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Short-Term Energy Outlook

Quarterly Projections

January 1987

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Preface

The Energy Information Administration (EIA) quarterly forecasts of short-term energy supply, demand, and prices are revised in January, April, July, and October for publication in the *Short-Term Energy Outlook (Outlook)*. An evaluation volume, published annually, analyzes previous forecast errors. The principal users of the *Outlook* are managers and energy analysts in private industry and government. The projections in this volume extend through the first half of 1988.

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

The three projections for petroleum supply and demand are based on low, middle, and high crude oil price trajectories. The discussion and tables in this volume refer primarily to the middle, or base case, scenario and, unless otherwise noted, to the domestic situation. Other cases examining the sensitivity of total petroleum demand to varying assumptions about prices, weather, and economic activity are shown in Table 13 on page 40. Discussions of the world oil price refer to the cost of imported crude oil to U.S. refiners.

The forecasts and historical data are based on EIA data published in the *Monthly Energy Review*, *Petroleum Supply Monthly*, and other EIA publications. Minor discrepancies between the data in those publications and the historical data in this *Outlook* are due to independent rounding. All percentage changes are calculated from the values in the tables rather than from the rounded numbers cited in the text.

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Highlights

Highlights

The major price declines and associated disruptions that occurred in the petroleum market in 1986 are not expected to be repeated in 1987. The rapidly falling price and consequent change in petroleum demand, production, and imports that characterized 1986 should, for the most part, not be repeated in 1987, as prices are expected to stabilize at an average value of \$16.50 per barrel. This is up somewhat from the average 1986 price of \$14.20 per barrel, and significantly higher than the 1986 low of \$10.90 per barrel in July.

This projection rests on the assumption that the accord reached by the Organization of Petroleum Exporting Countries (OPEC) in December 1986 will largely be adhered to, and that the excess stocks remaining at the end of 1986 will be worked off in a manageable fashion. As a result of firming prices in 1987, demand increases should be modest and inventories should decline, leading to a modest increase in imports. (The base case assumptions and projections are summarized in Table 1 on page 3.)

Import Increases in 1987 Expected to Be Modest

In 1986, net imports of petroleum products increased by almost 25 percent, or about 1 million barrels per day, from year-earlier levels. The increase was accounted for by an increase in demand of about 400,000 barrels per day, a decrease in domestic production of 300,000 barrels per day, and an increase in private stocks of 170,000 barrels per day (with the remainder of the change being due to other factors). In 1987, demand is expected to increase by only 150,000 barrels per day, production is projected to fall by about 440,000 barrels per day, and stocks are projected to decrease, leading to an increase in imports of about 470,000 barrels per day--less than half the growth experienced in 1986.

Decline in Domestic Oil Production to Continue in 1987

Between 1985 and 1986, revised data show that domestic crude oil production fell by about 300,000 barrels per day, or just over 3 percent. The decrease was larger at the end of the year, and production in December 1986 was 680,000 barrels per day lower than in December 1985. In 1987, production should continue to decline by about 440,000 barrels per day, as relatively low oil prices continue to depress domestic drilling activity and slow completions.

Natural Gas Prices Expected to Firm in 1987

The nominal price of natural gas at the wellhead and to electric utility customers fell markedly in 1986, along with oil prices. In July 1986, the wellhead price was \$1.64 per thousand cubic feet, compared to \$2.51 per thousand cubic feet 1 year earlier--a decline of about 35 percent. As oil prices firm in 1987, so should natural gas prices, showing slight increases in the electric utility and residential sectors.

Electricity Use Continues Modest Growth

A 2-percent increase in total electricity generation is projected in 1987, following an increase of less than 1 percent between 1985 and 1986. The relatively large jump in oil-fired generation in 1986 should be reversed in 1987 as oil prices increase. The real price of electricity is projected to drop slightly over the forecast period.

Coal Use Recovers in 1987

Coal consumption and production in 1987 are projected to increase by about 2 and 3 percent, respectively, from the 1986 levels, following little or no growth in 1986.

Decline in Energy Intensity Continues

Total U.S. energy consumption (as measured by gross energy consumption) is projected to increase by more than 2 percent in 1987, to 75.6 quadrillion Btu, following no change in 1986 from the previous year's level. The energy intensity of U.S. economic activity in 1987 is projected to be 20,000 Btu per 1982 dollar of real gross national product (GNP), a slight decline from the year-earlier level.

The forecasts previously discussed are the EIA base case projections. Additional sensitivity cases, based on alternative assumptions about world oil prices, are discussed elsewhere in this report (see "Petroleum Demand Sensitivities," page 17). Should the imported crude oil prices, economic growth rates, or weather during the forecast period differ from the base case assumptions (with all other factors held constant), it is estimated that:

- For each 1-percent increment in real GNP above the base case level, petroleum consumption and total net imports in 1987 would increase by about 190,000 barrels per day (approximately 1.2 percent and 3.3 percent, respectively).
- For each \$1-per-barrel (approximately 6.1 percent) decline from the base case in the price of imported crude oil, petroleum consumption and total net imports in 1987 would increase by about 80,000 barrels per day (approximately 0.5 percent and 1.4 percent, respectively).
- For each 10-percent increase in heating degree-days (from the base case level) during the first and fourth quarters (the heating season), petroleum consumption and total net imports for those two quarters would increase by an average of about 220,000 barrels per day (approximately 1.4 percent and 4.1 percent, respectively).

Table 1. Summary of Base Case Assumptions and Projections

Assumptions and Projections	Year				Annual Percentage Change		
	1984	1985	1986	1987	1984-1985	1985-1986	1986-1987
Assumptions							
Real Gross National Product (billion 1982 dollars)	3,490	3,585	3,676	<i>3,773</i>	2.7	2.5	2.6
Index of Industrial Production (Mfg.) (index, 1977: 100)	123.4	126.4	129.2	<i>131.8</i>	2.4	2.2	2.0
Average Cost of Imported Crude Oil (nominal dollars per barrel)	28.88	26.99	14.20	<i>16.50</i>	-6.5	-47.4	16.2
Price Projections (nominal values)^a							
Motor Gasoline ^b (dollars per gallon)	1.20	1.20	.93	<i>.99</i>	.0	-22.5	6.5
Retail No. 2 Heating Oil (dollars per gallon)	1.09	1.05	.78	<i>.85</i>	-3.7	-25.7	9.0
Residential Natural Gas (dollars per thousand cubic feet)	6.12	6.12	5.83	<i>5.99</i>	.0	-4.7	2.7
Residential Electricity (cents per kilowatthour)	7.54	7.79	7.83	<i>7.83</i>	3.3	.5	.0
Consumption Projections							
Total Market Economies Petroleum Consumption (million barrels per day)	46.7	46.4	47.4	<i>48.1</i>	-6	2.2	1.5
U.S. Total Petroleum Consumption (million barrels per day)	15.73	15.73	16.13	<i>16.28</i>	.0	2.5	.9
Motor Gasoline	6.69	6.83	7.00	<i>6.99</i>	2.1	2.5	-1
Distillate Fuel Oil	2.84	2.87	2.90	<i>2.93</i>	1.1	1.0	1.0
Residual Fuel Oil	1.37	1.20	1.41	<i>1.34</i>	-12.4	17.5	-5.0
Other Petroleum ^c	4.82	4.83	4.83	<i>5.02</i>	.2	.0	3.9
Net Petroleum Imports (million barrels per day, including SPR ^d)	4.72	4.29	5.29	<i>5.76</i>	-9.1	23.3	8.9
Coal Consumption (million short tons)	791	818	807	<i>823</i>	3.4	-1.3	2.0
Natural Gas Consumption (trillion cubic feet)	17.95	17.28	18.27	<i>16.66</i>	-3.7	-5.8	2.4
Electricity Generation (billion kilowatthours)	2,416.3	2,469.8	2,488.9	<i>2,544.2</i>	2.2	.8	2.2
Total Energy Consumption ^e (quadrillion Btu)	74.06	73.94	73.89	<i>75.59</i>	-2	-1	2.3
Thousand Btu/1982 Dollar of GNP	21.22	20.62	20.10	<i>20.03</i>	-2.8	-2.5	-3

^a All prices include taxes, except prices for No. 2 heating oil and residential electricity.

^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.

Notes: Minor discrepancies with other published EIA historical data are due to independent rounding. Historical values are printed in **boldface**, forecasts in *italics*.

Sources: Historical data: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(86/10); *International Energy Annual 1985* DOE/EIA-0219(85); *Petroleum Marketing Monthly*, DOE/EIA-0380(86/10); *Petroleum Supply Monthly*, DOE/EIA-0109(86/10); *Petroleum Supply Annual 1985*, DOE/EIA-0340(85)/1; *Natural Gas Monthly*, DOE/EIA-0130(86/11); *Electric Power Monthly*, DOE/EIA-0226(86/11); and *Quarterly Coal Report*, DOE/EIA-0121(86/3Q); Organization for Economic Cooperation and Development, *Quarterly Oil Statistics, Third Quarter 1986*. Macroeconomic projections are base on modifications to Data Resources, Inc., Forecast CONTROL1286.

Table printed at 1013, February 12, 1987

Highlights of the Energy Information Administration's Annual Energy Outlook 1986

The Energy Information Administration will release the *Annual Energy Outlook 1986* in mid-February. The report will contain projections on energy supply, demand, and prices through the year 2000. A brief forecast summary is presented below.

- Despite the steep decline in energy prices experienced in 1986, the long-term trends remain essentially unchanged. Real world oil prices expressed in 1986 dollars are expected to remain below \$20 per barrel until 1992, after which time demand increasingly begins to absorb the current excess of world supply and drive oil prices up at a faster rate, to \$33 by the year 2000 in the base case.
- Domestic petroleum demand, estimated at 16.1 million barrels per day in 1986, is projected to rise to 16.5 million barrels per day by 1995 and 17.4 million barrels per day by the year 2000. U.S. production levels for crude oil and other liquids, estimated at 10.9 million barrels per day in 1986, fall to 8.3 million barrels per day in 1995 and to 7.7 million barrels per day by the year 2000. As a result, net petroleum imports, estimated at 5.3 million barrels per day in 1986 (or 33 percent of consumption), rise steadily to 8.2 million barrels per day by 1995 and to 9.8 million barrels per day (or 56 percent of consumption) by the year 2000. (See the accompanying table for a summary of the base and alternative cases.)
- The U.S. natural gas outlook appears favorable for consumers, and ultimately for the market, as new Federal Energy Regulatory Commission (FERC) initiatives come into place. As a result, gas consumption, estimated at 16.5 trillion cubic feet in 1986, rises to 18.0 trillion cubic feet in 1995 and stays at that level until the year 2000. Real wellhead prices should bottom out in 1986 at \$1.70 per thousand cubic feet and then rise smoothly to \$5.50 by the year 2000, keeping pace with oil prices to the end user.
- The outlook for the domestic electric utility industry shows the current surplus of generating capability declining by the early 1990's. Demand growth, which was high in the past, has remained lower than GNP growth for 1986, leaving the industry with continued medium-term surplus generation capability. However, if projected demand materializes, additional capacity beyond that now planned or under construction will be needed in the late 1990's.
- Coal continues to increase its contribution to the Nation's energy utilization. Electricity is the only form of energy showing continued positive penetration for nontransportation use, and coal is the dominant provider of that electricity. Production, estimated at 890 million tons for 1986, is anticipated to rise to 1.1 billion tons by 1995 and to 1.2 billion tons by the year 2000.

(million barrels per day, except where noted)

Supply, Demand, and Imports	1985 ^a	1986 ^a	1987 ^a	1995 ^b			2000 ^b		
				Low Price/ High Growth	Base Case	High Price/ Low Growth	Low Price/ High Growth	Base Case	High Price/ Low Growth
World Oil Price (1986 dollars per barrel)	27.70	14.20	16.10	21.20	26.60	33.00	26.80	32.90	41.50
U.S. Production:									
Crude	9.0	8.7	8.2	5.6	6.0	6.8	4.6	5.4	6.9
Other Liquids	2.3	2.2	2.2	2.4	2.3	2.3	2.3	2.3	2.2
Total U.S. Production	11.3	10.9	10.4	8.0	8.3	9.1	6.9	7.7	9.1
Consumption	15.7	16.1	16.3	17.5	16.5	15.5	18.7	17.4	16.3
Net Imports	4.3	5.3	5.8	9.6	8.2	6.4	11.9	9.8	7.3

^a Source: This report.

^b Source: Energy Information Administration, *Annual Energy Outlook 1986*, to be released in mid-February 1987.

The Outlook

The Outlook

International Petroleum Markets

Current Situation

In mid-December, OPEC once again surprised many independent observers by not only extending but enhancing its August 1986 agreement to limit production. OPEC's December success has resulted in a further strengthening of oil prices. Since Christmas, prices have increased between \$4 and \$5 per barrel.

The new agreement has increased the confidence of participants in the oil market in OPEC's ability to control production sufficiently to stabilize a market still shaky from the sharp drop in world oil prices that occurred in early 1986. At the start of the new year, the price of North Sea crude oil was over \$18 per barrel, in reaction to the mid-December OPEC oil production accord. The agreement kept the quota system intact, with the added feature of an across-the-board 7- to 8-percent cut in production. The added cut was made by the cartel with the objective of stabilizing oil prices at \$18 per barrel.

Oil traders bid up the price of oil in a steady fashion after the agreement became apparent. Crude oil prices were last at these levels around the end of January 1986. The price rise provided an immediate gratification to the various members of OPEC, and such positive results should help them abide by the output agreement. As a result of the price rise, the market reward for output discipline is sufficient to allow each OPEC member to cut production without losing revenue.

The reason that the OPEC agreement seems to be working is the new determination by Saudi Arabia to enforce production cutbacks and to fix a reference price at \$18 per barrel. Reports that Saudi Arabian oil production was cut by about 20 percent at the start of the new year, to an estimated level of 3.4 million barrels per day, have silenced critics of the agreement. The resolve of several OPEC members to export oil only under fixed-price contracts after February 1, 1987, has placed customers in the position of either accepting the contracts offered or not buying the oil. Oil companies throughout the industrialized world must either accept the fixed-term contracts or work off petroleum

inventories at a greater rate than they anticipated. In 1986, netback contracts were the norm. The return to fixed-price contracts is an attempt by OPEC (Saudi Arabia) to shift price risks from OPEC producers back to Western refiners. Whether this oil market shift will be successful during the seasonal demand slump of early spring is the key question.

The OPEC agreement was not accepted by Iraq, but its production share was factored in by subtracting the quotas for each of the other 12 OPEC members from the overall OPEC production quota. With Iraqi air attacks limiting Iranian production and exports, the overall OPEC production target for crude oil of 15.8 million barrels per day (not including natural gas liquids production of around 1.2 million barrels per day) might be attainable even if the United Arab Emirates, Ecuador, and Gabon continue to produce over their quotas, as they did in the fourth quarter of 1986.

Helping to support the agreement, non-OPEC producers are responding positively to the cutback in order to strengthen prices. The Soviet Union, Norway, Egypt, Mexico, Oman, China, and Malaysia have indicated some degree of cooperation with production restraints.

OPEC production (including natural gas liquids) in the fourth quarter of 1986 is estimated at 18.7 million barrels per day. This is a decrease of almost 2 million barrels per day compared to the production level of the second and third quarters of 1986. On average, 1986 OPEC production is estimated at 19.5 million barrels per day, an increase of more than 2.2 million barrels per day over the 1985 level. OPEC achieved its goal of increasing market share, and although its members have sustained huge short-term revenue losses, the long-term benefit to OPEC is expected to be through lower production by non-OPEC countries. The production capacity of non-OPEC countries is expected to drop due to decreases in reserves caused by cutbacks in exploration and development. Budgets for finding oil are at a fraction of their former levels because of the price drop.

At the beginning of the first quarter of 1987, total petroleum stocks (including the Strategic Petroleum Reserve) in the market economies are estimated to be equivalent to about 98 to 102 days of forward consumption (at first quarter 1987 rates). Low prices in the second and third quarters of 1986 led to stock buildups throughout the distribution chain to levels much higher than in 1985. How this extra margin of stocks

will be used depends on the market perception of OPEC's ability to follow its output and pricing agreement. Stocks in the market economies are projected to be drawn down by 3.3 to 3.5 million barrels per day during the first quarter of 1987. However, expectations that crude oil will become more expensive in the future may slow stock drawdowns. Stocks of 4.8 to 5.0 billion barrels at the end of 1986 reflect additions to stocks during the year as a result of lower oil prices and uncertainty over changing market conditions.

International Petroleum Forecast

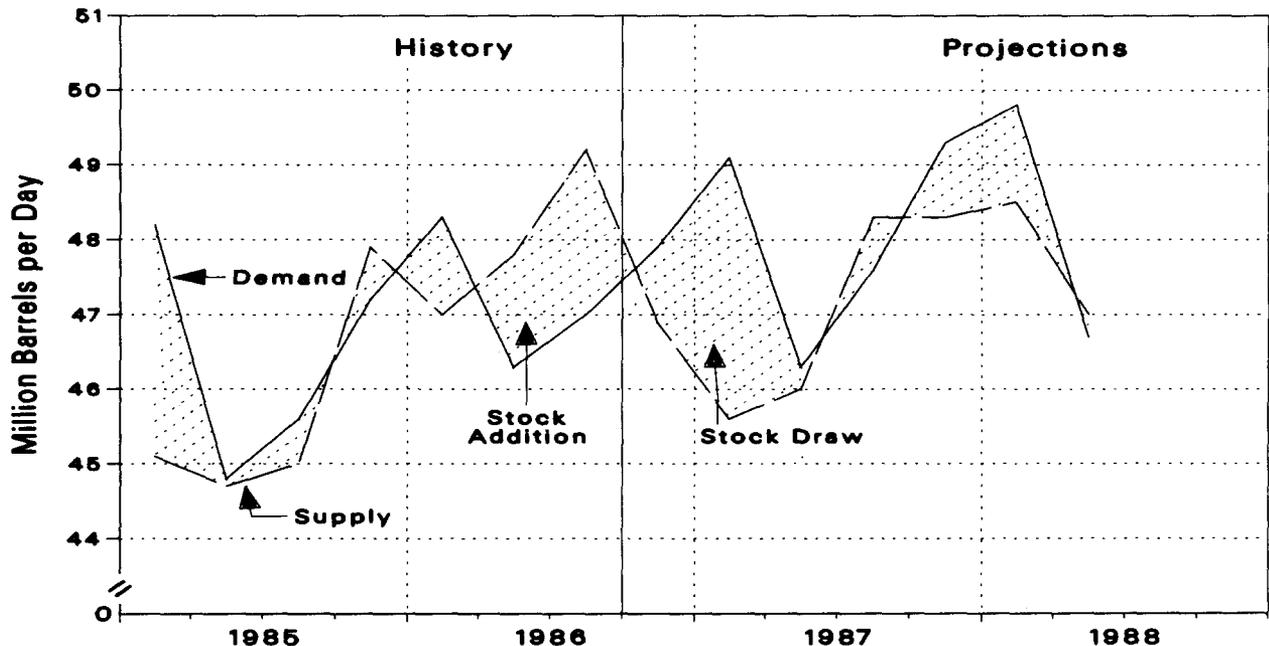
In response to lower petroleum prices, worldwide demand for petroleum has been increasing. Less developed oil-dependent consuming nations, such as Brazil and India, have seen relatively large increases in demand for oil over the past year. Petroleum demand in the market economies is expected to increase in 1987, due to somewhat higher economic growth and stable prices, to 48.1 million barrels per day (Figure 1). In 1987, first-quarter consumption is projected to be about 0.8 million barrels per day above year-earlier levels, while fourth-quarter consumption could be as much as

1.4 million barrels per day higher than the fourth-quarter 1986 level (Table 2 on page 30). The fourth-quarter annual difference is larger because of the use of secondary stocks by consumers during the fourth quarter of 1986. Use of secondary and consumer stocks is not reflected in EIA statistics.

The forecasts for petroleum demand are based on the expectation that the economic growth rate in the industrial countries will be 2.7 percent between 1986 and 1987 (Table 3 on page 30). The estimate for 1987 has been decreased by 1 percent since the last *Outlook*, based on a less sanguine view of the vigor of economic expansion in the industrial nations.

The next 3 months will demonstrate whether OPEC can successfully maneuver past the financial and market pressures that will be faced by member nations as the winter heating season comes to an end. If the price of North Sea Brent oil drops below the Nigerian Bonny Light price by a sufficient margin to cause marketing problems for Nigeria, the fixed-price regime will be subjected to enormous strains. Besides the price vulnerability issue, the output accord could also be strained by perceptions of wide-scale cheating by members wishing to earn more revenues at the higher price. In particular, Iraq's refusal to participate in the accord raises the prospect that much higher Iraqi export capacity will come online over the next 2 years.

Figure 1. Market Economies Petroleum Supply and Demand



Sources: • History: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(86/10) and *International Energy Annual 1985* DOE/EIA-0219(85) (Washington, DC); Organization for Economic Cooperation and Development, *Quarterly Oil Statistics, Third Quarter 1986*; Petroleum Economics Limited, *World Quarterly Primary Energy and Supply/Demand*, October 1986. • Projections: Table 2.

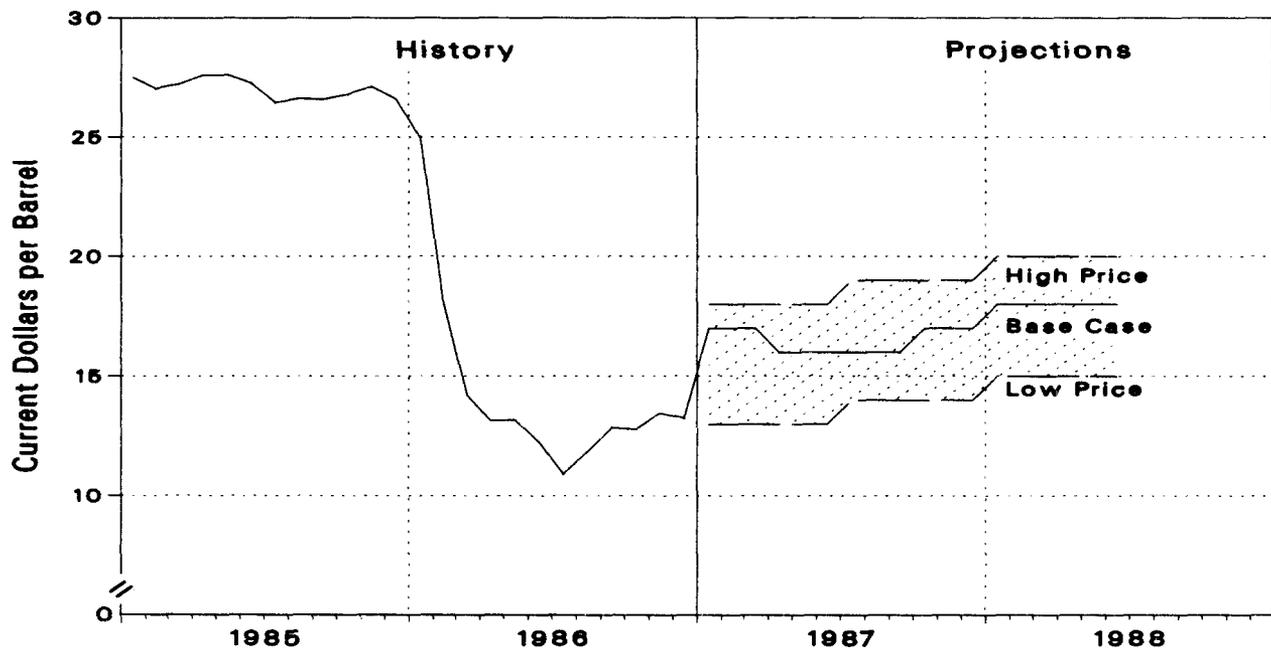
Forecast Assumptions

Since the October 1986 *Outlook*, the dollar has continued to decline against the European Monetary System currencies but has remained steady against the Canadian dollar. The U.S. dollar has dropped by about 7 percent against the German mark and the Japanese yen, to its lowest point in 6 years. During January 1987, the mark was revalued upward against the French franc by 3 percent. The dollar drop should continue to have a stimulating effect on oil consumption in the industrialized countries, because oil is traded in dollar terms which, when translated into stronger currencies, will magnify the drop in oil prices.

