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U.S. GENERAL ACCOUNTING OFFICE

STAFF ANALYSIS



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ANALYSIS OF THE ENERGY, ECONOMIC, AND BUDGETARY IMPACTS
OF H.R. 6860

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SUMMARY

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The General Accounting Office (GAO), at the request of the Chairman, Senate Finance Committee, has analyzed the probable energy, economic and budgetary impacts of H.R. 6860 as passed by the House of Representatives. The bill would impose quotas on imported petroleum products and take a number of actions designed to decrease domestic energy consumption. SFN 04100

The following general observations flow from GAO's analysis.

- The reductions in oil imports mandated by H.R. 6860 far exceed even the most optimistic reductions in oil consumption projected as a result of H.R. 6860 conservation actions.
- The estimated annual shortfall in oil supplies through 1980 resulting from the import restrictions imposed under H.R. 6860 ranges from 700,000 barrels a day in 1976 up to 2.3 million barrels a day in 1979.
- The system for auctioning oil import licenses contained in H.R. 6860, taken together with the expected shortfalls in oil supply, would trigger price increases of \$4 to \$6 a barrel for imported oil.
- Treasury receipts under the auction system are estimated to increase in the range of \$12 to \$18 billion each year through 1980. The increase in the price of imported oil should trigger a similar increase in the price of domestic uncontrolled oil and result in windfall profits for oil producers in the range of \$3 to \$8 billion each year through 1980.

--The anticipated price increases will be inflationary and have negative impacts on the growth of real Gross National Product, leading to increased unemployment.

--Only the automobile efficiency standards and tax credit for insulation of residences provisions of H.R. 6860 are likely to achieve measurable reductions in energy consumption, other actions will have only slight impact.

GAO's analysis

--assumed continuation of the current two-tier oil price control system, and

--did not consider the impacts of further increases in the crude oil prices of the Organization of Petroleum Exporting Countries.

Because of uncertainties regarding possible changes in the current oil price control system, GAO did not analyze the possible impacts of decontrol of oil prices. However, both decontrol and foreign oil price increases would further add to the increased price of domestic oil expected to result under the provisions of H.R. 6860.

The GAO study consists of five parts summarizing

--the major provisions of H.R. 6860 (see p. 5),

--the estimated impact of H.R. 6860 on the demand and supply of oil (see p. 9),

--estimated budgetary impacts of the proposed system of auctioning licenses to import crude oil (see p. 12).

--estimated economic impacts of the proposed system of auctioning licenses to import crude oil (see p. 16), and

--estimated savings from energy conservation measures (see p. 19).

CHAPTER 1

INTRODUCTION

At the request of the Chairman of the Senate Finance Committee, the General Accounting Office has analyzed the probable energy, economic, and budgetary impacts of the provisions of H.R. 6860 as passed by the House of Representatives. Our analysis

- assumed continuation of the current two-tier oil price control system, and
- did not consider the impacts of further increases in the crude oil prices of the Organization of Petroleum Exporting Countries (OPEC) effective October 1, 1975.

Because of uncertainties regarding possible changes in the current oil price control system, we did not analyze the possible impacts of decontrol of oil prices.

H.R. 6860 would impose quotas on imported petroleum products and take a number of actions designed to reduce domestic energy consumption. The following sections of this staff study summarize

- the major provisions of H.R. 6860,
- the estimated impact of H.R. 6860 on the demand and supply of oil,
- estimated economic and budgetary impacts of the proposed licensing system for imported crude oil, and
- estimated savings from energy conservation measures.

Many of the specific conservation proposals in H.R 6860 would not save as much energy as would others which have been proposed. For purposes of comparison, we show where possible the estimated savings under H.R. 6860 and those estimated under similar alternative proposals included in an energy package developed by our Office earlier this year in response to congressional inquiries.

CHAPTER II

SUMMARY OF MAJOR PROVISIONS OF H.R. 6860

The stated purpose of H.R. 6860 is to cushion the effects of another oil embargo by conservation measures designed to reduce U.S. dependence on oil so that by 1985 the United States would be importing no more than 25 percent of domestic oil consumption. These conservation measures include establishment of oil import quotas and duties; imposition of automobile fuel efficiency and other standards; repeal of excise taxes on intercity buses, radial tires and rerefined oil; tax incentives for energy related improvements in buildings, and qualified electric motor vehicles; establishment of an energy conservation and conversion trust fund to be used for research and development and demonstration efforts regarding energy technology and resources; and actions designed to encourage business conversion for energy savings. Provisions of the main conservation measures in the bill are summarized below:

1. Quotas - Imposition of Quantitative Restrictions

The bill establishes an import quota schedule. The President would be granted the authority to increase or decrease the quota by as much as 1 to 2 million barrels a day for selective years. Quotas for each calendar year before any adjustment are presented in the accompanying schedule:

Maximum Average Daily Number of Barrels

<u>Calendar Year</u>	<u>Barrels per Day</u> <u>(Millions)</u>
1975	6.0
1976	6.0
1977	6.5
1978	6.0
1979	6.0
1980 and thereafter	6.5

Petrochemical feedstocks and imported oil for strategic reserve storage are specifically excluded from quantitative restrictions. Distillate and residual fuel oil imports have only minor import restrictions because of relatively high quota allotments.

