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Short-Term Energy Outlook



Quarterly Projections

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Short-Term Energy Outlook Projections
Energy Information Administration

Preface

The Energy Information Administration (EIA) quarterly forecasts of short-term energy supply, demand, and prices are revised in February, May, August, and November for publication in the Short-Term Energy Outlook (Outlook). Methodology volumes, which are published periodically, contain descriptions of major changes in the forecasting system, an analysis of previous forecast errors, and detailed analyses of current issues that affect EIA's short-term energy forecasts. The principal users of the Outlook are managers and energy analysts in private industry and government. The projections in this volume extend through the first half of 1985.

The forecasts are produced using the Short-Term Integrated Forecasting System (STIFS). The STIFS model uses two principal driving variables: a macroeconomic forecast and the world oil price assumptions. Macroeconomic forecasts produced by Data Resources, Incorporated, (DRI) are adjusted by EIA to reflect EIA projections of the world price of crude oil, which differ from DRI estimates. EIA's Oil Market Simulation Model is used to project the world oil prices.

The three projections for petroleum supply and demand are based on low, medium, and high economic growth scenarios which incorporate high, medium, and low crude oil price trajectories. The discussion and tables in this volume primarily refer to the medium, or base case, scenario and, unless otherwise noted, to the domestic situation. Other cases examining the sensitivity of total petroleum demand to varying assumptions about prices, weather, and economic activity are shown in Table 13. Discussions of the world oil price refer to the cost of imported crude oil to U.S. refiners. All percentage changes are calculated from the values in the tables rather than from the rounded numbers cited in the text.

The forecasts and historical data are based on EIA data published in the Monthly Energy Review, Petroleum Supply Monthly, and other EIA publications. Minor discrepancies between the data in these publications and the historical numbers in this Outlook are due to independent rounding.

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1. Highlights

Domestic petroleum demand in 1984 is expected to show an increase, on an annual basis, for the first time since 1978. Due to the projected continuation of the current economic recovery, domestic petroleum consumption in 1984 is expected to average 15.6 million barrels per day--3.0 percent higher than the 1983 demand of 15.2 million barrels per day. (The base case projections are summarized on Table 1.) This forecast is still 2.7 percent below the 1981 level of 16.1 million barrels per day, despite projected 1984 industrial output (the key variable driving industrial demand for petroleum) of almost 10 percent above the 1981 level, and projected world oil prices (adjusted for inflation) of nearly 32 percent below 1981 average prices. U.S. petroleum demand in the first half of 1985 is projected to average 15.5 million barrels per day, slightly below the year-earlier level.

Compared to the February 1984 Short-Term Energy Outlook forecast, projected domestic demand for petroleum in 1984 is down slightly, despite assumptions of more robust economic activity and a stable world oil price. This downward revision primarily reflects higher expected automobile efficiency and conservation of residual fuel oil in the industrial and utility sectors. Data for the first quarter of 1984 show a slightly higher rate of economic recovery than previously forecast; as a result, manufacturing activity is now projected to rise by 11 percent between 1983 and 1984 and by 4.7 percent between first-half 1984 and first-half 1985. World oil prices are expected to remain stable at \$29 per barrel (in nominal terms) throughout the forecast period. This analysis assumes no major disruption of world oil markets, an event that could have major impacts on the domestic oil price and on the supply, demand, and imports situation.

U.S. energy needs are expected to be met by a higher level of oil imports in the short term, as domestic crude oil production is forecast to remain constant between 1983 and 1984. Likewise, demand for oil imports in other major consuming countries is projected to strengthen because of increased oil consumption and a reversal of the drawdown of petroleum inventories that occurred over the past 2 years. An important assumption underlying this forecast for oil imports is that OPEC will maintain the \$29 per barrel marker crude price and increase production quotas as needed to meet demand.

Oil consumption in the market economies (a category which excludes Communist countries) is projected to increase in 1984 for the first time since 1979. However, their demand for oil is expected to be met comfortably by current production with no appreciable rise in the world oil price during 1984. The economic growth that is underway in the industrial nations is expected to continue, thus increasing demand for petroleum throughout 1984. The market economies' demand for petroleum is projected to increase by about 1.3 percent between 1983 and 1984 and by 1.1 percent between first-half 1984 and first-half 1985. Market economies' production of oil in the first half of 1985 is projected to be 1.7 percent above the year-earlier level.

Domestic coal consumption is projected to increase by 8 percent between 1983 and 1984, compared with a 4-percent increase between 1982 and 1983. This forecast is contingent upon growth in electricity generation of nearly 5 percent from 1983 to 1984. In order to meet the projected increase in coal demand between 1983 and 1984, it is estimated that coal production will increase by 11 percent. This forecast was developed under the assumption that there will not be a coal strike in 1984. The forecast data, however, take into account historical production and stock alterations in anticipation of a strike.

Table 1. Summary of Base Case Assumptions and Projections

	History			Projec- tions	Annual Percentage Change		
	1981	1982	1983	1984	1981-82	1982-83	1983-84
Assumptions							
Real Gross National Product (billion 1972 dollars)	1,514	1,485	1,535	1,626	-1.9	3.4	5.9
Index of Industrial Production (index, 1967=100)	150.3	137.5	148.2	164.7	-8.5	7.8	11.1
Average Cost of Imported Crude Oil (nominal dollars per barrel)	37.05	33.55	29.30	28.97	-9.4	-12.7	-1.1
Price Projections (nominal values)							
Motor Gasoline ^a (dollars per gallon)	1.35	1.28	1.22	1.22	-5.2	-4.7	0.0
Residential Heating Oil (dollars per gallon)	1.21	1.19	1.08	1.09	-1.7	-9.2	0.9
Residential Natural Gas (dollars per thousand cubic feet)	4.29	5.17	5.99	6.25	20.5	15.9	4.3
Residential Electricity (cents per kWh)	6.20	6.86	7.18	7.52	10.6	4.7	4.7
Consumption Projections							
Total Market Economies Petroleum Consumption (million barrels per day)	47.4	45.7	45.1	45.7	-3.6	-1.3	1.3
U.S. Total Petroleum Consumption (million barrels per day)	16.06	15.30	15.18	15.63	-4.7	-0.8	3.0
Motor Gasoline	6.59	6.54	6.62	6.64	-0.8	1.2	0.3
Distillate Fuel Oil	2.83	2.67	2.68	2.86	-5.7	0.4	6.7
Residual Fuel Oil	2.09	1.72	1.40	1.42	-17.7	-18.6	1.4
Other Petroleum ^b	4.55	4.37	4.48	4.71	-4.0	2.5	5.1
Net Petroleum Imports (million barrels per day, including SPR)	5.40	4.30	4.25	5.00	-20.4	-1.2	17.6
Coal Consumption (million short tons)	733	707	737	797	-3.5	4.2	8.1
Natural Gas Consumption (trillion cubic feet)	19.40	18.00	17.03	17.95	-7.2	-5.4	5.4
Electricity Generation (billion kilowatt-hours)	2,295	2,241	2,310	2,419	-2.4	3.1	4.7
Total Energy Consumption (quadrillion Btu)	73.94	70.82	70.57	74.44	-4.2	-0.4	5.5
Thousand Btu/1972 Dollar of GNP	48.84	47.69	45.97	45.78	-2.4	-3.6	-0.4

^a Average for all grades and services.

^b Includes Reclassified Petroleum Products (products rerun through the refinery process).

^c SPR = Strategic Petroleum Reserve.

Note: Minor discrepancies with other published EIA historical data are due to independent rounding.

Sources: Historical data: Energy Information Administration, Monthly Energy Review, DOE/EIA-0035(84/02); 1982 International Energy Annual, DOE/EIA-0219(82); Organization for Economic Cooperation and Development, Quarterly Oil Statistics, Fourth Quarter 1983; Petroleum Economics Limited's World Quarterly Primary Energy and Supply/Demand, January 25, 1984; Petroleum Marketing Monthly, DOE/EIA-0380(84/02); Monthly Petroleum Product Price Report, DOE/EIA-0032(82/13); Petroleum Supply Monthly, DOE/EIA-0109(84/03); 1982 Petroleum Supply Annual, DOE/EIA-340(83/06); Natural Gas Monthly, DOE/EIA-0130(84/03); Electric Power Monthly, DOE/EIA-0026(84/03); Quarterly Coal Report, DOE/EIA-0121(83/4Q). Macroeconomic forecasts based on modifications to Data Resources, Inc., forecast CONTROL042484.

The highlights from the base case forecast are:

- Total U.S. petroleum consumption in 1983 was 15.2 million barrels per day, slightly below the level in 1982. As the economic recovery continues into 1984, petroleum consumption is projected to rise by approximately 3.0 percent above year-earlier levels. Total U.S. petroleum consumption in the first half of 1985 is projected to be 0.6 percent below the first-half 1984 level.
 - Motor gasoline consumption increased by 1.2 percent between 1982 and 1983, but is projected to remain almost flat between 1983 and 1984.
 - Distillate fuel oil remained at about 2.7 million barrels per day in 1982 and 1983. A 6.7-percent increase in distillate consumption, to 2.9 million barrels per day, is projected for 1984.
 - Residual fuel oil consumption decreased by almost 19 percent in 1983 from the 1982 level. In 1984, residual oil consumption is projected to be 1.42 million barrels per day, slightly above the 1983 level.
- Net oil imports in 1983, at about 4.3 million barrels per day, were about the same as the 1982 level. An 18-percent year-to-year rise in net imports, to about 5.0 million barrels per day, is projected for 1984. Net oil imports for the first half of 1985 are projected to average 4.7 million barrels per day, the same as the first-half 1984 level.
- Natural gas consumption in 1983 was 17.0 trillion cubic, the lowest level since 1966. In 1984, assuming continued economic recovery and normal weather, natural gas consumption is projected to be nearly 18 trillion cubic feet. In 1984, natural gas production is projected to be 17.6 trillion cubic feet, a 10-percent increase over the production level in 1983. Natural gas production in the first half of 1985 is projected to be 0.2 percent below the first-half 1984 level.
- Domestic coal consumption is expected to increase by about 8 percent in 1984, to 797 million tons. Coal consumption in the first half of 1985 is forecast to increase by nearly 5 percent from the first-half 1984 level. Coal exports declined by 26 percent from 1982 to 1983, primarily because of the depressed world economy and increased competition from Polish exports.

Because of a sharp decline in coal exports, significant withdrawals from domestic inventories, and weak growth in domestic consumption, U.S. coal production is estimated to have fallen by more than 6 percent, to 785 million tons, in 1983. In 1984, all categories of coal consumption (excluding exports) are expected to increase, leading to record-high coal production of 874 million tons, 11 percent above the year-earlier level. Coal production is expected to remain at about the same level between first-half 1984 and first-half 1985.

- Total electric power generation increased by 3.1 percent from 1982 to 1983, to 2,310 billion kilowatt-hours. As a result of the projected healthy growth in the economy, especially in the industrial sector, a

4.7-percent increase in electricity generation is projected between 1983 and 1984. Electric power generation between first-half 1984 and first-half 1985 is expected to increase by 2.2 percent.

- Generation from coal, nuclear power, and hydroelectric power increased from 1982 to 1983, while petroleum- and natural gas-fired generation declined. Levels of electricity generation from coal and nuclear power are projected to show significant increases from 1983 to 1984.
- Hydroelectric generation, which averaged about 283 billion kilowatt-hours per year since 1973, was 332 billion kilowatt-hours in 1983, a record 17 percent above the average level. The 1984 projection reflects a continuation of higher than normal levels of hydroelectric generation due to the current high water availability.
- Net imports of electricity were about 35 billion kilowatt-hours in 1983, up significantly from year-earlier levels. An increase of about 3 billion kilowatt-hours is forecast for electricity imports between 1983 and 1984.
- Total U.S. energy consumption (as measured by gross energy consumption) was 70.6 quadrillion Btu in 1983, and is projected to rise by 5.5 percent, to 74.4 quadrillion Btu, in 1984 (see Table 1). Total U.S. energy consumption is expected to increase by about 1 percent between first-half 1984 and first-half 1985.
- The energy intensity of U.S. economic activity declined to 46.0 thousand Btu per 1972 dollar of GNP in 1983. With U.S. energy use projected to rise somewhat less rapidly than GNP from 1983 to 1984, a further slight decline in the energy/GNP ratio to 45.8 thousand Btu per 1972 dollar of GNP is expected.

It should be noted that the forecasts previously discussed are this Outlook's base case forecasts. Additional sensitivity cases are published for petroleum supply and disposition, based on the combined effects of alternative economic growth rates and oil prices. Should the imported crude oil prices and economic growth that occur during the forecast period differ from the base case assumptions, it is estimated that:

- For each 1-percent increase in GNP above the forecast levels, petroleum consumption and total imports in 1984 would increase by 200,000 barrels per day (approximately 1.3 percent and 3.4 percent, respectively).
- For each \$1-per-barrel (approximately 3.5 percent) decline in the price of imported crude oil, petroleum consumption and total imports in 1984 would increase by 60,000 barrels per day (approximately 0.4 percent and 1.0 percent, respectively).
- For each 10-percent increase in heating degree days (from the base case level) during the first and fourth quarters, petroleum consumption and total imports would increase by an average of 280,000 barrels per day (approximately 1.8 percent and 4.8 percent, respectively).
- For each 15-percent increase in cooling degree days (from the base case level) during the second and third quarters, petroleum consumption and total imports would increase (because of higher electric utility demand for residual fuel oil) by an average of 30,000 barrels per day (approximately 0.2 percent and 0.5 percent, respectively).

2. The Outlook

Forecast Assumptions

World Oil Prices

The price of imported crude oil delivered to U.S. refiners is assumed to stabilize in the neighborhood of \$29 per barrel in the base case projections. Several factors have been responsible for downward pressure on crude oil prices during the last 2 years: Declining energy demand due to conservation and a generally depressed world economy; inventory drawdowns and resulting lower imports in major consuming countries; and additional oil production, particularly by countries that are not members of the Organization of Petroleum Exporting Countries (OPEC).

In the base case, the nominal price of imported crude oil is assumed to remain level through 1984 and the first half of 1985 because:

- Projected higher demands for oil compared with recent levels are expected to counteract downward pressure due to the excess crude oil production capacity, especially in OPEC.
- The large drawdown of inventories, which contributed to the decline in crude oil prices during the last 2 years, appears to have ended in 1983. With no significant change projected for inventory levels (seasonally adjusted) during 1984 and the first half of 1985, this source of downward pressure on prices will also be absent from the market.
- Recent attempts to restrain OPEC crude oil production are assumed to succeed to the extent that they prevent a major surge of additional production and a resulting price war. It is, however, expected that crude oil production will be raised sufficiently to meet projected demand.

The three alternative forecast cases presented in this Outlook incorporate differing economic growth and price assumptions in order to provide a range of energy consumption projections. The petroleum price assumptions associated with these cases are as follows (see Figure 1):

- High Economic Growth Case: As a result of lower levels of petroleum demand and/or higher levels of production than expected in the base case, the average price of imported crude oil to U.S. refiners is assumed to fall to \$25 per barrel in the second quarter of 1984, and then to remain at that level for the remainder of the forecast period.
- Base Case: The price of imported crude oil is assumed to remain at \$29 per barrel throughout 1984 and the first half of 1985.
- Low Economic Growth Case: As a result of increased tension and concerns about the availability of future supply in the oil market, the price of imported crude oil is assumed to rise at more than twice the U.S. rate of inflation and to average nearly \$32 per barrel by the second quarter of 1985.

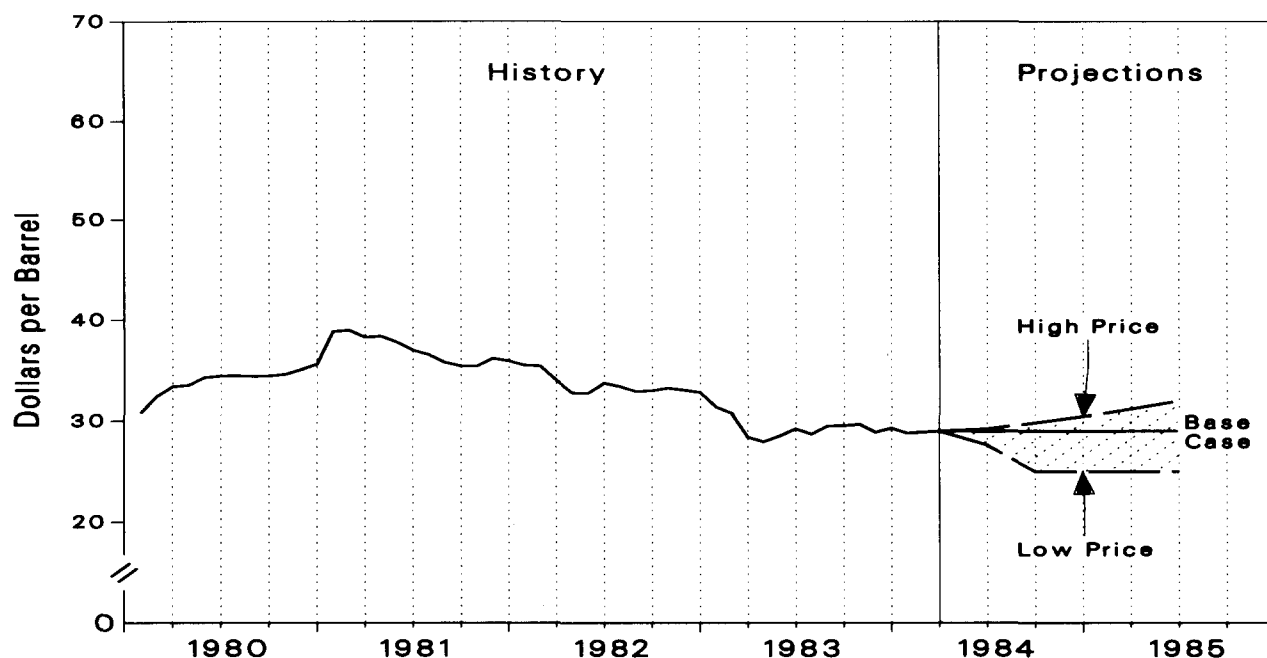


Figure 1. Imported Crude Oil Prices

The assumptions used to generate the high and low projections are designed to produce the widest probable variation in demand, given the current range of forecasts for these variables. For example, the high growth case uses the low assumed world oil price. This scenario does not imply that high economic growth will result in a lower oil price nor is this case necessarily inconsistent. Rather, this case is designed to show the effects on petroleum demand of the extreme ranges of these variables.

Macroeconomic Activity

The economic recovery that began in the first quarter of 1983 is projected to continue through the forecast period. Real Gross National Product (GNP) is projected to grow by 5.9 percent from 1983 to 1984, and then slow to 2.8 percent between first-half 1984 and first-half 1985. This projection is based on the Data Resources, Incorporated, (DRI) CONTROL042484 forecast of April 1984, modified to reflect the projected base case price of imported oil.

