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Short-Term Energy Outlook

Quarterly Projections

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Short-Term Energy Outlook

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Short-Term Energy Outlook

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 1985.

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

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

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

The Annual Energy Outlook for 1984, scheduled to be published in January of 1985, will contain annual forecasts through 1995 by fuel and by sector. The projections for 1984 and 1985 will be the same as those published in this report.

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1. Highlights

The projections in this Short-Term Energy Outlook (Outlook) cover the last quarter of 1984 through the end of 1985. The energy picture next year is projected to be quite different from that during 1984, mainly because of a slower rate of increase expected for economic activity. The year 1984 so far has experienced very rapid economic growth, as the recovery from the recent recession continues. The demand for most energy sources in 1984 is expected to be up significantly from 1983 levels, in some instances reversing downward trends that have persisted for several years. In contrast, 1985 is projected to be a year of economic expansion, where the economy continues to grow, but at much lower rates than during 1984. The combination of lower economic growth and continued energy conservation in 1985 is expected to result in much slower growth in energy demand than during 1984.

Domestic petroleum demand in 1984 will show an increase, on an annual basis, for the first time since 1978. Because of the continuation of the current economic expansion, domestic petroleum consumption in 1984 is expected to average almost 15.9 million barrels per day--more than 4 percent higher than the 1983 level. (The base case projections are summarized on Table 1.) Despite continued economic growth forecast for next year, however, U.S. petroleum demand is projected to fall by about 1 percent between 1984 and 1985. Net petroleum imports, which are projected to rise by about 10 percent in 1984 to 4.8 million barrels per day, are expected to increase only slightly in 1985. The price of imported crude oil to the United States is assumed to remain at about $29 per barrel (in nominal terms) through 1985. This analysis assumes that the existing downward pressure on oil prices does not result in a substantial 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.

Compared to the August 1984 Outlook forecast, projected domestic demand for petroleum in 1984 has not changed; an increase in the projected demand for other petroleum products is balanced by a decrease in the projected demand for motor gasoline. Petroleum demand for 1985, however, is lower than previously forecast, primarily because of the lower expected demand for motor gasoline. Data for the first 8 months of 1984 show a slightly lower rate of economic growth than previously forecast for 1984: Real gross national product (GNP) is now expected to grow by 7 percent from 1983 to 1984. Growth in industrial production, however, is now expected to be even stronger than the forecast published in the August 1984 Outlook, with an increase of nearly 12 percent between 1983 and 1984. Likewise, the level of economic activity forecast for 1985 has been lowered somewhat, while industrial production remains strong.

Oil consumption in the market economies (a group of countries which excludes Communist countries) is projected to increase in 1984 (by 2.4 percent) for the first time since 1979, and then remain flat between 1984 and 1985. Their demand for oil is expected to be met by current production with no rise (or perhaps even a decrease) in the world oil price through the forecast period. The economic growth that is underway in the industrial nations is expected to continue in 1985, although at a more modest rate than in 1984.

Growth in domestic coal consumption is projected to remain strong over the forecast period, with forecasted increases of nearly 8 percent from 1983 to 1984 and 6 percent from 1984 to 1985. This forecast depends on growth in electricity generation of 5 percent from 1983 to 1984 and nearly 3 percent from 1984 to 1985. To meet the projected increases in coal demand, coal production is forecast to increase by 14 percent between 1983 and 1984 and by 1 percent between 1984 and

Table 1. Summary of Base Case Assumptions and Projections

	History		Projections		Annual Percentage Change		
	1982	1983	1984	1985	1982-1983	1983-1984	1984-1985
Assumptions							
Real Gross National Product (billion 1972 dollars)	1,480	1,535	1,643	1,687	3.7	7.0	2.7
Index of Industrial Production (Mfg.) (index, 1967=100)	137.5	148.2	165.6	171.6	7.8	11.7	3.6
Average Cost of Imported Crude Oil (nominal dollars per barrel)	33.55	29.30	29.01	29.00	-12.7	-1.0	0.0
Price Projections (nominal values)[a]							
Motor Gasoline[b] (dollars per gallon)	1.28	1.22	1.20	1.20	-4.7	-1.6	0.0
Retail No. 2 Heating Oil (dollars per gallon)	1.19	1.08	1.10	1.11	-9.2	1.9	0.9
Residential Natural Gas (dollars per thousand cubic feet)	5.17	5.99	6.08	6.27	15.9	1.5	3.1
Residential Electricity (cents per kWh)	6.86	7.18	7.51	7.75	4.7	4.6	3.2
Consumption Projections							
Total Market Economies Petroleum Consumption (million barrels per day)	46.3	45.2	46.3	46.3	-2.4	2.4	0.0
U.S. Total Petroleum Consumption (million barrels per day)	15.30	15.23	15.88	15.78	-0.5	4.3	-0.6
Motor Gasoline	6.54	6.62	6.72	6.67	1.2	1.5	-0.7
Distillate Fuel Oil	2.67	2.69	2.88	2.79	0.7	7.1	-3.1
Residual Fuel Oil	1.72	1.42	1.42	1.34	-17.4	0.0	-5.6
Other Petroleum[c]	4.37	4.50	4.85	4.98	3.0	7.8	2.7
Net Petroleum Imports (million barrels per day, including SPR[d])	4.30	4.31	4.76	4.85	0.2	10.4	1.9
Coal Consumption (million short tons)	707	737	793	843	4.2	7.6	6.3
Natural Gas Consumption (trillion cubic feet)	18.00	17.00	18.04	18.21	-5.6	6.1	0.9
Electricity Generation (billion kilowatthours)	2,241.2	2,310.3	2,427.7	2,492.4	3.1	5.1	2.7
Total Energy Consumption[e] (quadrillion Btu)	70.82	70.66	74.74	75.79	-0.2	5.8	1.4
Thousand Btu/1972 Dollar of GNP	47.85	46.03	45.49	44.93	-3.8	-1.2	-1.2

[a] All prices include taxes except retail no. 2 heating oil prices.
[b] Average for all grades and services.
[c] Includes crude oil, pentanes plus, other hydrocarbons and alcohol, unfinished oil, and gasoline blending components.
[d] SPR = Strategic Petroleum Reserve.
[e] The 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 (84/07), 1982 International Energy Annual, DOE/EIA-0219(82), Petroleum Marketing Monthly, DOE/EIA-0380 (84/07), Petroleum Supply Monthly, DOE/EIA-0109(84/08), Petroleum Supply Annual, 1983, DOE/EIA-0340(83)/1, Natural Gas Monthly, DOE/EIA-0130(84/08), Electric Power Monthly, DOE/EIA-0226(84/08), and Quarterly Coal Report, DOE/EIA-0121(84/2Q); Organization for Economic Cooperation and Development, Quarterly Oil Statistics, First Quarter 1984; and Petroleum Economics Limited, World Quarterly Primary Energy and Supply/Demand, April 13, 1984. Macroeconomic forecasts based on modifications to Data Resources, Inc., forecast CONTROL092584.

1985. The slower rate of growth for coal production in 1985 reflects the expectation that consumer stocks of coal, which were increased in anticipation of a miners' strike in the fourth quarter of 1984, will be reduced in 1985.

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

- Based on continued economic growth in 1984, total U.S. petroleum consumption is projected to be approximately 4 percent above year-earlier levels. Petroleum consumption in 1985 is projected to fall slightly below the 1984 level.

  - Motor gasoline consumption is expected to increase by less than 2 percent between 1983 and 1984, then decrease slightly between 1984 and 1985.

  - A 7-percent increase in the consumption of distillate fuel oil, to 2.9 million barrels per day, is projected for 1984; a 3-percent decline is expected in 1985.

  - Residual fuel oil consumption is projected to remain constant between 1983 and 1984, at 1.4 million barrels per day, but fall by almost 6 percent in 1985.

- A 10-percent annual rise in net oil imports, to 4.8 million barrels per day, is projected from 1983 to 1984. However, only a small increase in the net imports level is expected in 1985.

- Assuming continued economic growth and a moderation in natural gas prices, consumption of natural gas is projected to rise to 18.0 trillion cubic feet in 1984 and to 18.2 trillion cubic feet in 1985. Natural gas production is projected to increase by 9 percent between 1983 and 1984, followed by a slight increase between 1984 and 1985.

- Domestic coal consumption is expected to increase to 793 million tons in 1984; all categories of coal consumption are expected to increase, leading to record-high coal production of 892 million tons (14 percent higher than the year-earlier level). Coal consumption in 1985 is forecast to increase by more than 6 percent from the 1984 level; coal production is projected to grow much less rapidly in 1985 as stockpiling requirements and exports of coal are reduced.

- As a result of the projected continuation of economic growth, especially in the industrial sector, a 5-percent increase in total electric power generation is projected from 1983 to 1984, and an increase of almost 3 percent is expected from 1984 to 1985.

  - Generation levels from coal, natural gas, and nuclear power are projected to increase from 1983 to 1984, while petroleum-fired and hydroelectric generation levels are expected to decline. Levels of electricity generation from coal and nuclear power are projected to increase from 1984 to 1985.

  - Hydroelectric generation is projected to be 322 billion kilowatthours in 1984, but is assumed to decline to normal levels in 1985.

- Net imports of electricity are expected to be about 38 billion kilowatthours in 1984, an increase of about 3 billion kilowatthours from the 1983 level. This increasing trend is projected to continue in 1985, with net imports expected to reach 41 billion kilowatthours.

- Total U.S. energy consumption (as measured by gross energy consumption) is projected to rise by almost 6 percent, to 74.7 quadrillion Btu, in 1984 and to increase by more than 1 percent between 1984 and 1985.

  - The energy intensity of U.S. economic activity is projected to decline to 45.5 thousand Btu per 1972 dollar of GNP in 1984. With U.S. energy use projected to rise less rapidly than GNP from 1984 to 1985, a further slight decline in the energy/GNP ratio to 44.9 thousand Btu per 1972 dollar of GNP 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 economic growth, oil price, and weather assumptions. 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 170,000 barrels per day (approximately 1.1 percent and 3.1 percent, respectively).

- For each $1-per-barrel (approximately 3.4 percent) decline in the price of imported crude oil, petroleum consumption and total imports in 1985 would increase by 55,000 barrels per day (approximately 0.3 percent and 1.0 percent, respectively).

- For each 10-percent increase in heating degree days (from the base case level) during the first and fourth quarters, petroleum consumption and total imports would increase by an average of about 265,000 barrels per day (approximately 1.7 percent and 4.8 percent, respectively).

Assuming that the impacts of price, income, and weather on petroleum demand are symmetrical, the above estimates would also hold for changes in the opposite direction.

2. The Outlook

Forecast Assumptions

World Oil Prices

The price of imported crude oil delivered to U.S. refiners is assumed to remain at approximately $29 per barrel through 1985. The oil price has remained at this level since March of 1983, and the forecast of a constant nominal price through 1985 has been published in issues of the Outlook for almost a year. The continuing downward pressure on crude oil prices can be attributed to several factors: the decline in world energy demand through 1983 and the current slow recovery in demand because of conservation and generally low world economic growth; inventory drawdowns and resulting lower imports in major consuming countries; additional oil production, particularly by countries that are not members of the Organization of Petroleum Exporting Countries (OPEC); and the continuing strength of the dollar relative to other major currencies.

As this is being written, the OPEC Oil Ministers have agreed to temporarily reduce the OPEC crude oil production ceiling by 1.5 million barrels per day to 16.0 million barrels per day, effective November 1. This action is being taken in an attempt to preserve the current OPEC crude oil price structure against downward pressure from recent crude oil price reductions by Norway, the United Kingdom, and Nigeria. It is uncertain how world oil markets will react to this OPEC action and how crude oil prices will be affected. At the present time, however, any further decline in crude oil price is not expected to be large enough to reduce the average price of imported crude oil to U.S. refiners below the $25-per-barrel level assumed in the low price case.

In the base case, the nominal price of imported crude oil is assumed to remain level through 1985 for the following reasons:

- Projected higher demands for oil compared with recent levels are expected to counteract recent downward pressure on prices resulting from crude oil production by OPEC members in excess of their quotas.

- The large drawdown of inventories, which contributed to the decline in crude oil prices during the last 2 years, appears to have ended in 1983. With no significant change projected for inventory levels (seasonally adjusted) during 1984 and 1985, this source of downward pressure on prices will also be absent from the market.

- Recent attempts to restrain OPEC crude oil production are assumed to succeed. Production is expected 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 January of 1985, and then to remain at that level for the remainder of the forecast period.

Base Case: The price of imported crude oil is assumed to remain at $29 per barrel throughout 1984 and 1985.

Low Economic Growth Case: As a result of increased tension and concerns about the availability of future supply in the oil market, the price of imported crude oil is assumed to rise at more than twice the U.S. rate of inflation and to reach nearly $32 per barrel by the end of 1985.

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.

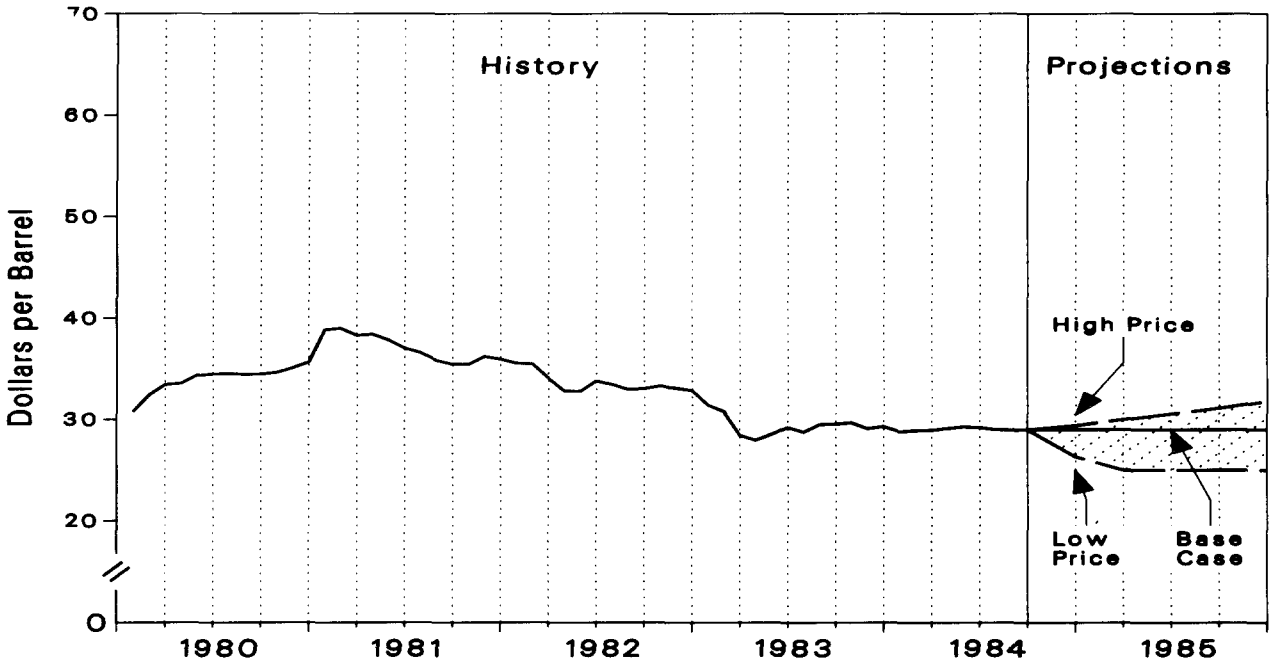

Figure 1. Imported Crude Oil Prices

Macroeconomic Activity

The economic recovery is projected to continue through 1985, but at a slower rate than experienced in 1984. Slower growth in the second half of 1984 is projected to hold the increase in real gross national product (GNP) between 1983 and 1984 at 7.0 percent. As credit demands push interest rates slightly higher in 1985, the real GNP growth is projected to be only 2.7 percent between 1984 and 1985. This projection is based on the CONTROL092584 forecast of Data Resources, Inc. (DRI), issued in late September. The forecast is modified to reflect the base case projection for the price of imported crude oil.

Growth in real disposable income is projected to mirror the pattern for real GNP growth, with increases of 6.7 percent projected in 1984 and 2.9 percent in 1985. The increase in manufacturing activity is expected to slow even more dramatically, falling from 11.7 percent growth projected for 1984 to 3.6 percent for 1985. Inflation is forecast to continue at relatively low levels; a 3.7-percent increase in the GNP deflator is forecast for 1984, and a 3.9-percent increase is forecast for 1985. (Assumptions pertaining to the price of imported crude oil, the economy, and the weather are shown in Table 2.)

