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Preface

The Energy Information Administration (EIA) quarterly forecasts of short-term energy supply, demand, and prices are revised in January, April, July, and October 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 1986.

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, Inc., (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, middle, and high economic growth scenarios which incorporate high, middle, and low crude oil price trajectories. The discussion and tables in this volume primarily refer to the middle, 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.

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 data in this Outlook are due to independent rounding. All percentage changes are calculated from the values in the tables rather than from the rounded numbers cited in the text. Unless otherwise noted, data for the fourth quarter of 1984 are considered estimates because actual data in most cases were not available for December.

Annual Energy Outlook, 1984 Now Available

The Short-Term Energy Outlook provides forecasts of the energy situation for 1985 and the first half of 1986. For readers interested in midterm forecasts, the Annual Energy Outlook, 1984 is now available. This report provides forecasts of energy supply, demand, and prices for 1990 and 1995. In addition to a base case discussion, the report examines the effects of higher and lower assumptions about economic growth and world oil prices, and also discusses many of the other uncertainties important to the midterm energy outlook.

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1. Highlights

The projections in this Short-Term Energy Outlook (Outlook) extend from the beginning of 1985 through the first half of 1986. The energy picture for 1985 is projected to be quite different from that during 1984, mainly because of a slower rate of increase expected for economic activity. The economy in 1984 experienced very rapid growth. As a result, the demand for most energy sources in 1984 was up significantly from 1983 levels, in some instances reversing downward trends that had persisted for several years. In contrast, 1985 is projected to be a year of much slower economic expansion compared to 1984. The combination of assumed lower economic growth and continued energy conservation in 1985 is expected to result in much slower growth in energy demand than during 1984. Economic growth is assumed to continue during the first half of 1986, and energy demand during the first half of 1986 is projected to be slightly higher than the first-half 1985 level.

Domestic petroleum demand in 1984 showed an increase, on an annual basis, for the first time since 1978. Because of the economic expansion, domestic petroleum consumption in 1984 averaged almost 15.8 million barrels per day--over 3 percent higher than the 1983 level. (The base case assumptions and projections are summarized in Table 1.) Despite continued economic growth assumed for this year, however, no growth in U.S. petroleum demand is projected between 1984 and 1985. Petroleum demand in the first half of 1986 is projected to be slightly above the first-half 1985 level in response to falling crude oil prices. Net petroleum imports, which rose by 9 percent in 1984 to 4.7 million barrels per day, are expected to decline somewhat in 1985 and during the first half of 1986. The price of imported crude oil to the United States is assumed to fall to about \$28 per barrel (in nominal terms) by the end of the first quarter of 1985 and then remain at that level through 1985 and the first half of 1986. This analysis assumes that the existing downward pressure on oil prices does not result in any additional price decrease and that no serious disruption of world oil markets occurs, an event that could have major impacts on the domestic oil price and on the supply, demand, and import situation.

The level of petroleum demand in 1984 is lower than forecast in the October 1984 Outlook, due primarily to lower-than-expected demand for residual fuel oil in the fourth quarter. The projected level of domestic petroleum demand in 1985 also has been revised downward in this Outlook from the previous forecast because the decline in the projected demand for other petroleum products in 1985 now outweighs the increase in the projected demand for motor gasoline. Similarly, economic growth for 1985 is assumed to be somewhat lower than the rate published in the October Outlook: Real gross national product (GNP) is now assumed to grow by 2.5 percent between 1984 and 1985 (compared with the 2.7 percent forecast previously), and industrial production is assumed to grow by 1.8 percent (rather than 3.6 percent) during that period.

An increase of nearly 2 percent in the level of oil consumption in the market economies (a group of countries that excludes Communist countries) is estimated for 1984, reversing the downward trend experienced since 1979. Consumption in the market economies is projected to increase by less than 1 percent between 1984 and 1985 and by about 1 percent between the first half of 1985 and the first half of 1986. Economic growth in the industrial nations is assumed to continue in 1985 and the first half of 1986, although at a more modest rate than in 1984.

Table 1. Summary of Base Case Assumptions and Projections

	History		1984	Projections	Annual Percentage Change		
	1982	1983		1985	1982-1983	1983-1984	1984-1985
Assumptions							
Real Gross National Product (billion 1972 dollars)	1,480	1,535	1,638	1,679	3.7	6.7	2.5
Index of Industrial Production (Mfg.) (index, 1967=100)	137.5	148.2	164.8	167.7	7.8	11.2	1.8
Average Cost of Imported Crude Oil (nominal dollars per barrel)	33.55	29.30	28.90	28.10	-12.7	-1.4	-2.8
Price Projections (nominal values)^a							
Motor Gasoline ^b (dollars per gallon)	1.28	1.22	1.20	1.18	-4.7	-1.6	-1.7
Retail No. 2 Heating Oil (dollars per gallon)	1.16	1.08	1.08	1.08	-6.9	0.0	0.0
Residential Natural Gas (dollars per thousand cubic feet)	5.17	6.06	6.12	6.27	17.2	1.0	2.5
Residential Electricity (cents per kilowatthour)	6.86	7.18	7.56	7.78	4.7	5.3	2.9
Consumption Projections							
Total Market Economies Petroleum Consumption (million barrels per day)	46.3	45.3	46.1	46.4	-2.2	1.8	0.7
U.S. Total Petroleum Consumption (million barrels per day)	15.30	15.23	15.75	15.69	-0.5	3.4	-0.4
Motor Gasoline	6.54	6.62	6.71	6.75	1.2	1.4	0.6
Distillate Fuel Oil	2.67	2.69	2.86	2.76	0.7	6.3	-3.5
Residual Fuel Oil	1.72	1.42	1.37	1.31	-17.4	-3.5	-4.4
Other Petroleum ^c	4.37	4.50	4.82	4.86	3.0	7.1	0.8
Net Petroleum Imports (million barrels per day, including SPR ^d)	4.30	4.31	4.70	4.61	0.2	9.0	-1.9
Coal Consumption (million short tons)	707	737	794	838	4.2	7.7	5.5
Natural Gas Consumption (trillion cubic feet)	18.00	17.06	17.50	17.82	-5.2	2.6	1.8
Electricity Generation (billion kilowatthours)	2,241.2	2,310.3	2,414.8	2,489.4	3.1	4.5	3.1
Total Energy Consumption ^e (quadrillion Btu)	70.82	70.72	73.85	75.40	-0.1	4.4	2.1
Thousand Btu/1972 Dollar of GNP	47.85	46.07	45.09	44.91	-3.7	-2.1	-0.4

^aAll prices include taxes, except retail no. 2 heating oil prices.

^bAverage for all grades and services.

^cIncludes crude oil, pentanes plus, other hydrocarbons and alcohol, unfinished oil, and gasoline blending components.

^dSPR = Strategic Petroleum Reserve.

^eThe conversion from physical units to Btu is calculated by STIFS using a subset of Monthly Energy Review (MER) conversion factors. Consequently, the historical data will not precisely match that published in the MER.

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 (84/10), 1983 International Energy Annual, DOE/EIA-0219(83), Petroleum Marketing Monthly, DOE/EIA-0380 (84/10), Petroleum Supply Monthly, DOE/EIA-0109(84/11), Petroleum Supply Annual, 1983, DOE/EIA-0340(83)/1, Natural Gas Monthly, DOE/EIA-0130(84/11), Electric Power Monthly, DOE/EIA-0276(84/11), and Quarterly Coal Report, DOE/EIA-0121(84/30); Organization for Economic Cooperation and Development, Quarterly Oil Statistics, Second Quarter 1984; Petroleum Economics Limited, World Quarterly Primary Energy and Supply/Demand, July 16, 1984. Macroeconomic projections are based on modifications to Data Resources, Inc., forecast CONTROL122384.

Domestic coal consumption and production are estimated to have risen substantially during 1984, by 8 percent and 14 percent, respectively. Growth in domestic coal consumption is projected to remain strong over the forecast period, with forecasted increases of more than 5 percent from 1984 to 1985 and nearly 4 percent from the first half of 1985 to the first half of 1986. This forecast is based on an expected increase in total electricity generation of 3 percent from 1984 to 1985 and an additional year-to-year increase of 2 percent for the first half of 1986. To meet the projected increase in coal demand, coal production is forecast to grow by 1 percent between 1984 and 1985 and by 4 percent during the first half of 1986. The slower rate of growth for coal production in 1985 reflects the expectation that consumer stocks of coal, which were increased during the third quarter of 1984 in anticipation of a miners' strike, will be drawn down to more normal levels in 1985.

The highlights from the base case forecast are as follows (Table 1):

- Despite the assumption of continued economic growth in 1985, total U.S. petroleum consumption is projected to be stable at the year-earlier level. Petroleum consumption in the first half of 1986 is projected to rise slightly above the year-earlier level.
 - Motor gasoline consumption is expected to remain relatively flat between 1984 and 1985, but decline by over 1 percent during the first half of 1986.
 - A decline of more than 3 percent in the consumption of distillate fuel oil, to 2.8 million barrels per day, is projected for 1985; a 1-percent decline is expected in the first half of 1986.
 - Residual fuel oil consumption is projected to fall by 4 percent between 1984 and 1985, but then remain relatively stable in the first half of 1986.
- Net oil imports are expected to fall slightly from 4.7 million barrels per day in 1984 to 4.6 million barrels per day in 1985. A small decline in the net imports level is also expected in the first half of 1986, compared to year-earlier levels, mainly because of the zero fill rate assumed for the Strategic Petroleum Reserve in fiscal year 1986.
- Assuming continued economic growth and only moderate increases in natural gas prices, consumption of natural gas is projected to rise to 17.8 trillion cubic feet in 1985. Natural gas consumption is projected to remain unchanged between first-half 1985 and first-half 1986. Natural gas production is expected to remain stable at 17.2 trillion cubic feet in 1985, and first-half 1986 production is projected to rise slightly from year-earlier levels.
- Domestic coal consumption is expected to increase to 838 million tons in 1985 (more than 5 percent higher than the 1984 level), with coal production at 898 million tons (less than 1 percent above the year-earlier level). Coal consumption and production in the first half of 1986 are forecast to rise by about 4 percent from year-earlier levels.

- An increase of about 3 percent in total electric power generation is projected from 1984 to 1985, and a further increase of 2 percent is expected from the first half of 1985 to the first half of 1986.
 - Generation levels from coal and nuclear power are projected to rise from 1984 to 1985, while natural gas-fired, petroleum-fired, and hydroelectric generation levels are expected to decline. These trends are expected to continue into the first half of 1986.
 - Net imports of electricity are expected to be about 41 billion kilowatthours in 1985, an increase of 3 billion kilowatthours from the 1984 level. This increasing trend is projected to continue in the first half of 1986.
- Total U.S. energy consumption (as measured by gross energy consumption) is projected to rise by 2 percent, to 75.4 quadrillion Btu, in 1985 and by over 1 percent between the first half of 1985 and the first of half of 1986.
 - The energy intensity of U.S. economic activity is projected to decline to 44.9 thousand Btu per 1972 dollar of real GNP in 1985. With U.S. energy use projected to rise less rapidly than real GNP from the first half of 1985 to the first half of 1986, a further slight decline in the energy/GNP ratio is expected.

The forecasts previously discussed are the base case projections. Additional sensitivity cases are discussed in the consumption section for petroleum supply and disposition, based on the combined effects of alternative assumptions about economic growth, oil prices, and weather. Should the imported crude oil prices, economic growth rates, or weather 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 1985 would increase by about 140,000 barrels per day (approximately 0.9 percent and 2.6 percent, respectively).
- For each \$1-per-barrel (approximately 3.6 percent) decline in the price of imported crude oil, petroleum consumption and total imports in 1985 would increase by 100,000 barrels per day (approximately 0.6 percent and 1.9 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 for those two quarters would increase by an average of about 250,000 barrels per day (approximately 1.6 percent and 4.9 percent, respectively).

Assuming that the impacts of prices, income, and weather on petroleum demand are symmetrical, the above estimates would also hold for changes in the opposite direction. However, some published studies comparing higher versus lower price effects suggest that the effect of price decreases on consumption could be smaller.

2. The Outlook

Forecast Assumptions

World Oil Prices

The economic factors responsible for the recent decline of and continuing downward pressure on oil prices include: the decline in world petroleum demand through 1983 and the current weak recovery in demand stemming from a decade of rapid price increases; the generally weak world economic activity; the substitution of coal, natural gas, and nuclear power for oil in electricity generation; the continuing strength of the dollar against major currencies; the inventory drawdowns through 1983 from unprecedented high levels; and the 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 delivered to U.S. refiners is assumed to decline to about \$28 per barrel by the end of the first quarter of 1985 and to remain at that level through the first half of 1986 for the following reasons:

- The assumed slight increase in the demand for oil in the market economy countries is not expected to be sufficient to offset the downward pressure on oil prices caused by continued increases in production by non-OPEC countries and past overproduction by OPEC members.
- The narrowing of the existing differential between the official prices of light and heavy crude oil prices is assumed to continue, with official prices for light crude declining towards spot market levels.
- The recent attempt by OPEC to restrain oil production and monitor prices is assumed not to be fully successful. OPEC's production rate is assumed to be adjusted to meet projected demand.

The three alternative forecasts 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 (Figure 1):

- High Economic Growth Case: As a result of lower levels of world 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 by the end of the first quarter of 1985 and to remain at that level through the first half of 1986.
- Base Case: The price of imported crude oil is assumed to decline to \$28 per barrel by the end of the first quarter of 1985 and to remain at that level through the first half of 1986.
- 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 the U.S. rate of inflation and to reach nearly \$31 per barrel by the end of the first half of 1986.

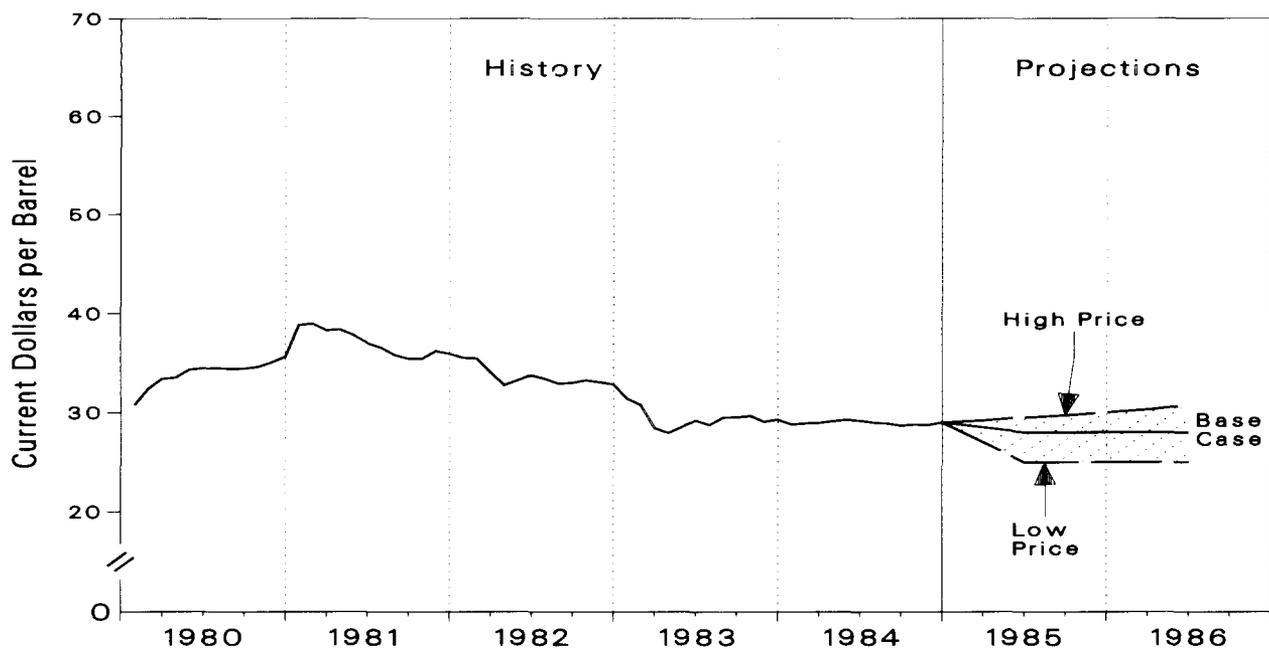


Figure 1. Imported Crude Oil Prices

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 world oil price assumption. This scenario does not imply that high economic growth will result in a lower oil price, nor is this case necessarily inconsistent. Rather, these sensitivity cases are designed to show the effects on petroleum demand of the extreme ranges of these variables.