2. Establishment of Import Licensing System

Not later than December 31, 1975, the President must establish an import licensing system for petroleum and petroleum products imports to be administered by the Federal Energy Administration (FEA). Import licenses would be distributed on the basis of sealed bids and the licenses would be marketable. Separate and generally not marketable licenses for small refineries and independent marketers would also be established. Criteria is provided for rejecting bids and limiting the number of import licenses which can be held by an individual or company.

3. Duties on Imported Petroleum and Petroleum Products

Rates of duty on imported petroleum would be established at 2 percent and at 5 percent on petroleum products. During times of war or national emergency, the President would have discretionary powers in altering these duties.

4. Automobile Standards

a. Fuel mileage. The average fuel economy for all passenger autos manufactured would not be less than 18 mpg beginning in model year 1978, rising to 28 mpg in model year 1985. Some very small manufacturers would be exempt from this provision. The Secretary of Transportation would have broad discretionary powers in establishing mileage standards for each class of motor vehicle, granting exemptions and deferrals, setting emission control standards and requiring data on these standards from manufacturers.

b. A \$50 civil penalty per car sold would be imposed for each mile per gallon by which a company's sales weighted fleet average gas mileage is below the established standard.

c. Each manufacturer would be required to provide and each dealer would maintain a sticker on every auto stating the fuel economy, average annual operating costs, and the range of fuel economy performance of other autos of similar weight and size.

5. Tax Incentives for Certain Energy-Related Improvements of Buildings

a. An individual would be allowed a tax credit of an amount equal to 30 percent of the qualified insulation expenditures paid by the taxpayer on his principal residence not to exceed \$500, or a maximum credit of \$150.

b. An individual would be allowed a tax credit of an amount equal to 25 percent of qualified solar heating and cooling equipment expenditures with respect to his principal residence not to exceed \$8,000, or a maximum credit of \$2,000.

6. Tax Incentives to Purchase Electric Motor Vehicles

An individual would be allowed a tax credit of an amount equal to 25 percent of the amount paid by the taxpayer for a qualified electric motor vehicle not to exceed \$3,000, or a maximum credit of \$750.

7. Establishment of an Energy Conservation Fund

A trust fund would be established from general tax funds generated by certain business taxes on businesses which use petroleum and natural gas and on revenues from oil import duties. The fund could not receive more than \$5 billion in any given fiscal year on or before September 30, 1983, or \$2.5 billion in fiscal 1984. The trust fund would make expenditures for basic and applied research programs related to new energy technologies.

8. Business Conversion for Greater Energy Saving

a. An excise tax will be imposed on each 1,000 cubic feet of natural gas starting at 4¢ in 1977 and reaching 18¢ in 1980, and on each barrel of petroleum and petroleum products starting at 17¢ in 1977 and reaching \$1.00 in 1982.

b. Certain energy-using equipment which would conserve oil and gas could be amortized for tax purposes over a 5-year period. Also, certain changes in the investment tax credit would be made.

CHAPTER III

PROJECTIONS OF DEMAND AND SUPPLY OF DOMESTIC CRUDE OIL

To provide a basis for analyzing the impacts of the provisions of H.R. 6860, the domestic demand and supply of crude oil must first be projected assuming no restrictions on imports. Under that assumption, imports would fill the gap between domestic demand and supply at the current world price for crude oil. Once projected, this "base case" can be used to estimate the quantitative amount by which the import quotas in H.R. 6860 would restrict domestic consumption of crude oil.

Table 1 contains "base case" estimates for demand and supply of domestic crude oil for 1975 to 1980. The domestic supply of crude oil is divided into old oil (with price controlled at about \$5.25 per barrel) and new oil including released¹ and stripper² oil (with price uncontrolled). Imports fill the gap between domestic supply and demand.

TABLE 1

Base Case Projections of Demand for and Domestic Supply of Crude Oil
(Millions of Barrels per Day)

<u>Calendar Year</u>	<u>Demand</u>	<u>Domestic Supply</u>		<u>Total</u>	<u>Demand less Domestic Supply</u>
		<u>Old Oil</u>	<u>New Oil</u>		
1975	16.9	7.1	3.0	10.1	6.8
1976	17.6	7.5	2.2	9.7	7.9
1977	18.4	7.2	2.1	9.3	9.1
1978	19.0	6.8	2.7	9.5	9.5
1979	20.0	6.4	3.4	9.8	10.2
1980	20.7	6.0	3.7	9.7	11.0

SOURCE: Office of Special Programs, U.S. General Accounting Office

¹ For each barrel of new oil produced above the production in a given oil producing area in the base year of 1972, a producer is allowed to "release" one barrel of old oil from price controls.