The possibility of either a significantly faster or slower increase in economic aggregates should be considered because of uncertainties regarding economic policy, the international situation, 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. In the high case, real GNP is projected to increase by 7.0 percent from 1983 to 1984 and by 3.7 percent from 1984 to 1985. The low case combines a lower rate of economic growth and a higher projection for oil prices. Real GNP in the low economic growth case is projected to grow by only 6.9 percent in 1984 and 1.6 percent in 1985. These forecasts are based on modifications of DRI forecasts OPTIM092684 and MINIRECESS092684, respectively, with modifications to reflect lower and higher oil price assumptions.

Energy Product Prices

Energy product prices over the forecast period are expected to remain stable or increase only slightly, in response to the general overcapacity in the energy industry. Petroleum product prices in nominal terms are expected to remain stable through 1985, in line with the assumption of constant world oil prices (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.

The price of gasoline, which averaged $1.22 per gallon in 1983, is projected to be $1.20 per gallon in 1984 and 1985, implying a falling real price over this period. This flat price projection is mainly due to the assumed stability of crude oil prices, projected excess refinery capacity, and stable demand. 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. This drop 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 distillate fuel oil in the first quarter of 1984. The normal seasonal pattern in gasoline prices is expected to resume in 1985.

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

Assumptions	History 1982 1st	1982 2nd	1982 3rd	1982 4th	1982 Year	1983 1st	1983 2nd	1983 3rd	1983 4th	1983 Year	1984 1st	1984 2nd	1984 3rd	Economic Growth	Projections 1984 4th	1984 Year	1985 1st	1985 2nd	1985 3rd	1985 4th	1985 Year
Macroeconomic[a]						(billion 1972 dollars)															
Real Gross National Product	1,484	1,481	1,477	1,479	1,480	1,491	1,525	1,550	1,573	1,535	1,611	1,639	1,653	High	1,670	1,643	1,688	1,699	1,709	1,721	1,704
														Base	1,669	1,643	1,681	1,685	1,689	1,694	1,687
														Low	1,661	1,641	1,658	1,659	1,669	1,680	1,667
Percent Change from Prior Year	-2.0	-2.1	-3.0	-1.5	-2.1	0.5	3.0	4.9	6.4	3.7	8.0	7.5	6.6	High	6.2	7.0	4.8	3.7	3.4	3.1	3.7
														Base	6.1	7.0	4.3	2.8	2.2	1.5	2.7
														Low	5.6	6.9	2.9	1.2	1.0	1.1	1.6
GNP Implicit Price Deflator (index, 1972=100)	204.0	206.8	208.5	210.3	207.4	212.9	214.3	215.9	218.2	215.3	220.6	222.4	224.2	High	226.0	223.3	228.1	229.7	231.4	233.6	230.7
														Base	226.1	223.3	228.5	230.7	232.8	235.4	231.9
														Low	226.2	223.4	228.5	230.5	232.7	235.4	231.8
Percent Change from Prior Year	7.4	7.2	5.5	4.3	6.0	4.4	3.6	3.5	3.8	3.8	3.6	3.8	3.8	High	3.6	3.7	3.4	3.3	3.2	3.4	3.3
														Base	3.6	3.7	3.6	3.7	3.8	4.1	3.9
														Low	3.7	3.8	3.6	3.6	3.8	4.1	3.8
Real Disposable Personal Income[b]	1,053	1,055	1,058	1,068	1,059	1,073	1,082	1,102	1,124	1,095	1,148	1,165	1,175	High	1,182	1,168	1,194	1,200	1,208	1,217	1,205
														Base	1,183	1,168	1,195	1,198	1,203	1,210	1,202
														Low	1,179	1,167	1,185	1,184	1,188	1,194	1,188
Percent Change from Prior Year	1.1	1.3	0.0	1.1	1.0	1.9	2.6	4.2	5.2	3.4	7.0	7.7	6.6	High	5.2	6.7	4.0	3.0	2.8	3.0	3.2
														Base	5.2	6.7	4.1	2.8	2.4	2.3	2.9
														Low	4.9	6.6	3.2	1.6	1.1	1.3	1.8
Index of Industrial Production (Mfg.) (index, 1967=100)	139.8	138.1	137.7	134.5	137.5	138.4	145.2	152.8	156.5	148.2	161.0	164.4	167.5	High	169.8	165.7	173.0	174.5	176.3	178.3	175.5
														Base	169.5	165.6	171.4	171.6	171.6	171.7	171.6
														Low	167.6	165.1	166.6	165.9	167.0	169.5	167.3
Percent Change from Prior Year	-7.6	-9.4	-9.7	-7.2	-8.5	-1.0	5.1	11.0	16.4	7.8	16.3	13.2	9.6	High	8.5	11.8	7.5	6.1	5.3	5.0	5.9
														Base	8.3	11.7	6.5	4.4	2.4	1.3	3.6
														Low	7.1	11.4	3.5	0.9	-0.3	1.1	1.3
Oil Price						(U.S. nominal dollars/barrel)															
Imported Crude Oil Prices[c]	35.03	33.13	33.14	33.07	33.55	30.20	28.57	29.27	29.35	29.30	28.89	29.19	28.97	High	27.67	28.69	25.00	25.00	25.00	25.00	25.00
														Base	29.00	29.01	29.00	29.00	29.00	29.00	29.00
														Low	29.19	29.07	29.81	30.35	30.90	31.56	30.66
U.S. Refiners' Cost[d]	33.05	31.20	31.53	31.78	31.87	29.62	28.61	28.87	28.94	28.99	28.76	28.79	28.74	High	27.41	28.43	24.74	24.74	24.74	24.74	24.74
														Base	28.74	28.76	28.74	28.74	28.74	28.74	28.74
														Low	28.95	28.81	29.56	30.10	30.64	31.30	30.40
Weather[e]						(number of degree days)															
Heating Degree Days	2,542	600	105	1,506	4,753	2,227	662	64	1,801	4,754	2,423	588	120		1,668	4,799	2,401	538	88	1,668	4,695
Cooling Degree Days	35	295	701	64	1,095	18	270	876	70	1,234	17	360	749		62	1,188	28	328	754	62	1,172

[a] Macroeconomic projections from three DRI model forecasts are seasonally adjusted at annual rates and modified as appropriate to the three world oil price cases. Macroeconomic data for the third quarter of 1984 are estimated. Historical data source: U.S. Department of Commerce, Survey of Current Business, September 1984.

[b] Seasonally adjusted at annual rates.

[c] Cost of imported crude oil to U.S. refiners.

[d] U.S. Refiner Acquisition Cost of foreign and domestic crude oil.

[e] Population-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(84/07); Bureau of Economic Analysis, U.S. Department of Commerce, Survey of Current Business, as revised, September 1984; National Oceanic and Atmospheric Administration, U.S. Department of Commerce, Monthly State, Regional, and National Heating Degree Days Weighted by Population, October 1984; and Federal Reserve System, Statistical Release G.12.3., September 1984. Macroeconomic forecasts based on modifications to Data Resources, Inc., forecasts CONTROL092584, OPTIM092684, and MINIRECESS092684.

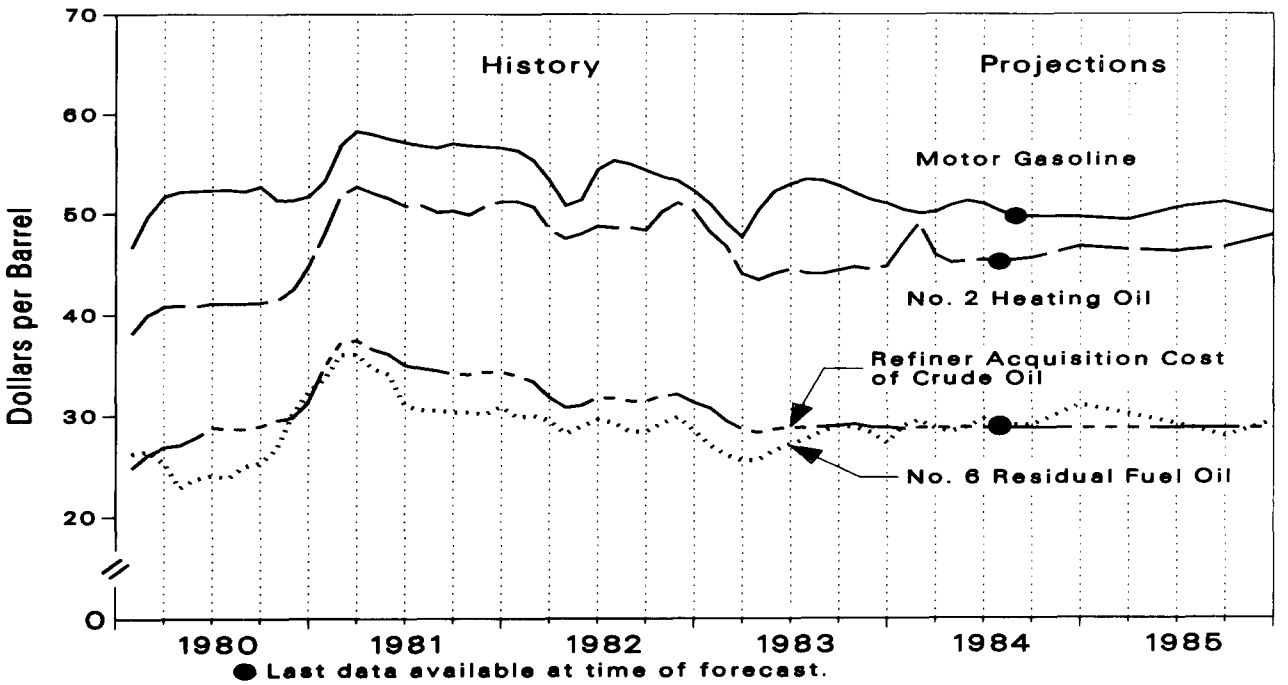

Figure 2. Retail Prices For Petroleum Products

Residential heating oil prices averaged $1.08 per gallon in 1983 and are projected to increase to $1.10 per gallon in 1984, with some of this increase attributable to higher demand for distillate fuel oil. Higher demand in the first quarter of 1984 due to colder weather sharply reduced heating oil inventories and raised the average retail price by 7 cents per gallon over the fourth-quarter 1983 price. Following the end of the heating season, the price of heating oil fell 5 cents in the second quarter of 1984. Prices are projected to increase to about $1.10 per gallon by the fourth quarter of this year, about 4 cents per gallon above the abnormally low fourth-quarter 1983 level. Between the fourth quarter of 1984 and first quarter of 1985, prices are projected to increase about 1 cent per gallon, a more normal seasonal pattern than occurred last year. Between 1984 and 1985, average annual prices are projected to increase by about 1 cent per gallon.

The price of propane at the consumer level appears to be related to the retail price of heating oil, a substitute fuel. In 1983, the price of propane averaged about 71 cents per gallon, well above the 1982 level. The price of propane is projected to increase to 73 cents per gallon in 1984 and then drop to 72 cents per gallon in 1985. Based on the relative Btu values of heating oil and propane, the projected propane prices appear to be higher than would be supported by the Btu differential, suggesting there may be limited substitution potential between these two fuels.

The price of residential electricity is expected to increase by about 5 percent and 3 percent annually for 1984 and 1985, respectively. These increases compare to a nearly 5-percent increase between 1982 and 1983. One reason for the smaller increase in 1985 is that interest rates and the cost of capital to electric utilities are expected to decrease in 1985. The addition of several new nuclear units to the rate base is not expected to have a major effect on electricity prices at the national level, although these additions could have significant price effects in some locations.

Natural Gas Decontrol in 1985

The price of natural gas remained relatively constant in nominal terms from late 1983 through the first half of 1984. The price ceilings in the Natural Gas Policy Act of 1978 appear to have constrained any upward price pressures that could have resulted from contracts signed in the late 1970's which called for parity with oil prices. Price stability has been reinforced also by the current surplus of natural gas. However, considerable uncertainty about the future price of natural gas is introduced in 1985 when price ceilings on about 50 percent of gas are removed. This event could result in upward pressure on wellhead prices, although market conditions exerting downward pressure on prices are expected to dominate the transition for most pipeline and distribution companies.

Three price sensitivity cases were developed using alternative assumptions about the possible resolution of contract issues, including oil parity clauses and most favored nation clauses. Oil parity clauses in some contracts between natural gas producers and pipeline companies call for the price of natural gas after decontrol to increase to the level of some other fuel, such as distillate oil. "Most favored nation" clauses call for the price of natural gas to increase to the highest price in a specified geographic region. In many cases, this would be the distillate oil price (assuming the oil parity clause is triggered).

The base case assumes that existing contracts are not the only factor determining wellhead prices, and that most of the contract pricing issues are resolved in favor of the consumer because of current market conditions. Residential and utility margins (the difference between the wellhead price and the end-use price) are assumed to remain at recent levels in nominal terms through 1985 because excess supply is assumed to result in an effort by the gas industry to keep prices competitive and thereby maintain its market share. The low price case assumes that nearly all contract pricing issues are resolved in favor of the consumer and that the wellhead price of natural gas moves closer to the market clearing level because of the excess supply pressure. In the low case, margins are assumed to remain fixed in nominal terms at recent levels. In the high price case, more pricing issues are assumed to be resolved in favor of the producer, with the resulting cost pressure projected to force margins upward by slightly more than the overall rate of inflation.

It is important to note that, in all cases, if there is to be a price increase for natural gas, it is unlikely to occur until at least the third quarter of 1985. This observation is based partly on the procedures established for the purchased gas cost adjustment filings by interstate pipeline companies at the Federal Energy Regulatory Commission. In these filings, the interstate pipeline companies are required to project costs for gas they intend to purchase over the next 6 months. Cost increases that have not actually been incurred cannot be passed to end-users until the next filing (after they are incurred), which is usually every 6 months for the major companies.

International Petroleum Situation

Current Situation

Although the current official crude oil prices charged by OPEC and major non-OPEC oil exporters are stable in the international oil market, considerable downward pressure on prices still exists. Spot product and crude oil prices, which plunged between May and July of 1984, have partially recovered; but spot crude oil prices (except for the price of Arabian Heavy crude oil) are still below their official selling prices, indicating a soft market. The continuing strong dollar, which rose to its highest level in more than 11 years against the Deutsche Mark, is eroding product prices and refiners' margins in Europe and elsewhere, adding to the downward pressure on crude oil prices. However, OPEC's ability to restrain production among its own members, especially in Saudi Arabia, is counteracting this downward pressure. In addition, the sporadic air attacks on oil tankers in the Persian Gulf are a continual 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 the first half of 1984, world oil consumption was higher than year-earlier levels, due to colder-than-normal weather in the Northern Hemisphere and the strong economic growth in the United States and Japan (Tables 4 and 5). However, oil demand in Europe remained weak. The generally flat demand in Europe is attributed to a slow economic recovery, increased use of natural gas in the residential and industrial sectors (especially in France), and the trend toward the substitution of other energy sources for fuel oil in electricity generation. The coal strike in the United Kingdom has resulted in an additional 170,000 barrels per day of fuel oil being used in place of coal to generate electricity in the first half of 1984 compared with year-earlier levels. This increase in oil demand has somewhat strengthened the spot price for fuel oil in Europe.

In response to the increase in world petroleum demand and the seasonal inventory buildup, oil production by the market economies increased by about 3.7 million barrels per day between the first-half of 1983 and the second-half of 1983. Of this increase, production from OPEC members contributed about 3.1 million barrels per day (including about 220,000 barrels per day of natural gas liquids production). In the first half of 1984, world oil supply remained at a relatively high level, mainly because of increased oil production in the non-OPEC market economies. Crude oil production by OPEC members declined by about 1 million barrels per day in the first half of 1984, compared to the level during the last half of 1983, but was still nearly one-half million barrels per day above the quota of 17.5 million barrels per day. OPEC crude oil production dropped to 1 million barrels per day below the quota in August of 1984 for the first time since June of 1983. (About 1 million barrels per day of natural gas liquids production is included in the level of OPEC production listed on Table 4 and, thus, must be excluded when making comparisons with the OPEC quota.)

Spot prices of OPEC crude oil during the first 5 months of 1984 rose from the year-end 1983 level of $27.70 per barrel to levels near or slightly above official contract prices. This increase was followed by a gradual decline in spot prices

through mid-June and then by a sharp drop in the last week of July, when prices fell to their lowest levels of the year. The declines could be directly linked to overproduction by several OPEC members. Early in August of 1984, spot prices began to increase but were still well below official contract prices. This increase has been attributed mainly to the support of official OPEC contract prices by non-OPEC suppliers and major oil companies, and lower production in OPEC. Further firming of spot prices will be achieved only if OPEC member countries adhere to their production quotas and if expected increases in demand actually occur during the winter season in 1984-1985.