World Oil Prices

In the base case, the nominal price of imported crude oil delivered to U.S. refiners is assumed to average \$17 per barrel in the first quarter of 1987 and then decrease to \$16 per barrel in the second quarter before rebounding to \$17 by the end of 1987 (Figure 2).

Figure 2. Imported Crude Oil Prices



Sources: • History: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(86/10) (Washington, DC, 1986). • Projections: Table 4.

This price path is based on the assumptions that world crude oil production will be slightly less than the slowly but steadily increasing demand, thereby working off the current inventory surplus, and that the December 1986 OPEC agreement will hold together, with limited cheating. However, because of the high degree of uncertainty about world oil prices, two alternative cases are presented in this *Outlook* to provide a range of energy projections (Table 4 on page 31). The same initial economic assumptions are used in all three cases, modified only for feedback effects due to the various oil price assumptions. The petroleum price assumptions associated with these cases are as follows:

Low Price Case: As a result of a general breakdown in OPEC's production restraint agreement and relatively weak worldwide demand, oil prices are assumed to fall to about \$13 per barrel in early 1987, followed by a gradual increase to \$15 per barrel by 1988.

High Price Case: As a result of OPEC's strict adherence to its production quota throughout 1987 and more rapid growth in oil demand, oil prices are assumed to be pushed up to \$18 per barrel immediately and to \$19 per barrel by the summer of 1987, with a further increase to \$20 per barrel in 1988.

Macroeconomic Activity

The outlook for the U.S. economy, which underlies the base case projections, includes steady but modest growth in 1987. The pace of the economy is expected to quicken noticeably by the first half of 1988, however. Based on the Data Resources, Inc., December 1986 macroeconomic forecast (DRI CONTROL1286), as modified to reflect EIA's crude oil price assumptions, the outlook includes 2.6-percent growth in real GNP between 1986 and 1987, about the same as the growth rate achieved between 1985 and 1986 (Table 4 on page 31). This growth is characterized by slow growth in consumption and outright declines in fixed investment on the negative side, and significant improvement in the foreign trade sector on the positive side. Industrial production growth is projected to remain steady

but weak through 1987, with slower growth in domestic spending offset by the tendency to substitute some U.S. products for higher priced foreign goods.

The 2.6-percent growth rate in real GNP projected for all of 1987 contrasts with the 3.8-percent rate expected for the first half of 1988 compared to the first half of 1987. In fact, on an annual basis, GNP growth slumps noticeably in the first quarter of 1987 to below 2 percent. The most important immediate contributor to this slowdown in GNP growth is the falloff in non-residential fixed investment. Lower investment in the nonresidential sector in early 1987 may partly reflect the impact of higher capital costs due to tax reform, including the repeal of the investment tax credit (ITC) and longer tax depreciation schedules. Also, investment levels in 1986 may have been somewhat inflated as a result of the rush to qualify for favorable depreciation treatment under the 1986 tax laws. The most important contributor to the slump in nonresidential investment is the decline in petroleum investment, which is expected to register negative growth in 1987, particularly in early 1987. None of the oil price cases considered in this *Outlook* returns real petroleum investment to the levels of late 1985 or early 1986.

From its low in the first quarter of 1987 through the second quarter of 1988, GNP growth is projected to accelerate, driven primarily by sharp reductions in the real trade deficit. As oil prices begin to increase again, and as the lower value of the dollar begins to have a significant effect on the economy, real import growth is projected to slow to about zero. Real export growth is projected to reach about 11 percent for 1987 and early 1988, beginning particularly in the second quarter of 1987. It is evident from DRI's forecast detail that any significant downward modification in this optimistic view of export growth will portend serious short-term growth restrictions for the U.S. economy.

The high and low macroeconomic forecasts shown in Table 4 on page 31 reflect only the impacts of the higher and lower oil price assumptions on income and consumption. Neither the higher nor the lower oil price case produces a very large difference in real GNP compared to the base case, as the difference in oil price in either direction is less than 20 percent throughout the forecast. Real GNP would differ by as little as 0.1 percent in 1987 and 0.3 percent in the first half of 1988 between the high and low price cases. In contrast, if real exports grew at an annual rate of 3.7 percent (the annual rate estimated for the last half of 1986) for 1987 and the first half of 1988, then the difference in the GNP forecast relative to the base case could be as much as 0.4 percent lower in 1987 and 1.3 percent lower in the first half of 1988.

Energy Product Prices

The steep decline in world crude oil prices beginning in the first quarter and continuing through the fourth quarter of 1986 lowered all petroleum product prices. On a seasonally adjusted basis, coal and natural gas prices also fell. Most energy product prices started to increase in the fourth quarter of 1986, as world crude oil prices began to stabilize. If the December 1986 OPEC agreement holds and crude oil prices increase to \$18 per barrel by the beginning of 1988, it is expected that corresponding energy product price increases will follow (Figure 3 and Table 5 on page 32).

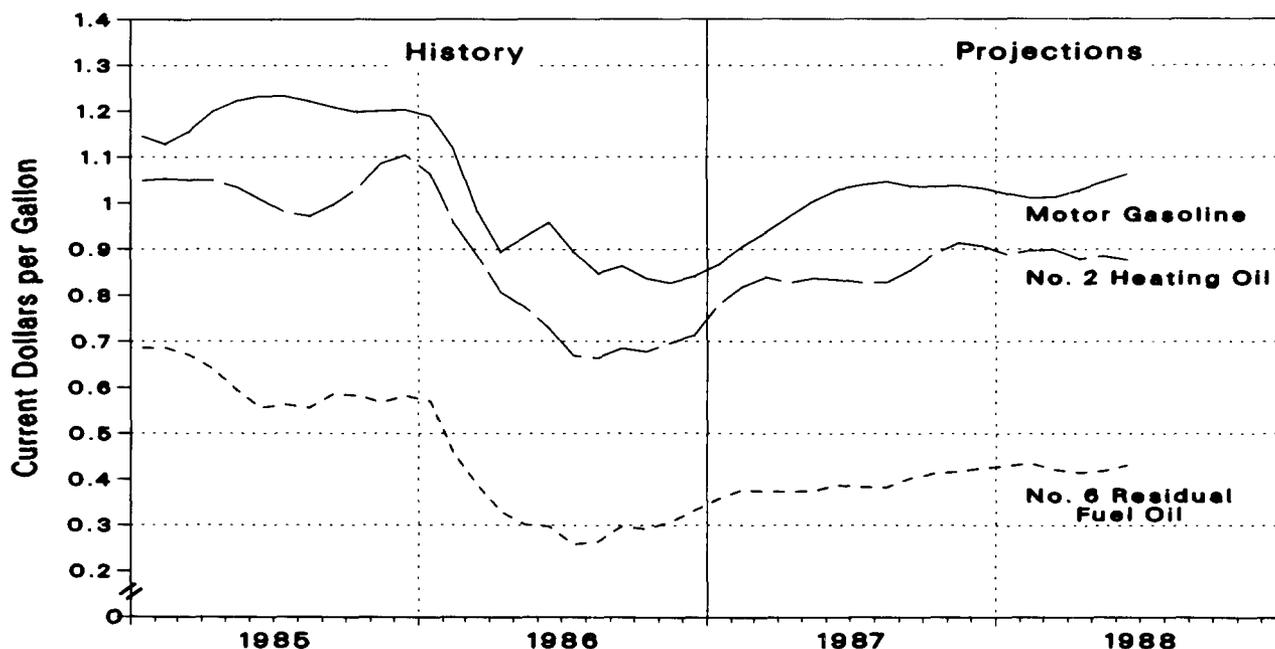
The low world oil price caused gasoline prices to fall by 27 cents per gallon in 1986. Refiner margins, according to figures derived from Tables 3 and 5 of the *Petroleum Marketing Monthly* (DOE/EIA-0380) fell by about 4 percent (or less than 1 cent) for the year, due to declines in the third and fourth quarters as a result of high stock levels. Retail margins, on the other hand, increased by more than 9 percent. Most of this increase was in the first quarter of the year, when retail price decreases lagged the decline in wholesale and crude oil prices. In 1987 and through the first half of 1988, retail gasoline prices are expected to increase

with the price of crude oil. Moreover, both refiner and retail margins are expected to increase at the rate of inflation. Thus, pump prices are projected to increase by 6 cents per gallon in 1987 and by an additional 8 cents per gallon in the first half of 1988, compared to the first half of 1987.

Retail heating oil prices are also expected to follow the price path of world crude oil. In 1986, retail heating oil prices fell by 27 cents per gallon. Prices are projected to increase by 7 cents in 1987 and by 6 cents in the first half of 1988 compared to the first half of 1987. Because stock levels have remained high through the end of the year, fourth-quarter 1986 prices are expected to increase by only 3 cents per gallon over third-quarter prices, despite the increase in crude oil prices and the beginning of the winter heating season. Prices in the first quarter of 1987 are projected to increase by 11 cents per gallon over fourth-quarter 1986 prices, as higher world crude oil prices combine with peak winter seasonal factors.

Diesel fuel oil prices are expected to follow the same pattern as that for heating oil, because both fuels are middle distillates. In 1986 retail diesel prices fell by 27 cents per gallon. They are projected to increase by 7 cents per gallon in 1987 and 6 cents per gallon in the first half of 1988 compared to the first half of 1987.

Figure 3. Retail Prices for Petroleum Products



Sources: • History: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(86/10) (Washington, DC, 1986). • Projections: Table 5.

Between April and August 1986, residual fuel oil prices to electric utilities were actually lower than natural gas prices on a national average level. By the fourth quarter of the year, as crude oil prices start their ascent, and through the first half of 1988, residual fuel oil prices are projected to increase at nearly the same rate as crude oil prices. By the same token, the price of oil to electric utilities is projected to exceed the natural gas price by the first quarter of 1987. Retail residual fuel oil prices, which normally are below the price of crude oil on an annual average, are expected to remain about 10 cents per barrel less than crude oil prices in 1987.

Natural gas prices to residential consumers are projected to increase with the rate of inflation (about 3 percent) in 1987 after falling by about 5 percent in 1986. Prices to electric utilities are projected to increase by 3 percent, even though the price of heavy oil to electric utilities is projected to increase by nearly 16 percent. (See page 13 for a more detailed discussion of natural gas prices.)

The price of coal delivered to electric utilities fell by 4 percent in 1986 due to substantial excess productive capacity, competition for transportation from the Powder River Basin, and the downward pressure caused by the price decline in other boiler fuels. Utility coal prices are expected to continue to remain low through the first quarter of 1987. The reason for this decline in the face of rising oil prices is that the spot market price of coal fell dramatically in the spring of 1986 and is expected to remain low as a result of continuing excess productive capacity and downward pressures on transportation costs. Spot market prices of coal fell by an average of more than 10 percent from January 1986 to January 1987 (Dow Jones News Service, 1/12/87). Prices are expected to turn upward in the second half of 1987 due to utility coal stock building in anticipation of a potential United Mine Workers of America strike in early 1988.

Residential electricity prices increased by only 0.5 percent in 1986, due to the decline in fossil fuel costs for electric utilities and lower interest rates. In real terms this represents a decrease of almost 2 percent. In 1987, residential electricity prices are expected to remain flat in nominal terms, with little or no change in the cost of fossil fuels to utilities or in capital costs. In the first half of 1988, projected higher capital costs and increases in fossil fuel prices should lead to a slight increase in the nominal price of electricity.

U.S. Petroleum Outlook

Overview

Total petroleum demand in 1987 is projected to average 16.3 million barrels per day, an increase of less than 1 percent from the 1986 level. Led by strong increases in demand for residual fuel oil and motor gasoline, total petroleum demand in 1986 reached its highest level since 1980. The projected increase in 1987 is dampened somewhat by higher prices and lower consumption of residual fuel oil at electric utilities.

Net petroleum imports (crude oil plus petroleum products) in 1987 are expected to average almost 5.8 million barrels per day. Imports in 1986 were the highest in 5 years. The increased level of imports projected for 1987 reflects primarily an expected decrease in domestic production of 440,000 barrels per day. (The base case forecast is shown in Table 6 on page 33; alternative cases for high and low world oil prices are shown in Table 7 on page 34 and Table 8 on page 35, respectively.)

Why Have Residential Natural Gas Prices Not Fallen?

Why did natural gas prices to residential users decline by only 5 percent in 1986 when other fuel prices fell considerably more?

On average, in 1986 imported crude oil prices dropped by about 47 percent from 1985 levels, with most of the decrease occurring between January and March 1986. Moreover, petroleum product prices also fell: residential heating oil declined by 26 percent and retail residual fuel oil by 44 percent. During the same period, the wellhead price of natural gas dropped by about 30 percent. However, natural gas prices to end users, specifically, to electric utilities and to residential customers, took divergent paths. While utility prices mirrored the wellhead price decrease (declining by 35 percent from August 1985 to August 1986), residential prices declined by only about 4 percent. Evidently, the difference between the end-user price and the wellhead price (the price margin) as a percentage of the end-user price has remained relatively constant at about 30 percent for utilities. The price margin, however, has increased by 66 percent to 77 percent in the same period for the residential sector. There are several possible explanations for this effect.

First, and probably foremost, is that the level of fuel competition in the utility sector is much higher than in the residential sector, especially in the short run. Many electric utilities, particularly those on the Gulf Coast and in the Southeast, have the capability to switch back and forth from oil to natural gas almost instantaneously. These dual-fired plants will burn the cheaper of the two fuels. Thus, when heavy oil prices and soon afterwards natural gas wellhead prices dropped in 1986, natural gas suppliers had incentives for lowering their price to utilities. During falling oil prices, they needed to lower natural gas prices to keep customers. During falling natural gas prices, a given percentage reduction in the price charged utilities would reduce revenue by less than the same percentage reduction in the price charged residential customers. When residential heating oil prices began to decline, there was no incentive for natural gas utilities to offer residential customers a corresponding price break. Few residential customers have the capability of switching between these fuels.

Second, average distribution costs are considerably higher for residential customers than for bulk consumers. The average volume of natural gas used by a typical residential customer is extremely small compared to that used by an electric utility, while the residential distribution network is much larger and thus this higher fixed cost must be added to the price of the fuel charged to the customer. Thus, the margin for individual residential customers is much higher than the margin for large-volume customers.

A third reason for high residential price margins may be that the Public Utility Commissions (PUC's), which set the rates for residential customers, sometimes do not respond as fast as market forces to changing prices. Therefore, there could be a lag between a price change at the wellhead and a price change to the end user. In addition, the PUC's, mindful of the potential for loss of gas sales to utilities, have tended to allow residential rates to absorb an increasing portion of the service costs in order to maintain the utility and industrial load.

Motor Gasoline

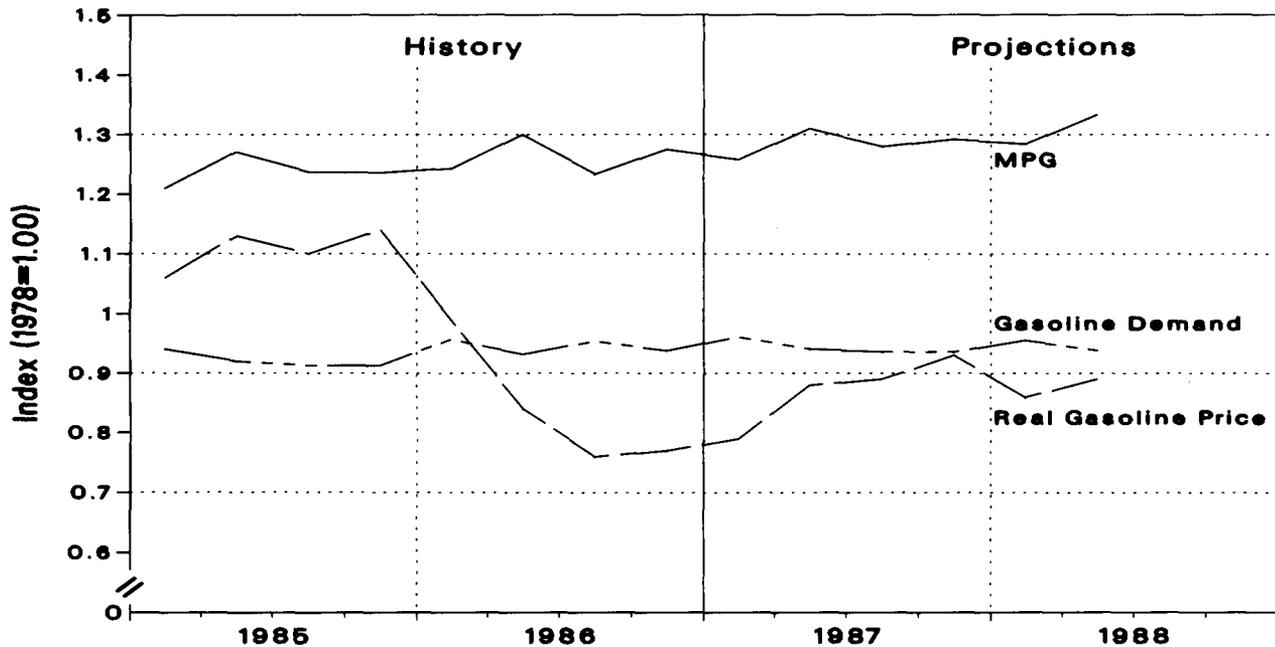
Motor gasoline demand, a major contributor to the total 1986 increase in demand for petroleum products, is projected to remain constant throughout the forecast period (Figure 4 and Table 9 on page 36). This forecast reflects an anticipated increase of close to 2 percent in vehicle miles traveled, offset by a similar percentage increase in average automobile fleet efficiency.

The number of vehicle miles traveled is projected to grow considerably less rapidly during 1987 than the near 5-percent increase experienced during 1986.¹ The big jump in travel over the past year is attributed to

the drop in gasoline prices, combined with a decline in overseas travel. Driving activity is projected to rise more slowly in the future, as gasoline prices have already started to firm up.

Vehicle efficiency is projected to improve by close to 2 percent in 1987 and by as much as 2.5 percent per year on average for the first half of 1988.² In addition to the long-term trend toward higher gas mileage, some of the increase in average fleet efficiency in 1988 can be attributed to a large influx of new cars in 1987. Car sales are expected to be particularly strong, based on the assumption that excess automobile manufacturing capacity will put considerable downward pressure on new car prices.

Figure 4. Motor Gasoline Demand, Vehicle Efficiency, and Real Gasoline Price



Sources: • History: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(86/10) (Washington, DC, 1986); Federal Highway Administration, *Traffic Volume Trends* (monthly). • Projections: Tables 5 and 9 and from unpublished output from the Energy Information Administration's Short Term Integrated Forecasting System.

¹Federal Highway Administration, Highway Statistics Division, "Traffic Volume Trends" (January 1987).

²Vehicle efficiency is calculated by dividing vehicle miles traveled by finished motor gasoline product supplied.

Motor Gasoline: A Return to Excess Consumption?

Motor gasoline consumption rose by close to 5 percent during the summer of 1986 relative to the year before. This increase in demand was considerably larger than would have been expected on the basis of the relationship between motor gasoline prices and demand established over recent years. Specifically, it would have been expected that the 30-percent drop in prices experienced during the first half of the year would have resulted in less than a 2-percent rise in gasoline consumption. The unexpected 5-percent jump in driving activity may reflect a return in consumer attitudes to the carefree days prior to the first oil embargo. On the other hand, the rise in travel demand may be only a temporary phenomenon related to a number of factors which have discouraged travel abroad and encouraged travel domestically.

Given the rise in motor gasoline consumption during the summer of 1986, there is some question as to whether gasoline demand is more responsive to price than currently reflected in the forecast. Based on data for the past 10 years, the 1-month elasticity of demand with respect to price is only -0.04, with the 1-year elasticity close to -0.1.³ The 1-year elasticity reflects the response in travel activity, as well as the impact on automobile efficiencies. As gasoline prices did not plummet until well into the first quarter of 1986, the relevant elasticity for the summer months would fall approximately midway between the 1-month and 1-year elasticities. In contrast, the change in demand for this period implies a demand elasticity closer to -0.16. This higher value is much closer in magnitude to the price/demand response experienced before the first embargo, during a period when petroleum consumption in the United States reflected an attitude that oil supplies would be abundant forever.⁴

While a simple examination of the price and energy data for 1986 indicates an unusually large response to the price change, it is clear that other factors may also have contributed to the big jump in travel activity. The increased threat of terrorism abroad and the declining value of the dollar relative to other currencies appear to have discouraged many potential travelers from leaving the country. According to a survey performed by the U.S. Travel Data Center, air travel to Europe in 1986 declined by 30 percent from the previous summer, with a 9-percent increase in domestic automobile travel.⁵ Federal Aviation Administration data on revenue passenger miles indicate a 7-percent decline in all international air travel originating from the United States, with a 17-percent increase in domestic air travel.⁶

The current EIA forecast for motor gasoline consumption in 1987 indicates essentially no change from 1986 levels. This projection is based on the assumption that the 1-year response in demand to price alone will remain close to -0.1. This is corroborated by the preliminary EIA data currently available through the end of the year, which show fourth-quarter 1986 gasoline demand to be less than 3 percent higher than the previous year.

³Elasticity is the ratio of the percentage change in consumption induced by a given percentage change in price to the percentage change in price. These estimates are calculated on the basis of the January 1987 version of the Short-Term Integrated Forecasting System Demand Model.

⁴Energy Information Administration, *Price Elasticities of Demand for Motor Gasoline and Other Petroleum Products*, DOE/EIA-0291 (Washington, DC, May 1981).

⁵U.S. Travel Data Center, Washington, DC.

⁶U.S. Department of Transportation, Research and Special Programs Administration, Form 41 (Washington, DC).