Macroeconomic Activity

The base case projections assume that economic growth will continue through mid-1986, but at a lower rate than in 1984. Based on the Data Resources, Inc., forecast (DRI CONTROL122384), as modified to reflect imported crude oil price assumptions, growth in real gross national product (GNP) between 1983 and 1984 was assumed in this report to be 6.7 percent (although later data indicate that this rate may have been as high as 6.8 percent), slightly less than the 7.0 percent forecast in the October 1984 Outlook. The assumed rate of economic growth for 1985 also is lower than the rate published in the previous Outlook, principally because of a deterioration in the forecast for net exports and business investment. The base case assumes real GNP growth of 2.5 percent in 1985, accompanied by 2.7 percent growth in real disposable income and only 1.8 percent growth in the index of manufacturing activity, which is particularly sensitive to foreign trade. (Assumptions pertaining to the price of imported crude oil, the economy, and the weather are shown in Table 2.)

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

Assumptions	History				1984				1985				1986					
	1982 Year	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year	1st	2nd	1st	2nd			
Macroeconomic ^a																		
Real Gross National Product	1,480	1,491	1,525	1,550	1,573	1,535	1,611	1,639	1,645	1,656	1,638	1,670	1,687	1,705	1,722	1,696	1,738	1,756
Percent Change from Prior Year	-2.1	0.5	3.0	4.9	6.4	3.7	8.0	7.5	6.1	5.3	6.7	3.7	2.9	3.6	4.0	3.5	4.1	4.1
GDP Implicit Price Deflator (index, 1972=100)	207.4	212.9	214.3	215.9	218.2	215.3	220.6	222.4	224.6	226.3	223.5	228.3	229.7	230.9	232.5	230.4	234.3	236.2
Percent Change from Prior Year	6.0	4.4	3.6	3.5	3.8	3.8	3.6	3.8	4.0	3.7	3.8	3.5	3.3	2.8	2.7	3.1	2.6	2.8
Real Disposable Personal Income	1,059	1,073	1,082	1,102	1,124	1,095	1,148	1,165	1,177	1,185	1,169	1,195	1,202	1,209	1,216	1,206	1,224	1,233
Percent Change from Prior Year	1.0	1.9	2.6	4.2	5.2	3.4	7.0	7.7	6.8	5.4	6.8	4.1	3.2	2.7	2.6	3.2	2.4	2.6
Index of Industrial Production (Mfg.) (index, 1967=100)	137.5	138.4	145.2	152.8	156.5	148.2	161.0	164.4	167.2	166.7	164.8	168.6	170.0	171.8	174.4	171.2	177.0	179.9
Percent Change from Prior Year	-8.5	-1.0	5.1	11.0	16.4	7.8	16.3	13.2	9.4	6.5	11.2	3.7	1.8	0.4	1.1	1.8	1.9	2.7
Oil Price																		
Imported Crude Oil Price ^c	33.55	30.20	28.57	29.27	29.35	29.30	28.89	29.19	28.87	28.80	28.90	27.00	25.00	25.00	25.00	25.50	25.00	25.00
U.S. Refiners' Cost ^d	31.87	29.62	28.61	28.87	28.94	28.99	28.76	28.79	28.69	28.50	28.70	26.70	24.70	24.70	24.70	25.20	24.70	24.70
Weather ^e																		
Heating Degree Days	4,753	2,227	662	64	1,801	4,754	2,423	588	107	1,495	4,613	2,401	538	88	1,668	4,695	2,401	538
Cooling Degree Days	1,095	18	270	876	70	1,234	17	360	749	82	1,208	28	328	754	62	1,172	28	328

^aMacroeconomic projections from three Data Resources, Inc., model forecasts are seasonally adjusted at annual rates and modified as appropriate to the three world oil price cases. Macroeconomic data for the fourth quarter of 1984 are estimated.

^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(84/10); Bureau of Economic Analysis, U.S. Department of Commerce, Survey of Current Business, as revised, December 1984; National Oceanic and Atmospheric Administration, U.S. Department of Commerce, Monthly State, Regional, and National Heating/Cooling Degree Days Weighted by Population, November 1984; Federal Reserve System, Statistical Release G.12.3., December 1984. Macroeconomic projections are based on modifications to Data Resources, Inc., forecasts CONTROL2784, OPTIM2784, and EARLYPROCS2784.

Continued moderate increases are projected for real GNP and disposable income in the first half of 1986. Growth in real GNP from the first half of 1985 to the first half of 1986 is projected to be 2.9 percent. Real disposable income growth is projected to be somewhat lower over this interval, at 2.2 percent. Manufacturing growth is assumed to improve in the first half of 1986, growing at a projected rate of 2.3 percent from year-earlier levels, as the outlook for net exports stabilizes.

The possibility of either significantly faster or slower growth in economic aggregates should be considered because of uncertainties regarding economic policy, exchange rates, inflation and interest rates, and other important variables. Two alternative cases, designated as high and low economic growth, are presented to show a range of possible energy demand. The high economic growth case is based on a higher assumed level of economic growth, combined with a lower world oil price than in the base case; the reverse is true for the low economic growth case. Real GNP growth rates between 1984 and 1985 and between first-half 1985 and first-half 1986 are as follows: high growth, 3.5 percent and 4.1 percent, respectively; low growth, 1.0 percent and 2.6 percent, respectively. The high growth case assumes a more robust growth than the base case throughout the forecast period, while the low growth case assumes a mild recession during the first half of 1985, followed by a return to growth in the last half of 1985. High and low economic growth alternatives are based on DRI forecasts OPTIM122784 and EARLYRECESS122784, respectively, with modifications to reflect lower and higher oil price assumptions.

Energy Product Prices

Energy product prices in real terms are expected to remain stable or decrease slightly through 1985, with few exceptions. The average annual prices of petroleum products in nominal terms are expected to decline between 1984 and 1985, following the assumed decrease in world oil prices during the first quarter of 1985 (Figure 2 and Table 3). Residential natural gas and electricity prices are projected to increase at slightly under the rate of inflation between 1984 and 1985.

Since the beginning of 1985, the spread in the prices of various grades of motor gasoline has increased sharply in certain areas of the country according to preliminary reports in the trade press. Declines in domestic crude oil prices, coupled with the availability of cheaper, imported blending components, have apparently triggered limited "price wars" on leaded gasoline in certain cities. In addition, there have been higher-than-normal levels of cheap imports of gasoline to the east and west coasts, further depressing prices for some grades in these areas. Spot prices of gasoline, currently below those of distillate and residual fuel oil, may be a sign of possible further declines in the price of gasoline at the pump into the spring.

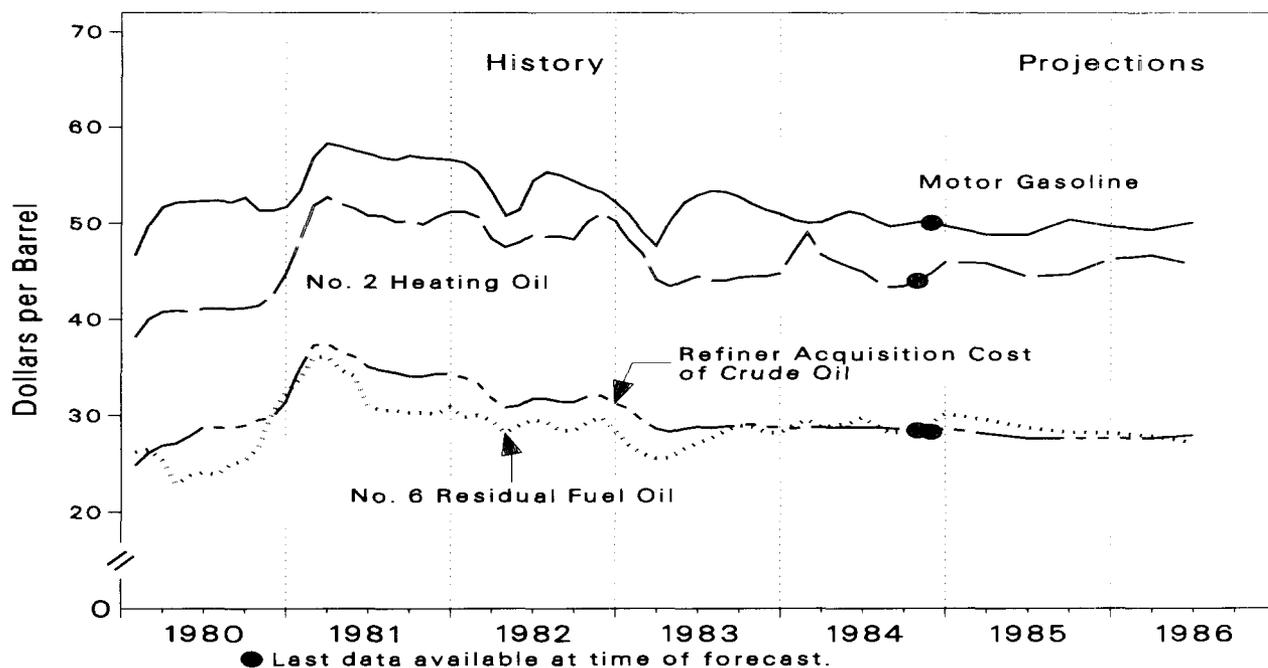


Figure 2. Retail Prices For Petroleum Products

The price of all types of gasoline, which averaged \$1.22 and \$1.20 per gallon in 1983 and 1984, respectively, is expected to decline by an average of an additional 2 cents in 1985. In the first half of 1986, gasoline prices are expected to increase only slightly (by less than the rate of inflation) compared to year-earlier levels, as refiner margins are projected to increase. Some seasonal variation in the price of gasoline is typical, with an increase normally occurring during the peak driving season. In 1984, however, the price actually fell by 3 cents per gallon during the summer and increased by about 1 cent in October. This countercyclical pattern may be explained by the relatively high levels of gasoline stocks at the beginning of the summer, a result of higher refinery runs necessary to meet the demand for heavy fuel oil in Europe which lead to a surplus of gasoline. Assuming normal weather, stable world oil prices, and a decline in the demand for heavy fuel oils currently spurred by the British coal strike, the normal seasonal pattern in gasoline prices is expected to resume through the first half of 1986.

Residential heating oil prices averaged \$1.08 per gallon in 1983 and are projected to remain at this level during 1984 and 1985. In the first quarter of 1984, heating oil prices increased sharply, because a combination of cold weather and refinery failures led to lower inventory levels. Conversely, the unexpectedly mild weather in the fourth quarter of 1984 and high stock levels are expected to keep heating oil prices low throughout the winter. The price of heating oil is projected to increase slightly in the first quarter of 1986, because retailers and refiners are expected to increase their margins.

The average price of residual fuel oil is estimated to have increased by 4 cents per gallon in 1984, even though demand is estimated to have decreased. This situation appears to have resulted from events in the international market, where the British coal strike increased the demand for residual fuel oil by 300,000 to 400,000 barrels per day and bid up the price on the international market. In addition, residual fuel oil appears to be readily interchangeable for heavier crude oils as a feedstock and thus shares in their increased demand and price. The price of residual fuel oil is expected to decrease by 1 cent per gallon in 1985 and by more than 3 cents per gallon between the first half of 1985 and the first half of 1986. All of this decrease is attributable to the assumed decrease in the world price of crude oil.

The residential price of electricity is projected to increase by about 3 percent in 1985 and by less than 4 percent in the first half of 1986 from year-earlier levels. This compares to an estimated 5.3-percent increase in 1984. A decline in interest rates is the primary reason for the smaller expected rise in electricity prices.

The real price of natural gas is expected to remain nearly constant between 1984 and 1985. The partial deregulation of natural gas that occurred on January 1, 1985, is expected to add upward pressure on wellhead prices because of contract terms that tie natural gas prices to the price of other fuels or to the prices of previously deregulated gas. Nevertheless, the downward pressure on natural gas prices resulting from current market conditions is expected to dominate the transition during 1985. Although there may be some isolated price adjustment problems, average wellhead prices are expected to remain stable.

Some natural gas contracts called for parity with oil prices, which are currently stable or declining slightly. In previous issues of the Outlook, there was considerable uncertainty about the future price of natural gas, given that price controls on about 50 percent of the gas at the wellhead were to be removed on January 1, 1985. Estimating how rapidly and completely existing contracts can be altered to reflect new market conditions is a major problem in forecasting wellhead prices. However, because some uncertainty does remain, three alternative assumptions about future natural gas prices have been developed. The base case assumes that wellhead prices remain flat in real terms throughout the forecast period. The low case assumes that the wellhead price remains nearly flat in nominal terms. The high price case is based partly upon the high oil price scenario and assumes that as the world price of crude oil increases, so will the natural gas wellhead price. In addition, the high price case assumes that natural gas contract issues regarding prices are largely resolved in favor of the producer.

International Petroleum Situation

Current Situation

With OPEC's difficulties in counteracting downward pressure on world oil prices, OPEC crude oil prices may show the first overall reduction since March of 1983. Spot prices persistently below official contract selling prices for all grades of crude oil (except Arabian Heavy) indicate the softness of the current oil market. In October of 1984, the combination of weak worldwide demand, overvaluation of light crude oils, and excess supply culminated in a decision by Norway to sell its

crude oil at spot-market-related prices, which, in turn, caused the United Kingdom and Nigeria to lower their official contract prices. As a result, spot prices fell sharply. Ministers from OPEC countries responded by cutting OPEC's crude oil production quota by 1.5 million barrels per day, effective November 1, 1984. This action produced a temporary firming of spot prices, but reports of continued price discounting and production in excess of quotas by some OPEC members raised doubts about the effectiveness of the cartel's effort to stabilize prices. Spot crude oil prices resumed their downward trend until late December.

At a meeting in late December, the OPEC members agreed on an effort to stabilize prices by establishing a monitoring system to police the cartel's pricing and production policies. Since that OPEC meeting, the prices of most light crude oils have remained relatively weak, but the prices of all crude oils have experienced some firming as a result of the higher demand during the recent cold winter weather. At a subsequent meeting in late January, the oil ministers from nine OPEC countries agreed to reduce the differential between the official contract prices of OPEC's heavy and light crude oils by, in general, reducing the prices of the lighter crude oils. Despite the recent market weakness, the increase in air attacks on oil tankers in the Persian Gulf at the end of 1984 and into 1985 serves as a reminder that the war between Iran and Iraq could escalate, leading to a possible disruption in the oil supply and upward pressure on world oil prices.

Recent Trends

In 1984, oil consumption in the market economies is estimated to have been almost 2 percent above the 1983 level, due to strong economic growth in the United States and Japan (Tables 4 and 5). This represents the first year-to-year increase in oil consumption in 4 years (Figure 3). However, oil demand in Europe remained weak. The generally flat demand in Europe can be attributed to a slow economic recovery, increased use of natural gas in the residential and industrial sectors (especially in France), a strong dollar pushing up oil prices in local currencies, and substitution of other energy sources for fuel oil in electricity generation. The coal strike in the United Kingdom, however, did result in a higher level of demand for fuel oil: an estimated average of 350,000 barrels per day of fuel oil (used in place of coal to generate electricity) was used during the April through October strike period in 1984 compared with the demand level for the same period a year earlier. This increase in the demand for fuel oil strengthened the spot price in Europe for heavy crude, and depressed the value of lighter products and lighter crude oils.

In the market economies, oil supply in 1984 was about 1 million barrels per day above the level in 1983, as a result of an increase of more than 2 percent in production. This increase in supply is solely the result of increased production in non-OPEC countries. After producing at higher rates in the first half of 1984, OPEC's production fell in the second half of the year, leaving average daily output from OPEC in 1984 at about the same level as in 1983. In the last 2 months of 1984, OPEC produced crude oil at an estimated 300,000 to 500,000 barrels per day above the November 1, 1984, quota of 16 million barrels per day. (OPEC production figures shown on Table 4 include an estimated 1.3 to 1.5 million barrels per day of natural gas liquids and condensates which are not subject to production quotas and, therefore, should be excluded when making comparisons to OPEC quotas.)

