

Short-Term ENERGY OUTLOOK



QUARTERLY PROJECTIONS

1997
1st
Quarter

EIA

Energy Information Administration

Short-Term Energy Outlook

Quarterly Projections

First Quarter 1997

Energy Information Administration
Office of Energy Markets and End Use
U.S. Department of Energy
Washington, DC 20585

This report was prepared by the Energy Information Administration, the independent statistical and analytical agency within the Department of Energy. The information contained herein should not be construed as advocating or reflecting any policy position of the Department of Energy or any other organization.

Contacts

The *Short-Term Energy Outlook* is prepared by the Energy Information Administration (EIA), Office of Energy Markets and End Use (EMEU). General questions concerning the content of the report may be referred to W. Calvin Kilgore (202-586-1617), Director of EMEU; Mark Rodekohr (202-586-1441), Director of Energy Markets and Contingency Information Division; or Derriell Cato (202-586-6574), Chief of the Short-Term Forecasting and Contingency Branch.

Detailed questions may be addressed to David Costello (202-586-1468) or the following analysts:

| | |
|-------------------------|--|
| World Oil Prices | Douglas MacIntyre (202-586-1831) Neil Gamson (202-586-2418) |
| International Petroleum | Douglas MacIntyre (202-586-1831) |
| Macroeconomic | Kay A. Smith (202-586-1455) |
| Energy Prices | Neil Gamson (202-586-2418) |
| Petroleum Demand | Michael Morris (202-586-1199) |
| Petroleum Supply | Tancred Lidderdale (202-586-7321) |
| Natural Gas | Evelyn Amerchih (202-586-8760) |
| Coal | Elias Johnson (202-586-7277) |
| Electricity | Evelyn Amerchih (202-586-8760) |
| Renewables | David Costello (202-586-1468) |

Domestic crude oil production figures are provided by the EIA Dallas Field Office, under the supervision of John H. Wood (214-767-2200). Nuclear electricity generation forecasts are provided by Kenneth Wade (202-426-1248); projections for hydroelectric generation, electricity imports, and nonutility generation are provided by Rebecca McNerney (202-426-1251); and coal production, imports, and exports are provided by Byung Doo Hong (202-426-1126)—all of the EIA Office of Coal, Nuclear, Electric and Alternate Fuels.

The Energy Information Administration (EIA) prepares quarterly short-term energy supply, demand, and price projections for publication in January, April, July, and October in the *Outlook*.

The forecast period for this issue of the *Outlook* extends from the first quarter of 1997 through the fourth quarter of 1998. Values for the fourth quarter of 1996, however, are preliminary EIA estimates (for example, some monthly values for petroleum supply and disposition are derived in part from weekly data reported in EIA's *Weekly Petroleum Status Report*) or are calculated from model simulations that use the latest exogenous information available (for example, electricity sales and generation are simulated by using actual weather data). The historical energy data, compiled in the first quarter 1997 version of the Short-Term Integrated Forecasting System (STIFS) database, are mostly EIA data regularly published in the *Monthly Energy Review*, *Petroleum Supply Monthly*, and other EIA publications. Minor discrepancies between the data in these publications and the historical data in this *Outlook* are due to independent rounding. The STIFS database is archived quarterly and is available from the National Technical Information Service.

The STIFS model is driven principally by three sets of assumptions or inputs: estimates of key macroeconomic variables, world oil price assumptions, and assumptions about the severity of weather. Macroeconomic estimates are produced by DRI/McGraw-Hill but are adjusted by EIA to reflect EIA assumptions about the world price of crude oil, energy product prices, and other assumptions which may affect the macroeconomic outlook. By varying the assumptions, alternative cases are produced by using the Short-Term Integrated Forecasting System (STIFS).

Contents

| | Page |
|---|------|
| Highlights | 1 |
| Table HL1 - U.S. Energy Supply and Demand Summary | 2 |
| The Outlook | |
| Outlook Assumptions | 4 |
| The Impact of Iraqi Oil on the World Market | 5 |
| International Oil Demand | 6 |
| International Oil Supply | 7 |
| World Oil Stocks and Net Trade | 9 |
| 1996-1997 Winter Distillate Fuel Review | 10 |
| U.S. Oil Demand | 12 |
| U.S. Oil Supply | 13 |
| U.S. Energy Prices | 14 |
| U.S. Oil Demand and Supply Sensitivities | 17 |
| 1996-1997 Winter Natural Gas Review | 18 |
| U.S. Natural Gas Demand | 20 |
| U.S. Natural Gas Supply | 21 |
| U.S. Coal Demand and Supply | 22 |
| U.S. Electricity Demand and Supply | 23 |
| U.S. Renewable Energy Demand | 24 |
| Tables | 25 |
| Text References and Notes | 45 |
| Figure References | 47 |
| Appendix | |
| Computation of Petroleum Demand Sensitivities | 51 |

Tables

| Quarterly and Annual History and Projections, 1995-1998 | | Page |
|--|---|-------------|
| 1. | U.S. Macroeconomic and Weather Assumptions | 25 |
| 2. | U.S. Energy Indicators: Mid World Oil Price Case | 26 |
| 3. | International Petroleum Supply and Demand: Mid World Oil Price Case | 27 |
| 4. | U.S. Energy Prices | 28 |
| 5. | U.S. Petroleum Supply and Demand: Low World Oil Price Case | 29 |
| 6. | U.S. Petroleum Supply and Demand: Mid World Oil Price Case | 30 |
| 7. | U.S. Petroleum Supply and Demand: High World Oil Price Case | 31 |
| 8. | U.S. Petroleum Demand Sensitivities | 32 |
| 9. | Forecast Components for U.S. Crude Oil Production | 32 |
| 10. | U.S. Natural Gas Supply and Demand: Mid World Oil Price Case | 33 |
| 11. | U.S. Coal Supply and Demand: Mid World Oil Price Case | 34 |
| 12. | U.S. Electricity Supply and Demand: Mid World Oil Price Case | 35 |
| 13. | U.S. Renewable Energy Use by Sector: Mid World Oil Price Case | 36 |

Annual History and Base Case Projections for Selected Indicators, 1983-1998

| | | |
|-----|--|----|
| A1. | Annual U.S. Energy Supply and Demand | 37 |
| A2. | Annual U.S. Macroeconomic and Weather Indicators | 38 |
| A3. | Annual International Petroleum Supply and Demand | 39 |
| A4. | Annual Average U.S. Energy Prices | 40 |
| A5. | Annual U.S. Petroleum Supply and Demand | 41 |
| A6. | Annual U.S. Natural Gas Supply and Demand | 42 |
| A7. | Annual U.S. Coal Supply and Demand | 43 |
| A8. | Annual U.S. Electricity Supply and Demand | 44 |

Contents

Figures

Page

| | |
|--|----|
| 1. U.S. Monthly Crude Oil Prices | 4 |
| 2. U.S. Macroeconomic Indicators | 4 |
| 3. World Oil Demand | 6 |
| 4. World Oil Demand Changes by Region | 6 |
| 5. World Oil Production | 7 |
| 6. OPEC Oil Production and Capacity | 7 |
| 7. Non-OPEC, Non-OECD Oil Production | 8 |
| 8. China and Mexico Oil Production | 8 |
| 9. OECD Commercial Oil Stocks | 9 |
| 10. FSU Oil Output, Demand, and Net Exports | 9 |
| 11. Winter Crude Oil Stocks | 10 |
| 12. Winter Distillate Oil Stocks | 10 |
| 13. Winter Heating Oil Retail Prices | 11 |
| 14. U.S. Petroleum Demand | 12 |
| 15. Distillate Demand Growth | 12 |
| 16. U.S. Crude Oil Production | 13 |
| 17. U.S. Net Petroleum Imports | 13 |
| 18. U.S. Oil and Gas Prices | 14 |
| 19. Petroleum Product Prices | 14 |
| 20. Natural Gas Prices by Sector | 15 |
| 21. Fossil Fuel Prices to Electric Utilities | 15 |
| 22. Total Petroleum Demand: Macro Cases | 17 |
| 23. Total Petroleum Demand: Weather Cases | 17 |
| 24. Winter Natural Gas Wellhead Prices | 19 |
| 25. U.S. Natural Gas Demand Trends | 20 |
| 26. Natural Gas Demand for Power Generation | 20 |
| 27. U.S. Dry Gas Production and Net Imports | 21 |
| 28. Total Gas in Underground Storage | 21 |
| 29. U.S. Coal Demand Trends | 22 |
| 30. U.S. Coal Production Trends by Region | 22 |
| 31. U.S. Electricity Demand | 23 |
| 32. U.S. Electricity Production | 23 |
| 33. Renewable Energy Use for Electricity | 24 |
| 34. Renewable Energy Use by Sector | 24 |

Oil Prices Trend Downward

World oil prices are expected to settle down from current high levels to average between \$21 and \$21.50 per barrel in 1997 and 1998. An average decline of about \$1 per barrel is seen between the fourth quarter of 1996 and the first quarter of 1997, particularly since Iraqi crude oil is now flowing into the world market. A decline is less likely if winter turns abnormally cold in the weeks ahead. Despite the expected short-term decline in prices, these projections represent an upward revision in average price forecasts from previous reports. Strong world oil demand and relatively low inventories have kept persistent pressure on spot prices in recent months.

Distillate Stocks at Record Lows; Higher Retail Prices Expected to Continue

Distillate (heating oil and diesel fuel) stocks have been well below year-ago levels so far this heating season, although recent, relatively mild, weather in the Northeast has alleviated the situation somewhat. Residential heating oil prices for the fourth quarter of 1996 averaged \$1.05 per gallon, 16 cents per gallon above that quarter in 1995. Assuming normal weather for the first quarter of 1997, these prices are expected to be \$1.06 per gallon, 10 cents higher than the same period in 1996. Severe weather could result in significant additional increases.

Natural Gas Production Rising in Response to Higher Prices and Demand

The decline in natural gas production capacity which began in 1986 has been clearly reversed in 1996 mainly due to new discoveries in the Gulf of Mexico Outer Continental Shelf. Dry gas production is expected to increase through the forecast period, due to wellhead prices averaging \$2 per thousand cubic feet from 1996 to 1998, as well as expected growth in natural gas demand and continuing improvements in production technology.

However, Gas Wellhead Prices Should Rise Sharply This Winter

Despite the rapid natural gas stockbuild this summer, the early winter weather, especially in the Midwest, slowed down the storage build and sent gas spot prices soaring. Although the composite wellhead price is not as volatile as the spot price, there could be a substantial wellhead price rise this winter of about 60 cents per thousand cubic feet compared with last winter.

Electricity Demand Growth to Slow in 1997 and 1998

In 1996, total electricity demand growth is estimated at 2.8 percent. In 1997, demand is expected to grow more slowly due mainly to expectations of normal weather, but pick up in 1998 due to continued economic growth.

Electricity Sector Coal Consumption Slower in 1997, Quickening in 1998

In 1997, electricity sector demand for coal is expected to grow more slowly than the 3.9 percent seen in 1996 as a result of slower growth in electricity demand. Declines in hydroelectric generation will lead to higher growth in coal demand by the electricity sector in 1998.

Table HL1. U.S. Energy Supply and Demand Summary

| | Price Case ^a | Year | | | | Annual Percentage Change | | |
|--|-------------------------|--------------|--------------|--------------|--------------|--------------------------|--------------|-------------|
| | | 1995 | 1996 | 1997 | 1998 | 1995-1996 | 1996-1997 | 1997-1998 |
| Real Gross Domestic Product (GDP) | | | | | | | | |
| (billion chained 1992 dollars) ^b | Mid | 6739 | 6904 | <i>7059</i> | <i>7215</i> | 2.4 | <i>2.2</i> | <i>2.2</i> |
| Imported Crude Oil Price (nominal dollars per barrel) | Low | | | <i>18.28</i> | <i>17.99</i> | | <i>-11.1</i> | <i>-1.6</i> |
| | Mid | 17.15 | 20.57 | <i>21.04</i> | <i>21.45</i> | 19.9 | <i>2.3</i> | <i>1.9</i> |
| | High | | | <i>23.79</i> | <i>24.92</i> | | <i>15.7</i> | <i>4.7</i> |
| Petroleum Supply | | | | | | | | |
| Crude Oil Production ^c (million barrels per day) | Low | | | <i>6.17</i> | <i>5.86</i> | | <i>-4.8</i> | <i>-5.0</i> |
| | Mid | 6.56 | 6.48 | <i>6.35</i> | <i>6.15</i> | -1.2 | <i>-2.0</i> | <i>-3.1</i> |
| | High | | | <i>6.53</i> | <i>6.43</i> | | <i>0.8</i> | <i>-1.5</i> |
| Total Petroleum Net Imports (including SPR) (million barrels per day) | Low | | | <i>9.26</i> | <i>10.01</i> | | <i>10.2</i> | <i>11.1</i> |
| | Mid | 7.89 | 8.40 | <i>8.91</i> | <i>9.30</i> | 6.5 | <i>6.1</i> | <i>4.4</i> |
| | High | | | <i>8.64</i> | <i>8.85</i> | | <i>2.9</i> | <i>2.4</i> |
| Energy Demand | | | | | | | | |
| World Petroleum | Mid | 70.2 | 71.9 | <i>73.4</i> | <i>75.2</i> | 2.4 | <i>2.1</i> | <i>2.5</i> |
| Petroleum (million barrels per day) | Low | | | <i>18.53</i> | <i>19.11</i> | | <i>1.6</i> | <i>3.1</i> |
| | Mid | 17.72 | 18.23 | <i>18.36</i> | <i>18.69</i> | 2.9 | <i>0.7</i> | <i>1.8</i> |
| | High | | | <i>18.25</i> | <i>18.50</i> | | <i>0.1</i> | <i>1.4</i> |
| Natural Gas (trillion cubic feet) | Low | | | <i>22.32</i> | <i>22.43</i> | | <i>0.4</i> | <i>0.5</i> |
| | Mid | 21.58 | 22.24 | <i>22.55</i> | <i>23.06</i> | 3.1 | <i>1.4</i> | <i>2.3</i> |
| | High | | | <i>22.54</i> | <i>23.08</i> | | <i>1.3</i> | <i>2.4</i> |
| Coal (million short tons) | Mid | 959 | 990 | <i>992</i> | <i>1007</i> | 3.2 | <i>0.2</i> | <i>1.5</i> |
| Electricity (billion kilowatthours) | | | | | | | | |
| Utility Sales ^d | Mid | 3009 | 3093 | <i>3117</i> | <i>3157</i> | 2.8 | <i>0.8</i> | <i>1.3</i> |
| Nonutility Own Use ^e | Mid | 158 | 162 | <i>166</i> | <i>169</i> | 2.5 | <i>2.5</i> | <i>1.8</i> |
| Total | Mid | 3167 | 3255 | <i>3282</i> | <i>3327</i> | 2.8 | <i>0.8</i> | <i>1.4</i> |
| Adjusted Total Energy Demand ^f (quadrillion Btu) | Mid | 90.6 | 93.3 | <i>93.6</i> | <i>95.1</i> | 3.0 | <i>0.4</i> | <i>1.6</i> |
| Adjusted Total Energy Demand per Dollar of GDP (thousand Btu per 1992 Dollar) | Mid | 13.44 | 13.52 | <i>13.27</i> | <i>13.19</i> | 0.6 | <i>-1.8</i> | <i>-0.6</i> |
| Renewable Energy as Percent of Total | Mid | 7.5 | 7.8 | <i>7.3</i> | <i>7.2</i> | | | |

^aRefers to the refiner acquisition cost (RAC) of imported crude oil assumed for the scenario depicted. In all cases on this table, the mid-macroeconomic case and normal weather are used.

^bIn accordance with the January 1996 revisions of the National Income and Product Accounts by the Bureau of Economic Analysis, macroeconomic measures have been changed from fixed-weighted to chain-weighted, and base year has been changed from 1987 to 1992.

^cIncludes lease condensate.

^dTotal annual electric utility sales for historical periods are derived from the sum of monthly sales figures based on submissions by electric utilities of Form EIA-826, "Monthly Electric Utility Sales and Revenue Report with State Distributions." These historical values differ from annual sales totals based on Form EIA-861, reported in several EIA publications, but match alternate annual totals reported in EIA's *Electric Power Monthly*, DOE/EIA-0226.

^eDefined as the difference between total nonutility electricity generation and sales to electric utilities by nonutility generators, reported on Form EIA-867, "Annual Nonutility Power Producer Report." Data for 1996 are estimates.

^fThe total energy demand concept shown here is that presented as total consumption in Energy Information Administration, *Annual Energy Review 1995 (AER)*, DOE/EIA-0384(95), Table 1.1. The conversion from physical units to Btu is calculated by using a subset of conversion factors used in the calculations performed for gross energy consumption in Energy Information Administration, *Monthly Energy Review (MER)*. Consequently, the historical data may not precisely match those published in the *MER* or the *AER*.

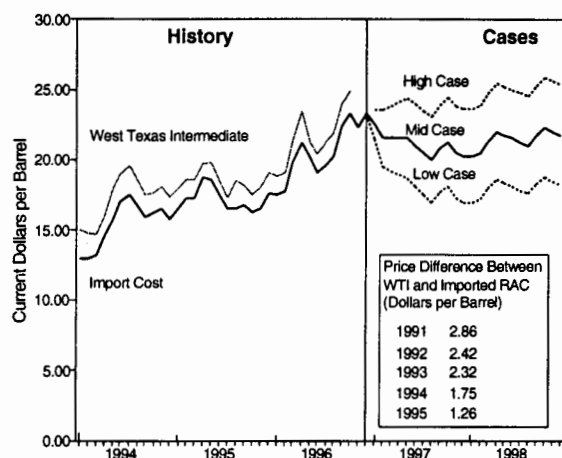
SPR: Strategic Petroleum Reserve.

Notes: Minor discrepancies with other published EIA historical data are due to independent rounding. Historical data are printed in bold; forecasts are in italic. The forecasts were generated by simulation of the Short-Term Integrated Forecasting System.

Sources: Historical data: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(96/11); *Petroleum Supply Monthly*, DOE/EIA-0109(96/11); *Petroleum Supply Annual 1996*, DOE/EIA-0340(96/2); *Natural Gas Monthly*, DOE/EIA-0130(96/10); *Electric Power Monthly*, DOE/EIA-0226(96/11); and *Quarterly Coal Report*, DOE/EIA-0121(96/1Q). Macroeconomic projections are based on DRI/McGraw-Hill Forecast CONTROL1196.