Distillate Fuel Oil

Warmer-than-normal weather (population-weighted heating degree-days 6 percent below normal) and stagnant industrial demand helped keep overall distillate consumption essentially flat in 1986, despite sharply lower prices (Figure 5 and Table 10 on page 37). Growth in industrial production of only 2 percent (Table 4 on page 31) was not enough to offset the typically sluggish reaction of the residential sector to lower prices.

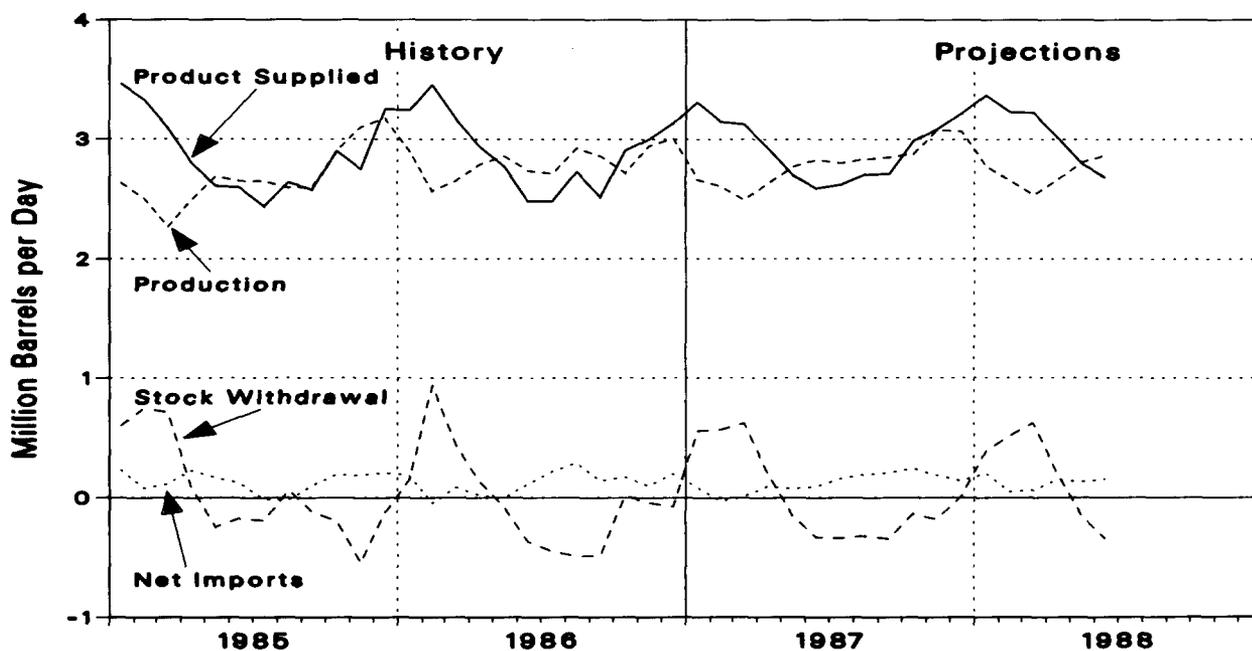
In 1987, demand for distillate fuel oil is projected to grow by only about 1 percent, with rising prices and only modest improvement in the economy offsetting increased consumption as a result of a return to average winter weather. Competition from natural gas is expected to forestall switching to oil in the industrial sector, despite a continuation of depressed oil prices, lower than at any time during this decade. Some growth in diesel demand is expected due to the growth in industrial output. However, diesel growth in the private automobile fleet has fallen sharply in the past several years. According to Platt's Oilgram Price Report (2/2/87), sales of diesel cars in 1986 were only 42,000 units, down 54 percent from the 91,000 units

sold in 1985 and less than 10 percent of the 521,000 diesel automobiles sold in 1981. Low motor gasoline prices, fewer automobile manufacturers offering diesel engines, and the higher cost of the diesel option are the primary factors in the decline. The likely result will be lower growth in demand for diesel fuel in 1987 and beyond.

Residual Fuel Oil

Total demand for residual fuel oil is projected to decrease by 5 percent in 1987, following an increase of more than 17 percent in 1986 (Table 11 on page 38). The rise in demand in 1986 was the first increase for this fuel since 1977. Much of the increase occurred in the utility sector (Table 5 on page 32), where a price decrease of nearly 43 percent (in the spring and early summer) in the price of heavy oil led utilities to switch from natural gas, and in some cases from coal, causing residual fuel shipments in this sector to increase by 48 percent from year-earlier levels. In contrast, nonutility demand, mainly bunker and industrial fuel, increased by only 1 percent, surprisingly low in view of the sharp price declines.

Figure 5. Components of Distillate Fuel Oil Supply



Sources: • History: Energy Information Administration, *Petroleum Supply Annual* (1985), DOE/EIA-0340(85)/1; *Petroleum Supply Monthly*, DOE/EIA-0109, January 1986 to October 1986; and *Weekly Petroleum Status Report*, DOE/EIA-0208(86-50,87-02) (Washington, DC). • Projections: Table 10.

In 1987 the price of residual fuel is projected to increase with the price of crude oil (about 14 percent for residual fuel oil), with a corresponding decrease in demand for this fuel (Table 5 on page 32). Moreover, new coal-fired and nuclear-powered electric generating capacity is expected to come online, causing further declines in utility demand for residual fuel oil. Nonutility demand in 1987 is expected to increase by about 2 percent, due mainly to the projected competitive price advantage of domestic bunker fuel over foreign fuel. In the first half of 1988, demand for residual fuel is expected to decline in both the nonutility and utility sectors as the price continues to rise.

Other Petroleum Products

Demand for other petroleum products accounts for about 30 percent of total petroleum demand throughout the forecast period. The demand for other petroleum products is projected to grow by 4 percent in 1987, after essentially no change between 1985 and 1986 (Table 12 on page 39). Demand for jet fuel, petrochemical feedstocks, and liquefied petroleum gas (LPG), which are the principal components of this category, is projected to average 3.3 million barrels per day in 1987 out of a total demand of 5.0 million barrels per day projected for other petroleum products. The remaining products are grouped under the miscellaneous category: petroleum coke, kerosene, still gas, road oil and asphalt, lubricants, waxes, aviation gasoline, special naphthas, and other small-volume petroleum products.

Demand for LPG is expected to grow by 4 percent in 1987, following the expected increase in population-weighted heating degree-days. A major portion of LPG demand is for winter space-heating requirements. Jet fuel demand is expected to increase by more than 1 percent in 1987, following a 7-percent increase in 1986 (when domestic air travel was significantly higher in the summer months than for the same period a year earlier). Continued growth in travel demand is expected to offset any projected increase in the price of jet fuel. The demand for petrochemical feedstocks is expected to decline by more than 3 percent in 1987, following a 1-percent increase between 1985 and 1986. Higher feedstock prices and competition from overseas in the petrochemical industry are the reasons for the decline, despite projected increases in chemical output.

Petroleum Demand Sensitivities

Figure 6 on page 18 and Table 13 on page 40 show the response of petroleum demand to changes in price, income, and weather. The sensitivity cases were developed as follows:

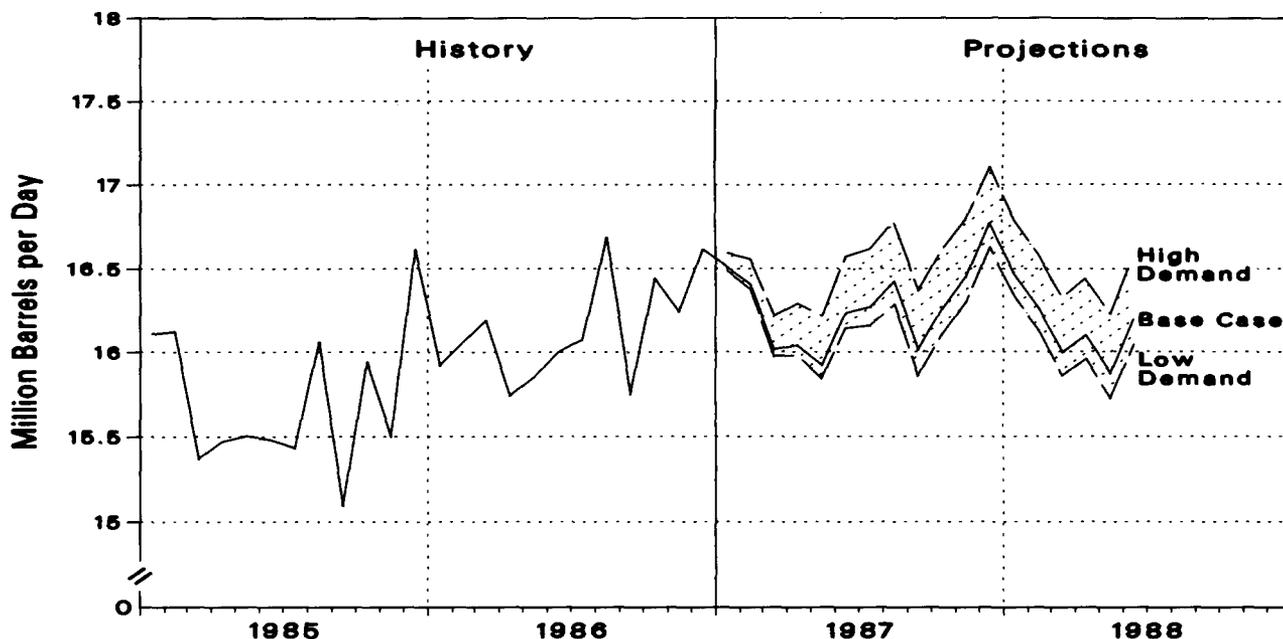
- The low and high price demands are based on the price paths shown in Table 5 on page 32, holding the variables representing economic activity at their base case levels.
- The economic sensitivity cases are derived from the low and high economic growth assumptions given in Table 4 on page 31, holding prices at their base case trajectories.
- The weather sensitivity cases are based on variations in population-weighted heating degree-days and cooling degree-days of 10 percent in the first and fourth quarters, and 15 percent in the second and third quarters, respectively.

In 1987, price uncertainty dominates the total petroleum uncertainty range of 0.6 million barrels per day. Given the narrow range of macroeconomic cases considered (Table 4 on page 31), the uncertainty with respect to the economy is only about 40,000 barrels per day in 1987. A more important contribution to the uncertainty range is made by weather, with changes in heating degree-days causing a variation of more than 0.5 million barrels per day in the first quarters of both 1987 and 1988.

Petroleum Supply

The outlook for domestic petroleum markets at the beginning of 1987 is clearer than it was only a few months ago. In December, OPEC extended the August accord to restrain oil production. This, combined with a greater-than-expected decline in domestic oil production (see page 21), has helped to ease the stock burden that had been hanging over the market. With total petroleum consumption (measured as product supplied) projected to increase slightly, changes in the basic

Figure 6. Total Petroleum Demand



Sources: • History: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(86/10) (Washington, DC, 1986). • Projections: Tables 6, 7, and 8.

sources of supply in 1987 are expected to be the reverse of those seen in 1986. A smaller increase in net imports in 1987 necessitates an overall drawdown in total primary petroleum stocks (particularly distillates and LPG's) to levels more in keeping with historical requirements (Figure 7 on page 19). As a result, refiners can produce a higher percentage of motor gasoline per barrel of crude oil input to refineries in the first quarter. A year ago, preparation by refiners for the summer driving season was hampered by low distillate stock levels at the beginning of the year. As a result, gasoline stocks now look about right for the peak demand period, without adverse (from the perspective of suppliers) downward price pressures. At the same time, no tightness is foreseen in any product market throughout the forecast horizon. A key to maintaining the projected balance for domestic petroleum markets is the level of net petroleum imports, which cannot rise much further than projected here without placing significant downward pressure on end-use markets.

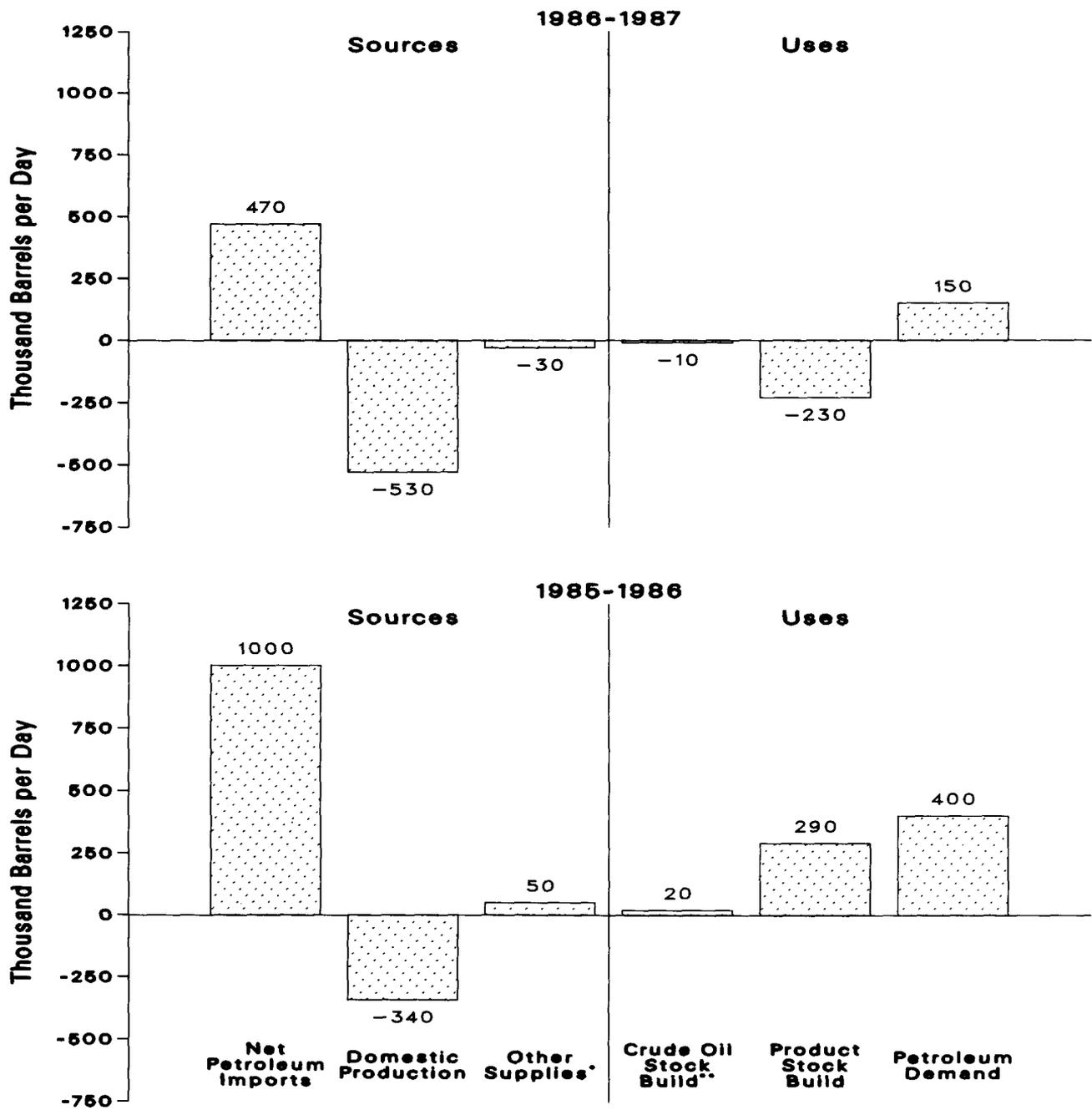
The drop in domestic crude oil production from 1985 to 1986 was startling. After the recent revision to EIA's 1986 crude oil production estimates (see page 21), average production for the year stands 300,000 barrels per day below the level for 1985, with another drop of 440,000 barrels per day projected on average for 1987 (Table 6 on page 33). Because domestic crude oil production by December 1986 was 320,000 barrels per day below the 1986 yearly average, more than half of the projected average decline from 1986 to 1987 has already taken place. Thus, while total production de-

clined by about 700,000 barrels per day from December 1985 to December 1986, it is only expected to decline by another 220,000 barrels per day by December 1987. The actual and projected declines are due mainly to falling production rates in the Lower 48 States. Alaskan crude oil production increased by 40,000 barrels per day from 1985 to 1986 and, due to increased production from the Lisburne reservoir of Prudhoe Bay, is projected to grow by another 10,000 barrels per day in 1987.

Declines in domestic oil production to date have been due primarily to lengthened shut-in periods for wells undergoing standard maintenance, reduced flows from wells with deferred maintenance, and reduced additions of new reserves through exploration and development. Losses due to early abandonment were small in 1986 and have been held down because some States, including Texas and Oklahoma, have extended the time that a well can be shut in before it is required to be plugged and abandoned. Also, the U.S. Department of the Interior has allowed operators to shut in stripper wells (wells producing less than 10 barrels per day on average) on Federal leases indefinitely without losing their leases.

The number of rotary rigs in operation (an important index of exploration and development activity) has rebounded somewhat from the low of 686 rigs reported during July 1986 (Hughes Rig Count, reprinted in EIA's *Monthly Energy Review*). The rig count was up to an average of 963 during December, which supports

Figure 7. Changes in Sources and Uses of Petroleum Supply, 1986-1987



* Includes change in crude oil supplied as product, unaccounted for crude oil, other hydrocarbon inputs, and refinery gains.
 ** Includes change in Strategic Petroleum Reserve build rate.
 Sources: • History and Projections: Table 6.

the outlook that the biggest declines in domestic production have already occurred. As an indication of the impact of lower oil prices on the industry, however, the December count is still 987 below the corresponding 1985 level, and 847 below the average rig count during January 1986.

The second-largest component of total domestic petroleum liquids production, natural gas liquids (that is, petroleum liquids extracted from gas at natural gas processing plants), has also experienced a recent dropoff of approximately 100,000 barrels per day and was 40,000 barrels per day lower in 1986 than a year earlier. The forecast for 1987 remains 90,000 barrels per day below the average 1986 level. The 1986 decline occurred during a period of only modest decline in natural gas production (see "Natural Gas," page 24) and reflects a lower extraction rate for these liquids. Increased competition from very low-priced LPG imports (excluding ethane) in 1986 apparently has had an adverse effect on the economics of domestic liquids extraction.

With total domestic petroleum production decreasing from 1986 to 1987, and with total petroleum consumption increasing during the same period, net petroleum imports are projected to increase by 470,000 barrels per day to help fill the resulting gap between supply and demand. This increase is expected to come mainly in the form of net imports of crude oil, as opposed to refined products. From 1985 to 1986, when net petroleum imports increased by 1 million barrels per day, net product imports increased by only 30,000 barrels per day, with the remaining increase of 970,000 barrels per day coming from net crude oil imports. This pattern is projected to continue, with the 470,000 barrel per day increase coming from a 530,000 barrel per day increase of net crude imports, the difference being a decrease in net product imports.

The projected increase in net crude oil rather than product imports is based in large part on the fact that the domestic oil refining industry appears to have benefited more from lower oil prices than have its foreign competitors. As one of the most energy-intensive economic activities, oil refineries both here and abroad have experienced greatly reduced operating costs (in addition to raw material costs) with the fall in oil prices. However, because of their relatively greater investment in the especially energy-intensive, light-product processing capabilities needed to service the transportation-oriented U.S. petroleum market, U.S. refiners may have gained an additional cost advantage in the production of gasoline, distillate fuel oil, and jet fuel.

Investments to upgrade domestic processing capabilities in recent years have also placed U.S. refiners in a strong position to take advantage of big changes in the relative availability of different types of crude oil since the start of 1986. The increasing flexibility of domestic

refineries is best illustrated by the recent divergent trends in oil prices and the average quality of crude oils purchased. World oil prices (average FOB) fell from \$27.10 on January 1, 1986, to \$16.24 on January 1, 1987, reducing the spread of oil prices from heavy to light. At the same time, the average American Petroleum Institute (API) gravity for crude oil input to distillation units decreased, from 32.46 for 1985 to 32.34 for the first 10 months of 1986, while the average sulfur content (percent by weight) of refinery crude oil inputs increased from 0.91 for 1985 to 0.96 for the first 10 months of 1986 (*Petroleum Supply Monthly*, Table 13). (A lower API gravity indicates a heavier oil.) As a result, refineries must increasingly treat this new crude oil mix with hydrogen to remove sulfur, and must use downstream processes more intensively to achieve the required high yield of the lighter transportation fuels. This willingness to run heavier crude oils represents the general orientation of U.S. refiners toward getting as much light product (especially motor gasoline) from a barrel of crude oil as possible and indicates that, since motor gasoline yields are not declining as heavier crude oils are run, refiners are finding ways to run the heavier petroleum fractions in downstream processors, such as catalytic crackers and hydrotreaters. Crude oil inputs to refineries in 1987 are projected to increase slightly (50,000 barrels per day) over the 1986 level.

The remainder of the 1987 increase in product supplied is expected to be met by a product stock drawdown of 90,000 barrels per day, consisting mostly of LPG and heavier petroleum products. Distillate stocks at the beginning of the first quarter of 1987, traditionally a period of stock drawdowns, were at 156 million barrels, or 49 days of supply, compared to 144 million barrels and 44 days at the end of 1985 (Table 10 on page 37). With refinery runs of crude oil in the first quarter of 1987 projected to be 290,000 barrels per day greater than in the first quarter of 1986, there will apparently be no problems keeping enough stocks on hand until the end of the heating season, even accounting for the possibility of reduced net imports of distillate fuel oil from Europe this winter as a result of the record cold temperatures in Europe in January 1987. Distillate stocks are projected to end the first quarter of 1987 at 103 million barrels and to finish the year at 152 million barrels, representing 38 and 46 days of supply, respectively. Both projected closing first-quarter figures are above the year-earlier levels of 99 million barrels and 36 days of supply.

Because distillate stocks are sufficiently high at the beginning of 1987, refinery production of distillate fuel oil for the winter can be lower than a year earlier. This means that more motor gasoline can be produced domestically in the first quarter of 1987 than was produced a year earlier, keeping motor gasoline stocks only slightly above early 1986 levels throughout the quarter. Finished gasoline stocks are projected to end the first quarter at 191 million barrels and then to remain essentially flat through the summer driving season.

Spurred by a buildup of 121 million barrels in the second and third quarters of 1986, total primary petroleum stocks ended the year at 1,086 million barrels and 67 days of supply. This represents an increase of 61 million barrels and 3 days over the closing 1985 level. The closing 1987 total primary stock level is projected to be 1,050 million barrels, or 65 days of supply. The Strategic Petroleum Reserve (SPR) inventory, cur-

rently over 511 million barrels, is assumed to be filled at a rate of 94,000 barrels per day during the first quarter of 1987, 76,000 barrels per day during the second quarter, 65,000 barrels per day during the third quarter, and 35,000 barrels per day thereafter. At these rates, total crude oil in the SPR will reach 536 million barrels by the end of 1987 and 542 million barrels by the end of June 1988.

EIA Revises 1986 Domestic Crude Oil Production Estimates

The Energy Information Administration (EIA) has revised its preliminary domestic crude oil production estimates for calendar year 1986 sharply downward. Compared with figures presented in EIA reports published through the end of 1986, the revised national production level for December 1986 is 363,000 barrels per day lower, and the average for the whole year is 129,000 barrels per day lower than previously reported. On this basis, from December 1985 through December 1986, it is now estimated that total domestic oil production declined by 682,000 barrels per day. Oil supply forecasts presented in this *Outlook* are in line with these revised estimates.

