/</sup> This \$197.5 billion figure does not represent the net increase in federal receipts resulting from decontrol without a windfall profits tax. This results from the fact that the increase will be somewhat offset by reduced receipts from other taxpayers because of the macroeconomic impact of higher oil prices. CBO's federal receipts estimates assume decontrol and no windfall profits tax, and so take into account both of these factors. CBO's most recent estimates do not fully reflect the higher oil prices of the last few months, however.

Figure 2.

**Tax Receipts from Decontrol of Domestic Oil Prices  
With and Without a Windfall Profits Tax (WPT), 1980-1990:  
In Billions of Current Dollars**



NOTE: Numbers may not add to totals because of rounding.

TABLE 3. TOTAL PRODUCER TAX LIABILITY RESULTING FROM HOUSE AND SENATE FINANCE COMMITTEE WINDFALL PROFITS TAX PROPOSALS, 1980-1990: IN BILLIONS OF CURRENT DOLLARS

	House Bill	Senate Finance Committee Bill
Total New Corporate Income Tax Without Windfall Profits Tax	197.5	197.5
With Windfall Profits Tax		
Minus Reduction in Corporate Income Tax from Imposition of Windfall Profits Tax	<u>-154.2</u>	<u>-90.8</u>
Net New Corporate Income Tax Liability	43.3	106.7
Plus Gross Windfall Profits Tax Liability	<u>399.6</u>	<u>208.7</u>
Total New Liability (Gross Windfall and Net Corporate Taxes)	442.8	315.5
Minus Total New Corporate Income Tax Without Windfall Profits Tax	-197.5	-197.5
Net New Total Liability Created by Windfall Profits Tax	245.3	118.0

NOTE: Numbers may not add because of rounding.

of its total producer liabilities than would the House bill, because the Senate bill would tax lower- and upper-tier oils at a higher rate. This pattern would be reversed in the later 1980s, however, when the higher taxed oil from known reserves is depleted and the bulk of production shifts to newly discovered and tertiary oils, which would be exempted under the Senate Finance Committee bill. Under the House bill, which would not exempt these forms of production, proportionately more liability would be incurred later in the period. Finally, the Senate Finance Committee bill would phase out its tax when a receipts target of \$127.1 billion is reached. Since the House bill would not phase out its taxes, it would produce liabilities indefinitely, and could result in over \$500 billion in producer liabilities in the 1990s.

By their very nature, estimates of tax liabilities over this period are subject to some uncertainties. The major sources of uncertainty are oil prices, production levels, and investment, exploration, and production costs. CBO has used, in its judgment, the most likely future price and production levels. While production levels can be extrapolated with some confidence, prices are subject to variation, and no price level can be asserted with great confidence. Higher prices or production levels would increase the estimates of both the net and gross windfall profits tax liabilities presented here.

Future investment, exploration, and production costs are important because they are deducted from the corporate income tax base. Higher costs would decrease the corporate income tax liabilities presented in all cases and, on balance, increase the net collections resulting from windfall profits taxes. CBO has assumed that the industry will reinvest approximately the same proportion of its revenues as it has in the past, and that there will be significant inflation in the costs of drilling equipment, particularly in the short term. Thus, large production costs are assumed. Should these assumptions prove untrue, total corporate income tax liabilities would be higher than estimated here, and net liabilities created by any windfall profits tax would decrease.

#### Retained Producer Revenues

Besides changing producers' federal tax liabilities, decontrol will result in additional corporate income tax receipts for state and local governments, higher royalty payments to federal and state governments (when these governments hold royalties), and increased state severance taxes. In the absence of a windfall profits tax, these liabilities would rise by \$115.1 billion over the 1980-1990 period. Of this total \$17.1 billion would be paid in new state and local income taxes, \$44.8 billion would accrue to federal and state royalty holders, and \$53.2 billion would result from added severance tax liabilities.

Under the Senate bill, over the 1980-1990 period, state and local income taxes would rise by \$18.2 billion, royalty payments by \$43.3 billion, and severance taxes by \$51.0 billion for a total of \$112.3 billion in new liabilities. Under the House bill, these total new liabilities would be \$99.1 billion. Of this total, \$11.7 billion would go to state and local income taxes, \$40.2 billion to new royalty payments, and \$47.1 billion to severance taxes.

These other taxes must be added to the corporate income and windfall profits taxes in order to compute the total new revenues producers will actually be allowed to retain. Under decontrol with no windfall profits tax, a total new producer revenue gain of \$831.8 billion would occur. From this figure, corporate income tax liabilities of \$197.5 and the other tax liabilities of \$115.1 billion must be subtracted, resulting in retained industry revenues of \$519.2 billion over the 1980-1990 period, or 62.4 percent of the total new revenues resulting from decontrol. Thus, the remaining 37.6 percent represents tax and royalty receipts accruing to all levels of government.

Under the Senate bill, total windfall and corporate income liabilities of \$315.5 billion would be incurred, based on total new producer revenues of \$793.2 billion. When the other tax liabilities of \$112.3 billion (under this bill) are taken into account, the Senate bill would allow producers to retain \$365.4 billion over the 1980-1990 period, or 46.1 percent of total new producer revenues. Thus, the remaining 53.9 percent represents tax and royalty receipts accruing to all levels of government. Under the House bill, producers would incur liabilities of \$442.8 billion for corporate income and windfall profits taxes, and \$99.1 billion for the other taxes. This would allow the industry to retain \$188.0 billion, or 25.0 percent of the \$722.9 billion in total new producer revenues it would receive under the House bill from 1980 to 1990. Thus, the remaining 75 percent represents tax and royalty receipts accruing to all levels of government. These results are presented in Table 4.

#### COMPARISON TO OTHER ESTIMATES

The estimates presented in this analysis differ from those that have been prepared for the Senate Finance Committee by the staff of the Joint Committee on Taxation (JCT). The major source of this difference lies in the estimates of future domestic production, under both decontrol and continued controls. Both the CBO and JCT analyses assume a decontrolled oil price of \$30.00 per barrel in the fourth quarter of 1979, rising annually at the rate of inflation plus 2 percent. Minor differences also occur because of different inflation assumptions. These differences become more significant in the later part of the 1980-1990 period than in the earlier part. Given the central importance of supply projection differences, the methodology used by CBO to estimate future domestic production is discussed in detail in the Appendix.

TABLE 4. RETAINED INDUSTRY REVENUES RESULTING FROM  
HOUSE AND SENATE FINANCE COMMITTEE WINDFALL  
PROFITS TAX PROPOSALS, 1980-1990: IN BILLIONS OF  
CURRENT DOLLARS

Industry Revenues	House Bill	Senate Finance Committee Bill	No Windfall Tax Tax
Total New Revenues	722.9	793.2	831.8
Minus			
Gross windfall profits tax liabilities	-399.6	-208.7	-0
Corporate income tax liabilities	-43.3	-106.7	-197.4
State and federal royalty liabilities	-40.2	-43.1	-44.8
Severance tax liabilities	-47.1	-51.0	-53.2
State and local income tax liabilities	<u>-11.7</u>	<u>-18.2</u>	<u>-17.1</u>
Retained Industry Revenues	188.0	365.4	519.3
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Retained Revenues as a Percent of Total New Revenues	25.0	46.1	62.4

Under continued controls, CBO projects domestic production would decline from its present level of about 8.5 million barrels per day to a level of 7.5 million barrels per day in 1985, and 6.7 million barrels per day in 1990. Both of these projections are lower than the production estimates provided to the JCT by the Department of Energy. Under CBO's analysis, decontrol will result in additional production of 815,000 barrels per day in 1985, and 1,165,000 barrels per day in 1990, assuming no windfall profits tax; again, these figures are lower than the estimates used in the JCT analysis.

## OTHER TAXATION ISSUES

The Senate Finance and House bills also differ in the way they treat other tax issues.

### Relationship to Other Taxes

The House bill would provide an exemption for all royalty interests held by state and local governments if the proceeds from those royalties are used to finance public education. The Senate Finance Committee bill would expand this exemption to all royalty interests held by state and local governments, regardless of their use. The Senate Finance Committee bill also added exemptions for interests held by Indian tribes and certain charitable institutions. Severance taxes would be deductible for the purpose of computing the windfall profits tax in both bills, but the House bill contains the provision that, if states raise their severance tax rates, only that amount which would be paid in severance taxes under the old rates would be deductible. This was intended to discourage states from raising their severance taxes and so reducing the windfall profits tax collections to the federal government. The Senate Finance Committee bill would remove this limitation. The collections schedules in each of the bills also differ. The Senate Finance Committee bill would provide for more time to deposit the tax to ease the burden on small refiners who would experience great problems in meeting the fast collections schedule prescribed by the House bill.

### Phase-out of the Senate Finance Committee Bill

The Senate Finance Committee bill would start to phase out the windfall profits tax when total tax receipts reach \$127.1 billion. Since CBO estimates that the Senate from bill would generate only \$118.0 billion in net receipts over the 1980-1990 period, that total will not be raised until sometime during the 1990s. Consequently, a portion of this tax would remain in effect after 1990.





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## CHAPTER IV. SPECIFIC WINDFALL PROFITS TAX PROVISIONS

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The previous chapter presented an overview of the House and Senate Finance Committee windfall profits tax bills. This chapter provides details on the differences between the two bills by category of oil. At the end of this chapter, some alternative proposals are discussed.

### THE STRUCTURE OF THE WINDFALL PROFITS TAX

Both the Senate Finance Committee and the House bills are a series of excise taxes on the various categories of oil defined by the current regulatory system. In both bills, each category is assigned its own tax base and a tax rate. Therefore, a detailed comparison of the two tax bills requires a comparison of how each bill treats each category of oil. This chapter provides such a comparison for the following categories of oil: old (or lower-tier) oil, new (or upper-tier) oil, newly discovered oil, incremental tertiary oil, stripper oil, Alaskan North Slope oil, heavy oil, and marginal oil.

In the following sections, each category of oil is defined and the tax issues regarding that category are identified. Then the effects on gross tax liability and production of the treatment of that category under the House and Senate Finance Committee bills are compared, first, with the effects under continued controls and, second, with the effects under decontrol with no windfall profits tax (that is, with only the existing corporate taxes). The effects of the House and Senate Finance Committee bills reflect the particular windfall profits tax provision of the two bills combined with decontrol.

Several technical points should be made about the results presented here. First, the projected production of crude oil from each category of oil (for example, lower tier, upper tier) is based on both the specific incentives created for that category by the tax bill under consideration and how those incentives compare to those created for other categories. As a result, production for a specific category is often different than one would assume by considering only that category's incentives. Second, with respect to lower-tier and marginal oil, a policy that stimulates production in one year will reduce production in the future because of depletion of the reserve base from which these two categories are produced. These "depletion effects" can be misleading when production under alternative taxes is considered at

any one point in time, so an estimate is presented for total production from each source over the 1980-1990 period under each bill. Yet it would be incorrect to derive a figure for "barrels sacrificed per dollar of tax raised" from this cumulative production number. This is because many of the investments that producer revenues from decontrol will finance will be producing considerably beyond the 1980-1990 period.

The reader reproducing these calculations will also notice that the revenue gains from decontrol (higher revenues for oil that would have been produced under controls) are sometimes unequal under the House and Senate Finance Committee bills for any individual category of oil. This is because, on occasion, supplies for a particular type of oil under decontrol will be lower than under continued controls, if only by a small margin. Thus, this smaller quantity must be used to calculate the appropriate revenue gain. These differences are rarely significant relative to the overall bill.

### Lower-Tier Oil

Definition. Lower-tier oil is defined as oil from properties developed before 1973. Under current EPCA procedures, oil from these properties is transferred into the upper-tier using a decline rate based on the history of the property, as discussed in Chapter II. About 760,000 barrels per day of heavy oil and marginal oil are currently being produced as lower-tier oil. These components have been deleted from the analysis in this section and are considered separately.