² Stripper oil comes from wells producing 10 or less barrels of oil per day.

In 1974, the 10.5 million barrels per day (MMB/D) domestic production was approximately 62 percent controlled and 38 percent uncontrolled. The 38 percent included 16.2 percent new oil, 10.5 percent released oil and 11.3 percent oil from stripper wells. Domestic production from existing wells is estimated to decline an average annual rate of 6 percent. New discoveries are projected such that overall domestic production (excluding Alaska) declines at a 4 percent annual rate. Production from Alaska is introduced at the rate of 600,000 barrels a day in 1978, 1.2 million barrels a day in 1979, and 1.5 million barrels a day in 1980.

Our forecasts for domestic production in the period from 1975 to 1980 are lower than FEA estimates. The differences are attributable to the following:

1. FEA forecasts a relatively constant level of domestic oil production. We project an average annual decline of 4 percent, which is consistent with the observed decline for the period 1973 to 1975.

2. FEA forecasts relatively constant rates of natural gas production; we forecast a 3 percent annual decline and reductions in Canadian natural gas. Canada has recently announced a curtailment of natural gas exports to the U.S. In 1974, domestic production declined 3.3 percent and imports declined 9 percent.

The increased imports under our "base case" necessary to balance demand and supply indicate that the imposition of the H.R. 6860 oil import quotas, despite the anticipated conservation savings, discussed on pages 19 to 26 would result in shortfalls of over 2 MMB/D by 1980. (See Table 2.)

TABLE 2
OIL SHORTFALL
(MMB/D)

<u>Calendar Year</u>	<u>Needed Imports</u>	<u>Conservation</u>	<u>Import Quotas</u>	<u>Shortfall</u>
1975	6.8	.1	7	-
1976	7.9	.2	7	.7
1977	9.1	.3	7.5	1.3
1978	9.5	.3	7.5	1.7
1979	10.2	.4	7.5	2.3
1980	11.0	.4	8.5	2.1

CHAPTER IV

FEDERAL BUDGET IMPACT OF H.R. 6860

The provisions of H.R. 6860, particularly those establishing import quotas and providing for the auction of import licenses, will likely result in substantial revenues for the U.S. Treasury and windfall profits for producers of domestic crude oil.

While H.R. 6860 would affect both budget outlays and revenues, its principal impact as summarized in Table 4 (see p. 15) is on the revenues side of the budget. The import quota system and related system for auctions of import licenses combine to cause this impact. The workings of the two systems are described in detail in the Appendix (see p.28).

Under H.R. 6860, licenses to import crude oil would be auctioned to domestic producers and refiners. The auction process should cause the price of imported crude oil to rise to the point where demand and supply are in balance. The price paid for the licenses would be passed on to the ultimate consumer and Treasury revenues would increase by the total amount of the license fees paid. The price of the crude oil and the revenues to Treasury would vary as demand varies and as import restrictions are eased or improved.

If imports are restricted by quotas below the amount required to meet demand, import licenses will become more valuable and domestic oil importers will bid higher for them. Using our projections of the domestic demand and the expected savings from the energy conservation measures in H.R. 6860, the excess demand for oil (domestic demand exceeding domestic supply, plus

the import quota) would be 0.7 MMB/D in 1976 rising to 2.3 MMB/D in 1979 and 2.1 MMB/D in 1980. These excess demands would lead to an estimated price of \$19.76 (in current dollars) per barrel of imported oil in 1979. Treasury revenues would be \$11.9 billion in 1976 and \$18.5 billion in 1979. Five-year projections of Treasury revenues and prices resulting from the auction process are presented in Table 3.

TABLE 3

<u>Calendar Year</u>	<u>Import Quotas</u> ^{1/} (MMB/D)	<u>Excess Demand</u>	<u>Auction Price</u>	<u>Price Per Barrel</u> ^{2/}	<u>Treasury Receipts</u> (Billions)	<u>Windfall Profits</u> (Billions)
1976	7.0	0.7	\$4.67	\$17.67	\$11.9	\$ 3.8
1977	7.5	1.3	6.19	19.19	16.9	4.7
1978	7.5	1.7	6.12	19.12	16.8	6.0
1979	7.5	2.3	6.76	19.76	18.5	8.4
1980	8.5	2.1	4.46	17.46	13.8	6.0

^{1/} Assumes that the President allows imports up to the maximum allowed under the law.

^{2/} Does not consider any increase in OPEC prices.

The auction process, in addition to producing revenues to the Treasury, also results in windfall profits for the domestic oil companies. The price of uncontrolled oil would very likely increase to the new auction price, and windfall profits would accrue to the oil companies. In 1976 the sum of windfall profits and auction proceeds would be almost \$16 billion, and in 1979 almost \$27 billion. This consequence of the auction process would act as a drag on the economy, dampening the current economic recovery.

