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1982 ANNUAL ENERGY REVIEW

K. Seiferlein

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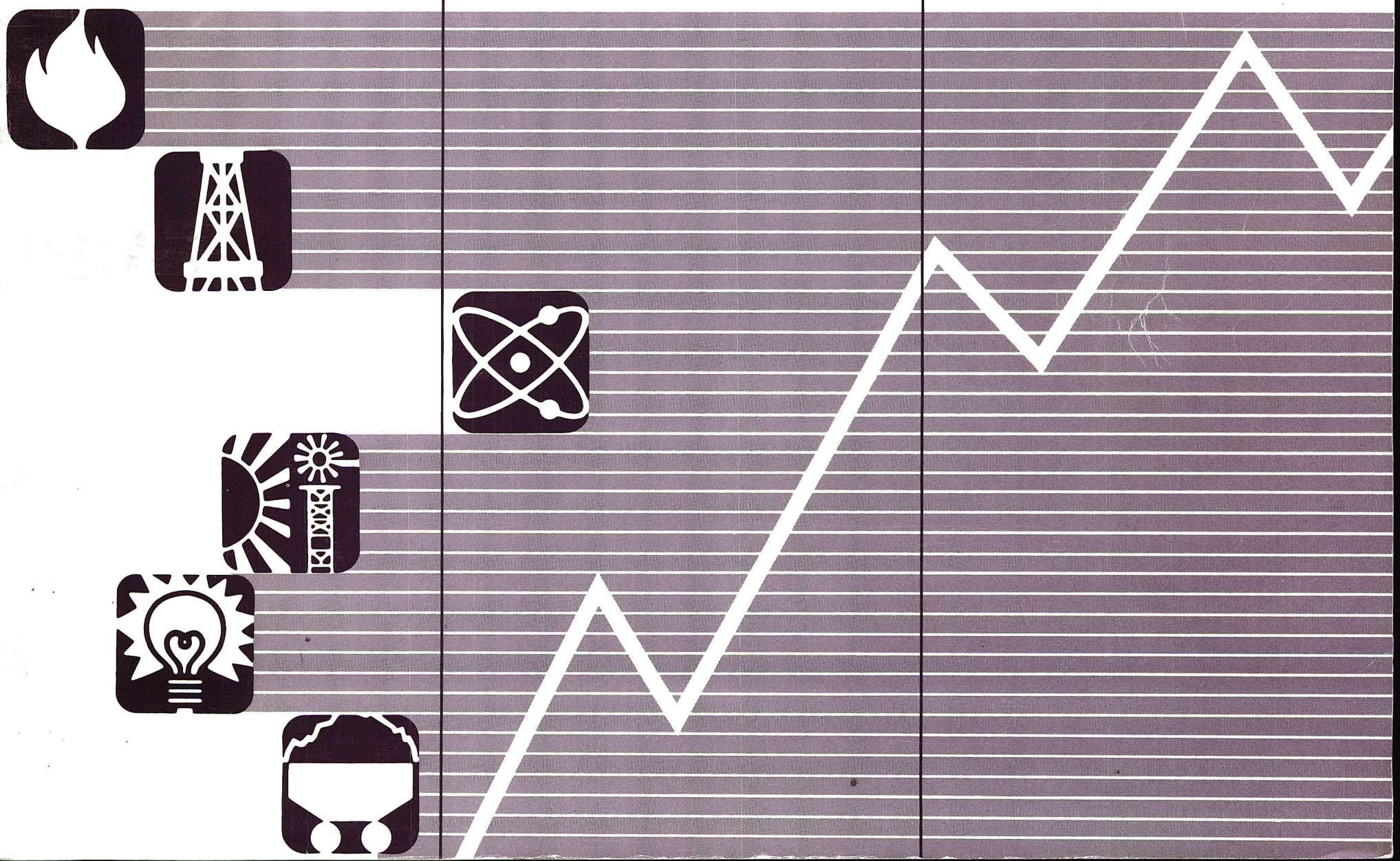

Contacts

The *Annual Energy Review* is prepared in the Energy Information Administration (EIA). General information may be obtained from Wray Smith, Director, Office of Energy Markets and End Use, (202) 252-1617; Arthur T. Andersen, Director, Economics and Statistics Division, (202) 252-1297; and Katherine E. Seiferlein, Acting Chief of the Statistics Branch, (202) 252-5692.

Questions concerning the contents of the *Annual Energy Review* may be referred to the following persons.

Production Manager		David A. Carleton (202) 252-5849
Section 1.	Energy Overview	Katherine E. Seiferlein (202) 252-5692 David A. Carleton (202) 252-5849
	(International Data)	Patricia A. Lott (202) 252-9815
Section 2.	Petroleum and Natural Gas Resources, Exploration and Development, and Reserves	Daniel C. Adkins (202) 252-5990
	(International Data)	Patricia A. Lott (202) 252-9815
Section 3.	Petroleum Supply and Disposition	Audrey E. Jones (202) 252-4747
	(Financial Data)	Annie P. Whatley (202) 252-6612 Charles Riner (202) 252-6610
	(International Data)	Patricia A. Lott (202) 252-9815
Section 4.	Natural Gas Supply and Disposition	Gordon W. Koelling (202) 252-6305
	(International Data)	Patricia A. Lott (202) 252-9815
Section 5.	Coal Supply and Disposition	Leonard N. Westerstrom (202) 252-5220
	(International Data)	Patricia A. Lott (202) 252-9815
Section 6.	Electricity Supply and Disposition	Vicki Moorhead (202) 252-6521 John H. Howie (202) 252-5104
	(International Data)	Patricia A. Lott (202) 252-9815
Section 7.	Nuclear Power Supply and Disposition	Harold L. Steinberg (202) 252-1332
Section 8.	Geothermal and Solar Energy	William D. Liggett (202) 252-4463
Section 9.	Miscellaneous Energy Indicators	Gene Rossidivito (202) 252-5103
	(Household Data)	Wendel L. Thompson (202) 252-1119
	(Financial Data)	David W. Costello (202) 252-1420

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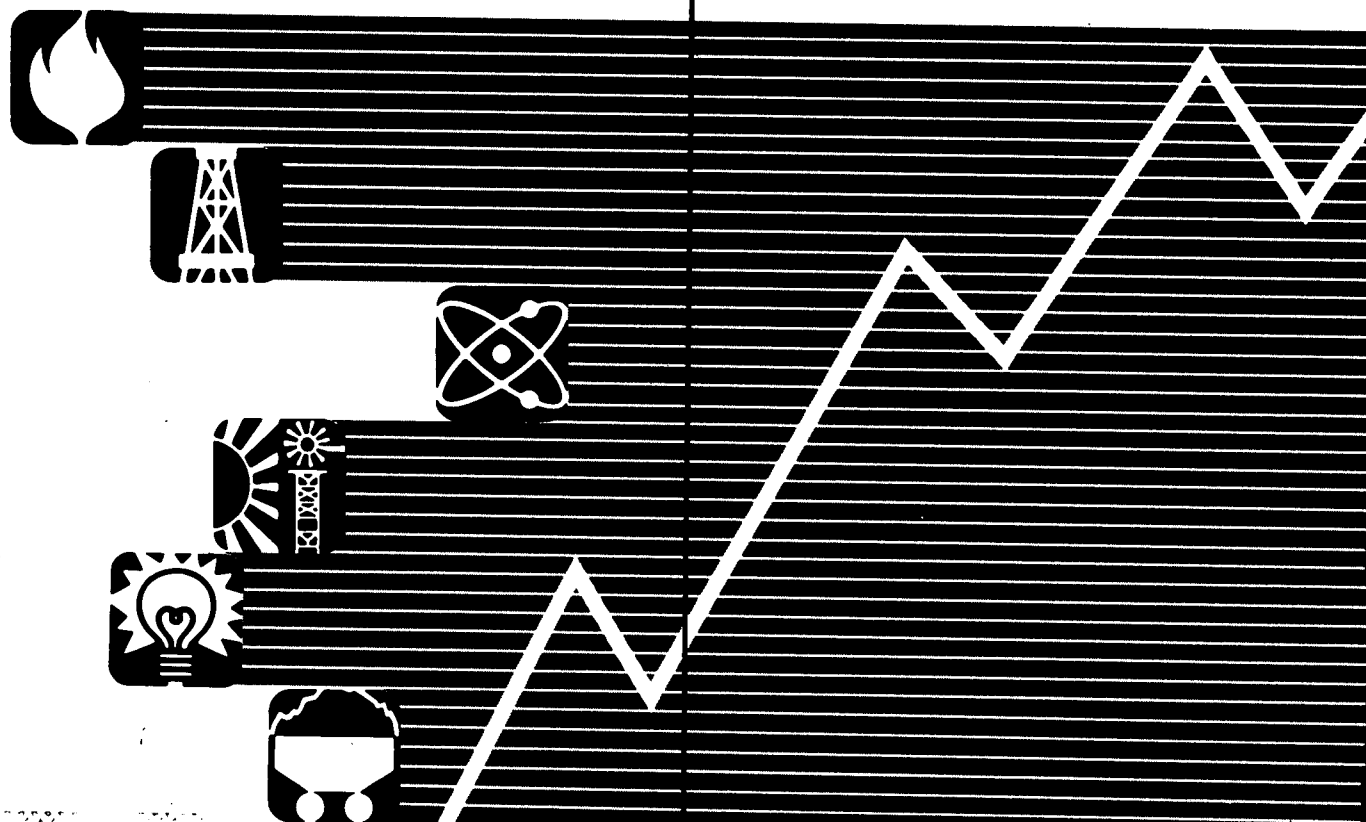

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Major Energy Developments — 1982

Total energy consumption in the United States equaled 70.9 quadrillion British thermal units (Btu) in 1982, a decline of 4.1 percent compared to 1981. Depressed economic activity was a major factor in reducing total energy demand. However, conservation also played a role as energy consumption per dollar of GNP continued to fall. Most of the decline in energy use involved petroleum and natural gas. Reduced petroleum demand translated into a 21.7 percent reduction in net petroleum imports. Natural gas demand and production fell, prompted by reduced economic activity and a substantial increase in prices. Crude oil prices fell for the first time in more than a decade. Weakened market conditions adversely affected the rate of domestic oil and gas exploration and development activities. Nonetheless, domestic crude oil production rose 1.2 percent. International activities were highlighted by a decline in crude oil production, especially by members of the Organization of Petroleum Exporting Countries (OPEC), a decrease in crude oil prices, and a substantial increase in electricity production by nuclear-powered utility plants in non-Communist countries.

Energy Production. Energy production in the United States in 1982 remained essentially unchanged from that of 1981, as small gains in hydroelectric power and nuclear power production were offset by losses in natural gas production (see Table 2).

Energy Consumption. For the third straight year, energy consumption in the United States declined. Whereas declines in 1980 and 1981 resulted primarily from consumer response to higher prices and conservation, the 1982 decline reflected primarily an economic slowdown, especially in industry (see Table 4). Annual per capita consumption fell to 306 million Btu, the lowest level since 1967.

Exploration and Development. Petroleum and natural gas well completions, which increased each year since 1973, attained another record in 1982, exceeding the 1981 level by 9.3 percent (see Table 18). The number of rotary rigs in use fell steadily throughout the year until exhibiting a slight upturn near the end of the year. Because of high rig utilization in early 1982, average rig usage fell only 22 percent from the record high of 3,970 in 1981.

Petroleum Imports. For the third consecutive year, the United States was able to reduce significantly its dependence on foreign petroleum sources. This was accomplished by increasing crude oil production, reducing demand, and drawing down inventories (excluding crude oil stocks in the U.S. Government's Strategic Petroleum Reserve). Net imports of petroleum as a share of petroleum consumption (product supplied) fell in 1982 by 5.9 percentage points to 27.7 percent of consumption. This was the lowest level since 1972, the last full year of petroleum import controls. United States dependence on OPEC countries also declined. During 1982, the United States received only 41.9 percent of its gross petroleum imports from OPEC members, down for the fifth consecutive year from an all-time high of 70.3 percent in 1977 (see Table 25). Quantities imported from OPEC countries fell 36 percent during 1982, with Algeria, Libya, and Saudi Arabia experiencing declines of 48, 92, and 51 percent, respectively. Saudi Arabia, which had been the major source of petroleum imports since 1976, fell to second place in 1982, behind Mexico, a non-OPEC country. Other major non-OPEC sources were Canada and the United Kingdom.

Petroleum Consumption. Petroleum consumption (product supplied), which averaged 15.3 million barrels per day in 1982, declined for the fourth consecutive year, to the lowest level since 1971 (see Table 29). The principal factor contributing to the decline in 1982 was reduced usage by the industrial and electric utility sectors. The consumption of residual and distillate fuel oils, the principal petroleum products burned in these sectors, declined 18.9 and 5.4 percent, respectively. Other factors contributing to the downtrend were fuel switching, fuel use efficiencies, and conservation.

Petroleum Production. In 1982, domestic production registered its most significant increase since 1977 when Alaskan North Slope oil began to flow. The 8.7 million barrels per day produced in 1982 exceeded 1981 output by nearly 100,000 barrels per day. Although Alaska accounted for most of the increase, production in the lower-48 States also increased, the first since 1970 (see Table 23).

Petroleum Refining. Crude oil input to distillation units averaged 11.8 million barrels per day in 1982, down 5.6 percent from 1981, a reflection of the decline in consumption (see Table 28). Operating capacity fell

from 18.1 million barrels per day on January 1, 1981, to 16.1 million barrels per day on January 1, 1982. An additional 1.8 million barrels per day of capacity was operable but idle on January 1, 1982 (Table 82).

Petroleum Stocks. Petroleum inventories, excluding crude oil in the U. S. Government's Strategic Petroleum Reserve (SPR), were drawn down 9.4 percent in 1982. This reduction averaged nearly 324,000 barrels per day (see Table 32). Stocks were added to SPR in 1982 at a rate of 174,000 barrels per day. At year-end, SPR inventories were equal to 89 days of non-SPR crude oil imports in 1982 (see Table 33).

Natural Gas. Natural gas consumption and marketed production fell substantially in 1982, a reflection of reduced economic activity, a relatively warm fourth quarter, and price-induced conservation. The 17.9 trillion cubic feet consumed in 1982 was 1.5 trillion cubic feet less than that consumed in 1981 and was the lowest level since 1967 (see Table 46). The price of natural gas delivered to electric utilities and industrial plants increased a substantial $0.62 and $0.58 per thousand cubic feet, respectively, over 1981 prices (see Table 52).

Coal. In 1982, coal output was 824 million short tons, the same as for 1981. However, coal consumption fell 3.4 percent to 707 million short tons, because of a decline in industrial activity, especially by industries that consume coal coke (see Table 53). Coal consumption for coke production fell from 61 million short tons in 1981 to 41 million short tons in 1982 (see Table 55). Following 3 years of increases, coal exports (including overseas shipments to U.S. Armed Forces) fell slightly to 107 million short tons. Most of the decline was in exports to European countries (see Table 56).

Electricity. Electricity production, which increased each year in the post-World War II period, declined in 1982 to a level less than that produced in 1979. Production from each of the fossil fuels declined, whereas production from nuclear power and hydropower increased, both to record levels (see Table 65). Electricity sales also declined in 1982, due to a 9.7-percent decline in sales to the industrial sector; sales to other sectors increased (see Table 67).

Prices. Changes in energy prices in 1982 were mixed. Whereas most petroleum prices declined, prices of natural gas, coal, and electricity rose:

- Crude oil wellhead price averaged $28.54 per barrel, 10 percent below the 1981 average (see Table 39).
- Refiner acquisition cost for imported crude oil averaged $33.62 per barrel, 9 percent below the 1981 average (see Table 41).
- Natural gas wellhead price averaged $2.42 per thousand cubic feet, 22 percent above the 1981 average (see Table 51).
- Bituminous coal and lignite prices at the mines averaged $27.30 per ton, 4 percent above the 1981 average (see Table 63).
- Leaded regular motor gasoline, which accounted for about half of total motor gasoline consumption in 1982, sold at service stations at a 1982 average of $1.22 per gallon (including taxes), 7 percent below the 1981 average (see Table 43).
- Residential heating oil prices averaged $1.19 per gallon, down 2 percent from the 1981 average (see Table 43).
- Residential electricity prices averaged 6.86 cents per kilowatt-hour, 10 percent above the 1981 average (see Table 73).

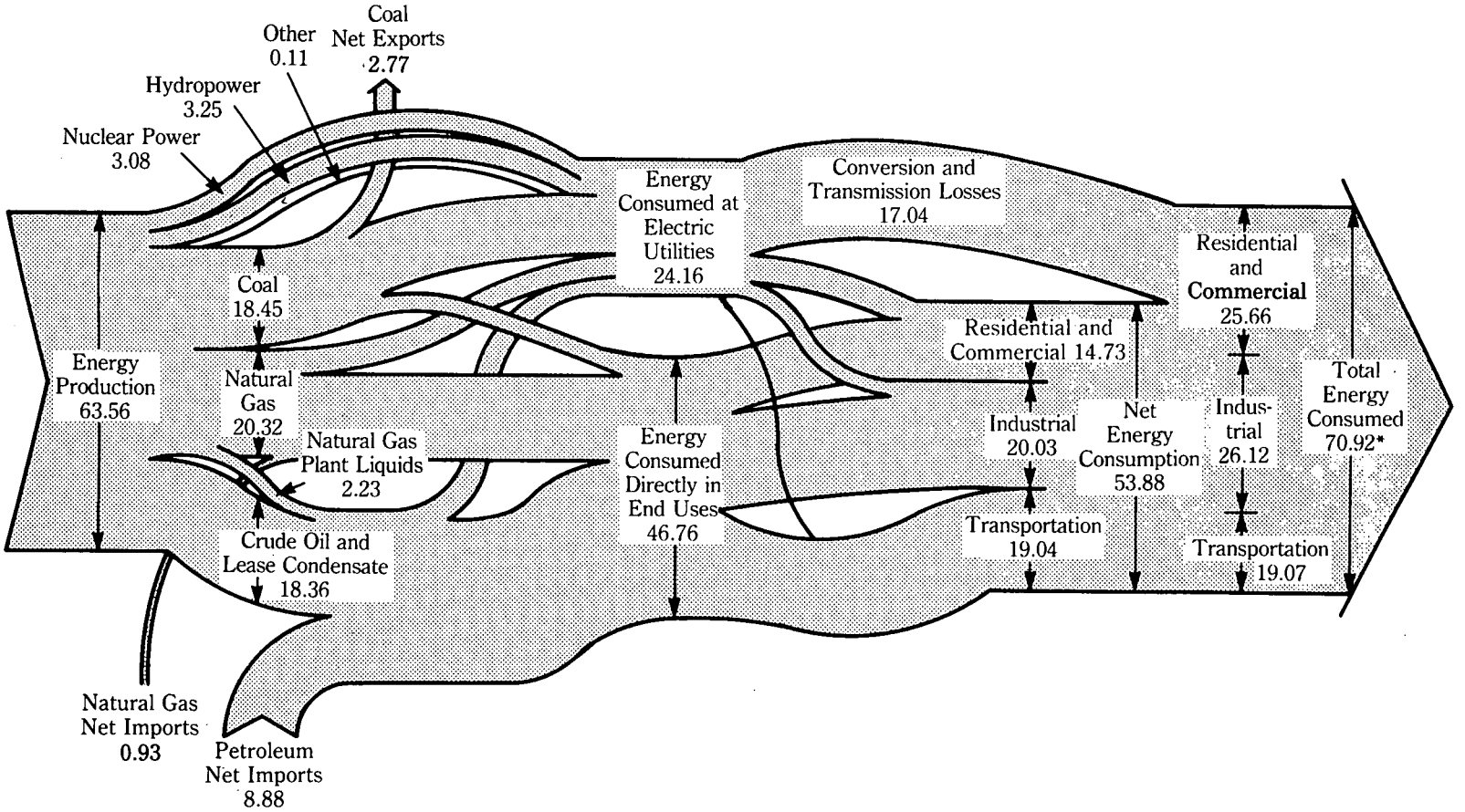
World Petroleum Production. World crude oil production (excluding natural gas plant liquids) of 52.8 million barrels per day in 1982 was down for the third straight year and was substantially below the all-time high of 62.5 million barrels per day in 1979. During this 3-year period, OPEC production declined 39 percent, and the OPEC share of world production fell from about 49 to 35 percent. Saudi Arabia accounted for most of the decline, with production during the year falling more than 3 million barrels per day. Among OPEC countries only Iran reported production gains in 1982. Other countries reporting increases in output include Mexico and the United Kingdom.

World Petroleum Prices. World oil prices showed a weakness in 1982, the first since the mid-1970's, when prices of some crude oils were reduced. Price reductions made in early 1982 by the United States, Iran, Mexico, and African members of OPEC were followed by further reductions by other OPEC members. Announced contract price reductions ranged from $0.50 to $3.00. Only Saudi Arabia, other Persian Gulf Arab members of OPEC, and Venezuela did not cut official prices (see Table 44).

World Petroleum Stocks. A downward pressure on world petroleum production was created not only from reduced consumption but also from stock drawdowns by industrialized countries. In the first half of 1982 (latest data available), stocks held by the Organization of Economic Cooperation and Development (OECD) countries fell from 3.5 billion barrels to 3.3 billion barrels. During this period, OECD countries reduced stocks at a rate of 1.3 million barrels per day (see Table 38).

Figure 1. Energy Flow Diagram, 1982

(Quadrillion Btu)



*Total energy consumption with conversion and transmission losses allocated to end use sectors in proportion to the sectors' use of electricity. Sum of components do not equal total due to the use of preliminary conversion factors. See footnotes on Table 4.

Note: Changes in stocks, miscellaneous supply and disposition and unaccounted for quantities are not shown.

Section 1. Energy Overview

During 1982, the United States recorded declines in energy production, consumption, and imports, and an increase in energy exports.

Production. Based on preliminary data, energy production in the United States fell for the second consecutive year to 63.6 quadrillion British thermal units (Btu) in 1982, 1.4 percent below the 1981 level. The fall in natural gas and natural gas liquids production accounted for most of the decline. However, gains were recorded in crude oil (including lease condensate) production, nuclear power electricity generation, and hydropower electricity generation.

During the period 1972 through 1982 the pattern of energy production shifted considerably. The production of coal, nuclear power, and hydropower increased from 28.5 percent of total production to 39.0 percent. During this period petroleum, natural gas, and natural gas plant liquids production declined from 71.4 percent of the total to 60.8 percent (see Table 2).

Consumption. Energy consumption totaled 70.9 quadrillion Btu in the United States during 1982, 4.1 percent below the 1981 level and 10.1 percent below the peak level of 78.9 quadrillion Btu during 1979 (see Table 3). During 1982, the United States consumed less coal, petroleum, and natural gas but more nuclear power and hydropower. On a Btu basis, coal consumption declined 3.4 percent, petroleum, 5.0 percent, and natural gas, 7.5 percent. Nuclear power increased 3.7 percent and hydropower, 16.6 percent. Petroleum consumption, which peaked in 1978 at 38.0 quadrillion Btu (18.8 million barrels per day), measured only 30.3 quadrillion Btu in 1982 (15.3 million barrels per day). The 1982 decrease in petroleum consumption was the fourth consecutive annual drop in petroleum usage in the United States, but petroleum still contributed the largest share of total energy usage, accounting for 42.8 percent of all energy used in this country during 1982. The share held by natural gas fell to 26.0 from a high of 32.9 percent in 1971.

Energy consumption (with electricity distributed) in two of the three major end-use sectors declined during 1982. While residential and commercial sector consumption increased 1.8 percent, energy usage in the industrial sector and the transportation sector decreased 10.8 and 2.1 percent, respectively (see Table 4). The industrial sector accounted for 37 percent of all energy consumed in the United States during 1982, the residential and commercial sector accounted for 36 percent, and the transportation sector consumed 27 percent of the total.

Consumption of energy by electric utilities for the generation of electricity declined in 1982, the first annual decline since World War II. The 24.2 quadrillion Btu consumed was down 2.1 percent from the 1981 level (see Table 6). Of the total quantity of energy consumed by the electric utilities, only 7.1 quadrillion Btu (29.5 percent) was sold to consumers. The remaining 17.0 quadrillion Btu (70.5 percent) represented energy used to generate and transport electricity.

Trade. During 1982, the United States consumed 12 percent more energy than it produced. This difference was met primarily by imported energy. Total imported energy during 1982 was 12.0 quadrillion Btu, and petroleum accounted for 89 percent of the total. The United States exported 4.6 quadrillion Btu of energy during 1982, of which 60 percent was coal exports. Petroleum imports in 1982 decreased by 16 percent from the 1981 level (see Table 7).

Prices. The prices of all major fossil fuels except crude oil continued to rise in 1982. In current dollars per million Btu, the price of crude oil remained the highest at $4.92, down from $5.48 in 1981. Natural gas rose to $2.22; bituminous coal and lignite was $1.22; anthracite reached $1.98; and the composite price of these fossil fuels was $2.77. It should be noted that in terms of constant 1972 dollars, however, these preliminary data show substantial increases only in natural gas (see Table 10).

The value of major fossil fuels produced in the United States during 1982 was $157 billion, in current dollars. The total value was comprised of petroleum at $90 billion, followed by natural gas at $45 billion and coal at $23 billion (see Table 11).

Figure 2. Energy Supply and Disposition

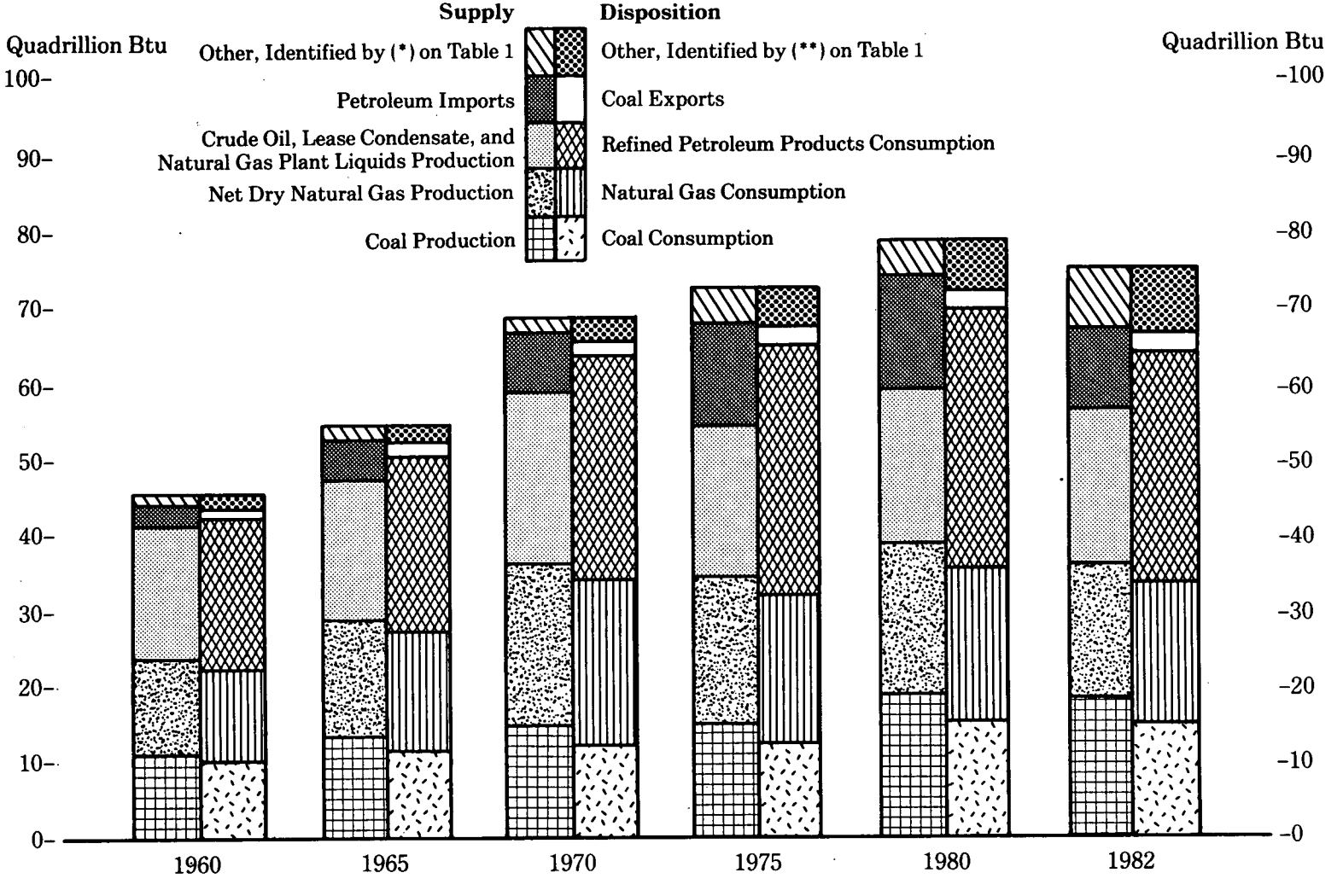


Table 1. Energy Supply and Disposition, 1960, 1965 and 1970-1982

(Quadrillion Btu)

Activity and Fuel	1960	1965	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982 [1]
Supply															
Production															
Crude Oil and Lease Condensate	14.93	16.52	20.40	20.03	20.04	19.49	18.57	17.73	17.26	17.45	18.43	18.10	18.25	18.15	18.36
Natural Gas Plant Liquids	1.46	1.88	2.51	2.54	2.60	2.57	2.47	2.37	2.33	2.33	2.25	2.29	2.25	2.31	2.23
Natural Gas [2]	12.66	15.78	21.67	22.28	22.21	22.19	21.21	19.64	19.48	19.57	19.49	20.08	19.92	19.69	18.09
Coal [3]	11.12	13.38	15.05	13.59	14.49	14.37	14.47	15.19	15.85	15.83	15.04	17.65	18.64	18.44	18.45
Nuclear Power*	0.01	0.04	0.24	0.41	0.58	0.91	1.27	1.90	2.11	2.70	3.02	2.71	2.74	2.97	3.08
Hydropower*	1.61	2.06	2.63	2.82	2.86	2.86	3.18	3.15	2.98	2.33	2.94	2.93	2.90	2.74	3.25
Other [4] *	([12])	0.01	0.02	0.02	0.03	0.05	0.06	0.07	0.08	0.08	0.07	0.09	0.11	0.13	0.11
Total Production	41.79	49.67	62.51	61.70	62.81	62.43	61.23	60.06	60.09	60.29	61.23	63.85	64.81	64.43	63.56
Imports															
Crude Oil [5]	2.20	2.65	2.81	3.57	4.71	6.89	7.40	8.72	11.24	14.03	13.46	13.83	11.19	9.34	7.35
Refined Petroleum Products [6]	1.80	2.75	4.66	4.97	5.59	6.58	5.73	4.23	4.43	4.73	4.36	4.11	3.46	3.30	3.27
Natural Gas*	0.16	0.47	0.85	0.96	1.05	1.06	0.99	0.98	0.99	1.04	0.99	1.30	1.01	0.92	0.99
Other [7] *	0.07	0.04	0.07	0.08	0.11	0.21	0.31	0.19	0.18	0.30	0.44	0.39	0.31	0.38	0.37
Total Imports	4.23	5.92	8.39	9.58	11.46	14.73	14.42	14.11	16.84	20.09	19.26	19.62	15.97	13.94	11.97
Adjustments [8] *	- 0.45	- 0.74	- 1.41	- 0.81	- 0.51	- 0.48	- 0.65	- 1.08	- 0.21	- 1.96	- 0.36	- 1.66	- 1.07	- 0.07	0.02
Total Supply	45.57	54.85	69.49	70.47	73.77	76.68	75.00	73.09	76.72	78.43	80.13	81.81	79.72	78.30	75.55
Disposition															
Exports															
Coal [3]	1.02	1.38	1.94	1.55	1.53	1.45	1.64	1.79	1.62	1.47	1.10	1.78	2.42	2.94	2.78
Other [9] **	0.46	0.48	0.73	0.63	0.61	0.63	0.60	0.60	0.59	0.63	0.85	1.12	1.31	1.37	1.84
Total Exports	1.48	1.86	2.66	2.18	2.14	2.07	2.24	2.39	2.21	2.10	1.95	2.90	3.73	4.32	4.63
Consumption															
Refined Petroleum Products [10]	19.92	23.25	29.52	30.56	32.95	34.84	33.45	32.73	35.17	37.12	37.97	37.12	34.20	31.93	30.33
Natural Gas	12.39	15.77	21.79	22.47	22.70	22.51	21.73	19.95	20.35	19.93	20.00	20.67	20.39	19.93	18.43
Coal [3]	10.12	11.89	12.66	12.01	12.45	13.30	12.88	12.82	13.73	13.96	13.85	15.11	15.46	15.97	15.42
Nuclear Power **	0.01	0.04	0.24	0.41	0.58	0.91	1.27	1.90	2.11	2.70	3.02	2.71	2.74	2.97	3.08
Hydropower [11] **	1.66	2.06	2.65	2.86	2.94	3.01	3.31	3.22	3.07	2.51	3.14	3.14	3.12	3.07	3.57
Other [4] **	([12])	0.01	0.02	0.02	0.03	0.05	0.06	0.07	0.08	0.08	0.07	0.09	0.11	0.13	0.11
Net Imports of Coal Coke **	- 0.01	- 0.02	- 0.06	- 0.03	- 0.03	- 0.01	0.06	0.01	([12])	0.02	0.13	0.07	- 0.04	- 0.02	- 0.02
Total Consumption	44.08	52.99	66.83	68.30	71.63	74.61	72.76	70.71	74.51	76.33	78.18	78.91	75.99	73.98	70.92
Total Disposition	45.57	54.85	69.49	70.47	73.77	76.68	75.00	73.09	76.72	78.43	80.13	81.81	79.72	78.30	75.55

[1] Preliminary. At time of release, preliminary coal production was 18.66 quadrillion Btu.
[2] Net dry natural gas.
[3] Bituminous coal, lignite, and anthracite.
[4] Geothermal, wood, refuse, and other vegetal fuels used for electricity generation at utilities (see Note).
[5] Includes imports of crude oil for the Strategic Petroleum Reserve.
[6] Includes imports of unfinished oils and natural gas plant liquids.
[7] Includes bituminous coal, lignite, anthracite, coal coke, and hydropower.
[8] A balancing item. Includes stock changes, losses, gains, miscellaneous blending components, unaccounted for supply, and anthracite shipped overseas to U.S. Armed Forces.
[9] Includes crude oil, refined petroleum products, natural gas, coal coke, and hydropower.
[10] Refined petroleum products supplied includes natural gas plant liquids and crude oil burned as fuel.
[11] Includes industrial generation of hydropower and net electricity imports.
[12] Less than 0.005 quadrillion Btu.

Note: Data do not include the consumption of wood derived fuel (other than that consumed by the electric utility industry) which amounted to an estimated 2.2 quadrillion Btu in 1981. This table also excludes small quantities of other energy forms for which consistent historical data are not available, such as solar energy obtained by the use of thermal and photovoltaic collectors; wind energy; and geothermal, biomass, and waste energy other than that consumed at electric utilities.

Note: Sum of components may not equal total due to independent rounding.

*Included in "Other Supply" in Figure 2.

**Included in "Other Disposition" in Figure 2.

Sources: See sources for Tables 22, 26, 46, 53, 58, 64, 66, and EIA estimates for industrial hydropower, and conversion factors in the Units of Measure, Conversion Factors, Price Deflators, and Energy Equivalents section.

Figure 3. Production of Energy by Type

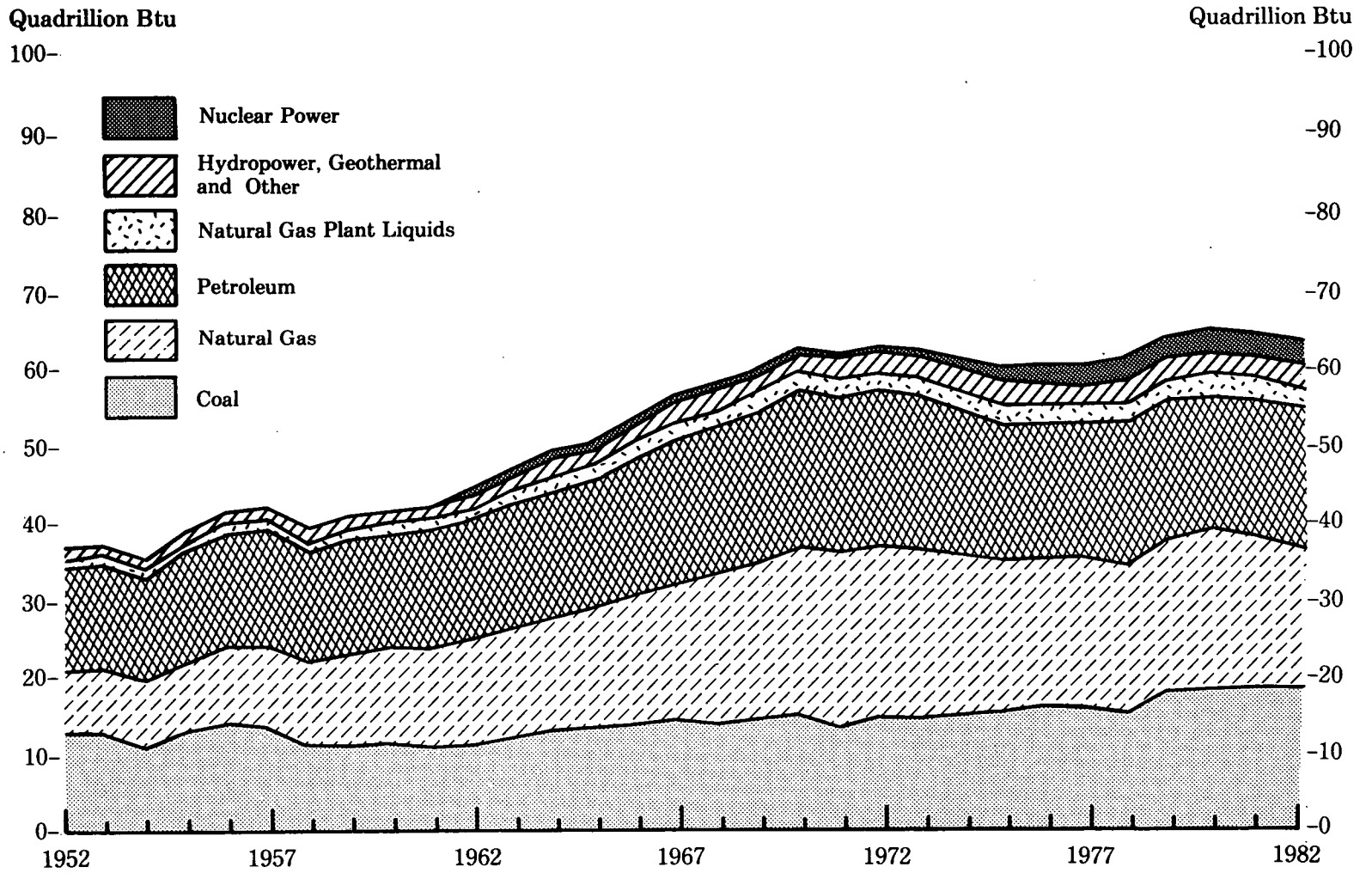


Table 2. Production of Energy by Type, 1952-1982

Year	Coal [1]		Natural Gas [2]		Petroleum [3]		Natural Gas Plant Liquids		Hydropower [4]		Nuclear Power		Geothermal [5]		Wood and Waste [6]		Total Energy Production	Change from Previous Year
	Quadrillion Btu	Million Short Tons	Quadrillion Btu	Trillion Cubic Feet	Quadrillion Btu	Million Barrels	Quadrillion Btu	Million Barrels	Quadrillion Btu	Billion kWh [7]	Quadrillion Btu	Billion kWh [7]	Quadrillion Btu	Billion kWh [7]	Quadrillion Btu	Billion kWh [7]	Quadrillion Btu	Percent [8]
1952	13.23	507.4	7.96	7.69	13.28	2,290	1.00	224	1.47	109.7	0	0	0	0	(9)	(10)	36.95	-2.4
1953	12.74	488.2	8.34	8.06	13.67	2,357	1.06	239	1.41	109.6	0	0	0	0	(9)	(10)	37.23	0.8
1954	10.98	420.8	8.68	8.39	13.43	2,315	1.11	252	1.36	111.6	0	0	0	0	(9)	(10)	35.56	-4.5
1955	12.72	490.8	9.34	9.03	14.41	2,484	1.24	281	1.36	116.2	0	0	0	0	(9)	(10)	39.08	9.9
1956	13.72	529.8	10.00	9.66	15.18	2,617	1.28	293	1.43	125.2	0	0	0	0	(9)	(10)	41.62	6.5
1957	13.42	518.0	10.61	10.25	15.18	2,617	1.29	295	1.52	133.4	0	0	0	0	(9)	(10)	42.00	0.9
1958	11.18	431.6	10.94	10.57	14.20	2,449	1.29	295	1.59	143.6	(9)	0.2	0	0	(9)	(10)	39.21	-6.7
1959	11.08	432.7	11.95	11.55	14.93	2,575	1.38	321	1.55	141.2	(9)	0.2	0	0	(9)	(10)	40.90	4.3
1960	11.12	434.3	12.66	12.23	14.93	2,575	1.46	340	1.61	149.4	0.01	0.5	0	0	(9)	0.1	41.79	2.2
1961	10.73	420.4	13.10	12.66	15.21	2,622	1.55	362	1.66	155.5	0.02	1.7	(9)	0.1	(9)	0.1	42.27	1.2
1962	11.21	439.0	13.72	13.25	15.52	2,676	1.59	373	1.82	172.0	0.03	2.3	(9)	0.1	(9)	0.1	43.89	3.8
1963	12.15	477.2	14.51	14.08	15.97	2,753	1.71	401	1.77	169.0	0.04	3.2	(9)	0.2	(9)	0.1	46.16	5.2
1964	12.83	504.2	15.30	14.82	16.16	2,787	1.80	422	1.89	180.3	0.04	3.3	(9)	0.2	(9)	0.1	48.03	4.1
1965	13.38	527.0	15.78	15.29	16.52	2,849	1.88	442	2.06	197.0	0.04	3.7	(9)	0.2	(9)	0.3	49.67	3.4
1966	13.82	546.8	17.01	16.47	17.56	3,028	2.00	469	2.06	197.9	0.06	5.5	(9)	0.2	(9)	0.3	52.52	5.7
1967	14.19	564.9	17.94	17.39	18.65	3,216	2.18	514	2.35	224.9	0.09	7.7	0.01	0.3	(9)	0.3	55.41	5.5
1968	13.93	556.7	19.07	18.49	19.31	3,329	2.32	550	2.35	225.9	0.14	12.5	0.01	0.4	(9)	0.4	57.13	3.1
1969	14.20	571.0	20.45	19.83	19.56	3,372	2.42	580	2.65	253.5	0.15	13.9	0.01	0.6	(9)	0.3	59.44	4.0
1970	15.05	612.7	21.67	21.01	20.40	3,517	2.51	606	2.63	251.0	0.24	21.8	0.01	0.5	(9)	0.4	62.51	5.2
1971	13.59	560.9	22.28	21.61	20.03	3,454	2.54	618	2.82	269.5	0.41	38.1	0.01	0.5	(9)	0.3	61.70	-1.3
1972	14.49	602.5	22.21	21.62	20.04	3,455	2.60	638	2.86	275.9	0.58	54.1	0.03	1.5	(9)	0.3	62.81	1.8
1973	14.37	598.6	22.19	21.73	19.49	3,361	2.57	634	2.86	275.4	0.91	83.5	0.04	2.0	(9)	0.3	62.43	-0.6
1974	14.47	610.0	21.21	20.71	18.57	3,203	2.47	616	3.18	304.2	1.27	114.0	0.05	2.5	(9)	0.3	61.23	-1.9
1975	15.19	654.6	19.64	19.24	17.73	3,057	2.37	596	3.15	303.2	1.90	172.5	0.07	3.2	(9)	0.2	60.06	-1.9
1976	15.85	684.9	19.48	19.10	17.26	2,976	2.33	587	2.98	286.9	2.11	191.1	0.08	3.6	(9)	0.3	60.09	0.1
1977	15.83	697.2	19.57	19.16	17.45	3,009	2.33	590	2.33	223.6	2.70	250.9	0.08	3.6	0.01	0.5	60.29	0.3
1978	15.04	670.2	19.49	19.12	18.43	3,178	2.25	572	2.94	283.5	3.02	276.4	0.06	3.0	(9)	0.3	61.23	1.6
1979	17.65	781.1	20.08	19.66	18.10	3,121	2.29	578	2.93	283.1	2.71	255.2	0.08	3.9	0.01	0.5	63.85	4.3
1980	18.64	829.7	19.92	19.60	18.25	3,146	2.25	576	2.90	279.2	2.74	251.1	0.11	5.1	(9)	0.4	64.81	1.5
1981	18.44	823.8	19.69	19.40	18.15	3,129	2.31	587	2.74	263.8	2.97	272.7	0.12	5.7	(9)	0.4	64.43	-0.6
1982[11]	18.45	824.0	18.09	17.82	18.36	3,165	2.23	567	3.25	312.7	3.08	282.8	0.10	4.8	(9)	0.3	63.56	-1.4

[1] Bituminous coal, lignite, and anthracite.
[2] Net dry natural gas.
[3] Crude oil and lease condensate.
[4] Electric utility and industrial generation of hydropower.
[5] Consumed by electric utilites.
[6] Wood, refuse, and other vegetal fuels consumed by electric utilities. Converted to Btu by applying national average heat rates for fossil fuel steam electric plants. Data do not include the consumption of wood derived fuel (other than that consumed by the electric utility industry) which amounted to an estimated 2.2 quadrillion Btu 1981. This table excludes small quantities of energy forms for which consistent historical data are not available, such as solar energy obtained by the use of thermal and photovoltaic collectors; wind energy; and geothermal, biomass, and waste energy other than that consumed at electric utilities.
[7] See Explanatory Note 1.
[8] Percent change calculated from data prior to rounding.
[9] Less than 0.005 quadrillion Btu.
[10] Less than 0.05 billion kWh.
[11] Preliminary. At time of release, preliminary coal production was 833.4 million short tons or 18.66 quadrillion Btu.

Note: Sum of components may not equal total due to independent rounding.

Sources: See sources for Tables 22, 46, 53, 66, and EIA estimates for industrial hydropower, and conversion factors in the Units of Measure, Conversion Factors, Price Deflators, and Energy Equivalents section.

Figure 4. Consumption of Energy by Type

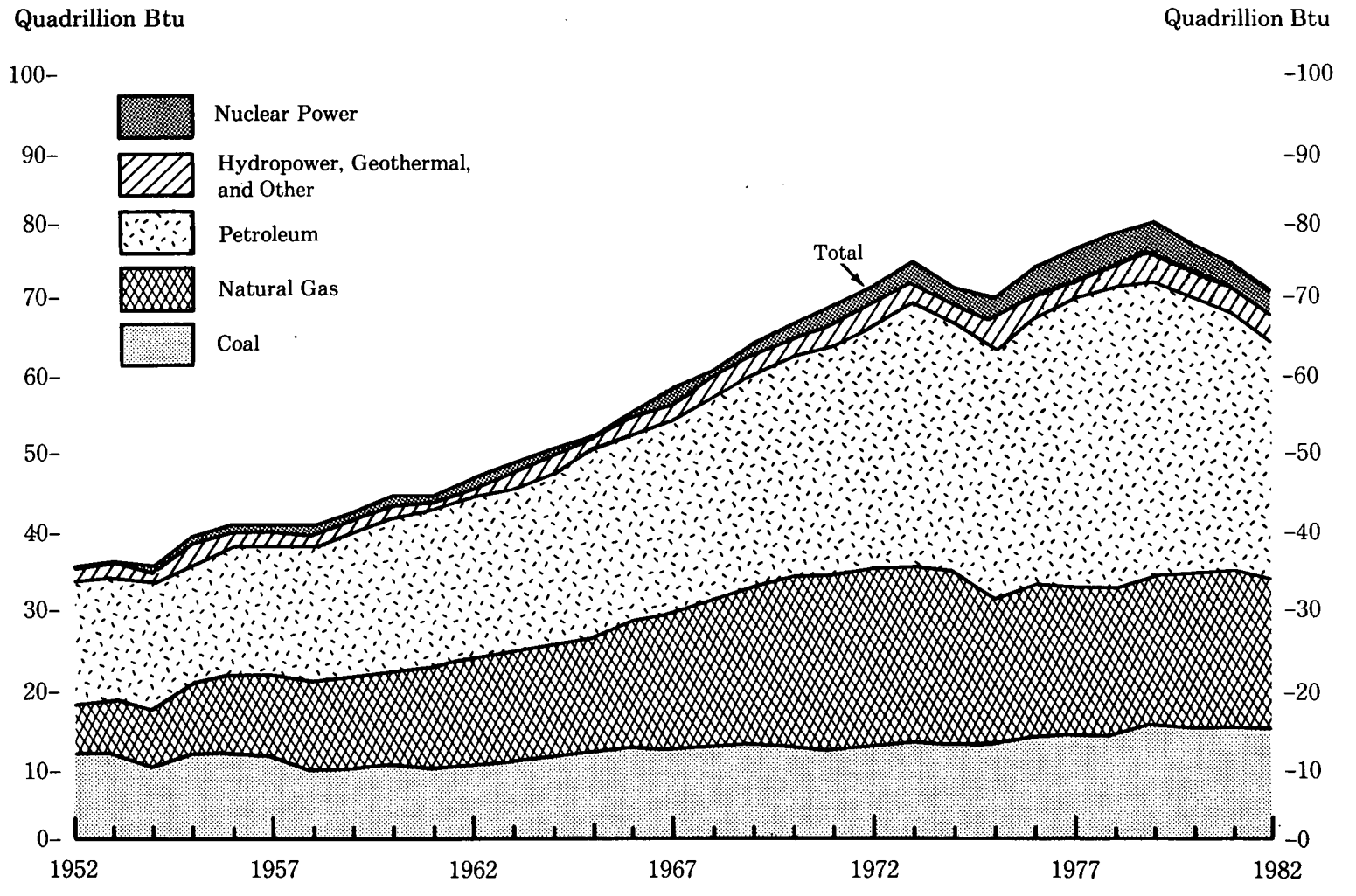


Table 3. Consumption of Energy by Type, 1952-1982

Year	Coal [1]		Natural Gas		Petroleum [2]		Hydropower [3]		Nuclear Power		Geothermal [4]		Wood and Waste [5]		Net Imports of Coal Coke		Total Energy Consumption	Change from Previous Year
	Quadrillion Btu	Million Short Tons	Quadrillion Btu	Trillion Cubic Feet	Quadrillion Btu	Million Barrels	Quadrillion Btu	Billion kWh [6]	Quadrillion Btu	Billion kWh [6]	Quadrillion Btu	Billion kWh [6]	Quadrillion Btu	Billion kWh [6]	Quadrillion Btu	Thousand Short Tons	Quadrillion Btu	Percent [7]
1952	11.84	454.1	7.55	7.29	14.96	2,661	1.50	112.0	0	0	0	0	(8)	(9)	- 0.01	- 479	35.83	- 0.8
1953	11.87	454.8	7.91	7.64	15.56	2,774	1.44	111.6	0	0	0	0	(8)	(9)	- 0.01	- 363	36.76	2.6
1954	10.17	389.9	8.33	8.05	15.84	2,831	1.39	114.0	0	0	0	0	(8)	(9)	- 0.01	- 272	35.73	- 2.8
1955	11.52	447.0	9.00	8.69	17.25	3,086	1.41	120.3	0	0	0	0	(8)	(9)	- 0.01	- 405	39.17	9.6
1956	11.72	456.9	9.61	9.29	17.94	3,212	1.49	129.8	0	0	0	0	(8)	(9)	- 0.01	- 525	40.75	4.0
1957	11.14	434.5	10.19	9.85	17.93	3,215	1.56	137.0	0	0	0	0	(8)	(9)	- 0.02	- 704	40.80	0.1
1958	9.83	385.7	10.66	10.30	18.53	3,328	1.63	146.9	(8)	0.2	0	0	(8)	(9)	- 0.01	- 271	40.65	- 0.4
1959	9.79	385.1	11.72	11.32	19.32	3,477	1.59	144.7	(8)	0.2	0	0	(8)	(9)	- 0.01	- 337	42.41	4.3
1960	10.12	398.1	12.39	11.97	19.92	3,586	1.66	154.0	0.01	0.5	(8)	0	(8)	0.1	- 0.01	- 227	44.08	3.9
1961	9.89	390.4	12.93	12.49	20.22	3,641	1.68	157.8	0.02	1.7	(8)	0.1	(8)	0.1	- 0.01	- 318	44.73	1.5
1962	10.18	402.3	13.73	13.27	21.05	3,796	1.82	172.6	0.03	2.3	(8)	0.1	(8)	0.1	- 0.01	- 222	46.80	4.6
1963	10.69	423.5	14.40	13.97	21.70	3,921	1.77	169.1	0.04	3.2	(8)	0.2	(8)	0.1	- 0.01	- 298	48.61	3.9
1964	11.25	445.7	15.29	14.81	22.30	4,034	1.91	182.3	0.04	3.3	(8)	0.2	(8)	0.1	- 0.01	- 421	50.78	4.5
1965	11.89	472.0	15.77	15.28	23.25	4,202	2.06	196.8	0.04	3.7	(8)	0.2	(8)	0.3	- 0.02	- 744	52.99	4.4
1966	12.48	497.7	17.00	16.45	24.40	4,411	2.07	199.0	0.06	5.5	(8)	0.2	(8)	0.3	- 0.03	- 1,006	55.99	5.7
1967	12.24	491.4	17.94	17.39	25.28	4,585	2.34	224.6	0.09	7.7	0.01	0.3	(8)	0.3	- 0.02	- 618	57.89	3.4
1968	12.66	509.8	19.21	18.63	26.98	4,902	2.34	225.2	0.14	12.5	0.01	0.4	(8)	0.4	- 0.02	- 698	61.32	5.9
1969	12.72	516.4	20.68	20.06	28.34	5,160	2.66	254.5	0.15	13.9	0.01	0.6	(8)	0.3	- 0.04	- 1,456	64.53	5.2
1970	12.66	523.2	21.79	21.14	29.52	5,364	2.65	252.9	0.24	21.8	0.01	0.5	(8)	0.4	- 0.06	- 2,325	66.83	3.6
1971	12.01	501.6	22.47	21.79	30.56	5,553	2.86	273.1	0.41	38.1	0.01	0.5	(8)	0.3	- 0.03	- 1,335	68.30	2.2
1972	12.45	524.3	22.70	22.10	32.95	5,990	2.94	283.6	0.58	54.1	0.03	1.5	(8)	0.3	- 0.03	- 1,047	71.63	4.9
1973	13.30	562.6	22.51	22.05	34.84	6,317	3.01	289.7	0.91	83.5	0.04	2.0	(8)	0.3	- 0.01	- 317	74.61	4.2
1974	12.88	558.4	21.73	21.22	33.45	6,078	3.31	316.9	1.27	114.0	0.05	2.5	(8)	0.3	0.06	2,262	72.76	- 2.5
1975	12.82	562.6	19.95	19.54	32.73	5,958	3.22	309.3	1.90	172.5	0.07	3.2	(8)	0.2	0.01	546	70.71	- 2.8
1976	13.73	603.8	20.35	19.95	35.17	6,391	3.07	295.5	2.11	191.1	0.08	3.6	(8)	0.3	(8)	- 4	74.51	5.4
1977	13.96	625.3	19.93	19.52	37.12	6,727	2.51	241.0	2.70	250.9	0.08	3.6	0.01	0.5	0.02	588	76.33	2.4
1978	13.85	625.2	20.00	19.63	37.97	6,879	3.14	303.2	3.02	276.4	0.06	3.0	(8)	0.3	0.13	5,029	78.18	2.4
1979	15.11	680.5	20.67	20.24	37.12	6,757	3.14	303.4	2.71	255.2	0.08	3.9	0.01	0.5	0.07	2,534	78.91	0.9
1980	15.46	702.7	20.39	19.88	34.20	6,242	3.12	300.1	2.74	251.1	0.11	5.1	(8)	0.4	- 0.04	- 1,412	75.99	- 3.7
1981	15.97	732.6	19.93	19.40	31.93	5,861	3.07	295.1	2.97	272.7	0.12	5.7	(8)	0.4	- 0.02	- 643	73.98	- 2.6
1982 [10]	15.42	707.4	18.43	17.94	30.33	5,568	3.57	344.0	3.08	282.8	0.10	4.8	(8)	0.3	- 0.02	- 873	70.92	- 4.1

[1] Bituminous coal, lignite, and anthracite.
[2] Refined petroleum products supplied including natural gas plant liquids and crude oil burned as fuel.
[3] Electric utility and industrial generation of hydropower and net electricity imports.
[4] Consumed by electric utilities.
[5] Wood, refuse, and other vegetal fuels consumed by electric utilities. Converted to Btu by applying national average heat rates for fossil fuel steam electric plants. Data do not include the consumption of wood derived fuel (other than that consumed by the electric utility industry) which amounted to an estimated 2.2 quadrillion Btu 1981. This table excludes small quantities of energy forms for which consistent historical data are not available, such as solar energy obtained by the use of thermal and photovoltaic collectors; wind energy; and geothermal, biomass, and waste energy other than that consumed at electric utilities.
[6] See Explanatory Note 1.
[7] Percent change calculated from data prior to rounding.
[8] Less than 0.005 quadrillion Btu.
[9] Less than 0.05 billion kWh.
[10] Preliminary.

Note: Sum of components may not equal total due to independent rounding.

Sources: See sources for Tables 22, 46, 53, 58, 64, 66, and EIA estimates for industrial hydropower, and conversion factors in the Units of Measure, Conversion Factors, Price Deflators, and Energy Equivalents section.

Figure 5. Consumption of Energy by End-Use Sector

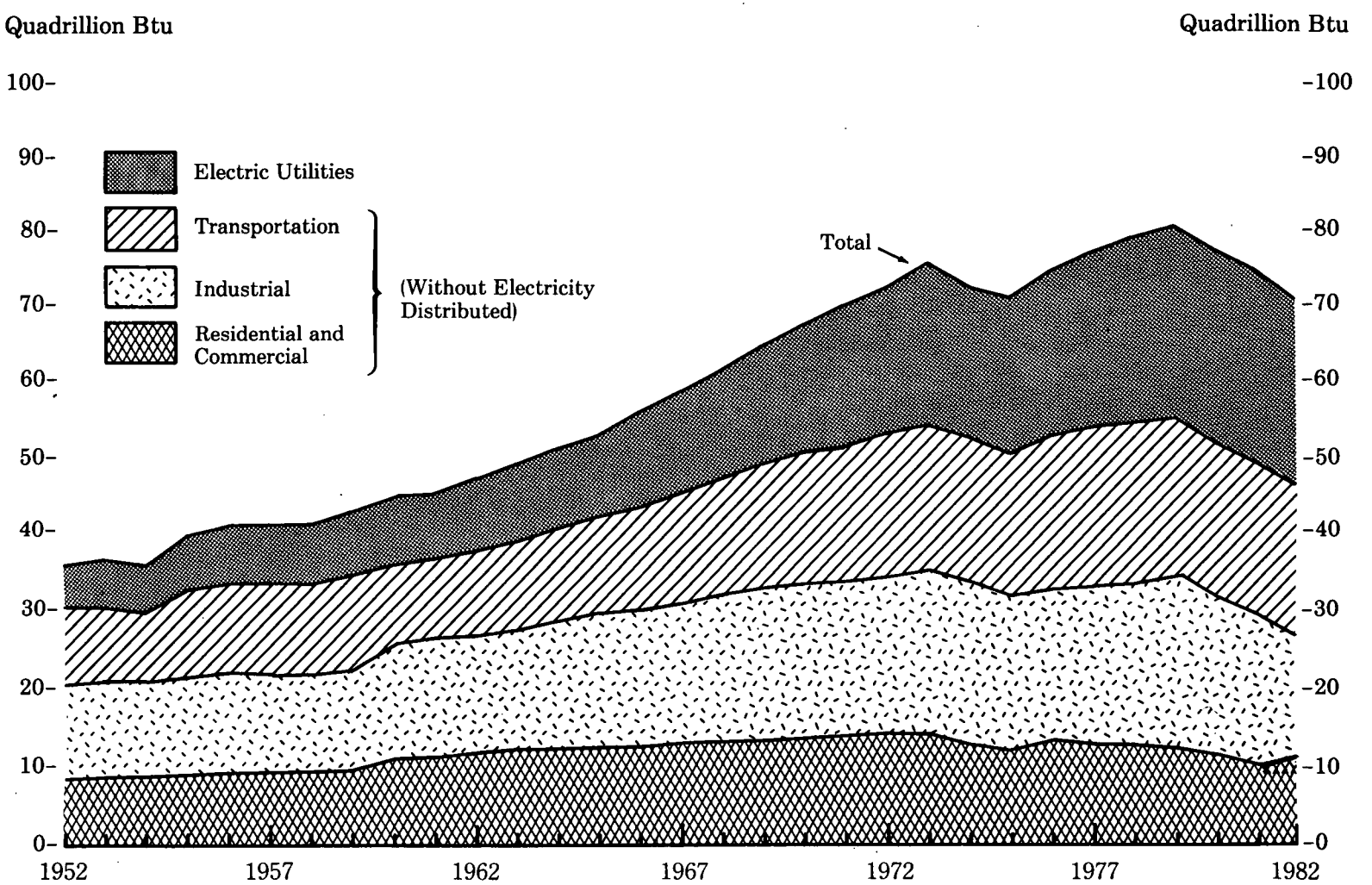


Table 4. Consumption of Energy by End-Use Sector, [1] 1952-1982

(Quadrillion Btu)

Year	Residential and Commercial		Industrial		Transportation		Electric Utilities	Total Energy Consumption
	Without Electricity Distributed [2]	With Electricity Distributed [3]	Without Electricity Distributed [4]	With Electricity Distributed [5]	Without Electricity Distributed [2]	With Electricity Distributed [3]		
1952	7.05	9.78	14.22	16.99	8.96	9.07	5.60	35.83
1953	6.84	9.73	14.86	17.86	9.07	9.17	6.00	36.76
1954	7.01	10.01	13.81	16.79	8.85	8.93	6.06	35.73
1955	7.47	10.61	15.47	19.00	9.49	9.57	6.75	39.17
1956	7.78	11.17	15.91	19.71	9.80	9.87	7.26	40.75
1957	7.54	11.17	15.89	19.73	9.84	9.90	7.53	40.80
1958	8.04	11.82	15.18	18.82	9.95	10.01	7.48	40.65
1959	8.23	12.32	15.80	19.74	10.30	10.35	8.08	42.41
1960	8.83	13.12	16.50	20.36	10.57	10.60	8.19	44.08
1961	9.03	13.51	16.49	20.45	10.73	10.77	8.47	44.73
1962	9.53	14.34	17.07	21.24	11.18	11.22	9.03	46.80
1963	9.55	14.78	17.81	22.18	11.61	11.65	9.64	48.61
1964	9.65	15.29	18.82	23.50	11.95	11.99	10.34	50.78
1965	10.05	16.09	19.52	24.48	12.39	12.42	11.03	52.99
1966	10.53	17.12	20.41	25.79	13.05	13.08	12.01	55.99
1967	11.09	18.16	20.40	26.01	13.70	13.73	12.71	57.89
1968	11.44	19.29	21.18	27.20	14.81	14.83	13.89	61.32
1969	11.95	20.64	21.94	28.41	15.45	15.48	15.19	64.53
1970	12.18	21.76	22.32	29.00	16.04	16.07	16.28	66.83
1971	12.40	22.64	22.08	28.96	16.66	16.69	17.16	68.30
1972	12.67	23.73	22.78	30.22	17.65	17.68	18.53	71.63
1973	12.31	24.18	23.89	31.84	18.55	18.58	19.85	74.61
1974	11.81	23.76	22.86	30.90	18.06	18.09	20.02	72.76
1975	11.62	23.93	20.56	28.57	18.17	18.21	20.35	70.71
1976	12.27	25.04	21.63	30.40	19.03	19.07	21.57	74.51
1977	11.89	25.39	21.99	31.15	19.75	19.79	22.69	76.33
1978	11.93	26.11	21.98	31.49	20.54	20.57	23.72	78.18
1979	11.55	25.80	22.87	32.65	20.42	20.46	24.07	78.91
1980	10.73	25.66	21.11	30.64	19.65	19.69	24.50	75.99
1981	10.06	25.22	19.79	29.28	19.45	19.48	24.68	73.98
1982[6]	10.16	25.66	17.49	26.12	19.03	19.07	24.16	70.92

[1] Data do not include consumption of wood derived fuel (other than that consumed by the electric utility industry) which amounted to an estimated 2.2 quadrillion Btu in 1981. Also, small quantities of other energy forms for which consistent historical data are not available, such as solar energy obtained by the use of thermal and photovoltaic collectors; wind energy; and geothermal, biomass, and waste energy other than that consumed at electric utilities, are not included. See Explanatory Note 2.

[2] Includes only those fossil fuels consumed directly in the sector. See Figure 1.

[3] Includes those fossil fuels consumed directly in the sector, electricity sales to the sector, and energy losses in the conversion and transmission of electricity. Conversion and transmission losses are allocated to sectors in proportion to electricity sales to sectors (see Figure 1).

[4] Includes those fossil fuels and very small quantities of self-produced hydropower consumed directly in the sector.

[5] Includes those fossil fuels and very small quantities of self-produced hydropower consumed directly in the sector, electricity sales to the sector, and energy losses in the conversion and transmission of electricity. Conversion and transmission losses are allocated to sectors in proportion to electricity sales to sectors (see Figure 1).

[6] Preliminary. Sum of components do not equal total due to the use of preliminary conversion factors.

Note: Sum of components may not equal total due to independent rounding.

Sources: See sources for Tables 30, 47, 55, 58, 64, 66, 67, and EIA estimates for industrial hydropower, and conversion factors in the Units of Measure, Conversion Factors, Price Deflators, and Energy Equivalents section.

Figure 6. A Comparison of Fuel and Non-Fuel Use of Fossil Fuels

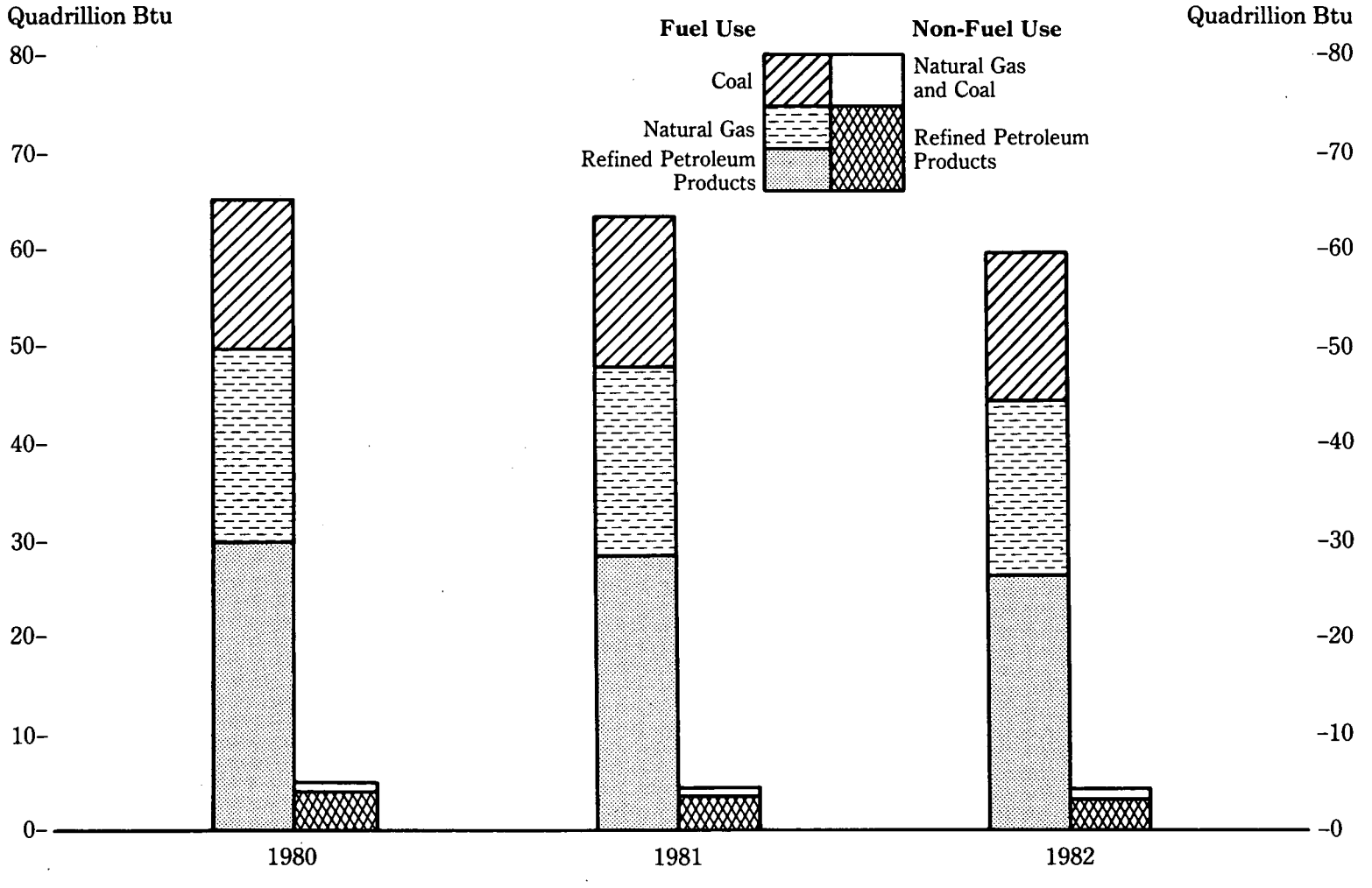


Table 5. A Comparison of Fuel and Non-Fuel Uses of Fossil Fuels, 1980-1982

Commodity	Physical Units			Quadrillion Btu		
	1980	1981	1982 [1]	1980	1981	1982 [1]
	Million Barrels					
Refined Petroleum Products						
Fuel Use	5,455	5,109	4,864	30.08	28.02	26.72
Non-Fuel Use						
Asphalt and Road Oil	145	125	125	0.96	0.83	0.83
Ethane [2]	110	117	129	0.34	0.36	0.40
Liquefied gases [3]	121	113	112	0.48	0.45	0.44
Lubricants	58	56	51	0.35	0.34	0.31
Petrochemical Feedstock	253	236	196	1.43	1.33	1.11
Petroleum Coke	16	34	28	0.10	0.21	0.17
Special Naphtha	37	27	25	0.19	0.14	0.13
Wax	6	7	5	0.03	0.04	0.03
Miscellaneous	41	36	33	0.24	0.21	0.19
Total Non-Fuel	788	752	704	4.13	3.91	3.61
Percent Non-Fuel	12.6	12.8	12.6	12.1	12.2	11.9
	Billion Cubic Feet					
Natural Gas						
Fuel Use	19,288	18,844	17,321	19.79	19.33	17.79
Non-Fuel Use						
Chemical Feedstock	569	560	502	0.58	0.57	0.51
Carbon Black	20	20	18	0.02	0.02	0.02
Total Non-Fuel	589	580	520	0.60	0.59	0.53
Percent Non-Fuel	3.0	3.0	2.9	3.0	3.0	2.9
	Million Short Tons					
Coal						
Fuel Use	699.81	730.1	705.7	15.37	15.78	15.37
Non-Fuel Use						
Crude Tar	2.3	2.1	1.4	0.08	0.08	0.05
Other	0.6	0.5	0.3	0.01	0.01	(*)
Total Non-Fuel	2.9	2.5	1.7	0.10	0.08	0.05
Percent Non-Fuel	0.4	0.3	0.2	0.6	0.5	0.3
Total Non-Fuel Use of Fossil Fuels	—	—	—	4.82	4.58	4.19
Percent Non-Fuel Use of Fossil Fuels	—	—	—	6.9	6.8	6.5

[1] Preliminary.
[2] Includes ethane, ethylene, and ethane share of ethane-propane mixtures.
[3] Includes propane, propylene, propane share of ethane-propane mixtures, butane, butylene, butane-propane mixtures, and isobutane.
[4] Less than 0.01 quadrillion Btu.
— Indicates data not applicable.

Note: All non-fuel use of energy is consumed by the industrial sector except for quantities of lubricants which are consumed in the transportation sector as follows, in million barrels (and quadrillion Btu): 1980 - 32(0.19); 1981 - 28(0.16); 1982 - 25(0.15).

Note: Sum of components may not equal total due to independent rounding.

Sources: **Refined Petroleum Products:** • 1980 - Energy Information Administration, Energy Data Reports, *Petroleum Statement, Annual* and *Sales of Liquefied Petroleum Gases and Ethane in 1980.* • 1981 - Energy Information Administration, *Petroleum Supply Annual 1981* and unpublished data. • 1982 - Energy Information Administration, *Petroleum Supply Monthly* and Energy Information Administration estimates. **Natural Gas:** • 1980 - Bureau of the Census, 1980 Survey of Manufactures, *Hydrocarbon, Coal, and Coke Materials Consumed.* • 1981 and 1982 Energy Information Administration estimates. **Coal:** • 1980 - Energy Information Administration, *Coke and Coal Chemicals in 1980.* • 1981 - Energy Information Administration, Energy Data Report, *Coke Plant Report,* quarterly. • 1982 - Energy Information Administration, *Coke Plant Report,* quarterly and Energy Information Administration estimates.

Figure 7. Energy Consumption and Losses by Electric Utilities and Electricity Sales

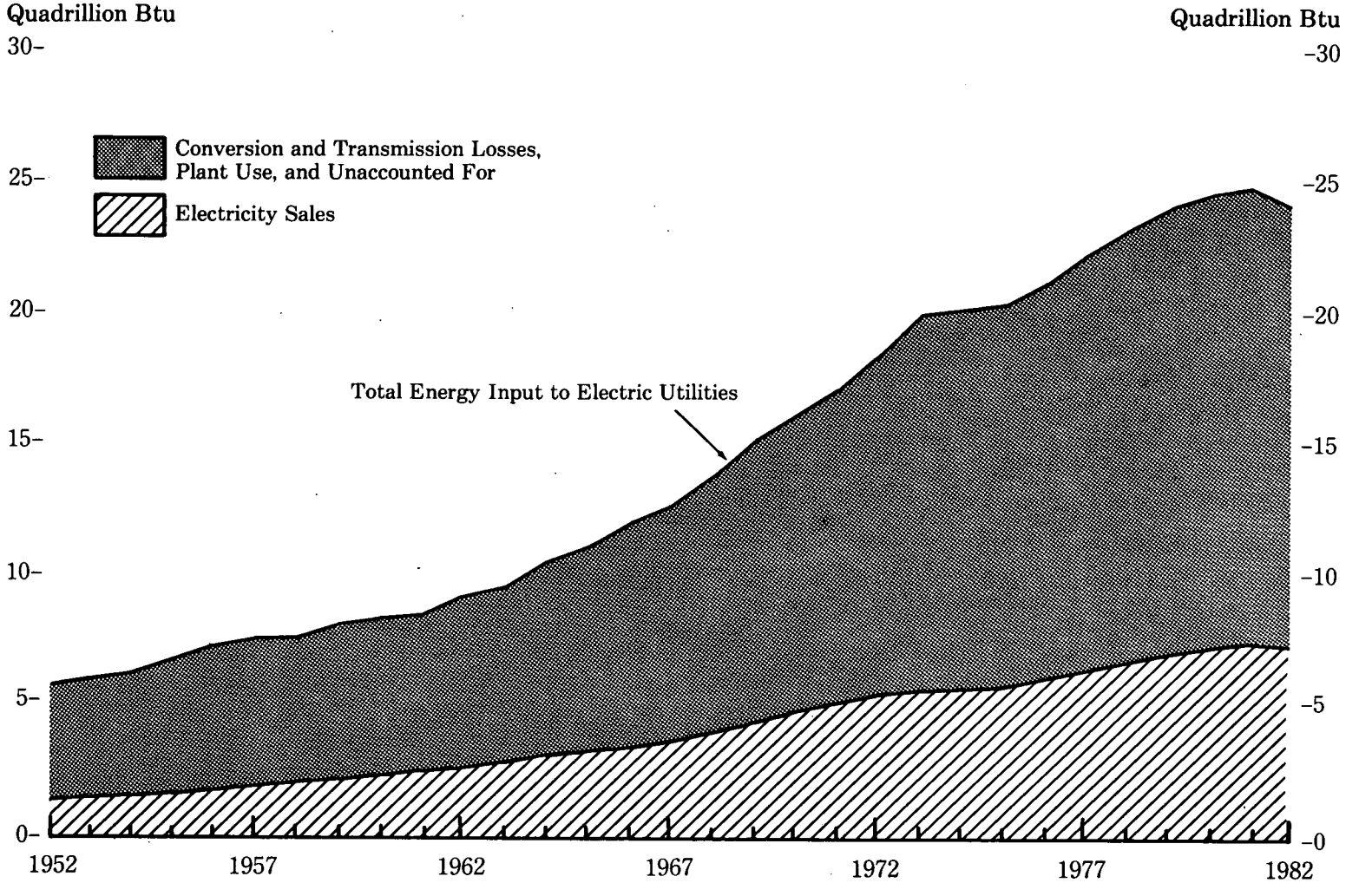


Table 6. Energy Consumption and Losses by Electric Utilities and Electricity Sales, 1952-1982

(Quadrillion Btu)

	Consumption/Generation											Conversion and Transmission Losses, Plant Use, and Unaccounted for		
				Hydropower [1]		Nuclear Power		Geothermal, Wood, and Waste		Total				
Year	Coal [2]	Natural Gas	Petroleum [3]	Fossil Fuel Equivalent [4]	Electricity Equivalent [5]	Heat Equivalent [6]	Electricity Equivalent [5]	Heat Equivalent [7]	Electricity Equivalent [5]	Fossil Fuel/Heat Equivalent [8]	Electricity Equivalent [9]	Fossil Fuel/Heat Equivalent [10]	Electricity Equivalent [11]	Electricity Sales
1952	2.80	0.94	0.42	1.43	0.37	0	0	(12)	(12)	5.60	4.53	4.39	3.31	1.22
1953	3.03	1.07	0.51	1.38	0.37	0	0	(12)	(12)	6.00	4.98	4.65	3.63	1.35
1954	3.10	1.21	0.42	1.33	0.37	0	0	(12)	(12)	6.06	5.09	4.61	3.65	1.45
1955	3.71	1.19	0.47	1.37	0.40	0	0	(12)	(12)	6.75	5.78	5.05	4.08	1.69
1956	4.07	1.28	0.45	1.45	0.43	0	0	(12)	(12)	7.26	6.24	5.39	4.37	1.86
1957	4.13	1.38	0.50	1.52	0.46	(12)	(12)	(12)	(12)	7.53	6.47	5.57	4.50	1.96
1958	3.97	1.42	0.49	1.59	0.49	(12)	(12)	(12)	(12)	7.48	6.37	5.47	4.37	2.01
1959	4.29	1.69	0.55	1.55	0.48	(12)	(12)	(12)	(12)	8.08	7.01	5.87	4.80	2.21
1960	4.25	1.79	0.53	1.62	0.51	0.01	(12)	(12)	(12)	8.19	7.08	5.84	4.73	2.35
1961	4.37	1.89	0.54	1.64	0.53	0.02	0.01	(12)	(12)	8.47	7.33	6.00	4.87	2.46
1962	4.64	2.03	0.54	1.79	0.58	0.03	0.01	(12)	(12)	9.03	7.80	6.37	5.14	2.65
1963	5.06	2.21	0.58	1.74	0.57	0.04	0.01	0.01	(12)	9.64	8.44	6.80	5.60	2.84
1964	5.39	2.40	0.63	1.87	0.61	0.04	0.01	0.01	(12)	10.34	9.05	7.29	5.99	3.06
1965	5.84	2.40	0.72	2.02	0.66	0.04	0.01	0.01	(12)	11.03	9.63	7.77	6.37	3.25
1966	6.32	2.70	0.88	2.04	0.67	0.06	0.02	0.01	(12)	12.01	10.58	8.47	7.05	3.53
1967	6.46	2.83	1.01	2.31	0.75	0.09	0.03	0.01	(12)	12.71	11.08	8.96	7.33	3.75
1968	7.01	3.25	1.18	2.31	0.76	0.14	0.04	0.01	(12)	13.89	12.24	9.79	8.13	4.10
1969	7.23	3.60	1.57	2.62	0.86	0.15	0.05	0.02	(12)	15.19	13.30	10.71	8.82	4.48
1970	7.24	4.05	2.12	2.62	0.85	0.24	0.07	0.02	(12)	16.28	14.34	11.53	9.59	4.75
1971	7.31	4.10	2.49	2.83	0.92	0.41	0.13	0.02	(12)	17.16	14.95	12.14	9.94	5.01
1972	7.82	4.08	3.10	2.91	0.96	0.58	0.18	0.03	0.01	18.53	16.15	13.08	10.70	5.44
1973	8.66	3.75	3.51	2.98	0.98	0.91	0.28	0.05	0.01	19.85	17.19	14.01	11.35	5.84
1974	8.53	3.52	3.36	3.28	1.07	1.27	0.39	0.06	0.01	20.02	16.89	14.20	11.07	5.82
1975	8.79	3.24	3.17	3.19	1.04	1.90	0.59	0.07	0.01	20.35	16.84	14.39	10.88	5.96
1976	9.72	3.15	3.48	3.03	1.00	2.11	0.65	0.08	0.01	21.57	18.01	15.24	11.68	6.33
1977	10.24	3.28	3.90	2.48	0.81	2.70	0.86	0.08	0.01	22.69	19.11	16.05	12.46	6.65
1978	10.24	3.30	3.99	3.11	1.02	3.02	0.94	0.07	0.01	23.72	19.50	16.84	12.61	6.89
1979	11.26	3.61	3.28	3.11	1.02	2.71	0.87	0.09	0.01	24.07	20.07	17.00	13.00	7.07
1980	12.12	3.81	2.63	3.08	1.01	2.74	0.86	0.11	0.02	24.50	20.45	17.35	13.30	7.15
1981	12.58	3.76	2.20	3.03	1.00	2.97	0.93	0.13	0.02	24.68	20.50	17.36	13.17	7.33
1982[13]	12.53	3.34	1.57	3.54	1.16	3.08	0.96	0.11	0.02	24.16	19.58	17.04	12.46	7.12

[1] Includes net imports of electricity.
[2] Includes bituminous coal, lignite, and anthracite.
[3] Includes distillate fuel oil, residual fuel oil (including crude oil burned as fuel), jet fuel, and petroleum coke.
[4] The equivalent of fossil fuel energy required to generate the electricity distributed using the average fossil fuel steam electric plant thermal efficiency. See Units of Measure, Conversion Factors, Price Deflators, and Energy Equivalents section for factors to convert physical unit data into Btu.
[5] The equivalent amount of heat that could be produced by the electricity distributed using the conversion factor 3,412 Btu per kilowatt-hour.
[6] The amount of heat released in reactors by fissioning uranium at electric utilities.
[7] Includes for geothermal plants the heat content of the steam consumed and for wood and waste plants the fossil fuel equivalent using national average heat rate for fossil fuel steam electric plants. See Units of Measure, Conversion Factors, Price Deflators, and Energy Equivalents section for factors to convert physical unit data into Btu.
[8] Total of fossil fuels and the fossil fuel/heat equivalent of non-fossil fuel energy sources.
[9] Total of fossil fuels and electricity equivalent of non-fossil fuel energy sources.
[10] Balancing item, the difference between Total Fossil Fuel/Heat Equivalent and Electricity Sales.
[11] Balancing item, the difference between Total Electricity Equivalent and Electricity Sales.
[12] Less than 0.005 quadrillion Btu.
[13] Preliminary.
Note: Sum of components may not equal total due to independent rounding.
Source: See sources for Tables 66, 67, and 68 and conversion factors in the Units of Measure, Conversion Factors, Price Deflators, and Energy Equivalents section.

Figure 8. Trade in Energy

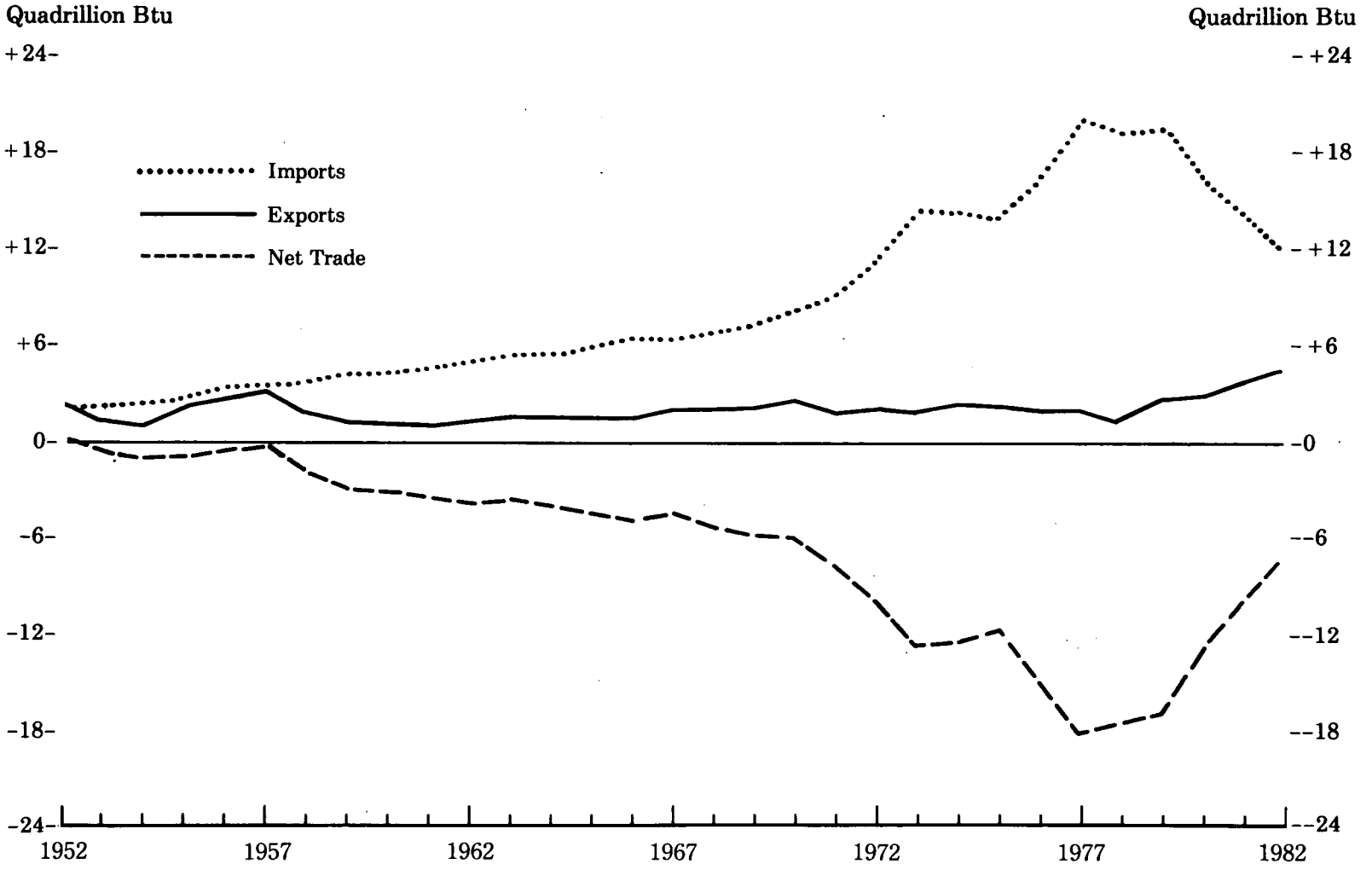


Table 7. Trade in Energy, 1952-1982

(Quadrillion Btu)

Year	Imports					Exports					Net Trade [1]				
	Coal [2]	Petroleum [3]	Natural Gas (Dry)	Other [4]	Total	Coal [2]	Petroleum [3]	Natural Gas (Dry)	Other [4]	Total	Coal [2]	Petroleum [3]	Natural Gas (Dry)	Other [4]	Total
1952	0.01	2.11	0.01	0.04	2.17	1.40	0.91	0.03	0.02	2.37	1.40	-1.20	0.02	-0.02	0.20
1953	0.01	2.28	0.01	0.04	2.34	0.98	0.84	0.03	0.02	1.87	0.97	-1.44	0.02	-0.02	-0.47
1954	0.01	2.32	0.01	0.04	2.37	0.91	0.75	0.03	0.01	1.70	0.91	-1.58	0.02	-0.02	-0.67
1955	0.01	2.75	0.01	0.06	2.83	1.46	0.77	0.03	0.02	2.29	1.46	-1.98	0.02	-0.04	-0.54
1956	0.01	3.17	0.01	0.06	3.25	1.98	0.91	0.04	0.02	2.95	1.98	-2.26	0.03	-0.04	-0.30
1957	0.01	3.46	0.04	0.06	3.57	2.17	1.20	0.04	0.04	3.45	2.16	-2.26	(5)	-0.02	-0.12
1958	0.01	3.72	0.14	0.05	3.92	1.42	0.58	0.04	0.02	2.06	1.41	-3.14	-0.10	-0.03	-1.86
1959	0.01	3.91	0.14	0.05	4.11	1.05	0.45	0.02	0.02	1.54	1.04	-3.46	-0.12	-0.03	-2.57
1960	0.01	4.00	0.16	0.06	4.23	1.02	0.43	0.01	0.02	1.48	1.02	-3.57	-0.15	-0.04	-2.74
1961	(5)	4.19	0.23	0.04	4.46	0.98	0.37	0.01	0.02	1.38	0.98	-3.82	-0.22	-0.02	-3.08
1962	0.01	4.56	0.42	0.03	5.01	1.08	0.36	0.02	0.03	1.48	1.08	-4.20	-0.40	(5)	-3.53
1963	0.01	4.65	0.42	0.03	5.10	1.36	0.44	0.02	0.03	1.85	1.35	-4.21	-0.40	0.01	-3.25
1964	0.01	4.96	0.46	0.07	5.49	1.34	0.43	0.02	0.06	1.85	1.33	-4.53	-0.44	-0.01	-3.65
1965	0.00	5.40	0.47	0.04	5.92	1.38	0.39	0.03	0.06	1.86	1.37	-5.01	-0.44	0.02	-4.06
1966	(5)	5.63	0.50	0.05	6.18	1.35	0.41	0.03	0.06	1.85	1.35	-5.21	-0.47	0.01	-4.32
1967	0.01	5.56	0.58	0.04	6.19	1.35	0.65	0.08	0.06	2.15	1.35	-4.91	-0.50	0.02	-4.04
1968	0.01	6.21	0.67	0.04	6.93	1.38	0.49	0.10	0.07	2.03	1.37	-5.73	-0.58	0.02	-4.90
1969	(5)	6.90	0.75	0.06	7.71	1.53	0.49	0.05	0.08	2.15	1.53	-6.42	-0.70	0.03	-5.56
1970	(5)	7.47	0.85	0.07	8.39	1.94	0.55	0.07	0.11	2.66	1.93	-6.92	-0.77	0.04	-5.72
1971	(5)	8.54	0.96	0.08	9.58	1.55	0.47	0.08	0.08	2.18	1.54	-8.07	-0.88	-(5)	-7.41
1972	(5)	10.30	1.05	0.11	11.46	1.53	0.47	0.08	0.06	2.14	1.53	-9.83	-0.97	-0.05	-9.32
1973	(5)	13.47	1.06	0.20	14.73	1.45	0.49	0.08	0.06	2.07	1.44	-12.98	-0.98	-0.14	-12.66
1974	0.05	13.13	0.99	0.25	14.42	1.64	0.46	0.08	0.06	2.24	1.58	-12.66	-0.91	-0.19	-12.18
1975	0.02	12.95	0.98	0.16	14.11	1.79	0.44	0.07	0.09	2.39	1.77	-12.51	-0.90	-0.08	-11.73
1976	0.03	15.67	0.99	0.15	16.84	1.62	0.47	0.07	0.06	2.21	1.59	-15.20	-0.92	-0.09	-14.63
1977	0.04	18.76	1.04	0.26	20.09	1.47	0.51	0.06	0.06	2.10	1.42	-18.24	-0.98	-0.20	-18.00
1978	0.07	17.82	0.99	0.37	19.26	1.10	0.77	0.05	0.03	1.95	1.02	-17.06	-0.94	-0.34	-17.31
1979	0.05	17.93	1.30	0.34	19.62	1.78	1.00	0.06	0.06	2.90	1.73	-16.93	-1.24	-0.28	-16.72
1980	0.03	14.66	1.01	0.28	15.97	2.42	1.16	0.05	0.10	3.73	2.39	-13.50	-0.96	-0.18	-12.25
1981	0.03	12.64	0.92	0.36	13.94	2.94	1.26	0.06	0.05	4.32	2.92	-11.38	-0.86	-0.31	-9.62
1982[6]	0.02	10.61	0.99	0.36	11.97	2.78	1.73	0.06	0.06	4.63	2.77	-8.88	-0.93	-0.30	-7.35

[1] Net trade = exports minus imports.
[2] Bituminous coal, lignite, and anthracite.
[3] Crude oil and refined petroleum products, including unfinished oils and natural gas plant liquids. Includes imports into the Strategic Petroleum Reserve which began in 1977.
[4] Coal coke and small amounts of electricity transmitted across U.S. borders with Canada and Mexico.
[5] Less than 0.005 quadrillion Btu.
[6] Preliminary.
Note: Sum of components may not equal totals or net trade items due to independent rounding.
Note: Includes trade between the United States (50 states and the District of Columbia) and its territories and possessions.
Source: See sources for Tables 22, 26, 46, 53, 58, and 64 and conversion factors in the Units of Measure, Conversion Factors, Price Deflators, and Energy Equivalents section.

Figure 9. Production of Fossil Fuels on Federally Administered Lands

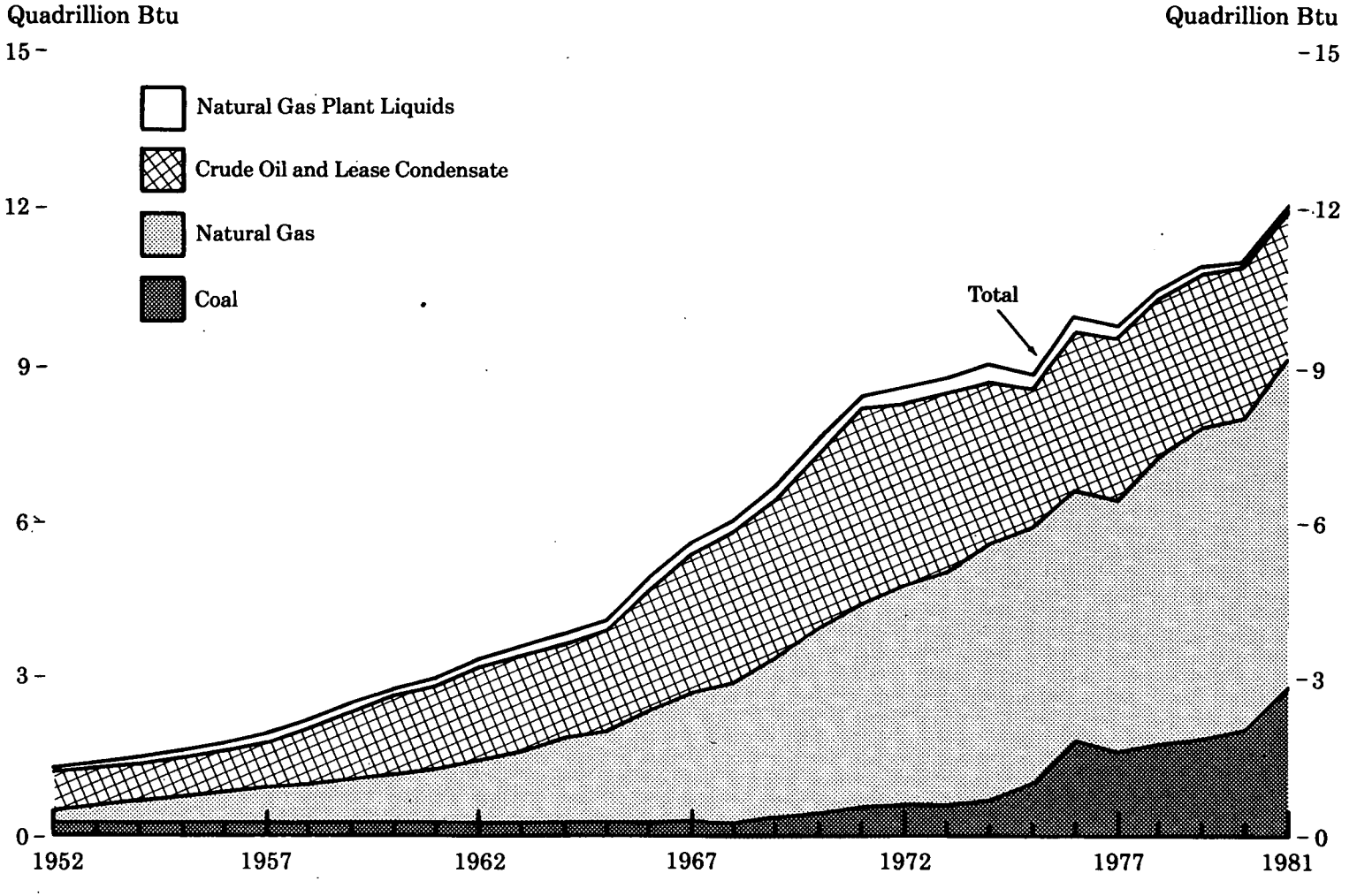


Table 8. Production of Fossil Fuels on Federally Administered Lands, 1952-1981

Year	Crude Oil and Lease Condensate [1]			Natural Gas Plant Liquids [2]			Natural Gas [3]			Coal [4]			Total	
	Million Barrels	Quadrillion Btu	Percent U.S. Total [5]	Million Barrels	Quadrillion Btu	Percent U.S. Total [5]	Trillion Cubic Feet	Quadrillion Btu	Percent U.S. Total [5]	Million Short Tons	Quadrillion Btu	Percent U.S. Total [5]	Quadrillion Btu	Percent U.S. Total
1952	118.7	0.69	5.2	5.5	0.02	2.5	0.25	0.25	3.2	8.7	0.18	1.7	1.15	3.2
1953	136.9	0.79	5.8	5.7	0.03	2.4	0.29	0.30	3.6	7.5	0.16	1.5	1.28	3.6
1954	146.5	0.85	6.3	6.1	0.03	2.4	0.39	0.40	4.6	7.4	0.16	1.8	1.43	4.2
1955	159.5	0.92	6.4	6.0	0.03	2.1	0.43	0.45	4.8	5.9	0.12	1.2	1.53	4.0
1956	174.1	1.01	6.7	6.4	0.03	2.2	0.49	0.51	5.1	5.8	0.12	1.1	1.67	4.1
1957	189.4	1.10	7.2	6.6	0.03	2.2	0.62	0.64	6.1	5.7	0.12	1.1	1.89	4.7
1958	216.8	1.26	8.9	8.0	0.04	2.7	0.69	0.71	6.5	5.3	0.11	1.2	2.11	5.6
1959	258.2	1.50	10.0	9.5	0.04	3.0	0.83	0.86	7.2	4.9	0.10	1.1	2.50	6.4
1960	277.3	1.61	10.8	11.6	0.05	3.4	0.95	0.98	7.8	5.2	0.11	1.2	2.75	6.8
1961	297.3	1.72	11.3	13.5	0.06	3.7	1.03	1.06	8.1	5.2	0.11	1.2	2.95	7.3
1962	321.7	1.87	12.0	15.3	0.07	4.1	1.18	1.22	8.9	5.8	0.12	1.3	3.27	7.8
1963	342.8	1.99	12.5	16.0	0.07	4.0	1.37	1.41	9.7	5.4	0.11	1.1	3.58	8.1
1964	356.0	2.07	12.8	15.5	0.07	3.7	1.51	1.55	10.2	7.1	0.15	1.4	3.84	8.3
1965	378.6	2.20	13.3	14.3	0.06	3.2	1.56	1.61	10.2	8.2	0.17	1.6	4.04	8.5
1966	426.7	2.47	14.1	15.2	0.06	3.2	2.02	2.09	12.3	8.3	0.17	1.5	4.80	9.5
1967	472.6	2.74	14.7	20.1	0.09	3.9	2.41	2.48	13.8	9.5	0.20	1.7	5.51	10.4
1968	523.7	3.04	15.7	13.7	0.06	2.5	2.61	2.69	14.1	9.1	0.19	1.6	5.97	10.9
1969	563.8	3.27	16.7	19.9	0.08	3.4	3.05	3.14	15.4	10.1	0.21	1.8	6.70	11.8
1970	605.6	3.51	17.2	40.6	0.17	6.7	3.56	3.67	16.9	12.0	0.25	2.0	7.60	12.7
1971	648.9	3.76	18.8	54.0	0.22	8.7	3.95	4.08	18.3	17.3	0.36	3.1	8.42	14.4
1972	630.5	3.66	18.2	56.7	0.23	8.9	4.17	4.28	19.3	19.0	0.40	3.1	8.56	14.4
1973	604.3	3.51	18.0	54.9	0.22	8.7	4.37	4.46	20.1	24.2	0.51	4.1	8.70	14.8
1974	570.2	3.31	17.8	61.9	0.25	10.1	4.75	4.87	22.9	32.1	0.67	5.3	9.10	16.0
1975	531.5	3.08	17.4	59.7	0.24	10.0	4.57	4.67	23.8	43.6	0.92	6.7	8.90	16.2
1976	525.7	3.05	17.7	57.2	0.23	9.7	4.81	4.91	25.2	86.4	1.82	12.6	10.00	18.2
1977	535.0	3.10	17.8	57.4	0.23	9.7	4.94	5.04	25.8	74.8	1.57	10.7	9.94	18.0
1978	523.6	3.04	16.5	25.9	0.10	4.5	5.60	5.71	29.3	79.2	1.66	11.8	10.51	19.0
1979	519.8	3.01	16.7	11.9	0.05	2.1	5.93	6.05	30.1	84.9	1.78	10.9	10.89	18.7
1980	510.4	2.96	16.2	10.5	0.04	1.8	5.85	5.95	29.9	92.9	1.95	11.2	10.90	18.5
1981	529.3	3.07	16.9	12.3	0.05	2.1	6.15	6.24	31.7	138.8	2.91	16.8	12.27	20.9

[1] Production from Naval Petroleum Reserve No. 3 (NPR#3) for 1974 and earlier years are for fiscal years (July through June). In 1974, production from NPR#3 accounted for 0.2 percent of total crude oil and lease condensate production on Federally Administered Land.

[2] Includes only those quantities of natural gas plant liquids for which the royalties were paid based on the value of the natural gas plant liquids produced. Additional quantities of natural gas plant liquids were produced; however, the royalties paid were based on the value of natural gas processed. These latter quantities are included with natural gas.

[3] Includes same quantities of natural gas processed into liquids at natural gas processing plants and fractionators.

[4] Converted to British thermal units (Btu) based on an estimated heat content of coal produced on federally administered lands of 21.0 million Btu per short ton.

[5] Based on physical units.