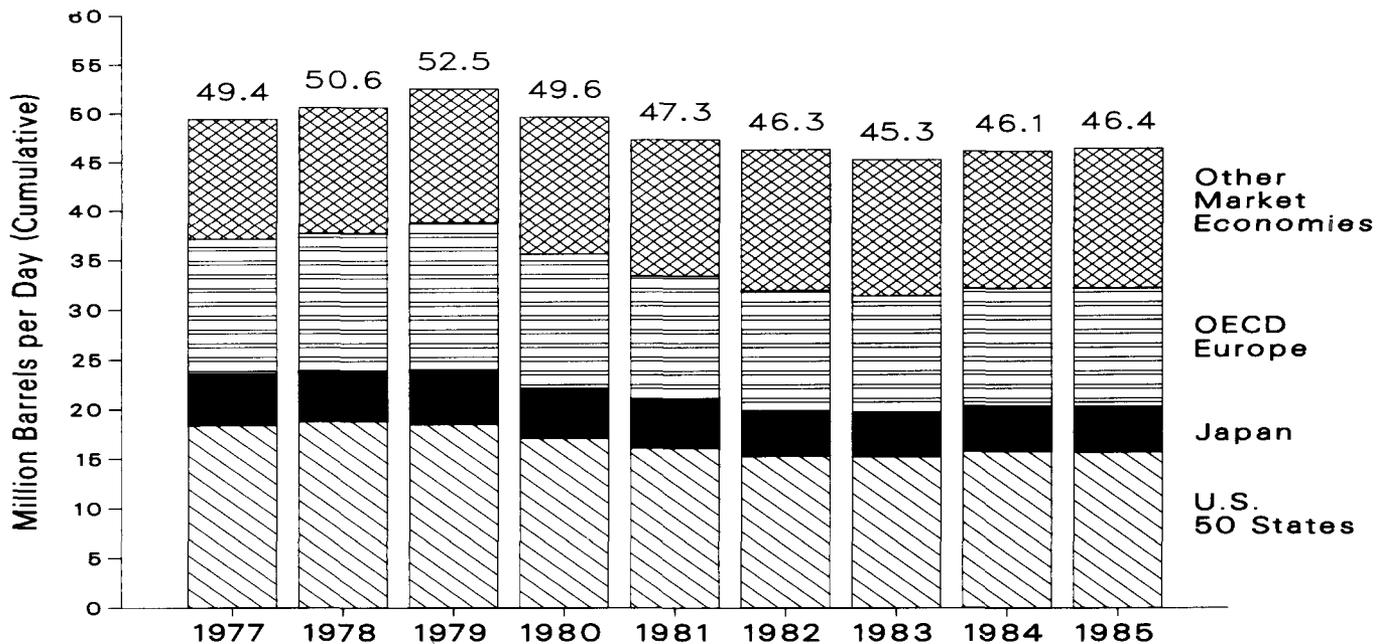


Figure 3. Market Economies Demand for Petroleum

After firming somewhat in the first 5 months of 1984, spot prices of crude oil began their current downward trend, which included several sharp drops and a few temporary recoveries. The first major decline, which occurred in the last week of July, could be linked directly to overproduction by several OPEC members. A temporary increase in spot prices, beginning in August, was attributed mainly to support of official OPEC contract prices by non-OPEC suppliers and major oil companies and lower OPEC production. Spot prices declined again in mid-October, when Norway, the United Kingdom, and Nigeria lowered prices on their overvalued light crude oils. The OPEC agreement to reduce the production quota at the emergency meeting on October 29, 1984, produced another temporary price recovery, but the downward trend resumed after reports of continued price discounting and production above quotas by some OPEC members raised doubts about the effectiveness of OPEC's efforts to stabilize prices. Spot oil prices continued to fall steadily until late December, when another meeting of the OPEC members established a monitoring system to police pricing and production policies.

International Petroleum Forecast

World economic growth is expected to remain strong through 1985 and the first half of 1986, but at a rate lower than was experienced during 1984 (Table 5). Total petroleum demand (product supplied) in the market economies is projected to increase by about 0.3 million barrels per day during 1985, with almost all of this increase occurring in Japan and "other" market economy countries (Figure 3). A slight decrease in U.S. petroleum demand is expected in 1985, but a small increase is expected in the first half of 1986. Petroleum demand in the developing countries is expected to pick up in 1985 and the first half of 1986, if economic conditions in these countries improve as projected.

OPEC's average crude oil production is expected to exceed its latest production quota (of 16 million barrels per day) by about 1.4 to 1.9 million barrels per day in 1985. Non-OPEC production (including production of natural gas liquids) is expected to increase by about 400,000 barrels per day in 1985. Net exports of oil from the Communist countries are forecast to remain level between 1984 and 1985. The total supply of oil to the market economies is forecast to increase by 1.6 percent in 1985, compared with the 2.2-percent increase observed in 1984.

Commercial petroleum stocks in the market economies at the end of 1985 are projected to be about the same as year-earlier levels (Figure 4). At the end of the first quarter of 1985, total petroleum stocks (including strategic petroleum reserves) in the market economies are projected to be at a level equivalent to about 100 days of forward consumption (at the next quarter's average consumption rate), which is considerably above the 88 days of forward consumption held during the market turbulence in 1979.

The war between Iran and Iraq is a continuing source of uncertainty and a threat to the stability of the world oil market. The conflict presents the possibility of a disruption in oil shipments from the Persian Gulf, as evidenced by the resumption of the conflict between these countries. Because about 8 to 9 million barrels per day of oil are expected to pass through the Strait of Hormuz during 1985, 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.

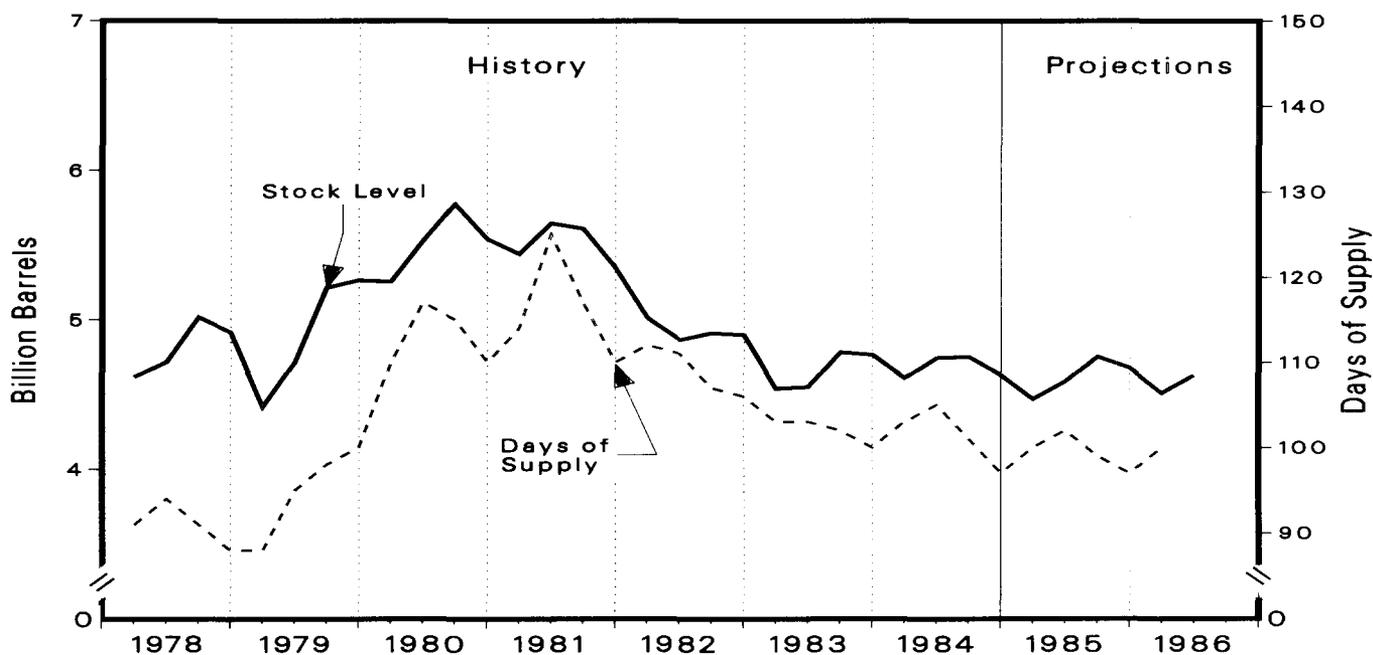


Figure 4. Market Economies Oil Stocks

U.S. Petroleum Outlook

Overview

U.S. petroleum demand is expected to decline slightly in 1985, after posting a 3.4-percent increase in 1984, the first year-to-year increase in 6 years. (The base case forecast is shown in Table 6; alternative cases for high and low growth are shown in Tables 7 and 8, respectively.) Growth in the economy, although lower than the rate in 1984, is projected to induce some growth in petroleum demand, but not enough to offset the declines associated with continued efficiency improvements, conservation, and fuel switching. During the first half of 1986, total petroleum demand is projected to increase by less than 1 percent from year-earlier levels, mainly as a result of increased petrochemical production and demand for feedstocks.

After a small increase in 1984, demand for motor gasoline is expected to remain basically flat in 1985, as continued efficiency improvements partially offset the stimulating effects of higher income and lower real gasoline prices. During the first half of 1986, motor gasoline consumption is expected to decline by just over 1 percent from the first half of 1985 level. After a substantial increase in 1984, distillate fuel oil consumption is expected to decline by about 3 percent in 1985, continuing the recent trend of households switching from oil to natural gas, electricity, and wood for space heating. Further slight declines (about 1 percent year-to-year) are predicted for the first half of 1986. Use of residual fuel oil is expected to decline by 4 percent between 1984 and 1985, resulting almost entirely from electric utilities' use of alternative fuels in place of petroleum. Residual fuel oil demand is projected to remain at about the same level in the first half of 1986 as a year earlier. The demand for other petroleum products is expected to be essentially flat in 1985, with a 5-percent increase projected in the first half of 1986, mainly because of increased demand for petrochemical feedstocks.

Primary petroleum stocks are projected to be drawn down to about 1,080 million barrels by the end of 1985, slightly below the closing level for 1984. During the first half of 1986, stocks are expected to be drawn down by about 60,000 barrels per day, to a level about 12 million barrels below projected year-earlier levels.

Net petroleum imports, including those for the Strategic Petroleum Reserve (SPR), are projected to average 4.6 million barrels per day in 1985, slightly below the 1984 level. The slight decline shown for net petroleum imports between first-half 1985 and first-half 1986 is mainly attributable to the zero fill rate assumed for the Strategic Petroleum Reserve in fiscal year 1986.

Domestic Crude Petroleum Production

Domestic crude oil production, nearly 8.7 million barrels per day in 1983, is estimated to have increased to nearly 8.8 million barrels per day in 1984 and is projected to grow to 8.9 million barrels per day in 1985. Total U.S. production of crude oil and lease condensate is expected to increase by less than 2 percent from 1984 to 1985 and then remain essentially unchanged in the first half of 1986 compared to year-earlier levels.

Production from the Alaskan North Slope is expected to increase by nearly 4 percent from 1984 to 1985, as additional production comes on line from the Kuparuk River field. North Slope production is expected to continue at the 1985 rate through the first half of 1986. Subarctic crude oil production is expected to increase by more than 1 percent between 1984 and 1985, with Louisiana production projected to make the major contribution. Subarctic production during the first half of 1986 is expected to remain level at 7.2 million barrels per day.

Motor Gasoline

Motor gasoline product supplied is estimated to have averaged 6.7 million barrels per day for 1984, or 1.4 percent higher than the level in 1983 (Table 9). For 1985, gasoline demand is expected to remain flat, as increases in demand resulting from a higher level of vehicle travel are approximately offset by changes in vehicle efficiency. However, between first-half 1985 and first-half 1986, increases in travel demand are expected to be less than increases in efficiency, leading to a decrease in product supplied of about 1 percent.

According to the Department of Transportation, efficiency (in terms of average, observed on-the-road miles per gallon) of passenger cars in the United States increased at an average annual rate of 3.7 percent between 1978 and 1982.¹ In 1983, auto efficiency increased by 2.2 percent. For the first 10 months of 1984, total travel (approximately 85 to 90 percent of which was gasoline-powered) increased by 4.1 percent over 1983 levels on an average daily basis. Gasoline consumption increased by approximately 1.3 percent over the same period, suggesting an improvement in vehicle miles per gallon between 1983 and 1984 of about 2.8 percent. This rate is below the average increase observed between 1978 and 1982.

For the forecast period, automobile efficiency is expected to grow by less than 3 percent on an average annual basis, and travel growth is expected to average about 2.5 percent annually through mid-1986. Combined, these projections imply little or no growth in fuel consumption for motor vehicle travel in 1985 and modest declines in the first half of 1986. Nevertheless, recent experience and the forecast in this Outlook are considerably different from the dropoff in gasoline consumption observed between 1978 and 1982, when gasoline product supplied fell at an average annual rate of 3.1 percent.

Distillate Fuel Oil

Together with the moderation in economic growth, particularly in the industrial sector, continued fuel switching by the residential sector is expected to result in a decline of more than 3 percent in distillate consumption in 1985 (Table 10). This decline follows a 6-percent increase in 1984, the largest percentage increase in distillate demand on an annual basis since 1976. The outlook for distillate demand in the first half of 1986 shows a slight decline from year-earlier levels.

¹U.S. Department of Transportation, Federal Highway Administration, Highway Statistics Division, Highway Statistics (Annual), Table VM-1 (Washington, DC, 1983).

The substantial growth of 6 percent in distillate consumption in 1984 was primarily the result of increased industrial production, which was up by 11 percent from year-earlier levels. While both diesel fuel and heating oil demand increased during the year, the percentage change for heating oil was lower, probably due to a continued reduction in the number of households using distillate oil for space heating. Concurrent with the stabilization in the economic recovery, the year-to-year rate of growth in distillate consumption moderated in each quarter of 1984, from 13-percent growth in the first quarter to no growth by the last quarter.

With less than 2-percent growth in industrial production expected in 1985, distillate demand is projected to fall by more than 3 percent to 2.76 million barrels per day. Falling real prices are not expected to offset the impact of continued household switching from distillate to alternative fuels for space heating. A decrease is also expected in the demand for diesel fuel, because 1984 was an unusually strong year for diesel consumption and because of the effects of the 6-cent-per-gallon increase in the excise tax for on-highway diesel fuel, which became effective on August 1, 1984.

A decrease of about 2 percent is forecast for distillate consumption during the first half of 1986. While minimal growth in industrial production is assumed, its impact is more than offset by the assumption of further fuel switching in the residential sector.

Residual Fuel Oil

Total consumption of residual fuel oil has declined steadily since 1977, reaching a level in 1984 that is less than half the amount used in 1977. This fuel has shown the largest rate of decrease of any of the petroleum products. However, the rate of decrease has changed significantly in recent years: Between 1981 and 1983, the average rate of decrease in residual fuel oil consumption was more than 17 percent per year; between 1983 and 1984, residual fuel oil use is only expected to decline by about 4 percent (Table 11). (This decline in use between 1983 and 1984 occurred at the same time that industrial production increased more than 11 percent and total electricity generation increased by more than 4 percent.) This decrease is projected to continue to slow because of fewer conservation and fuel switching opportunities as the market for this fuel shrinks.

Nonutility residual fuel oil demand is projected to remain flat between 1984 and 1985, despite a slight increase expected for industrial production. This represents a continuation of the situation experienced in 1984, when large increases in industrial activity resulted in no increase in nonutility residual fuel oil demand. If the 1984 relationship between changes in industrial activity and residual fuel oil were repeated in 1985, the decrease in residual demand would be much larger than projected here. Nonutility demand for residual fuel oil is expected to increase by 1 percent in the first half of 1986 compared with year-earlier levels.

Utility use of residual fuel oil fell by 7 percent during 1984, as electric utilities relied primarily to coal and nuclear power for generation needs. Despite projections of falling prices, residual fuel oil is expected to remain a relatively high-priced fuel option for electric utilities. As a result, utility demand for residual fuel oil is projected to continue to decline, by about 12 percent from 1984 to 1985 and by more than 4 percent from the first half of 1985 to the first half of 1986. Electric utilities are expected to continue to turn toward less expensive fuels, such as coal and nuclear power.

Other Petroleum Products

Other petroleum products supplied includes all petroleum products except motor gasoline, distillate, and residual fuel oil. Following a healthy increase of over 7 percent from 1983 to 1984, the "other" category is projected to increase by less than 1 percent from 1984 to 1985. Other petroleum product demands are projected to continue to grow in the first half of 1986, corresponding to expectations for continued growth in the industrial sector.