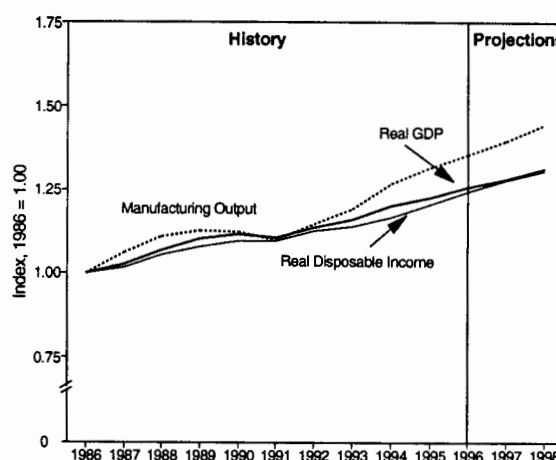
Outlook Assumptions

Figure 1. U.S. Monthly Crude Oil Prices



Sources: First Quarter 1997 STIFS database and Energy Information Administration, Energy Markets and Contingency Information Division. Details provided in Figure References Section.

Figure 2. U.S. Macroeconomic Indicators



Mid World Oil Price Case
Sources: First Quarter 1997 STIFS database, U.S. Commerce Department, and Federal Reserve Board. Details provided in Figure References Section.

World Oil Prices

- This forecast includes the implementation of Iraqi humanitarian oil sales approved by the United Nations in December. The addition of approximately 600,000 barrels per day of Iraqi exports is expected to cause world oil prices to fall \$1 to \$2 per barrel from what they would have been otherwise.
- Our current mid-price projection calls for a settling down of prices from the current relatively high levels to average between \$21-\$21.50 per barrel in 1997 and 1998. This represents an upward revision from previous projections and is based on the evident persistent pressure on spot prices from strong world demand and relatively low inventories. Although the flow of Iraqi crude should ease current high prices, abnormally cold weather in the weeks ahead could delay the decline.
- The high and low price cases illustrated in Figure 1 represent a typical uncertainty range around our base case forecast.

Economic Outlook

- U.S. Gross Domestic Product (GDP) is expected to average 2.2 percent growth in 1997

and 1998. Growth in disposable income should reach 2.7 percent in 1997 and 2.2 percent in 1998 (Figure 2 and Table 1).

- Inflation should remain moderate over the next few years. Commodity prices have increased, but only for agricultural products and oil. Consumer price inflation is expected to be 2.3 percent in 1997 and 1998.
- Manufacturing production growth slows in 1997, to 2.9 percent, as investment and export growth continue to slow. In 1998, manufacturing production growth rebounds, attaining 3.7 percent growth as export growth increases. Total employment will increase slowly over the forecast.

Weather Assumptions

- For the mid-case, heating and cooling degree-days are assumed to follow historical norms in the forecast period. This results in winter 1996/97 being about 4 percent warmer than last winter (Table 1).

The Impact of Iraqi Oil on the World Oil Market

On December 9, 1996, the United Nations gave the "green light" allowing Iraq to export oil to the world for the first time since Desert Shield/Desert Storm, over 6 years ago. U.N. Security Council Resolution 986 permits Iraq to sell \$1 billion worth of oil into the world oil market every 90 days for a 180-day trial period. At current prices, this would amount to about 600,000 barrels per day. Barring any changes in the political or diplomatic situation, it is expected that this agreement will continue indefinitely at the end of the 180 day trial period. Turkey's state-run refinery company Tupras was the first purchaser of the additional Iraqi crude oil. U.S. firms can buy the additional Iraqi oil once they have obtained a specific license from the U.S. Treasury's Office of Foreign Assets Control and the contract is approved by U.N. monitors in accordance with U.N. Security Council Resolution 986.

Because of this additional Iraqi crude oil, we expect oil prices to fall \$1-\$2 per barrel from levels they would have achieved if the Iraqi oil was not available. But as crude oil prices fall, retail prices for heating oil, diesel fuel, motor gasoline and other petroleum products are not likely to decline immediately. Instead, these retail prices should decline over the next few months as the full effects of the crude price drop are passed through to the end-user. However, unusually cold or warm weather could, particularly at a regional level, have a stronger impact on prices over a short period than the shipment of Iraqi crude. Yet some oil market analysts have stated that the market has already reacted to the additional Iraqi oil exports, and that prices will not decline significantly. We feel that market fundamentals dictate that prices will decline.

First, we see no evidence that production from other countries will decrease, making "room" for the additional Iraqi crude oil. Non-OPEC countries are producing near capacity and will likely continue to do so, despite the additional oil supplied to the market. As far as the rest of OPEC is concerned, there is no incentive for any one country to reduce production as long as the remaining OPEC countries continue to produce at the same levels. This discourages any decrease in production from the rest of OPEC to accommodate the re-entry of Iraq into the world oil market.

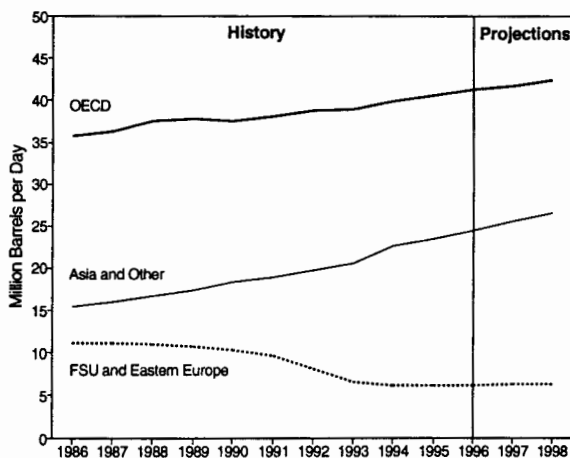
Secondly, in the near-term, oil demand does not rise significantly immediately following a price decline. It will take several months before any significant increase in world oil demand will take place due to the lower world oil price. This means that the extra oil production will initially be used to increase historically low oil inventory levels.

After several years of decreasing oil inventories worldwide, there is sufficient room to increase inventories. Following several years of drawing down inventories, we expect oil inventories to be built in 1997 and to hold steady in 1998 now that Iraq is exporting oil to the world. Over the course of 1997, the additional Iraqi oil exports are equivalent to adding another three days worth of supply to the world market.

Thus, as additional supply enters the market without a concomitant increase in demand, the fundamentals behind supply and demand lead us to expect a near-term decline in world oil prices. However, other factors such as weather, world economic growth, and the behavior of OPEC could alter this forecast.

International Oil Demand

Figure 3. World Oil Demand

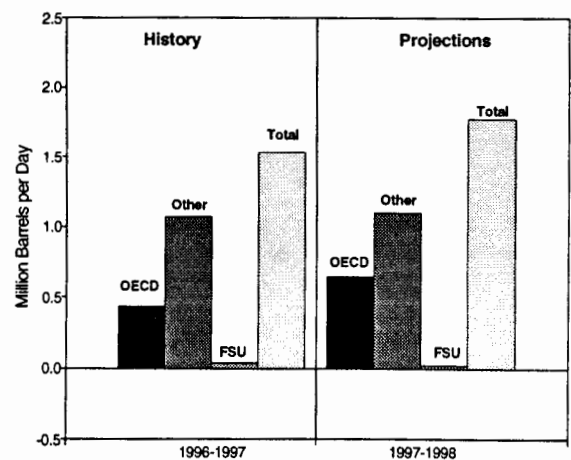


Mid World Oil Price Case

Sources: Energy Information Administration, Energy Markets and Contingency Information Division. Details provided in Figure References Section.

- World oil demand continues to increase to record levels. By 1998, total world oil demand may average over 75 million barrels per day (Table 3). All indicators (price, GDP growth, weather) point toward continued annual increments of 1.5 million barrels per day worldwide in 1997 and 1.8 million barrels per day in 1998, or an annual average growth of 2.3 percent compared with the 1.3 percent average growth seen between 1991 and 1995.
- Oil demand in the former Soviet Union (FSU) is projected to increase in 1997 and 1998, following years of major declines (Figure 3). This increase reflects the expectation that economic activity may be positive for the first time in many years. Demand stood at 8.9 million barrels per day in 1988, reached a low of 4.7 million barrels per day in 1996, and is forecast to increase to 4.8 million barrels per day in 1997 and 1998.

Figure 4. World Oil Demand Changes by Region

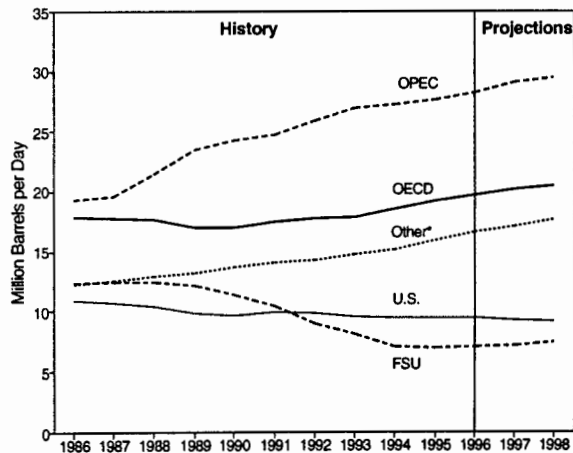


Mid World Oil Price Case

Sources: Energy Information Administration, Energy Markets and Contingency Information Division. Details provided in Figure References Section.

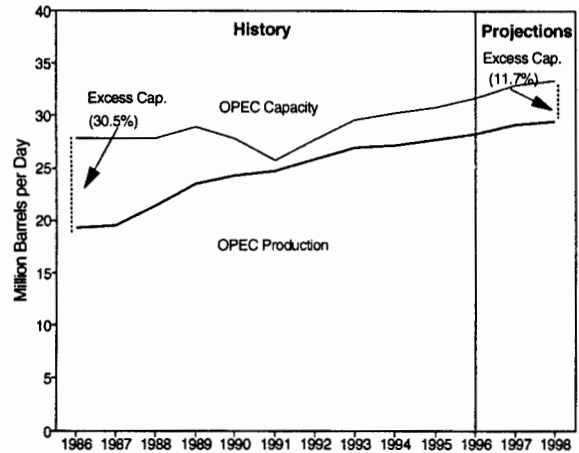
- Oil demand in China is expected to increase by 6 percent in both 1997 and 1998, as the government attempts to slow petroleum imports even though the economy is growing at nearly 10 percent annually. Other Asia¹ is expected to increase by about 6.5 percent on average in 1997 and 1998, as the economies of many of these countries continue to grow by 6 to 10 percent or more each year. In Africa, Latin America², and the Middle East, with economic growth between 4 and 5 percent for many of the economies, oil demand is expected to grow by about 2.2 percent in 1997 and 1998.³
- Oil demand in countries of the Organization for Economic Cooperation and Development (OECD) is expected to increase by 400,000 barrels per day in 1997 and 700,000 barrels per day in 1998, an average annual rate of 1.3 percent (Figure 4 and Table 3). The United States' oil demand growth represents about 30 percent of OECD growth in 1997, but over half of OECD oil demand growth in 1998.

Figure 5. World Oil Production



*Total-OECD-FSU-OPEC.
Mid World Oil Price Case
Sources: Energy Information Administration, Energy Markets and Contingency Information Division. Details provided in Figure References Section.

Figure 6. OPEC Oil Production and Capacity



Mid World Oil Price Case
Sources: Energy Information Administration, Energy Markets and Contingency Information Division. Details provided in Figure References Section.

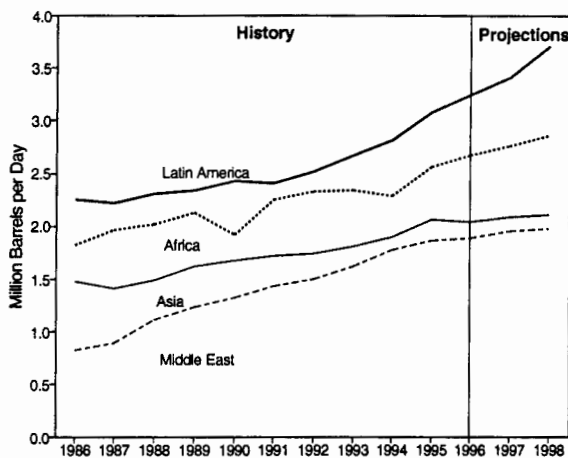
- On December 9, 1996, the United Nations approved additional Iraqi oil exports under U.N. Security Council Resolution 986 (see "The Impact of Iraqi Oil on the World Oil Market" on page 5). These oil sales are expected to add about 600,000 barrels per day of oil to the world market, depending on the price of oil. Additional oil from the North Sea and other non-OPEC countries should provide enough oil in 1997 and 1998 so that production from OPEC, excluding Iraq, will increase only slightly (Figure 5).
- With additional Iraqi oil exports, there will be no pressure for OPEC members to increase production in 1997 if capacity expansion plans are realized (Figure 6). Without any major increases in capacity expected—just a continuation of the production creep of the past several years—the additional Iraqi oil will, along with increases in non-OPEC, be sufficient to supply the market. However, OPEC countries such as Venezuela and Nigeria, are expected to increase oil production throughout the forecast period.

Even Saudi Arabia, although sticking relatively close to its crude oil production quota of 8 million barrels per day, is realizing increased production from non-crude natural gas liquids and crude oil from the Neutral Zone, both of which are excluded from their OPEC quota.

- Sustained growth of non-OPEC supply is expected to continue for the foreseeable future, both inside and outside of the OECD (Figure 5). The major growth story within the OECD region is North Sea production, which grew by almost 0.5 million barrels per day in 1996 and is expected to increase an additional 0.5 million barrels per day in 1997, with increases in production expected to be less in 1998 (Table 3). Only 4 million barrels of oil per day was produced in the North Sea as recently as 1991; North Sea oil production is expected to approach 7 million barrels per day by the end of 1997, and 7.4 million barrels per day by the end of 1998.⁴ This tremendous growth has been critical in keeping prices stable, given the high rate of world demand growth.

International Oil Supply

Figure 7. Non-OPEC, Non-OECD Oil Production

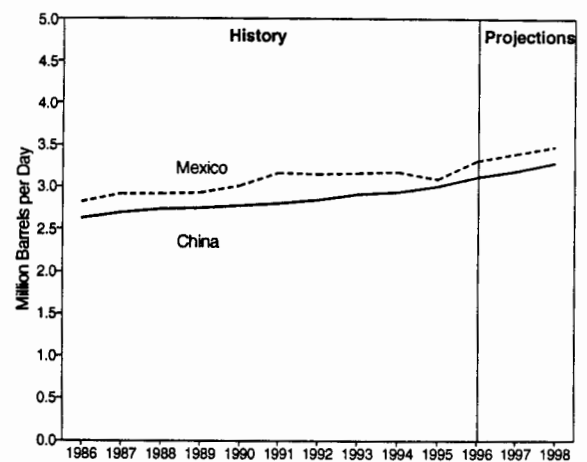


Mid World Oil Price Case

Sources: Energy Information Administration, Energy Markets and Contingency Information Division. Details provided in Figure References Section.

- Outside the OECD, the non-OPEC growth story is depicted by the "Other" group in Figure 5. Increments from this group are accelerating due to increases from China and Mexico (Figure 8), and from Latin America, Africa, Other Asia, and some slight increases from the Middle East. Figure 7 shows growth from these regions since 1985, and particularly since 1990, following the Iraqi invasion of Kuwait. Privatization efforts are beginning to accelerate growth, particularly from Latin America. Together, the non-OECD, non-OPEC countries (excluding the Former

Figure 8. China and Mexico Oil Production



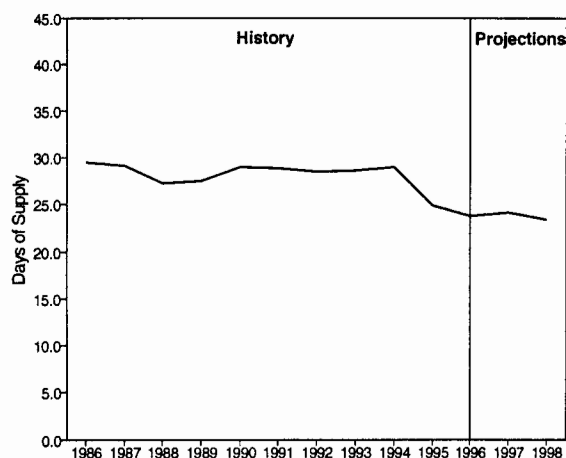
Mid World Oil Price Case

Sources: Energy Information Administration, Energy Markets and Contingency Information Division. Details provided in Figure References Section.

- Soviet Union republics) are expected to increase production by over 1.1 million barrels per day between 1996 and 1998 to 17.7 million barrels per day (Table 3), up nearly 5 million barrels per day since 1988.
- Joint ventures in the FSU, although growing slowly due to legal problems and export pipeline constraints, are beginning to foster positive supply prospects. Significant near-term increases are most likely to come from Kazakhstan, rather than Russia, Azerbaijan, or any of the other former republics.

World Oil Stocks, Capacity, and Net Trade

Figure 9. OECD Commercial Oil Stocks

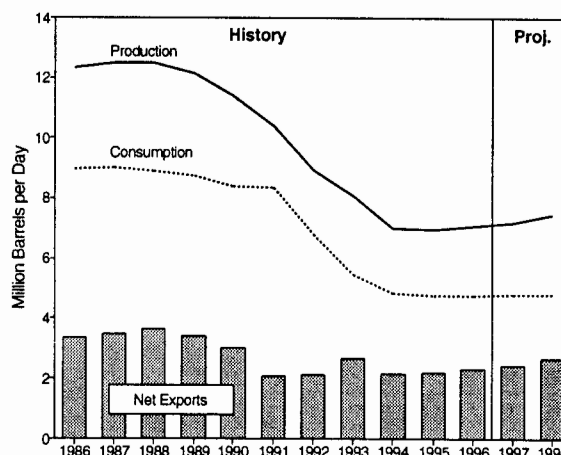


Mid World Oil Price Case

Sources: Energy Information Administration, Energy Markets and Contingency Information Division. Details provided in Figure References Section.

- Commercial oil inventories in OECD countries are expected to increase slightly in 1997 before declining in 1998 to levels similar to 1996 (Figure 9). This follows a sharp decline in 1995 brought about by uncertainty over the timing of Iraqi humanitarian oil sales, colder than normal weather, and low profitability in the refining sector. However, with the additional supply of Iraqi oil and a return to "normal" weather, oil inventories in OECD countries should remain higher than the historically low levels in 1995.
- Several OPEC members are expected to continue to expand capacity. Outside Iraq, over one-half million barrels of capacity expansions are expected in OPEC for both 1997 and 1998. Most of the expansion is expected in Saudi Arabia, Kuwait, Venezuela, and Nigeria. OPEC excess production capacity, including that of Iraq, is expected to increase to 3.7 million barrels per day in 1997 and to 3.9 million barrels per day in 1998. Saudi Arabia controls most of the excess with about 2 million barrels per day of excess production capacity.⁵

Figure 10. FSU Oil Output, Demand, and Net Exports



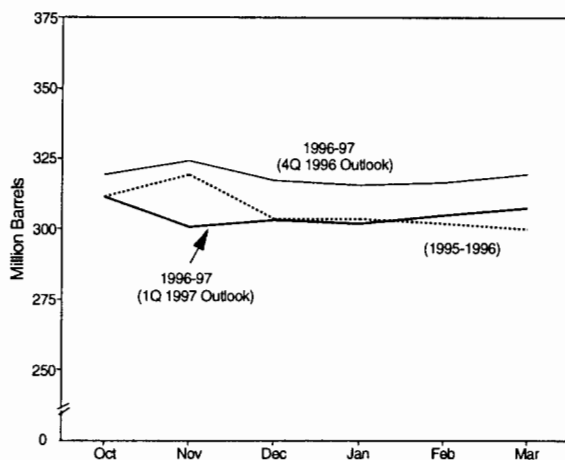
Mid World Oil Price Case

Sources: Energy Information Administration, Energy Markets and Contingency Information Division. Details provided in Figure References Section.