International Petroleum Forecast

World economic growth is expected to remain strong through 1985, but at a rate somewhat lower than was experienced during the first half of 1984 (Table 5). Total petroleum demand (product supplied) in the market economies is projected to increase by about 1.1 million barrels per day during 1984, with about two-thirds of this increase occurring in the United States (Figure 3). A slight decrease in U.S. petroleum demand is expected in 1985. Petroleum demand in the other market economies is projected to increase slightly over the forecast period, with very modest growth expected in Europe in 1984 and no growth expected in 1985. Petroleum demand in the developing countries is expected to remain relatively level during 1984 because of economic problems in Latin America, but is expected to pick up in 1985 if economic conditions in these countries improve as projected.

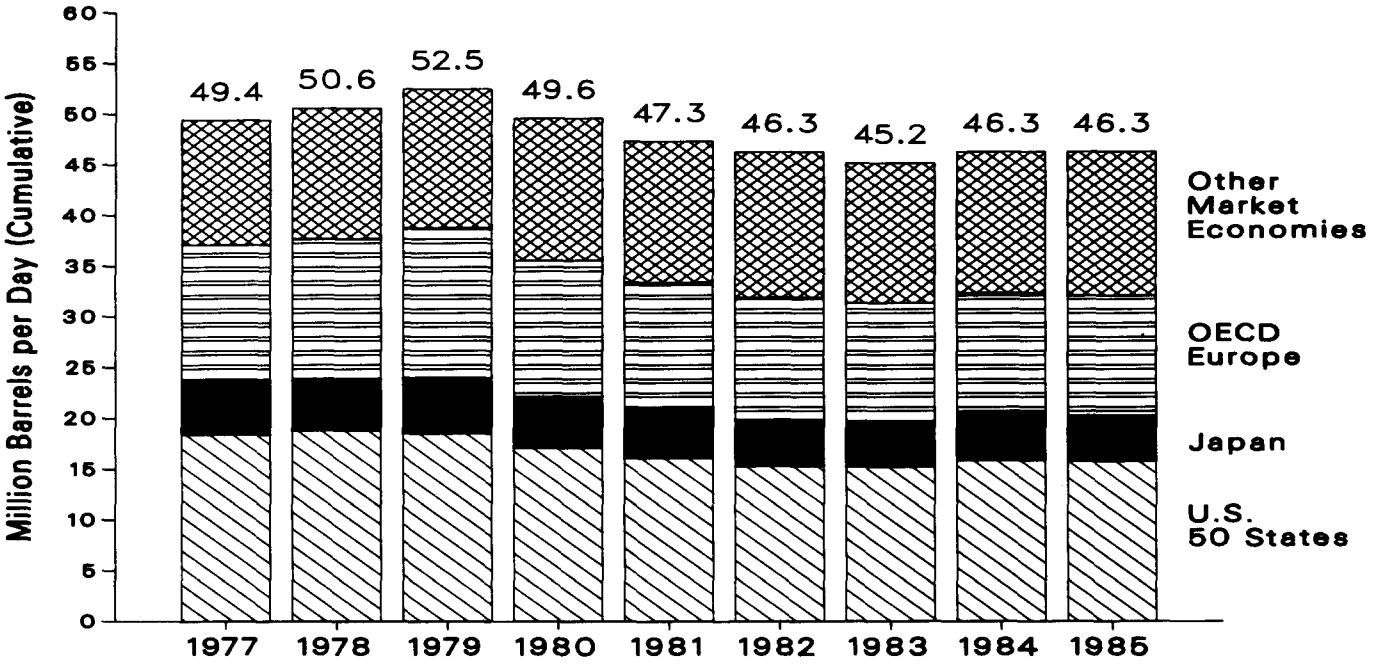

Figure 3. Market Economies Demand for Petroleum

OPEC's average crude oil production is expected to exceed its 1983 production quota by about one-half million barrels per day in 1984 and 1985. Non-OPEC production (including production of natural gas liquids) is expected to increase by about 1 million barrels per day in 1984 and by an additional 300,000 barrels per day in 1985. Net exports of oil from the Communist countries are forecast to decrease slightly between 1984 and 1985. The total world supply of oil is forecast to increase by 3.3 percent in 1984 and by less than 1 percent in 1985.

Commercial petroleum stocks in the market economies at the end of 1984 are projected to be slightly lower than the year-earlier level, and no significant stock buildup is expected in 1985 (Figure 4). However, continued growth in the U.S. Strategic Petroleum Reserve inventory is expected during this period. Total world petroleum stocks (including strategic petroleum reserves) were equivalent to about 105 days of forward consumption (at the next quarter's average consumption rate) at the end of the second quarter of 1984.

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 8 to 10 million barrels per day of oil are expected to pass through the Strait of Hormuz during 1984 and 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.

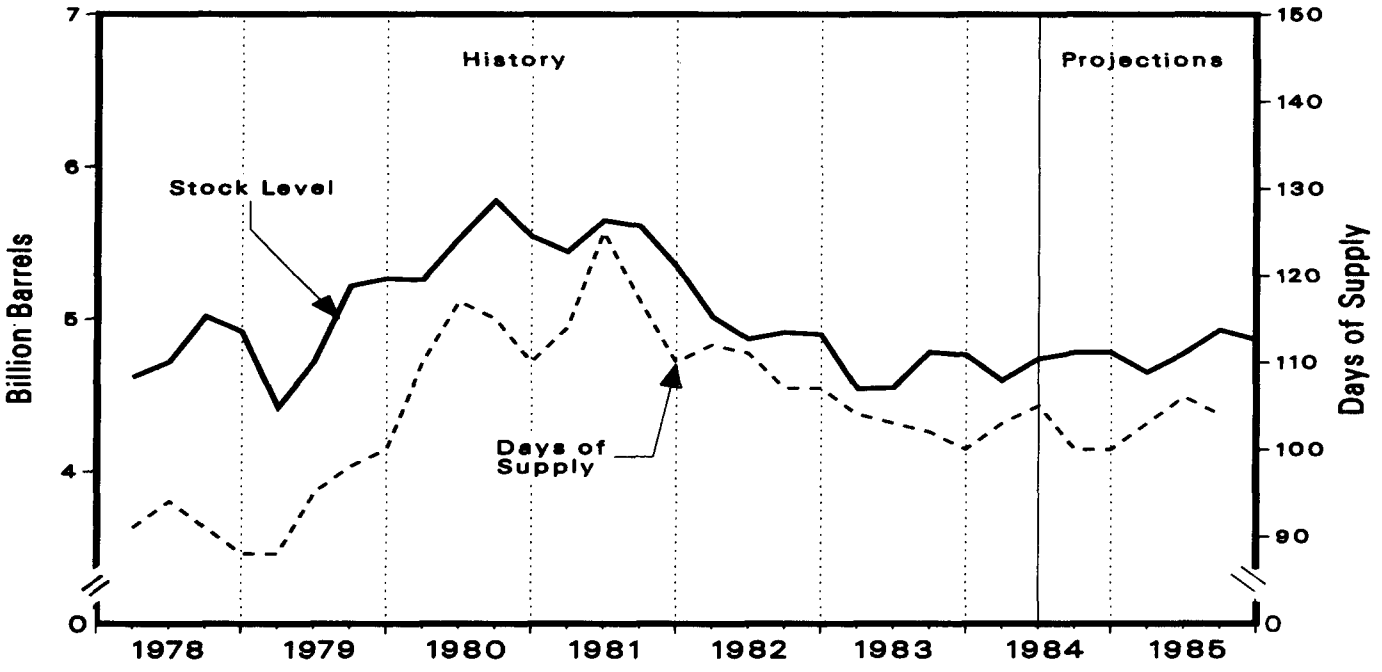

Figure 4. Market Economies Oil Stocks

U.S. Petroleum Outlook

Overview

The 5-year downward trend in total petroleum demand will be reversed in 1984, with total petroleum consumption (product supplied) projected to increase by 4.3 percent over year-earlier levels. (The base case forecast is shown in Table 6; alternative cases for high and low economic growth are shown in Tables 7 and 8, respectively.) With the slowdown in economic growth expected next year, however, petroleum demand is projected to decline slightly in 1985. Continued improvements in the fuel efficiency of the automobile fleet, industrial and utility conservation in the use of residual fuel oil, and continued declines in household use of distillate fuel oil are forecast to more than offset the positive impact on petroleum demand induced by economic growth.

Motor gasoline demand is projected to increase by less than 2 percent in 1984, as higher average fuel efficiency partially offsets the effects of an improving economy. Demand for motor gasoline is expected to dip slightly in 1985. Demands for distillate fuel oil and "other" petroleum products are expected to show substantial increases (of about 7 percent and 8 percent, respectively) from 1983 to 1984, based on the assumption of normal weather for the remainder of 1984 and the projected increases in industrial production. Continued growth in other products demand is expected in 1985. Residual fuel oil demand is forecast to be flat between 1983 and 1984 and then decline in 1985 as a result of continued energy conservation by industry and fuel substitution by electric utilities.

Primary petroleum stocks are projected to be drawn down to about 1,061 million barrels by the end of 1984, slightly below the closing level of stocks in 1983. At the end of 1985, petroleum stocks are expected to be at about the same level as at the end of 1984, but with typical seasonal fluctuations.

Net petroleum imports, including those for the Strategic Petroleum Reserve (SPR), are projected to average 4.8 million barrels per day in 1984, up about 10 percent from the 1983 level. Petroleum imports are forecast to increase only slightly in 1985, given the relatively stable projections for demand, production, and stocks.

Domestic Crude Petroleum Production

Domestic crude oil production is projected to be 8.8 million barrels per day in 1984, and then increase to 8.9 million barrels per day in 1985. Production from the Alaskan North Slope is expected to increase by 33,000 barrels per day, or about 2 percent, from 1984 to 1985 as additional production comes on line from the Kuparuk River field. This new production is expected to have a substantial impact beginning in the first quarter of 1985 and could be higher than projected, depending on the success of field operations. Subarctic crude oil production is expected to increase slightly from 1984 to 1985, with Louisiana production projected to make the largest contribution.

Motor Gasoline

Motor gasoline product supplied is expected to average 6.72 million barrels per day for 1984, or 1.5 percent higher than the level in 1983 (Table 9). The gasoline supply figures should fall off slightly in 1985 to an average of 6.67 million barrels per day. These forecasts for motor gasoline product supplied are lower than those published in the August 1984 Outlook, reflecting a downward revision in the outlook for disposable personal income and an upward revision in passenger-car efficiency.

Miles traveled in passenger cars powered by gasoline are projected to increase by about 4 percent in 1984 over 1983 levels and by at least another 1 percent from 1984 to 1985. Auto efficiency is now projected to increase by 5 percent between 1984 and 1985, resulting in a net drop in automobile gasoline consumption. Despite the implied falloff in gasoline consumed by passenger cars in 1985, nonauto (mostly commercial) gasoline use is expected to increase sufficiently during 1985 to keep total gasoline demand above 1983 levels, and only slightly below the expected 1984 level.

Distillate Fuel Oil

Continued economic recovery and stable or falling real prices of distillate fuel oil will result in a significant increase in distillate demand in 1984 for the first time in 6 years (Table 10). This upward trend is not expected to be sustained through 1985, however. Because of the moderation in economic growth projected for 1985, distillate demand is expected to decline from the 1984 level, although to a level considerably above demand in 1983.

Distillate fuel oil consumption in 1984 is expected to average almost 2.9 million barrels per day, up about 7 percent from the 1983 level. The primary cause of the demand increase is the rise in economic activity, particularly industrial production, which is projected to increase by almost 12 percent between 1983 and 1984. The real price of heating oil is expected to remain about constant between 1983 and 1984. However, an increase in the Federal excise tax on diesel fuel, which took effect on August 1, 1984, resulted in an increase of about 6 cents per gallon, leading to somewhat lower demand for diesel fuel oil than would otherwise have been forecast.

The strong growth in distillate demand (12 percent) in the first half of 1984 compared to year-earlier levels began to moderate during the third quarter of 1984, a trend that is expected to continue under current price, income, and weather assumptions. Industrial production in the first half of 1984 was 15 percent above first-half 1983 levels, and heating degree days were more than 4 percent higher. During the third quarter of 1984, more moderate growth in industrial production slowed the rate of growth in distillate demand to about 5 percent over year-earlier levels. The slowing of growth in distillate demand is expected to continue in the fourth quarter of 1984, with demand about the same as year-earlier levels because of the increased excise tax on diesel fuel and fewer households using distillate fuel oil for space heating.

In 1985, distillate demand is forecast to decline by about 3 percent, despite modest growth in industrial production. Diesel fuel declines in the first half of 1985 are projected as a result of the effects of the tax increase. Demand for heating oil is predicted to decline primarily because of the assumption of continued fuel switching.

Winter Outlook for Distillate Fuel Oil

Despite lower stocks of distillate fuel oil on the East Coast[1] than the levels at the beginning of last year's heating season, distillate supplies are expected to be sufficient this winter to meet demand, even if conditions are colder than normal. However, given the low level of stocks on the East Coast, some upward pressure on price cannot be ruled out if severely cold weather occurs during the winter.

Projected demand for distillate fuel oil in the fourth quarter of 1984 is 2.96 million barrels per day, roughly the same level as a year ago. Higher demand for diesel fuel (due to increases in industrial production) is expected to be offset by lower demand for heating oil in the residential, industrial, and commercial sectors (due to conservation, fuel switching, and a return to normal weather). Assuming normal weather, distillate demand is projected to peak at 3.00 million barrels per day in the first quarter of 1985, about 6 percent below year-earlier levels.

The impact of colder-than-normal weather on distillate demand would depend on the duration and regional distribution of the abnormal cold. A long cold spell in the West would have less impact on distillate demand than a shorter cold wave in the Northeast or Midwest. On average, however, a sustained 10 percent colder-than-normal winter at the national level (which occurs roughly once in 100 years) would increase demand for distillate fuel oil by about 150,000 barrels per day for the two winter quarters. If this cold weather did occur, the most likely source of such incremental demand would be additional domestic production, given current refinery utilization rates of less than 80 percent and surplus crude oil production capacity. Additional imports are also likely if the weather is unusually cold; in February of 1984 (following the very cold weather in January), imports of distillate reached 458,000 barrels per day, compared to a 1983 annual average of 174,000 barrels per day (with the additional imports coming primarily from Rotterdam).

Prices of residential heating oil are expected to average $1.10 per gallon this winter, but might range from as low as $1.02 per gallon (under high economic growth assumptions) to as high as $1.13 per gallon (under low economic growth assumptions) in the first quarter of 1985. The primary determinant of heating oil prices is the cost of crude oil, which is assumed to remain at about $29 per barrel throughout the forecast period. However, short-term price fluctuations due to abnormal demand and supply conditions are always a possibility. For example, prices rose 10 cents per gallon from December 1983 to February 1984 in response to high demand because of abnormally cold, early winter weather. By July, however, prices had fallen back to levels lower than a year earlier. No such price increase is expected this winter. Compared with year-earlier levels, spot prices are currently lower in both Europe and New York. However, a combination of circumstances, such as cold weather in the United States and Europe, refinery outages, and distribution difficulties, could lead to temporarily higher prices at any time during the winter.

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[1] Information on distillate stocks by region is available in Energy Information Administration, Weekly Petroleum Status Report, DOE/EIA-0208.

Residual Fuel Oil

Total demand for residual fuel oil in 1984 is expected to remain the same as in 1983 (Table 11), following several years of declining demand. This leveling of residual fuel oil demand is expected to be only temporary, as the decline is expected to continue in 1985.

Nonutility demand for residual fuel oil is projected to increase by almost 5 percent from 1983 to 1984 because of high economic growth and a real price reduction expected during this period. In addition, an unusually cold January in 1984 on the East Coast (where nearly half of all residual fuel oil is used) caused consumption to increase during that month, contributing to the increase in the annual consumption level. Utility use of residual fuel, however, is projected to decrease by 7 percent from 1983 to 1984, mainly because of increased generation from coal and nuclear power. In 1985, demand for residual fuel oil is projected to decrease by somewhat less than 6 percent from year-earlier levels, with most of the drop projected to occur in utility demand. The main reasons for this projected decrease are the displacement of residual fuel oil by coal and nuclear power at electric utilities and slower economic growth.

Other Petroleum Products

Other petroleum products supplied, which include all petroleum products except motor gasoline, distillate, and residual fuel, are projected to increase by about 8 percent between 1983 and 1984, mainly in response to higher levels of economic activity (Table 12). Unlike the demands for the major petroleum product categories, which are expected to decline in 1985, the demand for other petroleum products is expected to grow through 1985, although at a slower rate than in recent months.

Jet fuel, feedstocks, and liquefied petroleum gases (LPG) are the principal components of the other products category, comprising 2.95 million barrels per day out of total other products supplied of 4.43 million barrels per day in 1983. Miscellaneous products, which accounted for 1.48 million barrels per day in 1983, includes kerosene, still gas, road oil and asphalt, petroleum coke, lubricants, waxes, aviation gasoline, special naphthas, miscellaneous products, pentanes plus, unfinished oils, and aviation and motor gasoline blending components. Crude oil consumed directly (about 70,000 barrels per day in 1983) 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 product supplied reached its lowest point in over a decade during 1983, reflecting the combined impacts of the economic recession, conservation efforts, and price pressures associated with an international shortage of natural gas liquids. In 1984, the economic recovery and adequate supplies of LPG have encouraged domestic consumption. The projected increase in LPG product supplied through 1985 is based on the assumptions of continued economic growth and ample supplies, but also reflects the moderating influence of long-term conservation trends.