Jet fuel, feedstocks, and liquefied petroleum gases (LPG) are the principal components of the other products category. Based on preliminary data for the year, these three components accounted for 3.1 million barrels per day out of total other products supplied of 4.8 million barrels per day in 1984. The miscellaneous products category includes all the remaining petroleum products not accounted for elsewhere: kerosene, still gas, road oil and asphalt, petroleum coke, lubricants, waxes, aviation gasoline, special naphthas, and other small-volume finished petroleum products. Also included in the miscellaneous category are the remaining natural gas liquids, unfinished oils, and aviation and motor gasoline blending components. Crude oil consumed directly (about 65,000 barrels per day in 1984) is excluded from the detailed other products balance (Table 12), as are the remaining components of crude oil supply and disposition. All crude oil is accounted for in the overall petroleum balance, with crude oil product supplied added to the other products category in the summary petroleum tables (Tables 6 through 8).

LPG products were supplied for domestic consumption at an estimated rate of 1.0 million barrels per day in 1984. This average reflects a lower than expected fourth-quarter demand as a result of the unusually warm winter weather experienced in many areas of the country. Assuming normal winter weather in the first quarter of 1985, LPG demands are projected to increase and then level off later in 1985 and in early 1986, reflecting the moderating influences of conservation and slower growth in income.

Demand for jet fuel during 1984 averaged nearly 1.2 million barrels per day, compared to less than 1.1 million barrels per day in 1983. Demand for jet fuel has increased at nearly the same rate as passenger-miles, with little apparent change in efficiency. Jet fuel product supplied is projected to remain strong through 1985 and into 1986, averaging close to the 1984 level.

Petrochemical feedstock product supplied grew rapidly through the first half of 1984. During the third and fourth quarters of 1984, however, demand began to slacken, along with a slowdown in the rate of growth in organic chemicals manufacturing. Petrochemical feedstock requirements are projected to increase modestly through the first half of 1986. This projection reflects some downward pressure on demand for domestically produced raw materials, as several world-scale petrochemical plants are brought on line in Saudi Arabia and other oil-exporting nations. Given a clear advantage with respect to feedstock costs, these producers will be in a strong position to compete for traditional U.S. export markets as well as domestic markets.

Miscellaneous petroleum products supplied averaged an estimated 1.6 million barrels per day in 1984, up by almost 10 percent from the level in 1983. Demand is projected to remain level in 1985, and then return to the increasing trend in the first half of 1986, corresponding to expectations for growth in income and

industrial activity. Only the demand for kerosene, which accounts for approximately 7 percent of the miscellaneous products category, is projected to decline throughout the forecast period. In contrast, road oil and asphalt product supplied is expected to show the strongest growth, as the availability of Federal highway funds continues to encourage road building and maintenance projects.

Petroleum Inventories

Total primary petroleum stocks ended a 3-year decline in 1984, closing the year at approximately 1,093 million barrels, up by about 18 million barrels from the closing level in 1983 (Table 6). During the fourth quarter of 1984, stocks increased by 9 million barrels, in contrast to the usual stock drawdown in that quarter, reflecting the somewhat weaker demand as a result of the warm weather and the slowing of economic growth. End-of-year primary stocks, which exclude stocks held in the SPR, were equivalent to 66.9 days of supply at the end of 1983 and are estimated to be 69.5 days of supply at the end of 1984 and 68.4 days of supply at the end of 1985 (at the next quarter's anticipated rate of product supplied) (Figure 5).

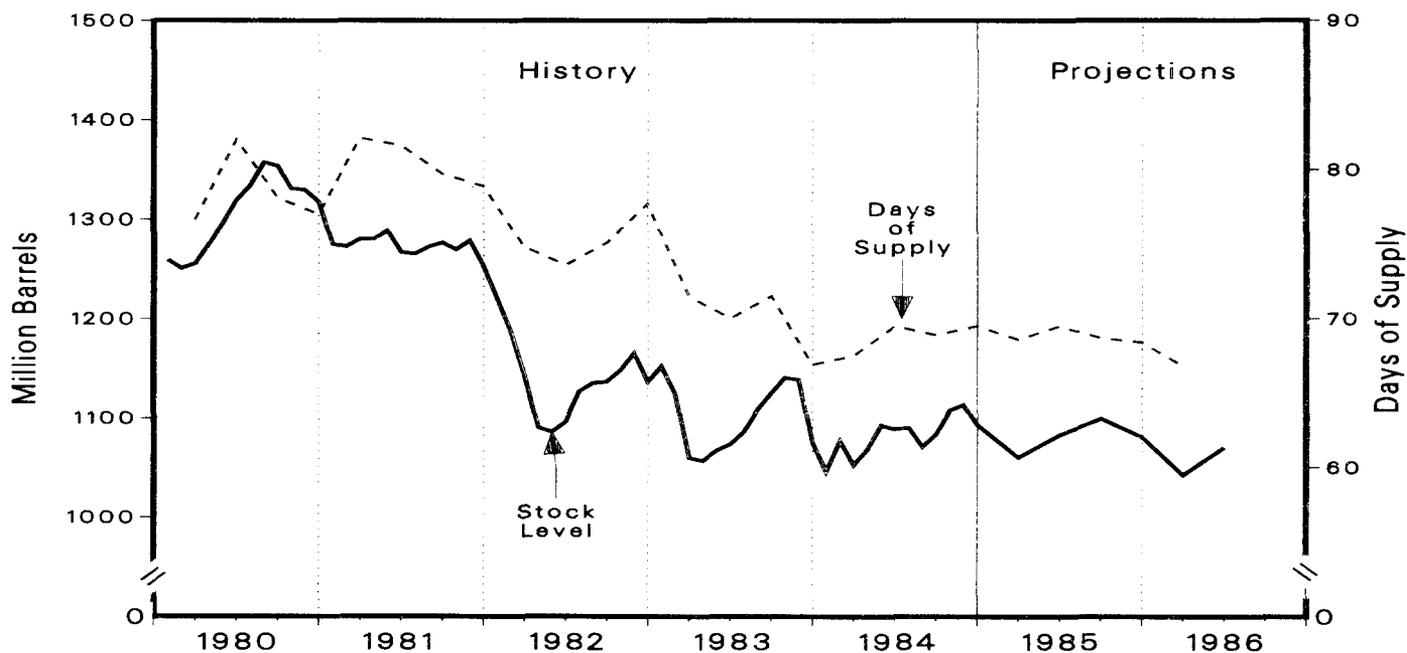


Figure 5. Total Petroleum Inventories Excluding SPR

²Historical data for the individual components of "other" petroleum products are available in the Energy Information Administration, Petroleum Supply Monthly (Washington, DC, 1984), DOE/EIA-0109. Detailed forecasts are available through the Division of Energy Analysis and Forecasting.

Changes in primary stocks of major petroleum products from the end of the fourth quarter of 1983 to the end of the fourth quarter of 1984 were the following: Finished motor gasoline and residual fuel oil were up by nearly 9 percent, and distillate fuel oil was up by 15 percent (Tables 9 through 11). From the end of 1984 to the end of 1985, stocks of finished motor gasoline and residual fuel oil are projected to change relatively little, with distillate fuel oil stocks decreasing by 4 percent. Seasonal swings in total petroleum inventories are expected to continue to be dominated by stocks of the major petroleum products; crude oil inventories are projected to remain near their current level of approximately 340 million barrels.

Stocks in the SPR currently are forecast to reach 490 million barrels by October of 1985. At the end of December of 1984, SPR crude oil inventories had surpassed 449 million barrels. Crude oil fill rates for the SPR are projected to average 148,000 barrels per day between January and September of 1985 (based on estimates provided by the Office of the Deputy Assistant Secretary for Strategic Petroleum Reserve, U.S. Department of Energy). The SPR fill rates for fiscal year 1986 (beginning in October of 1985) cannot be forecast because they are subject to pending budget policy decisions.

Petroleum Demand Sensitivities

Table 13 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 economic growth 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.
- The fuel-switching adjustment is based on an economic estimate of the effect of households switching out of heating oil into other fuels for space heating. The adjustment is an estimate of the incremental demand which would exist if additional switching does not take place over the forecast period.

The range of petroleum demand projected for 1985 is 880,000 barrels per day, with the largest source of uncertainty being prices. (The fuel-switching adjustment increases the range on the high demand side.) During the first half of 1986, both prices and income contribute about equally to the uncertainty range, which averages about 1.3 million barrels per day overall. The weather uncertainty is most important in the first quarter, however, with the positive or negative impacts on demand due to adverse or favorable heating degree days varying by as much as 660,000 barrels per day.

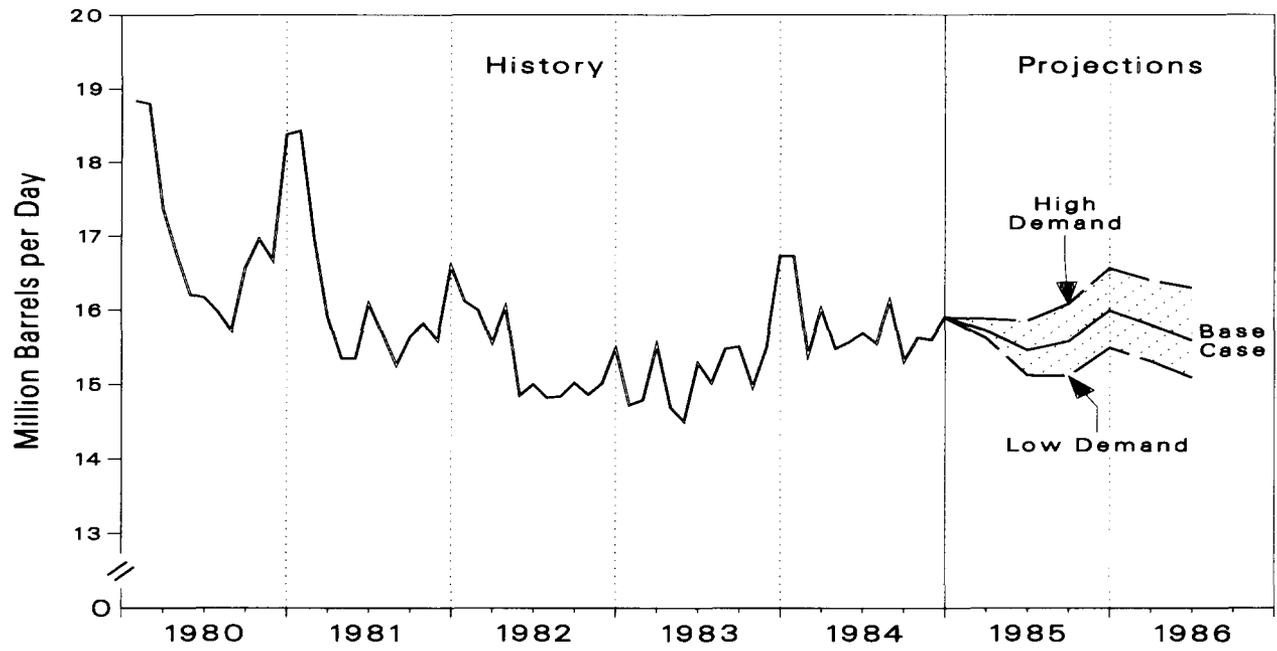


Figure 6. Total Petroleum Demand

Possible Consequences of \$20 per Barrel Oil

Although world oil prices are assumed to fall to \$25 per barrel in the high economic growth case by the second quarter of 1985, there is at least the potential that oil prices could go lower, perhaps to \$20 per barrel. Continued disagreement with OPEC, the desire by non-OPEC oil producers such as the United Kingdom and Norway to increase their market shares, and the warmer-than-normal early winter in North America have combined to drive spot oil prices down by as much as \$3 per barrel lower than the official OPEC market price of \$29. If this downward trend continues, a significant price break in world oil markets could occur in the second quarter, seasonally a time of relatively low petroleum demand.

After adjusting for inflation, a \$20 per barrel price of oil would represent the lowest crude oil price since 1978, when U.S. oil demand set a record of 18.85 million barrels per day. What would be the impact of \$20 per barrel crude oil on domestic petroleum demand in 1985? Would consumers and industry return to high consumption levels in response to the sudden drop in oil prices?

The probability is that they would not. Since 1980, real world oil prices have declined by more than 30 percent, yet oil consumption has also declined by almost 8 percent. This drop in oil consumption cannot be explained by lower economic activity over this period, as real GNP rose by 11 percent between 1980 and 1984. The main reason for lower oil demand is conservation, including more efficient automobiles and furnaces, switching from petroleum to other fuels, and improved weatherization. This conservation was partially in response to the earlier price increases of 1973-1974 and 1978-1980. Because these technological changes are relatively permanent and have been built into the infrastructure, lower prices no longer automatically mean higher oil consumption. Research published in recent years concerning energy consumption characterizes the response of consumption to changes in prices as asymmetric, that is, dependent on the direction of the price change. A 10-percent rise in prices, for example, may induce a 2-percent decline in consumption, but a 10-percent price decrease will not completely restore consumption to previous levels.

Assuming, however, that demand were symmetric with response to changes in oil prices, a \$20 per barrel world oil price would produce petroleum demand of about 16.65 million barrels per day in 1985. This level represents a 5.6-percent increase over the estimated level of petroleum demand in 1984, and the highest consumption rate since 1980. The likelihood of such an increase is minimal, however; a more likely outcome would be an increase to approximately 16 million barrels per day, attributable to a more energy-efficient economy than during the period prior to the Arab oil embargo. Using econometric models, it is difficult to predict what the impact of a \$20 per barrel oil price would be, given that prices have not been that low during the past 7 years.

Projections for Other Major Energy Sources

Natural Gas

Total natural gas consumption and production are estimated to have ended 4-year declines, increasing by about 3 percent and 7 percent, respectively, from 1983 to 1984 (Table 14). These increases are attributed to the strong economic recovery experienced during 1984. Relatively small increases are expected between 1984 and 1985. The projection for natural gas demand reflects the effects of the assumed continuation of economic growth and only moderate increases in natural gas prices during 1985 and the first half of 1986. No substantial changes in the nominal price of natural gas are anticipated from the partial deregulation that went into effect in January of this year. The level of natural gas in underground storage is projected to remain relatively unchanged between the end of 1984 and the end of 1985.

Natural Gas Demand. Total demand for natural gas, estimated to be 17.5 trillion cubic feet in 1984, is projected to increase to 17.8 trillion cubic feet in 1985. In 1984, electric utility consumption of natural gas was more than 5 percent above year-earlier levels, as a result of the increase in total electricity generation and the moderation in natural gas price increases. In 1985, electric utility demand for natural gas is projected to be about 4 percent lower than in 1984, as higher levels of generation from coal and nuclear power are expected to reduce the requirements for natural gas. Total natural gas consumption in the first half of 1986 is projected to show essentially no change from year-earlier levels, as lower electric utility demand for natural gas is expected to be offset by increases in the "all other uses" category.

Natural Gas Supply. Total dry gas production in 1985 is projected to remain at the 1984 level of 17.2 trillion cubic feet and show no change between the first half of 1985 and the first half of 1986. Natural gas production is currently restrained by the limited end-use demand for natural gas. These projections for natural gas production are based on the expectation of limited growth in end-use consumption.

A lower price floor on Canadian pipeline exports of natural gas to the United States is expected to lead to an increase in U.S. imports in 1985 and to help stabilize U.S. prices. Net pipeline imports of natural gas were 830 billion cubic feet in 1984 and are projected to be 920 billion cubic feet in 1985. Canada is currently the only source of U.S. pipeline imports of natural gas. Effective November 1, 1984, all deliveries of natural gas to the United States from Mexico have been suspended because of the high price of Mexican gas relative to the current U.S. wellhead price and the Canadian import price. Total natural gas imports are expected to increase over the forecast period, however, because of higher levels of imports from Canada.

Coal

Total shipments of domestic coal (production plus primary stock withdrawals) were an estimated 898 million tons in 1984 compared to 785 million tons in 1983. Coal shipments are not expected to increase significantly in 1985, partly because of slower projected growth in domestic coal consumption (6 percent in 1985 compared to 8 percent in 1984) and reduced exports, but mostly because of reduced coal stockpiling requirements (Table 15). Increases in consumer stocks during 1984 were largely attributable to the rapid stock buildups by eastern utilities and industrial plants hedging against a potential fourth-quarter coal strike. Growth in coal shipments in 1985 is expected to be restrained as coal stockpiles are reduced to normal operating levels. During the first half of 1986, a 4-percent year-to-year increase in coal shipments is expected to occur.

Coal Consumption. The increase in domestic coal consumption from 1983 to 1984 is estimated to have been 7.7 percent overall, with a 19-percent increase for coke plants, a 6.7-percent increase for electric utilities, and a 14-percent increase for other consumption. For 1985, an increase in total domestic coal consumption of 5.5 percent is anticipated, led mainly by increases in the electric utility market. However, the first half of 1986 is projected to exhibit a much slower rate of growth in utility coal use on a year-to-year basis than was evident in 1984, and noticeably less than the growth expected for the first half of 1985. Expectations of normal weather and a slowing of the growth in coal-based generating capacity help account for the slower projected growth in coal use at utilities in the first half of 1986.