Tax Issues. Under the President's decontrol plan, lower-tier oil will be "declined" into the upper-tier at an accelerated rate of 3.0 percent per month beginning in January 1980, in contrast to the historical rate, which has averaged between 1.0 and 1.5 percent in recent years. Both the Senate Finance and House bills divide the difference between the historical rate (which CBO estimates as 1.3 percent) and the 3.0 percent accelerated rate into two components. Oil that is transferred into the upper-tier because of the difference between its decline rate and 1.5 percent will not be taxed on the difference between the lower- and upper-tier prices, but will be taxed on the difference between the upper-tier price and the world price. Oil transferred into the upper tier because of an increase in the decline rate from 1.5 to 3.0 percent will be taxed on both the difference between the lower- and upper-tier prices, and any further price increase. The tax on the second difference, called the "lower-tier tax," is set at 60 percent in the

House bill and at 75 percent in the Senate Finance bill. 1/ The Senate Finance bill also provides that lower-tier oil which is produced along with a large percentage of water will be given upper-tier tax treatment. 2/

Effects. As summarized in Table 5, the Senate Finance Committee bill results in no more lower-tier oil over the 1980-1990 period than would have resulted under continued controls. This is because lower-tier oil receives the smallest incentives under the Senate Finance bill. In addition, tertiary processes will be applied to many lower-tier properties under the Senate Finance bill because the incentives for tertiary recovery are more attractive than those for lower-tier oil. Because of the relative uniformity of the incentives in the House bill, production occurs in an anticipated manner. Because of the relatively small incentives in the Senate Finance bill, significant investments occur later under that bill than they do under decontrol with no tax or under the House bill.

- o The producer revenue gain on lower-tier oil over the 1980-1990 period would be \$106.2 billion in current dollars under the House bill and \$103.5 billion under the Senate Finance bill. This is the amount that producers would receive from higher prices for oil that CBO projects would have been produced under a continuation of EPCA controls.
- o The House bill would tax \$50.1 billion of this revenue gain. Relative to continued controls, the bill in combination with decontrol would stimulate 245,000 barrels per day of additional supplies from this source in 1985, but would result in a reduction of 230,000 barrels per day in 1990. When compared to decontrol with no windfall profits tax, the House bill would reduce new supplies by 45,000 and 80,000 barrels per day in those two years, respectively.

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1/ It should also be noted that the tax on the difference between the lower- and upper-tier prices will phase out over time since lower-tier oil would have phased out anyway under a continuation of EPCA with the 1.3 decline rate.

2/ Many older fields are produced by injecting water in the periphery of the field to maintain pressure. After a while, the injected water begins to come up along with the oil. This makes production more difficult, and separation facilities must be made available, requiring additional expense.

TABLE 5. GROSS TAX LIABILITY AND PRODUCTION EFFECTS OF HOUSE AND SENATE FINANCE COMMITTEE TREATMENT OF LOWER-TIER OIL, 1980-1990 a/

	Continued Controls	Decontrol with		
		House Bill	Senate Finance Committee Bill	No Windfall Profits Tax
Gross Tax Liability <u>b/</u> (billions of current dollars)	---	50.1	46.8	---
1985 Production (thousands of barrels per day)	775	1,020	770	1,065
1990 Production (thousands of barrels per day)	355	125	230	205
Cumulative Production 1980-1990 (millions of barrels)	3,469	3,957	3,451	4,170
Average Daily Increase, 1980-1990, over Continued Controls (thousands of barrels per day)	---	122	-4	175

a/ Production figures do not include heavy oil, marginal oil, and some oil in tertiary recovery and stripper production which have shifted out of lower-tier production.

b/ This total represents total gross windfall profits tax liability from 1980-1990. This figure does not take into account changes in corporate liability. Were these effects to be included, the House and Senate Finance totals would be lower, and the no-windfall-profits-tax case would indicate some producer liabilities.

- o The Senate Finance Committee bill would tax \$46.8 billion of this total revenue gain. Relative to an extension of controls, the bill in combination with decontrol would result in 5,000 barrels per day less supplies from this source in 1985 and 125,000 barrels per day less in 1990. When compared to decontrol with no windfall profits tax, the bill would reduce supplies by 295,000 barrels per day in 1985, but would stimulate 25,000 more barrels per day in 1990.

#### Upper-Tier Oil from Proven Reserves

Definition. Upper-tier oil from proven reserves is all oil that is from properties that began producing during or after 1973 and are currently in production. In addition, oil from lower-tier properties in excess of the BPCL assigned to them and oil released from lower-tier properties is considered upper-tier oil.

Tax Issues. The proportion of upper-tier oil remaining under controls will decrease in equal monthly increments; in this manner, all upper-tier oil (including reclassified lower-tier) will sell at the world market price by October 1, 1981. When compared to an indefinite extension of EPCA procedures, upper-tier oil would receive a revenue gain windfall equal to the difference between what the controlled EPCA price would have been and the phased-in world price.

The House bill taxes this difference at a rate of 60 percent until 1985 and then phases out this tax between 1986 and 1990. It does this by raising the upper-tier base price to the level of the base price used to calculate the tax on third-tier oil. Thus, by 1990 upper-tier oil will not be taxed on the revenue gain resulting from its decontrol from the upper-tier to the world price, but only on the added revenues it will receive as a result of real OPEC price increases since April 1979.

Like the House bill, the Senate Finance Committee bill employs a 60 percent tax rate for upper-tier oil and phases out the tax on the revenue gain derived from raising the upper-tier price to the world price. Unlike the House bill, the Senate Finance Committee bill phases out the tier-three tax between 1986 and 1990.

Effects. As summarized in Table 6, the Senate Finance Committee bill results in a slight decrease in the production of upper-tier oil as compared to continued controls because the bill offers more attractive incentives to offered most other types of oil. While the House bill sets the same tax rate and tax base for upper-tier oil as does the Senate Finance bill, the relative uniformity of its incentives does not induce producers to shift from upper-tier oil.

TABLE 6. GROSS TAX LIABILITY AND PRODUCTION EFFECTS OF HOUSE AND SENATE FINANCE COMMITTEE TREATMENT OF KNOWN UPPER-TIER OIL, 1980-1990 a/

	Continued Controls	Decontrol with		
		House Bill	Senate Finance Committee Bill	No Windfall Profits Tax
Gross Tax Liability <u>b/</u> (billions of current dollars)	---	64.9	62.0	---
1985 Production (thousands of barrels per day)	1,095	1,135	1,075	1,315
1990 Production (thousands of barrels per day)	475	360	345	500
Cumulative Production 1980-1990 (millions of barrels)	5,046	5,157	4,917	5,665
Average Daily Increase, 1980-1990, over Continued Controls (thousands of barrels per day)	---	28	-32	154

a/ Production figures do not include heavy oil, marginal oil, and some oil in tertiary recovery and stripper production which have shifted out of lower-tier production.

b/ This total represents total gross windfall profits tax liability from 1980-1990. This figure does not take into account changes in corporate liability. Were these effects to be included, the House and Senate Finance totals would be lower, and the no-windfall-profits-tax case would indicate some producer liabilities.

- o The producer revenue gain on upper-tier oil over the 1980-1990 period would total \$113.1 billion in current dollars under the House bill, and \$112.7 billion under the Senate Finance bill.
- o The House bill would tax \$64.9 billion of this revenue gain. Relative to continued controls, the bill in combination with decontrol would stimulate 40,000 barrels per day of additional supplies in 1985, but would result in a reduction of 115,000 barrels per day in 1990 because of depletion and conversion to tertiary or heavy oil production. When compared to decontrol with no windfall profits tax, the bill would reduce supplies by 180,000 and 140,000 barrels per day in 1985 and 1990, respectively.
- o The Senate Finance Committee bill would tax \$62.0 billion of the total revenue gain. Relative to a continuation of controls, the bill in combination with decontrol would reduce supplies by 20,000 and 130,000 barrels per day in 1985 and 1990, respectively. When compared to decontrol with no windfall profits tax, the bill would reduce supplies by 240,000 and 155,000 barrels per day in these years.

#### New Discoveries

Definition and Tax Issues. In his April 1979 announcement, the President immediately decontrolled newly discovered oil (defined as oil not produced before January 1, 1979). In the absence of that announcement, new discoveries would have received the upper-tier price. The tax on new discoveries, and other oil that receives the world price, is referred to as the "tier-three tax" or the "real OPEC price increase tax."

Under the House bill, the tax base is the difference between the world price for newly discovered oil and a base price of \$17.00 per barrel, which prevailed in April 1979, increased by inflation plus 2 percent per year. The difference is attributed to OPEC price increases since that date. Under the House bill, a rate of 50 percent is applied to this base the price of newly discovered oil reaches \$26.00 per barrel, corrected for inflation plus 2 percent. Gains associated with prices above this level would be taxed at a rate of 60 percent.

The Senate Finance Committee bill has a more liberal definition under which all new discoveries would be exempted from taxation.<sup>3/</sup> This approach allows revenues to accrue to domestic producers as they would accrue to OPEC. The resulting higher prices will induce additional domestic production. However, the coupling of this exemption with the Senate Finance bill's liberal definition of new discoveries may induce producers to drill on the margins of existing fields rather than develop genuinely new discoveries. This would maximize the benefits of "new" treatment, while minimizing the risks of exploration.

Some portion of new discoveries would have occurred under extended controls. Since these would have received EPCA upper-tier prices, their decontrol creates a revenue gain as would the decontrol of any upper-tier oil. Over the 1980-1990 period, the value of this revenue gain would be equal to \$203.6 billion. While it might be appropriate to treat this revenue gain like other upper-tier oil for tax purposes, it would be very difficult to administer a tax on these new discoveries because of the problem in determining which discoveries could have occurred at lower prices.

Effects. The amount of oil from new discoveries is dependent on the definitions employed by the House and Senate Finance Committee bills, and on the incentives offered in each. The results are summarized in Table 7.

- o Under the House bill, production from new discoveries will result in \$198.6 billion in new producer revenues over the 1980-1990 period. Under the Senate Finance bill, production from new discoveries will result in \$190.8 billion in new producer revenues over that same period.
- o The House bill would tax \$31.7 billion of the tax base it defines. Relative to continued controls, the bill in combination with decontrol would stimulate 440,000 and 1,435,000 barrels per day of new supplies in 1985 and 1990, respectively. When compared to decontrol with no windfall profits tax, the House bill would reduce new supplies by 165,000 and 200,000 barrels per day in these years.
- o The Senate Finance Committee bill would not tax supplies from new discoveries. Relative to an extension of controls, the bill in

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<sup>3/</sup> Newly discovered oil, according to the Senate Finance bill, includes any oil from wells that did not produce during 1978. The House bill is more restrictive; it excludes from the newly discovered category oil from wells that produced oil in commercial quantities any time before 1979. It further excludes oil from reservoirs that were penetrated before 1979.



TABLE 7. GROSS TAX LIABILITY AND PRODUCTION EFFECTS OF HOUSE AND SENATE FINANCE COMMITTEE TREATMENT OF NEWLY DISCOVERED OIL, 1980-1990

		Decontrol with		
		House Bill	Senate Finance Committee Bill	No Windfall Profits Tax
Gross Tax Liability <u>a/</u> (billions of current dollars)	---	106.9	0.0 <u>b/</u>	---
1985 Production (thousands of barrels per day)	1,820	2,260	2,545	2,425
1990 Production (thousands of barrels per day)	1,810	3,245	3,310	3,445
Cumulative Production 1980-1990 (millions of barrels)	6,223	8,435	9,276	9,030
Average Daily Increase, 1980-1990, over Continued Controls (thousands of barrels per day)	---	496	760	699

a/ This total represents total gross windfall profits tax liability from 1980-1990. This figure does not take into account changes in corporate liability. Were these effects to be included, the House and Senate Finance totals would be lower, and the no-windfall-profits-tax case would indicate some producer liabilities.

b/ Exempted.

combination with decontrol would increase newly discovered oil by 725,000 barrels per day in 1985 and 1,500,000 barrels per day in 1990. 4/ When compared to decontrol with no windfall profits tax, the bill as a whole would increase new supplies by 120,000 and reduce them by 135,000 barrels per day in these years, respectively.

### Incremental Tertiary

Definition. Incremental tertiary oil is oil produced using tertiary processes, over and above the amount that would be expected from existing tertiary recovery projects using historical decline rates. Projects qualify as tertiary if they are certified by DOE or are certified by the producer as employing one of the nine accepted tertiary methods. In addition, producers using tertiary methods are allowed to transfer some portion of their lower- or upper-tier production to world prices to secure "front-end financing" of their projects. In the absence of the deregulation of tertiary production, tertiary projects would have received a price determined by the tier of the property from which they originated, unless they were individually excepted by DOE. The new tertiary production takes place primarily on existing lower-tier properties and secondarily on upper-tier properties, and therefore it diverts production from these properties.