Real Disposable Personal Income (RDPI) is projected to increase almost as rapidly as real GNP, growing by 5.7 percent from 1983 to 1984. Manufacturing activity, which rose by 7.8 percent from 1982 to 1983, is forecast to increase by more than 11 percent from 1983 to 1984. Inflation, as measured by the GNP implicit price deflator, is projected to continue recent trends; the deflator increased by 4.2 percent from 1982 to 1983 and is projected to rise by 4.0 percent in 1984. (Assumptions pertaining to the price of imported crude oil, the economy, and weather are shown in Table 2.)

Table 2. Macroeconomic, Price, and Weather Data Assumptions for Low, Base, and High Economic Growth Cases

Assumptions	History											Projections							
	1981 Year	1982				1983				1984 Year	Economic Growth	1984				1985			
	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year	1st	2nd		
Macroeconomic (billion 1972 dollars)																			
Real Gross National Product ^a	1,514	1,486	1,489	1,486	1,481	1,485	1,490	1,525	1,553	1,573	1,535	1,604	High	1,621	1,641	1,656	1,631	1,671	1,685
													Base	1,619	1,635	1,644	1,626	1,652	1,660
													Low	1,618	1,633	1,638	1,623	1,642	1,644
Percent Change from Prior Year	2.6	-1.6	-1.6	-2.6	-1.7	-1.9	0.3	2.4	4.5	6.2	3.4	7.7	High	6.3	5.7	5.3	6.3	4.2	3.9
													Base	6.2	5.3	4.5	5.9	3.0	2.5
													Low	6.1	5.2	4.1	5.7	2.4	1.6
GNP Implicit Price Deflator (Index, 1972=100)	195.1	203.4	206.1	208.0	210.0	206.9	212.8	214.6	216.4	218.5	215.6	220.7	High	223.3	226.3	229.6	225.0	233.8	238.0
													Base	222.9	225.3	227.9	224.2	230.9	233.8
													Low	222.9	225.4	228.0	224.3	231.2	234.2
Percent Change from Prior Year	9.3	7.2	7.0	5.6	4.4	6.0	4.6	4.1	4.0	4.0	4.2	3.7	High	4.1	4.6	5.1	4.4	5.9	6.6
													Base	3.9	4.1	4.3	4.0	4.6	4.9
													Low	3.9	4.2	4.3	4.0	4.8	5.1
Real Disposable Personal Income ^b	1,055	1,055	1,060	1,059	1,066	1,060	1,074	1,083	1,100	1,122	1,095	1,149	High	1,155	1,164	1,169	1,159	1,179	1,187
													Base	1,153	1,159	1,165	1,157	1,176	1,182
													Low	1,153	1,159	1,163	1,156	1,174	1,178
Percent Change from Prior Year	3.3	1.3	1.3	-0.8	0.2	0.5	1.8	2.2	3.9	5.3	3.3	7.0	High	6.6	5.8	4.2	5.8	2.6	2.8
													Base	6.5	5.4	3.8	5.7	2.3	2.5
													Low	6.5	5.4	3.7	5.6	2.2	2.2
Index of Industrial Production (MFG) (Index, 1967=100)	150.3	139.8	138.1	137.7	134.5	137.5	138.4	145.2	152.8	156.5	148.2	160.9	High	164.2	167.9	170.9	166.0	174.2	177.1
													Base	163.6	166.5	167.9	164.7	169.2	170.5
													Low	163.4	166.0	166.3	164.2	166.3	166.1
Percent Change from Prior Year	2.4	-7.6	-9.4	-9.7	-7.2	-8.5	-1.0	5.1	11.0	16.4	7.8	16.3	High	13.1	9.9	9.2	12.0	8.3	7.9
													Base	12.7	9.0	7.3	11.1	5.2	4.2
													Low	12.5	8.6	6.3	10.8	3.4	1.7
Oil Price (U.S. nominal dollars/barrel)																			
Imported Crude Oil Prices ^c	37.05	35.03	33.13	33.14	33.07	33.55	30.20	28.57	29.27	29.35	29.30	28.89	High	27.62	25.00	25.00	26.63	25.00	25.00
													Base	29.00	29.00	29.00	28.97	29.00	29.00
													Low	29.20	29.82	30.45	29.59	31.20	31.98
U.S. Refiners' Cost ^d	35.24	33.05	31.20	31.53	31.78	31.87	29.62	28.61	28.87	28.94	28.99	28.76	High	27.26	24.63	24.63	26.32	24.63	24.63
													Base	28.63	28.63	28.63	28.66	28.63	28.63
													Low	28.84	29.46	30.08	29.29	30.84	31.61
Weather ^e (number of degree days)																			
Heating Degree Days	4,653	2,542	600	105	1,506	4,753	2,227	662	64	1,791	4,744	2,428		538	88	1,668	4,722	2,401	538
Cooling Degree Days	1,167	35	295	701	64	1,095	18	270	876	70	1,234	17		328	754	62	1,161	28	328

^aMacroeconomic projections from three DRI model forecasts are seasonally adjusted at annual rates, and modified as appropriate to the three world oil price cases. Historical data: U.S. Department of Commerce, Survey of Current Business, April 1984.

^bSeasonally adjusted at annual rates.

^cCost of imported crude oil to U.S. refiners.

^dU.S. Refiner Acquisition Cost of foreign and domestic crude oil.

^ePopulation-weighted average degree days, revised December 1981. A degree day indicates the temperature variation from 65°F (calculated as the simple average of the daily minimum and maximum temperatures).

Sources: Historical data: Energy Information Administration, Monthly Energy Review, DOE/EIA-0035(84/02); Bureau of Economic Analysis, U.S. Department of Commerce, Survey of Current Business, as revised, April 1984; National Oceanic and Atmospheric Administration, U.S. Department of Commerce, Monthly State, Regional, and National Heating Degree Days Weighted by Population, April 1984; and the Federal Reserve System, Data Release G.12.3., April 1984. Macroeconomic forecasts based on modifications to Data Resources, Inc., forecasts CONTROL042484 and OPTIM042684.

The consensus of private forecasters is that the economic recovery will continue through the first half of 1985. The sustainability of the recovery has been reinforced by recent data suggesting that the economy is not "overheating"; growth in some key sectors has slowed, and inflationary pressures from the recovery generally are not being felt yet, especially in labor markets. Reflecting this increased certainty about the strength of the recovery, this Outlook forecasts higher growth and a narrower band of variation in the high and low cases than was published in the February 1984 Outlook.

Alternative forecast cases are designated as high and low economic growth. These macroeconomic projections (as modified by the oil price paths) provide a range of possible paths for energy consumption above and below the base case forecast. The high economic growth case is based on a modification of the DRI forecast OPTIM042684, and assumes higher wage gains, stronger consumer confidence, and a lower dollar exchange rate than DRI's optimistic case, although a slightly higher interest rate. The high case projects that real GNP will grow by 6.3 percent from 1983 to 1984 and by 4.1 percent from first-half 1984 to first-half 1985. The low economic growth case is based on a modification of CONTROL042484, assuming higher interest rates, a higher dollar exchange rate, and lower consumer confidence. In the low growth case, real GNP is projected to grow by 5.7 percent between 1983 and 1984 and by 2.0 percent between first-half 1984 and first-half 1985.

The Effect of the Economic Recovery on Energy Demand

The current economic recovery has had a pronounced effect on aggregate energy demand. Table 3 shows the percent growth in key macroeconomic variables and total energy demand in 1983 by quarter. The economic recovery began in the second quarter of 1983, but did not result in an immediate increase in energy demand; total energy demand in that quarter decreased by 2 percent over year-earlier levels. This lag in energy response was probably a result of a relatively low level of capital utilization at the beginning of the recovery. Because the more energy-efficient capital was most likely being used, incremental changes in output did not require very much additional energy use. However, by the third quarter of 1983, total energy demand was higher than the year-earlier level, perhaps because of greater use of less efficient capital as utilization rates increased. By the fourth quarter of 1983, the growth in energy demand over year-earlier levels was identical to the growth in the Real Gross National Product (GNP).

Table 3. Economic and Energy Growth During the Recovery

	1983			
	Percent Change from Year-Earlier Levels			
	1st	2nd	3rd	4th
Economic Indicators^a				
Real Gross National Product	0.3	2.4	4.5	6.2
Real Disposable Personal Income	1.8	2.2	3.9	5.3
Index of Industrial Production				
All Manufacturing	-1.0	5.1	11.0	16.4
Chemicals	1.3	8.4	13.1	15.8
Primary Metals	-11.1	12.7	20.4	41.2
Paper	4.5	8.7	11.0	11.5
Petroleum	-6.7	0.1	1.1	0.2
Stone, Clay, and Glass	0.1	10.9	15.4	20.4
Energy Consumption^b				
Total Energy	-8.6	-2.1	3.4	7.0
Petroleum	-5.6	-3.5	2.2	4.0
Natural Gas	-16.2	-5.2	-3.7	7.4
Coal	-7.9	0.1	11.3	11.5
Total Industrial Energy Consumption				
	-10.5	-3.6	3.5	9.1

^aSource: Data Resources, Inc., Central Data Base.

^bTotal energy consumption by all sectors. Source: Monthly Energy Review, DOE/EIA-0035(84/02).

Much of the increase in total energy demand can be attributed to the performance (as measured by output) of the industrial sector, which was more than 16 percent above year-earlier levels by the fourth quarter of 1983. In the top five energy-intensive industries,¹ output began to increase in the second quarter of 1983. However, the largest increases were not observed until the fourth quarter, when the primary metals industry showed a 41-percent increase over year-earlier levels. The chemical, paper, and stone, clay, and glass industries also recorded growth between 11 and 20 percent from year-earlier levels in the fourth quarter of 1983. Output from the petroleum industry remained relatively low even during the fourth quarter of 1983 because of low levels of refinery operation in response to only small increases in demand for petroleum products. By the fourth quarter of 1983, total energy consumed in the industrial sector was 9.1 percent above the year-earlier level, compared with an increase of only 7.0 percent for total energy use (all sectors).

The growth in demand for energy products has not been uniform during the recovery. The demand for natural gas took longer to recover than the other fuels, increasing relative to year-earlier levels only by the fourth quarter of 1983. The increase in petroleum demand also was lower than the increase in total energy demand due to continued conservation trends. The demand for coal picked up rapidly as a result of increases in the demand for electricity. Growth in the use of energy is expected to continue to follow the economic recovery but at somewhat lower rates than overall GNP growth because of continued conservation and moderation in the growth rates of the highly cyclical energy-intensive industries.

¹The energy-intensive industries are defined as the chemical, primary metals, paper, petroleum, and stone, clay, and glass industries. These five industries accounted for 37 percent of all industrial energy use in 1981.

Energy Product Prices

Petroleum product prices in nominal terms (unadjusted for inflation) generally are expected to remain stable throughout the forecast period, in line with the assumption of constant world oil prices (see Figure 2 and Table 4). Product price fluctuations, which tend to be small under normal circumstances, result mainly from seasonal variations in demand. The forecast for the price of natural gas is discussed in the Natural Gas Decontrol box.

The retail price of motor gasoline fell by nearly 5 percent from 1982 to 1983, as a result of the decrease in the world oil price and adequate supplies. The nominal price of motor gasoline is expected to remain stable through 1984, although normal seasonal fluctuations will cause the price to increase during the peak driving season by an estimated 3 to 4 cents per gallon over the price in the first quarter. The price of gasoline is then forecast to rise slightly (by less than 1 cent per gallon) between the first half of 1984 and the first half of 1985, corresponding to expectations that retailers will increase their margins at approximately the rate of inflation.

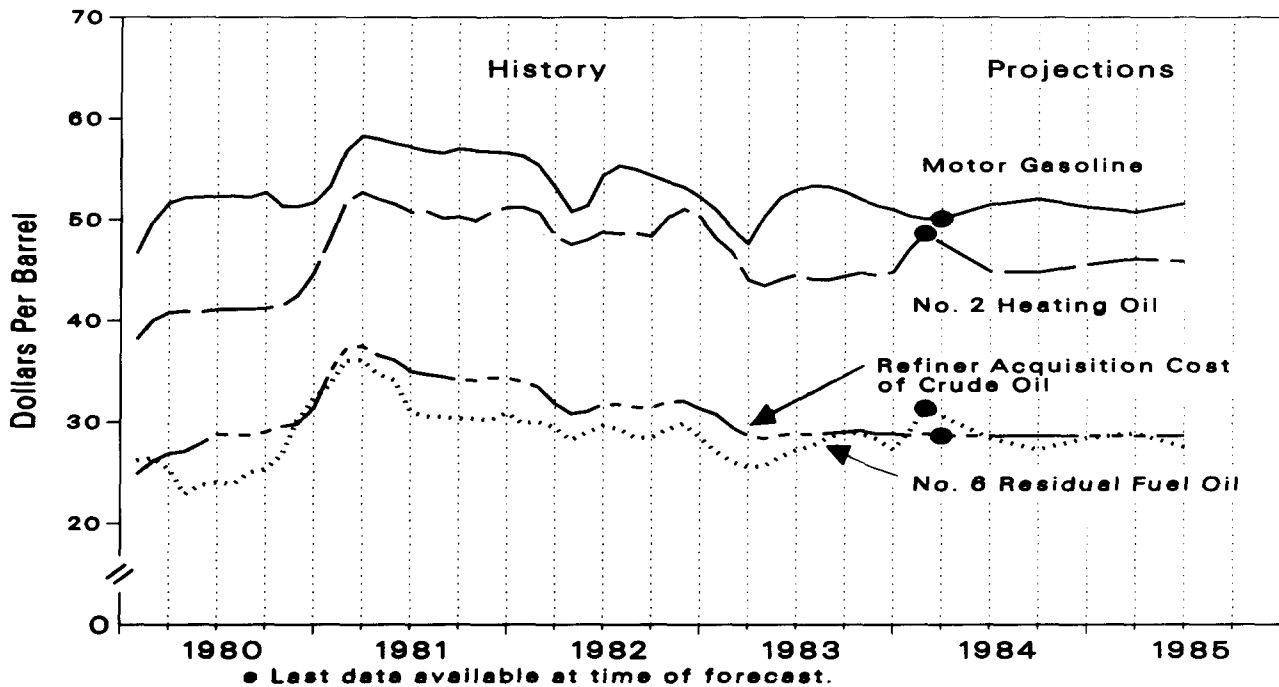


Figure 2. Retail Prices For Petroleum Products

The retail price of heating oil fell by 9 percent between 1982 and 1983. Most of this drop can be attributed to relatively low demand during the mild winter weather in the first quarter of 1983. Higher demand during the unusually cold weather in the last 2 weeks of 1983 and in January of 1984 reduced heating oil inventories and raised the average price of heating oil by 7 cents per gallon in the first quarter of 1984 over the fourth quarter 1983 level. Returning to the normal seasonal pattern, the nominal price of heating oil is projected to decline in the second and third quarters of 1984. Assuming normal weather throughout the remainder of the forecast period, the retail price of heating oil is expected to rise by about 1 percent from 1983 to 1984. This forecast is based on the assumptions that the price of crude oil remains level and margins rise at the rate of inflation.

In the first quarter of 1984, the domestic price of residual fuel oil exceeded the refiner acquisition cost of crude oil. This situation reflects a rising trend in residual fuel oil prices which could be the result of increased demand for heavy feedstocks. (The surge in demand during the first quarter of 1984 was caused by the unusually cold weather on the East Coast.) The price of residual fuel oil is expected to stay slightly below the price of crude oil for the remainder of 1984. Because of the large price increase in the beginning of 1984, the average price of residual fuel oil for the year is expected to increase by 4.6 percent (in nominal terms) over the 1983 level. In the first half of 1985, little change is expected for the price of residual fuel oil other than normal seasonal fluctuations.

The 4.7-percent rate of increase in the residential price of electricity between 1982 and 1983 is projected to continue in 1984, followed by a 6.9 percent increase forecast between first-half 1984 and first-half 1985. Over the forecast period, higher capital costs at electric utilities are expected to outweigh the expected lower aggregate fuel cost, resulting in higher electricity prices. Increased use of nuclear power and relatively cheap coal-fired generation is projected to reduce the overall fuel cost component of the electricity price. However, capacity additions and higher interest rates are expected to increase capital costs, more than offsetting the lower aggregate fuel cost.

Natural Gas Decontrol in 1985

Forecasting natural gas prices is complicated by the uncertainties of market reactions to wellhead price decontrol in 1985. Between January and December of 1983, the wellhead price of natural gas remained essentially unchanged after increasing for the last 10 years. Recent data show that the slowing of wellhead price increases may continue. However, on January 1, 1985, over 50 percent of the natural gas that is currently produced will be exempt from Federal controls on the wellhead price under the terms of the Natural Gas Policy Act (NGPA) of 1978. This measure could result in an increase in the real price of natural gas to the extent that decontrolled prices are allowed to rise under the price escalation clauses in existing contracts.

The annual average price of residential natural gas is projected to increase by 4.3 percent between 1983 and 1984, a rate slightly above the rate of inflation. The price of natural gas to electric utilities in 1984 is expected to rise somewhat less rapidly than the rate of inflation because of competition from residual fuel oil. Controls on the prices of some types of natural gas will be lifted on January 1, 1985. As a result, the residential price of natural gas is expected to increase by about 7.6 percent between the second quarter of 1985 and year-earlier levels.² The price of natural gas to electric utilities is expected to increase by 7.3 percent in the first half of 1985 over year-earlier levels. It is important to note that the actual price of residential natural gas for the first quarter of 1984 was lower than the annual projections would imply. If this trend continues, the natural gas price projections shown on Table 4 could be on the high side.

Natural gas prices may be either higher or lower after price decontrol, depending on a wide range of factors. The evidence supporting the forecast for higher gas prices in 1985 includes:

- The average price of natural gas under new contracts is currently about equal to the average wellhead price. As old, lower-cost natural gas is depleted, increased use of new natural gas will result in a higher average price over time.
- Many contracts contain indefinite price escalator clauses, which are tied to oil prices or the highest prices currently paid by others, and have no market-out provisions. After decontrol, prices at the wellhead under these contracts may increase to an oil-price equivalent, a level that is currently higher than the average natural gas price.
- The potential for invoking market-out clauses may have been exhausted during 1983. If so, options for pipeline companies to hold down price increases will be more limited than in the past.

- Take-or-pay clauses requiring some pipeline companies to purchase large amounts of high-priced gas may put upward pressure on prices. This effect will be exacerbated to the extent that the take-or-pay provisions force pipelines to take less low-cost gas when consumption falls.