Increases projected for coal consumption at electric utilities naturally reflect the increase in electricity expected to be generated from coal-fired plants. Average utilization rates at coal-fired generating plants, which have been trending upward since 1982, approached 1980 levels (the previous peak year) in 1984 on an annual basis. Coal plant utilization reached a low point of 49 percent during the recession year of 1982, but is estimated to have exceeded 52 percent for all of 1984.³ The current projections assume an increase in coal plant utilization to 53 percent in 1985 on an annual basis. In 1986, coal plant utilization is expected to reach approximately 54 percent on an annual basis. Thus, the recent strong growth in actual and expected utility coal use is in part explained by improvements in coal plant utilization rates, and not simply growth in capacity and in overall demand.

The outlook for increases in domestic steel production in 1985 is slightly less optimistic than the forecast in the October 1984 Outlook; consequently, domestic requirements for coke from coal are expected to be somewhat lower. For this Outlook, coking coal consumption is projected to be 44 million tons in 1985, a level about 4 percent lower than the 46 million tons projected for 1985 in the

³In this analysis, electric plant utilization is defined as monthly generation (kilowatthours) divided by capacity, where capacity is defined as the nameplate rating (kilowatts) times the number of hours in the month. The utilization figures are based on estimated monthly capacity numbers which are derived from the same data source used in the Energy Information Administration, Inventory of Power Plants in the United States, DOE/EIA-0095(83) (Washington, DC, 1984).

October Outlook, but equal to the 1984 level. Behind this forecast is the expectation that raw steel production will remain near the estimated 1984 level of 92 million tons in 1985 and 1986.⁴ It should be noted that, should voluntary restraints to reduce steel imports not be successful in 1985, somewhat less steel from domestic producers may be required, turning the projected leveling off of domestic steel production for 1985 into a small decline. In this case, the demand for coking coal may decline slightly in 1985. Furthermore, domestic steel production and coking coal demand could be lower in the first half of 1986 than projected in this Outlook.

Forecasts of coal consumed in the manufacture of synthetic fuels are included in this analysis. Projections for this item are included in the totals for retail and general industry category beginning in the first quarter of 1985. Total coal consumed for synfuels, which is entirely related to the Great Plains Coal Gasification Project, is expected to be 4.6 million tons in 1985, rising to an expected 5.2 million tons in 1986 on an annual basis.

Retail and general industry coal consumption is estimated to have been 84 million tons in 1984, a 10-million-ton increase from the 1983 level. Consumption for this sector (excluding synfuels-related consumption) is projected to remain flat through 1985 and the first half of 1986.

Coal Production. Coal production for 1984 is estimated to have been a record 890 million tons, 14 percent above 1983 levels. Although a large portion of the 108-million-ton increase experienced in 1984 was needed to meet increases in utility and industrial coal consumption, a significant portion of the increase was for stockpiling in anticipation of a possible fourth-quarter strike. Some of the increased coal use in 1985 will be supplied from net stock reductions. This development, along with declining coal exports, is expected to hold the increase in coal production to about 8 million tons in 1985. However, for the first half of 1986, a stronger rate of growth in coal production is expected. Mostly driven by increased utility coal use, coal production in the first half of 1986 is projected to be 463 million tons, or 4 percent higher than the year-earlier level.

Coal Exports. Although coal exports are estimated to have increased slightly between 1983 and 1984, this reversal of the downward slide of U.S. coal exports from the 1981 peak of 113 million tons is expected to be short-lived. From the estimated level of 80 million tons in 1984, coal exports are expected to decline to about 71 million tons in 1985. Temporary increases in Canadian requirements for steam coal imports, along with possible excess stockpiling by importers anticipating a U.S. coal strike, had a positive net effect on coal exports for 1984. By 1985, these sources of increased demand for U.S. export coal are expected to have evaporated. Slow economic growth in Europe and continued strength of the dollar should keep overall demand for U.S. export coal relatively weak. Little or no improvement in the overall demand for coal exported from the United States is expected by the first half of 1986.

⁴The estimate of steel production in 1984 is based on an extrapolation of 11 months of data from the American Iron and Steel Institute Form AIS-7.

Electric Power

Electricity generation is expected to increase by about 3 percent between 1984 and 1985 to 2,489 billion kilowatthours (Table 16). This increase reflects a continuation of the upward trend in total generation in response to the economic recovery. Total electricity generation in the October 1984 Outlook was forecast to increase by about 5 percent between 1983 and 1984, although the actual growth was closer to 4.5 percent. However, this growth in 1984 still marks the largest annual increase in generation since 1976. With the moderation in economic activity expected in 1986, total electricity generation is projected to increase by about 2 percent between the first half of 1985 and the first half of 1986.

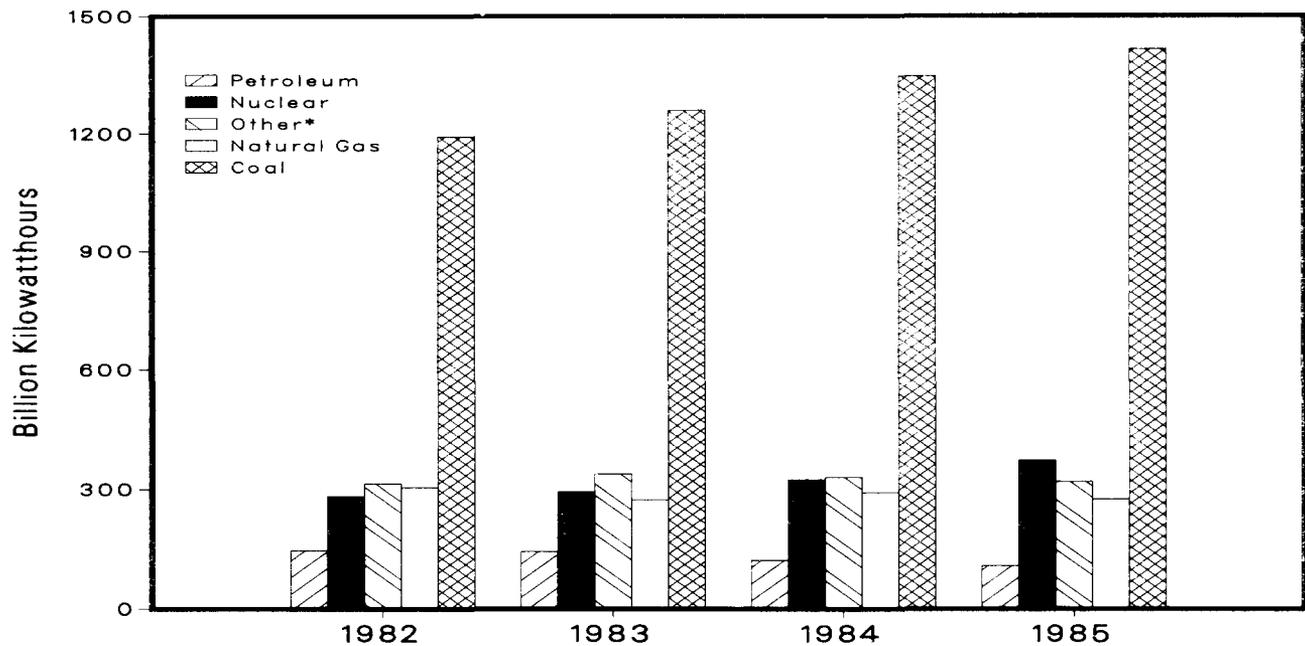
Using projected values for 1984 and 1985 and assuming normal weather in both years, the projected rate of growth in electricity generation would be somewhat lower than the growth rate projected for GNP between 1984 and 1985. However, the weather was not normal in 1984, and the relationship used to determine the electricity projection, as with other forecasting tools, does not achieve total accuracy. For these reasons, the projected growth in total electricity generation between 1984 and 1985 is higher than the assumed rate of growth in GNP over that period.

The nominal price of residential electricity increased by more than 5 percent between 1983 and 1984, a much lower increase than the double-digit rates of price increase experienced in 1981 and 1982. Electricity prices are expected to increase by less than 3 percent between 1984 and 1985 and at a slightly faster rate between the first half of 1985 and the first half of 1986 (Table 3).

Generation by Energy Source. Fuel shares of electricity generation in 1985 are projected to be: 57 percent coal, 15 percent nuclear power, 11 percent natural gas, 4 percent petroleum, 12 percent hydroelectric power, and less than 1 percent for other energy sources (Figure 7). The projected increase of nearly 75 billion kilowatthours in total generation between 1984 and 1985 is expected to be supplied primarily by coal and nuclear power, with decreasing contributions from petroleum, natural gas, and hydropower. These trends are expected to continue between the first half of 1985 and the first half of 1986.

Nuclear generation is projected to increase by nearly 15 percent between 1984 and 1985 to 372 billion kilowatthours, following the increase of about 10 percent between 1983 and 1984. At the end of 1984, there were 86 operable nuclear units in the United States; 6 of these units began full power operation during 1984. The forecast assumes full power operation of 10 new reactors (Catawba 1, Byron 1, Palo Verde 1, Wolf Creek, Fermi 2, Waterford 3, Commanche Peak 1, Watts Bar 1, Limerick 1, and Diablo Canyon 2) totaling more than 11 gigawatts in 1985.

Of the 48-billion-kilowatthour increase in nuclear generation forecast between 1984 and 1985, about one-third is attributable to the addition of new generating capacity, and two-thirds is expected as a result of the assumed modest growth in the capacity factor. Two new reactors (Harris 1 and Shoreham) are expected to begin full power operation during the first half of 1986, and total generation from nuclear power is projected to show a 15-percent increase over year-earlier levels. A comparison of the geographical distribution of the growth in nuclear-powered electricity generation for the forecast period (1985 and 1986) with that during 1980 through 1984 shows that nuclear growth in the forecast period will be concentrated more in regions that generate relatively large amounts of electricity from natural gas-fired plants and concentrated less in regions that use oil for electricity generation.



* Includes hydroelectric, geothermal, and other energy sources.

Figure 7. Electricity Generation by Fuel Source

Coal-fired generation of electricity is expected to increase by more than 5 percent from 1984 to 1985 as the demand for electricity increases and as new coal generating capacity begins operation. The outlook for coal-fired generation between the first half of 1985 and the first half of 1986 shows an increase of over 3 percent. Following the projected addition of almost 7 gigawatts of coal-fired capacity in 1985, more than 4 additional gigawatts of capacity are expected during the first half of 1986. Planned conversions of existing generating capacity to coal are forecast to be less than 1 gigawatt in 1985.

Hydroelectric generation in 1985 is projected to be nearly 311 billion kilowatthours, following the near-record level of 322 billion kilowatthours in 1984. The expectation for a higher-than-normal year for hydroelectric generation in 1985 results from the heavy snows and high levels of water storage and soil saturation that existed near the end of last year. However, abnormally low levels of precipitation in the West during December of 1984 may result in downward revisions to the forecast of hydroelectric generation in 1985. With the assumed return to normal precipitation in the first half of 1986, a decrease of 8 percent in hydropower generation is projected from year-earlier levels.

The combined share of oil- and natural gas-fired generation declined slightly in 1984, despite the large increment in total generation. This share is expected to decline from 17 percent in 1984 to 15 percent in 1985 because of higher levels of generation from coal and nuclear power and high availability of hydropower. Continued declines in the amounts and shares of oil and natural gas generation are expected in the first half of 1986 because of gains in the contributions from other fuels.

Net Electricity Imports. Electricity imports have increased significantly in recent years and are becoming an important source of electricity for some regions of the country. A decade of rising oil prices in the United States has encouraged areas dependent on oil-fired generation in the Northeast to purchase electricity from Canada, which currently has a surplus of hydroelectric power. In addition, small net amounts of electricity were imported from Mexico for the first time in 1984.

Net imports of electricity are expected to have increased by about 3 billion kilowatthours in 1984, from a level of more than 35 billion kilowatthours in 1983, and to have accounted for more than 1 percent of total electricity supply (Table 16). This increase is attributable both to increased purchases of power (more than half of which is generated from hydroelectric power) over existing lines and to the opening of new transmission lines (the Niagara Interties from Canada and the Imperial Valley-La Rosita Line from Mexico). Transmission capability also is being improved within the United States to increase the ability of the electrical system to move purchased power. Net electricity imports in 1985 are projected to reach 41 billion kilowatthours, mainly as a result of increased purchases over existing transmission lines. A major transmission line between New England and Canada is expected to come into service in the first half of 1986, and electricity imports during that period are forecast to be nearly 8 percent higher than the first-half 1985 level.

Total Domestic Energy Balance

Total energy consumption (measured as gross energy consumption) in 1984 was above the previous year's level for the first time since 1979, reaching 73.9 quadrillion Btu (Table 17 and Figure 8). The increase of more than 4 percent in total energy consumption from 1983 to 1984 was accompanied by an increase in real GNP of almost 7 percent over that period. Total energy consumption is projected to increase by 2 percent, to 75.4 quadrillion Btu between 1984 and 1985 and by about 1 percent between the first half of 1985 and the first half of 1986.

With GNP estimated to have grown faster than energy consumption from 1983 to 1984, the energy/GNP ratio has decreased for the 14th consecutive year (Table 1). The energy intensity of U.S. economic activity was 46.1 thousand Btu per 1972 dollar of real GNP in 1983 and is estimated to have decreased to 45.1 thousand Btu per 1972 dollar of real GNP in 1984. This decrease in the energy intensity of the economy is expected to continue through the forecast period: the ratio is expected to fall to 44.9 thousand Btu per 1972 dollar of GNP in 1985 and to decline slightly during the first half of 1986.