Tax Issues. Under the House bill, incremental tertiary oil is taxed identically to new discoveries: a 50 percent rate is applied to the differences between \$17.00 and \$26.00 (both increased each year by the inflation rate, plus 2 percent), and a 60 percent rate is applied to price increases over \$26.00. Once again, it is difficult to determine whether or not this tax actually addresses a "windfall" revenue gain. Some of the new tertiary projects might have come into existence under extended controls. Yet, by and large, tertiary projects require large front-end expenditures, and many of the new projects will be accelerated by decontrol rather than

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4/ The increase in production provided by the Senate bill over the no-windfall profits tax case is due to the fact that there will be a short-run limitation on drilling equipment and therefore under this bill producers will explore for new production due to the higher incentives rather than accelerate production from known reserves. Under the no-windfall profits tax case the incentives for accelerated production and new reserves are the same and therefore there would be equal incentives.

receive a windfall because of it.<sup>5/</sup> The Senate Finance Committee bill adopts this latter point of view, and exempts incremental tertiary oil from taxation while slightly expanding its definition (in part by assuming a higher decline rate of existing tertiary projects). Since prices of incremental tertiary production are not controlled under a case of continued price controls, a considerable amount of new investment is starting to be made in this category. Because of the tax, investment under the House bill would be lower.

Effects. As summarized in Table 8, production under the House bill is lower than under the other three cases. This is because the House bill taxes incremental tertiary production and therefore has the lowest after-tax cash flow of the four alternatives. Continued controls induce rather high production because tertiary recovery receives very high prices relative to other categories of production under controls. The Senate Finance Committee bill does not tax tertiary production, yet less is produced under this bill than would have resulted under continued controls, again because of the attractive incentives offered under controls. Under the no windfall-profits-tax case, however, larger retained industry revenues result in an absolute increase in tertiary production.

- o Under the House bill, production of new tertiary oil will result in \$39.1 billion in increased producer revenues over the 1980-1990 period, \$32.6 billion of which falls into the tier-three tax base. Under the Senate Finance bill, tertiary production, resulting in \$49.9 billion in new revenues, is exempted from windfall profits taxation.
- o The House bill would tax \$17.0 billion of the added revenues. Relative to continued controls, the bill in combination with decontrol would reduce new supplies by 70,000 and 95,000 barrels per day in 1985 and 1990, respectively. When compared to decontrol with no windfall profits tax, the House bill would reduce new supplies by 80,000 and 125,000 barrels per day in these years.
- o Relative to continued controls, the Senate Finance Committee bill in combination with decontrol would reduce supplies by 20,000 barrels per day in both 1985 and 30,000 barrels per day in 1990. When compared to decontrol with no windfall profits tax, the bill

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<sup>5/</sup> It should be noted that tertiary and heavy oil production are highly complementary. Both sets of processes are derived largely from the same technologies: in-site combustion, steam injection, detergent flushing, and the like. In addition, the firms involved in these technologies are usually involved in both processes, allowing innovations to develop both processes.

TABLE 8. GROSS TAX LIABILITY AND PRODUCTION EFFECTS OF HOUSE AND SENATE FINANCE COMMITTEE TREATMENT OF NEW TERTIARY OIL, 1980-1990

	Continued Controls	Decontrol with		
		House Bill	Senate Finance Committee Bill	No Windfall Profits Tax
Gross Tax Liability <u>a/</u> (billions of current dollars)	---	17.0	0.0 <u>b/</u>	---
1985 Production (thousands of barrels per day)	385	315	365	395
1990 Production (thousands of barrels per day)	720	625	690	750
Cumulative Production 1980-1990 (millions of barrels)	1,528	1,267	1,455	1,645
Average Daily Increase, 1980-1990, over Continued Controls (thousands of barrels per day)	---	-65	-18	29

a/ This total represents total gross windfall profits tax liability from 1980-1990. This figure does not take into account changes in corporate liability. Were these effects to be included, the House and Senate Finance totals would be lower, and the no-windfall-profits-tax case would indicate some producer liabilities.

b/ Exempted.

as a whole would reduce new supplies by 30,000 and 60,000 barrels per day in these years.

### Stripper Oil

Definition. Stripper oil is oil from wells producing 10 barrels or fewer per day. Because of the advanced age of most U.S. fields, and because stripper oil is currently decontrolled, stripper accounts for a disproportionate share of U.S. production when compared to other producing nations. Stripper oil generally has a higher unit cost per barrel, because of the expenditures necessary to maintain reservoir pressure and equipment.

A considerable amount of stripper oil produced by independent operators comes from small new discoveries. Since these new discoveries will be treated separately under both windfall profits tax bills, any tax on stripper will only apply to existing stripper or stripper from old fields.

Tax Issues. Stripper oil was decontrolled in 1976 and therefore its price has risen with world prices. A windfall profits tax would impose a new tax on stripper revenues. However, because world prices have risen so dramatically, this new tax would not provide less cash flow per barrel than operators received in 1978. This is important because stripper is disproportionately produced by small independent producers, who usually rely on wellhead revenues alone for the investments necessary to maintain production. It should also be noted that these small independent producers are involved in a disproportionate share of new discoveries, though most of these discoveries are small. Thus, incentives given to stripper can be important in financing exploration for new discoveries in several areas of the nation.

The House bill seeks to tax the revenue gains of stripper associated with OPEC real price increases. The bill uses a base of the difference between the prevailing world price and \$16.00 per barrel, adjusted for inflation. This is in contrast to the \$17.00 base and the 2 percent real annual used in other tier-three taxes. The bill applies a 60 percent rate to this base. The Senate Finance Committee bill uses the same rate and base, but it exempts the first 1,000 barrels per day of stripper oil produced by every nonmajor producer. This would exempt about 55 percent of all stripper oil, and would probably eliminate the need for 60 to 75 percent of all producers to pay any windfall profits tax.

Effects. As summarized in Table 9, decontrol accompanied by either windfall profits tax provision or by no windfall profits tax eliminates the incentive to shift current higher-producing wells to the stripper category.

TABLE 9. GROSS TAX LIABILITY AND PRODUCTION EFFECTS OF HOUSE AND SENATE FINANCE COMMITTEE TREATMENT OF STRIPPER OIL, 1980-1990

	Continued Controls	Decontrol with		
		House Bill	Senate Finance Committee Bill	No Windfall Profits Tax
Gross Tax Liability <u>a/</u> (billions of current dollars)	---	55.7	26.1	---
1985 Production <u>b/</u> (thousands of barrels per day)	1,285	850	925	670
1990 Production <u>b/</u> (thousands of barrels per day)	1,610	880	870	830
Cumulative Production <u>c/</u> 1980-1990 (millions of barrels)	5,564	3,791	3,960	3,228
Average Daily Increase, 1980-1990, over Continued Controls (thousands of barrels per day)	---	-442	-400	-582

a/ This total represents total gross windfall profits tax liability from 1980-1990. This figure does not take into account changes in corporate liability. Were these effects to be included, the House and Senate Finance totals would be lower, and the no-windfall-profits-tax case would indicate some producer liabilities.

b/ Stripper production receives world prices, thus, under continued controls, a large amount of production is diverted from other tiers toward stripper.

c/ Production figures do not include heavy oil from stripper properties.

That incentive existed occurred under controls. Thus, stripper production is lower under all decontrol cases than under continued controls.

- o Decontrol will not affect the price of stripper oil. Under the House bill, however, producers would pay a tier-three tax on all stripper oil. Nonmajors are exempted from this tax under the Senate Finance Committee bill. Between 1980 and 1990, this tax base would total \$92.9 billion under the House bill and \$45.5 billion under the Senate Finance bill.
- o The House bill would tax \$55.7 billion of this tax base and would encourage much less production from this category than would extended controls because of its lower price incentives. When compared to decontrol with no windfall profits tax, the bill would increase supplies by 180,000 barrels per day in 1980 and then by 50,000 barrels per day in 1990.
- o The Senate Finance Committee bill would tax \$26.1 billion of this tax base. When compared to decontrol with no windfall profits tax, the bill would increase new supplies by 255,000 and 40,000 barrels per day in 1985 and 1990, respectively.

#### Alaskan North Slope Oil

Definition and Background. Alaskan oil now flowing comes from the Sadlerochit Reservoir and is delivered through the Trans-Alaskan pipeline. When Alaskan oil was first developed, it was placed in the upper-tier by the Congress after it was determined that that price would probably ensure its profitability. Until recently, however, Alaskan oil had not received this price at the wellhead. This was because of the large transportation costs associated with Alaskan oil which, when subtracted from the price refiners were willing to pay for it, left Alaskan oil producers with less revenue than the upper-tier ceiling allowed. Alaskan producers were generally left with wellhead revenues of about \$6.00 per barrel, as compared with the approximately \$11.00-\$12.00 upper-tier ceiling of that period. The 1979 OPEC price increases have changed this situation, however, and Alaskan oil now receives the upper-tier ceiling.

Tax Issues. The differences between the House and Senate Finance Committee bills reflect this sudden change in circumstance. Under the House bill, the tax base for Alaskan oil is defined as the difference between its decontrolled wellhead price and a base price of \$7.50, adjusted for inflation. This base price will also be increased over time by declines in the real value of the Trans-Alaskan pipeline tariff (since this fee is constant

over time, it will decline in real terms as inflation continues). Thus, the House bill defines the Alaskan windfall base as including some revenues that Alaskan oil is now allowed under EPCA regulation. The Senate Finance bill defines the tax base for Alaskan oil as being the windfall attributable to decontrol--that is, the difference between the upper-tier price it would have received under EPCA (but without the correction for real declines in the Trans-Alaskan pipeline tariff in the House bill) and the decontrolled wellhead price of Alaskan oil. Both bills tax only Alaskan oil from the Sadlerochit Reservoir, exempting new future Alaskan producing areas. The results of the various treatments are summarized in Table 10.

#### Effects.

- o The producer revenue gain on Alaskan oil over the 1980-1990 period would be \$130.7 billion in current dollars.
- o The House bill would tax \$72.6 billion of the base it defines, of which \$51.5 billion is a tax on the revenue gain from Alaskan oil. Relative to continued controls, the bill in combination with decontrol would stimulate 50,000 barrels of additional supply per day in 1990. When compared to decontrol with no windfall profits tax, the House bill would reduce supplies by 40,000 barrels per day in 1990.
- o The Senate Finance Committee bill would tax \$61.8 billion of the revenue gain from Alaskan oil. Relative to an extension of controls, the bill in combination with decontrol would stimulate 70,000 barrels of new supply per day in 1990. When compared to decontrol with no windfall profits tax, the bill would lower supplies by 20,000 barrels per day in that year.

#### Heavy Oil

Definition and Background. Several weeks after his April 1979 announcement, the President announced his decision to decontrol heavy oil immediately and proposed exempting it from any taxation. Heavy oil is highly viscous and is defined as being less than 16.0 degrees API, a standard industry measurement and accepted definition. It is produced chiefly in California, and it is restricted by both price controls and environmental standards. Heavy oil is best produced by burning fuels at the surface and



TABLE 10. GROSS TAX LIABILITY AND PRODUCTION EFFECTS OF HOUSE AND SENATE FINANCE COMMITTEE TREATMENT OF ALASKAN NORTH SLOPE OIL, 1980-1990

	Continued Controls	Decontrol with		
		House Bill	Senate Finance Committee Bill	No Windfall Profits Tax
Gross Tax Liability <u>a/</u> (billions of current dollars)	---	72.6	61.8	---
1985 Production (thousands of barrels per day)	1,575	1,575	1,575	1,575
1990 Production (thousands of barrels per day)	1,300	1,350	1,370	1,390
Cumulative Production 1980-1990 (millions of barrels)	6,052	6,119	6,139	6,161
Average Daily Increase, 1980-1990, over Continued Controls (thousands of barrels per day)	---	17	22	27

a/ This total represents total gross windfall profits tax liability from 1980-1990. This figure does not take into account changes in corporate liability. Were these effects to be included, the House and Senate Finance totals would be lower, and the no-windfall-profits-tax case would indicate some producer liabilities.

injecting the heat into the formation to loosen it. The quantities of fuel necessary for this process are large, and they create air quality problems.

Tax Issues. The Senate Finance Committee bill exempts heavy oil from taxation. The House bill does not mention it, since its decontrol was announced after the House had already considered its bill. Under the House bill, therefore, heavy oil is taxed in its tier of origin.

Effects. The results of the various treatments are summarized in Table 11.