Sources: Coal: •1952 through 1980—U.S. Geological Survey—*Coal, Phosphate, Potash, Sodium, and Other Mineral Production, Royalty Income, and Related Statistics*, June 1981. •1981—U.S. Minerals Management Service- *Royalties-A Report on Federal and Indian Mineral Revenues*. Other: •1952-1980-U.S. Geological Survey, *Oil and Gas Production, Royalty Income, and Related Statistics;* June 1981, Department of Energy, Office of Petroleum and Oil Shale Reserves, unpublished data, and U.S. Geological Survey, National Petroleum Reserve in Alaska, unpublished data. •1981—U.S. Minerals Management Service, *Royalties-A Report on Federal and Indian Mineral Revenues* and unpublished data, Department of Energy, Office of Petroleum and Oil Shale Reserves, unpublished data, and U.S. Geological Survey, National Petroleum Reserve in Alaska, unpublished data.

Figure 10. International Primary Energy Production
(Quadrillion Btu)

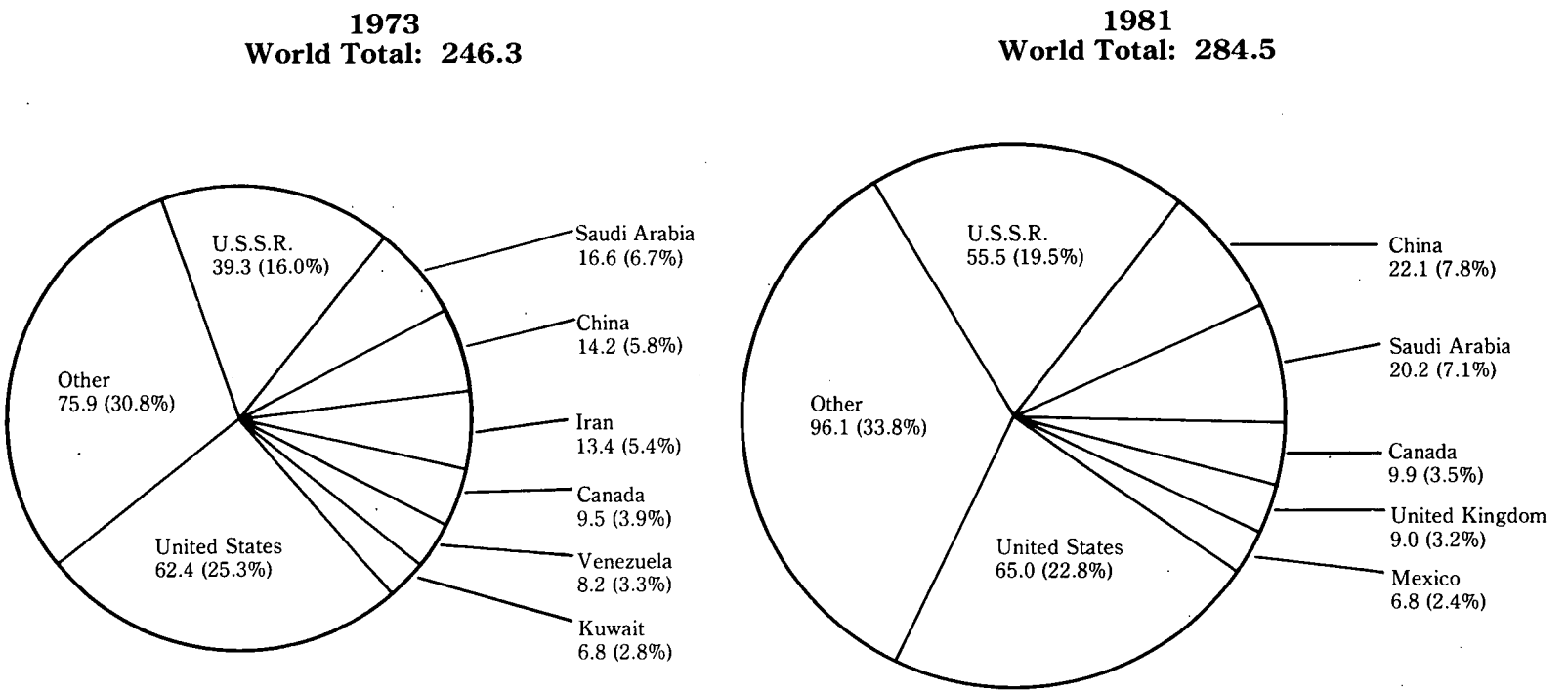


Table 9. International Primary Energy Production,[1] 1973-1981

(Quadrillion Btu)

Area and Country	1973	1974	1975	1976	1977	1978	1979	1980	1981[2]
North, Central, and South America									
Canada	9.50	9.38	8.89	8.73	9.16	9.26	9.95	10.13	9.85
Mexico	1.87	2.15	2.44	2.76	3.16	3.79	4.55	5.85	6.84
United States	62.39	61.17	59.99	60.01	60.21	61.16	63.76	65.39	64.99
Venezuela	8.20	7.35	5.93	5.79	5.70	5.49	5.94	5.66	5.57
Other	4.73	4.82	4.73	5.02	5.38	5.96	6.49	6.55	6.59
Total	86.69	84.87	81.98	82.31	83.61	85.66	90.69	93.58	93.84
Western Europe									
France	1.78	1.82	1.88	1.71	2.00	2.02	2.03	2.27	2.80
Germany, West	4.92	4.95	4.87	4.96	4.96	4.97	5.26	5.23	5.37
Netherlands	2.52	2.86	3.16	3.44	2.90	2.49	2.69	2.68	2.48
Norway	0.83	0.88	1.22	1.50	1.49	2.10	2.88	3.07	3.15
United Kingdom	4.66	4.47	4.97	5.49	6.69	7.31	8.41	8.58	9.00
Other	4.87	5.03	5.26	5.19	5.86	5.92	6.30	6.17	6.74
Total	19.58	20.01	21.36	22.29	23.90	24.81	27.57	28.00	29.54
Eastern Europe and U.S.S.R.									
Germany, East	2.19	2.19	2.20	2.26	2.30	2.32	2.36	2.43	2.45
Poland	4.94	5.09	5.37	5.59	5.81	6.02	6.21	6.03	5.10
Romania	2.14	2.19	2.30	2.39	2.49	2.34	2.47	2.48	2.76
U.S.S.R.	39.28	41.79	43.63	46.18	48.45	50.71	52.44	54.44	55.50
Other	2.89	2.92	3.02	3.12	3.20	3.27	3.28	3.36	3.29
Total	51.44	54.18	56.52	59.54	62.25	64.66	66.76	68.74	69.10
Middle East									
Iran	13.39	13.85	12.39	13.60	13.13	12.50	7.64	3.95	3.10
Iraq	4.35	4.25	4.89	5.25	5.08	5.44	7.37	5.36	2.18
Kuwait	6.84	5.76	4.77	4.93	4.55	4.95	5.87	4.00	2.87
Saudi Arabia	16.63	18.68	15.68	18.95	20.57	18.48	21.25	22.30	22.08
United Arab Emirates	3.27	3.56	3.56	4.20	4.45	4.09	4.11	3.89	3.45
Other	2.34	2.48	2.53	2.52	2.39	2.40	2.57	2.44	2.45
Total	46.82	48.58	43.82	49.45	50.17	47.86	48.81	41.94	36.13
Africa									
Algeria	2.47	2.35	2.34	2.70	2.77	2.87	2.90	3.01	3.20
Libya	4.72	3.32	3.27	4.26	4.53	4.36	4.66	3.98	2.58
Nigeria	4.45	4.85	3.81	4.44	4.46	4.06	4.95	4.43	3.07
South Africa, Republic of	1.48	1.57	1.65	1.84	2.03	2.15	2.53	2.89	3.27
Other	1.69	1.80	2.05	2.15	2.64	2.66	2.85	3.31	3.33
Total	14.81	13.89	13.12	15.39	16.43	16.10	17.89	17.62	15.45
Far East and Oceania									
Australia	3.25	3.44	3.64	3.99	4.08	4.20	4.68	4.67	4.94
China	14.22	15.39	16.30	17.16	18.03	20.16	20.68	20.41	20.20
India	2.22	2.36	2.68	2.84	2.90	3.09	3.15	3.15	3.72
Indonesia	2.90	2.99	2.90	3.38	3.85	3.72	3.84	4.12	4.22
Japan	1.53	1.70	1.82	1.87	1.66	1.91	2.06	2.35	2.37
Other	3.13	3.30	3.56	3.91	4.07	4.20	4.68	4.99	5.00
Total	27.25	29.18	30.90	33.15	34.59	37.28	39.09	39.69	40.45
World Total	246.60	250.71	247.71	262.13	270.95	276.37	290.81	289.58	284.51

[1] See Explanatory Note 3.
[2] Preliminary.
Note: Sum of components may not equal total due to independent rounding.
Note: Primary energy includes crude oil, lease condensate, natural gas plant liquids, dry natural gas, coal, net hydroelectric power, and net nuclear power.
Source: Energy Information Administration, *1981 International Energy Annual*.

Figure 11. Prices of Domestically Produced Fossil Fuels

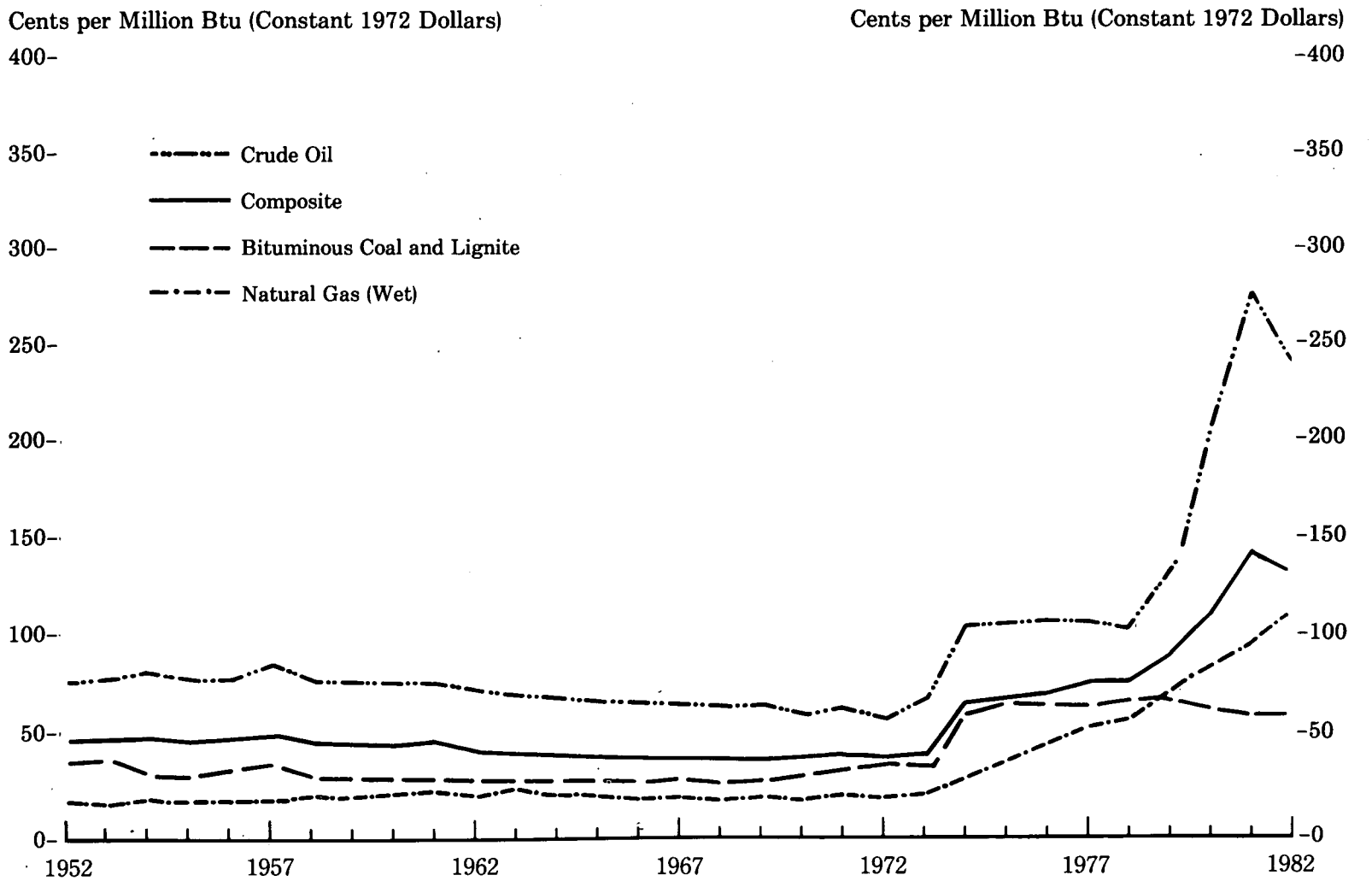


Table 10. Prices of Domestically Produced Fossil Fuels, 1952-1982

(Cents per Million Btu)

Year	Crude Oil [1]		Natural Gas [2]		Bituminous Coal and Lignite		Anthracite		Composite [3]	
	Current	Constant [4]	Current	Constant [4]	Current	Constant [4]	Current	Constant [4]	Current	Constant [4]
1952	43.6	75.3	7.2	12.4	18.7	32.3	38.9	67.2	25.7	44.4
1953	46.2	78.5	8.1	13.8	18.8	32.0	40.2	68.3	26.9	45.7
1954	47.9	80.4	9.0	15.1	17.3	29.1	35.6	59.8	27.3	45.8
1955	47.8	78.6	8.9	14.6	17.3	28.4	32.6	53.6	26.9	44.2
1956	48.1	76.6	9.9	15.8	18.6	29.6	34.2	54.5	27.6	44.0
1957	53.3	82.1	9.9	15.2	19.6	30.2	37.6	57.9	29.7	45.7
1958	51.9	78.6	10.8	16.4	18.7	28.3	37.3	56.5	28.9	43.8
1959	50.0	74.0	11.7	17.3	18.6	27.5	35.1	51.9	28.4	42.0
1960	49.7	72.3	12.6	18.3	18.3	26.6	33.0	48.0	28.1	40.9
1961	49.8	71.8	13.5	19.5	17.9	25.8	33.8	48.8	28.4	41.0
1962	50.0	70.8	14.5	20.5	17.5	24.8	32.8	46.5	28.5	40.4
1963	49.8	69.5	14.5	20.2	17.2	24.0	35.7	49.8	28.1	39.2
1964	49.7	68.3	13.6	18.7	17.5	24.0	37.0	50.8	27.5	37.8
1965	49.3	66.3	14.5	19.5	17.5	23.5	35.3	47.5	27.6	37.1
1966	49.7	64.7	14.5	18.9	17.9	23.3	33.7	43.9	27.8	36.2
1967	50.3	63.6	14.5	18.3	18.4	23.3	34.7	43.9	28.3	35.8
1968	50.7	61.4	14.3	17.3	18.6	22.5	37.6	45.6	28.3	34.3
1969	53.3	61.4	15.4	17.7	20.0	23.0	42.3	48.7	29.7	34.2
1970	54.8	59.9	15.4	16.8	25.5	27.9	47.1	51.5	31.5	34.4
1971	58.4	60.8	16.3	17.0	29.2	30.4	51.4	53.5	33.8	35.2
1972	58.4	58.4	17.3	17.3	31.9	31.9	52.9	52.9	34.8	34.8
1973	67.1	63.5	20.1	19.0	35.5	33.6	58.9	55.7	39.6	37.4
1974	118.4	102.9	27.3	23.7	66.4	57.7	98.4	85.5	67.2	58.4
1975	132.2	105.1	41.1	32.7	82.9	65.9	137.9	109.6	82.2	65.3
1976	141.2	106.7	53.1	40.1	83.9	63.4	149.0	112.6	89.8	67.9
1977	147.8	105.5	72.3	51.6	87.3	62.3	150.4	107.4	100.6	71.8
1978	155.2	103.2	83.6	55.6	97.1	64.6	149.9	99.7	111.3	74.0
1979	217.9	133.3	108.1	66.1	104.7	64.1	174.1	106.5	141.4	86.5
1980	372.2	208.4	146.1	81.8	109.2	61.1	182.1	101.9	204.5	114.5
1981	547.8	280.2	181.5	92.8	117.5	60.1	186.9	95.6	274.9	140.6
1982[5]	492.1	237.6	221.8	107.1	122.0	58.9	198.4	95.8	276.7	133.6

[1] Includes lease condensate.
[2] Wet natural gas, prior to extraction of natural gas plant liquids.
[3] Derived by multiplying the price per Btu of each fossil fuel by the total Btu content of the production of each fossil fuel and dividing the accumulated price of total fossil fuel production by the accumulated Btu content of total fossil fuel production.
[4] Constant 1972 prices calculated using GNP implicit price deflators, 1972 = 100. See Units of Measure, Conversion Factors, Price Deflators, and Energy Equivalents section.
[5] Estimated.

Note: All fuel prices taken as close as possible to the point of production.

Sources: See sources for Tables 39, 51, and 63 and the GNP implicit price deflators in the Units of Measure, Conversion Factors, Price Deflators, and Energy Equivalents section.

Figure 12. Value of Fossil Fuel Production

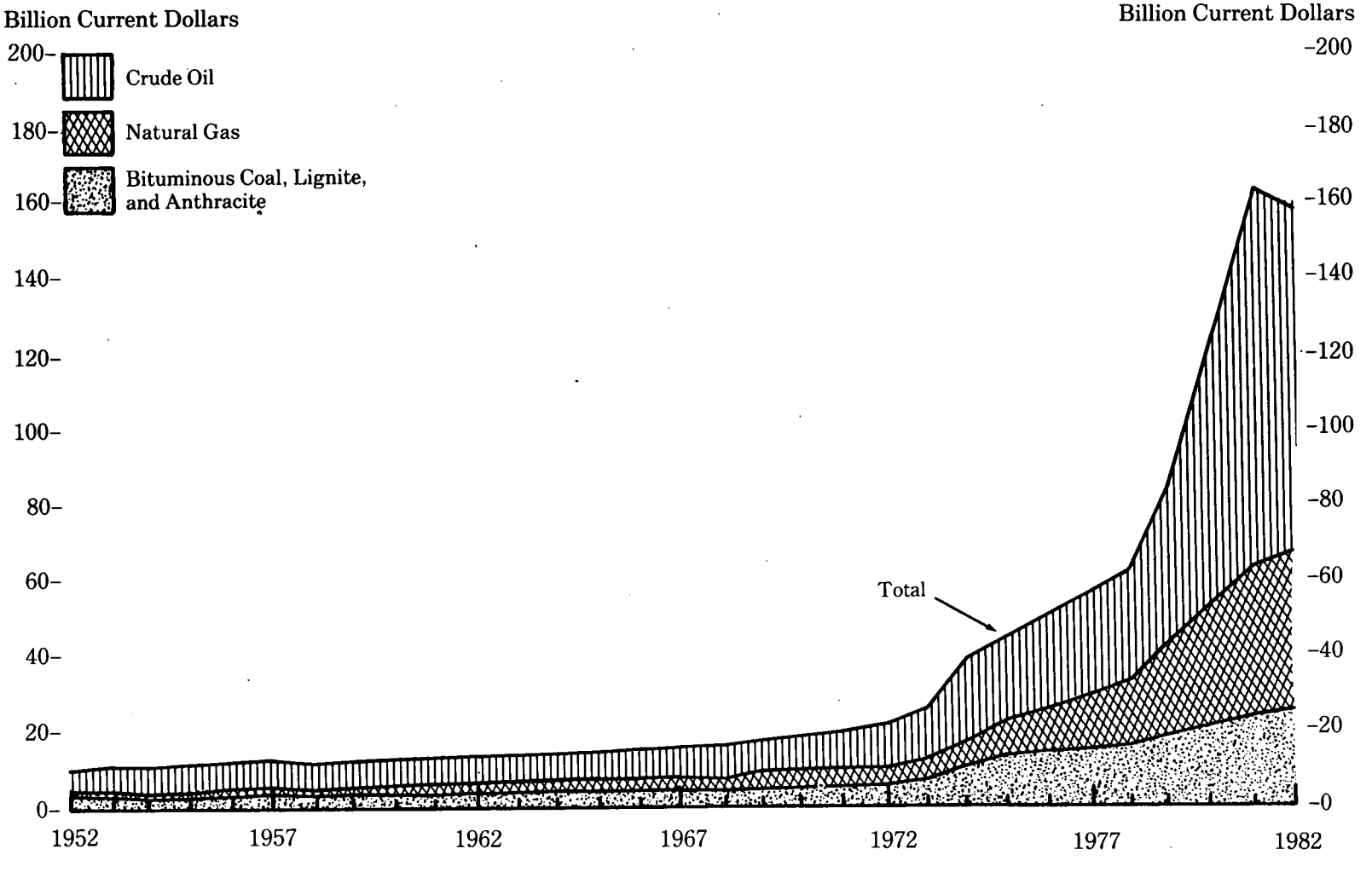


Table 11. Value of Fossil Fuel Production, 1952-1982

(Billion Dollars)

Year	Crude Oil [1]		Natural Gas (Marketed Production)		Bituminous Coal and Lignite		Anthracite		Total	
	Current	Constant [2]	Current	Constant [2]	Current	Constant [2]	Current	Constant [2]	Current	Constant [2]
1952	5.79	10.00	0.64	1.10	2.29	3.95	0.39	0.67	9.11	15.72
1953	6.32	10.74	0.76	1.29	2.25	3.83	0.31	0.53	9.64	16.39
1954	6.44	10.81	0.87	1.46	1.77	2.97	0.25	0.42	9.33	15.66
1955	6.88	11.31	0.94	1.55	2.09	3.44	0.21	0.35	10.12	16.65
1956	7.30	11.63	1.11	1.77	2.41	3.84	0.24	0.38	11.06	17.62
1957	8.09	12.46	1.17	1.80	2.50	3.85	0.23	0.35	11.99	18.46
1958	7.37	11.16	1.32	2.00	1.99	3.01	0.19	0.29	10.87	16.46
1959	7.47	11.05	1.57	2.32	1.97	2.91	0.18	0.27	11.19	16.55
1960	7.42	10.80	1.79	2.61	1.95	2.84	0.15	0.22	11.31	16.47
1961	7.58	10.93	1.99	2.87	1.85	2.67	0.14	0.20	11.56	16.67
1962	7.76	10.99	2.22	3.14	1.89	2.68	0.13	0.18	12.00	16.99
1963	7.96	11.11	2.36	3.29	2.01	2.80	0.16	0.22	12.49	17.42
1964	8.03	11.03	2.33	3.20	2.17	2.98	0.15	0.21	12.68	17.42
1965	8.15	10.96	2.57	3.46	2.27	3.05	0.13	0.17	13.12	17.64
1966	8.72	11.36	2.75	3.58	2.42	3.15	0.10	0.13	13.99	18.22
1967	9.39	11.88	2.91	3.68	2.55	3.23	0.10	0.13	14.95	18.92
1968	9.79	11.86	3.09	3.74	2.55	3.09	0.10	0.12	15.53	18.81
1969	10.42	12.01	3.52	4.06	2.80	3.23	0.10	0.12	16.84	19.42
1970	11.19	12.24	3.73	4.08	3.77	4.12	0.11	0.12	18.80	20.56
1971	11.71	12.20	4.05	4.22	3.90	4.06	0.11	0.11	19.77	20.59
1972	11.71	11.71	4.28	4.28	4.56	4.56	0.09	0.09	20.64	20.64
1973	13.07	12.36	4.98	4.71	5.05	4.78	0.09	0.09	23.19	21.94
1974	22.00	19.12	6.48	5.63	9.50	8.26	0.15	0.13	38.13	33.14
1975	23.45	18.64	9.05	7.19	12.47	9.91	0.20	0.16	45.17	35.90
1976	24.37	18.41	11.57	8.74	13.19	9.97	0.21	0.16	49.34	37.28
1977	25.79	18.41	15.82	11.30	13.70	9.78	0.20	0.14	55.51	39.63
1978	28.60	19.01	18.18	12.09	14.49	9.63	0.18	0.12	61.45	40.85
1979	39.45	24.14	24.16	14.78	18.36	11.23	0.20	0.12	82.17	50.27
1980	67.93	38.03	32.40	18.14	20.20	11.31	0.26	0.15	120.79	67.63
1981	99.40	50.84	39.95	20.43	21.51	11.00	0.24	0.12	161.10	82.39
1982[3]	90.33	43.61	44.58	21.52	22.38	10.80	0.20	0.10	157.49	76.03

[1] Includes lease condensate.
[2] Constant 1972 dollars calculated using GNP implicit price deflators, 1972 = 100. See Units of Measure, Conversion Factors, Price Deflators, and Energy Equivalents section.
[3] Preliminary.
Sources: See Tables 23, 39, 46, 51, 54, and 63.

Figure 13. Value of Fossil Fuel Imports

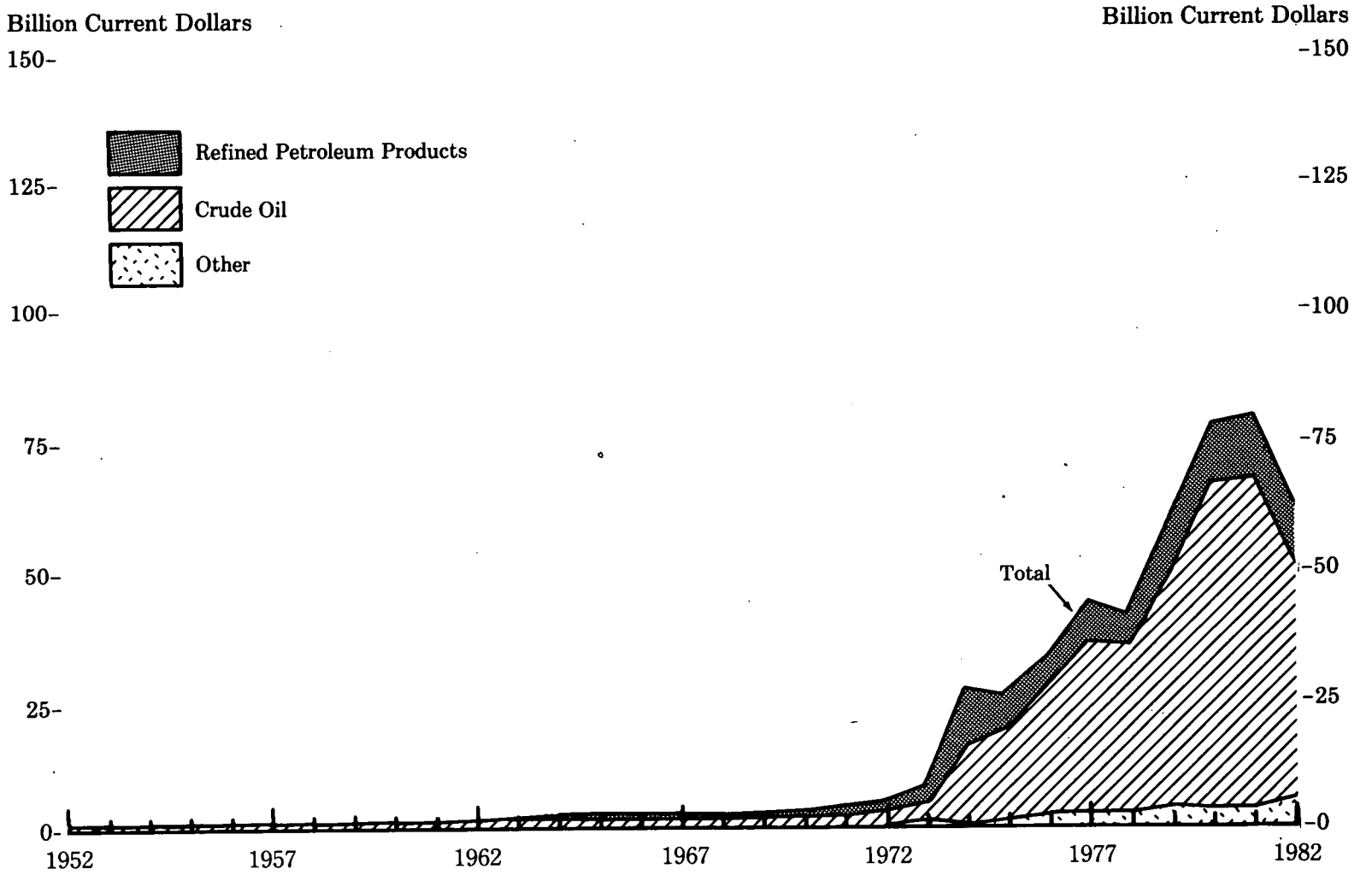


Table 12. Value of Fossil Fuel Imports, 1952-1982

(Billion Current Dollars)

Year	Coal	Coal Coke	Natural Gas	Crude Oil [1]	Refined Petroleum Products	Total
1952	(2)	(2)	(2)	0.42	0.25	0.68
1953	(2)	(2)	(2)	0.51	0.25	0.77
1954	(2)	(2)	(2)	0.54	0.28	0.83
1955	(2)	(2)	(2)	0.65	0.44	1.10
1956	(2)	(2)	(2)	0.84	0.45	1.29
1957	(2)	(2)	(2)	0.98	0.57	1.56
1958	(2)	(2)	0.02	0.94	0.68	1.65
1959	(2)	(2)	0.03	0.87	0.66	1.57
1960	(2)	(2)	0.03	0.90	0.73	1.66
1961	(2)	(2)	0.04	0.93	0.71	1.69
1962	(2)	(2)	0.09	1.01	0.75	1.86
1963	(2)	(2)	0.10	1.03	0.74	1.87
1964	(2)	(2)	0.10	1.08	0.78	1.97
1965	(2)	(2)	0.11	1.12	0.92	2.15
1966	(2)	(2)	0.11	1.12	0.99	2.21
1967	(2)	(2)	0.13	1.06	1.02	2.21
1968	(2)	(2)	0.15	1.18	1.16	2.50
1969	(2)	(2)	0.20	1.30	1.24	2.74
1970	(2)	(2)	0.26	1.26	1.48	3.00
1971	(2)	0.01	0.31	1.69	1.66	3.66
1972	(2)	(2)	0.31	2.37	1.99	4.68
1973	(2)	0.04	0.36	4.24	3.50	8.14
1974	0.06	0.19	0.53	15.25	11.01	27.05
1975	0.02	0.16	1.15	18.29	6.77	26.39
1976	0.02	0.11	1.66	25.46	6.65	33.90
1977	0.04	0.13	2.00	33.59	8.42	44.18
1978	0.07	0.41	2.06	32.30	7.30	42.15
1979	0.05	0.34	3.13	46.06	10.45	60.03
1980	0.03	0.06	4.21	61.90	12.54	78.75
1981	0.03	0.04	4.41	61.46	14.30	80.24
1982[3]	0.02	0.01	4.85	45.72	12.19	62.79

[1] Includes imports into the Strategic Petroleum Reserve.
[2] Less than $5 million.
[3] Preliminary.
Note: Sum of components may not equal total due to independent rounding.
Note: Includes value of imports into Puerto Rico from foreign countries; excludes receipts into the 50 States and the District of Columbia from the Virgin Islands and Puerto Rico.
Sources: **Natural Gas:** • 1952 through 1962—Bureau of the Census, *U.S. Imports of Merchandise for Consumption*, FT110. •1963—Bureau of the Census, *U.S. Imports of Merchandise for Consumption*, FT125. •1964 through 1971—Bureau of the Census, *U.S. Imports for Consumption and General Imports*, FT246. • 1972 through September 1977—Federal Power Commission, Form 14, *Annual Report for Importers and Exporters of Natural Gas*. • October 1977 through 1981—Energy Information Administration, FPC Form 14, *Annual Report for Importers and Exporters of Natural Gas*. • 1982—EIA estimate. **Others:** • 1952 through 1962—Bureau of the Census, *U.S. Imports of Merchandise for Consumption*, FT110. •1963—Bureau of the Census *U.S. Imports of Merchandise for Consumption*, FT125. • 1964 through 1981—Bureau of the Census, *U.S. Imports for Consumption and General Imports*, FT246. • 1982—Bureau of the Census, *U.S. Imports for Consumption and General Imports*, IM146.

Figure 14. Value of Fossil Fuel Exports

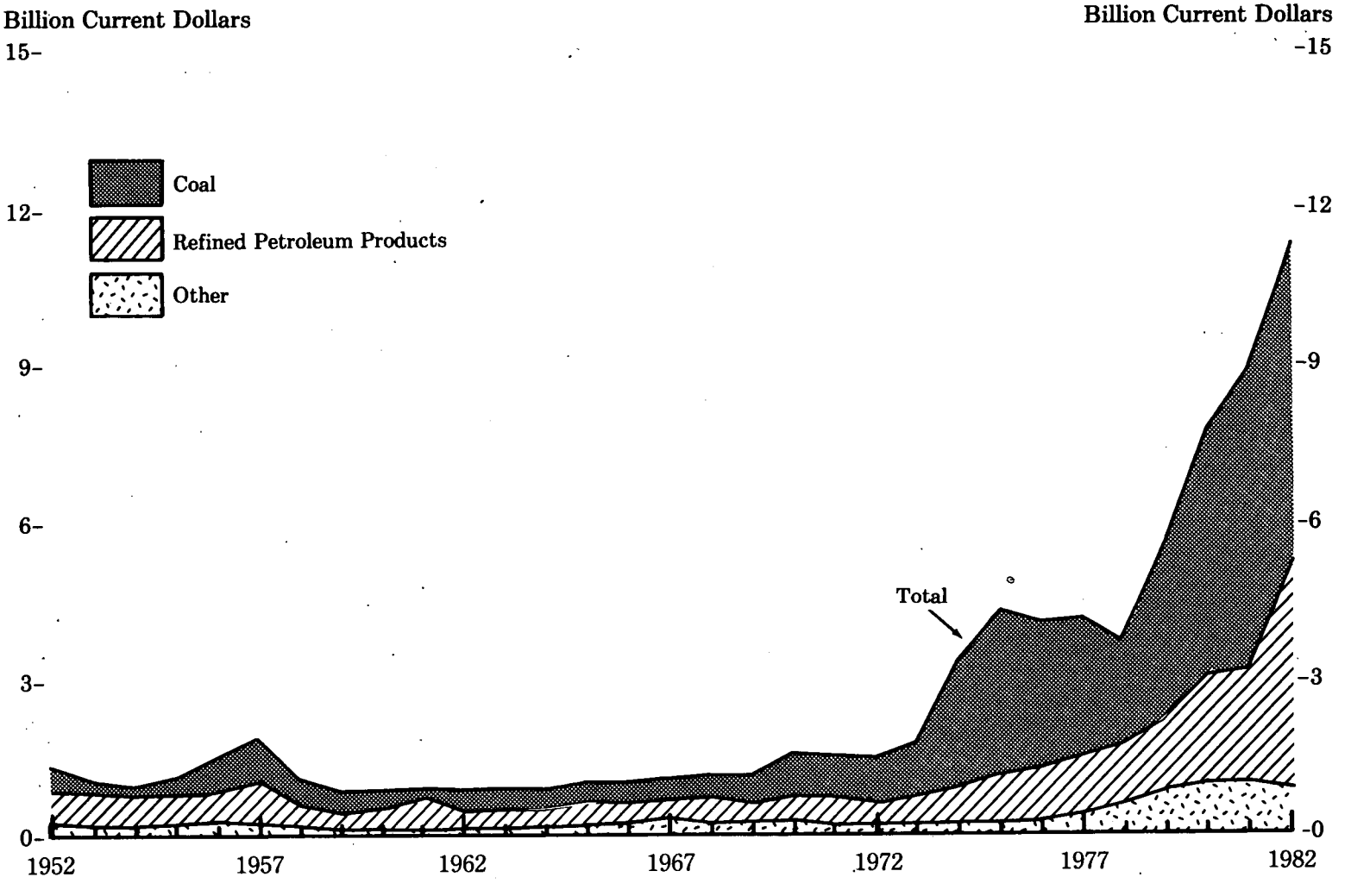


Table 13. Value of Fossil Fuel Exports, 1952-1982
(Billion Current Dollars)

Year	Coal	Coal Coke	Natural Gas	Crude Oil	Refined Petroleum Products	Total
1952	0.49	0.01	(1)	0.08	0.74	1.33
1953	0.34	0.01	(1)	0.06	0.63	1.04
1954	0.30	0.01	(1)	0.05	0.61	0.97
1955	0.48	0.01	0.01	0.04	0.60	1.14
1956	0.73	0.01	0.01	0.09	0.67	1.51
1957	0.83	0.01	0.01	0.17	0.81	1.84
1958	0.53	0.01	0.01	0.01	0.51	1.07
1959	0.38	0.01	0.01	0.01	0.45	0.85
1960	0.35	0.01	(1)	0.01	0.47	0.84
1961	0.34	0.01	(1)	0.01	0.57	0.93
1962	0.38	0.01	(1)	0.01	0.43	0.83
1963	0.47	0.01	(1)	(1)	0.43	0.92
1964	0.46	0.01	(1)	(1)	0.42	0.90
1965	0.48	0.02	0.01	(1)	0.50	1.00
1966	0.47	0.02	0.02	0.01	0.48	1.00
1967	0.48	0.02	0.03	0.09	0.47	1.09
1968	0.50	0.02	0.04	0.01	0.54	1.11
1969	0.59	0.04	0.03	0.01	0.45	1.12
1970	0.96	0.08	0.03	0.02	0.48	1.57
1971	0.90	0.04	0.04	0.01	0.52	1.51
1972	0.98	0.03	0.04	(1)	0.47	1.53
1973	1.01	0.03	0.04	(1)	0.63	1.72
1974	2.44	0.04	0.05	0.01	0.84	3.39
1975	3.26	0.07	0.09	(1)	1.00	4.43
1976	2.91	0.07	0.10	0.03	1.06	4.16
1977	2.66	0.07	0.11	0.21	1.14	4.18
1978	2.05	0.05	0.11	0.39	1.18	3.77
1979	3.39	0.08	0.13	0.39	1.55	5.55
1980	4.63	0.13	0.23	0.75	1.96	7.70
1981	5.92	0.07	0.35	0.58	2.09	9.01
1982[2]	6.03	0.06	0.33	0.47	4.40	11.30

[1] Less than $5 million.
[2] Preliminary.
Note: Includes value of exports from Puerto Rico to foreign countries; excludes shipments from the 50 States and the District of Columbia to the Virgin Islands and Puerto Rico.
Note: Sum of components may not equal total due to independent rounding.
Sources: Natural Gas: •1952 through 1971—Bureau of the Census, *U.S. Exports*, FT410. •1972 through September 1977—Federal Power Commission, Form 14, *Annual Report for Importers and Exporters of Natural Gas.* • October 1977 through 1981—Energy Information Administration, FPC Form 14, *Annual Report for Importers and Exporters of Natural Gas.* •1982—EIA estimate. Others: •1952 through 1981—Bureau of the Census, *U.S. Exports*, FT410. •1982—Bureau of the Census, *U.S. Exports by Schedule B Commodities*, EM522.

Figure 15. Value of Net Trade in Fossil Fuels

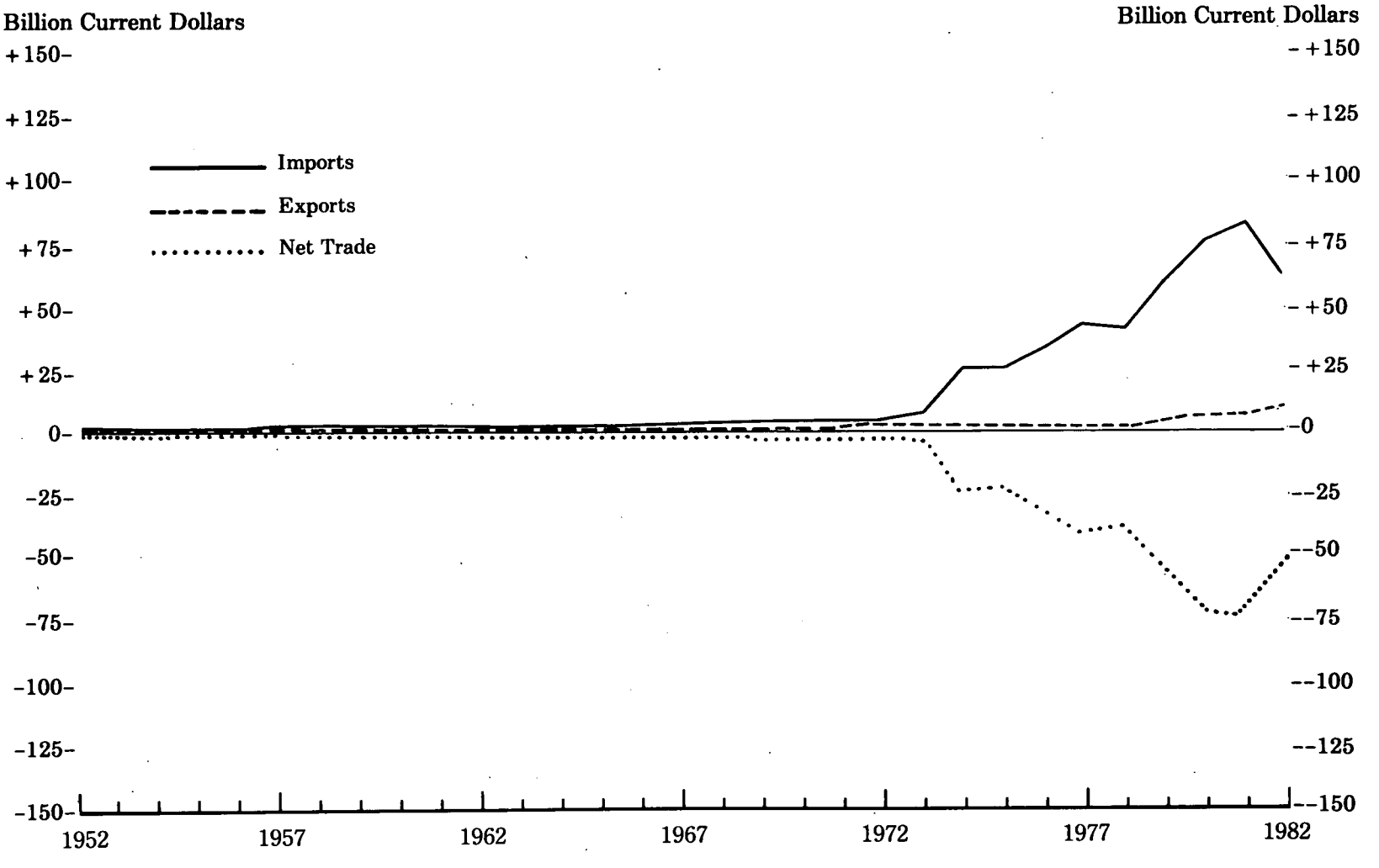


Table 14. Value of Net Trade[1] in Fossil Fuels, 1952-1982
(Billion Current Dollars)

Year	Coal	Coal Coke	Natural Gas	Crude Oil	Refined Petroleum Products	Total
1952	0.49	0.01	(2)	-0.34	0.49	0.65
1953	0.33	0.01	(2)	-0.45	0.38	0.27
1954	0.30	(2)	(2)	-0.50	0.32	0.14
1955	0.48	0.01	0.01	-0.62	0.16	0.04
1956	0.73	0.01	0.01	-0.75	0.22	0.22
1957	0.83	0.01	0.01	-0.81	0.24	0.28
1958	0.52	0.01	-0.01	-0.92	-0.17	-0.58
1959	0.38	0.01	-0.02	-0.87	-0.21	-0.71
1960	0.35	0.01	-0.02	-0.89	-0.26	-0.82
1961	0.34	0.01	-0.04	-0.92	-0.14	-0.76
1962	0.38	0.01	-0.08	-1.01	-0.32	-1.03
1963	0.47	0.01	-0.09	-1.02	-0.31	-0.95
1964	0.46	0.01	-0.10	-1.08	-0.36	-1.06
1965	0.48	0.01	-0.10	-1.11	-0.43	-1.15
1966	0.47	0.02	-0.09	-1.11	-0.51	-1.21
1967	0.48	0.01	-0.10	-0.97	-0.55	-1.12
1968	0.50	0.02	-0.11	-1.17	-0.63	-1.39
1969	0.59	0.04	-0.17	-1.29	-0.78	-1.62
1970	0.96	0.08	-0.23	-1.24	-1.00	-1.43
1971	0.90	0.04	-0.27	-1.68	-1.13	-2.15
1972	0.98	0.03	-0.28	-2.37	-1.51	-3.15
1973	1.01	-0.01	-0.32	-4.24	-2.87	-6.42
1974	2.38	-0.15	-0.48	-15.24	-10.17	-23.66
1975	3.24	-0.08	-1.06	-18.29	-5.77	-21.96
1976	2.89	-0.04	-1.56	-25.43	-5.59	-29.73
1977	2.62	-0.06	-1.89	-33.38	-7.28	-40.00
1978	1.97	-0.36	-1.95	-31.91	-6.13	-38.37
1979	3.34	-0.26	-3.00	-45.66	-8.90	-54.48
1980	4.60	0.07	-3.98	-61.15	-10.58	-71.05
1981	5.89	0.03	-4.06	-60.88	-12.21	-71.23
1982[3]	6.01	0.05	-4.52	-45.25	-7.79	-51.50

[1] Net trade = exports minus imports.
[2] Less than $5 million.
[3] Preliminary.
Note: Sum of components may not equal total due to independent rounding. Data on this table may not equal data on Table 13 minus data on Table 12 due to independent rounding.
Sources: Compiled from Tables 12 and 13.

Section 2. Petroleum and Natural Gas Resources, Exploration and Development, and Reserves

The earth's crust has been constantly altered, primarily by erosion, deposition, and movement over geologic time. These actions formed a variety of strata and structures into which the crude oil and natural gas migrated and became trapped.

Resources. Crude oil and natural gas are nonrenewable energy resources; therefore, it is important to know the recoverable quantities of these resources in the United States. They are defined as concentrations of naturally occurring liquid or gaseous hydrocarbons in or on the earth's crust in such form that recovery is currently or potentially economically feasible. The latest assessment of U.S. undiscovered recoverable crude oil and natural gas resources by the U.S. Geological Survey provides a mean estimate of domestic undiscovered recoverable crude oil resources of 82.6 billion barrels. Some 66 percent is onshore. Major areas containing these resources are Alaska (including offshore areas), 23 percent, and the Gulf of Mexico area (including the onshore Gulf Coast), 16 percent (see Table 15).

Exploration and Development. The principle method for finding oil and gas is a two-step process. First, geological and geophysical (primarily seismic) exploration identifies the most likely areas for the occurrence of oil and gas resources. The second step is the drilling of exploratory wells to confirm the presence of these hydrocarbons.

The line miles logged by seismic crews, which increased each year since 1977, reached a record 594 thousand in 1981 (the latest year for which data are available), 54 percent above the 1980 level (see Table 16). Drilling is done principally with rotary rigs. The 1982 rotary rig count average of 3,105 was down 22 percent from 1981 when rig count reached a record average of 3,970 (see Table 16).

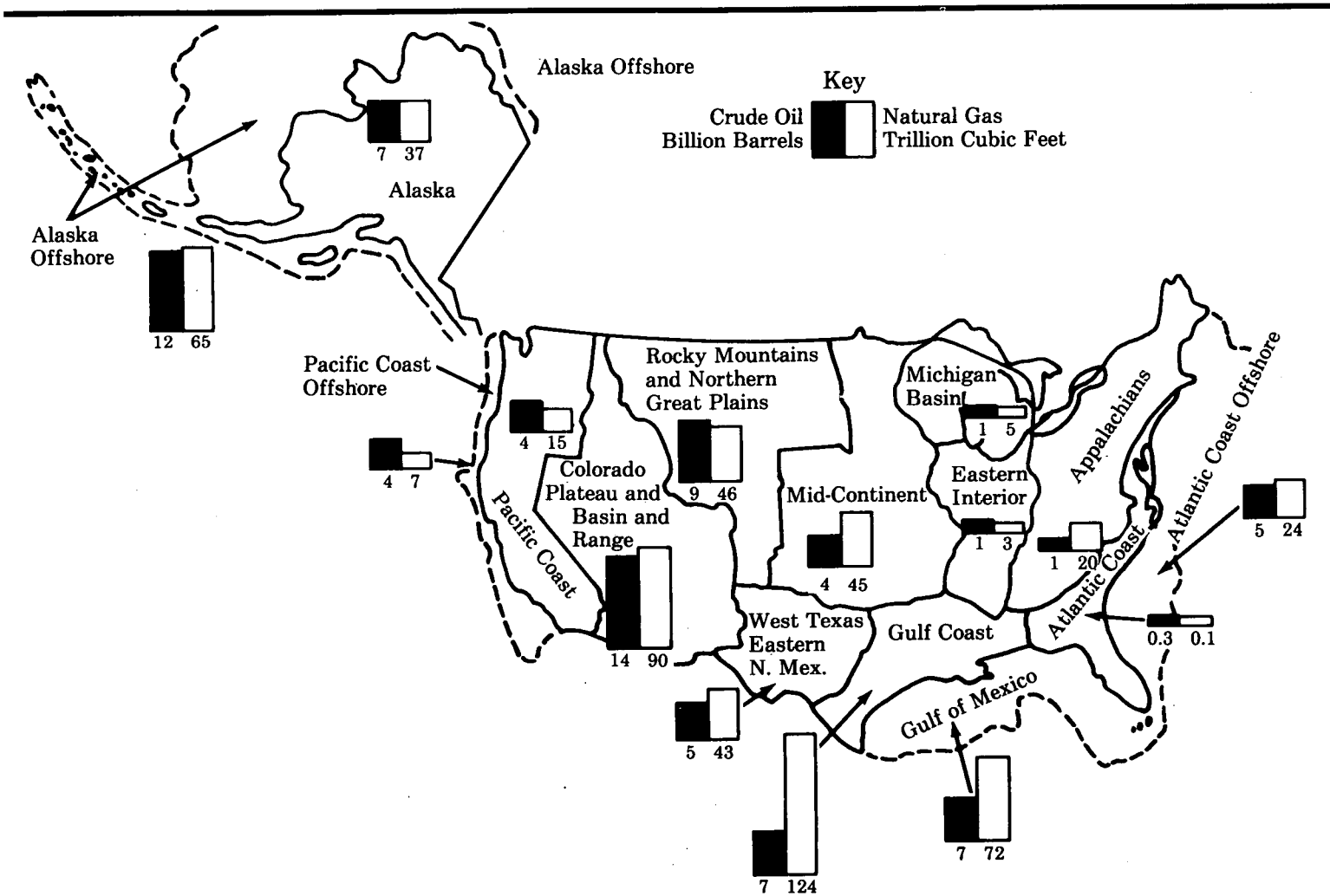
Preliminary 1982 data indicate that 16.5 thousand exploratory wells were drilled, up from 15.2 thousand in 1981 (see Table 17). The success rate fell slightly to 29.5 percent. The average depth of all exploratory wells has remained at about the same level for the past 15 years. The total number of wells drilled (exploratory and development wells combined) was 86 thousand, the highest in U.S. drilling history. Total footage drilled was 396 million feet, indicating that the average well depth was about 4.6 thousand feet (see Table 18). The average cost of wells drilled rose again, as expected, in 1981 (the latest year for which data are available). The average cost per foot drilled was $94 in 1981, twice that of 1977.

Domestic Reserves. Proved reserves of crude oil have declined significantly since the 1970 inclusion of Alaska's North Slope proved reserves. However, for more recent years the decline showed a leveling (see Table 20). Year-end 1981 proved reserves of crude oil declined only 1.3 percent from that of year-end 1979. Proved reserves of natural gas and natural gas liquids increased 0.4 and 6.8 percent, respectively, during this period.

World Reserves. World crude oil reserves were estimated to be 670 billion barrels at the end of 1982. Fifty-five percent were found in the Middle East. The countries with the largest reserves, in order, were Saudi Arabia, Kuwait, the U.S.S.R., Iran, and Mexico. These five countries accounted for 60 percent of the world's crude oil reserves (see Table 21).

World natural gas reserves were estimated to be 3.0 quadrillion cubic feet at the end of 1982. Countries with the largest reserves, in order, were the U.S.S.R., Iran, United States, Saudi Arabia, and Algeria. These five countries accounted for 71 percent of the world's natural gas reserves (see Table 21).

Figure 16. Estimated Undiscovered Recoverable Crude Oil and Natural Gas Resources, 1980



Note: Quantities Are Scaled According to the Btu Content of the Resource. 1 Billion Barrels of Crude Oil Equals Approximately 5.3 Trillion Cubic Feet of Natural Gas (1981).

Table 15. Estimated Undiscovered Recoverable Crude Oil and Natural Gas Resources, 1980

Region	Crude Oil (billion barrels)			Natural Gas (trillion cubic feet)		
		Estimated Range [1]			Estimated Range [1]	
	Mean [2]	Low	High	Mean [2]	Low	High
Onshore						
Alaska	6.9	2.5	14.6	36.6	19.8	62.3
Pacific Coast	4.4	2.1	7.9	14.7	8.2	24.9
Colorado Plateau and Basin and Range	14.2	6.9	25.9	90.1	53.5	142.4
Rocky Mountains and Northern Great Plains	9.4	6.0	14.0	45.7	29.6	69.0
West Texas and Eastern New Mexico	5.4	2.7	9.4	42.8	22.4	75.2
Gulf Coast	7.1	3.6	12.6	124.4	56.5	249.1
Mid-Continent	4.4	2.3	7.7	44.5	22.9	80.8
Michigan Basin	1.1	0.3	2.7	5.1	1.8	10.9
Eastern Interior	0.9	0.3	1.9	2.7	1.2	5.0
Appalachians	0.6	0.1	1.5	20.1	6.4	45.8
Atlantic Coast	0.3	0.1	0.8	0.1	[3]	0.4
Total Onshore	54.6	41.7	71.0	426.8	322.5	567.9
Offshore						
Alaska [4]	12.2	4.6	24.2	64.6	33.3	109.6
Pacific Coast	3.8	1.7	7.9	6.9	3.7	13.6
Gulf of Mexico	6.5	3.1	11.1	71.8	41.7	114.2
Atlantic Coast	5.4	1.1	12.9	23.7	9.2	42.8
Total Offshore	28.0	16.9	43.5	167.0	117.4	230.6
Total United States	82.6	64.3	105.1	593.8	474.6	739.3

[1] The low value of the range is the quantity associated with a 95 percent probability (19 in 20 chance) that there is at least this amount. The high value is the quantity with a 5 percent probability (1 in 20 chance) that there is at least this amount. Totals for the low and high values are not obtained by arithmetic summation; they are derived by statistical methods.
[2] The calculated mean from the probability curve using the Monte Carlo technique.
[3] Less than 0.1 trillion cubic feet.
[4] Includes quantities considered recoverable only if technology permits their exploitation beneath Arctic ice — a condition not yet met.
Source: U.S. Geological Survey, *Geological Estimates of Undiscovered Recoverable Conventional Resources of Oil and Gas in the United States, A Summary,* Circular 860, 1981.

Figure 17. Oil and Gas Exploration and Rotary Rigs in Use

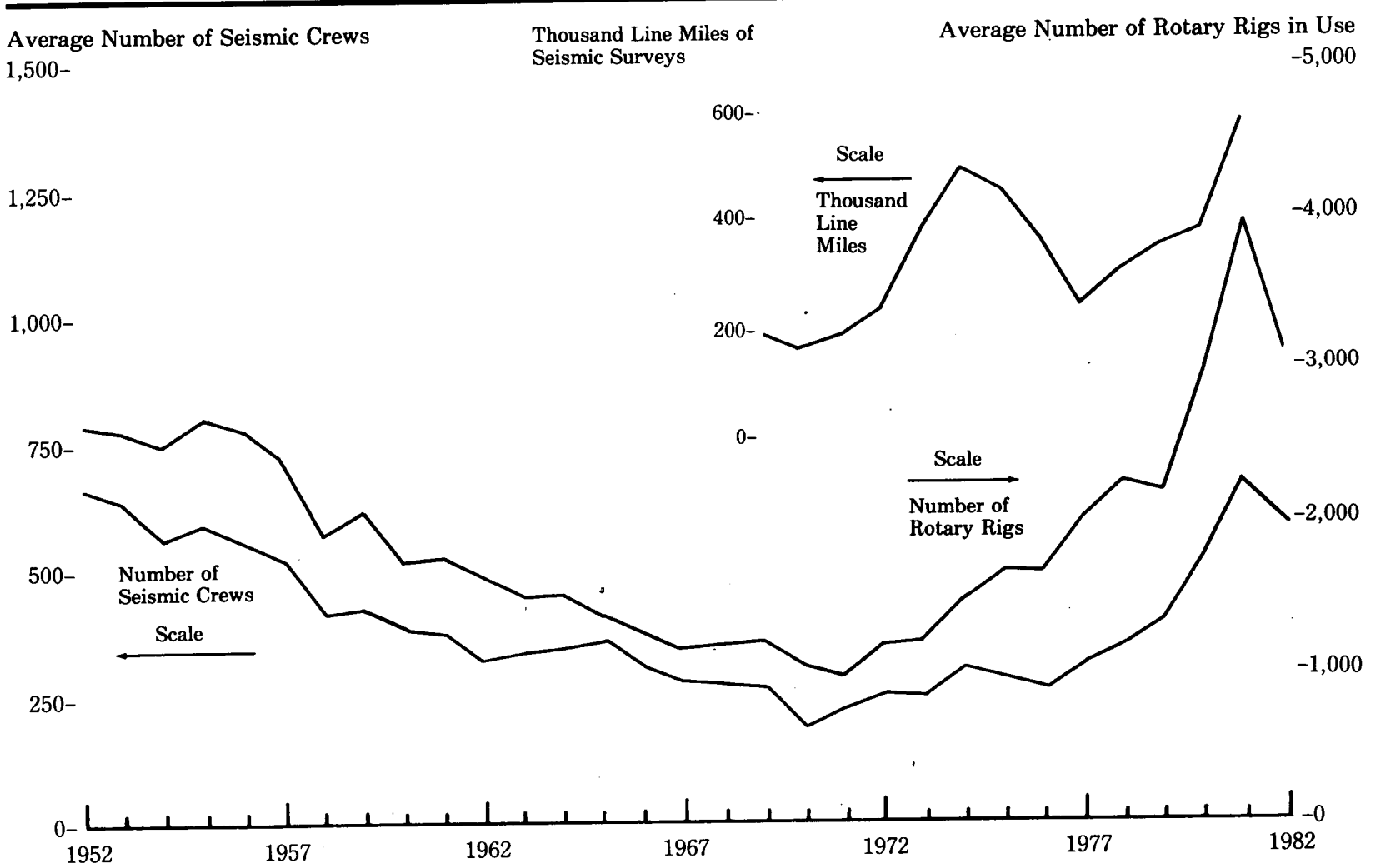


Table 16. Oil and Gas Exploration and Rotary Rigs in Use, 1952-1982

Year	Average Number of Seismic Crews	Line Miles of Seismic Surveys (thousand)	Average Number of Rotary Rigs in Use [1]
1952	663	NA	2,641
1953	639	NA	2,613
1954	572	NA	2,508
1955	591	NA	2,686
1956	568	NA	2,620
1957	524	NA	2,426
1958	422	NA	1,922
1959	425	NA	2,071
1960	385	NA	1,748
1961	380	NA	1,761
1962	326	NA	1,641
1963	331	NA	1,499
1964	342	NA	1,501
1965	354	NA	1,388
1966	306	NA	1,272
1967	278	NA	1,135
1968	272	NA	1,169
1969	263	199.9	1,194
1970	195	167.3	1,028
1971	221	191.7	976
1972	251	235.7	1,107
1973	250	386.1	1,194
1974	305	500.4	1,472
1975	284	460.0	1,660
1976	262	369.2	1,658
1977	308	244.7	2,001
1978	352	310.5	2,259
1979	400	357.1	2,177
1980	530	386.8	2,909
1981	681	594.4	3,970
1982	588	NA	3,105

[1] Data are not for the exact calendar year but for the 52 or 53 consecutive whole weeks that most nearly coincide with the calendar year.

NA = Not available.

Sources: •**Average Number of Seismic Crews and Line Miles of Seismic Surveys:** Society of Exploration Geophysicists, *SEG News Release,* Monthly, Tulsa, Oklahoma. •**Average Number of Rotary Rigs in Use:** *Rotary Rigs Running-By States,* Hughes Tool Company, Houston, Texas.

Figure 18. Exploratory Wells Drilled for Oil and Gas

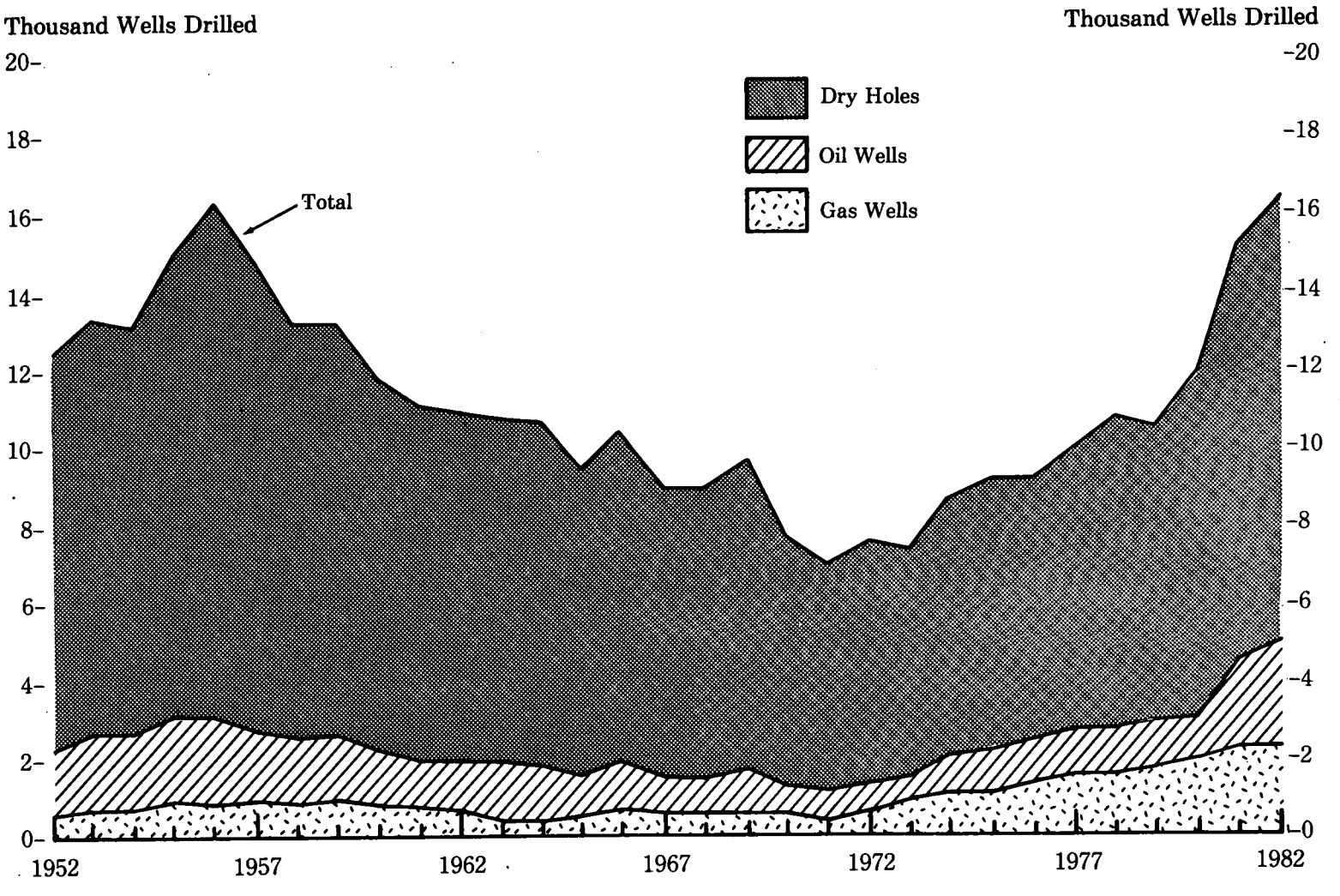


Table 17. Exploratory Wells Drilled for Oil and Gas, 1952-1982

Year	Wells Drilled (thousands)				Footage Drilled (million feet)				Average Depth (feet)				Successful Wells (percent)
	Oil	Gas	Dry Holes	Total	Oil	Gas	Dry Holes	Total	Oil	Gas	Dry Holes	Total	
1952	1.78	0.56	10.09	12.42	8.5	3.4	43.7	55.6	4,781	6,071	4,334	4,476	18.8
1953	1.98	0.70	10.63	13.31	9.4	4.0	47.3	60.7	4,761	5,654	4,447	4,557	20.1
1954	1.98	0.73	10.39	13.10	9.4	4.4	45.8	59.6	4,740	6,059	4,408	4,550	20.7
1955	2.24	0.87	11.83	14.94	10.8	5.2	53.2	69.2	4,819	5,964	4,498	4,632	20.8
1956	2.27	0.82	13.12	16.21	11.1	5.2	58.0	74.3	4,901	6,301	4,425	4,587	19.1
1957	1.94	0.86	11.90	14.71	9.8	6.0	53.4	69.2	5,036	6,898	4,488	4,702	19.1
1958	1.74	0.82	10.63	13.20	8.7	5.5	47.3	61.5	4,993	6,657	4,449	4,658	19.4
1959	1.70	0.91	10.58	13.19	8.5	6.0	48.7	63.3	5,021	6,613	4,602	4,795	19.8
1960	1.32	0.87	9.52	11.70	6.8	5.5	43.5	55.8	5,170	6,298	4,575	4,770	18.7
1961	1.16	0.81	9.02	10.99	5.9	5.2	43.3	54.4	5,099	6,457	4,799	4,953	17.9
1962	1.21	0.77	8.82	10.80	6.2	5.2	42.2	53.6	5,124	6,728	4,790	4,966	18.4
1963	1.31	0.66	8.69	10.66	6.4	4.2	42.8	53.5	4,878	6,370	4,933	5,016	18.5
1964	1.22	0.56	8.95	10.73	6.7	4.2	44.6	55.5	5,509	7,547	4,980	5,174	16.6
1965	0.95	0.52	8.00	9.47	5.4	3.8	40.1	49.2	5,672	7,295	5,007	5,198	15.4
1966	1.20	0.70	8.42	10.31	6.8	5.8	43.1	55.7	5,700	8,321	5,117	5,402	18.4
1967	0.99	0.53	7.36	8.88	5.7	4.0	38.2	47.8	5,758	7,478	5,188	5,388	17.1
1968	0.95	0.49	7.44	8.88	5.6	3.7	41.6	51.0	5,914	7,697	5,589	5,739	16.2
1969	1.08	0.62	8.00	9.70	6.6	5.0	45.9	57.5	6,054	8,092	5,739	5,924	17.5
1970	0.79	0.48	6.42	7.69	5.1	3.7	36.5	45.3	6,399	7,639	5,687	5,882	16.5
1971	0.65	0.44	5.83	6.92	3.7	3.3	33.3	40.4	5,702	7,616	5,716	5,835	15.7
1972	0.68	0.60	6.25	7.54	4.0	4.6	36.4	45.0	5,850	7,641	5,828	5,975	17.0
1973	0.62	0.90	5.95	7.47	3.9	6.2	34.8	44.8	6,226	6,856	5,844	5,997	20.3
1974	0.81	1.20	6.61	8.62	4.9	7.7	37.7	50.3	5,961	6,421	5,709	5,832	23.3
1975	0.97	1.17	7.07	9.21	5.7	8.0	40.1	53.8	5,863	6,831	5,678	5,844	23.3
1976	1.05	1.40	6.78	9.23	6.1	9.2	37.5	52.8	5,864	6,550	5,525	5,719	26.5
1977	1.21	1.48	7.28	9.96	7.1	9.7	40.9	57.7	5,834	6,550	5,626	5,788	27.0
1978	1.12	1.60	7.95	10.68	6.8	10.8	45.6	63.2	6,039	6,747	5,740	5,923	25.6
1979	1.24	1.78	7.46	10.48	7.5	11.8	43.2	62.5	6,023	6,599	5,794	5,958	28.8
1980	1.60	1.97	8.34	11.92	9.3	13.7	46.9	69.9	5,787	6,974	5,625	5,870	30.0
1981	2.22	2.37	10.58	15.17	13.3	15.7	60.1	89.1	5,979	6,648	5,678	5,873	30.2
1982[1]	2.60	2.28	11.64	16.52	15.1	16.0	64.9	95.9	5,791	7,026	5,573	5,807	29.5

[1] Preliminary.

Note: Sum of components may not equal total due to independent rounding. Average depth may not equal average of components due to independent rounding.

Note: For the period 1960 forward, data are for well completion reports received by the American Petroleum Institute during the reporting year.

Sources: •1952 through 1960—American Association of Petroleum Geologists, *Statistics on Exploratory Drilling in the United States, 1940 through 1960,* Tulsa, Oklahoma, 1962, pp. 4-19. •1961 through 1965 —*Bulletin of the American Association of Petroleum Geologists,* "North American Developments" issue, Tulsa, Oklahoma. •1966 through 1982—American Petroleum Institute, *Quarterly Review of Drilling Statistics for the United States,* annual summaries and monthly reports.

Figure 19. Total Wells Drilled for Oil and Gas

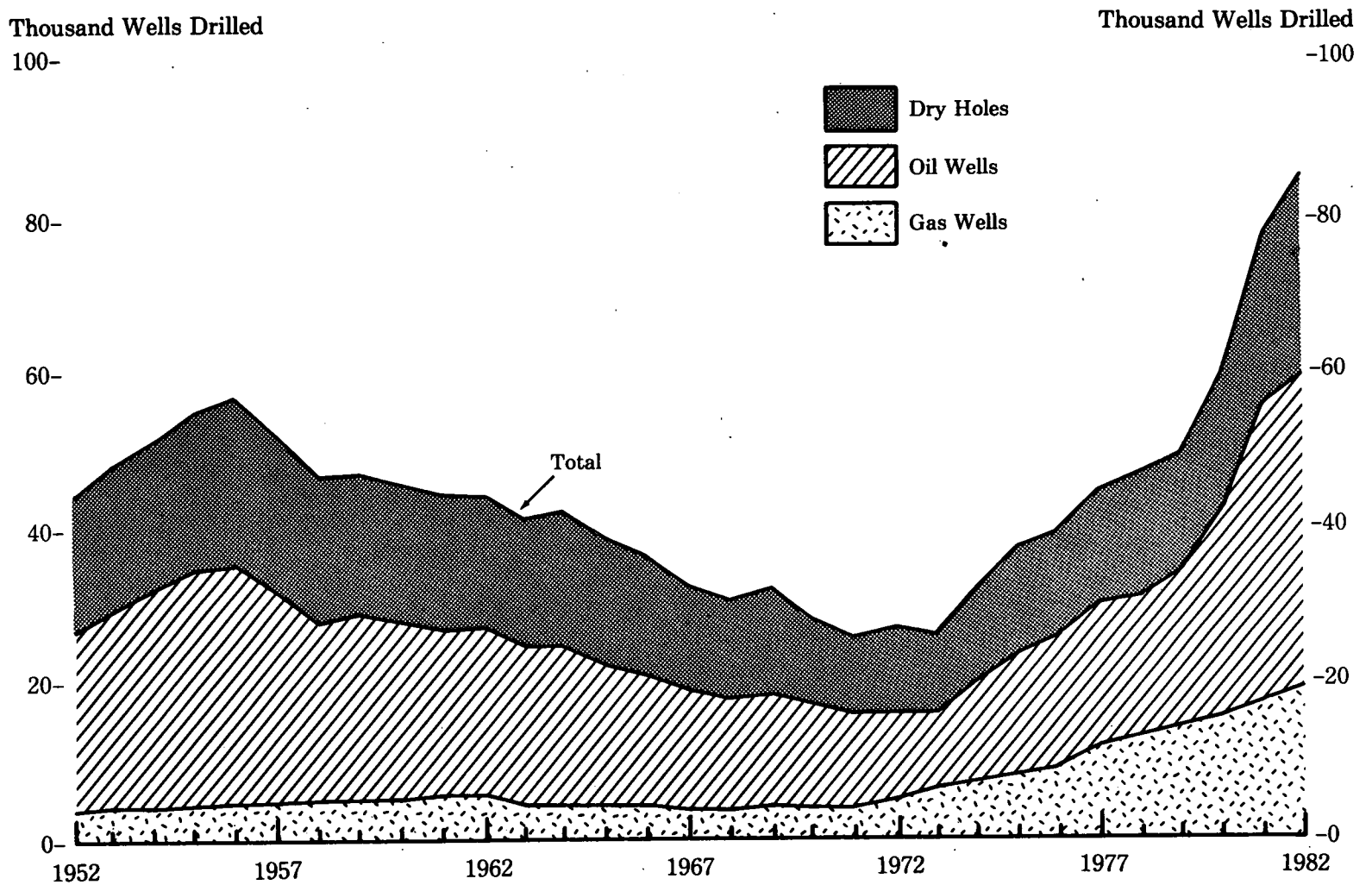


Table 18. Total Wells [1] Drilled for Oil and Gas, 1952-1982

Year	Wells Drilled (thousands)				Footage Drilled (million feet)				Average Depth (feet)				Successful Wells (percent)
	Oil	Gas	Dry Holes	Total	Oil	Gas	Dry Holes	Total	Oil	Gas	Dry Holes	Total	
1952	23.29	3.51	17.76	44.56	98.1	15.3	70.7	184.1	4,214	4,342	3,983	4,132	60.1
1953	25.32	3.97	18.45	47.74	102.1	18.2	73.9	194.2	4,033	4,599	4,004	4,069	61.4
1954	28.14	4.04	18.93	51.11	113.4	18.9	75.8	208.0	4,028	4,670	4,004	4,070	63.0
1955	30.43	4.27	20.45	55.15	121.1	19.9	85.1	226.2	3,981	4,672	4,161	4,101	62.9
1956	30.53	4.53	22.11	57.17	120.4	22.7	90.2	233.3	3,942	5,018	4,079	4,080	61.3
1957	27.36	4.48	20.16	52.00	110.0	23.8	83.2	217.0	4,021	5,326	4,126	4,174	61.2
1958	23.77	5.00	18.16	46.94	93.1	25.6	74.6	193.3	3,916	5,106	4,110	4,118	61.3
1959	24.04	4.93	18.59	47.56	94.6	26.6	79.5	200.7	3,935	5,396	4,275	4,220	60.9
1960	22.26	5.15	18.21	45.62	86.6	28.2	77.4	192.2	3,889	5,486	4,248	4,213	60.1
1961	21.44	5.49	17.33	44.25	85.6	29.3	74.7	189.6	3,994	5,339	4,311	4,285	60.8
1962	21.73	5.35	17.08	44.16	88.4	28.9	77.3	194.6	4,070	5,408	4,524	4,408	61.3
1963	20.14	4.57	16.76	41.47	81.8	24.5	76.3	182.6	4,063	5,368	4,552	4,405	59.6
1964	19.90	4.69	17.69	42.29	80.5	25.6	81.4	187.4	4,042	5,453	4,598	4,431	58.2
1965	18.06	4.48	16.23	38.77	73.3	24.9	76.6	174.9	4,059	5,562	4,723	4,510	58.2
1966	16.78	4.38	15.23	36.38	67.3	25.9	69.6	162.9	4,013	5,928	4,573	4,478	58.1
1967	15.33	3.66	13.25	32.23	58.6	21.6	61.1	141.4	3,825	5,898	4,616	4,385	58.9
1968	14.33	3.46	12.81	30.60	59.5	20.7	64.7	145.0	4,153	5,994	5,053	4,738	58.1
1969	14.37	4.08	13.74	32.19	61.6	24.2	71.4	157.1	4,286	5,918	5,195	4,881	57.3
1970	13.02	3.84	11.26	28.12	57.1	22.9	59.3	139.3	4,385	5,961	5,265	4,953	60.0
1971	11.86	3.83	10.16	25.85	48.6	22.6	53.1	124.2	4,094	5,907	5,221	4,806	60.7
1972	11.31	4.93	11.06	27.29	48.5	26.8	59.3	134.6	4,293	5,431	5,363	4,932	59.5
1973	9.90	6.38	10.30	26.59	44.6	35.6	56.1	136.4	4,508	5,576	5,449	5,129	61.2
1974	12.78	7.24	11.67	31.70	50.2	39.0	61.4	150.6	3,927	5,385	5,256	4,750	63.2
1975	16.41	7.58	13.25	37.24	64.5	41.9	68.0	174.4	3,932	5,531	5,133	4,685	64.4
1976	17.06	9.08	13.62	39.76	66.7	47.5	67.6	181.8	3,910	5,229	4,961	4,571	65.7
1977	18.91	11.38	14.69	44.98	75.3	59.5	76.0	210.8	3,982	5,233	5,173	4,687	67.3
1978	17.78	13.06	16.22	47.06	72.5	70.2	84.4	227.1	4,081	5,373	5,203	4,826	65.5
1979	19.38	14.68	15.75	49.82	78.6	77.8	82.3	238.7	4,057	5,296	5,223	4,791	68.4
1980	27.03	15.73	18.09	60.84	109.5	85.0	89.9	284.5	4,053	5,406	4,969	4,675	70.3
1981	37.67	17.89	22.97	78.54	150.7	96.9	113.9	361.4	4,000	5,414	4,956	4,602	70.7
1982[2]	40.33	18.98	26.55	85.86	159.6	107.3	129.5	396.4	3,957	5,655	4,878	4,617	69.1

[1] Includes exploratory and development wells; excludes service wells, stratigraphic tests, and core tests.
[2] Preliminary.
Note: Sum of components may not equal total due to independent rounding. Average depth may not equal average of components due to independent rounding.
Note: For the period 1960 forward, data are for well completion reports received by the American Petroleum Institute during the reporting year.
Sources: •1952 through 1965—*World Oil*, "Forecast-Review" issue, Houston, Texas. •1966 through 1982—American Petroleum Institute, *Quarterly Review of Drilling Statistics for the United States*, annual summaries and monthly reports.

Figure 20. Average Cost of Oil and Gas Wells Drilled

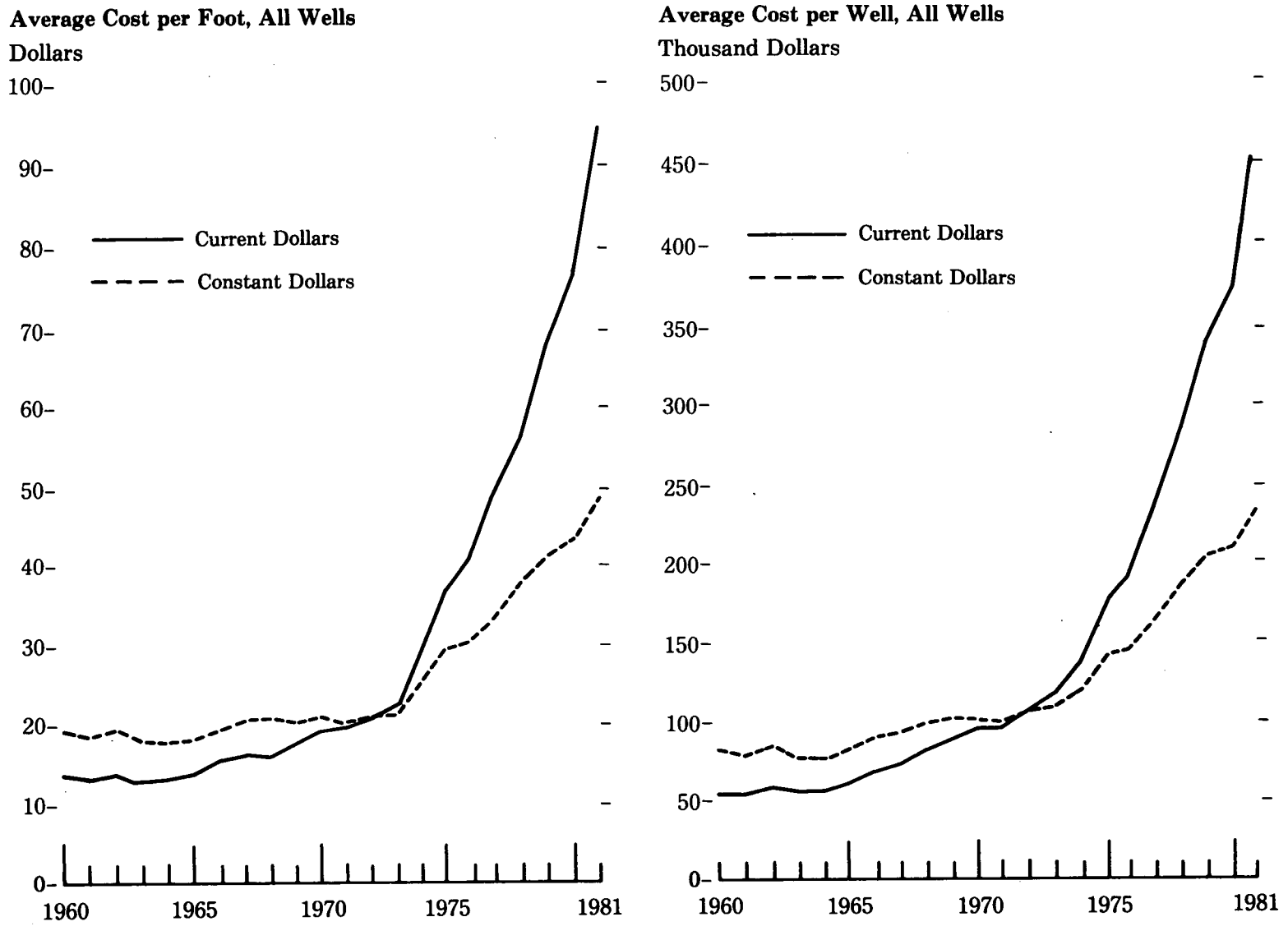


Table 19. Average Cost of Oil and Gas Wells Drilled, 1960-1981

Year	Average Cost per Well (thousand dollars)					Average Cost per Foot (dollars)				
	Oil	Gas	Dry Holes	All		Oil	Gas	Dry Holes	All	
	(current)	(current)	(current)	(current)	(constant) [1]	(current)	(current)	(current)	(current)	(constant) [1]
1960	52.2	102.7	44.0	54.9	80.0	13.22	18.57	10.56	13.01	18.94
1961	51.3	94.7	45.2	54.5	78.6	13.11	17.65	10.56	12.85	18.53
1962	54.2	97.1	50.8	58.6	83.0	13.41	18.10	11.20	13.31	18.85
1963	51.8	92.4	48.2	55.0	76.8	13.20	17.19	10.58	12.69	17.71
1964	50.6	104.8	48.5	55.8	76.7	13.12	18.57	10.64	12.86	17.67
1965	56.6	101.9	53.1	60.6	81.6	13.94	18.35	11.21	13.44	18.07
1966	62.2	133.8	56.9	68.4	89.1	15.04	21.75	12.34	14.95	19.48
1967	66.6	141.0	61.5	72.9	92.2	16.61	23.05	12.87	15.97	20.20
1968	79.1	148.5	66.2	81.5	98.7	18.63	24.05	12.88	16.83	20.39
1969	86.5	154.3	70.2	88.6	102.0	19.28	25.58	13.23	17.56	20.23
1970	86.7	160.7	80.9	94.9	103.8	19.29	26.75	15.21	18.84	20.60
1971	78.4	166.6	86.8	94.7	98.6	18.41	27.70	16.02	19.03	19.82
1972	93.5	157.8	94.9	106.4	106.4	20.77	27.78	17.28	20.76	20.76
1973	103.8	155.3	105.8	117.2	110.8	22.54	27.46	19.22	22.50	21.28
1974	110.2	189.2	141.7	138.7	120.5	27.82	34.11	26.76	28.93	25.14
1975	138.6	262.0	177.2	177.8	141.3	34.17	46.23	33.86	36.99	29.41
1976	151.1	270.4	190.3	191.6	144.8	37.35	49.78	36.94	40.46	30.57
1977	170.0	313.5	230.2	227.2	162.2	41.16	57.57	43.49	46.81	33.42
1978	208.0	374.2	281.7	280.0	186.1	49.72	68.37	52.55	56.63	37.65
1979	243.1	443.1	339.6	331.4	202.8	58.29	80.66	64.60	67.70	41.43
1980	272.1	536.4	376.5	367.7	205.8	66.36	95.16	73.70	77.02	43.11
1981	336.3	698.6	464.0	453.7	232.1	80.40	122.17	90.03	94.30	48.23

[1] Constant 1972 costs calculated using GNP implicit price deflators, 1972 = 100. See Units of Measure, Conversion Factors, Price Deflators, and Energy Equivalents section.

Note: Average cost is the arithmetic mean and includes all costs for drilling and equipping wells and for surface producing facilities. Wells drilled include exploratory and development wells; excludes service wells, stratigraphic tests, and core tests.

Note: The information reported for 1965 and prior years is not strictly comparable with the more recent surveys.

Source: American Petroleum Institute, Independent Petroleum Association of America, Mid-Continent Oil and Gas Association, Washington, D.C., *Joint Association Survey of the U.S. Oil and Gas Producing Industry.*

Figure 21. Proved Reserves of Liquid and Gaseous Hydrocarbons, Year-End

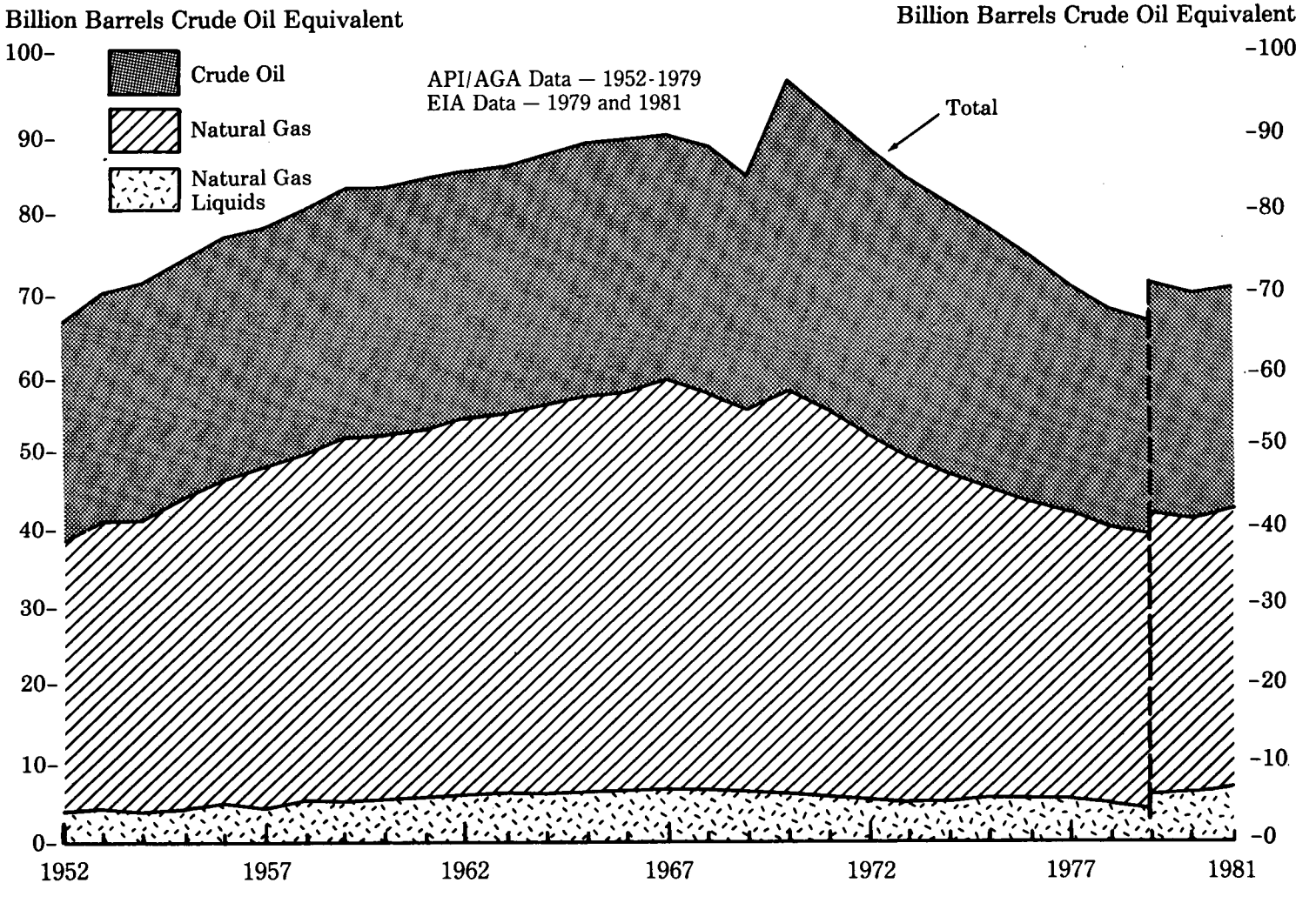


Table 20. Proved Reserves of Liquid and Gaseous Hydrocarbons, Year-End 1952-1981

Year	Crude Oil	Natural Gas		Natural Gas Liquids		Total
	Billion Barrels	Trillion Cubic Feet [1]	Billion Barrels COE [2]	Billion Barrels	Billion Barrels COE [3]	Billion Barrels COE
	American Petroleum Institute and American Gas Association Data					
1952	28.0	198.6	35.2	5.0	3.7	66.8
1953	28.9	210.3	37.2	5.4	4.0	70.2
1954	29.6	210.6	37.3	5.2	3.8	70.7
1955	30.0	222.5	39.4	5.4	4.0	73.4
1956	30.4	236.5	41.9	5.9	4.3	76.6
1957	30.3	245.2	43.4	5.7	4.2	77.9
1958	30.5	252.8	44.8	6.2	4.5	79.8
1959	31.7	261.2	46.2	6.5	4.8	82.7
1960	31.6	262.3	46.4	6.8	5.0	83.0
1961	31.8	266.3	47.1	7.0	5.2	84.1
1962	31.4	272.3	48.2	7.3	5.3	84.9
1963	31.0	276.2	48.9	7.7	5.6	85.5
1964	31.0	281.3	49.8	7.7	5.7	86.4
1965	31.4	286.5	50.7	8.0	5.9	87.9
1966	31.5	289.3	51.2	8.3	6.1	88.8
1967	31.4	292.9	51.9	8.6	6.3	89.5
1968	30.7	287.3	50.9	8.6	6.3	87.9
1969	29.6	275.1	48.7	8.1	6.0	84.3
1970	39.0	290.7	51.5	7.7	5.6	96.1
1971	38.1	278.8	49.4	7.3	5.3	92.8
1972	36.3	266.1	47.1	6.8	5.0	88.4
1973	35.3	250.0	44.3	6.5	4.7	84.3
1974	34.2	237.1	42.0	6.4	4.6	80.9
1975	32.7	228.2	40.4	6.3	4.6	77.7
1976	30.9	216.0	38.2	6.4	4.7	73.9
1977	29.5	208.9	37.0	6.0	4.4	70.9
1978	27.8	200.3	35.5	5.9	4.3	67.6
1979	27.1	194.9	34.5	5.7	4.1	65.7
	Energy Information Administration Data					
1977	31.8	207.4	36.7	NA	NA	NA
1978	31.4	208.0	36.8	6.8	5.0	73.1
1979	29.8	201.0	35.6	6.6	4.8	70.2
1980	29.8	199.0	35.2	6.7	4.9	70.0
1981	29.4	201.7	35.7	7.1	5.2	70.3

[1] The American Gas Association estimates of natural gas proved reserves include volumes of gas held in underground storage. In 1979 this volume amounted to 4.9 trillion cubic feet. Energy Information Administration data do not include gas in underground storage.

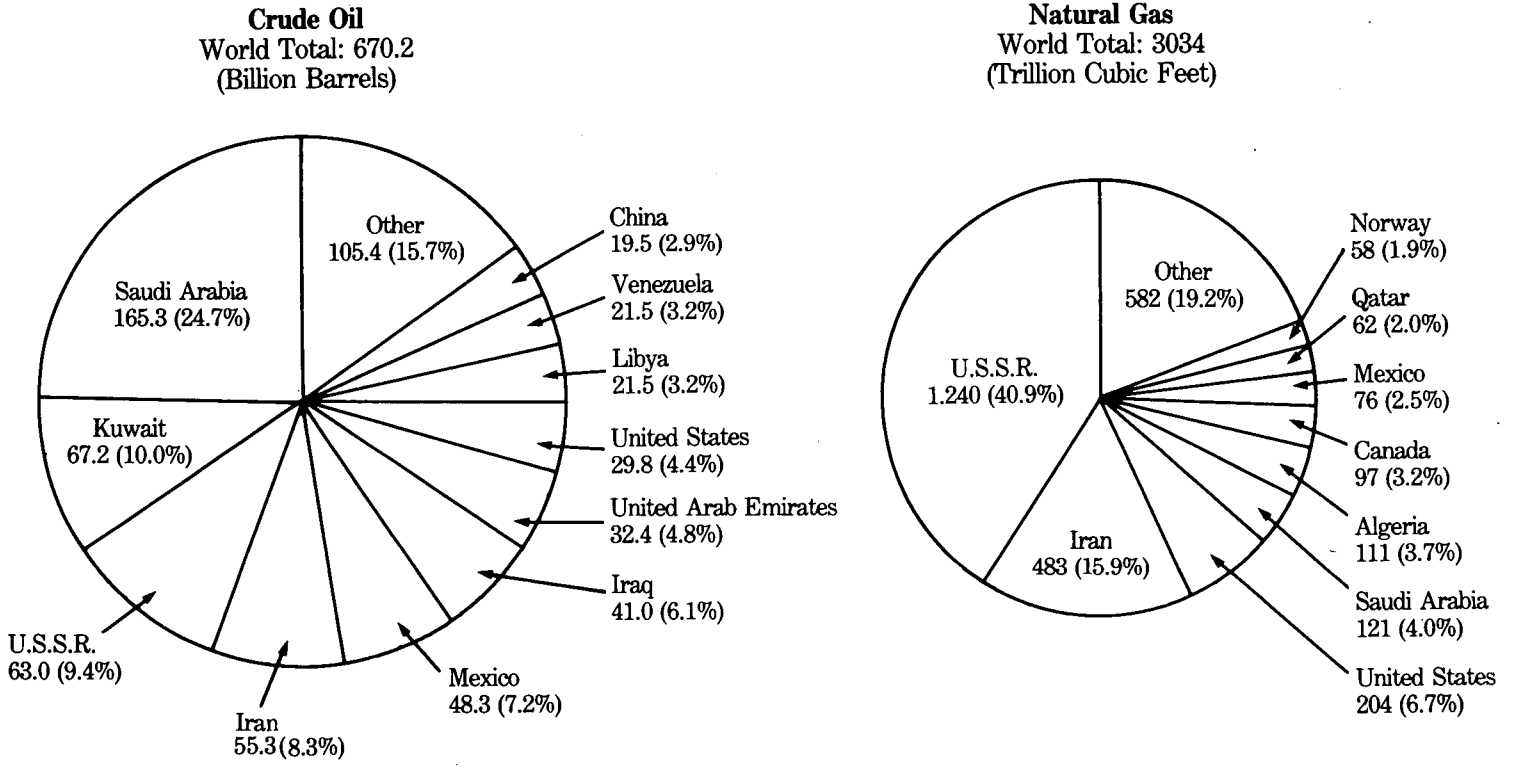
[2] Crude oil equivalent; converted on a Btu basis—5,648 cubic feet of natural gas for each barrel of crude oil, the 1981 equivalency rate.

[3] Crude oil equivalent; converted on a Btu basis—1.368 barrels of natural gas liquids (including lease condensate) for each barrel of crude oil; the 1981 equivalency rate.

NA=Not available.

Sources: •API/AGA Data—American Gas Association, American Petroleum Institute, and Canadian Petroleum Association (published jointly). *Reserves of Crude Oil, Natural Gas Liquids and Natural Gas in the United States and Canada as of December 31, 1979.* Volume 34, June 1980. •EIA Data—Energy Information Administration, *U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves, 1981 Annual Report.*

Figure 22. Estimated International Crude Oil and Natural Gas Proved Reserves, December 31, 1982



Note: Quantities are scaled in proportion to area according to the Btu content of the reserves. 1 billion barrels of crude oil equals approximately 5.7 trillion cubic feet of natural gas (1981).

Table 21. Estimated International Crude Oil and Natural Gas Proved Reserves, December 31, 1982

Area and Country	Crude Oil (billion barrels)	Natural Gas (trillion cubic feet)
North America		
Canada	7.0	97
Mexico	48.3	76
United States	29.8	204
Total	85.1	377
Central and South America		
Argentina	2.6	25
Bolivia	0.2	6
Brazil	1.8	2
Chile	0.8	3
Colombia	0.5	5
Ecuador	1.4	4
Peru	0.8	1
Trinidad and Tobago	0.6	11
Venezuela	21.5	54
Other	0.1	[3]
Total	30.2	111
Western Europe		
Denmark	0.5	2
Germany, West	0.3	6
Italy	0.7	4
Netherlands	0.3	52
Norway	6.8	58
United Kingdom	13.9	25
Other	0.7	9
Total	23.2	157
Eastern Europe and U.S.S.R.		
U.S.S.R.	63.0	1,240
Other	2.6	14
Total	65.6	1,254
Middle East		
Bahrain	0.2	8
Iran	55.3	483
Iraq	41.0	29
Kuwait [1]	67.2	34
Oman	2.7	3
Qatar	3.4	62
Saudi Arabia [1]	165.3	121
Syria	1.5	1
United Arab Emirates	32.4	29
Other	[2]	[3]
Total	369.0	769
Africa		
Algeria	9.4	111
Angola	1.6	1
Cameroon	0.5	4
Congo	1.6	3
Egypt	3.3	7
Gabon	0.5	[3]
Libya	21.5	22
Nigeria	16.8	32
Tunisia	1.9	4
Other	0.8	4
Total	57.8	189
Far East and Oceania		
Australia	1.6	18
Bangladesh	0	7
Brunei	1.2	7
China	19.5	30
India	3.4	15
Indonesia	9.6	30
Malaysia	3.3	34
New Zealand	0.2	6
Pakistan	0.2	19
Thailand	0.1	11
Other	0.1	1
Total	39.2	176
World Total	670.2	3,034

[1] Include one-half of the Partitioned Zone (formerly called Neutral Zone).
[2] Less than 0.05 billion barrels.
[3] Less than 0.05 trillion cubic feet.

Note: Sum of components may not equal total due to independent rounding. All reserve figures except those for the U.S.S.R. and natural gas reserves in Canada are proved reserves recoverable with present technology and prices. U.S.S.R. figures are "explored reserves," which include proved, probable, and some possible. The Canadian natural gas figure includes proved and some probable.

Source: *Oil and Gas Journal*, December 27, 1982. Petroleum Publishing Co., Tulsa, Oklahoma. The Energy Information Administration does not necessarily subscribe to the *Oil and Gas Journal* data but reproduces it as a matter of convenience.

Section 3. Petroleum Supply and Disposition

This section is separated into two parts. The first part presents petroleum supply and distribution data in barrels, and the second part contains price and cost data. Although most petroleum consumed by individuals in the United States is purchased by the gallon, most petroleum accounting is measured in U.S. barrels. One barrel equals 42 U.S. gallons and is a somewhat smaller measure than the U.S. standard drum, which contains 55 U.S. gallons.

Production. U.S. crude oil (including lease condensate, the liquid condensed from natural gas at or near the surface of gas wells during production operations) is produced primarily in Texas, Alaska, Louisiana, California, and their associated offshore areas. Crude oil production from an estimated 569 thousand oil wells averaged about 15 barrels per day per well during 1982 (see Table 82). Domestic crude oil (and lease condensate) production averaged 8.7 million barrels per day during 1982, up slightly from the 1979-1981 levels (see Table 23). Importantly, however, production from the conterminous (lower-48) States increased for the first time since 1972.

Supply. Consumption (products supplied) of petroleum products declined to 15.3 million barrels per day, the lowest level since 1971. Reduced use of residual fuel oil, used primarily to produce steam at electric powerplants and industrial facilities, accounted for most of the decline. Consumption of this fuel declined 19 percent from 2.1 million barrels per day in 1981 to 1.7 million barrels per day in 1982. Between 1977 and 1982, residual fuel oil use declined at an average annual rate of 11.2 percent (see Table 29). The decline in petroleum use meant that fewer petroleum imports were required—imports fell about 16 percent to 5.0 million barrels per day in 1982. Similarly, the decline in consumption caused some refiners to reduce throughput capacity, and total capacity fell by nearly 2 million barrels per day in 1981 (see Table 28).

Stocks. At year-end 1982, crude oil stocks totaled 642 million barrels, an 8-percent increase over the 1981 year-end level (see Table 32). Most of the increase was in stocks held at the Strategic Petroleum Reserve (SPR—a U.S. Government program to hedge against supply disruptions). The 294 million barrels in SPR at year-end 1982 was equal to 89 days of non-SPR crude oil imports that year. This compares to SPR stocks equal to 56 days of crude oil imports in 1981 (see Table 33).

International Production. World production of crude oil decreased in 1982 to 53 million barrels per day, a 5.3-percent reduction from the 1981 level. World crude oil production began its decline in late 1980 during the conflict between Iran and Iraq and continued into 1982 as world demand for petroleum decreased (see Table 35).

International Consumption. World consumption of petroleum decreased for the first time since 1975 as the world recession inhibited demand. Consumption fell 3.2 percent, from 65.1 million barrels per day in 1979 to 63.0 million barrels per day in 1980 (the latest data available). The major consumers were the United States, the U.S.S.R., Japan, West Germany, and France, accounting for 57 percent of consumption in 1980 (see Table 37).

Prices. The second part of this section presents annual price and cost information. These data are presented primarily to show trends and to make comparisons among fuels. Most of the current price and cost statistics are collected monthly to monitor cost increases to refiners, marketers, and consumers. Some statistics are collected to monitor the seasonality of price and distributors' margins.

U.S. average crude oil wellhead prices (in current dollars) increased each year from 1973 through 1981. Between 1979 and 1981, the increases were substantial, occurring at a rate of nearly $10.00 per barrel yearly. In 1982, however, prices declined for the first time since the mid-1960's (see Table 39). Although the decline was relatively small ($3.23 per barrel), it was significant in its impact on international crude oil export prices. Refiner acquisition cost of imported crude oil also declined. The 1982 price of $33.62 per barrel was down $3.43 per barrel (9.3 percent) from the 1981 price. These reductions in refiners' prices were reflected in the wholesale prices (excluding taxes) of refined petroleum products, which declined in the range of 6 to 8 percent depending on the product (see Table 42). The retail price of motor gasoline (including taxes) fell 6.8 percent (see Table 43).