- Current exports of crude oil worldwide are averaging 32 million barrels per day. About 60 per cent comes from OPEC countries.⁶ Saudi Arabia is by far the world's largest exporter, with over 6 million barrels per day of crude exports. It may be surprising to some people that Norway is the world's second largest exporter of crude oil.⁷
- Net exports from the FSU are expected to slowly increase in 1997 before increasing by about 0.3 million barrels per day in 1998 (Figure 10 and Table 3). By 1998, oil production in some of the Former Soviet Union republics such as Kazakhstan, Azerbaijan, and Russia, should begin increasing at more substantial rates. Thus, exports are expected to rise from 2.2 million barrels per day in 1995 to 2.7 million barrels per day in 1998.
- Exports from the Persian Gulf region are expected to increase only slightly over the next year as regional consumption increases largely offset production increases.

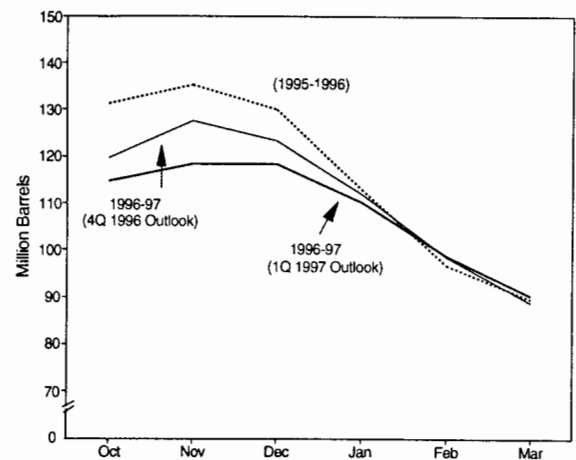
1996-1997 Winter Distillate Fuel Review

Figure 11. Winter Crude Oil Stocks



Sources: First Quarter 1997 STIFS database and Energy Information Administration, Energy Markets and Contingency Information Division. Details provided in Figure References Section.

Figure 12. Winter Distillate Oil Stocks



Sources: First Quarter 1997 STIFS database, and Energy Information Administration, Energy Markets and Contingency Information Division. Details provided in Figure References section.

The previous Short-Term Energy Outlook (Outlook) featured the 1996-1997 Winter Fuels Outlook, which projected lower-than-average distillate stocks and, hence, tighter-than-normal supplies. Since that Outlook's release, crude oil and distillate stocks have drifted even lower than those projections. This analysis revisits demand and supply for the winter, defined as the period from October 1, 1996 to March 31, 1997.

The base-case assumes normal weather for the rest of the winter; the severe-weather case assumes weather during the January-to-March quarter to be 10 percent colder than normal in terms of heating degree-days (HDD's). These projections are derived from simulations of the Short-Term Integrated Forecasting System (STIFS), which comprises the Short-Term Energy Outlook models. They assume no weather abnormalities or supply disruption sufficient to affect distillate distribution.

The Base-Case Outlook

Stocks

Stocks of crude oil at the end of December 1996 are expected to total 293 million barrels, about 24 million barrels less than forecast in the fourth quarter 1996 Outlook (Figure 11). Crude oil inventories normally build during November, but

high refinery operating rates drew down stocks by almost 11 million barrels during that month in 1996. Stocks of distillate fuel oil at the end of December 1996 are now projected to be 119 million barrels, 5 million barrels lower than projected in the previous Outlook (Figure 12) and 11 million barrels below last year. End-of-season stocks are now projected to be 86 million barrels, about 3 million lower than projected in the last Outlook.

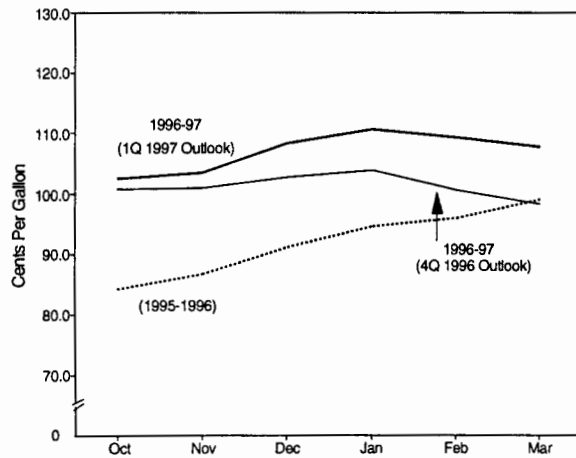
Demand

In the fourth quarter of 1996, distillate demand (3.50 million barrels per day) is estimated to be 170,000 barrels per day higher than projected in the previous Outlook. Weather and transportation almost equally accounted for that revision. With a normal December, HDD's for the full quarter in the Northeast will have been 6.7 percent higher (compared to the assumption of normal weather in the previous Outlook), resulting in 120,000 barrels per day of the revision. Transportation demand growth was about 50,000 barrels per day stronger than previously projected.

In the first quarter 1997, strong growth in diesel demand is expected to continue, resulting in a 130,000 barrels-per-day upward revision in total distillate demand to 3.72 million barrels per day.

1996-1997 Winter Distillate Fuel Review

Figure 13. Winter Heating Oil Retail Prices



Sources: First Quarter 1997 STIFS database and Energy Information Administration, Energy Markets and Contingency Information Division. Details provided in Figure References Section.

Supply

With low petroleum product stocks and continued strong product demand to boost crude oil runs, fourth quarter 1996 distillate production (estimated here at 3.60 million barrels per day) was 240,000 barrels per day higher than previously projected. That boosted average utilization rates and distillate yields to 94 and 24 percent, respectively, from 92 and 23 percent projected in the previous *Outlook*. Despite higher-than-expected demand, the sizeable output revisions might have brought distillate inventories to previously-expected year-end levels (and there has been improvement in recent weeks), but lower-than-anticipated availability of net imports prevented the expected stock build.

For the first quarter 1997, upward revisions in diesel demand are expected to boost distillate production to 3.22 million barrels per day, an increase of 70,000 barrels per day from the last *Outlook*. Utilization rates and yields are projected to average 91 and 23 percent, respectively. Net imports are expected to increase by 50,000 barrels per day compared to the last *Outlook*. Net stock withdrawals are expected to remain approximately unchanged from the last *Outlook*. However, since the year-end inventory level was lower than expected, projected end-of-season stocks have now been revised downward to 86 million barrels compared to 89 million barrels previously.

Prices

Low crude oil and petroleum product stocks and cold weather have contributed to higher prices than those forecast in the last *Outlook* (Figure 13). Crude oil prices in the fourth quarter, averaging \$22.93 per barrel, were almost \$3 higher than previously projected; retail heating oil prices averaged \$1.05 per gallon, 3 cents higher than previously projected. First quarter 1997 average crude oil prices at \$21.83 are now expected to be over \$2.50 per barrel higher than previously projected; retail heating oil prices are projected to be 5 cents higher, averaging \$1.06 per gallon.

Alternative Weather Scenario

Assumptions

This scenario assumes that weather, in terms of heating degree days, is 10 percent cooler than normal for first quarter 1997. This percentage deviation was proportionally distributed throughout the quarter and applied to both the U.S. as a whole and to the Northeast, the prime market for heating oil.

Demand and Supply

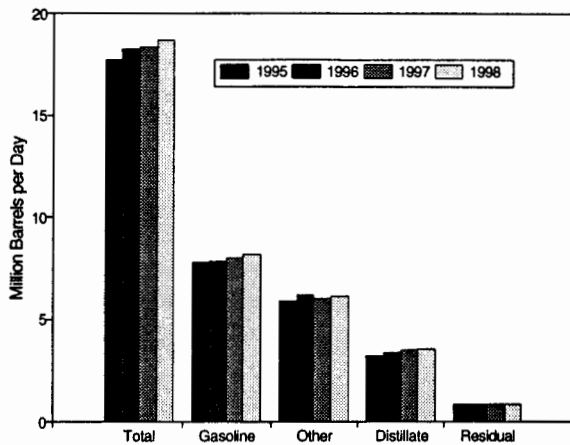
Distillate fuel demand for the first quarter of 1997 would average 3.84 million barrels per day, up 120,000 barrels per day, or 3.2 percent, from the base-case projection. Net imports, often the most responsive incremental source in times of severe weather, would supply just under half the additional requirement, increasing by 50,000 barrels per day. Refinery production would also rise by 50,000 barrels per day, increasing distillate yields slightly from that of the base case, with refinery utilization rates virtually unchanged. Average stockdraw would increase slightly, yielding an 84 million barrel end-of-season balance.

Prices

Severe weather is likely to raise heating oil prices. For the first quarter 1997, the average retail heating oil price would be \$1.11 per gallon compared to \$1.06 per gallon in the base case.

U.S. Oil Demand

Figure 14. U.S. Petroleum Demand

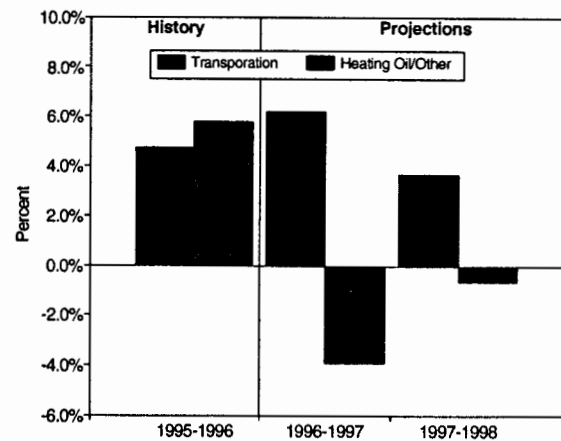


Mid World Oil Price Case

Sources: First Quarter 1997 STIFS database. Details provided in Figure References Section.

- Petroleum demand growth for 1996 is estimated at 500,000 barrels per day, a 2.8 percent increase from 1995 (Figure 14 and Table A5). Robust diesel fuel demand growth and year-to-year differences in weather account for much of that increase. In 1997, assumptions of normal weather are expected to result in demand growth of 130,000 barrels-per-day, or 0.7 percent, and a further 330,000 barrels per day, or 1.8 percent, in 1998 (Table 6).
- Of the major fuel categories, gasoline demand experienced the least growth, estimated at 0.8 percent, for 1996. Among factors limiting demand growth were poor first-quarter driving conditions and higher average retail prices. Assuming normal weather and little change in inflation-adjusted driving costs, demand is projected to rise 2.0 percent in 1997, exceeding 8 million barrels per day on an annual basis for the first time, and then rise by a further 1.7 percent in 1998.
- Following a strong 4.9 percent increase estimated for 1996, jet fuel demand growth is projected to average 1.6 percent per year during the forecast period. Led by increases

Figure 15. Distillate Demand Growth

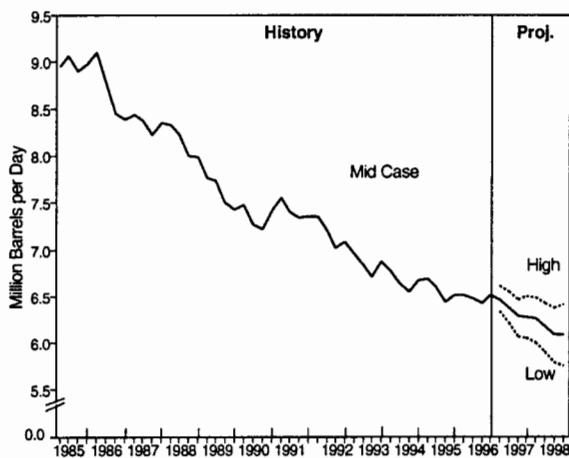


Mid World Oil Price Case

Sources: First Quarter 1997 STIFS database. Details provided in Figure References Section.

- in international activity, air travel capacity is projected to increase an average of almost 6 percent per year compared to 5 percent for utilization. The resultant decline in average load factors, as well as the deployment of new aircraft, are expected to bring about average fuel efficiency increases of over 3 percent (Table 2).
- Year-to-year differences in weather in the first half of the year, and substantial growth in freight traffic increased total distillate demand by an estimated 5 percent in 1996. Assumed normal weather, however, is expected to moderate demand growth to an average 2.3 percent during the forecast interval (Figure 15).
- In 1996, residual fuel oil demand remained flat at 1995 levels, despite weather factors. Due to some favorable changes in relative prices of gas and residual fuel, residual demand is expected to rise modestly during the forecast period. Growth in this fuel over the next 2 years will be related to power generation.

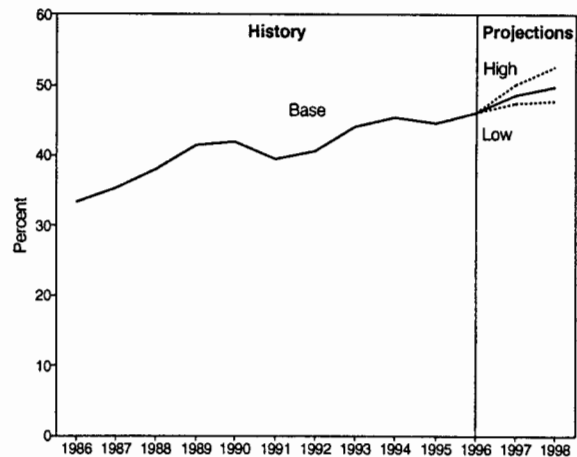
Figure 16. U.S. Crude Oil Production



Sources: First Quarter 1997 STIFS database and Energy Information Administration, Reserves and Natural Gas Division. Details provided in Figure References Section.

- In 1996, the decline in U.S. production leveled off due to an increase in lower-48 production.⁸ However, at mid-case prices, total U.S. domestic crude oil production is expected to decline by 130,000 barrels per day, or 2.0 percent, in 1997, and by an additional 200,000 barrels per day, or 3.2 percent, in 1998 (Table 6 and Figure 16).
- In 1996, declining U.S. crude oil production and higher demand contributed to an average 8.4 million barrels per day of total petroleum net imports, just below the record 8.6 million barrels per day set in 1977.⁹ In 1997, total net imports are projected to exceed 1977's record high, equaling 48.6 percent of total petroleum demand in the base case (Figure 17), and continue to increase to 49.8 percent in 1998. In the low-to-high price ranges, the net import share of demand could range between 47 and 51 percent (Tables 5 and 7).
- Oil production in the lower 48 States is expected to decline by 40,000 barrels per day in 1997 and by 120,000 barrels per day in 1998. Oil production from the Mars, Ram Powell, Auger, and Santa Ynez Federal Offshore fields is expected to account for about 6.7 percent of lower-48 oil production by the end of 1998. Mars Field production started in August 1996

Figure 17. U.S. Net Petroleum Imports (Percent of Total Demand)



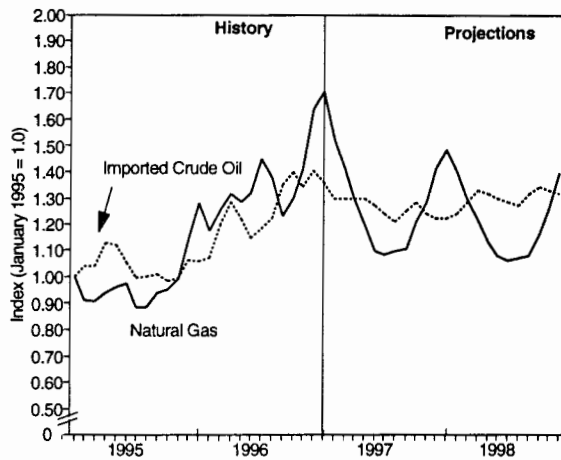
Sources: First Quarter 1997 STIFS database. Details provided in Figure References Section.

and is expected to peak at 100,000 barrels per day in early 1997. The Ram-Powell Field is expected to start in the last quarter of 1997 and peak later at a rate of 60,000 barrels per day. The Santa Ynez field, Federal offshore California, is currently producing at 100,000 barrels per day.¹⁰

- Alaska will account for almost 21 percent of the total U.S. oil production in 1997. Oil production in Alaska is expected to decline by 6.3 percent in both 1997 and 1998. Production from recent discoveries will partially offset the expected production decline from the giant Prudhoe Bay and other North Slope fields. A large scale enhanced oil recovery project was initiated in September 1996 in the Kuparuk River field, which should enable production to remain at 260,000 barrels per day over the forecast period.¹¹
- Crude oil production could be as high as 6.8 million barrels per day by the fourth quarter of 1998, given the high price case (Table 7), or as low as 6.0 million barrels per day under the low price scenario (Table 5).
- The rig count is estimated at an average of 783 in 1996, with further increases to 924 in 1997 and 1062 in 1998 expected.¹²

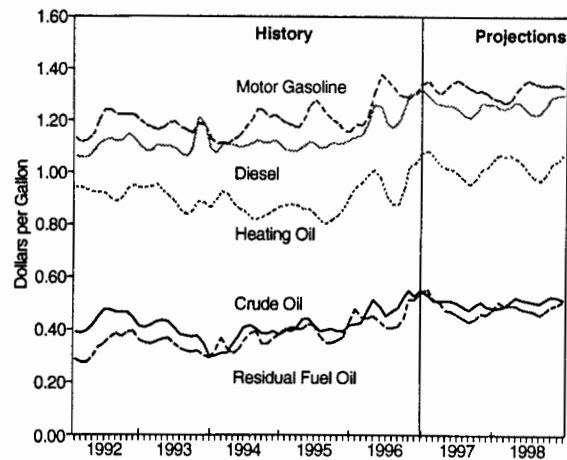
U.S. Energy Prices

Figure 18. U.S. Oil and Gas Prices



Mid World Oil Price Case
Sources: First Quarter 1997 STIFS database. Details provided in Figure References Section.

Figure 19. Petroleum Product Prices



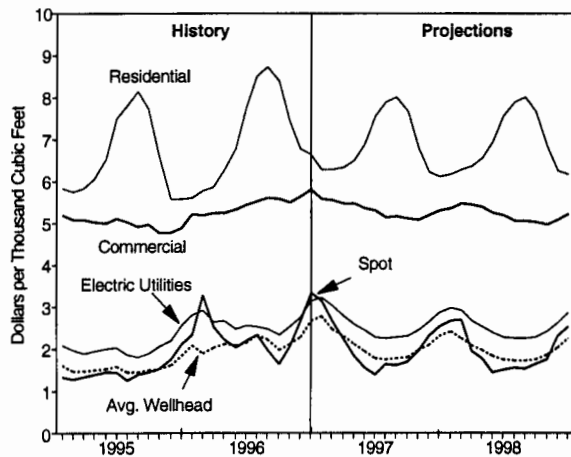
Mid World Oil Price Case
Sources: First Quarter 1997 STIFS database. Details provided in Figure References Section.