Demand for jet fuel during the first 9 months of 1984 averaged 1.16 million barrels per day (compared to an average of 1.04 million barrels per day for the same period in 1983), far exceeding the expected level based on an analysis of past trends. 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, at an average level of 1.14 million barrels per day.

Petrochemical feedstock product supplied grew rapidly during the first three quarters of 1984, following a prolonged period in 1983 during which feedstock demand failed to respond to the rebound in economic activity. Feedstock product supplied rose from an average of 0.93 million barrels per day for January through September of 1983 to an estimated 1.00 million barrels per day for the first 9 months in 1984. This increase in feedstocks demand is attributable to growth of nearly 10 percent over the same period in organic chemicals manufacturing, Standard Industrial Classification (SIC)[2] 2818. Chemical manufacturing, and thus demand for petrochemical feedstocks, is forecast to grow at a more modest pace throughout the forecast period. The projected growth rate reflects some downward pressures on demand for domestically produced feedstocks and primary petrochemicals in 1985, as several world-scale petrochemical plants are brought online in the oil-exporting nations. Given a clear advantage with respect to feedstock costs, Saudi Arabia, in particular, will be in a strong position to compete for traditional U.S. export markets as well as U.S. domestic markets.

Miscellaneous petroleum products supplied are projected to average 1.62 million barrels per day in 1984, up almost 10 percent from the level in 1983. More modest growth of nearly 4 percent is projected between 1984 and 1985. Only the demand for kerosene, which accounts for approximately 8 percent of the miscellaneous category, is forecast to decline over the forecast period. In contrast, road oil and asphalt product supplied is projected to increase by nearly 10 percent in both 1984 and 1985, as the availability of Federal highway funds continues to encourage road building and maintenance projects.[3]

Petroleum Inventories

The 3-year decline in total primary petroleum stocks that began in 1981 is expected to continue into 1985, with the major decrease occurring in crude oil stocks (Table 6). Total stocks are projected to begin to level off over the next 15 months, as a result of the lower level of total product supplied and the drawdown of stocks to near their minimum operating levels.

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[2]The Standard Industrial Classification (SIC) system defines industries in accordance with the composition and structure of the economy. The Federal Reserve Board production indices are based on the 1967 edition of the Standard Industrial Classification Manual, Executive Office of the President, Office of Management and Budget.

[3]Historical data for the individual components of "other" petroleum products are available in the Energy Information Administration, Petroleum Supply Monthly, DOE/EIA-0109. Detailed forecasts are available through the Division of Energy Analysis and Forecasting.

End-of-year primary stocks, which exclude stocks held in the Strategic Petroleum Reserve (SPR), were equivalent to 66.9 days of supply at the end of 1983 and are projected to be 66.4 days of supply at the end of 1984 (at the next quarter's anticipated rate of product supplied). Total primary stocks are expected to decline slightly between 1984 and 1985 (Figure 5).

Changes in primary stocks of major petroleum products from the end of the third quarter of 1983 to the end of the third quarter of 1984 were the following: finished motor gasoline was up nearly 1 percent; distillate fuel oil was down more than 7 percent; and residual fuel oil was down more than 10 percent (Tables 9 through 11). From the end of 1984 to the end of 1985, distillate fuel oil stocks are projected to change relatively little, with residual fuel oil stocks dropping by about 5 percent and finished motor gasoline stocks dropping by about 3 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 330 million barrels.

Stocks in the SPR currently are forecast to reach 444 million barrels by the end of 1984 and about 497 million barrels by the end of 1985, with the planned final level at 750 million barrels. At the end of September 1984, SPR crude oil inventories had surpassed 430 million barrels. Crude oil fill rates for the SPR are projected to average 180,000 barrels per day in 1984 and 145,000 barrels per day in 1985, based on projected deliveries of 145,000 barrels per day through the forecast period (an estimate provided by the SPR program office).

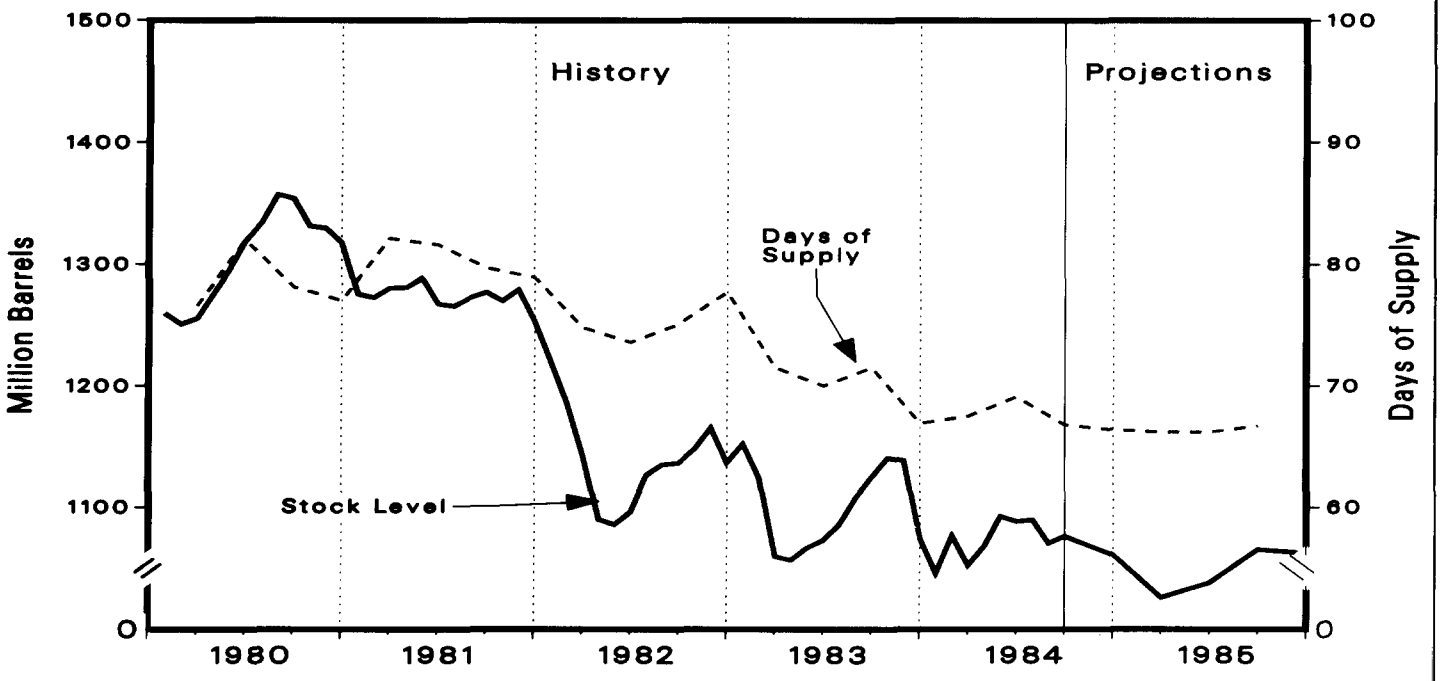

Figure 5. Total Petroleum Inventories Excluding SPR

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 the base case levels.
- The economic sensitivity cases are derived from the low and high growth economic assumptions given in Table 2, holding prices at their base case trajectories.
- The weather sensitivity cases are based on variations in population-weighted heating degree days and cooling degree days of 10 percent in the first and fourth quarters, and 15 percent in the second and third quarters, respectively.
- The fuel-switching adjustment is based on an econometric 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.

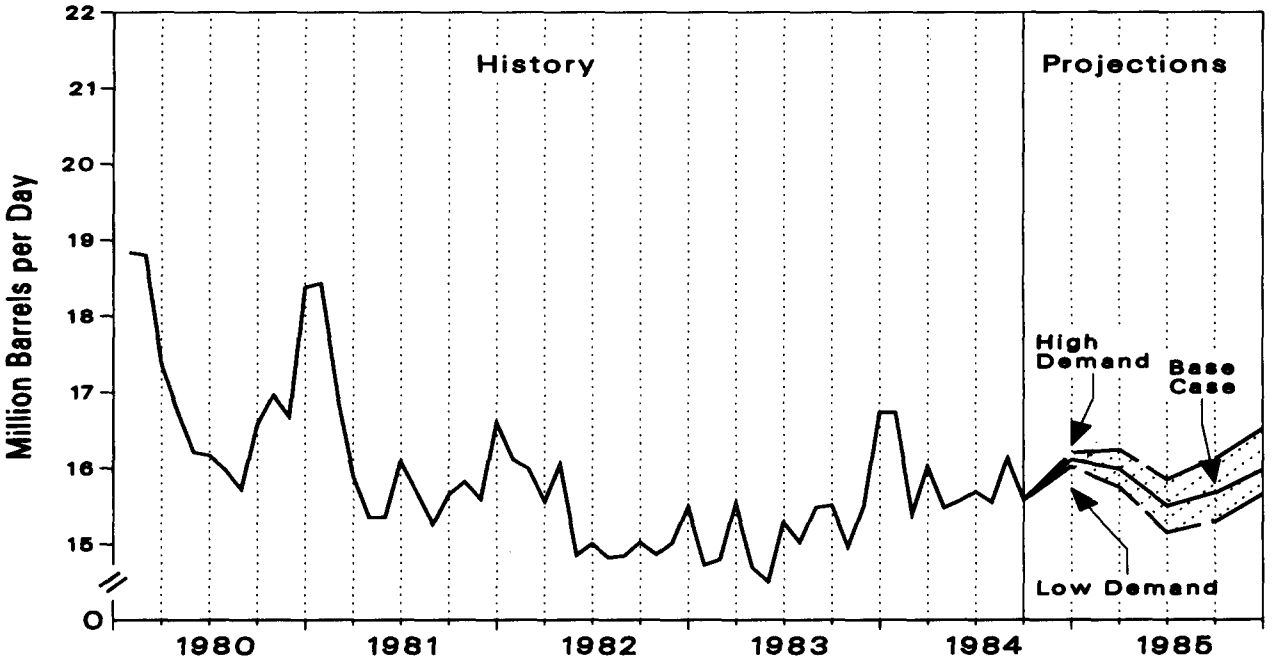

Figure 6. Total Petroleum Demand

The range of petroleum demand projected for 1984 is 130,000 barrels per day, with the largest source of uncertainty being the weather. (The fuel-switching adjustment increases the range on the high demand side.) This range of demand is relatively small compared to the level published in the August 1984 Outlook because only the fourth quarter of 1984 is a forecast in this Outlook. In 1985, the level of economic activity becomes the greatest source of uncertainty, with the total range of demand projected to be about 820,000 barrels per day. Although the level of economic activity is the greatest source of uncertainty in estimating petroleum demand on an annual basis, the first-quarter uncertainty is dominated by the weather-related variation in distillate demand for heating. Over the course of the year, the uncertainty in demand as a result of price variation also becomes more important, with a range of 390,000 barrels per day due to price changes by the fourth quarter of 1985.

Projections for Other Major Energy Sources

Natural Gas

Total natural gas consumption and production are forecast to end 4-year declines, increasing by 6 percent and 9 percent, respectively, from 1983 to 1984 (Table 14). Relatively small increases are expected between 1984 and 1985. The projection for natural gas demand is contingent on the effects of the assumed economic growth, the moderation in natural gas price increases during 1984, and only small increases in the nominal price of natural gas after partial deregulation goes into effect in January 1985. As the balancing item between demand and supply, the level of natural gas in underground storage is projected to decline by about 1 percent between the end of 1984 and the end of 1985.

Natural Gas Demand. Demand for natural gas in the United States is responding to the economic expansion. Total residential, commercial, and industrial use of natural gas was almost 8 percent higher in the first 9 months of 1984 compared to year-earlier levels, and is projected to increase by about 1 percent between 1984 and 1985. In the first 9 months of 1984, electric utility consumption of natural gas was more than 7 percent above year-earlier levels as a result of the increase in total electricity generation and the moderation in gas price increases. In 1984, electric utility demand for natural gas is projected to be about 9 percent above the 1983 level and is projected to increase slightly from 1984 to 1985, as higher levels of generation are expected to increase natural gas usage. Including the projected rise in electric utility gas use from 1984 to 1985, total gas consumption in 1985 is forecast to be 18.2 trillion cubic feet, the highest level since 1981, when consumption was 19.4 trillion cubic feet.

Natural Gas Supply. Total dry gas production is projected to increase by more than 9 percent to 17.4 trillion cubic feet in 1984 and then increase to 17.5 trillion cubic feet in 1985. 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 result in an increase in U.S. imports in 1985. Net pipeline imports of natural gas are projected to be 880 billion cubic feet in 1984 and 1 trillion cubic feet in 1985, a level still below the record of 1.2 trillion cubic feet of gas imports set in 1979.

Coal

Total shipments of domestic coal (production plus primary stock withdrawals) are expected to reach 899 million tons in 1984 compared to 785 million tons in 1983. Coal production, which grew at an average annual rate of 3.3 percent from 1961 to 1982 (in terms of tons of coal), would rise above its long-term growth trend if the projected level of 892 million tons is achieved in 1984. Coal shipments are not expected to increase in 1985, partly because of slower growth in domestic coal consumption and reduced exports, but mostly because of reduced coal stockpiling requirements (Table 15). Approximately 41 percent of the expected 114-million-ton increase in shipments in 1984 is related to the movement away from a period of rapid liquidation of consumer coal stocks (which had a negative effect on shipments) to a period in which significant net stock building by domestic consumers (between the end of 1983 and the end of 1984) is expected. This development has largely been the result of very rapid stock buildups by eastern utilities and industrial plants as a hedge against a potential fourth-quarter coal strike. Growth in coal shipments beyond 1984 is expected to be restrained until coal stockpiles are reduced to levels consistent with normal operating conditions.

Coal Consumption. The increase in domestic coal consumption from 1983 to 1984 is expected to be 7.6 percent overall, with a 19-percent increase for coke plants, 6.6 percent for electric utilities, and 13.5 percent for other consumption. For 1985, an increase in total domestic coal consumption of 6.3 percent is anticipated, with the strongest growth (in absolute and relative terms) occurring in the electric utility market. Increases projected for coal consumption at electric utilities reflect the increase in electricity expected to be generated from coal-fired plants. In this section, a review of the implications for the utilization of coal-fired electric plants should provide insight into the utility coal demand forecast.

Average utilization rates at coal-fired generating plants, which have been trending upward since 1982, are expected to approach 1980 levels in 1984 on an annual basis. Coal plant utilization reached a low point of 49 percent during the recession year of 1982, but will probably have exceeded 52 percent for the first 9 months of 1984.[4] The current projections assume an increase in coal plant utilization to nearly 54 percent in 1985 on an annual basis. An important implication of this projection is that combined average utilization for oil- and gas-fired plants is expected to fall by about 2 to 3 percent in 1985 compared to the level in 1984.

Coal is assumed to displace oil and gas when possible for electricity generation. The amount of displacement projected here presumes that future growth in coal capacity and in overall electricity requirements will be distributed geographically in such a way as to promote the general patterns of displacement observed in the past. However, it is possible that oil- and and gas-fired generation could be

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[4] In 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).

higher than projected if future displacement exhibits a different pattern than expected. A reasonable upper bound to changes in the oil and gas share of generation would be that it remains at the projected 1984 level through 1985, rather than falling from 17 percent in 1984 to 16 percent in 1985, as expected. Under this alternative assumption, coal-fired generation would be expected to rise by only 57 billion kilowatthours in 1985, compared to the increase of 81 billion kilowatthours forecast in the base case, assuming that all of the additional oil- and gas-fired generation replaces coal. Translated into tons of coal consumed, this would mean that utility coal consumption could range as low as 697 million tons in 1985, but will more likely approach the 709 million ton level shown in Table 15.

The outlook for increases in domestic steel production is less optimistic than was forecast in the August 1984 Outlook; consequently, domestic requirements for coke from coal are expected to be lower. For this Outlook, 44 million tons is projected for coking coal consumption in 1984, increasing by less than 5 percent to 46 million tons in 1985. Behind this forecast is an expected increase in raw steel production from 85 million tons in 1983 to about 94 million tons in 1984 and 95 million tons in 1985. It should be noted that even as steel production is increasing, the share of that production using iron from blast furnaces (which use coke) is declining. According to the latest figures from the American Iron and Steel Institute, the share of steel production from basic oxygen furnaces and open hearth furnaces was 68.5 percent in 1983 but has fallen during the first 8 months of 1984.[5] For this Outlook, a 66.5-percent share was assumed to hold throughout the forecast period.