Figure 23. Petroleum Flow Diagram, 1982

(Million Barrels per Day)

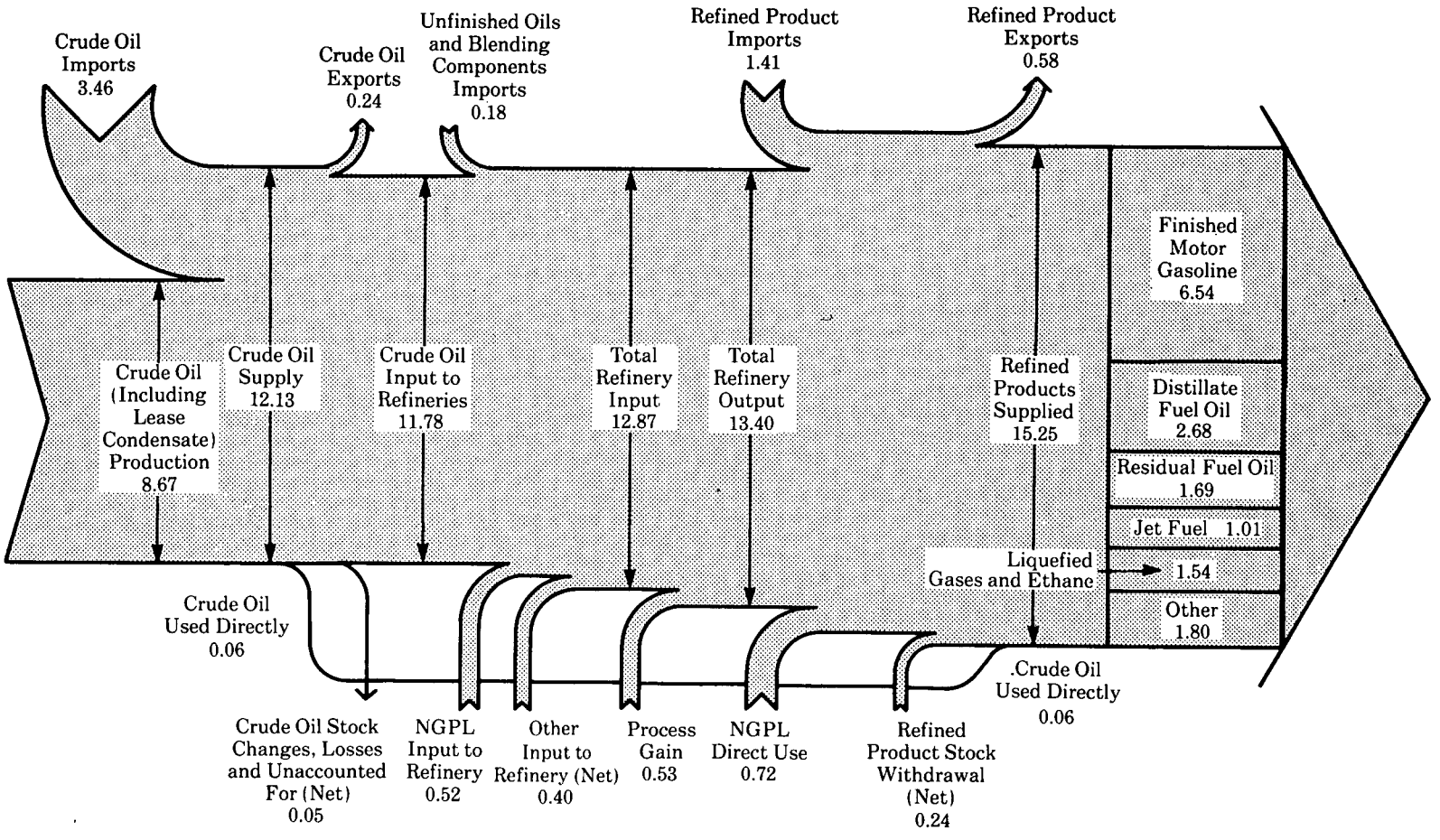


Figure 24. Petroleum Supply and Disposition

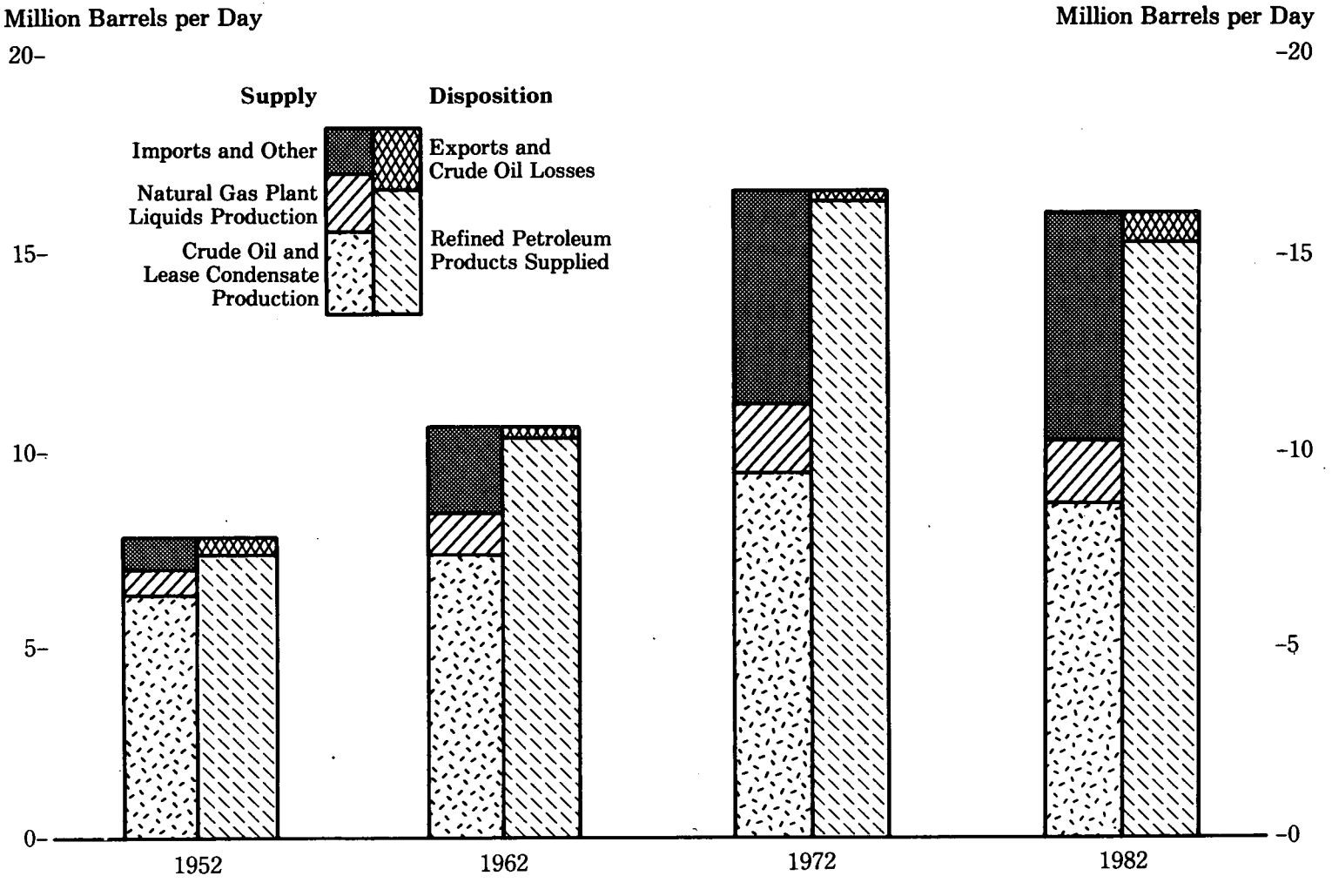


Table 22. Petroleum Supply and Disposition, 1952-1982

(Million Barrels per Day)

Year	Supply									Disposition				
	Production			Imports										
	Crude Oil [1]	Natural Gas Plant Liquids	Total Production	Crude Oil [2]	Refined Products [3]	Total Imports	Change in Stocks [4]	Other Supply [5]	Total Supply	Refined Petroleum Products Supplied	Exports	Crude Oil Losses	Total Disposition	Net Trade [6]
1952	6.26	0.61	6.87	0.57	0.38	0.95	-0.11	0.01	7.72	7.27	0.43	0.02	7.72	-0.52
1953	6.46	0.65	7.11	0.65	0.39	1.03	-0.14	0.02	8.02	7.60	0.40	0.02	8.02	-0.63
1954	6.34	0.69	7.03	0.66	0.40	1.05	0.03	0.02	8.14	7.76	0.36	0.03	8.14	-0.70
1955	6.81	0.77	7.58	0.78	0.47	1.25	(7)	0.04	8.86	8.46	0.37	0.04	8.86	-0.88
1956	7.15	0.80	7.95	0.93	0.50	1.44	-0.18	0.04	9.25	8.78	0.43	0.05	9.25	-1.01
1957	7.17	0.81	7.98	1.02	0.55	1.57	-0.17	0.04	9.43	8.81	0.57	0.05	9.43	-1.01
1958	6.71	0.81	7.52	0.95	0.75	1.70	0.14	0.06	9.42	9.12	0.28	0.03	9.42	-1.42
1959	7.05	0.88	7.93	0.97	0.81	1.78	-0.05	0.09	9.75	9.53	0.21	0.01	9.75	-1.57
1960	7.04	0.93	7.96	1.02	0.80	1.81	0.08	0.15	10.01	9.80	0.20	0.01	10.01	-1.61
1961	7.18	0.99	8.17	1.05	0.87	1.92	-0.11	0.18	10.16	9.98	0.17	0.01	10.16	-1.74
1962	7.33	1.02	8.35	1.13	0.96	2.08	-0.03	0.18	10.58	10.40	0.17	0.01	10.58	-1.91
1963	7.54	1.10	8.64	1.13	0.99	2.12	(7)	0.20	10.96	10.74	0.21	0.01	10.96	-1.91
1964	7.61	1.15	8.77	1.20	1.06	2.26	-0.01	0.22	11.23	11.02	0.20	0.01	11.23	-2.06
1965	7.80	1.21	9.01	1.24	1.23	2.47	0.01	0.22	11.71	11.51	0.19	0.01	11.71	-2.28
1966	8.30	1.28	9.58	1.22	1.35	2.57	-0.10	0.25	12.29	12.08	0.20	0.01	12.29	-2.37
1967	8.81	1.41	10.22	1.13	1.41	2.54	-0.17	0.29	12.88	12.56	0.31	0.01	12.88	-2.23
1968	9.10	1.50	10.60	1.29	1.55	2.84	-0.15	0.35	13.64	13.39	0.23	0.01	13.64	-2.61
1969	9.24	1.59	10.83	1.41	1.76	3.17	0.05	0.34	14.38	14.14	0.23	0.01	14.38	-2.93
1970	9.64	1.66	11.30	1.32	2.10	3.42	-0.10	0.35	14.97	14.70	0.26	0.01	14.97	-3.16
1971	9.46	1.69	11.16	1.68	2.25	3.93	-0.07	0.44	15.45	15.21	0.22	0.01	15.45	-3.70
1972	9.44	1.74	11.18	2.22	2.53	4.74	0.23	0.44	16.60	16.37	0.22	0.01	16.60	-4.52
1973	9.21	1.74	10.95	3.24	3.01	6.26	-0.14	0.49	17.55	17.31	0.23	0.01	17.55	-6.02
1974	8.77	1.69	10.46	3.48	2.64	6.11	-0.18	0.49	16.89	16.65	0.22	0.01	16.89	-5.89
1975	8.37	1.63	10.01	4.10	1.95	6.06	-0.03	0.51	16.54	16.32	0.21	0.01	16.54	-5.85
1976	8.13	1.60	9.74	5.29	2.03	7.31	0.06	0.59	17.70	17.46	0.22	0.01	17.70	-7.09
1977	8.24	1.62	9.86	6.61	2.19	8.81	-0.55	0.57	18.69	18.43	0.24	0.02	18.69	-8.56
1978	8.71	1.57	10.27	6.36	2.01	8.36	0.09	0.49	19.22	18.85	0.36	0.02	19.22	-8.00
1979	8.55	1.58	10.14	6.52	1.94	8.46	-0.15	0.56	19.00	18.51	0.47	0.02	19.00	-7.99
1980	8.60	1.57	10.17	5.26	1.65	6.91	-0.14	0.68	17.61	17.06	0.54	0.01	17.61	-6.36
1981	8.57	1.61	10.18	4.40	1.60	6.00	-0.16	0.64	16.66	16.06	0.59	(7)	16.66	-5.40
1982[8]	8.67	1.55	10.23	3.46	1.58	5.04	0.15	0.66	16.07	15.25	0.82	(7)	16.07	-4.23

[1] Includes lease condensate.
[2] Includes imports for the Strategic Petroleum Reserve, which began in 1977.
[3] Includes plant condensate, natural gasoline, unfinished oils, motor gasoline blending components, and aviation gasoline blending components.
[4] Negative numbers denote a net addition to stocks or a reduction in supply. Positive numbers denote a net withdrawal from stocks or an addition to supply.
[5] Includes benzol, other hydrocarbons, hydrogen, alcohol, processing gains, and unaccounted for crude oil.
[6] Net trade = exports minus imports.
[7] Less than 5,000 barrels per day.
[8] Preliminary.
NA = Not available.
Note: Sum of components may not equal total due to independent rounding.
Sources: •1952 through 1975—Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual.* •1976 through 1980—Energy Information Administration, Energy Data Reports, *Petroleum Statement, Annual.* •1981—Energy Information Administration, *Petroleum Supply Annual.* •1982—Energy Information Administration, *Petroleum Supply Monthly.*

Figure 25. Crude Oil and Lease Condensate Production

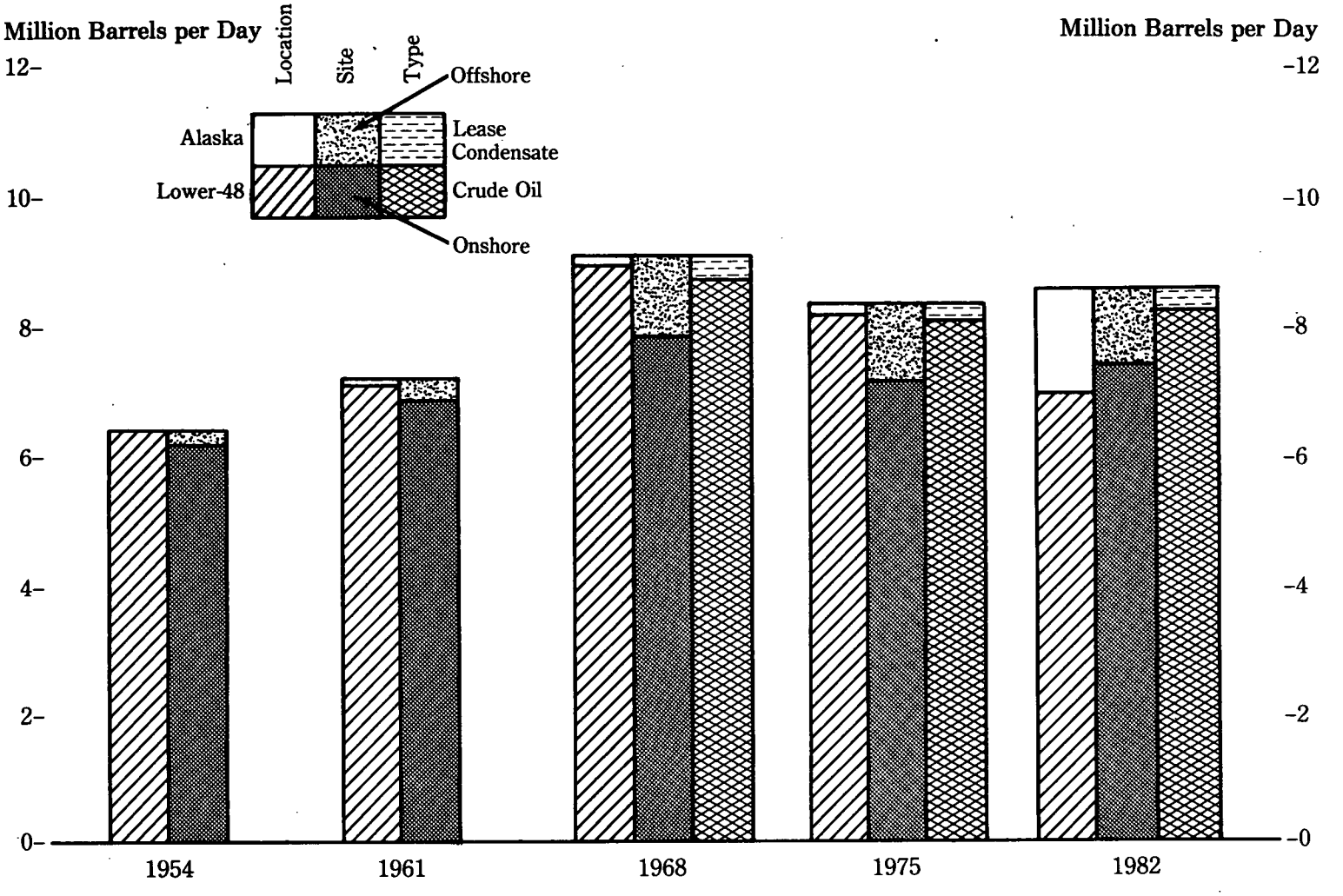


Table 23. Crude Oil and Lease Condensate Production by Location, Site, and Type, 1954-1982

(Thousand Barrels per Day)

Year	Location		Site		Type		Total
	Lower 48	Alaska	Onshore	Offshore	Crude Oil	Lease Condensate	
1954	6,342	0	6,209	133	6,342	[1]	6,342
1955	6,807	0	6,645	162	6,807	[1]	6,807
1956	7,151	0	6,951	201	7,151	[1]	7,151
1957	7,170	0	6,940	229	7,170	[1]	7,170
1958	6,710	0	6,473	236	6,710	[1]	6,710
1959	7,053	1	6,779	274	7,054	[1]	7,054
1960	7,034	2	6,716	319	7,035	[1]	7,035
1961	7,166	17	6,817	365	7,183	[1]	7,183
1962	7,304	28	6,888	444	7,332	[1]	7,332
1963	7,512	29	7,026	515	7,542	[1]	7,542
1964	7,584	30	7,027	587	7,614	[1]	7,614
1965	7,774	30	7,140	665	7,804	[1]	7,804
1966	8,256	39	7,473	823	8,295	[1]	8,295
1967	8,730	80	7,802	1,009	8,810	[1]	8,810
1968	8,915	181	7,808	1,287	8,660	436	9,096
1969	9,035	203	7,797	1,441	8,778	460	9,238
1970	9,408	229	8,060	1,577	9,180	457	9,637
1971	9,245	218	7,779	1,684	9,032	431	9,463
1972	9,242	199	7,780	1,660	8,998	443	9,441
1973	9,010	198	7,592	1,616	8,784	424	9,208
1974	8,581	193	7,285	1,489	8,375	399	8,774
1975	8,183	191	7,012	1,362	8,007	367	8,375
1976	7,958	173	6,868	1,264	7,776	356	8,132
1977	7,781	464	7,069	1,176	7,875	370	8,245
1978	7,478	1,229	7,571	1,136	8,353	355	8,707
1979	7,151	1,401	7,485	1,067	8,181	371	8,552
1980	6,980	1,617	7,562	1,034	8,210	386	8,597
1981	6,962	1,609	7,537	1,034	8,176	395	8,572
1982[2]	6,976	1,695	7,570	1,101	8,290	382	8,671

[1] Included in crude oil.
[2] Preliminary.
Note: Sum of components may not equal total due to independent rounding.
Sources: **Offshore:** •1954 through 1969—U.S. Geological Survey, *Outer Continental Shelf Statistics*, June 1979, p. 98. •1970 through 1975—Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual.* •1976 through 1980—Energy Information Administration, Energy Data Reports, *Petroleum Statement, Annual.* •1981—Energy Information Administration, *Petroleum Supply Annual.* •1982—Energy Information Administration, *Petroleum Supply Monthly* and *Weekly Petroleum Status Report.* **All Other Data:** •1954 through 1975—Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual.* •1976 through 1980—Energy Information Administration, Energy Data Reports, *Petroleum Statement, Annual.* •1981—Energy Information Administration, *Petroleum Supply Annual.* •1982—Energy Information Administration, *Petroleum Supply Monthly.*

Figure 26. Imports of Refined Petroleum Products

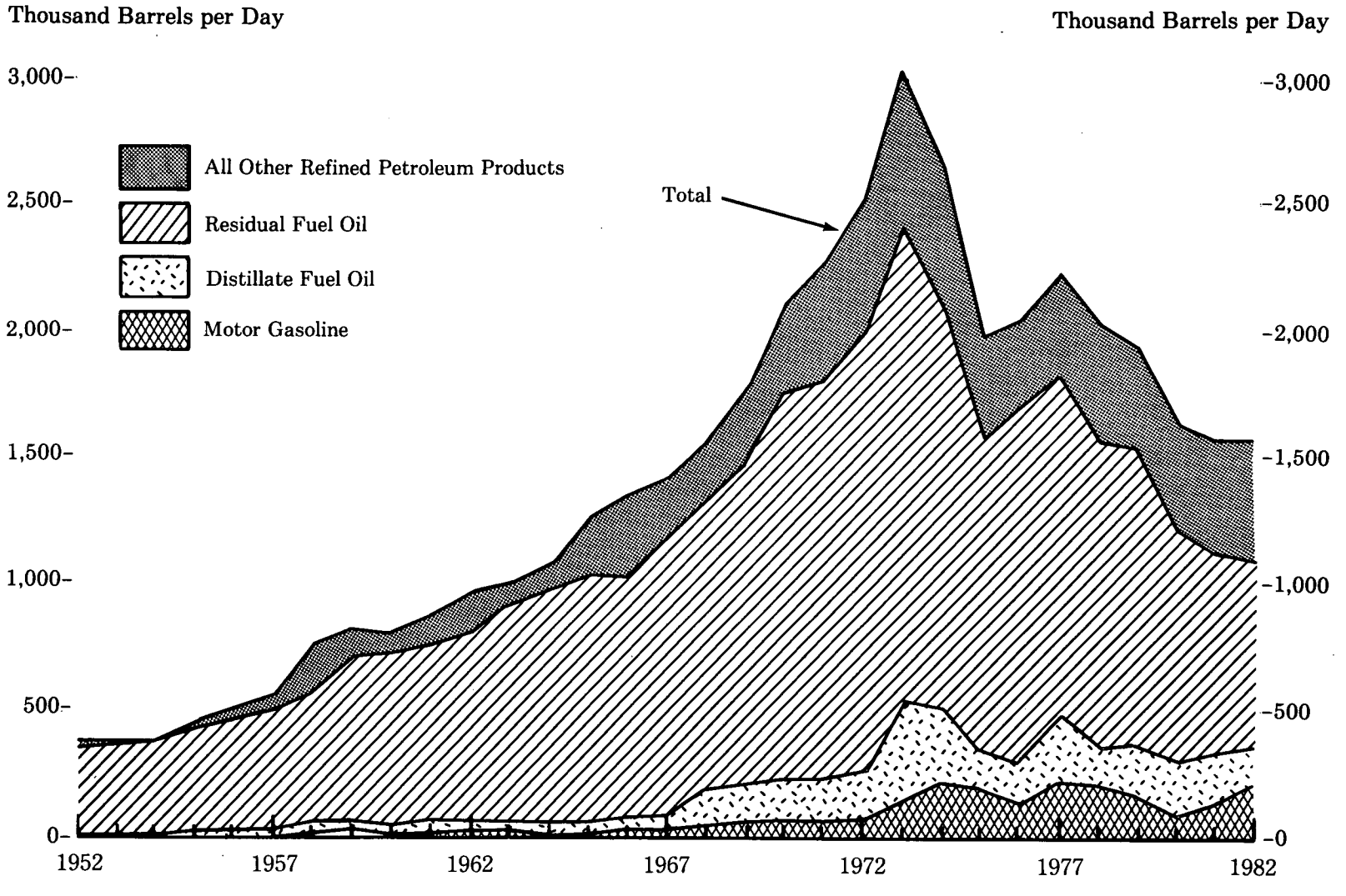


Table 24. Imports[1] of Refined Petroleum Products, 1952-1982

(Thousand Barrels per Day)

Year	Motor Gasoline[2]	Jet Fuel[3]	Distillate Fuel Oil	Residual Fuel Oil	Liquefied Gases[4]	Unfinished Oils	Other Products[5]	Total
1952	5	NA	7	351	0	9	7	380
1953	1	NA	9	360	0	9	7	386
1954	3	NA	9	354	0	21	9	396
1955	13	NA	12	417	0	15	9	466
1956	5	21	14	445	0	7	10	502
1957	8	25	23	475	0	3	18	552
1958	38	57	41	499	0	92	21	747
1959	37	37	48	610	0	63	19	814
1960	27	34	35	637	4	45	17	799
1961	29	28	48	666	5	69	26	872
1962	38	30	32	724	6	89	36	955
1963	44	41	25	747	7	87	41	992
1964	29	33	32	808	11	89	58	1,060
1965	28	81	36	946	21	92	27	1,229
1966	43	86	38	1,032	29	97	24	1,348
1967	42	89	51	1,085	27	97	20	1,409
1968	59	105	132	1,120	32	80	22	1,549
1969	62	125	139	1,265	35	106	25	1,757
1970	67	144	147	1,528	52	108	49	2,095
1971	59	180	153	1,583	70	124	76	2,245
1972	68	194	182	1,742	89	125	126	2,525
1973	134	212	392	1,853	132	137	152	3,012
1974	204	163	289	1,587	123	121	148	2,635
1975	184	133	155	1,223	112	36	108	1,951
1976	131	76	146	1,413	130	32	97	2,026
1977	217	75	250	1,359	161	31	99	2,193
1978	190	86	173	1,355	123	27	53	2,008
1979	181	78	193	1,151	217	59	58	1,937
1980	140	80	142	939	216	55	76	1,646
1981	181	38	173	800	244	112	52	1,599
1982[6]	225	26	93	758	226	137	117	1,581

[1] Includes imports from U.S. possessions and territories.
[2] Includes motor gasoline blending components. Prior to 1964, motor gasoline data were for total gasoline, including motor gasoline, aviation gasoline, and special naphtha.
[3] Prior to 1965, imports of kerosene-type jet fuel were included with kerosene, which is listed under "Other Products."
[4] Includes ethane after 1977.
[5] Includes aviation gasoline, kerosene, petrochemical feedstocks, special naphthas, lubricants, wax, asphalt, natural gasoline, unfractionated stream, plant condensate, aviation gasoline blending components, and miscellaneous products.
[6] Preliminary.
NA = Not available.
Note: Sum of components may not equal total due to independent rounding.
Sources: •1952 through 1975—Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual.* • 1976 through 1980—Energy Information Administration, Energy Data Reports, *Petroleum Statement, Annual.* •1981—Energy Information Administration, *Petroleum Supply Annual.* •1982—Energy Information Administration, *Petroleum Supply Monthly.*

Figure 27. Imports of Petroleum by Country of Origin

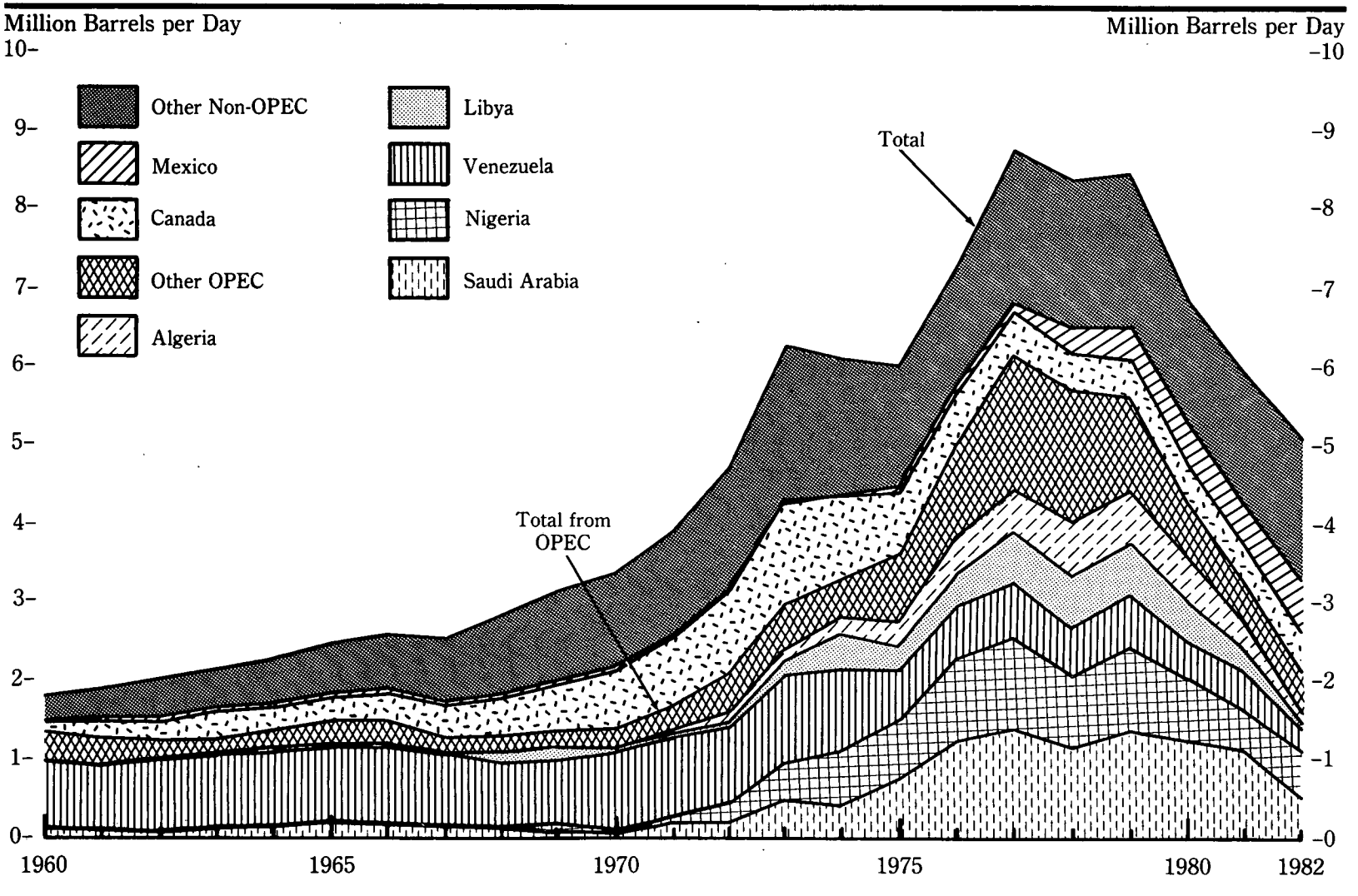


Table 25. Imports of Petroleum by Country of Origin, 1960-1982

(Thousand Barrels per Day)

Year	Algeria	Canada	Indonesia	Iran	Libya	Mexico	Nigeria	Saudi Arabia	United Kingdom	Venezuela	Virgin Is. and Puerto Rico	Other	U.S. Total	Total [1] OPEC [2]	Arab Members of OPEC [1,3]
1960	1	120	77	34	0	16	0	84	(4)	911	36	536	1,815	1,314	292
1961	0	190	62	61	0	40	0	73	1	879	44	568	1,917	1,286	284
1962	0	250	69	49	18	49	0	74	2	906	41	624	2,082	1,265	241
1963	1	265	63	62	19	48	0	108	3	900	44	609	2,123	1,283	258
1964	6	299	68	66	39	47	0	131	(4)	933	47	622	2,259	1,361	293
1965	9	323	63	80	42	48	15	158	(4)	994	47	690	2,468	1,476	324
1966	4	384	53	89	69	45	11	147	6	1,018	61	686	2,573	1,471	300
1967	5	450	66	71	42	49	5	92	11	938	96	713	2,537	1,259	177
1968	6	506	73	61	114	45	9	74	28	886	145	893	2,840	1,302	272
1969	2	608	88	46	135	43	49	65	20	875	189	1,046	3,166	1,336	276
1970	8	766	70	38	47	42	50	30	11	989	271	1,096	3,419	1,343	291
1971	15	857	111	112	58	27	102	128	10	1,020	368	1,117	3,926	1,673	327
1972	92	1,108	164	142	123	21	251	190	9	959	432	1,249	4,741	2,063	530
1973	136	1,325	213	223	164	16	459	486	15	1,135	429	1,656	6,256	2,993	915
1974	190	1,070	300	469	4	8	713	461	8	979	481	1,428	6,112	3,280	752
1975	282	846	390	280	232	71	762	715	14	702	496	1,265	6,056	3,601	1,383
1976	432	599	539	298	453	87	1,025	1,230	31	700	510	1,407	7,313	5,066	2,424
1977	559	517	541	535	723	179	1,143	1,380	126	690	571	1,843	8,807	6,193	3,185
1978	649	467	573	555	654	318	919	1,144	180	645	522	1,738	8,363	5,751	2,963
1979	636	538	420	304	658	439	1,080	1,356	202	690	523	1,610	8,456	5,637	3,056
1980	488	455	348	9	554	533	857	1,261	176	481	476	1,271	6,909	4,300	2,551
1981	311	447	366	0	319	522	620	1,129	375	406	389	1,110	5,996	3,323	1,848
1982[5]	161	476	245	35	25	684	505	548	450	408	364	1,139	5,042	2,113	840

[1] Excludes petroleum imported into the United States indirectly from OPEC countries, primarily from Caribbean and West European areas, as refined petroleum products which were refined from crude oil produced in OPEC countries.

[2] Organization of Petroleum Exporting Countries. See Glossary for membership.

[3] Includes Saudi Arabia, Iraq, Qatar, Libya, United Arab Emirates, Algeria, and Kuwait.

[4] Less than 500 barrels per day.

[5] Preliminary.

Note: Data include imports for the Strategic Petroleum Reserve, which began in 1977.

Note: Sum of components may not equal total due to independent rounding.

Sources: •1960 through 1975—Bureau of Mines, *Minerals Yearbook*, "Crude Petroleum and Petroleum Products" chapter. 1976 through 1980—Energy Information Administration, Energy Data Reports, *P.A.D. Districts Supply/Demand, Annual.* •1981—Energy Information Administration, *Petroleum Supply Annual.* •1982—Energy Information Administration, *Petroleum Supply Monthly.*

Figure 28. Exports of Petroleum by Type

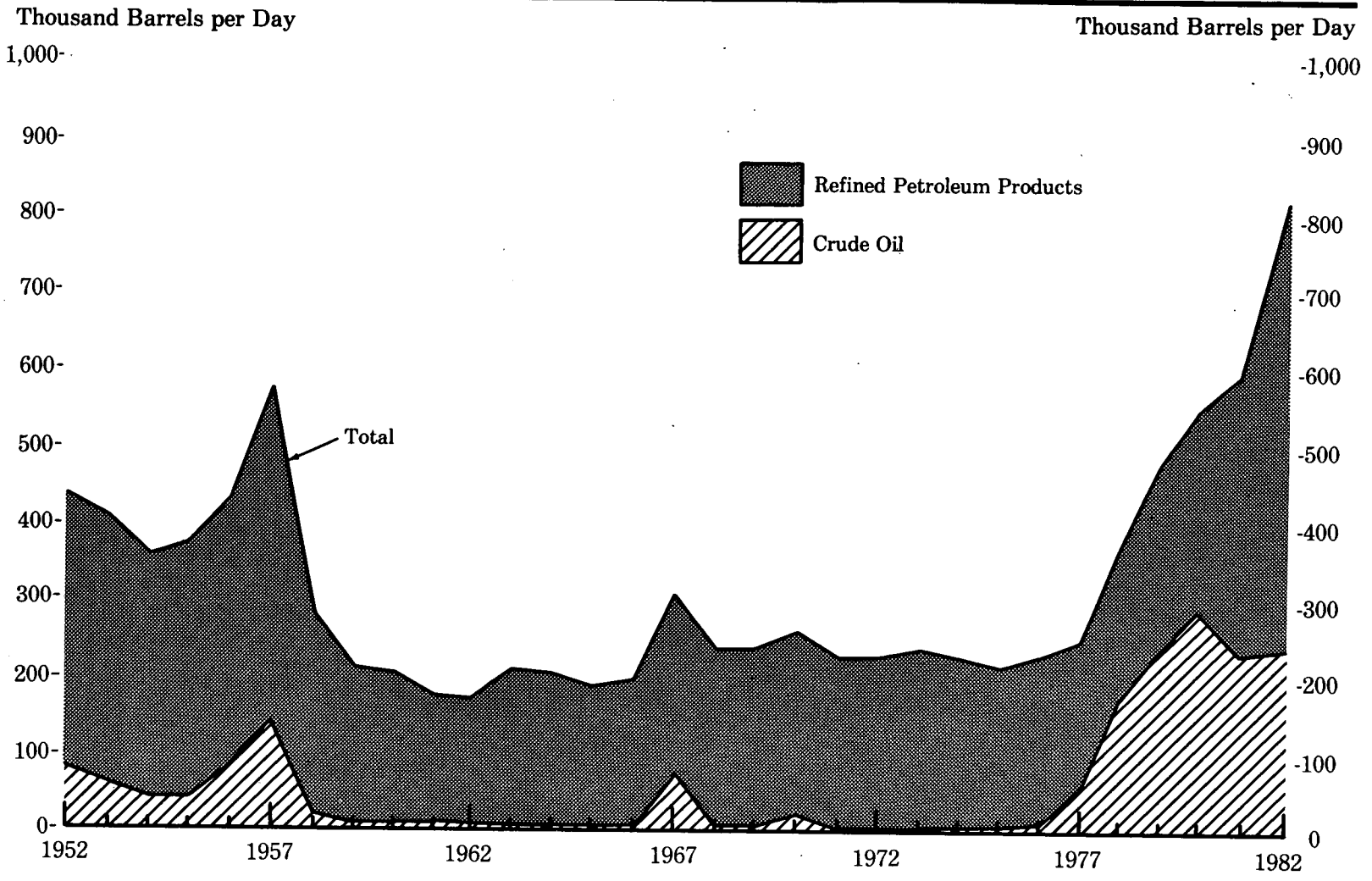


Table 26. Exports[1] of Petroleum by Type, 1952-1982

(Thousand Barrels per Day)

Year	Crude Oil	Refined Petroleum Products							Total Petroleum
		Liquefied Gases[2]	Residual Fuel Oil	Petrochemical Feedstocks	Lubricants	Petroleum Coke	Other Products[3]	Total Refined Products	
1952	73	7	76	0	44	11	222	359	432
1953	55	8	71	0	36	10	222	347	402
1954	37	11	73	0	41	9	184	318	355
1955	32	12	93	0	39	12	180	336	368
1956	78	12	76	0	38	18	209	352	430
1957	138	12	106	0	38	14	260	430	568
1958	12	8	71	0	36	12	138	264	276
1959	7	6	57	0	38	13	90	204	211
1960	8	8	51	0	43	19	73	193	202
1961	9	10	38	0	47	20	50	165	174
1962	5	11	35	0	48	20	49	163	168
1963	5	13	42	0	50	29	69	203	208
1964	4	15	52	0	50	37	45	198	202
1965	3	21	41	5	45	32	40	184	187
1966	4	22	35	7	47	40	43	194	198
1967	73	25	60	8	51	45	45	234	307
1968	5	29	55	8	49	53	32	226	231
1969	4	35	46	11	45	63	29	229	233
1970	14	27	54	10	44	84	25	245	259
1971	1	26	36	14	43	74	29	223	224
1972	1	31	33	13	41	85	19	222	222
1973	2	27	23	19	35	96	29	229	231
1974	3	25	14	15	33	113	18	218	221
1975	6	26	15	22	25	102	14	204	209
1976	8	25	12	30	26	103	19	215	223
1977	50	18	6	24	26	102	15	193	243
1978	158	20	13	23	27	111	10	204	362
1979	235	15	9	31	23	146	12	236	471
1980	287	21	33	29	23	136	14	258	544
1981	228	42	118	26	19	138	24	367	595
1982[4]	236	65	209	24	16	156	109	579	815

[1] Includes exports to U.S. possessions and territories.
[2] Includes ethane in 1981 forward.
[3] Includes aviation gasoline, motor gasoline, jet fuel, distillate fuel oil, kerosene, special naphthas, wax, asphalt, and miscellaneous products.
[4] Preliminary.
Note: Sum of components may not equal total due to independent rounding.
Sources: •1952 through 1975—Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual.* •1976 through 1980—Energy Information Administration, Energy Data Reports, *Petroleum Statement, Annual.* •1981—Energy Information Administration, *Petroleum Supply Annual.* •1982—Energy Information Administration, *Petroleum Supply Monthly.*

Figure 29. Exports of Petroleum by Major Country of Destination

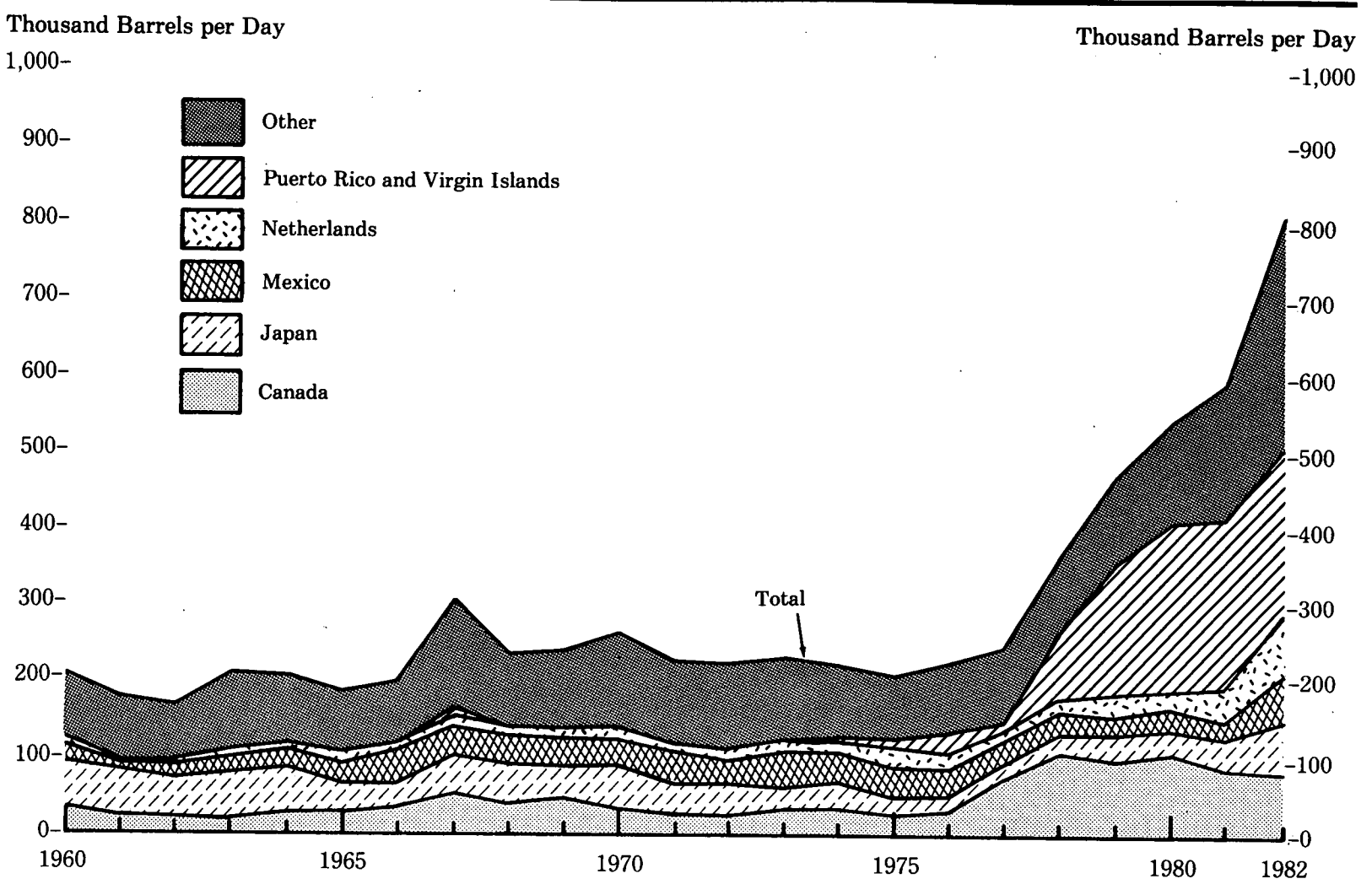


Table 27. Exports of Petroleum by Major Country of Destination, 1960-1982

(Thousand Barrels per Day)

Year	Canada	Japan	Mexico	Netherlands	Belgium[1]	Italy	United Kingdom	France	Brazil	Puerto Rico	Virgin Islands	Other	Total
1960	34	62	18	6	3	6	12	4	4	1	NA	52	202
1961	23	59	12	4	4	5	10	4	4	1	(2)	48	174
1962	21	54	14	5	3	5	8	3	5	1	(2)	50	168
1963	22	58	19	13	9	8	11	4	4	1	(2)	59	208
1964	27	56	24	9	4	8	10	4	4	1	1	55	202
1965	26	40	27	10	3	7	12	3	3	1	1	54	187
1966	32	36	39	9	3	7	12	4	4	3	(2)	49	198
1967	50	51	36	13	5	9	62	3	6	7	(2)	65	307
1968	39	56	31	10	4	8	14	4	8	2	(2)	55	231
1969	44	47	33	9	4	9	13	4	7	2	1	59	233
1970	31	69	33	15	5	10	12	5	7	1	(2)	71	259
1971	26	39	42	11	7	8	9	5	9	3	(2)	67	224
1972	26	32	41	12	13	9	10	5	9	3	(2)	63	222
1973	31	34	44	13	15	9	9	5	8	3	(2)	60	231
1974	32	38	35	17	13	9	6	4	9	4	2	52	221
1975	22	27	42	23	9	10	7	6	6	5	7	44	209
1976	28	25	35	22	12	10	13	6	7	21	1	43	223
1977	71	25	24	17	16	10	9	9	6	6	5	44	243
1978	108	26	27	18	15	10	7	9	8	44	42	47	362
1979	100	34	21	28	19	15	7	13	7	64	106	57	471
1980	108	32	28	23	20	14	7	11	4	86	134	79	544
1981	89	38	26	42	12	22	5	15	1	81	140	124	595
1982[3]	85	68	53	85	17	32	14	24	8	95	116	216	815

[1] Including Luxembourg.
[2] Less than 500 barrels per day.
[3] Preliminary.
NA = Not available.
Note: Sum of components may not equal total due to independent rounding.
Sources: •1960 through 1975—Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual.* •1976 through 1980—Energy Information Administration, Energy Data Reports, *Petroleum Statement, Annual.* •1981—Energy Information Administration, *Petroleum Supply Annual.* •1982—Bureau of the Census, *U.S. Exports by Schedule B Commodities,* EM522; *Shipments of Merchandise from the United States to Puerto Rico, U.S. Virgin Islands, and Shipments from Puerto Rico to the United States,* EM594; and Energy Information Administration, *Petroleum Supply Monthly.*

Figure 30. Refinery Input and Output

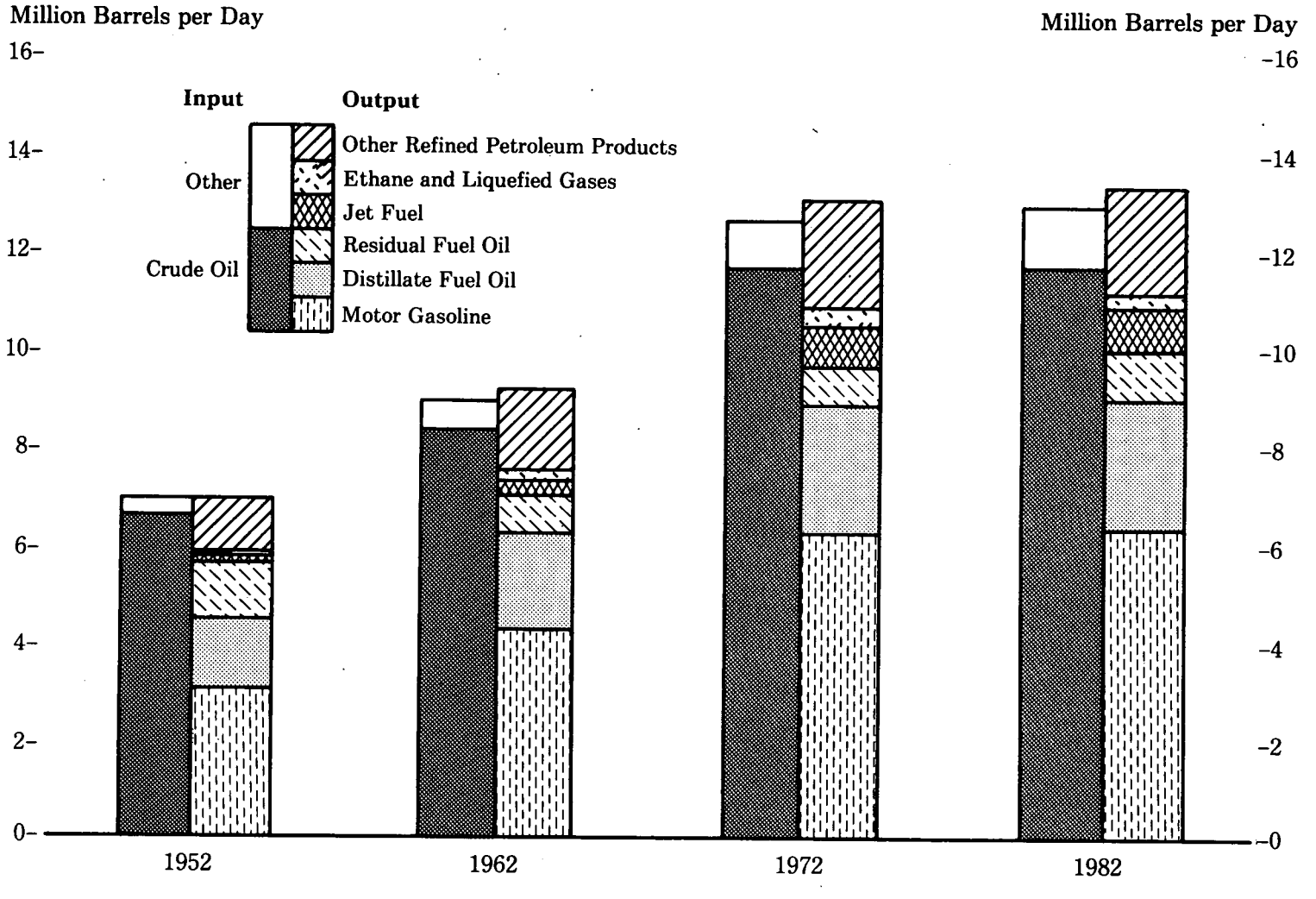


Table 28. Refinery Input and Output, 1952-1982

(Million Barrels per Day)

Year	Input				Output							
	Crude Oil	Natural Gas Plant Liquids	Other Liquids [1]	Total Input	Motor Gasoline [2]	Jet Fuel [2]	Distillate Fuel Oil	Residual Fuel Oil	Ethane and Liquefied Gases	Other Products [3]	Total Output	Processing Gain
1952	6.67	0.28	0.01	6.97	3.12	0.06	1.42	1.24	0.08	1.06	6.97	0.01
1953	7.00	0.30	(4)	7.31	3.38	0.10	1.45	1.23	0.09	1.08	7.33	0.02
1954	6.96	0.32	0.02	7.30	3.38	0.13	1.49	1.14	0.09	1.10	7.32	0.02
1955	7.48	0.34	0.03	7.86	3.65	0.16	1.65	1.15	0.12	1.17	7.89	0.03
1956	7.94	0.37	0.01	8.32	3.82	0.18	1.82	1.17	0.14	1.24	8.36	0.04
1957	7.92	0.41	(4)	8.33	3.88	0.17	1.83	1.14	0.15	1.20	8.37	0.04
1958	7.64	0.37	0.09	8.11	3.87	0.20	1.73	1.00	0.16	1.22	8.17	0.06
1959	7.99	0.42	0.07	8.48	4.04	0.25	1.86	0.95	0.19	1.28	8.57	0.09
1960	8.07	0.45	0.06	8.58	4.13	0.24	1.82	0.91	0.21	1.42	8.73	0.15
1961	8.18	0.46	0.06	8.71	4.15	0.26	1.91	0.86	0.22	1.49	8.89	0.18
1962	8.41	0.50	0.08	8.99	4.30	0.28	1.97	0.81	0.21	1.59	9.16	0.18
1963	8.69	0.52	0.09	9.30	4.39	0.27	2.09	0.76	0.26	1.72	9.50	0.20
1964	8.81	0.58	0.07	9.46	4.37	0.29	2.03	0.73	0.29	1.97	9.68	0.22
1965	9.04	0.62	0.09	9.75	4.51	0.52	2.10	0.74	0.29	1.81	9.97	0.22
1966	9.44	0.65	0.09	10.18	4.77	0.59	2.15	0.72	0.29	1.90	10.43	0.25
1967	9.82	0.67	0.09	10.58	4.94	0.75	2.20	0.76	0.31	1.92	10.87	0.29
1968	10.31	0.71	0.08	11.10	5.20	0.86	2.29	0.75	0.32	1.99	11.42	0.32
1969	10.63	0.72	0.11	11.46	5.47	0.88	2.32	0.73	0.34	2.06	11.79	0.34
1970	10.87	0.76	0.12	11.75	5.70	0.83	2.45	0.71	0.35	2.08	12.11	0.36
1971	11.20	0.78	0.14	12.12	5.97	0.83	2.50	0.75	0.36	2.09	12.50	0.38
1972	11.70	0.83	0.17	12.69	6.28	0.85	2.63	0.80	0.36	2.17	13.08	0.39
1973	12.43	0.82	0.15	13.40	6.53	0.86	2.82	0.97	0.37	2.30	13.85	0.45
1974	12.13	0.75	0.14	13.02	6.36	0.84	2.67	1.07	0.34	2.23	13.50	0.48
1975	12.44	0.71	0.07	13.23	6.52	0.87	2.65	1.24	0.31	2.10	13.68	0.46
1976	13.42	0.73	0.06	14.20	6.84	0.92	2.92	1.38	0.34	2.28	14.68	0.48
1977	14.60	0.67	0.07	15.35	7.03	0.97	3.28	1.75	0.35	2.49	15.87	0.52
1978	14.74	0.64	0.09	15.47	7.17	0.97	3.17	1.67	0.35	2.64	15.97	0.50
1979	14.65	0.51	0.08	15.24	6.84	1.01	3.15	1.69	0.34	2.74	15.76	0.53
1980	13.48	0.46	0.08	14.02	6.49	1.00	2.66	1.58	0.33	2.56	14.62	0.60
1981	12.47	0.52	0.49	13.48	6.40	0.97	2.61	1.32	0.31	2.37	13.99	0.51
1982[5]	11.78	0.52	0.58	12.87	6.34	0.98	2.61	1.06	0.27	2.13	13.40	0.53

[1] Prior to 1981, includes unfinished oils (net), hydrogen, and hydrocarbons not included elsewhere. 1981 forward includes unfinished oils (net), motor gasoline blending components (net), aviation gasoline blending components (net), hydrogen, other hydrocarbons, and alcohol. See Explanatory Note 4.

[2] Prior to 1964, motor gasoline data were for total gasoline, including motor gasoline, aviation gasoline, and special naphtha. Prior to 1965, kerosene-type jet fuel was included in kerosene.

[3] Includes kerosene, petrochemical feedstocks, lubricants, wax, petroleum coke, asphalt, road oil, still gas, and miscellaneous products. Since 1964 aviation gasoline and special naphthas are included.

[4] Less than 5,000 barrels per day.

[5] Preliminary.

Note: Sum of components may not equal total due to independent rounding.

Sources: •1952 through 1975—Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual.* •1976 through 1980—Energy Information Administration, Energy Data Reports, *Petroleum Statement, Annual.* •1981—Energy Information Administration, *Petroleum Supply Annual.* •1982—Energy Information Administration, *Petroleum Supply Monthly.*

Figure 31. Refined Petroleum Products Supplied by Type

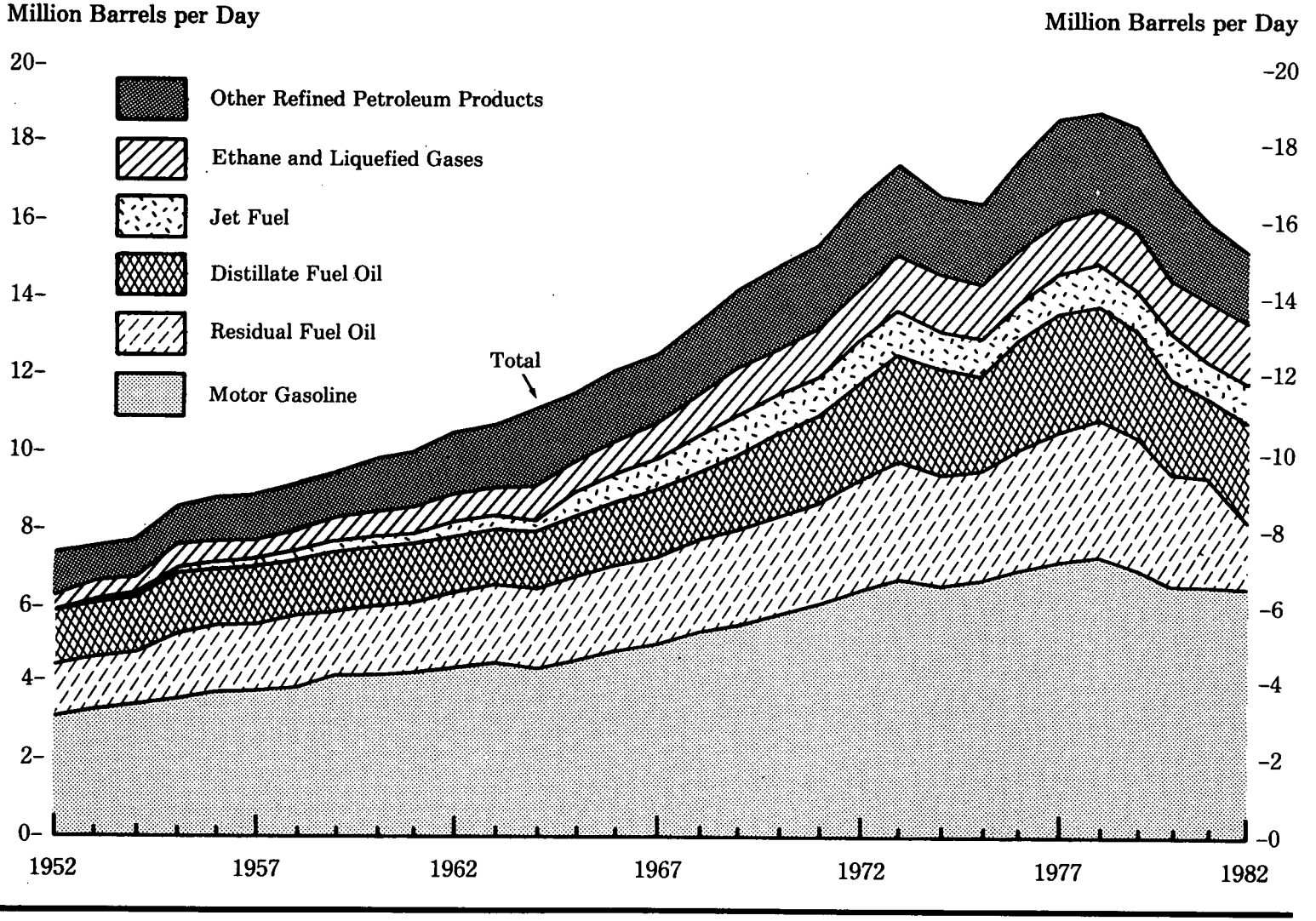


Table 29. Refined Petroleum Products Supplied [1] by Type, 1952-1982

(Million Barrels per Day)

Year	Motor Gasoline [2]	Jet Fuel	Distillate Fuel Oil	Residual Fuel Oil	Ethane and Liquefied Gases	Other Products [3]	Total Products	Percentage Change from Previous Year
1952	3.12	0.05	1.30	1.52	0.30	0.98	7.27	3.9
1953	3.30	0.09	1.34	1.54	0.33	1.00	7.60	4.3
1954	3.37	0.13	1.44	1.43	0.35	1.03	7.76	2.1
1955	3.66	0.15	1.59	1.53	0.40	1.12	8.46	9.0
1956	3.75	0.20	1.68	1.54	0.44	1.16	8.78	4.1
1957	3.82	0.20	1.69	1.50	0.45	1.15	8.81	0.1
1958	3.93	0.26	1.79	1.45	0.49	1.19	9.12	3.5
1959	4.07	0.29	1.81	1.54	0.58	1.24	9.53	4.5
1960	4.13	0.28	1.87	1.53	0.62	1.36	9.80	3.1
1961	4.20	0.29	1.90	1.50	0.64	1.44	9.98	1.5
1962	4.34	0.31	2.01	1.50	0.70	1.55	10.40	4.2
1963	4.47	0.32	2.05	1.48	0.76	1.68	10.74	3.3
1964	4.40	0.32	2.05	1.52	0.81	1.92	11.02	2.9
1965	4.59	0.60	2.13	1.61	0.84	1.74	11.51	4.2
1966	4.81	0.67	2.18	1.72	0.89	1.82	12.08	5.0
1967	4.96	0.82	2.24	1.79	0.94	1.81	12.56	3.9
1968	5.26	0.95	2.39	1.83	1.05	1.91	13.39	6.9
1969	5.53	0.99	2.47	1.98	1.22	1.95	14.14	5.3
1970	5.78	0.97	2.54	2.20	1.22	1.98	14.70	4.0
1971	6.01	1.01	2.66	2.30	1.25	1.98	15.21	3.5
1972	6.38	1.05	2.91	2.53	1.42	2.08	16.37	7.9
1973	6.67	1.06	3.09	2.82	1.45	2.21	17.31	5.5
1974	6.54	0.99	2.95	2.64	1.41	2.13	16.65	-3.8
1975	6.67	1.00	2.85	2.46	1.33	2.00	16.32	-2.0
1976	6.98	0.99	3.13	2.80	1.40	2.16	17.46	7.3
1977	7.18	1.04	3.35	3.07	1.42	2.37	18.43	5.3
1978	7.41	1.06	3.43	3.02	1.41	2.51	18.85	2.3
1979	7.03	1.08	3.31	2.83	1.59	2.67	18.51	-1.8
1980	6.58	1.07	2.87	2.51	1.47	2.57	17.06	-7.6
1981	6.59	1.01	2.83	2.09	1.47	2.08	16.06	-6.1
1982[4]	6.54	1.01	2.68	1.69	1.54	1.80	15.25	-5.0

[1] See Explanatory Notes 4, 5, and 6.

[2] Prior to 1964, motor gasoline data were for total gasoline, including motor gasoline, aviation gasoline, and special naphtha.

[3] Includes kerosene, petrochemical feedstocks, lubricants, wax, petroleum coke, asphalt, road oil, still gas, natural gasoline, unfractionated stream, plant condensate, and miscellaneous products. Since 1964 aviation gasoline and special naphthas are included. Prior to 1965 kerosene-type jet fuel was included in kerosene. 1981 forward, other products include negative barrels per day of distillate and residual fuel oil reclassified as unfinished oils and other products (from both primary and secondary supply) reclassified as gasoline blending components.

[4] Preliminary.

Note: Sum of components may not equal total due to independent rounding.

Sources: •1952 through 1975—Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual.* •1976 through 1980—Energy Information Administration, Energy Data Reports, *Petroleum Statement, Annual.* •1981—Energy Information Administration, *Petroleum Supply Annual.* •1982—Energy Information Administration, *Petroleum Supply Monthly.*

Figure 32. Refined Petroleum Products Supplied to End-Use Sectors

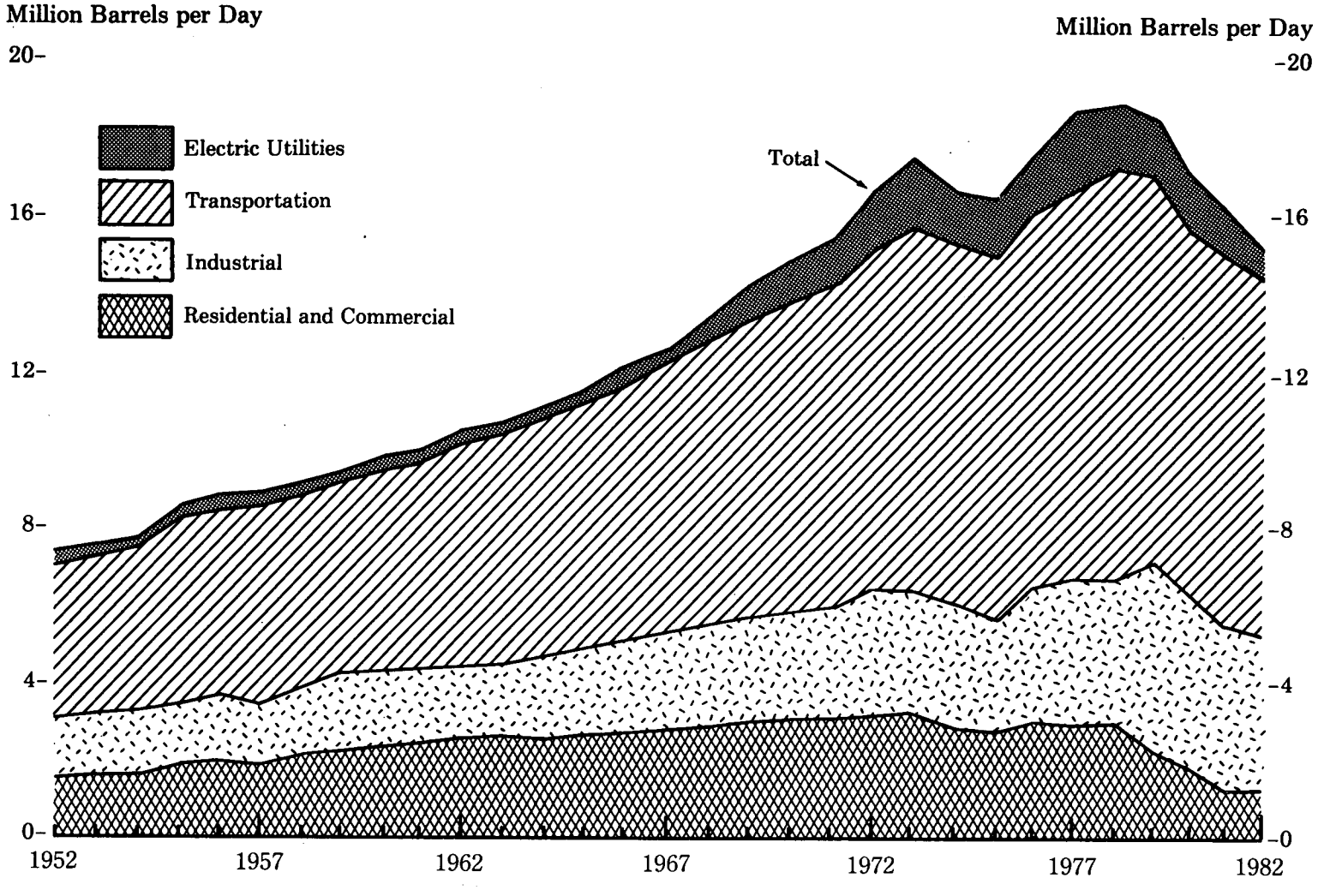


Table 30. Refined Petroleum Products Supplied [1] to End-Use Sectors, 1952-1982

(Million Barrels per Day)

Year	Residential and Commercial	Industrial	Transportation	Electric Utilities	Total
1952	1.20	2.02	3.87	0.18	7.27
1953	1.22	2.08	4.07	0.23	7.60
1954	1.30	2.16	4.11	0.18	7.76
1955	1.40	2.39	4.46	0.21	8.46
1956	1.46	2.49	4.62	0.20	8.78
1957	1.43	2.46	4.70	0.22	8.81
1958	1.53	2.54	4.83	0.21	9.12
1959	1.57	2.71	5.00	0.24	9.53
1960	1.71	2.72	5.13	0.23	9.80
1961	1.76	2.73	5.25	0.23	9.98
1962	1.84	2.85	5.48	0.23	10.40
1963	1.84	2.97	5.68	0.26	10.74
1964	1.79	3.13	5.82	0.28	11.02
1965	1.91	3.26	6.03	0.32	11.51
1966	1.94	3.42	6.34	0.39	12.08
1967	2.02	3.45	6.65	0.44	12.56
1968	2.10	3.59	7.18	0.52	13.39
1969	2.16	3.78	7.51	0.69	14.14
1970	2.18	3.83	7.76	0.93	14.70
1971	2.18	3.87	8.07	1.09	15.21
1972	2.25	4.21	8.54	1.36	16.37
1973	2.23	4.50	9.03	1.54	17.31
1974	2.04	4.32	8.82	1.48	16.65
1975	1.95	4.06	8.93	1.39	16.32
1976	2.12	4.47	9.35	1.52	17.46
1977	2.14	4.85	9.74	1.71	18.43
1978	2.07	4.90	10.13	1.75	18.85
1979	1.73	5.35	9.99	1.44	18.51
1980	1.52	4.85	9.54	1.15	17.06
1981	1.33	4.29	9.47	0.96	16.06
1982[2]	1.27	4.00	9.30	0.69	15.25

[1] See Explanatory Note 5.
[2] Estimated.
Note: Sum of components may not equal total due to independent rounding.
Sources: **Total:** •1952 through 1975—Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual.* •1976 through 1980—Energy Information Administration, Energy Data Reports, *Petroleum Statement, Annual* •1981—Energy Information Administration, *Petroleum Supply Annual.* •1982—Energy Information Administration, *Petroleum Supply Monthly* and *Weekly Petroleum Status Report.* **Other Data:** •1952 through 1959—Energy Information Administration estimates. •1960 through 1981—Energy Information Administration, *State Energy Data Report, 1960 through 1981.* •1982—Estimates of end-use based on 1981 data from the Energy Information Administration, *State Energy Data Report, 1960 through 1981.*

Figure 33. Refined Petroleum Products Supplied by Type and to End-Use Sectors

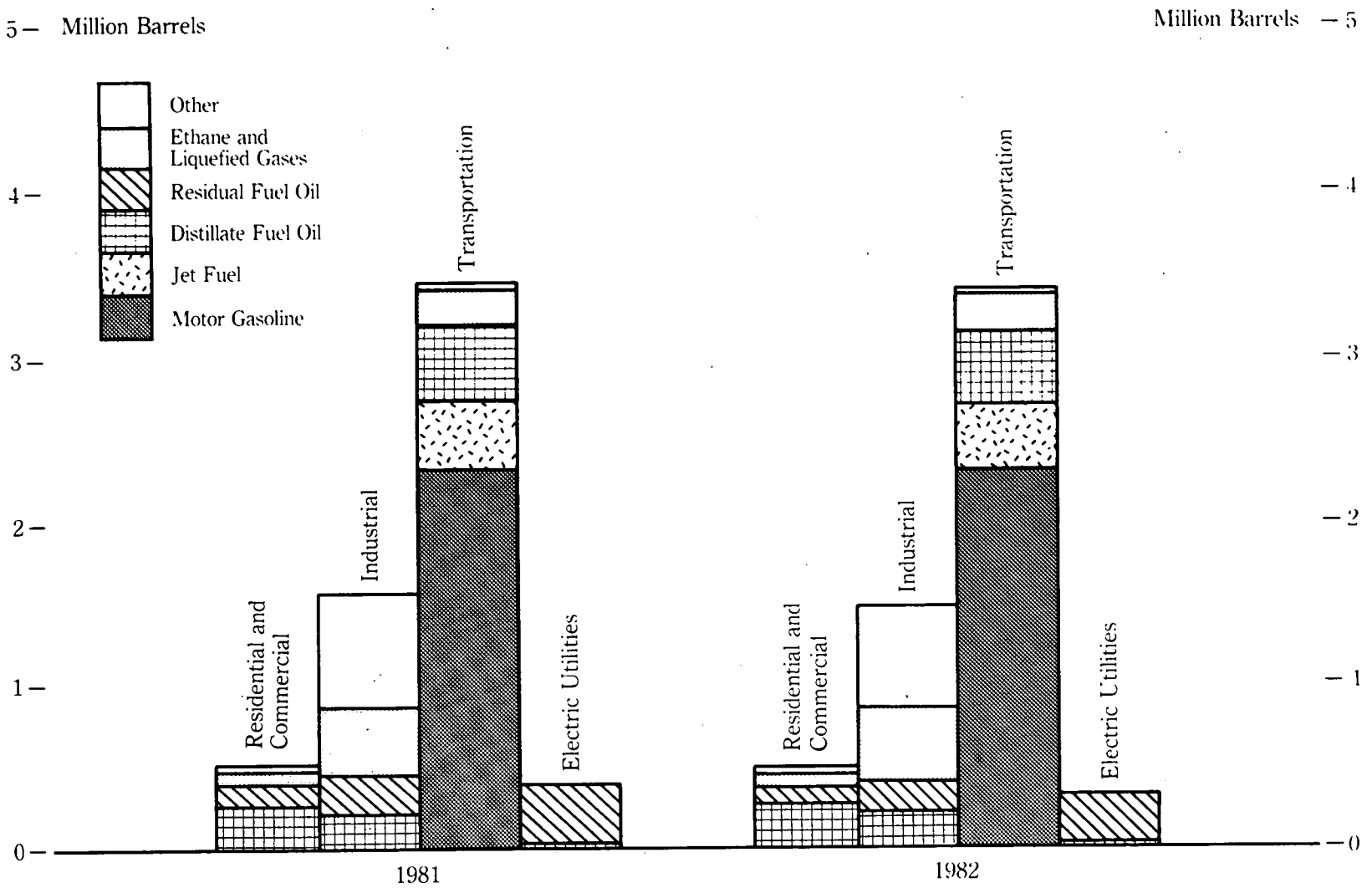


Table 31. Refined Petroleum Products Supplied [1] by Type and to End-Use Sectors, 1981 and 1982

Year and Refined Product	Residential and Commercial		Industrial		Transportation		Electric Utilities		Total	
	Million Barrels	Quadrillion Btu	Million Barrels	Quadrillion Btu	Million Barrels	Quadrillion Btu	Million Barrels	Quadrillion Btu	Million Barrels	Quadrillion Btu
1981										
Asphalt	0	0	124	0.82	0	0	0	0	124	0.82
Aviation Gasoline	0	0	0	0	11	0.06	0	0	11	0.06
Distillate Fuel Oil	275	1.60	238	1.39	498	2.90	21	0.12	1,032	6.01
Jet Fuel	0	0	0	0	367	2.06	1	(2)	368	2.06
Kerosene	27	0.15	19	0.11	0	0	0	0	46	0.26
Liquefied Gases and Ethane	101	0.37	432	1.57	2	0.01	0	0	535	1.95
Lubricants	0	0	29	0.17	27	0.16	0	0	56	0.34
Motor Gasoline	17	0.09	30	0.16	2,357	12.38	0	0	2,404	12.63
Residual Fuel Oil	66	0.42	172	1.08	194	1.22	330	2.07	762	4.79
Road Oil	0	0	1	0.01	0	0	0	0	1	0.01
All Other	0	0	521	3.00	0	0	1	(2)	521	3.00
Total	487	2.63	1,566	8.31	3,456	18.79	352	2.20	5,861	31.93
1982 [3]										
Asphalt	0	0	124	0.83	0	0	0	0	124	0.83
Aviation Gasoline	0	0	0	0	9	0.05	0	0	9	0.05
Distillate Fuel Oil	256	1.49	227	1.32	477	2.78	15	0.09	975	5.68
Jet Fuel	0	0	0	0	367	2.06	(4)	(2)	368	2.06
Kerosene	28	0.16	19	0.11	0	0	0	0	47	0.27
Liquefied Gases and Ethane	106	0.39	455	1.66	2	0.01	0	0	563	2.05
Lubricants	0	0	26	0.16	25	0.15	0	0	51	0.31
Motor Gasoline	17	0.09	30	0.16	2,338	12.28	0	0	2,386	12.53
Residual Fuel Oil	57	0.36	152	0.96	175	1.10	234	1.47	619	3.89
Road Oil	0	0	1	(2)	0	0	0	0	1	(2)
All Other	0	0	424	2.66	0	0	1	(2)	424	2.66
Total	465	2.49	1,459	7.85	3,393	18.42	250	1.57	5,567	30.33

[1] See Explanatory Notes 4, 5, and 6.
[2] Less than 0.005 quadrillion Btu.
[3] Preliminary.
[4] Less than 500,000 barrels.
Note: Sum of components may not equal total due to independent rounding.
Sources: Energy Information Administration, *State Energy Data Report*, annual, and Energy Information Administration estimates.

Figure 34. Primary Stocks of Petroleum by Type, Year-End

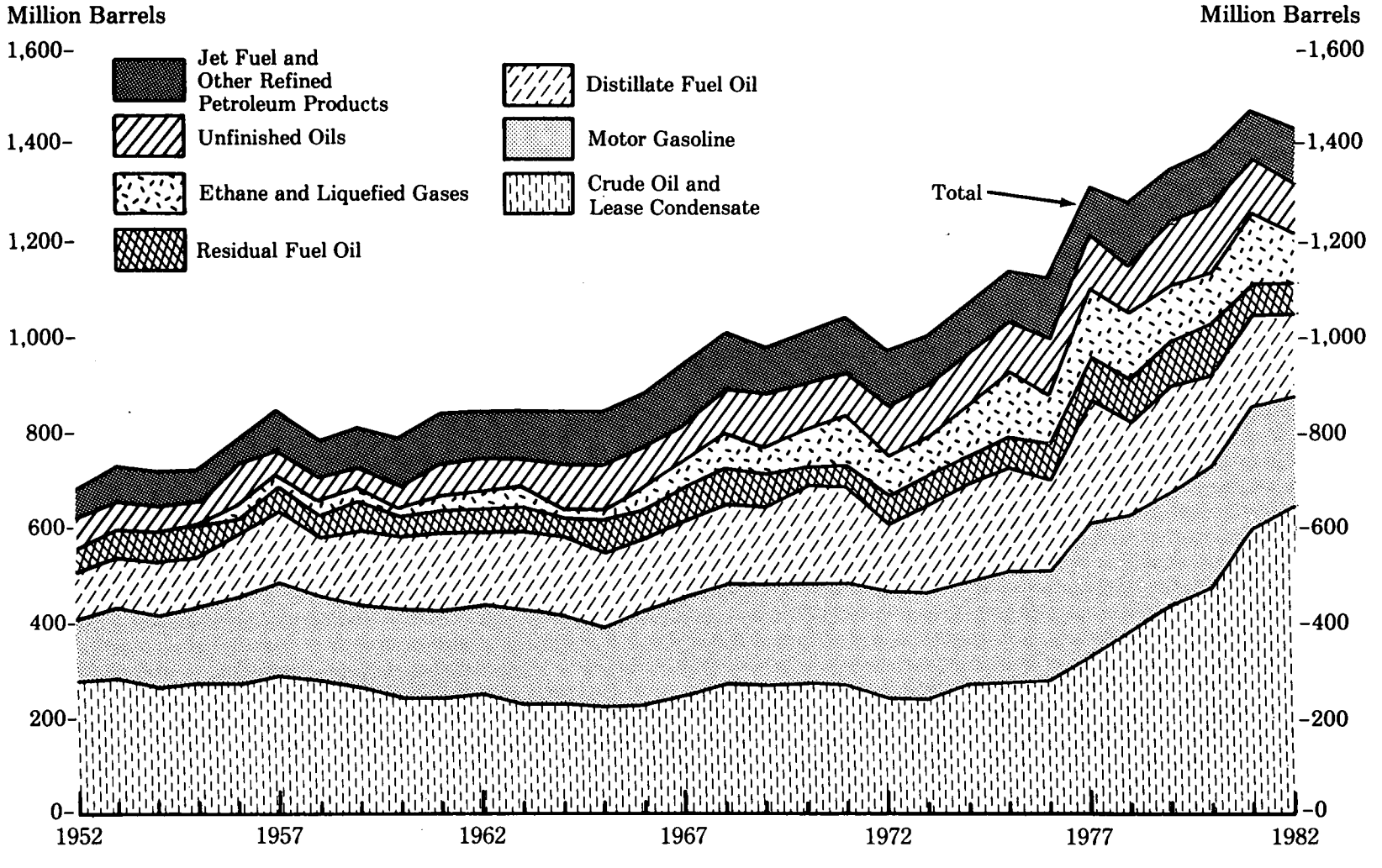


Table 32. Primary Stocks of Petroleum by Type, Year-End 1952-1982
(Million Barrels)

Year	Crude Oil and Lease Condensate [1]	Refined Petroleum Products								Total Petroleum
		Motor Gasoline [2]	Jet Fuel	Distillate Fuel Oil	Residual Fuel Oil	Ethane and Liquefied Gases	Unfinished Oils	Other Products [3]	Total Products	
1952	272	135	2	99	49	3	62	53	402	674
1953	274	158	3	112	49	4	69	56	451	726
1954	258	155	3	108	52	7	74	57	457	715
1955	266	165	3	111	39	7	68	55	449	715
1956	266	187	5	134	44	14	67	63	514	780
1957	282	197	5	149	60	14	69	66	560	841
1958	263	187	6	125	60	16	70	63	526	789
1959	257	188	8	151	54	19	67	66	552	809
1960	240	195	7	138	45	23	62	76	545	785
1961	245	184	8	152	45	31	79	81	580	825
1962	252	189	10	144	50	25	82	83	582	834
1963	237	191	9	157	48	28	82	85	598	836
1964	230	186	19	156	40	30	87	92	609	839
1965	220	175	19	155	56	30	89	92	616	836
1966	238	186	19	154	61	35	89	91	636	874
1967	249	200	22	160	66	64	90	93	695	944
1968	272	204	24	173	67	76	93	89	727	1,000
1969	265	211	28	172	58	60	98	88	715	980
1970	276	209	28	195	54	67	99	89	741	1,018
1971	260	219	28	191	60	95	101	92	784	1,044
1972	246	213	25	154	55	86	95	84	713	959
1973	242	209	29	196	53	99	99	80	766	1,008
1974	265	218	29	200	60	113	106	82	809	1,074
1975	271	235	30	209	74	125	106	82	862	1,133
1976	285	231	32	186	72	116	110	78	826	1,112
1977	348	258	35	250	90	136	113	82	964	1,312
1978	376	238	34	216	90	132	109	82	901	1,278
1979	430	237	39	229	96	111	118	82	911	1,341
1980	466	261	42	205	92	120	124	82	926	1,392
1981	594	253	41	192	78	135	111	80	890	1,484
1982[4]	642	235	37	179	66	95	105	70	787	1,429

[1] Includes crude oil stored in the Strategic Petroleum Reserve, which began in 1977.
[2] Includes motor gasoline blending components. Prior to 1964, motor gasoline data were for total gasoline which included motor gasoline, aviation gasoline, and special naphthas.
[3] Includes kerosene, petrochemical feedstocks, lubricants, wax, petroleum coke, asphalt, road oil, natural gasoline, unfractionated stream, plant condensate, and miscellaneous products. Since 1964 aviation gasoline and special naphthas are included. 1981 forward, other products include stocks of aviation gasoline blending components, hydrogen, other hydrocarbons, and alcohol.
[4] Preliminary.
Note: Sum of components may not equal total due to independent rounding.
Sources: •1952 through 1975—Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual.* •1976 through 1980—Energy Information Administration, Energy Data Reports, *Petroleum Statement, Annual.* •1981—Energy Information Administration, *Petroleum Supply Annual.* •1982—Energy Information Administration, *Petroleum Supply Monthly.*

Figure 35. Strategic Petroleum Reserve, Quarterly

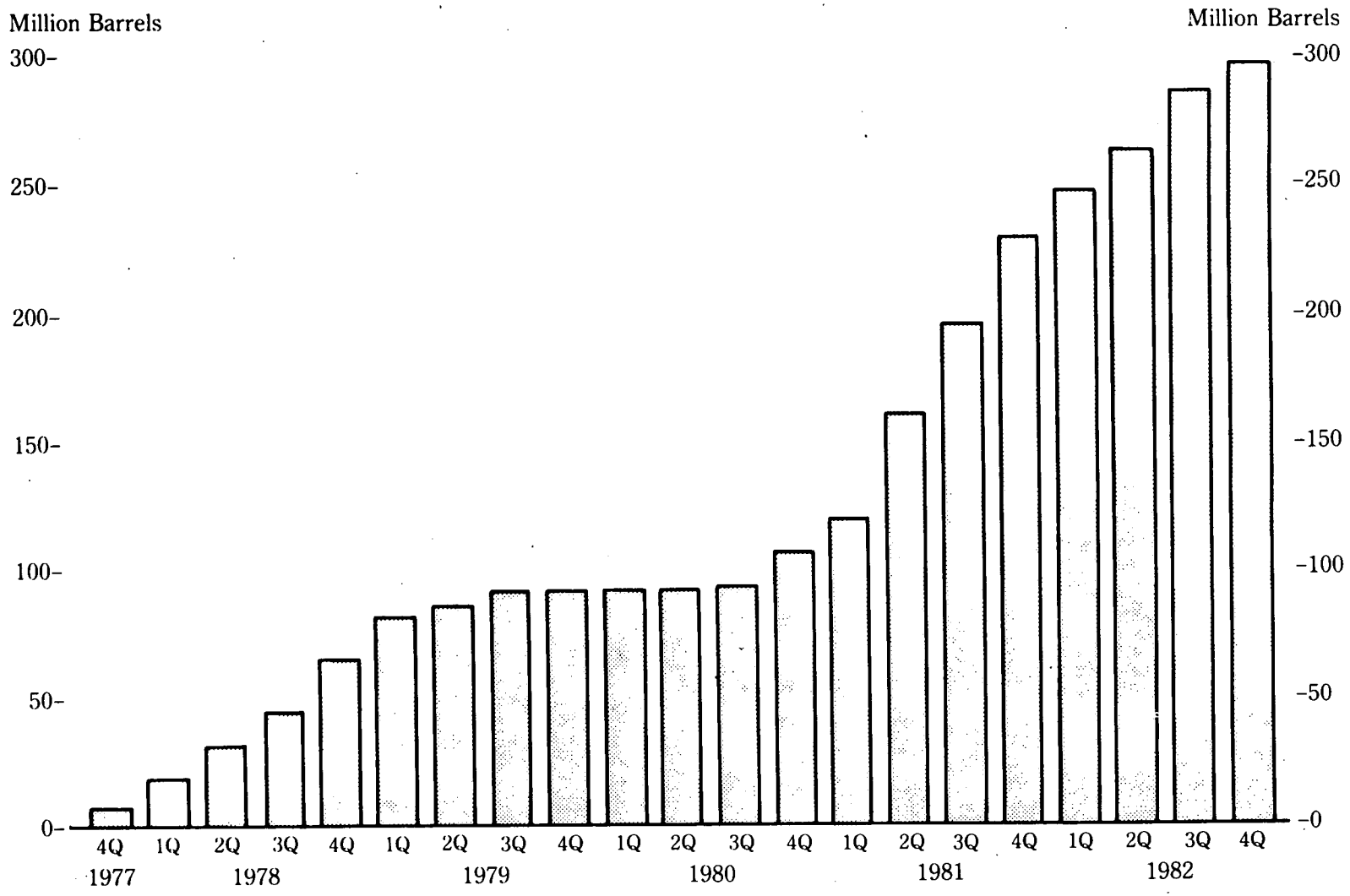


Table 33. Strategic Petroleum Reserve, Quarterly — Fourth Quarter 1977 through Fourth Quarter 1982

(Million Barrels)

Year/Quarter	Crude Oil Imports	Domestic Crude Oil Deliveries	End of Quarter Stocks
1977			
Fourth Quarter [1]	7.54	[2] 0.37	7.46
1978			
First Quarter	10.70	0	18.44
Second Quarter	11.76	0	30.14
Third Quarter	17.22	0	47.09
Fourth Quarter	19.28	0	66.86
1979			
First Quarter	15.12	0	82.50
Second Quarter	6.94	0	88.57
Third Quarter	2.37	0	91.19
Fourth Quarter	0	[3]	91.19
1980			
First Quarter	0	0	91.19
Second Quarter	0	0	91.19
Third Quarter	1.62	0	92.82
Fourth Quarter	14.45	1.30	107.80
1981			
First Quarter	9.85	2.13	120.86
Second Quarter	29.66	12.22	163.08
Third Quarter	26.45	11.52	199.25
Fourth Quarter	27.33	2.92	230.34
1982			
First Quarter	15.47	3.28	248.54
Second Quarter	15.15	0.44	264.14
Third Quarter	13.65	0.16	277.88
Fourth Quarter	15.92	0	293.83

[1] Foreign crude oil receipts for the Strategic Petroleum Reserve began in July 1977; however, these receipts went into bonded storage and were not considered an import until October 1977 when they were withdrawn from bonded storage.

[2] The quantity of domestic fuel oil which was in storage prior to injection of foreign crude oil. Stocks do not include imported quantities in transit to Strategic Petroleum Reserve terminals, pipeline fill, and above-ground storage.

[3] Less than 0.005 million barrels.

Sources: • 1977 through 1980 — Energy Information Administration, Energy Data Report, *Petroleum Statement, Annual.* • 1981 — Energy Information Administration, *Petroleum Supply Annual.* • 1982 — Energy Information Administration, *Petroleum Supply Monthly.*

Figure 36. International Petroleum Supply and Disposition, 1980
(Million Barrels per Day)

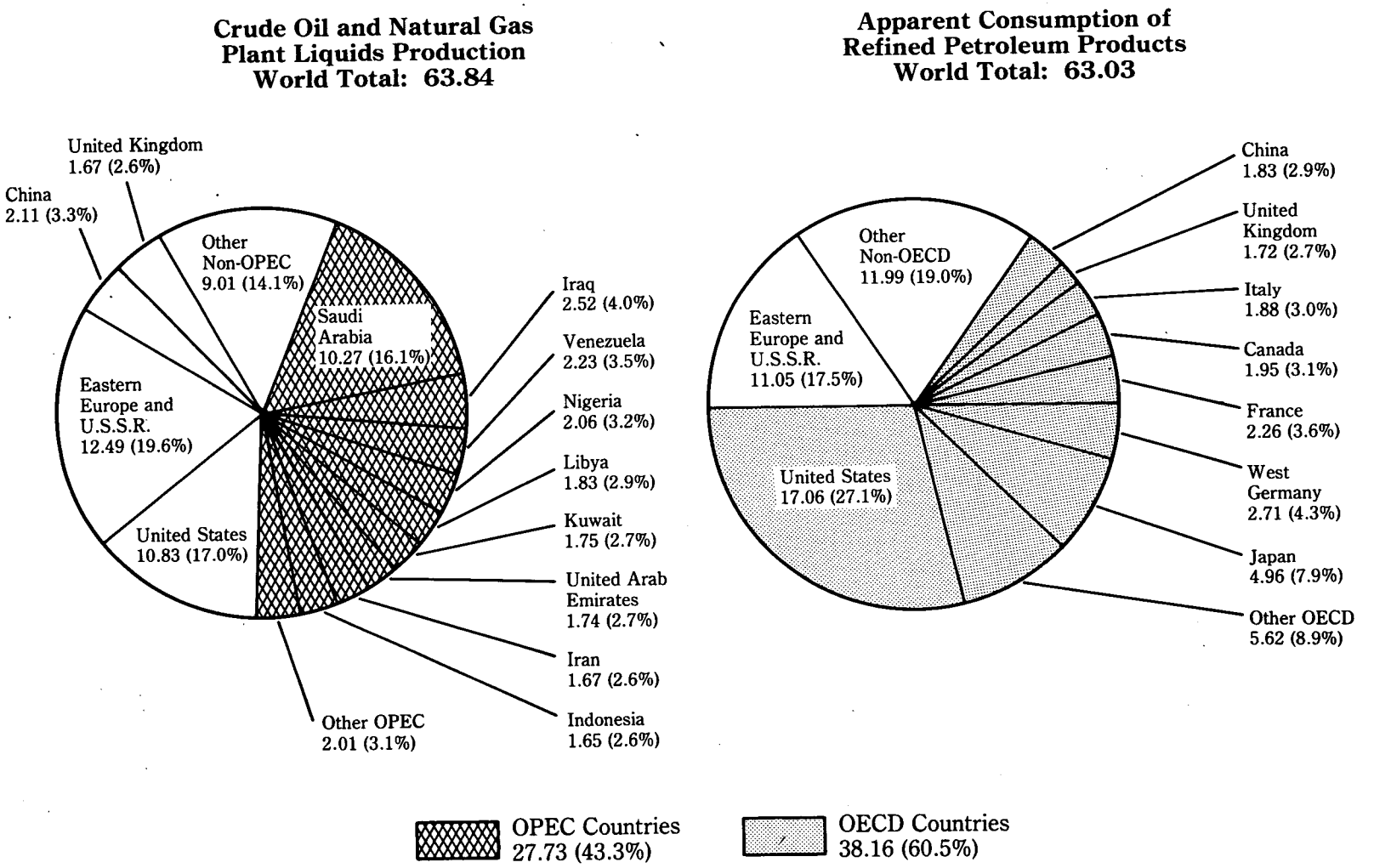


Table 34. International Petroleum Supply and Disposition, 1980

(Thousand Barrels per Day)

Area and Country	Supply				Disposition			
	Crude Oil [1] Production	Natural Gas Plant Liquids Production	Crude Oil Imports	Refined Petroleum Product Imports	Crude Oil Exports	Refined Petroleum Product Exports	Apparent Consumption [2]	International Bunkers
North America								
Canada	[3] 1,435	329	554	43	205	127	1,947	28
Mexico	1,936	193	0	15	828	46	1,222	1
United States	[4] 9,259	1,573	5,263	1,646	287	258	17,056	532
Other	0	0	0	12	0	0	12	4
Total	12,630	2,095	5,817	1,716	1,320	431	20,237	564
Central and South America								
Argentina	491	13	43	17	0	31	499	8
Bahama Islands	0	0	246	16	27	155	46	15
Brazil	[5] 221	6	869	39	1	24	1,164	21
Chile	33	12	64	(6)	0	2	107	2
Colombia	126	6	20	36	0	26	184	5
Cuba	2	1	124	63	0	0	196	0
Ecuador	204	2	0	13	110	22	84	5
Netherlands Antilles	0	0	623	39	20	489	137	44
Panama Republic	0	0	42	44	0	8	78	53
Peru	195	3	0	1	57	20	129	2
Puerto Rico	0	0	232	115	0	63	299	3
Trinidad and Tobago	211	5	144	1	136	175	61	18
Venezuela	2,168	60	0	3	1,286	536	337	15
Virgin Islands	0	0	546	19	0	385	117	19
Other	32	5	168	117	1	11	309	8
Total	3,683	113	3,120	521	1,638	1,947	3,747	218
Western Europe								
Austria	28	1	171	58	0	3	232	(6)
Belgium and Luxembourg	0	0	680	220	(6)	358	543	49
Denmark	6	0	123	178	9	36	290	20
Finland	0	0	259	58	0	42	271	16
France	26	26	2,237	367	0	333	2,256	61
Germany, West	92	0	2,004	830	1	151	2,707	80
Greece	0	0	365	123	63	155	262	30
Ireland	0	0	43	82	0	4	119	6
Italy	38	1	1,807	405	0	246	1,876	71
Netherlands	25	6	1,026	378	(6)	808	727	154
Norway	528	40	129	55	475	26	200	6
Portugal	0	0	162	22	0	22	154	0
Spain	33	0	970	87	0	45	990	17
Sweden	0	0	362	275	2	93	527	16
Switzerland	0	0	92	210	0	1	307	15

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Table 34. International Petroleum Supply and Disposition, 1980 (Continued)

(Thousand Barrels per Day)

Area and Country	Supply				Disposition			
	Crude Oil [1] Production	Natural Gas Plant Liquids Production	Crude Oil Imports	Refined Petroleum Product Imports	Crude Oil Exports	Refined Petroleum Product Exports	Apparent Consumption [2]	International Bunkers
Western Europe (continued)								
Turkey	46	0	209	62	0	5	314	3
United Kingdom	1,622	45	903	196	771	299	1,725	110
Yugoslavia	86	2	223	19	0	12	301	0
Other	0	0	0	19	0	0	19	2
Total	2,530	121	11,763	3,650	1,321	2,642	13,826	654
Eastern Europe and U.S.S.R.								
Albania	44	0	0	(*)	0	1	46	0
Bulgaria	6	0	260	38	0	3	306	0
Czechoslovakia	2	0	384	27	0	11	391	0
Germany, East	1	0	438	1	0	47	388	0
Hungary	38	20	166	36	0	15	244	0
Poland	7	1	328	91	0	32	387	1
Romania	238	14	321	1	0	194	374	0
U.S.S.R.	11,773	343	139	15	2,430	926	8,914	82
Total	12,109	378	2,036	209	2,430	1,230	11,050	83
Africa								
Algeria	1,012	137	0	36	998	151	111	2
Angola	150	0	0	3	152	2	20	7
Egypt	595	17	0	1	310	30	247	28
Gabon	175	0	0	5	151	17	16	2
Kenya	0	0	63	6	0	17	62	9
Libya	1,787	40	0	35	1,691	85	85	3
Morocco	1	0	92	6	0	6	89	7
Nigeria	2,055	0	0	20	1,960	9	148	2
South Africa, Republic of	0	0	316	19	0	3	312	60
Tunisia	110	0	20	14	97	3	43	2
Other	146	0	194	171	153	42	324	25
Total	6,031	194	685	316	5,512	365	1,457	147

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Table 34. International Petroleum Supply and Disposition, 1980 (Continued)

(Thousand Barrels per Day)

Area and Country	Supply				Disposition			
	Crude Oil [1] Production	Natural Gas Plant Liquids Production	Crude Oil Imports	Refined Petroleum Product Imports	Crude Oil Exports	Refined Petroleum Product Exports	Apparent Consumption [2]	International Bunkers
Middle East								
Bahrain	48	8	192	0	0	225	29	9
Iran	1,662	9	0	1	897	106	570	24
Iraq	2,514	8	0	(6)	2,459	26	217	2
Israel	1	0	152	29	0	11	170	0
Kuwait	1,656	95	0	0	1,261	251	106	36
Oman	282	0	0	8	279	0	8	0
Qatar	472	10	0	5	466	0	15	1
Saudi Arabia	9,900	369	0	33	9,276	538	500	86
Syria	164	0	83	39	133	13	138	0
United Arab Emirates	1,709	35	0	42	1,704	2	55	3
Other	0	0	129	32	0	19	142	23
Total	18,408	534	555	188	16,474	1,190	1,949	185
Far East and Oceania								
Australia	380	60	183	74	2	84	594	41
Brunei	235	35	0	1	240	0	4	0
China	2,114	NA	0	3	280	48	1,834	0
Hong Kong	0	0	0	128	0	4	124	27
India	182	0	325	138	0	2	643	3
Indonesia	1,577	70	89	182	1,237	135	408	6
Japan	10	1	4,414	683	0	12	4,960	183
Korea, South	0	0	499	38	0	(6)	537	4
Malaysia	283	0	74	34	227	6	134	4
New Zealand	7	1	55	27	0	(6)	91	11
Pakistan	10	0	79	33	0	18	94	7
Philippines	15	0	179	40	1	2	225	3
Singapore	0	0	713	72	2	567	218	80
Taiwan	5	2	364	63	0	18	415	10
Thailand	(6)	0	169	66	0	(6)	224	3
Other	30	0	131	134	1	24	261	38
Total	4,848	169	7,274	1,716	1,990	920	10,766	420
World Total	60,239	3,604	31,249	8,316	30,685	8,725	63,033	2,271

[1] Data include lease condensate.

[2] Data represent apparent consumption, which includes domestic consumption, refinery fuel and loss, and international bunkering. Apparent consumption is either an actual figure or is derived from the components of refined product output, plus imports, minus exports with no allowance for stock changes. Also includes, where available, liquefied petroleum gases sold directly for fuel and chemical uses from natural gas processing plants.

[3] Includes 137,000 barrels per day of synthetic crude oil processed from Athabasca tarsands.

[4] Includes 662,000 barrels per day of refinery processing gain and other hydrocarbon inputs to refineries.

[5] Includes 39,000 barrels per day of ethyl alcohol.

[6] Denotes less than 500 barrels per day.

NA = Not available.

Note: Sum of components may not equal total due to independent rounding.