Because of reporting lags of several months, monthly oil production estimates are normally derived as "forecasts," reflecting the most recently available State-level production data as well as interim trends in oil prices and other relevant information on oil industry activities. These preliminary monthly estimates are prepared quarterly in conjunction with the short-term oil supply forecasts for the *Outlook* and are presented in EIA's *Weekly Petroleum Status Report (WPSR)*, *Petroleum Supply Monthly (PSM)*, and *Monthly Energy Review (MER)*. Standard practice has been to report the preliminary monthly figures until all final production data for the entire year become available. A single revision for the year is then presented in EIA's *Petroleum Supply Annual* (published each June for data covering the preceding year) and in subsequent issues of the *WPSR*, *PSM*, and *MER*.

The unscheduled revision of EIA's preliminary 1986 oil production estimates in January 1987 was necessitated by a sharp drop in reported production levels, starting in June 1986, and by continued low oil prices throughout 1986, both of which contributed to a significant overestimation for the last 7 months of the year. The forecast procedure for the first 5 months, however, yielded production estimates that were too low, moderating the average downward adjustment made for the entire year. Revised estimates reflect actual preliminary production levels reported through September 1986, the last month for which data from most States are currently available.

The original and revised 1986 crude oil production estimates are as follows (in million barrels per day):

1986	Original Estimate	Revised Estimate	Change
1st Quarter	8.94	9.10	0.16
2nd Quarter	8.80	8.76	-0.04
3rd Quarter	8.71	8.45	-0.26
4th Quarter	8.74	8.37	-0.37
Year	8.80	8.67	-0.13

Impact of the 1986 Tax Reform Act on the Petroleum Industry

The Tax Reform Act of 1986, signed by the President in October, was designed to have a neutral effect on total tax revenues collected. On average, however, changes in the tax law will have the effect of shifting the tax burden from individual taxpayers to business taxpayers, and from the middle and lower income groups to higher income groups. Further changes in the relative tax burden on individual businesses will vary, depending upon such factors as the type of business, its size and capital structure, and to what extent its operations are focused on domestic or international activities.

Major elements of the new tax bill that will affect the net tax liability for energy businesses are as follows. The bill:

- Lowers the *tax rate* on corporate income
- Lengthens the *time period for depreciation* of most capital items
- Repeals the *investment tax credit* for new capital purchases
- Restricts the ability of multinational businesses to use *foreign tax credits* or interest and research and development expenses to reduce U.S. tax liabilities
- Establishes an alternative *minimum tax payment*
- Taxes *capital gains* at the higher regular income rate
- Restricts the ability to use losses from one business activity to offset positive earnings from other, unrelated activities.

Minor provisions related to energy in the new law include: a movement of the collection point for gasoline excise taxes from the wholesale distributor to the bulk terminal operator; a reduction in the excise tax exemption for motor fuels that are at least 15 percent alcohol (the full exemption for 10-percent alcohol blends is retained); and an extension of business tax credits for the use of innovative energy sources (residential energy credits are discontinued).

Except for the lower corporate rate, all these changes will raise overall business tax liabilities. Over half the increase in business taxes is expected to be attributable to the lengthened depreciation schedules and the repeal of the investment tax credit.

For the petroleum industry, the tax bill retains in only slightly modified form key provisions of the previous law that granted favorable tax treatment for domestic oil and gas exploration, development, and production. For example, the depletion allowance on the value of reserves owned by independent producers is still in place. The percentage of intangible drilling costs that may be expensed (written off in the year incurred) has been reduced, but only from 80 percent to 70 percent, and the balance may be amortized over a short, 5-year period. The industry also retained the benefit of allowing investors with a working interest in an oil and gas partnership to apply deductions such as intangible drilling costs against income from other sources. (The ability to use such passive losses on one investment to offset income on unrelated activities has been curtailed by the new tax law for other types of investors.)

(continued on following page)

The new law penalizes energy businesses doing work abroad. Most significantly, the law revises a complex system of tax credits that has allowed companies producing oil in foreign countries to write off much of their payments to those countries. To the extent that royalty payments to foreign governments are treated like foreign taxes, producers had received an important tax benefit not available to their domestic counterparts (where royalty payments are not deductible). A number of other changes will have the effect of further increasing tax liabilities for multinationals. For example, the new, consolidated treatment of interest and research and development expenditures by U.S.-based multinational corporations effectively restricts those firms from using losses on one foreign subsidiary to offset profits from another. (Foreign-based multinationals doing business in the United States would not face this restriction.) Also, U.S. petroleum firms with foreign tanker operations will have to pay more taxes on their overseas shipping income as well as a percentage of their gross U.S.-source shipping income, now defined as 50 percent of the revenues from any voyage with a U.S. leg. Finally, for U.S. companies producing oil abroad, intangible drilling expenses and exploration and development costs will now have to be written off over 10 years or under some cost depletion system (although dry hole costs may still be expensed).

An important industry concern, in addition to the direct effects of the new tax law on company cash flow, is how changes in the law will affect the industry's ability to attract capital. The view has been expressed by many trade analysts that lower personal and corporate income tax rates, the elimination or moderation of various deductions and investment incentives (such as writeoffs for passive losses), and the creation of a minimum tax payment might all combine to stem the flow of capital from investors outside the industry. For major oil firms, which rely largely on internal sources of financing, income from their processing, distribution, and marketing activities can act to compensate for tax-related losses from oil and gas leases. But, for many independent oil and gas producers, so goes the argument, the loss of external financing could be serious. Although this concern is not without merit, this is a simplification that does not provide a complete answer to the financing question. If projects have economic merit under the old tax law that is based on the value of the energy resource, they are not likely to be lost under the new tax law. Because many of their previous tax advantages have been retained, a counterargument holds that the attractiveness of domestic oil and gas investments might increase relative to other economic activities under the new law. A more serious consequence for petroleum industry investment than tax changes was the precipitous fall in oil and gas prices in 1986.

Projections for Other Major Energy Sources

Natural Gas

What appears to have been one of the worst years for the natural gas industry is now over. The volume of gas sales to industrial customers in 1986 may have been at its lowest level since 1964. Also, the relatively mild weather in the last quarter of the year dampened the response of residential and commercial demand to falling gas prices. Heating degree-days (weighted by gas space-heating customers) were 7 percent lower in the fourth quarter of 1986 than a year earlier. The price of crude oil, which had greatly increased the competitive pressure on gas suppliers, finally started to move upward in the latter part of 1986 and is projected to stay around the \$17 per barrel range in 1987. In particular, higher crude oil prices improve the ability of natural gas producers to compete with residual fuel oil in the industrial and electric utility markets.

Declining demand, inflexible pricing, and excess production capacity have plagued the natural gas industry in recent years. Although the gas "bubble" still exists, and is expected to persist until at least the end of 1988, increased flexibility of natural gas pricing resulting from Federal Energy Regulatory Commission (FERC) Orders 436 and 451 should enable natural gas producers to become more competitive in future years.

In 1987, total disposition of natural gas is projected to rise to 17.1 trillion cubic feet, an increase of approximately 0.4 trillion cubic feet from the 1986 level (Table 14 on page 41). Demand for natural gas in the electric utility sector, however, is projected to decline from 2.6 trillion cubic feet in 1986 to 2.4 trillion cubic feet in 1987. This anticipated decline is due mainly to the additional nuclear-powered and coal-fired plant capacity coming online this year. Nonutility demand for natural gas is projected to increase from 13.7 trillion cubic feet in 1986 to 14.2 trillion cubic feet in 1987. The expected rise in crude oil prices is the key factor responsible for the higher demand for nonutility gas, particularly with respect to industrial users with fuel-switching capabilities. In addition, higher nonutility demand can also be attributed to growth in the overall economy.

Domestic natural gas production is projected to increase slightly, from 15.9 trillion cubic feet in 1986 to 16.1 trillion cubic feet in 1987, in response to the in-

crease in total demand for natural gas. End-of-year underground storage levels are expected to remain fairly constant.

Net imports of natural gas are projected to increase from 0.64 trillion cubic feet in 1986 to 0.89 trillion cubic feet in 1987, approximately equal to the 1985 level. The forecast reflects the assumption that Canada will continue to adopt competitive free-market principles with regard to U.S. export arrangements. However, there is considerable uncertainty associated with the import forecast because of uncertainties about future oil prices, future demand levels for natural gas, and the impact of the FERC decision prohibiting Canadian natural gas producers from including fixed costs in the demand charges for exports to the United States (the "as-billed" treatment of Canadian gas costs in U.S. pipeline tariffs). Nevertheless, as deregulation of the Canadian natural gas industry proceeds, competitively priced gas has the potential to increase its share in U.S. markets. In particular, accessible markets in California and the Pacific Northwest may experience an influx of Canadian supplies in the near future.

Continued deregulation of the domestic natural gas market, coupled with other new developments in the gas industry, may brighten the outlook for the industry. For example, the industrial component of nonutility demand could grow if the Environmental Protection Agency (EPA) implements new particulate, sulfur dioxide, and nitrogen oxide (NOX) standards. New EPA limits on emissions, which are more stringent for coal- and oil-burning units than for gas-burning units, could increase the use of natural gas in the industrial sector. The potential impact of these new EPA emission standards on industrial use of natural gas is not included in the forecasts presented in this *Outlook*.

Another potentially important development in the natural gas industry in the near future relates to the use of natural gas underground storage. Natural gas production capacity and underground storage capacity are both related closely to the ability of gas producers to increase their market share. To date, seasonal patterns in the level of natural gas underground storage have mainly reflected seasonal demand patterns in established markets: the amount of natural gas in underground storage increases as the demand for natural gas decreases, and vice versa. Underground natural gas storage can play an important new role in a deregulated and more competitive market. As natural gas demand is expected to pick up in the late 1980's, the importance of underground storage is expected to grow as the gas industry becomes more market oriented and more sensitive to expected gas price trends, and as underground storage is used to extend sales of natural gas beyond production capability during periods of peak demand.

Coal

Total domestic coal consumption is projected to increase by 2 percent in 1987, followed by an additional 1-percent increase during the first half of 1988 (Figure 8 on page 26 and Table 15 on page 42). The forecast for total coal demand closely follows the anticipated growth pattern for electric utility coal consumption. Coking coal use is projected to continue to decline through 1987, while retail and general industry coal consumption is projected to grow by about 2 percent.

Electric utility coal consumption dropped by 8 million tons in 1986, corresponding to less than 1 percent growth in total electric generation and increased use of nuclear and hydroelectric generation. In addition, some switching from coal to oil is reported to have occurred. Utilization rates for coal-fired plant capacity dropped to 52 percent on average for the year.⁷

In 1987, electric utility coal consumption is projected to increase by 15 million tons, given the projected 2-percent increase in total electricity generation between 1986 and 1987. Coal's share of total generation is projected to decline slightly over the forecast period, however. With nuclear power additions accommodating most of the increase in total generation requirements, the coal share is projected to decline from an average 56 percent in 1986 to 54 percent by mid-1988. Further switching from coal to oil is not expected during the forecast period, due to the anticipated increase in oil prices.

Consumption of coking coal is expected to decline by 1 million tons in 1987, following a decrease of 4 million tons in 1986. This projection reflects the assumption of little growth in raw steel output, combined with the long-term trend toward less coke-intensive steelmaking techniques. Coking coal use is projected to remain constant between 1987 and the first half of 1988, corresponding to an assumed annual growth rate of 2 percent in raw steel output. The official end to the United Steelworkers strike against USX (formerly United States Steel) on January 31, 1987, is not expected to have a significant impact on coking coal consumption in 1987, given the vast amount of overcapacity currently plaguing the steel industry.

Retail and general industry coal demand, which is defined to include industrial, residential, commercial, and synthetic fuels use, is projected to grow by 2 percent

in 1987. Industrial coal use, which accounts for approximately 90 percent of this category, is projected to rise along with the anticipated growth in manufacturing output. Little change is projected for residential and commercial coal use.

After dropping by 7 million tons between 1985 and 1986, coal exports are projected to remain essentially level in 1987 and 1988. Projected economic expansion in Europe and elsewhere, combined with the recent devaluation of the dollar, should have a positive impact on coal exports. These factors are likely to be offset, however, by continued reductions in Canadian steam coal requirements and expanded competition from Colombia.

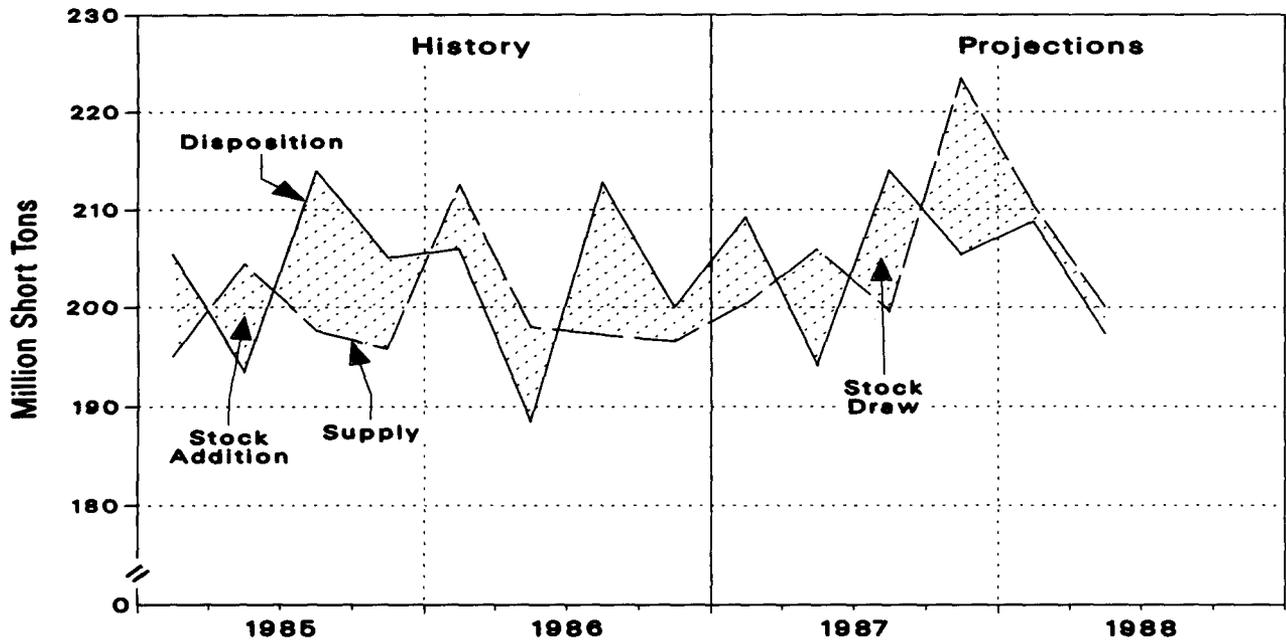
Electric Power

Total electricity generation is projected to increase by more than 2 percent in 1987, after a surprisingly low estimated growth rate of less than 1 percent in 1986 (Table 16 on page 43). The low growth rate in 1986 is attributed primarily to two factors: continued sluggish growth in electricity sales to the industrial sector, a situation that is likely to persist in 1987 and beyond; and warmer-than-normal weather in the winter quarters of 1986, reducing electricity consumption in the increasingly important residential and commercial sectors below what it would have been with normal weather. Higher growth in 1987 is projected primarily on the strength of increased consumption in those two sectors, due to an anticipated return to normal cold weather patterns, slightly lower real electricity prices, and moderate improvements in real disposable personal income. Offsetting these expected gains, however, is a continued sluggishness of sales projected for the industrial sector, due to a long-term shift in the composition of industrial output away from electricity-consuming industries.

Significant gains in nuclear generation continue to be expected for 1987, as additional capacity from new nuclear units comes online. Nuclear generation is estimated to have risen by 7 percent in 1986, the smallest percentage increase in 3 years. In 1987, nuclear generation is expected to increase by almost 12 percent (Figure 9 on page 26) with the addition of nearly 9 gigawatts of capacity from the expected operation of 8 new units:

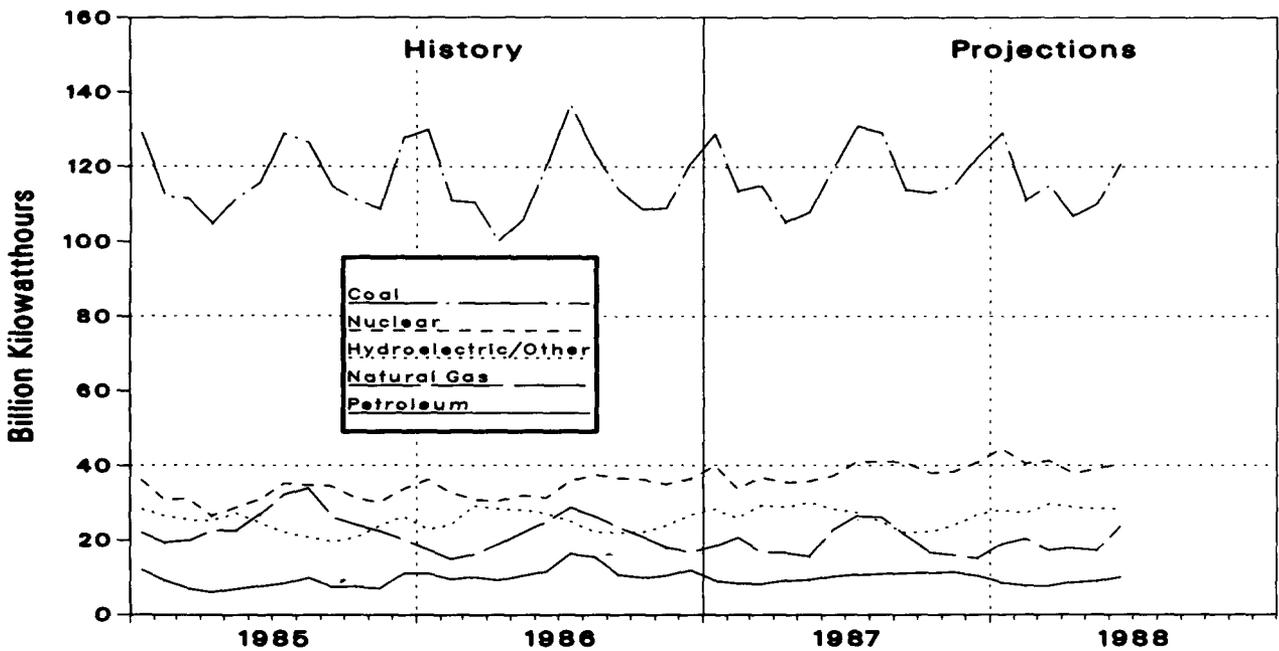
⁷Electric plant utilization is defined here as monthly generation (kilowatthours) divided by the product of nameplate capacity (kilowatts) and the number of hours in the month. The utilization figures are based on monthly capacity numbers derived from the same data source used in Energy Information Administration, *Inventory of Power Plants in the United States 1985*, DOE/EIA-0095(85) (Washington, DC, 1986).

Figure 8. Coal Supply and Disposition



Sources: • History: Energy Information Administration, *Quarterly Coal Report*, DOE/EIA-0121(86/30) (Washington, DC, 1986). • Projections: Table 16.

Figure 9. Electricity Generation by Fuel Source



Sources: • History: Energy Information Administration, *Electric Power Monthly*, DOE/EIA-0035(86/11) (Washington, DC, 1986). • Projections: Table 16.

Braidwood 1, Byron 2, Clinton 1, Harris 1 (already in operation), Nine Mile Point 2, Palo Verde 3, Seabrook 1, and Vogtle 1. A total of 108 nuclear units are expected to be operable in the United States by the end of 1987.

Coal-fired generation is expected to grow only modestly in 1987, after a slight decline in 1986. Coal use declined in 1986 for several reasons: the relatively low growth in overall generation, the dramatic increase in oil generation (an estimated 36 percent over 1985), and increased nuclear capacity. Approximately 2 gigawatts of additional coal capacity are expected to come online in 1987. However, increased nuclear and hydroelectric generation are expected to allow only modest growth in coal generation.

Oil-fired generation, estimated at 137 billion kilowatthours, was at its highest level in 3 years in 1986. This increase was due primarily to sharply lower prices of oil to electric utilities, falling below those of gas in many parts of the country. Due partly to higher prices, but mainly to increased nuclear and coal-fired capacity, oil-fired generation is expected to fall by about 12 percent in 1987, to 120 billion kilowatthours. The level of natural-gas-fired generation, having fallen sharply in 1986, is expected to continue its decline, although not as sharply, in 1987 in response to the increase in hydroelectric generation.

Hydroelectric generation is expected to increase to 307 billion kilowatthours in 1987, an increase of 5 percent over the estimated 1986 level of 291 billion kilowatthours. Hydroelectric generation in 1986 was below normal levels mainly because of lower generation in the southeastern United States.

Electricity imports are expected to reach a net level of 45 billion kilowatthours by the end of 1987, a slight increase over the estimated 1986 level of 44 billion kilowatthours. Electricity imports to the United States come mainly from Canada, with a small contribution from Mexico to California and the southwestern part of the country. The 1987 increase stems from assumed full-service operation of the Phase I transmission facilities between Hydro Quebec and New England, which opened on October 1, 1986, as well as increased transmissions over existing lines.

Summary of Aggregate Energy Trends

Gross energy consumption (including energy consumed in refining crude oil and in generating and transmitting electricity) is projected to increase by about 2 percent from 1986 to 1987, to 75.6 quadrillion Btu (Table 17 on page 44). Growth in energy consumption is expected to be fairly evenly distributed across utility and nonutility uses.

Nonutility use of energy, which accounts for almost 65 percent of total energy use and 95 percent of total petroleum use in this country, is projected to increase by about 2 percent from 1986 to 1987. Nonutility use of natural gas, stimulated by increasingly competitive gas prices in the second half of 1986, is projected to increase by 4 percent. Total consumption of energy by electric utilities continues to be dominated by coal use, which is projected to grow by 2 percent from 1986 to 1987. The pattern of change in utility consumption of other energy forms, however, is more varied. Over this period, total utility use of petroleum and natural gas is projected to decline by about 8 percent, offset by increases in nuclear-powered and hydroelectric generation.

Total energy requirements are projected to be met increasingly from imported sources. As a result of the accelerated decline in domestic crude oil production in the second half of 1986, oil production is projected to decline by more than 5 percent on average from 1986 to 1987. Compensating for this decline, net imports of crude oil are projected to increase by 13 percent. The contribution from other major domestic sources of energy is expected to grow over the next year, with natural gas production increasing by about 1 percent, and total coal-fired and nuclear-powered generation increasing by 4 percent.

The ratio of gross energy consumption to real GNP, a valuable indicator of trends in energy conservation, is projected to decrease from 20.1 thousand Btu per 1982 dollar of GNP in 1986 to 20.0 thousand in 1987. This change continues the declining trend of the past few years.