- o Under the Senate Finance Committee bill, the producer revenue gain realized on heavy oil over the 1980-1990 period would total \$5.7 billion. In addition, new supplies of heavy oil worth \$45.3 billion would be produced.
- o The House bill, would tax \$19.8 billion of this revenue gain. Relative to continued controls, the bill in combination with decontrol would increase supplies by 55,000 barrels per day in 1985 and would decrease supplies by 15,000 barrels per day in 1990. When compared to decontrol with no a windfall profits tax, the House bill would reduce heavy oil production by 130,000 and 285,000 barrels per day in those two years.
- o Relative to an extension of controls, the Senate Finance Committee bill in combination with decontrol would by exempting heavy oil, would result in additional production of 215,000 barrels per day in 1985 and 285,000 barrels per day in 1990. This represents an increase of 30,000 barrels per day in 1985 and 15,000 barrels per day in 1990 over the production that would have resulted under decontrol with no windfall profits tax. 6/

### Marginal Oil

Definition and Background. Marginal oil is "almost stripper" oil. The term was first used by the Texas Railroad Commission, the state oil and gas regulatory body, which defined it as being from wells producing between 10 and 35 barrels per day, depending on depth. The bulk of marginal oil comes

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6 Production is stimulated more by the Senate Finance bill than by no windfall profits tax because without a tax certain other categories of production have a higher return on investment than heavy oil.

TABLE 11. GROSS TAX LIABILITY AND PRODUCTION EFFECTS OF HOUSE AND SENATE FINANCE COMMITTEE TREATMENT OF HEAVY OIL, 1980-1990

	Continued Controls	Decontrol with		
		House Bill	Senate Finance Committee Bill	No Windfall Profits Tax
Gross Tax Liability <u>a/</u> (billions of current dollars)	---	19.8	--- <u>b/</u>	---
1985 Production (thousands of barrels per day)	280	335	495	465
1990 Production (thousands of barrels per day)	305	290	590	575
Cumulative Production 1980-1990 (millions of barrels)	1,133	1,274	1,898	1,823
Average Daily Increase, 1980-1990, over Continued Controls (thousands of barrels per day)	---	35	191	172

a/ This total represents total gross windfall profits tax liability from 1980-1990. This figure does not take into account changes in corporate liability. Were these effects to be included, the House and Senate Finance totals would be lower, and the no-windfall-profits-tax case would indicate some producer liabilities.

b/ Exempted.

from the lower tier, and by January 1, 1980, all of this oil will be moved to the upper tier and be decontrolled along with all upper-tier oil. Marginal oil is generally produced in older fields and requires the same kind of investments as does stripper oil.

Tax Issues. Both the House and Senate Finance Committee bills tax marginal oil as if it were tier-two oil, exempting lower-tier marginal oil from the tier-one tax.

Effects. The results of the various treatments are summarized in Table 12.

- o The producer revenue gain on marginal oil over the 1980-1990 period would be \$23.0 billion under the House bill and \$23.3 billion under the Senate Finance Committee bill.
- o The House bill would tax \$12.4 billion of the total revenue gain. Relative to continued controls, the bill in combination with decontrol would stimulate 85,000 barrels of new supplies per day in 1985, and reduce supplies by 10,000 barrels per day in 1990. When compared to decontrol with no windfall profits tax, the bill would reduce new supplies by 35,000 barrels per day in 1985, and 20,000 barrels per day in 1990.
- o The Senate Finance Committee bill would tax \$12.0 billion of its total revenue gain. Relative to continued controls, the bill in combination with decontrol would increase supplies by 90,000 barrels per day in 1985 and by 10,000 barrels per day in 1990. When compared to decontrol, that bill would reduce supplies by 30,000 barrels per day in 1985.

#### ALTERNATIVE PROPOSALS

This section presents the tax liabilities and production responses under several alternative proposals. All the estimates are relative to those under the Senate Finance Committee bill. Six proposals will be examined:

- o Applying a lower-tier tax to oil transferred from the lower-tier to the upper-tier at a decline rate above the natural rate (estimated to be 1.3) but less than the 1.5 percent per month as assumed in both the House and Senate Finance Committee bill.
- o Raising the tax rate on lower-tier oil to 85 percent;
- o Raising the tax rate on upper-tier oil to 75 percent;

TABLE 12. GROSS TAX LIABILITY AND PRODUCTION EFFECTS OF HOUSE AND SENATE FINANCE COMMITTEE TREATMENT OF MARGINAL OIL, 1980-1990

		Decontrol with		
	Continued Controls	House Bill	Senate Finance Committee Bill	No Windfall Profits Tax
Gross Tax Liability <u>a/</u> (billions of current dollars)	---	12.4	12.0	---
1985 Production (thousands of barrels per day)	130	215	220	250
1990 Production (thousands of barrels per day)	40	30	50	50
Cumulative Production 1980-1990 (millions of barrels)	756	1,077	1,031	1,119
Average Daily Increase, 1980-1990, over Continued Controls (thousands of barrels per day)	---	80	68	90

a/ This total represents total gross windfall profits tax liability from 1980-1990. This figure does not take into account changes in corporate liability. Were these effects to be included, the House and Senate Finance totals would be lower, and the no-windfall-profits-tax case would indicate some producer liabilities.

- o Taxing Alaskan North Slope oil at this higher upper-tier rate;
- o Creating a higher base price for tertiary and newly discovered oil; and
- o Eliminating the windfall profits tax completely, and relying on the corporate income tax alone.

#### Taxing All Lower-Tier Oil in the Tier-One Tax

For purposes of windfall profits taxation, both the House and Senate Finance Committee bills assume that lower-tier oil would have been transferred into the upper tier at a rate of 1.5 percent per month on a fixed base (the total amount of non marginal lower-tier oil as of June 1979). CBO projects that, in reality, lower-tier oil would have been transferred into the upper tier at a rate of 1.3 percent per month on a moving base (the previous month's quantity of lower-tier oil), equivalent to 0.62 percent on the June 1979 fixed base. This exception is significant: by 1985, the 1.5 percent transfer would account for all lower-tier oil, while CBO projects that 800,000 barrels per day would have been produced in that tier had EPCA been extended.

Applying a 75 percent rate to this base, as the Senate Finance bill does to other lower-tier revenue gains would yield approximately \$13.2 billion in new net windfall profits tax liabilities. This change in tax base would result in a loss of 20,000 barrels of oil per day from this category in 1985 when compared to the supplies induced by the Senate Finance bill as it now stands. <sup>7/</sup> Production losses in 1990 would be negligible.

#### Raising the Tax Rate on Lower-tier Oil

Lower-tier oil will receive the largest producer revenue gains per barrel from decontrol. These barrels might thus appropriately be subject to the highest tax rate. Raising the rate to 85 percent would add \$5.9 billion

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<sup>7/</sup> The effect of this provision would be to lower after-tax cash flow per barrel of lower-tier oil by about \$1.00 to \$1.25 in 1985.

to the total net liability under the Senate Finance bill (which uses a 75 percent rate). 8/

The effect on production in 1985 would be to reduce output by about 40,000 barrels per day under the Senate Finance bill. By 1990, production under this alternative would exceed the Senate Finance bill by about 35,000 barrels per day.

#### Raising the Tax Rate on Upper-Tier Oil

Upper-tier oil will also realize large producer revenue gains per barrel--second to lower-tier oil. The upper-tier tax might thus be increased to the size of the revenue gain per barrel this oil will receive. Raising the upper-tier tax rate to 75 percent from the 60 percent rate now found in both the House and Senate Finance Committee bills would increase total net liabilities by \$7.2 billion above the Senate Finance bill. The supply response would change only marginally.

#### Taxing Alaskan North Slope Oil at a Higher Rate

The Senate Finance Committee bill taxes Alaskan oil like all other upper-tier oil, using a 60 percent rate and a base of the difference between the world price and the projected upper-tier price. The House bill applies a 50 percent rate to Alaskan oil, but defines the base as the difference between the world price it will receive and \$7.50 per barrel, the price it received until the 1979 OPEC price increases. Since this price is lower than the upper-tier price that Alaskan oil was allowed under EPCA, Alaskan might appropriately be taxed on the base proposed by the Senate Finance bill. However, Alaskan production will not decrease sizably if its rate is increased. This would suggest a higher rate on the smaller base, such as the 75 percent rate examined above.

Taxing only the upper-tier base with a 75 percent rate would raise Alaskan producers' net liability by \$8.3 billion over the Senate Finance bill. Production from the Sadlerochit Reservoir (Sadlerochit) is not very sensitive to price changes until 1988 or 1989. By that time, the change in tax rates will be very small. Accordingly, this provision captures some producer revenue gains with negligible change in production.

### Creating a High-Base Tax for New Discoveries and Tertiary

New discoveries and tertiary recovery are the two main sources of future U.S. production. Thus, it may be appropriate to afford significant incentives to both. Under the Senate Finance Committee bill, both are exempted from windfall taxation. Under the House bill, both are taxed at a 50 percent rate on prices over a base level, taken to be \$17.00 per barrel, increasing at the rate of inflation plus 2 percent annually. Once prices reach a level of \$26.00 per barrel (which is escalated at the same rate as the \$17.00 base), price increases over this level are taxed at a 60 percent rate.

While the House bill may tax these types of oil too heavily if the concern is primarily with increasing production, it is possible that they correctly identify the principle that ever-decreasing additions to supply will occur as prices increase. This suggests that the proper base for tertiary and newly discovered oil might be at the \$26.00 level, as compared with the \$17.00 level. Were the Senate bill to include this tax, it would increase total liabilities by \$19.7 billion in the 1980-1990 period and decrease production by 25,000 barrels per day by 1990.

### Eliminating the Windfall Profits Tax

In the absence of a windfall profits tax, CBO projects that domestic oil producers' corporate income tax liability would rise by \$197.5 billion over the 1980-1990 period. This increase does not take into account the general reduction in corporate and personal income taxes that may be anticipated along with decontrol. This new corporate tax liability should be compared to the \$315.5 billion combined liability incurred under the Senate Finance Committee windfall profits tax and the corporate income tax.

If no new tax is passed, production of crude oil would be greater than under any of the windfall profits tax alternatives. Decontrol with no windfall profits tax stimulates production of 7.9 million barrels per day in 1990 as compared to 7.6 under the Senate Finance Committee bill and 7.1 million barrels per day under the House bill. A disadvantage of the existing corporate income tax is that the integrated, transnational companies may be able to avoid the tax by transferring profits to profit centers outside the United States, or away from crude oil production operations.



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## CHAPTER V. EXPENDITURE ISSUES--TRUST FUNDS AND TAX CREDITS

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The House and Senate Finance Committee bills allocate receipts from the windfall profits tax for various energy-related programs. 1/ The House bill establishes a trust fund to disperse the gross windfall tax receipts of \$399.6 billion over the 1980-1990 period, but it does not spell out the particular uses of these funds. The Senate Finance Committee bill, on the other hand, uses a portion of the \$118.0 billion net tax receipts 2/ generated from the windfall tax over the 1980-1990 period to establish trust funds to provide assistance to low- and middle-income families to help offset higher energy costs and to improve mass transit. The remaining receipts would be available for tax credits to stimulate residential and business energy conservation and the production of alternative energy sources. Specifically, the Senate Finance Committee bill allocates receipts as follows:

- o Fifty percent of the net tax receipts, or \$59 billion, would be devoted to a Low-Income Energy Assistance Trust Fund that would provide direct cash assistance for low-income households and furnish tax credits to help offset higher home heating costs for middle-income households.
- o One-fourth, or up to \$15 billion, of the net tax receipts would go into a Transportation Trust Fund.
- o Residential conservation tax credits would reduce revenues by \$8.3 billion. 3/

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1/ CBO has only estimated the revenues from both bills for the 1980-1990 period. The Senate Finance Committee bill, however, would begin to phase out the windfall profits tax when total net receipts reach \$127.1 billion.

2/ Net tax receipts are the gross windfall tax liability plus the corporate tax liability on corporate profits after deduction of the gross windfall profits tax, less the liability that would have been incurred under the corporate income tax without a windfall tax. See Chapter III, Figure 2.

3/ Unless noted otherwise, CBO uses Joint Committee on Taxation estimates of federal revenue effects of the various tax credits.

- o Business tax credits would reduce revenues by \$15.0 billion.

The Senate Finance Committee bill also creates a separate Taxpayer Trust Fund that could be used for tax reductions. These funds, which would come from the additional corporate tax revenues produced by decontrol of oil prices, would be sufficient to offset Social Security tax increases currently scheduled for 1981.