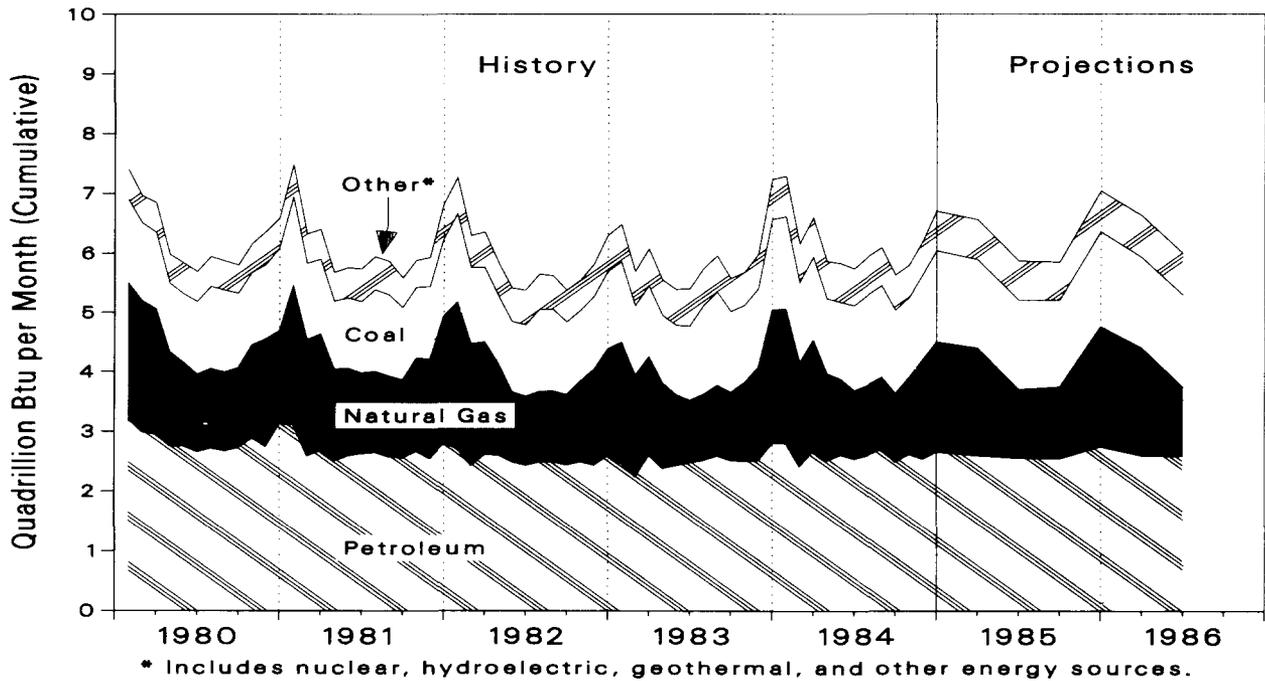


Figure 8. Gross Energy Consumption by Source

Table 3. Short-Term Energy Prices (Nominal), History and Projections

Product	History					Projections									
	1983					1984				1985				1986	
	Year	1st	2nd	3rd	4th	Year	Price ¹	1st	2nd	3rd	4th	Year	1st	2nd	
Petroleum															
Gasoline ² (dollars per gallon)		1.22	1.20	1.22	1.19	1.19	1.20	Low	1.14	1.10	1.13	1.11	1.12	1.11	1.11
							Base	1.16	1.16	1.20	1.18	1.18	1.18	1.18	1.19
							High	1.18	1.19	1.24	1.23	1.23	1.23	1.23	1.25
No. 2 Heating Oil, Wholesale (dollars per gallon)		0.82	0.86	0.83	0.79	0.82	0.83	Low	0.79	0.74	0.74	0.75	0.75	0.76	0.74
							Base	0.83	0.81	0.81	0.82	0.82	0.82	0.83	0.82
							High	0.84	0.84	0.85	0.87	0.85	0.85	0.88	0.88
No. 2 Heating Oil, Retail (dollars per gallon)		1.08	1.13	1.08	1.04	1.06	1.08	Low	1.06	0.99	0.99	1.03	1.02	1.04	1.01
							Base	1.09	1.06	1.06	1.10	1.08	1.11	1.11	1.08
							High	1.11	1.09	1.10	1.15	1.11	1.17	1.17	1.14
No. 6 Residual Fuel Oil ³ (dollars per gallon)		0.65	0.69	0.70	0.68	0.69	0.69	Low	0.68	0.63	0.62	0.62	0.64	0.61	0.59
							Base	0.70	0.68	0.67	0.67	0.68	0.66	0.66	0.65
							High	0.70	0.71	0.70	0.71	0.71	0.71	0.71	0.69
Propane, Consumer Grade (dollars per gallon)		0.71	0.77	0.73	0.72	0.71	0.73	Low	0.69	0.64	0.66	0.65	0.66	0.66	0.65
							Base	0.72	0.69	0.72	0.71	0.71	0.71	0.72	0.70
							High	0.74	0.72	0.76	0.76	0.75	0.77	0.77	0.76
Other															
Coal, Delivered to Utilities (dollars per million Btu) ..		1.66	1.64	1.68	1.68	1.70	1.68	Low	1.66	1.68	1.70	1.72	1.69	1.76	1.78
							Base	1.73	1.75	1.77	1.79	1.76	1.81	1.81	1.83
							High	1.76	1.79	1.81	1.83	1.80	1.85	1.85	1.87
Natural Gas, Residential ⁴ (dollars per thousand cu. ft.)		6.06	5.99	6.11	6.21	6.18	6.12	Low	6.13	6.21	6.16	6.15	6.16	6.09	6.20
							Base	6.15	6.28	6.29	6.35	6.27	6.35	6.53	6.53
							High	6.18	6.39	6.51	6.69	6.44	6.81	7.11	7.11
Natural Gas, to Utilities (dollars per million Btu) ..		3.47	3.44	3.55	3.69	3.58	3.57	Low	3.56	3.63	3.74	3.59	3.63	3.58	3.66
							Base	3.58	3.67	3.82	3.71	3.70	3.73	3.84	3.84
							High	3.60	3.74	3.94	3.90	3.80	3.99	4.14	4.14
Electricity, Residential (cents per kilowatt-hour) ...		7.18	6.97	7.60	8.03	7.63	7.56	Low	7.19	7.70	8.01	7.62	7.63	7.39	7.96
							Base	7.31	7.85	8.17	7.79	7.78	7.56	8.16	8.16
							High	7.41	7.98	8.33	7.96	7.92	7.76	8.39	8.39

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.

³Retail residual fuel oil--average, all sulfur contents.

⁴Historical data was revised through September 1984.

Notes: Fourth quarter 1984 estimated for all fuels, except gasoline and residential natural gas.

All prices exclude taxes, except gasoline, residential natural gas, and electricity prices.
Sources: Historical data: Energy Information Administration, Monthly Energy Review, DOE/EIA-0035(84/10) and Petroleum Marketing Monthly, DOE/EIA-0380(84/10).

Table 4. International Petroleum Balance
(Million Barrels per Day, Except Closing Stocks)

	History						Projections						
	1983	1984		1985		1986		1987		1988			
	Year	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year	1st	2nd
Supply¹													
Production													
U.S. (50 States)	10.8	10.9	11.0	11.0	11.1	11.0	11.2	11.1	11.1	11.2	11.2	11.2	11.2
OPEC	18.5	19.1	19.2	18.0	17.8	18.5	18.6	18.4	19.4	19.3	18.9	18.8	18.7
Other Non-OPEC	13.5	14.2	14.3	14.3	14.6	14.4	14.4	14.6	14.6	14.7	14.6	14.7	14.8
Total Market Economies	42.9	44.2	44.4	43.3	43.5	43.9	44.2	44.1	45.1	45.2	44.6	44.6	44.7
Net Communist Exports	1.9	1.7	2.0	1.9	2.0	1.9	1.7	2.0	1.9	1.9	1.9	1.6	1.9
Total Supply	44.8	45.9	46.4	45.2	45.5	45.8	45.9	46.1	47.0	47.1	46.5	46.2	46.6
Net Stock Withdrawals (+) or Additions (-)													
U.S. (50 States excl. SPR)	0.3	0.3	-0.4	0.1	-0.1	-0.0	0.4	-0.2	-0.2	0.2	0.0	0.4	-0.3
U.S. SPR	-0.2	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.1	0.0	-0.1	0.0	0.0
Other Market Economies	0.4	1.6	-0.9	0.1	1.6	0.6	1.6	-0.9	-1.5	0.6	-0.0	1.4	-1.0
Total Stock Withdrawals (+)	0.4	1.7	-1.5	-0.1	1.3	0.4	1.8	-1.3	-1.8	0.8	-0.1	1.9	-1.3
Product Supplied													
U.S. (50 States)	15.2	16.1	15.6	15.7	15.7	15.8	15.7	15.5	15.6	16.0	15.7	15.8	15.6
U.S. Territories	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Japan	4.4	5.3	4.1	4.3	4.5	4.5	5.2	4.1	4.2	4.8	4.6	5.1	4.1
OECD Europe	11.8	12.4	11.4	11.2	12.5	11.9	12.6	11.2	11.1	12.8	11.9	12.9	11.4
Other Market Economies	13.5	13.6	13.6	13.7	13.8	13.7	13.8	13.7	14.0	14.1	13.9	14.0	13.9
Total Market Economies	45.3	47.6	44.9	45.2	46.8	46.1	47.7	44.8	45.2	47.9	46.4	48.1	45.3
Closing Stocks (billion barrels)	4.8	4.6	4.7	4.8	4.6	4.6	4.5	4.6	4.8	4.7	4.7	4.5	4.6

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(84/09) and 1983 International Energy Annual, DOE/EIA-0219(83); Organization for Economic Cooperation and Development, Quarterly Oil Statistics, Second Quarter 1984; and Petroleum Economics Limited, World Quarterly Primary Energy and Supply/Demand, July 16, 1984.

Table 5. International Economic Growth
(Percent Change from Previous Period)

	Annual Average	1984 ¹	1985	First Half
	1970-1983			1986
OECD Total ²	2.8	4.6	2.7	2.6
United States ³	2.7	6.7	2.5	2.9
Western Europe	2.4	2.1	2.2	2.4
Japan ³	4.5	5.8	4.4	2.1
Other OECD ⁴	3.0	5.3	2.5	2.2

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, December 1984. Forecasts: Wharton Canadian Economic Forecasting Associates, World Economic Outlook, December 1984; Data Resources, Inc., Canadian Forecast, CONTROL121184, European Forecast CONTROL121284, and Japanese Forecast, JPCONTROL0185.

Table 6. Quarterly Supply and Disposition of Petroleum: Base Case
(Million Barrels per Day, Except Stocks)

	History				Projections									
	1983		1984		1985		1986							
	1st	2nd	3rd	4th	1st	2nd	3rd	4th						
Supply Production														
Crude Oil	8.69	8.70	8.73	8.77	8.83	8.76	8.93	8.90	8.91	8.90	8.92	8.90	8.90	8.92
Alaska, North Slope	1.65	1.67	1.71	1.68	1.63	1.67	1.73	1.73	1.73	1.72	1.73	1.73	1.72	1.73
Subarctic	7.04	7.03	7.02	7.09	7.20	7.09	7.20	7.17	7.18	7.17	7.18	7.17	7.17	7.18
Natural Gas Liquids	1.56	1.61	1.61	1.66	1.67	1.63	1.74	1.69	1.67	1.67	1.65	1.67	1.65	1.65
Other Domestic	0.05	0.05	0.05	0.05	0.04	0.05	0.04	0.05	0.05	0.05	0.04	0.05	0.04	0.05
Processing Gain	0.49	0.54	0.56	0.55	0.56	0.55	0.51	0.53	0.53	0.53	0.51	0.53	0.51	0.53
Total Production	10.79	10.89	10.95	11.03	11.10	10.99	11.22	11.10	11.16	11.17	11.16	11.19	11.19	11.15
Imports (including SPR)														
Crude Oil	3.33	3.15	3.59	3.40	3.54	3.42	3.02	3.64	3.72	3.34	3.43	2.93	3.43	3.54
Refined Products	1.72	2.26	1.93	1.80	1.90	1.97	1.99	1.76	1.70	1.94	1.85	1.97	1.85	1.89
Total Imports	5.05	5.41	5.51	5.20	5.44	5.39	5.01	5.40	5.41	5.28	5.28	4.90	5.28	5.43
Exports														
Crude Oil	0.16	0.19	0.20	0.15	0.17	0.18	0.25	0.21	0.20	0.22	0.22	0.25	0.22	0.21
Refined Products	0.58	0.47	0.55	0.49	0.53	0.51	0.46	0.46	0.44	0.45	0.45	0.47	0.45	0.47
Total Exports	0.74	0.66	0.76	0.64	0.70	0.69	0.71	0.67	0.64	0.66	0.67	0.72	0.67	0.68
Net Imports (incl. SPR)	4.31	4.74	4.76	4.56	4.74	4.70	4.30	4.73	4.77	4.61	4.61	4.18	4.61	4.75
Primary Stock Levels² (million barrels)														
Opening	1167.13	1074.55	1052.24	1088.44	1083.11	1074.55	1092.51	1060.02	1082.46	1098.94	1092.51	1080.19	1080.19	1042.03
Closing	1074.55	1052.24	1088.44	1083.11	1092.51	1092.51	1060.02	1082.46	1098.94	1080.19	1080.19	1042.03	1042.03	1070.06
Net Withdrawals	0.25	0.25	-0.40	0.06	-0.10	-0.05	0.36	-0.25	-0.18	0.20	0.03	0.42	0.42	-0.31
(million barrels per day)														
SPR Fill Rate Additions(-) ..	-0.23	-0.14	-0.24	-0.19	-0.21	-0.19	-0.17	-0.16	-0.11	0.00	-0.11	0.00	0.00	0.00
(million barrels per day)														
Total Primary Supply	15.12	15.73	15.07	15.45	15.53	15.45	15.72	15.46	15.58	15.99	15.69	15.80	15.69	15.59
Product Supplied														
Motor Gasoline	6.62	6.34	6.88	6.86	6.75	6.71	6.42	6.96	6.88	6.75	6.75	6.36	6.75	6.86
Distillate Fuel Oil	2.69	3.20	2.79	2.59	2.87	2.86	2.96	2.72	2.50	2.88	2.76	2.85	2.76	2.75
Residual Fuel Oil	1.42	1.74	1.30	1.22	1.21	1.37	1.61	1.18	1.15	1.31	1.31	1.62	1.31	1.15
Other Products ³	4.50	4.77	4.61	5.01	4.88	4.82	4.73	4.61	5.04	5.04	4.86	4.98	4.86	4.83
Total Product Supplied	15.23	16.06	15.58	15.67	15.71	15.75	15.72	15.46	15.58	15.99	15.69	15.80	15.69	15.59
Unaccounted for	-0.11	-0.32	-0.51	-0.21	-0.18	-0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Disposition	15.12	15.73	15.07	15.45	15.53	15.45	15.72	15.46	15.58	15.99	15.69	15.80	15.69	15.59

SPR = Strategic Petroleum Reserve.
¹ Lower 48 States and southern Alaska.
² Excludes crude oil for the Strategic Petroleum Reserve (SPR).
³ Includes Reclassified Petroleum Products.
 Note: Minor discrepancies with other EIA published historical data are due to rounding.
 Sources: Historical data: Energy Information Administration, Petroleum Supply Annual, 1983, DOE/EIA-340(83)/1;
 Petroleum Supply Monthly, Jan. to Nov.; and December data, Weekly Petroleum Status Report, DOE/EIA-0208(85-02).

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

	History				Projections								
	1983		1984		1985		1986						
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd			
Supply													
Production													
Crude Oil	8.69	10.79	10.89	10.95	11.03	11.10	10.99	11.22	11.12	11.08	11.14	11.19	11.13
Alaska, North Slope	1.65	1.71	1.68	1.63	1.67	1.63	1.63	1.73	1.73	1.73	1.73	1.73	1.73
Subarctic	7.04	7.03	7.02	7.09	7.20	7.20	7.09	7.20	7.18	7.16	7.18	7.17	7.18
Natural Gas liquids	1.56	1.60	1.61	1.66	1.67	1.67	1.63	1.74	1.64	1.62	1.67	1.75	1.65
Other Domestic	0.05	0.05	0.05	0.05	0.04	0.04	0.05	0.04	0.05	0.05	0.05	0.04	0.05
Processing Gain	0.49	0.54	0.56	0.55	0.56	0.56	0.55	0.50	0.51	0.52	0.51	0.50	0.51
Total Production	10.79	10.89	10.95	11.03	11.10	10.99	11.22	11.12	11.12	11.08	11.14	11.19	11.13
Imports (including SPR)													
Crude Oil	3.33	3.15	3.59	3.40	3.54	3.42	3.42	2.95	3.36	3.34	3.14	2.62	3.18
Refined Products	1.72	2.26	1.93	1.80	1.90	1.97	1.97	1.96	1.69	1.59	1.77	1.90	1.70
Total Imports	5.05	5.41	5.51	5.20	5.44	5.39	5.39	4.91	5.05	4.93	4.91	4.52	4.88
Exports													
Crude Oil	0.16	0.19	0.20	0.15	0.17	0.18	0.18	0.25	0.21	0.20	0.22	0.25	0.21
Refined Products	0.58	0.47	0.55	0.49	0.53	0.51	0.51	0.46	0.46	0.44	0.45	0.47	0.47
Total Exports	0.74	0.66	0.76	0.64	0.70	0.69	0.69	0.71	0.67	0.64	0.67	0.72	0.68
Net Imports (incl. SPR)	4.31	4.74	4.76	4.56	4.74	4.70	4.70	4.21	4.38	4.29	4.24	3.80	4.20
Primary Stock Levels ² (million barrels)													
Opening	1167.13	1074.55	1052.24	1068.44	1083.11	1074.55	1092.51	1059.83	1079.31	1092.81	1092.81	1069.58	1040.62
Closing	1074.55	1052.24	1068.44	1083.11	1092.51	1092.51	1059.83	1079.31	1092.81	1092.81	1069.58	1040.62	1062.92
Net Withdrawals (million barrels per day)	0.25	0.25	-0.40	0.06	-0.10	-0.05	-0.05	0.36	-0.21	-0.15	0.06	0.32	-0.25
SPR Fill Rate Additions(-) (million barrels per day)	-0.23	-0.14	-0.24	-0.19	-0.21	-0.19	-0.19	-0.17	-0.16	-0.11	-0.11	0.00	0.00
Total Primary Supply	15.12	15.73	15.07	15.45	15.53	15.45	15.62	15.62	15.12	15.11	15.49	15.31	15.09
Product Supplied													
Motor Gasoline	6.62	6.34	6.88	6.86	6.75	6.71	6.38	6.38	6.63	6.72	6.63	6.19	6.68
Distillate Fuel Oil	2.69	3.20	2.79	2.59	2.87	2.86	2.93	2.93	2.63	2.39	2.68	2.73	2.64
Residual Fuel Oil	1.42	1.74	1.30	1.22	1.21	1.37	1.59	1.59	1.12	1.09	1.26	1.54	1.08
Other Products ³	4.50	4.77	4.61	5.01	4.88	4.82	4.72	4.72	4.54	4.91	4.77	4.84	4.69
Total Product Supplied	15.23	16.06	15.58	15.67	15.71	15.75	15.62	15.62	15.12	15.11	15.49	15.31	15.09
Unaccounted for	-0.11	-0.32	-0.51	-0.21	-0.18	-0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Disposition	15.12	15.73	15.07	15.45	15.53	15.45	15.62	15.62	15.12	15.11	15.49	15.31	15.09

SPR = Strategic Petroleum Reserve.
¹Lower 48 States and southern Alaska.
²Excludes crude oil for the Strategic Petroleum Reserve (SPR).
³Includes Reclassified Petroleum Products.
 Note: Minor discrepancies with other EIA published historical data are due to rounding.
 Sources: Historical data: Energy Information Administration, Petroleum Supply Annual, 1983, DOE/EIA-340(83)/1;
 Petroleum Supply Monthly, Jan. to Nov.; and December data, Weekly Petroleum Status Report, DOE/EIA-0208(85-02).