The windfall profits could potentially be returned to the economy through outlays for exploration and development, in the form of profits to shareholders, etc. Lag times on such returns, however, have been estimated to be 6 months to 15 months. Further, there are no mechanisms in the bill to return to the economy the major portion of the receipts to the Treasury from the auction sales. While the economic effect of the bill would be eased by returning the \$11.9 billion to the economy through tax reductions, specific expenditure programs, or transfer payments, the fact remains that its initial impact would be the same as that of a tariff on oil.

TABLE 4

Estimated Budgetary Receipts and Outlays
of under H.R. 6860
(in Billions of Dollars)

<u>Receipts</u>	<u>FY 76</u>	<u>Transition Quarter</u>	<u>FY 77</u>	<u>FY 78</u>	<u>FY 79</u>	<u>FY 80</u>
Revenue from Import Licensing Auction ^{1/}	6.0	3.0	15.7	16.8	18.1	15.0
Ad Valorem Duty on Oil ^{2/}	2.3	1.0	4.6	5.1	5.4	5.4
Repeal of Current Licensing System ^{3/}	-1.9	-0.8	-3.7	-3.9	-4.1	-4.6
Tax Credits on Other Energy ^{4/} Conservation Programs	-0.8	-0.4	-1.9	-0.6	-0.1	-0.1
Excise Tax on Business Use of Petroleum & Petroleum Products	-	-	0.6	1.0	1.8	2.5
TOTAL RECEIPTS	<u>5.6</u>	<u>2.8</u>	<u>15.3</u>	<u>18.4</u>	<u>21.1</u>	<u>18.2</u>
<u>Outlays</u>	<u>FY 76</u>	<u>Transition Quarter</u>	<u>FY 77</u>	<u>FY 78</u>	<u>FY 79</u>	<u>FY 80</u>
Expenditures for Energy Conservation and Conversion Trust Fund	2.3	1.0	4.7	5.0	5.0	5.0
TOTAL OUTLAYS	<u>2.3</u>	<u>1.0</u>	<u>4.7</u>	<u>5.0</u>	<u>5.0</u>	<u>5.0</u>
BUDGETARY SURPLUS	<u>3.3</u>	<u>1.8</u>	<u>10.6</u>	<u>13.4</u>	<u>16.1</u>	<u>13.2</u>

^{1/} See Appendix for details on method of calculation.

^{2/} It is assumed that the rate of duty will be adjusted to 10 percent effective September 1, 1975. The rate of duty on distillate fuel and residual fuel will be 5 percent from September 1, 1975, to August 31, 1977, and 10 percent thereafter.

^{3/} Deductions from previous calculations of receipts due to the President's import fees.

^{4/} Sum of all Title II calculations.

CHAPTER V

ECONOMIC ASSESSMENT OF H.R. 6860

The projected increases in the price of crude oil under the provisions of H.R. 6860 and their resultant influence on the purchasing power of consumers would have several economic impacts. Not only would the price increases be inflationary, but they also are likely to have negative impacts on the growth of real GNP, thereby leading to increased unemployment. The economic impacts are summarized in Table 5 on page 15.

To make our analysis, we used the Wharton Econometric Model. The model results, incorporating full implementation of the provisions of H.R. 6860, were compared to "baseline" results through 1980, assuming no change in existing domestic energy policy and a moderate rate of economic recovery with annual growth in real GNP of 4.5 percent.

Our analysis indicated that H.R. 6860 would result in a growth rate of real GNP below that of the "baseline" results for 1976. The difference in the growth rates narrows in the 1977 to 1980 periods, and in 1980 H.R. 6860 generates the faster growth rate.

A similar pattern emerges with regard to inflation. H.R. 6860 would generate higher rates of inflation in 1976 and 1977, but a smaller rate of inflation in 1978 through 1980.

H.R. 6860 would have an adverse impact on the unemployment rate. The unemployment rate under H.R. 6860 would be higher than the "baseline" results through 1980, although the unemployment rates for both scenarios decline as the economy recovers. As shown earlier in

Table 4 on page 12, revenues resulting from the auction of import licenses create a large budgetary surplus which would reduce the size of the Federal budget deficit.

In summary, H.R. 6860 would deflate the economy most in 1976 when, according to most economic projections, the economy can least absorb it. It has a smaller impact on the economy in 1978 through 1980. As noted previously, one possible boost to the economy would be to pump the funds collected from the auction of import licenses into the economy in the form of transfer payments, tax reductions, and spending programs, phasing out such actions as the economy becomes stronger.