On the other hand, some indications that market pressures could force natural gas prices to stay constant or even decline include:

- In many States, the Public Utility Commissions have allowed natural gas (at the burner-tip) to be priced more competitively with heating oil and fuel oil in markets that have fuel switching capability.
- Purchases of old, inexpensive natural gas, which is currently shut in because of low demand, should increase as demand increases.
- Producers may continue the recent trend of renegotiating contracts, in an attempt to maintain or increase their market share in a period of relatively weak demand and low-priced competing fuels.
- Some pipelines still are successfully invoking market-out clauses or unilaterally reducing prices or take-or-pay percentages. The results of many of these actions remain in the hands of the courts.
- Significant excess deliverability currently is believed to exist in the domestic gas market.

These uncertainties make the estimation of natural gas prices extremely difficult; under these circumstances, the entire range of forecasted prices should be considered equally likely. The low price forecast assumes no increase in the nominal wellhead price³ between 1983 and 1984, and only a slight increase during the first half of 1985. The high price case assumes a resumption of the upward trend in wellhead prices, with increases of about half the 1982-83 rate through the middle of 1985. Also in the high price case, residential margins (the difference between the wellhead price and the end-use price) are assumed to increase at the same rate as the wellhead price. Utility margins are assumed to remain fixed in real terms in the high case and fixed in nominal terms in the low case.

²The forecasts of natural gas prices in Table 4 are based on the detailed analysis published in the Annual Energy Outlook, DOE/EIA 0383(83). In the AEO, the real wellhead price in the base case is forecast to show no increase between 1983 and 1984 and to increase by 3 percent between 1984 and 1985.

³This price series is published in the Natural Gas Monthly, DOE/EIA-0130 (84/02).

International Petroleum Situation

Overview

The current international petroleum situation is a complex balance of world energy consumption (demand), world energy production (supply), petroleum inventory levels, OPEC pricing and production policies, economic growth rates, and political uncertainties in oil producing and consuming countries. This situation reflects varying degrees of uncertainty in these areas. While oil prices have been stable for the past year, there is uncertainty regarding the rate of economic growth and the extent to which economic recovery will be translated into an increase in oil demand. The current forecast for world petroleum assumes that OPEC will maintain its price of \$29 per barrel for crude oil, although this assumption also is uncertain, even if the Middle East situation stabilizes.

As of the end of May, the greatest uncertainty and threat to the stability of the world oil market is the possibility of a disruption in the oil shipments from the Persian Gulf, as evidenced by the recent air attacks by Iranian and Iraqi aircraft on oil tankers. Under current market conditions, with excess production capacity in the Gulf and a high level of world oil stocks (in terms of days of supply), a minor disruption could be weathered with little or no impact. However, since 8 to 10 million barrels per day of oil are expected to pass through the Strait of Hormuz during 1984, a larger disruption could significantly alter this outlook. The effects of a disruption on world oil prices are highly uncertain, depending both on what happens in the Gulf and on how effectively oil stocks and excess world production capacity are used.

Recent Trends

World oil consumption declined in 1983 for the 4th consecutive year (see Figure 3). World petroleum supply (the sum of production in the market economies and net exports from the Communist countries) totaled an estimated 44.3 million barrels per day in 1983, down 0.3 million barrels per day from the 1982 level. (See Table 5.) World oil inventories are estimated to have been reduced during 1983 to 4.7 billion barrels, a decline of approximately 200 million barrels from the level at the end of 1982. A turnaround in declining oil demand occurred during the second half of 1983, as economic growth and lower real oil prices increased the demand for petroleum in the industrial countries.

This recent increase in petroleum demand is attributed in part to an overall increase in the Gross Domestic Product (GDP) of the Organization for Economic Cooperation and Development (OECD) countries. The GDP increased by 2.2 percent between 1982 and 1983; it is forecast to increase by 4.1 percent between 1983 and 1984, and by 2.6 percent between first-half 1984 and first-half 1985. (See Table 6.)

Although the recent upward trend in world petroleum demand is expected to continue, a weakening of demand could lead to downward pressure on world oil prices. This weakening could occur in Europe if the dollar remains strong against the major currencies, if economic growth is not as strong as projected, or if the substitution of other energy sources for oil continues at the rate experienced in Europe during 1983. (The growth in nuclear power in France is one example.)

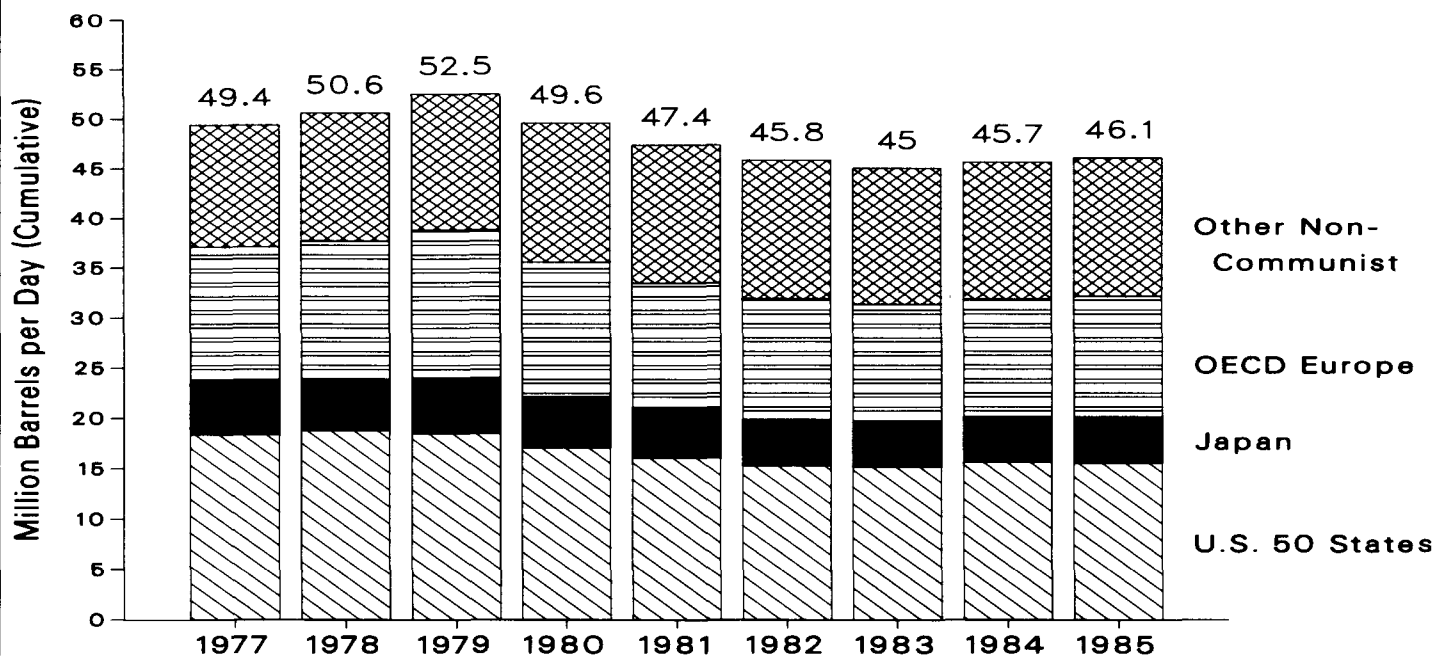


Figure 3. World Demand for Petroleum

International Petroleum Forecast

The estimated petroleum consumption in OECD during the first quarter of 1984 was higher than year-earlier levels as a result of cold winter weather in the United States and Japan, as well as robust economic growth in these two countries. For the remainder of 1984, the projected acceleration in world economic growth, the expected decline in real world oil prices, and the assumed normal weather in the Northern Hemisphere are projected to increase total petroleum demand in the market economies by 0.6 million barrels per day, with about two-thirds of this increase occurring in the United States. It also is expected that the large draws on world petroleum stocks that occurred in 1983 will end (see Figure 4). Petroleum demand in the other market economies is forecast to increase slightly between 1983 and 1984, mainly because of increases in Australia, Canada, and New Zealand. Petroleum demand in the developing countries (which also are included in the other market economies category) is expected to remain relatively level because of economic problems in Latin America.

The combination of increased demand and reduced stock draws is projected to increase the need for world oil production by approximately 1.5 million barrels per day between 1983 and 1984 in the base case. Of this increased supply, OPEC's share is expected to be about 0.7 million barrels per day.

The lower rate of economic growth projected for the first half of 1985 compared with the year-earlier level is expected to relieve some of the pressure on petroleum demand. However, the slowdown in the economic recovery is forecast to be offset by demand stimulating factors, including a continued fall in the real world oil price (adjusted for inflation) and the expected depreciation of the

effective dollar exchange rate (which reduces the local currency cost of oil for other countries).

In the base case, OPEC's average crude oil production (excluding natural gas liquids) in 1984 is projected to exceed its 1983 production quota of 17.5 million barrels per day by about 0.6 million barrels per day. OPEC is expected to continue to resolve the differences among its members with respect to production quotas and prices by maintaining the \$29 per barrel marker price of crude oil and by increasing the production quotas as needed to meet demand. It is possible, however, that oil prices would be higher if OPEC holds to its total production quota as world demand increases. Conversely, if OPEC does not restrain production, overproduction by individual OPEC members could lead to a decrease in oil prices.

World Oil Inventories

During 1982 and 1983, the decline in the market economies' oil consumption was accompanied by substantial drawdowns of their oil inventories. These drawdowns appear to have ended in the second half of 1983 (see Figure 4). From 1983 through the first half of 1985, world commercial oil stocks in the market economies are projected to remain roughly level on a seasonally adjusted basis. The estimated inventory level of 4.7 billion barrels at the end of 1983 is equivalent to approximately 99 days of projected oil consumption, which is significantly greater than the estimated 85 days of forward consumption that existed at the outbreak of the Iranian revolution at the end of 1978. Moreover, the current surplus in sustainable oil production capacity and low refinery utilization rates in the market economies should ensure that international oil stocks will be sufficient to meet consumption needs without putting undue pressure on demand in 1984 and 1985.

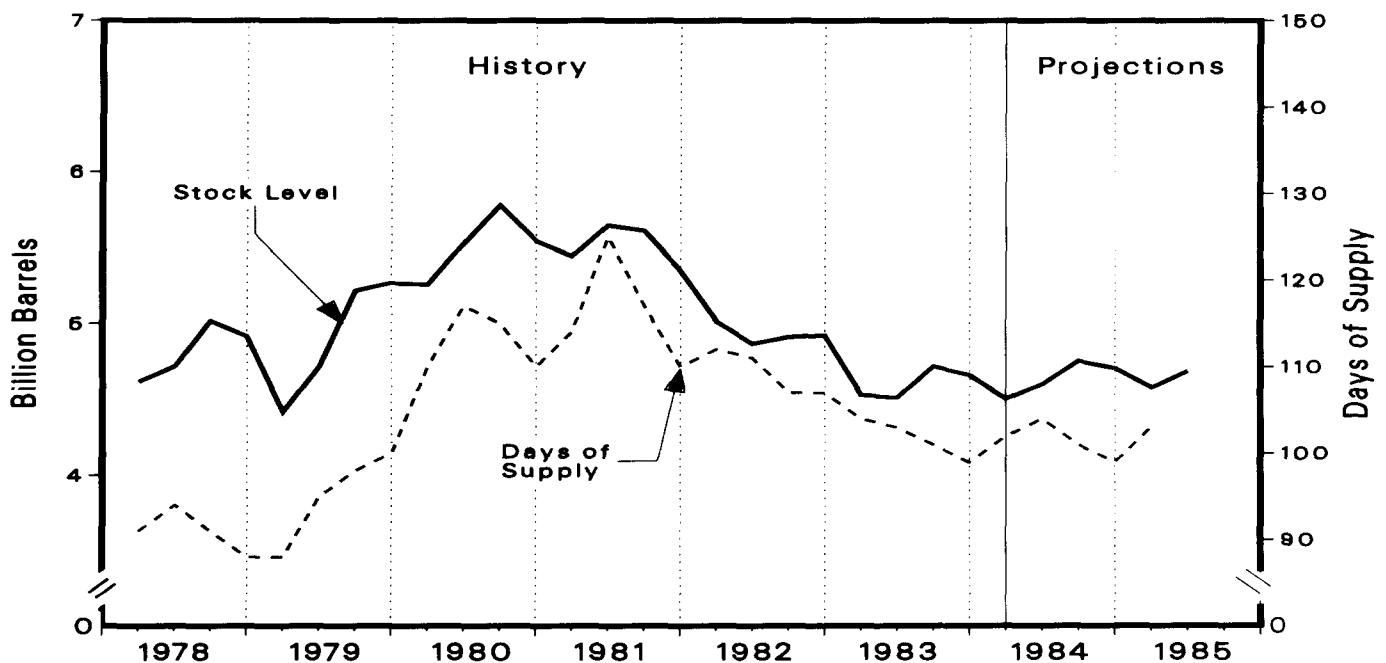


Figure 4. Market Economies Oil Stocks

U.S. Petroleum Outlook

Overview

Total petroleum demand in the United States declined in 1983 for the 5th consecutive year. However, this decline was entirely due to the decrease in the demand for residual fuel oil: The demand for motor gasoline, distillate fuel oil, and other petroleum products all increased between 1982 and 1983, although the increase for distillate was slight. The 5-year downward trend in total petroleum demand is expected to reverse in 1984, as petroleum consumption is projected to increase by 3.0 percent, to 15.6 million barrels per day. (The base case forecast is presented in Table 7; alternative cases for high and low economic growth are shown in Tables 8 and 9, respectively.) Demands for distillate fuel oil and "other" petroleum products are expected to show substantial increases (of 7 and 5 percent, respectively) from 1983 to 1984, based on the assumption of normal weather and the projected increases in industrial production. Motor gasoline demand is projected to increase only slightly, as higher average fuel efficiency partially offsets the effects of an improving economy. Residual fuel oil demand is forecast to remain relatively flat at 1.4 million barrels per day, as a result of continued conservation by industry and electric utilities.

Petroleum demand during the first half of 1985 is expected to decrease by 0.6 percent from the level during the first half of 1984. Increases in the consumption of "other" petroleum products are forecast to be more than offset by declines in motor gasoline, distillate, and residual fuel oil demands. The declines expected in the first half of 1985 are due primarily to continued improvements projected for the fuel efficiency of the automobile fleet and industrial and utility conservation in the use of residual fuel oil.

Primary petroleum stocks are projected to be built to about 1.11 billion barrels by the end of 1984, slightly above the closing level of stocks in 1983. The substantial drawdown in primary petroleum stocks during the first quarter of 1983 was not repeated during the first quarter of 1984. A slight buildup in petroleum stocks is projected in 1984 from the unusually low level at the end of 1983, a result of the colder-than-normal weather in the fourth quarter of 1983.

Net petroleum imports, including those for the Strategic Petroleum Reserve (SPR), are projected to average 5.0 million barrels per day in 1984, up 18 percent from the 1983 level.

Domestic Petroleum Production

Domestic crude oil production was nearly 8.7 million barrels per day in 1983, essentially unchanged from the 1982 level; it is projected to remain at that level in 1984 and the first half of 1985. (See Table 7.) Alaskan production is projected to be higher than otherwise expected in the second quarter of 1984 to make up for production lost during the 3 days in the first quarter when the Trans-Alaskan pipeline was not operating. On an annual basis, Alaskan production is expected to remain steady from 1983 to 1984 at 1.66 million barrels per day, and then show a 4.8-percent increase to 1.74 million barrels per day in the first half of 1985 as new production facilities in the Kuparuk River field on the

Alaskan North Slope come online. This additional production from Alaska in 1985 will partially offset the projected decline in Lower-48 States' production.

Lower-48 States' production of crude oil is projected to remain essentially unchanged from 1983 to 1984 as increased production from a few areas (particularly in the Louisiana Federal offshore and in Oklahoma) offsets a general production decline in most other areas. In the first half of 1985, production from the Lower-48 States is projected to decline by more than 1 percent from year-earlier levels, to 6.9 million barrels per day. Exploration and drilling activity has continued to recover and is expected to increase through the forecast period. Declines in the cost of drilling and the stabilization of oil prices should lead to further increases in drilling activity.

Motor Gasoline

The summer quarter of 1983 marked a turning point in domestic motor gasoline consumption, as continued moderation in gasoline prices and an expanding economy at least temporarily reversed the general decline in consumption that began in the second quarter of 1979. While Table 10 indicates that motor gasoline consumption (product supplied) increased by 1.2 percent between 1982 and 1983, consumption in the second half of 1983 was 2.6 percent above year-earlier levels. Between 1983 and 1984, average motor gasoline consumption is expected to increase by a negligible amount (20,000 barrels per day compared with the total level of 6.6 million barrels per day).

The small increase in motor gasoline consumption forecast between 1983 and 1984 is based on the expectation that increases in automobile efficiency will be almost completely offset by the effects on travel demand of a projected 5.7-percent growth in real disposable personal income, 11-percent growth in industrial production, and 4.7-percent decline in the real price of gasoline.

In the first half of 1985, motor gasoline consumption is expected to be about 0.7 percent below the comparable 1984 level. The forecasted return to lower gasoline consumption in the first half of 1985 is based primarily on the expectation of slower rates of growth in income and industrial production compared with year-earlier levels (resulting in lower growth rates in vehicle-miles traveled), combined with the strong advance expected for average automobile efficiency. During the first half of 1985, new car efficiency is projected to be about 4 percent above year-earlier levels. Average fleet efficiency (MPG) is projected to increase by 5 percent between 1983 and 1984, and by about 5.6 percent during 1985.

Summer 1984 Outlook for Motor Gasoline

Gasoline supplies for the summer of 1984 appear adequate to meet the range of likely demand during the peak driving season without any abnormal price increase. Between the first and third quarters of 1984, motor gasoline prices are projected to increase 4 cents per gallon in response to normal seasonal trends. This increase is lower than the increase between the first and third quarters of 1983, because of the somewhat higher level of gasoline stocks this year and the 5 cent per gallon gasoline tax that was imposed in April of 1983.

The forecast seasonal peak in gasoline consumption in the third quarter of 1984 is 1.6 percent lower than the average level during the third quarter for the period 1978 to 1983. (The peak year for gasoline consumption was 1978.) For the third quarter of 1984, gasoline consumption is projected to remain flat at year-earlier levels, averaging 6.8 million barrels per day, despite the assumed increase in real disposable personal income of 5.4 percent over the same period. Automobile travel in the third quarter of 1984 is projected to be about 5 percent above year-earlier levels. However, it is expected that the effects of this increase in travel on gasoline consumption will be offset by a nearly equal percentage increase in the miles per gallon (MPG) of the stock of automobiles over the year-earlier level.

This increase in MPG is the result of increased new car sales and the scrapping of older, less efficient cars. It is interesting to note that even if the efficiency of new automobiles falls relative to year-earlier levels, the miles per gallon of the fleet will continue to increase (but at a lower rate) because almost all new cars are more efficient than the fleet average.