- Low world oil stocks, high world oil demand and early cold weather have resulted in a volatile crude oil market. The suspension of the United Nations-sanctioned sale of Iraqi oil last September and the accompanying political tension led to a jittery spot market which moved world oil prices to about \$23.00 per barrel in the fourth quarter of 1996. With the additional Iraqi oil now finally on the market, prices are expected to decline gradually to about \$20.40 per barrel in the third quarter of 1997. Prices in 1997 are assumed to be at their highest in the first quarter at \$21.80 per barrel, as low stocks coupled with winter demand will absorb the additional Iraqi oil. The full effects of the resumption of shipments of Iraqi oil are assumed to occur later in the year. In 1998, a seasonal pattern more typical of 1995 is assumed, with crude oil prices peaking in the spring (second quarter) driving season and in the fourth quarter heating season (Figure 18).
- The \$3.40 per barrel crude oil price increase in 1996 was passed through to all petroleum products. In 1997 and 1998, average annual crude oil prices are expected to rise modestly,

which in turn will push up product prices. Motor gasoline and diesel fuel oil prices could each gain about 3 cents per gallon through 1998 (Table 4 and Figure 19). Residential heating oil prices should gain about 5 cents in 1997, with much of the rise coming in the first quarter. In 1998, this price is expected to remain relatively stable. Residual fuel prices will follow the crude oil price path with seasonal variations.

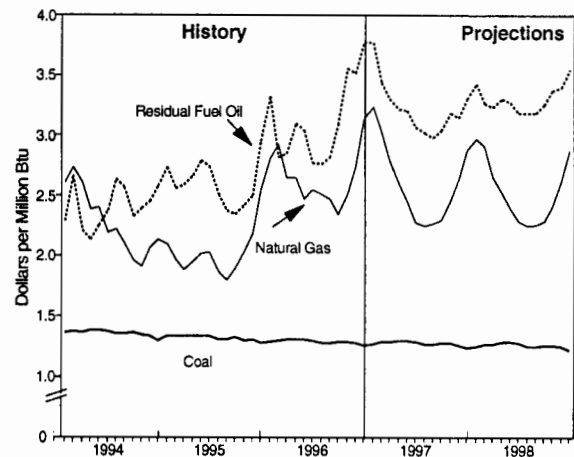
- Retail motor gasoline prices (an average of all types, all services) peaked last May at \$1.38 per gallon, then fell steadily through September. Prices stabilized in the fourth quarter and then began to rise by the end of the year led by the higher crude oil prices. Pump prices should hover around \$1.32 per gallon in the first quarter 1997. Considering that gasoline prices are projected to remain relatively high this winter and assuming that crude oil prices decline in the spring and summer, there should not be as steep an increase at the pump during the 1997 driving season. However, the same combination of factors that caused gasoline prices to jump in

Figure 20. Natural Gas Prices by Sector



Mid World Oil Price Case
Sources: First Quarter 1997 STIFS database. Details provided in Figure References Section.

Figure 21. Fossil Fuel Prices to Electric Utilities



Mid World Oil Price Case
Sources: First Quarter 1997 STIFS database. Details provided in Figure References Section.

the second quarter of each of the previous two years is expected to be in effect in 1998, but on a smaller scale.

- At the beginning of the driving season (April/May) in both 1995 and 1996, low crude oil and gasoline stocks resulted in significant price run-ups. In 1997, the pump price is expected to increase by about 2 cents per gallon from the first quarter to the second quarter compared with 15 cents in 1996.
- Spot heating oil prices spiked in October of 1996, climbing more than 20 cents per gallon from June.¹³ Although some of this increase could be attributed to seasonality, high crude oil prices combined with low stocks entering the heating season played a significant role. However, by early November, spot heating oil prices tumbled by nearly 8 cents per gallon in less than two weeks as distillate production increased dramatically and as crude oil prices moderated. Yet, by the middle of November, spot prices rebounded to their previous peak, as early winter weather in the Northeast slowed the stockbuild. In December, with stocks still about 10-12 million barrels below the previous year's level, high spot prices have continued. Low inventories often lead to price volatility, thus spot prices are likely to

fluctuate greatly during this winter as long as inventories remain low and the weather is unpredictable. The higher wholesale prices will be passed on to the residential market, pushing up average home heating oil prices by 14 cents per gallon this winter compared to last winter. If the weather is colder than normal, prices could rise further, perhaps by as much as 6 cents in some months. Average residential heating oil prices are expected to increase by 6 cents per gallon in 1997, leveling out in 1998 as crude oil costs stabilize.

- The unusually cool weather that much of the nation experienced last summer had helped natural gas storage buildup, driving down spot natural gas wellhead prices by nearly 70 cents per thousand cubic feet from July to September¹⁴. Underground storage levels had been at historically low levels going into the injection season. Despite the rapid stockbuild, the early winter weather, especially in the midwest, elevated November storage withdrawals, slowed down the storage buildup and sent spot prices soaring to nearly \$4.00 per thousand cubic feet at the Henry Hub.¹⁵ Although the composite wellhead price is not as volatile as the spot price, there could nevertheless be a substantial wellhead price rise this winter of about 60 cents per

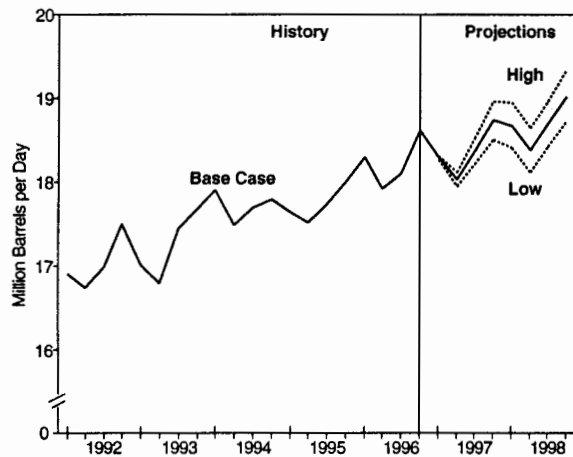
U.S. Energy Prices

thousand cubic feet compared to last winter.

- The average natural gas wellhead price in 1996 is estimated to have increased by 40 percent over 1995 (Table 4 and Figure 20). Assuming normal weather, wellhead prices are expected to drop quickly after January and resume their normal seasonal price patterns through 1998. This translates into an average of a 4 percent price drop in 1997 and an additional 5 percent in 1998 as increased domestic production and Canadian imports, as well as continued market efficiencies, offset demand growth. Residential prices will reflect these changes (Figure 20). However, very cold weather could rapidly deplete gas in storage, push spot prices to new highs, and put pressure on the wellhead market to recover supply balance that could last well into the summer or beyond. Thus, a gas price decrease in 1997 may be less likely if severe weather in consuming regions appears over the next 2 months.
- Residential natural gas prices are expected to rise slightly 1997 then flatten in 1998. This is because the projected decline in wellhead prices, which accounts for about one-third of the residential price, will be offset by small increases in transmission and distribution costs. These costs, which make up the remaining two-thirds of the end-use prices, are projected to increase at about half the rate of inflation through 1998.
- In 1995, natural gas prices to electric utilities were, on average, about 76 percent of the residual fuel oil price (Table 4). Due to the 40 percent jump in prices at the natural gas wellhead between 1995 and 1996, natural gas prices to electric utilities rose to 84 percent of the residual fuel oil price in 1996. This ratio is projected to return to about 77 percent in 1997 and 1998 as natural gas prices moderate.
- Coal prices to electric utilities fell in 1995 to their lowest level since 1979¹⁶ and are expected to continue to decrease through 1998 (Table 4 and Figure 21). Continued gains in mining productivity have resulted in a downward trend for coal prices. In addition, there could soon be increased competition in the spot market for coal due in part to the emerging deregulation of the electric utility sector.
- Annual average residential electricity prices are projected to fall through 1997 and 1998 as a result of moderate costs for capital, labor capital, and fossil fuels. Also, generation from non-utility producers and increased conservation efforts have reduced the need to build expensive new power plants.

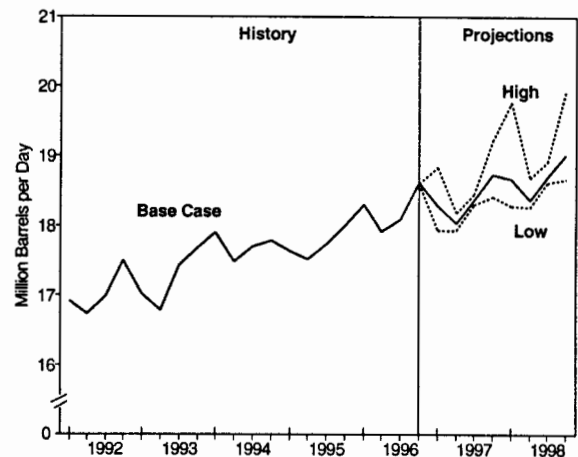
U.S. Oil Demand and Supply Sensitivities

Figure 22. Total Petroleum Demand: Macro Cases



Sources: First Quarter 1997 STIFS database. Details provided in Figure References Section.

Figure 23. Total Petroleum Demand: Weather Cases



Sources: First Quarter 1997 STIFS database. Details provided in Figure References Section.

- The petroleum demand and supply outlook for the mid-price case is based on assumed normal temperatures and GDP growth of 2.2 percent per year in 1997 and 1998. To enhance the usefulness of the mid-case forecast, ranges of possible outcomes for petroleum demand and supply, using alternative macroeconomic, price, and weather assumptions, are also derived (Tables 5 and 7). Plausible macroeconomic and weather-related petroleum demand cases are illustrated in Figures 22 and 23.
- The petroleum price sensitivity assumes that nonpetroleum prices remain constant. The weather sensitivities assume deviations above and below normal that correspond to one-half of the largest quarterly deviations from normal in heating and cooling degree-days over the last 15 years (see Appendix).
- A 1-percent increase in real GDP raises petroleum demand by about 120,000 barrels per day. The impact of shifts in economic growth varies depending upon distribution of incremental growth across energy-intensive and non-energy-intensive sectors (Table 8).
- A \$1-per-barrel increase in crude oil prices, assuming no price response from non-petroleum energy sources, reduces demand by about 69,000 barrels per day (Tables 8 and 9).
- A \$1-per-barrel increase in crude oil prices boosts domestic oil supply (crude oil and natural gas liquids production) by about 95,000 barrels per day.
- A 1-percent increase in heating degree-days increases demand by about 29,000 barrels per day. The impact of heating degree-day deviations from normal is not likely to be symmetrical. Extremely cold weather could result in indirect effects on fuel oil markets due to potential natural gas supply constraints that have no counterparts in the case of mild weather.
- A 1-percent increase in cooling degree-days increases petroleum demand by about 8,000 barrels per day. (See Appendix for sensitivity calculation methodology.)

1996-1997 Winter Natural Gas Review

This article compares previous and current projections of natural gas demand and supply for the 1996/1997 winter season, defined as the period from October 1, 1996 through March 31, 1997. The two sets of projections provided are those from the base case of the current First Quarter 1997 Outlook and those from the base case of the Fourth Quarter 1996 Outlook. The "base-case" scenario is consistent with the mid-price projection, which assumes normal weather patterns. A "severe-weather" case, derived from the current Outlook, is also discussed. These projections are derived from simulations of the Short-Term Integrated Forecasting System (STIFS) model, which is used to produce the Short-Term Energy Outlook.

The analysis shows that, under assumptions of normal weather, current projections of demand for natural gas are significantly higher than those given in the Fourth Quarter 1996 Outlook. Natural gas production rose in fourth quarter 1996 to meet weather-induced demand, enabling stocks to continue to be built, and thus end of first quarter 1997 stock levels are expected to be higher than previously anticipated. These current projections, which are discussed and summarized in Table WFO1 below, have had the benefit of more recent estimates of fourth quarter 1996 market movements.

The Base Case Outlook

Demand

Total winter natural gas demand, which was projected at 71.65 billion cubic feet per day in the

last Outlook, is projected at 72.90 in the current Outlook due mainly to higher-than-expected demand in fourth quarter 1996. The reasons were: higher residential demand for gas in the face of the early onslaught of cold temperatures; and higher industrial and commercial demand, indications of rising economic growth.

Supply

Natural gas production this winter is projected at 55.25 billion cubic feet per day in the current Outlook, compared with 52.98 in the last Outlook. Fourth quarter 1996 production is now estimated to have been 10 percent higher than previously projected. Stock withdrawals are expected to average 9.35 billion cubic feet per day in the current Outlook, considerably below the 10.2 billion cubic feet per day previously forecast, as higher production levels meet more of the increased demand. End of fourth quarter 1996 stock levels are estimated to be somewhat higher than expected. End of first quarter 1997 stock levels are currently projected to be 2.4 percent higher than in the last Outlook, due to greater reliance on production to meet incremental demand rather than stocks.

Table WFO1. 1996-1997 Winter Fuels Outlook: Mid World Oil Price Case

| | 1st Quarter 1997 Outlook | | | 4th Quarter 1996 Outlook | | | 1995-1996 Actual | | |
|--|--------------------------|-------|--------|--------------------------|-------|--------|------------------|-------|--------|
| | Q4 | Q1 | Winter | Q4 | Q1 | Winter | Q4 | Q1 | Winter |
| Demand/Supply | | | | | | | | | |
| Natural Gas (bill. cubic feet per day) | | | | | | | | | |
| Total Demand | 65.25 | 80.72 | 72.90 | 62.01 | 81.19 | 71.65 | 61.96 | 78.28 | 70.08 |
| Net Domestic Production ^a | 51.09 | 59.51 | 55.25 | 46.40 | 59.48 | 52.98 | 47.13 | 54.89 | 50.99 |
| Net Stock Withdrawal | 5.61 | 13.17 | 9.35 | 6.83 | 13.53 | 10.20 | 7.19 | 16.13 | 11.64 |
| Net Imports | 8.55 | 8.03 | 8.30 | 8.78 | 8.18 | 8.48 | 7.64 | 7.26 | 7.45 |
| Stocks (ending period) | | | | | | | | | |
| Nat. Gas in Und. Storage- Beginning (bcf) ^b | 6928 | 6398 | 6928 | 6956 | 6334 | 6956 | 7135 | 6492 | 7135 |
| Nat. Gas in Und. Storage- Ending (bcf) | 6398 | 5213 | 5213 | 6334 | 5090 | 5090 | 6492 | 5030 | 5030 |
| Prices | | | | | | | | | |
| Wellhead Gas Price (\$/mcf) ^c | 2.35 | 2.51 | 2.43 | 2.05 | 1.92 | 1.98 | 1.67 | 2.00 | 1.84 |
| Residential Gas Price (\$/mcf) | 6.82 | 6.29 | 6.55 | 6.41 | 5.79 | 6.01 | 5.73 | 5.74 | 5.74 |

^aDefined as demand minus net stock withdrawal minus net imports.

^bbcf = billion cubic feet.

^c\$/mcf = Dollars per thousand cubic feet.

1996-1997 Winter Natural Gas Review

Net imports for the winter are expected to average 8.3 billion cubic feet per day, somewhat lower than the 8.5 billion cubic feet per day forecast in the last *Outlook*. This is mainly because fourth quarter 1996 imports are estimated to have been 2.7 percent less than previously expected.

Prices

Natural gas wellhead price projections average 45 cents higher during the 1996/97 winter than they were in the previous *Outlook* (Figure 24) as harsh early winter weather increased demand. Also in this forecast, wellhead prices are expected to peak in the first quarter of 1997 rather than in the fourth quarter of 1996 as in the previous forecast. First quarter 1997 residential prices for natural gas are projected to average \$6.29 per thousand cubic feet, compared to the previous estimate of \$5.79 per thousand cubic feet. Propane prices, which are closely tied to natural gas prices, will also be considerably higher this winter compared to last winter.

Alternative Weather Scenario

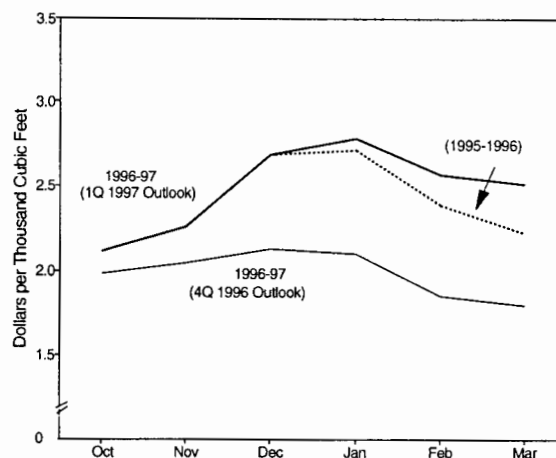
Summary

This scenario (summarized in Table WF02) assumes that weather, in terms of heating degree days, is 10 percent cooler than normal for the January-to-March quarter. To derive the alternative case, this percentage deviation was proportionally distributed throughout the quarter and applied to the U.S. heating oil market.

Demand and Supply

Under severe weather conditions, natural gas demand during the first quarter 1997 is now forecast to average 84.6 billion cubic feet per day compared to 80.7 billion cubic feet per day in the base case. The difference would be met mainly by production and stock withdrawals. Imports, due to pipeline constraints, would not increase. Expected production would average 62.4 billion cubic feet per day, up from the 59.5 billion cubic feet per day in the base case. The expected net stockdraw would increase to 14.2 billion cubic feet per day, up from

Figure 24. Winter Natural Gas Wellhead Prices



Sources: First Quarter 1997 STIFS database and Energy Information Administration, Energy Markets and Contingency Information Division. Details provided in Figure References section.

the 13.2 billion cubic feet in the base case. Stock supplies are expected to be more than adequate to meet this situation. However, stock levels at end of quarter would be 5.1 trillion cubic feet, down 96 billion cubic feet from what they would have been in the base case, but still higher than they actually were at last winter's end.

Prices

In first quarter 1997, wellhead gas prices could be about 6 cents higher under the 10 percent colder weather scenario than they would be in the base case, as greater pressure on the overall supply is felt. They would be expected to remain above the base case through the spring because off-season storage injection rates would have to be increased.