Source: Energy Information Administration, *1981 International Energy Annual.*

Figure 37. International Production of Crude Oil

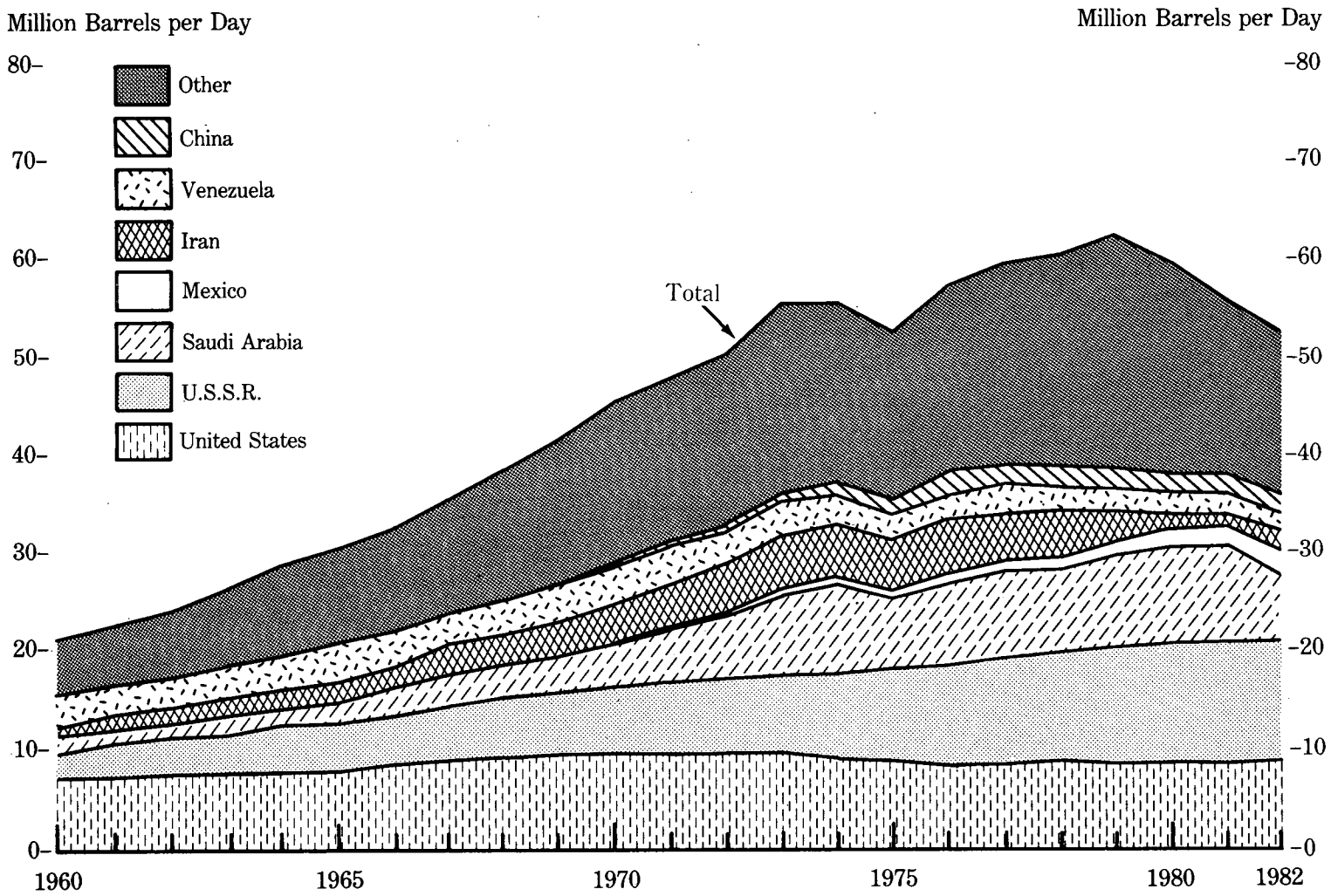


Table 35. International Production of Crude Oil,[1] 1960-1982

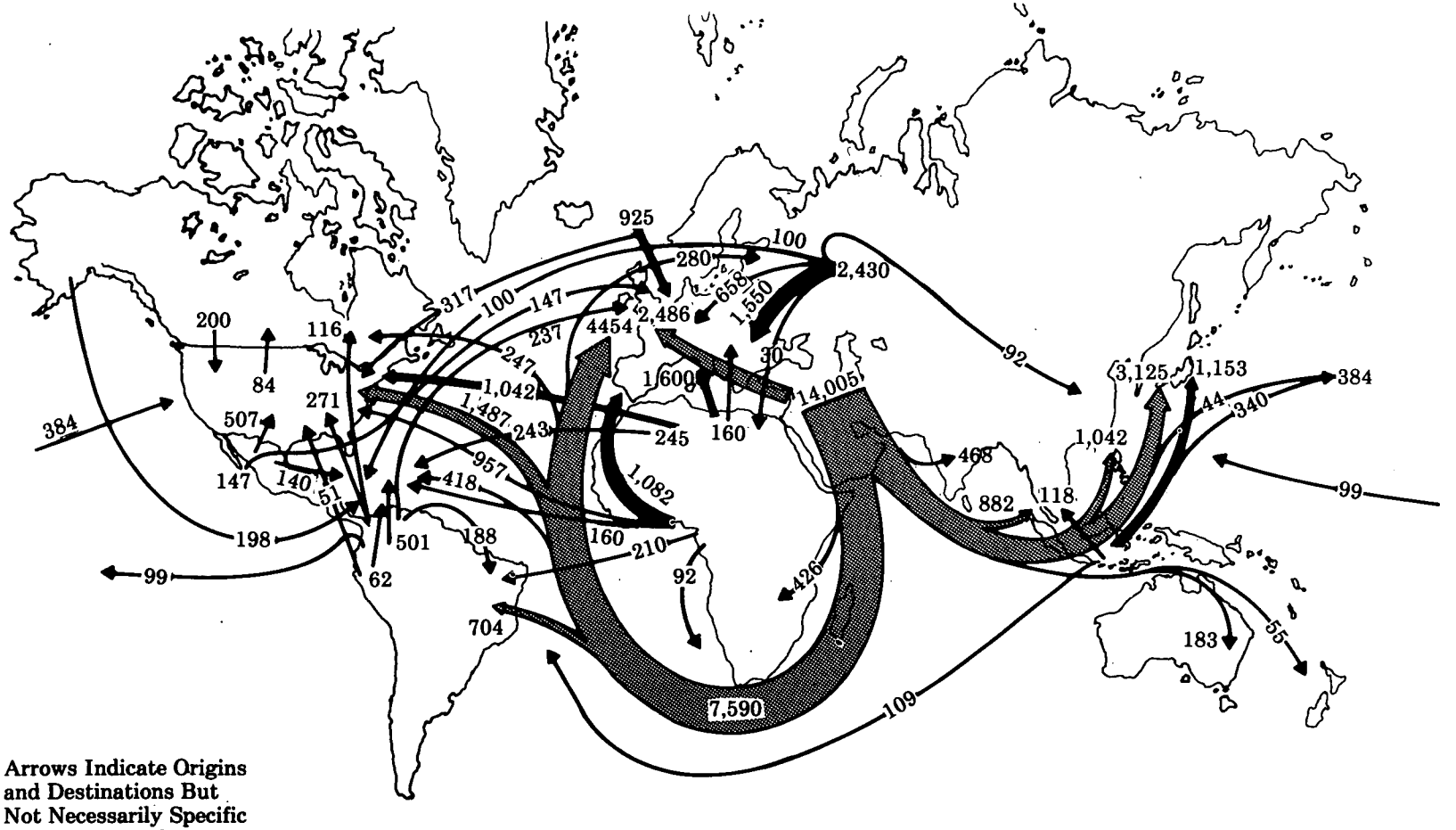
(Million Barrels per Day)

Year	China	Indonesia	Iran	Iraq	Kuwait[2]	Libya	Mexico	Nigeria	Saudi Arabia[2]	United Kingdom	United States	U.S.S.R.	Venezuela	Other	Total World	OPEC[4]
1960	0.10	0.41	1.07	0.97	1.69	(3)	0.27	0.02	1.31	(3)	7.04	2.91	2.85	2.32	20.96	8.70
1961	0.11	0.42	1.20	1.01	1.74	0.02	0.29	0.05	1.48	(3)	7.18	3.28	2.92	2.73	22.43	9.36
1962	0.12	0.45	1.34	1.01	1.96	0.18	0.31	0.07	1.64	(3)	7.33	3.67	3.20	3.04	24.32	10.51
1963	0.13	0.44	1.49	1.16	2.10	0.44	0.32	0.08	1.79	(3)	7.54	4.07	3.25	3.32	26.13	11.51
1964	0.18	0.46	1.71	1.26	2.30	0.86	0.32	0.12	1.90	(3)	7.61	4.60	3.39	3.65	28.30	12.98
1965	0.23	0.48	1.91	1.31	2.36	1.22	0.32	0.27	2.21	(3)	7.80	4.79	3.47	3.92	30.30	14.34
1966	0.29	0.47	2.13	1.39	2.48	1.50	0.33	0.42	2.60	(3)	8.30	5.23	3.37	4.41	32.93	15.77
1967	0.28	0.51	2.60	1.23	2.50	1.74	0.37	0.32	2.81	(3)	8.81	5.68	3.54	4.99	35.37	16.85
1968	0.30	0.60	2.84	1.50	2.61	2.60	0.39	0.14	3.04	(3)	9.10	6.08	3.61	5.82	38.64	18.79
1969	0.48	0.75	3.38	1.52	2.77	3.11	0.46	0.54	3.22	(3)	9.24	6.48	3.59	6.21	41.69	20.91
1970	0.60	0.85	3.83	1.55	2.99	3.32	0.49	1.08	3.80	(3)	9.64	6.97	3.71	6.46	45.29	23.41
1971	0.78	0.89	4.54	1.69	3.20	2.76	0.49	1.53	4.77	(3)	9.46	7.44	3.55	6.73	47.84	25.33
1972	0.90	1.08	5.02	1.47	3.28	2.24	0.51	1.82	6.02	(3)	9.44	7.88	3.22	7.37	50.26	27.09
1973	1.09	1.34	5.86	2.02	3.02	2.18	0.47	2.05	7.60	(3)	9.21	8.47	3.37	8.99	55.67	30.99
1974	1.32	1.38	6.02	1.97	2.55	1.52	0.57	2.26	8.48	(3)	8.77	9.00	2.98	9.03	55.85	30.73
1975	1.49	1.31	5.35	2.26	2.08	1.48	0.71	1.78	7.08	0.01	8.38	9.63	2.35	8.97	52.88	27.16
1976	1.67	1.50	5.88	2.42	2.15	1.93	0.83	2.07	8.58	0.25	8.13	10.14	2.29	9.47	57.31	30.74
1977	1.87	1.69	5.66	2.35	1.97	2.06	0.98	2.09	9.25	0.77	8.25	10.68	2.24	9.83	59.69	31.30
1978	2.08	1.64	5.24	2.56	2.13	1.98	1.21	1.90	8.30	1.08	8.71	11.19	2.17	9.86	60.06	29.81
1979	2.12	1.59	3.17	3.48	2.50	2.09	1.46	2.30	9.53	1.57	8.55	11.46	2.36	10.36	62.54	30.93
1980	2.11	1.58	1.66	2.51	1.66	1.79	1.94	2.06	9.90	1.62	8.60	11.77	2.17	10.17	59.54	26.89
1981	2.01	1.61	1.38	1.00	1.13	1.14	2.31	1.43	9.82	1.81	8.57	11.91	2.10	9.57	55.79	22.64
1982[5]	2.02	1.33	2.11	1.01	0.82	1.04	2.70	1.30	6.70	2.09	8.67	11.94	1.80	9.31	52.84	18.72

[1] Includes lease condensate, excludes natural gas plant liquids.
[2] Saudi Arabia and Kuwait each include one-half of the production in the Partitioned Zone (formerly Neutral Zone).
[3] Less than 5,000 barrels per day.
[4] Organization of Petroleum Exporting Countries. See Glossary for membership.
[5] Average for January through October.
Note: Sum of components may not equal total due to independent rounding.

Sources: **China** •1960 through 1972—Central Intelligence Agency, unpublished data. •1973 through 1981—Energy Information Administration, *1981 International Energy Annual.* •1982—Energy Information Administration, *Monthly Energy Review.* **United States** •1960 through 1975—Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual.* •1976 through 1980—Energy Information Administration, Energy Data Reports, *Petroleum Statement, Annual.* •1981—Energy Information Administration, *Petroleum Supply Annual.* •1982—Energy Information Administration, *Monthly Energy Review.* **U.S.S.R.:** •1960 through 1972—USSR Central Statistical Office, *Narodnoye Khozyaystvo SSSR* (National Economy USSR). •1973 through 1981—Energy Information Administration, *1981 International Energy Annual* •1982—Energy Information Administration, *Monthly Energy Review.* **OPEC Nations:** •1960 through 1972—Organization of Petroleum Exporting Countries, *Annual Statistical Bulletin 1980.* •1973 through 1980—Energy Information Administration, *1981 International Energy Annual.* •1981 and 1982—Energy Information Administration, *Monthly Energy Review.* **All other countries:** •1960 through 1969—Bureau of Mines, *International Petroleum Annual, 1969.* •1970 through 1972—Energy Information Administration, *International Petroleum Annual, 1978* •1973 through 1981—Energy Information Administration, *1981 International Energy Annual.* •1982—Energy Information Administration, *Monthly Energy Review.*

Figure 38. International Crude Oil Flow, 1980
(Thousand Barrels per Day)



Arrows Indicate Origins and Destinations But Not Necessarily Specific Routes. Several Minor Routes Are Not Displayed.

Table 36. International Crude Oil Flow, 1980

(Thousand Barrels per Day)

Exporting Area and Country	Importing Area or Country										
	North America		Central and South America		Western Europe				Far East and Oceania		
	United States	Canada	Caribbean Area	Other	Via Atlantic Ocean and North Sea	Via Mediterranean Sea	Eastern Europe	Middle East and Africa	Japan	Other	Total [1]
North America											
Canada	200	—	0	0	0	0	0	0	0	0	200
Mexico	507	0	140	34	147	0	0	0	0	0	828
United States	—	84	[2] 198	0	0	0	0	0	0	[3] 6	287
Central and South America											
Ecuador	17	1	52	18	0	3	0	0	21	0	112
Peru	40	0	10	7	0	0	0	0	0	0	57
Trinidad and Tobago	115	3	18	0	0	0	0	0	0	0	136
Venezuela	156	166	501	188	124	113	0	0	46	2	1,296
Other	4	0	3	0	10	0	0	0	0	30	47
Western Europe											
Norway	144	0	0	0	332	0	0	0	0	0	476
United Kingdom	173	7	20	0	593	3	0	1	0	0	798
Other	0	0	0	0	75	0	0	0	0	0	75
U.S.S.R.	0	0	100	0	348	310	1,550	30	2	90	2,430
Middle East											
Via Suez Canal and Sumed Pipeline	0	0	0	0	488	1,280	0	60	0	0	1,828
Via Eastern Mediterranean	2	20	0	0	58	680	20	55	0	0	835
Via Cape of Good Hope	1,487	247	418	704	3,274	1,180	280	0	0	0	7,590
Other [4]	44	8	0	0	0	30	0	960	3,125	2,248	6,415
Total	1,533	275	418	704	3,820	3,170	300	1,075	3,125	2,248	16,669
Africa											
North	1,042	14	245	14	710	890	160	39	45	59	3,218
West	956	3	167	210	850	232	25	70	22	0	2,535
Far East and Oceania	376	0	43	30	10	23	0	25	1,153	425	2,085
World Total	5,263	554	1,915	1,205	7,019	4,744	2,036	1,240	4,414	2,860	31,249

[1] Data in this column add to total world imports. Total world imports differ from total world exports because of changes in stocks at sea, exchanges, transshipments, and statistical discrepancies.

[2] Includes shipments to Puerto Rico and the Virgin Islands.

[3] U.S. shipments to the Hawaiian Foreign Trade Zone.

[4] Primarily tanker shipments to countries bordering the Indian or Pacific Oceans.

Note: Transshipments are assigned to the country of original lading, if known.

Note: Sum of components may not equal total due to independent rounding.

Source: Energy Information Administration, *1981 International Energy Annual.*

Figure 39. International Consumption of Refined Petroleum Products

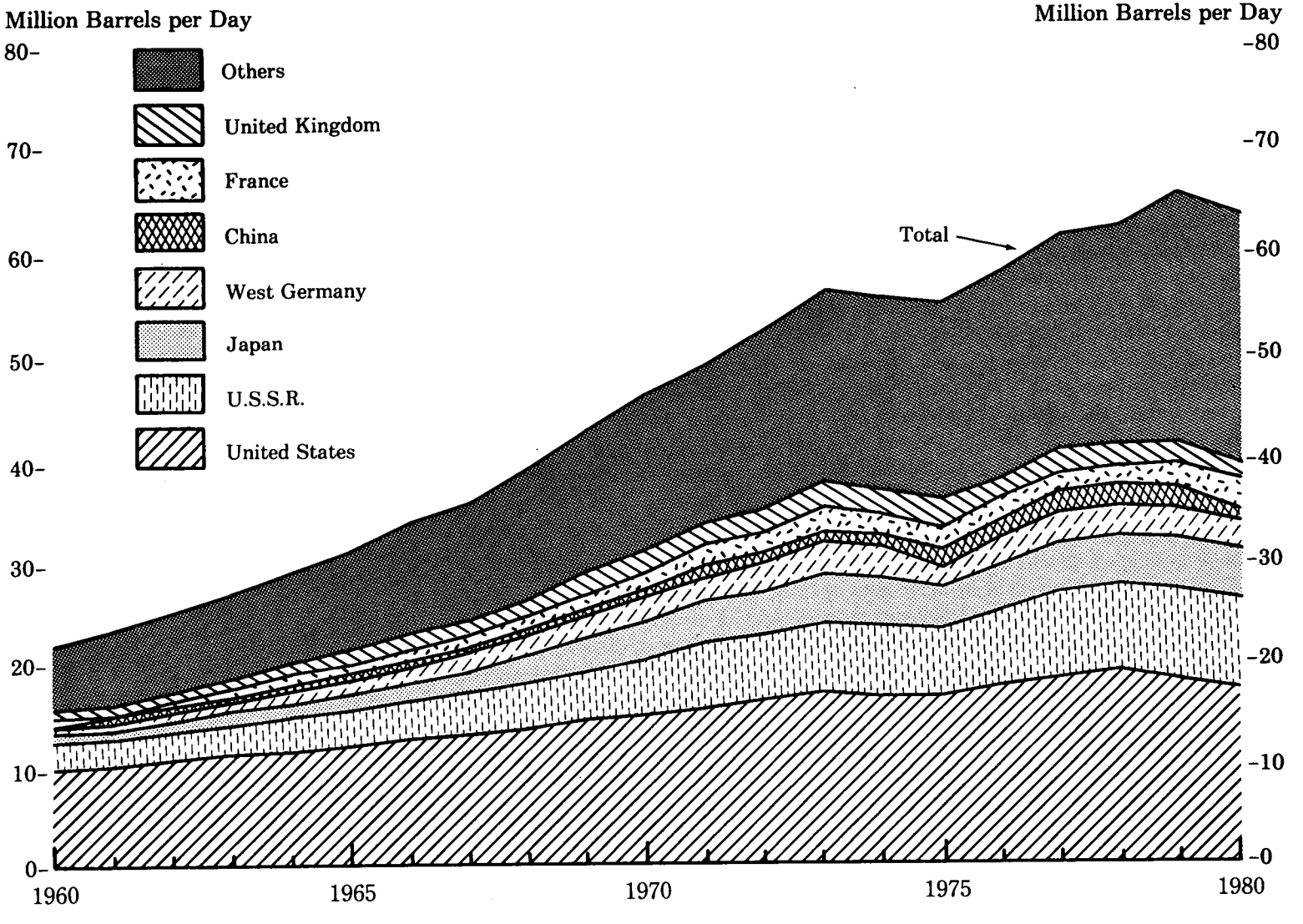


Table 37. International Consumption of Refined Petroleum Products, 1960-1980

(Million Barrels per Day)

Year	Australia	Brazil	Canada	China	France	West Germany	Italy	Japan	Mexico	Spain	United Kingdom	United States	U.S.S.R.	Other	Total World	OECD [1]
1960	0.22	0.27	0.84	0.17	0.56	0.63	0.44	0.66	0.30	0.10	0.94	9.80	2.38	4.03	21.48	15.30
1961	0.23	0.28	0.86	0.17	0.63	0.78	0.54	0.82	0.29	0.12	1.04	9.98	2.57	4.69	23.00	16.24
1962	0.25	0.31	0.92	0.14	0.73	1.00	0.67	0.93	0.30	0.12	1.12	10.40	2.87	5.13	24.89	17.53
1963	0.29	0.34	0.99	0.17	0.86	1.17	0.77	1.21	0.31	0.12	1.27	10.74	3.15	5.53	26.92	19.02
1964	0.32	0.35	1.05	0.20	0.98	1.36	0.90	1.48	0.33	0.20	1.36	11.02	3.58	5.95	29.08	20.45
1965	0.35	0.33	1.14	0.23	1.09	1.61	0.98	1.74	0.34	0.23	1.49	11.51	3.61	6.49	31.14	22.14
1966	0.37	0.38	1.20	0.30	1.19	1.80	1.08	1.98	0.36	0.31	1.58	12.08	3.87	7.06	33.56	23.84
1967	0.41	0.38	1.25	0.28	1.34	1.86	1.19	2.14	0.39	0.36	1.64	12.56	4.22	7.57	35.59	25.38
1968	0.45	0.46	1.34	0.31	1.46	1.99	1.40	2.66	0.41	0.46	1.82	13.39	4.48	8.33	38.96	27.87
1969	0.49	0.48	1.42	0.44	1.66	2.33	1.69	3.25	0.45	0.49	1.98	14.14	4.87	9.20	42.89	30.75
1970	0.51	0.51	1.49	0.62	1.89	2.43	1.83	3.85	0.50	0.56	2.09	14.70	5.30	9.89	46.17	33.00
1971	0.54	0.56	1.53	0.79	2.05	2.61	1.93	4.18	0.52	0.60	2.09	15.21	6.65	10.77	49.03	34.44
1972	0.54	0.65	1.62	0.91	2.23	2.76	2.07	4.36	0.56	0.67	2.24	16.37	6.10	11.39	52.47	36.82
1973	0.59	0.77	1.71	1.12	2.42	2.92	2.15	5.07	0.61	0.74	2.30	17.31	6.57	12.25	56.53	39.31
1974	0.62	0.83	1.74	1.38	2.26	2.61	2.09	4.96	0.67	0.78	2.14	16.65	7.01	12.38	56.12	37.78
1975	0.56	0.87	1.69	1.58	2.14	2.51	1.58	4.50	0.74	0.84	1.87	16.32	7.47	12.61	55.28	35.81
1976	0.62	0.97	1.74	1.68	2.28	2.71	1.80	4.77	0.80	0.98	1.86	17.46	7.65	12.99	58.31	38.20
1977	0.66	1.01	1.75	1.83	2.23	2.84	1.97	5.23	0.84	0.93	1.88	18.43	8.18	14.24	62.02	40.00
1978	0.61	1.05	1.74	1.81	2.17	3.05	2.18	5.14	0.92	0.95	1.85	18.85	8.47	14.05	62.84	40.58
1979	0.61	1.18	1.86	1.85	2.39	3.07	2.00	5.48	0.90	0.98	1.93	18.51	8.58	15.77	65.11	41.27
1980	0.59	1.16	1.95	1.83	2.26	2.71	1.88	4.96	1.22	0.99	1.73	17.06	8.91	15.79	63.03	38.16

[1] Organization for Economic Cooperation and Development. See Glossary for membership.

Sources: **United States:** •1960 through 1976—Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual.* •1977 through 1980—Energy Information Administration, Energy Data Reports, *Petroleum Statement, Annual.* **U.S.S.R.:** •1960 through 1976—U.S.S.R. Central Statistical Office, *Narodnoye Khozyaystvo SSSR* (National Economy U.S.S.R.), and *Vneshnyaya Torgvliya SSSR* (Foreign Trade of the U.S.S.R.), annual issues. •1977 through 1979—U.S.S.R. Central Statistical Office, *Narodnoye Khozyaystvo SSSR* (National Economy U.S.S.R.), annual issues; U.S.S.R. trade as imports reported by their trading partners in official trade statistics of the respective countries. •1980—Energy Information Administration, *1980 International Energy Annual.* **China:** •1960 through 1979—Central Intelligence Agency, unpublished data. •1980—Energy Information Administration, *1981 International Energy Annual.* **All other countries:** •1960 through 1969—Bureau of Mines, *International Petroleum Annual, 1969.* •1970 through 1978 —Energy Information Administration, *International Petroleum Annual, 1978.* •1979—Energy Information Administration, *1980 International Energy Annual.* •1980—Energy Information Administration, *1981 International Energy Annual.*

Figure 40. Primary Stocks of Petroleum in OECD Countries, End of Quarter

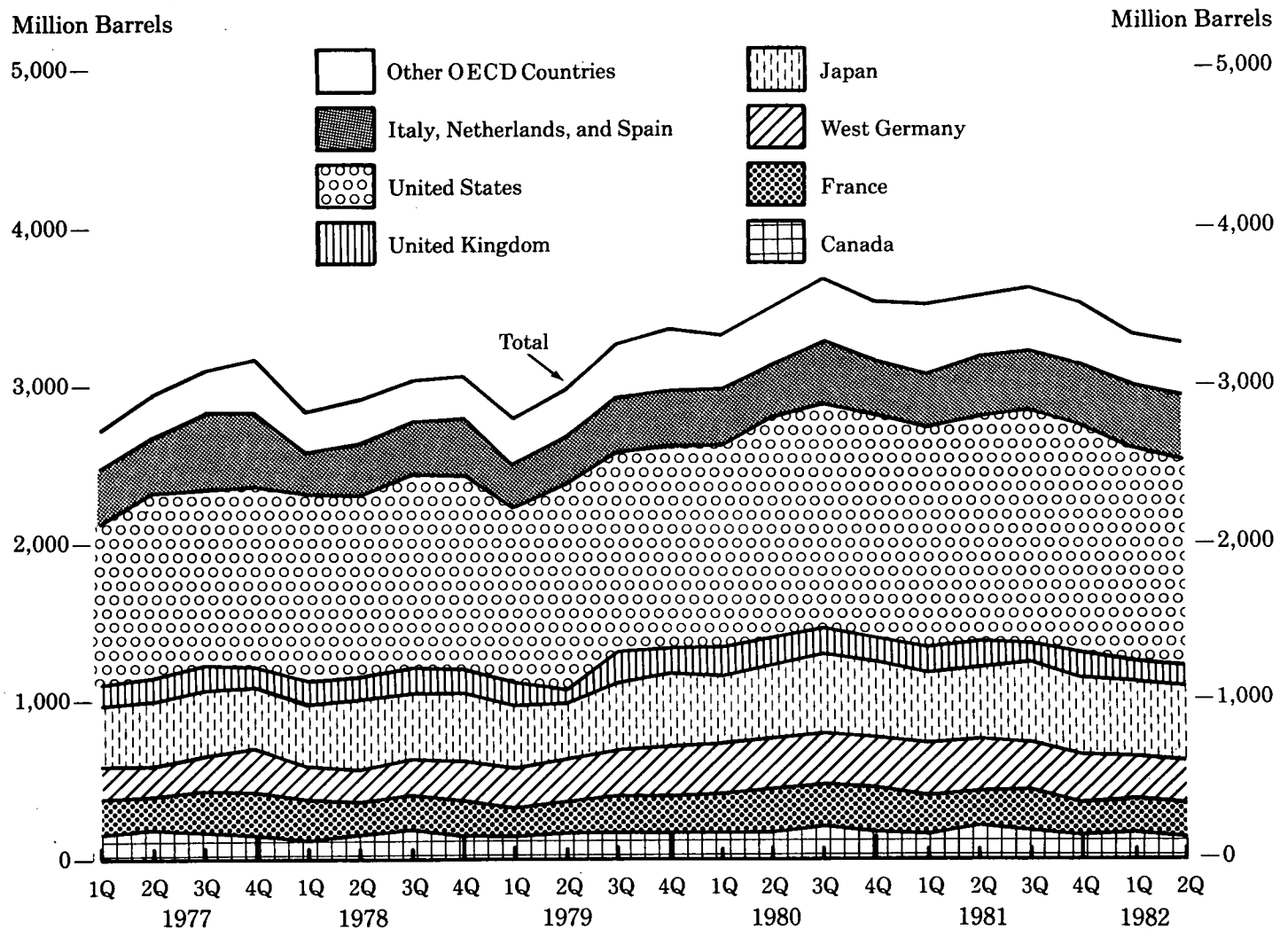


Table 38. Primary Stocks of Petroleum [1] in OECD Countries [2], End of Quarter—First Quarter 1977 through Second Quarter 1982

(Million Barrels)

Quarter	Canada	France	West Germany	Italy	Japan	Netherlands	Spain	United Kingdom	United States	Other OECD [3]	Total OECD
1977											
First Quarter	147	216	208	139	350	77	79	150	1,087	258	2,711
Second Quarter	164	206	206	165	386	85	83	158	1,195	301	2,949
Third Quarter	169	232	221	166	403	87	79	168	1,304	286	3,115
Fourth Quarter	170	241	236	162	399	82	80	147	1,312	323	3,152
1978											
First Quarter	150	200	216	137	379	70	68	158	1,168	280	2,826
Second Quarter	154	192	218	144	407	71	78	147	1,185	311	2,907
Third Quarter	159	219	231	160	410	64	80	162	1,263	317	3,065
Fourth Quarter	148	214	239	153	422	78	77	147	1,278	333	3,089
1979											
First Quarter	139	189	233	137	378	64	71	141	1,142	303	2,797
Second Quarter	149	204	247	148	391	72	74	151	1,210	328	2,974
Third Quarter	155	234	270	166	440	84	84	164	1,309	383	3,289
Fourth Quarter	156	231	273	163	457	87	78	163	1,341	409	3,358
1980											
First Quarter	156	233	299	152	427	99	83	163	1,348	375	3,335
Second Quarter	171	239	313	165	471	104	93	174	1,411	386	3,527
Third Quarter	183	264	306	192	508	112	103	173	1,447	417	3,705
Fourth Quarter	171	254	323	173	481	116	78	169	1,392	416	3,573
1981											
First Quarter	165	227	317	158	452	101	87	164	1,401	393	3,465
Second Quarter	179	225	312	171	484	102	101	158	1,430	395	3,557
Third Quarter	181	241	307	187	493	102	97	151	1,476	392	3,627
Fourth Quarter	164	222	297	167	466	112	88	145	1,484	375	3,520
1982											
First Quarter	149	207	279	158	480	88	82	133	1,401	354	3,331
Second Quarter	131	200	288	156	466	94	90	141	1,362	360	3,288

[1] Includes crude oil, lease condensate, natural gas plant liquids, unfinished oils, and finished petroleum products. See Explanatory Note 7.
[2] Organization for Economic Cooperation and Development. See Glossary for membership.
[3] A calculated quantity derived as the difference between "Total OECD" stocks and the sum of the countries identified above.
Sources: • 1977 through 1981 — Energy Information Administration. *1981 International Energy Annual* and Organization for Economic Cooperation and Development/International Energy Agency, *Quarterly Oil Statistics, Second Quarter 1982.* • First and second quarter 1982 — Energy Information Administration, *Monthly Energy Review,* February 1983.

Figure 41. Crude Oil Wellhead Prices

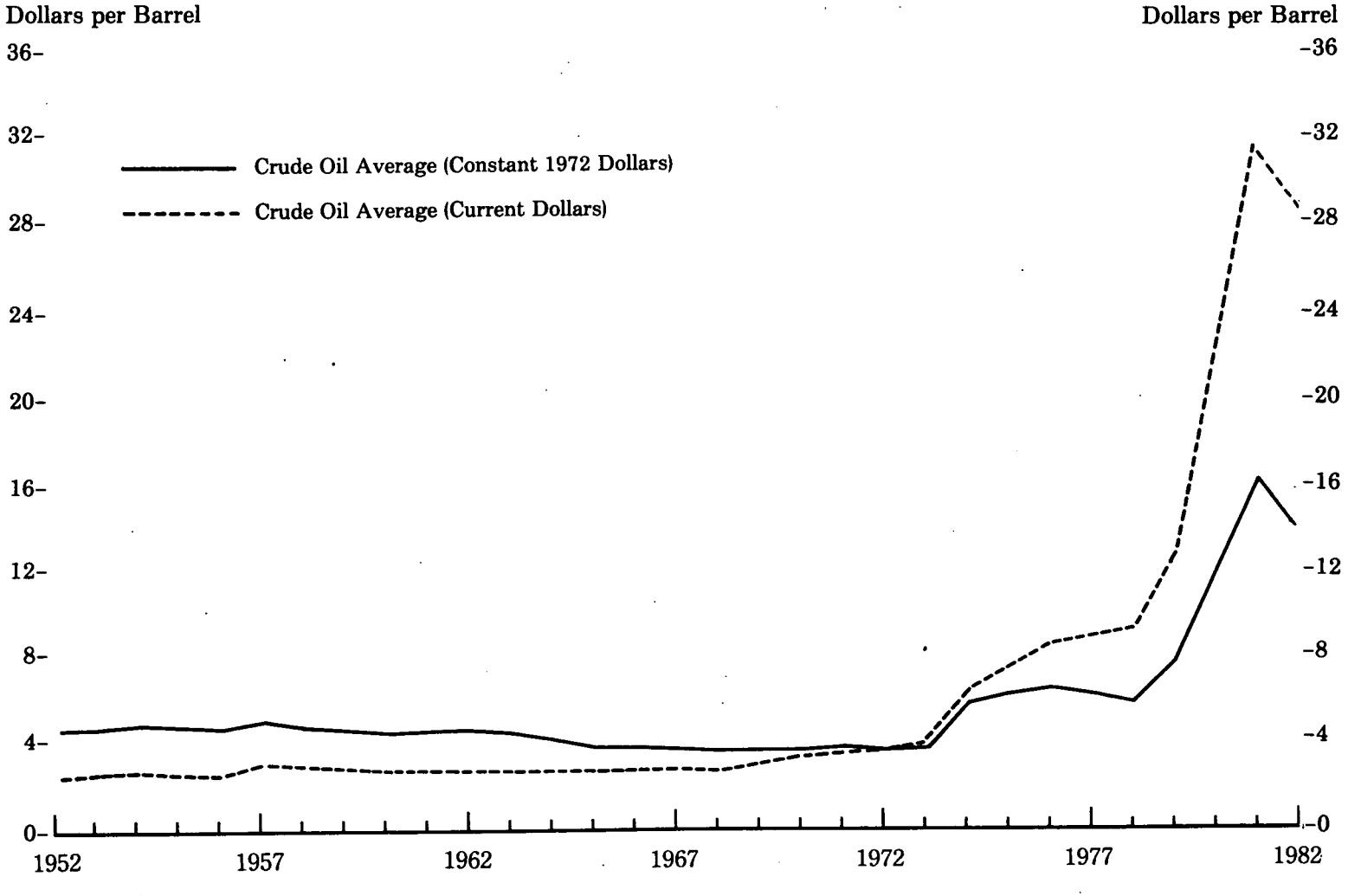


Table 39. Crude Oil Wellhead Prices, 1952-1982

(Dollars per Barrel)

Year	Lower Tier (current)	Upper Tier (current)	Stripper Oil (current)	Domestic Average (current)	Domestic Average (constant) [1]
1952				2.53	4.37
1953				2.68	4.56
1954				2.78	4.67
1955				2.77	4.55
1956				2.79	4.44
1957				3.09	4.76
1958				3.01	4.56
1959				2.90	4.29
1960				2.88	4.19
1961				2.89	4.17
1962				2.90	4.11
1963				2.89	4.03
1964				2.88	3.96
1965				2.86	3.85
1966				2.88	3.75
1967				2.92	3.69
1968				2.94	3.56
1969				3.09	3.56
1970				3.18	3.48
1971				3.39	3.53
1972				3.39	3.39
1973				3.89	3.68
1974	5.03	10.13		6.87	5.97
1975	5.03	12.03		7.67	6.10
1976	5.13	11.71	12.16	8.19	6.19
1977	5.19	11.22	13.59	8.57	6.12
1978	5.46	12.15	13.95	9.00	5.98
1979	5.95	13.20	22.93	12.64	7.73
1980	6.51	14.37	35.48	21.59	12.09
1981	[2]	[2]	[2]	31.77	16.25
1982	[2]	[2]	[2]	[3] 28.54	[3] 13.78

[1] Constant 1972 dollars calculated using GNP implicit price deflators, 1972=100. See Units of Measure, Conversion Factors, Price Deflators, and Energy Equivalents section.

[2] Crude oil prices were decontrolled on January 28, 1981, and purchasers were no longer required to report prices by category.

[3] Average for January through November.

Note: Crude oil wellhead prices for each category and for the domestic average are derived by dividing the sum of the value of all first purchases by the total volume of all first purchasers' purchases.

Note: From 1974 until February 1976, Lower Tier crude oil was called Old Oil, and Upper Tier crude oil was called New Oil. Alaskan North Slope crude oil is included in Upper Tier and Domestic Average.

Sources: •1952 through 1973—Bureau of Mines, *Minerals Yearbook*, "Crude Petroleum and Petroleum Products" chapter. •1974 through January 1976—Federal Energy Administration, FEA Form 90, "Crude Petroleum Production Monthly Report." • February 1976 through September 1979—Federal Energy Administration, Form FEA P-124, "Domestic Crude Oil Purchaser's Monthly Report." • October 1979 through 1982—Economic Regulatory Administration Form 182, "Domestic Crude Oil First Purchase Report."

Figure 42. Landed Cost of Crude Oil Imports into the United States from Selected Countries

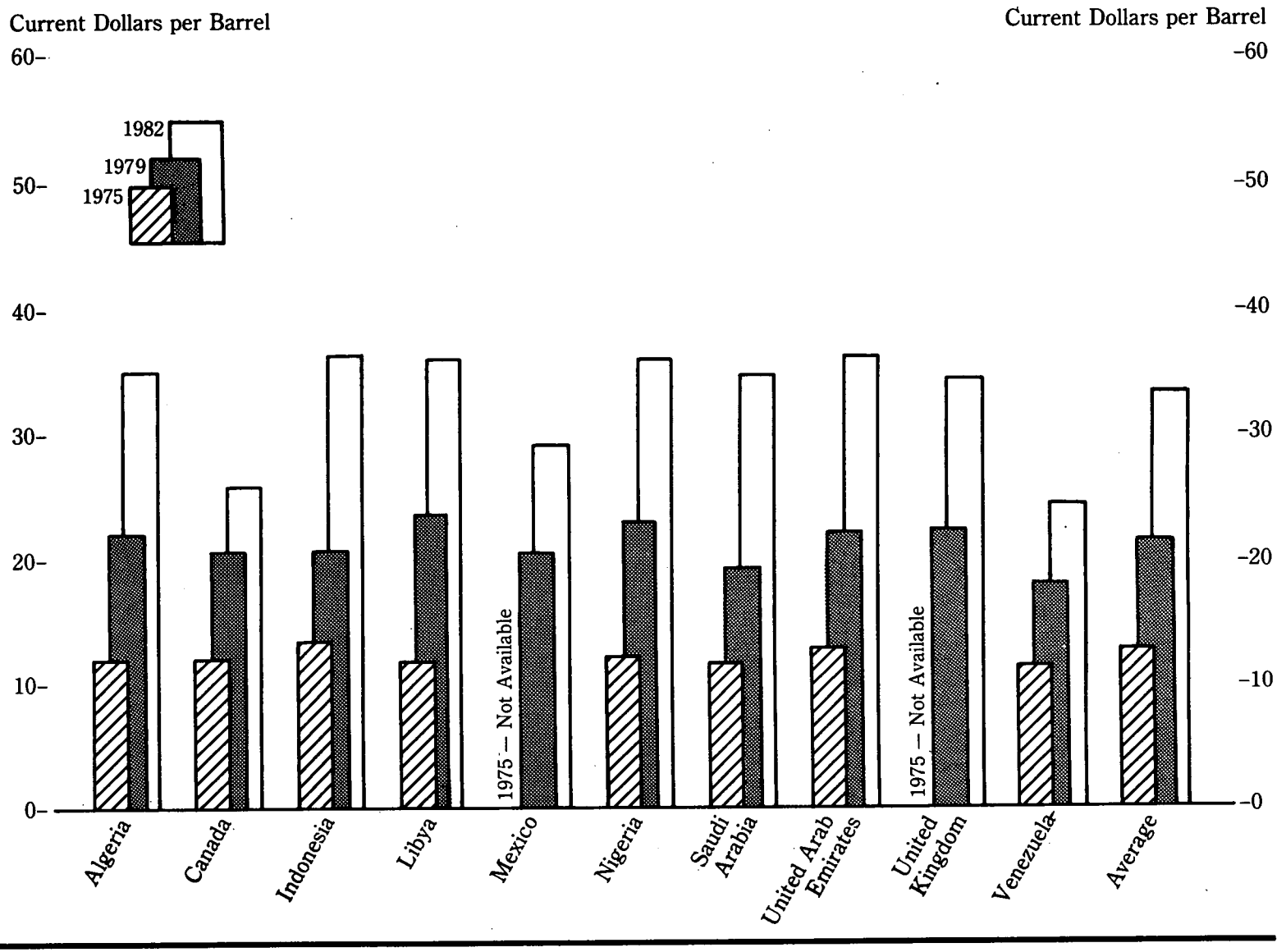


Table 40. Landed Cost of Crude Oil Imports into the United States from Selected Countries, 1975-1982

(Dollars per Barrel)

Country	1975	1976	1977	1978	1979	1980	1981	1982 [1]
Algeria	12.72	13.81	15.20	14.91	21.90	37.90	40.49	35.24
Canada	12.72	13.57	14.21	14.50	20.43	30.47	32.16	26.85
Indonesia	13.79	13.82	14.63	14.64	20.69	33.92	37.57	36.80
Iran	12.21	12.82	13.80	13.88	25.02	30.37	NA	32.32
Libya	12.35	13.58	14.87	14.72	23.68	37.72	40.92	36.05
Mexico	NA	NA	13.75	13.54	20.86	31.80	33.78	28.73
Nigeria	12.62	13.80	15.25	14.86	22.96	37.05	39.70	36.21
Saudi Arabia	12.30	13.04	13.61	13.92	19.15	30.02	34.19	34.83
United Arab Emirates	12.87	13.30	14.04	14.39	21.90	32.89	37.87	36.46
United Kingdom	NA	NA	NA	NA	22.16	35.88	37.24	34.32
Venezuela	11.65	11.80	13.13	12.83	18.18	25.86	29.87	24.43
Others	12.60	13.31	14.57	14.74	23.45	36.06	37.69	33.81
Average	12.45	13.34	14.31	14.38	21.65	33.95	36.52	33.22

[1] Averages for January through November.

NA = Not available.

Sources: •1975 through September 1977—Federal Energy Administration, Form FEA F701-M-0, "Transfer Pricing Report." • October 1977 through January 1979—Energy Information Administration, Form FEA F701-M-0, "Transfer Pricing Report." • February 1980 through September 1982—Energy Information Administration, Form ERA 51, "Transfer Pricing Report." • October 1982 forward—Energy Information Administration, Form EP 51, "Foreign Crude Oil Transaction Report."

Figure 43. Refiner Acquisition Cost of Crude Oil

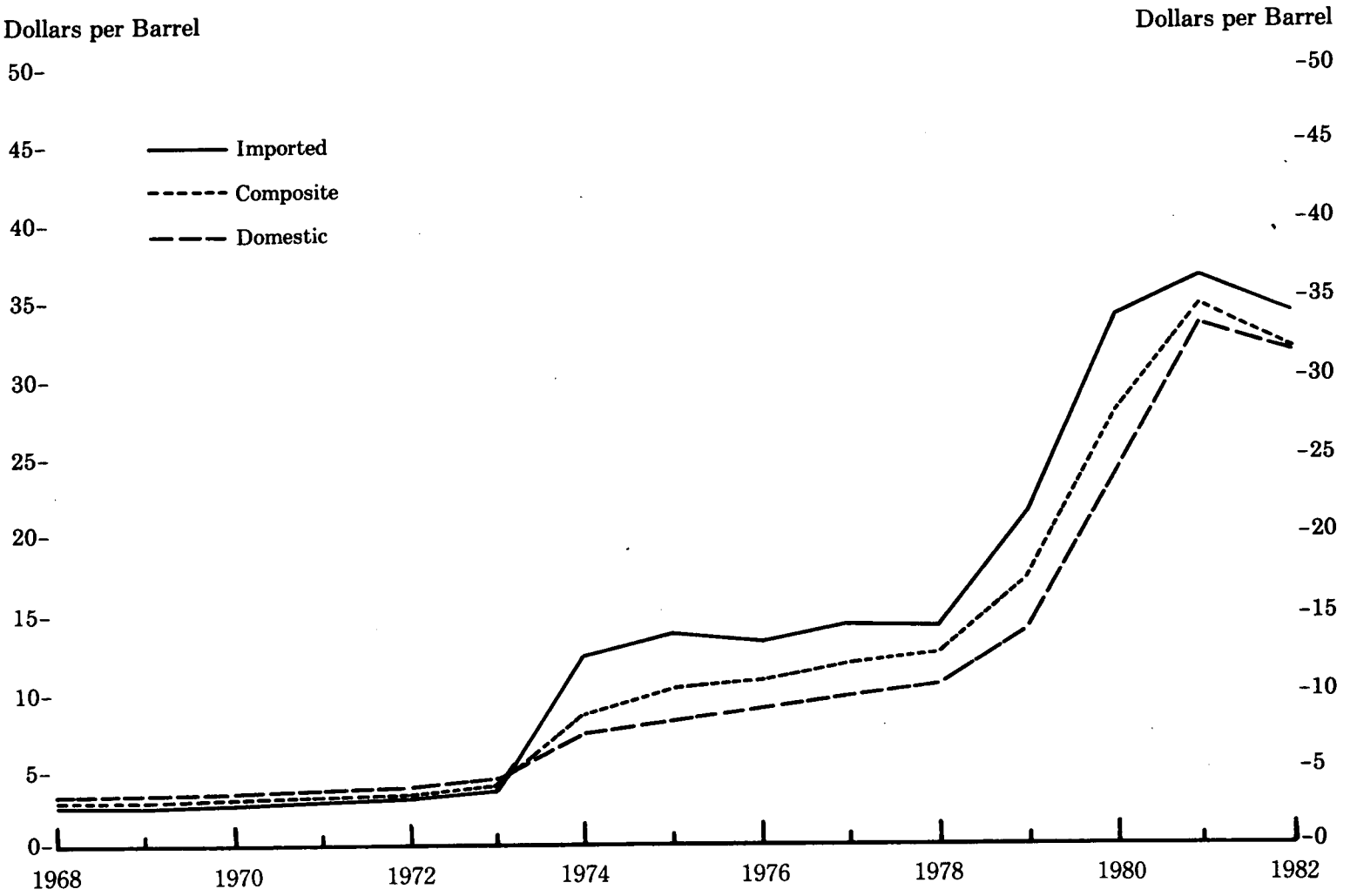


Table 41. Refiner Acquisition Cost[1] of Crude Oil, 1968-1982

(Dollars per Barrel)

Year	Domestic[2]	Imported[2]	Composite[2]
1968	3.21	2.90	3.17
1969	3.37	2.80	3.29
1970	3.46	2.96	3.40
1971	3.68	3.17	3.60
1972	3.67	3.22	3.58
1973	4.17	4.08	4.15
1974	7.18	12.52	9.07
1975	8.39	13.93	10.38
1976	8.84	13.48	10.89
1977	9.55	14.53	11.96
1978	10.61	14.57	12.46
1979	14.27	21.67	17.72
1980	24.23	33.89	28.07
1981	34.33	37.05	35.24
1982[3]	31.26	33.62	31.93

[1] Refiner acquisition cost of crude oil for each category and for the composite is derived by dividing the sum of the total purchasing (acquisition) costs of all refiners by the total volume of all refiners' purchases.

[2] Data 1968 through 1973 are estimated. See Explanatory Note 8.

[3] Averages for January through November.

Sources: •1974 through January 1976—Federal Energy Administration, Form FEO 96, "Monthly Cost Allocation Report." •February 1976 through September 1977—Federal Energy Administration, Form FEA P110-M-1, "Refiners' Monthly Cost Allocation Report." •October 1977 through June 1978—Energy Information Administration, Form FEA P110-M-1, "Refiners' Monthly Cost Allocation Report." •July 1978 through December 1980—Energy Information Administration, Form ERA 49, "Domestic Crude Oil Entitlements Program Refiners Monthly Report." •1981 and 1982—Energy Information Administration, Form EIA-14, "Refiners' Monthly Cost Report."

Figure 44. Refined Petroleum Product Wholesale Prices

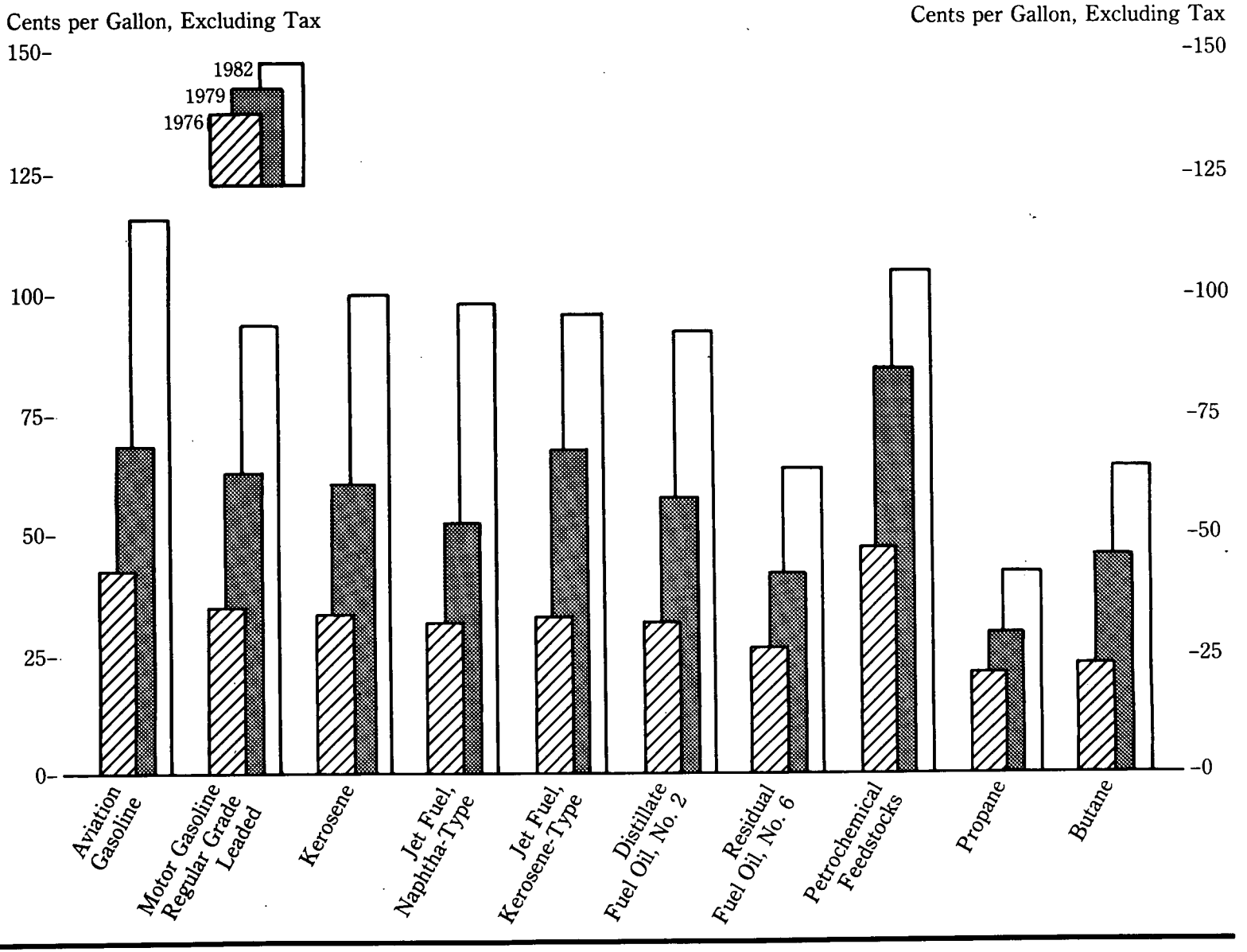


Table 42. Refined Petroleum Product Wholesale Prices, 1976-1982

(Cents per Gallon, Excluding Tax)

Product	1976	1977	1978	1979	1980	1981	1982 [1]
Aviation Gasoline	42.4	46.7	51.0	68.5	107.2	118.8	116.5
Motor Gasoline (Leaded Regular Grade)	35.0	38.1	40.5	62.4	91.0	101.8	93.6
Kerosene	32.9	37.0	39.4	60.8	84.2	103.9	99.7
Jet Fuel, Naphtha-Type [2]	31.5	35.0	37.5	52.3	88.2	105.7	98.0
Jet Fuel, Kerosene-Type	32.5	36.7	38.9	66.5	87.5	102.0	96.3
Distillate Fuel Oil (No. 2 Fuel Oil)	31.6	35.9	37.1	57.3	80.8	98.2	92.2
Residual Fuel Oil (No. 6 Fuel Oil [3])	25.5	28.5	27.4	42.0	55.1	68.7	63.2
Petrochemical Feedstocks	46.4	47.7	49.5	85.2	101.9	111.8	104.8
Propane	20.6	25.0	24.0	29.5	42.4	47.2	42.7
Butane	21.9	25.4	23.0	45.8	62.9	60.4	63.9

[1] Averages for January through November.
[2] Wholesale price is not applicable. Data represent the average price sold to ultimate consumers, including commercial airline and military accounts.
[3] All sulfur grades.

Note: Prices (excluding taxes) as reported by refiners, natural gas plant operators, and large resellers/retailers. Petroleum product wholesale prices for each product are derived by dividing the sum of the value of all sales to wholesalers by the sum of the total volume of all reported sales to wholesalers.

Sources: •1976 and 1977—Federal Energy Administration, *Monthly Petroleum Product Price Report.* •1978 through 1982—Energy Information Administration, *Monthly Petroleum Product Price Report.*

Figure 45. Motor Gasoline and Residential Heating Oil Retail Prices

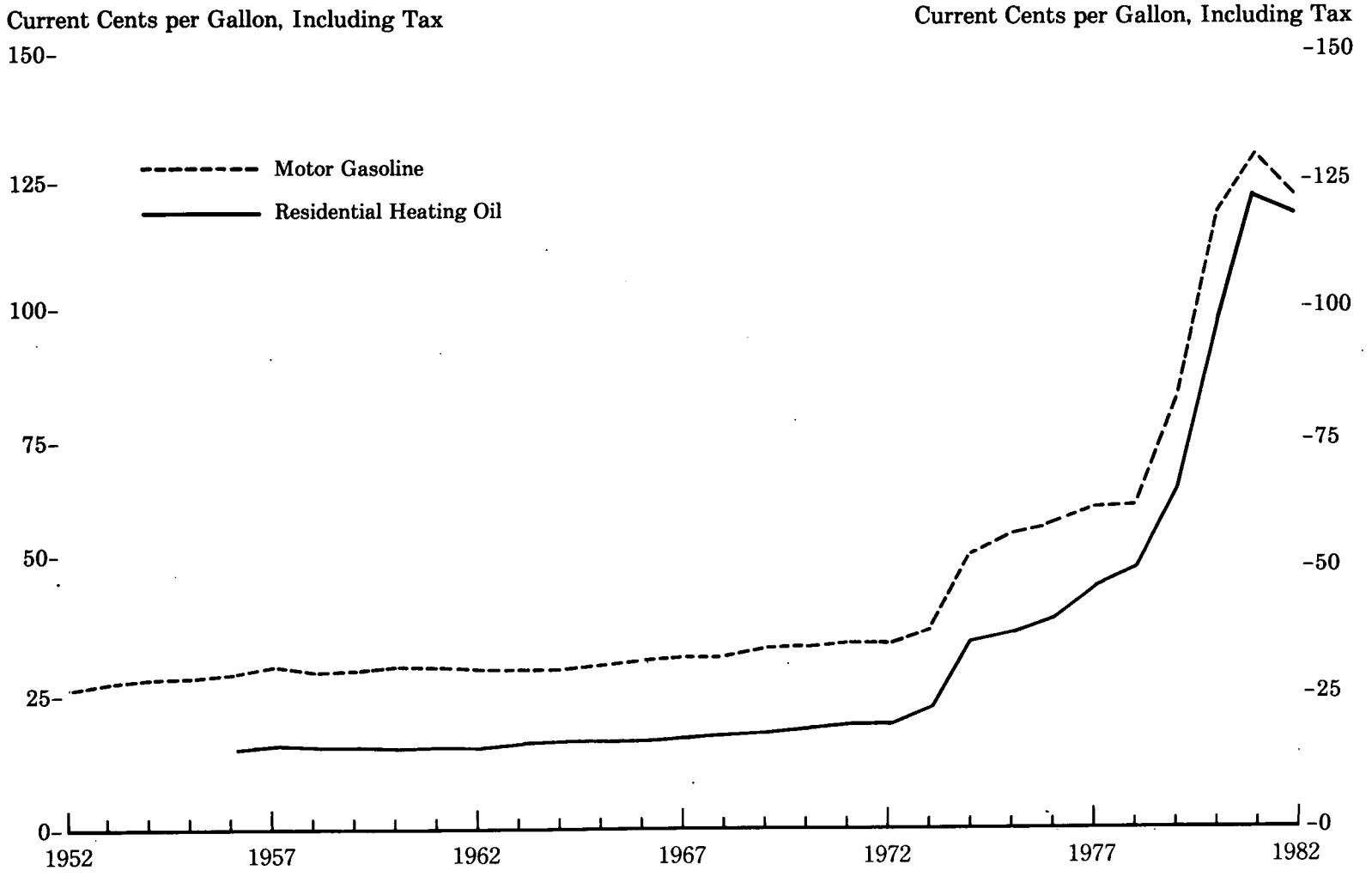


Table 43. Motor Gasoline and Residential Heating Oil Retail Prices, 1952-1982

(Cents per Gallon, Including Tax)

Year	Motor Gasoline [1]		Residential Heating Oil [2]	
	Current	Constant [3]	Current	Constant [3]
1952	27.4	47.3	NA	NA
1953	28.7	48.8	NA	NA
1954	29.0	48.7	NA	NA
1955	29.1	47.8	NA	NA
1956	29.9	47.6	15.2	24.2
1957	31.0	47.7	16.0	24.6
1958	30.4	46.0	15.1	22.9
1959	30.5	45.1	15.3	22.6
1960	31.1	45.3	15.0	21.8
1961	30.8	44.4	15.6	22.5
1962	30.6	43.3	15.6	22.1
1963	30.4	42.4	16.0	22.3
1964	30.4	41.8	16.1	22.1
1965	31.2	42.0	16.0	21.5
1966	32.1	41.8	16.4	21.4
1967	33.2	42.0	16.9	21.4
1968	33.7	40.8	17.4	21.1
1969	34.8	40.1	17.8	20.5
1970	35.7	39.0	18.5	20.2
1971	36.4	37.9	19.6	20.4
1972	36.1	36.1	19.7	19.7
1973	38.8	36.7	22.8	21.6
1974	53.2	46.2	36.0	31.3
1975	56.7	45.1	37.7	30.0
1976	59.0	44.6	40.6	30.7
1977	62.2	44.4	46.0	32.8
1978	62.6	41.6	49.4	32.8
1979	85.7	52.4	65.6	40.1
1980	119.1	66.7	97.8	54.7
1981	131.1	67.1	120.5	61.6
1982	122.2	59.0	[4] 118.5	[4] 57.2

[1] Average motor gasoline prices are for leaded regular. They are calculated from a sample of service stations providing all types of service (i.e. full-, mini-, and self-serve) in 85 urban areas.

[2] Average residential heating oil (No. 2 fuel oil) prices are derived by dividing the sum of the estimated national value of retail sales by the estimated volume of retail sales for residential heating only. January 1975 through October 1980 data are based on a monthly survey of 1,150 firms. November 1980 forward data are based on a monthly survey of approximately 1,800 firms.

[3] Constant 1972 prices calculated using GNP price deflators, 1972 = 100. See Units of Measure, Conversion Factors, Price Deflators, and Energy Equivalents section.

[4] Preliminary.

Sources: **Motor Gasoline:** •1952 through 1973— *Platt's Oil Price Handbook and Oilmanac, 1974,* 51st Edition. •1974 through 1982—Bureau of Labor Statistics, *Consumer Prices: Energy,* monthly. **Residential Heating Oil:** •1956 through 1974—Bureau of Labor Statistics, *Retail Prices and Indexes of Fuels and Utilities for Residential Usage,* monthly. •January 1975 through September 1977—Federal Energy Administration, Form FEA P112-M-1, "No. 2 Heating Oil Supply/Price Monitoring Report." •October 1977 through October 1980—Energy Information Administration, Form EIA 9, "No. 2 Heating Oil Supply/Price Monitoring Report." •November 1980 through 1982, Energy Information Administration, Form EIA-9A, "No. 2 Distillate Price Monitoring Report."

Figure 46. Prices of Selected Foreign Crude Oils, January 1

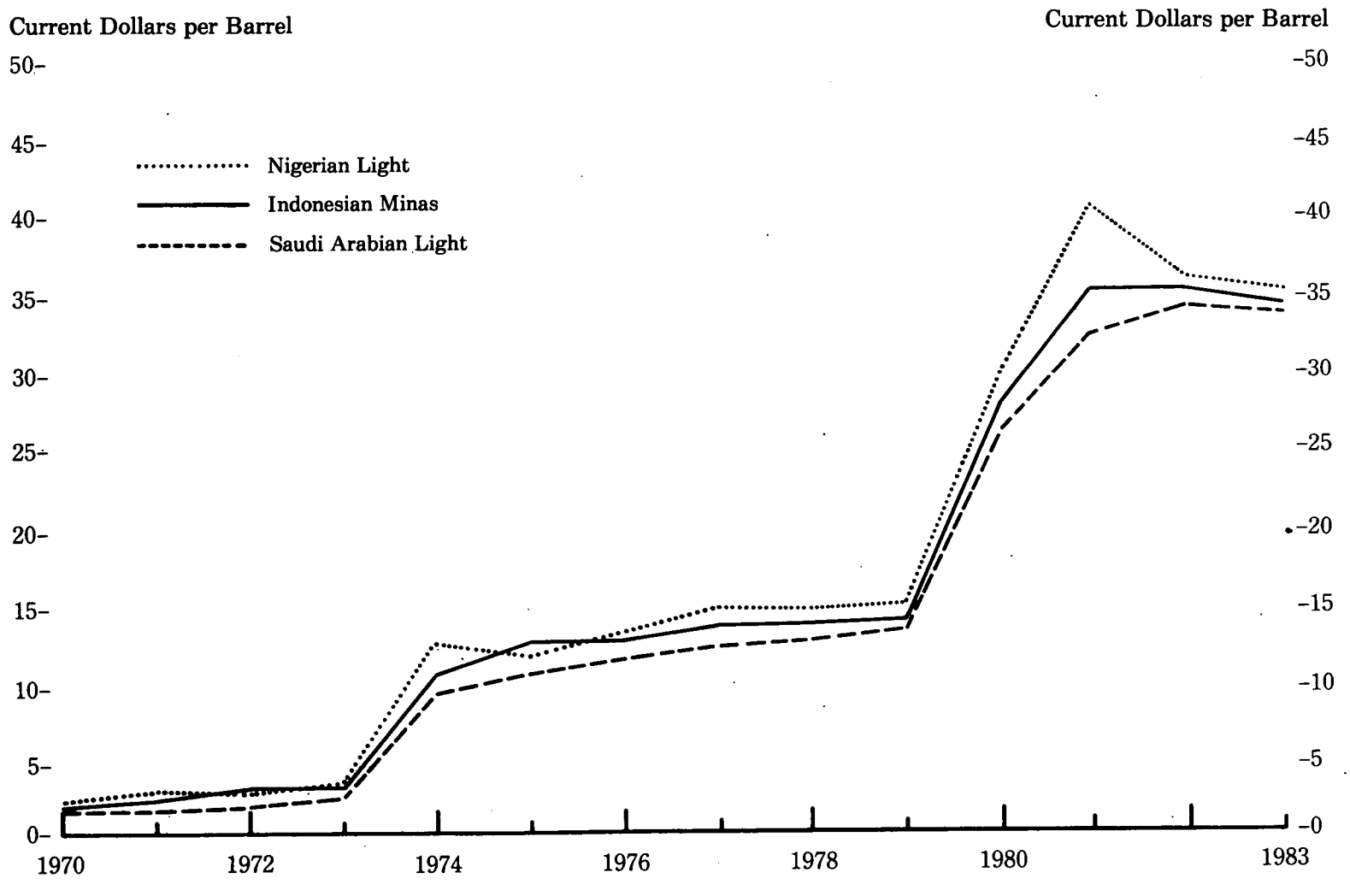


Table 44. Prices[1] of Selected Foreign Crude Oils, January 1, 1970-1983

(Dollars per Barrel)

Year	Saudi Arabian Light-34° API		Iranian Light-34° API		Libyan [2] Es Sider-37° API		Nigerian [3] Bonny-37° API		Indonesian Minas-34° API		Venezuelan Tia Juana-26° API	
	Current	Constant [4]	Current	Constant [4]	Current	Constant [4]	Current	Constant [4]	Current	Constant [4]	Current	Constant [4]
1970	1.35	1.48	1.36	1.49	2.09	2.29	2.10	2.30	1.67	1.83	2.05	2.24
1971	1.75	1.82	1.76	1.83	2.80	2.92	2.65	2.76	2.18	2.27	2.45	2.55
1972	1.90	1.90	1.91	1.91	2.80	2.80	2.80	2.80	2.96	2.96	2.45	2.45
1973	2.10	1.99	2.11	2.00	3.10	2.93	3.10	2.93	2.96	2.80	2.60	2.46
1974	9.60	8.34	10.63	9.24	14.30	12.43	12.60	10.95	10.80	9.38	9.30	8.08
1975	10.46	8.32	10.67	8.48	11.98	9.52	11.80	9.38	12.60	10.02	11.00	8.74
1976	11.51	8.70	11.62	8.78	12.21	9.23	12.84	9.70	12.80	9.67	11.12	8.40
1977	12.09	8.63	12.81	9.15	13.74	9.81	14.33	10.23	13.55	9.68	12.72	9.08
1978	12.70	8.44	12.81	8.52	13.80	9.17	14.33	9.53	13.55	9.01	12.82	8.52
1979	13.34	8.16	13.45	8.23	14.52	8.89	14.80	9.06	13.90	8.51	13.36	8.18
1980	26.00	14.55	[5] 30.37	[5] 17.00	34.50	19.31	29.97	16.78	27.50	15.39	25.20	14.11
1981	32.00	16.37	37.00	18.92	40.78	20.86	40.00	20.46	35.00	17.90	32.88	16.82
1982	34.00	16.41	34.20	16.51	36.50	17.62	36.50	17.62	35.00	16.90	32.88	15.87
1983	34.00	16.41	31.20	15.06	35.10	16.94	35.50	17.13	34.53	16.66	32.88	15.87

[1] Selling prices free on board (f.o.b.) at the foreign port of lading. For the period mid-1974 forward, prices are the official selling price including premiums or discounts in cases where they were clearly defined and applicable to all clients. For years prior to mid-1974, average contract selling prices are shown.

[2] Prices for 1974 and 1975 are for 40 degrees API gravity. Prices for 1980 include $4.72 in retroactive charges and market premiums.

[3] Prices from 1977 forward include 2 cents harbor dues.

[4] Constant 1972 dollars using GNP average annual implicit price deflator, 1972=100. See Units of Measure, Conversion Factors, Price Deflators, and Energy Equivalents section. January 1, 1983, based on 1982 average annual price deflator.

[5] Price for 1980 includes $1.87 market premiums and credit charges.

Sources: •1970 through 1978—Petroleum and Energy Intelligence Weekly, Inc., *Petroleum Intelligence Weekly.* •1979 through 1983—Energy Information Administration, *Weekly Petroleum Status Report.*

Section 4. Natural Gas Supply and Disposition

This section presents data relating to the supply, disposition, and price of natural gas. The first part includes physical data on natural gas production, foreign trade, underground storage, consumption by end-use sector, and international supply and disposition. The second part presents financial information including wellhead and end-use price data.

Preliminary data for 1982 indicate that gross withdrawals of natural gas from gas and oil wells totaled 20.0 trillion cubic feet, the lowest level since 1966. The 7.5-percent decline in 1982 resulted primarily from reduced consumption.

Production. Although most natural gas is produced from natural gas wells, about 20 percent is produced from crude oil wells. Almost all of the gas produced from oil wells is separated from the oil at or near the wellhead. In 1982, there were about 216 thousand producing gas wells in the United States (see Table 82).

Most of the gas produced is used as a fuel or chemical feedstock but small quantities are either vented, flared, or used for reservoir repressuring. Final data for 1981 show that of gross withdrawals from wells, 0.5 percent was vented or flared, 6.1 percent was used for repressuring, and the remaining 93.4 percent was "marketed production." In 1982 marketed production totaled 18.5 trillion cubic feet, down 8.2 percent from the 1981 total.

Consumption. In 1982, approximately 70 percent of natural gas gross withdrawals was processed to extract liquid hydrocarbons, and approximately 30 percent did not contain a volume of liquids sufficient to justify processing (see Figure 47). Gas that has been processed (residue gas) and gas that does not require processing are usually between 90 and 95 percent methane and are frequently referred to as "dry gas." It is this "dry gas" that is consumed by residences, industries, and electric utilities. A decline in natural gas consumption of 7.5 percent in 1982 is attributed to reduced economic activity, a relatively warm fourth quarter, and price-induced conservation.

Storage. Because of fluctuating seasonal, daily, and even hourly marketing requirements, substantial natural gas storage facilities have been created to meet peak supply needs. Many of these facilities are depleted gas reservoirs located near transmission lines and marketing areas. Gas is usually injected into storage when market requirements are less than available gas flow in transmission lines. Gas is withdrawn from storage when supplies from producing fields and/or the capacity of transmission systems are inadequate to meet peak requirements. Net withdrawals from underground storage supplied more than 15 percent of the gas consumed during recent winter heating seasons, and many transmission and distribution companies' peak day deliveries from underground storage exceeded 50 percent of their total maximum daily delivery. Although not shown in this publication, the total volume of gas in underground storage at the beginning of the 1982-1983 heating season (October 1982) was a record 7.1 trillion cubic feet, of which 3.4 trillion cubic feet was working gas (i.e., the volume of gas that is available for withdrawal). Year-end underground storage of natural gas is shown in Table 48.

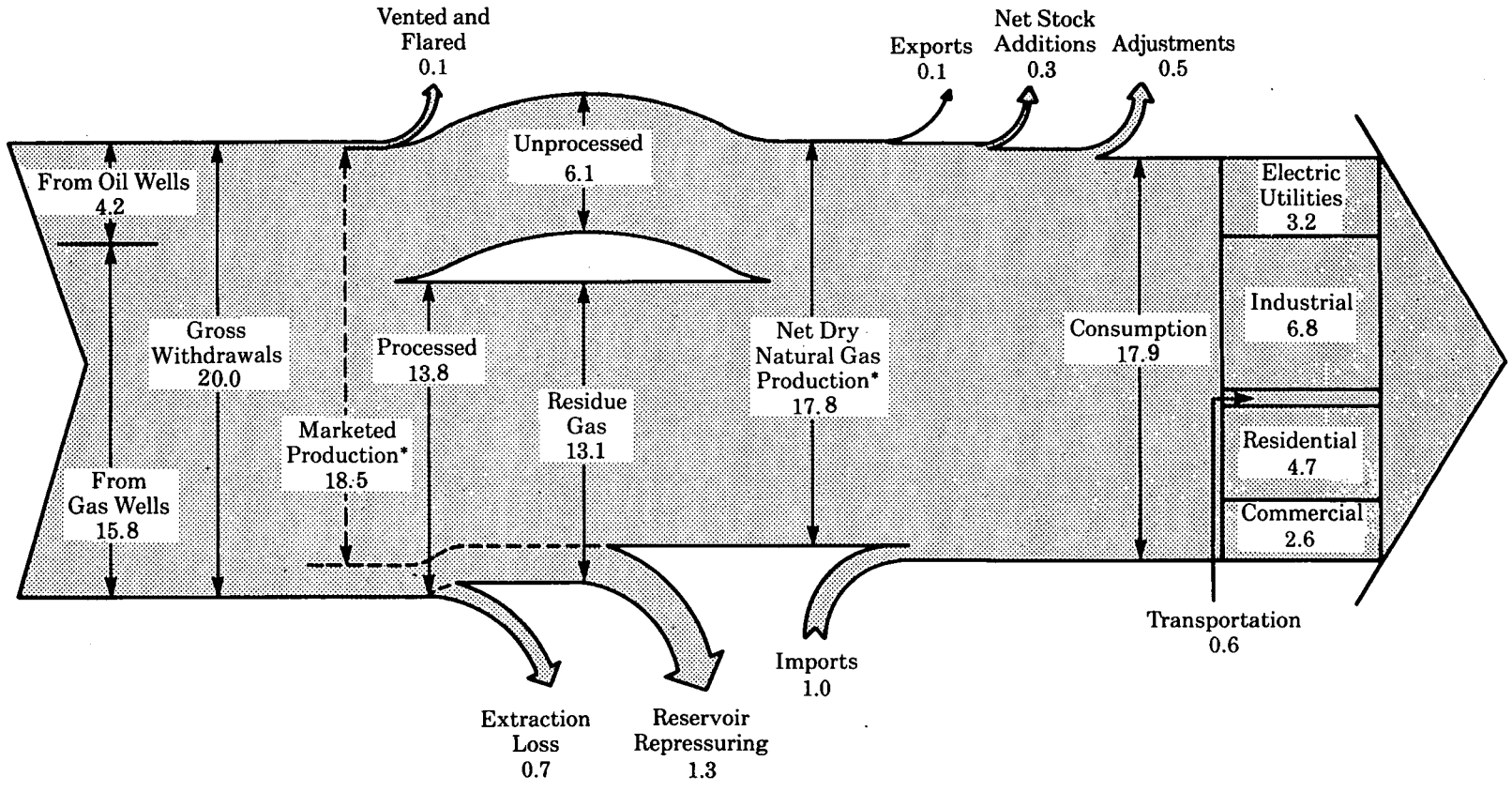
Trade. Imports of natural gas, including liquefied natural gas from Algeria, amounted to about 972 billion cubic feet during 1982. Exports continued at the relatively constant volume of about 55 billion cubic feet per year (see Table 46).

Prices. Natural gas has many price categories resulting from the different rate structures authorized by State and Federal ratemaking commissions. Preliminary data indicate that the average wellhead price of natural gas in 1982 was $2.42 per thousand cubic feet, 22 percent higher than the 1981 average (see Table 51). In 1981, residential consumers paid an average of $4.29 per thousand cubic feet, an increase of 17 percent from the 1980 average. The average price that all consumers paid was $3.39 per thousand cubic feet in 1981, an increase of 21 percent from the 1980 average (see Table 52).

World Production and Trade. World natural gas production in 1980 totaled 53.5 trillion cubic feet. The largest producers were the United States, the U.S.S.R., the Netherlands, and Canada, accounting for 75 percent of the total. The U.S.S.R., the Netherlands, and Norway were the leading exporters of natural gas; West Germany, the United States, Japan, and France were the leading importers (see Table 49).

Figure 47. Natural Gas Flow Diagram, 1982

(Trillion Cubic Feet)



*See Glossary.

Figure 48. Natural Gas Gross Withdrawals and Marketed Production

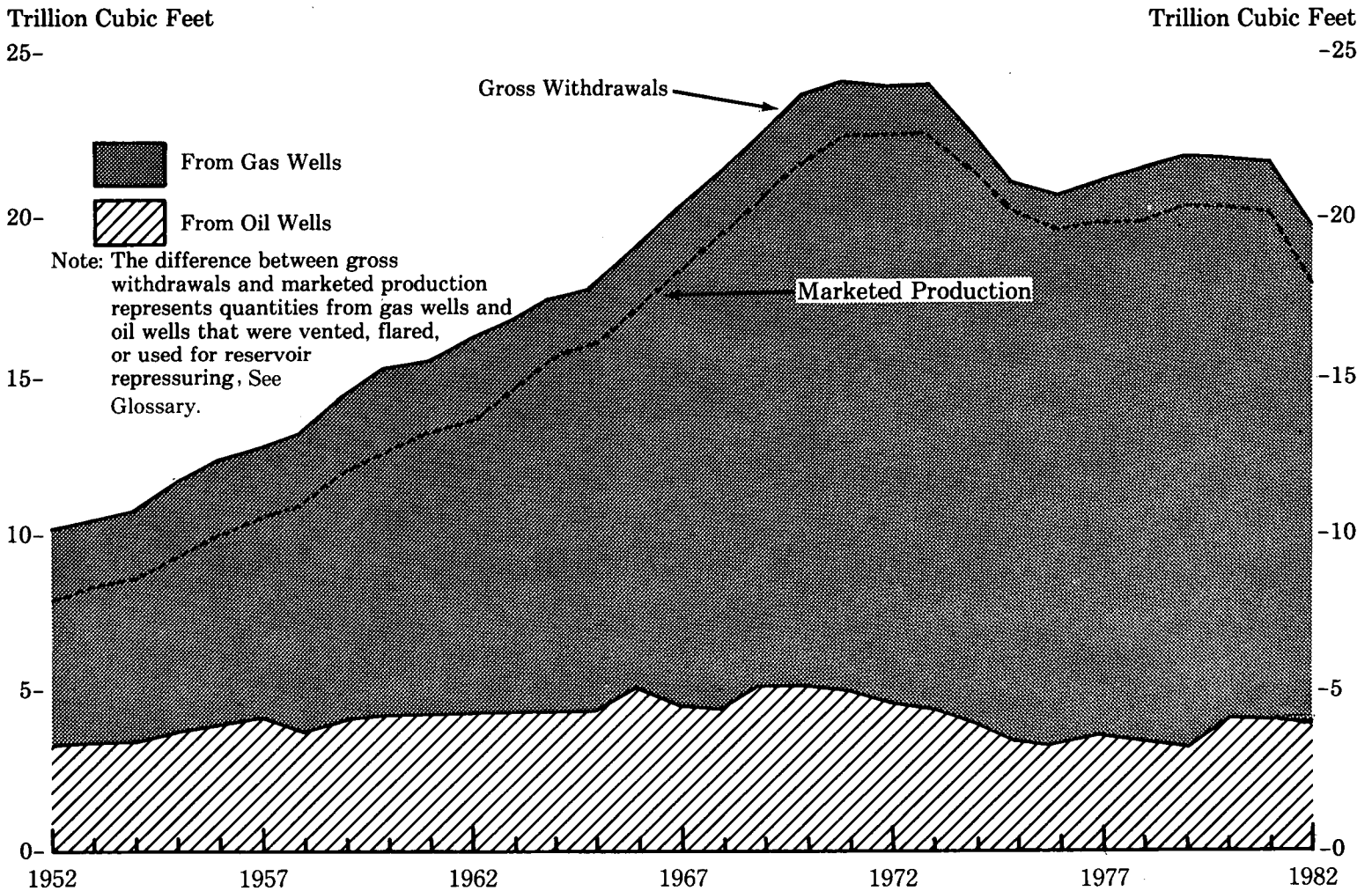


Table 45. Natural Gas Gross Withdrawals and Marketed Production, 1952-1982

(Trillion Cubic Feet)

Year	Gross Withdrawals			Reservoir Repressuring	Vented and Flared	Marketed Production [1]
	From Gas Wells	From Oil Wells	Total			
1952	6.84	3.43	10.27	1.41	0.85	8.01
1953	7.10	3.55	10.65	1.44	0.81	8.40
1954	7.47	3.52	10.98	1.52	0.72	8.74
1955	7.84	3.88	11.72	1.54	0.77	9.41
1956	8.31	4.07	12.37	1.43	0.86	10.08
1957	8.72	4.19	12.91	1.42	0.81	10.68
1958	9.15	3.99	13.15	1.48	0.63	11.03
1959	10.10	4.13	14.23	1.61	0.57	12.05
1960	10.85	4.23	15.09	1.75	0.56	12.77
1961	11.20	4.27	15.46	1.68	0.52	13.25
1962	11.70	4.34	16.04	1.74	0.43	13.88
1963	12.61	4.37	16.97	1.84	0.38	14.75
1964	13.11	4.43	17.54	1.65	0.34	15.55
1965	13.52	4.44	17.96	1.60	0.32	16.04
1966	13.89	5.14	19.03	1.45	0.38	17.21
1967	15.35	4.91	20.25	1.59	0.49	18.17
1968	16.54	4.79	21.32	1.49	0.52	19.32
1969	17.49	5.19	22.68	1.46	0.53	20.70
1970	18.59	5.19	23.79	1.38	0.49	21.92
1971	18.93	5.16	24.09	1.31	0.28	22.49
1972	19.04	4.97	24.02	1.24	0.25	22.53
1973	19.37	4.70	24.07	1.17	0.25	22.65
1974	18.67	4.18	22.85	1.08	0.17	21.60
1975	17.38	3.72	21.10	0.86	0.13	20.11
1976	17.19	3.75	20.94	0.86	0.13	19.95
1977	17.42	3.68	21.10	0.93	0.14	20.03
1978	17.39	3.91	21.31	1.18	0.15	19.97
1979	18.03	3.85	21.88	1.25	0.17	20.47
1980	17.57	4.30	21.87	1.37	0.13	20.38
1981	17.34	4.25	21.59	1.31	0.10	20.18
1982	15.76	4.20	19.96	1.35	0.08	18.53

[1] Includes nonhydrocarbon gases subsequently removed as follows, in trillion cubic feet: 1980-0.19; 1981-0.22; and 1982-estimated 0.20. Data are not available on nonhydrocarbon gases removed prior to 1980.

Note: Sum of components may not equal total due to independent rounding.

Note: Beginning with 1965 data, all volumes are shown on a pressure base of 14.73 p.s.i.a. at 60 degrees F. For prior years, the pressure base is 14.65 p.s.i.a. at 60 degrees F.

Sources: •1952 through 1975—Bureau of Mines, *Minerals Yearbook*, "Natural Gas" chapter. •1976 through 1978—Energy Information Administration, Energy Data Reports, *Natural Gas, Annual.* •1979—Energy Information Administration, *Natural Gas Production and Consumption 1979* •1980 and 1981—Energy Information Administration, *Natural Gas Annual.* •1982—Energy Information Administration, *Natural Gas Monthly.*

Figure 49. Natural Gas Supply and Disposition

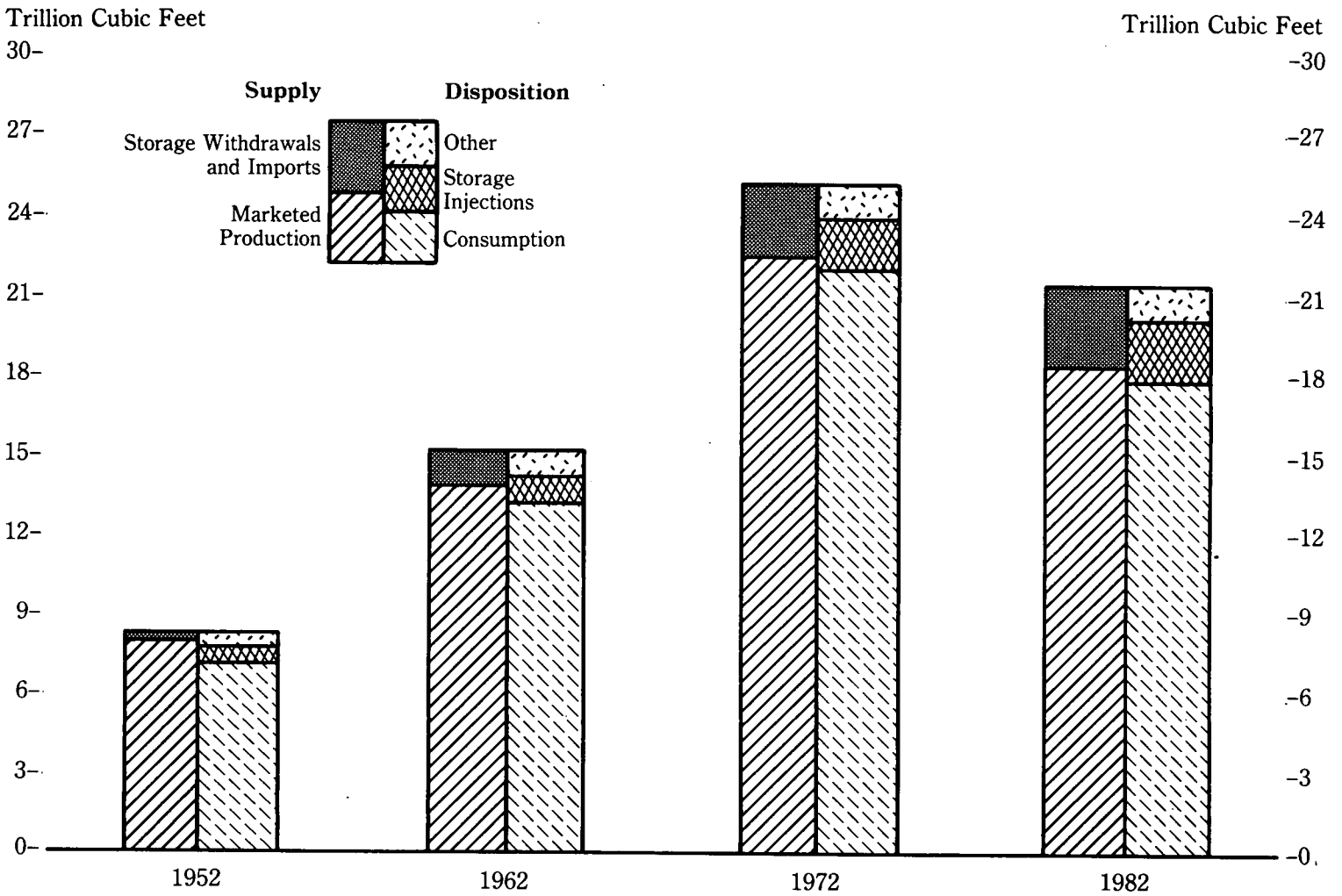


Table 46. Natural Gas Supply and Disposition, 1952-1982

(Trillion Cubic Feet)

Year	Supply				Disposition						
	Marketed Production [1]	Imports	Storage Withdrawals	Total Supply	Consumption [2]	Extraction Loss [3]	Exports	Storage Injections	Adjustments [4]	Total Disposition	Net Dry Natural Gas Production [5]
1952	8.01	0.01	0.22	8.24	7.29	0.32	0.03	0.40	0.20	8.24	7.69
1953	8.40	0.01	0.25	8.65	7.64	0.34	0.03	0.40	0.24	8.65	8.06
1954	8.74	0.01	0.33	9.08	8.05	0.35	0.03	0.43	0.22	9.08	8.39
1955	9.41	0.01	0.44	9.85	8.69	0.38	0.03	0.51	0.25	9.85	9.03
1956	10.08	0.01	0.45	10.55	9.29	0.42	0.04	0.59	0.21	10.55	9.66
1957	10.68	0.04	0.48	11.20	9.85	0.43	0.04	0.67	0.21	11.20	10.25
1958	11.03	0.14	0.62	11.79	10.30	0.46	0.04	0.70	0.28	11.79	10.57
1959	12.05	0.13	0.67	12.85	11.32	0.50	0.02	0.79	0.22	12.85	11.55
1960	12.77	0.16	0.71	13.64	11.97	0.54	0.01	0.84	0.27	13.64	12.23
1961	13.25	0.22	0.70	14.17	12.49	0.59	0.01	0.84	0.23	14.17	12.66
1962	13.88	0.40	0.85	15.13	13.27	0.62	0.02	0.94	0.29	15.13	13.25
1963	14.75	0.41	0.92	16.07	13.97	0.67	0.02	1.05	0.36	16.07	14.08
1964	15.55	0.44	0.89	16.88	14.81	0.72	0.02	1.01	0.30	16.88	14.82
1965	16.04	0.46	0.96	17.46	15.28	0.75	0.03	1.08	0.32	17.46	15.29
1966	17.21	0.48	1.14	18.83	16.45	0.74	0.02	1.21	0.40	18.83	16.47
1967	18.17	0.56	1.13	19.87	17.39	0.78	0.08	1.32	0.30	19.87	17.39
1968	19.32	0.65	1.33	21.30	18.63	0.83	0.09	1.43	0.33	21.30	18.49
1969	20.70	0.73	1.38	22.80	20.06	0.87	0.05	1.50	0.33	22.80	19.83
1970	21.92	0.82	1.46	24.20	21.14	0.91	0.07	1.86	0.23	24.20	21.01
1971	22.49	0.93	1.51	24.94	21.79	0.88	0.08	1.84	0.34	24.94	21.61
1972	22.53	1.02	1.76	25.31	22.10	0.91	0.08	1.89	0.33	25.31	21.62
1973	22.65	1.03	1.53	25.21	22.05	0.92	0.08	1.97	0.20	25.21	21.73
1974	21.60	0.96	1.70	24.26	21.22	0.89	0.08	1.78	0.29	24.26	20.71
1975	20.11	0.95	1.76	22.82	19.54	0.87	0.07	2.10	0.24	22.82	19.24
1976	19.95	0.96	1.92	22.84	19.95	0.85	0.06	1.76	0.22	22.84	19.10
1977	20.03	1.01	1.75	22.79	19.52	0.86	0.06	2.31	0.04	22.79	19.16
1978	19.97	0.97	2.16	23.10	19.63	0.85	0.05	2.28	0.29	23.10	19.12
1979	20.47	1.25	2.05	23.77	20.24	0.81	0.06	2.30	0.37	23.77	19.66
1980	20.38	0.98	1.97	23.34	19.88	0.78	0.05	1.95	0.68	23.34	19.60
1981	20.18	0.90	1.93	23.01	19.40	0.77	0.06	2.23	0.55	23.01	19.40
1982	18.53	0.97	2.08	21.59	17.94	0.71	0.06	2.38	0.50	21.59	17.82

[1] Includes nonhydrocarbon gases subsequently removed as follows, in trillion cubic feet: 1980-0.19; 1981-0.22; and 1982-estimated 0.20. Data are not available on nonhydrocarbon gases removed prior to 1980.

[2] Includes supplemental gaseous fuels consumed as follows, in trillion cubic feet: 1980-0.15; 1981-0.18, and 1982-estimated 0.16. Consumption data prior to 1980 include unknown quantities of supplemental gaseous fuels.

[3] Volume reduction resulting from the removal of natural gas plant liquids. Natural gas plant liquids are transferred to petroleum supply.

[4] Includes transmission losses, changes in above ground storage through 1979, lease and plant fuel consumption by field and gas plant operators not within the scope of the Form EIA-176, "Supply and Disposition of Natural Gas" survey, and nonhydrocarbon gases subsequently removed. (See Footnote 1 for volumes of nonhydrocarbon gases included and subsequently removed in data for 1980 through 1982).

[5] Marketed production including nonhydrocarbon gases subsequently removed less extraction loss.

Note: Sum of components may not equal total due to independent rounding.

Note: Beginning with 1965, all volumes are shown on a pressure base of 14.73 p.s.i.a. at 60 degrees F. For prior years, the pressure base is 14.65 p.s.i.a. at 60 degrees F.

Sources: •1952 through 1975—Bureau of Mines, *Minerals Yearbook*, "Natural Gas" chapter. •1976 through 1978—Energy Information Administration, Energy Data Reports, *Natural Gas, Annual*. •1979—Energy Information Administration, *Natural Gas Production and Consumption 1979*. •1980 and 1981—Energy Information Administration, *Natural Gas Annual*. •1982—Energy Information Administration, *Natural Gas Monthly*.

Figure 50. Consumption of Natural Gas by End-Use Sector

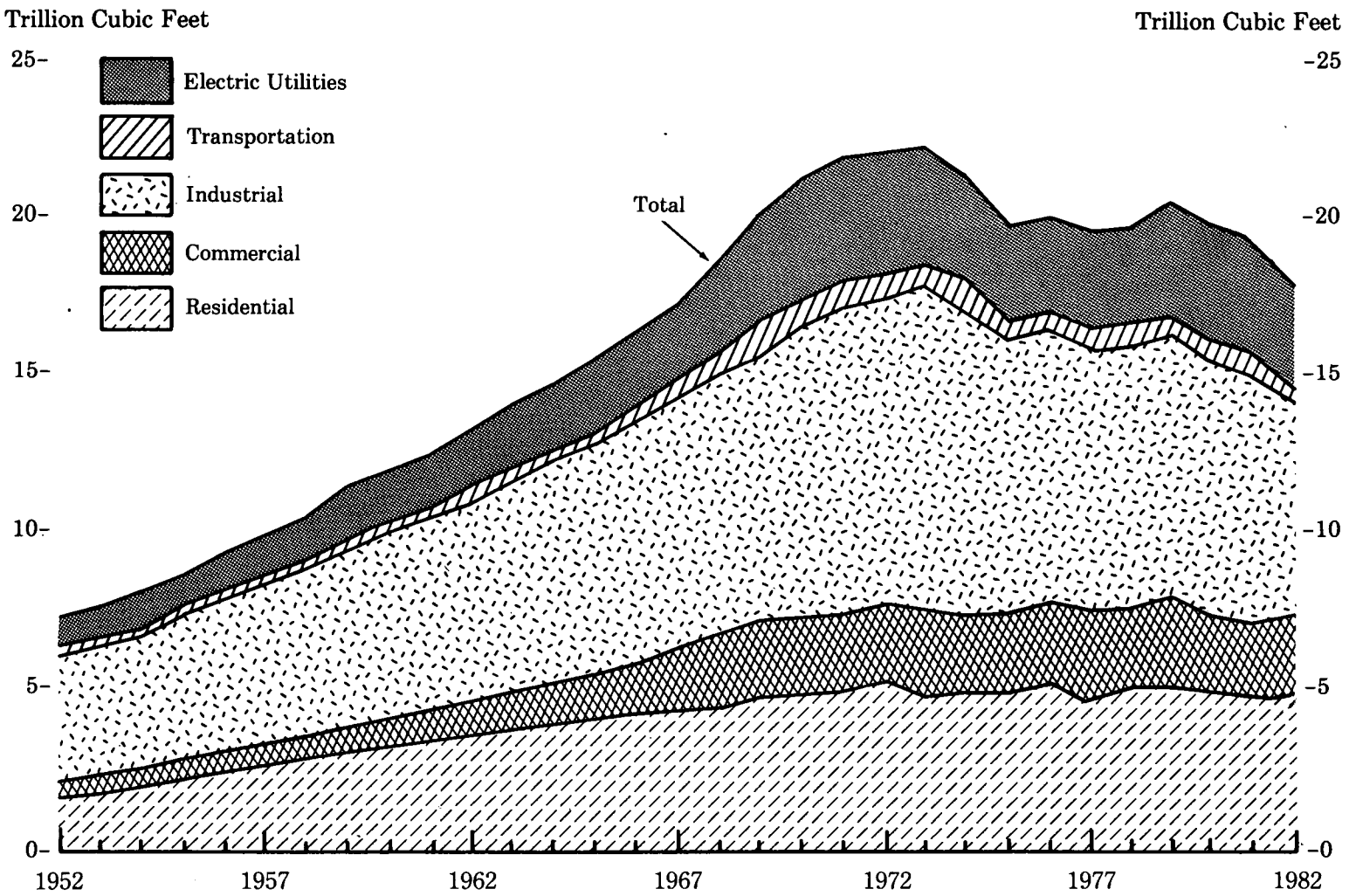


Table 47. Consumption of Natural Gas by End-Use Sector,[1] 1952-1982
(Trillion Cubic Feet)

Year	Residential	Commercial [2]	Industrial			Electric Utilities	Transportation [3]	Total
			Lease and Plant Fuel	Other Industrial	Total Industrial			
1952	1.62	0.52	1.16	2.87	4.04	0.91	0.21	7.29
1953	1.69	0.53	1.13	3.03	4.16	1.03	0.23	7.64
1954	1.89	0.58	1.10	3.07	4.17	1.17	0.23	8.05
1955	2.12	0.63	1.13	3.41	4.54	1.15	0.25	e8.69
1956	2.33	0.72	1.00	3.71	4.71	1.24	0.30	9.29
1957	2.50	0.78	1.05	3.89	4.93	1.34	0.30	9.85
1958	2.71	0.87	1.15	3.89	5.03	1.37	0.31	10.30
1959	2.91	0.98	1.24	4.22	5.46	1.63	0.35	11.32
1960	3.10	1.02	1.24	4.53	5.77	1.72	0.35	11.97
1961	3.25	1.08	1.29	4.67	5.96	1.83	0.38	12.49
1962	3.48	1.21	1.37	4.86	6.23	1.97	0.38	13.27
1963	3.59	1.27	1.41	5.13	6.55	2.14	0.42	13.97
1964	3.79	1.37	1.37	5.52	6.89	2.32	0.44	14.81
1965	3.90	1.44	1.16	5.96	7.11	2.32	0.50	15.28
1966	4.14	1.62	1.03	6.51	7.55	2.61	0.54	16.45
1967	4.31	1.96	1.14	6.65	7.79	2.75	0.58	17.39
1968	4.45	2.08	1.24	7.13	8.37	3.15	0.59	18.63
1969	4.73	2.25	1.35	7.61	8.96	3.49	0.63	20.06
1970	4.84	2.40	1.40	7.85	9.25	3.93	0.72	21.14
1971	4.97	2.51	1.41	8.18	9.59	3.98	0.74	21.79
1972	5.13	2.61	1.46	8.17	9.62	3.98	0.77	22.10
1973	4.88	2.60	1.50	8.69	10.18	3.66	0.73	22.05
1974	4.79	2.56	1.48	8.29	9.77	3.44	0.67	21.22
1975	4.92	2.51	1.40	6.97	8.36	3.16	0.58	19.54
1976	5.05	2.67	1.63	6.96	8.60	3.08	0.55	19.95
1977	4.82	2.50	1.66	6.82	8.47	3.19	0.53	19.52
1978	4.90	2.60	1.65	6.76	8.40	3.19	0.53	19.63
1979	4.97	2.79	1.50	6.90	8.40	3.49	0.60	20.24
1980	4.75	2.61	1.03	7.17	8.20	3.68	0.63	19.88
1981	4.55	2.52	0.93	7.13	8.06	3.64	0.64	19.40
1982	4.70	2.61	0.85	5.95	6.81	3.23	0.59	17.94

[1] See Explanatory Note 9.
[2] Includes deliveries to municipalities and public authorities for institutional heating and other purposes.
[3] Pipeline fuel.
Note: Sum of components may not equal total due to independent rounding. Beginning with 1965, all volumes are shown on a pressure base of 14.73 p.s.i.a. at 60 degrees F. For prior years, the pressure base is 14.65 p.s.i.a. at 60 degrees F.
Sources: **Electric Utilities:** •1952 through September 1977—Federal Power Commission, Form 4, "Monthly Power Plant Report." •October 1977 through 1981—Federal Energy Regulatory Commission, FPC Form 4, "Monthly Power Plant Report." •1982—Energy Information Administration—Form EIA-759, "Monthly Power Plant Report." **All Other Data:** •1952 through 1975 — Bureau of Mines, *Minerals Yearbook*, "Natural Gas" chapter. •1976 through 1978—Energy Information Administration, Energy Data Reports, *Natural Gas, Annual.* •1979—Energy Information Administration, *Natural Gas Production and Consumption 1979.* •1980 and 1981—Energy Information Administration, *Natural Gas Annual.* •1982—Energy Information Administration, *Natural Gas Monthly.*

Figure 51. Underground Storage of Natural Gas, Year-End

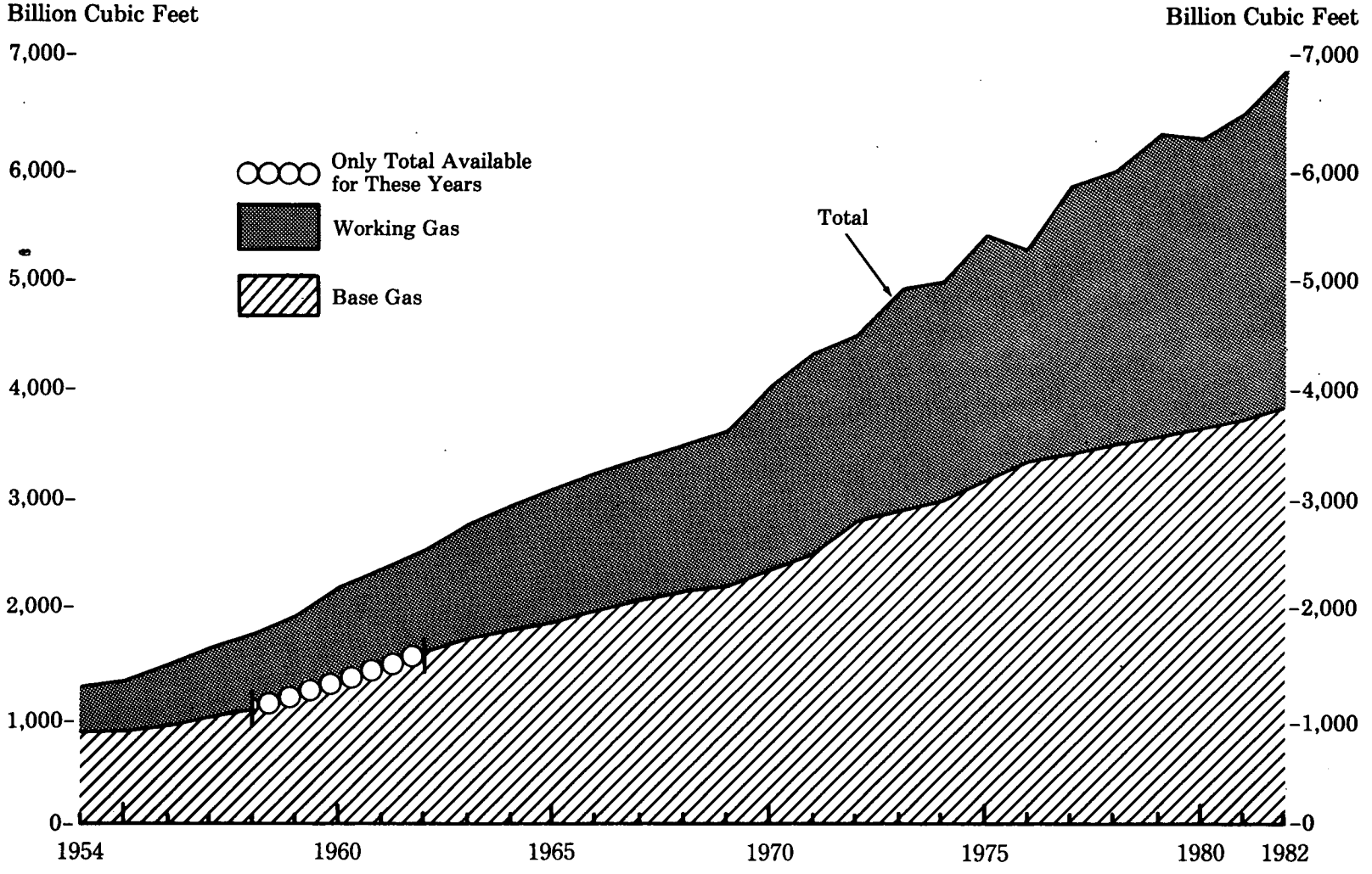


Table 48. Underground Storage of Natural Gas, Year-End 1954-1982
(Billion Cubic Feet)

Year	Base Gas [1]	Working Gas	Total Gas in Storage [1]
1954	817	465	1,281
1955	863	505	1,368
1956	919	583	1,502
1957	1,001	673	1,674
1958	1,056	708	1,764
1959	NA	NA	1,901
1960	NA	NA	2,184
1961	NA	NA	2,344
1962	1,571	933	2,504
1963	1,738	1,007	2,745
1964	1,781	1,159	2,940
1965	1,848	1,242	3,090
1966	1,958	1,267	3,225
1967	2,058	1,318	3,376
1968	2,128	1,366	3,495
1969	2,181	1,421	3,602
1970	2,326	1,678	4,004
1971	2,485	1,840	4,325
1972	2,751	1,729	4,480
1973	2,864	2,034	4,898
1974	2,912	2,050	4,962
1975	3,162	2,212	5,374
1976	3,323	1,926	5,250
1977	3,391	2,475	5,866
1978	3,473	2,547	6,020
1979	3,553	2,753	6,306
1980	3,642	2,655	6,297
1981	3,752	2,815	6,568
1982	3,805	3,072	6,877

[1] Includes native gas.
NA = Not available.
Note: Sum of components may not equal total due to independent rounding.
Note: Beginning with 1965 data, all volumes are shown on a pressure base of 14.73 p.s.i.a. at 60 degrees F. For prior years, the pressure base is 14.65 p.s.i.a. at 60 degrees F.
Sources: •1954 through 1974—American Gas Association, *Gas Facts*. •1975 and 1976—Federal Energy Administration, Form G 318-M-O and Federal Power Commission, Form 8, "Underground Gas Storage Report." •1977 through 1978— Energy Information Administration, and Federal Energy Administration, Form G 318-M-O and Federal Power Commission, Form 8, "Underground Gas Storage Report." •1979 through 1982—Energy Information Administration, EIA Form 191 and Federal Energy Regulatory Commission, FPC Form 8, "Underground Gas Storage Report."