The range of uncertainty surrounding the forecast is illustrated by the motor gasoline forecasts shown in the three demand cases (see Tables 7, 8, and 9). Neither the high demand case or the low demand case results in a deviation in total summer gasoline demand of as much as 1 percent from the base case. Therefore, at the high demand level, gasoline supplies are forecast to be ample to satisfy summer demand for gasoline, with only minimal increases in price.

As shown in Table 10, stocks of finished motor gasoline are within the normal range of stocks for the summer driving season. At the beginning of the third quarter of 1984, stocks of finished motor gasoline are forecast to represent 27.5 days' supply, which is about the average for the beginning of the third quarter for the 1981-83 period. (Gasoline price margins, and thus the price of gasoline, respond to the level of supply as measured by days of supply.) Should gasoline demand in the third quarter of 1984 be as high as the level projected in the high growth case, gasoline prices would tend to be slightly higher but probably by no more than an average of 1 or 2 cents.

Distillate Fuel Oil

Continued economic recovery, stable or falling real prices of distillate fuel oil, and assumed normal weather are projected to result in a significant increase in distillate demand in 1984 for the first time in 6 years. (See Table 11.) Consumption in 1984 is expected to average 2.86 million barrels per day, 6.7 percent above the 1983 level. The primary cause of the increase is economic activity, particularly industrial production, which is projected to rise by over 11 percent in 1984 (after a healthy 8-percent increase in 1983). The real price of heating oil is expected to remain about constant between 1983 and 1984. However, an expected increase in the Federal excise tax on diesel fuel will result in an increase of about 6 cents per gallon, leading to somewhat lower demand for diesel fuel oil than would otherwise have been forecast. Population-weighted heating degree days are assumed to be slightly above normal during 1984 (including actual data for the first quarter), at about the same level as in 1983.

Most of the increase in distillate demand in 1984 is forecast to occur during the first half of the year, again primarily due to the strong year-to-year increase in economic activity. Virtually all of the 1984 increase is anticipated to result from heating and industrial uses of distillate fuel. Demand for heating oil in the residential, commercial, and industrial sectors is projected to increase by about 150,000 barrels per day in 1984. The demand for diesel fuel, while continuing to be approximately half of total distillate demand, is not expected to change significantly. Only about 280,000 new diesel-powered automobiles were sold in 1983, down 44 percent from the peak year of 1981, when more than 500,000 diesel-powered new cars were sold.

Despite continued economic growth, distillate demand during the first half of 1985 is projected to be slightly below year-earlier levels, mainly because of the continued decline expected in the number of households using oil for space heating. Industrial production is expected to increase less than 5 percent from year-earlier levels, compared to growth of almost 15 percent between the first half of 1983 and the first half of 1984. Distillate demand is projected to decline by about 3.3 percent between the first half of 1984 and the first half of 1985.

Residual Fuel Oil

Residual fuel oil consumption, which averaged 1.72 million barrels per day in 1982, dropped to 1.40 million barrels per day in 1983, a decrease of nearly 19 percent. (See Table 12.) Much of this annual decline can be attributed to the slow economic activity and lower levels of electricity generation (which accounts for about 40 percent of total demand for residual fuel oil demand on a yearly basis) in the first quarter of 1983.

Total demand for residual fuel in 1984 is expected to increase by 1.4 percent from the 1983 level. An unusually cold January in the East Coast, where nearly half of all residual fuel is used, caused consumption to increase during that month. However, barring any further cold spells in 1984, nonutility demand for residual fuel oil is still projected to increase slightly by 1.2 percent from 1983 to 1984. Utility use of residual fuel is projected to increase slightly from 1983 to 1984. In the first half of 1985, demand for residual fuel oil is projected to decrease by 3.9 percent over year-earlier levels. The main reasons for this projected decrease are:

a return to normal weather for the next winter, the displacement of residual fuel oil by coal at electric utilities, and slower economic growth.

Net imports of residual fuel account for a high percentage of total domestic consumption (forecast to be nearly 50 percent in 1984), a much larger percentage than the imported share of consumption of any other refined petroleum product. Thus, the price of residual fuel on the international market can have a large effect on the domestic price. In the summer of 1983, increases in the spot market price occurred in both Rotterdam and New York (where residual fuel oil prices exceeded the price of crude oil). Recent spot market price data (as of April 1984) show prices in both harbors to be declining. The contract price, which generally follows the spot market, also is expected to decline now that the heating season is over and demand has peaked for the year.

Other Petroleum Products

The "other" petroleum products category includes jet fuel, liquefied petroleum gases (excluding ethane), petroleum coke, kerosene, road oil and asphalt, still gas, petrochemical feedstocks and ethane, waxes, lubricants, aviation gasoline, special naphthas, unfinished oils, aviation and motor gasoline blending components, and miscellaneous products. The three principal components of "other" petroleum are jet fuel, liquefied petroleum gas (excluding ethane), and petrochemical feedstocks plus ethane. Consumption of these products amounted to 2.90 million barrels per day out of total "other" product consumption of 4.48 million barrels per day in 1983.

Jet fuel consumption, which remained constant at 1.01 million barrels per day in 1981 and 1982, increased moderately during 1983 to 1.04 million barrels per day. Consumption of jet fuel is expected to grow to 1.11 million barrels per day in 1984 and then to level off at 1.13 million barrels per day in the first half of 1985. Primarily responsible for the increase in demand is an expected upturn in domestic air travel (both business and pleasure), corresponding to continued economic recovery.

Consumption of liquefied petroleum gases (LPG's), excluding ethane, fell to 0.96 million barrels per day in 1983, down 3.4 percent from the previous year. This decline in average daily product supplied reflects a 10-percent decline during the first half of the year, followed by strong growth during the fourth quarter of 1983. LPG consumption in 1984 is projected to exceed the 1983 level by 3.5 percent in response to continued economic growth and declining real prices. LPG product supplied is forecast to average slightly over 1 million barrels per day in 1985.

Strong growth is forecast for petrochemical feedstocks during 1984. This recovery follows declines of 12.1 percent from 1981 to 1982 and 1.7 percent from 1982 to 1983 in products supplied of ethane and finished petroleum products reported for feedstock use. A projected increase of 9.0 percent, from 0.90 million barrels per day in 1983 to 0.98 million barrels per day in 1984, corresponds to expectations of increased feedstock use to meet higher levels of demand for chemical products. Demand for petroleum-based chemicals is likely to be particularly strong as declining real feedstock costs associated with lower oil prices could reduce production costs significantly. Lower prices and higher levels of economic

activity are expected to continue to have a positive impact on feedstock consumption through 1985, with product supplied forecast to be 1.00 million barrels per day for the first 6 months of the year.

Worldwide production of petrochemical feedstocks and their derivatives is expected to increase significantly during the next few years, starting with the two major petrochemical complexes in Saudi Arabia scheduled to come on stream in 1985. Increased production outside the United States is expected to have the most direct impact on U.S. exports, particularly in the European market. The competition, which stems from the fact that Mideast producers will have access to much cheaper feedstocks, will have the greatest impact on domestic markets to the extent that petrochemical products are imported rather than produced. While the impact of these changes on feedstock demand is expected to be negligible for the period covered by this Outlook, the effects will become increasingly significant over time.

Demand for the remaining "other" petroleum products is expected to increase by close to 7 percent from 1983 to 1984, with projected consumption of 1.61 million barrels per day in 1984. For the first half of 1985, product supplied is projected to rise to 1.70 million barrels per day. Only kerosene product supplied, which comprises approximately 8 percent of these remaining "other" products, is forecast to decline over the forecast period.

"Other" petroleum products supplied, including LPG, jet fuel, feedstocks, and the remaining categories, amounted to almost 30 percent of all petroleum products supplied in 1983. The projections for the combined "other" category are provided in Table 7.⁴ These estimates represent the total for all of the products indicated above, with the miscellaneous category defined to include natural gasoline, isopentane, unfractionated stream, plant condensate, and reclassified products.

Petroleum Inventories

In terms of both total inventories and days of supply, petroleum stocks are projected to be considerably lower than during the period following the major increase in petroleum prices in 1979 and 1980 when inventories were unusually high. (See Table 13 and Figure 5.) End-of-year primary stocks, excluding stocks held in the Strategic Petroleum Reserve (SPR), were equivalent to 66.9 days' supply in 1983 and are projected to be 70.3 days' supply in 1984 (at the next quarters' anticipated rates of product supplied). This forecast represents a substantial decline from the nearly 79 days' supply at the end of 1981, but is slightly higher than the 68 days' supply level reached in 1979. Continued high costs of carrying inventories and growing confidence in the ability to operate with lower stocks appear to have led to some reduction in target stock levels.

⁴Table 7 provides data and forecasts for the aggregate "other" category only. Data through 1983 for the individual components of "other" petroleum products are available in the Petroleum Supply Monthly. Detailed forecasts for the individual components are available through the Division of Energy Analysis and Forecasting (EIA/Department of Energy).

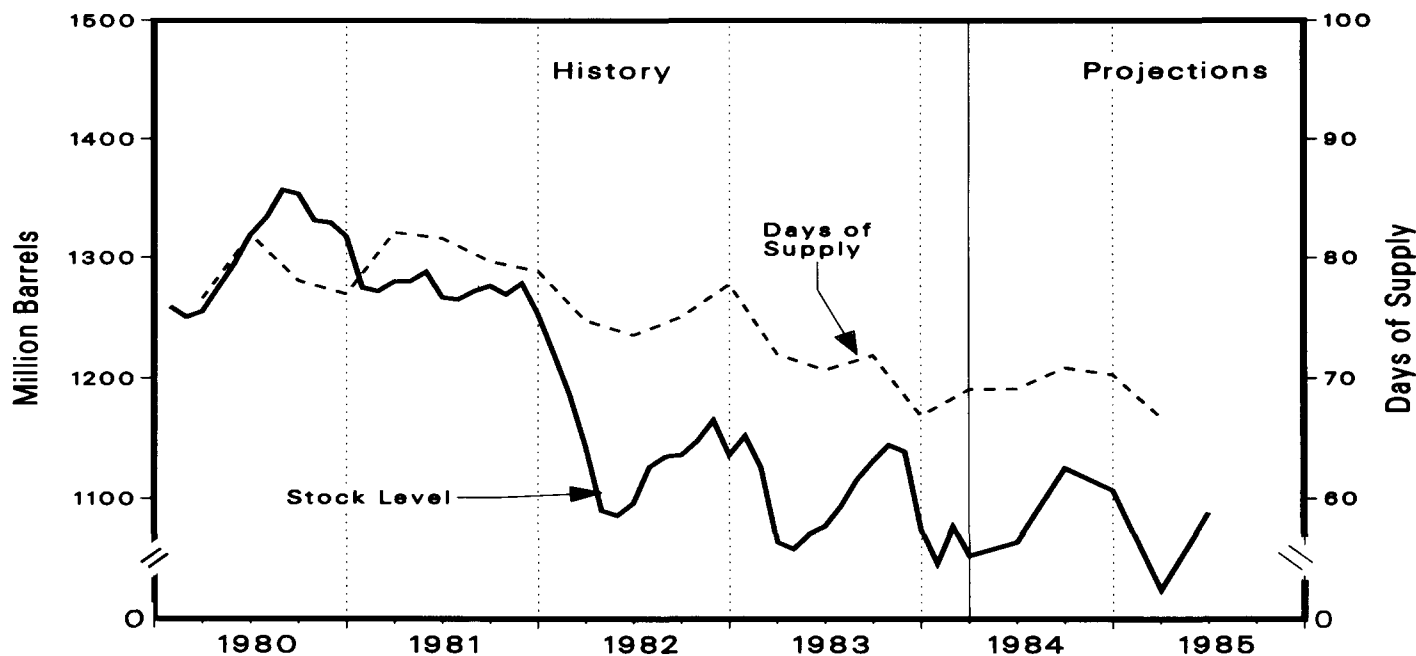


Figure 5. Total Petroleum Inventories Excluding SPR

SPR stocks, which were just above 90 million barrels by the end of 1979, currently are forecast to reach 440 million barrels by the end of 1984 and about 465 million barrels by mid-1985. At the end of March 1984, SPR crude oil inventories had reached almost 400 million barrels, with the planned final level at 750 million barrels. Crude oil fill rates for the SPR are projected to average 176,000 barrels per day in 1984 and 145,000 barrels per day in the first-half of 1985, based on a forecast of deliveries provided by the SPR program office.

Changes in stocks of major petroleum products from the end of the first quarter 1983 to the end of the first quarter 1984 were: finished motor gasoline was up 10 percent; distillate fuel oil fell nearly 8 percent; and residual fuel oil went up almost 3 percent. In terms of days' supply, finished motor gasoline was up 10 percent, distillate fuel oil was down 16 percent, and residual fuel oil was up 5 percent. Seasonal swings in total petroleum inventories are expected to continue to be dominated by major petroleum product stocks, while crude oil inventories are projected to remain stable.

Petroleum Imports

Net U.S. imports of petroleum (including SPR imports) in 1983 were nearly 4.3 million barrels per day, essentially the same level as in 1982. As shown in Table 7, net petroleum imports in the fourth quarter of 1983 rose 50 percent from the very low level of 3 million barrels per day reached in the first quarter of 1983. Net petroleum imports in 1984 are projected to increase 18 percent from the 1983 level, averaging 5.0 million barrels per day. (Net imports in 1983 were at the lowest level since 1971.) In the first half of 1985, net imports are projected to average 4.7 million barrels per day, slightly lower than the year-earlier level.

Petroleum Demand Sensitivities

Table 14 and Figure 6 show the response of petroleum demand to changes in price, income, and weather. The sensitivity cases were developed as follows:

- The low and high price demands are based on the price paths shown in Table 3, holding the variables representing economic activity at their base case levels.
- The economic sensitivity cases are derived from the low and high growth economic assumptions given in Table 2, holding prices at their base case trajectories.
- The weather sensitivity cases are based on variations in population-weighted heating degree days and cooling degree days of 10 percent in the first and fourth quarters, and 15 percent in the second and third quarters, respectively.

In 1984, the variation in petroleum demand due to price is the largest of the sensitivity cases analyzed, with a range of 180,000 barrels per day between the low price and high price cases for the year. More substantial variations are shown in the first half of 1985, with a range of 450,000 barrels per day due to price; 380,000 barrels per day due to weather; and 430,000 barrels per day due to economic activity.

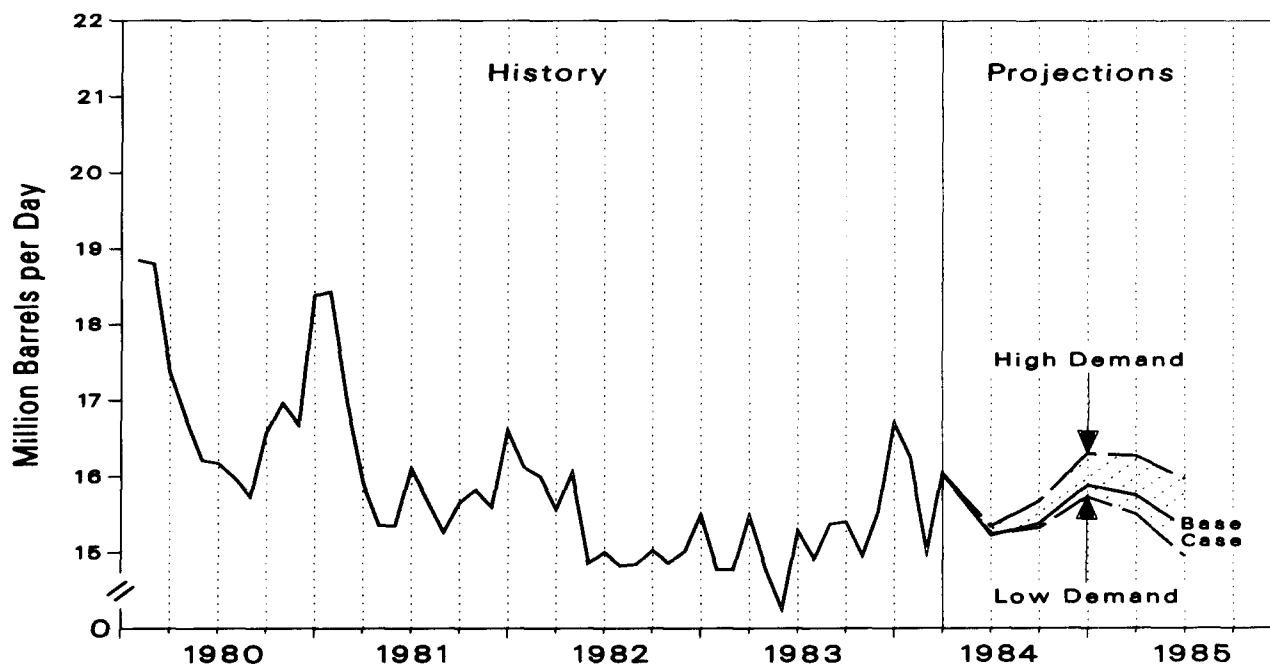


Figure 6. Total Petroleum Demand

Projections for Other Major Energy Sources

Natural Gas

Total U.S. natural gas consumption and production are forecast to increase by 5.4 percent and 10.3 percent, respectively, between 1983 and 1984, which ends the 4-year decline in both areas. Projected levels of natural gas consumption and production in all the forecast quarters are higher than year-earlier levels except in the first quarter of 1985. (See Table 15.) In the second quarter of 1984, domestic natural gas consumption is expected to rise by almost 4 percent while domestic gas production is forecast to increase by over 16 percent from year-earlier levels. The turnaround projected for natural gas demand is contingent on the effects of a strong economic recovery and the moderation in natural gas price increases. Natural gas production also is responding to the economic recovery as well as to the extremely low storage levels reached in the first quarter of 1984.

Natural Gas Demand. Natural gas demand has responded slowly to the growth in economic activity that started early in 1983: despite an 8-percent increase in industrial activity between 1982 and 1983, consumption of nonutility natural gas fell by 4.5 percent. This year-to-year decline occurred despite the fact that total residential, commercial, and industrial gas use (shown on Table 14 as "All Other Uses") in the fourth quarter of 1983 was about 10 percent higher than year-earlier levels. The fourth quarter rise in demand can be explained for the most part by the severe weather experienced during December, when total consumption was almost 30 percent higher than the year-earlier level.

Demand for natural gas in the United States now appears to be responding to the economic expansion. Total residential, commercial, and industrial use of natural gas was nearly 12 percent higher in the first quarter of 1984 than year-earlier levels, and is projected to increase by 5.6 percent between 1983 and 1984. A smaller change (3.4 percent) occurred in first-quarter electric utility fuel use of natural gas between 1983 and 1984 because of the natural gas requirements of the nonutility sectors and the lack of utility gas sources in parts of the Northern United States.

Based on the high rate of growth assumed for industrial production and modest price increases compared to recent years, the growth in total natural gas demand is expected to continue throughout 1984. The severe weather experienced in the first quarter of 1984 resulted in an abnormal consumption boost that is not forecast to occur during the same period in 1985. However, continued economic growth and the assumption of normal heating season requirements are expected to result in a 1.7-percent increase in nonutility gas consumption during the second quarter of 1985 over year-earlier levels.