Table WF02. Severe Weather Case Q1 1997

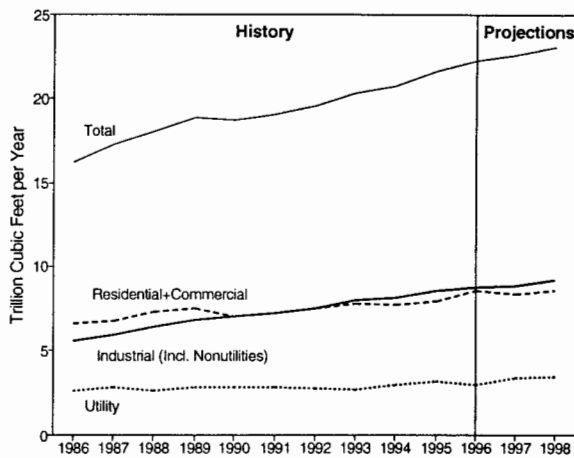
| | |
|---|------|
| Natural Gas Supply/Demand (bcfd)^a | |
| Total Demand | 84.6 |
| Net Domestic Production | 62.4 |
| Net Stock Withdrawal | 14.2 |
| Net Imports | 8.0 |
| Prices (average) | |
| Wellhead Gas Price (\$/mcf) ^b | 2.57 |
| Residential Gas Price (\$/mcf) | 6.31 |

^abcfd = billion cubic feet per day.

^b\$/mcf = dollars per thousand cubic feet.

U.S. Natural Gas Demand

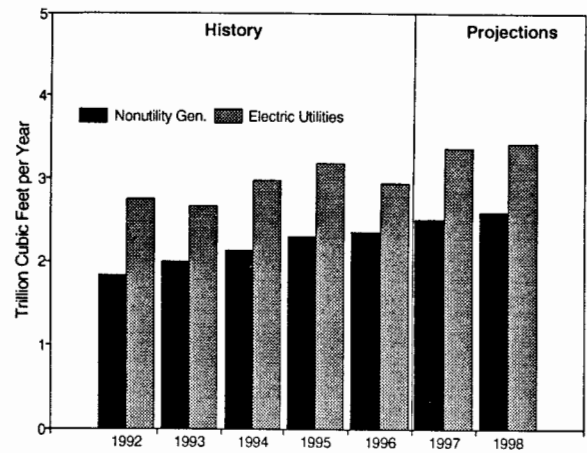
Figure 25. U.S. Natural Gas Demand Trends



Mid World Oil Price Case

Sources: First Quarter 1997 STIFS database. Details provided in Figure References Section.

Figure 26. Natural Gas Demand for Power Generation

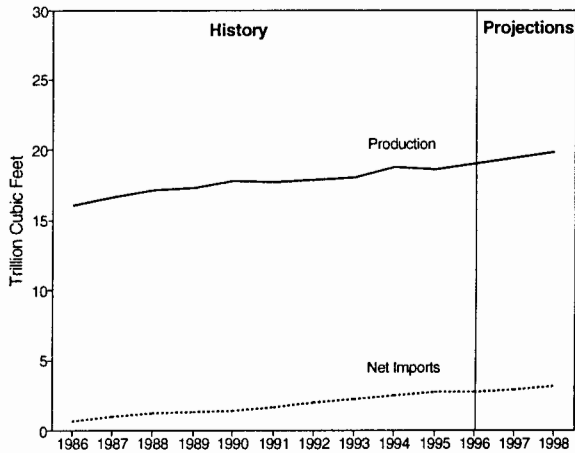


Mid World Oil Price Case

Sources: First Quarter 1997 STIFS database. Details provided in Figure References Section.

- In 1996, natural gas demand grew by 3.1 percent, due mainly to weather factors, and despite depressed gas demand levels on the U.S. west coast amid record hydroelectric power availability.¹⁷ Continued economic growth, aided by lower gas prices and recovering west coast demand, is expected to help raise total annual natural gas demand in 1997 and 1998 to its highest levels since 1973.¹⁸ In 1997, demand grows by 1.4 percent, led by growth in the electricity generating and industrial sectors (Figure 25 and Table 10). In 1998, a high of 23.1 trillion cubic feet is expected, as natural gas demand rises by an additional 2.3 percent.
- In 1997, based on the assumption of normal weather, residential demand is expected to be down by 2.6 percent for the year compared with high 1996 levels. In 1998, residential demand is expected to increase by 1.2 percent due mainly to the continued addition of new gas-heated homes.
- Industrial gas demand in 1997 and 1998 is expected to grow by 0.7 and 3.2 percent, respectively. This pattern is due mainly to expectations of declining gas prices from currently high levels by mid- to late-1997. Also, continued economic growth and rising manufacturing production should add to overall industrial use.
- A big jump in gas consumption for utility power generation is expected in 1997 (Figure 26), compared with a decrease in 1996. This is the result mainly of decreased availability of hydropower for electricity generation, based on the assumption of a return to normal rainfall. Similar factors will drive an additional 1.9 percent increase in 1998 (Tables 10 and 12).
- Commercial sector demand posted a healthy increase of 9.0 percent in 1996 due mainly to weather conditions aided by economic growth and increased use of gas-burning equipment. Demand is expected to decline somewhat in 1997, as weather is assumed to be normal. In 1998, commercial sector demand is expected to continue to rise along with the economy.

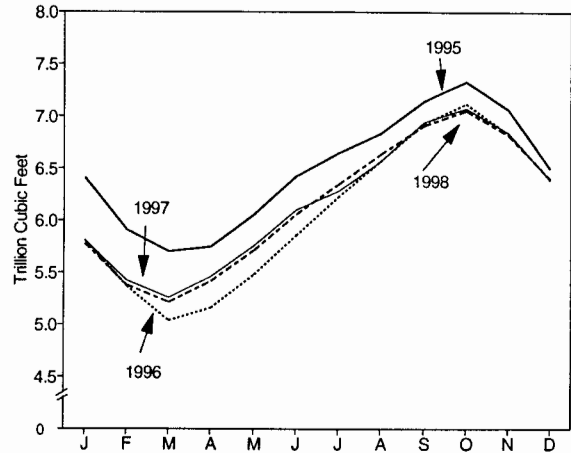
Figure 27. U.S. Dry Gas Production and Net Imports



Mid World Oil Price Case

Sources: First Quarter 1997 STIFS database and Energy Information Administration, Reserves and Natural Gas Division. Details provided in Figure References Section.

Figure 28. Total Gas in Underground Storage



Mid World Oil Price Case

Sources: First Quarter 1997 STIFS database. Details provided in Figure References Section.

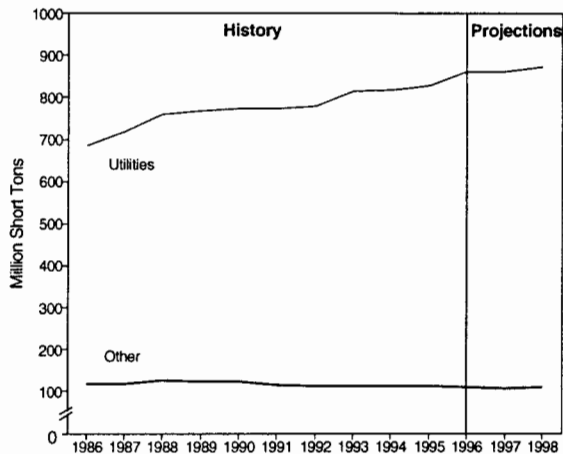
- The decline in natural gas production capacity which began in 1986 was clearly reversed in 1996 due mainly to new discoveries in the Gulf of Mexico outer continental shelf.¹⁹ Dry gas production is expected to increase through the forecast period, encouraged by wellhead prices averaging \$2.08 per thousand cubic feet between 1996 and 1998, as well as pressure from natural gas demand growth. U.S. dry gas production growth in 1996 is estimated at 2.5 percent, and in 1997 it is expected to rise by an additional 2.0 percent. In 1998, gas production is expected to continue to grow by 2.1 percent (Figure 27 and Table 10).
- Overall gas storage at the beginning of the heating season (November 1, 1996) was only 3 percent below last year's level (Figure 28), and storage in the key northeastern consuming region, where 60 percent of U.S. storage is located, was at about last year's level.
- New methods of managing storage resources may lead to more efficient and economical service for customers and change requirements for storage gas.²⁰ This includes use of salt

cavern storage and marketing hubs to increase short-term delivery capability of the industry. In the gas producing region particularly, use of salt cavern storage enables increased rate of turnover of gas storage, effectively reducing the levels of storage needed.²¹

- The resurgence of gas exploration and development in the offshore Gulf in 1996 is expected to provide new supply in 1997 and 1998. The Baker Hughes natural gas rig count for the month of November was 482 rigs.²²
- Net natural gas imports expanded by 2.5 percent in 1996. In 1997, net imports could increase by 6.7 percent, due to strong U.S. demand and favorable price differentials. Also, about 200 million cubic feet of increased pipeline capacity to the U.S. northeast is expected in November 1997, with expansion of the TransCanada pipeline. In 1998, net imports rise by another 8.3 percent as about 900 million cubic feet per day of total increased export capacity is expected to be added on the TransCanada and Northern Border pipelines.²³

U.S. Coal Demand and Supply

Figure 29. U.S. Coal Demand Trends

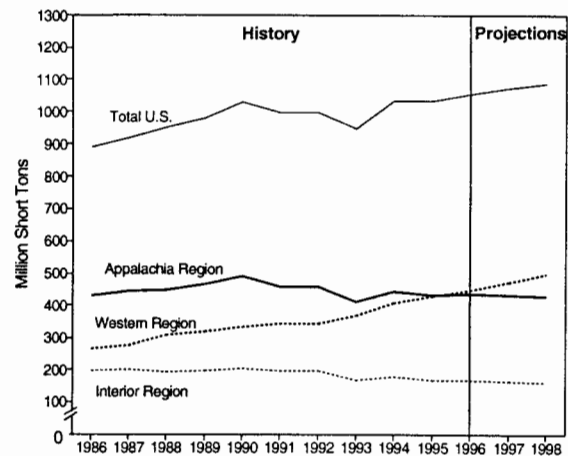


Mid World Oil Price Case

Sources: First Quarter 1997 STIFS database. Details provided in Figure References Section.

- Electricity demand growth will continue to be the driving force behind coal consumption. Total coal demand is expected to decrease by 0.2 percent in 1997 and increase by 1.6 percent in 1998 (Figure 29 and Table 11).
- Coal demand by utility and nonutility electricity generators grew by 3.9 percent in 1996 (Table 11). In 1997, electricity sector demand for coal is expected to grow only by 0.3 percent as a result of slower growth in electricity demand. In 1998, rising growth in electricity demand, combined with declines in hydroelectric electricity generation and slower growth in nuclear-powered generation, will lead to 1.7 percent growth in coal demand by the electricity sector.
- Demand growth for coal at coke plants is expected to remain around 32 million short tons throughout the forecast period, primarily as a result of coking plant capacity constraints. Another factor hampering the growth of coke plant coal consumption is the use of non-coke methods of steel production (steel recycling and electric arc furnaces) by the iron and steel

Figure 30. U.S. Coal Production Trends by Region



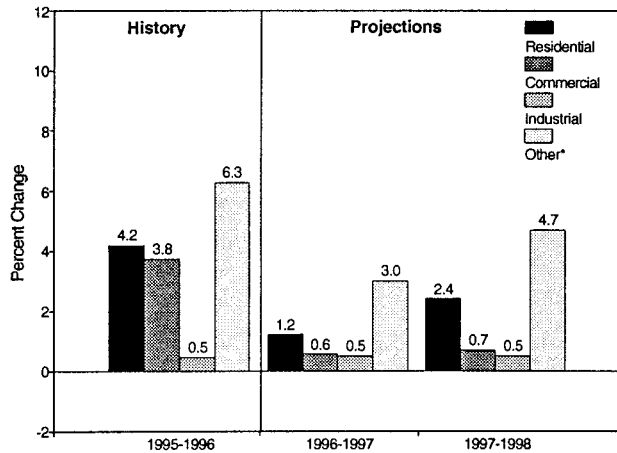
Mid World Oil Price Case

Sources: First Quarter 1997 STIFS database and Energy Information Administration, Office of Coal, Nuclear, Electric, and Alternative Fuels. Details provided in Figure References Section.

- industry. Electric-arc production grew by 7.6 percent in 1996, accounting for 41.6 percent of raw steel production.²⁴
- Demand for coal by the retail and general industry sectors is projected at 76.9 million short tons in 1997, a 0.8 percent decrease from 1996 demand. Demand is forecast to increase by 0.4 percent in 1998.
- U.S. coal exports are expected to continue growing in 1997 and 1998. Exports will be 91.9 million short tons in 1997, a 2.1 percent increase, and 92.4 million short tons in 1998 (Table 11).
- Coal production is expected to grow by 1.4 percent in 1997, with annual output reaching 1,072 million short tons in 1997 (Figure 30). Production will grow by an additional 1.5 percent in 1998. Production in the Western region should continue to rise over the forecast period, while production in the Interior and Appalachian regions declines in 1997 and 1998.²⁵

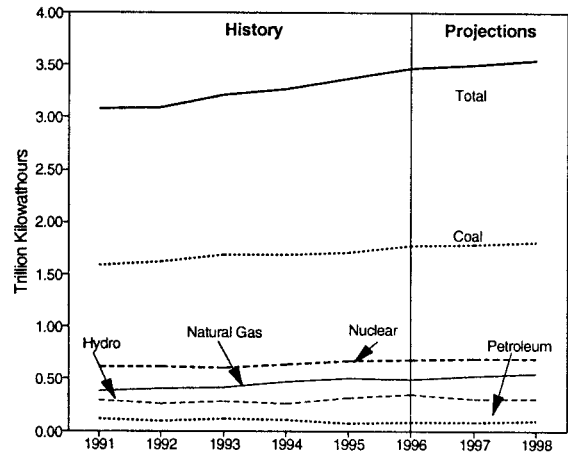
U.S. Electricity Demand and Supply

Figure 31. U.S. Electricity Demand



*Includes nonutility own use
Mid World Oil Price Case
Sources: First Quarter 1997 STIFS database. Details provided in Figure References Section.

Figure 32. U.S. Electricity Production*

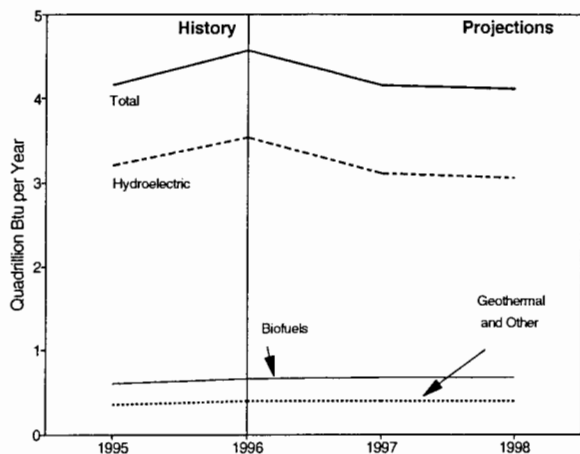


*Includes nonutilities
Mid World Oil Price Case
Sources: First Quarter 1997 STIFS database and Energy Information Administration, Office of Coal, Nuclear, Electric and Alternate Fuels. Details provided in Figure References Section.

- In 1996, total electricity demand is estimated to have grown by 2.8 percent. In 1997, demand is expected to grow more slowly, at 0.8 percent (see Table HL1). This is due mainly to expectations of normal weather (Figure 31 and Table 12).
- Residential demand growth for electricity in 1996 is estimated at 4.2 percent, with much of the weather-related increase taking place in the first quarter (Figure 31). Normal weather in the forecast period, together with housing additions, results in continued, though slower, residential demand increases.
- Commercial sector electricity demand rose by 3.8 percent in 1996 along with commercial employment (Table 2). In 1997 and 1998, commercial demand increases more slowly due primarily to assumptions of normal weather, along with slower rates of expansion of commercial employment (Figure 31 and Table 12).
- Industrial demand grew by 0.5 percent in 1996. It is projected to grow an average of 0.5 percent in 1997 and 1998, reflecting continuing growth in industrial output (Table 12).
- U.S. utility generation is expected to be flat in 1997 compared with 1996's relatively higher growth rate, but resume growing in 1998. Nonutility generation is expected to continue to increase at faster rates of 5.1 percent in 1997 and 3.4 percent in 1998, a result of capacity additions.²⁶
- Hydropower generation by electric utilities in 1997 and 1998 is expected to decline from high 1996 levels due to the assumption of a return to normal precipitation in the Pacific Northwest (Figure 32).
- Nuclear power generation is expected to continue to rise during the forecast period, though at much slower rates than in 1996. Increases in nuclear generation are due to the continuing improvement in performance efficiency of existing plants.
- In 1997 and 1998, net imports of electricity are expected to continue to decline from their well-above-normal 1994 levels.

U.S. Renewable Energy Demand

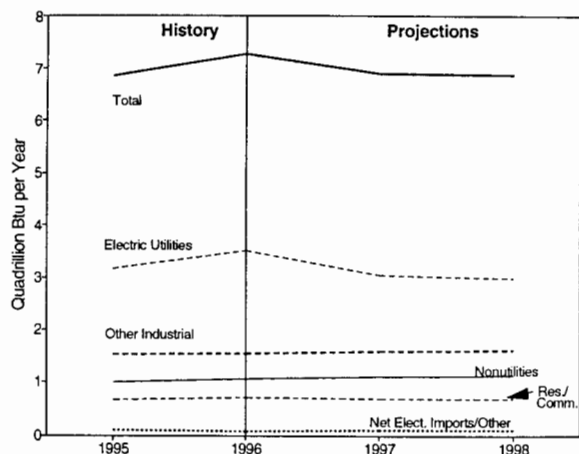
Figure 33. Renewable Energy Use for Electricity



Mid World Oil Price Case

Sources: First Quarter 1997 STIFS database. Details provided in Figure References Section.

Figure 34. Renewable Energy Use by Sector



Mid World Oil Price Case

Sources: First Quarter 1997 STIFS database and Energy Information Administration, Office of Coal, Nuclear, Electric and Alternate Fuels. Details provided in Figure References Section.

- Renewable energy use in the United States amounted to about 7.3 quadrillion Btu (quads), or about 7.7 percent, of total domestic gross energy demand in 1996 (Tables HL1 and 13). In 1996, use of renewables increased by 6.2 percent due to an increase in hydroelectric generation resulting from heavy rainfall. In 1997, renewables use is expected to decrease by an annual average of 5.2 percent, as rainfall and therefore water levels return to normal from their unusually high 1996 levels in the major hydro-generating areas. Renewables use in 1998 is constant at about 1997 levels.
- More than half of all renewable energy use measured by EIA is associated with the production of electricity. While the biggest component of electricity producers' use of renewables is hydroelectric power generated by electric utilities (Figure 33), a significant and growing portion of renewables use occurs at nonutility generating facilities.
- Hydropower generation by electric utilities is expected to decrease in 1997 and 1998 from high 1996 levels because of assumed normal streamflow in the Pacific Northwest.
- Most of the nonutility use of renewables involves biofuels, principally wood, wood by-products, and waste. However, all of the major forms of renewables used at nonutilities (including hydropower) are projected to grow.
- Most of the utility use of renewables involves hydropower. Since hydroelectric availability is expected to return to normal in 1997 and 1998 due to the assumption of a return to normal precipitation, utility use of renewables will show a decline in these forecast years.
- Currently, aside from power generation, the most significant area of renewables use is in the industrial sector, accounting for 21 percent of the total in 1996 (Figure 34). This component is principally biofuels.
- Renewables use in the combined residential and commercial sector, at about 0.71 quad in 1996, accounts for about 10 percent of marketed total domestic renewables demand. Most of this energy is wood used for home heating, with only a very small amount having to do with solar hot water heating.