TABLE 5

ECONOMIC IMPACT OF H.R. 6860

<u>Calendar Years</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
<u>REAL GROSS NATIONAL PRODUCT</u> (Billions of 1958 Dollars)						
H.R. 6860	779.0	813.5	886.9	935.2	964.0	987.0
Baseline	777.4	816.7	893.0	943.0	973.5	993.3
<u>RATE OF CHANGE IN REAL GROSS NATIONAL PRODUCT (in %)</u>						
H.R. 6860	NA	4.4	9.1	5.4	3.1	2.4
Baseline	NA	5.0	9.3	5.6	3.2	2.0
<u>GNP DEFLATOR (1958 = 100.0)</u>						
H.R. 6860	186.2	196.7	204.2	213.4	228.5	243.9
Baseline	186.2	196.0	202.9	212.1	227.4	243.4
<u>INFLATION RATE (in %)</u>						
H.R. 6860	NA	5.6	3.8	4.5	7.1	6.7
Baseline	NA	5.3	3.5	4.5	7.2	7.0
<u>UNEMPLOYMENT RATE (in %)</u>						
H.R. 6860	9.1	8.7	7.7	5.8	4.9	4.6
Baseline	9.1	8.6	7.3	5.3	4.2	4.1

CHAPTER VI

ENERGY CONSERVATION EFFECTS OF H.R. 6860

Titles II and IV of H.R. 6860 contain provisions designed to encourage energy conservation. For the reasons summarized below, we estimate that energy conservation savings resulting from implementation of these provisions will not be significant when compared to the anticipated reduction in imports. For example, in 1979 energy conservation is projected to reduce oil consumption by about 400,000 barrels a day; whereas, the maximum allowable imports under H.R. 6860 for that year would result in a total crude oil supply some 2.7 million barrels a day short of projected demand. Most of the energy conservation savings under H.R. 6860 would result from automobile fuel efficiency standards and incentives for insulation of residences. Other energy conservation measures are not expected to have substantial impact.

As noted earlier, we have, where appropriate, compared the savings resulting from provisions of H.R. 6860 with the savings under similar alternative energy conservation provisions prepared by our Office.

1. Automobile Fuel Efficiency Standards

Estimated Savings (Thousands of Barrels per day)

<u>Year</u>	<u>H.R. 6860 [Maximum]</u>	<u>Alternative</u>
1976	0	0
1977	0	20,000
1978	30,000	60,000
1979	90,000	110,000
1980	180,000	190,000

The above table shows the possible savings in gasoline consumption resulting from the introduction of more efficient automobiles. The programs put forth in H.R. 6860 and the alternative are compared using the same base case parameters [new car sales, vehicles on the road, and gasoline consumption]. The savings are seen to be comparable in 1980, assuming the mileage standards are met. However, there is a possibility that the H.R. 6860 provision will result in almost no change.

H.R. 6860 places the major burden for improving automobile efficiency on the manufacturer. This provision is an across-the-board tax on all vehicles, efficient and inefficient. The negative incentive is likely to have very little effect on automobile manufacturers since a \$50 penalty for falling one mile per gallon short of standards is less than 2 percent of new car prices in 1975. Since large gas inefficient but expensive automobiles are high profit per unit items for manufacturers, a manufacturer could alter the price lists to offset the penalty. Thus, H.R. 6860 could have little effect on the introduction of more efficient gas automobiles into the automobile fleet. The H.R. 6860 provisions regarding more efficient automobiles do not take effect until 1978.

In contrast, the alternative proposal--also designed to take effect in 1978--is more likely to result in energy savings because it would require that the consumer pay a sizeable tax if he wished to purchase a vehicle which did not meet certain efficiency standards. Thus, the alternative both encourages manufacturers to produce more efficient automobiles, and consumers to purchase more efficient automobiles.

More immediate energy conservation savings also could be attained by a program of cash rebates from the Treasury for the purchase of new automobiles which meet certain efficiency standards prior to model year 1978.

2. Repeal of the Excise Tax on Intercity Buses

The removal of the excise tax on intercity buses will result in savings for the bus companies and a loss in Government revenues. However, this cost saving provision, even if passed through to customer fares, would appear to be of such minimal impact that it would have no perceptible effect on bus transportation and therefore, on oil consumption.

3. Repeal of the Excise Tax on Radial Tires

The cash savings for a consumer purchasing radial tires resulting from the repeal of the excise tax would be less than the price difference between one radial and one bias ply tire. While this provision might have some impact upon the sales of radial tires, it is doubtful that it will impact upon energy consumption to any measurable extent.

4. Repeal of the Excise Tax on Rerefined Lubricating Oil

If this action were successful in encouraging the additional use of rerefined oil, it would have a negligible impact on oil consumption.

In 1972, the United States consumed about 2.2 billion gallons of lubricating oil. Only about half remains after usage. EPA estimates that about 340 million gallons of the remaining 1.1 billion gallons are not reused. If all 340 million gallons could be recovered, a 22,000

barrels a day oil savings would result. However, this is only slightly more than .1 percent of total 1974 oil consumption.

5. Insulation of Principal Residence

To obtain a 40 percent savings in heating energy for residences, FEA's Project Independence Report estimated that an owner in the Northeast and Northcentral areas would have to spend about \$800 and in Southern and Western areas about \$250 to retrofit housing units.