Electric utility demand for natural gas declined by 10 percent from 1982 to 1983. In the first half of 1983, electric utility consumption of natural gas was 16 percent below year-earlier levels due to the decline in total electricity generation, the high prices for gas, and the record high level of hydroelectric generation. Even though electricity demand in the fourth quarter of 1983 was almost 10 percent above year-earlier levels, natural gas use at electric utilities remained below the level in 1982. In 1984, electric utility demand for natural gas is projected to be almost 6 percent above the 1983 level.

Natural Gas Supply. Domestic production of natural gas reached a 17-year low of 16.0 trillion cubic feet in 1983, the lowest level since 1965 when production was 15.3 trillion cubic feet. (Record production of 21.7 trillion cubic feet of natural gas occurred in 1973.) Total dry gas production is projected to increase by over 10 percent to 17.6 trillion cubic feet in 1984, a level still 140 billion cubic feet lower than total dry gas production in 1982. During the first half of 1985, total dry gas production is expected to be slightly lower than during the corresponding period in 1984 mainly because of the assumed return to normal heating season requirements in 1985.

Coal

The overall prospects for a strong recovery in the domestic coal sector continue to improve, as evident in the upward revisions in demand projections for all domestic coal consuming sectors. The total year-to-year increase in the consumption of coal by domestic users is expected to be about 60 million tons in 1984, an 8-percent increase over the 1983 level (see Table 16). This rate of increase in domestic consumption is noticeably higher than the 6-percent increase projected in the February 1984 Outlook. In the first half of 1985, domestic coal consumption is forecast to be nearly 5 percent above the level in the first half of 1984.

Coal Consumption. Coal use at electric utilities in 1984 is projected to be about 8 percent above the 1983 level. This increase accounts for about 78 percent of the total projected increase in domestic coal consumption between 1983 and 1984. The increase in total electricity generation between 1983 and 1984 is projected to be nearly 5 percent. The growth in coal use at electric utilities is higher than the projected growth in total electricity generation because the share of coal-fired generation is projected to increase from 55 percent to 56 percent between 1983 and 1984. (See Table 17.)

An expected increase of nearly 11 million tons in domestic consumption of metallurgical coal accounts for another 18 percent of the total projected increase in domestic coal consumption between 1983 and 1984. The impetus for growth in metallurgical coal demand is a projected large increase in raw steel production in 1984, the first full year of recovery in the domestic steel industry. It should be noted that a large part of the expected increase in demand for metallurgical coal in 1984 stems from the fact that in 1983, much of the need for metallurgical-grade coal in the United States was met by the rapid reduction of coke stocks. During 1983, coke stocks, which had reached relatively high levels during the recent recession, were drawn down by about 5 million tons, a quantity of coke which would have required nearly 7 million tons of coal to produce. The forecast in Table 16 assumes that coke stocks remain constant throughout 1984 and increase slightly in the first half of 1985.

Retail and general industry coal consumption is expected to increase at a modest pace of about 4 percent between 1983 and 1984 and then to remain at the first-half 1984 level during the first half of 1985. This sector is comprised of all noncoke plant users of coal (referred to as other industrial users) as well as commercial and retail coal consumers. Although these categories are not disaggregated on Table 16, the projected rates of growth are different for the two segments.

Consumption in the retail and commercial sector is assumed to remain relatively flat through the forecast period. Other industrial use of coal grew by 2.9 percent between 1982 and 1983, with all of the growth concentrated in the second half of 1983. The last 6 months of 1983 brought an 11-percent increase in other industrial coal use compared to the same period in 1982. Thus, the rate of growth in other industrial coal consumption for 1984 is projected to be 11 percent in the first 6 months of 1984 compared to the first half of 1983, but only 1 percent in the second half of 1984 over year-earlier levels. The three largest coal-consuming industries (excluding coke plants), chemicals, stone, clay, and glass, and paper and allied products, account for about 56 percent of other industrial consumption of coal. The composite output from this group is expected to increase by 9.7 percent between 1983 and 1984.

Coal Exports. While domestic markets for U.S. coal continue to improve, the outlook for U.S. coal exports shows at least a modest decline between 1983 and 1984. Coal exports were unchanged between the first quarters of 1983 and 1984. Strong competition from other coal exporters as well as continued sluggish demand growth in foreign countries that consume coal reduces the likelihood of a near-term revival in U.S. coal exports.

Coal Production. Coal production is expected to increase by 11 percent between 1983 and 1984. In the first quarter of 1984, coal production was 224 million tons, a 16-percent increase over the comparable level in 1983. It should be noted that coal production in 1983 was low partly because approximately 30 million tons of coal for domestic consumption and export was met through the net reduction of producers' and consumers' stocks. No net change is forecast in 1984 for producers' plus consumers' stocks of coal.

Coal production for 1984 is projected to be about 21 million tons higher than was projected in the February 1984 Outlook. Approximately 10 million tons of this difference is attributable to upward revisions in domestic demand. The remainder results from the assumption that producers' stocks plus consumers' stocks, which were at lower levels at the end of 1983 than previously assumed, will not be drawn down in 1984 as was projected in the February Outlook.

Effects of Labor Contract Negotiations. The coal production and stock level forecasts shown in Table 16 were developed under the assumption that there will be no coal strike in 1984. The current contract between the United Mine Workers of America and the Bituminous Coal Operators Association expires at the end of September 1984. Historically, normal patterns of production and stock withdrawal have been altered in anticipation of impending coal contract negotiations, and the current forecast takes this behavior into account by modifying the quarterly pattern of behavior. In particular, it is assumed that production is increased and consumer stock drawdowns are avoided or minimized in the first three quarters of 1984. Should a strike actually occur, it is likely that both production and stocks will be lower at the end of 1984 than the levels forecast here.

It would appear that if coal production and consumption patterns continue as projected in this Outlook, domestic coal consumers will be slightly less able to absorb an extended general strike than they were at the outset of the two previous strikes. Excluding years during which coal strikes actually occurred, the average days of supply of coal held by domestic users at the beginning of the fourth quarter has been 88 days. The projected level for the beginning of the fourth quarter of 1984 is only 83 days, about 6 percent below the average level. In

contrast, just before the coal strikes in 1978 and 1981, coal stocks were 8 to 12 percent above average. A possible explanation for the relatively lower level in projected domestic coal supply in 1984 is that domestic users, particularly electric utilities, are learning to operate more efficiently on smaller coal reserve margins.

Electric Power

Total electricity generation in 1983 was 2,310 billion kilowatt-hours, a 3.1-percent increase from the 1982 level (see Table 17). Generation during the first half of 1983 was 2.4 percent below year-earlier levels, mainly because of continued low levels of industrial electricity demand and mild weather. A turning point occurred during the second half of 1983, when abnormal weather (a warmer-than-normal summer and a colder-than-normal December) and rising economic activity led to an 8.5-percent increase in electricity generation compared to year-earlier levels. The strong rebound in industrial demand for electricity in the second half of 1983 was a result of the rapid recovery in industrial production.

Electricity generation in 1984 is projected to be 2,419 billion kilowatt-hours, a 4.7-percent increase over the 1983 level. Between first-half 1984 and first-half 1985, electricity generation is projected to increase by 2.2 percent. These forecasts are based primarily on the strength of the economic recovery, which is expected to continue into 1985, but at a somewhat lower rate. If economic activity does not achieve the growth rates assumed in the base case (growth in real disposable personal income is projected to be 5.7 percent between 1983 and 1984, and 2.4 percent between first-half 1984 and first-half 1985) or if the turnaround in industrial electricity demand is not as strong as expected, total electricity demand could be lower than the levels forecast here. Lower electricity demand would then translate into lower utility fuel demands, especially for coal.

The nominal price of residential electricity, which increased at double-digit rates in 1981 and 1982, increased by less than 5 percent between 1982 and 1983. A 4.7-percent increase in the residential price of electricity is forecasted between 1983 and 1984. One reason for the moderation in electricity prices is that yields on newly issued utility bonds are projected to be lower in 1983 and 1984 than in 1982. In addition, increases in the average costs of fuel to electric utilities between 1983 and 1984 are expected to be more moderate than in years prior to 1983. Residential electricity prices are forecast to increase by less than 7 percent between first-half 1984 and first-half 1985.

Generation by Energy Source. Fuel shares of electricity generation in 1984 are expected to be: 56 percent coal, 12 percent natural gas, 14 percent nuclear power, 5 percent petroleum, 13 percent hydroelectric power, and less than 1 percent for other energy sources (see Table 17). These shares are very similar to the distribution in 1983, with the exception of a slight increase in the coal share and a slight decrease in the hydroelectric power share. The forecast increase in total generation of 109 billion kilowatt-hours from 1983 to 1984 is projected to be supplied primarily by increases in generation from coal and nuclear power (see Figure 7.) A continuation of this trend is forecast between first-half 1984 and first-half 1985, with a projected total increase of 30 billion kilowatt-hours from coal generation and 11 billion kilowatt-hours from nuclear power.

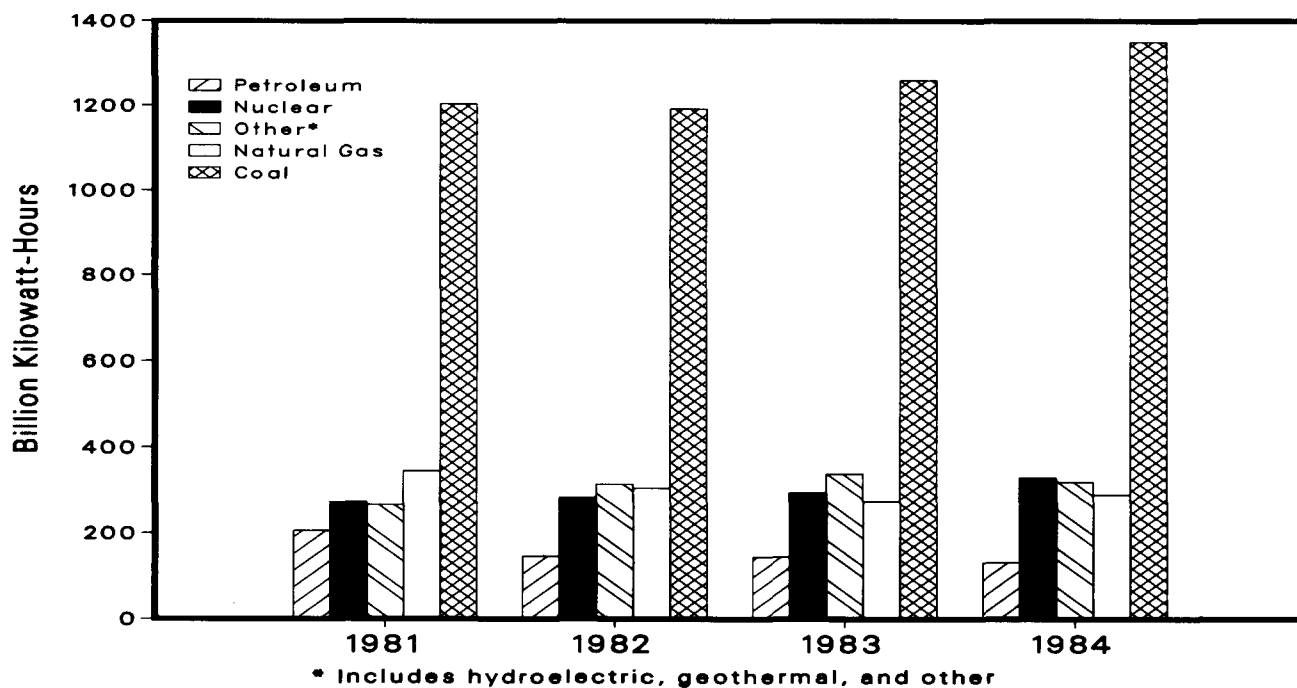


Figure 7. Electricity Generation by Fuel Source

Electricity generation from nuclear power was nearly 294 billion kilowatt-hours in 1983, nearly 4 percent above the 1982 level. Seven new units (Susquehanna 1, Summer 1, St. Lucie 2, San Onofre 2, LaSalle 1, McGuire 2, and San Onofre 3) began full power operation in 1983. The 12-percent growth in nuclear generation projected from 1983 to 1984 is higher than the forecast published in the February 1984 Outlook because of unexpectedly high generation from nuclear units in the first quarter of 1984. This forecast assumes full power operation of seven new reactors totaling 7.8 gigawatts in 1984 and two new reactors totaling 2.3 gigawatts in the first half of 1985. Also, Three Mile Island Unit 1 is assumed to resume operation in 1984. Five of the nine new reactors expected to begin operating by mid-1985 are located in regions where a significant amount of oil is consumed by utilities for baseload generation; power produced by these units can be expected to reduce the reliance on oil-fired generation in those areas.

Coal-fired generation increased by 5.7 percent from 1982 to 1983. In the absence of a prolonged coal strike in the fall of 1984, coal-fired generation of electricity is expected to increase by 7.2 percent from 1983 to 1984 as the demand for electricity increases and as new coal generating capacity begins operation. Following the projected addition of nearly 6 gigawatts of coal-fired capacity in 1983, 10 additional gigawatts of capacity are expected to begin operation in 1984. The outlook for coal-fired generation during the first half of 1985 shows a 4.5-percent increase over the year-earlier level, with an addition of about 6 gigawatts of new generation capacity during this period.

Although the increases in coal-fired generation over the forecast period may appear large, the combined effects of newly available coal capacity, lower levels of hydroelectric generation, and the 4.7-percent increase in total generation between 1983 and 1984 are forecast to result in coal-fired generation of 1,350

billion kilowatt-hours in 1984. Because the least expensive sources of increased electricity generation, given the current generating stock, are coal and nuclear power (excluding hydroelectric power), plants consuming these fuels are expected to be utilized where they are available. The majority of electric utilities now use oil and natural gas only to meet incremental generation demands.

Hydroelectric generation in 1983 was a record-breaking 332 billion kilowatt-hours, 7.4 percent above the previous record set in 1982 and 17 percent above normal levels. The current high water availability is projected to result in higher than normal hydroelectric generation through the first half of 1984, with total 1984 generation forecast to reach 312 billion kilowatt-hours (assuming weather and precipitation patterns return to normal during this period). With the return to assumed normal weather in 1985, a decrease of 14 percent in hydropower generation is expected between first-half 1984 and first-half 1985.

Oil and natural gas consumption by electric utilities has decreased over the past 4 years in both absolute and percentage terms. Combined generation from oil and natural gas in 1983 dropped over 7 percent from the 1982 level as a result of increased shares from coal and nuclear power and increased availability of hydro-power. Between 1983 and 1984, the resurgence in electricity demand and the lower levels of hydroelectric generation lead to a projected reversal in the decline of oil and gas generation, although the increase forecast for natural gas generation is nearly offset by the projected drop in petroleum generation. Generation from natural gas is expected to increase between first-half 1984 and first-half 1985: the drop in hydroelectric generation is balanced by an increase in nuclear and coal-fired generation, leaving a small additional share needed from oil and gas generation. If the actual level of electricity generation from coal and nuclear power in 1984 is lower or the growth in demand is higher than forecast here, consumption of oil and natural gas at electric utilities most likely will be higher.

Net Electricity Imports

Electricity imports have increased in recent years and are becoming a more important source of electricity for some regions of the country. Nearly all electricity imports come from Canada; a very small amount is received from Mexico, although the United States is a net exporter to that country. Net imports of electricity were about 35 billion kilowatt-hours in 1983, up significantly from year-earlier levels, and accounting for more than 1 percent of total electricity supply. The increase of about 3 billion kilowatt-hours forecast for electricity imports in 1984 is attributable both to increased purchases of power (more than half of which is generated from hydroelectric power) and to the availability of new transmission lines (the Niagara Interties from Canada, which are already in service, and the Imperial Valley-La Rosita Line from Mexico, expected to begin service in mid-May of 1984). Transmission capability also is being improved within the United States to increase the ability of electric system to move purchased power. Net electricity imports are expected to increase between first-half 1984 and first-half 1985. Based on new data sources and an analysis of the trend in electricity imports, this forecast has been revised upward from the projections published in the February 1984 Outlook.

The Effect of Hot Weather on Electricity Demand

The demand for electricity exhibits a major peak during the summer cooling season because nearly all air conditioners use electricity. An analysis of monthly data over the past 7 years shows that at the national level, the percent change in electricity generation in response to a 1-percent change in the number of cooling degree days on an annual basis is about 0.08. This value, called a weather elasticity, measures the aggregate response of all sectors to changes in cooling degree days. However, looking at the demand for electricity (which is measured by electricity sales rather than generation) by consuming sector reveals very diverse responses: the elasticity of residential demand for electricity with respect to cooling degree days is estimated to be about 0.12, with the elasticity of commercial demand at about 0.06. (Note that these figures do not imply that the commercial sector uses less air conditioning than the residential sector; the elasticities measure relationships between rates of change.) The industrial sector has displayed a negligible demand in response to changes in cooling degree days, mainly because most of the electricity used by industry is for processing or mechanical drive rather than space conditioning.

Although the electricity forecasts in Table 17 do not reflect any regional disaggregation, some interesting differences have been calculated using regional data on electricity demand. As would be expected, the highest elasticities of residential demand for electricity with respect to cooling degree days were found in the South (where nearly three-fourths of the homes have some kind of air conditioning). The weather elasticities of 0.20 to 0.30 in the South can be compared with the very low responses (only about 0.02 to 0.03) in the New England and the Pacific regions,⁵ areas where a relatively low percentage of homes have air conditioning. Thus, in determining the effect of regional weather on the national demand for electricity, it is important to know where the hottest weather has occurred in any particular summer: a heat wave in the Northeast has a smaller effect on total electricity demand than a heat wave in the South. Likewise, the elasticity of electricity with respect to cooling degree days for the commercial sector is estimated to be higher in the Southern states, although the variance across the country is less than for residential electricity demand. The weather elasticities for the commercial sector range from 0.02 in New England to 0.15 in the West South Central region.

The summer of 1983 was very warm: cooling degree days were 16 percent above normal and 25 percent above year-earlier levels for the July through September period. Electricity generation for those months was about 8 percent above the year-earlier levels, due both to the hot weather and to the economic recovery. In the current forecast, electricity generation for the third quarter of 1984 is expected to be almost the same level as during the third quarter of 1983; the upward effects of higher income on electricity demand are expected to be balanced by the lower demand due to the assumption of normal cooling degree days. However, a repeat of last summer's hot weather in 1984 would result in a level of electricity generation higher than shown in Table 17.

⁵The air conditioning information is from The Annual Housing Survey: 1981, Part A. General Housing Characteristics, U.S. Department of Commerce and U.S. Department of Housing and Urban Development (Washington, D.C., June 1983).