Table 1. U.S. Macroeconomic and Weather Assumptions

| | Macro Case | 1996 | | | | 1997 | | | | 1998 | | | | Year | | | | |
|---|------------|--------------|--------------|--------------|--------------|-------------|------------|------------|-------------|-------------|------------|------------|-------------|-------------|-------------|-------------|------|------|
| | | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1996 | 1997 | 1998 | | |
| Macroeconomic ^a | | | | | | | | | | | | | | | | | | |
| Real Gross Domestic Product (billion chained 1992 dollars - SAAR) . . . | High | | | | | 7021 | 7093 | 7173 | 7260 | 7317 | 7351 | 7381 | 7417 | | | | 7137 | 7366 |
| | Mid | 6824 | 6893 | 6930 | 6969 | 7005 | 7036 | 7074 | 7120 | 7166 | 7200 | 7229 | 7264 | 6904 | 7059 | 7215 | | |
| | Low | | | | | 6989 | 6980 | 6975 | 6980 | 7016 | 7048 | 7077 | 7112 | | 6981 | 7063 | | |
| Percentage Change from Prior Year . . . | High | | | | | 2.9 | 2.9 | 3.5 | 4.2 | 4.2 | 3.6 | 2.9 | 2.2 | | 3.4 | 3.2 | | |
| | Mid | 1.8 | 2.7 | 2.4 | 2.8 | 2.7 | 2.1 | 2.1 | 2.2 | 2.3 | 2.3 | 2.2 | 2.0 | 2.4 | 2.2 | 2.2 | | |
| | Low | | | | | 2.4 | 1.3 | 0.7 | 0.2 | 0.4 | 1.0 | 1.5 | 1.9 | | 1.1 | 1.2 | | |
| Annualized Percent Change from Prior Quarter | High | | | | | 3.0 | 4.1 | 4.6 | 4.8 | 3.2 | 1.8 | 1.7 | 1.9 | | | | | |
| | Mid | 2.8 | 4.0 | 2.1 | 2.2 | 2.1 | 1.8 | 2.2 | 2.6 | 2.6 | 1.8 | 1.7 | 1.9 | | | | | |
| | Low | | | | | 1.2 | -0.5 | -0.3 | 0.2 | 2.1 | 1.8 | 1.7 | 1.9 | | | | | |
| GDP Implicit Price Deflator (Index, 1992=1.000) | High | | | | | 1.115 | 1.118 | 1.123 | 1.127 | 1.133 | 1.139 | 1.146 | 1.152 | | 1.121 | 1.142 | | |
| | Mid | 1.092 | 1.096 | 1.101 | 1.108 | 1.116 | 1.121 | 1.128 | 1.134 | 1.141 | 1.147 | 1.154 | 1.160 | 1.099 | 1.125 | 1.150 | | |
| | Low | | | | | 1.116 | 1.124 | 1.133 | 1.141 | 1.149 | 1.155 | 1.162 | 1.168 | | 1.129 | 1.158 | | |
| Percentage Change from Prior Year . . . | High | | | | | 2.1 | 2.0 | 2.0 | 1.7 | 1.6 | 1.9 | 2.0 | 2.2 | | 2.0 | 1.9 | | |
| | Mid | 2.4 | 2.1 | 2.0 | 2.1 | 2.2 | 2.3 | 2.5 | 2.4 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.3 | 2.3 | | |
| | Low | | | | | 2.2 | 2.6 | 2.9 | 3.0 | 2.9 | 2.8 | 2.5 | 2.4 | | 2.7 | 2.6 | | |
| Real Disposable Personal Income (billion chained 1992 Dollars - SAAR) . . | High | | | | | 5188 | 5249 | 5325 | 5382 | 5428 | 5448 | 5470 | 5488 | | 5286 | 5458 | | |
| | Mid | 5037 | 5057 | 5116 | 5133 | 5175 | 5205 | 5247 | 5273 | 5310 | 5330 | 5352 | 5369 | 5086 | 5225 | 5340 | | |
| | Low | | | | | 5162 | 5162 | 5170 | 5164 | 5193 | 5212 | 5233 | 5251 | | 5165 | 5222 | | |
| Percentage Change from Prior Year . . . | High | | | | | 3.0 | 3.8 | 4.1 | 4.9 | 4.6 | 3.8 | 2.7 | 2.0 | | 3.9 | 3.3 | | |
| | Mid | 2.9 | 3.3 | 3.3 | 2.7 | 2.7 | 2.9 | 2.6 | 2.7 | 2.6 | 2.4 | 2.0 | 1.8 | 3.1 | 2.7 | 2.2 | | |
| | Low | | | | | 2.5 | 2.1 | 1.1 | 0.6 | 0.6 | 1.0 | 1.2 | 1.7 | | 1.5 | 1.1 | | |
| Manufacturing Production (Index, 1987=1.000) | High | | | | | 1.309 | 1.335 | 1.363 | 1.390 | 1.409 | 1.423 | 1.438 | 1.447 | | 1.349 | 1.429 | | |
| | Mid | 1.253 | 1.275 | 1.292 | 1.296 | 1.302 | 1.311 | 1.321 | 1.331 | 1.345 | 1.359 | 1.373 | 1.382 | 1.279 | 1.316 | 1.365 | | |
| | Low | | | | | 1.295 | 1.287 | 1.279 | 1.272 | 1.281 | 1.295 | 1.308 | 1.317 | | 1.283 | 1.300 | | |
| Percentage Change from Prior Year . . . | High | | | | | 4.4 | 4.7 | 5.5 | 7.3 | 7.6 | 6.6 | 5.5 | 4.1 | | 5.5 | 5.9 | | |
| | Mid | 1.0 | 3.4 | 4.1 | 4.1 | 3.9 | 2.9 | 2.3 | 2.7 | 3.3 | 3.7 | 3.9 | 3.8 | 3.1 | 2.9 | 3.7 | | |
| | Low | | | | | 3.3 | 1.0 | -1.0 | -1.9 | -1.0 | 0.6 | 2.2 | 3.5 | | 0.3 | 1.3 | | |
| OECD Economic Growth (percent) ^b | | | | | | | | | | | | | | 2.3 | 2.2 | 2.6 | | |
| Weather ^c | | | | | | | | | | | | | | | | | | |
| Heating Degree-Days | | | | | | | | | | | | | | | | | | |
| U.S. | | 2406 | 552 | 128 | 1746 | 2327 | 524 | 89 | 1636 | 2327 | 524 | 89 | 1636 | 4832 | 4576 | 4576 | | |
| New England | | 3361 | 933 | 269 | 2431 | 3267 | 915 | 171 | 2269 | 3267 | 915 | 171 | 2269 | 6994 | 6621 | 6621 | | |
| Middle Atlantic | | 3120 | 750 | 152 | 2155 | 2993 | 716 | 105 | 2026 | 2993 | 716 | 105 | 2026 | 6177 | 5839 | 5839 | | |
| U.S. Gas-Weighted | | 2501 | 636 | 135 | 1822 | 2426 | 539 | 81 | 1686 | 2426 | 539 | 81 | 1686 | 5094 | 4732 | 4732 | | |
| Cooling Degree-Days (U.S.) | | 21 | 368 | 705 | 56 | 30 | 334 | 758 | 72 | 30 | 334 | 758 | 72 | 1150 | 1193 | 1193 | | |

^aMacroeconomic projections from DRI/McGraw-Hill model forecasts are seasonally adjusted at annual rates and modified as appropriate to the mid world oil price case. These mid-case macroeconomic projections are then modified by the low and high world oil price cases (as shown in Table 5) and by various explicit economic assumptions, with the low world oil price case applied to the high macroeconomic case, and the high world oil price case applied to the low macroeconomic case. In accordance with the January 1996 revisions of the National Income and Product Accounts by the Bureau of Economic Analysis, macroeconomic measures have been changed from fixed-weighted to chain-weighted, and base year has been changed from 1987 to 1992.

^bOECD: Organization for Economic Cooperation and Development: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States. Mexico is also a member but is not yet included in OECD data.

^cPopulation-weighted degree days. A degree day indicates the temperature variation from 65 degrees Fahrenheit (calculated as the simple average of the daily minimum and maximum temperatures) weighted by 1990 population. Normal is used for the forecast period and is defined as the average number of degree days between 1961 and 1990 for a given period.

SAAR: Seasonally-adjusted annualized rate.

Note: Historical data are printed in bold; forecasts are in italics.

Sources: Historical data: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(96/11); U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, October 1996; U.S. Department of Commerce, National Oceanic and Atmospheric Administration, *Monthly State, Regional, and National Heating/Cooling Degree Days Weighted by Population*, Federal Reserve System, *Statistical Release G.17(419)*, October 1996. Macroeconomic projections are based on DRI/McGraw-Hill Forecast CONTROL1196.

Table 2. U.S. Energy Indicators: Mid World Oil Price Case

| | 1996 | | | | 1997 | | | | 1998 | | | | Year | | |
|--|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|---------------|
| | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1996 | 1997 | 1998 |
| Macroeconomic * | | | | | | | | | | | | | | | |
| Real Fixed Investment (billion chained 1992 dollars-SAAR) | 1015 | 1025 | 1052 | <i>1057</i> | <i>1062</i> | <i>1068</i> | <i>1076</i> | <i>1086</i> | <i>1098</i> | <i>1107</i> | <i>1111</i> | <i>1114</i> | <i>1037</i> | <i>1073</i> | <i>1107</i> |
| Real Exchange Rate (index) | 0.998 | 1.013 | 1.016 | <i>1.027</i> | <i>1.029</i> | <i>1.029</i> | <i>1.025</i> | <i>1.018</i> | <i>1.012</i> | <i>1.006</i> | <i>1.001</i> | <i>0.996</i> | <i>1.014</i> | <i>1.025</i> | <i>1.004</i> |
| Business Inventory Change (billion chained 1992 dollars-SAAR) | 17.9 | -0.8 | 10.2 | <i>9.3</i> | <i>7.4</i> | <i>5.6</i> | <i>3.4</i> | <i>0.3</i> | <i>0.0</i> | <i>2.1</i> | <i>3.8</i> | <i>4.5</i> | <i>9.1</i> | <i>4.2</i> | <i>2.6</i> |
| Producer Price Index (index, 1980-1984=1.000) | 1.263 | 1.274 | 1.280 | <i>1.286</i> | <i>1.286</i> | <i>1.284</i> | <i>1.283</i> | <i>1.286</i> | <i>1.290</i> | <i>1.296</i> | <i>1.301</i> | <i>1.307</i> | <i>1.276</i> | <i>1.285</i> | <i>1.298</i> |
| Consumer Price Index (index, 1980-1984=1.000) | 1.551 | 1.565 | 1.575 | <i>1.590</i> | <i>1.602</i> | <i>1.612</i> | <i>1.624</i> | <i>1.636</i> | <i>1.649</i> | <i>1.660</i> | <i>1.672</i> | <i>1.684</i> | <i>1.570</i> | <i>1.619</i> | <i>1.666</i> |
| Petroleum Product Price Index (index, 1980-1984=1.000) | 0.632 | 0.727 | 0.704 | <i>0.767</i> | <i>0.773</i> | <i>0.720</i> | <i>0.695</i> | <i>0.700</i> | <i>0.715</i> | <i>0.710</i> | <i>0.709</i> | <i>0.729</i> | <i>0.707</i> | <i>0.722</i> | <i>0.716</i> |
| Non-Farm Employment (millions) | 118.5 | 119.3 | 119.9 | <i>120.4</i> | <i>120.9</i> | <i>121.2</i> | <i>121.5</i> | <i>121.8</i> | <i>122.3</i> | <i>122.8</i> | <i>123.2</i> | <i>123.6</i> | <i>119.5</i> | <i>121.4</i> | <i>123.0</i> |
| Commercial Employment (millions) | 80.2 | 81.0 | 81.6 | <i>82.1</i> | <i>82.6</i> | <i>82.9</i> | <i>83.3</i> | <i>83.6</i> | <i>84.0</i> | <i>84.5</i> | <i>84.8</i> | <i>85.2</i> | <i>81.2</i> | <i>83.1</i> | <i>84.6</i> |
| Total Industrial Production (index, 1987=1.000) | 1.234 | 1.254 | 1.268 | <i>1.274</i> | <i>1.279</i> | <i>1.288</i> | <i>1.297</i> | <i>1.306</i> | <i>1.319</i> | <i>1.332</i> | <i>1.345</i> | <i>1.353</i> | <i>1.258</i> | <i>1.293</i> | <i>1.337</i> |
| Housing Stock (millions) | 110.6 | 111.0 | 111.4 | <i>111.8</i> | <i>112.1</i> | <i>112.5</i> | <i>112.9</i> | <i>113.2</i> | <i>113.6</i> | <i>113.9</i> | <i>114.2</i> | <i>114.5</i> | <i>111.2</i> | <i>112.7</i> | <i>114.1</i> |
| Miscellaneous | | | | | | | | | | | | | | | |
| Gas Weighted Industrial Production (index, 1987=1.000) | 1.184 | 1.192 | 1.203 | <i>1.204</i> | <i>1.206</i> | <i>1.212</i> | <i>1.219</i> | <i>1.227</i> | <i>1.236</i> | <i>1.246</i> | <i>1.252</i> | <i>1.256</i> | <i>1.196</i> | <i>1.216</i> | <i>1.247</i> |
| Vehicle Miles Traveled (million miles/day) | 6134 | 6942 | 7113 | <i>6595</i> | <i>6362</i> | <i>7071</i> | <i>7263</i> | <i>6757</i> | <i>6520</i> | <i>7236</i> | <i>7415</i> | <i>6908</i> | <i>6697</i> | <i>6865</i> | <i>7022</i> |
| Vehicle Fuel Efficiency (miles per gallon) | 19.45 | 20.70 | 21.17 | <i>19.88</i> | <i>19.88</i> | <i>20.73</i> | <i>21.07</i> | <i>19.94</i> | <i>19.99</i> | <i>20.85</i> | <i>21.18</i> | <i>20.09</i> | <i>20.31</i> | <i>20.42</i> | <i>20.54</i> |
| Real Vehicle Fuel Cost (cents per mile) | 3.97 | 4.15 | 3.92 | <i>4.16</i> | <i>4.16</i> | <i>4.02</i> | <i>3.87</i> | <i>3.99</i> | <i>3.87</i> | <i>3.86</i> | <i>3.78</i> | <i>3.94</i> | <i>4.05</i> | <i>4.01</i> | <i>3.86</i> |
| Air Travel Capacity (mill. available ton-miles/day) | 381.7 | 399.6 | 415.6 | <i>409.0</i> | <i>407.0</i> | <i>424.0</i> | <i>440.0</i> | <i>430.5</i> | <i>425.6</i> | <i>443.2</i> | <i>462.1</i> | <i>454.1</i> | <i>401.6</i> | <i>425.5</i> | <i>446.4</i> |
| Aircraft Utilization (mill. revenue ton-miles/day) | 212.9 | 233.1 | 244.6 | <i>228.7</i> | <i>223.4</i> | <i>239.6</i> | <i>254.7</i> | <i>240.1</i> | <i>235.6</i> | <i>253.0</i> | <i>269.6</i> | <i>255.1</i> | <i>229.9</i> | <i>239.5</i> | <i>253.4</i> |
| Aircraft Yield (cents per ton-mile) | 14.10 | 13.98 | 13.48 | <i>14.24</i> | <i>15.36</i> | <i>14.88</i> | <i>14.00</i> | <i>14.73</i> | <i>15.89</i> | <i>15.52</i> | <i>14.73</i> | <i>15.49</i> | <i>13.95</i> | <i>14.74</i> | <i>15.41</i> |
| Raw Steel Production (millions) | 26.55 | 26.05 | 25.62 | <i>26.74</i> | <i>27.88</i> | <i>27.42</i> | <i>26.37</i> | <i>27.80</i> | <i>28.75</i> | <i>28.84</i> | <i>28.04</i> | <i>28.73</i> | <i>104.96</i> | <i>109.46</i> | <i>114.36</i> |

*Macroeconomic projections from DRI/McGraw-Hill model forecasts are seasonally adjusted at annual rates and modified as appropriate to the mid world oil price case. These mid-case macroeconomic projections are then modified by the low and high world price cases (as shown in Table 4) and by various explicit economic assumptions, with low world oil price case applied to the high macroeconomic case, and high world oil price case applied to the low macroeconomic case. In accordance with the January 1996 revisions of the National Income and Product Accounts by the Bureau of Economic Analysis, macroeconomic measures have been changed from fixed-weighted to chain-weighted, and base year has been changed from 1987 to 1992.

SAAR: Seasonally-adjusted annualized rate.

Note: Historical data are printed in bold; forecasts are in italics.

Sources: Historical data: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(96/11); U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, October 1996; U.S. Department of Commerce, National Oceanic and Atmospheric Administration, *Monthly State, Regional, and National Heating/Cooling Degree Days Weighted by Population*; Federal Reserve System, *Statistical Release G.17(419)*, October 1996. Macroeconomic projections are based on DRI/McGraw-Hill Forecast CONTROL1196.