Conversion Factors

Product	Unit	Heat Content (million Btu per unit)
Heat Content of Fuels		
Coal		
Production	Short ton	21.874
Consumption	Short ton	21.370
Coke Plants	Short ton	26.800
Industrial and Retail	Short ton	22.111
Electric Utilities	Short ton	20.959
Imports	Short ton	25.000
Exports	Short ton	26.307
Coal Coke	Short ton	24.800
Crude Oil		
Production	Barrel	5.800
Imports	Barrel	5.832
Petroleum Products		
Consumption	Barrel	5.387
Motor Gasoline	Barrel	5.253
Jet Fuel	Barrel	5.615
Distillate Fuel Oil	Barrel	5.825
Residual Fuel Oil	Barrel	6.287
LPG (excluding ethane)	Barrel	3.895
Ethane	Barrel	3.082
Unfinished Oils	Barrel	5.825
Imports	Barrel	5.572
Exports	Barrel	5.819
Natural Gas Plant Liquids		
Production	Barrel	3.805
Natural Gas		
Production, Dry	Cubic foot	1,033
Consumption	Cubic foot	1,033
Non-electric Utilities	Cubic foot	1,032
Electric Utilities	Cubic foot	1,038
Imports	Cubic foot	1,002
Exports	Cubic foot	1,011

Component	Heat Rate (Btu per kilowatthour)
Heat Rates for Electricity	
Plant Generation Efficiency	
Coal	10,372
Petroleum	
Distillate Fuel Oil	12,091
Residual Fuel Oil	10,786
Natural Gas	10,823
Nuclear Energy	10,843
Hydropower	10,211
Geothermal and Other Energy	21,303
Electricity Consumption	3,412

Table 2. International Petroleum Balance
(Million Barrels per Day, Except Closing Stocks)

	1986				1987				1988		Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	1985	1986	1987
Supply*													
Production													
U.S. (50 States)	11.4	10.9	10.6	<i>10.5</i>	<i>10.5</i>	<i>10.3</i>	<i>10.2</i>	<i>10.3</i>	<i>10.3</i>	<i>10.1</i>	11.2	10.9	10.3
OPEC	18.6	19.9	20.9	<i>18.7</i>	<i>17.9</i>	<i>18.3</i>	<i>20.2</i>	<i>20.3</i>	<i>20.8</i>	<i>19.4</i>	17.2	19.5	19.2
Other Non-OPEC	15.6	15.3	15.9	<i>15.9</i>	<i>15.9</i>	<i>15.7</i>	<i>16.0</i>	<i>16.1</i>	<i>16.1</i>	<i>15.9</i>	15.5	15.7	15.9
Total Market Economies	45.6	46.1	47.3	<i>45.1</i>	<i>44.3</i>	<i>44.4</i>	<i>46.5</i>	<i>46.6</i>	<i>47.2</i>	<i>45.4</i>	43.9	46.1	45.5
Net Communist Exports	1.4	1.7	1.9	<i>1.8</i>	<i>1.3</i>	<i>1.6</i>	<i>1.8</i>	<i>1.7</i>	<i>1.3</i>	<i>1.6</i>	1.8	1.7	1.6
Total Supply	47.0	47.8	49.2	<i>46.9</i>	<i>45.6</i>	<i>46.0</i>	<i>48.3</i>	<i>48.3</i>	<i>48.5</i>	<i>47.0</i>	45.7	47.8	47.1
Net Stock Withdrawals or Additions (-)													
U.S. (50 States excl. SPR) .....	.4	-5	-8	<i>.3</i>	<i>.8</i>	<i>-3</i>	<i>-3</i>	<i>.2</i>	<i>.5</i>	<i>-3</i>	.2	-2	.1
U.S. SPR .....	.0	-1	-1	<i>-1</i>	<i>-1</i>	<i>-1</i>	<i>-1</i>	<i>.0</i>	<i>.0</i>	<i>.0</i>	-1	.0	-1
Other Market Economies .....	.6	-5	-1.4	<i>.6</i>	<i>2.7</i>	<i>.5</i>	<i>-4</i>	<i>.6</i>	<i>.7</i>	<i>.0</i>	.2	-2	.9
Total Stock Withdrawals	1.0	-1.1	-2.2	<i>.9</i>	<i>3.4</i>	<i>.2</i>	<i>-8</i>	<i>.8</i>	<i>1.2</i>	<i>-4</i>	.3	-4	.9
Product Supplied													
U.S. (50 States)	16.1	15.9	16.2	<i>16.4</i>	<i>16.3</i>	<i>16.1</i>	<i>16.2</i>	<i>16.5</i>	<i>16.2</i>	<i>16.1</i>	15.7	16.1	16.3
U.S. Territories .....	.2	.2	.2	<i>.3</i>	.3	.3	.3	.3	.3	.3	.3	.2	.3
Japan	5.0	3.8	4.0	<i>4.6</i>	<i>5.0</i>	<i>3.9</i>	<i>4.1</i>	<i>4.6</i>	<i>5.1</i>	<i>3.9</i>	4.3	4.3	4.4
OECD Europe	12.5	11.8	11.9	<i>11.8</i>	<i>12.7</i>	<i>11.2</i>	<i>12.0</i>	<i>12.6</i>	<i>12.9</i>	<i>11.3</i>	11.7	12.0	12.1
Other Market Economies	14.5	14.6	14.7	<i>14.9</i>	<i>14.9</i>	<i>14.9</i>	<i>14.9</i>	<i>15.2</i>	<i>15.2</i>	<i>15.1</i>	14.4	14.7	15.0
Total Market Economies	48.3	46.3	47.0	<i>47.9</i>	<i>49.1</i>	<i>46.3</i>	<i>47.6</i>	<i>49.3</i>	<i>49.8</i>	<i>46.7</i>	46.4	47.4	48.1
Statistical Discrepancy .....	.3	-4	.0	<i>.1</i>	.1	.1	.1	.1	.1	.1	.5	.0	.1
Closing Stocks (billion barrels)													
	4.7	4.8	5.0	<i>4.9</i>	<i>4.6</i>	<i>4.6</i>	<i>4.7</i>	<i>4.6</i>	<i>4.5</i>	<i>4.5</i>	4.8	4.9	4.6

* 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.

SPR: Strategic Petroleum Reserve

Notes: Minor discrepancies with other published EIA historical data are due to rounding. Historical values are printed in **boldface**, forecasts in *italics*.

Sources: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(86/10); and *International Energy Annual 1985*, DOE/EIA-0219(85); Organization for Economic Cooperation and Development, *Quarterly Oil Statistics, Third Quarter 1986*.

Table printed at 1013, February 12, 1987

Table 3. International Economic Growth
(Percent Change from Previous Period)

	Annual Average 1970-1984	1985	1986	1987
OECD Total ^a	2.9	2.9	<i>2.5</i>	<i>2.7</i>
United States ^b	3.0	2.7	<i>2.5</i>	<i>2.6</i>
Western Europe	2.4	2.4	<i>2.5</i>	<i>2.5</i>
Japan	4.6	4.6	<i>2.5</i>	<i>3.0</i>
Other OECD ^c	3.3	4.0	<i>2.4</i>	<i>2.6</i>

^a Weighted average of growth in gross national product for the United States and growth in gross domestic product for the other countries of the Organization for Economic Cooperation and Development (OECD).

^b Gross national product.

^c Canada, Australia, and New Zealand.

Note: Historical values are printed in **boldface**, forecasts in *italics*.

Sources: Historical data: Organization for Economic Cooperation and Development, *Main Economic Indicators*, September 1986. Forecasts: Data Resources, Inc., United States Forecast, CONTROL286; Wharton Economic Forecasting Associates, *World Economic Outlook* December 1986.

Table printed at 1013, February 12, 1987

Table 4. Macroeconomic, Price, and Weather Data Assumptions for Low, Base, and High World Oil Price Cases

Assumptions	1986				World Oil Price Case	1987				1988		Year		
	1st	2nd	3rd	4th		1st	2nd	3rd	4th	1st	2nd	1985	1986	1987
Macroeconomic^a														
Real Gross National Product (billion 1982 dollars)	3,656	3,661	3,686	3,702	Low	<i>3,725</i>	<i>3,755</i>	<i>3,793</i>	<i>3,827</i>	<i>3,872</i>	<i>3,907</i>	-	-	<i>3,775</i>
					Base	<i>3,726</i>	<i>3,754</i>	<i>3,789</i>	<i>3,823</i>	<i>3,865</i>	<i>3,898</i>	3,585	3,676	<i>3,773</i>
					High	<i>3,727</i>	<i>3,753</i>	<i>3,787</i>	<i>3,820</i>	<i>3,861</i>	<i>3,892</i>	-	-	<i>3,772</i>
Percent Change from Prior Year	3.1	2.6	2.3	2.2	Low	<i>1.9</i>	<i>2.6</i>	<i>2.9</i>	<i>3.4</i>	<i>3.9</i>	<i>4.0</i>	-	-	<i>2.7</i>
					Base	<i>1.9</i>	<i>2.5</i>	<i>2.8</i>	<i>3.3</i>	<i>3.7</i>	<i>3.8</i>	2.7	2.5	<i>2.6</i>
					High	<i>1.9</i>	<i>2.5</i>	<i>2.7</i>	<i>3.2</i>	<i>3.6</i>	<i>3.7</i>	-	-	<i>2.6</i>
GNP Implicit Price Deflator (index, 1982: 100)	113.5	114.0	115.0	115.3	Low	<i>116.2</i>	<i>116.9</i>	<i>117.7</i>	<i>118.6</i>	<i>119.5</i>	<i>120.5</i>	-	-	<i>117.4</i>
					Base	<i>116.2</i>	<i>117.0</i>	<i>117.9</i>	<i>118.8</i>	<i>119.8</i>	<i>120.9</i>	111.5	114.5	<i>117.5</i>
					High	<i>116.2</i>	<i>117.0</i>	<i>118.0</i>	<i>118.9</i>	<i>120.0</i>	<i>121.2</i>	-	-	<i>117.5</i>
Percent Change from Prior Year	3.0	2.6	2.9	2.2	Low	<i>2.4</i>	<i>2.5</i>	<i>2.3</i>	<i>2.9</i>	<i>2.8</i>	<i>3.1</i>	-	-	<i>2.5</i>
					Base	<i>2.4</i>	<i>2.6</i>	<i>2.5</i>	<i>3.0</i>	<i>3.1</i>	<i>3.3</i>	3.3	2.7	<i>2.6</i>
					High	<i>2.4</i>	<i>2.6</i>	<i>2.6</i>	<i>3.1</i>	<i>3.3</i>	<i>3.6</i>	-	-	<i>2.6</i>
Real Disposable Personal Income ^b (billion 1982 dollars)	2,581	2,626	2,606	2,602	Low	<i>2,644</i>	<i>2,657</i>	<i>2,668</i>	<i>2,684</i>	<i>2,716</i>	<i>2,732</i>	-	-	<i>2,663</i>
					Base	<i>2,638</i>	<i>2,647</i>	<i>2,657</i>	<i>2,673</i>	<i>2,704</i>	<i>2,719</i>	2,528	2,604	<i>2,654</i>
					High	<i>2,636</i>	<i>2,641</i>	<i>2,650</i>	<i>2,664</i>	<i>2,695</i>	<i>2,711</i>	-	-	<i>2,648</i>
Percent Change from Prior Year	3.4	2.9	3.2	2.4	Low	<i>2.4</i>	<i>1.2</i>	<i>2.4</i>	<i>3.2</i>	<i>2.7</i>	<i>2.8</i>	-	-	<i>2.3</i>
					Base	<i>2.2</i>	<i>.8</i>	<i>2.0</i>	<i>2.7</i>	<i>2.5</i>	<i>2.7</i>	2.3	3.0	<i>1.9</i>
					High	<i>2.1</i>	<i>.6</i>	<i>1.7</i>	<i>2.4</i>	<i>2.2</i>	<i>2.7</i>	-	-	<i>1.7</i>
Index of Industrial Production (Mfg.) (index, 1977: 100)	128.4	128.4	129.4	130.6	Low	<i>128.8</i>	<i>130.8</i>	<i>133.9</i>	<i>135.6</i>	<i>136.9</i>	<i>138.5</i>	-	-	<i>132.3</i>
					Base	<i>128.6</i>	<i>130.4</i>	<i>133.3</i>	<i>134.8</i>	<i>135.8</i>	<i>137.0</i>	126.4	129.2	<i>131.8</i>
					High	<i>128.6</i>	<i>130.2</i>	<i>132.9</i>	<i>134.3</i>	<i>135.1</i>	<i>136.2</i>	-	-	<i>131.5</i>
Percent Change from Prior Year	2.5	1.7	2.1	2.5	Low	<i>.3</i>	<i>1.9</i>	<i>3.5</i>	<i>3.8</i>	<i>6.3</i>	<i>5.9</i>	-	-	<i>2.4</i>
					Base	<i>.2</i>	<i>1.6</i>	<i>3.0</i>	<i>3.2</i>	<i>5.6</i>	<i>5.1</i>	2.4	2.2	<i>2.0</i>
					High	<i>.2</i>	<i>1.4</i>	<i>2.7</i>	<i>2.8</i>	<i>5.1</i>	<i>4.6</i>	-	-	<i>1.8</i>
Oil Price														
Imported Crude Oil Price ^c (U.S. dollars/barrel)	19.05	12.85	11.88	13.20	Low	<i>13.00</i>	<i>13.00</i>	<i>14.00</i>	<i>14.00</i>	<i>15.00</i>	<i>15.00</i>	-	-	<i>13.50</i>
					Base	<i>17.00</i>	<i>16.00</i>	<i>16.00</i>	<i>17.00</i>	<i>18.00</i>	<i>18.00</i>	26.99	14.20	<i>16.50</i>
					High	<i>18.00</i>	<i>18.00</i>	<i>19.00</i>	<i>19.00</i>	<i>20.00</i>	<i>20.00</i>	-	-	<i>18.50</i>
U.S. Refiners' Cost ^d (U.S. dollars/barrel)	20.11	12.98	12.18	13.20	Low	<i>13.00</i>	<i>13.00</i>	<i>14.00</i>	<i>14.00</i>	<i>15.00</i>	<i>15.00</i>	-	-	<i>13.50</i>
					Base	<i>17.00</i>	<i>16.00</i>	<i>16.00</i>	<i>17.00</i>	<i>18.00</i>	<i>18.00</i>	26.75	14.60	<i>16.50</i>
					High	<i>18.00</i>	<i>18.00</i>	<i>19.00</i>	<i>19.00</i>	<i>20.00</i>	<i>20.00</i>	-	-	<i>18.50</i>
Weather^e														
Heating Degree Days	2,209	462	100	1,642		<i>2,401</i>	<i>538</i>	<i>88</i>	<i>1,668</i>	<i>2,401</i>	<i>538</i>	4,773	4,413	<i>4,695</i>
Cooling Degree Days	33	359	749	74		<i>28</i>	<i>328</i>	<i>754</i>	<i>62</i>	<i>28</i>	<i>328</i>	1,154	1,215	<i>1,172</i>

^a Macroeconomic projections from the Data Resources, Inc., model forecast are seasonally adjusted at annual rates and modified as appropriate to the three world oil price cases.

^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 degrees Fahrenheit (calculated as the simple average of the daily minimum and maximum temperatures).

Note: Historical values are printed in **boldface**, forecasts in *italics*.

Sources: Historical data: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(86/10); Bureau of Economic Analysis, U.S. Department of Commerce, *Survey of Current Business*, December 1986; National Oceanic and Atmospheric Administration, U.S. Department of Commerce, *Monthly State, Regional, and National Heating/Cooling Degree Days Weighted by Population*; Federal Reserve System, *Statistical Release G.12.3*, January 1987. Macroeconomic projections are based on modifications to Data Resources, Inc., Forecast CONTROL1286.

Table printed at 1717, February 12, 1987

Table 5. Quarterly Energy Prices (Nominal), History and Projections

Product	1986				World Oil Price Case	1987				1988		Year		
	1st	2nd	3rd	4th		1st	2nd	3rd	4th	1st	2nd	1985	1986	1987
Petroleum														
Imported Crude Oil Price ^a (dollars per barrel)	19.05	12.85	11.88	13.20	Low	<i>13.00</i>	<i>13.00</i>	<i>14.00</i>	<i>14.00</i>	<i>15.00</i>	<i>15.00</i>	-	-	<i>13.50</i>
					Base	<i>17.00</i>	<i>16.00</i>	<i>16.00</i>	<i>17.00</i>	<i>18.00</i>	<i>18.00</i>	26.99	14.20	<i>16.50</i>
					High	<i>18.00</i>	<i>18.00</i>	<i>19.00</i>	<i>19.00</i>	<i>20.00</i>	<i>20.00</i>	-	-	<i>18.50</i>
Gasoline ^b (dollars per gallon)	1.10	.93	.87	.83	Low	<i>.86</i>	<i>.91</i>	<i>.96</i>	<i>.95</i>	<i>.92</i>	<i>.95</i>	-	-	<i>.92</i>
					Base	<i>.90</i>	<i>1.00</i>	<i>1.04</i>	<i>1.03</i>	<i>1.01</i>	<i>1.04</i>	1.20	.93	<i>.99</i>
					High	<i>.91</i>	<i>1.04</i>	<i>1.11</i>	<i>1.11</i>	<i>1.08</i>	<i>1.11</i>	-	-	<i>1.04</i>
No. 2 Diesel Oil, Retail (dollars per gallon)	1.04	.87	.80	.81	Low	<i>.84</i>	<i>.87</i>	<i>.91</i>	<i>.92</i>	<i>.91</i>	<i>.92</i>	-	-	<i>.89</i>
					Base	<i>.90</i>	<i>.95</i>	<i>.97</i>	<i>.99</i>	<i>.98</i>	<i>1.00</i>	1.15	.88	<i>.95</i>
					High	<i>.92</i>	<i>.99</i>	<i>1.04</i>	<i>1.05</i>	<i>1.04</i>	<i>1.05</i>	-	-	<i>1.00</i>
No. 2 Heating Oil, Wholesale (dollars per gallon) .....	.61	.44	.39	.42	Low	<i>.43</i>	<i>.43</i>	<i>.45</i>	<i>.47</i>	<i>.48</i>	<i>.48</i>	-	-	<i>.44</i>
					Base	<i>.51</i>	<i>.50</i>	<i>.51</i>	<i>.54</i>	<i>.56</i>	<i>.55</i>	.78	.46	<i>.52</i>
					High	<i>.54</i>	<i>.55</i>	<i>.58</i>	<i>.60</i>	<i>.61</i>	<i>.60</i>	-	-	<i>.57</i>
No. 2 Heating Oil, Retail (dollars per gallon) .....	.97	.77	.67	.70	Low	<i>.74</i>	<i>.75</i>	<i>.77</i>	<i>.82</i>	<i>.81</i>	<i>.79</i>	-	-	<i>.77</i>
					Base	<i>.81</i>	<i>.83</i>	<i>.84</i>	<i>.90</i>	<i>.89</i>	<i>.88</i>	1.05	.78	<i>.85</i>
					High	<i>.83</i>	<i>.88</i>	<i>.91</i>	<i>.97</i>	<i>.96</i>	<i>.94</i>	-	-	<i>.90</i>
No. 6 Residual Fuel Oil ^c (dollars per barrel)	19.87	13.01	11.51	13.03	Low	<i>14.00</i>	<i>13.80</i>	<i>14.80</i>	<i>15.00</i>	<i>16.00</i>	<i>16.00</i>	-	-	<i>14.40</i>
					Base	<i>15.50</i>	<i>15.90</i>	<i>16.40</i>	<i>17.60</i>	<i>16.20</i>	<i>17.10</i>	25.62	14.36	<i>16.40</i>
					High	<i>15.80</i>	<i>16.70</i>	<i>17.70</i>	<i>19.00</i>	<i>19.30</i>	<i>18.90</i>	-	-	<i>17.30</i>
Electric Utility Fuels														
Coal (dollars per million Btu)	1.61	1.62	1.56	1.55	Low	<i>1.53</i>	<i>1.53</i>	<i>1.53</i>	<i>1.54</i>	<i>1.55</i>	<i>1.55</i>	-	-	<i>1.53</i>
					Base	<i>1.55</i>	<i>1.55</i>	<i>1.56</i>	<i>1.58</i>	<i>1.60</i>	<i>1.61</i>	1.65	1.59	<i>1.56</i>
					High	<i>1.60</i>	<i>1.61</i>	<i>1.62</i>	<i>1.65</i>	<i>1.67</i>	<i>1.67</i>	-	-	<i>1.62</i>
Heavy Oil ^d (dollars per million Btu)	3.20	2.21	2.00	2.27	Low	<i>2.47</i>	<i>2.47</i>	<i>2.58</i>	<i>2.75</i>	<i>2.80</i>	<i>2.76</i>	-	-	<i>2.57</i>
					Base	<i>2.67</i>	<i>2.73</i>	<i>2.80</i>	<i>3.00</i>	<i>3.07</i>	<i>3.02</i>	4.24	2.42	<i>2.80</i>
					High	<i>2.72</i>	<i>2.86</i>	<i>3.02</i>	<i>3.22</i>	<i>3.26</i>	<i>3.20</i>	-	-	<i>2.96</i>
Natural Gas (dollars per million Btu)	2.83	2.31	2.17	2.35	Low	<i>2.30</i>	<i>2.36</i>	<i>2.48</i>	<i>2.51</i>	<i>2.38</i>	<i>2.44</i>	-	-	<i>2.41</i>
					Base	<i>2.38</i>	<i>2.45</i>	<i>2.57</i>	<i>2.60</i>	<i>2.46</i>	<i>2.62</i>	3.43	2.42	<i>2.50</i>
					High	<i>2.52</i>	<i>2.60</i>	<i>2.72</i>	<i>2.76</i>	<i>2.61</i>	<i>2.78</i>	-	-	<i>2.65</i>
Other Residential														
Natural Gas (dollars per 1,000 cu. ft.)	5.66	6.15	6.88	5.88	Low	<i>5.48</i>	<i>5.92</i>	<i>6.65</i>	<i>5.40</i>	<i>5.61</i>	<i>6.07</i>	-	-	<i>5.78</i>
					Base	<i>5.68</i>	<i>6.14</i>	<i>6.90</i>	<i>5.60</i>	<i>5.82</i>	<i>6.29</i>	6.12	5.83	<i>5.99</i>
					High	<i>5.89</i>	<i>6.37</i>	<i>7.15</i>	<i>5.81</i>	<i>6.03</i>	<i>6.52</i>	-	-	<i>6.21</i>
Electricity (cents per kilowatthour)	7.49	7.91	8.18	7.73	Low	<i>7.25</i>	<i>7.69</i>	<i>8.06</i>	<i>7.70</i>	<i>7.43</i>	<i>8.01</i>	-	-	<i>7.68</i>
					Base	<i>7.34</i>	<i>7.87</i>	<i>8.25</i>	<i>7.87</i>	<i>7.60</i>	<i>8.19</i>	7.79	7.83	<i>7.83</i>
					High	<i>7.48</i>	<i>8.03</i>	<i>8.42</i>	<i>8.04</i>	<i>7.75</i>	<i>8.36</i>	-	-	<i>7.99</i>

^a Cost of imported crude oil to U.S. refiners.