Total Domestic Energy Balance

U.S. energy consumption (measured as gross energy consumption) in 1983 was 70.6 quadrillion Btu, slightly lower than the 1982 level (see Table 18). In 1984, total energy consumption is projected to increase for the first time since 1979, reaching 74.4 quadrillion Btu (see Figure 8). The projected 5.5-percent increase in total energy consumption from 1983 to 1984 is based on real GNP increasing by 5.9 percent over that period. Between first-half 1984 and first-half 1985, total energy consumption is forecast to increase by less than 1 percent.

With the GNP forecasted to grow faster than energy consumption from 1983 to 1984, the energy/GNP ratio is projected to decrease for the 14th consecutive year. The energy intensity of U.S. economic activity fell to 46.0 thousand Btu per 1972 dollar in 1983 and is projected to decrease to 45.8 thousand Btu per 1972 dollar in 1984. This decrease in the energy-intensity of the economy is expected to continue through mid-1985.

U.S. energy production declined by 4.3 percent from 1982 to 1983 and is projected to increase by 6.5 percent from 1983 to 1984. Net imports of energy are projected to increase by over 18 percent from 1983 to 1984 to provide 13 percent of the total U.S. energy supplies.

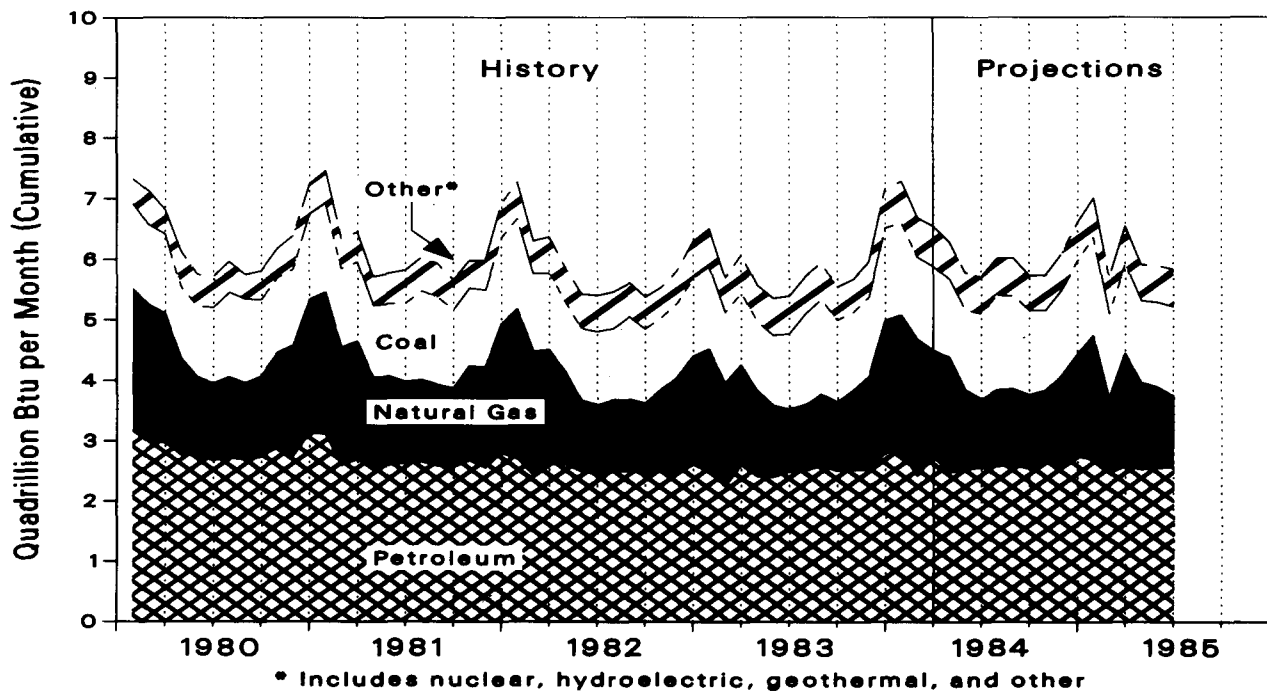


Figure 8. Gross Energy Consumption by Source

Table 4. Short-Term Energy Prices (Nominal), History and Projections

Product	History					Projections								
	1982	1983				1984			1985					
	Year	1st	2nd	3rd	4th	Year	1st	Price ¹	2nd	3rd	4th	Year	1st	2nd
Petroleum														
Gasoline ² (dollars per gallon)	1.28	1.17	1.23	1.27	1.23	1.22	1.20	Low	1.21	1.16	1.11	1.17	1.10	1.11
								Base	1.23	1.24	1.22	1.22	1.21	1.23
								High	1.23	1.25	1.25	1.23	1.26	1.30
No. 2 Fuel Oil, Wholesale ³ (dollars per gallon)	0.91	0.81	0.80	0.83	0.82	0.82	0.85	Low	0.79	0.73	0.74	0.78	0.74	0.74
								Base	0.83	0.83	0.83	0.83	0.84	0.83
								High	0.83	0.84	0.87	0.85	0.89	0.91
No. 2 Heating Oil, Retail (dollars per gallon)	1.19	1.10	1.05	1.05	1.06	1.08	1.13	Low	1.04	0.97	0.99	1.03	1.00	1.00
								Base	1.07	1.07	1.08	1.09	1.10	1.09
								High	1.07	1.09	1.12	1.10	1.15	1.16
No. 6 Residual Fuel Oil ⁴ (dollars per gallon)	0.69	0.62	0.63	0.67	0.69	0.65	0.72	Low	0.66	0.58	0.60	0.64	0.61	0.58
								Base	0.68	0.65	0.68	0.68	0.69	0.66
								High	0.68	0.66	0.70	0.69	0.73	0.71
Kerosene-Based Jet Fuel (dollars per gallon)	0.97	0.93	0.88	0.86	0.86	0.88	0.86	Low	0.85	0.79	0.76	0.82	0.76	0.75
								Base	0.86	0.86	0.86	0.86	0.86	0.86
								High	0.86	0.87	0.90	0.87	0.91	0.93
Other														
Coal, Delivered to Utilities (dollars per million Btu)	1.65	1.67	1.67	1.65	1.65	1.66	1.62	Low	1.62	1.64	1.67	1.64	1.70	1.72
								Base	1.65	1.68	1.70	1.66	1.73	1.76
								High	1.68	1.71	1.75	1.69	1.79	1.82
Natural Gas, Residential (dollars per 1,000 cu. ft.)	5.17	5.87	6.13	6.17	6.04	5.99	5.98	Low	6.11	6.03	6.08	6.05	6.13	6.29
								Base	6.38	6.30	6.32	6.25	6.68	6.80
								High	6.49	6.52	6.69	6.42	7.12	7.32
Natural Gas, to Utilities (dollars per million Btu)	3.38	3.38	3.39	3.61	3.43	3.39	3.47	Low	3.40	3.47	3.40	3.43	3.40	3.46
								Base	3.49	3.57	3.47	3.50	3.72	3.74
								High	3.59	3.81	3.81	3.66	3.95	4.03
Electricity, Residential (cents per kilowatt-hour)	6.86	6.77	7.17	7.52	7.24	7.18	7.02	Low	7.53	7.68	7.28	7.38	7.33	7.84
								Base	7.69	7.88	7.50	7.52	7.58	8.14
								High	7.86	8.08	7.72	7.67	7.83	8.44

¹The low prices are used with the high economic growth assumptions and the high prices are used with the low economic growth assumptions referred to in Table 2.

²Average for all grades and services.

³Wholesale No. 2 heating oil prices for 1982 are from the Monthly Petroleum Product Price Report.

⁴Retail residual fuel oil--average, all sulfur contents.

Note: First quarter 1984 estimated for all fuels except gasoline and residential natural gas.

Sources: Historical data: Energy Information Administration, Monthly Energy Review, DOE/EIA-0035(84/02); Petroleum Marketing Monthly, DOE/EIA-0380(84/02); and Monthly Petroleum Product Price Report, DOE/EIA-0032(82/13). All prices exclude taxes except gasoline, residential natural gas, and electricity. For 1982 only, the retail heating oil price includes taxes.

Table 5. International Petroleum Balance
(Million Barrels per Day, Except Closing Stocks)

	History						Projections						
	1982 Year	1st	2nd	1983 3rd	4th	Year	1st	2nd	1984 3rd	4th	Year	1st	1985 2nd
Supply ¹													
Production													
U.S. (50 States)	10.6	10.8	10.7	10.7	10.8	10.8	10.9	10.9	10.7	10.8	10.8	10.9	10.8
OPEC	19.7	16.3	17.6	20.1	20.0	18.5	18.9	18.3	19.5	20.2	19.2	19.6	19.0
Other Non-OPEC	12.3	12.8	13.2	13.4	13.7	13.3	14.1	14.1	14.1	14.1	14.1	14.2	14.2
Total Market Economies	42.8	39.9	41.6	44.3	44.5	42.6	43.9	43.3	44.3	45.1	44.2	44.7	44.0
Net Communist Exports	1.7	1.5	1.8	1.9	1.8	1.7	1.5	1.8	1.6	1.6	1.6	1.4	1.8
Total Supply	44.6	41.4	43.4	46.2	46.3	44.3	45.4	45.1	45.9	46.7	45.8	46.1	45.8
Net Stock Withdrawals (+) or Additions (-)													
U.S. (50 States excl. SPR)	0.3	1.2	-0.1	-0.6	0.6	0.3	0.2	-0.1	-0.7	0.2	-0.1	0.9	-0.7
U.S. SPR	-0.2	-0.2	-0.2	-0.3	-0.2	-0.2	-0.1	-0.3	-0.1	-0.1	-0.2	-0.1	-0.1
Other Market Economies	1.0	3.4	0.6	-1.3	0.2	0.7	1.6	-0.7	-0.8	0.5	0.1	0.7	-0.4
Total Stock Withdrawals (+)	1.2	4.4	0.2	-2.2	0.6	0.7	1.7	-1.1	-1.7	0.5	-0.1	1.4	-1.2
Product Supplied													
U.S. (50 States)	15.3	15.0	14.8	15.2	15.7	15.2	16.1	15.2	15.4	15.9	15.6	15.8	15.3
U.S. Territories	0.3	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Japan	4.6	4.8	3.9	4.1	4.8	4.4	5.1	4.0	4.1	4.8	4.5	5.0	4.1
OECD Europe	12.1	12.4	11.4	10.9	12.5	11.8	12.3	11.2	11.0	12.5	11.8	12.7	11.4
Other Market Economies	13.5	13.3	13.3	13.4	13.5	13.4	13.4	13.3	13.5	13.7	13.5	13.8	13.5
Total Market Economies	45.7	45.8	43.6	44.0	46.9	45.1	47.2	44.0	44.3	47.2	45.7	47.5	44.6
Closing Stocks (billion barrels)	4.2	4.5	4.5	4.7	4.7	4.7	4.5	4.6	4.8	4.7	4.7	4.6	4.7

¹Includes production of crude oil and natural gas liquids, other hydrogen and hydrocarbons for refinery feedstock, refinery gains, alcohol, liquids produced from coal and other sources, and net exports from Communist countries.

Note: Minor discrepancies with other published EIA historical data are due to rounding.

Sources: Energy Information Administration, Monthly Energy Review, DOE/EIA 0035(84/02) and 1982 International Energy Annual, DOE/EIA-0219(82); Organization for Economic Cooperation and Development, Quarterly Oil Statistics, Fourth Quarter 1983; and Petroleum Economics Limited, World Quarterly Primary Energy and Supply/Demand, January 25, 1984.

Table 6. International Economic Growth
(Percent Change from Previous Period)

	Annual Average 1970-1982	1983 ¹	1984	First Half 1985
OECD Total ²	2.8	2.2	4.1	2.6
United States ³	2.7	3.4	5.9	2.8
Western Europe	2.6	1.0	2.3	2.3
Japan ³	4.5	3.6	4.7	2.6
Other OECD ⁴	3.1	1.2	4.3	3.3

¹Preliminary estimates for Organization for Economic Cooperation and Development (OECD) countries.

²Gross Domestic Product.

³Gross National Product.

⁴Canada, Australia, and New Zealand.

Sources: Historical data: Organization for Economic Cooperation and Development, Main Economic Indicators, October 1983. Forecasts: Wharton Economic Forecasting Associates, World Economic Outlook, May 1984. Data Resources, Inc.: Canada's Forecast, CONTROL042384; European Forecast CONTROL041384; and Japan's Forecast, JPCONTROL0184.

Table 7. Quarterly Supply and Disposition of Petroleum: Base Case
(Million Barrels per Day, Except Stocks)

	History				Projections									
	1982 Year	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year	1st	2nd	
Supply														
Production														
Crude Oil	8.45	8.66	8.68	8.65	8.63	8.64	8.76	8.73	8.60	8.59	8.67	8.69	8.65	
Alaska, North Slope	1.42	1.64	1.64	1.64	1.65	1.64	1.71	1.71	1.61	1.61	1.64	1.74	1.73	
Subarctic	7.83	7.01	7.04	7.02	6.98	7.81	7.05	7.02	6.99	6.97	7.81	6.94	6.92	
Natural Gas Liquids	1.35	1.50	1.50	1.56	1.59	1.54	1.60	1.62	1.58	1.64	1.61	1.70	1.64	
Other Domestic	0.88	0.05	0.06	0.05	0.05	0.85	0.05	0.05	0.05	0.06	0.83	0.05	0.05	
Processing Gain	0.83	0.47	0.48	0.47	0.50	0.48	0.54	0.49	0.50	0.49	0.81	0.47	0.49	
Total Production	18.78	10.77	10.72	10.74	10.78	10.75	10.94	10.89	10.74	10.77	10.84	10.91	10.83	
Imports (including SPR)														
Crude Oil	3.49	2.49	3.30	4.09	3.34	3.31	3.14	3.82	4.21	3.71	3.72	2.76	3.96	
Refined Products	1.62	1.42	1.66	1.85	1.81	1.89	2.26	1.62	1.97	2.06	1.98	2.05	2.10	
Total Imports	5.11	3.90	4.95	5.94	5.16	4.99	5.40	5.44	6.18	5.77	5.70	4.81	6.06	
Exports														
Crude Oil	0.24	0.18	0.17	0.16	0.14	0.16	0.19	0.18	0.17	0.18	0.18	0.19	0.16	
Refined Products	0.38	0.70	0.64	0.47	0.49	0.57	0.47	0.54	0.53	0.53	0.52	0.55	0.55	
Total Exports	0.62	0.88	0.81	0.64	0.63	0.74	0.66	0.71	0.71	0.72	0.70	0.74	0.71	
Net Imports (incl SPR)	4.30	3.02	4.14	5.30	4.53	4.25	4.74	4.73	5.47	5.05	5.00	4.07	5.35	
Primary Stock Levels²														
(million barrels)														
Opening	1253.31	1168.19	1063.61	1076.77	1131.15	1168.19	1074.01	1052.24	1063.57	1125.31	1074.01	1106.82	1023.88	
Closing	1136.16	1063.61	1076.77	1131.15	1074.01	1074.01	1052.24	1063.57	1125.31	1106.82	1106.82	1023.88	1087.77	
Net Withdrawals	0.32	1.16	-0.14	-0.59	0.62	0.26	0.24	-0.12	-0.67	0.20	-0.89	0.92	-0.70	
(million barrels per day)														
SPR Fill Rate Additions ³ (-)	-0.17	-0.20	-0.23	-0.31	-0.20	-0.23	-0.14	-0.27	-0.15	-0.14	-0.18	-0.14	-0.14	
(million barrels per day)														
Total Primary Supply	15.23	14.76	14.49	15.14	15.73	15.03	15.78	15.22	15.38	15.68	15.57	15.75	15.33	
Product Supplied														
Motor Gasoline	6.24	6.29	6.68	6.81	6.69	6.62	6.34	6.72	6.84	6.65	6.64	6.30	6.67	
Distillate Fuel Oil	2.67	2.83	2.52	2.43	2.95	2.68	3.20	2.78	2.47	3.00	2.86	3.04	2.75	
Residual Fuel Oil	1.72	1.57	1.33	1.33	1.38	1.48	1.74	1.30	1.30	1.34	1.42	1.62	1.30	
Other Products ³	4.37	4.32	4.23	4.66	4.71	4.48	4.77	4.42	4.77	4.89	4.71	4.80	4.61	
Total Product Supplied	15.30	15.01	14.76	15.22	15.73	15.18	16.06	15.22	15.38	15.88	15.63	15.75	15.33	
Unaccounted for	-0.07	-0.26	-0.27	-0.09	0.00	-0.15	-0.28	0.00	0.00	0.00	-0.07	0.00	0.00	
Total Disposition	15.23	14.76	14.49	15.14	15.73	15.03	15.78	15.22	15.38	15.88	15.57	15.75	15.33	

SPR = Strategic Petroleum Reserve.
¹Lower-48 States and southern Alaska.
²Excludes crude oil for the Strategic Petroleum Reserve (SPR). The respondent universe for petroleum inventories was expanded in January 1983. This resulted in the addition of 32 million barrels to total petroleum stocks at the close of December 31, 1982. (See the Petroleum Supply Reporting System Overview and Table 30 in the March 1983 Petroleum Supply Monthly.)
³Includes Reclassified Petroleum Products.
 Note: Minor discrepancies with other EIA published historical data are due to rounding.
 Sources: Historical data: Energy Information Administration, 1982 Petroleum Supply Annual, DOE/EIA-340(83/06) and Petroleum Supply Monthly, DOE/EIA-0109(84/03). Data for March 1984 are preliminary.