Figure 52. International Supply and Disposition of Natural Gas, 1980
(Trillion Cubic Feet)

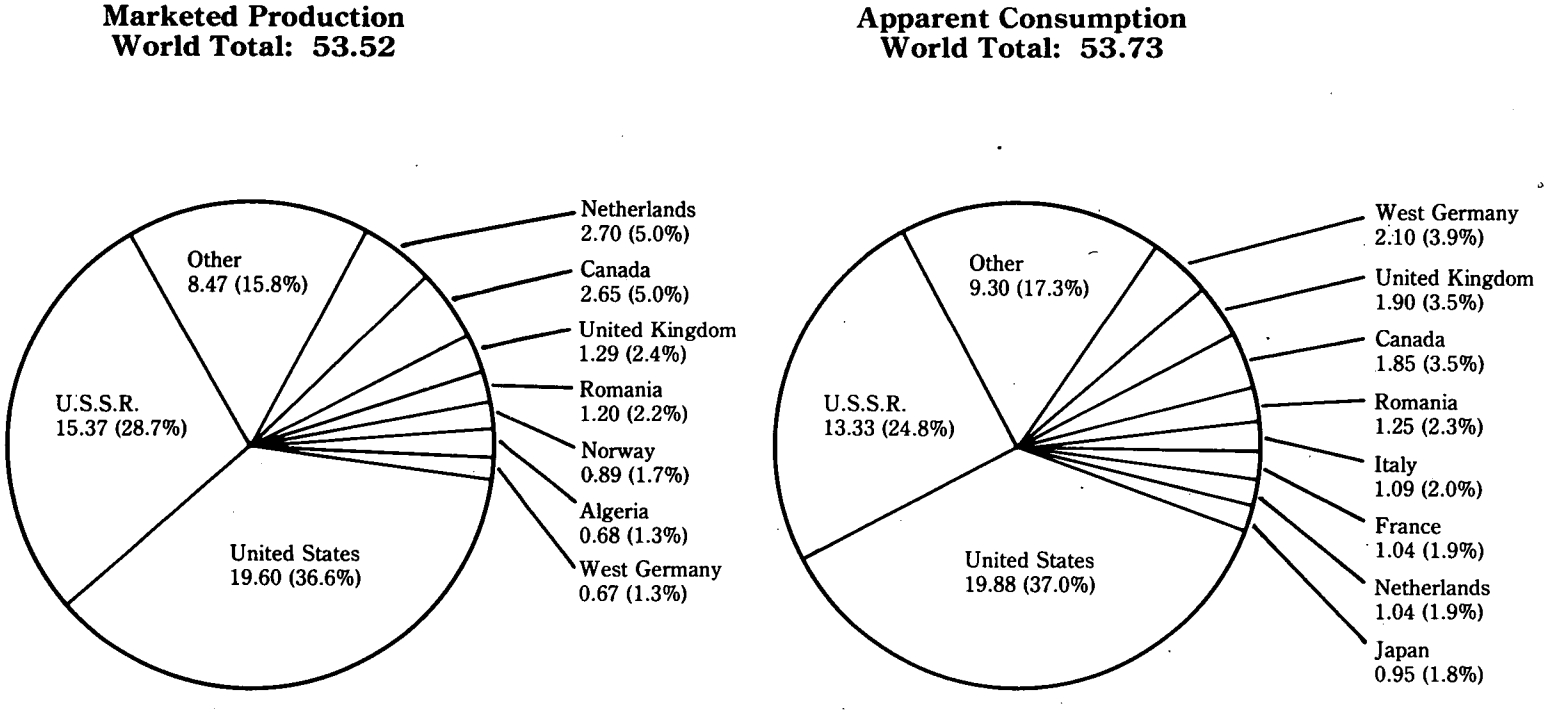


Table 49. International Supply and Disposition of Natural Gas, 1980
(Billion Cubic Feet)

Area and Country	Supply		Disposition	
	Net Dry Production	Imports	Apparent Consumption	Exports
North, Central, and South America				
Argentina	279	80	359	0
Canada	2,647	(1)	1,850	797
Mexico	1,010	0	908	102
United States	19,602	985	[2] 19,877	49
Venezuela	517	0	517	0
Other	666	0	594	80
Total	24,721	1,065	24,105	1,028
Western Europe				
France	266	775	1,035	6
Germany, West	669	1,526	2,102	93
Italy	430	658	1,088	0
Netherlands	2,700	195	1,035	1,860
Norway	887	0	431	1,318
United Kingdom	1,288	612	1,900	0
Other	160	862	1,014	8
Total	6,400	4,628	8,605	3,285
Eastern Europe and U.S.S.R.				
Czechoslovakia	18	307	325	0
Germany, East	302	230	524	8
Hungary	210	143	353	0
Poland	224	188	412	0
Romania	1,203	55	1,251	7
U.S.S.R.	15,370	120	13,328	2,162
Other	53	175	227	0
Total	17,379	1,217	16,419	2,177
Middle East and Africa				
Algeria	683	0	460	223
Iran	292	0	232	60
Kuwait	244	0	244	0
Saudi Arabia	517	0	517	0
Other	841	0	618	223
Total	2,577	0	2,071	506
Far East and Oceania				
Australia	338	0	338	0
Brunei	316	0	6	310
China	504	0	504	0
Indonesia	630	0	195	435
Japan	78	870	948	0
Pakistan	286	0	286	0
Other	293	20	253	60
Total	2,445	890	2,530	805
World Total	53,521	7,800	53,730	7,800

[1] Less than 0.5 billion cubic feet.
[2] Actual consumption.
Note: Sum of components may not equal total due to independent rounding.
Source: Energy Information Administration, *1981 International Energy Annual.*

Figure 53. International Natural Gas Flow, 1980 (Billion Cubic Feet)

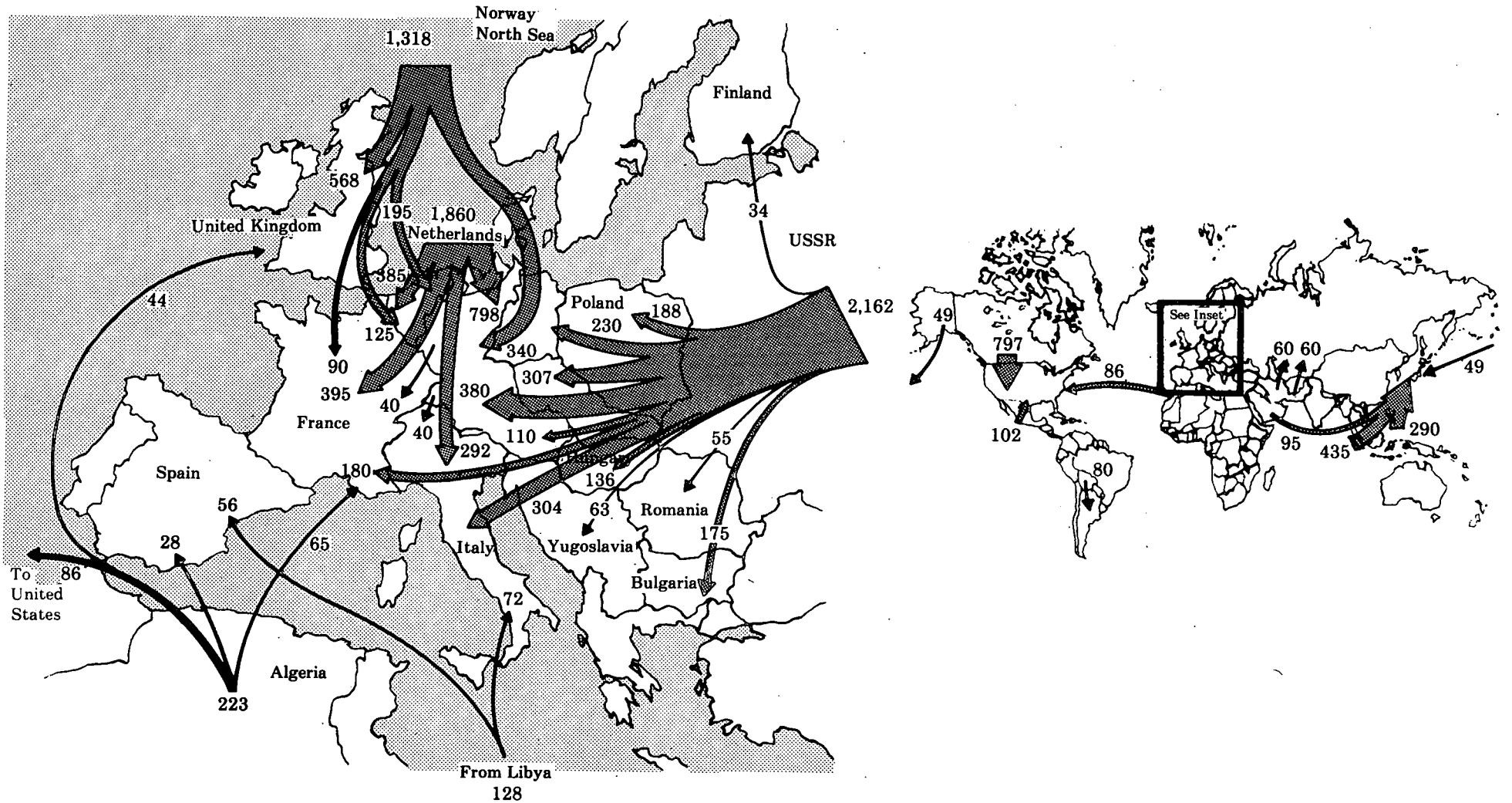


Table 50. International Natural Gas Flow, 1980

(Billion Cubic Feet)

Importing Area and Country	Exporting Area or Country: North America			Western Europe			Eastern Europe		Africa			
	Canada	United States	Central and South America	Germany, West	Netherlands	Norway and Other [1]	U.S.S.R.	Romania and Other [2]	Algeria	Libya	Other [3]	Total
North, Central, and South America												
Argentina	0	0	[4] 80	0	0	0	0	0	0	0	0	80
Canada	—	[5]	0	0	0	0	0	0	0	0	0	[5]
Mexico	0	4	0	0	0	0	0	0	0	0	0	4
United States	797	—	[6] 102	0	0	0	0	0	[7] 86	0	0	985
Western Europe												
Austria	0	0	0	14	0	0	110	0	0	0	0	124
Belgium and Luxembourg	0	0	0	0	385	125	0	0	0	0	0	510
Finland	0	0	0	0	0	0	34	0	0	0	0	34
France	0	0	0	40	395	96	180	0	[7] 65	0	0	775
Germany, West	0	0	0	—	798	340	380	8	0	0	0	1,526
Italy	0	0	0	0	282	0	304	0	0	[7] 72	0	658
Netherlands	0	0	0	0	—	195	0	0	0	0	0	195
Spain	0	0	0	0	0	0	0	0	[7] 28	[7] 56	0	84
Switzerland	0	0	0	40	0	7	0	0	0	0	0	47
United Kingdom	0	0	0	0	0	568	0	0	[7] 44	0	0	612
Yugoslavia	0	0	0	0	0	0	63	0	0	0	0	63
Eastern Europe and U.S.S.R.												
Bulgaria	0	0	0	0	0	0	175	0	0	0	0	175
Czechoslovakia	0	0	0	0	0	0	307	0	0	0	0	307
Germany, East	0	0	0	0	0	0	230	0	0	0	0	230
Hungary	0	0	0	0	0	0	136	7	0	0	0	143
Poland	0	0	0	0	0	0	188	0	0	0	0	188
Romania	0	0	0	0	0	0	55	0	0	0	0	55
U.S.S.R.	0	0	0	0	0	0	—	0	0	0	[8] 120	120
Far East and Oceania												
Japan	0	[7] 45	0	0	0	0	0	0	0	0	[9] 820	865
Malaysia	0	0	0	0	0	0	0	0	0	0	[10] 20	20
World Total	797	49	182	93	1,860	1,331	2,162	15	223	128	960	7,800

[1] All quantities are exported from Norway except for 6 and 7 billion cubic feet (Bcf) exported from unidentified Western European countries to France and Switzerland, respectively.
[2] Includes 7 Bcf exported from Romania to Hungary and 8 Bcf exported to West Germany from an unidentified East European country.
[3] Includes Middle East, Far East, and Oceania.
[4] Exports from Bolivia and Chile.
[5] Less than 0.5 billion cubic feet.
[6] Exports from Mexico.
[7] Liquefied natural gas (LNG).
[8] Includes estimated 60 Bcf from Iran and 60 Bcf from Afghanistan.
[9] All LNG; includes 95 Bcf from United Arab Emirates, 290 Bcf from Brunei and 435 Bcf from Indonesia.
[10] LNG from Brunei.

Note: Sum of components may not equal total due to independent rounding.
Source: Energy Information Administration, *1981 International Energy Annual.*

Figure 54. Natural Gas Wellhead Price

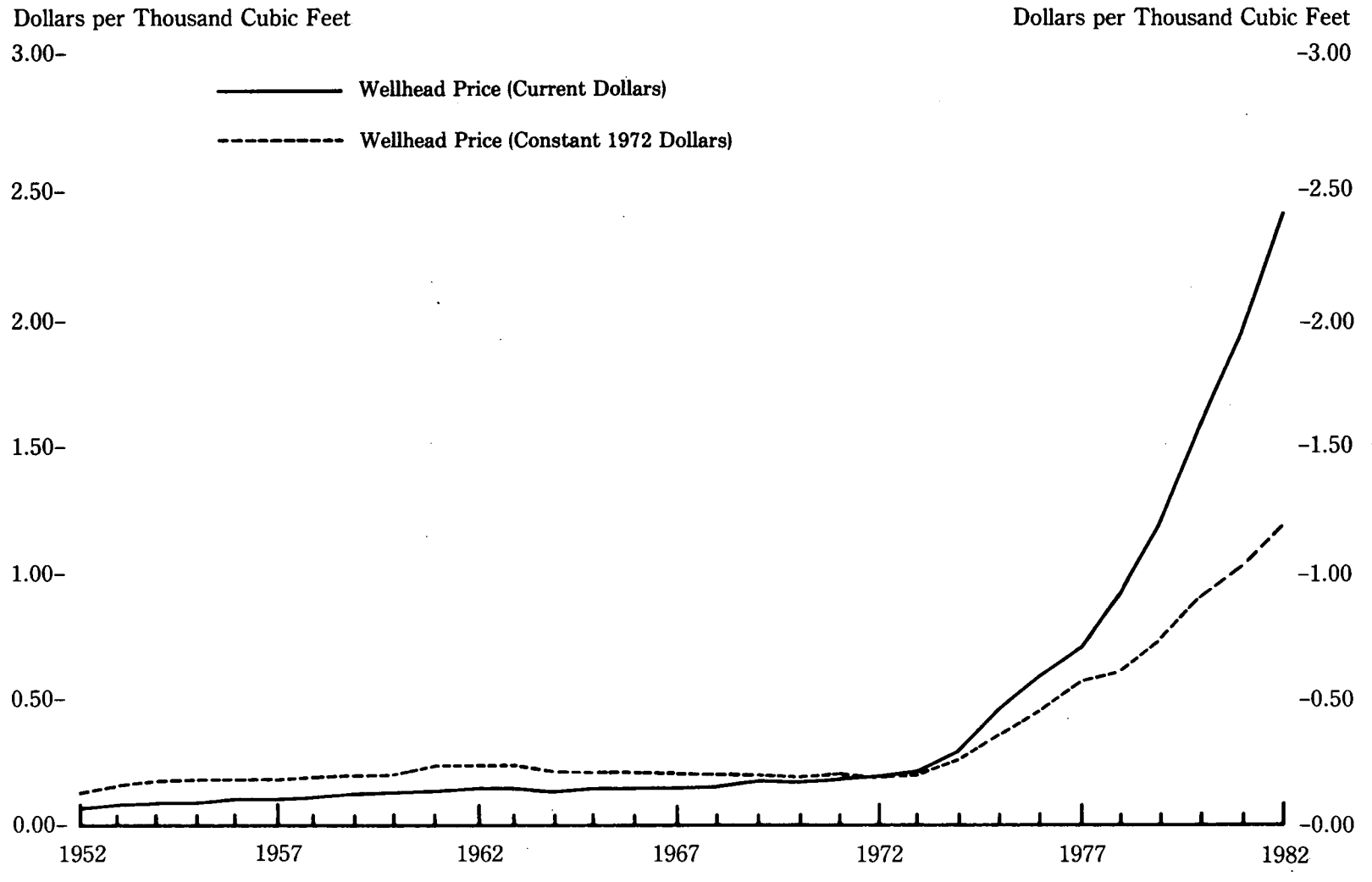


Table 51. Natural Gas Wellhead Price, 1952-1982
(Dollars per Thousand Cubic Feet)

Year	Wellhead Price [1]	
	Current	Constant [2]
1952	0.08	0.14
1953	0.09	0.15
1954	0.10	0.17
1955	0.10	0.16
1956	0.11	0.18
1957	0.11	0.17
1958	0.12	0.18
1959	0.13	0.19
1960	0.14	0.20
1961	0.15	0.22
1962	0.16	0.23
1963	0.16	0.22
1964	0.15	0.21
1965	0.16	0.22
1966	0.16	0.21
1967	0.16	0.20
1968	0.16	0.19
1969	0.17	0.20
1970	0.17	0.19
1971	0.18	0.19
1972	0.19	0.19
1973	0.22	0.21
1974	0.30	0.26
1975	0.45	0.36
1976	0.58	0.44
1977	0.79	0.56
1978	0.91	0.60
1979	1.18	0.72
1980	1.59	0.89
1981	1.98	1.01
1982[3]	2.42	1.17

[1] The U.S. average wellhead price of natural gas is generated by dividing the sum of total values of natural gas produced in all States by the sum of total quantities of natural gas produced in all States. See Glossary for definitions of Natural Gas Wellhead Price.
[2] Constant 1972 prices calculated using GNP implicit price deflators, 1972 = 100. See Units of Measure, Conversion Factors, Price Deflators, and Energy Equivalents section.
[3] Estimated based on data through October.
Sources: •1952 through 1975—Bureau of Mines, *Minerals Yearbook*, "Natural Gas" chapter. •1976 through 1978—Energy Information Administration, Energy Data Reports, *Natural Gas, Annual*. •1979—Energy Information Administration, *Natural Gas Production and Consumption 1979*. •1980 and 1981—Energy Information Administration, *Natural Gas Annual*. •1982—Energy Information Administration, *Natural Gas Monthly*.

Figure 55. Average Price of Natural Gas Consumed by End-Use Sector

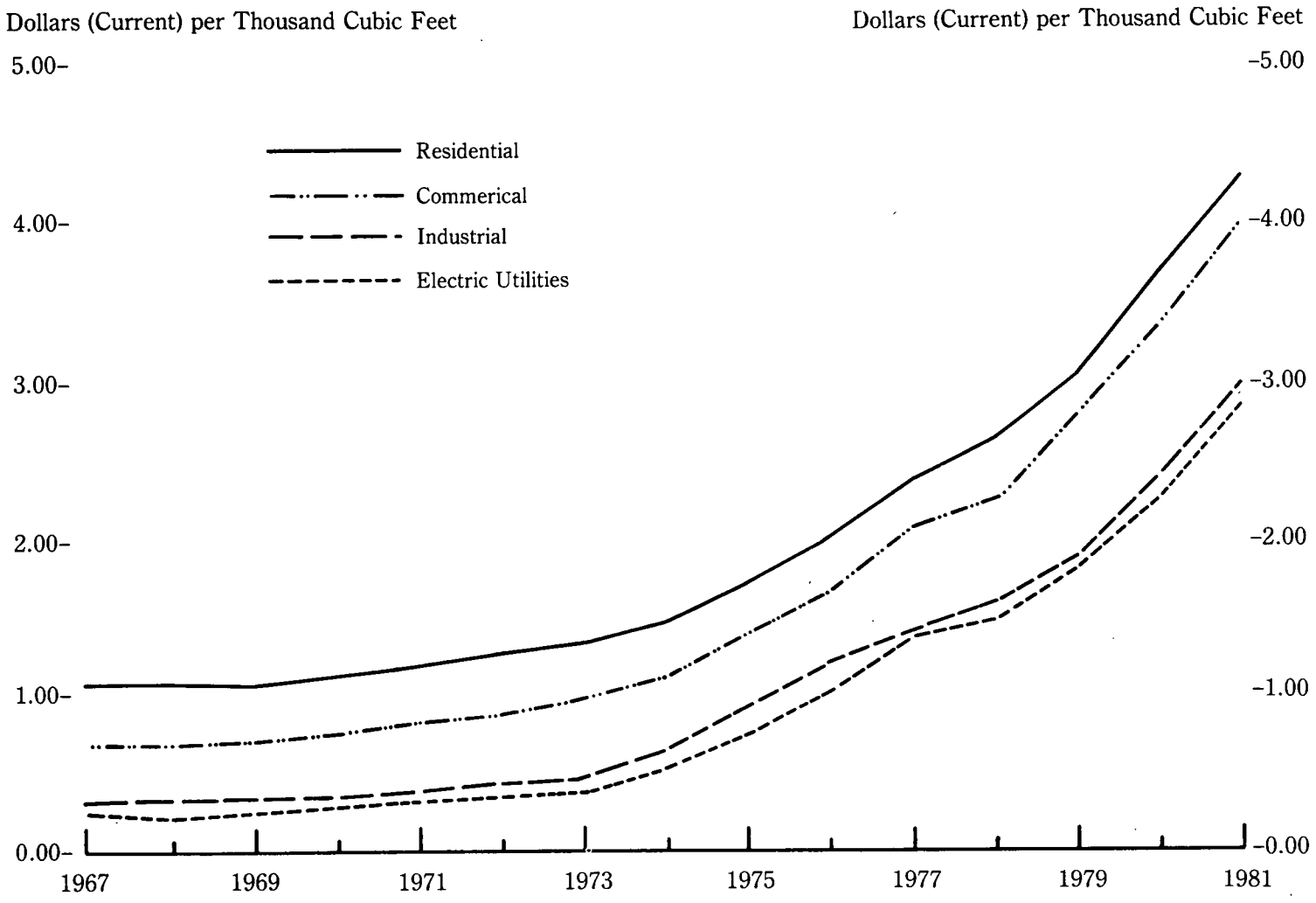


Table 52. Average Price of Natural Gas Consumed by End-Use Sector, 1967-1981

(Dollars per Thousand Cubic Feet)

Year	Residential	Commercial [1]	Industrial			Electric Utilities	Transportation [2]	Total
			Lease and Plant Fuel	Other Industrial	Total Industrial			
1967	1.04	0.74	0.15	0.34	0.31	0.28	0.20	0.53
1968	1.04	0.73	0.16	0.34	0.31	0.22	0.20	0.51
1969	1.05	0.74	0.18	0.35	0.32	0.27	0.21	0.53
1970	1.09	0.77	0.18	0.37	0.34	0.29	0.21	0.55
1971	1.15	0.82	0.19	0.41	0.38	0.32	0.22	0.59
1972	1.21	0.88	0.20	0.45	0.41	0.34	0.23	0.63
1973	1.29	0.94	0.21	0.50	0.46	0.38	0.25	0.68
1974	1.43	1.07	0.51	0.67	0.65	0.51	0.30	0.84
1975	1.71	1.35	0.47	0.96	0.88	0.77	0.40	1.12
1976	1.98	1.64	0.57	1.24	1.11	0.98	0.51	1.37
1977	2.35	2.04	0.71	1.50	1.34	1.32	0.77	1.66
1978	2.56	2.23	0.79	1.70	1.52	1.48	0.90	1.85
1979	2.98	2.73	1.06	1.99	1.82	1.81	1.32	2.21
1980	3.68	3.39	1.43	2.56	2.42	2.27	1.85	2.80
1981	4.29	4.00	1.93	3.14	3.00	2.89	2.39	3.39

[1] Includes deliveries to municipalities and public authorities for institutional heating and other purposes.
[2] Pipeline fuel.
Note: The average for each end-use sector is calculated by dividing the total value of the gas consumed by each sector by the total quantity consumed. See Explanatory Note 9.
Sources: **Electric Utilities:** •1967 through 1972 —Federal Power Commission, Form 4, "Monthly Power Plant Report." •1973 through 1976—Federal Power Commission, FPC Form 4, "Monthly Power Plant Report" and FPC Form 423, " Monthly Report of Cost and Quality of Fuels for Electric Plants." •1977—Federal Energy Regulatory Commission, FPC Form 4, "Monthly Power Plant Report" and FPC Form 423, "Monthly Report of Cost and Quality of Fuels for Electric Plants." •1978 through 1981—Energy Information Administration, FPC Form 4, "Monthly Power Plant Report" and FPC Form 423, "Monthly Report of Cost and Quality of Fuels for Electric Plants." **All Other Data:** •1967 through 1975—Bureau of Mines, *Minerals Yearbook*, "Natural Gas" chapter. •1976 through 1978—Energy Information Administration, Energy Data Reports, *Natural Gas, Annual.* •1979—Energy Information Administration, *Natural Gas Production and Consumption 1979.* • 1980 and 1981—Energy Information Administration, *Natural Gas Annual.*

Section 5. Coal Supply and Disposition

This section presents basic data relating to the supply and disposition of coal. Coal consists of bituminous coal (including subbituminous coal), lignite, and anthracite. The section also includes data on labor productivity in coal mining, coal prices, the supply and demand for coke, and international coal reserves and production.

Production. Commercial quantities of coal are produced in 26 States from some 5,800 active mines, of which 15 percent provide about 80 percent of the total output. The mines are controlled by approximately 3,700 companies, the majority of which are small. During recent years, the trend has been to develop larger mines and to consolidate operations for greater efficiency. In 1982, production totaled 824 million short tons, virtually unchanged from 1981 and only 0.7 percent less that the record high production of 830 million tons produced in 1980 (see Table 54).

Exports. Coal exports in 1982 reached 107 million short tons (including shipments to U.S. Armed Forces overseas), down 5.6 percent from 1981, a reflection of reduced international industrial output. Exports were shipped principally to Japan, Canada, and Western Europe (see Table 56).

Consumption. Domestic consumption of coal during 1982 was 707 million short tons, 3.4 percent below the 1981 level. The leading consumer of coal continued to be electric utilities. In 1982 coal consumption by utilities fell slightly to 594 short tons, the first decline since 1958 (see Table 55). There is little seasonal variation in the use of coal. Decreases in the demand for coal after the heating season are generally offset by increases in the demand for coal by utilities to meet electric power requirements for air conditioning. There are often considerable variations in the supply of coal. Therefore, large stockpiles are usually maintained at powerplants and coke plants to compensate for production losses due to strikes, bad weather, and other emergencies. For example, during the 1981 strike, which ended in June 1981, 50 million short tons of coal were drawn from inventories, approximately 30 percent of total stocks available. By year-end 1981, 24 million short tons of coal had been added to the depleted inventories (see Table 57). Year-end 1982 stocks of 196 million short tons were especially high, considering that no strike is anticipated for 1983.

Resources. The U.S. Geological Survey has identified U.S. coal resources of more than 1,700 billion short tons at depths of less than 3,000 feet. The Survey also estimated the existence of additional coal resources of more than 2,200 billion short tons to depths of 6,000 feet. The Energy Information Administration in 1982 estimated that approximately 473 billion short tons of coal were in the Demonstrated Reserve Base as of January 1, 1980 (see Table 60). Although site-specific recovery rates range from 40 percent in some underground mines to more than 90 percent at some surface mines, it is estimated that on a national basis at least half of the coal in the Demonstrated Reserve Base can be recovered.

International Production. World coal production rose from 3.7 billion short tons in 1975 to 4.2 billion short tons in 1981, an average growth rate of 2.3 percent per year. The U.S.S.R., the United States, and China together accounted for about 54 percent of the world's coal production during 1981 (see Table 61).

International Reserves. In a 1979 report by the World Energy Conference (latest available), world recoverable coal reserves were estimated to be 975 billion short tons, which is 24 percent higher than in the 1978 survey. The United States, the U.S.S.R., China, West Germany, and Australia accounted for 76 percent of the world's estimated recoverable reserves of coal (see Table 62).

Prices. Domestic coal prices increased in 1982, continuing a long-term trend. Bituminous coal and lignite at the mine-mouth averaged $27.30 per short ton; the price at electric utility powerplants averaged $35.25 per ton; anthracite at preparation plants was up to $47.00 per ton (see Table 63).

Figure 56. Coal Flow Diagram, 1982

(Million Short Tons)

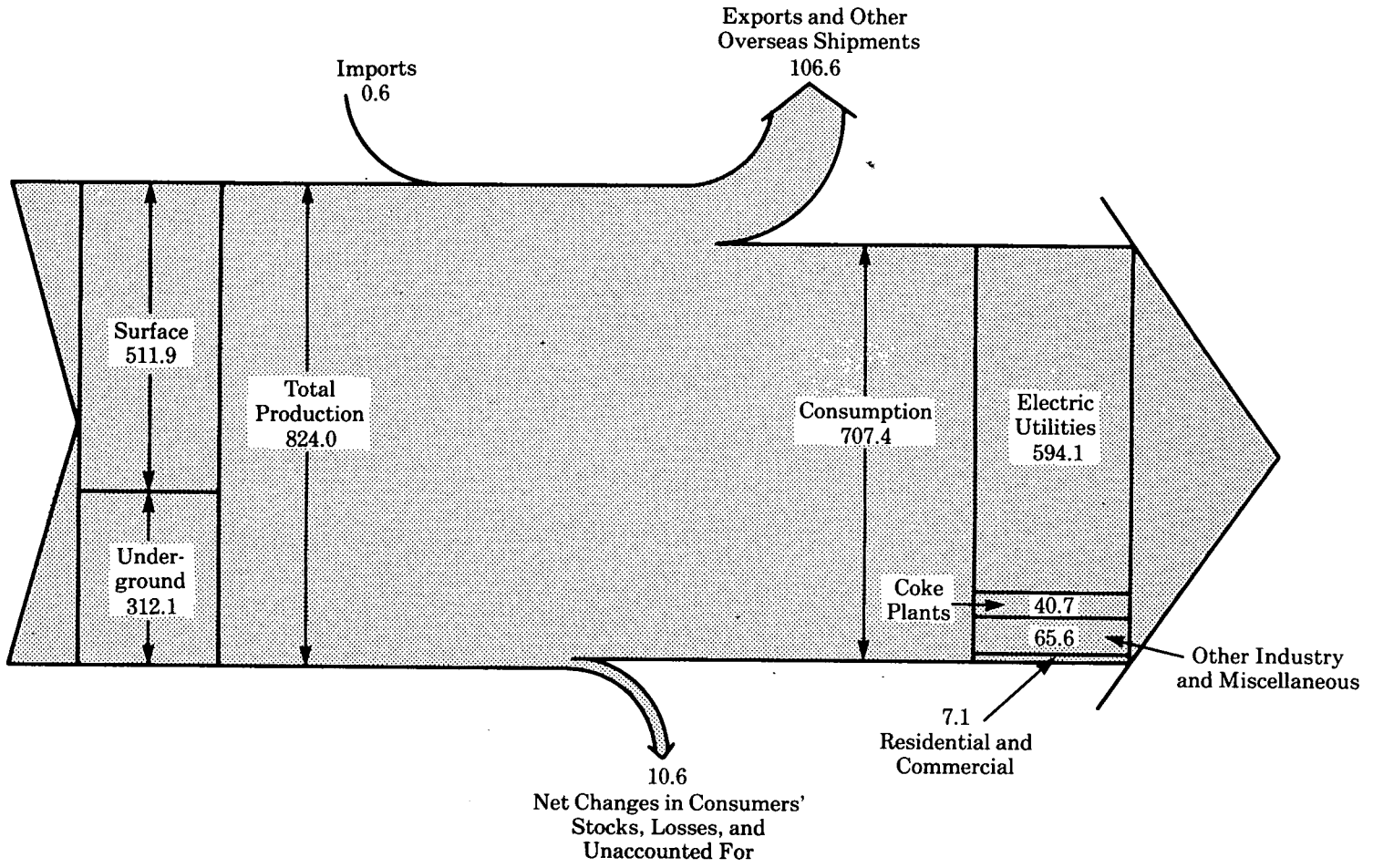


Figure 57. Coal Supply and Disposition

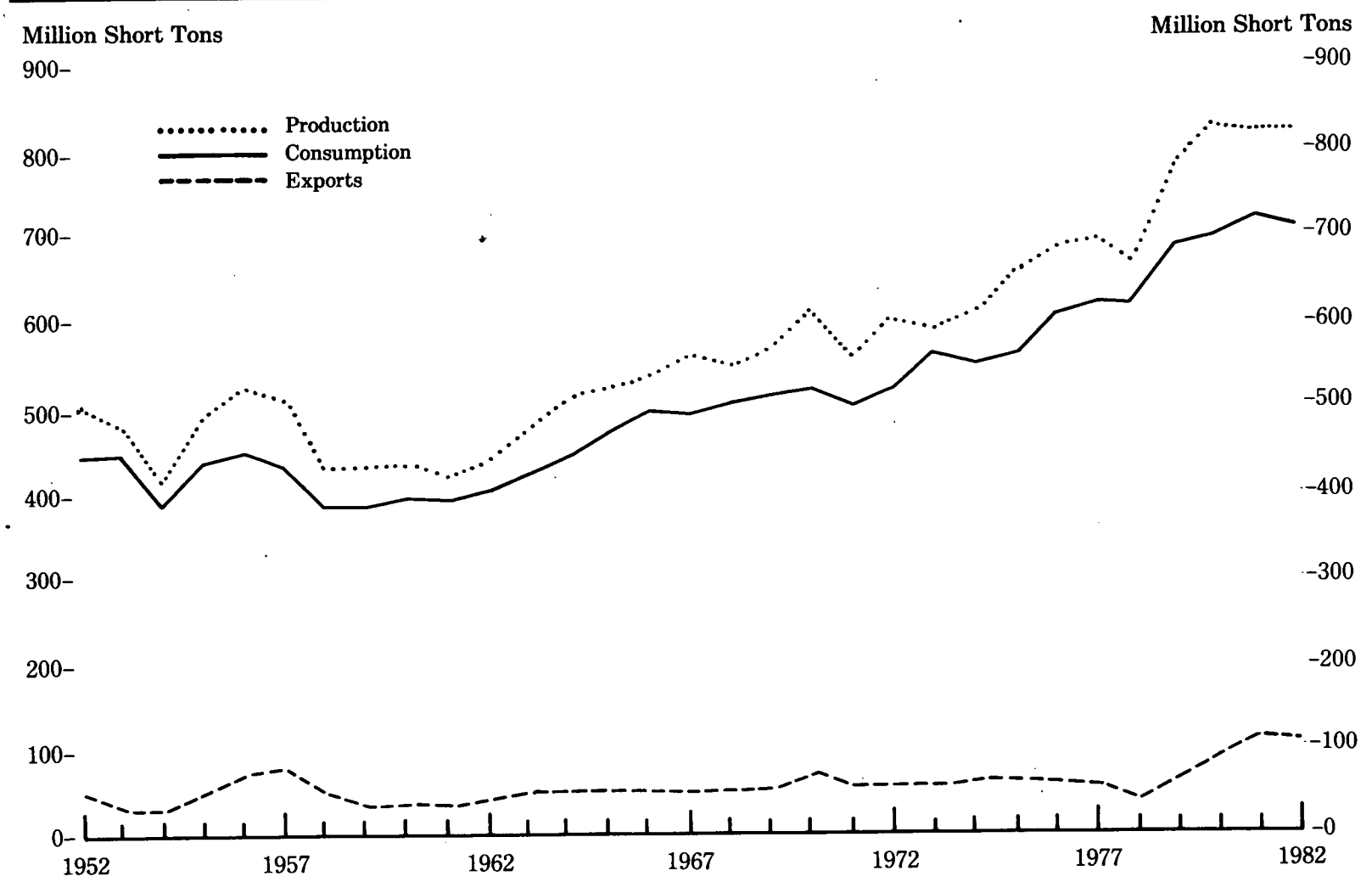


Table 53. Coal Supply and Disposition, 1952-1982

(Million Short Tons)

Year	Supply				Disposition		
	Production	Imports	Change in Consumers' Stocks, Losses, and Unaccounted for [1]	Total	Exports [2]	Consumption	Total
1952	507.4	0.3	-1.4	506.3	52.2	454.1	506.3
1953	488.2	0.3	2.8	491.3	36.5	454.8	491.3
1954	420.8	0.2	2.8	423.8	33.9	389.9	423.8
1955	490.8	0.3	10.3	501.4	54.4	447.0	501.4
1956	529.8	0.4	0.5	530.7	73.8	456.9	530.7
1957	518.0	0.4	-3.2	515.3	80.8	434.5	515.3
1958	431.6	0.3	6.4	438.3	52.6	385.7	438.3
1959	432.7	0.4	-9.0	424.1	39.0	385.1	424.1
1960	434.3	0.3	1.4	436.0	38.0	398.1	436.0
1961	420.4	0.2	6.1	426.7	36.4	390.4	426.7
1962	439.0	0.2	4.1	443.3	41.2	402.3	443.3
1963	477.2	0.3	-2.7	474.8	51.3	423.5	474.8
1964	504.2	0.3	-7.9	496.6	50.9	445.7	496.6
1965	527.0	0.2	-3.0	524.1	52.2	472.0	524.1
1966	546.8	0.2	1.6	548.6	50.8	497.7	548.6
1967	564.9	0.2	-22.7	542.4	51.0	491.4	542.4
1968	556.7	0.2	4.9	561.8	52.0	509.8	561.8
1969	571.0	0.1	3.2	574.3	57.9	516.4	574.3
1970	612.7	[3]	-17.0	595.6	72.4	523.2	595.6
1971	560.9	0.1	-1.4	559.6	58.0	501.6	559.6
1972	602.5	[3]	-21.1	581.5	57.2	524.3	581.5
1973	598.6	0.1	17.9	616.6	54.0	562.6	616.6
1974	610.0	2.1	7.4	619.5	61.1	558.4	619.5
1975	654.6	0.9	-26.2	629.4	66.8	562.6	629.4
1976	684.9	1.2	-21.7	664.4	60.6	603.8	664.4
1977	697.2	1.6	-18.8	680.0	54.7	625.3	680.0
1978	670.2	3.0	-6.9	666.2	41.0	625.2	666.2
1979	781.1	2.1	-36.3	746.9	66.4	680.5	746.9
1980	829.7	1.2	-36.1	794.8	92.1	702.7	794.8
1981	823.8	1.0	20.7	845.5	112.9	732.6	845.5
1982[4]	824.0	0.6	-10.6	814.0	106.6	707.4	814.0

[1] Includes changes in stocks at electric utilities, coke plants, other industries, and retail dealers and the balancing item of losses and unaccounted for. Net additions to stocks are considered as negative numbers. Net withdrawals from stocks are considered as positive numbers.

[2] Includes small quantities of anthracite shipped overseas to U.S. Armed Forces.

[3] Less than 0.05 million short tons.

[4] Preliminary. At time of release, preliminary coal production was 833.4 million short tons.

Note: Sum of components may not equal total due to independent rounding.

Sources: •1952 through 1975—Bureau of Mines, *Minerals Yearbook*, "Coal-Bituminous and Lignite" and "Coal-Pennsylvania Anthracite" chapters. •1976—Energy Information Administration, Energy Data Report, *Coal-Bituminous and Lignite in 1976* and *Coal-Pennsylvania Anthracite 1976*. •1977 and 1978—Energy Information Administration, Energy Data Reports, *Bituminous Coal and Lignite Production and Mine Operations-1977;....1978* and *Coal-Pennsylvania Anthracite 1977;....1978*. • 1979 through 1980—Energy Information Administration, Energy Data Report, *Weekly Coal Report*. •1981 and 1982—Energy Information Administration, *Weekly Coal Production*.

Figure 58. Coal Production

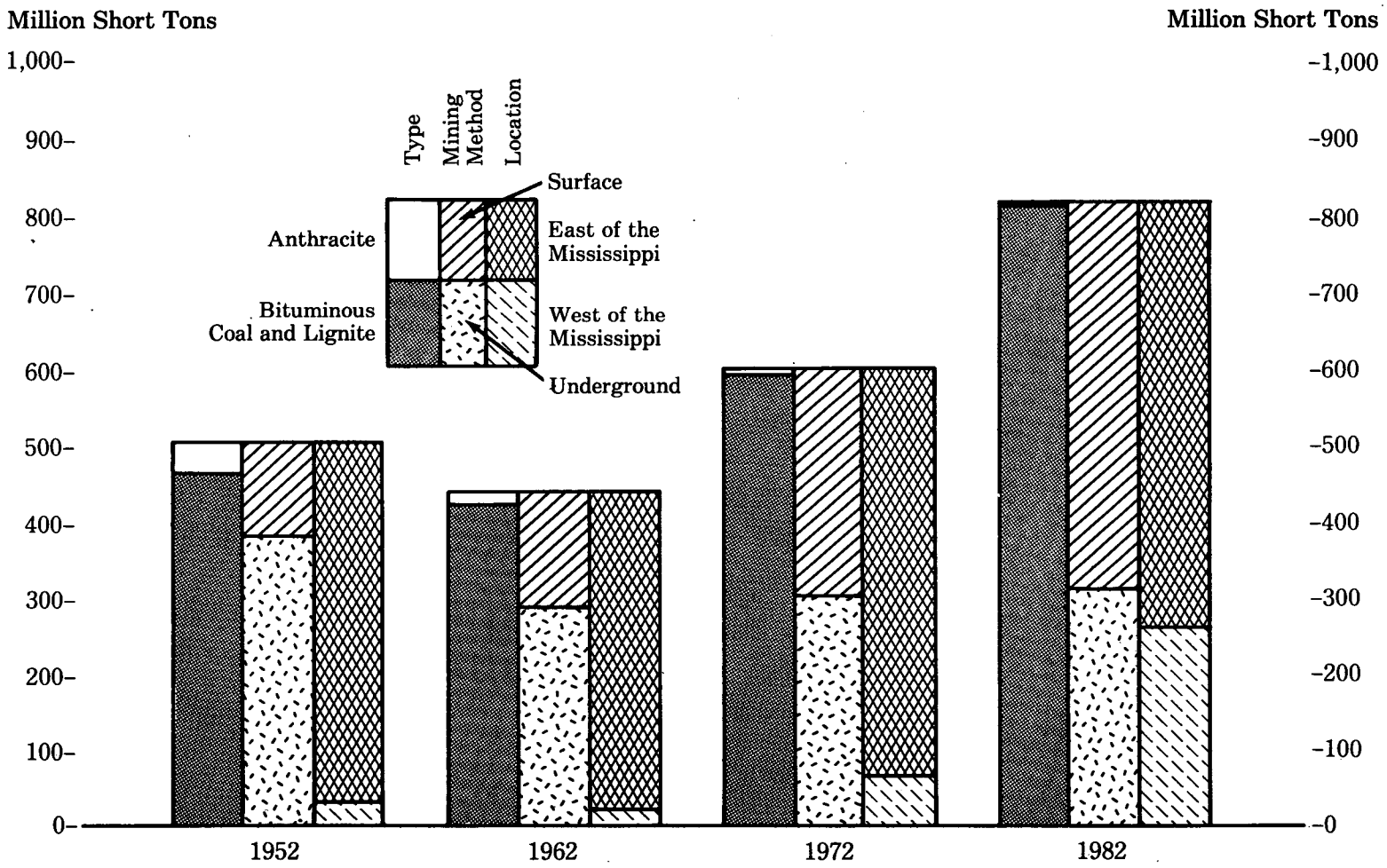


Table 54. Coal Production, 1952-1982
(Million Short Tons)

Year	Type		Method of Mining		Location		Total
	Bituminous Coal and Lignite	Anthracite	Underground	Surface	West of the Mississippi	East of the Mississippi	
1952	466.8	40.6	381.2	126.3	32.7	474.8	507.4
1953	457.3	30.9	367.4	120.8	30.6	457.7	488.2
1954	391.7	29.1	306.0	114.8	25.4	395.4	420.8
1955	464.6	26.2	358.0	132.9	26.6	464.2	490.8
1956	500.9	28.9	380.8	148.9	25.8	504.0	529.8
1957	492.7	25.3	373.6	144.5	24.7	493.4	518.0
1958	410.4	21.2	297.6	134.0	20.3	411.3	431.6
1959	412.0	20.6	292.8	139.8	20.3	412.4	432.7
1960	415.5	18.8	292.6	141.7	21.3	413.0	434.3
1961	403.0	17.4	279.6	140.9	21.8	398.6	420.4
1962	422.1	16.9	287.9	151.1	21.4	417.6	439.0
1963	458.9	18.3	309.0	168.2	23.7	453.5	477.2
1964	487.0	17.2	327.7	176.5	25.7	478.5	504.2
1965	512.1	14.9	338.0	189.0	27.4	499.5	527.0
1966	533.9	12.9	342.6	204.2	28.0	518.8	546.8
1967	552.6	12.3	352.4	212.5	28.9	536.0	564.9
1968	545.2	11.5	346.6	210.1	29.7	527.0	556.7
1969	560.5	10.5	349.2	221.7	33.3	537.7	571.0
1970	602.9	9.7	340.5	272.1	44.9	567.8	612.7
1971	552.2	8.7	277.2	283.7	51.0	509.9	560.9
1972	595.4	7.1	305.0	297.4	64.3	538.2	602.5
1973	591.7	6.8	300.1	298.5	76.4	522.1	598.6
1974	603.4	6.6	278.0	332.1	91.9	518.1	610.0
1975	648.4	6.2	293.5	361.2	110.9	543.7	654.6
1976	678.7	6.2	295.5	389.4	136.1	548.8	684.9
1977	691.3	5.9	266.6	430.6	163.9	533.3	697.2
1978	665.1	5.0	242.8	427.4	183.0	487.2	670.2
1979	776.3	4.8	320.9	460.2	221.4	559.7	781.1
1980	823.6	6.1	337.5	492.2	251.0	578.7	829.7
1981	818.4	5.4	316.5	507.3	269.9	553.9	823.8
1982[1]	819.8	4.2	312.1	511.9	264.1	559.9	824.0

[1] Preliminary. At time of release, preliminary total coal production was 833.4 million short tons.

Note: Sum of components may not equal total due to independent rounding.

Sources: •1952 through 1975—Bureau of Mines, *Minerals Yearbook*, "Coal-Bituminous and Lignite" and "Coal-Pennsylvania Anthracite" chapters. •1976—Energy Information Administration, Energy Data Report, *Coal-Bituminous and Lignite in 1976* and *Coal-Pennsylvania Anthracite 1976*. •1977 and 1978—Energy Information Administration, Energy Data Report, *Bituminous Coal and Lignite Production and Mine Operations-1977; ...1978* and *Coal-Pennsylvania Anthracite 1977; ...1978*. •1979 through 1980—Energy Information Administration, Energy Data Report, *Weekly Coal Report*. •1981 and 1982—Energy Information Administration, *Weekly Coal Production*.

Figure 59. Coal Consumption by End-Use Sector

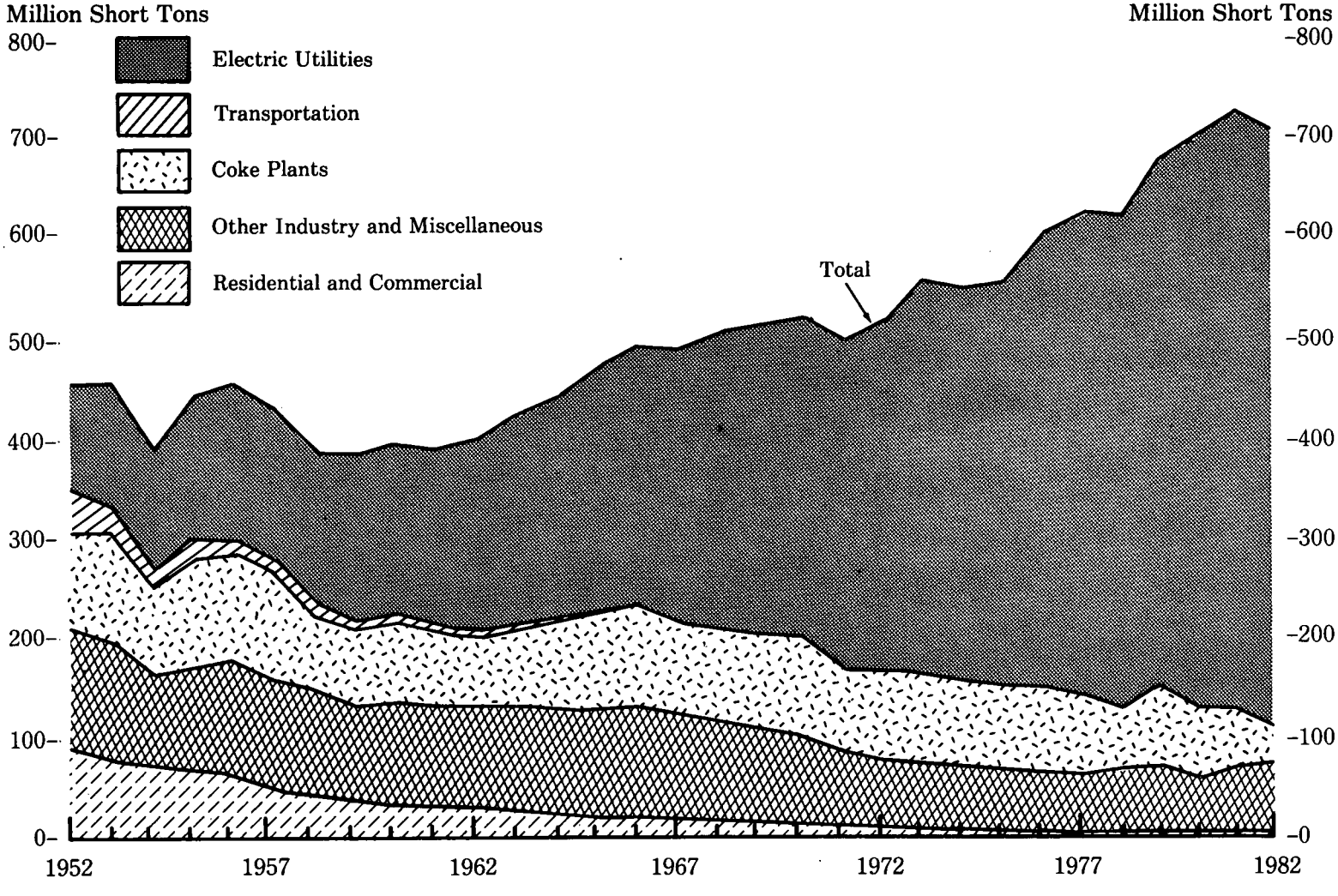


Table 55. Coal Consumption by End-Use Sector,[1] 1952-1982
(Million Short Tons)

Year	Electric Utilities	Industry and Miscellaneous			Transportation	Residential and Commercial	Total
		Coke Plants	Other Industry and Miscellaneous	Total			
1952	107.1	97.8	117.1	214.9	39.8	92.3	454.1
1953	115.9	113.1	117.0	230.1	29.6	79.2	454.8
1954	118.4	85.6	98.2	183.9	18.6	69.1	389.9
1955	143.8	107.7	110.1	217.8	17.0	68.4	447.0
1956	158.3	106.3	114.3	220.6	13.8	64.2	456.9
1957	160.8	108.4	106.5	214.9	9.8	49.0	434.5
1958	155.7	76.8	100.5	177.4	4.7	47.9	385.7
1959	168.4	79.6	92.7	172.3	3.6	40.8	385.1
1960	176.7	81.4	96.0	177.4	3.0	40.9	398.1
1961	182.2	74.2	95.9	170.1	0.8	37.3	390.4
1962	193.3	74.7	97.1	171.7	0.7	36.5	402.3
1963	211.3	78.1	101.9	180.0	0.7	31.5	423.5
1964	225.4	89.2	103.1	192.4	0.7	27.2	445.7
1965	244.8	95.3	105.6	200.8	0.7	25.7	472.0
1966	266.5	96.4	108.7	205.1	0.6	25.6	497.7
1967	274.2	92.8	101.8	194.6	0.5	22.1	491.4
1968	297.8	91.3	100.4	191.6	0.4	20.0	509.8
1969	310.6	93.4	93.1	186.6	0.3	18.9	516.4
1970	320.2	96.5	90.2	186.6	0.3	16.1	523.2
1971	327.3	83.2	75.6	158.9	0.2	15.2	501.6
1972	351.8	87.7	72.9	160.6	0.2	11.7	524.3
1973	389.2	94.1	68.0	162.1	0.1	11.1	562.6
1974	391.8	90.2	64.9	155.1	0.1	11.4	558.4
1975	406.0	83.6	63.6	147.2	(2)	9.4	562.6
1976	448.4	84.7	61.8	146.5	(2)	8.9	603.8
1977	477.1	77.7	61.5	139.2	(2)	9.0	625.3
1978	481.2	71.4	63.1	134.5	(2)	9.5	625.2
1979	527.1	77.4	67.7	145.1	(2)	8.4	680.5
1980	569.3	66.7	60.3	127.0	(2)	6.5	702.7
1981	596.8	61.0	67.4	128.4	(2)	7.4	732.6
1982[3]	594.1	40.6	65.6	106.2	(2)	7.1	707.4

[1] See Explanatory Note 10.
[2] Less than 0.05 million short tons. Quantities are included in the Other Industry and Miscellaneous category.
[3] Preliminary.
Note: Sum of components may not equal total due to independent rounding.
Sources: •1952 through 1975—Bureau of Mines, *Minerals Yearbook*, "Coal-Bituminous and Lignite" and "Coal-Pennsylvania Anthracite" chapters. •1976—Energy Information Administration, Energy Data Report, *Coal-Bituminous and Lignite in 1976* and *Coal-Pennsylvania Anthracite 1976*. •1977 and 1978—Energy Information Administration, Energy Data Report, *Bituminous Coal and Lignite Production and Mine Operations-1977;....1978* and *Coal-Pennsylvania Anthracite 1977;....1978*. • 1979 through 1980—Energy Information Administration, Energy Data Report, *Weekly Coal Report*. •1981 and 1982—Energy Information Administration, *Weekly Coal Production*.

Figure 60. Coal Exports by Country of Destination

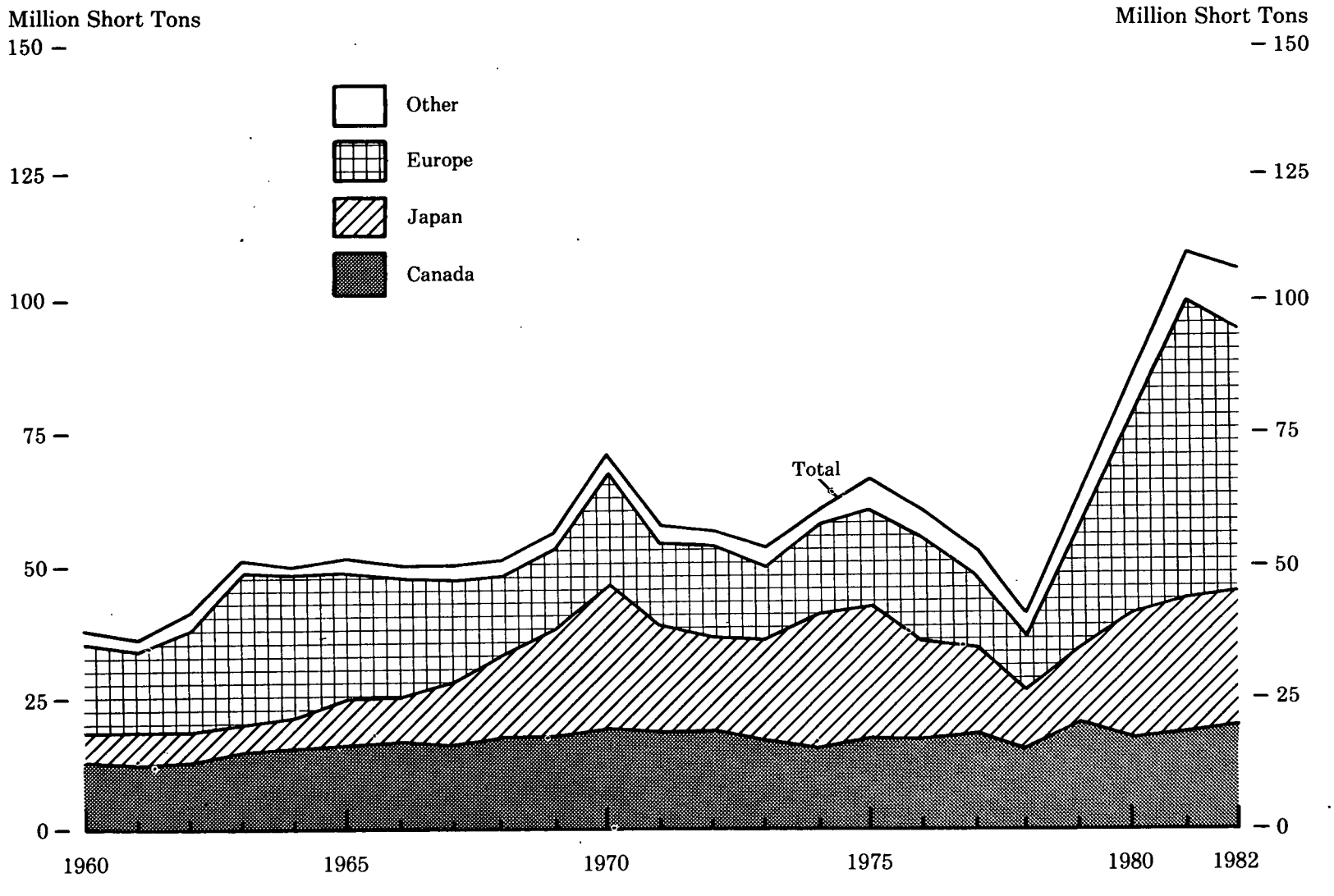


Table 56. Coal Exports[1] by Country of Destination, 1960-1982
(Million Short Tons)

Year	Canada	Brazil	Europe												
			Belgium/ Luxem-bourg	Denmark	France	West Germany	Italy	Nether-lands	Spain	United Kingdom	Other	Total	Japan	Other	Total
1960	12.8	1.1	1.1	0.1	0.8	4.6	4.9	2.8	0.3	0	2.4	17.1	5.6	1.3	38.0
1961	12.1	1.0	1.0	0.1	0.7	4.3	4.8	2.6	0.2	0	2.0	15.7	6.6	1.0	36.4
1962	12.3	1.3	1.3	(2)	0.9	5.1	6.0	3.3	0.8	(2)	1.8	19.1	6.5	1.0	40.2
1963	14.6	1.2	2.7	(2)	2.7	5.6	7.9	5.0	1.5	(2)	2.4	27.7	6.1	0.9	50.4
1964	14.8	1.1	2.3	(2)	2.2	5.2	8.1	4.2	1.4	(2)	2.6	26.0	6.5	1.1	49.5
1965	16.3	1.2	2.2	(2)	2.1	4.7	9.0	3.4	1.4	(2)	2.3	25.1	7.5	0.9	51.0
1966	16.5	1.7	1.8	(2)	1.6	4.9	7.8	3.2	1.2	(2)	2.5	23.1	7.8	1.0	50.1
1967	15.8	1.7	1.4	0	2.1	4.7	5.9	2.2	1.0	0	2.1	19.4	12.2	1.0	50.1
1968	17.1	1.8	1.1	(2)	1.5	3.8	4.3	1.5	1.5	(2)	1.9	15.5	15.8	0.9	51.2
1969	17.3	1.8	0.9	0	2.3	3.5	3.7	1.6	1.8	(2)	1.3	15.2	21.4	1.2	56.9
1970	19.1	2.0	1.9	(2)	3.6	5.0	4.3	2.1	3.2	(2)	1.8	21.8	27.6	1.2	71.7
1971	18.0	1.9	0.8	0	3.2	2.9	2.7	1.6	2.6	1.7	1.1	16.6	19.7	1.1	57.3
1972	18.7	1.9	1.1	(2)	1.7	2.4	3.7	2.3	2.1	2.4	1.1	16.9	18.0	1.2	56.7
1973	16.7	1.6	1.2	0	2.0	1.6	3.3	1.8	2.2	0.9	1.3	14.4	19.2	1.6	53.6
1974	14.2	1.3	1.1	0	2.7	1.5	3.9	2.6	2.0	1.4	0.9	16.1	27.3	1.8	60.7
1975	17.3	2.0	0.6	0	3.6	2.0	4.5	2.1	2.7	1.9	1.6	19.0	25.4	2.6	66.3
1976	16.9	2.2	2.2	(2)	3.5	1.0	4.2	3.5	2.5	0.8	2.1	19.9	18.8	2.1	60.0
1977	17.7	2.3	1.5	0.1	2.1	0.9	4.1	2.0	1.6	0.6	2.1	15.0	15.9	3.5	54.3
1978	15.7	1.5	1.1	0	1.7	0.6	3.2	1.1	0.8	0.3	1.8	10.5	10.1	3.0	40.7
1979	19.5	2.8	3.2	0.2	3.9	2.6	5.0	2.0	1.4	1.4	3.6	23.1	15.7	4.9	66.0
1980	17.5	3.2	4.6	1.6	7.8	2.5	7.1	4.7	3.4	4.1	5.1	41.0	23.1	6.9	91.7
1981	18.2	2.7	4.3	3.9	9.7	4.3	10.5	6.8	6.4	2.3	8.8	57.0	25.9	8.7	112.5
1982	18.6	3.1	4.8	2.8	9.0	2.7	11.3	5.9	5.6	2.0	5.7	49.8	25.8	9.1	106.3

[1] Excludes overseas shipments of anthracite to U.S. Armed Forces.
[2] Less than 50,000 tons.
Note: Sum of components may not equal total due to independent rounding.
Source: Bureau of the Census, *U.S. Exports by Schedule B Commodities*, EM 522.

Figure 61. Stocks of Coal by End-Use Sector, Year-End

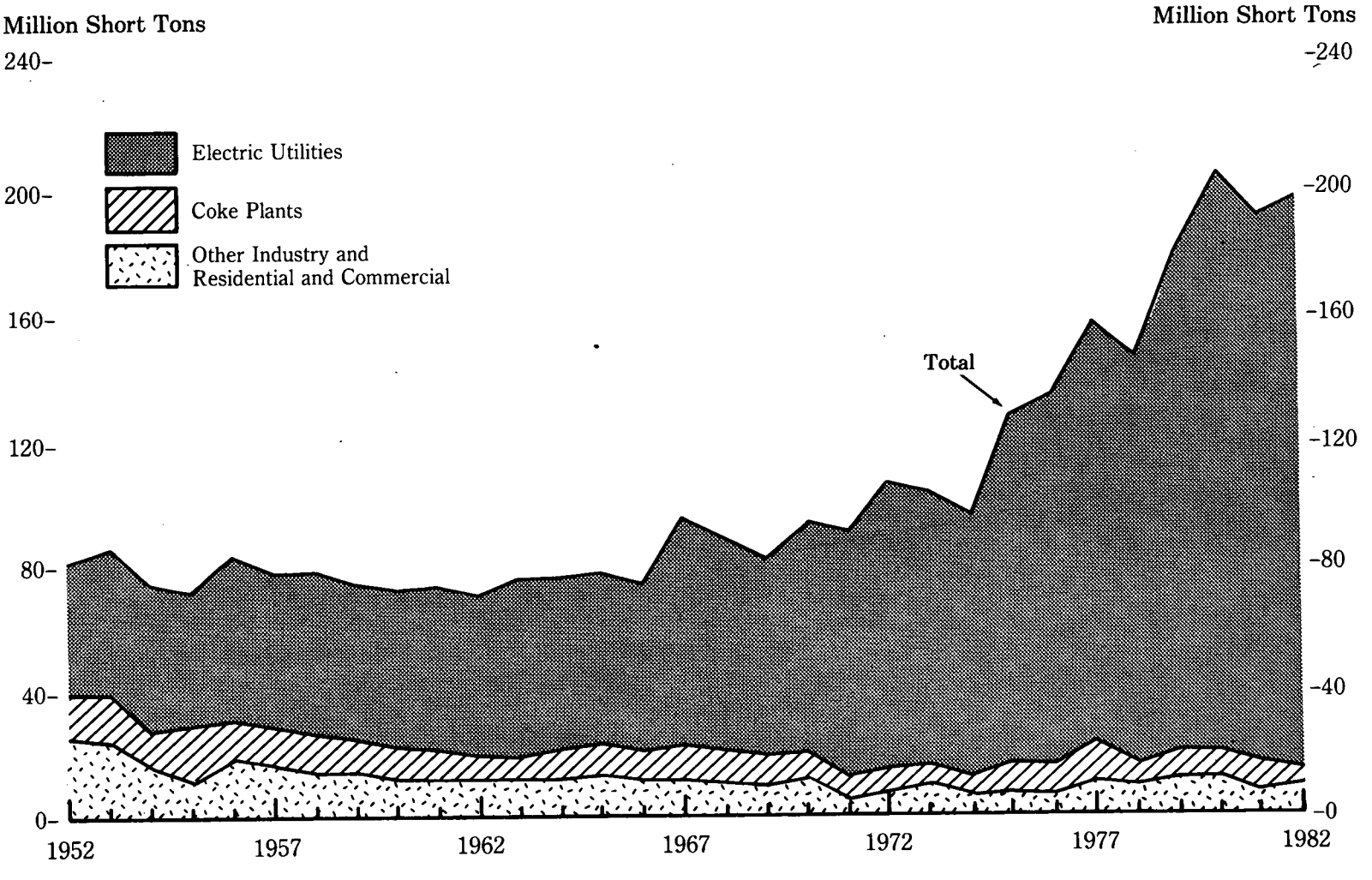


Table 57. Stocks of Coal by End-Use Sector, Year-End 1952-1982
(Million Short Tons)

Year	Electric Utilities	Industry and Miscellaneous			Residential [2] and Commercial	Total
		Coke Plants	Other Industry and Miscellaneous [1]	Total		
1952	41.5	14.5	24.7	39.2	1.7	82.4
1953	45.6	16.6	22.8	39.4	1.5	86.6
1954	46.1	12.4	16.4	28.8	0.8	75.7
1955	41.4	13.4	15.9	29.3	1.0	71.7
1956	48.8	14.0	17.4	31.5	1.1	81.3
1957	53.1	14.2	15.5	29.7	0.9	83.7
1958	51.0	13.1	13.7	26.7	0.9	78.6
1959	52.1	11.6	13.6	25.2	1.0	78.4
1960	51.7	11.1	11.6	22.8	0.7	75.2
1961	50.1	10.5	11.9	22.4	0.5	73.0
1962	50.4	8.4	12.0	20.4	0.5	71.3
1963	50.6	8.1	12.3	20.4	0.5	71.5
1964	53.9	10.2	12.2	22.5	0.4	76.7
1965	54.5	10.6	13.1	23.8	0.4	78.6
1966	53.9	9.3	12.2	21.5	0.2	75.6
1967	71.0	11.1	12.3	23.4	0.2	94.6
1968	65.5	9.7	11.7	21.3	0.2	87.0
1969	61.9	9.1	10.8	19.9	0.2	81.9
1970	71.9	9.0	11.8	20.8	0.3	93.0
1971	77.8	7.3	5.6	12.9	0.3	91.0
1972	99.7	9.1	7.6	16.7	0.3	116.8
1973	87.0	7.0	10.4	17.4	0.3	104.6
1974	83.5	6.2	6.6	12.8	0.3	96.6
1975	110.7	8.8	8.5	17.3	0.2	128.3
1976	117.4	9.9	7.1	17.0	0.2	134.7
1977	133.2	12.8	11.1	23.9	0.2	157.3
1978	128.2	8.3	9.0	17.3	0.4	145.9
1979	159.7	10.2	11.8	21.9	0.3	182.0
1980	183.0	9.1	12.0	21.0	NA	204.0
1981	168.9	6.5	9.9	16.4	NA	185.3
1982[3]	181.1	5.5	9.6	15.1	NA	196.2

[1] Includes transportation sector.
[2] Stocks at retail dealers.
[3] Estimated.
Note: Sum of components may not equal total due to independent rounding.
Sources: •1952 through 1975—Bureau of Mines, *Minerals Yearbook*, "Coal-Bituminous and Lignite" and "Coal-Pennsylvania Anthracite" chapters. •1976—Energy Information Administration, Energy Data Report, *Coal-Bituminous and Lignite in 1976* and *Coal-Pennsylvania Anthracite 1976*. •1977 and 1978—Energy Information Administration, Energy Data Report, *Bituminous Coal and Lignite Production and Mine Operations-1977;....1978* and *Coal-Pennsylvania Anthracite 1977;....1978*. •1979 through 1980—Energy Information Administration, Energy Data Report, *Weekly Coal Report*. •1981 and 1982—Energy Information Administration, *Weekly Coal Production*.

Figure 62. Coke Supply and Disposition

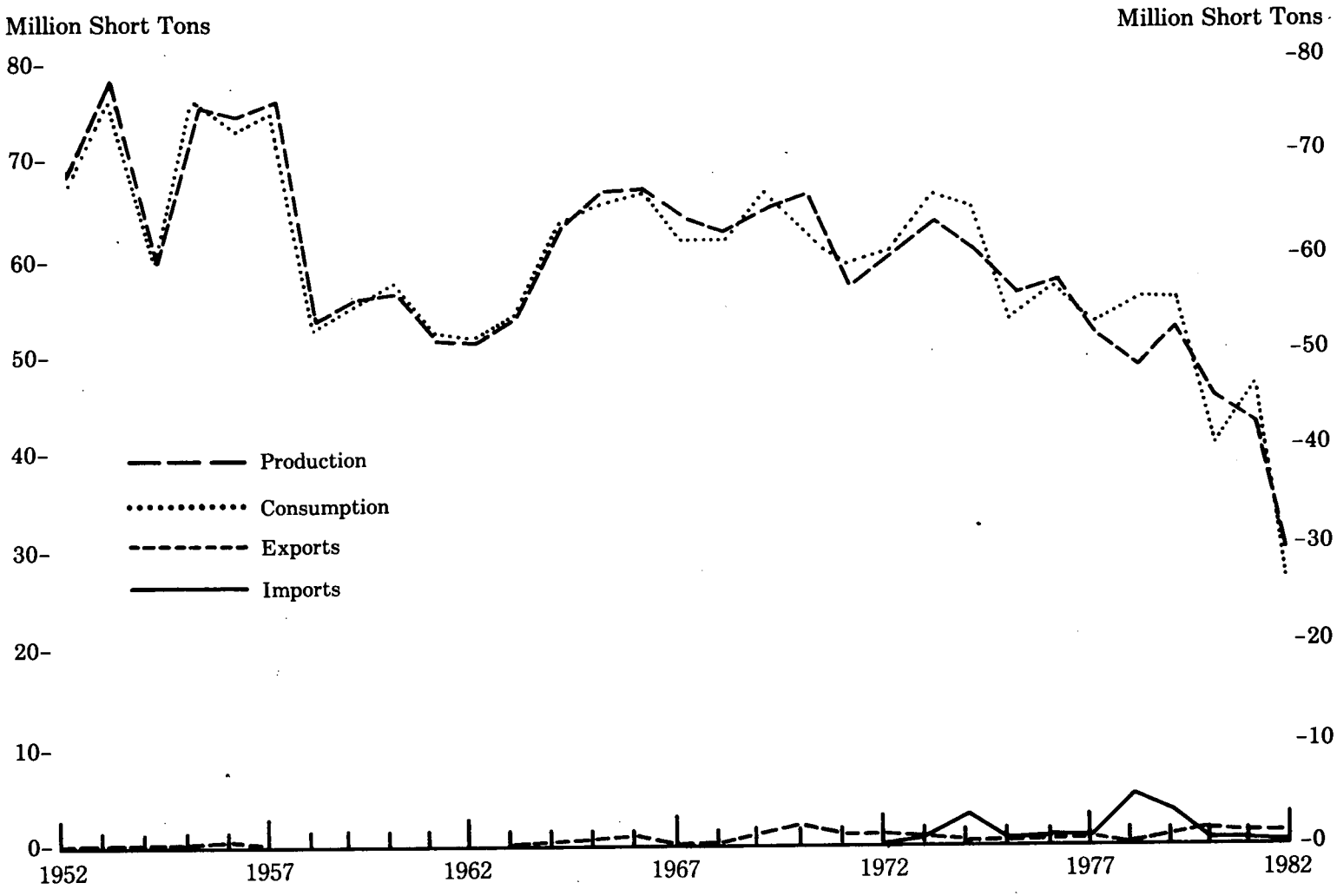


Table 58. Coke Supply and Disposition, 1952-1982

(Million Short Tons)

Year	Supply				Disposition		
	Production	Imports	Stock Change [1]	Total	Exports	Consumption	Total
1952	68.25	0.31	-0.42	68.15	0.79	67.36	68.15
1953	78.84	0.16	-0.78	78.22	0.52	77.70	78.22
1954	59.66	0.12	-0.27	59.51	0.39	59.12	59.51
1955	75.30	0.13	1.25	76.68	0.53	76.14	76.68
1956	74.48	0.13	-0.63	73.98	0.66	73.32	73.98
1957	75.95	0.12	-0.81	75.26	0.82	74.43	75.26
1958	53.60	0.12	-0.68	53.05	0.39	52.66	53.05
1959	55.86	0.12	-0.86	55.13	0.46	54.67	55.13
1960	57.23	0.13	-0.06	57.30	0.35	56.95	57.30
1961	51.71	0.13	0.70	52.53	0.44	52.09	52.53
1962	51.91	0.14	0.14	52.19	0.36	51.82	52.19
1963	54.28	0.15	1.02	55.45	0.45	55.00	55.45
1964	62.14•	0.10	0.91	63.16	0.52	62.64	63.16
1965	66.85	0.09	-0.73	66.21	0.83	65.38	66.21
1966	67.40	0.10	-0.38	67.12	1.10	66.02	67.12
1967	64.58	0.09	-2.39	62.28	0.71	61.57	62.28
1968	63.65	0.09	-0.52	63.23	0.79	62.44	63.23
1969	64.76	0.17	2.86	67.80	1.63	66.17	67.80
1970	66.52	0.15	-0.99	65.68	2.48	63.21	65.68
1971	57.44	0.17	0.59	58.20	1.51	56.69	58.20
1972	60.51	0.18	0.59	61.28	1.23	60.05	61.28
1973	64.32	1.08	1.76	67.16	1.40	65.76	67.16
1974	61.58	3.54	0.25	65.37	1.28	64.09	65.37
1975	57.21	1.82	-4.06	54.96	1.27	53.69	54.96
1976	58.33	1.31	-1.50	58.15	1.32	56.83	58.15
1977	53.51	1.83	0.05	55.38	1.24	54.14	55.38
1978	49.01	5.72	2.91	57.64	0.69	56.95	57.64
1979	52.94	3.97	-1.65	55.27	1.44	53.83	55.27
1980	46.13	0.66	-3.44	43.35	2.07	41.28	43.35
1981	42.79	0.53	1.90	45.22	1.17	44.05	45.22
1982[2]	29.10	0.12	-1.28	27.95	1.00	26.95	27.95

[1] Negative numbers denote a net addition to stocks or a reduction in supply. Positive numbers denote a net withdrawal from stocks or an addition to supply.

[2] Preliminary.

Note: Sum of components may not equal total due to independent rounding.

Sources: •1952 through 1975—Bureau of Mines, *Minerals Yearbook*, "Coke and Coal Chemicals" chapter. •1976 through 1980—Energy Information Administration, Energy Data Report, *Coke and Coal Chemicals*, annual. •1981—Energy Information Administration, Energy Data Report, *Coke Plant Report*, quarterly. •1982—Energy Information Administration, *Weekly Coal Production*.

Figure 63. Labor Productivity in Coal Mining

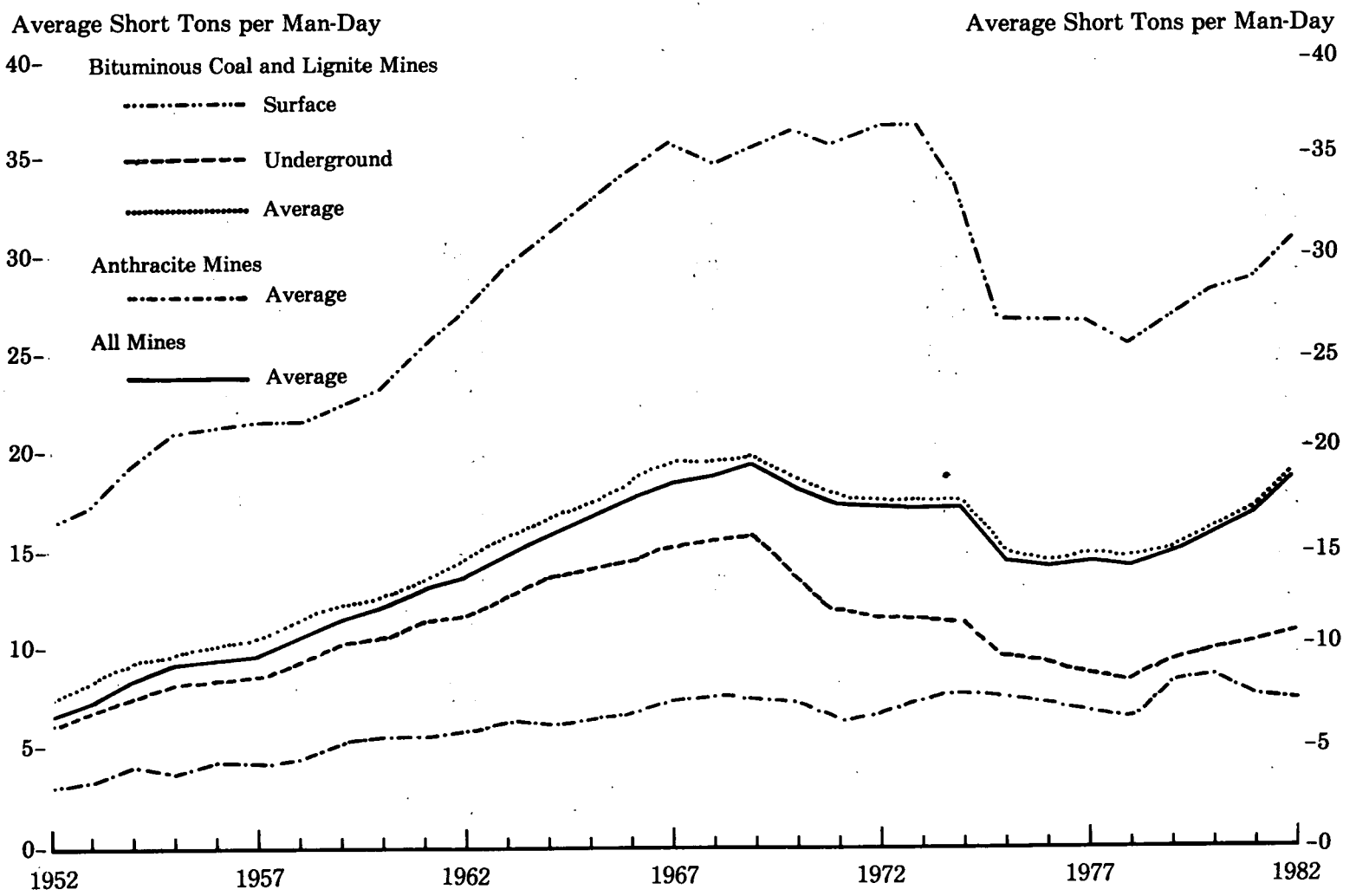


Table 59. Labor Productivity in Coal Mining, 1952-1982
(Average Short Tons per Man-Day)

Year	Bitmuminous Coal and Lignite Mines			Anthracite Mines Average	All Mines Average
	Underground	Surface	Average		
1952	6.37	16.81	7.47	3.06	6.70
1953	7.01	17.73	8.17	3.28	7.46
1954	7.99	19.80	9.47	4.02	8.66
1955	8.28	21.17	9.84	3.96	9.12
1956	8.62	21.37	10.28	4.25	9.54
1957	8.91	21.87	10.59	4.18	9.85
1958	9.38	21.84	11.33	4.36	10.51
1959	10.08	22.94	12.22	5.12	11.46
1960	10.64	23.31	12.83	5.60	12.15
1961	11.41	25.29	13.87	5.63	13.08
1962	11.97	27.22	14.72	5.92	13.92
1963	12.78	29.30	15.83	6.27	14.96
1964	13.74	30.05	16.84	6.11	15.89
1965	14.00	32.76	17.52	6.55	16.73
1966	14.64	34.23	18.52	6.87	17.81
1967	15.07	35.87	19.17	7.21	18.50
1968	15.40	34.64	19.37	7.62	18.77
1969	15.61	36.00	19.90	7.45	19.31
1970	13.76	36.26	18.84	7.10	18.36
1971	12.03	35.88	18.02	6.30	17.51
1972	11.91	36.33	17.74	6.88	17.42
1973	11.66	36.67	17.58	7.15	17.29
1974	11.31	33.16	17.58	7.87	17.35
1975	9.54	26.69	14.74	7.45	14.60
1976	9.10	26.40	14.46	7.19	14.33
1977	8.69	26.59	14.84	6.97	14.70
1978	8.38	25.78	14.68	6.51	14.54
1979	9.24	27.03	15.33	8.21	15.23
1980	9.86	28.32	16.32	8.38	16.18
1981	10.62	31.11	18.08	6.94	17.87
1982[1]	10.85	31.00	18.30	7.00	18.15

[1] Preliminary.

Note: Average output per man per day for each mining method and all mining methods is derived by dividing the sum of production of each mine (over 1,000 short tons per year) by the sum of the number of man-days expended by production workers (miners) at each mine to produce the coal.

Sources: •1952 through 1975—Bureau of Mines, *Minerals Yearbook*, "Coal-Bituminous and Lignite" and "Coal-Pennsylvania Anthracite" chapters. •1976—Energy Information Administration, Energy Data Report, *Coal-Bituminous and Lignite in 1976* and *Coal-Pennsylvania Anthracite 1976*. •1977 and 1978—Energy Information Administration, Energy Data Report, *Bituminous Coal and Lignite Production and Mine Operations-1977; ....1978* and *Coal-Pennsylvania Anthracite 1977; ....1978*. •1979—Energy Information Administration, Energy Data Report, *Coal Production-1979*. •1980—Energy Information Administration, *Coal Production—1980* •1981 and 1982—Energy Information Administration, *Weekly Coal Production*.

Figure 64. Demonstrated Reserve Base of Coal by Rank, Region, and Potential Method of Mining, January 1, 1980

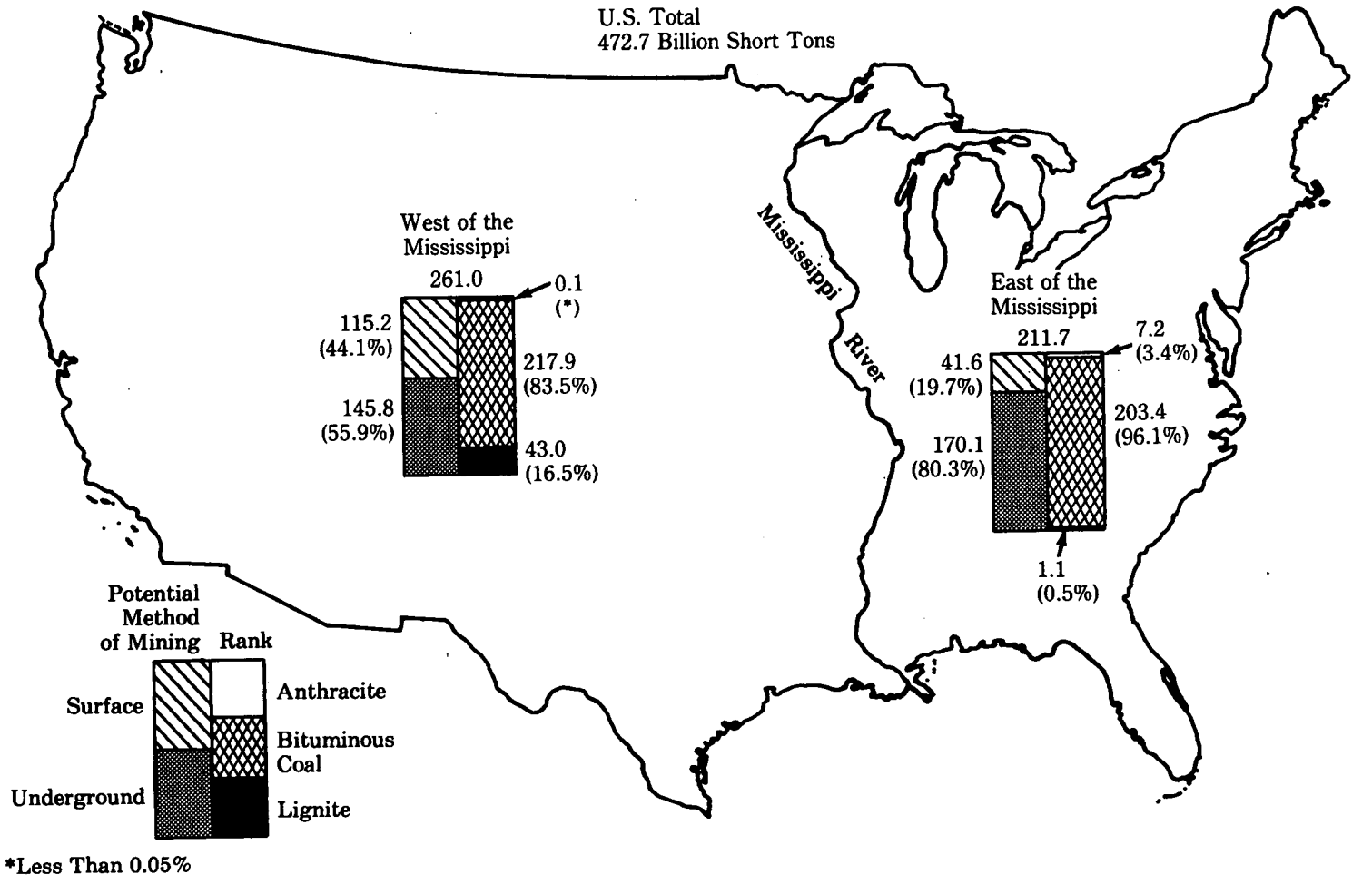


Table 60. Demonstrated Reserve Base of Coal [1] by Rank, Region, and Potential Method of Mining, January 1, 1980

(Billion Short Tons)

Region and State	Anthracite	Bituminous Coal		Lignite	Total		
	Underground and Surface [2]	Underground	Surface	Surface [3]	Underground	Surface	Total
East of the Mississippi River							
Alabama	0	1.8	2.1	1.1	1.8	3.2	5.0
Georgia	0	(4)	(4)	0	(4)	(4)	(4)
Illinois	0	52.9	14.7	0	52.9	14.7	67.6
Indiana	0	8.9	1.6	0	8.9	1.6	10.6
Kentucky	0	25.7	8.3	0	25.7	8.3	34.0
Maryland	0	0.7	0.1	0	0.7	0.1	0.8
Michigan	0	0.1	(4)	0	0.1	(4)	0.1
North Carolina	0	(4)	0	0	(4)	0	(4)
Ohio	0	13.1	6.0	0	13.1	6.0	19.1
Pennsylvania	7.1	22.0	1.2	0	29.0	1.3	30.3
Tennessee	0	0.7	0.3	0	0.7	0.3	1.0
Virginia	0.1	2.5	0.8	0	2.6	0.8	3.5
West Virginia	0	34.6	5.2	0	34.6	5.2	39.8
Total	7.2	163.0	40.4	1.1	170.1	41.6	211.7
West of the Mississippi River							
Alaska	0	5.4	0.7	(4)	5.4	0.7	6.2
Arizona	0	0.1	0.3	0	0.1	0.3	0.4
Arkansas	0.1	0.2	0.1	(4)	0.3	0.1	0.4
Colorado	(4)	12.3	0.8	4.2	12.3	5.0	17.3
Idaho	0	(4)	0	0	(4)	0	(4)
Iowa	0	1.7	0.5	0	1.7	0.5	2.2
Kansas	0	0	1.0	0	0	1.0	1.0
Missouri	0	1.5	4.6	0	1.5	4.6	6.1
Montana	0	71.0	33.7	15.8	71.0	49.5	120.4
New Mexico	(4)	2.1	2.4	0	2.1	2.4	4.5
North Dakota	0	0	0	10.0	0	10.0	10.0
Oklahoma	0	1.2	0.4	0	1.2	0.4	1.6
Oregon	0	(4)	(4)	0	(4)	(4)	(4)
South Dakota	0	0	0	0.4	0	0.4	0.4
Texas	0	0	0	12.7	0	12.7	12.7
Utah	0	6.2	0.3	0	6.2	0.3	6.5
Washington	0	1.3	0.1	(4)	1.3	0.1	1.5
Wyoming	0	42.6	27.4	0	42.6	27.4	69.9
Total	0.1	145.7	72.2	43.0	145.8	115.2	261.0
Grand Total	7.3	308.7	112.6	44.1	315.9	156.9	472.7

[1] Includes measured and indicated resource categories representing 100 percent of the coal in place. Recoverability varies between 40 and 90 percent for individual deposits. About one-half of the demonstrated coal reserve base in the United States is estimated to be recoverable.
[2] Includes 137.4 million short tons of surface mine reserves, of which 129.6 million tons are in Pennsylvania and 7.8 million tons are in Arkansas.
[3] There are no underground demonstrated coal reserves of lignite.
[4] Less than 0.05 billion short tons.
Note: Sum of components may not equal total due to independent rounding.
Source: Energy Information Administration, *Demonstrated Reserve Base of Coal in the United States on January 1, 1980*, May 1982.

Figure 65. International Coal Production, 1981
(Million Short Tons)

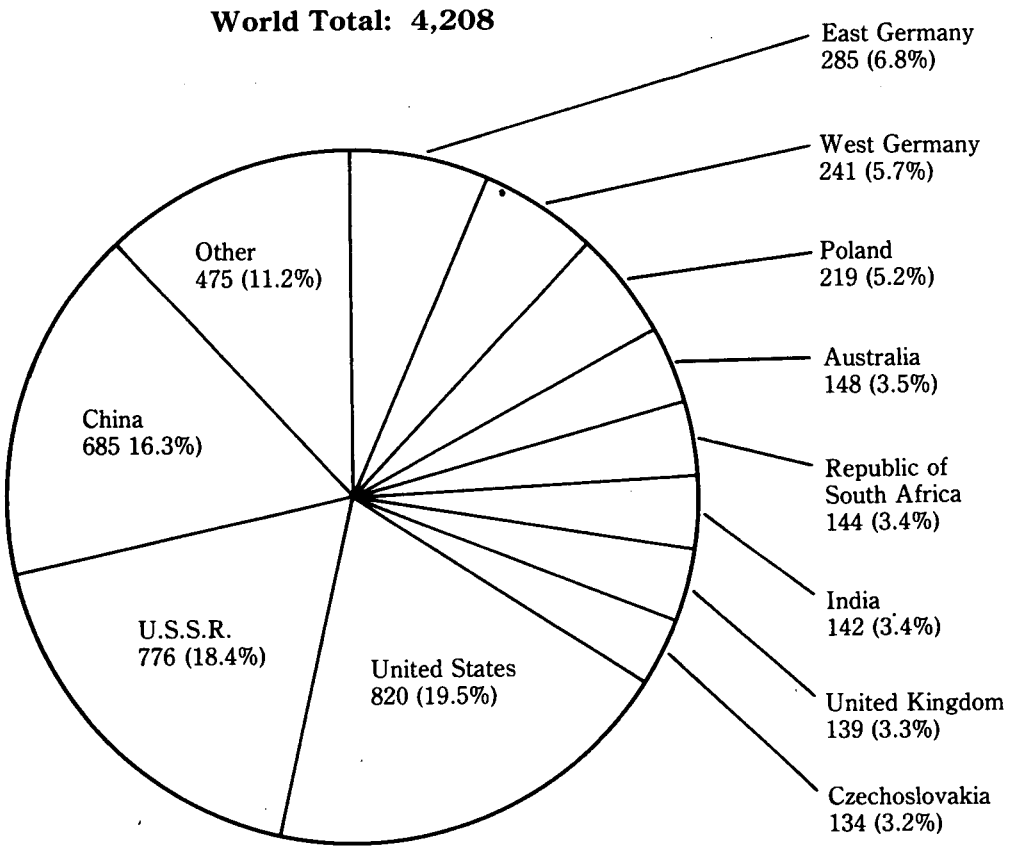


Table 61. International Coal Production, 1975-1981
(Million Short Tons)

Area and Country	1975	1976	1977	1978	1979	1980	1981 [1]
North, Central, and South America							
Canada	28	28	32	34	33	40	44
United States	655	685	697	670	781	830	820
Other	14	16	17	17	24	24	25
Total	697	729	746	721	838	894	889
Western Europe							
Germany, West	238	247	229	228	239	239	241
Spain	15	16	19	22	24	32	39
Turkey	12	11	13	15	22	18	23
United Kingdom	142	137	135	136	135	141	139
Yugoslavia	39	41	43	44	46	52	58
Other	63	66	67	64	63	61	66
Total	509	518	506	509	529	543	566
Eastern Europe and U.S.S.R.							
Bulgaria	31	28	28	28	31	33	32
Czechoslovakia	127	130	134	136	137	136	134
Germany, East	272	273	280	279	282	285	285
Poland	233	241	250	258	264	254	219
U.S.S.R.	773	784	796	798	792	790	776
Other	61	57	58	61	65	68	71
Total	1,494	1,513	1,546	1,560	1,571	1,566	1,517
Africa							
South Africa, Republic of	77	85	94	100	114	127	144
Other	6	6	6	5	7	6	5
Total	82	91	100	105	120	133	149
Middle East, Far East, and Oceania							
Australia	105	117	119	124	139	140	148
China	570	586	606	681	698	684	685
India	109	116	115	116	118	125	142
Other	105	102	103	105	108	111	111
Total	890	921	942	1,026	1,063	1,061	1,086
World Total	3,673	3,772	3,840	3,921	4,121	4,197	4,208

[1] Preliminary.
Note: Sum of components may not equal total due to independent rounding.
Source: Energy Information Administration, *1981 International Energy Annual.*

Figure 66. Estimated International Recoverable Reserves of Coal, 1979
(Billion Short Tons)

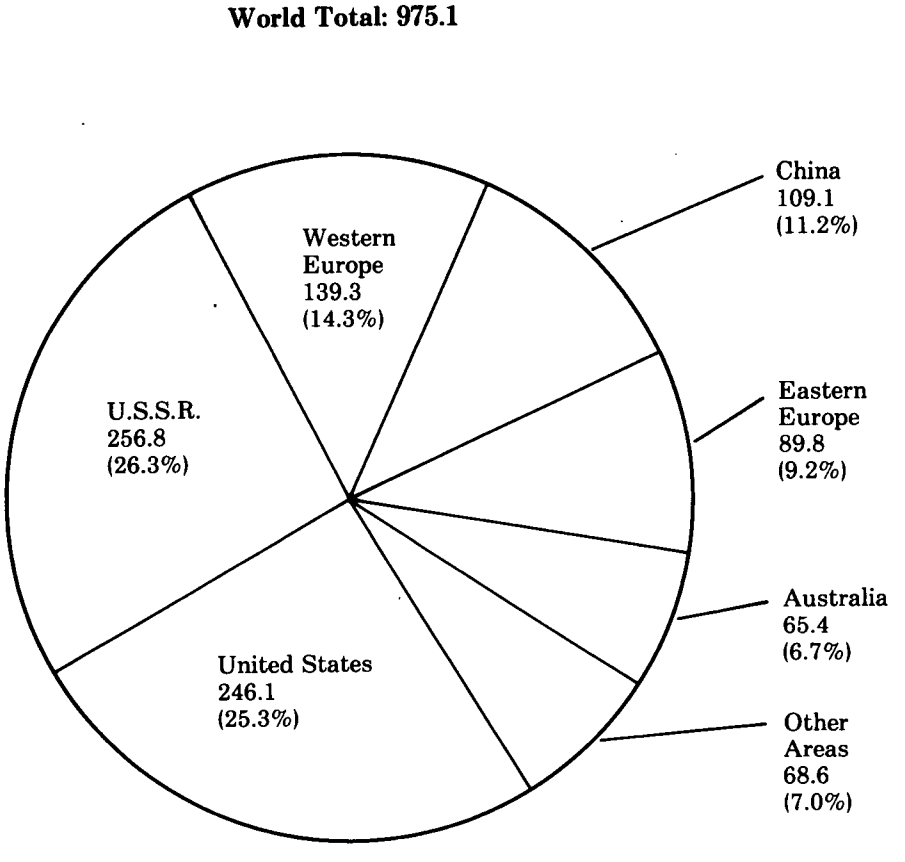


Table 62. Estimated International Recoverable Reserves of Coal, 1979 [1]

(Billion Short Tons)

Area and Country	Anthracite and Bituminous Coal			Lignite		Total Recoverable
	Recoverable	Portion Surface Minable	Portion Coking Quality	Recoverable	Portion Surface Minable	
North, Central, and South America						
Canada	4.18	3.82	1.40	2.33	2.33	6.51
United States	219.20	66.41	41.35	26.90	26.90	246.10
Other	5.74	0.34	1.52	[2]	0	5.74
Total	229.11	NA	NA	29.23	NA	258.34
Western Europe						
Germany, West	26.45	0	15.87	38.75	38.75	65.19
Turkey	0.20	0	0	1.90	0	2.11
United Kingdom	49.60	NA	18.35	0	0	49.60
Yugoslavia	1.73	0.58	0	16.53	13.23	18.27
Other	1.78	[3] 0.05	[3] 0.49	2.37	0.60	4.15
Total	79.76	NA	NA	59.56	[3] 52.57	139.32
Eastern Europe and U.S.S.R.						
Bulgaria	0.03	NA	0.02	4.08	2.65	4.11
Czechoslovakia	2.98	NA	NA	3.15	NA	6.13
Germany, East	0.11	NA	NA	27.56	27.56	27.67
Hungary	0.25	NA	NA	4.41	NA	4.66
Poland	29.76	0	0	13.23	NA	42.99
U.S.S.R.	160.94	23.92	57.32	95.90	86.31	256.84
Other	0.05	0	0	4.21	0	4.26
Total	194.12	NA	NA	152.54	NA	346.66
Africa						
Botswana	3.86	0	0	0	0	3.86
South Africa, Republic of	27.88	1.39	0.83	0	0	27.88
Swaziland	2.01	NA	0	0	0	2.01
Other	2.30	[3] 0.57	0.51	[2]	[2]	2.30
Total	36.04	NA	1.35	[2]	[2]	36.04
Middle East, Far East, and Oceania						
Australia	29.65	8.40	12.60	35.76	35.76	65.41
China	109.13	109.13	40.38	[4]	[4]	109.13
India	13.90	5.84	4.31	1.75	1.75	15.65
Other	3.68	[3] 0.16	[3] 0.62	0.91	0.56	4.59
Total	156.36	NA	NA	38.42	NA	194.76
World Total	695.39	NA	NA	279.74	NA	975.12

[1] The reference year for most of the reserves data in the source report is 1979.
[2] Less than 5 million tons.
[3] Not all countries in this group reported under this category.
[4] May be included with anthracite and bituminous coal.
NA = Not available.
Source: Federal Republic of Germany, Federal Institute of Geosciences and Natural Resources, *World Energy Conference of Energy Resources 1980*, London, 1980.

Figure 67. Coal Prices

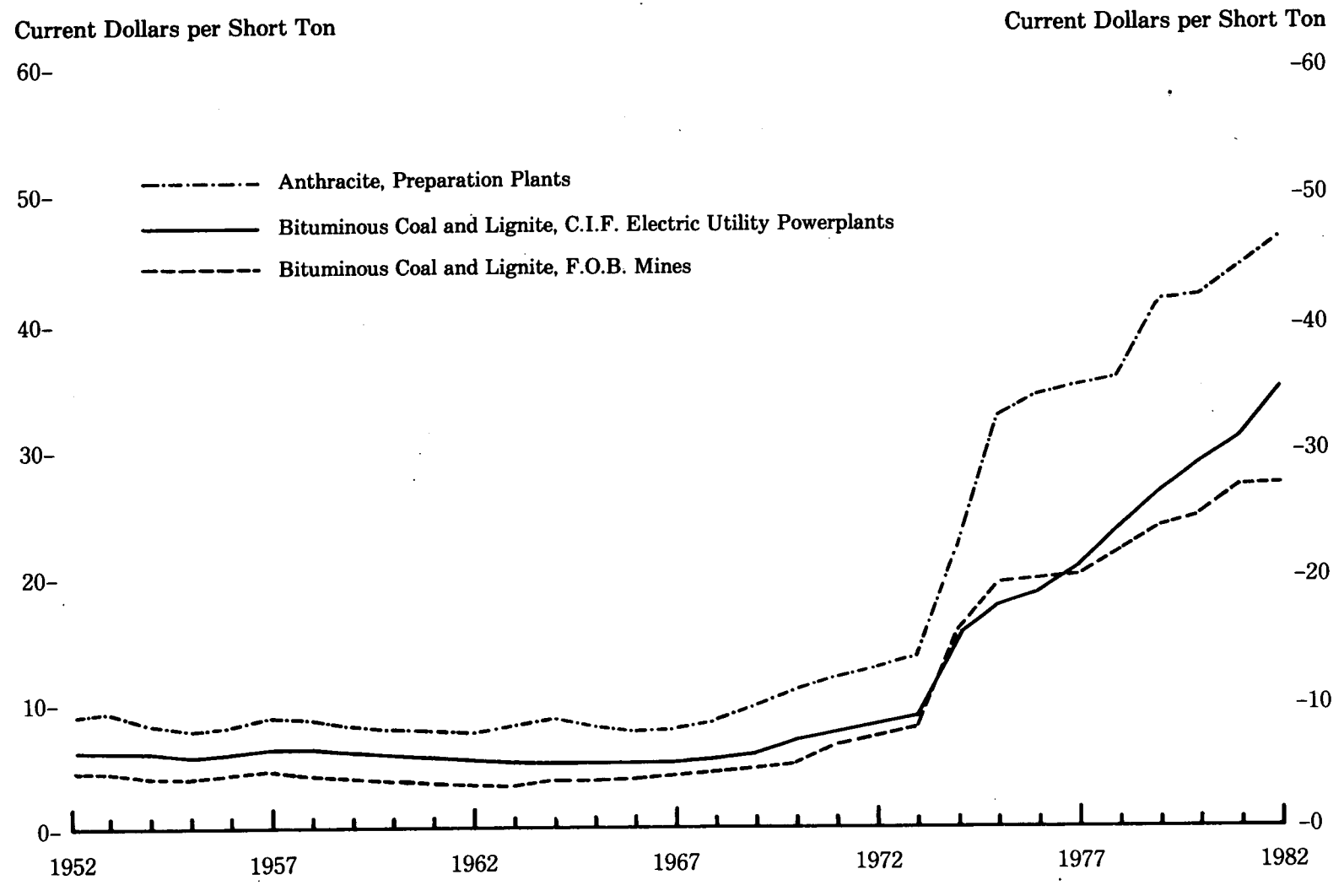


Table 63. Coal Prices, 1952-1982

(Dollars per Short Ton)

Year	Bituminous Coal and Lignite				Anthracite	
	F.O.B.[1] Mines		C.I.F.[2] Electric Utility Powerplants		Preparation Plants	
	Current	Constant[3]	Current	Constant[3]	Current	Constant[3]
1952	4.90	8.46	6.61	11.41	9.58	16.54
1953	4.92	8.36	6.61	11.24	9.87	16.78
1954	4.52	7.59	6.31	10.60	8.76	14.71
1955	4.50	7.40	6.07	9.98	8.00	13.15
1956	4.82	7.68	6.32	10.07	8.33	13.27
1957	5.08	7.82	6.64	10.23	9.11	14.03
1958	4.86	7.36	6.58	9.96	9.14	13.84
1959	4.77	7.06	6.37	9.42	8.55	12.65
1960	4.69	6.83	6.26	9.11	8.01	11.66
1961	4.58	6.61	6.20	8.94	8.26	11.91
1962	4.48	6.34	6.02	8.53	7.99	11.32
1963	4.39	6.13	5.86	8.18	8.64	12.06
1964	4.45	6.12	5.74	7.89	8.93	12.27
1965	4.44	5.97	5.71	7.68	8.51	11.44
1966	4.54	5.91	5.76	7.50	8.08	10.53
1967	4.62	5.84	5.85	7.40	8.15	10.31
1968	4.67	5.66	5.93	7.18	8.78	10.64
1969	4.99	5.75	6.13	7.06	9.91	11.42
1970	6.26	6.85	7.13	7.80	11.03	12.06
1971	7.07	7.36	8.00	8.33	12.08	12.58
1972	7.66	7.66	8.44	8.44	12.40	12.40
1973	8.53	8.07	9.01	8.52	13.65	12.91
1974	15.75	13.69	15.46	13.43	22.19	19.28
1975	19.23	15.29	17.63	14.02	32.26	25.65
1976	19.43	14.68	18.38	13.89	33.92	25.63
1977	19.82	14.15	20.37	14.54	34.86	24.89
1978	21.78	14.48	23.75	15.79	35.25	23.43
1979	23.65	14.47	26.15	16.00	41.06	25.13
1980	24.52	13.73	28.76	16.10	42.51	23.80
1981	26.29	13.45	32.31	16.53	44.28	22.65
1982[4]	27.30	13.18	35.25	17.02	47.00	22.69

[1] Free on board (see Glossary).
[2] Cost, Insurance, and Freight (see Glossary).
[3] Constant 1972 prices calculated using GNP implicit price deflators, 1972 = 100. See Units of Measure, Conversion Factors, Price Deflators, and Energy Equivalents section.
[4] Preliminary.