This chapter first discusses the advantages and disadvantages of using trust funds as a financing mechanism. It then analyzes the trust fund expenditure proposals (excluding the Taxpayer Trust Fund) and the potential energy savings and federal revenue losses from the various tax credits contained in the Senate Finance Committee bill.

### TRUST FUND FINANCING

The primary advantage of using a trust fund as a financing mechanism is that it provides an automatic, self-adjusting device for channeling the receipts of a special tax into programs that are closely related to that tax. If the revenue source is steady, it also provides funding security for programs that require long lead times for planning. A trust fund device may be less desirable, however, if uncertainty about the amount of receipts that will enter the fund in future years inhibits careful planning and leads to program inefficiency. This is a potential problem for the trust fund in the House bill since the receipts in that bill are extremely sensitive to future OPEC prices, which are very difficult to project. Since the Senate Finance Committee bill phases out the tax, this is a less serious problem in terms of the total receipts available to the trust fund, though the time at which these receipts will be available still remains uncertain. The unpredictability of these tax revenues was demonstrated by the June 26, 1979, OPEC price increase, which almost doubled the estimates of trust fund receipts that had prevailed only a few months earlier. Earmarking such an unpredictable source of receipts for long-term investments in energy programs could lead to over- or under-investment of the windfall profits tax revenues.

Under both bills, the proposed trust funds would be subject to the normal Congressional authorizing and appropriating processes. In principle, this would permit the Congress to adjust expenditures from the funds to fit with energy policy, fiscal policy, changing needs, and evolving legislative priorities. But by earmarking the trust fund receipts for specific program purposes (as the Senate Finance Committee bill does), the Congress would reduce its flexibility to redirect receipts toward changing priorities. Consequently, decisions about yearly expenditures might be based more on the

amount of receipts available in the trust funds than on the importance of the specific programs.

## LOW-INCOME ENERGY ASSISTANCE TRUST FUND

### Overview

The Senate Finance Committee bill would allocate one-half of the net tax receipts from the windfall profits tax to a Low-Income Energy Assistance Trust Fund; this would total \$59 billion for the 1980-1990 period. These funds would be used to provide direct cash payments for energy-related costs to low-income households and to furnish tax credits to middle-income households to offset a portion of their home heating expenditures. While the cost of the tax credits would be uncontrollable, the cash payments are limited by an authorization ceiling. It is unlikely that there would be much direct overlap between the two assistance mechanisms, since few households would probably qualify for both. But trust fund allocations for the tax credits (if they run ahead of projected costs) could reduce the funds available for cash payments.

### Analysis

Low-Income Energy Assistance. Cash assistance would be provided to low-income households through a variety of mechanisms, including cash payments through current welfare programs, block grants to states, and state tax credits for vendors or direct payments to vendors who reduce energy prices for low-income households. These mechanisms are similar to those included in the Administration's decontrol proposal. Under the Senate Finance Committee plan, monthly supplemental cash benefits would be paid to low-income households participating in the Aid to Families with Dependent Children (AFDC) and Supplemental Security Income (SSI) programs. Food stamp recipients not participating in AFDC or SSI would also receive a supplemental payment for energy assistance once or twice a year. Benefits for multiple-person households would be 50 percent greater than those for a single person.

Through the end of fiscal year 1982, up to \$3 billion a year would be appropriated for low-income energy assistance. 4/ Fifty percent of the

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4/ The program would be reviewed before the end of fiscal year 1982 to determine how trust fund receipts for low-income assistance would be used in subsequent years.

funds would be allocated among the states according to their proportion of total U.S. energy expenditures by low-income households (that is, households below 125 percent of the poverty level). The other 50 percent would be allocated among the states on the basis of heating needs weighted by a state's proportion of the total U.S. low-income population. <sup>5/</sup> The average payment per household would depend upon estimated national caseloads. Payments to AFDC and SSI recipients would be based upon these estimates and would be dispersed first. The payment to food stamp recipients would come out of remaining funds and would be reduced if actual caseloads exceeded projections. <sup>6/</sup> In fiscal year 1982, assuming that the energy assistance program did not induce additional participation in welfare programs, the average monthly caseload for AFDC, SSI, and food stamp participants would be about 11 million households. Thus, the average payment to a welfare family would be about \$275 a year; that is, about 18 percent of the direct and indirect oil expenditures by families in the bottom 20 percent of the income distribution. <sup>7/</sup>

States would have the option of receiving their allocation in the form of a block grant to be used as they choose to meet the energy needs of their low-income populations. States could, for example, use the funds for vendor payments to suppliers who reduce the heating bills of the low-income population.

Regardless of the option that the states choose, the energy assistance plan has two overall advantages. First, even though it is an entitlement program, <sup>8/</sup> it has a funding ceiling which affords greater control over the commitment of federal dollars. This control is further strengthened by the fact that the assistance is provided only through the end of fiscal year 1982,

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<sup>5/</sup> This allocation is calculated on the basis of "heating degree days" as defined by the National Oceanic and Atmospheric Administration.

<sup>6/</sup> In no case would benefits be reduced for SSI recipients.

<sup>7/</sup> Direct expenditures are the retail costs paid by households for gasoline, heating oil, and propane; indirect expenditures are the costs paid by households reflecting the value of petroleum in other consumer products. These expenditures are discussed in more detail in CBO, The Decontrol of Domestic Oil Prices: An Overview (May 1979), Chapter VII.

<sup>8/</sup> Entitlements are benefits that must be provided to anyone who qualifies under the law.

at which time the program must be reviewed. Second, benefits would not rise over this period, a limitation that should act as an incentive for the low-income populations to conserve as they have time to adjust to higher prices.

The major advantage of using block grants for low-income energy assistance is that they would allow states to adjust the program to local needs.

On the other hand, using current welfare programs would have a number of distinct advantages:

- o Additional administrative costs would be minimized by using the administrative structures of existing programs. Administrators of such programs as AFDC, SSI, and food stamps are experienced at dealing with low-income households.
- o Current welfare programs cover a large part of the low-income population.
- o The benefits could be provided in a timely fashion that would make the program responsive to increased energy expenditures as they occur.
- o Cash supplements meet general income needs and do not directly subsidize expenditures on energy. Direct subsidies, such as in vendor payments, could counteract the objective of stimulating conservation.
- o Relating state allocations to heating needs and the size of the state's low-income population would help offset the inequities associated with differing regional dependence on particular petroleum products.

The overall disadvantages of the low-income energy assistance plan could include the following:

- o Although the proposal mitigates the effects of rising energy prices, it does not attack the basic problem--that is, low-income households generally live in the most energy-inefficient housing. The plan offers incentives for conservation only over time, and then only by a reduction in the real value of assistance. Unfortunately, low-income households are the population least able to respond to financial incentives since they lack the money to make the original investment in conservation improvements.

- o Since the plan is not an open-ended entitlement but has a spending ceiling, there may be unequal treatment among low-income households within states and between states. An unanticipated rise in the low-income population could reduce benefits for those who need them most. Low-income families living in states with unanticipated growth in caseloads and greater need might receive less than recipients in states with anticipated or less than anticipated caseloads.
- o Since many welfare recipients reside in nonpoor households--for example, elderly SSI couples living with their children--energy assistance may end up going to households that are not needy.
- o The block grant option gives the federal government less control over the form of assistance. States could conceivably target benefits on existing cash welfare programs or through crisis intervention assistance and not provide benefits to low-income households that do not qualify for these forms of assistance.
- o The vendor payment option for states that choose the block grant would subsidize the low-income population for actual energy expenditures at the rate of 25 percent. Such reductions in home energy expenses would reduce the incentive for the low-income population to conserve. Moreover, direct vendor payments may be difficult to monitor and increase the administrative burden of the program.

Tax Credit for Residential Energy Use. In addition to low-income energy assistance, taxpayers would be entitled to a nonrefundable tax credit for energy used to heat their homes. There would be very little overlap between recipients of the credit and the energy assistance program, since low-income households have little or no tax liability against which to claim the credit. Thus, the credit would be used primarily by middle-income taxpayers. The maximum credit would be \$200 per return for taxpayers with adjusted gross incomes below \$18,000 in 1979 and below \$20,000 in 1980 and 1981. Above these levels, the credit would be phased out at the rate of \$1 for every \$10 of income, so that the credit would not be available to taxpayers with incomes above \$20,000 in 1979 and above \$22,000 in 1980 and 1981. The minimum credit would be \$20 in 1979 and \$30 in 1980 and 1981. The credit would be based in part on actual energy use. The credit would equal a percentage of the amount that the price of a particular fuel increased above the general inflation rate during the year, times the actual amount spent by the taxpayer for that particular heating fuel. Renters would qualify regardless of whether or not they were separately metered. Renters not separately metered would compute their credit according to a

percentage of their rent. This home heating credit would be available from 1979 through 1981 and would reduce total federal revenues by \$4.8 billion from 1980 through 1990.

The tax credit approach for energy assistance to middle-income taxpayers has several advantages:

- o It should be relatively simple to administer. Though it requires the collection of additional information and at least another line on the Form 1040, the Internal Revenue Service (IRS) has experience in dealing with such tax credit subsidies.
- o It targets the credit on those taxpayers most adversely affected by recent rises in the prices of oil and other forms of energy. The income cutoff prevents benefits from going to higher-income taxpayers who have a greater ability to pay for rising energy costs.
- o The credit would provide assistance to some low-income taxpayers who do not qualify for the low-income energy assistance.
- o Since the credit subsidizes only a portion of rising energy costs, it retains some incentive to conserve while providing relief for a short period during which conservation improvements can be made.

Heating tax credits have a number of disadvantages, however:

- o Subsidizing part of heating expenditures and basing the tax credit on actual energy use does not encourage conservation.
- o Unless taxpayers adjust their withholding, the tax credit is not responsive to needs as they occur.
- o In and of itself, the tax credit is probably not adequate to offset the burden of rising heating costs.
- o Taxpayers for whom cooling may be particularly burdensome would not benefit from the credit.

## TRANSPORTATION TRUST FUND

### Overview

The Senate Finance Committee bill establishes a trust fund for mass transit, dedicating to it one-quarter of the net receipts of the windfall

profits tax, up to a total of \$15 billion over the period 1980-1990. Projections of tax receipts suggest that the upper limit of \$15 billion almost certainly would be available. Though the bill stipulates that the Transportation Trust Fund should be used to help finance energy-efficient transportation, it leaves the design of specific programs to the authorizing committees (Senate Banking, Senate Public Works, and House Public Works). One possible policy is the package of transit programs proposed by the Administration, which would cost \$15.5 billion between 1980 and 1990 for two major programs.

Under the public transportation investment program, \$13 billion of the funds would go to various forms of public transportation. The Secretary of Transportation has suggested spending \$5.0 billion on buses and bus-related facilities, \$5.4 billion on modernization and extension of existing mass transit rail systems, \$0.9 billion to fund transit programs currently authorized but not appropriated, and \$0.8 billion to accelerate transit projects that are substituted for withdrawn segments of the Interstate Highway System.

The Administration's proposed auto use management program would increase the amount of federal funding available for enforcing the 55 miles-per-hour speed limit, for promoting greater use of carpools and vanpools, and for building additional highway lanes to be used for inspection stations that would check tire pressure, tuneups, and other factors that influence a vehicle's fuel economy.

The estimates presented in Table 13 indicate that from 65,000 to 158,000 barrels per day of oil might be saved by these two programs in 1990. Although these estimates are far lower than the corresponding savings estimated by the Department of Transportation, they should probably be considered upper limits because they are based upon optimistic assumptions about local spending and additional patronage. <sup>9/</sup>

### Analysis

The savings of oil that might be obtained from the trust fund programs depend upon which transportation modes are selected for additional funding.

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<sup>9/</sup> Rough estimates made by the Department of Transportation show total energy savings of 277,000 barrels per day by 1990. See Department of Transportation, Estimated Impacts of the Transportation Energy Initiative (September 1979).



TABLE 13. ESTIMATED POTENTIAL SAVINGS OF OIL FROM ALTERNATIVE MASS TRANSIT PROGRAMS: IN THOUSANDS OF BARRELS PER DAY

Program	1985	1990
Public Transportation Investment		
Bus and related facilities	8-13	16-26
Mass transit rail modernization and extension	5-8	11-15
Completion of new rail systems	<u>0-1</u>	<u>0-2</u>
Subtotal, Public Transportation	13-22	27-43
Auto Use Management--Ridesharing	<u>18-115</u>	<u>38-115</u>
Total	31-137	65-158

NOTE: These estimates assume that the funds do not substitute for current or expected support for energy-efficient transportation--that is, the funds provided by the trust fund represent net additional resources. Further, they assume that any new projects supported by these funds will be at least as productive in terms of patronage and energy savings as are existing projects. Accordingly, these estimates should be viewed as upper bounds, since some substitution of funding sources is likely and since expansion of transit capacity, by itself, is not likely to yield proportional increases in transit patronage. Nevertheless, such increases might take place if fuel prices continue to rise rapidly and if occasional shortages continue to occur.