^b Average retail for all grades and services.

^c Retail residual fuel oil—average, all sulfur contents.

^d Heavy fuel oil prices include fuel oils No. 4., No. 5., and No. 6., and topped crude fuel oil prices.

Notes: Fourth quarter 1986 estimated for all fuels, except gasoline. All prices exclude taxes, except gasoline, residential natural gas, and diesel. Historical values are printed in **boldface**, forecasts in *italics*.

Sources: Historical data: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(86/10); and *Petroleum Marketing Monthly*, DOE/EIA-0380(86/10).

Table printed at 1717, February 12, 1987

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

Supply and Disposition	1986				1987				1988		Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	1985	1986	1987
Supply													
Crude Oil Supply													
Domestic Production ^a	9.10	8.76	8.45	8.37	<i>8.36</i>	<i>8.27</i>	<i>8.17</i>	<i>8.13</i>	<i>8.14</i>	<i>8.04</i>	8.97	8.67	<i>8.23</i>
Alaska	1.88	1.88	1.83	1.87	<i>1.88</i>	<i>1.89</i>	<i>1.89</i>	<i>1.89</i>	<i>1.92</i>	<i>1.92</i>	1.83	1.87	<i>1.88</i>
Lower 48	7.22	6.88	6.62	6.50	<i>6.48</i>	<i>6.39</i>	<i>6.29</i>	<i>6.25</i>	<i>6.22</i>	<i>6.12</i>	7.15	6.80	<i>6.35</i>
Net Imports (Including SPR) ^b	2.94	3.99	4.66	4.25	<i>3.91</i>	<i>4.69</i>	<i>4.82</i>	<i>4.55</i>	<i>4.14</i>	<i>4.74</i>	3.00	3.97	<i>4.50</i>
Gross Imports													
(Excluding SPR)	3.07	4.08	4.77	4.38	<i>4.01</i>	<i>4.81</i>	<i>4.94</i>	<i>4.71</i>	<i>4.30</i>	<i>4.91</i>	3.08	4.08	<i>4.62</i>
SPR Imports .....	.05	.05	.05	.04	<i>.08</i>	<i>.07</i>	<i>.05</i>	<i>.02</i>	<i>.02</i>	<i>.02</i>	.12	.05	<i>.06</i>
Exports .....	.18	.14	.15	.17	<i>.18</i>	<i>.20</i>	<i>.17</i>	<i>.19</i>	<i>.18</i>	<i>.20</i>	.20	.16	<i>.18</i>
SPR Stock Withdrawn													
or Added (-)	-.04	-.05	-.05	-.06	<i>-.09</i>	<i>-.08</i>	<i>-.06</i>	<i>-.03</i>	<i>-.03</i>	<i>-.03</i>	-.12	-.05	<i>-.07</i>
Other Stock Withdrawn													
or Added (-)	-.22	.17	-.13	.09	<i>-.01</i>	<i>-.01</i>	<i>.06</i>	<i>.01</i>	<i>-.07</i>	<i>-.01</i>	.07	-.02	<i>.01</i>
Products Supplied and Losses	-.06	-.05	-.05	-.05	<i>-.06</i>	<i>-.06</i>	<i>-.06</i>	<i>-.06</i>	<i>-.06</i>	<i>-.06</i>	-.06	-.05	<i>-.06</i>
Unaccounted-for Crude .....	.27	.18	.21	.17	<i>.16</i>	<i>.16</i>	<i>.15</i>	<i>.16</i>	<i>.17</i>	<i>.16</i>	.15	.21	<i>.16</i>
Crude Oil Input to Refineries	11.98	13.00	13.09	12.77	<i>12.27</i>	<i>12.97</i>	<i>13.09</i>	<i>12.76</i>	<i>12.28</i>	<i>12.84</i>	12.00	12.72	<i>12.77</i>
Other Supply													
NGL Production	1.88	1.57	1.52	1.53	<i>1.57</i>	<i>1.43</i>	<i>1.41</i>	<i>1.51</i>	<i>1.57</i>	<i>1.43</i>	1.61	1.57	<i>1.48</i>
Other Hydrocarbon and													
Alcohol Inputs .....	.04	.05	.06	.05	<i>.04</i>	<i>.05</i>	<i>.06</i>	<i>.05</i>	<i>.05</i>	<i>.05</i>	.06	.05	<i>.05</i>
Crude Oil Product Supplied .....	.06	.05	.05	.05	<i>.06</i>	<i>.06</i>	<i>.06</i>	<i>.06</i>	<i>.06</i>	<i>.06</i>	.06	.05	<i>.06</i>
Processing Gain .....	.55	.55	.60	.55	<i>.53</i>	<i>.56</i>	<i>.57</i>	<i>.56</i>	<i>.53</i>	<i>.56</i>	.56	.56	<i>.56</i>
Net Product Imports ^c	1.15	1.33	1.54	1.27	<i>1.05</i>	<i>1.24</i>	<i>1.43</i>	<i>1.35</i>	<i>1.19</i>	<i>1.43</i>	1.29	1.32	<i>1.27</i>
Gross Product Imports ^c	1.78	1.91	2.13	1.88	<i>1.64</i>	<i>1.79</i>	<i>1.98</i>	<i>1.96</i>	<i>1.80</i>	<i>2.00</i>	1.87	1.92	<i>1.84</i>
Product Exports .....	.63	.58	.59	.60	<i>.59</i>	<i>.55</i>	<i>.55</i>	<i>.61</i>	<i>.60</i>	<i>.57</i>	.58	.60	<i>.57</i>
Product Stock Withdrawn													
or Added (-) ^d .....	.59	-.69	-.67	.21	<i>.79</i>	<i>-.25</i>	<i>-.39</i>	<i>.20</i>	<i>.56</i>	<i>-.33</i>	.15	-.14	<i>.09</i>
Total Product Supplied,													
Domestic Use	16.06	15.86	16.18	16.44	<i>16.31</i>	<i>16.06</i>	<i>16.24</i>	<i>16.50</i>	<i>16.24</i>	<i>16.05</i>	15.73	16.13	<i>16.28</i>
Disposition													
Motor Gasoline	6.64	7.09	7.27	7.01	<i>6.67</i>	<i>7.16</i>	<i>7.13</i>	<i>6.99</i>	<i>6.63</i>	<i>7.14</i>	6.83	7.00	<i>6.99</i>
Jet Fuel	1.25	1.27	1.33	1.37	<i>1.34</i>	<i>1.30</i>	<i>1.34</i>	<i>1.35</i>	<i>1.36</i>	<i>1.32</i>	1.22	1.31	<i>1.33</i>
Distillate Fuel Oil	3.28	2.73	2.57	3.01	<i>3.20</i>	<i>2.74</i>	<i>2.68</i>	<i>3.10</i>	<i>3.27</i>	<i>2.83</i>	2.87	2.90	<i>2.93</i>
Residual Fuel Oil	1.42	1.34	1.43	1.43	<i>1.48</i>	<i>1.30</i>	<i>1.23</i>	<i>1.33</i>	<i>1.40</i>	<i>1.23</i>	1.20	1.41	<i>1.34</i>
Other Oils Supplied ^e	3.46	3.44	3.57	3.61	<i>3.61</i>	<i>3.57</i>	<i>3.86</i>	<i>3.73</i>	<i>3.59</i>	<i>3.54</i>	3.61	3.52	<i>3.69</i>
Total Product Supplied	16.06	15.86	16.18	16.43	<i>16.31</i>	<i>16.06</i>	<i>16.24</i>	<i>16.50</i>	<i>16.24</i>	<i>16.05</i>	15.73	16.13	<i>16.28</i>
Total Petroleum Net Imports	4.08	5.32	6.21	5.52	<i>4.96</i>	<i>5.92</i>	<i>6.26</i>	<i>5.90</i>	<i>5.33</i>	<i>6.17</i>	4.29	5.29	<i>5.76</i>
Closing Stocks (million barrels)													
Crude Oil (Excluding SPR) ^f	340.9	325.5	337.8	329.5	<i>330.2</i>	<i>331.4</i>	<i>325.6</i>	<i>324.4</i>	<i>330.3</i>	<i>331.6</i>	320.9	329.5	<i>324.4</i>
Total Motor Gasoline	219.9	233.4	235.1	236.2	<i>228.0</i>	<i>228.0</i>	<i>228.5</i>	<i>226.8</i>	<i>226.1</i>	<i>225.5</i>	222.8	236.2	<i>226.8</i>
Finished Motor Gasoline	185.0	197.6	196.7	197.8	<i>190.7</i>	<i>191.0</i>	<i>190.3</i>	<i>191.2</i>	<i>188.9</i>	<i>188.6</i>	190.3	197.8	<i>191.2</i>
Blending Components	34.9	35.8	38.3	38.5	<i>37.4</i>	<i>37.0</i>	<i>38.1</i>	<i>35.6</i>	<i>37.2</i>	<i>36.9</i>	32.5	38.5	<i>35.6</i>
Jet Fuel	47.4	46.2	48.7	49.9	<i>49.2</i>	<i>50.3</i>	<i>51.4</i>	<i>49.4</i>	<i>51.6</i>	<i>52.8</i>	40.5	49.9	<i>49.4</i>
Distillate Fuel Oil	99.3	108.8	152.6	155.7	<i>103.2</i>	<i>111.7</i>	<i>142.6</i>	<i>151.9</i>	<i>105.6</i>	<i>114.1</i>	143.7	155.7	<i>151.9</i>
Residual Fuel Oil	38.8	43.0	44.0	43.9	<i>40.9</i>	<i>41.9</i>	<i>44.5</i>	<i>47.8</i>	<i>41.6</i>	<i>41.9</i>	50.4	43.9	<i>47.8</i>
Other Oils ^g	245.9	282.5	295.4	270.8	<i>263.9</i>	<i>276.0</i>	<i>276.7</i>	<i>249.4</i>	<i>249.7</i>	<i>270.2</i>	247.2	270.8	<i>249.4</i>
Total Stocks (Excluding SPR)	992.1	1039.3	1113.6	1086.0	<i>1015.4</i>	<i>1039.4</i>	<i>1069.3</i>	<i>1049.7</i>	<i>1004.9</i>	<i>1036.1</i>	1025.5	1086.0	<i>1049.7</i>
Crude Oil in SPR	496.9	501.8	506.4	511.5	<i>520.0</i>	<i>526.9</i>	<i>532.9</i>	<i>536.1</i>	<i>539.3</i>	<i>542.5</i>	493.3	511.5	<i>536.1</i>
Total Stocks (Including SPR)	1489.0	1541.1	1620.0	1597.5	<i>1535.4</i>	<i>1566.3</i>	<i>1602.1</i>	<i>1585.8</i>	<i>1544.1</i>	<i>1578.6</i>	1518.8	1597.5	<i>1585.8</i>

^a Includes lease condensate.

^b Net Imports equals Gross Imports plus SPR Imports minus Exports.

^c Includes finished petroleum products, unfinished oils, gasoline blending components, and natural gas plant liquids for processing.

^d Includes an estimate of minor product stock change based on monthly data.

^e Includes crude oil product supplied, natural gas liquids, liquefied refinery gases, other liquids, and all finished petroleum products except motor gasoline, jet fuels, and distillate and residual fuel oils.

^f Includes crude oil in transit to refineries.

^g Includes stocks of all other oils such as aviation gasoline, kerosene, natural gas liquids (including ethane), aviation gasoline blending components, naphtha and other oils for petrochemical feedstock use, special naphthas, lube oils, wax, coke, asphalt, road oil, and miscellaneous oils.

SPR: Strategic Petroleum Reserve

NGL: Natural Gas Liquids

Notes: Minor discrepancies with other EIA published historical data are due to rounding. Historical values are printed in **boldface**, forecasts in *italics*.

Sources: Historical data: Energy Information Administration, *Petroleum Supply Annual 1985*, DOE/EIA-0340(85)/1; *Petroleum Supply Monthly*, DOE/EIA-0109, Jan. 1986 to Oct. 1986; *Weekly Petroleum Status Report*, DOE/EIA-0208(86-50,87-02).

Table printed at 1013, February 12, 1987

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

Supply and Disposition	1986				1987				1988		Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	1985	1986	1987
Supply													
Crude Oil Supply													
Domestic Production ^a	9.10	8.76	8.45	8.37	8.29	8.17	8.05	8.00	7.99	7.89	8.97	8.67	8.12
Alaska	1.88	1.88	1.83	1.87	1.88	1.89	1.89	1.88	1.92	1.92	1.83	1.87	1.88
Lower 48	7.22	6.88	6.62	6.50	6.40	6.28	6.16	6.11	6.07	5.97	7.15	6.80	6.24
Net Imports (Including SPR) ^b	2.94	3.99	4.66	4.25	4.35	4.89	5.03	4.79	4.39	5.00	3.00	3.97	4.77
Gross Imports													
(Excluding SPR)	3.07	4.08	4.77	4.38	4.45	5.02	5.15	4.95	4.55	5.17	3.08	4.06	4.89
SPR Imports .....	.05	.05	.05	.04	.08	.07	.05	.02	.02	.02	.12	.05	.06
Exports .....	.18	.14	.15	.17	.18	.20	.17	.19	.18	.20	.20	.16	.18
SPR Stock Withdrawn or Added (-)	-.04	-.05	-.05	-.06	-.09	-.08	-.06	-.03	-.03	-.03	-.12	-.05	-.07
Other Stock Withdrawn or Added (-)	-.22	.17	-.13	.09	-.06	-.03	.06	.02	-.08	-.01	.07	-.02	.00
Products Supplied and Losses	-.06	-.05	-.05	-.05	-.06	-.06	-.06	-.06	-.06	-.06	-.08	-.05	-.06
Unaccounted-for Crude .....	.27	.18	.21	.17	.15	.16	.14	.15	.18	.16	.15	.21	.15
Crude Oil Input to Refineries	11.98	13.00	13.09	12.77	12.56	13.05	13.16	12.86	12.39	12.94	12.00	12.72	12.91
Other Supply													
NGL Production	1.68	1.57	1.52	1.53	1.56	1.43	1.42	1.51	1.57	1.44	1.61	1.57	1.48
Other Hydrocarbon and													
Alcohol Inputs .....	.04	.05	.06	.05	.04	.05	.06	.05	.05	.05	.06	.05	.05
Crude Oil Product Supplied .....	.06	.05	.05	.05	.06	.06	.06	.06	.06	.06	.06	.05	.06
Processing Gain .....	.55	.55	.60	.55	.54	.57	.58	.57	.54	.57	.58	.58	.56
Net Product Imports ^c	1.15	1.33	1.54	1.27	.94	1.45	1.75	1.57	1.37	1.73	1.29	1.32	1.43
Gross Product Imports ^e	1.78	1.91	2.13	1.88	1.53	2.01	2.29	2.17	1.97	2.30	1.87	1.92	2.00
Product Exports .....	.63	.58	.59	.60	.59	.55	.55	.61	.60	.57	.58	.60	.57
Product Stock Withdrawn or Added (-) ^d .....	.59	-.69	-.67	.21	.74	-.26	-.43	.21	.59	-.39	.15	-.14	.06
Total Product Supplied, Domestic Use	16.06	15.86	16.18	16.44	16.45	16.36	16.59	16.84	16.57	16.41	15.73	16.13	16.56
Disposition													
Motor Gasoline	6.64	7.09	7.27	7.01	6.70	7.24	7.23	7.09	6.72	7.23	6.83	7.00	7.07
Jet Fuel	1.25	1.27	1.33	1.37	1.35	1.31	1.36	1.38	1.38	1.34	1.22	1.31	1.35
Distillate Fuel Oil	3.28	2.73	2.57	3.01	3.24	2.82	2.77	3.19	3.37	2.93	2.87	2.90	3.01
Residual Fuel Oil	1.42	1.34	1.43	1.43	1.50	1.32	1.26	1.36	1.43	1.26	1.20	1.41	1.36
Other Oils Supplied ^g	3.46	3.44	3.57	3.61	3.66	3.65	3.97	3.82	3.67	3.64	3.61	3.52	3.78
Total Product Supplied	16.06	15.86	16.18	16.43	16.45	16.36	16.59	16.84	16.57	16.41	15.73	16.13	16.56
Total Petroleum Net Imports	4.08	5.32	6.21	5.52	5.29	6.35	6.78	6.36	5.76	6.73	4.29	5.29	6.20
Stocks (million barrels)													
Crude Oil (Excluding SPR) ^f	340.9	325.5	337.8	329.5	335.2	338.3	333.0	331.1	338.2	339.1	320.9	329.5	331.1
Total Motor Gasoline	219.9	233.4	235.1	236.2	227.2	230.4	231.2	229.6	226.8	229.2	222.8	236.2	229.6
Finished Motor Gasoline	185.0	197.6	196.7	197.8	189.8	193.5	193.2	194.0	189.7	192.4	190.3	197.8	194.0
Blending Components	34.9	35.8	38.3	38.5	37.4	36.9	38.0	35.6	37.1	36.7	32.5	38.5	35.6
Jet Fuel	47.4	46.2	48.7	49.9	50.3	51.0	52.2	49.9	52.6	54.1	40.5	49.9	49.9
Distillate Fuel Oil	99.3	108.8	152.6	155.7	103.4	114.7	148.4	156.3	108.3	119.0	143.7	155.7	156.3
Residual Fuel Oil	38.8	43.0	44.0	43.9	42.1	42.4	45.3	48.2	42.7	43.2	50.4	43.9	48.2
Other Oils ^g	245.9	282.5	295.4	270.8	266.8	275.4	276.6	250.4	250.2	270.4	247.2	270.8	250.4
Total Stocks (Excluding SPR)	992.1	1039.3	1113.6	1086.0	1025.1	1052.2	1086.6	1065.6	1018.8	1054.9	1025.5	1086.0	1065.6
Crude Oil in SPR	496.9	501.8	506.4	511.5	520.0	526.9	532.9	536.1	539.3	542.5	493.3	511.5	536.1
Total Stocks (Including SPR)	1489.0	1541.1	1620.0	1597.5	1545.1	1579.1	1619.5	1601.7	1558.1	1597.4	1518.8	1597.5	1601.7

^a Includes lease condensate.

^b Net Imports equals Gross Imports plus SPR Imports minus Exports.

^c Includes finished petroleum products, unfinished oils, gasoline blending components, and natural gas plant liquids for processing.

^d Includes an estimate of minor product stock change based on monthly data.

^e Includes crude oil product supplied, natural gas liquids, liquefied refinery gases, other liquids, and all finished petroleum products except motor gasoline, jet fuels, and distillate and residual fuel oils.

^f Includes crude oil in transit to refineries.

^g Includes stocks of all other oils such as aviation gasoline, kerosene, natural gas liquids (including ethane), aviation gasoline blending components, naphtha and other oils for petrochemical feedstock use, special naphthas, lube oils, wax, coke, asphalt, road oil, and miscellaneous oils.

SPR: Strategic Petroleum Reserve

NGL: Natural Gas Liquids

Notes: Minor discrepancies with other EIA published historical data are due to rounding. Historical values are printed in **boldface**, forecasts in *italics*.

Sources: Historical data: Energy Information Administration, *Petroleum Supply Annual 1985*, DOE/EIA-0340(85)/1; *Petroleum Supply Monthly*, DOE/EIA-0109, Jan. 1986 to Oct. 1986; *Weekly Petroleum Status Report*, DOE/EIA-0208(86-50,87-02).