Table 9. Quarterly Supply and Disposition of Motor Gasoline: Base Case
(Million Barrels per Day, Except Stocks)

	History				Projections								
	1983		1984		1985		1986						
	Year	1st	2nd	3rd	4th	Year	1st	2nd					
Supply													
Domestic Production ¹	6.34	6.24	6.60	6.49	6.54	6.47	6.20	6.50	6.61	6.52	6.12	6.42	
Imports	0.25	0.29	0.30	0.27	0.30	0.29	0.26	0.33	0.29	0.31	0.27	0.34	
Exports	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
Net Imports	0.24	0.29	0.30	0.27	0.29	0.29	0.26	0.33	0.28	0.30	0.26	0.33	
Primary Finished Stock Levels² (million barrels)													
Opening	202.03	185.50	202.80	204.17	194.46	185.50	201.79	204.60	193.18	194.12	201.79	200.82	203.38
Closing	185.50	202.80	204.17	194.46	201.79	201.79	204.60	193.18	194.12	200.82	200.82	203.38	193.59
Net Withdrawals	0.05	-0.19	-0.02	0.11	-0.08	-0.04	-0.03	0.13	-0.01	-0.07	0.00	-0.03	0.11
(million barrels per day)													
Total Primary Supply	6.62	6.34	6.88	6.86	6.75	6.71	6.42	6.96	6.88	6.75	6.75	6.36	6.86
Disposition													
Leaded	2.97	2.69	2.86	2.75	2.62	2.73	2.53	2.69	2.62	2.53	2.59	2.51	2.66
Unleaded	3.65	3.65	4.02	4.11	4.13	3.98	3.89	4.26	4.26	4.22	4.16	3.85	4.21
Total Product Supplied	6.62	6.34	6.88	6.86	6.75	6.71	6.42	6.96	6.88	6.75	6.75	6.36	6.86
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	0.00
Total Disposition	6.62	6.34	6.88	6.86	6.75	6.71	6.42	6.96	6.88	6.75	6.75	6.36	6.86

¹Refinery production plus production at natural gas processing plants.
²Includes stocks at natural gas processing plants. Excludes stocks of reclassified motor gasoline blending components.
 Note: Minor discrepancies with other EIA published historical data are due to rounding.
 Sources: Historical data: Energy Information Administration, Petroleum Supply Annual, 1983, DOE/EIA-340(83)/1; Petroleum Supply Monthly, Jan. to Nov.; and December data, Weekly Petroleum Status Report, DOE/EIA-0208(85-02).

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

	History						Projections						
	1983	1984				1985	1986						
	Year	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year	1st	2nd
Supply													
Refinery Output	2.46	2.64	2.62	2.71	2.78	2.69	2.37	2.57	2.56	2.63	2.53	2.26	2.64
Imports	0.17	0.28	0.25	0.25	0.32	0.27	0.23	0.23	0.25	0.29	0.25	0.22	0.23
Exports	0.06	0.05	0.04	0.05	0.03	0.04	0.04	0.03	0.03	0.03	0.03	0.04	0.03
Net Imports	0.11	0.23	0.20	0.20	0.29	0.23	0.19	0.21	0.22	0.26	0.22	0.17	0.21
Primary Stock Levels (million barrels)													
Opening	185.53	140.26	109.64	112.87	143.21	140.26	161.39	125.38	130.48	155.66	161.39	155.62	118.59
Closing	140.26	109.64	112.87	143.21	161.39	161.39	125.38	130.48	155.66	155.62	155.62	118.59	127.17
Net Withdrawals	0.12	0.34	-0.04	-0.33	-0.20	-0.06	0.40	-0.06	-0.27	0.00	0.02	0.41	-0.09
(million barrels per day)													
Total Primary Supply	2.69	3.20	2.79	2.59	2.87	2.86	2.96	2.72	2.50	2.88	2.76	2.85	2.75
Product Supplied													
Nonutility Shipments	2.66	3.15	2.74	2.55	2.84	2.82	2.92	2.70	2.47	2.86	2.74	2.79	2.73
Electric Utility Shipments	0.03	0.05	0.05	0.03	0.03	0.04	0.03	0.02	0.03	0.03	0.03	0.06	0.02
Total Product Supplied	2.69	3.20	2.79	2.59	2.87	2.86	2.96	2.72	2.50	2.88	2.76	2.85	2.75
Electric Utility Consumption													
Electric Utility Stock Levels (million barrels)													
Opening	23.37	18.80	19.06	19.71	18.90	18.80	18.12	17.22	16.27	16.40	18.12	15.70	17.30
Closing	18.80	19.06	19.71	18.90	18.12	18.12	17.22	16.27	16.40	15.70	15.70	17.30	17.30
Net Additions	-0.01	0.00	0.01	-0.01	-0.01	-0.00	-0.01	-0.01	0.00	-0.01	-0.01	0.02	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	0.00	0.00	-0.00	0.00
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	0.00
Total Disposition	2.69	3.20	2.79	2.59	2.87	2.86	2.96	2.72	2.50	2.88	2.76	2.85	2.75

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

Sources: Historical data: Energy Information Administration, Petroleum Supply Annual, 1983, DOE/EIA-340(83)/1; the Petroleum Supply Monthly, Jan. to Nov.; the Monthly Energy Review, DOE/EIA-0035(84/10); the Electric Power Monthly, DOE/EIA-0226(84/11); and December data, Weekly Petroleum Status Report, DOE/EIA-0208(85-02).

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

	History						Projections						
	1983	1984				1985				1986			
	Year	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year	1st	2nd
Supply													
Refinery Output	0.85	0.95	0.84	0.82	0.96	0.89	0.98	0.84	0.84	0.89	0.89	0.99	0.74
Imports	0.70	0.93	0.62	0.59	0.53	0.67	0.73	0.44	0.44	0.57	0.55	0.70	0.55
Exports	0.18	0.15	0.17	0.19	0.22	0.18	0.12	0.12	0.11	0.13	0.12	0.12	0.12
Net Imports	0.51	0.78	0.45	0.40	0.31	0.49	0.61	0.32	0.33	0.44	0.42	0.58	0.42
Primary Stock Levels (million barrels)													
Opening	68.53	48.50	47.64	46.81	46.97	48.50	52.63	51.20	49.97	51.58	52.63	52.76	48.78
Closing	48.50	47.64	46.81	46.97	52.63	52.63	51.20	49.97	51.58	52.76	52.76	48.78	50.22
Net Withdrawals (million barrels per day)	0.05	0.01	0.01	-0.00	-0.06	-0.01	0.02	0.01	-0.02	-0.01	-0.00	0.04	-0.02
Total Primary Supply	1.42	1.74	1.30	1.22	1.21	1.36	1.61	1.18	1.15	1.31	1.31	1.62	1.15
Product Supplied													
Nonutility Shipments	0.86	1.11	0.85	0.69	0.75	0.85	1.05	0.81	0.70	0.86	0.85	1.05	0.83
Electric Utility Shipments	0.56	0.63	0.45	0.52	0.46	0.52	0.56	0.37	0.46	0.45	0.46	0.57	0.32
Total Product Supplied	1.42	1.74	1.30	1.22	1.21	1.37	1.61	1.18	1.15	1.31	1.31	1.62	1.15
Electric Utility Consumption	0.63	0.64	0.47	0.53	0.47	0.53	0.58	0.39	0.45	0.47	0.47	0.54	0.34
Electric Utility Stock Levels (million barrels)													
Opening	95.51	70.57	69.88	68.10	67.25	70.57	66.35	64.55	62.69	62.95	66.35	61.40	63.24
Closing	70.57	69.88	68.10	67.25	66.35	66.35	64.55	62.69	62.95	61.40	61.40	63.24	61.76
Net Additions	-0.07	-0.01	-0.02	-0.01	-0.01	-0.01	-0.02	-0.02	0.00	-0.02	-0.01	0.02	-0.02
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	0.00
Unaccounted for	-0.00	-0.01	-0.00	0.00	0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
Total Disposition	1.42	1.74	1.30	1.22	1.21	1.36	1.61	1.18	1.15	1.31	1.31	1.62	1.15

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

Sources: Historical data: Energy Information Administration, Petroleum Supply Annual, 1983, DOE/EIA-340(83)/1; the Petroleum Supply Monthly, Jan. to Nov.; the Monthly Energy Review, DOE/EIA-0035(84/10); the Electric Power Monthly, DOE/EIA-0226(84/11); and December data, Weekly Petroleum Status Report, DOE/EIA-0208(85-02).

Table 12. Quarterly Supply and Disposition of Other Petroleum Products: Base Casea
(Million Barrels per Day, Except Stocks)

	History				Projections						
	1983		1984		1985		1986				
	Year	1st	2nd	3rd	4th	Year	1st	2nd			
Supply											
Net Refinery Output ^b	2.53	2.58	2.65	2.81	2.22	2.56	2.62	2.64	2.65	2.64	2.76
Natural Gas Plant Output	1.56	1.60	1.61	1.66	1.67	1.63	1.74	1.64	1.69	1.67	1.65
Other Domestic ^c	0.05	0.05	0.05	0.05	0.04	0.05	0.04	0.05	0.05	0.05	0.05
Net Imports	0.29	0.49	0.42	0.44	0.47	0.46	0.48	0.45	0.50	0.46	0.45
Primary Stocks (million barrels)											
Opening	359.88	356.43	356.42	371.90	373.14	356.43	334.53	353.79	372.52	334.53	345.93
Closing	356.43	356.42	371.90	373.14	334.53	334.53	353.79	375.15	372.52	345.93	346.22
Net Withdrawals	0.01	0.00	-0.17	-0.01	0.42	0.06	-0.21	-0.23	0.03	0.29	-0.03
(million barrels per day)											
Total Primary Supply ...	4.43	4.71	4.55	4.94	4.83	4.76	4.67	4.55	4.98	4.80	4.77
Product Supplied											
Jet Fuel	1.05	1.14	1.13	1.21	1.21	1.17	1.18	1.13	1.17	1.15	1.15
Liquefied Petroleum Gases ^d	0.98	1.14	0.81	0.90	1.12	0.99	1.21	0.83	0.89	1.02	0.83
Petrochemical ^e Feedstocks ^e	0.92	1.03	0.99	0.95	0.87	0.97	0.97	0.99	1.01	1.00	1.04
Miscellaneous	1.48	1.40	1.62	1.88	1.62	1.63	1.32	1.60	1.92	1.63	1.48
Total Product Supplied	4.43	4.71	4.55	4.94	4.82	4.76	4.67	4.55	4.98	4.80	4.77
Unaccounted for	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Disposition	4.43	4.71	4.55	4.94	4.82	4.76	4.67	4.55	4.98	4.80	4.77

^a Excludes crude oil product supplied and other components of the crude oil supply/demand balance, all of which are accounted for under the total petroleum supply and disposition table.
^b Includes refinery production of all other products less natural gas liquids, LRG's, and "other liquids" input to refineries.
^c Field production of other hydrocarbons and alcohol.
^d Includes propane, normal butane, and isobutane.
^e Includes ethane plus naphtha and other oils designated for petrochemical feedstock use.
^f Includes all petroleum products supplied except motor gasoline, distillate, residual fuel, liquefied petroleum gases, petrochemical feedstocks, and jet fuel.
Sources: Historical data: Energy Information Administration, Petroleum Supply Annual, 1983, DOE/EIA-0340(83)/1, Petroleum Supply Monthly, DOE/EIA-0109(84/11), and Weekly Petroleum Status Report, DOE/EIA-0208(85-02). Data for December 1984 are preliminary.

Table 13. Petroleum Demand: Sensitivity Differentials
(Million Barrels per Day)

Sensitivities	1985					1986	
	1st	2nd	3rd	4th	Year	1st	2nd
Demand in 50 States							
Low Price	15.81	15.75	15.91	16.33	15.95	16.13	15.96
Base Case	15.72	15.46	15.58	15.99	15.69	15.80	15.59
High Price	15.67	15.34	15.41	15.79	15.55	15.58	15.36
Weather Sensitivity							
Adverse Weather	0.29	0.03	0.02	0.21	0.14	0.33	0.03
Favorable Weather	-0.31	-0.02	-0.02	-0.21	-0.14	-0.33	-0.03
Economic Sensitivity							
High Economic Activity	0.05	0.11	0.16	0.23	0.14	0.26	0.33
Low Economic Activity	-0.06	-0.21	-0.30	-0.30	-0.22	-0.27	-0.26
Fuel-Switching Adjustment	0.18	0.04	0.01	0.13	0.09	0.18	0.04
Combined Sensitivity Differentials ^a (excl. price)							
Upper Range	0.34	0.12	0.16	0.34	0.22	0.46	0.33
Lower Range	0.32	0.21	0.30	0.37	0.26	0.43	0.26
Range of Projected Demand							
High Demand ^b	16.15	15.87	16.07	16.67	16.17	16.59	16.29
Low Demand ^c	15.35	15.13	15.11	15.42	15.29	15.15	15.10

^aThe upper range of the differentials is calculated by taking the square root of the sum of the squared adverse weather, high economic activity, and fuel-switching sensitivities. The lower range of differentials 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, high economic activity, and the fuel-switching adjustment.

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

Table 14. Quarterly Supply and Disposition of Natural Gas
(Trillion Cubic Feet)

	History				Projections									
	1984				1985									
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	Year	1st	2nd			
Supply														
Total Dry Gas Production ¹	16.03	4.48	4.20	4.31	17.20	4.43	4.21	4.20	4.37	17.21	4.43	4.24	4.24	4.24
Net Imports of Dry Gas	0.79	0.22	0.17	0.24	0.83	0.24	0.21	0.20	0.26	0.92	0.25	0.22	0.22	0.22
Net Imports of LNG	0.08	-0.00	-0.01	-0.00	-0.01	-0.00	-0.00	-0.00	-0.00	-0.01	-0.00	-0.00	-0.00	-0.00
Supplemental Gaseous Fuels	0.19	0.04	0.03	0.04	0.14	0.05	0.03	0.03	0.05	0.17	0.05	0.04	0.04	0.04
Total New Supply	17.03	4.74	4.38	4.59	18.16	4.72	4.45	4.44	4.68	18.29	4.73	4.50	4.50	4.50
Underground Working Gas Storage														
Opening	3.07	2.60	1.57	3.00	2.60	2.88	1.72	2.35	3.26	2.88	2.87	1.74	2.39	1.74
Closing	2.60	1.57	2.14	2.88	2.88	1.72	2.35	3.26	2.87	2.87	1.74	2.39	1.74	2.39
Net Withdrawals ²	0.46	1.06	-0.57	0.17	-0.20	1.16	-0.63	-0.91	0.39	0.01	1.13	-0.65	-0.65	-0.65
Total Primary Supply ¹	17.49	5.80	3.87	4.76	17.96	5.88	3.82	3.53	5.07	18.30	5.86	3.85	3.85	3.85
Consumption														
Electric Utilities	2.91	0.61	0.78	0.68	3.06	0.61	0.75	0.93	0.65	2.94	0.58	0.72	0.72	0.72
Refinery Fuel	0.57	0.16	0.16	0.16	0.64	0.14	0.15	0.16	0.15	0.60	0.14	0.15	0.15	0.15
All Other Uses ³	13.57	4.91	2.81	3.81	13.79	4.98	2.82	2.32	4.15	14.27	5.01	2.85	2.85	2.85
Subtotal	17.06	5.68	3.75	4.66	17.50	5.74	3.72	3.41	4.95	17.82	5.74	3.72	3.72	3.72
Unaccounted for	0.43	0.12	0.12	0.10	0.46	0.14	0.10	0.12	0.12	0.48	0.12	0.13	0.13	0.13
Total Disposition	17.49	5.80	3.87	4.76	17.96	5.88	3.82	3.53	5.07	18.30	5.86	3.85	3.85	3.85

LNG=Liquefied Natural Gas.