H.R. 6860 would provide a tax credit for 30 percent of insulation expenditures up to \$500, or a maximum tax credit of \$150. A more liberal tax credit for insulation expenditures should result in greater savings. For example, the alternative proposal provides for a tax credit of 50 percent for the first \$500 of expenditures and 25 percent for all expenditures over that amount. There is also a provision for direct low-interest loans to cover the complete expenses of insulation for persons having a gross income less than \$12,000.

The following table indicates the amount of tax credit and expense to the taxpayer for insulating his home under H.R. 6860 and the alternative proposal.

	<u>Cost</u>	<u>Rebates</u>	
		<u>H.R. 6860</u>	<u>Alternative</u>
Northeast and Northcentral	\$800	\$150	\$325
South and West	\$250	\$ 75	\$125

The savings resulting from the insulation of existing housing under the provisions of H.R. 6860 were previously calculated by FEA. The following table shows the savings in barrels per day of oil for the period 1976 to 1980 for both H.R. 6860 and the alternative.

<u>Year</u>	<u>H.R. 6860</u>	<u>Alternative</u>
1976	65,000	120,000
1977	110,000	200,000
1978	110,000	270,000
1979	110,000	280,000
1980	110,000	290,000

Aside from the differences in tax credits, other differences giving rise to higher savings under the alternative are:

--H.R. 6860 only deals with old houses; whereas, the alternative deals with both old and new houses.

--H.R. 6860 only allows tax credits until January 1, 1977, whereas the alternative allows tax credits until January 1, 1978.

Both programs have no further impact on retrofitting old houses after the expiration of their rebate provisions.

6. Residential Solar Energy Equipment

Prices for solar heating and cooling systems start at about \$2,500. Given the current erosion of disposable income, even the 25 percent tax credit is unlikely to make much difference in the rate of introduction of solar heating and cooling systems.

Although solar heating of residences and water in particular has advanced to the point where it does offer opportunity for energy savings, such systems generally must be installed together with conventional heating systems for use in prolonged periods where there is no sunlight. Given the high initial cost of solar systems, a 25 percent tax credit is not likely to have a measurable impact on the levels of energy consumption by 1980.

7. Electric Highway Vehicles

The absence of a large scale manufacturing industry and service organization preclude any measurable impact of electric motor vehicles on energy consumption before the end of this decade. It is important also to understand that electric vehicles as such may not conserve energy, but will transfer energy consumption from petroleum to electricity which may be produced by coal, nuclear energy, or other sources, including oil.

8. Excise Tax on Business Use of Oil and Natural Gas

The excise tax imposed on industrial consumption by H.R. 6860 is expected to result in reduced industrial consumption of oil. The table below shows the impact of the tax on industrial oil consumption. The price per barrel of oil is the weighted average price of old oil, plus imported and uncontrolled oil. The price of uncontrolled oil includes the effects of the H.R. 6860 import license auction. For purposes of calculating the savings, an elasticity of 0.044 is assumed (this figure is comparable to FEA estimates). As shown, the savings are minimal, amounting to only .22 of 1 percent of consumption by 1980.

<u>Year</u>	<u>Tax</u>	<u>Price</u>	<u>Percent Savings of Total Industrial Consumption of Oil</u>
1977	\$.17	\$ 13.22	.06
1978	.33	13.61	.11
1979	.50	14.39	.15
1980	.67	13.43	.22

Natural gas consumption is likely to fall steadily in the next few years due to declining production. In the presence of this overall decline, the impact of an excise tax on industrial consumption of natural gas will be undetectable.

Since the excise tax is placed on the consumption of particular types of energy, oil and natural gas, the bill may have little impact

on overall energy consumption. Industry can avoid the tax by switching to coal or electricity. Any impact the tax might have on consumption of oil and natural gas is likely to be more in the nature of accelerating a switch to electricity and coal rather than saving energy.

The tax could be modified to encourage energy conservation. Industrial consumption of energy per unit output could be determined, and should an industry improve its energy per unit output by some amount, for example, 5 percent, the tax would be forgiven. This would minimize switching from taxed to untaxed energy sources, and it would be accomplished without reducing existing Government revenues.

TECHNICAL APPENDIX

EVALUATION OF THE IMPORT LICENSING SYSTEM

H.R. 6860 establishes an import quota system with a ceiling which reaches 6.5 MMB/D in 1980 and after. This import ceiling could be modified at the President's discretion depending on economic conditions. The President must set the import limits at least once each calendar quarter. The President may reduce or extend the daily maximum by 1 MMB/D in 1975 through 1977, by 1.5 MMB/D in 1978 and 1979, and by 2 MMB/D thereafter. As conservation of oil takes hold and reduces the consumption of oil, the President is to reduce the import quotas in line with the oil saving.

The quantity of oil demanded is expected to rise between 3.5 and 5 percent each year between 1976 and 1980. By 1980, the conservation programs of H.R. 6860 will reduce oil consumption by about 400,000 to 500,000 barrels of oil a day. Despite these savings, the imposition of the quotas contained in H.R. 6860 will result in shortfalls in the supply of oil. The import license auction will have a significant impact on the price of oil, Treasury receipts, windfall profits, and the economy.