For this Outlook, forecasts of coal consumed in the manufacture of synthetic fuels are included for the first time. Projections for this item are included in the totals for retail and general industry 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.

Retail and general industry coal consumption is expected to rise to 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. The projected 1984 consumption level is 4 million tons higher than the forecast in the August 1984 Outlook. One-half of this increase is due to the fact that actual consumption for the second quarter of 1984 was 2 million tons higher than expected. The remaining part of the increase results from revised expectations about the strength of retail and commercial coal consumption over the forecast period.

The first half of 1984 exhibited a much more broad-based increase in coal consumption at manufacturing plants (other than coke plants) than was apparent during 1983.[6] Although by the third quarter of 1983 most major coal-consuming industries showed strong growth in coal use, increased coal consumption in the

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[5]See American Iron and Steel Institute, Annual Report (1983), and Raw Steel and Pig Iron Production Reports (AIS-7).

[6]See Energy Information Administration, Quarterly Coal Report, DOE/EIA-0121 (83/1Q-84/2Q).

industrial sector, for the year as a whole, was concentrated in the stone, clay, and glass, and paper and allied products industries.[7] So far in 1984, all industries have shown significant growth in coal consumption over 1983 levels, at least at the 2-digit SIC code level.[8] Although the rate of growth in coal consumption for the industrial sector is projected to decline considerably for the rest of 1984 from year-earlier levels, it is estimated that, for the year as a whole, industrial consumption of coal outside of coke plants will increase by about 13 percent. The retail and commercial portion of retail and general industry consumption is expected to remain about flat throughout the forecast period. However, the level of retail and commercial use is now expected to be about 280,000 tons per quarter higher during the forecast period, compared to the projection in the August 1984 Outlook, because year-to-year growth through the second quarter of 1984 has been unexpectedly robust in this sector.

Coal Production

Coal production is expected to increase by 14 percent between 1983 and 1984 and by 1 percent between 1984 and 1985. Preliminary data through September of 1984 indicate that production is running more than 20 percent ahead of 1983 levels. For the fourth quarter of this year, however, coal production should fall off considerably, as excess stocks at eastern and midwestern plants (created in anticipation of a potential miners' strike in the fourth quarter) are reduced significantly. In fact, despite an estimated record production level of 244 million tons in the third quarter of this year, projected fourth quarter production of 197 million tons promises to be the lowest fourth quarter level in 8 years (excluding the fourth quarter of 1977, in which a strike occurred).

Coal Exports. Although coal exports are expected to increase 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 expected level of 80 million tons in 1984, coal exports should drop off to about 73 million tons in 1985. Temporary increases in Canadian requirements for steam coal imports, along with possible excess stockpiling in anticipation of a strike by importers of U.S. coal, have had a positive effect on coal exports so far this year. 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.

For the first 8 months of 1984, coal exports were 11 percent above year-earlier levels. In general, growth in metallurgical coal exports and in steam coal shipments to Canada account for this increase. Steam coal exports for use by the Canadian electric utility sector have been substantially higher during the first three quarters of 1984 because of temporarily reduced availability of nuclear

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[7] See Energy Information Administration, Quarterly Coal Report, DOE/EIA-0121 (83/1Q-84/2Q).

[8] Ibid.

generating capacity in Ontario.[9] These increased requirements by Canada for steam coal should cease to be a factor before the end of the year, and barring continued problems with Canadian nuclear capacity, Canadian imports of steam coal from the United States should decline rapidly through the forecast period. In contrast, overseas shipments of steam coal have been considerably depressed so far in 1984. Metallurgical coal exports were 24 percent higher through August of 1984 compared with year-earlier levels. However, drawdowns of excess stockpiles of metallurgical coal held by foreign users are expected to depress shipments from the United States next year. Most of the expected 7-million-ton decline in exports between 1984 and 1985 is concentrated in the steam coal markets.

Electric Power

Electricity generation in 1984 is expected to increase by about 5 percent from the 1983 level to 2,428 billion kilowatthours (Table 16). Continuing the upward trend in generation that began during the second half of 1983, total generation in the first 9 months of 1984 was almost 6 percent above generation during the same period in 1983. This rate of growth is expected to moderate in the forecast period, with growth in electricity generation during the last quarter of 1984 projected to be only 2.8 percent above year-earlier levels. Electricity generation is forecast to grow by about 2.7 percent, to 2,492 billion kilowatthours, between 1984 and 1985.

These electricity forecasts are based primarily on the expected continuation of the economic expansion. If economic activity surpasses the growth rates assumed in the base case (growth in real disposable personal income is projected to be 6.7 percent between 1983 and 1984 and 2.9 percent between 1984 and 1985), total electricity demand could be higher than the levels forecast here. Because the forecast for growth in disposable income between 1984 and 1985 was revised from 3.2 percent in the August 1984 Outlook to 2.9 percent in this Outlook, the total generation forecast was also revised downward.

The nominal price of residential electricity, which increased at double-digit rates in 1981 and 1982, increased by less than 5 percent between 1982 and 1983. A 4.6-percent increase in the residential price of electricity is forecast between 1983 and 1984. One reason for the lower increases in electricity prices over the last 2 years is that increases in the average costs of fuels to electric utilities have lessened; between 1983 and 1984, fuel prices are expected to continue to be more moderate than in years prior to 1983. Residential electricity prices are forecast to increase by about 3 percent between 1984 and 1985, mainly because of the continued moderation expected for fuel prices.

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[9]The Commerce Department reports that coal exports through August totaled 55.4 million short tons, 28 percent of which consisted of steam coal shipments. Of the total 15.4 million tons in steam coal exports, 54 percent went to Canada, a share which was 1.9 times greater than the year-earlier level. For these and other details on coal exports, see Energy Information Administration, Weekly Coal Production, DOE/EIA-0218 (October 26, 1984).

Generation by Energy Source. Fuel shares of electricity generation in 1984 are expected to be: 55 percent coal, 12 percent natural gas, 14 percent nuclear power, 5 percent petroleum, 13 percent hydroelectric power, and less than 1 percent for other energy sources (Figure 7). The projected increase of 117 billion kilowatthours in total generation from 1983 to 1984 is projected to be supplied primarily by increases in generation from coal and nuclear power. A continuation of these trends is forecast from 1984 to 1985, with a projected increase of 81 billion kilowatthours from coal and 37 billion kilowatthours from nuclear power.

Growth in nuclear generation is projected to be 14 percent between 1983 and 1984 and 11 percent between 1984 and 1985. The lower level of projected nuclear generation in 1985 compared with the forecast in the August 1984 Outlook reflects a net delay in estimated operable dates for expected new nuclear capacity. The average capacity factor is assumed to be 56.3 percent in 1984 and 54.8 percent in 1985. This forecast assumes full power operation of 4 new reactors (LaSalle 2, WNP 2, Susquehanna 2, and Grand Gulf 1) totaling 4.5 gigawatts in 1984 and 10 new reactors (Callaway 1, Diablo Canyon 1, Catawba 1, Watts Bar 1, Byron 1, Fermi 2, Waterford 3, Palo Verde 1, Wolf Creek, and Comanche Peak 1) totaling more than 11 gigawatts in 1985. Since new reactors typically operate at a capacity factor level of 40 percent to 45 percent for the first operating cycle (about 2 years), the relatively large amount of new capacity projected for 1985 results in a projected drop in the average capacity factor in 1985.

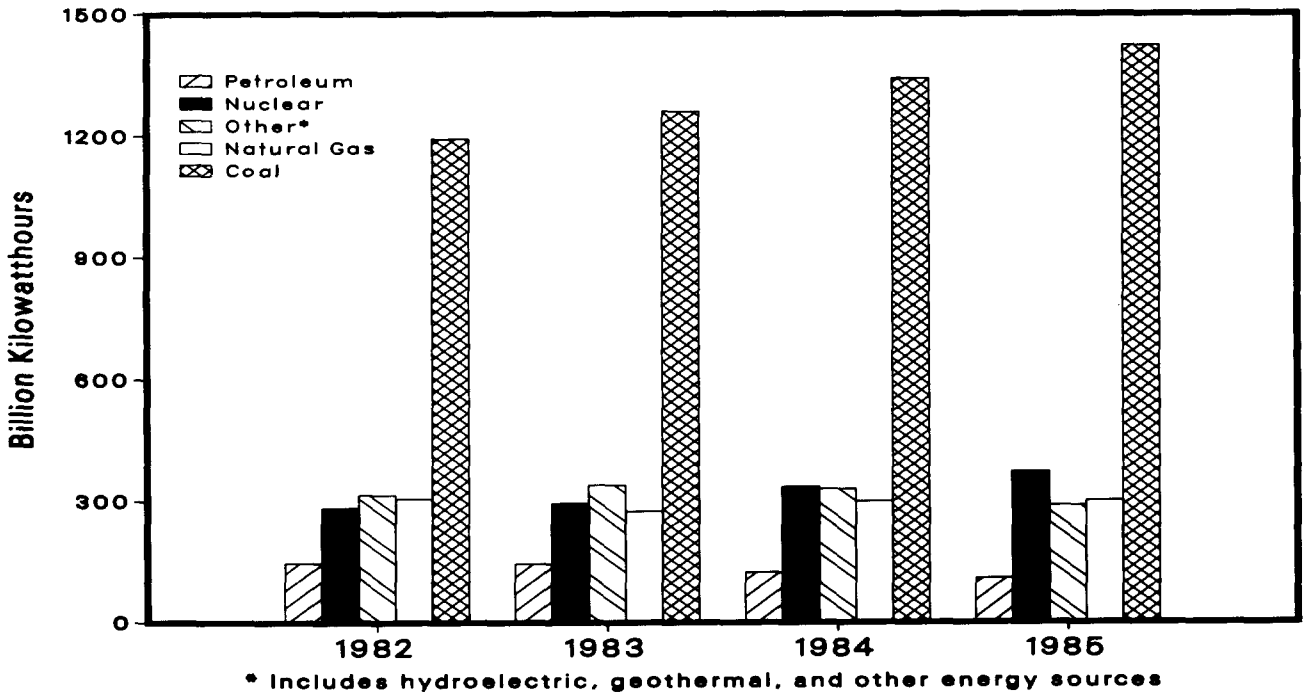

Figure 7. Electricity Generation by Fuel Source

Coal-fired generation of electricity is expected to increase by over 6 percent from 1983 to 1984 as the demand for electricity increases and as new coal generating capacity begins operation. The outlook for coal-fired generation between 1984 and 1985 shows a 6-percent increase. Following the projected addition of more than 10.8 gigawatts of coal-fired capacity in 1984, almost 5.7 additional gigawatts of capacity are expected in 1985.

Hydroelectric generation in 1983 was a record-breaking 332 billion kilowatthours, 17 percent above the average for the last 10 years. The high water availability is projected to result in higher than normal hydroelectric generation through 1984, with total generation forecast to reach 322 billion kilowatthours. With the assumed return to normal precipitation in 1985, a decrease of nearly 13 percent in hydropower generation is projected between 1984 and 1985.

Oil and natural gas consumption at electric utilities decreased over the past 4 years. The amount of combined generation from oil and natural gas in 1984 is expected to be only slightly higher than the 1983 level because of increased gas usage. However, the combined oil and gas share of total generation is expected to decline modestly in 1984 (from 18 percent in 1983 to 17 percent in 1984) because of higher levels of generation from coal and nuclear power and continued high availability of hydropower. Continued declines in the amount and share are expected in 1985 because gains in the contributions from other fuels are expected to displace oil- and gas-fired generation.

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 are being imported from Mexico for the first time in 1984.

Net imports of electricity were about 35 billion kilowatthours in 1983, accounting for more than 1 percent of total electricity supply (Table 16). The increase of about 3 billion kilowatthours forecast for electricity imports in 1984 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 expected to reach 41 billion kilowatthours; this increase is attributable mainly to purchases using existing transmission lines.

Total Domestic Energy Balance

Total energy consumption (measured as gross energy consumption) in 1984 is projected to be above the previous year's level for the first time since 1979, reaching 74.7 quadrillion Btu (Table 17 and Figure 8). The projected increase of nearly 6 percent in total energy consumption from 1983 to 1984 is based on real GNP increasing by 7 percent over that period. From 1984 to 1985, total energy consumption is forecast to increase by more than 1 percent to 75.8 quadrillion Btu.

With GNP forecast to grow faster than energy consumption from 1983 to 1984, the energy/GNP ratio is projected to decrease for the 14th consecutive year (Table 1). The energy intensity of U.S. economic activity fell to 46.0 thousand Btu per 1972 dollar of GNP in 1983 and is projected to decrease to 45.5 thousand Btu per 1972 dollar of GNP in 1984. This decrease in the energy intensity of the economy is expected to continue through 1985 when the ratio will be 44.9 thousand Btu per 1972 dollar of GNP.

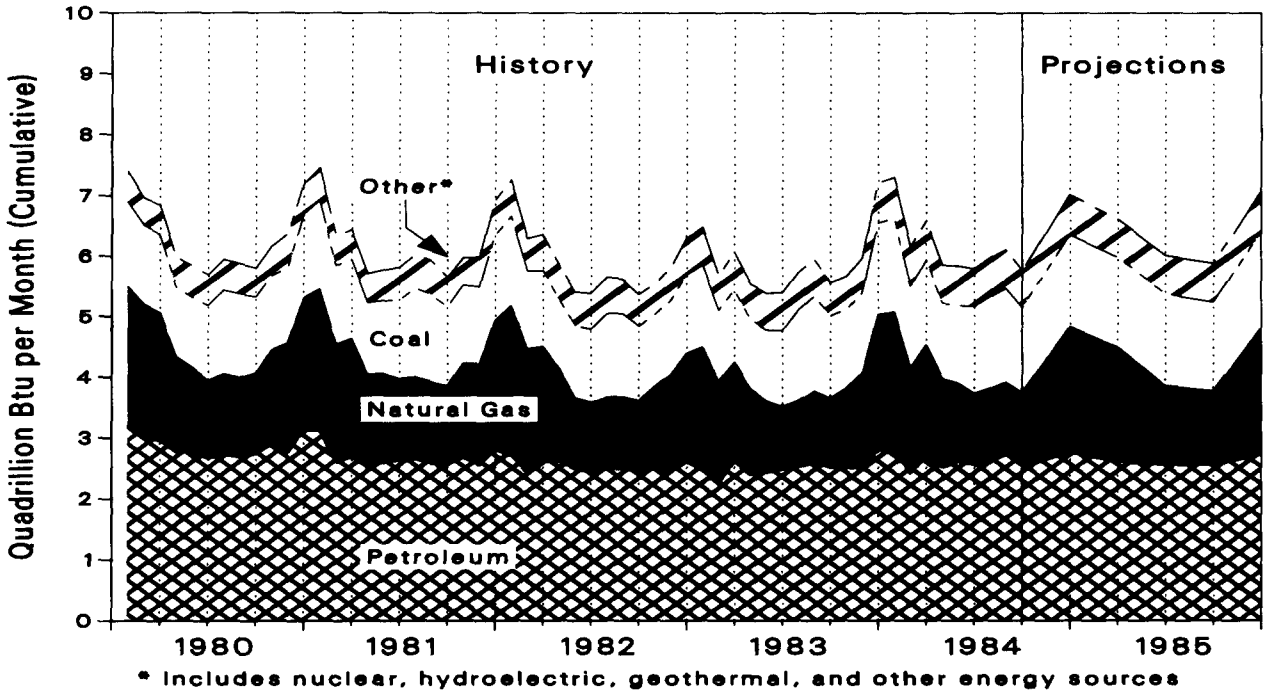

Figure 8. Gross Energy Consumption by Source

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

Product	History 1983 3rd	1983 4th	1983 Year	1984 1st	1984 2nd	1984 3rd	Price[1]	Projections 1984 4th	1984 Year	1985 1st	1985 2nd	1985 3rd	1985 4th	1985 Year
Petroleum														
Gasoline[2] (dollars per gallon)	1.27	1.23	1.22	1.20	1.22	1.19	Low	1.17	1.19	1.14	1.15	1.18	1.16	1.16
							Base	1.18	1.20	1.18	1.19	1.22	1.20	1.20
							High	1.19	1.20	1.19	1.21	1.24	1.22	1.22
No. 2 Fuel Oil, Wholesale (dollars per gallon)	0.83	0.82	0.82	0.86	0.83	0.83	Low	0.80	0.83	0.75	0.74	0.75	0.75	0.75
							Base	0.84	0.84	0.84	0.84	0.84	0.85	0.84
							High	0.84	0.84	0.86	0.87	0.87	0.91	0.88
No. 2 Heating Oil, Retail (dollars per gallon)	1.05	1.06	1.08	1.13	1.08	1.08	Low	1.07	1.09	1.02	1.00	1.01	1.03	1.01
							Base	1.10	1.10	1.11	1.10	1.10	1.12	1.11
							High	1.10	1.10	1.13	1.13	1.15	1.18	1.15
No. 6 Residual Fuel Oil[3] (dollars per gallon)	0.67	0.69	0.68	0.69	0.68	0.69	Low	0.71	0.69	0.66	0.62	0.60	0.61	0.62
							Base	0.73	0.70	0.73	0.70	0.67	0.69	0.70
							High	0.73	0.70	0.75	0.73	0.71	0.74	0.73
Propane, Consumer Grade (dollars per gallon)	0.70	0.73	0.71	0.76	0.73	0.72	Low	0.70	0.73	0.68	0.64	0.67	0.65	0.66
							Base	0.71	0.73	0.74	0.70	0.73	0.72	0.72
							High	0.72	0.73	0.77	0.73	0.76	0.75	0.75
Other														
Coal, Delivered to Utilities (dollars per million Btu)	1.65	1.65	1.66	1.64	1.67	1.69	Low	1.64	1.66	1.66	1.68	1.69	1.71	1.68
							Base	1.71	1.68	1.73	1.75	1.76	1.78	1.76
							High	1.76	1.69	1.78	1.79	1.80	1.82	1.80
Natural Gas, Residential (dollars per 1,000 cu. ft.)	6.17	6.04	5.99	5.97	6.09	6.12	Low	6.00	6.05	5.93	6.04	5.98	6.00	5.99
							Base	6.13	6.08	6.09	6.26	6.30	6.42	6.27
							High	6.28	6.12	6.34	6.68	6.88	7.12	6.76
Natural Gas, to Utilities (dollars per million Btu)	3.61	3.43	3.47	3.44	3.55	3.61	Low	3.41	3.50	3.38	3.46	3.54	3.41	3.45
							Base	3.50	3.53	3.51	3.66	3.81	3.71	3.67
							High	3.54	3.54	3.58	3.86	4.19	4.24	3.97
Electricity, Residential (cents per kilowatthour)	7.52	7.24	7.18	6.97	7.60	8.01	Low	7.41	7.50	7.10	7.63	7.92	7.50	7.54
							Base	7.46	7.51	7.24	7.83	8.16	7.76	7.75
							High	7.51	7.52	7.38	8.03	8.40	8.03	7.96

[1]The 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.