¹Excludes nonhydrocarbon gases removed.

²Net withdrawals may vary from the difference between opening and closing stocks of gas in working gas storage due to book transfers between base and working gas categories, and other storage operator revisions of working gas inventories.

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(84/10);

Natural Gas Monthly, DOE/EIA-0130(84/11); and Electric Power Monthly, DOE/EIA-0226(84/11).

Table 15. Quarterly Supply and Disposition of Coal
(Million Short Tons)

	1983				History				Projections									
	Year				1984				1985				1986					
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year	1st	2nd		
Supply																		
Production	782	224	2	228	2	243	2	196	2	890	2	213	232	220	233	898	227	236
Primary Stock Levels ¹																		
Opening	37	34	34	31	30	31	30	30	34	34	26	26	26	26	26	26	26	25
Closing	34	34	31	30	30	31	30	26	26	26	26	26	26	26	26	26	25	24
Net Withdrawals	3	0	3	1	1	1	4	2	8	2	0	0	0	0	0	0	0	1
Imports	1	0	0	0	0	0	0	0	1	2	0	0	0	0	0	1	0	0
Exports	78	15	24	24	25	25	16	2	80	2	15	18	18	20	18	71	15	18
Total New Domestic Supply ...	708	209	2	208	2	219	2	184	2	819	2	199	214	200	215	829	213	220
Secondary Stock Levels ³																		
Opening	195	169	173	173	192	192	206	2	206	2	169	2	177	192	173	189	180	175
Closing	169	173	192	192	206	206	17	2	189	2	189	2	192	173	180	180	175	188
Net Withdrawals	27	-4	-19	-19	-13	-13	17	2	-20	2	12	-15	-15	19	-7	9	4	-13
Total Indicated Consumption	735	205	2	188	2	206	2	200	2	799	2	211	199	219	209	838	217	207
Domestic Consumption																		
Coke Plants	37	11	12	12	11	11	10	2	44	2	11	11	11	10	11	44	11	11
Electric Utilities	625	167	154	154	178	178	168	2	667	2	176	167	167	188	174	706	182	174
Retail and General Industry ⁴ ...	74	22	20	20	20	20	23	2	84	2	24	21	21	20	24	89	24	21
Total Domestic Consumption ..	737	200	186	186	208	208	200	2	794	2	211	199	199	219	209	838	218	207
Discrepancy ⁵	-2	4	2	3	2	-3	2	0	2	4	2	0	0	0	0	0	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.

⁴Included in retail and general industry coal consumption is consumption at coal gasification plants of 1.0, 1.1, 1.2, and 1.3 million tons for quarters 1 through 4 respectively, for 1985, and 1.3 million tons per quarter for 1986.

⁵Historical 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(84/10); and Quarterly Coal Report, DOE/EIA-0121(84/3Q).

Table 16. Quarterly Supply and Disposition of Electricity
(Billion Kilowatthours)

	History						Projections						
	1983	1984			1985		1985		1986		1986		
	Year	1st	2nd	3rd	4th ³	Year ³	1st	2nd	3rd	4th	Year	1st	2nd
Generation													
Coal	1259.4	336.7	313.0	357.6	338.5	1345.8	353.5	336.5	376.6	348.3	1415.0	364.6	348.9
Petroleum	144.5	36.8	27.1	30.9	27.3	122.3	32.9	22.0	26.1	27.0	108.0	30.7	19.2
Natural Gas	274.1	57.7	74.8	94.5	65.4	292.4	57.3	70.6	86.5	60.8	275.2	54.7	67.3
Nuclear Power	293.7	84.1	74.9	86.0	79.0	324.0	88.8	83.0	100.9	99.4	372.2	102.1	95.0
Hydropower	332.1	88.1	90.5	73.5	69.9	322.0	86.6	87.5	70.1	66.7	310.9	78.0	81.5
Geothermal Power and Other ¹ ..	6.5	1.9	2.0	2.2	2.3	8.3	1.9	1.9	2.2	2.2	8.1	2.0	2.1
Total Generation	2310.3	605.3	582.3	644.7	582.5	2414.8	621.0	601.5	662.4	604.4	2489.4	632.2	614.0
Net Imports	35.3	8.8	8.1	10.6	10.4	38.0	9.5	8.7	11.5	11.3	41.0	10.2	9.4
Total Supply	2345.6	614.1	590.4	655.3	592.9	2452.8	630.5	610.3	673.9	615.6	2530.4	642.4	623.3
T & D Loss²	194.7	33.2	51.4	46.4	73.7	204.6	50.6	51.0	57.9	53.1	212.7	50.0	52.0
Total Consumption (sales) ..	2151.0	581.0	539.0	609.0	519.2	2248.2	579.9	559.2	616.0	562.5	2317.7	592.4	571.3

¹Includes wind, wood, and waste.

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

³Estimated fourth quarter 1984 data.

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(84/10); and Electric Power Monthly, DOE/EIA-0226(84/11).

Table 17. Quarterly Supply and Disposition of Total Energy
(Quadrillion Btu)

	History						Projections						
	1983	1984		1985		1986		1985		1986			
	Year	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year	1st	2nd
Supply													
Production													
Petroleum ¹	20.59	5.15	5.17	5.27	5.30	20.90	5.27	5.28	5.32	5.35	21.21	5.25	5.29
Natural Gas ²	16.48	4.60	4.33	4.31	4.43	17.68	4.55	4.33	4.32	4.50	17.69	4.56	4.36
Coal	17.22	4.93	5.01	5.35	4.31	19.60	4.70	5.10	4.85	5.14	19.78	5.00	5.20
Nuclear Power	3.23	0.93	0.83	0.95	0.87	3.57	0.98	0.91	1.11	1.09	4.10	1.12	1.05
Hydropower ³	3.51	0.93	0.96	0.78	0.74	3.40	0.92	0.93	0.74	0.70	3.29	0.83	0.86
Geothermal Power and Other ⁴	0.14	0.04	0.04	0.05	0.05	0.18	0.04	0.04	0.05	0.05	0.18	0.04	0.04
Subtotal	61.17	16.59	16.34	16.70	15.70	65.33	16.45	16.59	16.38	16.83	66.25	16.80	16.80
Net Imports													
Crude Oil	6.73	1.57	1.79	1.74	1.81	6.91	1.45	1.82	1.88	1.67	6.82	1.40	1.76
Other Petroleum	2.33	0.91	0.70	0.67	0.70	2.98	0.75	0.64	0.62	0.75	2.77	0.74	0.70
Natural Gas (Dry)	0.80	0.23	0.20	0.17	0.24	0.84	0.25	0.21	0.21	0.27	0.93	0.25	0.22
Liquefied Natural Gas	0.08	-0.00	0.00	-0.01	-0.00	-0.01	-0.00	-0.00	-0.00	-0.00	-0.01	-0.00	-0.00
Coal and Coke	-2.03	-0.39	-0.62	-0.66	-0.42	-2.09	-0.38	-0.46	-0.52	-0.48	-1.84	-0.39	-0.46
Electricity	0.37	0.09	0.08	0.11	0.11	0.40	0.10	0.09	0.12	0.12	0.43	0.11	0.10
Subtotal	6.28	2.40	2.15	2.02	2.44	9.02	2.18	2.30	2.31	2.32	9.11	2.11	2.32
Primary Stocks													
Net Withdrawals	1.07	1.18	-0.67	-0.82	0.11	-0.21	1.38	-0.76	-1.02	0.49	0.10	1.36	-0.80
SPR Fill Rate Additions(-)	-0.49	-0.07	-0.13	-0.10	-0.11	-0.41	-0.09	-0.09	-0.06	0.00	-0.24	0.00	0.00
Secondary Stocks⁵													
Net Withdrawals	0.75	-0.09	-0.42	-0.29	0.40	-0.40	0.27	-0.29	0.39	-0.13	0.24	0.08	-0.26
Total Supply⁶	70.77	20.00	17.28	17.52	18.53	73.33	20.19	17.75	18.00	19.52	75.46	20.36	18.06
Consumption													
Nonutility Uses													
Petroleum	28.54	7.52	7.38	7.48	7.51	29.89	7.32	7.41	7.47	7.67	29.87	7.34	7.50
Natural Gas ⁷	14.51	5.20	3.04	2.49	4.08	14.81	5.26	3.05	2.54	4.41	15.27	5.28	3.08
Coal	2.63	0.78	0.75	0.73	0.78	3.04	0.84	0.76	0.76	0.84	3.20	0.86	0.79
Subtotal	45.68	13.50	11.16	10.70	12.38	47.74	13.42	11.22	10.77	12.92	48.34	13.48	11.37
Electric Utility Inputs													
Petroleum	1.54	0.39	0.29	0.33	0.30	1.32	0.35	0.24	0.28	0.29	1.16	0.33	0.21
Natural Gas	3.01	0.63	0.81	1.02	0.71	3.17	0.63	0.78	0.96	0.67	3.05	0.61	0.74
Coal	13.23	3.53	3.26	3.74	3.54	14.08	3.71	3.53	3.96	3.66	14.86	3.83	3.66
Nuclear Power	3.23	0.93	0.83	0.95	0.87	3.57	0.98	0.91	1.11	1.09	4.10	1.12	1.05
Hydropower ⁸	3.88	1.02	1.04	0.89	0.85	3.80	1.01	1.02	0.86	0.82	3.71	0.93	0.96
Geothermal Power and Other	0.14	0.04	0.04	0.05	0.05	0.18	0.04	0.04	0.05	0.05	0.18	0.04	0.04
Subtotal	25.04	6.55	6.27	6.98	6.32	26.11	6.74	6.52	7.21	6.59	27.06	6.87	6.67
Gross Energy Consumption⁶	70.72	20.05	17.43	17.68	18.69	73.85	20.16	17.74	17.98	19.51	75.40	20.35	18.04
Electric Utility Adjustments													
Conversion Loss ⁹	17.69	4.56	4.43	4.90	4.54	18.43	4.75	4.61	5.11	4.66	19.14	4.84	4.71
Total Net Energy	53.03	15.49	13.00	12.78	14.15	55.42	15.41	13.13	12.87	14.85	56.26	15.51	13.33
Unaccounted for	0.05	-0.05	-0.15	-0.16	-0.16	-0.52	0.03	0.00	0.02	0.01	0.06	0.01	0.02
Total Disposition	70.77	20.00	17.28	17.52	18.53	73.33	20.19	17.75	18.00	19.52	75.46	20.36	18.06

SPR = Strategic Petroleum Reserve.

¹Includes crude oil and lease condensate, natural gas liquids, hydrogen, 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(84/10); and Electric Power Monthly, DOE/EIA-0226(84/11).

Forecast Conversion Factors Used in STIFS

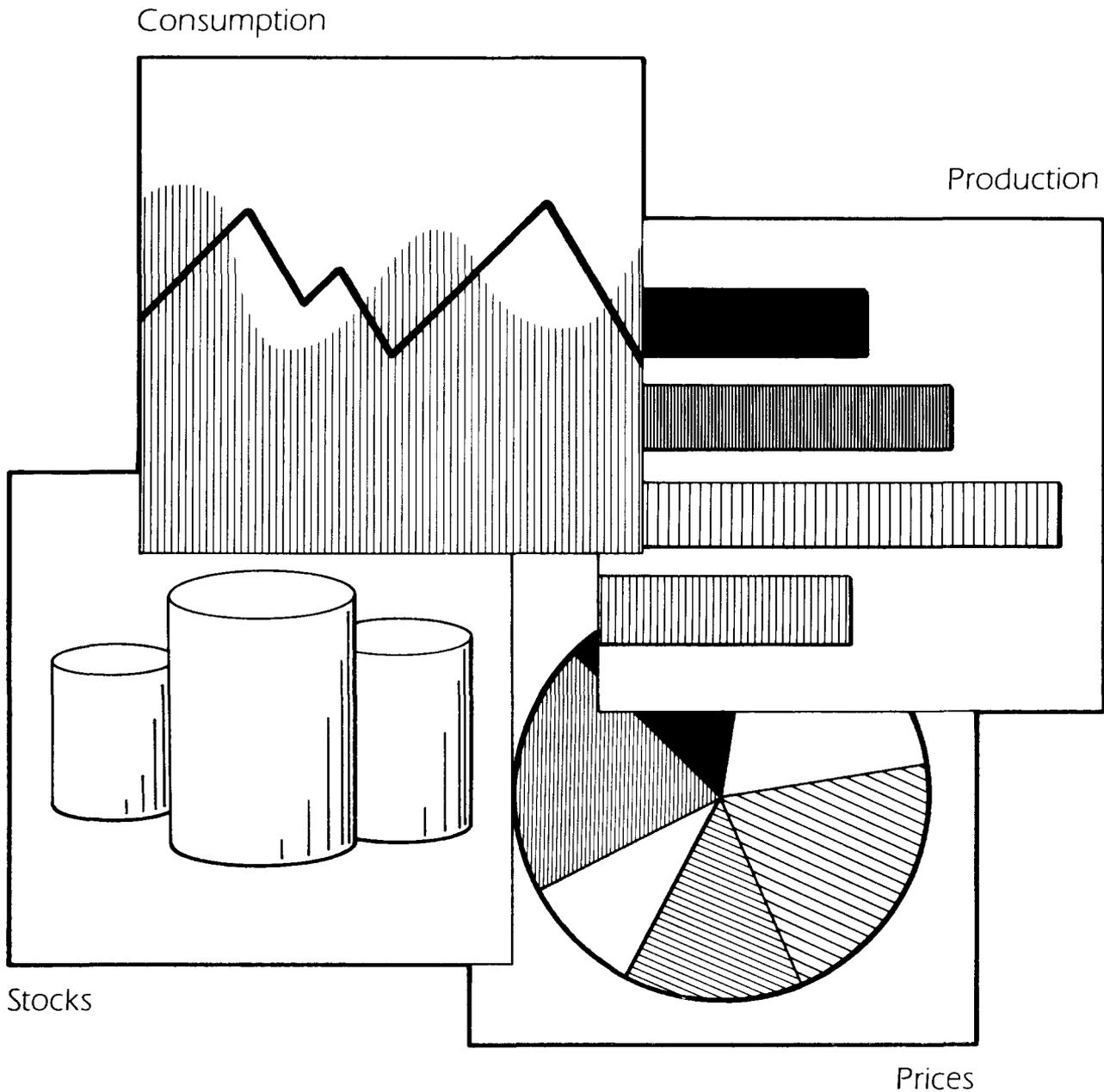
Most of the conversion factors used by the Short-Term Integrated Forecasting System (STIFS) are the 1983-1984 EIA standard conversion factors (found in the Monthly Energy Review). Special factors used in STIFS are derived from data in the Monthly Energy Review or from energy data reports such as the 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	barrel	5,824,000
Unfinished Oils	barrel	5,825,000
Total Petroleum Consumed	barrel	5,410,000
Total Petroleum Imports	barrel	5,768,000
Total Petroleum Exports	barrel	5,800,000
Motor Gasoline	barrel	5,253,000
Jet Fuel	barrel	5,608,000
Distillate Fuel Oil	barrel	5,825,000
Refinery Fuel (liquids)	barrel	5,595,000
All Refinery Inputs	barrel	5,769,000
Residual Fuel Oil	barrel	6,287,000
LPG and LRG	barrel	3,612,000
Ethane	barrel	3,082,000
Hydrogen, etc. (to refineries)	barrel	3,500,000
Natural Gas Liquids (production)	barrel	3,859,000
Natural Gas Consumption (dry)	cubic foot	1,028
Natural Gas Production (dry)	cubic foot	1,028
Natural Gas Imports	cubic foot	1,018
Natural Gas Exports	cubic foot	1,011
Supplemental Gaseous Fuel	cubic foot	1,028
Natural Gas Refinery Fuel	cubic foot	1,026
Natural Gas to Utilities	cubic foot	1,035
Bituminous Coal and Lignite Prod.	short ton	22,015,000
Bituminous Coal & Lignite Consumed	short ton	21,547,000
Coal to Electric Utilities	short ton	21,160,000
General Industry and Retail Coal	short ton	22,650,000
Coking Coal	short ton	26,000,000
Coke	short ton	26,000,000
Bituminous Coal and Lignite Imports	short ton	25,000,000
Bituminous Coal and Lignite Exports	short ton	26,300,000
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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