If the demand for crude oil increases at the rate indicated in Table A.1. (see page 32), and if the President allows the maximum imports under the law, then some technique must be established to allocate the available supply of oil (domestic and imported) between the users of oil. One technique used during the embargo in late 1973 and early 1974 was to allocate by fiat the supply of oil by regions, put a ceiling price on fuel oil and gasoline at the pump, and ration through queuing at the service station for gasoline, and through cutting off business users of oil. This procedure has high costs in terms of waiting time (gas) and unemployment (business cutbacks).

It is assumed in Figure 1 that in 1975 we are at equilibrium consuming 16 MMB/D. In 1976, an increase in demand is represented by curve D which shows an excess demand of 1.7 MMB/D over 16 MMB/D at the world price of \$13 per barrel. Under these conditions, we would have to assume that the President allows imports to go to the upper limit allowed under H.R. 6860 or 7.0 MMB/D, thereby resulting in total oil supply of 17 MMB/D. If this were the case, the excess demand for oil would be 0.7 MMB/D. Price could be expected to increase by the amount necessary to bring demand and supply into balance. In economic terms this is defined as the market clearing price. The amount of price increase is represented in Figure 1 as the change in price (ΔP). Thus, the market clearing price would be equal to $\$13 + \Delta P$.

In effect, the price rises by an amount appropriate to curtailing the demand for crude oil. The question is: How does the auction process assure that the price will rise by the appropriate amount?

H.R. 6860 would auction off the import licenses to those willing to pay for the rights to import oil. This auction process should drive up the price of crude to the market clearing price. The price paid for the licenses will be passed on to the users of the end product. Treasury receipts would be the average price of the licenses times the barrels of oil imported. Further, the price of the crude oil and Treasury receipts will vary as demand fluctuates and as import restrictions are eased or improved.

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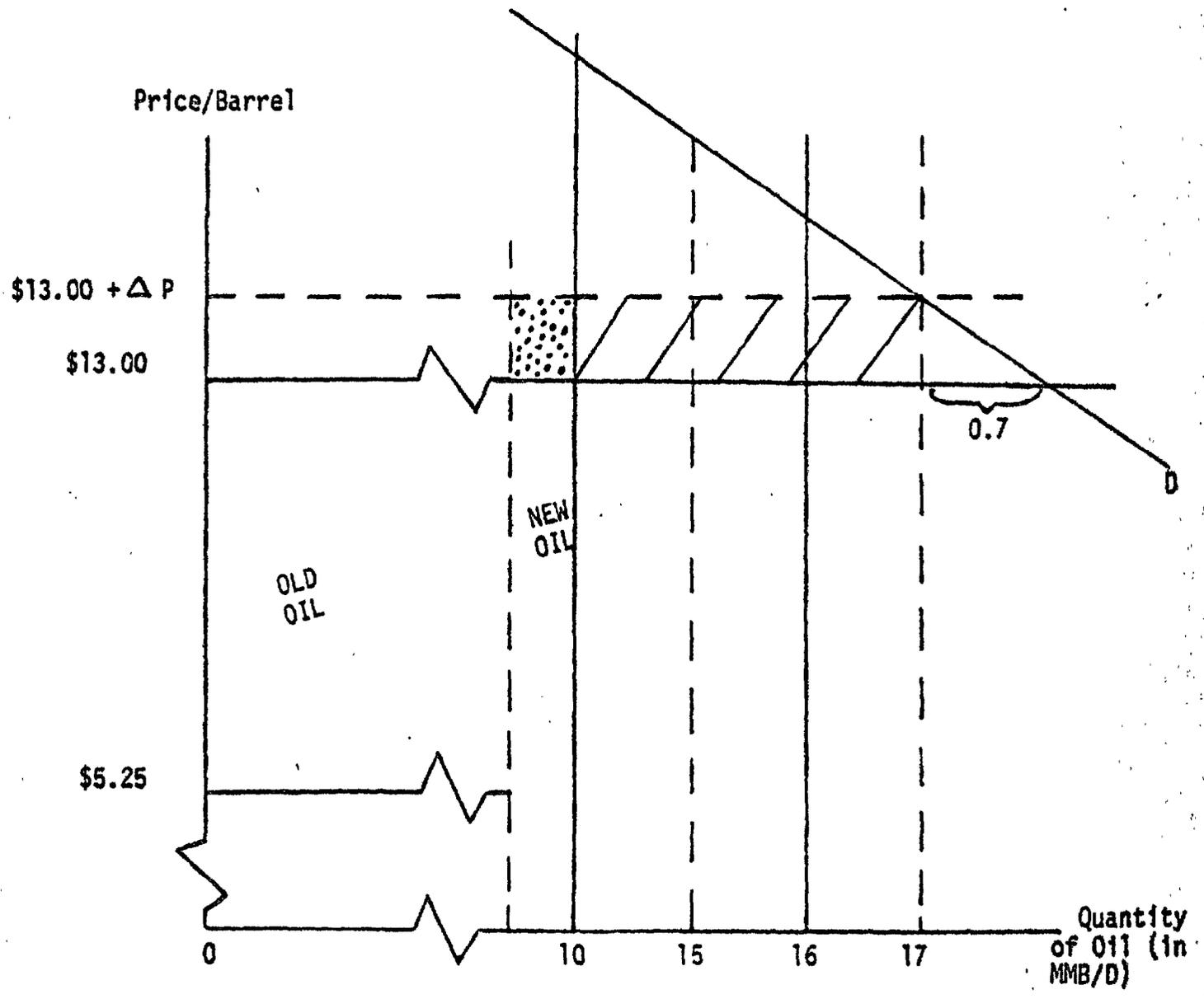