The different modes of urban transportation show substantial variations in their ability to reduce energy consumption. Vanpools and carpools show the greatest savings of oil for each passenger mile of travel they attract. These savings represent the difference in oil required to travel by vanpool or carpool relative to that which would be required on the modes otherwise

taken. <sup>10/</sup> Buses, particularly express buses operating on exclusive rights of way or reserved lanes, show the next greatest potential to save oil. New heavy rail systems do not appear to promise savings of total energy, although they can help to save oil since much of their energy comes from nonpetroleum sources. Existing heavy rail systems, particularly those built before the automobile age, probably can yield savings of energy similar to those of buses since these older systems have relatively few energy-consuming amenities (escalators, air conditioning, and so forth) and since an exceptionally high proportion of their patrons walk rather than drive to stations.

The package of programs suggested by the Secretary of Transportation generally directs funding toward modes with the greatest oil-saving potential: buses, existing rail systems, carpools, and vanpools. It is, however, somewhat skewed toward existing rail systems, which would receive more aid than buses even though they carry only one-third as many passengers. This emphasis may be appropriate, inasmuch as current federal transit programs do not fully reflect the high patronage, and correspondingly high state and local subsidies, that are associated with some of the existing rail systems. In addition to oil savings, the proposed extensions to bus and rail capacity would enhance public transportation's ability to serve temporary peaks in patronage that might be generated during future periods of acute fuel shortages.

The greatest potential savings are available through the ridesharing program, in which savings of 38,000 to 115,000 barrels per day are possible by 1990. Although the potential of ridesharing is somewhat speculative because of the varied results obtained thus far, the energy savings of the overall package might be increased by allocating a greater proportion of funds to the construction of busways and similar facilities that make buses, carpools, and vanpools more attractive.

Probably the greatest weakness of the Administration's proposal is that it allocates \$12.1 billion of the \$13 billion designated for public transit investment to the discretionary grant or loan program and the formula bus grant program. <sup>11/</sup> This creates a substantial risk that new rail starts,

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<sup>10/</sup> These savings also include the energy used to get to stations as well as other secondary uses. For details, see CBO, Urban Transportation and Energy: The Potential Savings of Different Modes (September 1977).

<sup>11/</sup> Sections 3 and 5(a)4(A) of the Urban Mass Transportation Act of 1964.

which have dominated the discretionary grant program in the past, will continue to do so in spite of their relatively poor oil-saving potential and in spite of the Secretary of Transportation's statements to the contrary. More specific language than that contained in the Administration's proposed authorization bill could eliminate this risk.

Another disadvantage of the Administration's proposal is that it contains no funds for the additional operating costs required for the new transit and highway facilities. Even though these costs will be partly offset by transit revenues, the increased operating deficits could be \$800 million a year by 1985 and \$1.3 billion a year by 1990. Both of these estimates are in 1979 dollars; continued inflation will result in much greater deficits, probably over \$3 billion a year in 1990. State and local governments will have to bear most of these added expenses.

## RESIDENTIAL CONSERVATION TAX CREDITS

### Overview

The Senate Finance Committee bill uses part of the windfall profits tax receipts to broaden existing tax credits designed to stimulate residential conservation. Currently, a 15 percent tax credit for residential conservation expenditures, in effect since 1978, can be applied to expenditures for insulation, storm windows and storm doors, replacement burners for oil and gas furnaces, furnace ignition systems that eliminate pilot lights, clock thermostats, caulking and weatherstripping, and display-type electric meters. The existing credit is limited to \$300 per dwelling and applies to expenditures made between April 20, 1977, and December 31, 1985. Since 1978, a tax credit has also been provided for purchases of equipment that uses renewable resources, such as solar energy. This credit is 30 percent of the first \$2,000 of conservation improvements and 20 percent of the next \$8,000. CBO estimates that the existing tax credits will save the equivalent of about 80,000 barrels of oil per day by 1985, at a cost of about \$3.2 to \$3.8 billion in reduced tax receipts between 1980 and 1985.

The Senate Finance Committee bill would extend and expand the current tax credits for residential conservation investment to include:

- o A 15 percent credit for heat pumps that replace ordinary electric furnaces or serve to back up solar water heaters.
- o A 15 percent credit for efficient woodstoves (eligible for the credit through 1982). Chimneys and flue-connection costs would not be covered.

- o A 10 percent credit to landlords for conventional conservation improvements.
- o A 15 percent credit for replacement of oil and gas furnaces with high-efficiency models and a 25 percent credit for installation of new coal-fired furnaces and boilers.
- o An increase in the renewable energy resource equipment tax credits to 50 percent of expenditures up to \$10,000 per dwelling (40 percent for landlords).
- o Credits for equipment that produces electricity from solar energy or other renewable fuels, and for drilling costs for geothermal wells.
- o Credits for conservation improvements on vacation homes and jointly owned equipment.

Relative to the savings that would occur under current policy, these extensions and expansions of conservation tax credits would save an additional 110,000 barrels per day of oil equivalent by 1990. These provisions would cost an additional \$8.3 billion in reduced receipts between 1980 and 1990.

#### Analysis

The additional energy savings from these provisions are relatively low. Several specific weaknesses in the tax credit approach can be identified, as well as possible ways to obtain additional savings from cash grants and subsidized loans for conservation improvements.

Current Policy Conservation Savings. Normal market forces, particularly in response to higher energy prices from oil price decontrol, natural gas deregulation, and existing federal policies, will stimulate a savings of about the equivalent of 500,000 barrels of oil per day by 1990. Current policy includes the existing tax credits for conventional conservation improvements and for equipment to utilize renewable resources. Any savings attributable to the Senate Finance Committee proposal must be in addition to these substantial savings that would occur even without further incentives.

Cost-Effectiveness. Both the existing nonrefundable tax credits and the extension proposed by the Senate Finance Committee are most attractive to middle- and upper-income taxpayers who have money to make

improvements and who have sufficient tax liabilities against which to claim credits. Nonrefundable credits provide subsidies to many middle- and upper-income households that would have invested in conservation without the subsidy. Low-income households generally lack the funds to make improvements and have insufficient tax liabilities to claim all or even part of a nonrefundable tax credit. Yet, low-income households promise the greatest additional conservation savings since many of them have not yet made initial conservation improvements.

The cost-effectiveness of conservation subsidies could be improved in a number of ways. A refundable tax credit could increase the funds going to low-income taxpayers, but it would continue to provide windfalls to higher-income households. Targeting could be improved by reducing the size of the credit as income rises. Since conservation measures require "up-front" financing, the low-income population may be better served by cash grants or subsidized loans, which alleviate the problem of having to finance improvements well before the credit is received. Loans or grants could be limited to low-income households to improve targeting and reduce unintended windfalls for higher-income households.

Declining Returns per Dollar Spent on Improvements. Since the easiest and best energy-saving projects will be chosen first, improvements made at the end of the projection period will save less energy per dollar of cost than improvements made earlier. Relatively cheap ceiling insulation saves more energy than a costly window replacement. Though the window replacement may be financially worthwhile by 1985, the energy saving in oil equivalent will be small compared to initial improvements made earlier.

Renters. In most cases, renters have little incentive to make conservation improvements, because few of them are long-term occupants of their dwellings and many do not pay their own utilities. Though renters qualify for conservation tax credits, they must still pay a large portion of conservation improvements and there is a substantial chance that they will not stay long enough to see their investment pay off. On the other hand, a cash grant program that provided a large subsidy of the first dollars of conservation expenditures would probably offer renters a much greater incentive to invest. Subsidized loans would probably offer the greatest incentive to landlords, who would not be required to make substantial up-front investments.

Administration. The IRS has relatively little experience in administering a residential subsidy program. Moreover, apart from the threat of audit, the IRS has few opportunities to monitor subsidy claims, or to minimize fraud and abuse in applying for the subsidy. The IRS also does not have much impact on the population group that offers the greatest conservation savings--that is, low-income households.

On the other hand, a grant or loan program administered through the utility companies might have more success. Utilities could handle the financing of conservation improvements and include repayment of loans in monthly utility bills. This would address the up-front financing problem of the low-income population and utilize an existing institutional structure that has experience in home energy use, access to residents, and name recognition for energy matters.

Ensuring Proper Installation. Unless energy-saving improvements are examined or audited both before and after installation, there can be no assurance that tax credits are in fact subsidizing improvements that are needed, that promise substantial energy savings, and that are installed properly. The IRS is not equipped to administer effectively a pre- and post-conservation audit.

Once again, utility companies may be able to offer assistance in this regard. It may be worthwhile to pay utilities to administer a rigorous pre- and post-audit to assess conservation needs and assure proper installation. They could perhaps be required to perform energy audits for all residential customers over the next 10 years.

## BUSINESS TAX INCENTIVES

### Overview

The Senate Finance Committee bill includes tax incentives designed to encourage energy production or conservation from a wide variety of existing and emerging technologies. These tax incentives include investment credits for solar and wind energy, geothermal energy, hydroelectric power, biomass energy, and conservation and cogeneration;<sup>12/</sup> and production credits for alcohol and alternative energy sources such as oil shale, tar sands, and new fuels from coal. By 1990, under current tax incentives and oil price decontrol, it is estimated that these technologies are likely to provide and save energy equivalent to a total of 1.0 to 1.5 million barrels per day of oil. The business tax incentives in the Senate Finance Committee bill would increase energy production and conservation from these technologies by perhaps another 200,000 to 400,000 barrels per day of oil equivalent in 1990. The additional production and conservation would come at a tax expenditure cost of \$15.0 billion from 1980 through 1990.

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<sup>12/</sup> Cogeneration is the generation of electricity, combined with direct use of the residual heat for industrial process heat or for space heating.

The following section analyzes the various credits for investment in energy facilities, alcohol production, and alternative fuel production in the Senate Finance Committee bill. Specifically, it describes the major provisions, their individual energy effects, and costs to the government in reduced tax receipts, and it examines the general advantages and disadvantages of the investment tax credits and the specific production tax credits.

### Analysis

Business Energy Investment Credits. The major business energy investment credits in the Senate Finance Committee bill would increase and extend existing investment tax credits. Collectively, these new provisions are estimated to increase production and conservation by about 100,000 to 300,000 barrels per day of oil equivalent over current tax incentives in 1990 and reduce federal revenues by \$13.0 billion from 1980 to 1990. Specifically, these investment credits for the various energy sources include:

- o Solar and Wind Energy. The bill would increase the current refundable energy credit from 10 to 20 percent, extend the effective period for the credit from 1982 to 1990, and allow the credit for equipment that uses solar process heat for commercial and industrial facilities. Coupled with current credits, this would more than halve the capital costs of solar and wind facilities for businesses and lead to additional energy production of 50,000 to 150,000 barrels per day of oil equivalent over current policy.
- o Geothermal Energy. The bill would raise the present nonrefundable tax credit from 10 to 20 percent and extend it from 1982 to 1990. Geothermal energy production is projected to be small under current tax incentives, and the new provision could produce an additional 30,000 to 40,000 barrels per day of oil equivalent.
- o Hydroelectric Power. The bill would establish a new nonrefundable investment tax credit of 10 percent and make development bonds tax exempt. This provision would stimulate small additional energy production of about 10,000 to 25,000 barrels per day of oil equivalent.
- o Biomass. The bill would increase from 10 to 20 percent the current refundable energy tax credits for investments such as those to utilize urban waste as a supplement for fossil fuels in boilers. It would extend the credit through 1990 and make industrial development bonds tax-exempt. Additional energy production stimulated by the credit could be up to 50,000 barrels per day of oil equivalent.

- o Conservation and Cogeneration. The bill would establish a new nonrefundable 10 percent tax credit for investment in cogeneration facilities to produce steam or heat both for generation of electricity and for use in industry, agriculture, or the commercial sector. A large variety of conservation investments would benefit from this tax credit. Though potential energy savings might be large, institutional constraints in the relationship between public utilities and consumers would limit the short-term savings.