Table 3. International Petroleum Supply and Demand: Mid World Oil Price Case
(Million Barrels per Day, Except Closing Stocks)

| | 1996 | | | | 1997 | | | | 1998 | | | | Year | | |
|---|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1996 | 1997 | 1998 |
| Demand ^a | | | | | | | | | | | | | | | |
| OECD | | | | | | | | | | | | | | | |
| U.S. (50 States) | 18.3 | 17.9 | 18.1 | 18.6 | 18.3 | 18.0 | 18.4 | 18.7 | 18.7 | 18.4 | 18.7 | 19.0 | 18.2 | 18.4 | 18.7 |
| U.S. Territories | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| Canada | 1.8 | 1.7 | 1.8 | 1.9 | 1.8 | 1.7 | 1.8 | 1.9 | 1.8 | 1.7 | 1.8 | 1.9 | 1.8 | 1.8 | 1.8 |
| Europe ^b | 14.5 | 13.7 | 14.2 | 14.8 | 14.7 | 13.9 | 14.4 | 15.0 | 14.9 | 14.1 | 14.6 | 15.1 | 14.3 | 14.5 | 14.7 |
| Japan | 6.4 | 5.2 | 5.5 | 6.0 | 6.5 | 5.3 | 5.5 | 6.1 | 6.7 | 5.4 | 5.6 | 6.2 | 5.8 | 5.8 | 6.0 |
| Australia and New Zealand | 1.0 | 1.0 | 0.9 | 1.0 | 1.0 | 1.0 | 0.9 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Total OECD | 42.2 | 39.7 | 40.7 | 42.5 | 42.5 | 40.1 | 41.3 | 42.9 | 43.2 | 40.7 | 41.9 | 43.5 | 41.3 | 41.7 | 42.3 |
| Non-OECD | | | | | | | | | | | | | | | |
| Former Soviet Union | 5.0 | 4.6 | 4.6 | 4.7 | 5.1 | 4.6 | 4.7 | 4.8 | 5.0 | 4.7 | 4.7 | 4.8 | 4.7 | 4.8 | 4.8 |
| Europe | 1.6 | 1.4 | 1.4 | 1.5 | 1.6 | 1.4 | 1.4 | 1.5 | 1.6 | 1.4 | 1.4 | 1.5 | 1.4 | 1.5 | 1.5 |
| China | 3.5 | 3.6 | 3.6 | 3.6 | 3.7 | 3.8 | 3.8 | 3.8 | 4.0 | 4.0 | 4.0 | 4.0 | 3.6 | 3.8 | 4.0 |
| Other Asia | 8.5 | 8.3 | 8.0 | 9.0 | 9.0 | 8.8 | 8.5 | 9.6 | 9.6 | 9.4 | 9.1 | 10.2 | 8.4 | 9.0 | 9.6 |
| Other Non-OECD | 12.3 | 12.4 | 12.4 | 12.6 | 12.6 | 12.7 | 12.7 | 12.9 | 12.9 | 12.9 | 12.9 | 13.2 | 12.4 | 12.7 | 13.0 |
| Total Non-OECD | 31.0 | 30.1 | 29.9 | 31.4 | 32.1 | 31.2 | 31.0 | 32.5 | 33.1 | 32.4 | 32.1 | 33.7 | 30.6 | 31.7 | 32.8 |
| Total World Demand | 73.1 | 69.8 | 70.6 | 73.8 | 74.5 | 71.3 | 72.3 | 75.4 | 76.3 | 73.1 | 74.0 | 77.3 | 71.9 | 73.4 | 75.2 |
| Supply ^c | | | | | | | | | | | | | | | |
| OECD | | | | | | | | | | | | | | | |
| U.S. (50 States) | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 | 9.3 | 9.2 | 9.2 | 9.2 | 9.1 | 9.1 | 9.1 | 9.4 | 9.3 | 9.1 |
| Canada | 2.4 | 2.4 | 2.5 | 2.5 | 2.5 | 2.5 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.5 | 2.5 | 2.6 |
| North Sea ^d | 6.2 | 6.1 | 6.1 | 6.5 | 6.7 | 6.5 | 6.7 | 7.0 | 7.0 | 6.9 | 7.2 | 7.4 | 6.2 | 6.7 | 7.1 |
| Other OECD | 1.5 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.7 | 1.7 | 1.7 | 1.7 | 1.6 | 1.6 | 1.7 |
| Total OECD | 19.5 | 19.6 | 19.7 | 20.0 | 20.2 | 19.9 | 20.1 | 20.4 | 20.5 | 20.3 | 20.5 | 20.7 | 19.7 | 20.2 | 20.5 |
| Non-OECD | | | | | | | | | | | | | | | |
| OPEC | 28.1 | 28.1 | 28.3 | 28.5 | 29.0 | 29.1 | 29.2 | 29.3 | 29.3 | 29.4 | 29.5 | 29.7 | 28.2 | 29.1 | 29.5 |
| Former Soviet Union | 7.1 | 7.1 | 7.0 | 7.1 | 7.1 | 7.2 | 7.2 | 7.3 | 7.3 | 7.4 | 7.5 | 7.6 | 7.1 | 7.2 | 7.5 |
| China | 3.1 | 3.1 | 3.1 | 3.2 | 3.2 | 3.2 | 3.2 | 3.3 | 3.3 | 3.3 | 3.3 | 3.4 | 3.1 | 3.2 | 3.3 |
| Mexico | 3.3 | 3.4 | 3.3 | 3.3 | 3.4 | 3.4 | 3.4 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.3 | 3.4 | 3.5 |
| Other Non-OECD | 10.0 | 10.2 | 10.2 | 10.3 | 10.3 | 10.4 | 10.6 | 10.7 | 10.8 | 10.9 | 11.0 | 11.1 | 10.2 | 10.5 | 11.0 |
| Total Non-OECD | 51.7 | 51.8 | 51.9 | 52.3 | 52.9 | 53.2 | 53.6 | 53.9 | 54.1 | 54.5 | 54.8 | 55.2 | 51.9 | 53.4 | 54.7 |
| Total World Supply | 71.2 | 71.4 | 71.5 | 72.3 | 73.2 | 73.1 | 73.7 | 74.3 | 74.6 | 74.8 | 75.3 | 75.9 | 71.6 | 73.6 | 75.2 |
| Stock Changes | | | | | | | | | | | | | | | |
| Net Stock Withdrawals or Additions (-) | | | | | | | | | | | | | | | |
| U.S. (50 States including SPR) | 0.9 | -0.7 | -0.1 | 0.7 | 0.2 | -0.8 | -0.4 | 0.4 | 0.3 | -0.6 | -0.3 | 0.5 | 0.2 | -0.1 | 0.0 |
| Other | 1.1 | -0.8 | -0.9 | 0.9 | 1.1 | -1.0 | -1.0 | 0.7 | 1.4 | -1.1 | -1.0 | 0.9 | 0.1 | -0.1 | 0.0 |
| Total Stock Withdrawals | 1.9 | -1.5 | -0.9 | 1.6 | 1.4 | -1.8 | -1.4 | 1.1 | 1.7 | -1.7 | -1.3 | 1.3 | 0.3 | -0.2 | 0.0 |
| Closing Stocks, OECD only (billion barrels) | 2.6 | 2.6 | 2.7 | 2.6 | 2.5 | 2.6 | 2.7 | 2.6 | 2.6 | 2.6 | 2.7 | 2.6 | 2.6 | 2.6 | 2.6 |
| Non-OPEC Supply | 43.1 | 43.3 | 43.3 | 43.8 | 44.2 | 44.1 | 44.5 | 45.0 | 45.3 | 45.3 | 45.8 | 46.3 | 43.4 | 44.5 | 45.7 |
| Net Exports from Former Soviet Union | 2.1 | 2.5 | 2.4 | 2.3 | 2.0 | 2.6 | 2.5 | 2.5 | 2.3 | 2.7 | 2.8 | 2.8 | 2.3 | 2.4 | 2.7 |

^aDemand for petroleum by the OECD countries is synonymous with "petroleum product supplied," which is defined in the glossary of the EIA *Petroleum Supply Monthly*, DOE/EIA-0109. Demand for petroleum by the non-OECD countries is "apparent consumption," which includes internal consumption, refinery fuel and loss, and bunkering.

^bOECD Europe includes the former East Germany.

^cIncludes production of crude oil (including lease condensates), natural gas plant liquids, other hydrogen and hydrocarbons for refinery feedstocks, refinery gains, alcohol, and liquids produced from coal and other sources.

^dIncludes offshore supply from Denmark, Germany, the Netherlands, Norway, and the United Kingdom.

OECD: Organization for Economic Cooperation and Development: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States. Mexico is also a member, but is not yet included in OECD data.

OPEC: Organization of Petroleum Exporting Countries: Algeria, Gabon, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, the United Arab Emirates, and Venezuela.

SPR: Strategic Petroleum Reserve

Former Soviet Union: Armenia, Azerbaijan, Belarus, Estonia, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine and Uzbekistan.

Notes: Minor discrepancies with other published EIA historical data are due to rounding. Historical data are printed in bold; forecasts are in italic. The forecasts were generated by simulation of the Short-Term Integrated Forecasting System.

Sources: Energy Information Administration, *International Petroleum Statistics Report*, DOE/EIA-0520(96/11); Organization for Economic Cooperation and Development, Annual and Monthly Oil Statistics Database, October 1996.

Table 4. U.S. Energy Prices
(Nominal Dollars)

| | Price Case | 1996 | | | | 1997 | | | | 1998 | | | | Year | | |
|--|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------------|
| | | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1996 | 1997 | 1998 |
| Imported Crude Oil ^a | Low | | | | | 20.05 | 18.53 | 17.36 | 17.40 | 17.30 | 18.31 | 17.85 | 18.43 | | | |
| (dollars per barrel) | Mid | 18.38 | 20.11 | 20.69 | 22.93 | 21.83 | 21.33 | 20.41 | 20.67 | 20.66 | 21.74 | 21.33 | 22.00 | 20.57 | 21.04 | 21.45 |
| | High | | | | | 23.62 | 24.13 | 23.47 | 23.94 | 24.03 | 25.18 | 24.83 | 25.58 | | | 23.79 24.92 |
| Natural Gas Wellhead | Low | | | | | 2.27 | 1.78 | 1.52 | 1.66 | 1.63 | 1.47 | 1.49 | 1.63 | | | 1.81 1.56 |
| (dollars per thousand cubic feet) | Mid | 2.00 | 2.12 | 2.19 | 2.35 | 2.51 | 1.95 | 1.78 | 2.11 | 2.26 | 1.85 | 1.73 | 2.06 | 2.17 | 2.09 | 1.98 |
| | High | | | | | 2.74 | 2.27 | 2.11 | 2.46 | 2.59 | 2.26 | 2.25 | 2.49 | | | 2.40 2.40 |
| Petroleum Products | | | | | | | | | | | | | | | | |
| Gasoline Retail ^b | Low | | | | | 1.29 | 1.28 | 1.25 | 1.23 | 1.20 | 1.26 | 1.26 | 1.25 | | | 1.26 1.24 |
| (dollars per gallon) | Mid | 1.20 | 1.35 | 1.31 | 1.31 | 1.32 | 1.34 | 1.32 | 1.30 | 1.27 | 1.34 | 1.34 | 1.33 | 1.29 | 1.32 | 1.32 |
| | High | | | | | 1.35 | 1.40 | 1.39 | 1.37 | 1.35 | 1.41 | 1.42 | 1.41 | | | 1.38 1.40 |
| No. 2 Diesel Oil, Retail | Low | | | | | 1.23 | 1.19 | 1.15 | 1.19 | 1.18 | 1.18 | 1.16 | 1.22 | | | 1.19 1.18 |
| (dollars per gallon) | Mid | 1.16 | 1.23 | 1.21 | 1.31 | 1.27 | 1.25 | 1.22 | 1.26 | 1.25 | 1.25 | 1.24 | 1.29 | 1.23 | 1.25 | 1.26 |
| | High | | | | | 1.31 | 1.31 | 1.29 | 1.34 | 1.32 | 1.33 | 1.31 | 1.37 | | | 1.31 1.34 |
| No. 2 Heating Oil, Wholesale | Low | | | | | 0.61 | 0.57 | 0.56 | 0.60 | 0.59 | 0.58 | 0.56 | 0.62 | | | 0.59 0.59 |
| (dollars per gallon) | Mid | 0.59 | 0.61 | 0.63 | 0.71 | 0.65 | 0.64 | 0.63 | 0.67 | 0.66 | 0.65 | 0.64 | 0.69 | 0.64 | 0.65 | 0.66 |
| | High | | | | | 0.69 | 0.70 | 0.70 | 0.74 | 0.74 | 0.73 | 0.72 | 0.77 | | | 0.71 0.74 |
| No. 2 Heating Oil, Retail | Low | | | | | 1.03 | 0.95 | 0.90 | 0.96 | 0.99 | 0.97 | 0.91 | 0.99 | | | 0.98 0.98 |
| (dollars per gallon) | Mid | 0.96 | 0.98 | 0.91 | 1.05 | 1.06 | 1.01 | 0.97 | 1.03 | 1.07 | 1.04 | 0.98 | 1.06 | 0.99 | 1.04 | 1.05 |
| | High | | | | | 1.09 | 1.07 | 1.04 | 1.11 | 1.14 | 1.11 | 1.06 | 1.14 | | | 1.09 1.13 |
| No. 6 Residual Fuel Oil, Retail ^c | Low | | | | | 18.81 | 16.03 | 14.69 | 15.57 | 16.45 | 15.90 | 15.32 | 16.68 | | | 16.40 16.14 |
| (dollars per barrel) | Mid | 19.28 | 18.12 | 17.69 | 22.15 | 22.21 | 19.70 | 18.43 | 19.61 | 20.91 | 20.30 | 19.61 | 21.01 | 19.34 | 20.13 | 20.52 |
| | High | | | | | 23.48 | 22.28 | 21.85 | 23.21 | 24.17 | 23.60 | 23.41 | 24.87 | | | 22.79 24.05 |
| Electric Utility Fuels | | | | | | | | | | | | | | | | |
| Coal | Low | | | | | 1.23 | 1.25 | 1.23 | 1.22 | 1.22 | 1.24 | 1.22 | 1.20 | | | 1.23 1.22 |
| (dollars per million Btu) | Mid | 1.29 | 1.30 | 1.28 | 1.27 | 1.28 | 1.29 | 1.27 | 1.26 | 1.26 | 1.28 | 1.25 | 1.24 | 1.29 | 1.27 | 1.26 |
| | High | | | | | 1.34 | 1.37 | 1.36 | 1.36 | 1.36 | 1.39 | 1.37 | 1.36 | | | 1.36 1.37 |
| Heavy Fuel Oil ^d | Low | | | | | 2.98 | 2.57 | 2.42 | 2.57 | 2.62 | 2.56 | 2.52 | 2.75 | | | 2.64 2.61 |
| (dollars per million Btu) | Mid | 3.00 | 2.93 | 2.87 | 3.63 | 3.52 | 3.16 | 3.02 | 3.22 | 3.32 | 3.25 | 3.21 | 3.45 | 3.11 | 3.24 | 3.30 |
| | High | | | | | 3.72 | 3.57 | 3.57 | 3.80 | 3.82 | 3.77 | 3.82 | 4.07 | | | 3.67 3.87 |
| Natural Gas | Low | | | | | 2.78 | 2.25 | 2.03 | 2.24 | 2.30 | 2.04 | 2.02 | 2.23 | | | 2.27 2.12 |
| (dollars per million Btu) | Mid | 2.79 | 2.55 | 2.45 | 2.78 | 3.01 | 2.43 | 2.27 | 2.64 | 2.84 | 2.39 | 2.26 | 2.62 | 2.61 | 2.53 | 2.48 |
| | High | | | | | 3.21 | 2.71 | 2.58 | 2.95 | 3.14 | 2.75 | 2.72 | 3.01 | | | 2.81 2.87 |
| Other Residential | | | | | | | | | | | | | | | | |
| Natural Gas | Low | | | | | 6.20 | 6.60 | 7.61 | 5.91 | 5.71 | 6.22 | 7.36 | 5.87 | | | 6.30 5.97 |
| (dollars per thousand cubic feet) | Mid | 5.74 | 6.66 | 8.53 | 6.82 | 6.29 | 6.81 | 7.83 | 6.26 | 6.26 | 6.85 | 7.84 | 6.30 | 6.41 | 6.49 | 6.49 |
| | High | | | | | 6.37 | 7.04 | 8.18 | 6.64 | 6.69 | 7.28 | 8.37 | 6.88 | | | 6.70 6.97 |
| Electricity | Low | | | | | 7.55 | 8.10 | 8.32 | 7.82 | 7.46 | 8.06 | 8.32 | 7.85 | | | 7.95 7.93 |
| (cents per kilowatthour) | Mid | 7.90 | 8.52 | 8.84 | 8.21 | 7.87 | 8.43 | 8.65 | 8.18 | 7.76 | 8.36 | 8.60 | 8.13 | 8.37 | 8.29 | 8.21 |
| | High | | | | | 8.25 | 8.87 | 9.12 | 8.65 | 8.35 | 8.96 | 9.23 | 8.76 | | | 8.72 8.83 |

^aRefiner acquisition cost (RAC) of imported crude oil assumed for the scenario depicted.

^bAverage for all grades and services.

^cAverage for all sulfur contents.

^dIncludes fuel oils No. 4, No. 5, and No. 6 and topped crude fuel oil prices.

Notes: Data are estimated for the third quarter of 1995. Prices exclude taxes, except prices for gasoline, residential natural gas, and diesel. Price cases are derived by simulating all energy product price models under the assumptions of the three world oil price cases using the mid macroeconomic case and normal weather assumptions for all simulations. The forecasts were generated by simulation of the Short-Term Integrated Forecasting System.

Sources: Historical data: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(96/11); and *Petroleum Marketing Monthly*, DOE/EIA-0380(96/11).