[2]Average for all grades and services.

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

Note: Third quarter 1984 estimated for all fuels.

All prices exclude taxes except gasoline, residential natural gas, and electricity.

Sources: Historical data: Energy Information Administration, Monthly Energy Review, DOE/EIA-0035(84/07) and Petroleum Marketing Monthly, DOE/EIA-0380(84/07).

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

	History					Projections							
	1983			1984					1985				
	3rd	4th	Year	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year
Supply[1]													
Production													
U.S. (50 States)	10.8	10.8	10.8	10.9	11.0	11.0	11.0	11.0	11.2	11.1	11.0	11.1	11.1
OPEC	20.2	20.0	18.6	19.1	19.2	17.9	20.0	19.1	19.3	18.9	19.2	19.1	19.1
Other Non-OPEC	13.7	13.9	13.5	14.2	14.2	14.4	14.5	14.3	14.3	14.5	14.6	14.7	14.5
Total Market Economies	44.6	44.7	42.9	44.2	44.4	43.4	45.6	44.4	44.8	44.4	44.8	44.8	44.7
Net Communist Exports	2.1	2.0	1.9	1.7	2.0	2.1	2.0	1.9	1.6	1.9	2.0	1.9	1.8
Total Supply	46.7	46.7	44.8	45.9	46.4	45.5	47.6	46.3	46.4	46.3	46.8	46.7	46.5
Net Stock Withdrawals (+) or Additions (-)													
U.S. (50 States excl. SPR)	-0.6	0.5	0.3	0.3	-0.4	0.1	0.2	0.0	0.4	-0.1	-0.3	0.0	-0.0
U.S. SPR	-0.3	-0.2	-0.2	-0.1	-0.2	-0.2	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1
Other Market Economies	-1.7	-0.2	0.4	1.8	-0.9	-0.4	-0.0	0.1	1.2	-1.1	-1.2	0.8	-0.1
Total Stock Withdrawals (+)	-2.5	0.2	0.4	1.9	-1.6	-0.5	-0.0	-0.0	1.5	-1.4	-1.7	0.7	-0.2
Product Supplied													
U.S. (50 States)	15.3	15.7	15.2	16.1	15.6	15.8	16.1	15.9	16.0	15.5	15.7	16.0	15.8
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	4.1	4.7	4.4	5.4	4.0	4.2	4.8	4.6	5.2	4.1	4.1	4.6	4.5
OECD Europe	10.9	12.5	11.8	12.5	11.4	11.2	12.6	11.9	12.6	11.3	11.2	12.5	11.9
Other Market Economies	13.5	13.6	13.5	13.6	13.5	13.6	13.7	13.6	13.8	13.7	13.9	14.0	13.9
Total Market Economies	44.2	46.9	45.2	47.8	44.8	45.0	47.5	46.3	47.8	44.9	45.1	47.4	46.3
Closing Stocks (billion barrels)	4.8	4.8	4.8	4.6	4.7	4.8	4.8	4.8	4.6	4.8	4.9	4.9	4.9

[1]Includes 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(84/07) and 1982 International Energy Annual, DOE/EIA-0219(82); Organization for Economic Cooperation and Development, Quarterly Oil Statistics, First Quarter 1984; and Petroleum Economics Limited, World Quarterly Primary Energy and Supply/Demand, April 13, 1984.

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

	Annual Average 1970-1982	1983[1]	1984	1985
OECD Total[2]	2.8	2.3	4.6	2.6
United States[3]	2.7	3.7	7.0	2.7
Western Europe	2.6	1.0	2.1	2.1
Japan[3]	4.5	3.0	6.0	4.0
Other OECD[4]	3.1	1.4	4.3	2.5

[1]Preliminary estimates for Organization for Economic Cooperation and Development (OECD) countries.
[2]Gross Domestic Product.
[3]Gross National Product.
[4]Canada, Australia, and New Zealand.
Sources: Historical data: Organization for Economic Cooperation and Development, Main Economic Indicators, September 1984. Forecasts: Wharton Economic Forecasting Associates, World Economic Outlook, October 1984; Data Resources, Inc., Canadian Forecast, CONTROL091084, European Forecast CONTROL091184, and Japanese Forecast, JPCONTROL0884.

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

	History						Projections						
	1983			1984					1985				
	3rd	4th	Year	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year
Supply													
Production													
Crude Oil	8.70	8.64	8.69	8.70	8.73	8.77	8.83	8.76	8.90	8.87	8.83	8.84	8.86
Alaska, North Slope	1.65	1.66	1.65	1.67	1.71	1.68	1.63	1.67	1.73	1.71	1.70	1.69	1.70
Subarctic[1]	7.05	6.99	7.04	7.03	7.02	7.09	7.20	7.09	7.17	7.16	7.14	7.15	7.15
Natural Gas Liquids	1.57	1.60	1.56	1.60	1.61	1.65	1.61	1.62	1.69	1.61	1.59	1.65	1.64
Other Domestic	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.04	0.05	0.05	0.05	0.05
Processing Gain	0.49	0.50	0.49	0.54	0.56	0.57	0.55	0.55	0.53	0.53	0.54	0.55	0.54
Total Production	10.80	10.79	10.79	10.89	10.95	11.04	11.04	10.98	11.16	11.07	11.02	11.09	11.08
Imports (including SPR)													
Crude Oil	4.10	3.33	3.33	3.15	3.59	3.36	3.83	3.48	3.29	3.55	3.86	3.77	3.62
Refined Products	1.91	1.83	1.72	2.26	1.93	1.77	1.83	1.95	1.93	1.79	1.85	1.85	1.85
Total Imports	6.01	5.17	5.05	5.41	5.51	5.13	5.66	5.43	5.22	5.34	5.70	5.61	5.47
Exports													
Crude Oil	0.16	0.14	0.16	0.19	0.20	0.15	0.18	0.18	0.17	0.16	0.17	0.18	0.17
Refined Products	0.47	0.49	0.58	0.47	0.55	0.49	0.44	0.49	0.46	0.46	0.44	0.45	0.45
Total Exports	0.64	0.63	0.74	0.66	0.76	0.65	0.61	0.67	0.63	0.62	0.61	0.62	0.62
Net Imports (incl. SPR)	5.37	4.54	4.31	4.74	4.76	4.48	5.05	4.76	4.59	4.72	5.09	4.99	4.85
Primary Stock Levels[2] (million barrels)													
Opening	1072.97	1124.33	1167.13	1074.55	1052.24	1088.44	1076.51	1074.55	1061.06	1025.90	1038.04	1065.37	1061.06
Closing	1124.33	1074.55	1074.55	1052.24	1088.44	1076.51	1061.06	1061.06	1025.90	1038.04	1065.37	1062.50	1062.50
Net Withdrawals (million barrels per day)	-0.56	0.54	0.25	0.25	-0.40	0.13	0.17	0.04	0.39	-0.13	-0.30	0.03	-0.00
SPR Fill Rate Additions(-) (million barrels per day)	-0.31	-0.20	-0.23	-0.14	-0.24	-0.19	-0.14	-0.18	-0.14	-0.14	-0.14	-0.14	-0.14
Total Primary Supply	15.31	15.67	15.12	15.73	15.07	15.46	16.11	15.59	15.99	15.50	15.67	15.97	15.78
Product Supplied													
Motor Gasoline	6.81	6.68	6.62	6.34	6.88	6.90	6.76	6.72	6.41	6.77	6.86	6.66	6.67
Distillate Fuel Oil	2.45	2.95	2.69	3.20	2.79	2.58	2.96	2.88	3.00	2.74	2.51	2.90	2.79
Residual Fuel Oil	1.35	1.40	1.42	1.74	1.30	1.26	1.39	1.42	1.66	1.21	1.18	1.30	1.34
Other Products[3]	4.73	4.70	4.50	4.77	4.61	5.02	5.00	4.85	4.92	4.77	5.12	5.11	4.98
Total Product Supplied	15.33	15.73	15.23	16.06	15.58	15.75	16.11	15.88	15.99	15.50	15.67	15.97	15.78
Unaccounted for	-0.03	-0.06	-0.11	-0.32	-0.51	-0.30	0.00	-0.28	0.00	0.00	0.00	0.00	0.00
Total Disposition	15.31	15.67	15.12	15.73	15.07	15.46	16.11	15.59	15.99	15.50	15.67	15.97	15.78

SPR = Strategic Petroleum Reserve.
[1]Lower-48 States and southern Alaska.
[2]Excludes crude oil for the Strategic Petroleum Reserve (SPR). The respondent universe for petroleum inventories was expanded in January 1983. This resulted in the addition of 32 million barrels to total petroleum stocks at the close of December 31, 1982. (See the "Petroleum Supply Reporting System Overview" and Table 30 in the March 1983 Petroleum Supply Monthly.)
[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(83/01); Petroleum Supply Monthly, Jan. to Aug.; and September data, Weekly Petroleum Status Report DOE/EIA-0208(84-41).

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

	History							Projections				
	1983			1984				1985				
	3rd	4th	Year	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year
Supply													
Production													
Crude Oil	8.76	8.64	8.69	8.70	8.73	8.77	8.83	8.76	8.90	8.87	8.83	8.84	8.86
Alaska, North Slope	1.65	1.66	1.65	1.67	1.71	1.68	1.63	1.67	1.73	1.71	1.70	1.69	1.70
Subarctic[1]	7.05	6.99	7.04	7.03	7.02	7.09	7.20	7.09	7.17	7.16	7.14	7.15	7.15
Natural Gas Liquids	1.57	1.60	1.56	1.60	1.61	1.65	1.61	1.62	1.69	1.61	1.59	1.65	1.64
Other Domestic	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.04	0.05	0.05	0.05	0.05
Processing Gain	0.49	0.50	0.49	0.54	0.56	0.57	0.55	0.55	0.53	0.54	0.55	0.55	0.54
Total Production	10.80	10.79	10.79	10.89	10.95	11.04	11.04	10.98	11.16	11.07	11.02	11.10	11.09
Imports (including SPR)													
Crude Oil	4.10	3.33	3.33	3.15	3.59	3.36	3.87	3.49	3.32	3.71	4.08	4.01	3.78
Refined Products	1.91	1.83	1.72	2.26	1.93	1.77	1.95	1.98	2.07	2.05	2.16	2.18	2.12
Total Imports	6.01	5.17	5.05	5.41	5.51	5.13	5.82	5.47	5.39	5.75	6.24	6.19	5.90
Exports													
Crude Oil	0.16	0.14	0.16	0.19	0.20	0.15	0.18	0.18	0.17	0.16	0.17	0.18	0.17
Refined Products	0.47	0.49	0.58	0.47	0.55	0.49	0.44	0.49	0.46	0.46	0.44	0.45	0.45
Total Exports	0.64	0.63	0.74	0.66	0.76	0.65	0.61	0.67	0.63	0.62	0.61	0.62	0.62
Net Imports (incl. SPR)	5.37	4.54	4.31	4.74	4.76	4.48	5.20	4.80	4.76	5.13	5.63	5.57	5.27
Primary Stock Levels[2] (million barrels)													
Opening	1072.97	1124.33	1167.13	1074.55	1052.24	1088.44	1076.51	1074.55	1067.74	1026.14	1044.19	1079.43	1067.74
Closing	1124.33	1074.55	1074.55	1052.24	1088.44	1076.51	1067.74	1067.74	1026.14	1044.19	1079.43	1080.73	1080.73
Net Withdrawals	-0.56	0.54	0.25	0.25	-0.40	0.13	0.10	0.02	0.46	-0.20	-0.38	-0.01	-0.04
(million barrels per day)													
SPR Fill Rate Additions(-) ..	-0.31	-0.20	-0.23	-0.14	-0.24	-0.19	-0.14	-0.18	-0.14	-0.14	-0.14	-0.14	-0.14
(million barrels per day)													
Total Primary Supply	15.31	15.67	15.12	15.73	15.07	15.46	16.20	15.62	16.24	15.85	16.12	16.51	16.18
Product Supplied													
Motor Gasoline	6.81	6.68	6.62	6.34	6.88	6.90	6.77	6.72	6.44	6.83	6.95	6.76	6.75
Distillate Fuel Oil	2.45	2.95	2.69	3.20	2.79	2.58	2.98	2.89	3.08	2.84	2.63	3.05	2.90
Residual Fuel Oil	1.35	1.40	1.42	1.74	1.30	1.26	1.40	1.42	1.72	1.28	1.26	1.39	1.41
Other Products[3]	4.73	4.70	4.50	4.77	4.61	5.02	5.05	4.87	5.00	4.90	5.29	5.31	5.13
Total Product Supplied	15.33	15.73	15.23	16.06	15.58	15.75	16.20	15.90	16.24	15.85	16.12	16.51	16.18
Unaccounted for	-0.03	-0.06	-0.11	-0.32	-0.51	-0.30	0.00	-0.28	0.00	0.00	0.00	0.00	0.00
Total Disposition	15.31	15.67	15.12	15.73	15.07	15.46	16.20	15.62	16.24	15.85	16.12	16.51	16.18

SPR = Strategic Petroleum Reserve.

[1]Lower-48 States and southern Alaska.

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

[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(83/01); Petroleum Supply Monthly, Jan. to Aug.; and September data, Weekly Petroleum Status Report DOE/EIA-0208(84-41).