Table 8. Quarterly Supply and Disposition of Petroleum: High Economic Growth Case
(Million Barrels per Day, Except Stocks)

	History					Projections							
	1982	1983				1984	1985						
	Year	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year	1st	2nd
Supply													
Production													
Crude Oil	8.65	8.66	8.68	8.65	8.63	8.66	8.76	8.73	8.60	8.59	8.67	8.69	8.65
Alaska, North Slope	1.62	1.64	1.64	1.64	1.65	1.64	1.71	1.71	1.61	1.61	1.66	1.74	1.73
Subarctic ¹	7.03	7.01	7.04	7.02	6.98	7.01	7.05	7.02	6.99	6.97	7.01	6.94	6.92
Natural Gas Liquids	1.53	1.60	1.50	1.56	1.59	1.56	1.60	1.62	1.58	1.64	1.61	1.70	1.64
Other Domestic	0.05	0.05	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.05	0.05	0.05
Processing Gain	0.53	0.47	0.48	0.47	0.50	0.48	0.54	0.49	0.51	0.50	0.51	0.47	0.50
Total Production	10.78	10.77	10.72	10.74	10.78	10.75	10.94	10.89	10.75	10.78	10.84	10.91	10.83
Imports (including SPR)													
Crude Oil	3.49	2.49	3.30	4.09	3.34	3.31	3.14	3.99	4.38	3.92	3.86	2.94	4.13
Refined Products	1.62	1.42	1.66	1.85	1.81	1.69	2.26	1.66	1.92	2.16	2.00	2.57	2.22
Total Imports	5.11	3.90	4.95	5.94	5.16	4.99	5.40	5.65	6.30	6.08	5.86	5.51	6.35
Exports													
Crude Oil	0.24	0.18	0.17	0.16	0.14	0.16	0.19	0.24	0.24	0.24	0.22	0.24	0.24
Refined Products	0.58	0.70	0.64	0.47	0.49	0.57	0.47	0.49	0.49	0.49	0.49	0.52	0.52
Total Exports	0.82	0.88	0.81	0.64	0.63	0.74	0.66	0.73	0.73	0.72	0.71	0.76	0.75
Net Imports (incl SPR)	4.30	3.02	4.14	5.30	4.53	4.25	4.74	4.92	5.58	5.36	5.15	4.76	5.59
Primary Stock Levels² (million barrels)													
Opening	1253.31	1168.19	1063.61	1076.77	1131.15	1168.19	1074.01	1052.24	1070.71	1117.16	1074.01	1088.39	1021.18
Closing	1136.10	1063.61	1076.77	1131.15	1074.01	1074.01	1052.24	1070.71	1117.16	1088.39	1088.39	1021.18	1050.24
Net Withdrawals	0.32	1.16	-0.14	-0.59	0.62	0.26	0.24	-0.20	-0.50	0.31	-0.04	0.75	-0.32
(million barrels per day)													
SPR Fill Rate Additions(-) ..	-0.17	-0.20	-0.23	-0.31	-0.20	-0.23	-0.14	-0.27	-0.15	-0.14	-0.18	-0.14	-0.14
(million barrels per day)													
Total Primary Supply	15.23	14.76	14.49	15.14	15.73	15.03	15.78	15.34	15.67	16.30	15.77	16.27	15.96
Product Supplied													
Motor Gasoline	6.54	6.29	6.68	6.81	6.69	6.62	6.34	6.74	6.90	6.76	6.69	6.44	6.84
Distillate Fuel Oil	2.67	2.83	2.52	2.43	2.95	2.68	3.20	2.80	2.55	3.10	2.91	3.17	2.89
Residual Fuel Oil	1.72	1.57	1.33	1.33	1.38	1.40	1.74	1.36	1.37	1.43	1.48	1.72	1.41
Other Products ³	4.37	4.32	4.23	4.66	4.71	4.48	4.77	4.43	4.85	5.01	4.77	4.95	4.82
Total Product Supplied	15.30	15.01	14.76	15.22	15.73	15.18	16.06	15.34	15.67	16.30	15.84	16.27	15.96
Unaccounted for	-0.07	-0.26	-0.27	-0.09	0.00	-0.15	-0.28	0.00	0.00	0.00	-0.07	0.00	0.00
Total Disposition	15.23	14.76	14.49	15.14	15.73	15.03	15.78	15.34	15.67	16.30	15.77	16.27	15.96

SPR = Strategic Petroleum Reserve.

¹Lower-48 States and southern Alaska.

²Excludes crude oil for the Strategic Petroleum Reserve (SPR). The respondent universe for petroleum inventories was expanded in January 1983. This resulted in the addition of 32 million barrels to total petroleum stocks at the close of December 31, 1982. (See the Petroleum Supply Reporting System Overview and Table 30 in the March 1983 *Petroleum Supply Monthly*.)

³Includes Reclassified Petroleum Products.

Note: Minor discrepancies with other EIA published historical data are due to rounding.

Sources: Historical data: Energy Information Administration, 1982 *Petroleum Supply Annual*, DOE/EIA-340(83/06) and *Petroleum Supply Monthly*, DOE/EIA-0109(84/03). Data for March 1984 are preliminary.

Table 9. Quarterly Supply and Disposition of Petroleum: Low Economic Growth Case
(Million Barrels per Day, Except Stocks)

	History				Projections								
	1982 Year	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year	1st	2nd
Supply													
Production													
Crude Oil	6.63	6.66	6.68	6.65	6.63	6.66	6.76	6.73	6.60	6.59	6.67	6.69	6.65
Alaska, North Slope	1.42	1.64	1.64	1.64	1.65	1.64	1.71	1.71	1.61	1.61	1.66	1.74	1.73
Subarctic	7.03	7.01	7.04	7.02	6.98	7.01	7.05	7.02	6.99	6.97	7.01	6.94	6.92
Natural Gas Liquids	1.35	1.60	1.50	1.56	1.59	1.56	1.60	1.62	1.58	1.64	1.61	1.70	1.64
Other Domestic	0.05	0.05	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.05	0.05	0.05
Processing Gain	0.33	0.47	0.48	0.47	0.50	0.48	0.54	0.49	0.50	0.49	0.50	0.45	0.48
Total Production	10.78	10.77	10.72	10.74	10.78	10.75	10.94	10.88	10.74	10.77	10.83	10.89	10.82
Imports (including SPR)													
Crude Oil	3.49	2.49	3.30	4.09	3.34	3.31	3.14	3.78	4.16	3.66	3.69	2.33	3.77
Refined Products	1.62	1.42	1.66	1.85	1.81	1.69	2.26	1.83	2.03	2.20	2.08	2.01	2.13
Total Imports	5.11	3.90	4.95	5.94	5.16	4.99	5.40	5.61	6.19	5.86	5.77	4.34	5.90
Exports													
Crude Oil	0.24	0.18	0.17	0.16	0.14	0.16	0.19	0.17	0.17	0.17	0.18	0.17	0.18
Refined Products	0.56	0.70	0.64	0.47	0.49	0.57	0.47	0.53	0.52	0.52	0.51	0.54	0.55
Total Exports	0.82	0.88	0.81	0.64	0.63	0.74	0.66	0.70	0.69	0.69	0.69	0.71	0.72
Net Imports (incl. SPR)	4.30	3.02	4.14	5.30	4.53	4.25	4.74	4.91	5.50	5.17	5.08	3.63	5.17
Primary Stock Levels² (million barrels)													
Opening	1253.31	1168.19	1063.61	1076.77	1131.15	1168.19	1074.01	1052.24	1078.82	1150.07	1074.01	1155.92	1053.78
Closing	1136.10	1063.61	1076.77	1131.15	1074.01	1074.01	1052.24	1078.82	1150.07	1155.92	1155.92	1053.78	1136.14
Net Withdrawals	0.32	1.16	-0.14	-0.59	0.62	0.28	0.24	-0.29	-0.77	-0.06	-0.22	1.13	-0.91
(million barrels per day)	-0.17	-0.20	-0.23	-0.31	-0.20	-0.23	-0.14	-0.27	-0.15	-0.14	-0.16	-0.14	-0.14
SPR Fill Rate Additions(-)													
(million barrels per day)													
Total Primary Supply	15.23	14.76	14.49	15.14	15.73	15.03	15.78	15.24	15.32	15.73	15.51	15.50	14.94
Product Supplied													
Motor Gasoline	6.54	6.29	6.68	6.81	6.69	6.62	6.34	6.72	6.83	6.61	6.63	6.25	6.58
Distillate Fuel Oil	2.67	2.83	2.52	2.43	2.95	2.66	3.20	2.77	2.45	2.96	2.85	2.97	2.65
Residual Fuel Oil	1.72	1.57	1.33	1.33	1.38	1.40	1.74	1.33	1.29	1.31	1.42	1.56	1.23
Other Products ³	4.37	4.32	4.23	4.66	4.71	4.48	4.77	4.41	4.75	4.84	4.69	4.72	4.48
Total Product Supplied	15.30	15.01	14.76	15.22	15.73	15.18	16.06	15.24	15.32	15.73	15.56	15.50	14.94
Unaccounted for	-0.07	-0.26	-0.27	-0.09	0.00	-0.15	-0.28	0.00	0.00	0.00	-0.07	0.00	0.00
Total Disposition	15.23	14.76	14.49	15.14	15.73	15.03	15.78	15.24	15.32	15.73	15.51	15.50	14.94

SPR = Strategic Petroleum Reserve.

¹Lower-48 States and southern Alaska.

²Excludes crude oil for the Strategic Petroleum Reserve (SPR). The respondent universe for petroleum inventories was expanded in January 1983. This resulted in the addition of 32 million barrels to total petroleum stocks at the close of December 31, 1982. (See the Petroleum Supply Reporting System Overview and Table 30 in the March 1983 Petroleum Supply Monthly.)

³Includes Reclassified Petroleum Products.

Note: Minor discrepancies with other EIA published historical data are due to rounding.

Sources: Historical data: Energy Information Administration, 1982 Petroleum Supply Annual, DOE/EIA-340(83/06) and Petroleum Supply Monthly, DOE/EIA-0109(84/03). Data for March 1984 are preliminary.

Table 10. Quarterly Supply and Disposition of Motor Gasoline: Base Case
(Million Barrels per Day, Except Stocks)

	History				Projections							
	1983				1984				1985			
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	Year	1st	2nd	
Supply												
Domestic Production ¹	6.34	6.41	6.61	6.37	6.33	6.24	6.34	6.45	6.41	6.26	6.41	6.41
Imports	0.20	0.27	0.28	0.27	0.25	0.29	0.23	0.22	0.24	0.22	0.23	0.23
Exports	0.02	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.02	0.02	0.02
Net Imports	0.18	0.27	0.27	0.26	0.24	0.29	0.22	0.21	0.23	0.21	0.21	0.21
Primary Finished Stock Levels² (million barrels)												
Opening	203.47	183.71	183.32	189.68	202.54	185.49	202.80	186.70	185.49	188.17	203.13	203.13
Closing	194.5	183.32	189.68	185.49	185.49	202.80	187.77	188.17	188.17	203.13	198.06	198.06
Net Withdrawals	0.00	0.00	-0.07	0.05	0.05	-0.19	0.17	-0.02	-0.01	-0.17	0.06	0.06
(million barrels per day)												
Total Primary Supply	6.54	6.68	6.80	6.68	6.62	6.34	6.72	6.65	6.64	6.30	6.67	6.67
Disposition												
Leaded	3.13	3.07	3.05	2.89	2.97	2.69	2.75	2.56	2.60	2.35	2.40	2.40
Unleaded	3.41	3.62	3.75	3.79	3.65	3.65	3.97	4.09	3.96	3.96	4.27	4.27
Total Product Supplied	6.54	6.68	6.81	6.69	6.62	6.34	6.72	6.65	6.54	6.30	6.67	6.67
Unaccounted for	0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	0.00	-0.00	-0.00	0.00	0.00
Total Disposition	6.54	6.68	6.80	6.68	6.62	6.34	6.72	6.65	6.54	6.30	6.67	6.67

¹Refinery production plus production at natural gas processing plants.

²Includes stocks at natural gas processing plants. Excludes stocks of reclassified motor gasoline blending components. The respondent universe for petroleum inventories was expanded in January 1983. This resulted in the addition of 8 million barrels to total motor gasoline stocks at the close of December 31, 1982. (See the Petroleum Supply Reporting System Overview and Table 30 in the March 1983 Petroleum Supply Monthly.)

Note: Minor discrepancies with other EIA published historical data are due to rounding.

Sources: Historical data: Energy Information Administration, 1982 Petroleum Supply Annual, DOE/EIA-340(83/06) and Petroleum Supply Monthly, DOE/EIA-0109(84/03). Data for March 1984 are preliminary.

Table 11. Quarterly Supply and Disposition of Distillate Fuel Oil: Base Case
(Million Barrels per Day, Except Stocks)

	History				Projections				
	1982		1983		1984		1985		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	
Supply									
Refinery Output	2.61	2.15	2.39	2.64	2.63	2.45	2.64	2.76	2.68
Imports	0.89	0.05	0.13	0.27	0.22	0.17	0.28	0.25	0.27
Exports	0.07	0.11	0.05	0.04	0.05	0.06	0.05	0.06	0.06
Net Imports	0.82	-0.06	0.08	0.23	0.16	0.10	0.23	0.19	0.21
Primary Stock Levels¹ (million barrels)									
Opening	191.54	185.58	118.72	113.80	154.75	185.58	140.40	155.21	140.40
Closing	178.59	118.72	113.80	154.75	140.40	140.40	109.64	150.75	150.75
Net Withdrawals	0.04	0.74	0.05	-0.45	0.16	0.12	-0.34	0.05	-0.03
(million barrels per day)									
Total Primary Supply	2.66	2.83	2.52	2.43	2.95	2.68	3.20	3.00	2.66
Product Supplied									
Nonutility Shipments	2.64	2.81	2.50	2.39	2.90	2.65	3.15	2.98	2.82
Electric Utility Shipments	0.03	0.02	0.02	0.04	0.04	0.03	0.05	0.03	0.04
Total Product Supplied	2.67	2.83	2.52	2.43	2.95	2.68	3.20	3.00	2.86
Electric Utility Consumption (million barrels)	0.04	0.03	0.03	0.05	0.06	0.05	0.05	0.04	0.04
Opening	26.09	23.37	22.39	21.47	20.70	23.37	18.80	18.31	18.80
Closing	23.37	22.39	21.47	20.70	18.80	18.80	19.06	17.30	17.30
Net Additions	-0.01	-0.01	-0.01	-0.01	-0.02	-0.01	0.00	-0.01	-0.00
(million barrels per day)									
Electric Utility Discrepancy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unaccounted for	-0.01	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	0.00	-0.00
Total Disposition	2.66	2.83	2.52	2.43	2.95	2.68	3.20	3.00	2.86

¹The respondent universe for petroleum inventories was expanded in January 1983. This resulted in the addition of 7 million barrels to total distillate fuel oil stocks at the close of December 31, 1982. (See the Petroleum Supply Reporting System Overview and Table 30 in the March 1983 Petroleum Supply Monthly.)
 Note: Minor discrepancies with other EIA published historical data are due to rounding.
 Sources: Historical data: Energy Information Administration, 1982 Petroleum Supply Annual DOE/EIA-340(83/06), the Petroleum Supply Monthly, DOE/EIA-0109(84/03), the Monthly Energy Review, DOE/EIA-0035(84/02), and the Electric Power Monthly, DOE/EIA-0226(84/03). Data for March 1984 are preliminary.

Table 12. Quarterly Supply and Disposition of Residual Fuel Oil: Base Case
(Million Barrels per Day, Except Stocks)

	History				Projections								
	1982		1983		1984		1985						
	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year	1st	2nd	
Supply													
Refinery Output	1.07	0.88	0.90	0.76	0.85	0.85	0.95	0.77	0.78	0.77	0.76	0.64	
Imports	0.78	0.67	0.71	0.69	0.68	0.69	0.93	0.78	0.77	0.80	0.91	0.87	
Exports	0.21	0.22	0.24	0.13	0.15	0.18	0.15	0.15	0.15	0.15	0.15	0.15	
Net Imports	0.57	0.45	0.47	0.56	0.53	0.50	0.78	0.63	0.62	0.65	0.76	0.72	
Primary Stock Levels¹ (million barrels)													
Opening	77.99	68.23	46.31	50.08	49.69	68.23	49.11	47.64	44.67	49.11	49.64	41.07	
Closing	66.20	46.31	50.08	49.69	49.11	49.11	47.64	49.63	49.64	49.64	41.07	46.18	
Net Withdrawals	0.03	0.24	-0.04	0.00	0.01	0.05	0.02	-0.02	-0.05	-0.00	0.10	-0.06	
(million barrels per day)													
Total Primary Supply	1.67	1.57	1.33	1.33	1.38	1.40	1.74	1.30	1.34	1.42	1.62	1.30	
Product Supplied													
Nonutility Shipments	1.09	1.04	0.82	0.69	0.84	0.84	1.11	0.77	0.84	0.85	1.01	0.82	
Electric Utility Shipments	0.62	0.53	0.52	0.65	0.54	0.56	0.63	0.53	0.50	0.57	0.61	0.48	
Total Product Supplied	1.72	1.57	1.33	1.33	1.38	1.40	1.74	1.30	1.34	1.42	1.62	1.30	
Electric Utility Consumption	0.64	0.68	0.53	0.71	0.59	0.63	0.64	0.52	0.53	0.57	0.63	0.50	
Electric Utility Stock Levels (million barrels)													
Opening	102.04	95.51	81.96	80.20	74.56	95.51	70.57	69.88	71.87	70.57	68.80	66.94	
Closing	95.51	81.96	80.20	74.56	70.57	70.57	69.88	71.07	68.80	68.80	66.94	65.08	
Net Additions	-0.02	-0.15	-0.02	-0.06	-0.04	-0.07	-0.01	0.01	-0.03	-0.00	-0.02	-0.02	
(million barrels per day)													
Electric Utility Discrepancy	0.00	0.00	0.00	-0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Unaccounted for	-0.05	-0.00	-0.00	0.00	0.00	-0.00	-0.00	-0.00	0.00	-0.00	-0.00	-0.00	
Total Disposition	1.67	1.57	1.33	1.33	1.38	1.40	1.74	1.30	1.34	1.42	1.62	1.30	

¹The respondent universe for petroleum inventories was expanded in January 1983. This resulted in the addition of 2 million barrels to total residual fuel oil stocks at the close of December 31, 1982. (See the Petroleum Supply Reporting System Overview and Table 30 in the March 1983 Petroleum Supply Monthly.)
Note: Minor discrepancies with other EIA published historical data are due to rounding.
Sources: Historical data: Energy Information Administration, 1982 Petroleum Supply Annual DOE/EIA-340(83/06), the Petroleum Supply Monthly, DOE/EIA-0109(84/03), the Monthly Energy Review, DOE/EIA-0035(84/02), and the Electric Power Monthly, DOE/EIA-0226(84/03). Data for March 1984 are preliminary.

Table 13. Petroleum Inventories^a

Unit of Measure	End of 1979	End of 1980 ^b	End of 1981	End of 1982 ^c	Mid- 1983	Base Case Projections		
						End of 1983	Mid- 1984	End of 1984
Million Barrels	1,250	1,284	1,254	1,136	1,077	1,074	1,064	1,107
Days' Supply ^d	68.2	75.0	78.9	75.7	70.7	66.9	69.2	70.3

^aPrimary stocks (excluding Strategic Petroleum Reserve).

^bBecause of changes in EIA reporting in January 1981, inventory data since 1980 include approximately 34 million barrels of petroleum stocks (primarily Alaskan crude oil in transit by water) that was not counted before. (See Table 31 and Explanatory Notes, 1981 Petroleum Supply Annual, DOE/EIA-340(81/01).)

^cThe respondent universe for petroleum inventories was expanded in January 1983. This resulted in the addition of 32 million barrels to total petroleum stocks at the close of December 31, 1982. (See the Petroleum Supply Reporting System Overview and Table 30 in the Petroleum Supply Monthly, DOE/EIA-0109(83/03).)

^dInventory level divided by the next quarter's figure for product supplied.

Note: Minor discrepancies with published EIA historical data are due to rounding.