Note: During certain years, the average F.O.B. mine price exceeded the average C.I.F. electric utility price. This reflected long-term contract buying and occurred during a period of rapid and steep F.O.B. mine price increases.

Sources: **Bituminous Coal and Lignite, F.O.B. Mines** •1952 through 1975—Bureau of Mines, *Minerals Yearbook*, "Coal-Bituminous and Lignite" chapter. •1976—Energy Information Administration, Energy Data Report, *Coal-Bituminous and Lignite in 1976*. •1977 and 1978—Energy Information Administration, Energy Data Report, *Bituminous Coal and Lignite Production and Mine Operations-1977; ....1978*. •1979 through 1981—Energy Information Administration, Energy Data Report, *Weekly Coal Reports*. •1982—Energy Information Administration, *Weekly Coal Production*. **Bituminous Coal and Lignite, C.I.F. Electric Utility Powerplants** •1952 through 1972—National Coal Association, *Steam Electric Plant Factors*. •1973 through September 1977—Federal Power Commission Form 423. "Monthly Report of Cost and Quality of Fuels for Electric Plants." •October 1977 through 1982—Federal Energy Regulatory Commission, FPC Form 423, "Monthly Report of Cost and Quality of Fuel for Electric Plants." **Anthracite** •1952 through 1976—Bureau of Mines, *Minerals Yearbook*, "Coal-Pennsylvania Anthracite" chapter. •1977 and 1978—Energy Information Administration, Energy Data Report, *Coal-Pennsylvania Anthracite 1977; ....1978*. •1979—Energy Information Administration, Energy Data Report, *Coal Production-1979*. •1980—Energy Information Administration, *Coal Production-1980*. •1981 and 1982—Energy Information Administration, *Weekly Coal Production*.

Section 6. Electricity Supply and Disposition

Information in this section covers physical and financial data relating to the production and marketing of electricity by the electric utility industry. The topics covered are generating capacity, production, sales, prices, the amount of hydrocarbon fuels consumed to produce electricity, and the amount of fuel stocks at electric utility plants.

Electricity output (generation) is measured in watt-hours and for convenience is recorded in kilowatt-hours (1,000 watt-hours). For example, a 1,000-kilowatt generator running at full load for an entire year would produce 8,760,000 kilowatt-hours of electricity (1,000 times 24 hours per day times 365 days per year). However, all generators must operate less than 100 percent of the time during a year, if only to allow for routine maintenance. To put electricity generation in perspective, a theoretical 1-kilowatt generator running at full load for 1 hour supplies 1 kilowatt-hour of electricity, which is enough power to simultaneously light 10 100-watt light bulbs for 1 hour.

Usually conventional steam plants, nuclear plants, and some hydropower plants in western States (Oregon and Washington) are used for base-load electricity requirements. Gas turbine plants, internal combustion plants, and most hydropower plants are generally used for peaking (short periods of high demand) purposes and are operated less than base-load plants.

Capacity. From 1950 through 1982, installed generating capacity at electric utilities has increased each year to meet the growing demand for electricity. During 1982, installed generating capacity increased 2.3 percent over the 1981 level to 650 million kilowatts. Conventional steam generating plants in 1982 accounted for 69 percent of the total electric utility capacity; hydropower plants, 12 percent; and nuclear plants, 10 percent (see Table 70).

Domestic Generation. In 1982, a total of 2.2 trillion kilowatt-hours of electricity were generated by the electric utility industry. This was the first decline in electricity generation since World War II. Conventional steam generation, which has consistently been the major source of electricity production, accounted for 73 percent of the total output in 1982. Hydropower generated 14 percent of total production, and nuclear power accounted for 13 percent of electricity generation (see Table 66).

Fossil Fuel Consumption. The mix of fossil fuels used to produce electricity has shifted over the past 30 years. Coal consumption has trended upward while petroleum and natural gas consumption have fluctuated. From 1972 through 1982, coal use at electric utilities increased 69 percent while petroleum consumption decreased 49 percent, and the use of natural gas dropped 19 percent. The use of petroleum to generate electricity during 1982 declined for the fourth consecutive year and was at the lowest level since 1968 (see Table 68).

Sales. From 1970 through 1980, sales of electricity increased from 1.39 trillion kilowatt-hours to 2.09 trillion kilowatt-hours at an average annual rate of 4.2 percent. In 1981, sales rose only 2.5 percent and in 1982, sales fell 2.8 percent. All of the 1982 reduction in electricity use occurred in the industrial sector where sales declined 9.8 percent (see Table 67).

International Generation. World hydroelectric power production rose from 1.3 trillion kilowatt-hours in 1973 to 1.8 trillion kilowatt-hours in 1981, an average annual growth rate of 3.9 percent. The major producers in 1981, in order, were the United States, Canada, the U.S.S.R., and Brazil. These countries accounted for 47 percent of the total hydroelectric power production (see Table 71).

Prices. During 1981, weighted average monthly electric bills increased for each consumer group. The average monthly electric bill for residential consumers who consume 750 kilowatt-hours increased from $43.99 in 1981 to $50.40 in 1982 (see Table 72). The average price of electricity sold by electric utilities reached 6.13 cents per kilowatt-hour in 1982, 12 percent over the 1981 price (see Table 73).

Figure 68. Electric Utility Electricity Flow Diagram, 1982

(Billion Kilowatt-Hours)

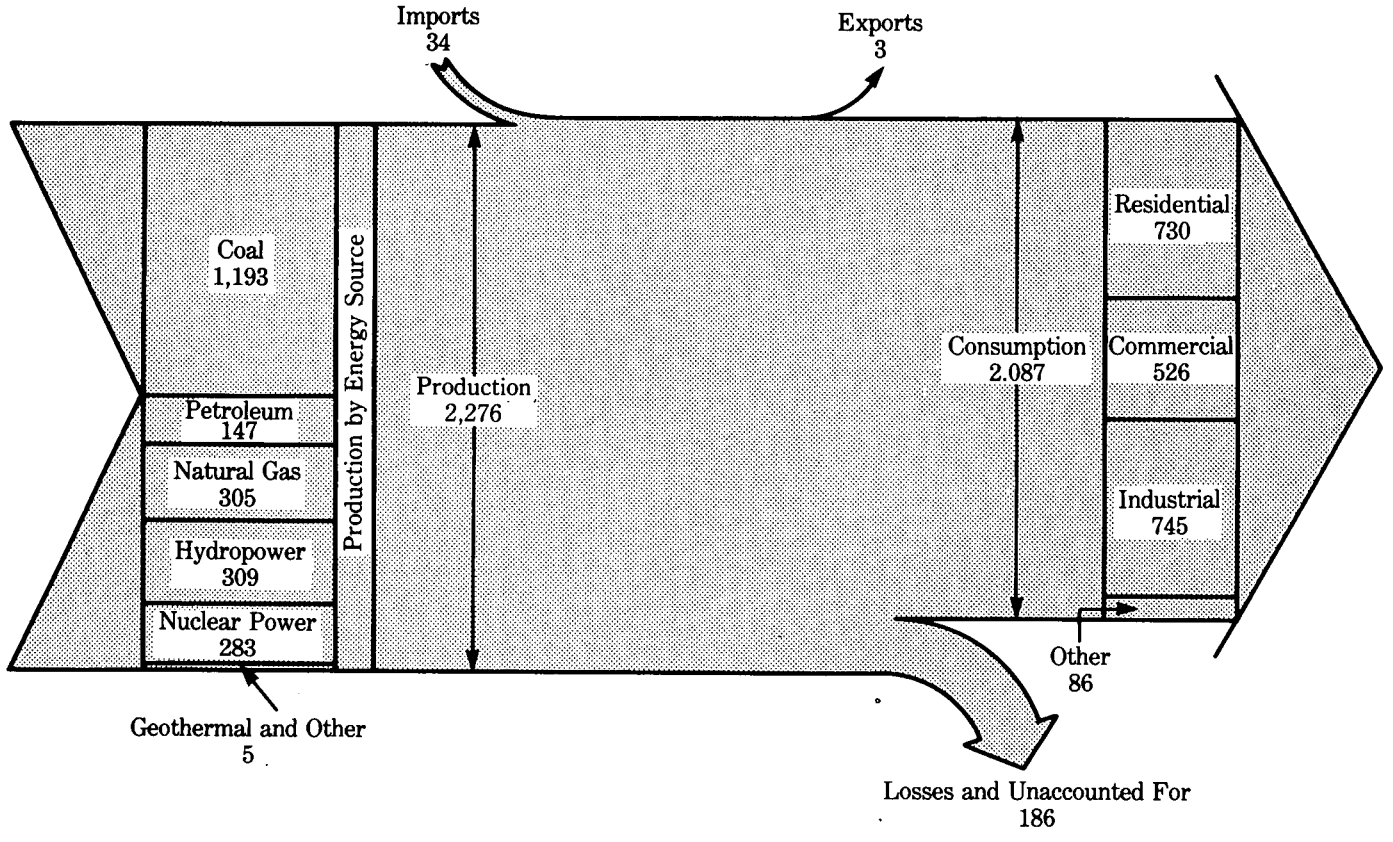


Figure 69. Electric Utility Industry Supply and Disposition

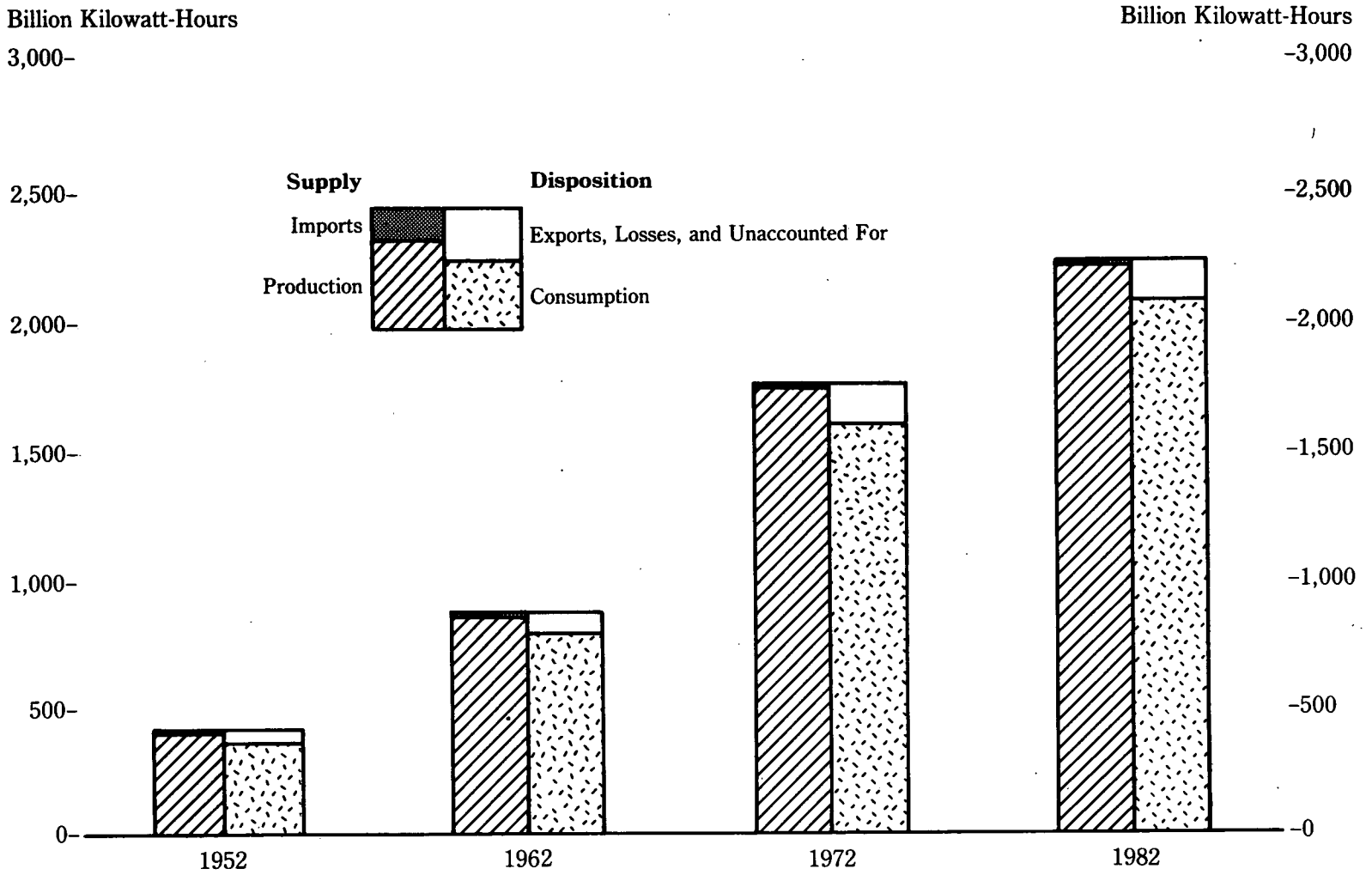


Table 64. Electric Utility Industry Supply and Disposition, 1952-1982
(Billion Kilowatt-Hours)

Year	Supply			Disposition			
	Production	Imports [1]	Total	Exports [1]	Consumption	Losses and Unaccounted for [2]	Total
1952	399	3	402	([3])	356	45	402
1953	443	2	445	([3])	396	48	445
1954	472	3	474	([3])	424	50	474
1955	547	5	552	([3])	497	54	552
1956	601	5	606	1	546	59	606
1957	632	5	636	1	576	59	636
1958	645	4	649	1	588	61	649
1959	710	4	714	1	647	67	714
1960	754	5	759	1	688	70	759
1961	792	3	796	1	722	73	796
1962	853	2	855	2	778	76	855
1963	917	2	919	2	833	84	919
1964	984	6	990	4	896	90	990
1965	1,055	4	1,059	4	954	101	1,059
1966	1,144	4	1,149	3	1,035	110	1,149
1967	1,214	4	1,218	4	1,099	115	1,218
1968	1,329	4	1,333	4	1,203	126	1,333
1969	1,442	5	1,447	4	1,314	129	1,447
1970	1,532	6	1,538	4	1,392	142	1,538
1971	1,613	7	1,620	4	1,470	147	1,620
1972	1,750	10	1,760	3	1,595	162	1,760
1973	1,861	17	1,878	3	1,713	162	1,878
1974	1,867	15	1,883	3	1,706	174	1,883
1975	1,918	11	1,929	5	1,747	177	1,929
1976	2,038	11	2,049	2	1,855	191	2,049
1977	2,124	20	2,144	3	1,948	193	2,144
1978	2,206	21	2,228	1	2,018	208	2,228
1979	2,247	23	2,270	2	2,071	197	2,270
1980	2,286	25	2,311	4	2,094	213	2,311
1981	2,295	33	2,328	2	2,147	179	2,328
1982[4]	2,242	34	2,276	3	2,086	187	2,276

[1] Small amounts of electricity are transmitted across U.S. borders with Canada and Mexico.
[2] Balancing item, mainly transmission losses.
[3] Less than 0.5 billion kilowatt-hours.
[4] Estimated.
Note: Sum of components may not equal total due to independent rounding.
Sources: **Production:** •1952 through September 1977 —Federal Power Commission, Form 4, "Monthly Power Plant Report." •October 1977 through 1981—Federal Energy Regulatory Commission, FPC Form 4, "Monthly Power Plant Report." •1982—Energy Information Administration, Form EIA-759, "Monthly Power Plant Report." **Consumption:** •1952 through September 1977—Federal Power Commission, Form 5, "Monthly Statement of Electric Operating Revenue and Income." •October 1977 through 1982—Federal Energy Regulatory Commission, FPC Form 5, "Monthly Statement of Electric Operating Revenue and Income." **Imports and Exports:** •1952 through September 1977—unpublished Federal Power Commission data; •October 1977 through 1982—unpublished Economic Regulatory Administration data.

Figure 70. Production of Electricity by the Electric Utility Industry by Type of Energy Source

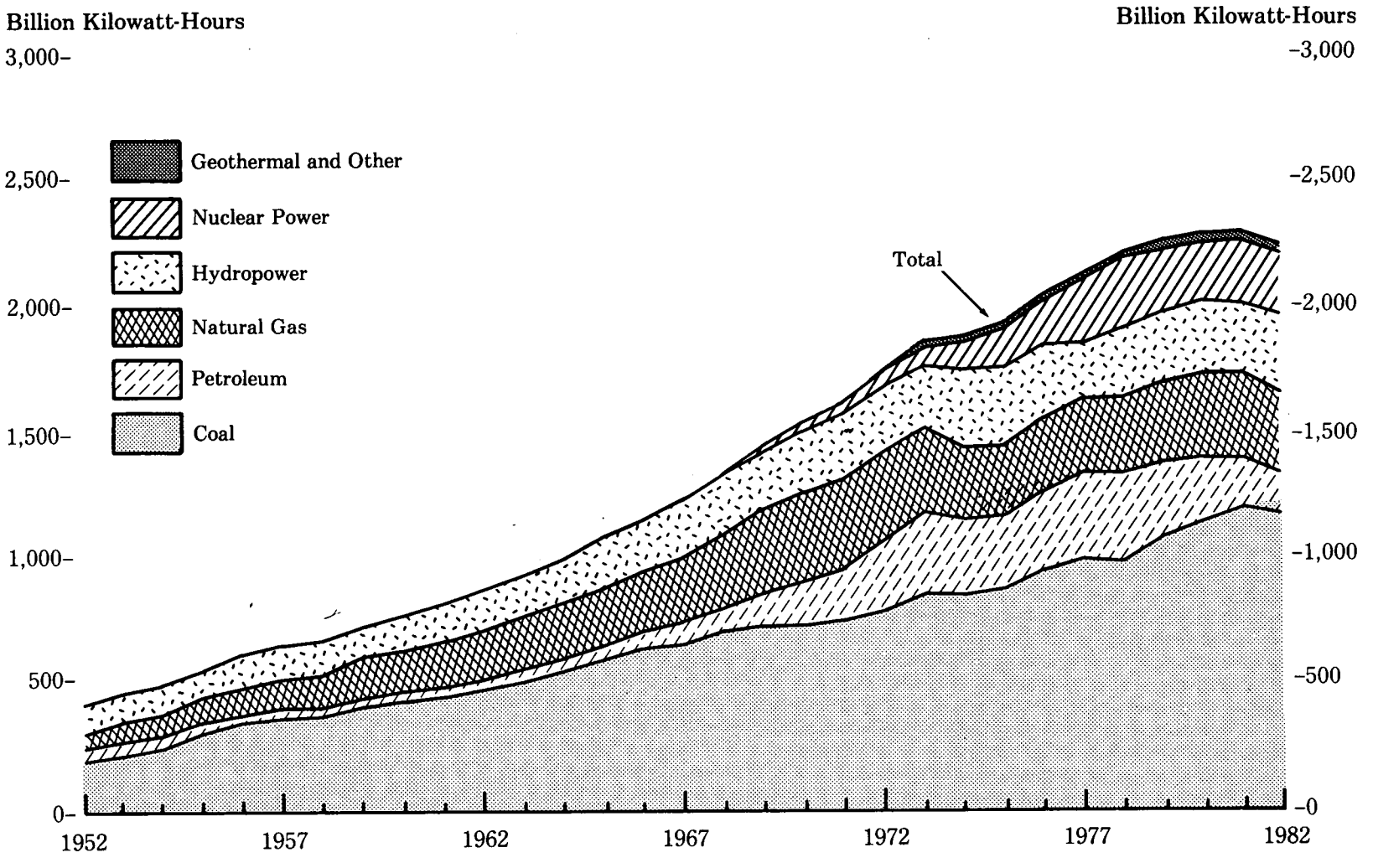


Table 65. Production of Electricity [1] by the Electric Utility Industry by Type of Energy Source, 1952-1982

(Billion Kilowatt-Hours)

Year	Coal	Petroleum [2]	Natural Gas	Nuclear Power	Hydropower	Geothermal and Other [3]	Total
1952	195	30	68	0	105	(4)	399
1953	219	38	80	0	105	(4)	443
1954	239	32	94	0	107	(4)	472
1955	301	37	95	0	113	(4)	547
1956	339	36	104	0	122	(4)	601
1957	346	40	114	(4)	130	(4)	632
1958	344	40	120	(4)	140	(4)	645
1959	378	47	147	(4)	138	(4)	710
1960	403	46	158	1	146	(4)	754
1961	422	47	169	2	152	(4)	792
1962	450	47	184	2	169	(4)	853
1963	494	52	202	3	166	(4)	917
1964	526	57	220	3	177	(4)	984
1965	571	65	222	4	194	(4)	1,055
1966	613	79	251	6	195	1	1,144
1967	630	89	265	8	222	1	1,214
1968	685	104	304	13	222	1	1,329
1969	706	138	333	14	250	1	1,442
1970	704	184	373	22	248	1	1,532
1971	713	220	374	38	266	1	1,613
1972	771	274	376	54	273	2	1,750
1973	848	314	341	83	272	2	1,861
1974	828	301	320	114	301	3	1,867
1975	853	289	300	173	300	3	1,918
1976	944	320	295	191	284	4	2,038
1977	985	358	306	251	220	4	2,124
1978	976	365	305	276	280	3	2,206
1979	1,075	304	329	255	280	4	2,247
1980	1,162	246	346	251	276	6	2,286
1981	1,203	206	346	273	261	6	2,295
1982[5]	1,193	147	305	283	309	5	2,242

[1] See Explanatory Note 6.
[2] Includes distillate fuel oil, residual fuel oil (including crude oil burned as fuel), jet fuel, and petroleum coke.
[3] Includes production from plants which consume wood, refuse, and other vegetal fuels.
[4] Less than 0.5 billion kilowatt-hours.
[5] Preliminary.
Note: Sum of components may not equal total due to independent rounding.
Sources: •1952 through September 1977—Federal Power Commission, Form 4, "Monthly Power Plant Report." •October 1977 through 1981—Federal Energy Regulatory Commission, FPC Form 4, "Monthly Power Plant Report." •1982—Energy Information Administration, Form EIA-759, "Monthly Power Plant Report."

Figure 71. Production of Electricity by the Electric Utility Industry by Type of Generation

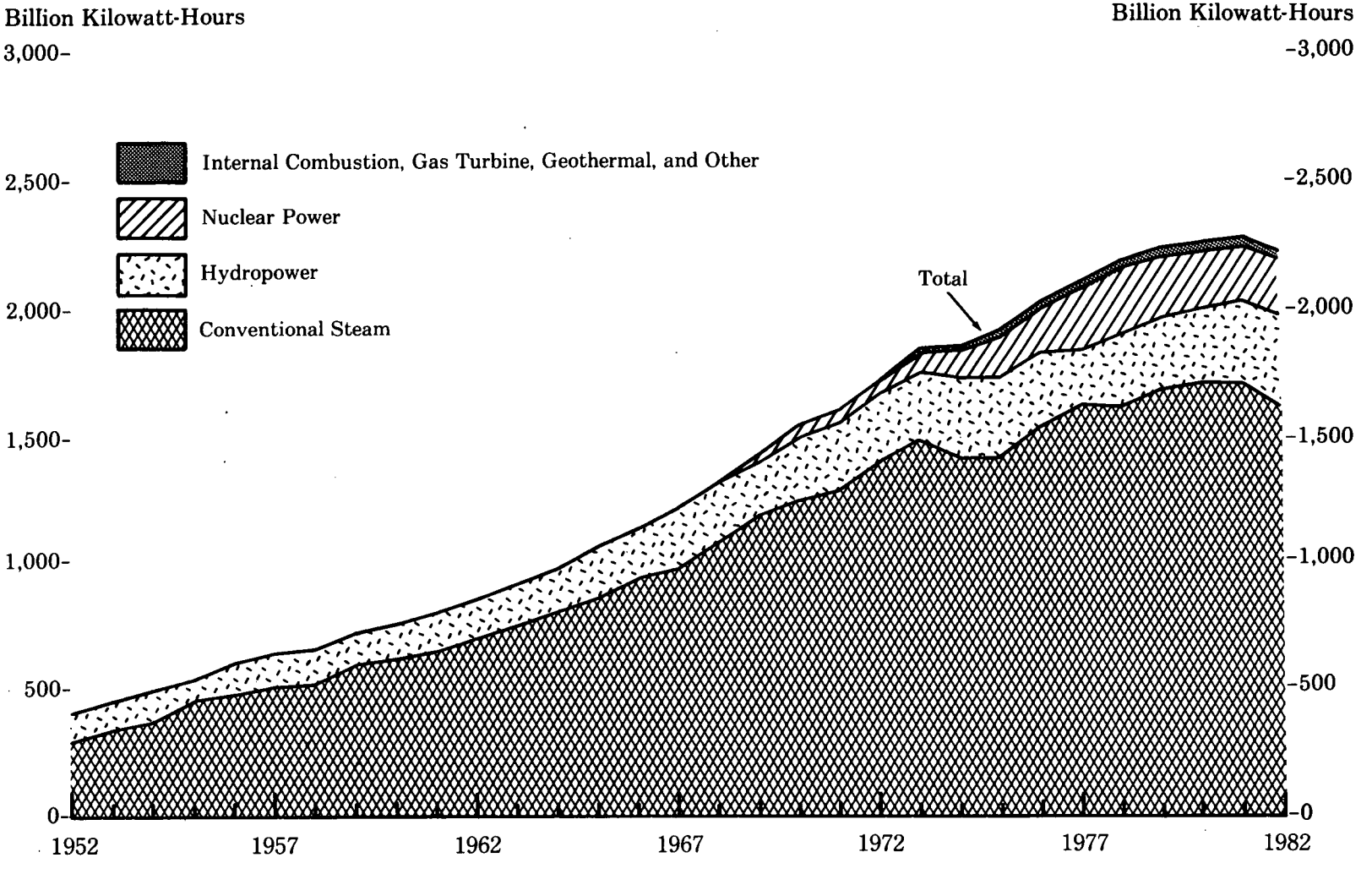


Table 66. Production of Electricity[1] by the Electric Utility Industry by Type of Generation, 1952-1982

(Billion Kilowatt-Hours)

Year	Conventional Steam [2]	Internal Combustion	Gas Turbine	Nuclear Power	Hydropower	Geothermal and Other [3]	Total
1952	290	4	0	0	105	(4)	399
1953	333	4	0	0	105	(4)	443
1954	361	4	0	0	107	(4)	472
1955	430	4	0	0	113	(4)	547
1956	474	4	0	0	122	(4)	601
1957	497	4	0	(4)	130	(4)	632
1958	500	4	0	(4)	140	(4)	645
1959	567	4	0	(4)	138	(4)	710
1960	603	4	0	1	146	(4)	754
1961	634	5	0	2	152	(4)	792
1962	677	5	0	2	169	(4)	853
1963	742	5	(4)	3	166	(4)	917
1964	798	5	1	3	177	(4)	984
1965	851	5	1	4	194	(4)	1,055
1966	938	5	NA	6	195	1	1,144
1967	980	5	NA	8	222	1	1,214
1968	1,084	5	4	13	222	1	1,329
1969	1,163	6	8	14	250	1	1,442
1970	1,240	6	16	22	248	1	1,532
1971	1,279	6	22	38	266	1	1,613
1972	1,385	7	29	54	273	2	1,750
1973	1,467	7	30	83	272	2	1,861
1974	1,411	6	32	114	301	3	1,867
1975	1,414	6	22	173	300	3	1,918
1976	1,530	5	24	191	284	4	2,038
1977	1,615	5	29	251	220	4	2,124
1978	1,610	5	31	276	280	3	2,206
1979	1,676	4	28	255	280	4	2,247
1980	1,726	4	24	251	276	6	2,286
1981	1,730	3	22	273	261	6	2,295
1982[5]	1,628	2	14	283	309	5	2,242

[1] See Explanatory Note 1.
[2] Excludes geothermal and other.
[3] Includes production from plants which consume wood, refuse, and other vegetal fuels.
[4] Less than 0.5 billion kilowatt-hours.
[5] Preliminary.
NA = Not available.
Note: Sum of components may not equal total due to independent rounding.
Sources: •1952 through September 1977—Federal Power Commission, Form 4, "Monthly Power Plant Report." •October 1977 through 1981—Federal Energy Regulatory Commission, FPC Form 4, "Monthly Power Plant Report." •1982—Energy Information Administration, Form EIA-759, "Monthly Power Plant Report."

Figure 72. Sales of Electricity to End-Use Sectors

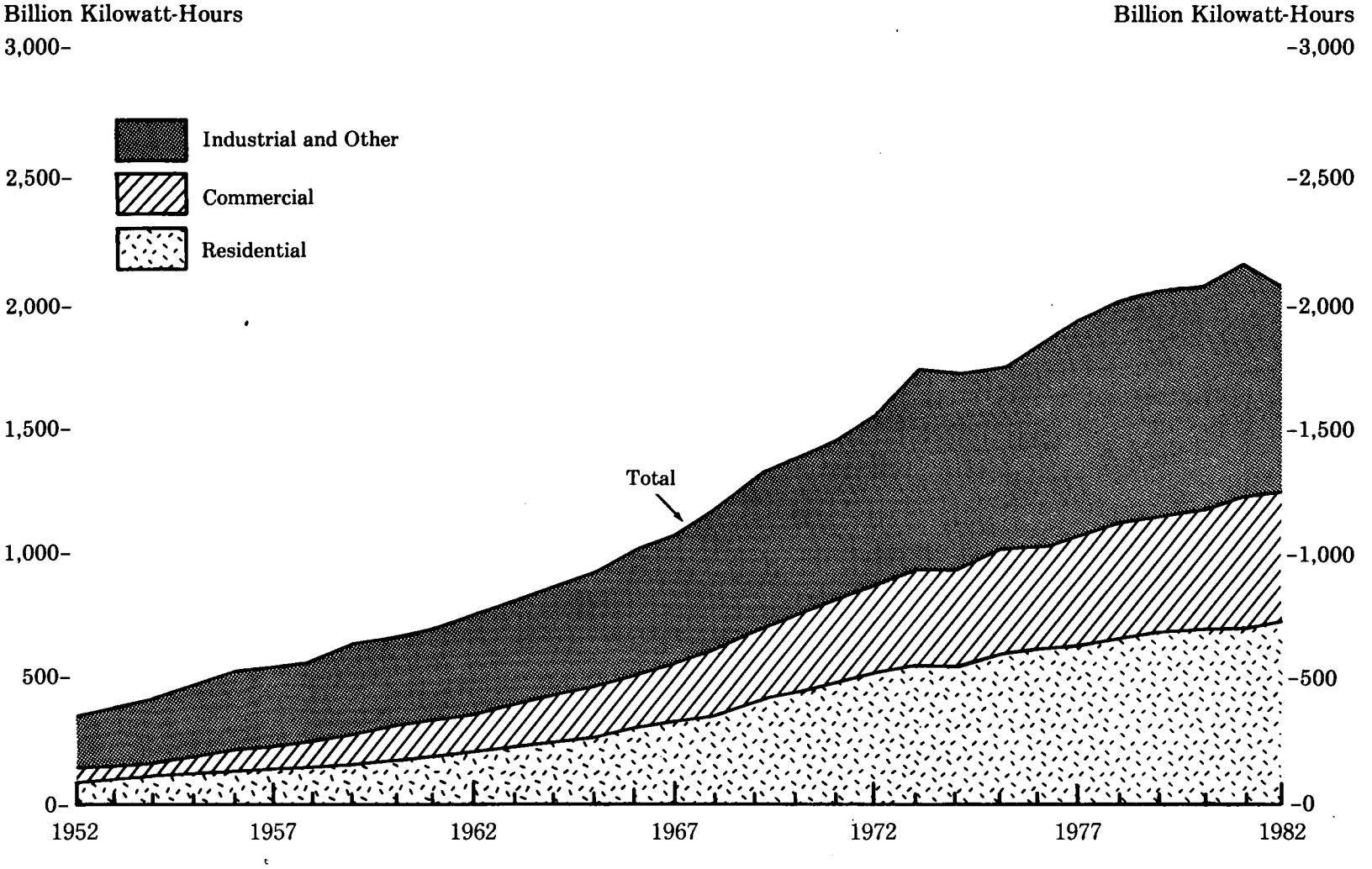


Table 67. Sales of Electric Utility Electricity to End-Use Sectors,[1] 1952-1982
(Billion Kilowatt-Hours)

Year	Residential	Commercial	Industrial	Other	Total
1952	94	62	176	24	356
1953	104	67	199	26	396
1954	116	72	208	27	424
1955	128	79	260	29	497
1956	143	87	286	30	546
1957	157	94	294	31	576
1958	169	100	287	32	588
1959	185	112	315	36	647
1960	201	131	324	32	688
1961	214	138	337	32	722
1962	233	153	360	32	778
1963	251	171	377	34	833
1964	272	187	405	32	896
1965	291	200	429	34	954
1966	317	218	464	37	1,035
1967	340	234	485	40	1,099
1968	382	258	521	42	1,203
1969	427	282	559	46	1,314
1970	466	307	571	48	1,392
1971	500	329	589	51	1,470
1972	539	359	641	56	1,595
1973	579	388	686	59	1,713
1974	578	385	685	58	1,706
1975	588	403	688	68	1,747
1976	606	425	754	70	1,855
1977	645	447	786	71	1,948
1978	674	461	809	73	2,018
1979	683	473	842	73	2,071
1980	717	488	815	74	2,094
1981	722	514	826	85	2,147
1982[2]	730	526	745	86	2,086

[1] See Explanatory Note 11.
[2] Estimated.
Note: Sum of components may not equal total due to independent rounding.
Sources: •1952 through September 1977—Federal Power Commission, FPC Form 5, "Monthly Statement of Electric Operating Revenue and Income." •October 1977 through February 1980—Federal Energy Regulatory Commission, FPC Form 5, "Monthly Statement of Electric Operating Revenue and Income." March 1980 through 1982—Federal Energy Regulatory Commission, FPC Form 5, "Electric Utility Company Monthly Statement."

Table 68. Fossil Fuels Consumed by the Electric Utility Industry to Produce Electricity, 1952-1982

Year	Coal			Petroleum [1]		Natural Gas
	Anthracite	Bituminous Coal and Lignite	Total	Oil	Petroleum Coke	
	(million short tons)			(million barrels)	(million short tons)	(billion cubic feet)
1952	3.8	103.3	107.1	67.2	NA	910
1953	3.6	112.3	115.9	82.2	NA	1,034
1954	3.2	115.2	118.4	66.7	NA	1,165
1955	3.2	140.5	143.8	75.3	NA	1,153
1956	3.3	155.0	158.3	72.7	NA	1,239
1957	3.4	157.4	160.8	79.7	NA	1,336
1958	2.8	152.9	155.7	77.7	NA	1,373
1959	2.6	165.8	168.4	88.3	NA	1,629
1960	2.8	173.9	176.7	85.3	NA	1,725
1961	2.5	179.7	182.2	85.7	NA	1,825
1962	2.3	191.0	193.3	85.8	NA	1,966
1963	2.1	209.2	211.3	93.3	NA	2,144
1964	2.2	223.2	225.4	101.1	NA	2,323
1965	2.2	242.6	244.8	115.2	NA	2,321
1966	2.2	264.3	266.5	140.9	NA	2,610
1967	2.2	272.0	274.2	161.3	NA	2,746
1968	2.2	295.6	297.8	188.6	NA	3,148
1969	1.9	308.8	310.6	251.0	NA	3,488
1970	1.9	318.3	320.2	335.5	0.6	3,932
1971	1.6	325.7	327.3	396.5	0.6	3,976
1972	1.6	350.2	351.8	493.8	0.6	3,977
1973	1.4	387.8	389.2	560.2	0.5	3,660
1974	1.5	390.3	391.8	536.3	0.6	3,443
1975	1.5	404.5	406.0	506.1	0.1	3,158
1976	1.3	447.0	448.4	555.9	0.1	3,081
1977	1.4	475.7	477.1	623.7	0.1	3,191
1978	1.1	480.2	481.2	635.8	0.4	3,188
1979	1.0	526.0	527.1	523.3	0.3	3,491
1980	1.0	568.3	569.3	420.2	0.2	3,682
1981	1.2	595.6	596.8	351.1	0.1	3,640
1982[2]	1.1	593.0	594.1	249.7	0.1	3,227

[1] These data are petroleum consumed by electric utilities and do not equate to petroleum supplied to (or delivered to) electric utilities. Oil includes residual fuel oil (including crude oil burned as fuel), distillate fuel oil, and jet fuel.

[2] Preliminary.

NA = Not available.

Note: Sum of components may not equal total due to independent rounding.

Sources: •1952 through September 1977—Federal Power Commission, Form 4, "Monthly Power Plant Report." •October 1977 through 1981—Federal Energy Regulatory Commission, FPC Form 4, "Monthly Power Plant Report." •1982—Energy Information Administration, Form EIA-759, "Monthly Power Plant Report."

Table 69. Coal and Petroleum Stocks at Electric Utilities, Year-End 1952-1982

Year	Coal			Petroleum	
	Anthracite	Bituminous Coal and Lignite	Total	Oil [1]	Petroleum Coke
	(million short tons)			(million barrels)	(million short tons)
1952	5.6	35.9	41.5	13.7	NA
1953	5.9	39.8	45.6	15.0	NA
1954	6.4	39.7	46.1	15.9	NA
1955	3.2	38.2	41.4	13.7	NA
1956	2.8	46.0	48.8	17.3	NA
1957	2.8	50.3	53.1	20.1	NA
1958	2.2	48.8	51.0	20.8	NA
1959	2.0	50.1	52.1	18.5	NA
1960	1.8	49.9	51.7	19.6	NA
1961	1.5	48.6	50.1	22.0	NA
1962	1.4	49.0	50.4	23.8	NA
1963	1.3	49.3	50.6	24.9	NA
1964	1.2	52.7	53.9	22.4	NA
1965	1.1	53.4	54.5	25.6	NA
1966	1.0	52.9	53.9	27.4	NA
1967	1.3	69.7	71.0	26.7	NA
1968	1.3	64.2	65.5	28.7	NA
1969	1.3	60.6	61.9	35.3	NA
1970	1.1	70.8	71.9	38.0	0.2
1971	1.1	76.7	77.8	49.6	0.3
1972	0.9	98.8	99.7	57.7	0.3
1973	1.1	85.9	87.0	89.2	0.3
1974	0.9	82.6	83.5	112.9	[2]
1975	1.0	109.7	110.7	125.3	[2]
1976	1.0	116.4	117.4	121.7	[2]
1977	2.3	130.9	133.2	144.0	[2]
1978	2.2	126.0	128.2	118.8	0.2
1979	3.3	156.4	159.7	131.4	0.2
1980	4.7	178.3	183.0	135.4	0.1
1981	5.5	163.4	168.9	128.1	[2]
1982[3]	6.1	175.0	181.1	118.9	[2]

[1] Includes residual fuel oil (including crude oil burned as fuel), distillate fuel oil, and jet fuel.
[2] Less than 0.05 million short tons.
[3] Preliminary.
NA = Not available.
Note: Sum of components may not equal total due to independent rounding.
Sources: •1952 through September 1977—Federal Power Commission, Form 4, "Monthly Power Plant Report." •October 1977 through 1981—Federal Energy Regulatory Commission, FPC Form 4, "Monthly Power Plant Report." •1982—Energy Information Administration, Form EIA-759, "Monthly Power Plant Report."

Figure 73. Installed Generating Capacity of the Electric Utility Industry, Year-End

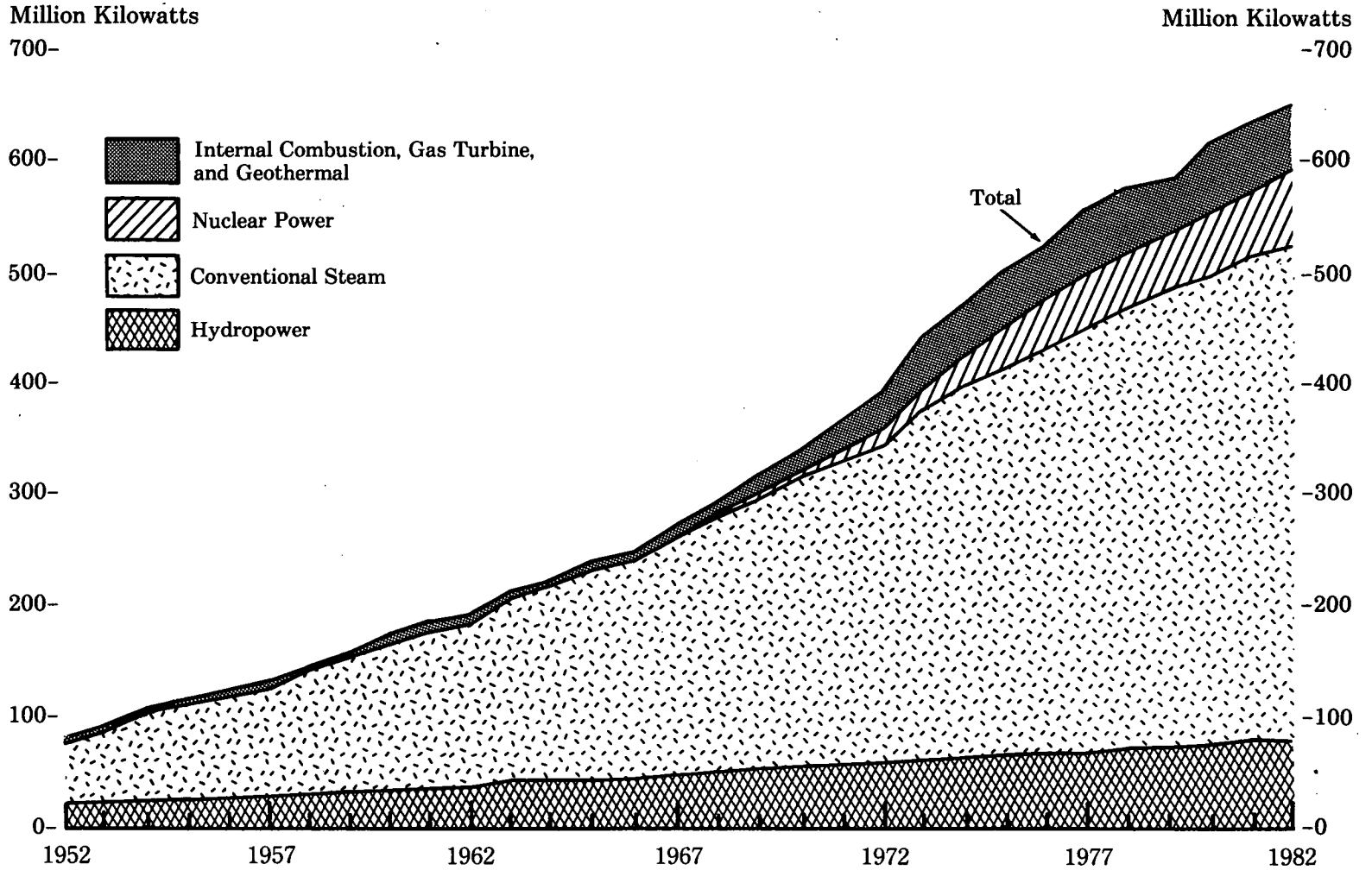


Table 70. Installed Generating Capacity of the Electric Utility Industry, Year-End 1952-1982

(Million Kilowatts)

Year	Conventional Steam [1]	Internal Combustion	Gas Turbine	Nuclear Power	Hydropower	Geothermal	Total
1952	59.7	2.1	0	0	20.4	0	82.2
1953	67.2	2.2	0	0	22.0	0	91.5
1954	77.1	2.3	0	0	23.2	0	102.6
1955	87.1	2.4	0	0	25.0	0	114.5
1956	92.6	2.5	0	0	25.7	0	120.7
1957	99.4	2.5	0	0.1	27.0	0	129.1
1958	110.5	2.6	0	0.1	29.4	0	142.6
1959	123.0	2.7	0	0.1	31.1	0	156.8
1960	132.1	2.8	0	0.3	32.4	(2)	168.0
1961	141.8	3.0	0	0.4	35.5	(2)	180.7
1962	150.0	3.0	0	0.7	37.3	(2)	191.1
1963	165.7	3.2	0.6	0.7	40.2	(2)	210.5
1964	175.0	3.3	0.9	0.9	42.2	(2)	222.3
1965	186.6	3.4	1.4	0.9	43.8	(2)	236.1
1966	195.4	3.5	2.0	1.9	45.0	(2)	247.8
1967	211.1	3.8	3.3	2.9	48.1	0.1	269.3
1968	226.8	4.0	6.2	2.8	51.2	0.1	291.1
1969	242.2	4.2	10.1	4.0	52.8	0.1	313.3
1970	260.0	4.4	15.5	6.5	55.1	0.1	341.6
1971	277.8	4.5	21.9	8.7	55.9	0.2	368.9
1972	294.1	4.8	27.7	15.3	56.4	0.3	398.6
1973	320.6	5.0	33.4	21.0	62.0	0.4	442.4
1974	337.3	5.0	39.6	31.6	63.6	0.4	477.6
1975	352.9	5.1	44.1	39.8	65.9	0.6	508.3
1976	367.9	5.3	46.6	42.9	67.7	0.6	531.0
1977	387.8	5.3	47.9	49.9	68.7	0.6	560.2
1978	399.5	5.5	49.0	53.5	71.0	0.6	579.2
1979	411.6	5.5	50.6	54.6	75.3	0.7	598.3
1980	423.5	5.5	50.6	56.5	76.4	1.0	613.5
1981	438.9	5.6	51.4	60.8	77.1	1.0	634.8
1982[3]	450.4	5.1	51.8	63.1	78.0	1.0	649.5

[1] Excludes capacity of geothermal plants; includes capacity at plants that produce steam from coal, petroleum, natural gas, and biomass.
[2] Less than 0.05 million kilowatts.
[3] Preliminary.
Note: Sum of components may not equal total due to independent rounding.
Sources: •1952 through September 1977—Federal Power Commission, Form 4, "Monthly Power Plant Report." •October 1977 through 1981—Federal Energy Regulatory Commission, FPC Form 4, "Monthly Power Plant Report." •1982—Energy Information Administration, Form EIA-759, "Monthly Power Plant Report."

Figure 74. International Hydroelectric Power Production
(Billion Kilowatt-Hours)

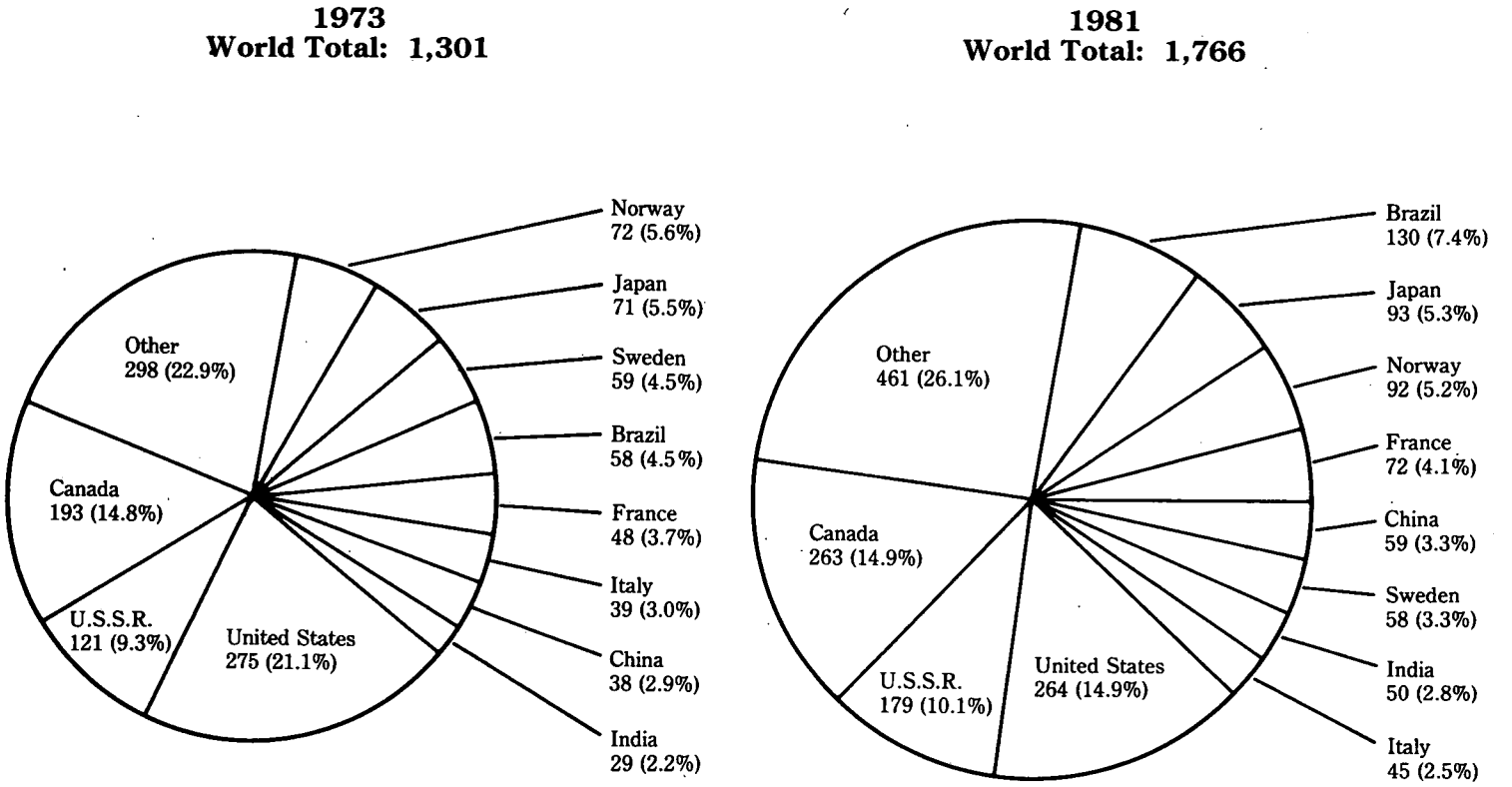


Table 71. International Hydroelectric Power Production,[1] 1973-1981

(Billion Kilowatt-Hours)

Area and Country	1973	1974	1975	1976	1977	1978	1979	1980	1981 [2]
North, Central, and South America									
Argentina	3	5	5	5	6	8	11	15	15
Brazil	58	65	74	82	93	103	115	127	130
Canada	193	211	202	213	220	234	243	251	263
Colombia	8	9	10	10	11	12	13	14	14
Mexico	16	17	15	17	19	16	18	16	17
United States	275	304	303	287	224	283	283	279	264
Venezuela	6	7	9	10	12	12	13	14	15
Other	17	19	19	20	21	23	24	28	28
Total	577	637	637	645	605	691	720	744	746
Western Europe									
Austria	19	22	24	20	25	25	28	29	30
Finland	10	13	12	9	12	10	11	10	11
France	48	57	60	49	76	69	67	70	72
Germany, West	15	18	17	14	17	18	18	18	20
Italy	39	39	42	41	52	47	48	47	45
Norway	72	76	77	81	71	80	88	83	92
Portugal	7	8	6	5	10	11	12	8	5
Spain	29	31	26	22	40	41	47	31	30
Sweden	59	57	57	54	53	57	60	58	58
Switzerland	29	29	34	27	36	33	32	34	34
Yugoslavia	16	20	19	20	24	25	26	28	30
Other	14	15	17	19	20	22	24	24	25
Total	358	384	390	362	437	436	461	440	452
Eastern Europe and U.S.S.R.									
Romania	7	8	9	8	9	11	11	12	12
U.S.S.R.	121	131	125	134	146	168	170	182	179
Other	9	11	11	11	13	13	13	14	14
Total	137	150	145	154	168	191	195	208	205
Middle East and Africa									
Egypt	5	6	7	8	9	9	9	10	10
Zambia	5	6	6	7	9	8	9	9	9
Other	27	28	30	34	36	39	46	48	51
Total	37	40	43	49	54	56	64	67	70
Far East and Oceania									
Australia	12	14	15	15	14	15	16	17	18
China	38	43	45	50	47	44	50	55	59
India	29	28	33	35	38	47	45	46	50
Japan	71	84	85	88	76	74	84	91	93
Korea, North	12	14	16	17	17	19	20	22	24
New Zealand	14	14	17	15	14	16	15	16	17
Other	16	17	19	21	20	21	27	29	32
Total	191	213	229	241	226	236	257	277	292
World Total	1,301	1,425	1,445	1,450	1,491	1,611	1,697	1,736	1,766

[1] See Explanatory Note 1.
[2] Preliminary.
Note: Data include industrial and utility production of hydroelectric power.
Note: Sum of components may not equal total due to independent rounding.
Source: Energy Information Administration, *1981 International Energy Annual.*

Figure 75. Weighted Average Monthly Electric Bill

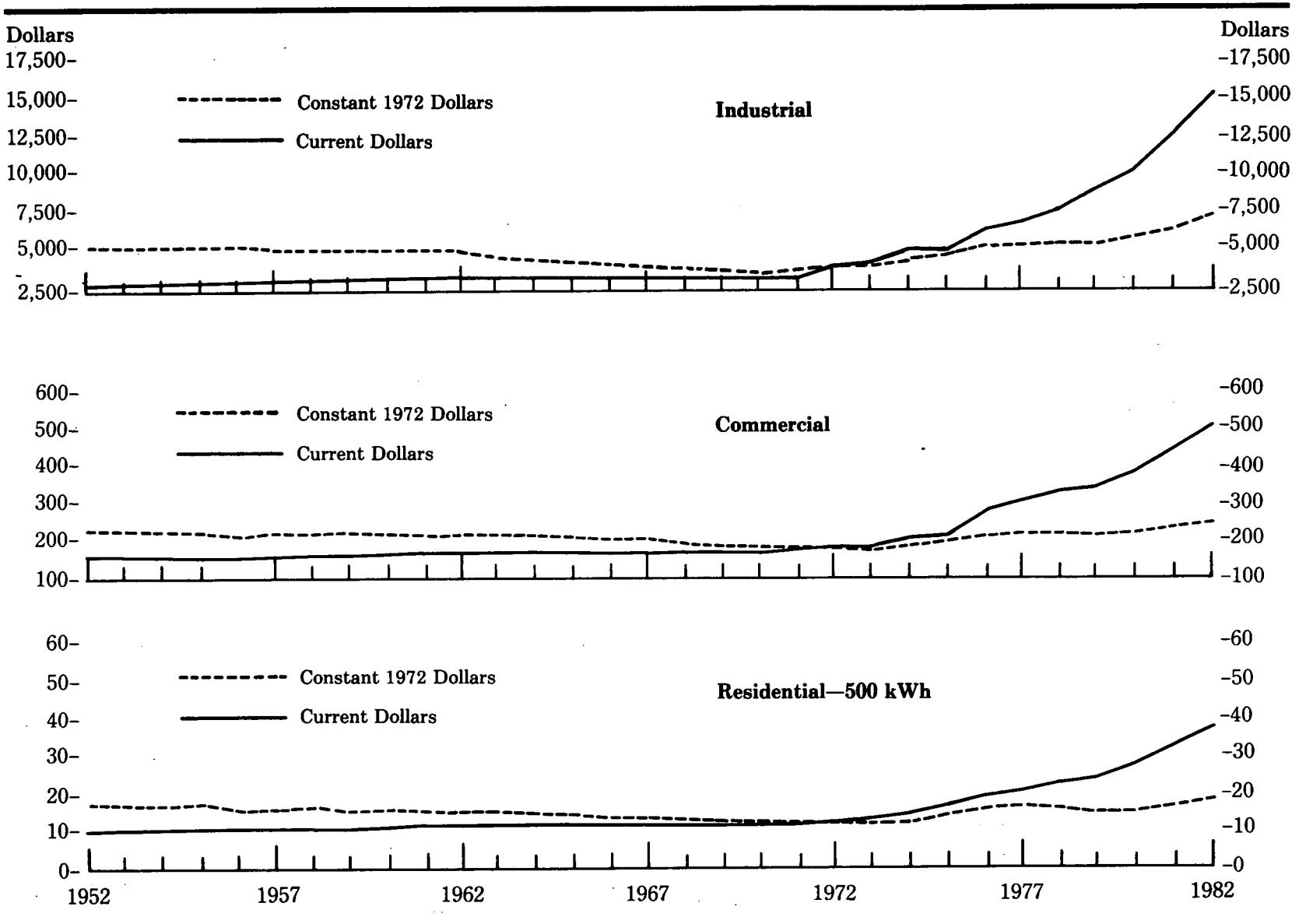


Table 72. Weighted Average Monthly Electric Bill,[1] January 1, 1952-1982

(Dollars per Month)

Year	Residential—500 kWh[2]		Residential—750 kWh[3]		Commercial[4]		Industrial[5]	
	Current	Constant[6]	Current	Constant[6]	Current	Constant[6]	Current	Constant[6]
1952	10.08	17.40	NA	NA	159.4	275.2	3,042	5,252
1953	10.20	17.34	NA	NA	158.0	268.6	3,154	5,362
1954	10.23	17.18	NA	NA	158.2	265.7	3,162	5,310
1955	10.30	16.93	NA	NA	159.2	261.7	3,168	5,207
1956	10.36	16.50	NA	NA	160.1	255.0	3,204	5,103
1957	10.39	16.00	NA	NA	160.7	247.5	3,235	4,982
1958	10.47	15.85	NA	NA	162.9	246.7	3,279	4,965
1959	10.51	15.55	NA	NA	163.5	241.9	3,283	4,857
1960	10.62	15.46	NA	NA	165.1	240.3	3,309	4,817
1961	10.64	15.35	NA	NA	164.1	236.7	3,337	4,813
1962	10.66	15.10	NA	NA	164.7	233.3	3,551	5,029
1963	10.64	14.85	14.65	20.44	164.4	229.4	3,442	4,803
1964	10.61	14.58	14.51	19.94	163.0	224.0	3,414	4,691
1965	10.41	14.00	14.34	19.28	161.0	216.5	3,423	4,603
1966	10.34	13.47	14.19	18.49	159.7	208.1	3,407	4,439
1967	10.37	13.12	14.21	17.97	160.1	202.5	3,422	4,328
1968	10.37	12.56	14.16	17.16	160.4	194.3	3,428	4,153
1969	10.32	11.89	13.97	16.10	160.9	185.4	3,436	3,959
1970	10.51	11.49	14.22	15.55	162.9	178.1	3,492	3,818
1971	11.13	11.59	14.99	15.61	171.9	179.0	3,774	3,931
1972	11.99	11.99	16.14	16.14	184.8	184.8	4,137	4,137
1973	12.56	11.88	16.96	16.04	193.7	183.2	4,402	4,163
1974	14.10	12.25	19.14	16.63	215.4	187.2	5,196	4,515
1975	17.93	14.25	24.72	19.65	268.7	213.6	6,883	5,472
1976	19.26	14.55	26.78	20.24	285.9	216.0	7,395	5,588
1977	20.86	14.89	29.22	20.86	310.0	221.3	8,224	5,872
1978	22.19	14.75	31.23	20.76	333.4	221.6	8,973	5,965
1979	23.05	14.10	32.72	20.02	343.9	210.4	9,408	5,757
1980	27.50	15.39	36.93	20.67	385.5	215.8	10,910	6,107
1981	32.61	16.68	43.99	22.50	449.4	229.9	12,756	6,524
1982	37.26	17.99	50.40	24.33	509.3	245.9	15,097	7,288

[1] The U.S. average for each energy consumption level (end-use sector) is calculated by multiplying the bill for each city included in the typical bill report by the city's population and dividing the sum of the products for all cities by the sum of their populations. Bills are based on rates, fuel adjustments, and taxes in effect January 1 of each year.

[2] Weighted average monthly bill of residential consumers of 500 kilowatt-hours.

[3] Weighted average monthly bill of residential consumers of 750 kilowatt-hours.

[4] Weighted average monthly bill of commercial consumers who required 30 kilowatts of service for 6,000 kilowatt- hours.

[5] Weighted average monthly bill of industrial consumers who required 1,000 kilowatts of service for 200,000 kilowatt-hours.

[6] Constant 1972 dollars calculated using GNP implicit price deflators, 1972 = 100. See Units of Measure, Conversion Factors, Price Deflators, and Energy Equivalents section.

NA = Not available.

Sources: •1952 through September 1977—Federal Power Commission, Form 3, "Typical Net Monthly Bills." •October 1977 through June 1979—Federal Energy Regulatory Commission, FPC Form 3, "Typical Net Monthly Bills." •July 1979 through December 1982—Energy Information Administration, Form 213, "Typical Net Monthly Bills."

Figure 76. Average Price of Electricity Sold by the Electric Utility Industry to End-Use Sectors

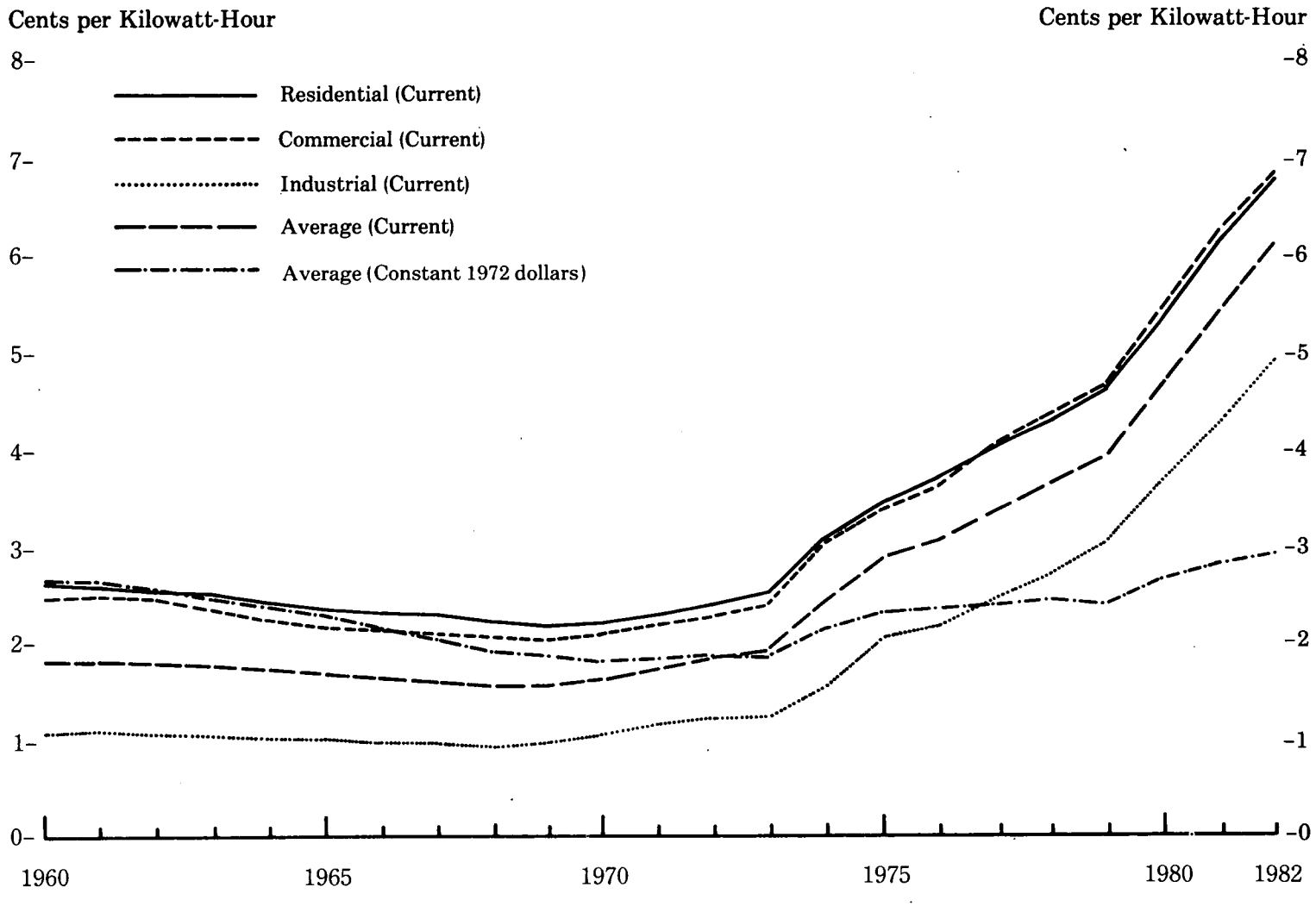


Table 73. Average Price of Electricity Sold by the Electric Utility Industry[1] to End-Use Sectors, 1960-1982

(Cents per Kilowatt-Hour)

Year	Residential		Commercial		Industrial		Other		Weighted Average	
	Current	Constant[2]	Current	Constant[2]	Current	Constant[2]	Current	Constant[2]	Current	Constant[2]
1960	2.62	3.81	2.42	3.52	1.06	1.54	1.91	2.78	1.82	2.65
1961	2.60	3.75	2.43	3.50	1.08	1.56	1.83	2.64	1.82	2.63
1962	2.56	3.63	2.38	3.37	1.05	1.49	1.86	2.63	1.80	2.55
1963	2.51	3.50	2.34	3.26	1.04	1.45	1.83	2.55	1.77	2.47
1964	2.45	3.37	2.22	3.05	1.01	1.39	1.83	2.51	1.73	2.38
1965	2.39	3.21	2.18	2.93	1.00	1.34	1.82	2.45	1.70	2.29
1966	2.34	3.05	2.13	2.77	0.98	1.28	1.80	2.34	1.66	2.16
1967	2.31	2.92	2.11	2.67	0.98	1.24	1.76	2.23	1.65	2.09
1968	2.25	2.73	2.07	2.51	0.97	1.18	1.76	2.13	1.63	1.97
1969	2.21	2.55	2.06	2.37	0.98	1.13	1.74	2.00	1.63	1.88
1970	2.22	2.43	2.08	2.27	1.02	1.12	1.80	1.97	1.67	1.83
1971	2.32	2.42	2.20	2.29	1.10	1.15	1.91	1.99	1.77	1.84
1972	2.42	2.42	2.29	2.29	1.16	1.16	1.98	1.98	1.86	1.86
1973	2.54	2.40	2.41	2.28	1.25	1.18	2.10	1.99	1.96	1.85
1974	3.10	2.69	3.04	2.64	1.69	1.47	2.75	2.39	2.49	2.16
1975	3.51	2.79	3.45	2.74	2.07	1.65	3.08	2.45	2.92	2.32
1976	3.73	2.82	3.69	2.79	2.21	1.67	3.27	2.47	3.09	2.33
1977	4.05	2.89	4.09	2.92	2.50	1.79	3.51	2.51	3.42	2.44
1978	4.31	2.87	4.36	2.90	2.79	1.85	3.62	2.41	3.69	2.45
1979	4.64	2.84	4.68	2.86	3.05	1.87	3.96	2.42	3.99	2.44
1980	5.36	3.00	5.48	3.07	3.69	2.07	4.76	2.66	4.73	2.65
1981	6.20	3.17	6.29	3.22	4.29	2.19	5.28	2.70	5.46	2.79
1982[3]	6.86	3.31	6.86	3.31	4.95	2.39	5.92	2.86	6.13	2.96

[1] Data 1979 and earlier are for Classes A and B privately-owned electric utilities only. Data 1980 forward are for selected Class A utilities whose electric operating revenues were $100 million or more during the previous year.

[2] Constant 1972 dollars using GNP implicit price deflator, 1972=100. See Units of Measure, Conversion Factors, Price Deflators, and Energy Equivalents section.

[3] Estimated.

Sources: 1960 through September 1977—Federal Power Commission, Form 5, "Monthly Statement of Electric Operating Revenues and Income." •October 1977 through February 1980—Federal Energy Regulatory Commission, FPC Form 5, "Monthly Statement of Electric Operating Revenues and Income." •March 1980 through 1982—Federal Energy Regulatory Commission, Form 5, "Electric Utility Company Monthly Statement."

Section 7. Nuclear Energy Supply and Disposition

This section presents information on the nuclear energy industry in the United States and in 18 other non-Communist countries. Included are data on nuclear powerplants, including operating or construction status, generating capacity, and output, and data on uranium resources, production, imports, and exports.

Uranium Supply. There were an estimated 203 mines in operation in the United States during 1982, down about 20 percent from 1981. Most were located in the West and Southwest. Of the total, 143 were underground, 32 were open pit, 15 involved solution mining, and 13 involved other types of extraction. Production from these mines and other sources totaled 13,500 short tons of uranium oxide (U_3O_8), down 30 percent from the 1981 level. Mined ores contain about 0.05 to 0.3 percent by weight of uranium and are processed into high-purity U_3O_8, or 'yellowcake,' at uranium 'mills.' Market conditions reduced the number of operating mills from 20 at the beginning of 1982 to 14 at the year's end. Estimated 1982 U_3O_8 imports and exports were 3,800 and 1,900 short tons, respectively. Imports were up 15 percent and exports down 14 percent (see Table 77).

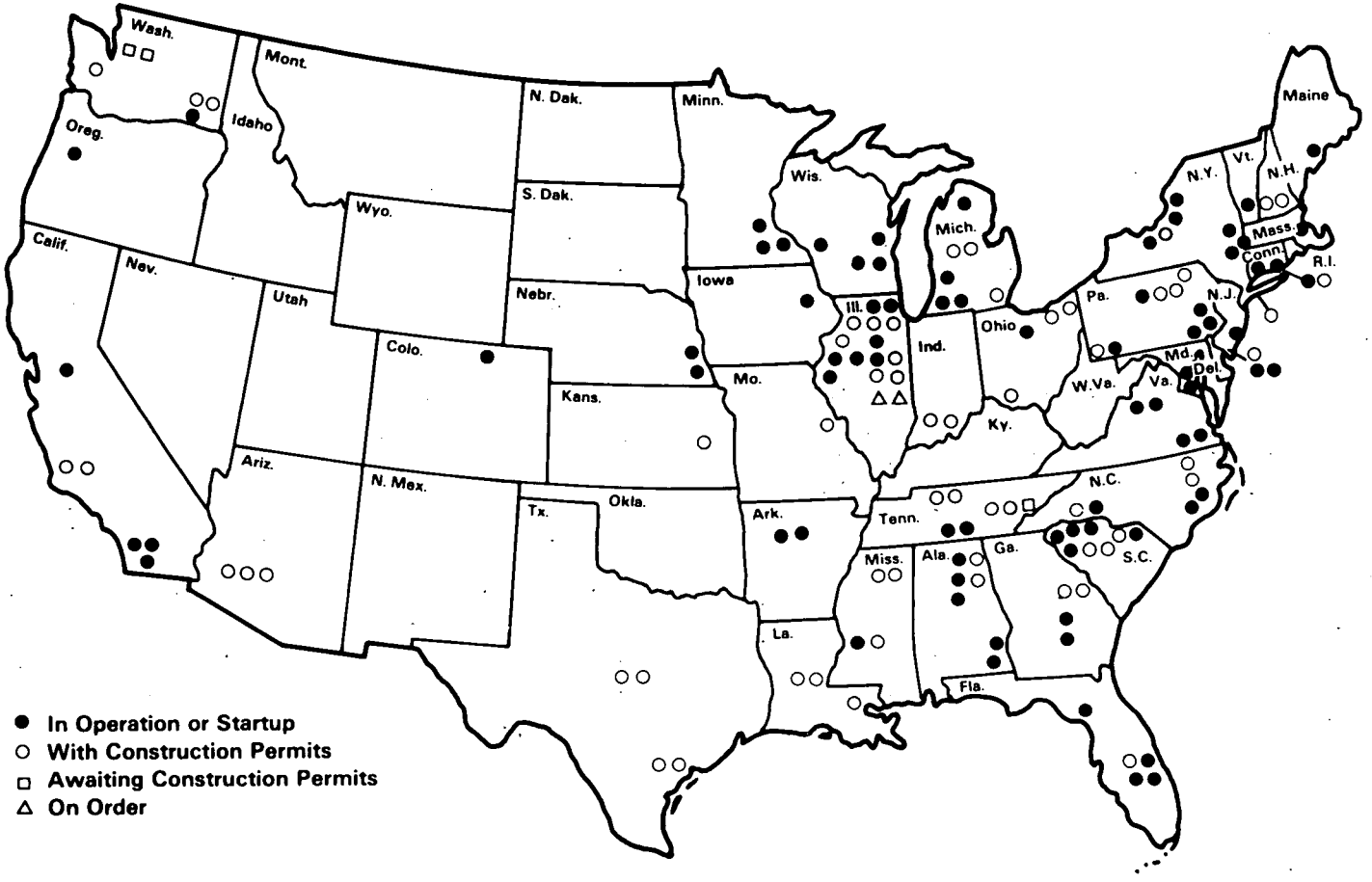
Uranium resources with 'forward' costs of $50 or less per pound of U_3O_8, as of January 1, 1982, were estimated to be 2.6 million short tons, down about 23 percent from the January 1, 1981 level. This decline is a reflection of the rise in production costs. About 0.6 million short tons of the resources were classified as 'reserves' and the remaining 2 million short tons as 'potential resources' (see Table 76).

Nuclear Power Generation. During 1982, licensed U.S. nuclear-power reactors generated a record 282.8 billion net kilowatt-hours of electricity, up 3.7 percent from the 1981 total. The 1982 nuclear output was 12.6 percent of total U.S. net electricity generation, also a record (see Tables 65 and 75).

Six domestic reactors were granted low-power licenses by the Nuclear Regulatory Commission in 1982, four of which also received full power operating licenses during the year. In a separate action, Shippingport, a 60,000 net kilowatt unit operated by the Department of Energy since 1957, was retired from service. On December 31, 1982, there were 79 operable nuclear powerplants with a combined capacity of 59.7 million net kilowatts, both up from their respective 1981 levels (see Table 75). In contrast, 18 units in various stages of planning or construction, with a collective potential capacity of 19 million net kilowatts, were cancelled in 1982. Overall in 1982, the total number of domestic reactors in all stages of planning, construction, or operation fell to 144 units with a total rated capacity of 135 million net kilowatts (see Table 74).

Nuclear-based electricity generation by the non-Communist nations was 789 billion gross kilowatt-hours in 1982, up 7.9 percent from the 1981 level. Approximately 38 percent of this generation was in the United States. Other major producing countries were France, 14 percent; Japan, 13 percent, and West Germany, 8 percent (see Table 78).

Figure 77. Status of Nuclear Reactor Units, December 31, 1982



Due to space limitations, symbols do not represent actual locations

Table 74. Status of Nuclear Reactor Units, December 31, 1982

Status	Number of Reactors				Capacity[1] (thousand net kilowatts)	
	Boiling Water Reactors	Pressurized Water Reactors	Other[2]	Total	Total	Average (per reactor)
In Operation or Startup[3]	27	50	2	79	63,710	806
(In Full Operation)	(26)	(49)	(2)	(77)	(61,373)	(797)
Construction Permits Granted	19	41	0	60	66,388	1,106
(Construction Started)	(19)	(41)	(0)	(60)	(66,388)	(1,106)
Construction Permits Pending	2	0	1	3	2,904	968
Units on Order	0	2	0	2	2,240	1,120
Total	48	93	3	144	135,242	939

[1] Net Design Electrical Rating (DER), which represents the total installed (nameplate) capacity of the units' electrical generator(s) less capacity required for plant operation. See Explanatory Note 12.
[2] Includes one graphite-moderated and one gas-cooled (HGTR) reactor in full operation and one fast-breeder reactor with a pending construction permit.
[3] Excludes the following units which have been inoperative for at least 3 years: Humboldt Bay; Dresden-1; and Three Mile Island-2.
Sources: Compiled by the Energy Information Administration from various sources, but primarily from the Nuclear Regulatory Commission Report, NUREG-0871, *Summary Information Report*, Quarterly.

Figure 78. Nuclear Powerplant Capacity and Electricity Production

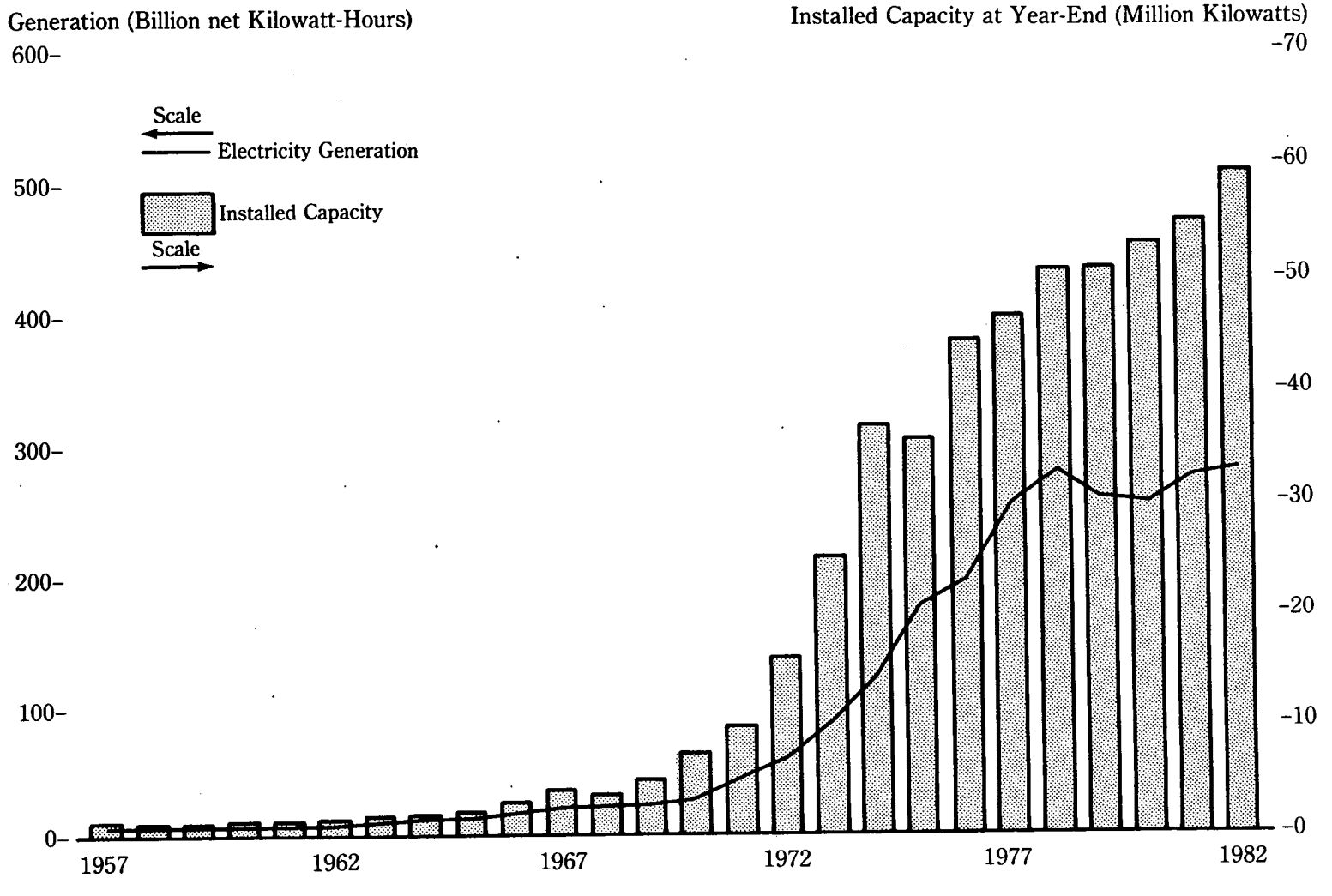


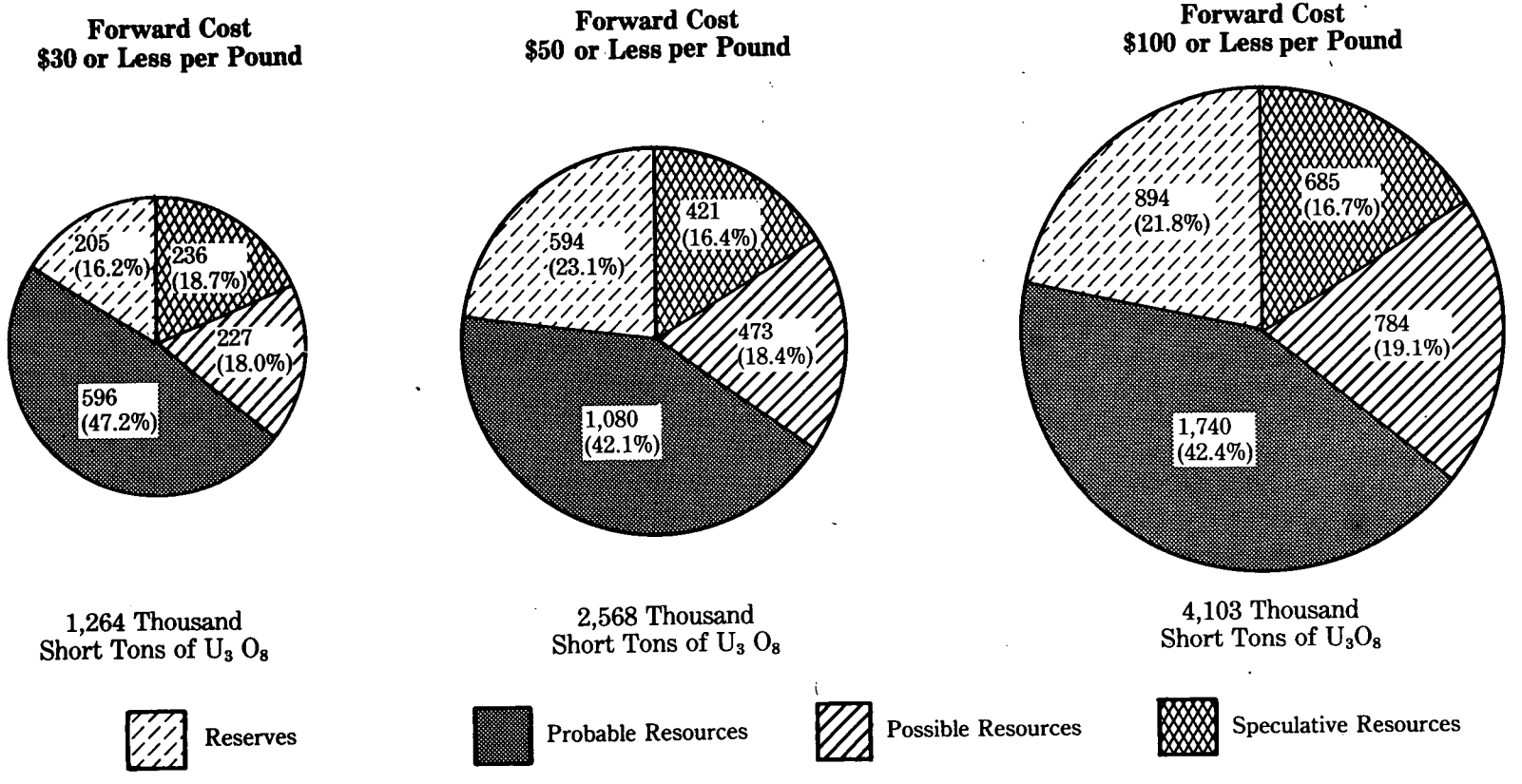
Table 75. Nuclear Powerplant Capacity and Electricity Production, 1957-1982

Year	Year-End Licensed Reactors[1]	Year-End Capacity (million kilowatts)[1]	Electricity Generation	
			(billion net kilowatt-hours)	(percent of total U.S. generation)
1957	1	0.1	[2]	[3]
1958	1	0.1	0.2	[3]
1959	1	0.1	0.2	[3]
1960	2	0.3	0.5	0.1
1961	3	0.4	1.7	0.2
1962	4	0.7	2.3	0.3
1963	7	0.7	3.2	0.4
1964	9	0.9	3.3	0.3
1965	10	0.9	3.7	0.4
1966	11	1.9	5.5	0.5
1967	10	2.9	7.7	0.6
1968	10	2.8	12.5	0.9
1969	13	4.0	13.9	1.0
1970	19	6.5	21.8	1.4
1971	21	8.7	38.1	2.4
1972	29	15.3	54.1	3.1
1973	40	19.8	83.5	4.5
1974	55	35.7	114.0	6.1
1975	58	35.8	172.5	9.0
1976	65	44.6	191.1	9.4
1977	68	47.2	250.9	11.8
1978	72	50.8	276.4	12.5
1979	71	50.9	255.2	11.4
1980	72	52.6	251.1	11.0
1981	74	55.5	272.7	11.9
1982[4]	79	59.7	282.8	12.6

[1] See Explanatory Note 12.
[2] Less than 0.05 billion kilowatt-hours.
[3] Less than 0.05 percent.
[4] Preliminary.

Sources: **Year-End Licensed Reactors:** •1957 through 1972—Federal Power Commission, Form 4, "Monthly Power Plant Report." •1973 through 1982—Nuclear Regulatory Commission, Report NUREG-0020, *Licensed Operating Reactors*, monthly. **Year-End Capacity:** •1957 through 1972—Federal Power Commission, Form 4, "Monthly Power Plant Report." •1973 through 1982 Nuclear Regulatory Commission, Report NUREG-0020, *Licensed Operating Reactors*. **Electricity Generation.** •1957 through September 1977—Federal Power Commission, Form 4, "Monthly Power Plant Report." •October 1977 through 1981—Federal Energy Regulatory Commission, FPC Form 4, "Monthly Power Plant Report." •1982—Energy Information Administration, Form EIA-759, "Monthly Power Plant Report."

Figure 79. Uranium Resources, January 1, 1982



Note: Quantities scaled in proportion to area.

Table 76. Uranium Resources, January 1, 1982

(Thousand Short Tons, U_3O_8)

Class	Forward Cost (dollars per pound) [1]		
	$30 or Less	$50 or Less	$100 or Less
Reserves [2,3]	205	594	894
Potential Resources [3]	1,059	1,974	3,209
Probable	596	1,080	1,740
Possible	227	473	784
Speculative	236	421	685
Total	1,264	2,568	4,103

[1] Forward costs are those costs yet to be expended, and, therefore, do not represent prices at which U_3O_8 will be sold.
[2] Does not include 140,000 tons of U_3O_8 estimated to be available as a by-product of phosphate and copper production during the 1980-2010 time period.
[3] See Glossary.
Sources: U.S. Department of Energy, Grand Junction Area Office, Colorado. *Statistical Data of the Uranium Industry*, Report No. GJO-100(82), January 1, 1982.

Figure 80. Uranium Production, Exports, and Imports

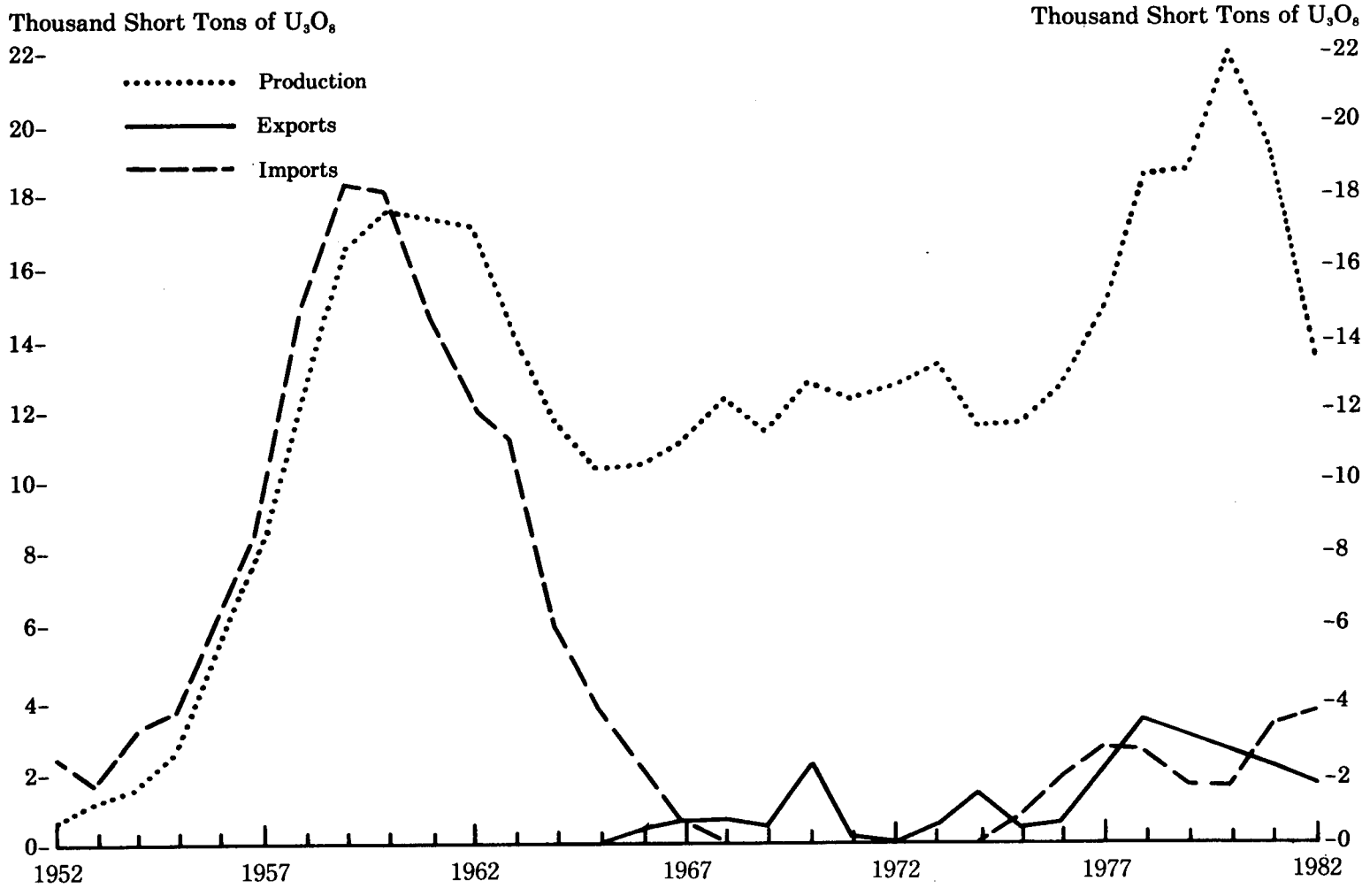


Table 77. Uranium Production, Exports, and Imports, 1952-1982

(Thousand Short Tons of U_3O_8)

Year	Domestic Production	Exports	Imports [1]
1952	0.87	0	2.83
1953	1.16	0	1.90
1954	1.70	0	3.24
1955	2.78	0	3.80
1956	5.96	0	6.24
1957	8.48	0	8.57
1958	12.44	0	16.13
1959	16.24	0	18.16
1960	17.64	0	18.01
1961	17.35	0	14.50
1962	17.01	0	12.11
1963	14.22	0	11.22
1964	11.85	0	6.07
1965	10.44	0	4.00
1966	10.59	0.40	2.32
1967	11.25	0.70	0.88
1968	12.37	0.80	0
1969	11.61	0.50	0
1970	12.90	2.10	0
1971	12.27	0.20	0
1972	12.90	0.10	0
1973	13.24	0.60	0
1974	11.53	1.50	0
1975	11.60	0.50	0.70
1976	12.75	0.60	1.80
1977	14.94	2.00	2.80
1978	18.49	3.40	2.60
1979	18.73	3.10	1.50
1980	21.85	2.90	1.80
1981	19.24	2.20	3.30
1982[2]	13.50	1.90	3.80

[1] Import quantities through 1970 are reported for fiscal years. Until 1971 the Atomic Energy Commission was the sole purchaser of all imported U_3O_8.

[2] Preliminary.

Sources: **Domestic Production:** •1952 through 1981—U.S. Department of Energy, Grand Junction Area Office, Colorado, *Statistical Data of the Uranium Industry,* Report No. GJO-100, annual. •1982—Preliminary, U.S. Department of Energy, Grand Junction Area Office, Colorado. **Imports and Exports:** •1952 through 1981—U.S. Department of Energy, Grand Junction Area Office, Colorado, *Statistical Data of the Uranium Industry,* Report No. GJO-100, annual. •1982—Preliminary, U.S. Department of Energy, Grand Junction Area Office, Colorado.

Figure 81. Nuclear Electricity Production by Non-Communist Countries

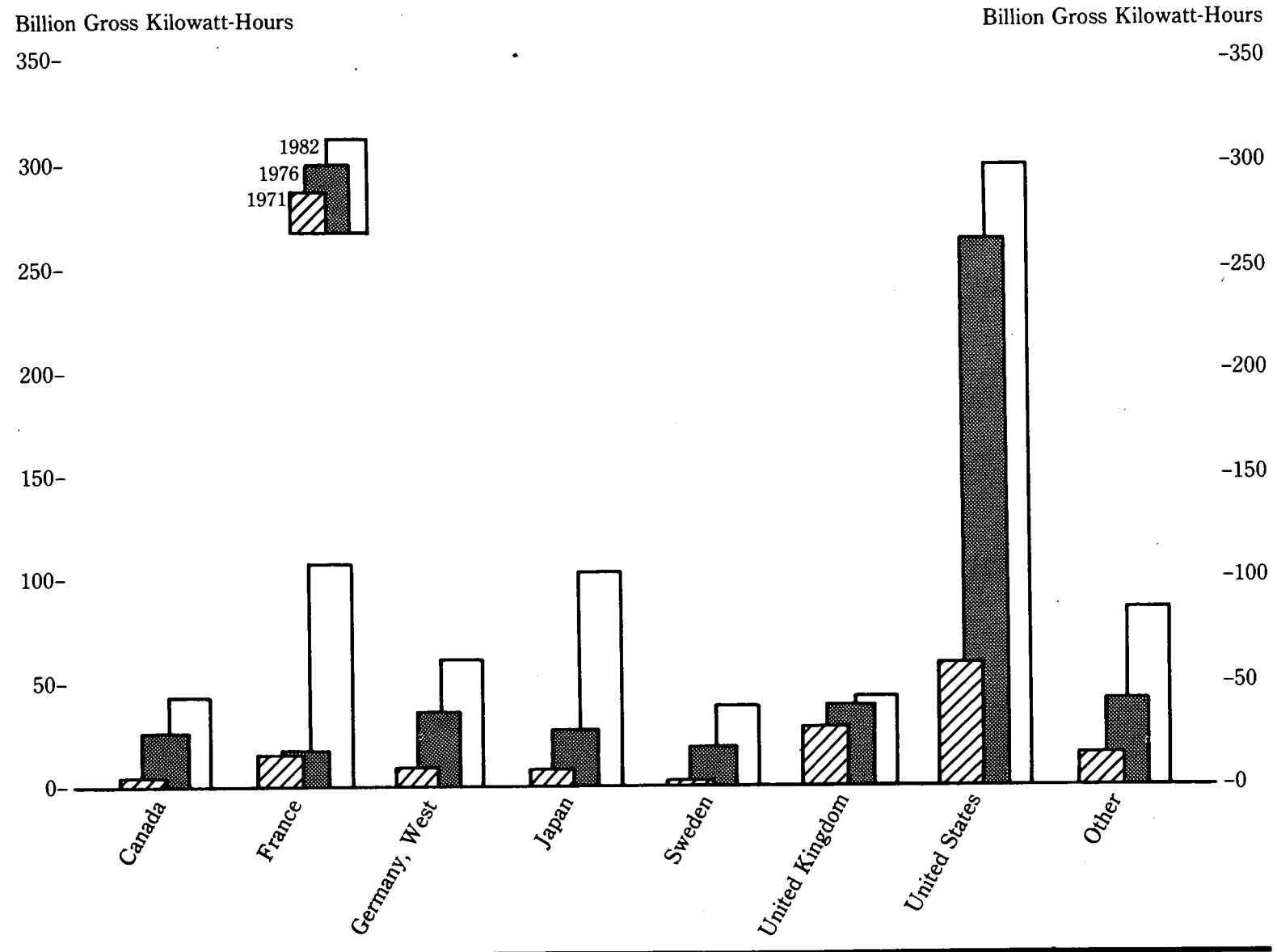


Table 78. Nuclear Electricity Production[1] by Non-Communist Countries, 1971-1982
(Billion Gross Kilowatt-Hours)

Country	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
North America												
Canada	4.2	3.5	18.3	15.4	13.2	18.0	26.8	32.9	38.4	40.4	43.3	42.6
United States	40.8	57.6	88.0	104.5	181.7	201.8	263.3	292.7	270.6	265.4	288.5	298.6
Total	44.9	61.1	106.2	119.9	195.0	219.8	290.1	325.6	309.0	305.8	331.8	341.2
Central and South America												
Argentina	0	0	0	1.0	2.5	2.6	1.6	2.9	2.7	2.3	2.8	[2] 1.9
Western Europe												
Belgium	0	0	0	0.1	6.8	10.0	11.9	12.5	11.4	12.5	12.8	15.6
Finland	0	0	0	0	0	0	2.7	3.3	6.7	7.0	14.5	16.5
France	9.4	14.6	11.6	14.7	18.3	15.8	17.9	30.5	39.9	61.2	105.2	108.9
Germany, West	6.0	9.3	11.9	12.0	21.7	24.5	35.8	35.9	42.2	43.7	53.4	63.4
Italy	3.4	3.6	3.1	3.4	3.8	3.8	3.4	4.4	2.6	2.2	2.7	6.8
Netherlands	0.4	0.3	1.1	3.3	3.3	3.9	3.7	4.1	3.5	4.2	3.7	3.9
Spain	2.5	4.8	6.5	7.2	7.5	7.6	6.5	7.6	6.7	5.2	9.4	8.8
Sweden	0.1	1.5	2.1	1.6	12.0	16.0	19.9	23.8	21.0	26.7	37.7	38.8
Switzerland	1.9	4.9	6.2	7.0	7.7	7.9	8.1	8.3	11.8	14.3	15.2	15.0
United Kingdom	27.6	29.6	28.0	34.0	30.5	36.8	38.1	36.7	38.5	37.2	38.9	44.1
Total	51.3	68.6	70.6	83.5	111.7	126.2	147.9	167.1	184.3	214.2	293.4	321.8
Far East												
India	1.8	0.9	1.9	2.5	2.5	3.2	2.8	2.3	3.2	2.9	3.1	2.2
Japan	6.5	9.0	9.4	18.1	22.2	36.7	28.1	53.2	62.0	82.8	86.0	104.5
Pakistan	[3]	0.2	0.5	0.6	0.5	0.5	0.3	0.2	[3]	0.1	0.2	0.1
South Korea	0	0	0	0	0	0	0.1	2.3	3.2	3.5	2.9	3.8
Taiwan	0	0	0	0	0	0	0.1	2.7	6.3	8.2	10.7	13.1
Total	8.3	10.1	11.8	21.2	25.3	40.4	31.4	60.7	74.7	97.4	102.9	123.6
Total	104.5	139.8	188.7	225.6	334.4	389.1	471.0	556.3	570.7	619.8	730.9	788.5

[1] See Explanatory Note 1.
[2] Includes 54,113,000 kilowatt-hours of electricity produced from nuclear power in Brazil in 1982.
[3] Less than 0.05 billion gross kilowatt-hours.
Note: Sum of components may not equal total due to independent rounding.
Note: These annual data are aggregated from monthly data.
Source: *Nucleonics Week*, McGraw-Hill Publishing Co., Inc.

Section 8. Geothermal and Solar Energy

Solar and geothermal energy are two emerging energy sources that are growing in use and have recently begun to fill more of the Nation's needs. Solar energy collection systems are now commercially available nationwide. Geothermal energy is currently used for space heating and to produce electricity.

Solar Energy. Solar energy is an inexhaustible energy source. The Earth's share of solar radiation measures 3 million quadrillion ($3x10^{21}$) Btu per year. If all of this extraordinarily large amount of energy could be harnessed, the energy obtained during 1 day could satisfy the world's energy needs for approximately 30 years at current rates of consumption. However, although solar radiation is universally available, it is a diffuse form of energy requiring a large collection area. The result is that only a small portion of the potential energy is utilized.

The transformation of sunlight into usable energy is accomplished through both passive and active systems. Passive systems use natural processes to collect and transfer heat. South-facing windows and greenhouses are examples of passive solar applications. Active systems require mechanical means, such as motors, pumps, and valves, to carry heat from the collectors to storage and from storage to the point of use. Collectors consist of an absorbing plate that transfers the sun's heat to a working medium (either liquid or gas), a translucent cover plate that prevents the heat from radiating back into the atmosphere, and usually insulation on the back of the collector panel to further reduce heat losses. The storage medium is usually water for liquid systems and rocks for air systems.

Conversion of solar energy is typically made at the site where it is used. Because there is no buyer-seller transaction for solar energy, it is difficult to measure the amount of solar energy converted. However, data on the quantity of collectors manufactured and shipped by producers, measured in square feet, are collected. Those data are provided in this section as an indicator of trends in the use of solar energy.

During 1981, there were 19.95 million square feet of solar collectors manufactured, a 3-percent increase from the 1980 level (see Table 80). The square footage of low-temperature collectors manufactured fell to 43 percent of total collector area manufactured, down from 63 percent in 1980. The manufacture of medium-temperature, special, and other collectors accounted for the remaining 57 percent. Pool-heating and domestic hot water collectors accounted for 84 percent of all collectors during 1981. The residential sector was the dominant user of solar collectors, accounting for 78 percent of the manufacturers' shipments in 1981 (see Table 81).

Geothermal Energy. Geothermal energy, or heat from the earth, is conducted and radiated from the hot mass of molten rock that forms the earth's core. Most of the heat is too deep within the earth for its energy to be extracted for practical use. However, in hot springs, geysers, and fumaroles, the earth's heat is more readily available. Geothermal energy is most useful when geologic conditions concentrate heat energy into hot spots or thermal reservoirs. There are three types of thermal reservoirs: hydrothermal, geopressurized resources, and dry rock.

Hydrothermal resources are the most desirable reservoirs for producing geothermal energy. These reservoirs consist of a heat source covered by a permeable formation in which the water circulates. There are two types of hydrothermal systems: vapor-dominated and hot water-dominated. The Geysers in California, a vapor-dominated system, is the only geothermal facility producing electricity in the United States.

A second type of reservoir is the geopressurized geothermal resource, such as those found in the Texas and Louisiana Gulf Coast area. These reservoirs are sedimentary formations containing hot water and methane. None is in use.

A third type of geothermal reservoir is the dry rock formation that can be found throughout the United States. The development of dry hot rock systems is in the early stages of experimentation. The use of these reservoirs requires fracturing the rock formation and injecting water to produce steam or hot water. These reservoirs are not expected to be used commercially until the end of this century.