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

	History						Projections						
	1983			1984					1985				
	3rd	4th	Year	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year
Supply													
Production													
Crude Oil	8.70	8.64	8.69	8.70	8.73	8.77	8.83	8.76	8.90	8.87	8.83	8.84	8.86
Alaska, North Slope	1.65	1.66	1.65	1.67	1.71	1.68	1.63	1.67	1.73	1.71	1.70	1.69	1.70
Subarctic[1]	7.05	6.99	7.04	7.03	7.02	7.09	7.20	7.09	7.17	7.16	7.14	7.15	7.15
Natural Gas Liquids	1.57	1.60	1.56	1.60	1.61	1.65	1.61	1.62	1.69	1.61	1.59	1.65	1.64
Other Domestic	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.04	0.05	0.05	0.05	0.05
Processing Gain	0.49	0.50	0.49	0.54	0.56	0.57	0.54	0.55	0.52	0.53	0.54	0.53	0.53
Total Production	10.80	10.79	10.79	10.89	10.95	11.04	11.04	10.98	11.15	11.06	11.02	11.07	11.08
Imports (including SPR)													
Crude Oil	4.10	3.33	3.33	3.15	3.59	3.36	3.75	3.46	3.17	3.40	3.66	3.42	3.41
Refined Products	1.91	1.83	1.72	2.26	1.93	1.77	1.82	1.94	1.82	1.67	1.72	1.70	1.73
Total Imports	6.01	5.17	5.05	5.41	5.51	5.13	5.57	5.41	4.99	5.07	5.38	5.12	5.14
Exports													
Crude Oil	0.16	0.14	0.16	0.19	0.20	0.15	0.18	0.18	0.17	0.16	0.17	0.18	0.17
Refined Products	0.47	0.49	0.58	0.47	0.55	0.49	0.44	0.49	0.46	0.46	0.44	0.45	0.45
Total Exports	0.64	0.63	0.74	0.66	0.76	0.65	0.61	0.67	0.63	0.62	0.61	0.62	0.62
Net Imports (incl. SPR)	5.37	4.54	4.31	4.74	4.76	4.48	4.96	4.73	4.36	4.44	4.77	4.49	4.52
Primary Stock Levels[2] (million barrels)													
Opening	1072.97	1124.33	1167.13	1074.55	1052.24	1088.44	1076.51	1074.55	1060.63	1026.86	1045.79	1077.68	1060.63
Closing	1124.33	1074.55	1074.55	1052.24	1088.44	1076.51	1060.63	1060.63	1026.86	1045.79	1077.68	1056.18	1056.18
Net Withdrawals (million barrels per day)	-0.56	0.54	0.85	0.25	-0.40	0.13	0.17	0.04	0.38	-0.21	-0.35	0.23	0.01
SPR Fill Rate Additions(-) (million barrels per day)	-0.31	-0.20	-0.23	-0.14	-0.24	-0.19	-0.14	-0.18	-0.14	-0.14	-0.14	-0.14	-0.14
Total Primary Supply	15.31	15.67	15.11	15.73	15.07	15.46	16.02	15.87	15.75	15.15	15.29	15.66	15.46
Product Supplied													
Motor Gasoline	6.81	6.68	6.68	6.34	6.88	6.90	6.74	6.71	6.34	6.68	6.78	6.59	6.60
Distillate Fuel Oil	2.45	2.95	2.69	3.20	2.79	2.58	2.93	2.87	2.94	2.65	2.42	2.83	2.71
Residual Fuel Oil	1.35	1.40	1.48	1.74	1.30	1.26	1.37	1.42	1.61	1.16	1.12	1.24	1.28
Other Products[3]	4.73	4.70	4.58	4.77	4.61	5.02	4.98	4.85	4.85	4.65	4.97	4.99	4.87
Total Product Supplied	15.33	15.73	15.43	16.06	15.58	15.75	16.02	15.85	15.75	15.15	15.29	15.65	15.46
Unaccounted for	-0.03	-0.06	-0.11	-0.32	-0.51	-0.30	0.00	-0.02	0.00	0.00	0.00	0.00	0.00
Total Disposition	15.31	15.67	15.11	15.73	15.07	15.46	16.02	15.87	15.75	15.15	15.29	15.66	15.46

SPR = Strategic Petroleum Reserve.
[1]Lower-48 States and southern Alaska.
[2]Excludes crude oil for the Strategic Petroleum Reserve (SPR). The respondent universe for petroleum inventories was expanded in January 1983. This resulted in the addition of 32 million barrels to total petroleum stocks at the close of December 31, 1982. (See the "Petroleum Supply Reporting System Overview" and Table 30 in the March 1983 Petroleum Supply Monthly.)
[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(83/01); Petroleum Supply Monthly, Jan. to Aug.; and September data, Weekly Petroleum Status Report DOE/EIA-0208(84-41).

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

	History							Projections				
	1983			1984				1985				
	3rd	4th	Year	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year
Supply													
Domestic Production[1]	6.62	6.37	6.34	6.24	6.60	6.50	6.54	6.47	6.22	6.37	6.45	6.53	6.39
Imports	0.28	0.27	0.25	0.29	0.30	0.26	0.23	0.27	0.25	0.28	0.30	0.25	0.27
Exports	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Net Imports	0.26	0.26	0.24	0.29	0.30	0.26	0.22	0.27	0.24	0.27	0.29	0.25	0.26
Primary Finished Stock Levels[2] (million barrels)													
Opening	182.86	189.32	202.03	185.50	202.80	204.17	190.76	185.50	190.54	194.94	183.55	172.73	190.54
Closing	189.32	185.50	185.50	202.80	204.17	190.76	190.54	190.54	194.94	183.55	172.73	184.13	184.13
Net Withdrawals	-0.07	0.04	0.05	-0.19	-0.02	0.15	0.00	-0.01	-0.05	0.13	0.12	-0.12	0.02
(million barrels per day)													
Total Primary Supply	6.81	6.68	6.62	6.34	6.88	6.90	6.76	6.72	6.41	6.77	6.86	6.66	6.67
Disposition													
Leaded	3.05	2.89	2.97	2.69	2.86	2.84	2.72	2.78	2.53	2.62	2.61	2.49	2.56
Unleaded	3.76	3.79	3.65	3.65	4.02	4.05	4.04	3.94	3.88	4.15	4.25	4.16	4.11
Total Product Supplied	6.81	6.68	6.62	6.34	6.88	6.90	6.76	6.72	6.41	6.77	6.86	6.66	6.67
Unaccounted for	-0.00	-0.00	-0.00	0.00	0.00	0.00	-0.00	0.00	-0.00	0.00	0.00	0.00	-0.00
Total Disposition	6.81	6.68	6.62	6.34	6.88	6.90	6.76	6.72	6.41	6.77	6.86	6.66	6.67

[1]Refinery production plus production at natural gas processing plants.

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

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

Sources: Historical data: Energy Information Administration, Petroleum Supply Annual, 1983, DOE/EIA-340(83/01); Petroleum Supply Monthly, Jan. to Aug.; and September data, Weekly Petroleum Status Report DOE/EIA-0208(84-41).

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

	History						Projections						
	1983			1984					1985				
	3rd	4th	Year	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year
Supply													
Refinery Output	2.65	2.63	2.46	2.64	2.62	2.71	2.70	2.67	2.39	2.60	2.74	2.57	2.58
Imports	0.28	0.23	0.17	0.28	0.25	0.24	0.24	0.25	0.24	0.21	0.24	0.28	0.24
Exports	0.04	0.05	0.06	0.05	0.04	0.05	0.03	0.04	0.04	0.03	0.03	0.03	0.03
Net Imports	0.23	0.17	0.11	0.23	0.20	0.19	0.21	0.21	0.20	0.18	0.21	0.25	0.21
Primary Stock Levels[1] (million barrels)													
Opening	113.72	154.00	185.53	140.26	109.64	112.87	142.46	140.26	138.05	100.98	104.53	145.48	138.05
Closing	154.00	140.26	140.26	109.64	112.87	142.46	138.05	138.05	100.98	104.53	145.48	137.89	137.89
Net Withdrawals (million barrels per day)	-0.44	0.15	0.12	0.34	-0.04	-0.32	0.05	0.01	0.41	-0.04	-0.45	0.08	0.00
Total Primary Supply	2.45	2.95	2.69	3.20	2.79	2.58	2.96	2.88	3.00	2.74	2.51	2.90	2.79
Product Supplied													
Nonutility Shipments	2.41	2.91	2.66	3.15	2.74	2.55	2.93	2.84	2.96	2.73	2.47	2.88	2.76
Electric Utility Shipments	0.04	0.04	0.03	0.05	0.05	0.03	0.02	0.04	0.05	0.02	0.03	0.02	0.03
Total Product Supplied	2.45	2.95	2.69	3.20	2.79	2.58	2.96	2.88	3.00	2.74	2.51	2.90	2.79
Electric Utility Consumption	0.05	0.06	0.05	0.05	0.04	0.05	0.03	0.04	0.05	0.03	0.03	0.03	0.03
Electric Utility Stock Levels (million barrels)													
Opening	21.47	20.70	23.37	18.80	19.06	19.71	18.30	18.80	17.30	17.22	16.27	16.40	17.30
Closing	20.70	18.80	18.80	19.06	19.71	18.30	17.30	17.30	17.22	16.27	16.40	15.70	15.70
Net Additions (million barrels per day)	-0.01	-0.02	-0.01	0.00	0.01	-0.02	-0.01	-0.00	-0.00	-0.01	0.00	-0.01	-0.00
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	2.45	2.95	2.69	3.20	2.79	2.58	2.96	2.88	3.00	2.74	2.51	2.90	2.79

[1]The respondent universe for petroleum inventories was expanded in January 1983. This resulted in the addition of 7 million barrels to total distillate fuel oil stocks at the close of December 31, 1982. (See the "Petroleum Supply Reporting System Overview" and Table 30 in the March 1983 Petroleum Supply Monthly.)

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

Sources: Historical data: Energy Information Administration, Petroleum Supply Annual, 1983, DOE/EIA-340(83/01); the Petroleum Supply Monthly, Jan. to Aug.; the Monthly Energy Review, DOE/EIA-0035(84/07); the Electric Power Monthly, DOE/EIA-0226(84/08); and September data, Weekly Petroleum Status Report DOE/EIA-0208(84-41).

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

	History						Projections						
	1983			1984					1985				
	3rd	4th	Year	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year
Supply													
Refinery Output	0.77	0.85	0.85	0.95	0.84	0.82	0.91	0.88	1.02	0.79	0.71	0.89	0.85
Imports	0.71	0.69	0.70	0.93	0.62	0.57	0.64	0.69	0.67	0.57	0.55	0.60	0.60
Exports	0.13	0.15	0.16	0.15	0.17	0.16	0.13	0.15	0.12	0.12	0.10	0.13	0.12
Net Imports	0.58	0.53	0.51	0.78	0.45	0.41	0.51	0.54	0.55	0.45	0.45	0.47	0.48
Primary Stock Levels[1] (million barrels)													
Opening	49.87	49.68	48.53	48.50	47.64	46.81	44.46	48.50	48.16	40.26	42.37	40.06	48.16
Closing	49.68	48.50	48.50	47.64	46.81	44.46	48.16	48.16	40.26	42.37	40.06	45.92	45.92
Net Withdrawals (million barrels per day)	0.00	0.01	0.05	0.01	0.01	0.03	-0.04	0.00	0.09	-0.02	0.03	-0.06	0.01
Total Primary Supply	1.35	1.40	1.42	1.74	1.30	1.26	1.39	1.42	1.66	1.21	1.18	1.30	1.34
Product Supplied													
Nonutility Shipments	0.70	0.85	0.86	1.11	0.85	0.75	0.89	0.90	1.04	0.84	0.74	0.88	0.87
Electric Utility Shipments	0.65	0.54	0.56	0.63	0.45	0.51	0.50	0.52	0.61	0.38	0.45	0.42	0.46
Total Product Supplied	1.35	1.40	1.42	1.74	1.30	1.26	1.39	1.42	1.66	1.21	1.18	1.30	1.34
Electric Utility Consumption	0.71	0.59	0.63	0.64	0.47	0.52	0.48	0.53	0.63	0.40	0.44	0.43	0.48
Electric Utility Stock Levels (million barrels)													
Opening	80.20	74.56	95.51	70.57	69.88	68.10	67.00	70.57	68.80	66.94	65.08	65.34	68.80
Closing	74.56	70.57	70.57	69.88	68.10	67.00	68.80	68.80	66.94	65.08	65.34	63.79	63.79
Net Additions (million barrels per day)	-0.06	-0.04	-0.07	-0.01	-0.02	-0.01	0.02	-0.00	-0.02	-0.02	0.00	-0.02	-0.01
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	-0.01	-0.00	0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
Total Disposition	1.35	1.40	1.42	1.74	1.30	1.26	1.39	1.42	1.66	1.21	1.18	1.30	1.34

[1]The respondent universe for petroleum inventories was expanded in January 1983. This resulted in the addition of 2 million barrels to total residual fuel oil stocks at the close of December 31, 1982. (See the" Petroleum Supply Reporting System Overview" and Table 30 in the March 1983 Petroleum Supply Monthly.)

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

Sources: Historical data: Energy Information Administration, Petroleum Supply Annual, 1983, DOE/EIA-340(83/01); the Petroleum Supply Monthly, Jan. to Aug.; the Monthly Energy Review, DOE/EIA-0035(84/07); the Electric Power Monthly, DOE/EIA-0226(84/08); and September data, Weekly Petroleum Status Report DOE/EIA-0208(84-41).

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

	History					Projections					
	1983	1984				1985					
	Year	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year
Supply											
Net Refinery Output[b]	2.53	2.58	2.65	2.80	2.69	2.68	2.77	2.78	2.88	2.77	2.79
Natural Gas Plant Output	1.55	1.60	1.61	1.65	1.61	1.62	1.69	1.61	1.59	1.65	1.64
Other Domestic[c]	0.05	0.05	0.05	0.05	0.05	0.05	0.04	0.05	0.06	0.05	0.05
Net Imports	0.29	0.49	0.42	0.42	0.44	0.44	0.47	0.42	0.46	0.44	0.45
Primary Stocks (million barrels)											
Opening	359.88	356.43	356.42	371.90	368.17	356.43	356.01	365.98	379.73	373.58	356.01
Closing	356.43	356.42	371.90	368.17	356.01	356.01	365.98	379.73	373.58	360.29	360.29
Net Withdrawals ..... (million barrels per day)	0.01	0.00	-0.17	0.04	0.14	0.00	-0.11	-0.15	0.07	0.14	-0.01
Total Primary Supply ...	4.43	4.71	4.55	4.96	4.94	4.79	4.86	4.71	5.06	5.05	4.92
Product Supplied											
Jet Fuel .....[d]	1.05	1.14	1.13	1.22	1.12	1.15	1.17	1.12	1.15	1.14	1.14
Liquefied Petroleum Gases[e]	0.98	1.14	0.81	0.92	1.14	1.00	1.21	0.83	0.87	1.14	1.01
Petrochemical Feedstocks[f]	0.92	1.03	0.99	1.00	1.06	1.02	1.08	1.09	1.09	1.10	1.09
Miscellaneous[g]	1.48	1.40	1.62	1.83	1.64	1.62	1.41	1.67	1.94	1.68	1.68
Total Product Supplied	4.43	4.71	4.55	4.96	4.94	4.79	4.86	4.71	5.06	5.05	4.92
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	4.96	4.94	4.79	4.86	4.71	5.06	5.05	4.92

[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 and Petroleum Supply Monthly, DOE/EIA-0109(84/08). Data for September 1984 are preliminary.

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

Sensitivities	1984		1985				
	4th	Year	1st	2nd	3rd	4th	Year
Demand in 50 States							
Low Price	16.19	15.90	16.18	15.73	15.91	16.21	16.00
Base Case	16.11	15.88	15.99	15.50	15.67	15.97	15.78
High Price	16.10	15.88	15.96	15.43	15.55	15.82	15.69
Weather Sensitivity							
Adverse Weather	0.21	0.05	0.32	0.03	0.02	0.21	0.14
Favorable Weather	-0.20	-0.05	-0.33	-0.03	-0.03	-0.21	-0.15
Economic Sensitivity							
High Economic Activity	0.01	0.00	0.06	0.12	0.21	0.29	0.17
Low Economic Activity	-0.07	-0.02	-0.20	-0.28	-0.26	-0.16	-0.22
Fuel-Switching Adjustment	0.13	0.03	0.18	0.04	0.0	0.13	0.09
Combined Sensitivity Differentials[a] (excl. price)							
Upper Range	0.25	0.06	0.37	0.13	0.21	0.38	0.24
Lower Range	0.21	0.05	0.39	0.28	0.26	0.26	0.27
Range of Projected Demand							
High Demand[b]	16.44	15.96	16.55	15.86	16.12	16.59	16.24
Low Demand[c]	15.89	15.83	15.57	15.15	15.29	15.56	15.42

[a]The 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.

[b]Low Price demand plus the combined effects of adverse weather, high economic activity, and the fuel-switching adjustment.