Table printed at 1013, February 12, 1987

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

Supply and Disposition	1986				1987				1988		Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	1985	1986	1987
Supply													
Crude Oil Supply													
Domestic Production ^a	9.10	8.76	8.45	8.37	<i>8.38</i>	<i>8.33</i>	<i>8.24</i>	<i>8.21</i>	<i>8.22</i>	<i>8.14</i>	8.97	8.67	<i>8.29</i>
Alaska	1.88	1.88	1.83	1.87	<i>1.88</i>	<i>1.89</i>	<i>1.89</i>	<i>1.89</i>	<i>1.92</i>	<i>1.92</i>	1.83	1.87	<i>1.88</i>
Lower 48	7.22	6.88	6.62	6.50	<i>6.50</i>	<i>6.44</i>	<i>6.35</i>	<i>6.32</i>	<i>6.30</i>	<i>6.22</i>	7.15	6.80	<i>6.40</i>
Net Imports (Including SPR) ^b	2.94	3.99	4.66	4.25	<i>3.74</i>	<i>4.47</i>	<i>4.59</i>	<i>4.41</i>	<i>3.94</i>	<i>4.54</i>	3.00	3.97	<i>4.31</i>
Gross Imports													
(Excluding SPR)	3.07	4.08	4.77	4.38	<i>3.84</i>	<i>4.60</i>	<i>4.70</i>	<i>4.57</i>	<i>4.10</i>	<i>4.71</i>	3.08	4.08	<i>4.43</i>
SPR Imports .....	.05	.05	.05	.04	<i>.08</i>	<i>.07</i>	<i>.05</i>	<i>.02</i>	<i>.02</i>	<i>.02</i>	.12	.05	<i>.06</i>
Exports .....	.18	.14	.15	.17	<i>.18</i>	<i>.20</i>	<i>.17</i>	<i>.19</i>	<i>.18</i>	<i>.20</i>	.20	.16	<i>.18</i>
SPR Stock Withdrawn													
or Added (-)	-.04	-.05	-.05	-.06	<i>-.09</i>	<i>-.08</i>	<i>-.06</i>	<i>-.03</i>	<i>-.03</i>	<i>-.03</i>	-.12	-.05	<i>-.07</i>
Other Stock Withdrawn													
or Added (-)	-.22	.17	-.13	.09	<i>.00</i>	<i>.00</i>	<i>.08</i>	<i>.01</i>	<i>-.07</i>	<i>-.01</i>	.07	-.02	<i>.02</i>
Products Supplied and Losses	-.06	-.05	-.05	-.05	<i>-.06</i>	<i>-.06</i>	<i>-.06</i>	<i>-.06</i>	<i>-.06</i>	<i>-.06</i>	-.06	-.05	<i>-.06</i>
Unaccounted-for Crude .....	.27	.18	.21	.17	<i>.15</i>	<i>.15</i>	<i>.15</i>	<i>.15</i>	<i>.15</i>	<i>.15</i>	.15	.21	<i>.15</i>
Crude Oil Input to Refineries	11.98	13.00	13.09	12.77	<i>12.12</i>	<i>12.81</i>	<i>12.94</i>	<i>12.68</i>	<i>12.16</i>	<i>12.73</i>	12.00	12.72	<i>12.64</i>
Other Supply													
NGL Production	1.68	1.57	1.52	1.53	<i>1.56</i>	<i>1.43</i>	<i>1.42</i>	<i>1.51</i>	<i>1.57</i>	<i>1.44</i>	1.61	1.57	<i>1.48</i>
Other Hydrocarbon and													
Alcohol Inputs .....	.04	.05	.06	.05	<i>.04</i>	<i>.05</i>	<i>.06</i>	<i>.05</i>	<i>.05</i>	<i>.05</i>	.06	.05	<i>.05</i>
Crude Oil Product Supplied .....	.06	.05	.05	.05	<i>.06</i>	<i>.06</i>	<i>.06</i>	<i>.06</i>	<i>.06</i>	<i>.06</i>	.06	.05	<i>.06</i>
Processing Gain .....	.55	.55	.60	.55	<i>.52</i>	<i>.56</i>	<i>.57</i>	<i>.56</i>	<i>.53</i>	<i>.56</i>	.58	.58	<i>.55</i>
Net Product Imports ^c	1.15	1.33	1.54	1.27	<i>1.14</i>	<i>1.28</i>	<i>1.43</i>	<i>1.29</i>	<i>1.23</i>	<i>1.39</i>	1.29	1.32	<i>1.29</i>
Gross Product Imports ^c	1.78	1.91	2.13	1.88	<i>1.73</i>	<i>1.83</i>	<i>1.97</i>	<i>1.90</i>	<i>1.83</i>	<i>1.95</i>	1.87	1.92	<i>1.86</i>
Product Exports .....	.63	.58	.59	.60	<i>.59</i>	<i>.55</i>	<i>.55</i>	<i>.61</i>	<i>.60</i>	<i>.57</i>	.58	.60	<i>.57</i>
Product Stock Withdrawn													
or Added (-) ^d .....	.59	-.69	-.67	.21	<i>.83</i>	<i>-.20</i>	<i>-.37</i>	<i>.19</i>	<i>.52</i>	<i>-.32</i>	.15	-.14	<i>.11</i>
Total Product Supplied, Domestic Use	16.06	15.86	16.18	16.44	<i>16.28</i>	<i>15.99</i>	<i>16.10</i>	<i>16.35</i>	<i>16.10</i>	<i>15.91</i>	15.73	16.13	<i>16.18</i>
Disposition													
Motor Gasoline	6.64	7.09	7.27	7.01	<i>6.67</i>	<i>7.14</i>	<i>7.09</i>	<i>6.94</i>	<i>6.59</i>	<i>7.10</i>	6.83	7.00	<i>6.96</i>
Jet Fuel	1.25	1.27	1.33	1.37	<i>1.34</i>	<i>1.29</i>	<i>1.33</i>	<i>1.34</i>	<i>1.35</i>	<i>1.31</i>	1.22	1.31	<i>1.33</i>
Distillate Fuel Oil	3.28	2.73	2.57	3.01	<i>3.18</i>	<i>2.71</i>	<i>2.64</i>	<i>3.05</i>	<i>3.23</i>	<i>2.79</i>	2.87	2.90	<i>2.90</i>
Residual Fuel Oil	1.42	1.34	1.43	1.43	<i>1.48</i>	<i>1.29</i>	<i>1.22</i>	<i>1.32</i>	<i>1.38</i>	<i>1.21</i>	1.20	1.41	<i>1.32</i>
Other Oils Supplied ^e	3.46	3.44	3.57	3.61	<i>3.61</i>	<i>3.55</i>	<i>3.83</i>	<i>3.69</i>	<i>3.56</i>	<i>3.50</i>	3.61	3.52	<i>3.67</i>
Total Product Supplied	16.06	15.86	16.18	16.43	<i>16.28</i>	<i>15.99</i>	<i>16.10</i>	<i>16.35</i>	<i>16.10</i>	<i>15.91</i>	15.73	16.13	<i>16.18</i>
Total Petroleum Net Imports	4.08	5.32	6.21	5.52	<i>4.88</i>	<i>5.75</i>	<i>6.02</i>	<i>5.70</i>	<i>5.17</i>	<i>5.92</i>	4.29	5.29	<i>5.59</i>
Stocks (million barrels)													
Crude Oil (Excluding SPR) ^f	340.9	325.5	337.8	329.5	<i>329.8</i>	<i>330.3</i>	<i>322.6</i>	<i>321.8</i>	<i>327.9</i>	<i>328.5</i>	320.9	329.5	<i>321.8</i>
Total Motor Gasoline	219.9	233.4	235.1	236.2	<i>229.2</i>	<i>225.7</i>	<i>225.4</i>	<i>224.5</i>	<i>225.9</i>	<i>222.1</i>	222.8	236.2	<i>224.5</i>
Finished Motor Gasoline	185.0	197.6	196.7	197.8	<i>191.7</i>	<i>189.7</i>	<i>189.1</i>	<i>189.9</i>	<i>189.2</i>	<i>186.9</i>	190.3	197.8	<i>189.9</i>
Blending Components	34.9	35.8	38.3	38.5	<i>37.5</i>	<i>36.0</i>	<i>36.4</i>	<i>34.6</i>	<i>36.7</i>	<i>35.2</i>	32.5	38.5	<i>34.6</i>
Jet Fuel	47.4	46.2	48.7	49.9	<i>47.6</i>	<i>47.9</i>	<i>48.7</i>	<i>47.1</i>	<i>48.4</i>	<i>49.9</i>	40.5	49.9	<i>47.1</i>
Distillate Fuel Oil	99.3	108.8	152.6	155.7	<i>104.2</i>	<i>111.5</i>	<i>140.3</i>	<i>150.3</i>	<i>105.3</i>	<i>112.7</i>	143.7	155.7	<i>150.3</i>
Residual Fuel Oil	38.8	43.0	44.0	43.9	<i>39.8</i>	<i>40.8</i>	<i>43.9</i>	<i>47.1</i>	<i>41.5</i>	<i>41.4</i>	50.4	43.9	<i>47.1</i>
Other Oils ^g	245.9	282.5	295.4	270.8	<i>260.9</i>	<i>274.2</i>	<i>275.7</i>	<i>247.3</i>	<i>248.3</i>	<i>272.0</i>	247.2	270.8	<i>247.3</i>
Total Stocks (Excluding SPR)	992.1	1039.3	1113.6	1086.0	<i>1011.5</i>	<i>1030.4</i>	<i>1056.6</i>	<i>1038.0</i>	<i>997.3</i>	<i>1026.6</i>	1025.5	1086.0	<i>1038.0</i>
Crude Oil in SPR	496.9	501.8	506.4	511.5	<i>520.0</i>	<i>526.9</i>	<i>532.9</i>	<i>536.1</i>	<i>539.3</i>	<i>542.5</i>	493.3	511.5	<i>536.1</i>
Total Stocks (Including SPR)	1489.0	1541.1	1620.0	1597.5	<i>1531.5</i>	<i>1557.3</i>	<i>1589.5</i>	<i>1574.1</i>	<i>1536.5</i>	<i>1569.0</i>	1518.8	1597.5	<i>1574.1</i>

^a Includes lease condensate.
^b Net Imports equals Gross Imports plus SPR Imports minus Exports.
^c Includes finished petroleum products, unfinished oils, gasoline blending components, and natural gas plant liquids for processing.
^d Includes an estimate of minor product stock change based on monthly data.
^e Includes crude oil product supplied, natural gas liquids, liquefied refinery gases, other liquids, and all finished petroleum products except motor gasoline, jet fuels, and distillate and residual fuel oils.
^f Includes crude oil in transit to refineries.
^g Includes stocks of all other oils such as aviation gasoline, kerosene, natural gas liquids (including ethane), aviation gasoline blending components, naphtha and other oils for petrochemical feedstock use, special naphthas, lube oils, wax, coke, asphalt, road oil, and miscellaneous oils.
SPR: Strategic Petroleum Reserve
NGL: Natural Gas Liquids

Notes: Minor discrepancies with other EIA published historical data are due to rounding. Historical values are printed in **boldface**, forecasts in *italics*.
Sources: Historical data: Energy Information Administration, *Petroleum Supply Annual 1985*, DOE/EIA-0340(85)/1; *Petroleum Supply Monthly*, DOE/EIA-0109, Jan. 1986 to Oct. 1986; *Weekly Petroleum Status Report*, DOE/EIA-0208(86-50,87-02).
Table printed at 1013, February 12, 1987

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

Supply and Disposition	1986				1987				1988		Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	1985	1986	1987
Supply													
Domestic Production ^a	6.29	6.90	6.99	6.83	<i>6.37</i>	<i>6.85</i>	<i>6.82</i>	<i>6.72</i>	<i>6.35</i>	<i>6.78</i>	6.42	6.76	<i>6.69</i>
Imports .....	.29	.33	.30	.23	<i>.23</i>	<i>.32</i>	<i>.32</i>	<i>.29</i>	<i>.26</i>	<i>.36</i>	.38	.29	<i>.29</i>
Exports .....	.00	.00	.03	.05	<i>.01</i>	<i>.01</i>	<i>.01</i>	<i>.01</i>	<i>.01</i>	<i>.01</i>	.01	.02	<i>.01</i>
Net Imports .....	.29	.33	.27	.19	<i>.23</i>	<i>.31</i>	<i>.30</i>	<i>.28</i>	<i>.25</i>	<i>.35</i>	.37	.27	<i>.28</i>
Net Withdrawals .....	.06	-.14	.01	-.01	<i>.08</i>	<i>.00</i>	<i>.01</i>	<i>-.01</i>	<i>.03</i>	<i>.00</i>	.04	-.02	<i>.02</i>
Total Primary Supply	6.64	7.09	7.27	7.01	<i>6.67</i>	<i>7.16</i>	<i>7.13</i>	<i>6.99</i>	<i>6.63</i>	<i>7.14</i>	6.83	7.01	<i>6.99</i>
Disposition													
Leaded	2.15	2.27	2.22	1.98	<i>1.83</i>	<i>1.88</i>	<i>1.78</i>	<i>1.66</i>	<i>1.62</i>	<i>1.88</i>	2.43	2.15	<i>1.79</i>
Unleaded	4.49	4.82	5.06	5.03	<i>4.84</i>	<i>5.29</i>	<i>5.34</i>	<i>5.33</i>	<i>5.00</i>	<i>5.26</i>	4.41	4.85	<i>5.20</i>
Total Product Supplied	6.64	7.09	7.27	7.01	<i>6.67</i>	<i>7.16</i>	<i>7.13</i>	<i>6.99</i>	<i>6.63</i>	<i>7.14</i>	6.83	7.00	<i>6.99</i>
Stocks													
Primary Finished Stock Levels ^b (million barrels)													
Opening	190.3	185.0	197.6	196.7	<i>197.8</i>	<i>190.7</i>	<i>191.0</i>	<i>190.3</i>	<i>191.2</i>	<i>188.9</i>	205.2	190.3	<i>197.8</i>
Closing	185.0	197.6	196.7	197.8	<i>190.7</i>	<i>191.0</i>	<i>190.3</i>	<i>191.2</i>	<i>188.9</i>	<i>188.6</i>	190.3	197.8	<i>191.2</i>

^a Refinery Production plus production at natural gas processing plants.

^b Includes stocks at natural gas processing plants. Excludes stocks of reclassified motor gasoline blending components.

Notes: Minor discrepancies with other EIA published historical data are due to rounding. Historical values are printed in **boldface**, forecasts in *italics*.

Sources: Historical data: Energy Information Administration, *Petroleum Supply Annual 1985*, DOE/EIA-0340(85)/1; *Petroleum Supply Monthly*, DOE/EIA-0109, Jan. 1986 to Oct. 1986; *Weekly Petroleum Status Report*, DOE/EIA-0208(86-50,87-02).

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

Supply and Disposition	1986				1987				1988		Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	1985	1986	1987
Supply													
Refinery Output	2.71	2.79	2.83	2.89	<i>2.59</i>	<i>2.75</i>	<i>2.83</i>	<i>3.01</i>	<i>2.66</i>	<i>2.78</i>	2.69	2.81	<i>2.79</i>
Imports .....	.22	.15	.30	.24	<i>.09</i>	<i>.13</i>	<i>.24</i>	<i>.24</i>	<i>.17</i>	<i>.19</i>	.20	.23	<i>.17</i>
Exports .....	.14	.11	.08	.08	<i>.07</i>	<i>.04</i>	<i>.05</i>	<i>.05</i>	<i>.07</i>	<i>.04</i>	.07	.10	<i>.05</i>
Net Imports .....	.08	.04	.22	.16	<i>.02</i>	<i>.09</i>	<i>.19</i>	<i>.19</i>	<i>.11</i>	<i>.15</i>	.13	.12	<i>.12</i>
Net Withdrawals .....	.49	-.11	-.48	-.03	<i>.58</i>	<i>-.09</i>	<i>-.34</i>	<i>-.10</i>	<i>.51</i>	<i>-.09</i>	.05	-.03	<i>.01</i>
Disposition													
Electric Utility Consumption .....	.04	.04	.04	.04	<i>.04</i>	<i>.05</i>	<i>.05</i>	<i>.05</i>	<i>.04</i>	<i>.04</i>	.04	.04	<i>.05</i>
Utility Stock Additions	-.01	.01	.00	.00	<i>.00</i>	<i>.00</i>	<i>.00</i>	<i>.00</i>	<i>.00</i>	<i>.00</i>	-.01	.00	<i>.00</i>
Electric Utility Shipments .....	.04	.04	.05	.04	<i>.04</i>	<i>.04</i>	<i>.05</i>	<i>.05</i>	<i>.04</i>	<i>.04</i>	.03	.04	<i>.05</i>
Nonutility Shipments	3.25	2.69	2.53	2.97	<i>3.15</i>	<i>2.70</i>	<i>2.63</i>	<i>3.05</i>	<i>3.24</i>	<i>2.79</i>	2.84	2.86	<i>2.88</i>
Total Product Supplied	3.28	2.73	2.57	3.01	<i>3.20</i>	<i>2.74</i>	<i>2.68</i>	<i>3.10</i>	<i>3.27</i>	<i>2.83</i>	2.87	2.90	<i>2.93</i>
Stocks													
Electric Utility Stock Levels (million barrels)													
Opening	16.4	15.7	16.2	16.7	<i>16.9</i>	<i>16.8</i>	<i>16.7</i>	<i>16.6</i>	<i>16.5</i>	<i>16.3</i>	19.1	16.4	<i>16.9</i>
Closing	15.7	16.2	16.7	16.9	<i>16.8</i>	<i>16.7</i>	<i>16.6</i>	<i>16.5</i>	<i>16.3</i>	<i>16.2</i>	16.4	16.9	<i>16.5</i>
Primary Stock Levels (million barrels)													
Opening	143.7	99.3	108.8	152.6	<i>155.7</i>	<i>103.2</i>	<i>111.7</i>	<i>142.6</i>	<i>151.9</i>	<i>105.6</i>	161.1	143.7	<i>155.7</i>
Closing	99.3	108.8	152.6	155.7	<i>103.2</i>	<i>111.7</i>	<i>142.6</i>	<i>151.9</i>	<i>105.6</i>	<i>114.1</i>	143.7	155.7	<i>151.9</i>

Notes: Minor discrepancies with other EIA published historical data are due to rounding. Historical values are printed in **boldface**, forecasts in *italics*.
Sources: Historical data: Energy Information Administration, *Petroleum Supply Annual 1985*, DOE/EIA-0340(85)/1; *Petroleum Supply Monthly*, DOE/EIA-0109, Jan. 1986 to Oct. 1986; *Monthly Energy Review*, DOE/EIA-0035(86/10); *Electric Power Monthly*, DOE/EIA-0226(86/11); *Weekly Petroleum Status Report*, DOE/EIA-0208(86-50,87-02).
Table printed at 1013, February 12, 1987

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

Supply and Disposition	1986				1987				1988		Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	1985	1986	1987
Supply													
Refinery Output	0.87	0.89	0.87	0.91	<i>0.96</i>	<i>0.93</i>	<i>0.85</i>	<i>0.92</i>	<i>0.91</i>	<i>0.88</i>	0.88	0.86	<i>0.91</i>
Imports .....	.59	.62	.70	.63	<i>.68</i>	<i>.54</i>	<i>.56</i>	<i>.65</i>	<i>.61</i>	<i>.52</i>	.51	.64	<i>.61</i>
Exports .....	.17	.12	.13	.12	<i>.19</i>	<i>.16</i>	<i>.15</i>	<i>.20</i>	<i>.19</i>	<i>.16</i>	.20	.13	<i>.18</i>
Net Imports .....	.42	.49	.57	.52	<i>.49</i>	<i>.38</i>	<i>.41</i>	<i>.45</i>	<i>.42</i>	<i>.36</i>	.31	.50	<i>.43</i>
Net Withdrawals .....	.13	-.05	-.01	.00	<i>.03</i>	<i>-.01</i>	<i>-.03</i>	<i>-.04</i>	<i>.07</i>	<i>.00</i>	.01	.02	<i>-.01</i>
Disposition													
Electric Utility Consumption .....	.53	.54	.73	.56	<i>.45</i>	<i>.50</i>	<i>.56</i>	<i>.57</i>	<i>.42</i>	<i>.48</i>	.44	.59	<i>.52</i>
Utility Stock Additions	-.02	.02	.00	-.01	<i>.01</i>	<i>-.02</i>	<i>-.02</i>	<i>-.02</i>	<i>.03</i>	<i>-.01</i>	-.03	.00	<i>-.01</i>
Electric Utility Shipments .....	.52	.56	.73	.55	<i>.47</i>	<i>.48</i>	<i>.54</i>	<i>.55</i>	<i>.45</i>	<i>.47</i>	.40	.59	<i>.51</i>
Nonutility Shipments .....	.90	.78	.70	.88	<i>1.02</i>	<i>.82</i>	<i>.69</i>	<i>.78</i>	<i>.95</i>	<i>.75</i>	.80	.81	<i>.83</i>
Total Product Supplied	1.42	1.34	1.43	1.43	<i>1.48</i>	<i>1.30</i>	<i>1.23</i>	<i>1.33</i>	<i>1.40</i>	<i>1.23</i>	1.20	1.41	<i>1.34</i>
Stocks													
Electric Utility Stock Levels (million barrels)													
Opening	57.3	55.8	57.5	57.4	<i>56.8</i>	<i>58.0</i>	<i>56.4</i>	<i>54.4</i>	<i>52.7</i>	<i>55.2</i>	68.5	57.3	<i>56.8</i>
Closing	55.8	57.5	57.4	56.8	<i>58.0</i>	<i>56.4</i>	<i>54.4</i>	<i>52.7</i>	<i>55.2</i>	<i>54.5</i>	57.3	56.8	<i>52.7</i>
Primary Stock Levels (million barrels)													
Opening	50.4	38.8	43.0	44.0	<i>43.9</i>	<i>40.9</i>	<i>41.9</i>	<i>44.5</i>	<i>47.8</i>	<i>41.6</i>	53.0	50.4	<i>43.9</i>
Closing	38.8	43.0	44.0	43.9	<i>40.9</i>	<i>41.9</i>	<i>44.5</i>	<i>47.8</i>	<i>41.6</i>	<i>41.9</i>	50.4	43.9	<i>47.8</i>

Note: Minor discrepancies with other EIA published historical data are due to rounding. Historical values are printed in **boldface**, forecasts in *italics*.
Sources: Historical data: Energy Information Administration, *Petroleum Supply Annual 1985*, DOE/EIA-0340(85)/1; *Petroleum Supply Monthly*, DOE/EIA-0109, Jan. 1986 to Oct. 1986; *Monthly Energy Review*, DOE/EIA-0035(86/10); *Electric Power Monthly*, DOE/EIA-0226(86/11); *Weekly Petroleum Status Report*, DOE/EIA-0208(86-50,87-02).

Table printed at 1013, February 12, 1987

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

Supply and Disposition	1986				1987				1988		Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	1985	1986	1987
Supply													
Net Refinery Output ^b	2.67	2.97	3.00	2.69	<i>2.88</i>	<i>3.00</i>	<i>3.17</i>	<i>2.67</i>	<i>2.91</i>	<i>2.97</i>	2.57	2.83	<i>2.93</i>
Natural Gas Plant Output	1.68	1.57	1.51	1.53	<i>1.56</i>	<i>1.43</i>	<i>1.41</i>	<i>1.51</i>	<i>1.57</i>	<i>1.43</i>	1.61	1.57	<i>1.48</i>
Other Domestic ^c .....	.04	.05	.06	.05	<i>.04</i>	<i>.05</i>	<i>.06</i>	<i>.05</i>	<i>.05</i>	<i>.05</i>	.06	.05	<i>.05</i>
Net Imports .....	.35	.46	.48	.41	<i>.31</i>	<i>.46</i>	<i>.53</i>	<i>.43</i>	<i>.41</i>	<i>.58</i>	.47	.42	<i>.43</i>
Net Withdrawals	-.09	-.40	-.20	.25	<i>.10</i>	<i>-.14</i>	<i>-.03</i>	<i>.35</i>	<i>-.05</i>	<i>-.24</i>	.06	-.11	<i>.07</i>
Total Primary Supply	4.65	4.66	4.85	4.93	<i>4.89</i>	<i>4.81</i>	<i>5.14</i>	<i>5.02</i>	<i>4.88</i>	<i>4.79</i>	4.76	4.77	<i>4.97</i>
Disposition													
Jet Fuel	1.25	1.27	1.33	1.37	<i>1.34</i>	<i>1.30</i>	<i>1.34</i>	<i>1.35</i>	<i>1.36</i>	<i>1.32</i>	1.22	1.31	<i>1.33</i>
Liquefied Petroleum Gas ^d	1.14	.82	.82	1.24	<i>1.25</i>	<i>.85</i>	<i>.92</i>	<i>1.18</i>	<i>1.25</i>	<i>.85</i>	1.02	1.01	<i>1.05</i>
Petrochemical Feedstocks ^e .....	.95	.97	.95	.93	<i>.95</i>	<i>.94</i>	<i>.92</i>	<i>.87</i>	<i>.92</i>	<i>.91</i>	.94	.95	<i>.92</i>
Miscellaneous ^f	1.30	1.59	1.76	1.39	<i>1.35</i>	<i>1.72</i>	<i>1.96</i>	<i>1.61</i>	<i>1.36</i>	<i>1.72</i>	1.59	1.51	<i>1.66</i>
Total Product Supplied	4.65	4.66	4.85	4.93	<i>4.89</i>	<i>4.81</i>	<i>5.14</i>	<i>5.02</i>	<i>4.88</i>	<i>4.79</i>	4.76	4.77	<i>4.97</i>
Stock													
Primary Stocks (million barrels)													
Opening	320.2	328.2	364.5	382.4	<i>359.2</i>	<i>350.5</i>	<i>363.4</i>	<i>366.2</i>	<i>334.4</i>	<i>338.5</i>	341.1	320.2	<i>359.2</i>
Closing	328.2	364.5	382.4	359.2	<i>350.5</i>	<i>363.4</i>	<i>366.2</i>	<i>334.4</i>	<i>338.5</i>	<i>359.9</i>	320.2	359.2	<i>334.4</i>

^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, liquefied refinery gases, 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.

Note: Historical values are printed in **boldface**, forecasts in *italics*.

Sources: Historical data: Energy Information Administration, *Petroleum Supply Annual 1985*, DOE/EIA-0340(85)/1; *Petroleum Supply Monthly*, DOE/EIA-0109, Jan. 1986 to Oct. 1986; and *Weekly Petroleum Status Report*, DOE/EIA-0208(86-50,87-02). Data for November and December 1986 are preliminary.