Figure 1

By breaking up the licenses such that an individual or related group of individuals can import only a small amount of oil, it is hoped that there will be no way to corner the market. Assuming this does not occur, then the oil importers, who bid for the licenses, would make what they calculate would be the appropriate bid. The Office of Petroleum Import Licensing in the Federal Energy Administration will allocate the quota among the high bidders. If the high bids are such that the market clearing price is still below $\$13.00 + \Delta P$ then the excess demand for the end products will bid up the price of crude oil and the holders of the import licenses may either sell the import licenses at a higher price since they have been shown to be more valuable than thought or the license holder may import the crude and sell it at the price $\$13.00 + \Delta P$. In either case, they make a windfall profit. But in the next "go around" the oil importers that were unable to obtain the import licenses in the previous auction will raise their bids, increasing the price of crude to approximately the market clearing price, $\$13.00 + \Delta P$. Generally the market clearing price is quickly established in an auction arrangement.

The Treasury receives the revenues represented by the cross-hatched area with the stipled area going to windfall profits due to the auction (represented by the increase in the price of uncontrolled domestic oil times the bid price for the import licenses). To calculate the bid price, ΔP , we assume an elasticity of demand for crude oil and use the formula for elasticity to be found in any elementary economics text.

That is:

$$E = \frac{\Delta Q/Q}{\Delta P/P}$$

Rearranging terms:

$$P = \frac{P \cdot \Delta Q}{EQ}$$

Our assumptions for the change in quantity demanded (excess demand) are found in Table A.1., along with total demand, Q. These numbers have been taken from Tables 1 and 2 in the body of this study and transferred to Table A.1. along with the assumptions for Price (P) and Elasticity (E).

TABLE A.1.

Calculation of Auction Price/Barrel

<u>Calendar Year</u>	<u>Demand Elasticity</u> ^{1/}	<u>Price</u>	<u>Total Quantity (MMB/D)</u>	<u>Excess Demand (MMB/D)</u>	<u>Bid Price</u>	<u>Market Price</u>
1976	-0.11	\$13.00	16.7	0.7	\$4.67	\$17.67
1977	-0.15	13.00	16.8	1.3	6.19	19.19
1978	-0.19	13.00	17.0	1.7	6.12	19.12
1979	-0.23	13.00	17.3	2.3	6.76	19.76
1980	-0.30	13.00	18.2	2.1	4.46	17.46

^{1/} This elasticity relates to the demand for crude oil, but is not a direct measure of the sensitivity of consumers to the price of goods derived from crude oil.

The Treasury receipts and windfall profits expected to result from H.R. 6860 are presented in Table 2 in the body of this study. The assumptions underlying the calculations are optimistic, as explained below, yet t

magnitude of the Treasury receipts, windfall profits, and the rise in the price of oil are of a serious nature.

If we assume that the windfall profits will be put into energy research and development or returned in the form of profits to the stockholders (and not used to buy non-energy related companies--i.e., diversity) then the windfall profits should not be a drag on the economy. There will, however, have been a redistribution of income from consumers to oil producers.

The Treasury receipts, however, together with the impacts of other provisions of H.R. 6860 do constitute a drag on the economy of \$3.3 billion in 1976 rising to \$16.1 billion in 1979. This could be easily remedied by pumping the net receipts back into the economy through temporary tax reductions (extending the current tax reduction) transfer payments, or spending programs. The simplest procedure would be to extend the Tax Reduction Act of 1975, while other spending programs and tax reform are being studied.

In this analysis, we have not considered the supply side of the domestic petroleum market, because it is not likely that there will be a supply response to higher prices until 1980 or thereafter.

The underlying economic assumptions of these calculations constitute an optimistic scenario. If the economy recovers at a faster pace than forecast and, therefore, the demand for petroleum products increases, excess demand could be much greater than shown in Table A.1. This would greatly increase the price of uncontrolled crude and petroleum products over the \$19.00 per barrel indicated for 1979 and Treasury receipts and windfall profits would also be much larger than indicated. If demand is much more inelastic than assumed, prices and receipts become much larger.