[c]High 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					
	1983			1984				1985				
	3rd	4th	Year	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year
Supply													
Total Dry Gas Production[1]	3.90	4.27	15.97	4.50	4.22	4.28	4.43	17.43	4.48	4.29	4.27	4.44	17.48
Net Imports of Dry Gas	0.16	0.22	0.79	0.22	0.19	0.19	0.27	0.88	0.28	0.23	0.22	0.28	1.00
Net Imports of LNG	0.01	0.01	0.08	-0.00	0.00	-0.01	-0.00	-0.02	-0.00	0.00	-0.00	-0.00	-0.01
Supplemental Gaseous Fuels	0.03	0.04	0.14	0.04	0.03	0.03	0.04	0.15	0.05	0.03	0.03	0.04	0.15
Total New Supply	4.10	4.55	16.97	4.76	4.45	4.48	4.74	18.43	4.80	4.55	4.51	4.76	18.62
Underground Working Gas Storage													
Opening	2.45	3.14	3.07	2.60	1.57	2.14	3.00	2.60	2.57	1.41	1.98	2.91	2.57
Closing	3.14	2.60	2.60	1.57	2.14	3.00	2.57	2.57	1.41	1.98	2.91	2.54	2.54
Net Withdrawals[2]	-0.69	0.55	0.48	1.02	-0.57	-0.85	0.43	0.03	1.16	-0.57	-0.93	0.37	0.03
Total Primary Supply[1]	3.41	5.09	17.45	5.79	3.88	3.63	5.17	18.46	5.96	3.98	3.58	5.13	18.65
Consumption													
Electric Utilities	0.96	0.68	2.91	0.61	0.78	1.00	0.77	3.16	0.68	0.82	0.99	0.73	3.21
Refinery Fuel	0.15	0.14	0.57	0.16	0.16	0.16	0.16	0.64	0.15	0.15	0.15	0.16	0.61
All Other Uses[3]	2.19	4.13	13.52	4.94	2.82	2.34	4.24	14.34	5.13	3.01	2.44	4.25	14.83
Subtotal	3.31	4.95	17.00	5.70	3.76	3.50	5.17	18.13	5.96	3.98	3.58	5.13	18.65
Unaccounted for	0.10	0.14	0.45	0.09	0.12	0.13	0.00	0.33	0.00	0.00	0.00	0.00	0.00
Total Disposition	3.41	5.09	17.45	5.79	3.88	3.63	5.17	18.46	5.96	3.98	3.58	5.13	18.65

LNG=Liquefied Natural Gas.
[1]Excludes nonhydrocarbon gases removed.
[2]Includes withdrawals less injections of natural gas and changes in storage quantities due to gas migration.
[3]Includes 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(84/07), Natural Gas Monthly; DOE/EIA-0130(84/08), and Electric Power Monthly, DOE/EIA-0226(84/08).

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

	History								Projections				
	1983			1984					1985				
	3rd	4th	Year	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year
Supply													
Production	199	204	782	224 [2]	228 [2]	244 [2]	197	892	215	232	220	232	899
Primary Stock Levels[1]													
Opening	38	35	37	34	34	31	27	34	27	27	27	27	27
Closing	35	34	34	34	31	27 [2]	27	27	27	27	27	27	27
Net Withdrawals	3	1	3	-0	3	3 [2]	1	7	-1	-0	0	1	-0
Imports	0	0	1	0	0	0 [2]	0	1	0	0	0	0	1
Exports	22	20	78	15	24	23 [2]	18	80	15	18	21	19	73
Total New Domestic Supply	180	186	708	209 [2]	208 [2]	224 [2]	180	821	199	214	200	215	828
Secondary Stock Levels[3]													
Opening	197	174	195	169	173	192	210	169	189	175	189	169	189
Closing	174	169	169	173	192	210 [2]	189	189	175	189	169	174	174
Net Withdrawals	23	5	27	-4	-19	-18 [2]	21	-20	14	-14	20	-5	16
Total Indicated Consumption	203	191	735	205 [2]	188 [2]	206 [2]	201	800	213	200	220	210	843
Domestic Consumption													
Coke Plants	10	10	37	11	12	10 [2]	11	44	12	12	11	11	46
Electric Utilities	178	161	625	167	154	177 [2]	168	666	178	168	188	175	709
Retail and General Industry[4]	18	21	74	22	20	19 [2]	23	84	24	21	20	24	89
Total Domestic Consumption	206	192	737	200	186	206 [2]	201	793	213	200	220	210	843
Discrepancy[5]	-3	-2	-2	4 [2]	3 [2]	0 [2]	0	7	-0	-0	-0	-0	-0

[1]Primary stocks are those held at the mines, preparation plants, and distribution points.
[2]Estimated.
[3]Secondary stocks are those held by users. Most of the secondary stocks are held by electric utilities.
[4]Included in retail and general industry coal consumption for 1985 is consumption at coal gasification plants of 1.0, 1.1, 1.2, and 1.3 million tons for quarters 1 through 4 respectively.
[5]Historical 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(84/07), and Quarterly Coal Report, DOE/EIA-0121(84/2Q).

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

	History						Projections						
	1983			1984					1985				
	3rd	4th	Year	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year
Generation													
Coal	359.7	322.3	1259.4	336.7	313.0	354.9	336.4	1341.0	357.3	338.3	377.0	349.3	1422.0
Petroleum	40.7	35.2	144.5	36.8	27.1	32.3	27.4	123.7	35.8	22.7	25.5	25.0	108.9
Natural Gas	90.8	64.5	274.1	57.7	74.8	94.7	71.8	298.9	63.7	76.4	92.6	67.9	300.6
Nuclear Power	76.8	77.2	293.7	84.1	74.9	87.1	88.4	334.5	89.7	85.5	100.2	96.5	371.9
Hydropower	75.7	77.1	332.1	88.1	90.5	74.3	68.6	321.5	75.2	76.7	65.1	64.1	281.1
Geothermal Power and Other[1]	2.0	1.9	6.5	1.9	2.0	2.1	1.9	7.9	1.8	1.9	2.1	2.1	7.9
Total Generation	645.7	578.2	2310.3	605.3	582.3	645.4	594.6	2427.7	623.6	601.4	662.5	605.0	2492.4
Net Imports	9.9	9.7	35.3	8.8	8.1	10.6	10.4	38.0	9.5	8.7	11.5	11.3	41.0
Total Supply	655.6	587.9	2345.6	614.1	590.4	656.1	605.1	2465.7	633.1	610.1	674.0	616.2	2533.4
T & D Loss[2]	53.8	55.7	196.8	33.2	51.4	60.5	59.1	204.1	52.3	50.0	57.0	52.8	212.1
Total Consumption (sales)	601.9	532.2	2148.8	581.0	539.0	595.6	546.0	2261.6	580.8	560.1	617.0	563.4	2321.3

[1]Includes geothermal, wind, wood, and waste.
[2]Transmission and distribution losses through the power network, calculated as total supply minus total sales.
Note: Estimated third 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(84/07); and Electric Power Monthly DOE/EIA-0226(84/08).

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

	History						Projections					
	1983			1984				1985				
	3rd	4th	Year	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year
Supply													
Production													
Petroleum[1]	5.20	5.18	20.89	5.15	5.17	5.26	5.28	20.88	5.23	5.25	5.28	5.30	21.06
Natural Gas[2]	4.01	4.39	16.42	4.62	4.34	4.40	4.55	17.92	4.61	4.41	4.39	4.56	17.97
Coal	4.38	4.49	17.22	4.93	5.01	5.36	4.34	19.65	4.72	5.11	4.84	5.12	19.79
Nuclear Power	0.85	0.85	3.23	0.93	0.83	0.96	0.97	3.69	0.99	0.94	1.10	1.06	4.10
Hydropower[3]	0.80	0.81	3.51	0.93	0.96	0.79	0.72	3.40	0.80	0.81	0.69	0.68	2.97
Geothermal Power and Other[4]	0.04	0.04	0.14	0.04	0.04	0.04	0.04	0.17	0.04	0.04	0.05	0.04	0.17
Subtotal	15.28	15.77	61.11	16.61	16.35	16.82	15.92	65.69	16.39	16.56	16.34	16.77	66.06
Net Imports													
Crude Oil	2.11	1.71	6.73	1.57	1.79	1.72	1.96	7.04	1.63	1.80	1.98	1.92	7.33
Other Petroleum	0.74	0.69	2.31	0.91	0.70	0.65	0.70	2.96	0.72	0.66	0.70	0.71	2.79
Natural Gas (Dry)	0.16	0.23	0.68	0.23	0.20	0.19	0.28	0.89	0.28	0.23	0.22	0.28	1.02
Liquefied Natural Gas	0.01	0.01	0.08	-0.00	0.00	-0.01	-0.00	-0.02	-0.00	0.00	-0.00	-0.00	-0.01
Coal and Coke	-0.58	-0.53	-2.03	-0.39	-0.62	-0.59	-0.48	-2.08	-0.39	-0.47	-0.53	-0.49	-1.88
Electricity	0.10	0.10	0.37	0.09	0.08	0.11	0.11	0.40	0.10	0.09	0.12	0.12	0.43
Subtotal	2.54	2.22	8.28	2.40	2.16	2.07	2.56	9.19	2.34	2.31	2.48	2.54	9.67
Primary Stocks													
Net Withdrawals	-0.92	0.82	1.07	1.18	-0.67	-0.74	0.55	0.31	1.37	-0.67	-1.12	0.43	0.01
SPR Fill Rate Additions(-)	-0.17	-0.10	-0.49	-0.07	-0.13	-0.10	-0.08	-0.38	-0.08	-0.08	-0.08	-0.08	-0.31
Secondary Stocks[5]													
Net Withdrawals	0.53	0.14	0.75	-0.09	-0.42	-0.37	0.47	-0.42	0.31	-0.27	0.42	-0.09	0.37
Total Supply[6]	17.27	18.84	70.71	20.02	17.29	17.67	19.42	74.40	20.34	17.85	18.05	19.57	75.81
Consumption													
Nonutility Uses													
Petroleum	7.26	7.47	28.77	7.55	7.41	7.53	7.71	30.21	7.42	7.43	7.53	7.68	30.07
Natural Gas[7]	2.40	4.38	14.46	5.22	3.05	2.57	4.51	15.36	5.42	3.24	2.65	4.52	15.84
Coal	0.66	0.74	2.63	0.78	0.73	0.76	0.80	3.06	0.84	0.77	0.77	0.85	3.24
Subtotal	10.32	12.59	45.85	13.56	11.19	10.86	13.03	48.64	13.69	11.44	10.96	13.05	49.14
Electric Utility Inputs													
Petroleum	0.44	0.38	1.54	0.39	0.29	0.33	0.30	1.31	0.39	0.24	0.27	0.27	1.17
Natural Gas	1.00	0.71	3.01	0.63	0.81	1.03	0.79	3.27	0.71	0.85	1.02	0.75	3.33
Coal	3.77	3.41	13.23	3.53	3.26	3.72	3.53	14.05	3.75	3.55	3.96	3.67	14.94
Nuclear Power	0.85	0.85	3.23	0.93	0.83	0.96	0.97	3.69	0.99	0.94	1.10	1.06	4.10
Hydropower[8]	0.90	0.92	3.88	1.02	1.04	0.90	0.83	3.80	0.90	0.90	0.81	0.79	3.40
Geothermal Power and Other	0.04	0.04	0.14	0.04	0.04	0.04	0.04	0.17	0.04	0.04	0.05	0.04	0.17
Subtotal	7.00	6.30	25.04	6.55	6.27	6.98	6.47	26.27	6.77	6.53	7.22	6.59	27.10
Gross Energy Consumption[6]	17.32	18.89	70.89	20.11	17.46	17.84	19.50	74.91	20.46	17.97	18.18	19.65	76.25
Electric Utility Adjustments													
Conversion Loss[9]	4.95	4.48	17.70	4.56	4.43	4.95	4.61	18.55	4.78	4.61	5.11	4.67	19.17
Total Net Energy	12.37	14.41	53.19	15.55	13.04	12.89	14.89	56.36	15.68	13.35	13.07	14.98	57.07
Unaccounted for	-0.04	-0.04	-0.18	-0.09	-0.18	-0.17	-0.08	-0.51	-0.12	-0.12	-0.13	-0.08	-0.44
Total Disposition	17.27	18.84	70.71	20.02	17.29	17.67	19.42	74.40	20.34	17.85	18.05	19.57	75.81

SPR = Strategic Petroleum Reserve.
[1]Includes crude oil and lease condensate, natural gas liquids, hydrogen, input to oil refineries.
[2]Total dry gas production excluding nonhydrocarbon gases removed.
[3]Includes industrial production.
[4]Includes wood and waste used to generate electricity.
[5]Primarily electric utility stocks.
[6]This total excludes approximately 2 quadrillion Btu of wood.
[7]Includes natural gas used as refinery fuel.
[8]Includes industrial hydroelectric production and net imports of electricity.
[9]Includes 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(84/07) and Electric Power Monthly, DOE/EIA-0226(84/08).

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	5,607,000
Distillate Fuel Oil	barrel	5,825,000
Refinery Fuel (Liquids)	barrel	5,595,000
All Refinery Inputs	barrel	5,768,000
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 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 & Lignite Consumed	short ton	21,547,000
Coal to Electric Utilities	short ton	21,160,000
Bituminous Coal and Lignite Prod.	short ton	22,015,000
Coking Coal	short ton	26,000,000
General Ind. and Retail Coal	short ton	23,800,000
Coke	short ton	26,000,000
Bituminous Coal and Lignite Exports	short ton	26,300,000
Bituminous Coal and Lignite Imports	short ton	25,000,000

B. Efficiency of Conversion Processes	
1. Electric Power Generation	
Fuel or Power Source:	Btu/kWh (heat rate)
Coal	10,504
Crude Oil	10,724
Distillate Fuel Oil	13,501
Residual Fuel Oil	10,625
Geothermal and Other Energy	21,594
Nuclear Energy	11,015
Natural Gas	10,991
Hydropower	10,470
2. Other Conversion Processes	Btu Out/Btu In
Coke	0.70
Synthetic Gas	0.95

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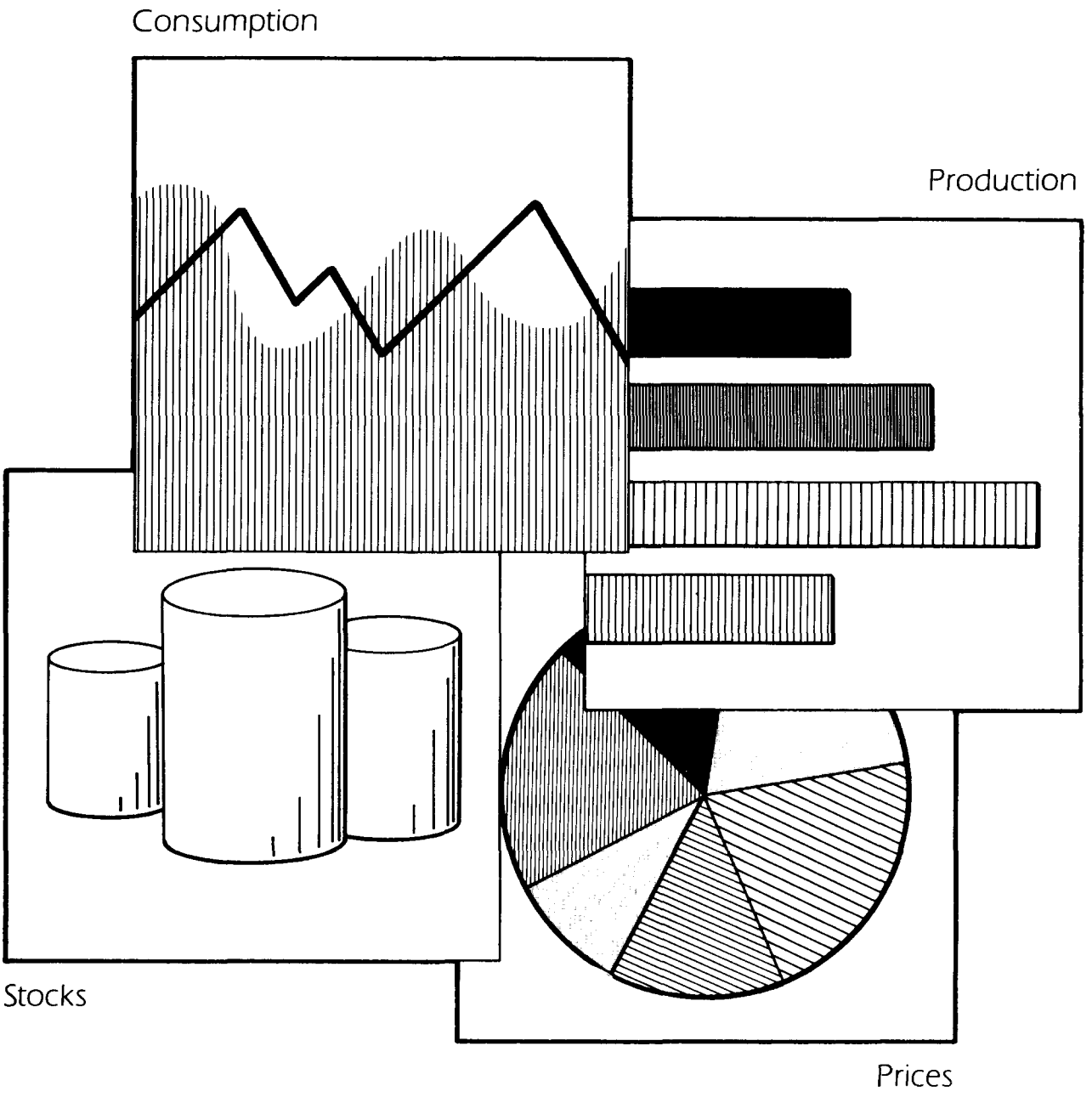

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