Figure 82. Production of Electricity from Geothermal Sources

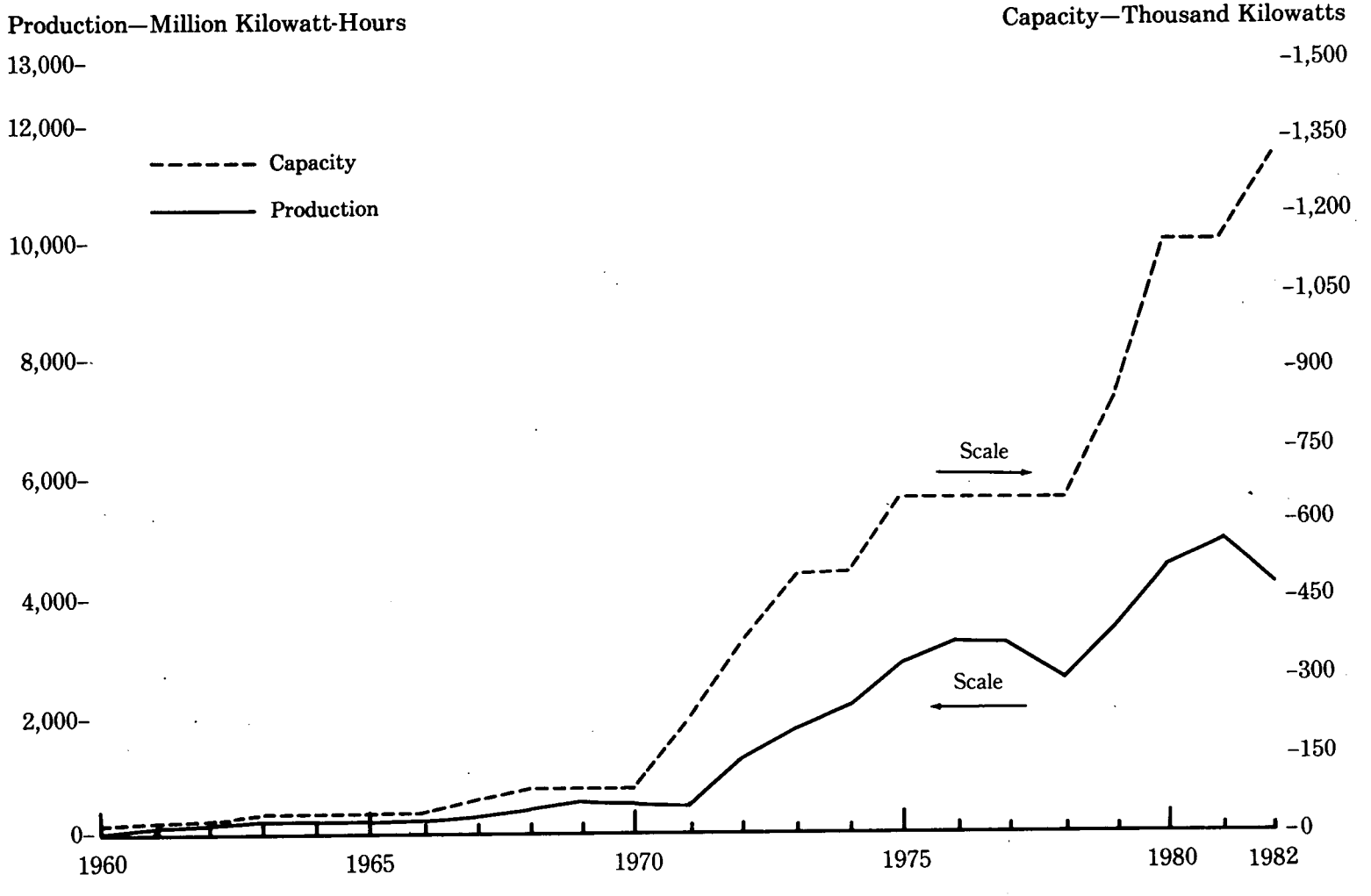


Table 79. Production of Electricity from Geothermal Sources, 1960-1982

Year	Year-End Capacity On Line (thousand kilowatts)	Production [1] (million kilowatt-hours)
1960	12	33
1961	12	94
1962	12	100
1963	27	168
1964	27	204
1965	27	189
1966	27	188
1967	55	316
1968	84	436
1969	84	615
1970	84	525
1971	203	548
1972	322	1,453
1973	441	1,966
1974	441	2,453
1975	559	3,246
1976	559	3,616
1977	559	3,582
1978	559	2,978
1979	742	3,889
1980	1,005	5,073
1981	1,005	5,686
1982	1,129	4,843

[1] See Explanatory Note 1.

Sources: **Capacity on Line:** •1960 through September 1977—Federal Power Commission, Form 12, "Power Systems Statement." •October 1977 through 1982—Federal Energy Regulatory Commission, FPC Form 12, "Power Systems Statement." **Production:** • 1960 through 1977—Federal Power Commission, Form 4, "Monthly Power Plant Report." •October 1977 through 1981—Federal Energy Regulatory Commission, FPC Form 4, "Monthly Power Plant Report." •1982—Energy Information Administration, Form EIA-759, "Monthly Power Plant Report."

Figure 83. Production of Solar Collectors

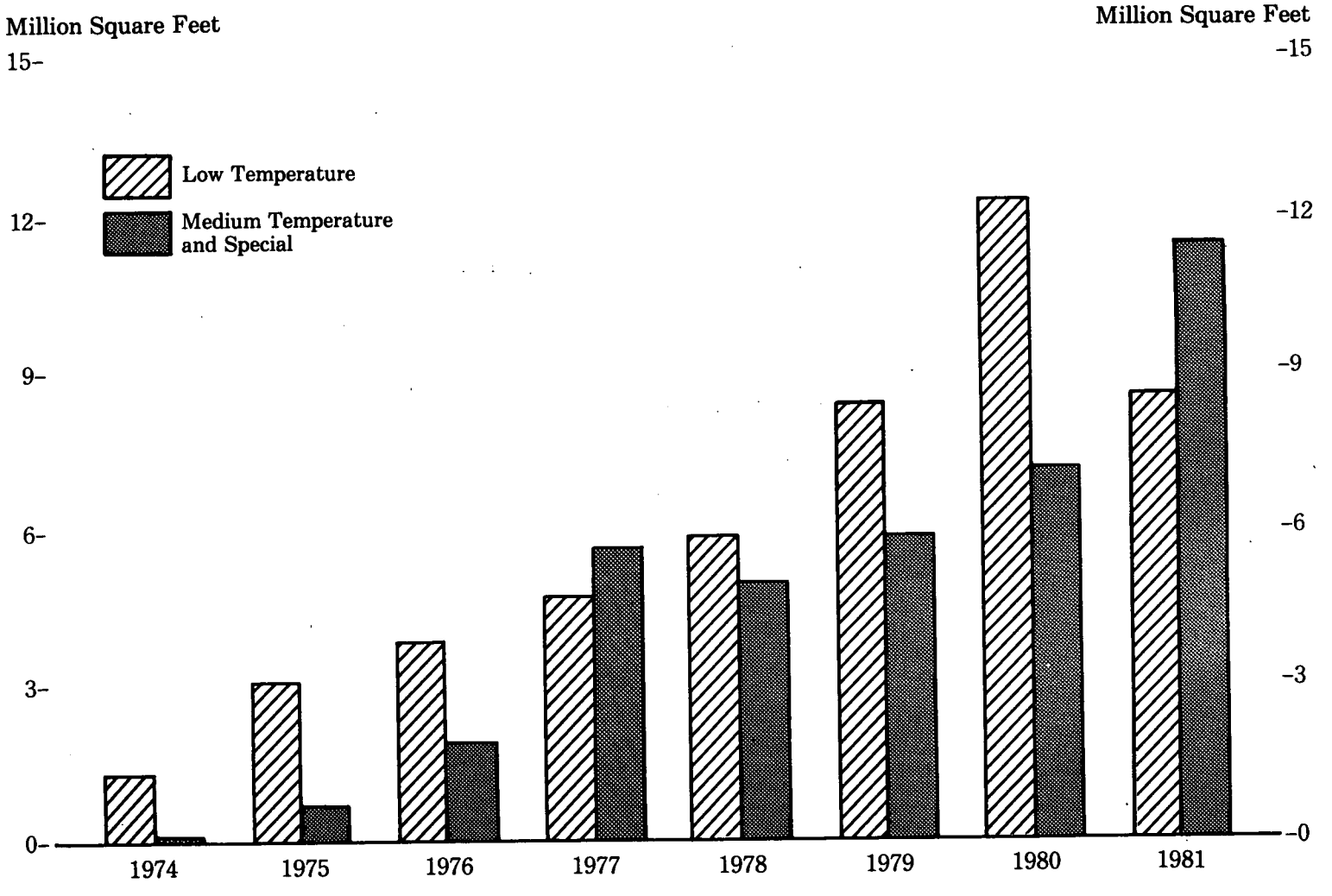


Table 80. Production of Solar Collectors, 1974-1981

Year	Low-Temperature Collectors [1]		Medium-Temperature, Special, and Other Collectors [2]	
	Number of Manufacturers	Quantity Manufactured (million square feet)	Number of Manufacturers	Quantity Manufactured (million square feet)
1974	6	1.14	39	0.14
1975	13	3.03	118	0.72
1976	19	3.88	203	1.92
1977	52	4.74	297	5.57
1978	81	5.87	180	4.99
1979	74	8.39	250	5.86
1980	73	12.23	245	7.16
1981	75	8.56	267	11.39

[1] Low-temperature collectors are used almost exclusively for swimming pool heating.
[2] Medium-temperature collectors are used primarily for space heating and domestic water heating. Special collectors include evacuated-tube collectors and concentrating collectors; uses include domestic water heating, space heating, and space cooling.
Note: Manufacturers producing more than one type of collector are accounted for in the respective listing.
Sources: •1974 through 1976—Federal Energy Administration, *Solar Collector Manufacturing Activity*, semi-annual • 1977 through 1981—Energy Information Administration, *Solar Collector Manufacturing Activity, July through December, 1981*. March 1982 (semi-annual).

Figure 84. Producer Shipments of Solar Collectors by Type of Collector and Application, 1981

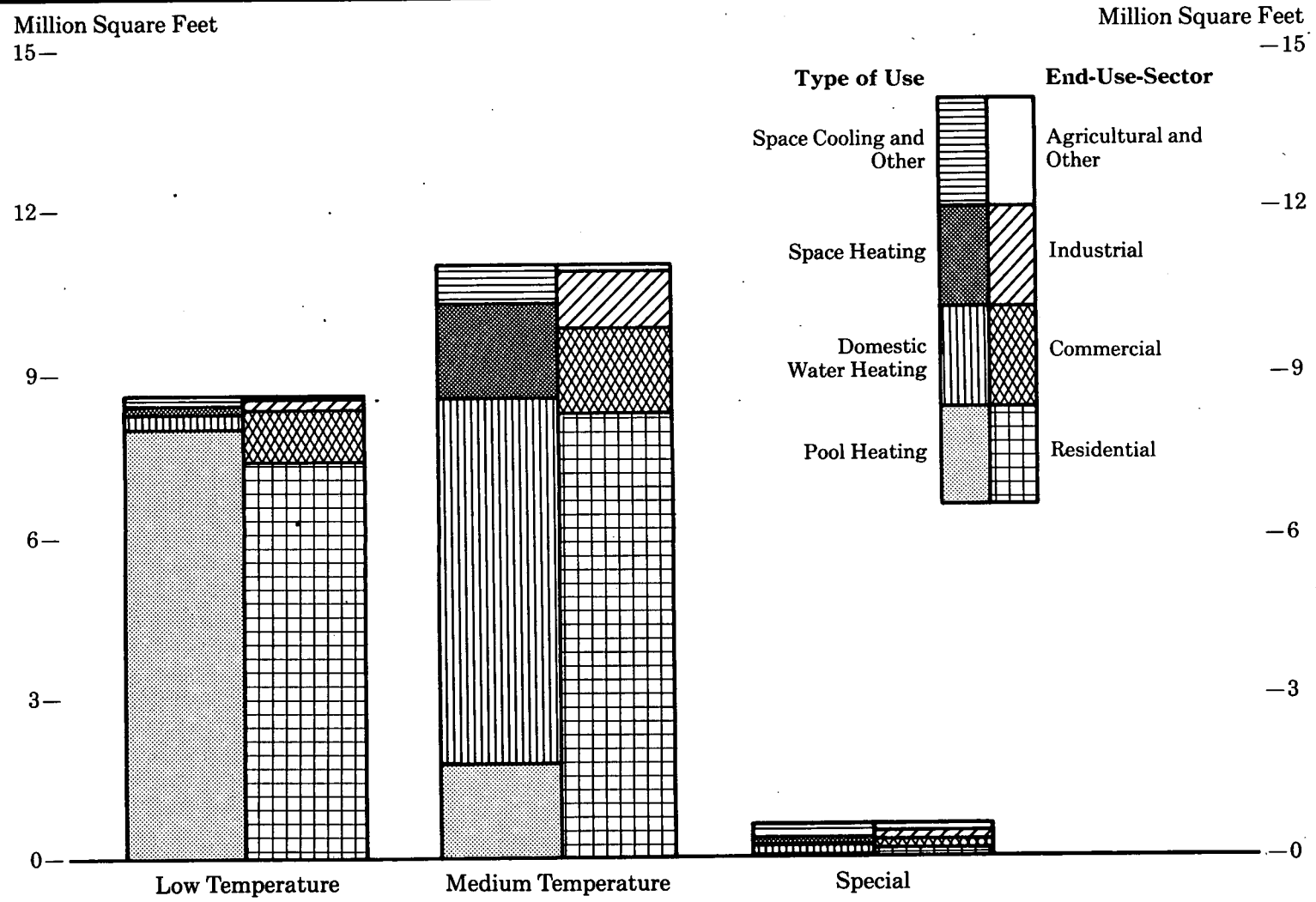


Table 81. Producer Shipments of Solar Collectors by Type of Collector and Application, 1981
(Million Square Feet)

Application	Type of Collector				
		Medium-Temperature			
	Low Temperature	Liquid	Air	Special and Other	Total
Type of Use					
Pool Heating	7.96	1.70	[1]	[1]	9.67
Domestic Hot Water	0.23	6.66	0.08	0.18	7.14
Space Heating	0.13	1.52	0.31	0.06	2.02
Space Cooling	0.02	0.35	[1]	0.05	0.41
Other	0.23	0.29	0.05	0.17	0.72
Total	8.56	10.50	0.44	0.45	19.95
End-Use Sector					
Residential	7.36	7.81	0.35	0.11	15.63
Commerical	0.90	1.44	0.06	0.12	2.52
Industrial	0.25	1.14	[1]	0.13	1.52
Agricultural	0.04	0.01	0.02	0.05	0.12
Other	0.01	0.10	0.01	0.04	0.16
Total	8.56	10.50	0.44	0.45	19.95

[1] Less than 0.005 million square feet.
Note: Sum of components may not equal total due to independent rounding.
Source: Energy Information Administration, *Solar Collector Manufacturing Activity, July through December, 1981.* March 1982 (semi-annual).

Section 9. Miscellaneous Energy Indicators

This section presents miscellaneous information on energy production, processing, and consumption; details on residential energy use; and data from the EIA Financial Reporting System (FRS). It shows utilization trends for selected energy consuming equipment and facilities.

Energy Indicators. Vehicular travel and fuel consumption, which were reduced during 1973 and 1974, returned to their previous upward trends during 1975-1978, and declined again during 1979-1982. Average annual passenger car mileage decreased from 10.1 thousand miles in 1978 to 9.4 thousand miles in 1982. At the same time, passenger car efficiency improved from 14.1 miles per gallon to 15.5 miles per gallon, a reflection primarily of the fleet shift toward smaller cars (see Table 83). Data on refineries, producing wells, and U.S. Government fuel use are also included in this section. The estimated number of producing oil wells and gas wells increased by 12 and 17 thousand wells, respectively, in 1982. Crude oil production per well fell from 15.4 barrels per day in 1981 to 15.1 barrels per day in 1982, a result of depletion of the older fields and the retention of many small wells on production. Annual per capita consumption of energy declined for the fourth consecutive year, to 306 million Btu, the lowest level since 1967 (see Table 82).

Financial Reporting System. In 1981, the 26 companies that provided financial statistics to FRS accounted for 56 percent of U.S. crude oil and natural gas liquid production, 46 percent of natural gas production, 18 percent of bituminous coal and lignite production, 77 percent of refinery output, and 37 percent of uranium production (see Table 93).

Although FRS companies operated in a number of businesses, petroleum and natural gas were dominant, accounting for 98 percent of 1981 net income. That income was derived 71 percent from domestic operations and 33 percent from foreign operations (see Table 95). Petroleum and natural gas activities also accounted for the major share of net investment in property, plant, and equipment. Of the $225 billion of this investment, domestic operations represented 74 percent and foreign operations 25 percent (see Table 94).

Residential Energy Consumption Survey. Based on the EIA Residential Energy Consumption Survey (RECS), 9.51 quadrillion Btu were consumed by households, of which 57 percent of the energy consumed was natural gas, 26 percent was electricity, 14 percent was distillate fuel oil and kerosene, and 3 percent was liquefied petroleum gas (see Table 86).

Based on the RECS November 1981 survey total of 83.1 million households, over 99 percent have one or more refrigerators, the highest saturation level for all types of major appliances. Saturation levels for other major appliances are as follows: color television, 80 percent; clothes washer (automatic), 70 percent; kitchen range (electric), 56 percent; kitchen range (gas), 44 percent; and clothes dryer (electric), 47 percent (see Table 88).

Based on the RECS survey on household vehicles in 1981, the average household vehicle is driven 734 miles per month and consumes 49 gallons at a cost of $64 (see Table 89).

Figure 85. Selected Energy Producing and Consuming Indicators

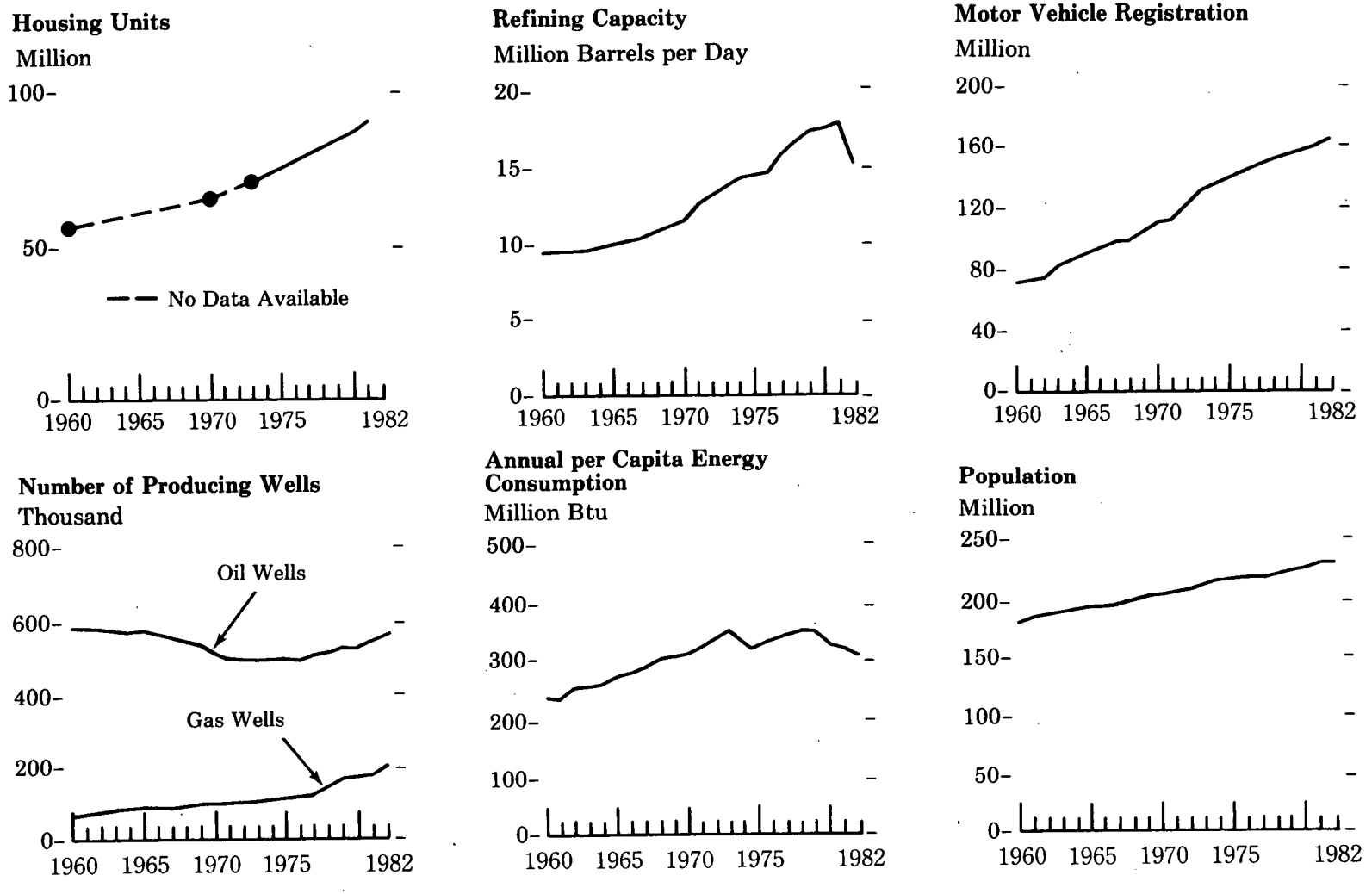


Table 82. Selected Energy Producing and Consuming Indicators, 1960-1982

Year	Total Housing Units [1] (million)	Operating Refineries [2]		Producing Oil Wells [3]		Producing Gas Wells [3]	Motor Vehicle Registrations (million)	Population [4] (million)	Annual Per Capita Energy Consumption (million Btu)	Gross National Product Implicit Price Deflator (1972=100)
		Number	Capacity (million barrels per day)	Number (thousand)	Production per Well (barrels per day)	Number (thousand)				
1960	58.33	290	9.54	591	12.0	91	74.4	180.0	245	68.70
1961	NA	289	9.63	595	12.1	97	76.6	183.0	244	69.33
1962	NA	287	9.79	596	12.3	100	79.8	185.8	252	70.61
1963	NA	287	9.81	589	12.7	103	83.5	188.5	258	71.67
1964	NA	282	10.06	588	12.9	103	87.3	191.1	266	72.77
1965	NA	273	10.16	589	13.3	112	91.7	193.5	274	74.36
1966	NA	267	10.17	583	14.2	112	95.7	195.6	286	76.76
1967	NA	260	10.41	565	15.3	112	98.9	197.5	293	79.06
1968	NA	270	11.17	554	16.2	114	103.0	199.4	308	82.54
1969	NA	264	11.58	542	16.9	114	107.4	201.4	320	86.79
1970	68.67	262	11.88	531	18.0	117	111.2	204.0	328	91.45
1971	NA	253	12.66	517	18.1	120	116.3	206.8	330	96.01
1972	NA	250	13.03	508	18.4	121	122.6	209.3	342	100.00
1973	75.97	252	13.45	497	18.3	124	130.0	211.4	353	105.75
1974	77.60	257	14.22	498	17.6	128	134.9	213.3	341	115.08
1975	79.09	262	14.70	500	16.8	132	137.9	215.5	328	125.79
1976	80.88	265	14.87	499	16.3	138	143.5	217.6	342	132.34
1977	82.42	273	15.86	507	16.4	148	148.8	219.8	347	140.05
1978	84.62	290	16.79	517	17.0	157	153.9	222.1	352	150.42
1979	86.37	301	17.15	531	16.3	170	159.6	224.6	351	163.42
1980	88.21	311	17.56	548	15.9	182	161.6	227.2	335	178.64
1981	91.57	315	18.05	557	15.4	199	164.3	229.3	323	195.51
1982	NA	254	16.10	[5] 569	[5] 15.1	[5] 216	[6] 166.5	[6] 231.5	[6] 306	[6] 207.15

[1] Includes mobile homes, individual units in apartment buildings, and unoccupied units.
[2] Data are for operating and operable shutdown refineries in the United States, excluding the Hawaiian Foreign Trade Zone, as of January 1.
[3] As of December 31.
[4] Resident population of the 50 States and the District of the Columbia estimated for July 1 of each year.
[5] Estimate.
[6] Preliminary.
NA = Not available.

Sources: **Housing Units:** •1960 and 1970—Bureau of the Census, *Census of Population and Housing.* •1973 through 1981—Bureau of the Census, *Annual Housing Survey.* **Operating Refineries:** •1960 through 1977—Bureau of Mines, Mineral Industry Surveys, *Petroleum Refineries, Annual.* •1978 through 1981—Energy Information Administration, Energy Data Reports, *Petroleum Refineries in the United States and U.S. Territories.* •1982—Energy Information Administration, *Petroleum Supply Annual.* **Producing Oil Wells:** •1960 through 1975—Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual.* •1976 through 1980 —Energy Information Administration, Energy Data Reports, *Petroleum Statement, Annual.* •1981—Independent Petroleum Association of America, *The Oil Producing Industry in Your State,* 1982. **Producing Gas Wells:** •1960 through 1975—Bureau of Mines, Mineral Industry Surveys, *Natural Gas, Annual.* •1976 through 1981—Energy Information Administration, Energy Data Reports, *Natural Gas, Annual.* **Motor Vehicle Registration:** •1960 through 1975—Federal Highway Administration, *Highway Statistics Summary to 1975,* Table MV-201. •1976 through 1981—Federal Highway Administration, *Highway Statistics, Annual,* Table MV-1. •1982—Federal Highway Administration, Table ES-V (October 1982). **Population:** •1960 through 1969— Bureau of the Census, *Current Population Reports,* "Population Estimates and Projections," Series P-25, Numbers 802 (issued May 1979) and 894 (issued December 1980). •1970 through 1982—Bureau of the Census, *Current Population Reports,* "Population Estimates and Projections," Series P-25, Number 921 (issued August 1982). **Annual per Capita Energy Consumption:** Table 3 (Total Consumption) and Table 82 (Population). **Gross National Product Implicit Price Deflator:** •1960 through 1976—Department of Commerce, Bureau of Economic Analysis, *The National Income and Product Accounts of the United States, 1929-76: Statistical Tables.* •1977 through 1982—Department of Commerce, Bureau of Economics Analysis, *Survey of Current Business,* monthly.

Figure 86. Average Annual Motor Vehicle Mileage and Fuel Consumption

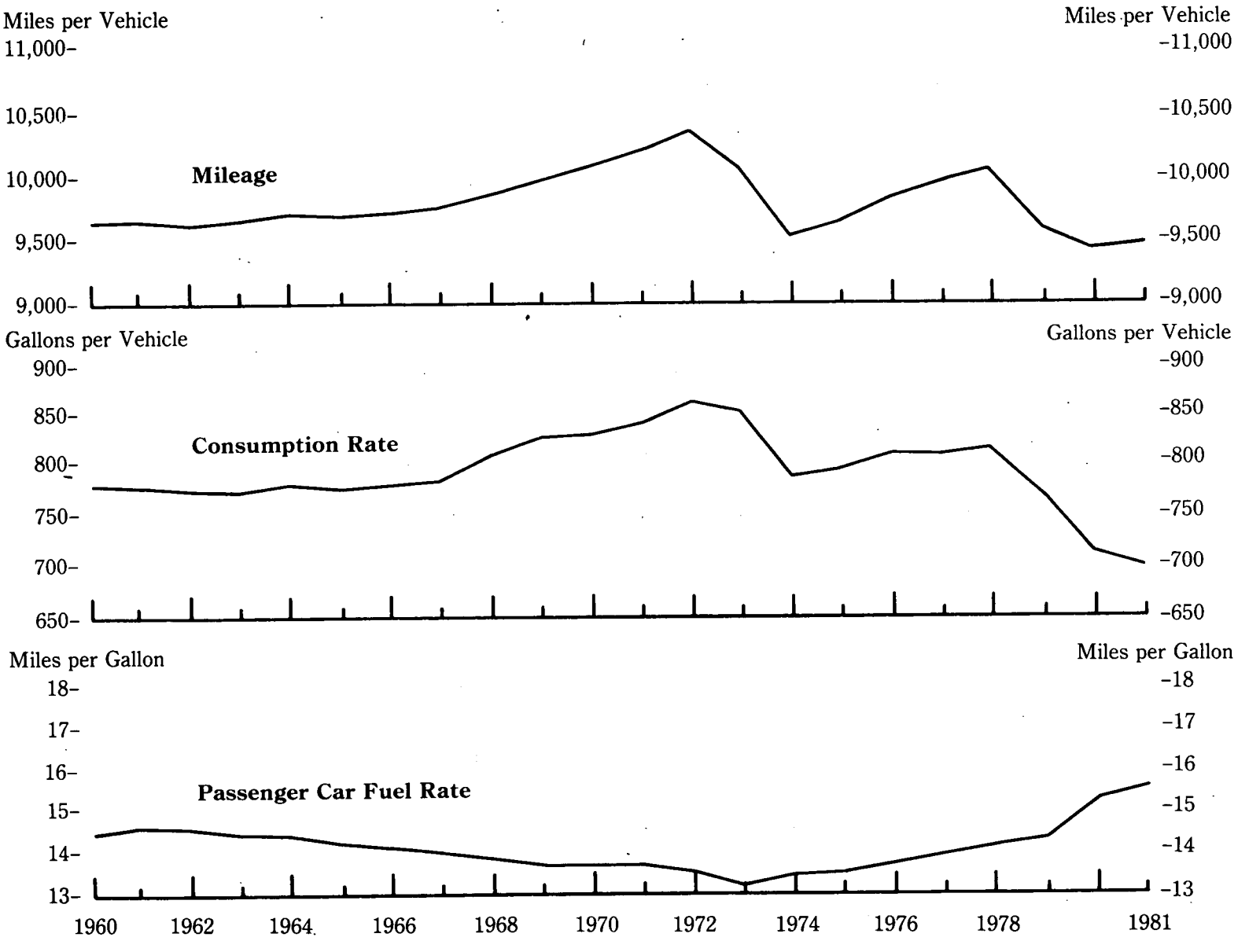


Table 83. Average [1] Annual Motor Vehicle Mileage and Fuel Consumption, 1960-1981

Year	Passenger Cars			Motorcycles		Buses		Trucks		All Motor Vehicles	
	Mileage (thousand miles per vehicle)	Fuel Consumption (gallons per vehicle)	Fuel Rate (miles per gallon)	Mileage (thousand miles per vehicle)	Fuel Consumption (gallons per vehicle)	Mileage (thousand miles per vehicle)	Fuel Consumption (gallons per vehicle)	Mileage (thousand miles per vehicle)	Fuel Consumption (gallons per vehicle)	Mileage (thousand miles per vehicle)	Fuel Consumption (gallons per vehicle)
1960	9.45	661	14.3	[2]	[2]	16.00	3,040	10.58	1,330	9.65	777
1961	9.47	658	14.4	[2]	[2]	15.66	2,957	10.46	1,338	9.65	776
1962	9.44	657	14.4	[2]	[2]	15.51	2,906	10.41	1,334	9.62	774
1963	9.24	648	14.3	[2]	[2]	15.05	2,813	11.64	1,380	9.65	773
1964	9.29	652	14.3	[2]	[2]	15.12	2,829	11.72	1,389	9.70	778
1965	9.39	667	14.1	3.77	50	15.22	2,844	11.59	1,347	9.68	775
1966	9.51	679	14.0	3.93	52	15.01	2,772	11.21	1,316	9.70	778
1967	9.53	684	13.9	3.96	53	14.48	2,693	11.27	1,338	9.72	786
1968	9.63	698	13.8	3.97	53	14.12	2,649	11.57	1,382	9.85	804
1969	9.78	718	13.6	4.02	54	13.83	2,600	11.57	1,384	9.97	821
1970	9.98	735	13.6	3.61	48	13.31	2,491	11.45	1,365	10.08	830
1971	10.12	746	13.6	4.50	90	12.82	2,382	11.47	1,368	10.20	838
1972	10.18	755	13.5	4.50	90	12.55	2,165	12.23	1,446	10.37	859
1973	9.99	763	13.1	4.50	90	11.66	1,991	11.54	1,361	10.08	851
1974	9.45	704	13.4	4.50	90	11.32	1,919	10.86	1,268	9.53	788
1975	9.63	712	13.5	4.50	90	11.14	1,937	10.65	1,227	9.64	790
1976	9.76	711	13.7	4.50	90	12.04	2,015	11.09	1,292	9.84	807
1977	9.84	706	13.9	4.50	90	12.00	2,002	11.15	1,284	9.93	804
1978	10.05	715	14.1	4.50	90	12.14	2,041	10.97	1,270	10.06	813
1979	9.48	664	14.3	4.00	80	11.73	1,966	10.81	1,225	9.58	765
1980	9.14	603	15.2	3.14	63	12.10	2,034	11.43	1,194	9.41	711
1981[3]	9.03	581	15.5	3.09	62	11.80	1,998	11.95	1,198	9.44	697

[1] Arithmetic mean.
[2] Motorcycles included with passenger cars, 1960-1964.
[3] Preliminary.
Note: Sum of components may not equal total due to independent rounding.
Source: Federal Highway Administration, *Highway Statistics Annual*, Table VM-1.

Figure 87. Motor Vehicle Registration and Motor Fuel Consumption

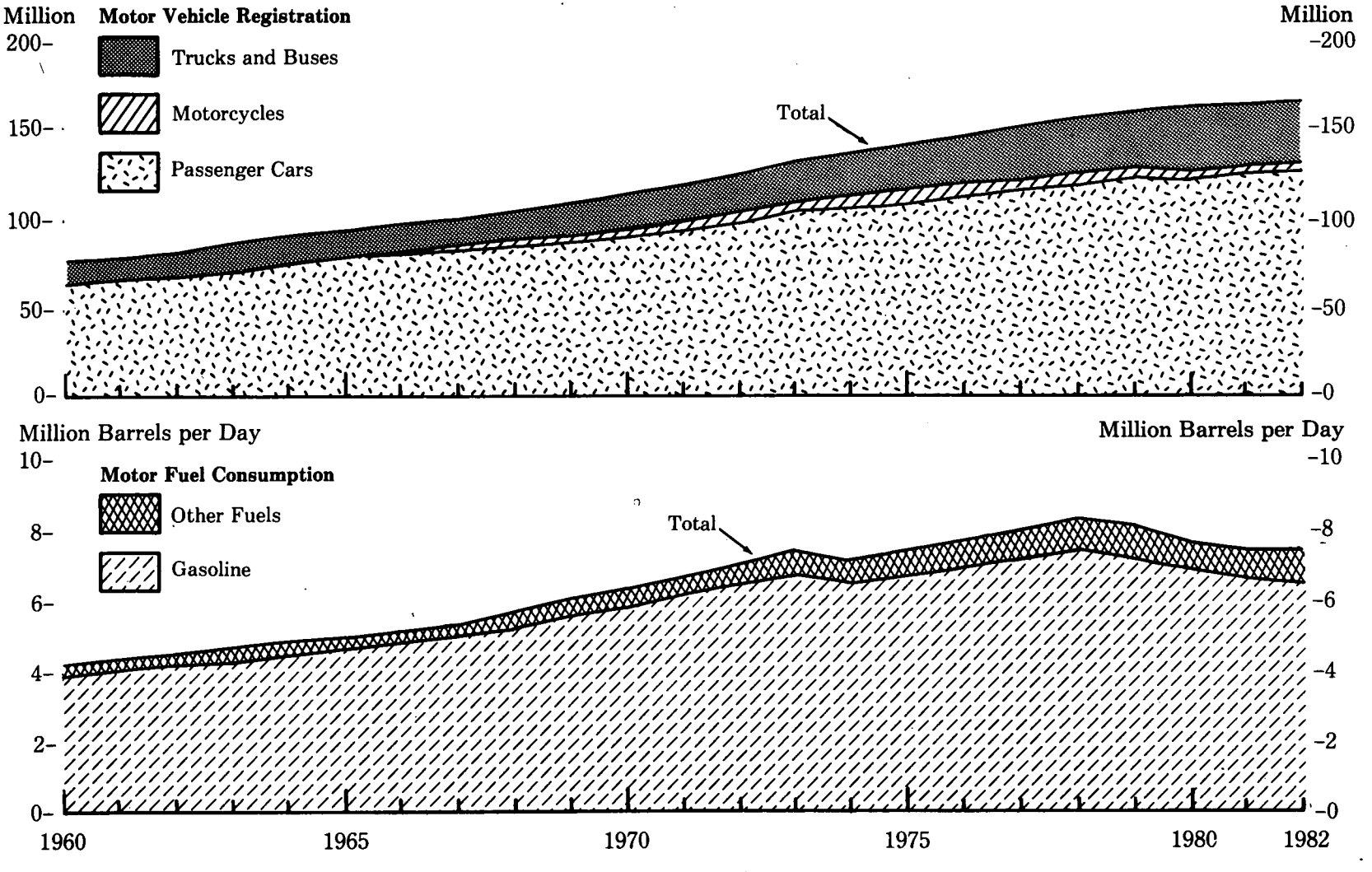


Table 84. Motor Vehicle Registration and Motor Fuel Consumption, 1960-1982

Year	Motor Vehicle Registration (millions)					Motor Fuel Consumption [1] (thousand barrels per day)		
	Passenger Cars	Motorcycles	Buses	Trucks	Total	Gasoline [2]	Other Fuels [3]	Total [4]
1960	61.7	0.6	0.3	11.9	74.4	3,953	159	4,112
1961	63.4	0.6	0.3	12.3	76.6	4,034	176	4,210
1962	66.1	0.7	0.3	12.8	79.8	4,120	192	4,312
1963	69.0	0.8	0.3	13.4	83.5	4,274	211	4,485
1964	72.0	1.0	0.3	14.0	87.3	4,454	236	4,690
1965	75.3	1.4	0.3	14.8	91.7	4,644	269	4,913
1966	78.1	1.8	0.3	15.5	95.7	4,846	306	5,152
1967	80.4	2.0	0.3	16.2	98.9	5,014	329	5,343
1968	83.6	2.1	0.4	16.9	103.0	5,300	370	5,670
1969	86.9	2.3	0.4	17.9	107.4	5,604	413	6,017
1970	89.2	2.8	0.4	18.8	111.2	5,845	439	6,284
1971	92.7	3.3	0.4	19.9	116.3	6,125	494	6,619
1972	97.1	3.8	0.4	21.3	122.6	6,529	554	7,083
1973	102.0	4.4	0.4	23.2	130.0	6,819	642	7,460
1974	104.9	5.0	0.4	24.6	134.9	6,531	639	7,170
1975	106.7	5.0	0.5	25.8	137.9	6,719	628	7,347
1976	110.4	5.0	0.5	27.7	143.5	7,075	697	7,772
1977	113.7	5.0	0.5	29.6	148.8	7,287	760	8,046
1978	116.6	5.1	0.5	31.7	153.9	7,555	837	8,392
1979	120.2	5.5	0.5	33.3	159.6	7,291	913	8,204
1980	121.7	5.7	0.5	33.6	161.6	6,820	896	7,716
1981	123.5	5.8	[5]	[6] 35.0	164.3	6,726	969	7,695
1982[7]	124.8	6.0	[5]	19 35.6	166.5	6,703	998	7,701

[1] Includes only motor fuel taxed at the prevailing tax rates in each State. Excludes motor fuel exempt from tax payment, subject to tax refund, or taxed at rates other than the prevailing tax rate. In 1981, the total motor fuel consumption quantity cited here equaled 99.4 percent of gross reported motor fuel consumption.
[2] Includes motor gasoline, aviation gasoline, and gasohol.
[3] Includes distillate fuel oil (diesel oil), liquefied gases, and kerosene when they are used to operate vehicles on highways. Excludes jet fuel beginning in 1962.
[4] Excludes losses allowed for evaporation, handling, etc.
[5] Included in trucks.
[6] Includes buses.
[7] Preliminary.
Note: Sum of components may not equal total due to independent rounding.
Sources: •1960 through 1975—Federal Highway Administration, *Highway Statistics Summary to 1975*, Tables MV-201 and MF-221. •1976 through 1981—Federal Highway Administration, *Highway Statistics Annual*, Tables MV-1, MF-21, and MF-25. •1982—Federal Highway Administration, Table ES-V (October 1982) and Table SS81-1 (October 1982).

Figure 88. Type of Heating in Occupied Housing Units

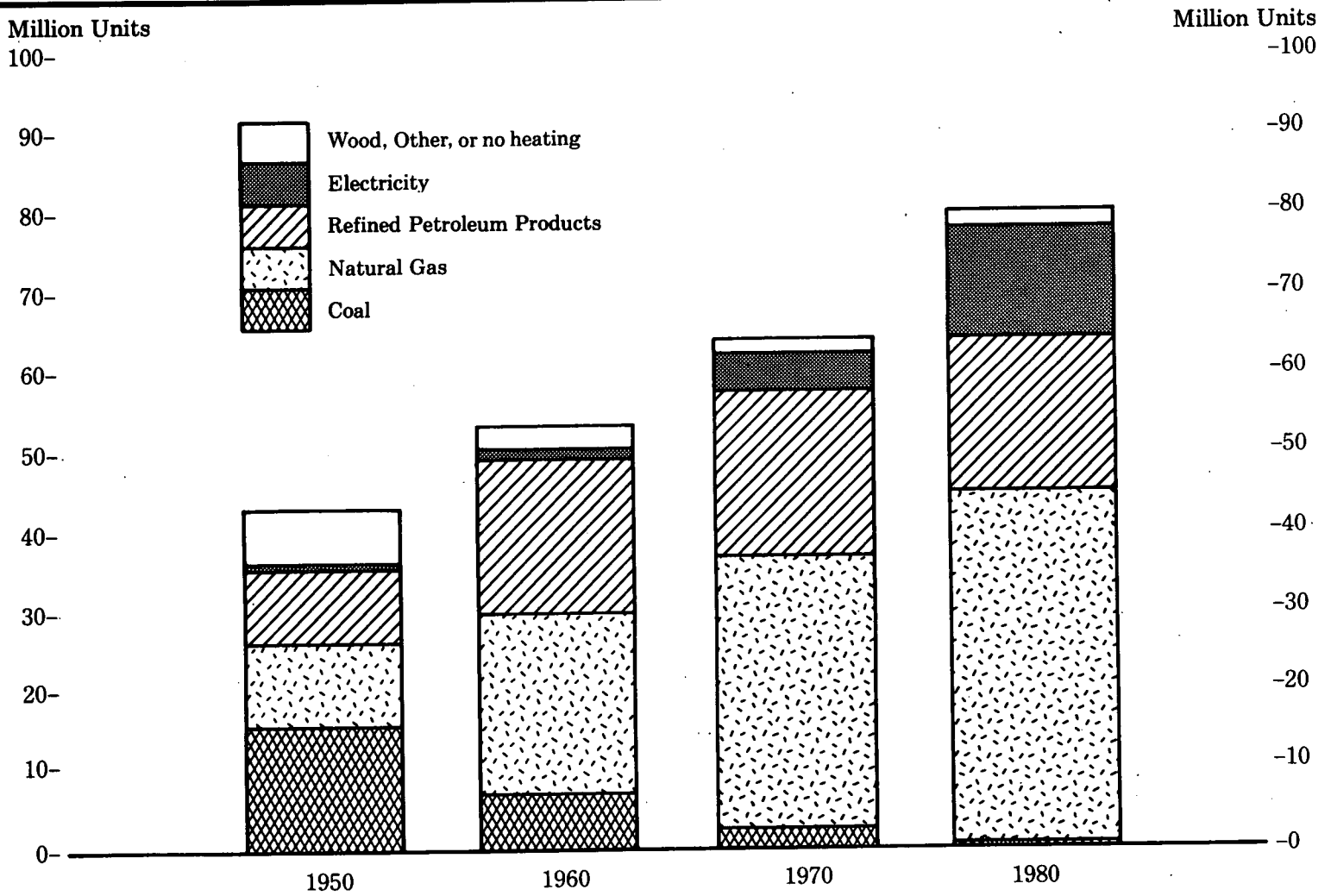


Table 85. Type of Heating in Occupied Housing[1] Units, 1950, 1960, 1970, and 1973-1980

Year	Coal [2]	Natural Gas	Liquefied Gas	Distillate Fuel Oil	Kerosene	Electricity	Wood	Other	None [3]	Total
Million										
1950	14.48	11.12	0.98	9.46	(4)	0.28	4.17	0.77	1.57	42.83
1960	6.46	22.85	2.69	17.16	(4)	0.93	2.24	0.22	0.48	53.02
1970	1.82	35.01	3.81	16.47	(4)	4.88	0.79	0.27	0.40	63.45
1973	0.80	38.46	4.42	17.24	(4)	7.21	0.60	0.15	0.45	69.34
1974	0.74	39.47	4.14	16.84	(4)	8.41	0.66	0.09	0.48	70.83
1975	0.57	40.93	4.15	16.30	(4)	9.17	0.85	0.08	0.47	72.52
1976	0.48	41.22	4.24	16.45	(4)	10.15	0.91	0.09	0.46	74.01
1977	0.45	41.54	4.18	15.62	0.44	11.15	1.24	0.15	0.51	75.28
1978	0.40	42.52	4.13	15.65	0.42	12.26	1.07	0.12	0.60	77.17
1979	0.36	43.32	4.13	15.30	0.41	13.24	1.14	0.10	0.57	78.57
1980	0.33	44.40	4.17	14.50	0.37	14.21	1.38	0.11	0.61	80.07
Percent										
1950	33.8	26.0	2.3	22.1	(4)	0.6	9.7	1.8	3.7	100.0
1960	12.2	43.1	5.1	32.4	(4)	1.8	4.2	0.4	0.9	100.0
1970	2.9	55.2	6.0	26.0	(4)	7.7	1.3	0.4	0.6	100.0
1973	1.2	55.5	6.4	24.9	(4)	10.4	0.9	0.2	0.7	100.0
1974	1.0	55.7	5.8	23.8	(4)	11.9	0.9	0.1	0.7	100.0
1975	0.8	56.4	5.7	22.5	(4)	12.6	1.2	0.1	0.6	100.0
1976	0.7	55.7	5.7	22.2	(4)	13.7	1.2	0.1	0.6	100.0
1977	0.6	55.2	5.6	20.7	0.6	14.8	1.6	0.2	0.7	100.0
1978	0.5	55.1	5.4	20.3	0.5	15.9	1.4	0.2	0.8	100.0
1979	0.5	55.1	5.3	19.5	0.5	16.9	1.4	0.1	0.7	100.0
1980	0.4	55.4	5.2	18.1	0.5	17.7	1.7	0.1	0.8	100.0

[1] Includes mobile homes and individual housing units in apartment buildings. Housing units with more than one type of heating system are classified according to the principal type of heating system.
[2] Includes coal coke.
[3] Includes non-reporting units in 1950 and 1960 which totaled 997 and 2,000 units, respectively.
[4] Included in distillate fuel oil.
Note: Sum of components may not equal total due to independent rounding.
Sources: •1950, 1960, and 1970—Bureau of the Census, *Census of Population and Housing.* •1973 through 1980—Bureau of the Census, *Annual Housing Survey.*

Figure 89. Energy Consumed by Households, April 1981 through March 1982

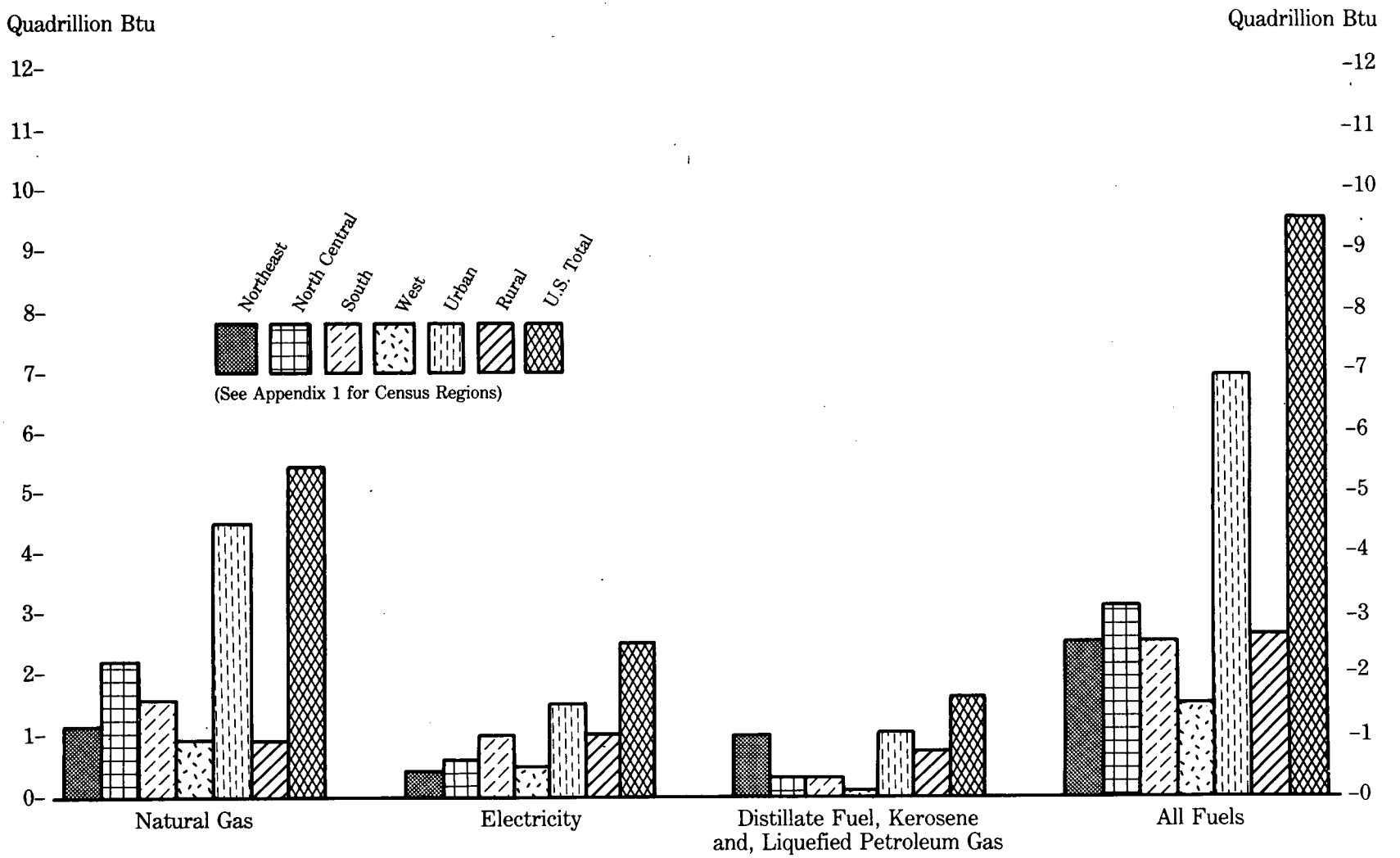
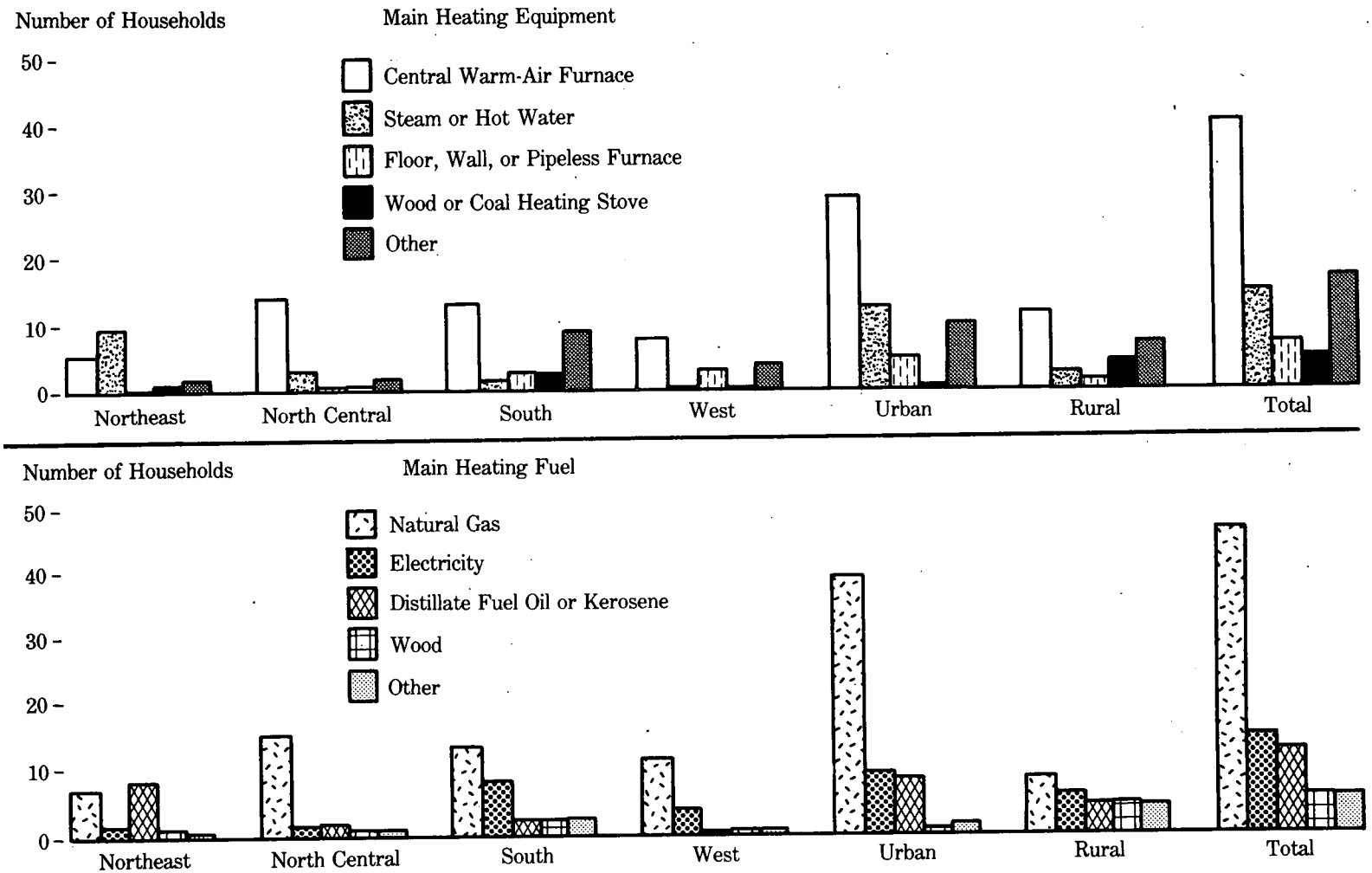


Table 86. Energy Consumed by Households, April 1981 through March 1982
(Quadrillion Btu)

Household Characteristics	Natural Gas	Electricity	Distillate Fuel Oil and Kerosene	Liquefied Gases	Total
Total Households	5.39	2.48	1.33	0.31	9.51
Census Region					
Northeast	1.06	0.42	0.96	0.03	2.47
North Central	2.24	0.57	0.17	0.13	3.12
South	1.16	1.03	0.16	0.12	2.46
West	0.93	0.46	0.03	0.04	1.47
Type Area					
Urban	4.45	1.53	0.91	0.04	6.93
Rural	0.94	0.95	0.42	0.28	2.58
Type of Structure					
Single Family Detached	4.06	1.81	0.80	0.25	6.92
Single Family Attached	0.19	0.07	0.06	—	0.32
Two to Four Unit Building	0.62	0.20	0.19	0.01	1.01
Five or More Unit Building	0.41	0.27	0.25	—	0.92
Mobile Home	0.12	0.13	0.04	0.06	0.34
Number of Rooms					
One to Three	0.34	0.19	0.19	0.02	0.73
Four	0.79	0.42	0.21	0.06	1.48
Five	1.20	0.55	0.26	0.08	2.09
Six	1.20	0.52	0.24	0.07	2.03
Seven	0.80	0.36	0.18	0.03	1.37
Eight or More	1.07	0.44	0.25	0.06	1.81
Year House Built					
Before 1940	1.96	0.53	0.61	0.14	3.23
1940 to 1949	0.47	0.18	0.11	0.02	0.79
1950 to 1959	1.00	0.37	0.24	0.02	1.62
1960 to 1964	0.55	0.23	0.10	0.03	0.92
1965 to 1969	0.52	0.27	0.11	0.02	0.92
1970 to 1974	0.49	0.40	0.11	0.05	1.05
1975 to 1978	0.30	0.33	0.04	0.03	0.69
After 1978	0.11	0.17	0.01	0.01	0.30
Household Members					
One	0.77	0.29	0.26	0.03	1.35
Two	1.63	0.77	0.43	0.11	2.95
Three	1.07	0.50	0.21	0.07	1.85
Four	1.04	0.52	0.23	0.05	1.84
Five or More	0.88	0.40	0.20	0.05	1.52

Note: A dash (—) represents zero, not available, or not applicable.
Note: Sum of components may not equal total due to independent rounding.
Source: Energy Information Administration, Form EIA-457B, "The 1981 Residential Energy Consumption Survey."

Figure 90. Household Fuel-Use Characteristics by Census Region* and Area Type, November 1981



*See Appendix 1 for Census Regions.

Table 87. Household Fuel-Use Characteristics by Census Region and Area Type, November 1981
(Million Households)

Household Characteristics	Census Region				Area Type		Total
	Northeast	North Central	South	West	Urban	Rural	
Total Households	17.9	21.2	27.7	16.3	57.3	25.9	83.1
Main Heating Equipment							
Central Warm-Air Furnace (Excluding Heat Pump)	5.2	14.4	12.8	8.0	28.9	11.5	40.4
Steam or Hot Water [1]	9.7	3.1	1.3	0.6	12.4	2.2	14.6
Heat Pump	0.2	—	2.0	0.5	1.8	0.9	2.8
Floor, Wall or Pipeless Furnace	0.1	0.8	2.3	3.3	5.2	1.3	6.5
Room Heater, Oil or Gas	0.4	1.0	4.6	0.6	3.8	2.8	6.6
Built-In Electric Units	1.1	1.0	1.7	1.7	3.4	2.1	5.5
Wood or Coal Stove	1.1	0.9	2.2	0.7	0.8	4.1	4.9
Other or None	0.1	—	0.9	0.8	1.0	0.8	1.8
Main Heating Fuel							
Natural Gas	7.0	15.4	13.0	10.8	38.3	8.0	46.2
Electricity	1.5	1.6	7.7	3.4	8.8	5.4	14.2
Distillate Fuel Oil or Kerosene	7.9	1.7	2.2	0.4	8.0	4.2	12.2
Wood	1.1	1.2	2.2	0.8	0.9	4.5	5.4
Liquefied Gases	0.1	1.0	2.1	0.4	0.6	3.1	3.7
Other or None	0.2	0.3	0.5	0.4	0.7	0.8	1.5
Main Water-Heating Fuel							
Natural Gas	8.0	14.5	11.9	11.2	38.4	7.1	45.6
Electricity	3.6	5.2	13.9	4.3	13.2	13.9	27.1
Distillate Fuel Oil or Kerosene	5.7	0.1	0.3	—	4.9	1.2	6.1
Liquefied Gases	0.4	1.2	1.3	0.5	0.4	3.0	3.4
Wood	0.1	—	0.1	0.1	—	0.3	0.3
Solar	—	—	—	0.1	—	0.1	0.1
Other or None	0.1	0.3	0.1	—	0.3	0.2	0.5
Main Cooking Fuel							
Electricity	7.9	11.0	16.9	9.7	28.3	17.2	45.4
Natural Gas	9.0	8.8	8.2	6.2	28.0	4.2	32.2
Liquefied Gases	1.0	1.3	2.4	0.4	0.9	4.2	5.1
Wood	—	—	0.1	—	—	0.2	0.2
Other or None	—	0.1	0.1	—	0.1	0.1	0.2

[1] Includes systems with radiators, base-board convertors, and in-floor pipes.
Note: A dash (—) represents zero, not available, or not applicable.
Note: Sum of components may not equal total due to independent rounding.
Source: Energy Information Administration, Form EIA-457B, "The 1981 Residential Energy Consumption Survey."

Figure 91. Household Appliance Data by Census Region and Area Type, November 1981

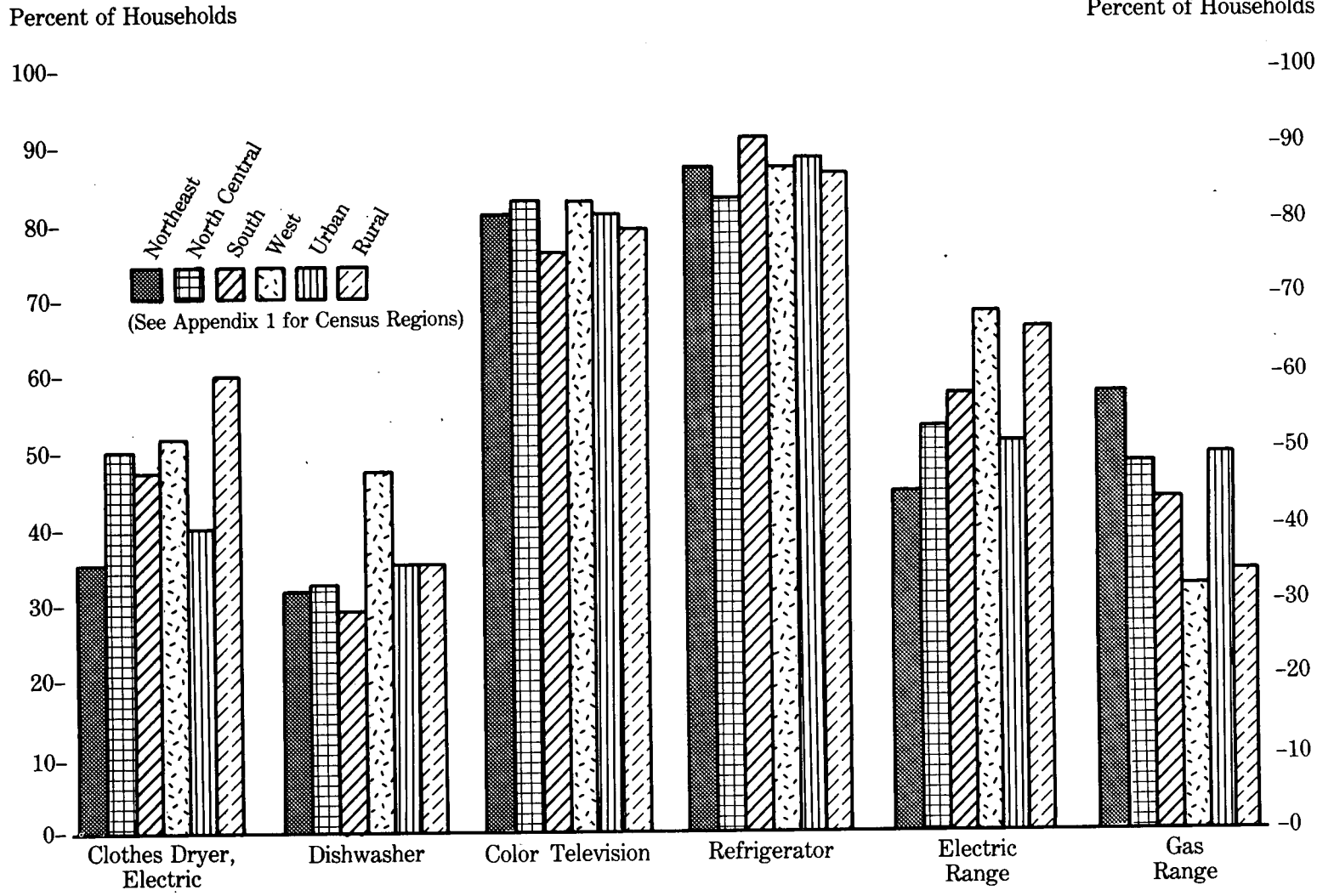


Table 88. Household Appliance Data by Census Region and Area Type, November 1981
(Million Households)

Appliance	Census Region								Area Type				Total	
	Northeast		North Central		South		West		Urban		Rural			
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total Households	17.9	100.0	21.2	100.0	27.7	100.0	16.3	100.0	57.3	100.0	25.9	100.0	83.1	100.0
Type Appliances														
Electric Appliances														
Television Set (Color)	15.0	80.9	17.9	83.4	21.8	75.9	13.7	82.5	47.6	80.9	20.8	78.6	68.4	80.2
Television Set (B/W)	9.6	53.8	10.7	49.2	12.9	47.5	6.4	39.3	27.6	47.9	12.0	45.8	39.5	47.2
Clothes Washer (Automatic)	11.8	65.7	15.5	72.0	19.5	69.1	11.6	72.9	37.7	65.4	20.8	78.9	58.4	70.0
Clothes Washer (Wringer)	0.7	3.9	1.0	5.4	0.9	3.7	0.2	1.7	1.4	2.8	1.4	5.3	2.8	3.6
Range (Stove-Top or Burners)	7.8	43.7	11.0	53.4	16.7	56.7	9.6	67.7	28.0	51.0	17.2	65.8	45.2	56.0
Oven (Not Microwave)	7.2	40.0	9.0	45.1	15.4	52.1	8.6	60.2	24.6	45.2	15.5	59.5	40.2	50.0
Microwave	0.3	1.7	1.6	7.1	1.1	3.5	1.1	6.9	2.8	4.6	1.4	5.1	4.1	4.8
Clothes Dryer	6.1	35.4	10.2	50.1	13.9	47.2	7.3	51.9	21.7	39.6	15.8	60.4	37.5	46.6
Separate Freezer	5.0	27.9	9.8	48.0	11.9	45.2	5.2	38.2	16.9	31.2	15.0	59.3	31.9	40.7
Dishwasher	6.4	31.6	6.9	33.0	9.5	28.7	7.8	47.0	21.0	34.6	9.5	34.8	30.5	34.6
Humidifier	2.5	13.3	6.4	28.7	1.4	4.6	0.5	4.9	7.0	11.3	3.8	12.7	10.8	11.8
Dehumidifier	2.6	13.5	4.0	17.0	1.1	3.5	0.2	1.1	5.0	7.3	2.9	9.3	7.8	8.0
Evaporative Cooler	—	—	0.1	1.1	0.7	2.5	2.2	15.5	2.4	5.7	0.6	3.0	3.0	4.8
Gas Appliances														
Range (Stove-Top or Burners)	10.2	56.6	10.5	47.9	10.9	42.6	6.7	32.3	29.6	49.3	8.6	34.0	38.2	44.2
Oven	8.5	46.9	8.7	40.2	9.5	37.4	6.1	29.5	25.1	42.0	7.7	30.4	32.8	38.1
Clothes Dryer	3.3	15.3	4.6	18.8	2.3	7.5	2.9	11.4	10.7	15.0	2.4	7.7	13.1	12.5
Outdoor Gas Grill	2.2	10.5	2.4	10.9	1.8	5.7	1.0	5.8	5.0	7.7	2.5	8.2	7.4	7.8
Outdoor Gas Light	0.1	0.3	0.5	2.7	0.8	2.6	0.1	0.4	1.1	1.8	0.4	1.4	1.4	1.6
Swimming Pool Heater	—	0.2	—	0.2	—	—	0.3	0.8	0.4	0.4	—	—	0.4	0.3
Refrigerators														
One	15.4	87.3	17.7	82.7	25.1	90.6	14.2	86.9	50.2	88.1	22.2	85.5	72.4	87.3
Two or More	2.5	12.7	3.4	16.8	2.6	9.1	2.0	12.6	6.9	11.6	3.6	14.0	10.5	12.4
None	—	—	0.1	0.5	0.1	0.3	—	0.5	0.2	0.3	0.1	0.5	0.2	0.3
Air Conditioning (A/C)														
Central	1.7	7.4	5.6	28.3	11.8	35.9	3.3	15.4	16.2	24.4	6.2	21.8	22.4	23.6
Individual Room Units	7.0	35.5	7.3	35.7	9.4	38.4	2.3	12.8	18.6	31.4	7.4	30.5	26.0	31.1
None	9.2	57.1	8.4	36.0	6.5	25.7	10.7	71.9	22.5	44.1	12.2	47.7	34.7	45.3

Note: A dash (—) represents zero, not available, or not applicable.
Note: Sum of components may not equal total due to independent rounding.
Source: Energy Information Administration, Form EIA-457B, "The 1981 Residential Energy Consumption Survey."

Figure 92. Household Vehicle Data by Census Region and Area Type, October 1980–September 1981

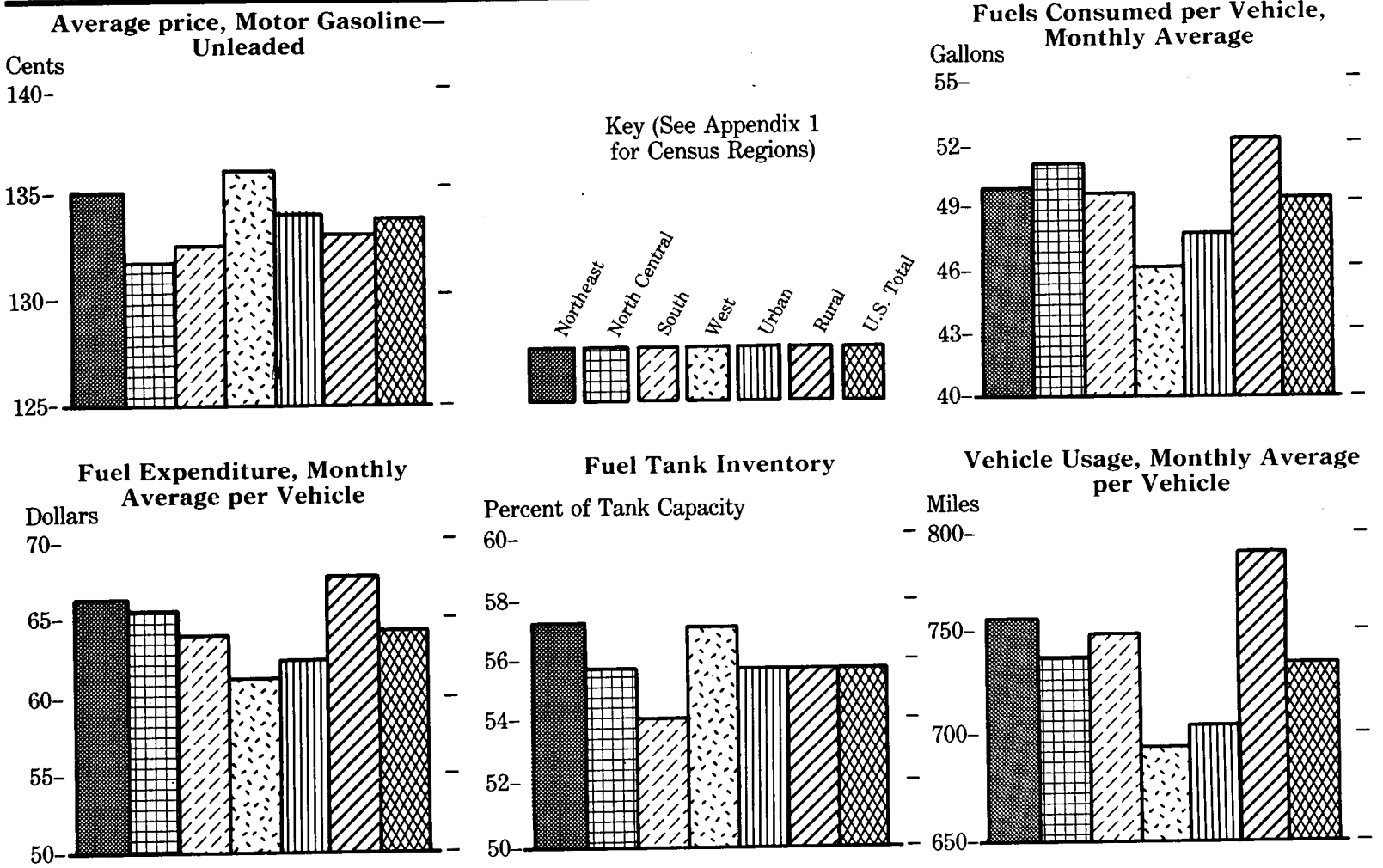
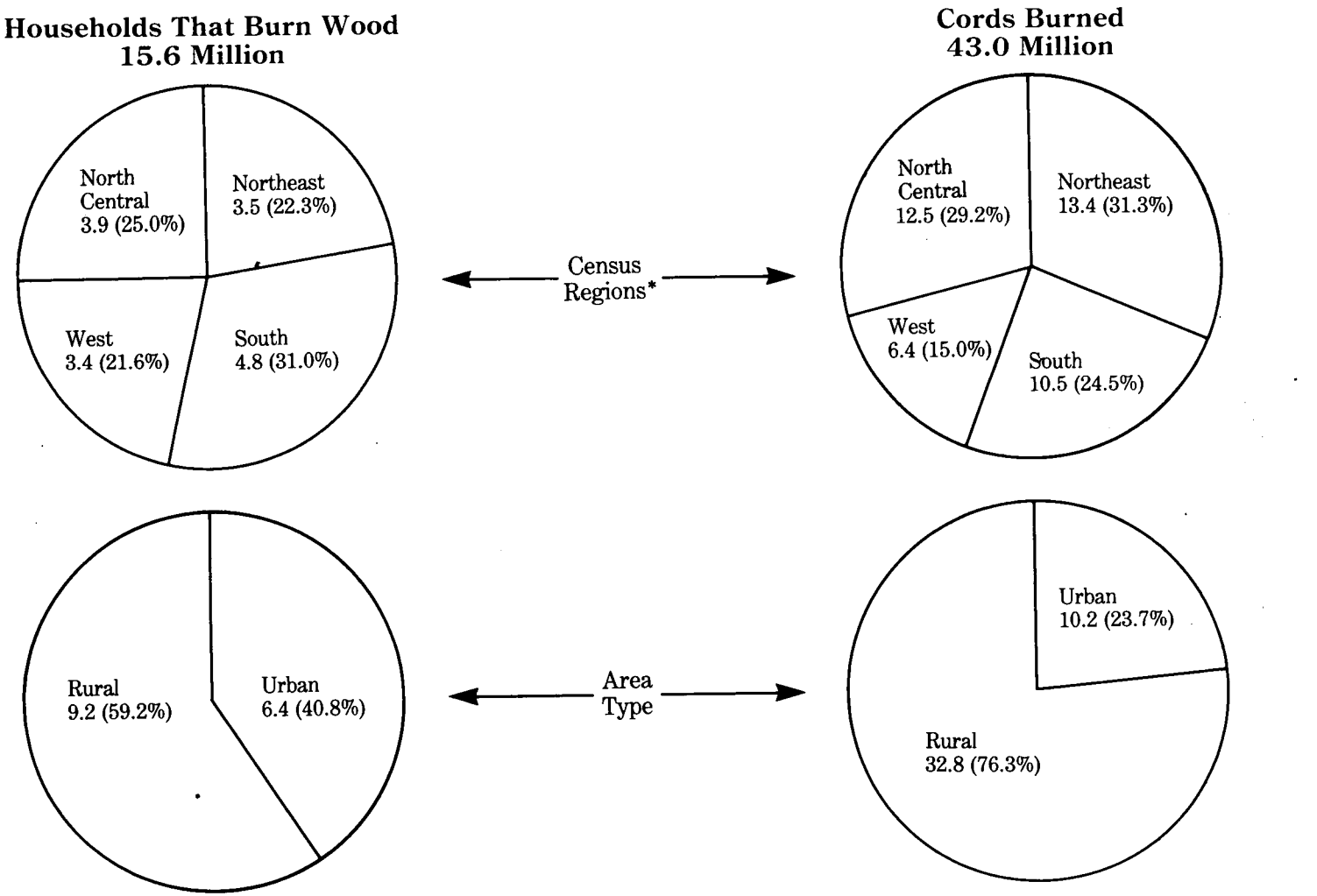


Table 89. Household Vehicle Data by Census Region and Area Type, October 1980 through September 1981

Activity	Census Region				Area Type		Total
	Northeast	North Central	South	West	Urban	Rural	
Annual Totals							
Households with Vehicles [1] (million)	14.5	18.8	24.0	14.1	48.7	22.7	71.4
Vehicles [1] (million)	23.2	35.2	43.4	26.6	83.1	45.5	128.6
Vehicle Usage (billion miles)	195.1	287.6	360.1	204.1	648.8	398.1	1,046.9
Fuel Expenditures (billion dollars)							
Motor Gasoline, Leaded	6.1	11.0	12.2	8.0	22.5	14.8	37.3
Motor Gasoline, Unleaded	10.3	13.3	16.4	8.5	31.5	17.0	48.5
Diesel Oil, Other, or Unknown	0.7	1.3	2.1	1.5	3.3	2.3	5.6
Total	17.1	25.6	30.7	18.0	57.3	34.1	91.4
Fuel Purchased (billion gallons)							
Motor Gasoline, Leaded	4.7	8.8	9.8	6.2	17.9	11.7	29.6
Motor Gasoline, Unleaded	7.6	10.1	12.4	6.3	23.5	12.8	36.4
Diesel Oil, Other, or Unknown	0.5	1.0	1.7	1.2	2.6	1.8	4.4
Total	12.9	19.9	23.9	13.7	44.0	26.3	70.4
Average Price per Gallon (cents)							
Motor Gasoline, Leaded	129.1	124.8	124.3	128.3	125.8	126.5	126.1
Motor Gasoline, Unleaded	135.1	131.7	132.4	136.0	133.7	132.8	133.4
Diesel Oil, Other, or Unknown	129.7	125.7	125.1	126.5	126.6	125.5	126.2
Total	132.7	128.3	128.6	131.7	130.1	129.5	129.9
Monthly Average per Vehicle							
Fuel Consumed (gallons)	49.8	50.9	49.5	46.0	47.6	52.1	49.2
Vehicle Usage (miles)	756.2	736.2	747.7	690.6	704.5	788.4	734.2
Fuel Expenditures (dollars)	66.3	65.4	63.8	60.8	62.2	67.5	64.1
Fuel Tank Inventory (percent of tank capacity)	57.2	55.7	54.0	57.1	55.7	55.7	55.7

[1] June average.
Note: Sum of components may not equal total due to independent rounding.
Source: Energy Information Administration, Form EIA-457B, "The 1981 Residential Energy Consumption Survey."

Figure 93. Wood Burned in Households, December 1980 through November 1981



*See Appendix 1 for Census Regions

Table 90. Wood Burned in Households, December 1980 through November 1981

Household Characteristics	Households That Burn Wood [1]		Cords Burned		Average Amount Burned per Household (cords)	Most Recent 1981 Purchase	
	(million)	(percent)	(million)	(percent)		Households Reporting Purchases (million)	Average Purchase Price (dollars per cord)
Total Households	15.6	100.0	43.0	100.0	2.8	4.0	77
Census Regions							
Northeast	3.5	22.3	13.4	31.3	3.9	1.3	69
North Central	3.9	25.0	12.5	29.2	3.2	1.1	73
South	4.8	31.0	10.5	24.5	2.2	0.9	77
West	3.4	21.6	6.4	15.0	1.9	0.8	97
Area Type							
Urban	6.4	40.8	10.2	23.7	1.6	2.1	79
Rural	9.2	59.2	32.8	76.3	3.5	1.9	74
Year House was Built							
Before 1940	4.0	25.7	16.7	39.0	4.2	1.1	56
1940 to 1949	1.1	7.3	3.3	7.6	2.9	0.2	71
1950 to 1959	2.3	15.0	4.3	10.0	1.8	0.7	95
1960 to 1964	1.4	9.2	3.1	7.2	2.2	0.4	95
1965 to 1969	1.5	9.9	3.6	8.5	2.4	0.3	76
1970 to 1974	2.2	14.2	5.2	12.1	2.3	0.7	80
1975 to 1978	2.1	13.7	5.0	11.7	2.4	0.6	74
After 1978	0.8	5.1	1.7	4.0	2.1	0.1	120
Wood as the Main Heating Fuel							
Yes	4.9	31.6	23.9	55.6	4.8	1.2	66
Fireplace	0.3	2.0	1.0	2.2	3.1	—	—
Airtight Stove	3.7	23.5	16.5	38.5	4.5	1.0	70
Nonairtight Stove	0.6	3.9	3.1	7.1	5.1	0.1	57
Furnace/Other	0.4	2.3	3.3	7.7	9.3	0.1	23
No	10.7	68.4	19.1	44.4	1.8	2.8	81
Wood Burned as Secondary Fuel							
Yes	9.2	58.7	16.6	38.7	1.8	2.4	83
Fireplace	6.2	39.9	8.5	19.8	1.4	1.7	89
Airtight Stove	2.4	15.4	6.2	14.5	2.6	0.5	75
Nonairtight Stove	0.5	3.3	1.9	4.4	3.6	0.1	37
No	6.4	41.3	26.3	61.3	4.1	1.6	68
Amount of Wood Burned							
0.33 to 1.49 Cords	7.1	45.7	5.3	12.3	0.7	1.6	90
1.50 to 2.49 Cords	3.1	19.6	5.8	13.6	1.9	0.9	84
2.50 to 3.49 Cords	1.8	11.4	5.3	12.3	3.0	0.4	58
3.50 to 4.49 Cords	1.0	6.4	3.9	9.2	3.9	0.3	47
4.50 or More Cords	2.6	16.8	22.6	52.7	8.6	0.8	65

[1] Survey is limited to households that burned one-third of a cord or more during the survey period.
Note: A dash (—) represents zero, not available, or not applicable.
Note: Sum of components may not equal total due to independent rounding.
Source: Energy Information Administration, Form EIA-457B, "The 1981 Residential Energy Consumption Survey."

Figure 94. Purchased Fuel Expenditures and Electricty Sales

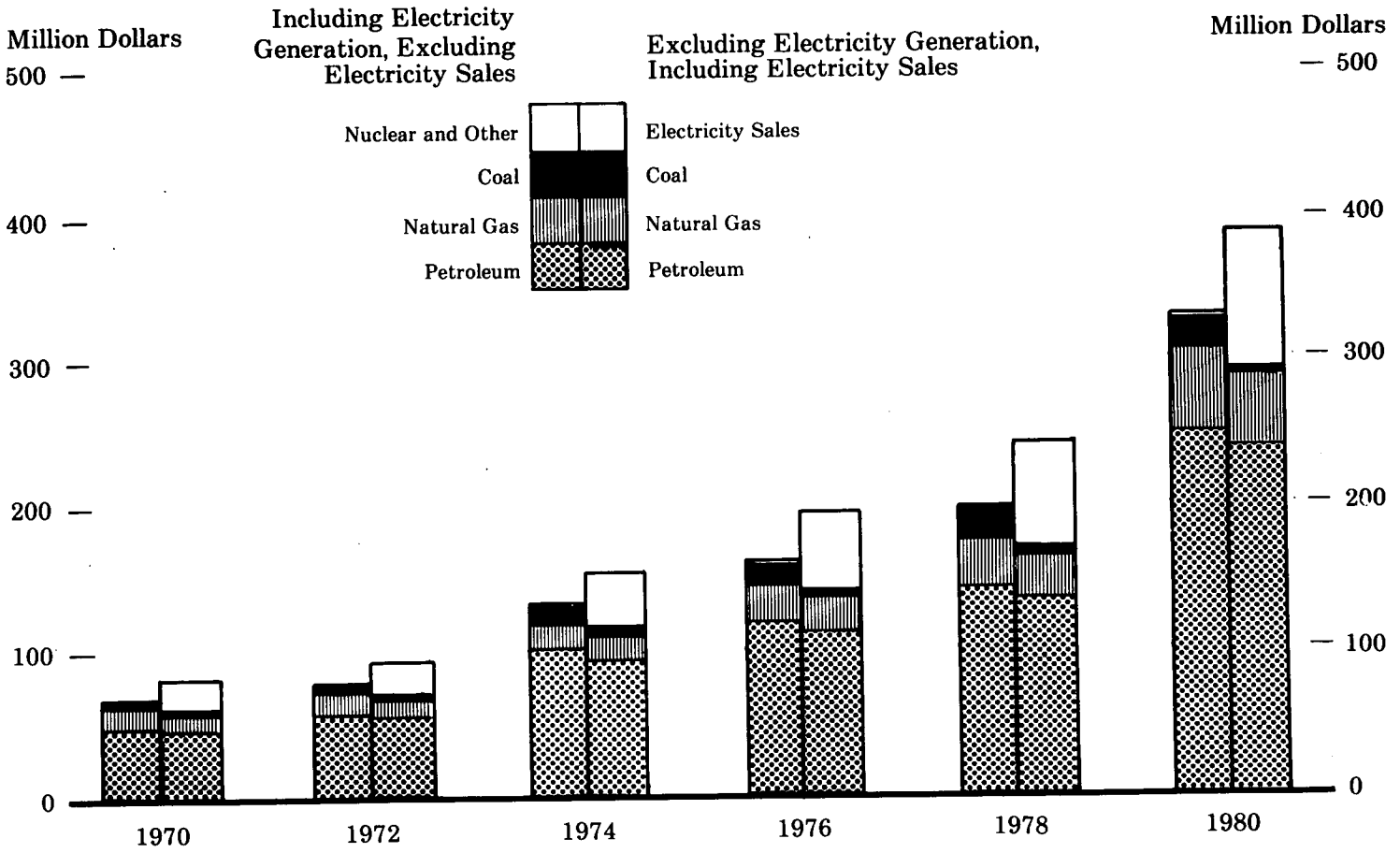


Table 91. Purchased Fuel Expenditures and Electricity Sales, 1970-1980

(Billion Dollars)

Energy Source	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Coal											
Metallurgical Coal	1.2	1.2	1.5	1.8	3.3	3.9	3.9	3.5	3.6	3.8	3.6
Other Coal	3.4	3.7	4.0	4.9	10.6	10.3	10.3	12.4	14.7	16.2	18.5
(Excluding Electricity Generation)	(1.1)	(1.1)	(1.1)	(1.0)	(1.9)	(2.0)	(1.9)	(2.1)	(2.5)	(2.5)	(2.4)
Total Coal	4.6	4.9	5.5	6.7	13.9	14.3	14.2	15.9	18.3	20.0	22.0
(Excluding Electricity Generation)	(2.4)	(2.3)	(2.5)	(2.8)	(5.1)	(6.0)	(5.8)	(5.6)	(6.0)	(6.3)	(5.9)
Natural Gas	11.6	12.9	14.0	14.8	17.7	21.8	27.6	32.5	35.4	44.6	55.7
(Excluding Electricity Generation)	(10.5)	(11.6)	(12.7)	(13.5)	(15.9)	(19.4)	(24.4)	(28.3)	(30.7)	(38.4)	(47.4)
Petroleum											
Asphalt and Road Oil	0.7	0.9	0.9	1.1	1.9	1.9	1.9	2.1	2.5	3.0	3.5
Aviation Gasoline	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.7	0.9
Distillate Fuel Oil	6.1	6.8	7.4	9.4	15.2	15.7	18.4	22.0	23.7	32.5	41.6
(Excluding Electricity Generation)	(6.1)	(6.6)	(7.1)	(8.9)	(14.2)	(14.9)	(17.6)	(20.9)	(22.5)	(31.4)	(40.6)
Jet Fuel	1.5	1.7	1.8	2.1	3.4	4.5	4.9	5.9	6.6	9.2	14.8
(Excluding Electricity Generation)	(1.5)	(1.7)	(1.7)	(2.1)	(3.3)	(4.4)	(4.8)	(5.8)	(6.5)	(9.1)	(14.8)
Kerosene	0.7	0.6	0.6	0.6	0.9	0.9	1.0	1.2	1.3	2.0	2.4
Liquefied Gases and Ethane	2.5	2.6	3.0	4.0	5.4	5.4	6.1	7.0	6.7	10.1	11.8
Lubricants	1.8	1.8	1.9	2.2	2.9	2.8	3.2	3.5	3.8	5.0	5.2
Motor Gasoline	31.6	33.5	35.3	39.7	54.1	59.4	64.5	70.0	74.4	95.2	123.3
Residual Fuel Oil	2.2	3.1	3.7	5.1	11.0	10.8	12.1	15.0	14.1	18.3	22.6
(Excluding Electricity Generation)	(1.4)	(1.8)	(2.0)	(2.6)	(5.4)	(5.1)	(6.1)	(7.1)	(7.0)	(9.2)	(12.1)
Other Petroleum Products [1]	1.7	1.7	1.9	2.5	5.5	5.9	7.0	8.9	9.9	14.7	23.6
(Excluding Electricity Generation)	(1.6)	(1.7)	(1.9)	(2.5)	(5.4)	(5.9)	(7.0)	(8.9)	(9.9)	(14.7)	(23.6)
Total Petroleum	49.1	53.0	56.9	66.9	100.8	107.8	119.5	136.0	143.4	190.5	249.7
(Excluding Electricity Generation)	(48.2)	(51.5)	(54.8)	(63.9)	(94.1)	(101.2)	(112.6)	(127.0)	(135.1)	(180.2)	(238.1)
Nuclear Power, Wood, and Waste Electricity Generation	[3]	0.1	0.1	0.2	0.3	0.5	0.5	0.7	1.0	0.9	1.2
Net Imports of Coal Coke [2]	-0.1	[3]	[3]	[3]	0.1	0.1	[3]	[3]	0.4	0.2	-0.1
Electricity Sales	23.5	26.4	30.0	34.3	43.0	51.1	57.5	66.9	74.9	82.9	99.3
Total (Including Electricity Generation, Excluding Electricity Sales)	65.3	70.8	76.5	88.7	132.8	144.4	161.9	185.2	198.5	256.4	328.5
Total (Excluding Electricity Generation, Including Electricity Sales)	84.5	91.8	100.0	114.5	158.2	177.8	200.4	227.8	247.1	308.0	390.5

[1] Includes isopentane, natural gasoline, unfractionated steam (including plant condensate), petrochemical feedstocks, special naphthas, petroleum coke, still gas, wax, and miscellaneous products.

[2] Negative entries indicate that export values exceeded import values.

[3] Less than 0.5 million dollars.

Note: There are no associated fuel expenditures for hydropower and geothermal power. Electricity sales from these energy sources are excluded.

Source. Energy Information Administration, *Energy Price and Expenditure Data System.*

Figure 95. U.S. Government Fuel Use by Type

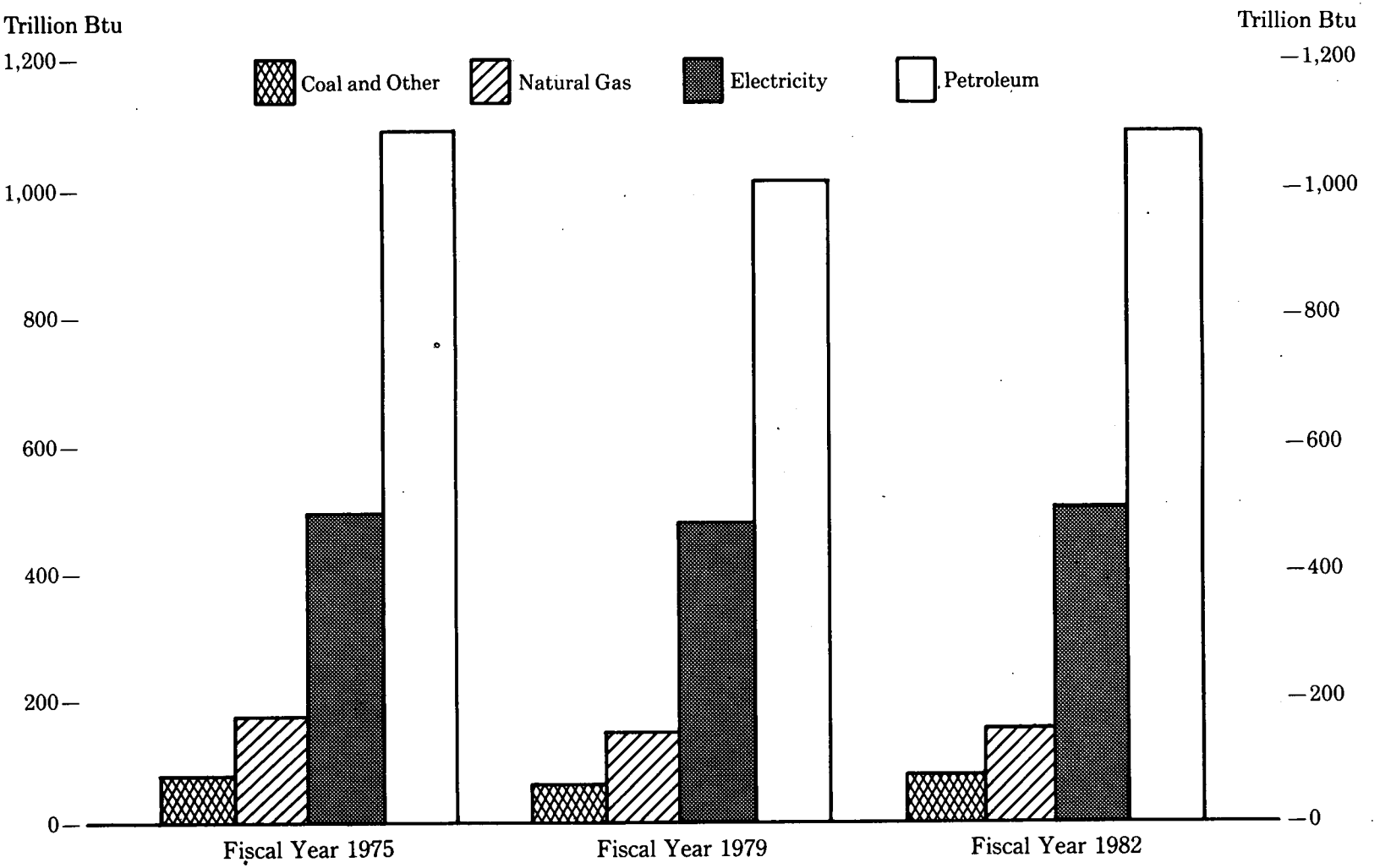


Table 92. U.S. Government Fuel Use by Type, Fiscal Years, 1975-1982
(Trillion Btu)

Fuel Type	1975	1976	1977	1978	1979	1980	1981	1982 [1]
Petroleum								
Motor Gasoline	64	62	62	60	59	54	56	57
Aviation Gasoline	16	13	9	6	5	5	4	4
Jet Fuel, Total	649	646	621	603	619	646	650	663
Distillate and Residual Fuel Oils	361	342	348	331	324	300	356	363
Liquefied Petroleum Gas	5	4	4	3	4	4	4	4
Subtotal	1,095	1,067	1,044	1,003	1,011	1,009	1,070	1,091
Electricity	492	444	478	479	480	486	485	495
Natural Gas	171	152	143	144	149	148	147	150
Coal	78	55	70	68	65	63	63	64
Purchased Steam	7	6	7	8	9	8	8	9
Total	1,843	1,724	1,742	1,702	1,714	1,714	1,773	1,809

[1] Preliminary.
Note: Sum of components may not equal total due to independent rounding.
Source: Energy Information Administration, Form FEA-U-502, "Federal Energy Conservation Performance."