Table printed at 1013, February 12, 1987

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

Sensitivities	1987				1988		Year
	1st	2nd	3rd	4th	1st	2nd	1987
Demand in 50 States							
Low Price	<i>16.44</i>	<i>16.32</i>	<i>16.55</i>	<i>16.80</i>	<i>16.51</i>	<i>16.34</i>	<i>16.53</i>
Base Case	<i>16.31</i>	<i>16.06</i>	<i>16.24</i>	<i>16.50</i>	<i>16.24</i>	<i>16.05</i>	<i>16.28</i>
High Price	<i>16.29</i>	<i>16.00</i>	<i>16.12</i>	<i>16.38</i>	<i>16.13</i>	<i>15.94</i>	<i>16.20</i>
Weather Sensitivity							
Adverse Weather	<i>.28</i>	<i>.01</i>	<i>.00</i>	<i>.17</i>	<i>.27</i>	<i>.01</i>	<i>.11</i>
Favorable Weather	<i>-.28</i>	<i>-.02</i>	<i>.00</i>	<i>-.18</i>	<i>-.29</i>	<i>-.01</i>	<i>-.12</i>
Economic Sensitivity							
High Economic Activity	<i>.01</i>	<i>.02</i>	<i>.03</i>	<i>.03</i>	<i>.04</i>	<i>.06</i>	<i>.02</i>
Low Economic Activity	<i>.00</i>	<i>-.01</i>	<i>-.02</i>	<i>-.03</i>	<i>-.03</i>	<i>-.03</i>	<i>-.02</i>
Combined Sensitivity Differentials^a (excl. price)							
Upper Range	<i>.28</i>	<i>.02</i>	<i>.03</i>	<i>.17</i>	<i>.27</i>	<i>.06</i>	<i>.13</i>
Lower Range	<i>.28</i>	<i>.02</i>	<i>.02</i>	<i>.18</i>	<i>.29</i>	<i>.03</i>	<i>.13</i>
Range of Projected Demand							
High Demand ^b	<i>16.72</i>	<i>16.34</i>	<i>16.58</i>	<i>16.97</i>	<i>16.78</i>	<i>16.40</i>	<i>16.65</i>
Low Demand ^c	<i>16.01</i>	<i>15.98</i>	<i>16.10</i>	<i>16.20</i>	<i>15.84</i>	<i>15.91</i>	<i>16.07</i>

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

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

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

Note: Forecast values in *italics*.

Table printed at 1013, February 12, 1987

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

Supply and Disposition	1986				1987				1988		Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	1985	1986	1987
Supply													
Total Dry Gas Production ^a	4.25	3.81	3.80	4.08	<i>4.35</i>	<i>3.92</i>	<i>3.79</i>	<i>4.08</i>	<i>4.35</i>	<i>3.98</i>	16.38	15.94	<i>16.14</i>
Net Imports .....	.21	.12	.13	.18	<i>.28</i>	<i>.18</i>	<i>.17</i>	<i>.26</i>	<i>.28</i>	<i>.18</i>	.89	.64	<i>.89</i>
Supplemental Gaseous Fuels .....	.04	.04	.04	.04	<i>.04</i>	<i>.03</i>	<i>.03</i>	<i>.03</i>	<i>.04</i>	<i>.03</i>	.13	.16	<i>.13</i>
Total New Supply	4.50	3.97	3.97	4.30	<i>4.67</i>	<i>4.13</i>	<i>3.99</i>	<i>4.37</i>	<i>4.67</i>	<i>4.19</i>	17.40	16.74	<i>17.16</i>
Underground Working Gas Storage													
Opening	2.61	1.76	2.31	3.04	<i>2.79</i>	<i>1.72</i>	<i>2.27</i>	<i>3.04</i>	<i>2.89</i>	<i>1.69</i>	2.88	2.61	<i>2.79</i>
Closing	1.76	2.31	3.04	2.79	<i>1.72</i>	<i>2.27</i>	<i>3.04</i>	<i>2.89</i>	<i>1.69</i>	<i>2.29</i>	2.61	2.79	<i>2.89</i>
Net Withdrawals ^b .....	.84	-.54	-.74	.37	<i>1.07</i>	<i>-.55</i>	<i>-.77</i>	<i>.15</i>	<i>1.20</i>	<i>-.60</i>	.23	-.07	<i>-.10</i>
Total Primary Supply ^a	5.35	3.42	3.24	4.67	<i>5.74</i>	<i>3.58</i>	<i>3.22</i>	<i>4.52</i>	<i>5.87</i>	<i>3.59</i>	17.63	16.68	<i>17.06</i>
Consumption													
Electric Utilities .....	.51	.69	.82	.58	<i>.58</i>	<i>.58</i>	<i>.77</i>	<i>.50</i>	<i>.59</i>	<i>.62</i>	3.04	2.60	<i>2.43</i>
Refinery Fuel .....	.12	.13	.13	.13	<i>.12</i>	<i>.13</i>	<i>.14</i>	<i>.13</i>	<i>.13</i>	<i>.13</i>	.49	.51	<i>.53</i>
All Other Uses ^c	5.04	2.67	1.98	3.47	<i>4.93</i>	<i>2.77</i>	<i>2.21</i>	<i>3.79</i>	<i>5.05</i>	<i>2.74</i>	13.75	13.15	<i>13.70</i>
Subtotal	5.67	3.49	2.93	4.18	<i>5.64</i>	<i>3.48</i>	<i>3.12</i>	<i>4.42</i>	<i>5.77</i>	<i>3.49</i>	17.28	16.27	<i>16.66</i>
Total Disposition	5.35	3.42	3.24	4.67	<i>5.74</i>	<i>3.58</i>	<i>3.22</i>	<i>4.52</i>	<i>5.87</i>	<i>3.59</i>	17.63	16.68	<i>17.06</i>
Unaccounted for	-.32	-.06	.30	.49	<i>.10</i>	<i>.10</i>	<i>.10</i>	<i>.10</i>	<i>.10</i>	<i>.10</i>	.35	.41	<i>.40</i>

^a Excludes nonhydrocarbon gases removed.

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

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

Notes: Minor discrepancies with other EIA published historical data are due to rounding. Historical values are printed in **boldface**, forecasts in *italics*.

Sources: Historical data: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(86/10); *Natural Gas Monthly*, DOE/EIA-0130(86/11); and *Electric Power Monthly*, DOE/EIA-0226(86/11).

Table printed at 1013, February 12, 1987

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

Supply and Disposition	1986				1987				1988		Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	1985	1986	1987
Supply													
Production	b 229	b 222	b 220	c 217	<i>217</i>	<i>230</i>	<i>223</i>	<i>244</i>	<i>227</i>	<i>224</i>	884	c 888	<i>913</i>
Primary Stock Levels ^a													
Opening	33	38	38	34	<i>34</i>	<i>33</i>	<i>32</i>	<i>30</i>	<i>30</i>	<i>30</i>	34	33	<i>34</i>
Closing	38	38	34	c 34	<i>33</i>	<i>32</i>	<i>30</i>	<i>30</i>	<i>30</i>	<i>30</i>	33	c 34	<i>30</i>
Net Withdrawals	-5	0	4	c -1	<i>1</i>	<i>1</i>	<i>2</i>	<i>0</i>	<i>0</i>	<i>0</i>	1	c -1	<i>4</i>
Imports	0	1	1	c 1	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	2	c 2	<i>2</i>
Exports	17	24	24	c 21	<i>17</i>	<i>24</i>	<i>24</i>	<i>21</i>	<i>17</i>	<i>24</i>	93	c 86	<i>86</i>
Total New Domestic Supply	b 208	b 198	b 202	c 196	<i>201</i>	<i>207</i>	<i>202</i>	<i>223</i>	<i>210</i>	<i>200</i>	794	c 803	<i>833</i>
Secondary Stock Levels ^d													
Opening	170	166	176	164	<i>160</i>	<i>152</i>	<i>165</i>	<i>152</i>	<i>170</i>	<i>172</i>	197	170	<i>160</i>
Closing	166	176	164	c 160	<i>152</i>	<i>165</i>	<i>152</i>	<i>170</i>	<i>172</i>	<i>175</i>	170	c 160	<i>170</i>
Net Withdrawals	4	-10	12	c 4	<i>8</i>	<i>-13</i>	<i>12</i>	<i>-18</i>	<i>-2</i>	<i>-3</i>	27	c 11	<i>-11</i>
Total Indicated Consumption	b 212	b 188	b 214	c 200	<i>209</i>	<i>194</i>	<i>214</i>	<i>205</i>	<i>209</i>	<i>197</i>	821	c 814	<i>823</i>
Consumption													
Coke Plants	10	10	8	c 9	<i>10</i>	<i>10</i>	<i>8</i>	<i>8</i>	<i>10</i>	<i>10</i>	41	c 37	<i>36</i>
Electric Utilities	173	158	186	c 169	<i>177</i>	<i>164</i>	<i>186</i>	<i>174</i>	<i>176</i>	<i>167</i>	694	c 686	<i>701</i>
Retail and General Industry ^e	23	20	19	c 23	<i>23</i>	<i>20</i>	<i>20</i>	<i>23</i>	<i>24</i>	<i>21</i>	83	c 84	<i>86</i>
Subtotal	206	189	213	c 200	<i>209</i>	<i>194</i>	<i>214</i>	<i>205</i>	<i>209</i>	<i>197</i>	818	c 807	<i>823</i>
Total Disposition	b 212	b 188	b 214	c 200	<i>209</i>	<i>194</i>	<i>214</i>	<i>205</i>	<i>209</i>	<i>197</i>	821	c 814	<i>823</i>
Discrepancy ^f	6	0	1	0	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	3	6	<i>0</i>

^a Primary stocks are held at the mines, preparation plants, and distribution points.

^b Preliminary.

^c Estimated.

^d Secondary stocks are held by users. Most of the secondary stocks are held by electric utilities.

^e Includes consumption at coal gasification plants of 4.8 million tons for 1985. For the first half of 1986 and for the forecast, synfuels account for 1.5 million tons per quarter.

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

Notes: Rows and columns may not add due to independent rounding. Zeros indicate amounts of less than 500,000 tons. Historical values are printed in **boldface**, forecasts in *italics*.

Sources: Historical data: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(86/10); and *Quarterly Coal Report*, DOE/EIA-0121(86/3Q).

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

Supply and Disposition	1986				1987				1988		Year		
	1st	2nd	3rd	4th ^a	1st	2nd	3rd	4th	1st	2nd	1985	1986	1987
Net Generation													
Coal	351.4	326.2	374.2	338.7	<i>357.3</i>	<i>332.7</i>	<i>373.9</i>	<i>350.7</i>	<i>355.2</i>	<i>337.9</i>	1402.1	1390.5	<i>1414.5</i>
Petroleum	30.7	31.2	42.4	32.3	<i>25.8</i>	<i>28.7</i>	<i>32.7</i>	<i>32.9</i>	<i>24.0</i>	<i>27.6</i>	100.2	136.6	<i>120.0</i>
Natural Gas	48.5	65.6	76.4	55.5	<i>55.6</i>	<i>54.9</i>	<i>73.7</i>	<i>47.8</i>	<i>56.6</i>	<i>58.8</i>	291.9	248.1	<i>232.0</i>
Nuclear Power	99.7	93.7	110.0	107.6	<i>110.4</i>	<i>108.4</i>	<i>122.9</i>	<i>117.1</i>	<i>126.2</i>	<i>117.5</i>	383.7	411.0	<i>458.8</i>
Hydropower	73.5	81.0	66.4	70.2	<i>80.8</i>	<i>84.6</i>	<i>71.2</i>	<i>70.1</i>	<i>82.1</i>	<i>82.9</i>	281.1	291.1	<i>306.7</i>
Geothermal Power and Other ^b	3.1	2.8	3.0	2.6	<i>2.9</i>	<i>2.9</i>	<i>3.2</i>	<i>3.2</i>	<i>3.2</i>	<i>3.2</i>	10.7	11.5	<i>12.2</i>
Total Generation	606.9	600.5	674.5	607.0	<i>632.8</i>	<i>612.1</i>	<i>677.5</i>	<i>621.8</i>	<i>647.4</i>	<i>627.9</i>	2469.8	2488.9	<i>2544.2</i>
Net Imports	10.1	9.4	12.2	12.3	<i>9.8</i>	<i>10.7</i>	<i>13.7</i>	<i>10.9</i>	<i>10.0</i>	<i>10.9</i>	40.9	44.0	<i>45.0</i>
Total Supply	617.0	609.9	686.6	619.3	<i>642.6</i>	<i>622.8</i>	<i>691.2</i>	<i>632.7</i>	<i>657.4</i>	<i>638.8</i>	2510.8	2532.9	<i>2589.2</i>
T & D Loss^c	26.3	40.4	48.0	51.5	<i>39.0</i>	<i>40.9</i>	<i>37.9</i>	<i>52.0</i>	<i>44.1</i>	<i>47.5</i>	201.2	166.1	<i>169.9</i>
Total Consumption (sales)	590.7	569.6	638.7	567.8	<i>603.6</i>	<i>581.9</i>	<i>653.2</i>	<i>580.6</i>	<i>613.4</i>	<i>591.2</i>	2309.5	2366.8	<i>2419.4</i>

^a Estimated.

^b Includes wind, wood, and waste.

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

Notes: Minor discrepancies with other EIA published historic data are due to rounding. Historical values are printed in **boldface**, forecasts in *italics*.

Sources: Historical data: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(86/10); and *Electric Power Monthly*, DOE/EIA-0226(86/11).

Table printed at 1013, February 12, 1987

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

Supply and Disposition	1986				1987				1988		Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	1985	1986	1987
Supply													
Production													
Petroleum ^a	5.33	5.17	5.04	5.00	4.90	4.86	4.86	4.87	4.84	4.74	21.23	20.54	19.49
Natural Gas ^b	4.39	3.93	3.93	4.22	4.49	4.05	3.91	4.22	4.49	4.11	16.92	16.46	16.67
Coal	5.02	4.85	4.82	4.74	4.75	5.02	4.87	5.33	4.97	4.89	19.33	19.43	19.98
Nuclear Power	1.08	1.02	1.19	1.17	1.20	1.18	1.33	1.27	1.37	1.27	4.16	4.46	4.97
Hydropower ^c .....	.76	.84	.69	.72	.83	.87	.73	.72	.85	.86	2.90	3.01	3.16
Geothermal Power and Other ^d .....	.06	.06	.06	.05	.06	.06	.06	.06	.06	.06	.21	.23	.24
Subtotal	16.63	15.86	15.73	15.91	16.23	16.04	15.77	16.48	16.58	15.94	64.76	64.12	64.52
Net Imports													
Crude Oil	1.54	2.12	2.50	2.28	2.05	2.49	2.59	2.44	2.20	2.52	6.38	8.44	9.57
Other Petroleum .....	.56	.66	.78	.64	.51	.61	.72	.68	.59	.71	2.57	2.64	2.53
Natural Gas .....	.21	.12	.13	.18	.28	.18	.17	.26	.28	.18	.89	.65	.89
Coal and Coke	-.44	-.62	-.62	-.54	-.44	-.63	-.61	-.54	-.44	-.63	-2.40	-2.23	-2.22
Electricity .....	.10	.10	.12	.13	.10	.11	.14	.11	.10	.11	.42	.45	.46
Subtotal	1.97	2.38	2.91	2.69	2.50	2.77	3.01	2.95	2.73	2.90	7.86	9.95	11.23
Primary Stocks													
Net Withdrawals .....	.98	-.78	-1.03	.48	1.49	-.67	-.89	.20	1.49	-.77	.63	-.34	.13
SPR Fill Rate Additions(-)	-.02	-.03	-.03	-.03	-.05	-.04	-.03	-.02	-.02	-.02	-.25	-.11	-.14
Secondary Stocks^e													
Net Withdrawals .....	.10	-.22	.26	.08	.14	-.24	.29	-.36	-.09	-.03	.69	.23	-.17
Total Supply^f	19.66	17.21	17.85	19.13	20.32	17.85	18.14	19.25	20.69	18.01	73.68	73.85	75.57
Disposition													
Nonutility Uses													
Petroleum	7.46	7.45	7.57	7.80	7.63	7.56	7.69	7.82	7.70	7.57	29.83	30.27	30.70
Natural Gas ^g	5.32	2.89	2.18	3.72	5.22	3.00	2.42	4.05	5.34	2.96	14.69	14.11	14.68
Coal ^h .....	.78	.71	.61	.73	.77	.71	.66	.73	.78	.72	2.93	2.83	2.86
Industrial Hydropower .....	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.03	.03	.03
Subtotal	13.57	11.06	10.36	12.25	13.62	11.28	10.78	12.60	13.83	11.26	47.48	47.24	48.28
Electric Utility Inputs													
Petroleum .....	.33	.33	.45	.35	.28	.31	.36	.36	.26	.30	1.09	1.46	1.31
Natural Gas .....	.53	.72	.85	.60	.61	.60	.80	.52	.62	.64	3.16	2.70	2.52
Coal	3.63	3.32	3.91	3.53	3.71	3.45	3.88	3.64	3.68	3.50	14.54	14.39	14.67
Nuclear Power	1.08	1.02	1.19	1.17	1.20	1.18	1.33	1.27	1.37	1.27	4.16	4.46	4.97
Hydropower ⁱ .....	.85	.92	.80	.84	.92	.97	.87	.83	.94	.96	3.29	3.42	3.59
Geothermal Power and Other .....	.06	.06	.06	.05	.06	.06	.06	.06	.06	.06	.21	.23	.24
Subtotal	6.48	6.36	7.27	6.54	6.77	6.57	7.30	6.68	6.93	6.74	26.45	26.65	27.31
Gross Energy Consumption^f	20.04	17.42	17.63	18.79	20.39	17.84	18.08	19.28	20.76	18.00	73.94	73.89	75.59
Electrical System Energy Losses ^j	4.46	4.42	5.09	4.60	4.71	4.58	5.07	4.69	4.84	4.72	18.57	18.57	19.06
Total Net Energy	15.58	13.00	12.54	14.19	15.68	13.26	13.01	14.58	15.92	13.28	55.36	55.31	56.53
Total Disposition	19.66	17.21	17.85	19.13	20.32	17.85	18.14	19.25	20.69	18.01	73.68	73.85	75.57
Unaccounted for	-.38	-.21	.22	.33	-.07	.01	.06	-.02	-.07	.01	-.26	-.04	-.02

^a Includes crude oil and lease condensate, natural gas liquids, hydrogen, etc., input to oil refineries.

^b Total dry gas production excluding nonhydrocarbon gases removed.

^c Includes industrial production.

^d Includes wood and waste used to generate electricity.

^e Primarily electric utility stocks.

^f This total excludes approximately 2 quadrillion Btu of wood.

^g Includes natural gas used as refinery fuel.

^h Includes net imports of coal coke.

ⁱ Includes net imports of electricity.

^j Includes plant use and transmission and distribution losses.

SPR: Strategic Petroleum Reserve.

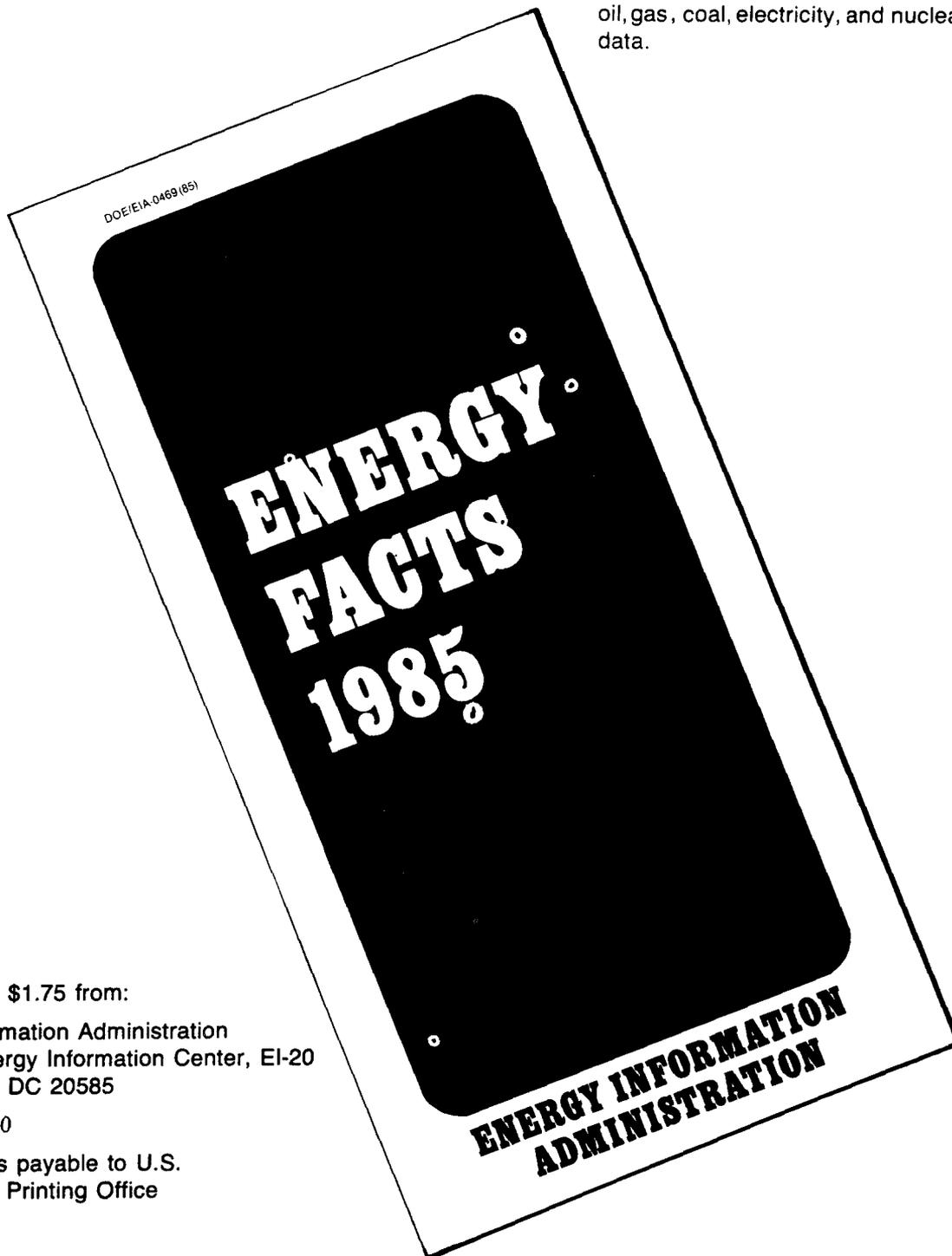
Notes: The conversion from physical units to Btu is calculated by STIFS using a subset of *Monthly Energy Review* conversion factors. Consequently, the historical data will not precisely match that published in the *Monthly Energy Review*. In addition, minor discrepancies with EIA published historical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

Sources: Historical data: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(86/10); and *Electric Power Monthly*, DOE/EIA-0226(86/11).

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