Note: Due to the different basis for petroleum inventories, the pre-1981 days' supply measure is not comparable to subsequent days' supply measures. Using the old basis, the 1981 statistic would have been 76.9 days' supply. Due to the second revision of the reporting basis for petroleum inventories, pre-1983 days' supply measures are not comparable to subsequent days' supply measures. Using the 1981-82 basis, the end-of-1983 statistic would have been 64.9 days' supply.

Source: Historical data: Energy Information Administration, Petroleum Supply Monthly, DOE/EIA-0109-(84/03).

Table 14. Petroleum Demand: Sensitivity Differentials
(Million Barrels per Day)

Sensitivities	1984				1985	
	2nd	3rd	4th	Year	1st	2nd
Demand in 50 States						
Low Price	15.26	15.60	16.16	15.73	16.04	15.64
Base Case	15.22	15.38	15.88	15.63	15.75	15.33
High Price	15.19	15.35	15.80	15.55	15.63	15.15
Weather Sensitivity						
Adverse Weather	0.02	0.02	0.22	0.07	0.34	0.04
Favorable Weather	-0.03	-0.02	-0.21	-0.07	-0.34	-0.03
Economic Sensitivity						
High Economic Activity	0.03	0.07	0.14	0.06	0.22	0.32
Low Economic Activity	-0.01	-0.02	-0.07	-0.02	-0.12	-0.20
Combined Sensitivity Differentials ^a (excl. price)						
Upper Range	0.04	0.07	0.26	0.09	0.40	0.32
Lower Range	0.03	0.03	0.22	0.07	0.36	0.20
Range of Projected Demand						
High Demand ^b	15.30	15.67	16.42	15.82	16.44	15.96
Low Demand ^c	15.16	15.32	15.58	15.48	15.27	14.95

^aThe upper range of projected demand is calculated by taking the square root of the sum of the squared adverse weather and high economic sensitivities. The lower range of projected demand is calculated by taking the square root of the sum of the squared favorable weather and low economic sensitivities.

^bLow Price demand plus the combined effects of adverse weather and high economic activity.

^cHigh Price demand less the combined effects of favorable weather and low economic activity.

Table 15. Quarterly Supply and Disposition of Natural Gas
(Trillion Cubic Feet)

	History						Projections						
	1982	1983				1984	1985						
	Year	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year	1st	2nd
Supply													
Total Dry Gas Production ¹	17.76	4.07	3.72	3.90	4.27	15.97	4.58	4.33	4.28	4.43	17.62	4.51	4.38
Net Imports of Dry Gas	0.66	0.27	0.16	0.15	0.23	0.61	0.22	0.17	0.16	0.22	0.77	0.25	0.16
Net Imports of LNG	0.01	0.03	0.02	0.01	0.01	0.06	-0.00	-0.00	-0.00	-0.00	-0.01	-0.00	-0.00
Supplemental Gaseous Fuels	0.14	0.04	0.03	0.03	0.04	0.14	0.05	0.03	0.03	0.04	0.15	0.05	0.03
Total New Supply	18.78	4.41	3.94	4.10	4.55	17.00	4.84	4.53	4.46	4.70	18.53	4.80	4.56
Underground Working Gas Storage													
Opening	2.61	3.07	2.15	2.45	3.14	3.07	2.60	1.57	2.36	3.26	2.60	2.90	1.88
Closing	3.07	2.15	2.45	3.14	2.60	2.60	1.57	2.36	3.26	2.90	2.90	1.88	2.59
Net Withdrawals ²	-0.26	0.92	-0.31	-0.69	0.54	0.48	1.02	-0.79	-0.90	0.36	-0.30	1.02	-0.71
Total Primary Supply ¹	18.53	5.34	3.63	3.41	5.09	17.47	5.87	3.74	3.56	5.06	18.23	5.82	3.85
Consumption													
Electric Utilities	3.23	0.59	0.67	0.96	0.68	2.91	0.61	0.73	1.00	0.74	3.06	0.70	0.80
Refinery Fuel	0.59	0.14	0.16	0.16	0.16	0.62	0.16	0.15	0.16	0.16	0.62	0.14	0.15
All Other Uses ³	14.19	4.49	2.71	2.18	4.11	13.49	5.02	2.79	2.34	4.10	14.25	4.91	2.84
Subtotal	18.00	5.23	3.54	3.31	4.95	17.03	5.78	3.67	3.50	5.00	17.95	5.75	3.79
Unaccounted for	0.53	0.11	0.09	0.11	0.14	0.45	0.09	0.07	0.06	0.06	0.28	0.07	0.06
Total Disposition	18.53	5.34	3.63	3.41	5.09	17.47	5.87	3.74	3.56	5.06	18.23	5.82	3.85

LNG=Liquefied Natural Gas.

¹Excludes nonhydrocarbon gases removed.

²Includes withdrawals less injections of natural gas and changes in storage quantities due to gas migration.

³Includes residential, commercial, and industrial uses other than for refinery fuel, plus use of supplemental gas.

Note: Minor discrepancies with other EIA published historical data are due to rounding.

Sources: Historical data: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(84/02), *Natural Gas Monthly*, DOE/EIA-0130(84/03), and *Electric Power Monthly*, DOE/EIA-0226(84/03).

Table 16. Quarterly Supply and Disposition of Coal
(Million Short Tons)

	History						Projections						
	1982	1983				Year	1984				1985		
	Year	1st	2nd	3rd	4th		1st	2nd	3rd	4th	Year	1st	2nd
Supply													
Production	638.	193. ²	188. ²	200. ²	205. ²	765. ²	224. ²	227.	214.	209.	674.	218.	235.
Primary Stock Levels ¹													
Opening	24.	37.	40.	38.	35.	37.	34.	35.	37.	35.	34.	33.	31.
Closing	37.	40.	38.	35.	34.	34.	35. ²	37.	35.	33.	33.	31.	30.
Net Withdrawals	-13.	-3.	2.	3.	1.	3.	-1. ²	-2.	2.	2.	1.	2.	2.
Imports	1.	0.	0.	0.	0.	1.	0.	0.	0.	0.	1.	0.	0.
Exports	106.	15.	20.	22.	20.	78.	15.	20.	21.	21.	77.	17.	21.
Total New Domestic Supply ...	720.	175. ²	170. ²	181. ²	186. ²	712. ²	208. ²	206.	196.	190.	800.	203.	216.
Secondary Stock Levels ³													
Opening	185.	195.	192.	197.	174.	195.	169.	175.	193.	179.	169.	170.	163.
Closing	195.	192.	197.	174.	169.	169.	175. ²	193.	179.	170.	170.	163.	182.
Net Withdrawals	-10.	3.	-5.	23.	5.	27.	-6. ²	-18.	14.	9.	-1.	7.	-19.
Total Indicated Consumption	710.	178. ²	165. ²	204. ²	191. ²	738. ²	202. ²	187.	210.	199.	799.	209.	197.
Domestic Consumption													
Coke Plants	41.	8.	9.	10.	10.	37.	12. ²	12.	11.	12.	48.	14.	13.
Electric Utilities	594.	146.	140.	178.	161.	625.	167.	158.	181.	167.	672.	175.	166.
Retail and General Industry ...	72.	19.	17.	18.	21.	74.	21. ²	18.	17.	21.	77.	21.	18.
Total Domestic Consumption ..	707.	173.	165.	206.	192.	737.	200. ²	188.	210.	199.	797.	209.	197.
Discrepancy ⁴	3.	5. ²	-0. ²	-2. ²	-1. ²	2. ²	2. ²	-0.	0.	0.	2.	0.	0.

¹Primary stocks are those held at the mines, preparation plants, and distribution points.

²Estimated.

³Secondary stocks are those held by users. Most of the secondary stocks are held by electric utilities.

⁴Historical period discrepancy reflects unaccounted for shipper and receiver reporting discrepancies.

Note: Rows and columns may not add due to independent rounding. Zeros indicate amounts of less than 500,000 tons.

Sources: Historical data: Energy Information Administration, Monthly Energy Review, DOE/EIA-0035(84/02), and Quarterly Coal Report, DOE/EIA-0121(83/4Q).

Table 17. Quarterly Supply and Disposition of Electricity
(Billion Kilowatt-Hours)

	History					Projections							
	1982	1983				1984	1985						
	Year	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year	1st	2nd
Generation													
Coal	1192.00	296.45	280.92	359.74	322.31	1259.42	336.71	318.15	361.87	333.01	1349.75	351.22	333.23
Petroleum	146.80	38.02	30.53	40.74	35.21	144.50	36.82	29.75	35.11	30.52	132.20	35.29	28.34
Natural Gas	305.26	56.07	62.71	90.80	64.52	274.10	57.72	68.25	93.87	69.22	289.08	65.30	74.45
Nuclear Power	282.77	71.16	68.54	76.81	77.17	293.68	84.09	70.29	86.82	87.57	328.77	85.21	80.65
Hydropower	309.21	87.49	91.88	75.65	77.12	332.13	88.06	89.62	67.50	66.84	312.01	74.43	77.72
Geothermal and Other ¹	5.16	1.36	1.24	1.98	1.88	6.46	1.89	1.64	1.91	1.90	7.34	1.89	1.78
Total Generation	2241.21	550.55	535.81	645.73	578.20	2310.28	605.31	577.70	647.08	589.06	2419.15	613.34	596.17
Net Imports	29.31	8.20	7.51	9.88	9.61	35.20	8.85	8.10	10.67	10.38	38.00	9.55	8.74
Total Supply	2270.52	558.75	543.32	655.61	587.81	2345.48	614.16	585.80	657.75	599.44	2457.15	622.89	604.91
T & D Loss²	185.45	38.27	49.11	53.74	55.61	196.71	33.86	50.38	56.57	51.55	192.36	53.57	52.02
Total Consumption (sales) ..	2085.07	520.48	494.22	601.87	532.20	2148.77	580.30	535.42	601.18	547.89	2264.79	569.32	552.89

¹Includes wood and waste.

²Transmission and distribution losses through the power network, calculated as total supply minus total sales.

Note: Minor discrepancies with other EIA published historical data are due to rounding.

Source: Historical data: Energy Information Administration, Monthly Energy Review, DOE/EIA-0035(84/02), and Electric Power Monthly DOE/EIA-0226(84/03).

Table 18. Quarterly Supply and Disposition of Total Energy
(Quadrillion Btu)

	History						Projections						
	1982	1983		1984		1985		1986		1987			
	Year	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year	1st	2nd
Supply													
Production													
Petroleum ¹	20.50	5.07	5.11	5.17	5.17	20.53	5.18	5.17	5.15	5.16	20.67	5.13	5.14
Natural Gas ²	18.26	4.19	3.83	4.01	4.39	16.42	4.70	4.45	4.40	4.56	18.11	4.63	4.50
Coal	18.68	4.25	4.13	4.40	4.51	17.29	4.94	5.01	4.71	4.59	19.25	4.80	5.17
Nuclear Power	3.11	0.78	0.75	0.85	0.85	3.23	0.93	0.77	0.96	0.96	3.62	0.94	0.89
Hydropower ³	3.27	0.93	0.97	0.80	0.82	3.51	0.93	0.95	0.72	0.71	3.30	0.79	0.82
Geothermal and Other ⁴	0.11	0.03	0.03	0.04	0.04	0.14	0.04	0.04	0.04	0.04	0.16	0.04	0.04
Subtotal	63.05	15.25	14.82	15.27	15.78	61.12	16.72	16.39	15.98	16.03	65.12	16.33	16.56
Net Imports													
Crude Oil	6.92	1.21	1.66	2.10	1.71	6.67	1.56	1.93	2.16	1.89	7.55	1.35	2.01
Other Petroleum	2.13	0.36	0.52	0.71	0.68	2.26	0.91	0.54	0.73	0.77	2.95	0.75	0.78
Natural Gas (Dry)	0.89	0.27	0.17	0.16	0.23	0.83	0.23	0.17	0.16	0.23	0.79	0.25	0.16
Liquefied Natural Gas	0.01	0.03	0.02	0.01	0.01	0.08	-0.00	-0.00	-0.00	-0.00	-0.01	-0.00	-0.00
Coal and Coke	-2.79	-0.39	-0.53	-0.58	-0.53	-2.03	-0.39	-0.53	-0.54	-0.55	-2.01	-0.45	-0.56
Electricity	0.32	0.09	0.09	0.09	0.09	0.34	0.09	0.08	0.11	0.11	0.40	0.10	0.09
Subtotal	7.47	1.56	1.92	2.49	2.19	8.16	2.40	2.19	2.62	2.45	9.66	1.99	2.48
Primary Stocks													
Net Withdrawals	-0.16	1.45	-0.30	-0.94	0.87	1.08	1.15	-0.97	-1.22	0.50	-0.54	1.54	-1.05
SPR Fill Rate Additions(-)	-0.37	-0.10	-0.12	-0.17	-0.11	-0.30	-0.07	-0.14	-0.08	-0.08	-0.38	-0.08	-0.08
Secondary Stocks ⁵													
Net Withdrawals	-0.15	0.16	-0.09	0.53	0.14	0.75	-0.10	-0.42	0.29	0.23	-0.01	0.15	-0.30
Total Supply ⁶	70.63	18.31	16.23	17.19	18.87	70.61	20.10	17.05	17.59	19.13	73.86	19.94	17.54
Consumption													
Nonutility Uses													
Petroleum	20.46	6.91	6.94	7.14	7.45	20.44	7.58	7.22	7.31	7.62	29.74	7.34	7.31
Natural Gas ⁷	15.16	4.75	2.95	2.40	4.38	14.48	5.31	3.08	2.62	4.43	15.45	5.26	3.14
Coal	2.49	0.63	0.60	0.66	0.74	2.63	0.78	0.70	0.71	0.79	2.99	0.82	0.74
Subtotal	46.91	12.29	10.49	10.20	12.57	45.55	13.68	11.01	10.65	12.85	48.18	13.42	11.19
Electric Utility Inputs													
Petroleum	1.57	0.40	0.33	0.44	0.38	1.54	0.39	0.32	0.38	0.33	1.42	0.38	0.31
Natural Gas	3.34	0.61	0.69	1.00	0.71	3.01	0.63	0.76	1.04	0.77	3.19	0.72	0.82
Coal	12.39	3.09	2.95	3.77	3.41	13.23	3.53	3.34	3.80	3.50	14.16	3.69	3.50
Nuclear Power	3.11	0.78	0.75	0.85	0.85	3.23	0.93	0.77	0.96	0.96	3.62	0.94	0.89
Hydropower ⁸	3.69	1.01	1.06	0.89	0.90	3.86	1.02	1.03	0.83	0.82	3.78	0.89	0.92
Geothermal and Other	0.11	0.03	0.03	0.04	0.04	0.14	0.04	0.04	0.04	0.04	0.16	0.04	0.04
Subtotal	24.32	5.92	5.81	6.99	6.29	25.82	6.55	6.26	7.04	6.42	26.27	6.66	6.47
Gross Energy Consumption ⁶	70.82	18.21	16.30	17.19	18.86	70.57	20.22	17.27	17.69	19.26	74.44	20.08	17.66
Electric Utility Adjustments													
Conversion Loss ⁹	17.16	4.15	4.15	4.96	4.52	17.75	4.48	4.45	5.00	4.56	18.49	4.73	4.60
Total Net Energy	53.66	14.06	12.15	12.23	14.34	52.79	15.74	12.82	12.69	14.70	55.95	15.35	13.06
Unaccounted for	-0.19	+0.10	-0.08	0.00	0.01	0.04	-0.12	-0.22	-0.11	-0.13	-0.58	-0.14	-0.12
Total Disposition	70.63	18.31	16.23	17.19	18.87	70.61	20.10	17.05	17.59	19.13	73.86	19.94	17.54

SPR = Strategic Petroleum Reserve.

¹Includes crude oil and lease condensate; natural gas liquids; hydrogen, etc., input to oil refineries.²Total dry gas production excluding nonhydrocarbon gases removed.³Includes industrial production.⁴Includes wood and waste used to generate electricity.⁵Primarily electric utility stocks.⁶This total excludes approximately 2 quadrillion Btu of wood.⁷Includes natural gas used as refinery fuel.⁸Includes industrial hydroelectric production and net imports of electricity.⁹Includes plant use and T & D losses.

Note: The conversion from physical units to Btu is calculated by STIFS using a subset of Monthly Energy Review conversion factors. Consequently, the historical data will not precisely match that published in the Monthly Energy Review. In addition, minor discrepancies with EIA published historical data are due to rounding.

Source: Historical data: Energy Information Administration, Monthly Energy Review, DOE/EIA-0035(84/02) and Electric Power Monthly, DOE/EIA-0226(84/03).

See note above.

Forecast Conversion Factors Used in STIFS

Most of the conversion factors used by the Short-Term Integrated Forecasting System (STIFS) are the 1983-84 EIA standard conversion factors (found in the Monthly Energy Review). Special factors used in STIFS are derived from data in the Monthly Energy Review or from energy data reports such as the Petroleum Supply Monthly.

Product Identification	Unit	Btu/Unit
A. Thermal Content of Fuels and Energy		
Crude Oil Production	barrel	5,800,000
Crude Oil Imports	"	5,824,000
Unfinished Oils	"	5,825,000
Total Petroleum Consumed	"	5,410,000
Total Petroleum Imports	"	5,768,000
Total Petroleum Exports	"	5,800,000
Motor Gasoline	"	5,253,000
Jet Fuel	"	5,615,000
Distillate Fuel Oil	"	5,825,000
Refinery Fuel (Liquids)	"	5,850,000
All Refinery Inputs	"	5,682,000
Residual Fuel Oil	"	6,287,000
LPG and LRG	"	3,612,000
Ethane	"	3,082,000
Hydrogen, etc. to Refineries	"	3,500,000
Natural Gas Liquids (Production)	"	3,859,000
Natural Gas Consumption (dry)	cubic foot	1,028
Natural Gas Imports	"	1,018
Natural Gas Exports	"	1,011
Synthetic Gas Production	"	1,000
Natural Gas Refinery Fuel	"	1,021
Bituminous Coal & Lignite Consumed	short ton	21,547,000
Coal to Electric Utilities	"	21,160,000
Bituminous Coal and Lignite Prod.	"	22,015,000
Coking Coal	"	23,800,000
General Ind. and Retail Coal	"	23,800,000
Coke	"	26,000,000
Bituminous Coal and Lignite Exports	"	26,300,000
Bituminous Coal and Lignite Imports	"	25,000,000
B. Efficiency of Conversion Processes		
1. Electric Power Generation		
Fuel or Power Source:		Btu/KWh (heat rate)
Coal		10,504
Crude Oil		10,724
Distillate Fuel Oil		13,501
Residual Fuel Oil		10,625
Geothermal and Other Energy		21,594
Nuclear Energy		11,015
Natural Gas		10,991
Hydropower		10,470
2. Other Conversion Processes		Btu Out/Btu In
Coke		0.70
Synthetic Gas		0.95

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