Figure 96. Selected Statistics for FRS* Companies' Operations

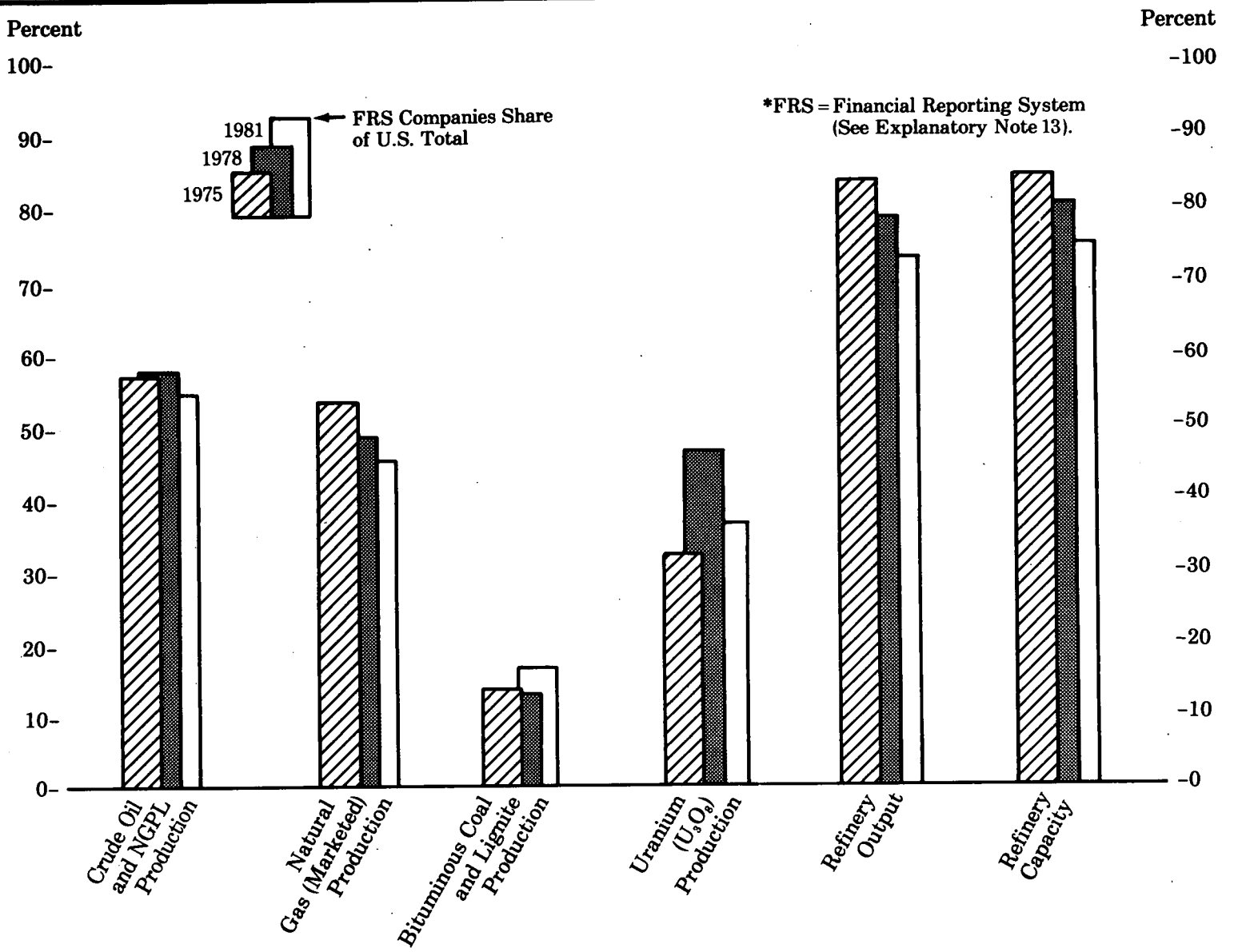
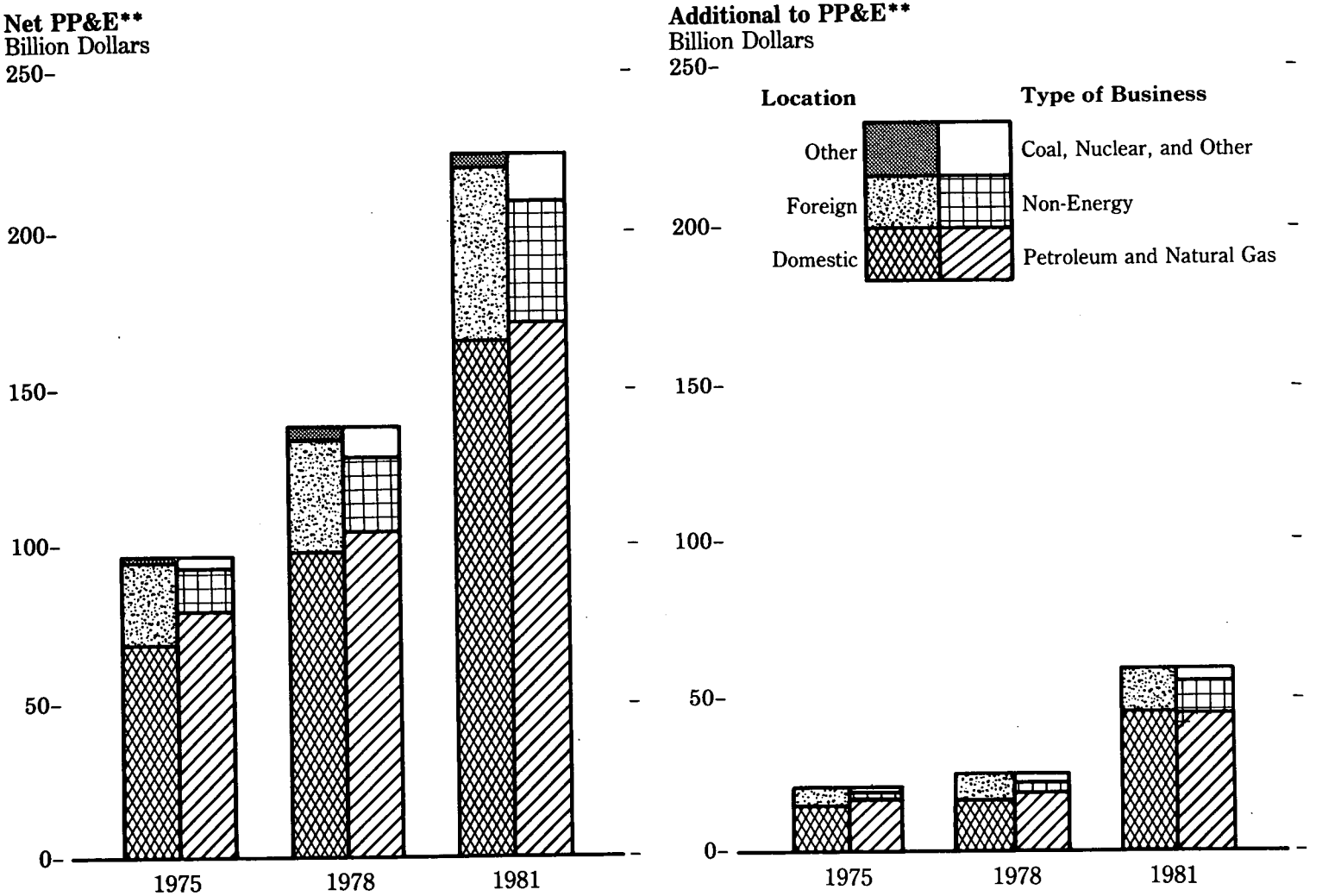


Table 93. Selected Statistics for FRS [1] Companies' Operations, 1975, 1978 and 1981

Activity	FRS Companies			U.S. Total			FRS Percent of U.S. Total		
	1975	1978	1981 [2]	1975	1978	1981	1975	1978	1981 [2]
Production									
Crude Oil and NGL [3] (million barrels)	2,080.9	2,160.6	2,072.4	3,652.8	3,750.3	3,715.7	57.0	57.6	55.8
Natural Gas, Marketed (trillion cubic feet)	11.1	10.0	9.2	20.1	20.0	20.2	55.2	50.0	45.5
Bituminous Coal and Lignite (million short tons)	88.1	85.5	154.8	684.4	665.1	818.4	13.6	12.9	18.1
Uranium (million pounds of U_3O_8)	7.6	17.3	14.5	23.2	37.0	38.5	32.8	46.8	36.6
Refining [4]									
Capacity (million barrels per day)	13.4	14.8	14.6	15.7	18.2	18.8	85.5	81.4	77.7
Output (million barrels per day)	12.2	13.6	11.3	14.4	16.9	14.6	84.5	80.7	77.4

[1] FRS = Financial Reporting System (See Explanatory Note 13).
[2] Preliminary.
[3] NGL = Natural Gas Liquids.
[4] Operable capacity as of January 1 of the following year.
Note: FRS Crude Oil and NGL, and Natural Gas (Marketed) production are on a net ownership interest basis (see Glossary).
Sources: **FRS Companies:** • 1975 and 1978 — Energy Information Administration, *Energy Company Development Patterns in the Postembargo Era*, Vol. 2, October, 1982. • 1981 — Energy Information Administration, Form EIA-28, "Financial Reporting System." **U.S. Total, Production: Crude Oil and NGL:** • 1975 — Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual.* • 1978 — Energy Information Administration, Energy Data Reports, *Petroleum Statement, Annual.* • 1981 — Energy Information Administration, *Petroleum Supply Annual.* **U.S. Total, Production: Natural Gas (Marketed):** • 1975 — Bureau of Mines, *Minerals Yearbook*, "Natural Gas" chapter. • 1978 — Energy Information Administration, Energy Data Reports, *Natural Gas, Annual.* • 1981 — Energy Information Administration, *Natural Gas Annual.* **U.S. Total, Production: Bituminous Coal and Lignite:** • 1975 — Bureau of Mines, *Minerals Yearbook*, "Coal — Bituminous and Lignite" chapter. • 1978 — Energy Information Administration, Energy Data Report, *Bituminous Coal and Lignite Production and Mine Operations — 1978.* •1981 — Energy Information Administration, *Weekly Coal Production.* **U.S. Total, Production: Uranium.** • 1975, 1978, and 1981 — U.S. Department of Energy, Grand Junction Office, Colorado, *Statistical Data of the Uranium Industry*, Report No. GJO-100, annual. **U.S. Total, Refining:** • 1975 and 1978 — Energy Information Administration, *Energy Company Development Patterns in the Postembargo Era*, Vol. 2, October, 1982. • 1981 — Energy Information Administration, *Petroleum Supply Annual.*

Figure 97. Investment Patterns of FRS* Companies



*FRS = Financial Reporting System (See Explanatory Note 13)

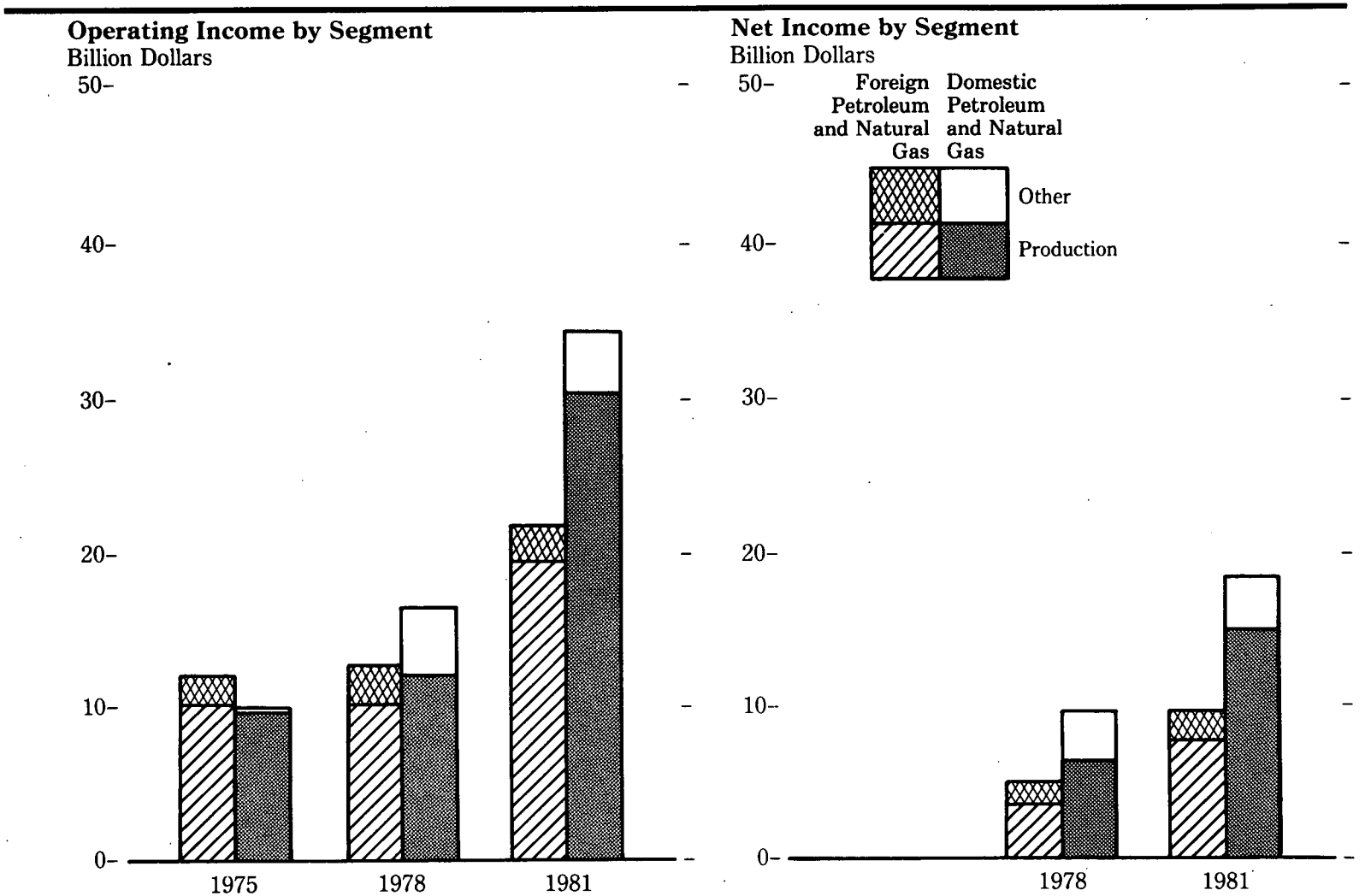
**PP&E = Plant, Property, and Equipment

Table 94. Investment Patterns of FRS [1] Companies, 1975, 1978 and 1981

Item	Net PP&E [2]						Additions to PP&E [2]					
	1975		1978		1981 [3]		1975		1978		1981 [3]	
	Billion Dollars	Percentage	Billion Dollars	Percentage	Billion Dollars	Percentage	Billion Dollars	Percentage	Billion Dollars	Percentage	Billion Dollars	Percentage
Location												
Domestic	69.4	71.4	99.3	71.9	165.9	73.8	14.7	70.5	17.6	70.3	45.1	76.7
Foreign	26.8	27.6	37.3	27.0	56.0	24.9	6.1	29.4	7.4	29.4	12.6	21.5
Eliminations and Nontraceables	1.0	1.1	1.5	1.1	3.0	1.3	(4)	0.1	0.1	0.3	1.0	1.8
Total	97.3	100.0	138.1	100.0	224.9	100.0	20.9	100.0	25.1	100.0	58.7	100.0
Type-of-Business												
Petroleum and Natural Gas	79.8	82.0	106.2	76.9	171.3	76.2	17.0	81.6	19.1	76.1	44.2	75.3
Coal	1.6	1.7	3.1	2.3	6.8	3.0	0.5	2.3	0.7	2.7	2.8	4.8
Nuclear	0.3	0.4	0.9	0.6	1.3	0.6	0.1	0.5	0.3	1.2	0.2	0.3
Other Energy	0.8	0.8	2.2	1.6	3.0	1.3	0.3	1.7	0.5	2.1	0.7	1.2
Non-Energy	13.7	14.1	24.2	17.5	39.5	17.6	2.7	12.7	4.2	16.8	9.7	16.6
Eliminations and Nontraceables	1.0	1.0	1.4	1.0	3.0	1.4	0.2	1.1	0.3	1.1	1.0	1.8
Total	97.3	100.0	138.1	100.0	224.9	100.0	20.9	100.0	25.1	100.0	58.7	100.0
Domestic Petroleum and Natural Gas												
Production	27.8	50.7	40.4	55.3	83.1	67.8	6.0	51.8	9.3	73.5	26.7	79.7
Refining/Marketing	20.0	36.4	21.6	29.5	28.5	23.2	2.8	24.2	2.8	21.9	6.0	18.0
Transportation	7.0	12.8	11.0	15.1	10.9	8.9	2.8	24.0	0.6	4.6	0.8	2.3
Eliminations and Nontraceables	(4)	(5)	(4)	0.1	0.0	0.0	0.0	0.0	(4)	(5)	0.0	(5)
Total	54.8	100.0	73.1	100.0	122.5	100.0	11.6	100.0	12.7	100.0	33.5	100.0
Foreign Petroleum and Natural Gas												
Production	9.4	37.8	16.6	50.2	30.4	62.3	3.0	54.5	4.7	73.0	8.0	74.8
Refining/Marketing	10.3	41.3	11.1	33.4	13.6	27.9	1.4	26.1	1.5	23.2	2.4	22.1
Transportation	5.2	20.9	5.4	16.2	4.8	9.9	1.1	19.3	0.2	3.7	0.3	3.1
Eliminations and Nontraceables	(4)	0.1	0.1	0.2	0.0	0.0	(4)	(5)	(4)	0.1	0.0	0.0
Total	24.9	100.0	33.1	100.0	48.8	100.0	5.5	100.0	6.4	100.0	10.7	100.0

[1] FRS = Financial Reporting System (See Explanatory Note 13).
[2] Property, Plant, and Equipment.
[3] Preliminary.
[4] Less than $50 million.
[5] Less than 0.05 percent.
Note: Sum of components may not equal total due to independent rounding.
Sources: •1975 and 1978 - Energy Information Administration, *Energy Company Development Patterns in the Postembargo Era*, October 1982. •1981 - Energy Information Administration, Form EIA-28, "Financial Reporting System".

Figure 98. Income Patterns of FRS* Companies



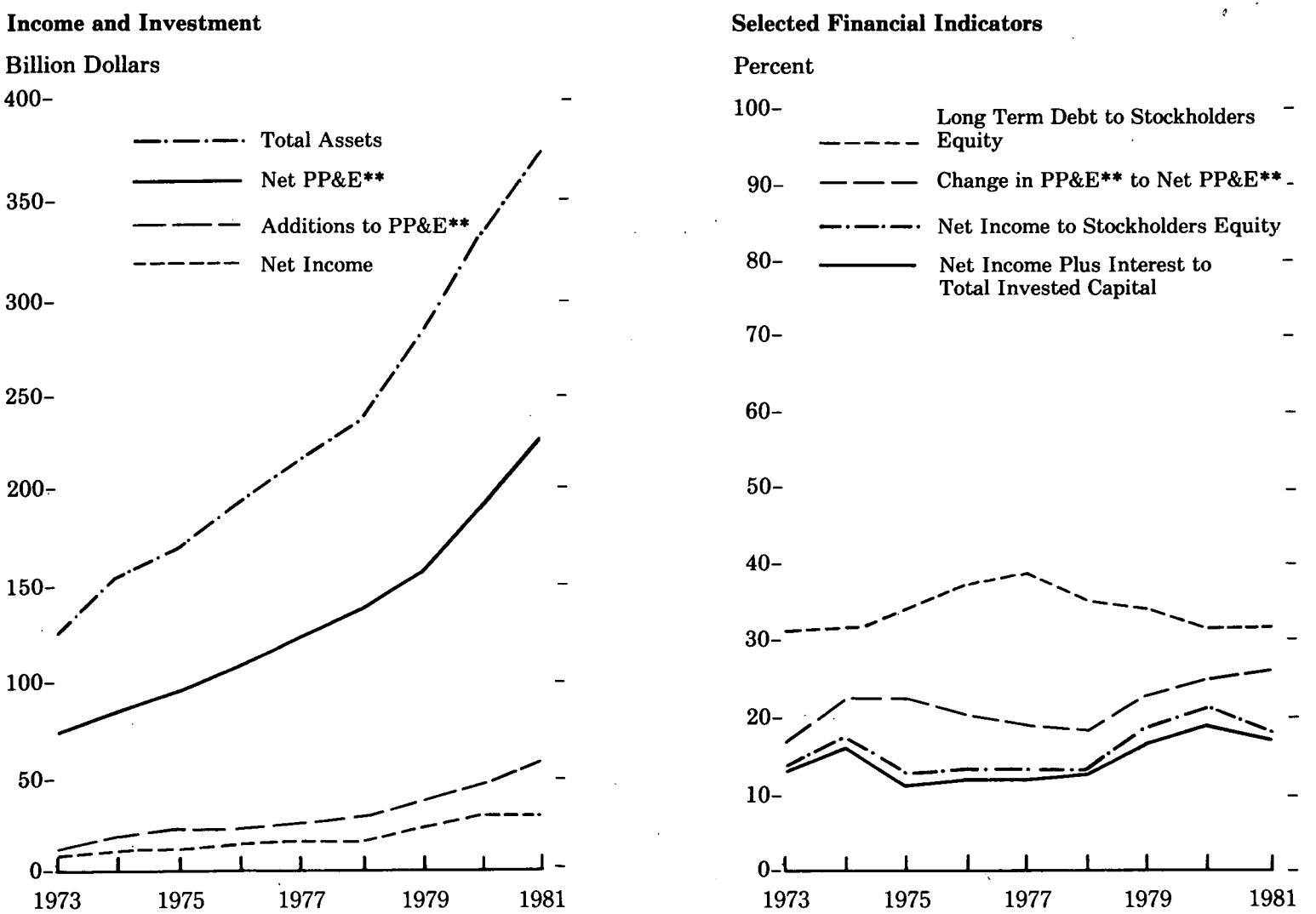
FRS = Financial Reporting System (See Explanatory Note 13)

Table 95. Income Patterns of FRS [1] Companies, 1975, 1978 and 1981

Item	Operating Income						Net Income [2]			
	1975		1978		1981 [3]		1978		1981 [3]	
	Billion Dollars	Percentage	Billion Dollars	Percentage	Billion Dollars	Percentage	Billion Dollars	Percentage	Billion Dollars	Percentage
Location										
Domestic	12.1	50.2	18.0	60.5	35.0	63.8	NA	NA	21.2	70.6
Foreign	12.5	51.7	13.4	44.9	22.9	41.7	NA	NA	10.0	33.4
Eliminations and Nontraceables	-0.4	-1.8	-1.6	-5.3	-3.0	-5.5	NA	NA	-1.2	-4.1
Total	24.3	100.0	29.8	100.0	54.8	100.0	13.9	100.0	30.0	100.0
Type-of-Business										
Petroleum and Natural Gas	22.7	93.6	29.5	98.9	56.9	103.8	14.7	105.1	29.5	98.3
Coal	0.4	1.7	0.1	0.4	0.2	0.4	0.1	1.0	0.4	1.5
Nuclear	-0.1	-0.4	-0.1	-0.3	-0.2	-0.4	[4]	-0.3	-0.1	-0.3
Other Energy	-0.2	-0.7	-0.2	-0.6	-0.5	-0.9	-0.1	-0.7	-0.2	-0.7
Non-Energy	2.6	10.6	2.1	7.0	1.4	2.6	1.8	12.7	1.6	5.3
Eliminations and Nontraceables	-1.2	-4.8	-1.6	-5.3	-3.0	-5.5	-2.5	-17.8	-1.2	-4.1
Total	24.3	100.0	29.8	100.0	54.8	100.0	13.9	100.0	30.0	100.0
Domestic Petroleum and Natural Gas										
Production	9.6	96.3	12.0	72.1	30.4	88.3	6.7	70.4	16.8	84.7
Refining/Marketing	-0.2	-2.3	2.7	15.9	0.9	2.7	1.6	17.3	1.3	6.4
Transportation	0.6	6.4	2.1	12.7	3.1	9.0	1.2	12.9	1.8	8.8
Eliminations and Nontraceables	[4]	-0.4	-0.1	-0.7	[4]	[5]	-0.1	-0.6	[4]	[5]
Total	10.0	100.0	16.7	100.0	34.5	100.0	9.5	100.0	19.9	100.0
Foreign Petroleum and Natural Gas										
Production	10.3	84.5	10.2	80.2	19.5	87.0	3.5	66.5	8.0	83.9
Refining/Marketing	1.8	14.6	2.4	19.1	3.0	13.5	1.8	34.3	1.6	16.9
Transportation	-0.1	-0.1	[4]	[5]	-0.1	-0.4	[4]	-0.8	-0.1	-0.6
Eliminations and Nontraceables	0.2	1.0	0.1	0.7	[4]	[5]	[4]	[5]	[4]	-0.2
Total	12.2	100.0	12.8	100.0	22.4	100.0	5.2	100.0	9.6	100.0

[1] FRS = Financial Reporting System (See Explanatory Note 13).
[2] Net income data are not available for 1975.
[3] Preliminary.
[4] Less than $50 million.
[5] Less than 0.05 percent.
NA = Not available.
Note: Sum of components may not equal total due to independent rounding.
Sources: •1975 and 1978 - Energy Information Administration, *Energy Company Development Patterns in the Postembargo Era*, October 1982. •1981 - Energy Information Administration, Form EIA-28, "Financial Reporting System".

Figure 99. Income and Investment Levels and Selected Financial Indicators for FRS* Companies



*FRS = Financial Reporting System (See Explanatory Note 13)
**PP&E = Property, Plant, and Equipment

Table 96. Income and Investment Levels and Selected Financial Indicators for FRS [1] Companies, 1973-1981

	1973	1974	1975	1976	1977	1978	1979	1980	1981 [2]
Income and Investment Levels (Billion Dollars)									
Net Income	9.7	13.4	10.3	12.0	12.7	13.9	23.5	31.0	30.0
Additions to PP&E [3]	12.5	19.5	20.9	23.0	23.9	25.1	37.2	47.8	58.7
Net PP&E [3]	76.1	87.3	97.3	111.1	125.9	138.1	159.3	188.9	224.9
Total Assets	129.2	159.6	173.7	196.9	217.1	237.1	282.8	333.0	372.5
Selected Financial Indicators (Percent)									
Net Income to Stockholders' Equity	13.8	17.3	12.3	13.1	12.6	12.8	18.8	21.1	18.1
Net Income Plus Interest to Total Invested Capital	12.4	15.4	11.3	11.7	11.6	12.3	16.9	18.7	16.8
Long-Term Debt to Stockholders' Equity	31.1	31.7	35.6	38.7	38.9	35.6	33.7	31.5	32.2
Change in PP&E [3] to Net PP&E [3]	16.4	22.3	21.5	20.7	19.0	18.2	23.4	25.3	26.1

[1] FRS = Financial Reporting System (See Explanatory Note 13).
[2] Preliminary.
[3] PP&E = Property Plant and Equipment.
Sources: •1973—Standard and Poor's Compustat Industrial File. •1974 through 1980—Energy Information Administration, Form EIA-28. "Financial Reporting System," and *Energy Company Development Patterns in the Postembargo Era*, Volumes 1 and 2, October 1982. •1981—Energy Information Administration, Form EIA-28 "Financial Reporting System."

Figure 100. Exploration, and Development Expenditures, Addition to Proved Reserves, and Production of Liquid and Gaseous Hydrocarbons by FRS Comparing

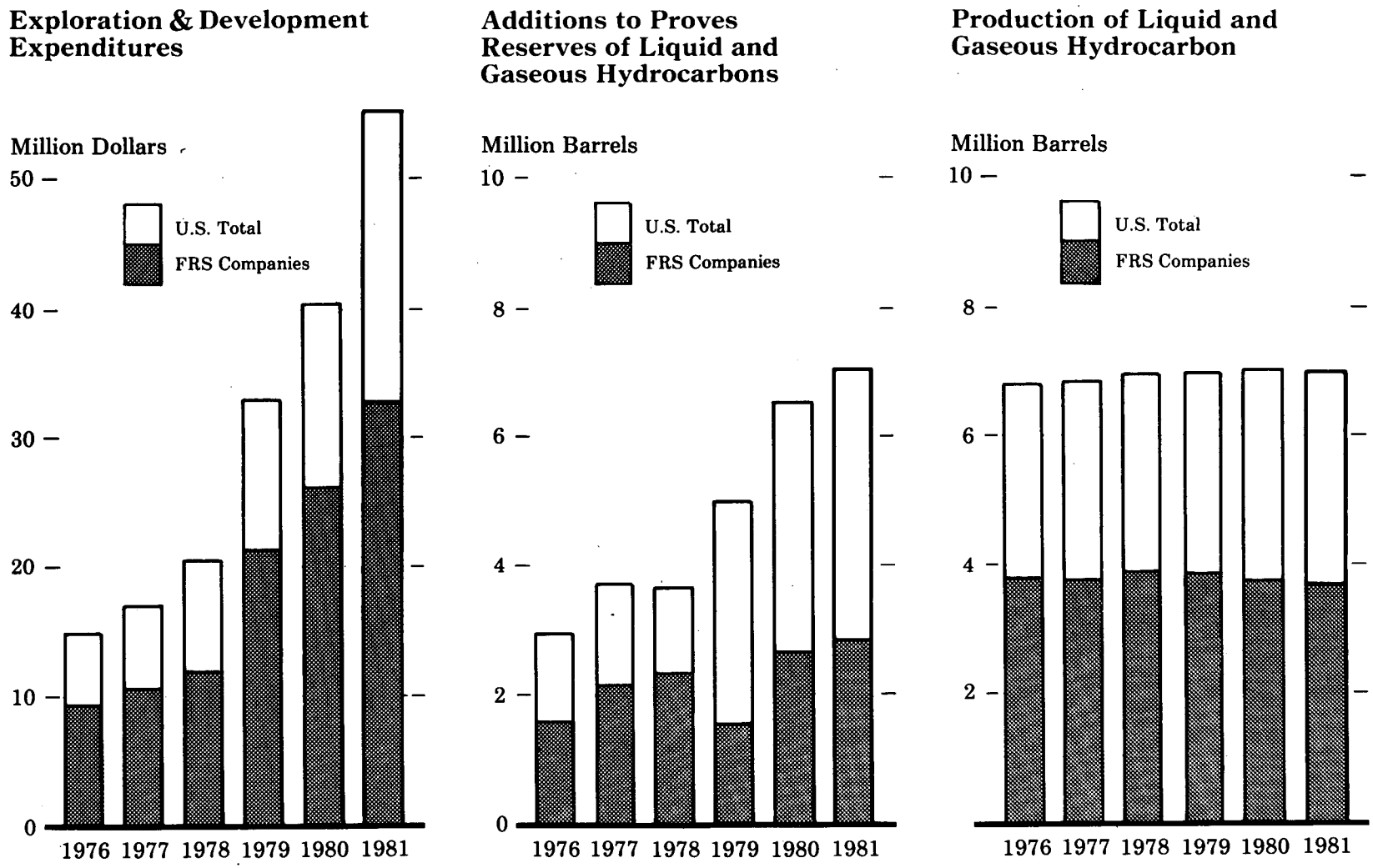


Table 97. Exploration and Development Expenditures, Additions to Proved Reserves, and Production of Liquid and Gaseous Hydrocarbons by FRS [1] Companies, 1976-1981

	1976	1977	1978	1979	1980	1981
Exploration and Development Expenditures						
(Billion Dollars)						
FRS Companies	9.2	10.4	11.8	21.3	26.2	[2] 33.0
U.S. Total	14.9	17.0	20.4	32.9	40.4	55.7
Additions to Proved Reserves [3] of Liquid and Gaseous Hydrocarbons [4]						
(Million Barrels COE [5])						
FRS Companies [6]	1,537.6	2,167.7	2,363.1	1,422.3	2,620.6	[2] 2,849.3
U.S. Total	2,988.6	3,699.5	3,625.1	4,999.2	6,502.7	7,099.5
Production of Liquid and Gaseous Hydrocarbons						
(Million Barrels COE [5])						
FRS Companies [6]	3,796.6	3,759.8	3,870.5	3,821.4	3,738.9	[2] 3,694.8
U.S. Total	6,755.3	6,802.2	6,951.4	6,994.4	7,007.1	6,961.8

[1] FRS = Financial Reporting System (See Explanatory Note 13).
[2] Preliminary.
[3] Additions to proved reserves equal annual change in proved reserves plus annual production.
[4] Liquid and gaseous hydrocarbons include crude oil, natural gas liquids, and natural gas.
[5] Crude oil equivalent: converted on a Btu basis, 5,648 cubic feet of natural gas and 1.476 barrels of natural gas liquids (excluding lease condensate) for each barrel of crude oil, the 1981 equivalency.
[6] Based on net ownership interest (See Glossary).
NA = Not available.
Sources: **FRS Companies:** Energy Information Administration, *Form EIA-28*, "Financial Reporting System." **U.S. Total, Exploration and Development Expenditures:** •1976 through 1981 - Bureau of the Census, *Annual Survey of Oil and Gas*. **U.S. Total, Additions to Proved Reserves of Liquid and Gaseous Hydrocarbons:** •1976 through 1979 - American Gas Association, American Petroleum Institute, and Canadian Petroleum Association (published jointly), *Reserves of Crude Oil, Natural Gas Liquids, and Natural Gas in the United States and Canada as of December 31, 1979*, Volume 34, June 1980. • 1980 and 1981 - Energy Information Administration, *U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves, 1981 Annual Report*. **U.S. Total, Production of Liquid and Gaseous Hydrocarbons:** •1976 through 1981, see Tables 22 and 46.

Glossary

Alcohol. The family name of a group of organic chemical compounds composed of carbon, hydrogen, and oxygen; a series of molecules that vary in chain length and are composed of a hydrocarbon plus a hydroxyl group, CH-(CH)n-OH; includes methanol and ethanol.

Anthracite. A hard, black, lustrous coal containing a high percentage of fixed carbon and a low percentage of volatile matter. It is often referred to as hard coal. Includes metaanthracite and semianthracite. Conforms to ASTM Specification D388 for anthracite.

Apparent Consumption, Natural Gas (International). The total of an individual nation's marketed natural gas production plus imports less exports.

Asphalt. A dark brown to black cement-like material. The predominating constituents are bitumens, which are obtained in petroleum processing. Its consistency can vary from a liquid to a solid. It is used as a base for road surfacing and for other adhesive or protective purposes. Statistics include crude asphalt and finished products such as asphalt cements and fluxes and the asphalt content of emulsions.

ASTM. American Society for Testing and Materials.

Aviation Gasoline. See **Finished Aviation Gasoline.**

Aviation Gasoline Blending Components. Finished components in the gasoline range that will be used for blending or compounding into finished aviation gasoline.

Base Gas. The total volume of natural gas in underground storage reservoirs that will maintain the required rate of delivery during an output cycle.

Base Production Control Level. (1) Prior to February 1, 1976: the total number of barrels of domestic crude oil produced and sold from a particular property in the corresponding month of 1972. If domestic crude oil was not produced and sold from that property in every month of 1972, an estimate is derived by dividing the annual total by 12. (2)Effective February 1, 1976: the total number of barrels of crude oil produced and sold from the property during calendar year 1975, divided by 365, and multiplied by the number of days in the particular month during 1975. A producer may elect to use the total number of barrels of crude oil produced and sold from the property during calendar year 1972, divided by 366, and multiplied by the number of days in the particular month during 1972.

Bituminous Coal. A coal that is high in carbonaceous matter having a volatility greater than anthracite and a calorific value greater than lignite. Often referred to in the United States as soft coal. Includes subbituminous coal and conforms to ASTM Specification D388 for bituminous and subbituminous coal.

British Thermal Unit (Btu). The amount of energy required to raise the temperature of 1 pound of water 1 degree Fahrenheit at or near 39.2 degrees Fahrenheit. One Btu is equivalent to about 252 IT (International Steam Table) calories.

Butane. A colorless, volatile, hydrocarbon (C_4H_{10}) that is gaseous at ordinary atmospheric conditions and readily recoverable as a liquid at natural gas processing plants and refineries. It is used primarily for blending into motor gasoline, for residential and commercial heating, and for industrial purposes, especially the manufacture of chemicals and synthetic rubber. Includes normal butane and other butanes.

Class A Electric Utility. A utility having annual electric operating revenues of $2.5 million or more.

Class B Electric Utility. A utility having annual electric operating revenues of $1.0 million or more but less than $2.5 million.

Coke (Coal). Bituminous coal from which constituents have been driven off by heat so that the fixed carbon and the ash are fused together. It is used primarily in blast furnaces for smelting ores, especially iron ore.

Cost, Insurance, and Freight (C.I.F.). A term used in sales price contracts for both domestic and export sales. In general, the sales price includes the cost of the goods, the freight charges to a named destination, and the insurance charges on the goods shipped. The seller may waive insurance

and choose to assume responsibility for any loss or damage. Regarding domestic coal sales, the sales price includes all charges for delivering the coal to the electric power utility excluding demurrage at the plant and unloading charges. Federal Power Commission Form 423, on which these data are collected, refers to this price as "FOB plant" price.

Crude Oil. A mixture of hydrocarbons that exists in the liquid phase in natural underground reservoirs and remains liquid at atmospheric pressure after passing through surface separating facilities. Statistically, crude oil reported at refineries, in pipelines, at pipeline terminals, and on leases may include lease condensate, shale oil, and tar sands oil.

Crude Oil Refinery Input. Total crude oil (including lease condensate) input to crude oil distillation units and other units for processing.

Crude Oil Stocks. Stocks of crude oil and lease condensate held at refineries, in pipelines, at pipeline terminals, and on leases.

Crude Oil Wellhead Price. Composite average price per barrel of first purchases of domestic crude oil including sales of lower tier, upper tier, stripper, Alaskan North Slope, Naval Petroleum Reserves, incremental tertiary, newly discovered, marginal property, heavy crude, tertiary incentive, and other decontrolled oil. Since January 1981, prices by sales group have not been available.

Demonstrated Reserve Base of Coal. Known inplace coals of all rank that are technically and economically minable at the time of evaluation. It includes measured and indicated coal resources. It is estimated that at least one-half of the inplace coals can be recovered. (See **Indicated Resources, Coal; and Measured Resources, Coal.**)

Distillate Fuel Oil. A light fuel oil distilled off during the refining process. Included are products known as No. 1 and No. 2 heating oils, diesel fuels, and No. 4 fuel oil, which conform to either ASTM Specification D396 or D975. These products are used primarily for space heating, on- and off-highway diesel engine fuel (including railroad engine fuel), and electric power generation.

Dry Hole. An exploratory or development well found to be incapable of producing either oil or gas in sufficient quantities to justify completion as an oil or gas well.

Eliminations. Revenues and expenses resulting from transactions between segments. Consolidated company accounts do not include intersegment revenues and expenses. Therefore, such intersegment transactions must be eliminated.

Ethane. A normally gaseous, colorless hydrocarbon (C_2H_6) produced at natural gas processing plants and refineries. It is used primarily as petrochemical feedstock for eventual production of chemicals and plastic materials.

Exploratory Well. A well drilled to: find and produce oil or gas in an unproved area; find a new reservoir in a field previously found to be productive of oil or gas in another reservoir; or extend the limit of a known oil or gas reservoir.

Exports. Shipments from the 50 States and the District of Columbia to foreign countries, Puerto Rico, the Virgin Islands, and other U.S. possessions and territories.

Extraction Loss. The reduction in volume of natural gas due to the removal of natural gas constituents, such as ethane, propane, and butane, at natural gas processing plants.

Federally Administered Lands. Includes all public lands (Federal), Indian lands, Naval Petroleum Reserve, National Petroleum Reserve (Alaska), Outer Continental Shelf, and acquired lands (lands formerly held by the Department of Agriculture and now under the jurisdiction of the Department of the Interior).

Finished Aviation Gasoline. All special grades of gasoline for use in aviation reciprocating engines, as given in ASTM Specification D910. Includes all refinery products within the gasoline range or additives that are blended in finished aviation gasoline.

Finished Motor Gasoline. Beginning in January 1981, **Motor Gasoline** was redefined as **Finished Motor Gasoline**, which is a complex mixture of relatively volatile hydrocarbons, with or without small quantities of additives that have been blended to form a fuel suitable for use in spark ignition engines. Included are premium and regular grade, both leaded and unleaded, gasohol, and all other refinery products listed in ASTM Specification D439. Excludes any blendstock until blending has been completed and the blendstock is incorporated in the finished gasoline and no longer separately identified. Also excludes any alcohol to be used in the blending of gasohol.

Free Alongside Ship (F.A.S.). This represents the transaction value of imports at the foreign port of exportation. It is based on the purchase price, i.e., the actual transaction value, and generally includes all charges incurred in placing the merchandise alongside the carrier at the foreign port of exportation.

Free on Board (F.O.B.). A term used in sales price quotations meaning, in general, that the seller assumes all responsibility and costs up to the specific point of delivery and that the buyer takes over responsibility and costs at that same point.

Fuelwood. Wood and wood products used as fuel. It includes roundwood, limbwood, bark, charcoal, forest residues, sawdust, wood and pulp waste, and spent pulping liquor.

Gasohol. A blend of alcohol and finished motor gasoline consisting of 90 percent or less finished motor gasoline and 10 percent or more alcohol (ethanol or methanol).

Gas Well. A well completed for the production of natural gas from one or more gas zones or reservoirs. Such wells have no completions for the production of crude oil.

Geothermal Production, Electricity. Production of electricity at a conventional type steam electric powerplant whose turbines are powered with geothermal steam.

Household. A group of 12 persons or less that occupy the same housing unit (see **Housing Unit**) as their usual or permanent place of residence. Persons include babies, lodgers, boarders, and persons who live in the housing unit but are traveling or in a hospital. Excluded are persons who are away from home as college students or members of the Armed Services.

Housing Unit. A structure or part of a structure in which a household (see **Household**) lives or could live, with access to the outside of the building either directly or through a common hall. Housing units do not include group quarters, such as prisons, hospitals, dormitories, nursing homes, fraternity/sorority houses, or convents, in which 10 or more unrelated persons live. Hotels, motel rooms, mobile homes, and trailers are considered housing units if permanently occupied by a household.

Hydropower Production, Electricity. Electricity generated by using water flow to drive a turbine.

Implicit GNP Price Deflator. A measure of the change in U.S. price levels, which is the ratio of the current value of goods and services to the base year value for the same goods and services.

Imports. Receipts into the 50 States and the District of Columbia of foreign goods (including goods from U.S. territories and U.S. Foreign Trade Zones) that are classified by customs officials as "imports for consumption" or "withdrawals from bonded warehouses for consumption," including withdrawals from bonded warehouses for military offshore use and for bunkering of vessels or aircraft engaged in international commerce. See also **Petroleum Imports.**

Indicated Resources, Coal. Coal resources for which estimates for the rank, quality, and quantity have been computed partly from sample analyses and measurements and partly from reasonable geologic projections (see **Demonstrated Reserve Base of Coal).**

International Bunkers. Fuel loaded on vessels and aircraft engaged in international commerce for use as fuel by the vessel or aircraft.

Isobutane. A saturated branch-chain hydrocarbon ($(CH_3)_3CH$) that contains 80 percent or more isobutane.

Jet Fuel. Includes both naphtha-type and kerosene-type jet fuel meeting standards for use in aircraft turbine engines or meeting ASTM Specification D1655. Although most jet fuel is used in aircraft, some is used for other purposes, such as fuel for turbines to produce electricity.

Kerosene. A petroleum middle distillate having burning properties suitable for use as an illuminant when burned in wick lamps. It includes grades of kerosene called range oil having properties similar to No. 1 fuel oil, and is used primarily in space heaters, cooking stoves, and water heaters.

Landed Cost of Imported Crude Oil. Includes the purchase price at the foreign port (or U.S. land border), transportation and insurance costs, wharfage and demurrage, brokerage fees, import fees and duties, license (ticket) fees, and transportation costs to the refinery. Averages are computed based on major importers, which account for an estimated 90 to 95 percent of total crude oil imports. Coverage includes the United States and its territories.

Lease Condensate. A natural gas liquid recovered from gas-well gas in lease separators or field facilities. It consists primarily of pentanes and heavier hydrocarbons. Generally, it is blended with crude oil for refining.

Lignite. A brownish-black coal of low rank with high inherent moisture and volatile matter. It is also referred to as brown coal. It conforms to ASTM Specification D388 for lignite, and is used almost exclusively for electric power generation.

Line Miles of Seismic Exploration. The distance along the earth's surface that is covered by seismic surveying.

Liquefied Gases. Propane, propylene, butane, butylene, ethane-propane mixtures, propane-butane mixtures, and isobutane produced at refineries or natural gas processing plants, including plants that fractionate raw natural gas plant liquids.

Lower Tier Crude Oil. The total number of barrels of crude oil produced and sold from a property in a specific month up to the amount of base period production. Base period production equals the lesser of 1972 or 1975 production, with a downward adjustment to take account of depletion of the oilfield (see **Base Production Control Level**). Crude oil prices were decontrolled in January 1981.

Low-Temperature Solar Collector. A collector that generally operates in the temperature range below 110 degrees Fahrenheit. Typically, it has no glazing or insulation and is made of plastic or rubber, although it may be made of metal.

Lubricants. All lubricating oils containing more than 50 percent by volume of refined petroleum distillate or specially treated petroleum residuum. Included are lubricating greases, lube base stocks, and all grades of lubricating oils from spindle oil and cylinder oil to those used in greases.

Marketed Production, Including Nonhydrocarbon Gases. This quantity is derived. It is gross withdrawals of natural gas from production reservoirs, less gas used for reservoir repressuring and quantities vented and flared. It includes the nonhydrocarbon gases subsequently removed.

Measured Resources, Coal. Coal resources for which estimates of the quality and quantity have been computed within a margin of error of less than 20 percent, by analyzing measurements taken from closely spaced geologically well-known sample sites (see **Demonstrated Reserve Base of Coal**).

Medium-Temperature Solar Collector. A collector that generally operates in the temperature range of 140 degrees Fahrenheit to 180 degrees Fahrenheit. Typically, it has one or two glazings, a metal frame, a metal absorption panel with integral flow channels or attached tubing (liquid collector) or with integral ducting (air collector), and insulation on the sides and back of the panel.

Miscellaneous Products. Includes all other finished petroleum products not elsewhere identified, such as petrolatum, absorption oils, ram-jet fuel, petroleum rocket fuels, synthetic natural gas feedstocks, and other finished products.

Motor Gasoline. A complex mixture of relatively volatile hydrocarbons with or without small quantities of additives, that have been blended to form a fuel suitable for use in spark ignition engines. Included are leaded and unleaded products and all refinery products listed in ASTM Specification D439. Also see **Finished Motor Gasoline.**

Motor Gasoline Blending Components. Finished components in the gasoline range, such as butane, that will be used for blending or compounding into finished motor gasoline. Pool gasoline (gasoline needing no processing other than blending) is a blending component.

Motor Gasoline, Regular Grade. Motor gasoline (see above) that has an antiknock designation of 2 for unleaded motor gasoline and 3 for leaded motor gasoline.

Native Gas. The total volume of natural gas indigenous to the storage reservoir at the time the gas storage started.

Natural Gas. A mixture of hydrocarbon compounds and small quantities of various nonhydrocarbons existing in the gaseous phase or in solution with crude oil in natural underground reservoirs at reservoir conditions. The designation "dry" represents the marketable portion of natural gas production that is obtained by subtracting extraction losses from total production.

Natural Gas, End-Use Average Price. Average price per specified unit, including all taxes, at the point of consumption.

Natural Gas Gross Withdrawals. Full well stream volume of produced natural gas excluding condensate separated at the lease.

Natural Gas Liquids. Those hydrocarbons in natural gas that are separated as a liquid from the gas at lease separators, field facilities, and natural gas processing plants. Natural gas liquids include natural gas plant liquids and lease condensate.

Natural Gas Plant Liquids. Liquid hydrocarbon products obtained from processing natural gas at natural gas processing plants, including natural gasoline plants, cycling plants, fractionators, and in some instances, field facilities. Products obtained include ethane, liquefied petroleum gases (propane, butane, propane-butane mixtures, ethane-propane mixtures, and isobutane), isopentane, natural gasoline, unfractionated streams, plant condensate, and minor quantities of products such as motor gasoline, special naphthas, jet fuel, kerosene, and distillate fuel oil.

Natural Gas Wellhead Price. The wellhead price of natural gas is calculated by dividing the total reported value at the wellhead by the total quantity produced as reported by the appropriate agencies of individual producing States and the U.S. Geological Survey. The price includes all costs prior to shipment from the lease including gathering and compression costs in addition to State production, severence, and/or similar charges.

Natural Gas, Wet. Natural gas prior to the extraction of liquids and other miscellaneous products.

Net Dry Natural Gas Production, Including Nonhydrocarbon Gases. Derived by subtracting extraction loss from "Marketed Production, Including Nonhydrocarbon Gases." It represents the amount of domestic gas production that is available to be marketed and consumed as a gas prior to the removal of nonhydrocarbon gases.

Net Income. Operating income plus earnings from unconsolidated affiliates, gains from disposition of property, plant, and equipment, minority interest income, and foreign currency translation effects; less income taxes, extraordinary items, and the cumulative effect of accounting changes.

Net Ownership Interest. The sum of net working interest and royalty interest (see **Net Working Interest** and **Royalty Interest**). Net ownership interest applies to both production and reserves.

Net Property, Plant, and Equipment. The original cost of property, plant and equipment (PP&E), less accumulated depreciation.

Net Working Interest. A company's working interest, not including any basic royalty or overriding royalty interests (see **Working Interest**).

New Crude Oil. (See **Upper Tier Crude Oil.**)

Nonhydrocarbon Gases. Typical nonhydrocarbon gases which may be present in reservoir natural gas are carbon dioxide, helium, hydrogen sulfide, and nitrogen.

Nontraceables. Those revenues, costs, assets, and liabilities that cannot be directly attributed to a type of business or that cannot be assigned to a type of business by use of a reasonable allocation method developed on the basis of operating level realities.

Nuclear Production, Electricity. Production of electricity at a nuclear powerplant.

Oil Well. A well completed for the production of crude oil from one or more oil zones or reservoirs.

Old Crude Oil. (See **Lower Tier Crude Oil.**)

Operating Income. Operating revenues less operating expenses. Excludes items of other revenue and expense such as equity in earnings of unconsolidated affiliates, dividends, interest income and expense, income taxes, extraordinary items, and cumulative effect of accounting charges.

Organization for Economic Cooperation and Development (OECD). In 1982, OECD included Australia, Austria, Belgium, Canada, Denmark, Finland, France, West Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom, and the United States.

Organization of the Petroleum Exporting Countries (OPEC). In 1982, OPEC included Algeria, Ecuador, Gabon, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, United Arab Emirates, and Venezuela. Data for Saudi Arabia and Kuwait include their share from the Partitioned Zone (formerly Neutral Zone).

Other Hydrocarbons (Petroleum). Other materials processed at refineries. Includes coal tar derivatives, hydrogen, gilsonite, and natural gas received by the refinery for reforming into hydrogen.

Paraffin Wax. A solid or semisolid material derived from petroleum distillates and residuals by chilling, dewaxing, precipitating with a solid, and de-oiling. When separated from solutions it is a lightly colored, more or less translucent, crystalline mass, slightly greasy to touch, and consists of a mixture of solid hydrocarbons in which the paraffin series predominates. Included are all marketable waxes whether crude scale or refined. Used primarily as industrial coatings for surface protection.

Petrochemical Feedstocks. Refined petroleum products used for processing at a petrochemical plant.

Petroleum. A generic term applied to oil and oil products in all forms, such as crude oil, lease condensate, unfinished oils, refined petroleum products, natural gas plant liquids, and nonhydrocarbon compounds blended into finished petroleum products.

Petroleum Coke. A solid residue; the final product of the condensation process in cracking. It consists of aromatic hydrocarbons very poor in hydrogen. Calcination of petroleum coke can yield almost pure carbon or artificial graphite suitable for production of carbon or graphite electrodes, structural graphite, motor brushes, dry cells, and similar products. This product is reported as marketed or catalyst petroleum coke.

Petroleum Imports. Imports of petroleum into the 50 States and the District of Columbia from foreign countries, U.S. territories, and the U.S. Foreign Trade Zones. Included are imports for the Strategic Petroleum Reserve and withdrawals from bonded warehouses for onshore consumption, offshore bunker use, and military use. Receipts of foreign petroleum into bonded warehouses, into U.S. territories, and U.S. Foreign Trade Zones are not included.

Petroleum Products. (See **Refined Petroleum Products.**)

Plant Condensate. One of the natural gas plant liquids, mostly pentanes and heavier hydrocarbons, separated and recovered as liquids at gas inlet separators or scrubbers in natural gas processing plants. Plant condensate is not suitable for blending into finished motor gasoline. It is usually blended with crude oil for distilling or processed at other refinery units.

Primary Stocks. (See **Refined Petroleum Product Stocks, Primary.**)

Processing Gain. Represents the amount by which the total volume of refinery output is greater than the volume of input for a given period of time. This difference is due to the processing of crude oil and other hydrocarbons into products that have less weight per volume than crude oil processed. Therefore, in terms of volume (barrels), the total output of products is greater than the input.

Propane. A colorless, highly volatile hydrocarbon (C_3H_8) that is gaseous at ordinary atmospheric conditions, and readily recovered as a liquid at natural gas processing plants and refineries. Propane is used primarily for residential and commercial heating and cooling, and also as a fuel for transportation and industrial uses, including petrochemical feedstocks.

Property, Plant, and Equipment (PP&E), Additions to. The current year's expenditures on property, plant, and equipment. The amount is predicated upon each reporting company's accounting practices. That is, accounting practices with regard to capitalization of certain items may differ across companies, and therefore this figure is a function of each reporting company's policy.

Property, Plant, and Equipment (PP&E), Net. The original cost of property, plant, and equipment less accumulated depreciation.

Proved Reserves, Crude Oil. The estimated quantities of all liquids statistically defined as crude oil, which geological and engineering data demonstrate with reasonable certainty to be recoverable in future years from known reservoirs under existing economic and operating conditions.

Proved Reserves, Natural Gas. The estimated quantities of natural gas, which geological and engineering data demonstrate with reasonable certainty to be recoverable in the future from known crude oil and natural gas reservoirs under existing economic and operating conditions.

Proved Reserves, Natural Gas Liquids. Estimates include: (1) reserves of liquids that are expected to be recovered from associated and nonassociated gas produced from gas wells and processed through lease separators, and (2) reserves of liquids expected to be recovered from associated-dissolved and nonassociated gas when processed in field facilities or gas processing plants. Estimates of proved reserves of natural gas liquids are based on (1) proved reserves of natural gas at the time of estimation, and (2) rates at which liquids can be recovered from natural gas by using processing equipment of the type currently installed or planned at the time of estimation.

Refined Petroleum Product Stocks, Primary. Stocks held at refineries, natural gas processing plants, bulk terminals, and pipelines (including pipeline fill) where the storage capacity is 50,000 barrels or more, or where refined petroleum products are received by tanker, barge, or pipeline. Stocks held in secondary storage facilities, such as those held by jobbers, dealers, independent marketers, and consumers, are excluded.

Refined Petroleum Products. Products obtained from the processing of crude oil, unfinished oils, natural gas liquids, and other miscellaneous hydrocarbon compounds. Includes aviation gasoline, motor gasoline, naphtha-type jet fuel, kerosene-type jet fuel, kerosene, distillate fuel oil, residual fuel oil, ethane, liquefied petroleum gases, petrochemical feedstocks, special naphthas, lubricants, paraffin wax, petroleum coke, asphalt, road oil, still gas, natural gasoline, unfractionated streams, unfinished oils, and miscellaneous products.

Refined Petroleum Products Supplied. See Explanatory Note 5.

Refiner Acquisition Cost. The cost of crude oil to the refiner, including transportation and fees. The composite cost is the average of domestic and imported crude oil costs, and represents the amount of crude oil cost that refiners may pass on to their customers. Also see Explanatory Note 8.

Reservoir Repressuring. The injection of gas into a reservoir to maintain or increase reservoir pressure.

Residual Fuel Oil. The heavier oils that remain after the distillate fuel oils and lighter hydrocarbons are boiled off in refinery operations. Included are products known as No. 5 and No. 6 fuel oil that conform to ASTM Specification D396, Navy Special Fuel Oil, Bunker C fuel oil, and acid sludge and pitch used as refinery fuels. Residual fuel oil is used for the production of electric power, space heating, vessel bunkering, and various industrial purposes.

Residue Gas. Natural gas from which natural gas processing plant liquid products and, in some cases, nonhydrocarbon components have been extracted.

Road Oil. Any heavy petroleum oil, including residual asphaltic oils, used as a dust palliative and for surface treatment of roads and highways. It is generally produced in six grades from O, the most liquid, to 5, the most viscous.

Rotary Rig. A machine, used for drilling wells, that employs a rotating tube attached to a bit for boring holes through rock.

Royalty Interest. An interest in a mineral property provided through a contractual arrangement that gives the owner of the interest the right to a fractional share of production or proceeds therefrom, that does not contain rights and obligations of operating a mineral property, and that is normally free and clear of exploration, development, and operating costs, except production taxes.

Rural. A locality with less than 2,500 inhabitants as defined in the 1970 Census.

Special Naphthas. All finished products within the gasoline range, specially refined to a specified flash point and boiling range, for use as paint thinners, cleaners, and solvents, including commercial hexane conforming with ASTM Specification D1836, and cleaning solvent conforming to ASTM Specification D484. Excluded are naphthas to be blended or marketed as motor gasoline or aviation gasoline, or to be used as petrochemical and synthetic natural gas (SNG) feedstock.

Special Solar Collector. An evacuated tube collector or a concentrating (focusing) collector. Special collectors operate in the temperature range from just above ambient temperature (low concentration for pool heating) to several hundred degrees Fahrenheit (high concentration for air conditioning and specialized industrial processes).

Still Gas (Refinery Gas). Any form or mixture of gas produced in refineries by cracking, reforming, and other processes, the principal constituents of which are methane and ethane. It is used primarily as refinery fuel and petrochemical feedstock.

Strategic Petroleum Reserve. Petroleum inventories, currently only crude oil, held in Government-owned underground storage for use during periods of major supply interruption.

Stripper Well Property. A property whose average daily production of crude oil per well (excluding condensate recovered in nonassociated natural gas production) did not exceed an average of 10 barrels per day during any preceding consecutive 12-month period beginning after December 31, 1972.

Subbituminous Coal. Black lignite or lignite coal of rank intermediate between lignite and bituminous coal. Conforms to ASTM Specification D388 for subbituminous coal. Used almost exclusively for electric power generation.

Supplemental Gaseous Fuels. Other gaseous fuels, such as synthetic natural gas, propane-air, manufactured gas, biomass gas, coke oven gas, and refinery (still) gas, normally mixed with natural gas prior to distribution.

Synthetic Natural Gas. A product resulting from the manufacture, conversion, or reforming of hydrocarbons that may be easily substituted for, or interchanged with, pipeline-quality natural gas.

Unaccounted for Crude Oil. Represents the arithmetic difference between the indicated demand for crude oil and the total disposition of crude oil. Indicated demand is the sum of crude oil production and crude oil imports less changes in crude oil stocks. Total disposition of crude oil is the sum of refinery input of crude oil, crude oil exports, crude oil burned as fuel, and crude oil losses.

Undiscovered Recoverable Resources (Crude Oil and Natural Gas). Those economic resources of crude oil and natural gas, yet undiscovered, that are estimated to exist in favorable geologic settings.

Unfinished Oil. Includes all oil requiring further refinery processing, except those requiring only mechanical blending.

Unfractionated Streams. Mixtures of unsegregated natural gas plant liquid components, including those liquids recovered and separated at raw natural gas inlet scrubbers and separators. Includes some compounds formerly called plant condensate. See **Plant Condensate.**

United States. Unless otherwise noted, "United States" in this publication means the 50 States and the District of Columbia. U.S. exports include shipments to U.S. Territories, and imports include receipts from U.S. Territories.

Upper Tier Crude Oil. (1) Prior to February 1, 1976: the total number of barrels of domestic crude oil produced and sold in a specific month, less the base production control level for that month and less the current cumulative deficiency. (2) February 1, 1976, through August 31, 1976: the total number of barrels of domestic crude oil produced and sold in a specific month, less the property's base production control level for that month and less the current cumulative deficiency since February 1, 1976. Includes new crude oil and crude oil produced from a stripper well property. (3) Since September 1, 1976: upper tier crude oil excludes crude oil produced from a stripper well property. Crude oil prices were decontrolled in January 1981.

Uranium Resources. Generally refers to natural uranium occurrences that are known or estimated to exist as a fuel base for nuclear power program development. Uranium resources are further categorized as either reserves or potential resources. Reserves are defined as uranium deposits that have been clearly established by detailed investigation of drill hole samples and other similar geologic procedures. Potential resources are less reliable and further categorized as probable, possible, and speculative resources. Probable potential resources comprise deposits estimated to exist adjacent to known deposits or areas with known potential. Possible potential resources are those estimated to occur in undiscovered or partly defined deposits in formations or geologic settings productive elsewhere within the same geologic province. Speculative potential resources are those estimated to occur in formations, geologic settings, or geologic provinces not previously productive.

Urban. A locality with 2,500 or more inhabitants as defined in the 1970 Census.

Wax. Includes all marketable wax whether crude scale or refined, in three grades: microcrystalline, crystalline-fully refined, and other crystalline.

Well. A hole drilled for the purpose of finding or producing crude oil or natural gas or providing services related to the production of crude oil or natural gas. Wells are classified as oil wells, gas wells, dry holes, stratigraphic or core tests, or service wells.

Working Gas. The total volume of gas in a storage reservoir that is in excess of the base gas.

Working Interest. An interest in a mineral property that entitles the owner of that interest to all or a share of mineral production from the property, usually subject to a royalty.

Explanatory Notes

1. Production of Electricity. Data on the production of electricity in the United States represents gross electricity output measured at the generator terminals, minus powerplant use (net electricity generated). International nuclear electricity production data are gross electricity output.

2. Consumption of Primary Energy by End-Use Sector. Sector data are derived from the end-use sector table of each energy commodity. The "Other" sector in the Electric Utility Sales table is allocated to the Residential and Commercial Sector, except for the railways' portion of "Other," which is allocated to the Transportation Sector.

3. Primary Energy Production—International. Includes only crude oil and lease condensate, natural gas plant liquids, dry natural gas, coal, and electricity from hydropower and nuclear power. Crude oil production is measured at the wellhead and includes lease condensate. Natural gas plant liquids are products obtained from processing natural gas at natural gas processing plants, including natural gas plants, cycling plants, and fractionators. Dry natural gas production is that amount of natural gas production that is available to be marketed and consumed as a gas. Coal (anthracite, subanthracite, bituminous, subbituminous, lignite, and brown coal) production is the sum of sales, mine consumption, issues to miners, and issues to coking, briquetting, and other ancillary plants at mines. Coal production data include quantities extracted from surface and underground workings and normally exclude wastes removed at mines or associated preparation plants. The production of electricity from hydropower and nuclear power includes both electric utility and industrial production reported on a net basis, thus excluding electricity that is generally used by the electric powerplant for its own operating purposes or electricity losses in the transformers that are considered integral parts of the station.

4. Reclassified. Accurate calculation of the quantity of petroleum products supplied to the domestic market is complicated by the recycling of products at the refinery, the renaming of products involved in a transfer, and the receipt of products from outside of the primary supply system. Beginning in 1981, a single adjustment (always a negative quantity) is made to total product supplied to correct this accounting problem. The calculation of this adjustment, called "reclassified," involves only unfinished oils and gasoline blending components. It is the sum of their net changes in primary stocks (net withdrawals is a plus quantity, net additions is a minus quantity) plus imports minus net input to refineries.

5. Refined Petroleum Product Supplied. Total refined petroleum product supplied is the sum of all refined petroleum products supplied. For each product, the amount supplied is calculated by adding production, crude oil burned directly, and imports and subtracting changes in primary stocks (net withdrawals is a plus quantity; net additions is a minus quantity) and exports. This term is synonymous with the term "Refined Petroleum Product Consumption" in the Energy Overview Section. End-use sector data for petroleum products used in more than one sector are derived from surveys of sales to ultimate consumers by refiners, marketers, distributors, and dealers and from receipts at electric utilities. See Explanatory Notes 12 and 13.

6. Joint Petroleum Reporting System. Beginning in January 1981, several Energy Information Administration survey forms and calculation methodologies were changed to reflect new developments in refinery and blending plant practices and to improve data integrity. These changes affect production and product supplied statistics for motor gasoline, distillate fuel oil, and residual fuel oil, and stocks of motor gasoline. On the new basis, motor gasoline production during the last half of 1980 would have averaged 289,000 barrels per day higher than that which was published on the old basis. Distillate and residual fuel oil production and product supplied for all of 1980 would have averaged, respectively, 105,000 and 54,000 barrels per day higher than the numbers that were published.

7. Primary Oil Stocks—OECD. Oil stocks reported by the Organization for Economic Cooperation and Development (OECD) include those held at (or in) the following locations or facilities: leases, refineries, natural gas processing plants, bulk terminals, tanks associated with pipelines, barges, intercoastal tankers, ocean tankers in port, inland ship bunkers, major final consumers, and the strategic storage reserve. For an individual country, stocks include those held for the account of that country but located in another country. U.S. stocks (as reported to the OECD) include those held in the 50 States, the District of Columbia,

Puerto Rico, and the Virgin Islands. The OECD definition of oil stocks excludes oil in pipelines, rail tank cars, tank trucks, oceangoing ship bunkers, service stations, retail stores, and tankers at sea.

8. Refiner Acquisition Cost of Crude Oil. This cost was estimated for 1968 through 1973. The cost of domestic crude oil was derived by adding estimated transportation costs to the reported average wellhead value. The cost of imported crude oils was derived by adding an estimated ocean transport cost based on the published "Average Freight Rate Assessment" to the average "Free Alongside Ship" value published by the U.S. Bureau of the Census. The composite cost was derived by weighting domestic costs and imported costs based on quantities produced and imported.

9. Natural Gas Consumption. Natural gas consumption statistics are compiled from a survey of natural gas production, transmission, and distribution companies and electric utility companies. Consumption by end-use sector from these surveys is compiled on a national and individual State basis and then balanced with national and individual State supply data. Included in end-use data are the following: Commercial Sector—consumption by manufacturing establishments, by municipalities for institutional heating and lighting, and those engaged in agriculture, forestry, and fishing; Electric Utility Sector—consumption by electric utilities for the generation of electric power; Industrial Sector—consumption by establishments engaged primarily in processing unfinished materials into another form of product (includes mining, petroleum refining, manufacturing, and natural gas industry use for lease and plant fuel); Residential Sector—consumption by private households for space heating, cooking, and other household uses; Transportation Sector—natural gas transmission (pipeline) fuel.

10. Coal Consumption. Data in this report on the consumption of bituminous coal, lignite, and anthracite are generated primarily from consumption data reported in surveys. Included are data reported by all powerplant companies, all coke plant companies, approximately 75 percent of the industrial and large commercial establishments, and approximately 25 percent of the retail dealers. Remaining data for the industrial and large commercial establishments are estimated based on factors updated every 5 years in the *Census of Manufacturers*, a Bureau of the Census publication. The remaining data on retail dealers are based on the balance of supply and disposition. Included in end-use sector data are the following: Electric Utility Sector—consumption by privately- and publicly-owned establishments engaged in the generation and/or distribution of electric power primarily for sale or resale; Industrial Sector—consumption at manufacturing plants, and large commercial establishments, for coking at steel plants, and for miscellaneous uses; Transportation Sector—sales to railroads and vessel bunker fuel; Residential and Commercial Sector—retail dealer sales to households and small commercial establishments for bituminous coal and lignite and the balance of supply and disposition for anthracite.

11. Electricity Sales. Data on the sales of electric utility electricity represent gross electricity output measured at the generator terminals, minus powerplant use and transmission and distribution losses. Included in each end-use sector are the following: Commercial Sector—sales of electricity to businesses that generally require less than 1,000 kilowatts of service; Industrial Sector—sales of electricity to businesses that generally require more than 1,000 kilowatts of service; Residential Sector—sales of electricity to residences for household purposes; "Other" Sector—sales of electricity to Government, railways, street lighting authorities, and sales not elsewhere included.

12. Operating Reactors and Capacity. Prior to 1973, the number of "Year-End Licensed Reactors" includes reactors that were in commercial operation by December 31 of the stated year. Units decommissioned or inoperative for extended periods were generally included. Also included are two U.S. Department of Energy (DOE)-operated plants that supply electricity to the commercial grid. A third DOE plant, which does not distribute electricity to the grid, is excluded. For 1973 and forward, the number of reactors includes units issued low-power operating licenses and generally does not include units in long-term shutdown status. Prior to 1973, "Year-End Capacity" figures are gross kilowatts of installed capacity. For 1973 and forward, the capacity is net Maximum Dependable Capacity (MDC), except for some units in start-up testing for which the Design Electrical Rating (DER) value is used. Starting with 1980, the restricted capacity of "derated" units (i.e., units for which the Nuclear Regulatory Commission or the operating utility has imposed a "power limit") is used in place of either the MDC or DER capacity. This provides a more realistic estimate of available capacity.

13. Financial Reporting System (FRS) Companies. The structure of the FRS data system is designed to permit review of the functional performance of energy companies in total, as well as specific functions and

geographic areas of operation. Domestic operations include Puerto Rico and the Virgin Islands. Foreign operations exclude these areas. The following are the FRS companies:

Amerada Hess Corporation
American Petrofina, Incorporated
Ashland Oil, Incorporated
Atlantic Richfield Company
Burlington Northern, Incorporated
Cities Service Oil Company
Conoco Incorporated
Exxon Corporation
Getty Oil Company
Gulf Oil Corporation
Kerr-McGee Corporation
Marathon Oil Company
Mobil Oil Corporation
Occidental Petroleum Corporation
Phillips Petroleum Company
Shell Oil Company
Standard Oil Company (an Indiana Corporation)
Standard Oil Company of California
Sun Company, Incorporated
Tenneco Incorporated
Texaco, Incorporated
The Coastal Corporation
The Standard Oil Company (an Ohio Corporation)
The Superior Oil Company
Union Oil Company of California
Union Pacific Corporation

Units of Measure, Conversion Factors, Price Deflators, and Energy Equivalents

Approximate Heat Content of Refined Petroleum Products (Million Btu per Barrel)

Asphalt	6.636
Aviation Gasoline	5.048
Butane	4.326
Butane-propane mixture*	4.130
Distillate fuel oil	5.825
Ethane	3.082
Ethane-propane mixture**	3.308
Isobutane	3.974
Jet fuel—kerosene type	5.670
Jet fuel—naphtha type	5.355
Kerosene	5.670
Lubricants	6.065
Motor gasoline	5.253
Natural gasoline	4.620
Petrochemical feedstocks	
Naphtha 400° F or less	5.248
Other Oils over 400° F	5.825
Still gas	6.000
Petroleum coke	6.024
Plant condensate	5.418
Propane	3.836
Residual fuel oil	6.287
Road oil	6.636
Special naphtha	5.248
Still gas	6.000
Unfinished oils	5.825
Unfractionated stream	5.418
Wax	5.537
Miscellaneous	5.796

* 60 percent butane and 40 percent propane.
** 70 percent ethane and 30 percent propane.

Using Thermal Equivalent Conversion Factors

Btu conversion factors for hydrocarbons mixes are the weighted average of the Btu content of all hydrocarbons included in the mix. All Btu factors are computed from *final* annual data. If the current year's final data are not available, Btu conversion fators for the latest annual data are used.

Gross National Product (GNP) Implicit Price Deflators 1972=100

1952	57.92	1967	79.06
1953	58.82	1968	82.54
1954	59.55	1969	86.79
1955	60.84	1970	91.45
1956	62.79	1971	96.01
1957	64.93	1972	100.00
1958	66.04	1973	105.75
1959	67.60	1974	115.08
1960	68.70	1975	125.79
1961	69.33	1976	132.34
1962	70.61	1977	140.05
1963	71.67	1978	150.42
1964	72.77	1979	163.42
1965	74.36	1980	178.64
1966	76.76	1981	195.51
		1982	207.15

Source: U.S. Department of Commerce, Bureau of Economic Analysis

Weight

1 short ton	contains	2,000 pounds
1 metric ton	contains	1.102 short tons
1 long ton	contains	1.120 short tons

Volume

1 cubic foot	contains	0.028 cubic meters
1 cubic meter	contains	35.315 cubic feet
1 U.S. barrel	contains	42 U.S. gallons

Conversion Factors for Crude Oil (Average Gravity)

1 U.S. barrel	weighs	0.136 metric tons
1 U.S. barrel	weighs	0.150 short tons
1 metric ton	contains	7.33 U.S. barrels
1 short ton	contains	6.65 U.S. barrels

Electricity Consumption ..... *3,412 Btu/kilowatt-hour*
Hardwood (Dry) ..... *8,000-9,000 Btu/pound*

Thermal Conversion Factors: Petroleum and Natural Gas Plant Liquids, 1952-1982

(Million Btu per Barrel)

Year	Petroleum Consumption				
	Consumption of All Petroleum Products by All Users	Consumption of All Petroleum Products by Residential and Commercial Users Only	Consumption of All Petroleum Products by Industrial Users Only	Consumption of All Petroleum Products for Transportation Use Only	Consumption of All Petroleum Products by Electric Utilities Only
1952	5.621	5.621	5.904	5.443	6.254
1953	5.608	5.606	5.895	5.426	6.254
1954	5.595	5.603	5.881	5.413	6.254
1955	5.591	5.607	5.864	5.408	6.254
1956	5.585	5.601	5.853	5.407	6.254
1957	5.577	5.587	5.839	5.406	6.254
1958	5.567	5.582	5.829	5.394	6.254
1959	5.557	5.549	5.809	5.390	6.254
1960	5.555	5.571	5.798	5.389	6.267
1961	5.552	5.571	5.792	5.388	6.268
1962	5.545	5.556	5.781	5.388	6.267
1963	5.534	5.532	5.754	5.386	6.266
1964	5.528	5.517	5.724	5.390	6.267
1965	5.532	5.535	5.723	5.389	6.267
1966	5.532	5.523	5.715	5.391	6.266
1967	5.515	5.473	5.674	5.395	6.266
1968	5.504	5.450	5.637	5.398	6.263
1969	5.492	5.399	5.595	5.397	6.259
1970	5.503	5.404	5.595	5.396	6.252
1971	5.504	5.392	5.589	5.394	6.245
1972	5.500	5.368	5.554	5.392	6.233
1973	5.515	5.387	5.559	5.399	6.245
1974	5.504	5.377	5.530	5.397	6.238
1975	5.494	5.358	5.520	5.395	6.250
1976	5.504	5.383	5.529	5.399	6.251
1977	5.518	5.389	5.546	5.405	6.249
1978	5.519	5.382	5.542	5.409	6.251
1979	5.494	5.471	5.415	5.430	6.258
1980	5.479	5.468	5.373	5.442	6.254
1981	5.448	5.408	5.306	5.436	6.258
1982[1]	5.448	5.354	5.383	5.429	6.258

[1] Preliminary.
Note: See Thermal Conversion Factor Documentation.

Thermal Conversion Factors: Petroleum and Natural Gas Plant Liquids, 1952-1982 (Continued)

(Million Btu per Barrel)

Year	Petroleum Production, Imports, and Exports							Natural Gas Plant Liquids
	Production of Crude Oil and Lease Condensate	Imports of Crude Oil and Petroleum Products	Imports of Crude Oil Only	Imports of Petroleum Products Only	Exports of Crude Oil and Petroleum Products	Exports of Crude Oil Only	Exports of Petroleum Products Only	Production
1952	5.8	6.067	5.938	6.261	5.774	5.8	5.768	4.464
1953	5.8	6.052	5.924	6.268	5.742	5.8	5.732	4.450
1954	5.8	6.052	5.931	6.252	5.745	5.8	5.738	4.415
1955	5.8	6.040	5.924	6.234	5.768	5.8	5.765	4.406
1956	5.8	6.024	5.916	6.225	5.754	5.8	5.744	4.382
1957	5.8	6.023	5.918	6.219	5.780	5.8	5.774	4.369
1958	5.8	5.993	5.916	6.091	5.779	5.8	5.778	4.366
1959	5.8	6.020	5.916	6.142	5.829	5.8	5.830	4.311
1960	5.8	6.021	5.911	6.161	5.834	5.8	5.835	4.295
1961	5.8	5.991	5.900	6.102	5.832	5.8	5.833	4.283
1962	5.8	6.004	5.890	6.138	5.841	5.8	5.842	4.273
1963	5.8	6.002	5.894	6.126	5.840	5.8	5.841	4.264
1964	5.8	5.998	5.882	6.129	5.844	5.8	5.845	4.268
1965	5.8	5.997	5.872	6.123	5.743	5.8	5.742	4.264
1966	5.8	5.993	5.863	6.112	5.729	5.8	5.728	4.259
1967	5.8	5.999	5.838	6.128	5.777	5.8	5.758	4.232
1968	5.8	5.977	5.836	6.095	5.763	5.8	5.762	4.218
1969	5.8	5.974	5.825	6.093	5.714	5.8	5.713	4.170
1970	5.8	5.985	5.822	6.088	5.810	5.8	5.811	4.146
1971	5.8	5.961	5.824	6.062	5.775	5.8	5.775	4.117
1972	5.8	5.935	5.809	6.045	5.741	5.8	5.741	4.070
1973	5.8	5.897	5.817	5.983	5.752	5.8	5.752	4.049
1974	5.8	5.884	5.827	5.959	5.774	5.8	5.773	4.011
1975	5.8	5.858	5.821	5.935	5.748	5.8	5.747	3.984
1976	5.8	5.856	5.808	5.980	5.745	5.8	5.743	3.964
1977	5.8	5.834	5.810	5.908	5.797	5.8	5.796	3.941
1978	5.8	5.839	5.802	5.955	5.808	5.8	5.814	3.925
1979	5.8	5.810	5.810	5.811	5.832	5.8	5.864	3.955
1980	5.8	5.796	5.812	5.748	5.820	5.8	5.841	3.914
1981	5.8	5.775	5.818	5.659	5.821	5.8	5.837	3.930
1982[1]	5.8	5.775	5.818	5.659	5.821	5.8	5.837	3.930

[1] Preliminary.

Note: See Thermal Conversion Factor Documentation.

Thermal Conversion Factors: Natural Gas, 1952-1982

(Btu per Cubic Foot)

Year	Dry Natural Gas						Wet Natural Gas Production
	Production	Consumption	Consumption by Electric Utilities Only	Consumption by Non-Utility Users Only	Imports	Exports	
1952	1,035	1,035	1,035	1,035	1,035	1,035	1,115
1953	1,035	1,035	1,035	1,035	1,035	1,035	1,116
1954	1,035	1,035	1,035	1,035	1,035	1,035	1,115
1955	1,035	1,035	1,035	1,035	1,035	1,035	1,120
1956	1,035	1,035	1,035	1,035	1,035	1,035	1,116
1957	1,035	1,035	1,035	1,035	1,035	1,035	1,113
1958	1,035	1,035	1,035	1,035	1,035	1,035	1,110
1959	1,035	1,035	1,035	1,035	1,035	1,035	1,109
1960	1,035	1,035	1,035	1,035	1,035	1,035	1,107
1961	1,035	1,035	1,035	1,035	1,035	1,035	1,108
1962	1,035	1,035	1,035	1,035	1,035	1,035	1,107
1963	1,031	1,031	1,031	1,031	1,031	1,031	1,103
1964	1,032	1,032	1,032	1,032	1,032	1,032	1,102
1965	1,032	1,032	1,032	1,032	1,032	1,032	1,101
1966	1,033	1,033	1,033	1,033	1,033	1,033	1,103
1967	1,032	1,032	1,032	1,032	1,032	1,032	1,105
1968	1,031	1,031	1,031	1,031	1,031	1,031	1,115
1969	1,031	1,031	1,031	1,031	1,031	1,031	1,103
1970	1,031	1,031	1,031	1,031	1,031	1,031	1,102
1971	1,031	1,031	1,031	1,031	1,031	1,031	1,103
1972	1,027	1,027	1,027	1,027	1,027	1,027	1,100
1973	1,021	1,021	1,024	1,020	1,026	1,023	1,093
1974	1,024	1,024	1,022	1,024	1,027	1,016	1,097
1975	1,021	1,021	1,026	1,020	1,026	1,014	1,095
1976	1,020	1,020	1,023	1,019	1,025	1,013	1,093
1977	1,021	1,021	1,029	1,019	1,026	1,013	1,093
1978	1,019	1,019	1,034	1,016	1,030	1,013	1,088
1979	1,021	1,021	1,034	1,018	1,037	1,013	1,092
1980	1,016	1,026	1,034	1,024	1,022	1,013	1,088
1981	1,015	1,027	1,034	1,025	1,014	1,011	1,091
1982[1]	1,015	1,027	1,034	1,025	1,014	1,011	1,091

[1] Preliminary.
Note: See Thermal Conversion Factor Documentation.

Thermal Conversion Factors: Bituminous Coal and Lignite, Anthracite, and Coal Coke, 1952-1982

(Million Btu per Short Ton)

Year	Bituminous Coal and Lignite						Anthracite					Coal Coke
	Production	Consumption by All Users	Consumption by Electric Utilities Only	Consumption by Non-Utility Users Only	Imports	Exports	Production	Consumption by All Users	Consumption by Electric Utilities Only	Consumption by Non-Utility Users Only	Imports and Exports	Imports and Exports
1952	26.20	26.20	26.20	26.20	25.00	27.00	24.65	24.54	24.54	24.54	25.40	26.00
1953	26.20	26.20	26.20	26.20	25.00	27.00	24.57	24.48	24.48	24.48	25.40	26.00
1954	26.20	26.20	26.20	26.20	25.00	27.00	24.62	24.55	24.55	24.55	25.40	26.00
1955	26.00	25.84	25.84	25.84	25.00	27.00	24.55	24.53	24.53	24.53	25.40	26.00
1956	25.98	25.74	25.74	25.74	25.00	27.00	24.34	24.13	24.13	24.13	25.40	26.00
1957	25.98	25.72	25.72	25.72	25.00	27.00	24.26	24.01	24.01	24.01	25.40	26.00
1958	25.98	25.54	25.54	25.54	25.00	27.00	24.52	24.42	24.42	24.42	25.40	26.00
1959	25.68	25.48	25.48	25.48	25.00	27.00	24.34	24.24	24.24	24.24	25.40	26.00
1960	25.66	25.48	24.03	26.70	25.00	27.00	24.28	24.20	24.20	24.20	25.40	26.00
1961	25.58	25.38	24.00	26.66	25.00	27.00	24.42	24.33	24.33	24.33	25.40	26.00
1962	25.58	25.34	23.99	26.65	25.00	27.00	24.39	24.20	24.20	24.20	25.40	26.00
1963	25.52	25.30	23.96	26.70	25.00	27.00	24.21	23.86	23.86	23.86	25.40	26.00
1964	25.50	25.28	23.93	26.73	25.00	27.00	24.13	23.89	23.89	23.89	25.40	26.00
1965	25.42	25.22	23.84	26.77	25.00	27.00	24.14	23.95	23.95	23.95	25.40	26.00
1966	25.30	25.10	23.70	26.77	25.00	27.00	23.95	23.75	23.75	23.75	25.40	26.00
1967	25.16	24.94	23.55	26.75	25.00	27.00	23.51	23.25	23.25	23.25	25.40	26.00
1968	25.06	24.86	23.53	26.79	25.00	27.00	23.35	23.06	23.06	23.06	25.40	26.00
1969	24.90	24.66	23.27	26.81	25.00	27.00	23.41	23.04	23.04	23.04	25.40	26.00
1970	24.58	24.22	22.60	26.84	25.00	27.00	23.40	23.04	23.04	23.04	25.40	26.00
1971	24.24	23.96	22.32	27.12	25.00	27.00	23.50	23.16	23.16	23.16	25.40	26.00
1972	24.05	23.75	22.22	26.93	25.00	27.00	23.42	23.02	23.02	23.02	25.40	26.00
1973	24.01	23.65	22.26	26.84	25.00	27.00	23.17	22.71	17.92	24.34	25.40	26.00
1974	23.73	23.07	21.80	26.12	25.00	27.00	22.56	21.95	17.20	23.75	25.40	26.00
1975	23.20	22.80	21.66	25.81	25.00	27.00	23.39	21.74	17.06	23.65	25.40	26.00
1976	23.15	22.75	21.69	25.87	25.00	27.00	22.77	22.15	17.53	23.84	25.40	26.00
1977	22.70	22.33	21.48	25.13	25.00	27.00	23.18	22.69	17.24	24.99	25.40	26.00
1978	22.43	22.14	21.28	25.07	25.00	27.00	23.52	22.97	17.10	25.17	25.40	26.00
1979	22.59	22.20	21.38	25.06	25.00	27.00	23.59	22.70	17.45	25.20	25.40	26.00
1980	22.46	22.00	21.30	25.06	25.00	26.40	23.35	22.16	17.65	23.74	25.40	26.00
1981	22.38	21.80	21.09	24.96	25.00	26.18	23.69	22.10	18.17	25.12	25.40	26.00
1982[1]	22.38	21.80	21.09	24.96	25.00	26.18	23.69	22.10	18.17	25.12	25.40	26.00

[1] Preliminary.

Note: See Thermal Conversion Factor Documentation.

Thermal Conversion Factors: Hydropower, Nuclear Power, Geothermal Power, and Wood and Waste,[1] 1952-1982

(Thousand Btu per Kilowatt-Hour)

Year	Hydropower	Nuclear Power	Geothermal Power	Wood and Waste [1]
1952	13.361	(2)	(2)	13.361
1953	12.889	(2)	(2)	12.889
1954	12.180	(2)	(2)	12.180
1955	11.699	(2)	(2)	11.699
1956	11.456	(2)	(2)	11.456
1957	11.365	11.629	(2)	11.365
1958	11.085	11.629	(2)	11.085
1959	10.970	11.629	(2)	10.970
1960	10.760	11.629	23.200	10.760
1961	10.650	11.629	23.200	10.650
1962	10.558	11.629	23.200	10.558
1963	10.482	11.877	22.184	10.482
1964	10.462	11.912	22.184	10.462
1965	10.453	11.804	22.184	10.453
1966	10.415	11.623	22.184	10.415
1967	10.432	11.555	21.770	10.432
1968	10.398	11.297	21.606	10.398
1969	10.447	11.037	21.606	10.447
1970	10.494	10.977	21.606	10.494
1971	10.478	10.837	21.655	10.478
1972	10.379	10.792	21.668	10.379
1973	10.389	10.903	21.674	10.389
1974	10.442	11.161	21.674	10.442
1975	10.406	11.013	21.611	10.406
1976	10.373	11.047	21.611	10.373
1977	10.435	10.769	21.611	10.435
1978	10.361	10.941	21.611	10.361
1979	10.353	10.640	21.545	10.353
1980	10.388	10.908	21.637	10.388
1981	10.388	10.908	21.594	10.388
1982[3]	10.388	10.908	21.594	10.388

[1] Consumed at electric utilities only.
[2] Not Applicable.
[3] Preliminary.
Note: See Thermal Conversion Factor Documentation.

Energy Equivalents

One Million Btu equals approximately:

90	pounds of bituminous coal and lignite production (1982)
125	pounds of oven-dried wood
8	gallons of motor gasoline or enough to move the average passenger car about 124 miles (1981 rate)
10	therms of natural gas (dry)
11	gallons of propane
1.2	days of per capita energy consumption in the United States (1982 rate)
2	months of dietary intake of a laborer
20	cases (240 bottles) of table wine

One million Btu of fossil fuels burned at electric utilities can generate about 100 kilowatt-hours of electricity, while about 300 kilowatt-hours of electricity generated at electric utilities can produce about one million Btu of heat.

One quadrillion Btu equals approximately:

44	million short tons of bituminous coal and lignite production
63	million short tons of oven-dried wood
1	trillion cubic feet of natural gas (dry)
170	million barrels of crude oil
500	thousand barrels per day of crude oil for one year
35	days of petroleum imports into the United States (1982 rate)
30	days of United States motor gasoline usage (1982 rate)

One barrel of crude oil equals approximately:

5.7	thousand cubic feet of natural gas (dry)
0.26	short tons of bituminous coal and lignite production
1,700	kilowatt-hours of electricity consumed

One short ton of bituminous coal and lignite production equals about:

3.9	barrels of crude oil
22	thousand cubic feet of natural gas (dry)
6,600	kilowatt-hours of electricity consumed

One thousand cubic feet of natural gas equals approximately:

0.18	barrels (or 7.5 gallons) of crude oil
0.045	short tons (or 90 pounds) of bituminous coal and lignite production
300	kilowatt-hours of electricity consumed

One thousand kilowatt-hours of electricity equal approximately:

0.59	barrels of crude oil (although it takes about 1.7 barrels of oil to produce 1,000 kWh)
0.15	short tons of bituminous coal and lignite production (although it takes about 0.5 short tons to produce 1,000 kWh)
3,300	cubic feet of natural gas—dry (although it takes about 10,000 cubic feet to produce 1,000 kWh)

Approximate U.S. Daily Per Capita Consumption of Types of Energy in 1982

Natural gas (dry), including consumption at electric utility powerplants	212 cubic feet
Natural gas (dry), excluding consumption at electric utility powerplants	174 cubic feet
Coal, including consumption at electric utility powerplants	17 pounds
Coal, excluding consumption at electric utility powerplants	2.6 pounds
Hydropower electricity	4.1 kilowatt-hours
Nuclear power electricity	3.3 kilowatt-hours
Electricity, including hydropower and nuclear power electricity	25 kilowatt-hours
Refined petroleum products, including consumption at electric utility powerplants	2.8 gallons
Refined petroleum products, excluding consumption at electric utility powerplants	2.6 gallons
Motor gasoline	1.2 gallons

Thermal Conversion Factor Documentation

This section provides documentation and methodologies for developing the thermal conversion factors used in this report.

PETROLEUM AND NATURAL GAS PLANT LIQUIDS

Asphalt. • 1952-1982: Energy Information Administration adopted the thermal conversion factor of 6.636 million British thermal units (Btu) per barrel as estimated by the Bureau of Mines and first published in the *Petroleum Statement, Annual, 1956.*

Aviation Gasoline. • 1952-1982: Energy Information Administration adopted the thermal conversion factor of 5.048 million Btu per barrel as adopted by the Bureau of Mines from the Texas Eastern Transmission Corporation publication *Competition and Growth in American Energy Markets 1947-1985,* 1968.

Butane. • 1952-1982: Energy Information Administration adopted the Bureau of Mines thermal conversion factor of 4.326 million Btu per barrel as published by the Gas Processors Suppliers Association/Gas Processors Association in the *Engineering Data Book,* Ninth Edition, 1972.

Butane–Propane Mixture. • 1952-1982: Energy Information Administration adopted the Bureau of Mines calculation of 4.130 million Btu per barrel based on an assumed mixture of 60 percent butane and 40 percent propane. See **Butane** and **Propane.**

Distillate Fuel Oil. • 1952-1982: Energy Information Administration adopted the Bureau of Mines thermal conversion factor of 5.825 million Btu per barrel as reported in a Bureau of Mines internal memorandum, *Bureau of Mines Standard Average Heating Value of Various Fuels, adopted January 3, 1950.*

Ethane. • 1952-1982: Energy Information Administration adopted the Bureau of Mines thermal conversion factor of 3.082 million Btu per barrel as published by the Gas Processors Suppliers Association/Gas Processors Association in the *Engineering Data Book,* Ninth Edition, 1972.

Ethane–Propane Mixture. • 1952-1982: Energy Information Administration calculation of 3.308 million Btu per barrel based on an assumed mixture of 70 percent ethane and 30 percent propane. See **Ethane** and **Propane.**

Isobutane. • 1952-1982: Energy Information Administration adopted the Bureau of Mines thermal conversion factor of 3.974 million Btu per barrel as published by the Gas Processors Suppliers Association/Gas Processors Association in the *Engineering Data Book,* Ninth Edition, 1972.

Jet Fuel, Kerosene Type. • 1952-1982: Energy Information Administration adopted the Bureau of Mines thermal conversion factor of 5.670 million Btu per barrel as published for "Jet Fuel, Commercial" by the Texas Eastern Transmission Corporation in the report *Competition and Growth in American Energy Markets 1947-1985,* 1968.

Jet Fuel, Naphtha Type. • 1952-1982: Energy Information Administration adopted the Bureau of Mines thermal conversion factor of 5.355 million Btu per barrel as published for "Jet Fuel, Military" by the Texas Eastern Transmission Corporation in the report *Competition and Growth in American Energy Markets 1947-1985,* 1968.

Kerosene. • 1952-1982: Energy Information Administration adopted the Bureau of Mines thermal conversion factor of 5.670 million Btu per barrel as reported in a Bureau of Mines internal memorandum, *Bureau of Mines Standard Average Heating Values of Various Fuels, adopted January 3, 1950.*

Lubricants. • 1952-1982: Energy Information Administration adopted the thermal converson factor of 6.065 million Btu per barrel as estimated by the Bureau of Mines and first published in the *Petroleum Statement, Annual, 1956.*

Motor Gasoline. • 1952-1982: Energy Information Administration adopted the Bureau of Mines thermal conversion factor of 5.253 million Btu per barrel as published for "Gasoline, Motor Fuel" by the Texas Eastern Transmission Corporation in the report *Competition and Growth in American Energy Markets 1947-1985,* 1968.

Natural Gasoline • 1952-1982: Energy Information Administration adopted the thermal conversion factor of 4.620 million Btu per barrel as estimated by the Bureau of Mines and first published in the *Petroleum Statement, Annual, 1956.*

Petrochemical Feedstocks, Naphtha 400 degrees F or Less. • 1952-1982: Assumed by the Energy Information Administration to be 5.248 million Btu per barrel, equal to the thermal conversion factor for special naphtha. See **Special Naphtha.**

Petrochemical Feedstock, Over 400 degrees F. • 1952-1982: Assumed by the Energy Information Administration to be 5.825 million Btu per barrel, equal to the thermal conversion factor for distillate fuel oil. See **Distillate Fuel Oil.**

Petrochemical Feedstock, Still Gas. • 1952-1982: Assumed by the Energy Information Administration to be 6.000 million Btu per barrel, equal to the thermal conversion factor for still gas. See **Still Gas.**

Petroleum Coke. • 1952-1982: Energy Information Administration adopted the thermal conversion factor of 6.024 million Btu per barrel as reported in Btu per short ton in the Bureau of Mines internal memorandum *Bureau of Mines Standard Average Heating Value of Various Fuels, adopted January 3, 1950.* Bureau of Mines calculated this factor by dividing the 30,120,000 Btu per short ton as given in the referenced Bureau of Mines internal memorandum by 5.0 per barrel per short ton as given in the Bureau of Mines Form 6-1300-M and successor EIA forms.

Plant Condensate. • 1952-1982: Estimated to be 5.418 million Btu per barrel by Energy Information Administration from data provided by McClanahan Consultants, Inc., Houston, Texas.

Propane. • 1952-1982: Energy Information Administration adopted the Bureau of Mines thermal conversion factor of 3.836 million Btu per barrel as published by the Gas Processors Suppliers Association/Gas Processors Association in the *Engineering Data Book,* Ninth Edition, 1972.

Residual Fuel Oil. • 1952-1982: Energy Information Administration adopted the thermal conversion factor of 6.287 million Btu per barrel as reported in the Bureau of Mines internal memorandum *Bureau of Mines Standard Average Heating Values of Various Fuels, adopted January 3, 1950.*

Road Oil. • 1952-1982: Energy Information Administration adopted the Bureau of Mines thermal conversion factor of 6.636 million Btu per barrel which was assumed to be equal to that of asphalt (see **Asphalt**) and was first published by the Bureau of Mines in the *Petroleum Statement, Annual, 1970.*

Special Naphtha. • 1952-1982: Energy Information Administration adopted the Bureau of Mines thermal conversion factor of 5.248 million Btu per barrel which was assumed to be equal to that of total gasoline (aviation and motor) factor and was first published in the *Petroleum Statement, Annual, 1970.*

Still Gas. • 1952-1982: Energy Information Administration adopted the Bureau of Mines estimated thermal conversion factor of 6.000 million Btu per barrel and first published in the *Petroleum Statement, Annual, 1970.*

Unfinished Oil. • 1952-1982: Energy Information Administration assumed the thermal conversion factor to be 5.825 million Btu per barrel or equal to that for distillate fuel oil (see **Distillate Fuel Oil**) and first published in the *Annual Report to Congress, Volume 3, 1977.*

Unfractionated Stream. • 1952-1982: Energy Information Administration assumed the thermal conversion factor to be 5.418 million Btu per barrel or equal to that for natural gasoline (see **Natural Gasoline**) and first published in the *Annual Report to Congress, Volume 2, 1981.*

Wax. • 1952-1982: Energy Information Administration adopted the thermal conversion factor of 5.537 million Btu per barrel as estimated by the Bureau of Mines and first published in the *Petroleum Statement, Annual, 1956.*

Miscellaneous Products. • 1952-1982: Energy Information Administration adopted the thermal conversion factor of 5.796 million Btu per barrel as estimated by the Bureau of Mines and first published in the *Petroleum Statement, Annual, 1956.*

Consumption of All Petroleum Products by All Users. • 1952-1981: Calculated annually by Energy Information Administration as the average of the thermal conversion factors for all petroleum products consumed, weighted by the quantity of each petroleum product consumed.

Consumption of All Petroleum Products by Residential and Commercial Users Only. • 1952-1981: Calculated annually by Energy Information Administration as the average of the thermal conversion factors for all petroleum products consumed by the residential and commercial sector, weighted by the estimated quantity of each petroleum product consumed in the residential and commercial sector. During 1960 through 1981, the quantity of petroleum products consumed is estimated in the State Energy Data System as documented in the *State Energy Data Report.*

Consumption of All Petroleum Products by Industrial Users Only. • 1952-1981: Calculated annually by Energy Information Administration as the average of the thermal conversion factors for all petroleum products consumed in the industrial sector, weighted by the estimated quantity of each petroleum product consumed in the industrial sector. During 1960 through 1981, the quantity of petroleum products consumed is estimated in the State Energy Data System as documented in the *State Energy Data Report.*

Consumption of All Petroleum Products for Transportation Use Only. • 1952-1981: Calculated annually by Energy Information Administration as the average of the thermal conversion factor for all petroleum products consumed in the transportation sector, weighted by the estimated quantity of each petroleum product consumed in the transportation sector. During 1960 through 1981, the quantity of petroleum products consumed is estimated in the State Energy Data System as documented in the *State Energy Data Report.*

Consumption of All Petroleum Products by Electric Utilities Only. • 1952-1981: Calculated annually by Energy Information Administration as the average of the thermal conversion factors for all petroleum products consumed at electric utilities, weighted by the quantity of each petroleum product consumed at electric utilities. During 1960 through 1981, the quantity of petroleum consumed is estimated in the State Energy Data System as documented in the *State Energy Data Report.*

Production of Crude Oil and Lease Condensate. • 1952-1981: Energy Information Administration adopted the thermal conversion factor of 5.800 million Btu per barrel as reported in a Bureau of Mines internal memorandum *Bureau of Mines Standard Average Heating Values of Various Fuels adopted January 3, 1950.*

Imports of Crude Oil and Petroleum Products. • 1952-1981: Calculated annually by Energy Information Administration as the average of the thermal conversion factors for each petroleum product and each crude oil imported weighted by the quantity of each petroleum product and each type of crude oil imported. See **Imports of Crude Oil Only** and **Imports of Petroleum Products Only.**

Imports of Crude Oil Only. • 1952-1981: Calculated annually by Energy Information Administration by weighting the thermal conversion factor of each type of crude oil imported by the quantity imported. Thermal conversion factors for each type were calculated on a foreign country basis, by determining the average American Petroleum Institute (API) gravity of crude imported from each foreign country from form ERA-60 in 1977 and converting average API gravity to average Btu content using National Bureau of Standards, Miscellaneous Publication No. 97, *Thermal Properties of Petroleum Products,* 1933.

Imports of Petroleum Products Only. • 1952-1981: Calculated annually by Energy Information Administration as the average of the thermal conversion factors for each petroleum product imported weighted by the quantity of each petroleum product imported.

Exports of Crude Oil and Refined Products. • 1952-1981: Calculated annually by Energy Information Administration as the average of the thermal conversion factors for each petroleum product exported and crude oil exported weighted by the quantity of each petroleum product and crude oil exported. See **Exports of Petroleum Products Only** and **Exports of Crude Oil Only.**

Exports of Crude Oil Only. • 1952-1981: Assumed by Energy Information Administration to be 5.800 million Btu per barrel or equal to the thermal conversion factor for crude oil produced in the United States. See **Production of Crude Oil and Lease Condensate.**

Exports of Petroleum Products Only. • 1952-1981: Calculated annually by Energy Information Administration as the average of the thermal conversion factors for each petroleum product weighted by the quantity of each petroleum product exported.

Natural Gas Plant Liquids. • 1952-1981: Calculated annually by Energy Information Administration as the average of the thermal conversion factors of each natural gas plant liquid produced weighted by the quantity of each natural gas plant liquid produced.

NATURAL GAS

Dry Natural Gas Production. • 1952-1979: Assumed by Energy Information Administration to be equal to the thermal conversion factor for the consumption of dry natural gas. See **Dry Natural Gas, Consumption.** • 1980-1981: Calculated annually by Energy Information Administration by subtracting from the total quantity of dry natural gas production including the quantity of nonhydrocarbons, subsequently removed, then multiplying the resulting difference by the conversion factor for dry natural gas consumption (see **Dry Natural Gas, Consumption**) then dividing the resulting product (which is total heat content of dry natural gas production) by the total quantity of dry natural gas production, including the non-hydrocarbon gases subsequently removed.

Dry Natural Gas, Consumption. • 1952-1962: Energy Information Administration adopted the thermal conversion factor of 1,035 Btu per cubic feet as estimated by the Bureau of Mines and first published in the *Petroleum Statement, Annual, 1956.* • 1963-1979: Energy Information Administration adopted the thermal conversion factor calculated annually by the American Gas Association (AGA) and published in *Gas Facts,* an AGA annual. • 1980-1981: Calculated annually by Energy Information Administration by dividing the total heat content of natural gas consumed by the total quantity of natural gas consumed. Heat content and quantity consumed are from Form EIA-176.

Dry Natural Gas, Consumption by Electric Utilities Only. • 1952-1972: Assumed by Energy Information Administration to be equal to the thermal conversion factor for the consumption of dry natural gas. See **Dry Natural Gas, Consumption.** • 1973-1981: Calculated annually by Energy Information Administration by dividing the total heat content of natural gas consumed at electric utilities. The heat contents are from Form FPC-423 and the quantities consumed are from Form EIA-759 and predecessor forms.

Dry Natural Gas, Consumption by Non-Electric Utility Users Only. • 1952-1972: Assumed by Energy Information Administration to be equal to the thermal conversion factor for the consumption of dry natural gas. See **Dry Natural Gas, Consumption.** • 1973-1981: Calculated annually by Energy Information Administration by dividing the heat content of natural gas consumed by non-electric utility consumers by the quantity of non-electric utility natural gas consumed. Data are from Forms EIA-176, FPC-423, EIA-759, and predecessor forms.

Dry Natural Gas, Imports. • 1952-1972: Assumed by Energy Information Administration to be equal to the thermal conversion factor for the consumption of dry natural gas. See **Dry Natural Gas, Consumption.** • 1973-1981: Calculated annually by Energy Information Administration by dividing the heat content of imported natural gas by the quantity of natural gas imported, both reported on Form FPC-14.

Dry Natural Gas, Exports. • 1952-1972: Assumed by Energy Information Administration to be equal to the thermal conversion factor for the consumption of dry natural gas. See **Dry Natural Gas, Consumption.** • 1973-1981: Calculated annually by Energy Information Administration by dividing the heat content of exported natural gas by the quantity of natural gas exported, both reported on Form FPC-14.

Wet Natural Gas Production. • 1952-1979: Calculated annually by Energy Information Administration by adding the heat content of dry natural gas production and the total heat content of natural gas plant liquids production and dividing this sum by the total quantity of marketed (wet) natural gas production. • 1980-1981: Calculated annually by Energy Information Administration by adding the total heat content of natural gas production, including nonhydrocarbons subsequently removed, and the total heat content of natural gas plant liquids production and dividing this sum by the total quantity of marketed (wet) natural gas production, including nonhydrocarbons subsequently removed.

Bituminous Coal and Lignite, Production. • 1952-1954: Energy Information Administration adopted the Bureau of Mines estimate of 26.20 million Btu per short ton, first reported in the Bureau of Mines publication *Average Heating Values of American Coal by Rank and by State,* Information Circular 7538, 1949. • 1955-1981: Calculated annually by Energy Information Administration by adding the heat content of bituminous coal and lignite consumption and the heat content of bituminous coal and lignite exports then subtracting the heat content of bituminous coal and lignite imports and dividing the remaining heat content by the sum of the quantity of bituminous coal and lignite consumption and the quantity of net trade (exports minus imports) of bituminous coal and lignite.

Bituminous Coal and Lignite, Consumption. • 1952-1954: Energy Information Administration adopted the Bureau of Mines assumption that the thermal conversion factor was 26.20 million Btu per short ton, equal to that for bituminous coal and lignite production. See **Bituminous Coal and Lignite, Production.** • 1955-1959: Energy Information Administration adopted the Bureau of Mines assumption that the thermal conversion factor was equal to that of bituminous coal and lignite consumption at electric utilities. See **Bituminous Coal and Lignite, Consumption at Electric Utilities Only.** • 1960-1981: Calculated annually by Energy Information Administration by the addition of the heat content of bituminous coal and lignite consumed by electric utilities plus the heat content of bituminous coal and lignite consumed by non-electric utility consumers and dividing this sum by the total quantity of bituminous coal and lignite consumed.

Bituminous Coal and Lignite, Consumption by Electric Utilities Only. • 1952-1954: Energy Information Administration adopted the Bureau of Mines assumption that the thermal conversion factor was 26.20 million Btu per short ton, equal to that for bituminous coal and lignite production. See **Bituminous Coal and Lignite, Production.** • 1955-1972: Energy Information Administration adopted the average thermal conversion factor of the Bureau of Mines which adopted the National Coal Association (NCA) average thermal conversion factor for electric utilities calculated from Form FPC-1 and published in *Steam Electric Plant Factors,* an NCA annual. • 1973-1981: Calculated annually by Energy Information Administration by dividing the total heat content of bituminous coal and lignite consumed at electric utilities by the total quantity consumed by electric utilities. Heat contents are from Form FPC-423 and quantities consumed are from Form EIA-759 and predecessor forms.

Bituminous Coal and Lignite, Consumption by Non-Electric Utility Users Only. • 1952-1954: Energy Information Administration adopted the Bureau of Mines assumption that the thermal conversion factor was 26.20 million Btu per short ton, equal to that for bituminous coal and lignite production. See **Bituminous Coal and Lignite, Production.** • 1955-1959: Energy Information Administration adopted the Bureau of Mines assumption that the average thermal conversion factor was equal to that of bituminous coal and lignite consumption at electric utilities. See **Bituminous Coal and Lignite, Consumption by Electric Utilities Only.** • 1960-1981: Calculated annually by Energy Information Administration as the addition of the heat content of bituminous coal and lignite consumed at coke plants (estimated to have an average thermal conversion factor of 26.00 million Btu per short ton) plus the heat content of bituminous coal and lignite consumed by other industrial consumers and the transportation sector (estimated to have an average thermal conversion factor of 24.00 million Btu per short ton) plus the heat content of bituminous coal and lignite consumed by the residential and commercial sectors (estimated to have an average thermal conversion factor of 25.00 million Btu per short ton; and then dividing this accumulated heat content by the accumulated quantity of bituminous coal and lignite consumed at coke plants, by other industrial users, in the transportaion sector and by residential and commercial users.

Bituminous Coal and Lignite, Imports. • 1952-1981: Energy Information Administration estimates that the average thermal conversion factor to be 25.00 million Btu per short ton.

Bituminous Coal and Lignite, Exports. • 1952-1979: Assumed by Energy Information Administration to be all metallurgical coal and to have an average thermal content of 27.00 million Btu per short ton. • 1980-1981: Calculated annually by Energy Information Administration by the addition of the heat content of exported metallurgical coal (estimated to average 27.00 million Btu per short ton) plus the heat content of exported steam coal (estimated to have an average thermal content of 25.00 million Btu per short ton); and then dividing this accumulated heat content by the total quantity of bituminous coal and lignite exported.

Anthracite, Production. • 1952-1981: Calculated annually by Energy Information Administration by adding the heat content of freshly mined anthracite (estimated to have an average thermal content of 25.40 million Btu per short ton) and the heat content of anthracite recovered from culm banks (estimated to have a thermal content of 19.00 million Btu per short ton); and then dividing this sum by the total quantity of anthracite production.

Anthracite, Average Consumption by All Users. • 1952-1981: Calculated annually by Energy Information Administration by adding the heat content of anthracite production plus the heat content of anthracite imports (see **Anthracite Imports**) less the heat content of anthracite exports, including shipments to U.S. Armed Forces overseas and dividing this total heat content by the total quantity of anthracite consumed.

Anthracite, Consumption by Electric Utilities Only. • 1952-1972: Energy Information Administration adopted the Bureau of Mines assumption that the average thermal conversion factor is equal to total for anthracite consumption (see **Anthracite, Average Consumption by All Users**). • 1973-1981: Calculated annually by Energy Information Administration by dividing the heat content of anthracite receipts at electric utilities by the quantity of anthracite consumed at electric utilities. The heat content of receipts are from Form FPC-423 and quantities consumed are from Form EIA-759 and predecessor forms.

Anthracite, Consumption by Non-Electric Utility Users Only. • 1952-1972: Energy Information Administration adopted the Bureau of Mines assumption that the heat content was equal to that of total anthracite consumption (see **Anthracite Average Consumption by All Users**). • 1973-1981: Calculated annually by Energy Information Administration by subtracting the total heat content of anthracite consumed at electric utilities from the total heat content of all anthracite consumed and dividing the resulting amount by the quantity of anthracite consumed by non-electric utility users.

Anthracite, Imports and Exports. • 1952-1982: Energy Information Administration assumed the anthracite imports and exports to be freshly mined anthracite having an estimated heat content of 25.40 million Btu per short ton.

Coal Coke, Imports and Exports. • 1952-1982: Estimated by Energy Information Administration to be 26.00 million Btu per short ton.

HYDROPOWER, NUCLEAR POWER, GEOTHERMAL POWER, AND WOOD AND WASTE

Hydropower. There is no generally accepted practice for measuring hydropower thermal conversion rates. Energy Information Administration has selected a rate that is equal to the prevailing heat rate factor at fossil fuel steam electric powerplants. By using the heat rate factor, it is possible to evaluate fossil fuel requirements for replacing hydropower production during periods of drought. Furthermore, it allows for better comparisons with certain other countries such as Norway where hydropower is the principal means for producing electricity. The heat content of a kilowatt-hour of electricity produced, regardless of the generation process, is 3,412 Btu per kilowatt-hour. • 1952-1980: Assumed by Energy Information Administration to be the weighted average annual heat rate for all fossil fuel steam-electric plants in the United States as published in *Thermal-Electric Plant Construction Cost and Annual Production Expenses—1980* and *Steam-Electric Plant Construction Cost and Annual Production Expenses—1978.*

Nuclear Power. • 1957-1980: Calculated annually by Energy Information Administration by dividing the total heat content consumed in reactors at nuclear plants by the total (net) electricity generated by nuclear plants as reported on Form FPC-1, EIA-412 and predecessor forms.

Geothermal Power. • 1960-1981: Calculated by Energy Information Administration by weighting the average annual heat rates of operating geothermal units by the installed nameplate capacities as reported on Form FPC-12.

Wood and Waste (Consumed at Electric Utilities Only). • 1952-1980: Assumed by Energy Information Administration to be the weighted average annual heat rate for all fossil fuel steam-electric plants in the United States as published in *Thermal-Electric Plant Construction Cost and Annual Production Expenses—1980* and *Steam-Electric Plant Construction Cost and Annual Production Expenses—1978.*

Appendix 1. Census Regions

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