Alcohol Production Credit. Under current law, gasohol (a mixture of 90 percent gasoline and 10 percent alcohol made from any source other than oil, natural gas, or coal) is exempted from the 4 cent per gallon federal excise tax on gasoline. The Senate Finance Committee bill would replace this exemption with a refundable tax credit for the manufacturers of alcohol for motor fuels and a reinstitution of the excise tax. The tax credit would be 40 cents per gallon for alcohol made from any source other than oil, natural gas, or coal, and 10 cents per gallon for alcohol made from coal. In the aggregate, this stimulus is no greater than the one it replaces. Under current policy, about 75,000 to 150,000 barrels per day of oil equivalent are expected to be produced from alcohol by 1990. The production credit would not stimulate significant quantities of new supplies because the amount of credit is not being increased by this bill. This production credit would reduce federal revenues by \$1.9 billion for the 1980-1990 period.

Alternative Energy Production Credit. The Senate Finance Committee bill would provide a nonrefundable tax credit of \$3 per barrel of oil equivalent for energy production from a number of emerging technologies, such as oil shale; tar sands; gas from geopressurized brine, coal, or Devonian shale; synthetic fuels from coal (other than alcohol); gas from biomass; steam from agricultural residues; and certain wood products. This credit would phase out as the price of imported oil approaches \$29.50. Because this analysis projects that the price of imported oil will be about \$30 per barrel by January 1980, this production credit would not be available to producers of alternative fuels, such as oil shale and tar sands, which would receive the world price. It is possible, however, that some production of unconventional gas would still be below the world oil price, and may still receive some of the production subsidy. Accordingly, production stimulated by this credit would be small—probably less than 10,000 barrels per day of oil equivalent over the 400,000 barrels per day that would occur under current policy in 1990. Thus, the tax expenditure impact would be insignificant.

These investment and production tax credits have a number of advantages:



- o They reduce the real price of some existing and emerging technologies, and are likely to accelerate investment decisions. The size of the production subsidy for alcohol from biomass--the equivalent of about \$16.80 per barrel--will make the investment in alcohol production very attractive, but no more so than the existing excise tax exemption for gasohol.
- o In general, subsidies stimulate additional production and energy savings that would not occur under current incentives. Moreover, production credits may have a more significant impact on new production than investment credits that subsidize new plant and equipment. For example, subsidizing actual alcohol production may stimulate more new production than a tax credit for investment in alcohol conversion facilities. Facilities for grain-based alcohols can be built quickly and with less capital investment than alternative resources such as synthetic fuels.
- o Many of these energy sources will be substitutes for fossil fuels and will indirectly reduce U.S. dependence on foreign oil.

On the other hand, investment and production tax credits have a number of disadvantages:

- o Though potential additional energy production or savings may be quite large, the actual savings stimulated by the credits are quite small for a number of the technologies.
- o Savings may come at substantial cost to the government in the form of reduced federal receipts.
- o Institutional barriers, such as those between utilities and consumers, may dampen the stimulative effects of the tax credits.
- o Alcohol production may be limited by the amount of resources available for conversion. For example, 5 percent of the 1979 grain harvest would produce the equivalent of only 75,000 barrels per day of oil equivalent. The equivalent production from other fuels could probably be achieved with lower subsidy levels. Moreover, the credit for alcohol production may increase food price inflation.
- o The investment and production tax credits may provide a windfall to producers who would have developed alternative fuels anyway as they become economically attractive.



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## APPENDIX

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APPENDIX.       ESTIMATES OF CRUDE OIL PRODUCTION RESPONSES  
                    UNDER FOUR SCENARIOS

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This appendix provides details on the oil supply projections used in estimating producer revenues for the four scenarios discussed in this paper. The four scenarios are as follows:

- o An indefinite continuation of controls in effect in May 1979 under the Energy Policy and Conservation Act (EPCA). This postulates controls remain on the prices of heavy and newly discovered oil, both of which have been decontrolled since May. It further assumes no controls on the prices of oil from incremental tertiary production if producers can certify that such production qualifies as tertiary. The Administration accorded this treatment to tertiary oil in May 1979.
- o Decontrol of oil prices, as announced by the President, with no windfall profits tax. This case assumes that the increased industry revenue and profits receive conventional corporate income taxation.
- o Decontrol and the windfall profits tax bill passed by the House.
- o Decontrol and the windfall profits tax bill reported by the Senate Finance Committee.

Estimates of production of crude oil under each scenario are derived by dividing current production into geological components and projecting each by specific techniques that are applicable to the geological conditions. The three major geological components are:

- o Production from proven reserves;
- o Production from resources not yet discovered; and
- o Production from the Alaskan North Slope.

PROVEN RESERVES

All 1979 production is from proven reserves. About two-thirds of total production (excluding Alaskan North Slope oil which is treated separately)

comes from about 200 relatively large fields. Almost all of these fields have been producing oil for over ten years, and the great majority for over 25 years. Production by conventional primary and secondary recovery methods is declining in most fields because of depletion. Across the nation, the decline in production from properties that have had no new discoveries of reserves has averaged 12.7 percent per year. This report projects that, if price controls are extended, production will decline at the 12.7 percent rate unless enhanced recovery methods are used. If prices are decontrolled, however, the industry will have very high incentives to accelerate production for two to five years, after which the production would fall below the basic decline rate as the fields become depleted. The American Petroleum Institute (API) has compiled reserve estimates, called "indicated" reserves, which represent the potential enhanced recovery from known fields if certain advanced techniques, including some tertiary, are used. These indicated reserves represent the upper limit for enhanced production from known reserves over the next 10 to 15 years. CBO combined these API estimates of indicated reserves with estimates of enhanced production from a number of other studies to arrive at estimates of tertiary recovery from proven reserves under each price and tax scenario for 1985 and 1990.

All future lower-tier, marginal, and Naval Petroleum Reserve crude oil will be produced from today's proven reserves. In addition, a large part of upper-tier, stripper, and additional tertiary oil will come from proven and indicated reserves. To establish the aggregate production for these categories, CBO's projection under continued controls used the basic decline rate of 12.7 per year plus an increment for tertiary recovery. Production for each price category (lower tier, upper tier, and so on) was calculated separately by a similar process except that different decline rates were used for each category, depending on the specific price incentives existing under controls. The resulting projections in this appendix are the mid-points of ranges.

Production resulting from decontrol with no tax is difficult to estimate because the increase in cash flow to production from lower-tier, marginal, and upper-tier properties would be much greater than has ever been experienced in the past. This analysis assumes that 20 percent of the incremental cash flow is invested in acceleration of production from proven reserves. (The remaining 80 percent would be invested either in exploration and production of new reserves, or in non-oil ventures.) This investment in drilling, water-flooding, and other infrastructure associated with production from old properties would accelerate production by a maximum of about 410,000 barrels per day in 1982 over a production under extended controls.

Estimates of production from proven reserves that would result from the House or Senate Finance Committee bill differ from those that would

result from extended controls, because of different incentives contained in each bill. The House bill would be very stimulative for oil in the lower tier because it increases cash flow per barrel by over 100 percent compared to extended controls. The relative incentive provided for upper-tier oil would be smaller but still stimulative. The incentive for stripper oil, however, would be negative, compared to the extended controls, because the House bill would tax stripper oil which was exempted from controls under EPCA. In the aggregate, the House bill would stimulate enough investments in known fields to result in 320,000 barrels per day more production in 1982 from currently proven reserves than would an extension of controls. This increase is mostly an acceleration of production which, under extended controls, would occur in later years. By 1988, production would fall below that under the extended controls because of accelerated depletion.

The Senate Finance Committee bill would be less stimulative than the House bill for lower-tier, marginal, and upper-tier oil. It would, however, be more stimulative than a continuation of controls. Of the types of oil from proven reserves, the Senate Finance Committee bill would stimulate only heavy oil and new tertiary recovery more than the House bill does. A technique using cash flow and return on investment was used to estimate heavy oil production.

Production from proven and indicated reserves for the four scenarios is summarized in Table A-1.

#### NEW DISCOVERIES

Discoveries of additional reserves will provide the basis for the balance of production from upper-tier, stripper, and new tertiary categories. (New upper-tier oil is the most important category). Production was estimated by two techniques. First, reserve additions (which are variously called revisions, extensions, new fields, new pools, extensions to new pools, and frontier discoveries) were disaggregated and projected individually to reflect specific conditions and constraints. Second, all drilling outside of established fields was accumulated, and the average reserves of any type added per well by that drilling were estimated. The computations are complicated, but in both approaches the key assumptions are (1) the effect on exploratory and developmental drilling of the relative price incentives, and (2) what would be the "finding rate" of reserves found per foot or per well drilled. For simplicity and consistency, this analysis assumes the same finding rate in all cases. Finding rates are assumed to decline by about 1.5 percent per year through 1990. This decline reflects recent trends.

TABLE A-1. CRUDE OIL PRODUCTION FROM CURRENTLY PROVEN RESERVES UNDER FOUR SCENARIOS, CALENDAR YEARS 1985 AND 1990: IN THOUSANDS OF BARRELS PER DAY

Scenario	1985	1990
Continued Controls		
Conventional Recovery	3,200	1,600
Heavy and Tertiary Recovery	465	820
House Bill		
Conventional Recovery	3,510	1,400
Heavy and Tertiary Recovery	410	670
Senate Finance Committee Bill		
Conventional Recovery	3,460	1,575
Heavy and Tertiary Recovery	495	905
Decontrol with No Tax		
Conventional Recovery	3,550	1,615
Heavy and Tertiary Recovery	515	950

Projecting exploration for new reserves (mostly drilling) as a result of price incentives poses methodological difficulties. Two problems are involved: how fast drilling and exploration would increase in the near term, and when the increase would cease because of changing economic conditions. Drilling under extended controls is projected to increase very slowly because of the increase in stripper prices. Drilling as a result of decontrol with no tax is assumed to increase at the maximum historically observed rate for a three-year period. If a windfall profits tax is passed, the drilling rate would be somewhat lower than that which would result from no tax.

The eventual decline of drilling is estimated by a technique based on a ratio of value of reserves discovered per dollar of investment. After the embargo and price increases of 1973-1974, the "value-to-cost ratio" increased rapidly, the ratio declined because the increase in exploratory and development costs were greater than the controlled price increases of the oil being discovered, and because the finding rate declined. After four to five years, the ratio was similar to that before the embargo, so that drilling for oil stagnated and started to decline. This analysis assumes that after an



initial spurt of exploratory activity from decontrol, the same will happen in the future, but at different times for different types of oil, depending on the relative incentives.

As a result of projections of drilling and finding rates, reserve discoveries can be estimated. This study assumes that 8 percent of reserves discovered onshore in the lower 48 states are produced one year after discovery and that conventional production profiles are used thereafter. Production from new discoveries for each case is summarized in Table A-2.

TABLE A-2. CRUDE OIL PRODUCTION FROM NEW RESERVE DISCOVERIES UNDER FOUR SCENARIOS, CALENDAR YEARS 1985 AND 1990: IN THOUSANDS OF BARRELS PER DAY

Scenario	1985	1990
Continued Controls	2,290	3,030
House Bill	2,395	3,655
Senate Finance Committee Bill	2,625	3,775
Decontrol with No Tax	2,705	3,960

By 1985, roughly two-thirds of reserve discoveries will actually be extensions and revisions to already producing fields. By 1990, such "close to home" types of reserves will account for less than 40 percent of new production. New fields and discoveries in unexplored areas (such as Alaska or the Outer Continental Shelf) will account for almost half of new production. Obviously, a discovery like that of Prudhoe Bay would change these estimates dramatically.

#### ALASKAN NORTH SLOPE

This category was estimated separately because the North Slope production is substantial and has a unique production profile. Simply put, the producers are not sure at what rate they will produce because of changing economic conditions and because the primary reservoir is not

behaving exactly as planned. The projection used in this report is a synthesis of recent testimony and statements by the producers as well as older engineering reports.

Under extended controls, the incentives are low relative to the alternative cases, but nonetheless favorable. Production from the primary (Sadlerochit) reservoir is predicted to maintain a level of 1.5 million barrels per day through 1987, and then decline rapidly to 1.125 million barrels per day in 1990. That production will probably be supplemented with up to 175,000 barrels per day, mostly from the Kuparuk reservoir (see Table A-3). Under the alternative scenarios, the decline of the Sadlerochit would be slightly less, and production from the Kuparuk and other fields, such as Lisburne and Point Thompson, would be marginally greater.

Total production for the four scenarios is itemized by year in Tables A-4 to A-7.

TABLE A-3. CRUDE OIL PRODUCTION FROM THE ALASKAN NORTH SLOPE UNDER FOUR SCENARIOS: BY CALENDAR YEAR, IN THOUSAND BARRELS PER DAY

Scenario	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Continued Controls												
Sadlerochit	1,290	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,400	1,270	1,125
Kuparuk and Other	---	---	---	20	35	60	75	80	80	120	140	175
House Bill												
Sadlerochit	1,290	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,420	1,310	1,160
Kuparuk and Other	---	---	---	20	35	60	75	85	95	135	180	190
Senate Finance Bill												
Sadlerochit	1,290	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,430	1,330	1,180
Kuparuk and Other	---	---	---	20	35	60	75	85	95	140	180	190
Decontrol with No Tax												
Sadlerochit	1,290	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,450	1,350	1,200
Kuparuk and Other	---	---	---	20	35	60	75	85	95	140	180	190

TABLE A-4. CRUDE OIL PRODUCTION BY CATEGORY RESULTING FROM EXTENDED CONTROLS: BY CALENDAR YEAR, IN THOUSANDS OF BARRELS PER DAY

Category	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Lower Tier												
Minus Heavy	1,980	1,650	1,420	1,225	1,050	900	775	660	570	485	415	355
Heavy	60	55	50	40	35	30	25	25	20	20	15	15
Marginal												
Minus Heavy	685	515	395	295	225	170	130	105	80	65	50	40
Heavy	15	15	10	10	5	5	5	5	5	5	5	5
Upper Tier from Known Reserves												
Minus Heavy	2,940	2,530	2,140	1,810	1,535	1,305	1,095	925	785	665	560	475
Heavy	80	80	80	80	80	75	70	65	55	50	45	40
New Upper Tier	---	510	930	1,250	1,440	1,625	1,820	1,920	1,945	1,920	1,880	1,810
New Tertiary	---	70	100	160	220	295	385	460	530	595	650	720
Stripper												
Minus Heavy	1,260	1,365	1,375	1,345	1,310	1,295	1,285	1,315	1,365	1,450	1,530	1,610
Heavy	110	115	130	140	150	165	180	190	210	220	235	245
Naval Petroleum Reserve	110	130	150	170	185	185	185	175	165	155	145	135
Alaskan North Slope	<u>1,290</u>	<u>1,500</u>	<u>1,500</u>	<u>1,520</u>	<u>1,535</u>	<u>1,560</u>	<u>1,575</u>	<u>1,580</u>	<u>1,580</u>	<u>1,520</u>	<u>1,410</u>	<u>1,300</u>
Total	8,530	8,535	8,280	8,045	7,770	7,610	7,530	7,425	7,310	7,150	6,940	6,750
(Total Heavy	265	265	270	270	270	275	280	285	290	295	300	305)

TABLE A-5. CRUDE OIL PRODUCTION BY CATEGORY RESULTING FROM DECONTROL WITH THE HOUSE TAX BILL: BY CALENDAR YEAR, IN THOUSANDS OF BARRELS PER DAY

Category	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Lower Tier												
Minus Heavy	1,980	1,780	1,690	1,565	1,425	1,230	1,020	780	575	405	245	125
Heavy	60	65	75	75	80	80	75	75	70	65	60	50
Marginal												
Minus Heavy	685	610	535	455	375	290	215	175	125	85	55	30
Marginal Heavy	15	15	15	15	15	15	15	10	10	10	10	10
Upper Tier From Known Reserves												
Minus Heavy	2,940	2,560	2,330	2,000	1,680	1,365	1,135	915	740	590	455	360
Heavy	80	90	95	95	95	100	100	105	110	115	120	120
New Upper Tier	---	480	920	1,330	1,660	1,995	2,260	2,500	2,725	2,900	3,095	3,245
New Tertiary	---	55	80	110	150	235	315	380	445	510	565	625
Stripper												
Minus Heavy	1,260	1,280	1,075	1,075	955	885	850	835	840	845	865	880
Heavy	110	115	125	135	145	145	145	140	135	125	115	110
Naval Petroleum Reserve	110	130	150	170	185	185	185	185	185	180	175	170
Alaskan North Slope	<u>1,290</u>	<u>1,500</u>	<u>1,500</u>	<u>1,520</u>	<u>1,535</u>	<u>1,560</u>	<u>1,575</u>	<u>1,585</u>	<u>1,595</u>	<u>1,555</u>	<u>1,490</u>	<u>1,350</u>
Total	8,530	8,680	8,590	8,545	8,300	8,085	7,890	7,685	7,555	7,385	7,250	7,075
Total Heavy	<u>265</u>	<u>285</u>	<u>310</u>	<u>320</u>	<u>335</u>	<u>340</u>	<u>335</u>	<u>330</u>	<u>325</u>	<u>315</u>	<u>305</u>	<u>290</u>

TABLE A-6. CRUDE OIL PRODUCTION BY CATEGORY RESULTING FROM DECONTROL WITH THE SENATE FINANCE COMMITTEE TAX BILL: BY CALENDAR YEAR, IN THOUSANDS OF BARRELS PER DAY

Category	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
<b>Lower Tier</b>												
Minus Heavy	1,980	1,675	1,550	1,345	1,140	950	770	630	495	380	290	230
Heavy	60	75	90	110	130	145	160	170	180	185	195	200
<b>Marginal</b>												
Minus Heavy	685	595	510	420	350	280	220	165	110	70	55	50
Heavy	15	15	20	20	20	20	20	15	15	15	10	10
<b>Upper Tier from Known Reserves</b>												
Minus Heavy	2,940	2,530	2,160	1,815	1,530	1,290	1,075	900	750	610	465	345
Heavy	80	90	110	120	130	140	150	155	165	175	180	185
New Upper Tier	---	580	1,100	1,570	1,990	2,295	2,545	2,765	2,940	3,100	3,220	3,310
New Tertiary	---	65	100	160	215	275	365	430	495	565	625	690
<b>Stripper</b>												
Minus Heavy	1,260	1,245	1,175	1,120	1,035	955	925	895	885	875	870	870
Heavy	110	120	130	140	150	160	165	170	175	185	190	195
<b>Naval Petroleum Reserve</b>												
Alaskan North Slope	1,290	1,500	1,500	1,520	1,535	1,560	1,575	1,585	1,595	1,570	1,510	1,370
Total	8,530	8,620	8,595	8,510	8,410	8,255	8,155	8,065	7,990	7,910	7,785	7,625
Total Heavy	<u>265</u>	<u>300</u>	<u>350</u>	<u>390</u>	<u>430</u>	<u>465</u>	<u>495</u>	<u>510</u>	<u>535</u>	<u>560</u>	<u>575</u>	<u>590</u>

TABLE A-7. CRUDE OIL PRODUCTION BY CATEGORY RESULTING FROM DECONTROL WITH NO WINDFALL PROFITS TAX: BY CALENDAR YEAR, IN THOUSANDS OF BARRELS PER DAY

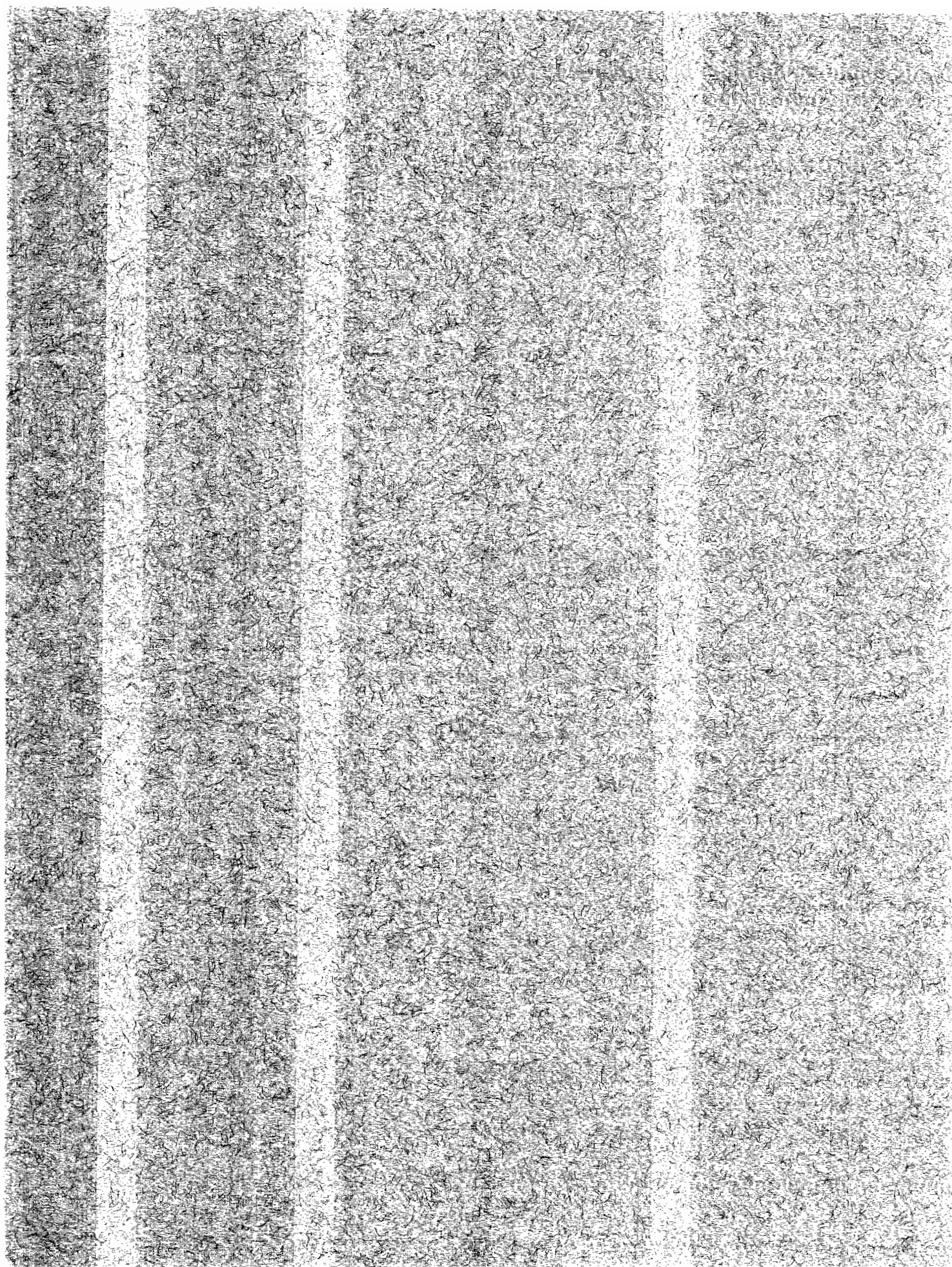
Category	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
<b>Lower Tier</b>												
Minus Heavy	1,980	1,855	1,730	1,635	1,480	1,300	1,065	810	610	435	300	205
Heavy	60	75	90	105	120	130	145	160	165	175	185	190
<b>Marginal</b>												
Minus Heavy	685	610	530	445	380	315	250	190	135	90	70	50
Heavy	15	15	20	20	20	20	20	15	15	15	10	10
<b>Upper Tier from Known Reserves</b>												
Minus Heavy	2,940	2,590	2,315	2,055	1,770	1,525	1,315	1,080	960	785	625	500
Heavy	80	90	100	110	120	130	135	150	160	165	175	185
New Upper Tier	---	520	960	1,335	1,730	2,100	2,425	2,730	2,960	3,180	3,355	3,445
New Tertiary	---	70	145	215	300	350	395	460	530	615	685	750
<b>Stripper</b>												
Minus Heavy	1,260	1,185	1,055	925	800	715	670	640	625	665	735	830
Heavy	110	120	125	135	150	160	165	170	175	180	185	190
<b>Naval Petroleum Reserve</b>												
Alaskan North Slope	1,290	1,500	1,500	1,520	1,535	1,560	1,575	1,585	1,595	1,590	1,530	1,390
Total	8,530	8,750	8,710	8,670	8,590	8,490	8,345	8,175	8,115	8,075	8,030	7,915
Total Heavy	<u>265</u>	<u>300</u>	<u>335</u>	<u>370</u>	<u>410</u>	<u>440</u>	<u>465</u>	<u>495</u>	<u>515</u>	<u>535</u>	<u>555</u>	<u>575</u>











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