Table 5. U.S. Petroleum Supply and Demand: Low World Oil Price Case
(Million Barrels per Day, Except Closing Stocks)

| | 1996 | | | | 1997 | | | | 1998 | | | | Year | | |
|---|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1996 | 1997 | 1998 |
| Supply | | | | | | | | | | | | | | | |
| Crude Oil Supply | | | | | | | | | | | | | | | |
| Domestic Production ^a | 6.52 | 6.47 | 6.42 | 6.51 | 6.35 | 6.22 | 6.07 | 6.06 | 6.01 | 5.90 | 5.79 | 5.75 | 6.48 | 6.17 | 5.86 |
| Alaska | 1.46 | 1.38 | 1.35 | 1.40 | 1.35 | 1.29 | 1.24 | 1.27 | 1.26 | 1.20 | 1.17 | 1.19 | 1.39 | 1.29 | 1.21 |
| Lower 48 | 5.06 | 5.10 | 5.08 | 5.11 | 5.00 | 4.93 | 4.83 | 4.78 | 4.74 | 4.70 | 4.62 | 4.56 | 5.09 | 4.89 | 4.65 |
| Net Imports (including SPR) ^b | 6.90 | 7.67 | 7.60 | 7.46 | 7.28 | 8.18 | 8.49 | 8.12 | 8.08 | 8.69 | 8.95 | 8.80 | 7.41 | 8.02 | 8.63 |
| Other SPR Supply | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| SPR Stock Withdrawn or Added (-) | 0.03 | 0.05 | 0.12 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 |
| Other Stock Withdrawn or Added (-) | 0.04 | -0.16 | 0.11 | 0.13 | -0.09 | -0.14 | 0.03 | -0.03 | -0.08 | -0.03 | 0.08 | 0.00 | 0.03 | -0.06 | -0.01 |
| Product Supplied and Losses | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 |
| Unaccounted-for Crude Oil | 0.20 | 0.38 | 0.16 | 0.20 | 0.26 | 0.28 | 0.28 | 0.27 | 0.27 | 0.28 | 0.29 | 0.28 | 0.24 | 0.27 | 0.28 |
| Total Crude Oil Supply | 13.67 | 14.40 | 14.41 | 14.33 | 13.78 | 14.53 | 14.86 | 14.40 | 14.27 | 14.82 | 15.09 | 14.82 | 14.20 | 14.40 | 14.75 |
| Other Supply | | | | | | | | | | | | | | | |
| NGL Production | 1.74 | 1.83 | 1.86 | 1.80 | 1.86 | 1.83 | 1.80 | 1.83 | 1.84 | 1.82 | 1.81 | 1.83 | 1.81 | 1.83 | 1.82 |
| Other Hydrocarbon and Alcohol Inputs | 0.32 | 0.29 | 0.30 | 0.29 | 0.33 | 0.32 | 0.32 | 0.33 | 0.34 | 0.32 | 0.32 | 0.33 | 0.30 | 0.32 | 0.33 |
| Crude Oil Product Supplied | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Processing Gain | 0.78 | 0.84 | 0.85 | 0.81 | 0.76 | 0.81 | 0.83 | 0.81 | 0.79 | 0.82 | 0.84 | 0.83 | 0.82 | 0.80 | 0.82 |
| Net Product Imports ^c | 0.96 | 1.15 | 0.99 | 0.87 | 1.30 | 1.35 | 1.21 | 1.10 | 1.32 | 1.50 | 1.41 | 1.28 | 0.99 | 1.24 | 1.38 |
| Product Stock Withdrawn or Added (-) ^d | 0.82 | -0.59 | -0.31 | 0.51 | 0.33 | -0.64 | -0.44 | 0.47 | 0.42 | -0.56 | -0.38 | 0.49 | 0.11 | -0.07 | -0.01 |
| Total Supply | 18.29 | 17.91 | 18.09 | 18.61 | 18.37 | 18.19 | 18.60 | 18.95 | 18.98 | 18.74 | 19.11 | 19.58 | 18.23 | 18.53 | 19.11 |
| Demand | | | | | | | | | | | | | | | |
| Motor Gasoline | 7.51 | 7.99 | 8.00 | 7.90 | 7.63 | 8.15 | 8.25 | 8.11 | 7.81 | 8.31 | 8.39 | 8.24 | 7.85 | 8.04 | 8.19 |
| Jet Fuel | 1.60 | 1.52 | 1.59 | 1.65 | 1.59 | 1.56 | 1.62 | 1.66 | 1.63 | 1.59 | 1.65 | 1.69 | 1.59 | 1.61 | 1.64 |
| Distillate Fuel Oil | 3.62 | 3.23 | 3.14 | 3.50 | 3.73 | 3.34 | 3.30 | 3.56 | 3.84 | 3.46 | 3.42 | 3.70 | 3.37 | 3.48 | 3.60 |
| Residual Fuel Oil | 0.96 | 0.77 | 0.83 | 0.83 | 1.10 | 0.92 | 0.90 | 1.06 | 1.24 | 1.05 | 1.03 | 1.20 | 0.85 | 0.99 | 1.13 |
| Other Oils ^e | 4.60 | 4.41 | 4.54 | 4.74 | 4.32 | 4.22 | 4.53 | 4.57 | 4.46 | 4.33 | 4.63 | 4.75 | 4.57 | 4.41 | 4.54 |
| Total Demand | 18.29 | 17.91 | 18.09 | 18.61 | 18.37 | 18.19 | 18.60 | 18.95 | 18.98 | 18.74 | 19.11 | 19.58 | 18.23 | 18.53 | 19.11 |
| Total Petroleum Net Imports | 7.86 | 8.81 | 8.59 | 8.32 | 8.57 | 9.53 | 9.70 | 9.21 | 9.40 | 10.18 | 10.36 | 10.07 | 8.40 | 9.26 | 10.01 |
| Closing Stocks (million barrels) | | | | | | | | | | | | | | | |
| Crude Oil (excluding SPR) ^f | 300 | 314 | 304 | 293 | 301 | 314 | 311 | 314 | 321 | 324 | 317 | 317 | 293 | 314 | 317 |
| Total Motor Gasoline | 203 | 205 | 200 | 193 | 206 | 200 | 198 | 204 | 213 | 204 | 201 | 206 | 193 | 204 | 206 |
| Finished Motor Gasoline | 159 | 165 | 161 | 156 | 164 | 162 | 159 | 165 | 173 | 167 | 162 | 167 | 156 | 165 | 167 |
| Blending Components | 44 | 40 | 39 | 36 | 42 | 38 | 39 | 39 | 40 | 38 | 39 | 39 | 36 | 39 | 39 |
| Jet Fuel | 34 | 39 | 43 | 40 | 40 | 40 | 42 | 43 | 41 | 42 | 42 | 44 | 40 | 43 | 44 |
| Distillate Fuel Oil | 90 | 102 | 115 | 119 | 86 | 94 | 115 | 116 | 83 | 95 | 113 | 113 | 119 | 116 | 113 |
| Residual Fuel Oil | 32 | 35 | 38 | 42 | 35 | 40 | 43 | 43 | 35 | 37 | 39 | 41 | 42 | 43 | 41 |
| Other Oils ^g | 235 | 267 | 280 | 234 | 233 | 285 | 301 | 249 | 244 | 290 | 306 | 252 | 234 | 249 | 252 |
| Total Stocks (excluding SPR) | 893 | 961 | 980 | 922 | 901 | 972 | 1009 | 969 | 938 | 991 | 1019 | 974 | 922 | 969 | 974 |
| Crude Oil in SPR | 589 | 584 | 574 | 570 | 570 | 570 | 570 | 570 | 570 | 570 | 570 | 570 | 570 | 570 | 570 |
| Total Stocks (including SPR) | 1482 | 1546 | 1554 | 1492 | 1470 | 1542 | 1579 | 1538 | 1507 | 1561 | 1589 | 1543 | 1492 | 1538 | 1543 |

^aIncludes lease condensate.

^bNet imports equals gross imports plus SPR imports minus exports.

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

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

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

^fIncludes crude oil in transit to refineries.

^gIncludes 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 data are printed in bold; forecasts are in italics. The forecasts were generated by simulation of the Short-Term Integrated Forecasting System.

Sources: Historical data: Energy Information Administration, *Petroleum Supply Monthly*, DOE/EIA-0109(93/01-96/11); and *Weekly Petroleum Status Report*, DOE/EIA-0208(various issues).

Table 6. U.S. Petroleum Supply and Demand: Mid World Oil Price Case
(Million Barrels per Day, Except Closing Stocks)

| | 1996 | | | | 1997 | | | | 1998 | | | | Year | | |
|---|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1996 | 1997 | 1998 |
| Supply | | | | | | | | | | | | | | | |
| Crude Oil Supply | | | | | | | | | | | | | | | |
| Domestic Production ^a | 6.52 | 6.47 | 6.42 | 6.51 | 6.47 | 6.38 | 6.29 | 6.28 | 6.26 | 6.17 | 6.09 | 6.09 | 6.48 | 6.35 | 6.15 |
| Alaska | 1.46 | 1.38 | 1.35 | 1.40 | 1.37 | 1.31 | 1.26 | 1.29 | 1.28 | 1.22 | 1.19 | 1.20 | 1.39 | 1.31 | 1.22 |
| Lower 48 | 5.06 | 5.10 | 5.08 | 5.11 | 5.10 | 5.07 | 5.03 | 4.99 | 4.98 | 4.95 | 4.91 | 4.88 | 5.09 | 5.05 | 4.93 |
| Net Imports (including SPR) ^b | 6.90 | 7.67 | 7.60 | 7.46 | 7.13 | 7.96 | 8.16 | 7.78 | 7.68 | 8.26 | 8.50 | 8.19 | 7.41 | 7.76 | 8.16 |
| Other SPR Supply | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| SPR Stock Withdrawn or Added (-) | 0.03 | 0.05 | 0.12 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 |
| Other Stock Withdrawn or Added (-) | 0.04 | -0.16 | 0.11 | 0.13 | -0.09 | -0.14 | 0.03 | -0.03 | -0.08 | -0.03 | 0.08 | 0.00 | 0.03 | -0.06 | -0.01 |
| Product Supplied and Losses | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 |
| Unaccounted-for Crude Oil | 0.20 | 0.38 | 0.16 | 0.20 | 0.26 | 0.27 | 0.28 | 0.27 | 0.27 | 0.28 | 0.28 | 0.28 | 0.24 | 0.27 | 0.28 |
| Total Crude Oil Supply | 13.67 | 14.40 | 14.41 | 14.33 | 13.76 | 14.46 | 14.76 | 14.28 | 14.12 | 14.67 | 14.95 | 14.55 | 14.20 | 14.32 | 14.57 |
| Other Supply | | | | | | | | | | | | | | | |
| NGL Production | 1.74 | 1.83 | 1.86 | 1.80 | 1.87 | 1.83 | 1.81 | 1.84 | 1.85 | 1.83 | 1.82 | 1.85 | 1.81 | 1.84 | 1.84 |
| Other Hydrocarbon and Alcohol Inputs | 0.32 | 0.29 | 0.30 | 0.29 | 0.33 | 0.32 | 0.32 | 0.33 | 0.34 | 0.32 | 0.32 | 0.33 | 0.30 | 0.32 | 0.33 |
| Crude Oil Product Supplied | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Processing Gain | 0.78 | 0.84 | 0.85 | 0.81 | 0.76 | 0.80 | 0.82 | 0.80 | 0.78 | 0.82 | 0.83 | 0.81 | 0.82 | 0.80 | 0.81 |
| Net Product Imports ^c | 0.96 | 1.15 | 0.99 | 0.87 | 1.24 | 1.26 | 1.09 | 1.01 | 1.16 | 1.28 | 1.13 | 0.98 | 0.99 | 1.15 | 1.14 |
| Product Stock Withdrawn or Added (-) ^d | 0.82 | -0.59 | -0.31 | 0.51 | 0.33 | -0.64 | -0.45 | 0.47 | 0.42 | -0.56 | -0.38 | 0.48 | 0.11 | -0.07 | -0.01 |
| Total Supply | 18.29 | 17.91 | 18.09 | 18.61 | 18.29 | 18.04 | 18.37 | 18.73 | 18.67 | 18.37 | 18.69 | 19.01 | 18.23 | 18.36 | 18.69 |
| Demand | | | | | | | | | | | | | | | |
| Motor Gasoline | 7.51 | 7.99 | 8.00 | 7.90 | 7.62 | 8.12 | 8.21 | 8.07 | 7.77 | 8.26 | 8.33 | 8.19 | 7.85 | 8.01 | 8.14 |
| Jet Fuel | 1.60 | 1.52 | 1.59 | 1.65 | 1.59 | 1.56 | 1.62 | 1.66 | 1.63 | 1.59 | 1.65 | 1.69 | 1.59 | 1.61 | 1.64 |
| Distillate Fuel Oil | 3.62 | 3.23 | 3.14 | 3.50 | 3.72 | 3.32 | 3.27 | 3.52 | 3.79 | 3.40 | 3.35 | 3.60 | 3.37 | 3.46 | 3.53 |
| Residual Fuel Oil | 0.96 | 0.77 | 0.83 | 0.83 | 1.04 | 0.82 | 0.75 | 0.93 | 1.08 | 0.84 | 0.76 | 0.91 | 0.85 | 0.89 | 0.90 |
| Other Oils ^e | 4.60 | 4.41 | 4.54 | 4.74 | 4.32 | 4.22 | 4.52 | 4.55 | 4.41 | 4.29 | 4.59 | 4.63 | 4.57 | 4.40 | 4.48 |
| Total Demand | 18.29 | 17.91 | 18.09 | 18.61 | 18.29 | 18.04 | 18.37 | 18.73 | 18.67 | 18.37 | 18.69 | 19.01 | 18.23 | 18.36 | 18.69 |
| Total Petroleum Net Imports | 7.86 | 8.81 | 8.59 | 8.32 | 8.37 | 9.22 | 9.25 | 8.78 | 8.83 | 9.54 | 9.64 | 9.17 | 8.40 | 8.91 | 9.30 |
| Closing Stocks (million barrels) | | | | | | | | | | | | | | | |
| Crude Oil (excluding SPR) ^f | 300 | 314 | 304 | 293 | 301 | 314 | 311 | 314 | 321 | 324 | 317 | 317 | 293 | 314 | 317 |
| Total Motor Gasoline | 203 | 205 | 200 | 193 | 206 | 200 | 198 | 204 | 213 | 204 | 201 | 206 | 193 | 204 | 206 |
| Finished Motor Gasoline | 159 | 165 | 161 | 156 | 164 | 162 | 159 | 165 | 173 | 167 | 162 | 167 | 156 | 165 | 167 |
| Blending Components | 44 | 40 | 39 | 36 | 42 | 38 | 39 | 39 | 40 | 38 | 39 | 39 | 36 | 39 | 39 |
| Jet Fuel | 34 | 39 | 43 | 40 | 40 | 40 | 42 | 43 | 41 | 42 | 42 | 44 | 40 | 43 | 44 |
| Distillate Fuel Oil | 90 | 102 | 115 | 119 | 86 | 94 | 115 | 117 | 84 | 96 | 115 | 115 | 119 | 117 | 115 |
| Residual Fuel Oil | 32 | 35 | 38 | 42 | 35 | 40 | 43 | 43 | 35 | 37 | 39 | 41 | 42 | 43 | 41 |
| Other Oils ^g | 235 | 267 | 280 | 234 | 233 | 285 | 302 | 250 | 245 | 291 | 307 | 254 | 234 | 250 | 254 |
| Total Stocks (excluding SPR) | 893 | 961 | 980 | 922 | 901 | 972 | 1010 | 970 | 939 | 993 | 1022 | 978 | 922 | 970 | 978 |
| Crude Oil in SPR | 589 | 584 | 574 | 570 | 570 | 570 | 570 | 570 | 570 | 570 | 570 | 570 | 570 | 570 | 570 |
| Total Stocks (including SPR) | 1482 | 1546 | 1554 | 1492 | 1471 | 1542 | 1580 | 1540 | 1509 | 1563 | 1591 | 1547 | 1492 | 1540 | 1547 |

^aIncludes lease condensate.

^bNet imports equals gross imports plus SPR imports minus exports.

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

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

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

^fIncludes crude oil in transit to refineries.

^gIncludes 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 data are printed in bold; forecasts are in italic. The forecasts were generated by simulation of the Short-Term Integrated Forecasting System.

Sources: Historical data: Energy Information Administration, *Petroleum Supply Monthly*, DOE/EIA-0109(93/01-96/08); and *Weekly Petroleum Status Report*, DOE/EIA-0208(various issues).

Table 7. U.S. Petroleum Supply and Demand: High World Oil Price Case
(Million Barrels per Day, Except Closing Stocks)

| | 1996 | | | | 1997 | | | | 1998 | | | | Year | | |
|---|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1996 | 1997 | 1998 |
| Supply | | | | | | | | | | | | | | | |
| Crude Oil Supply | | | | | | | | | | | | | | | |
| Domestic Production ^a | 6.52 | 6.47 | 6.42 | 6.51 | 6.61 | 6.54 | 6.47 | 6.50 | 6.49 | 6.43 | 6.38 | 6.42 | 6.48 | 6.53 | 6.43 |
| Alaska | 1.46 | 1.38 | 1.35 | 1.40 | 1.40 | 1.34 | 1.29 | 1.32 | 1.30 | 1.24 | 1.20 | 1.22 | 1.39 | 1.34 | 1.24 |
| Lower 48 | 5.06 | 5.10 | 5.08 | 5.11 | 5.21 | 5.21 | 5.18 | 5.18 | 5.19 | 5.19 | 5.18 | 5.20 | 5.09 | 5.19 | 5.19 |
| Net Imports (including SPR) ^b | 6.90 | 7.67 | 7.60 | 7.46 | 6.98 | 7.76 | 7.92 | 7.48 | 7.35 | 7.91 | 8.11 | 7.76 | 7.41 | 7.54 | 7.79 |
| Other SPR Supply | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| SPR Stock Withdrawn or Added (-) | 0.03 | 0.05 | 0.12 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 |
| Other Stock Withdrawn or Added (-) | 0.04 | -0.16 | 0.11 | 0.13 | -0.09 | -0.14 | 0.03 | -0.03 | -0.08 | -0.03 | 0.08 | 0.00 | 0.03 | -0.06 | -0.01 |
| Product Supplied and Losses | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 |
| Unaccounted-for Crude Oil | 0.20 | 0.38 | 0.16 | 0.20 | 0.26 | 0.27 | 0.28 | 0.27 | 0.27 | 0.28 | 0.28 | 0.27 | 0.24 | 0.27 | 0.27 |
| Total Crude Oil Supply | 13.67 | 14.40 | 14.41 | 14.33 | 13.75 | 14.43 | 14.69 | 14.20 | 14.03 | 14.57 | 14.84 | 14.44 | 14.20 | 14.27 | 14.47 |
| Other Supply | | | | | | | | | | | | | | | |
| NGL Production | 1.74 | 1.83 | 1.86 | 1.80 | 1.86 | 1.83 | 1.81 | 1.84 | 1.85 | 1.83 | 1.82 | 1.85 | 1.81 | 1.84 | 1.84 |
| Other Hydrocarbon and Alcohol Inputs | 0.32 | 0.29 | 0.30 | 0.29 | 0.33 | 0.32 | 0.32 | 0.33 | 0.34 | 0.32 | 0.32 | 0.33 | 0.30 | 0.32 | 0.33 |
| Crude Oil Product Supplied | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Processing Gain | 0.78 | 0.84 | 0.85 | 0.81 | 0.76 | 0.80 | 0.82 | 0.80 | 0.78 | 0.81 | 0.83 | 0.81 | 0.82 | 0.79 | 0.81 |
| Net Product Imports ^c | 0.96 | 1.15 | 0.99 | 0.87 | 1.22 | 1.21 | 1.02 | 0.94 | 1.09 | 1.21 | 1.05 | 0.90 | 0.99 | 1.10 | 1.06 |
| Product Stock Withdrawn or Added (-) ^d | 0.82 | -0.59 | -0.31 | 0.51 | 0.32 | -0.65 | -0.45 | 0.46 | 0.42 | -0.56 | -0.39 | 0.47 | 0.11 | -0.08 | -0.01 |
| Total Supply | 18.29 | 17.91 | 18.09 | 18.61 | 18.26 | 17.95 | 18.22 | 18.57 | 18.50 | 18.19 | 18.50 | 18.81 | 18.23 | 18.25 | 18.50 |
| Demand | | | | | | | | | | | | | | | |
| Motor Gasoline | 7.51 | 7.99 | 8.00 | 7.90 | 7.60 | 8.09 | 8.17 | 8.03 | 7.72 | 8.21 | 8.28 | 8.13 | 7.85 | 7.98 | 8.09 |
| Jet Fuel | 1.60 | 1.52 | 1.59 | 1.65 | 1.59 | 1.56 | 1.62 | 1.65 | 1.62 | 1.58 | 1.64 | 1.68 | 1.59 | 1.60 | 1.63 |
| Distillate Fuel Oil | 3.62 | 3.23 | 3.14 | 3.50 | 3.71 | 3.30 | 3.24 | 3.49 | 3.75 | 3.36 | 3.31 | 3.56 | 3.37 | 3.44 | 3.49 |
| Residual Fuel Oil | 0.96 | 0.77 | 0.83 | 0.83 | 1.04 | 0.79 | 0.70 | 0.88 | 1.02 | 0.78 | 0.69 | 0.84 | 0.85 | 0.85 | 0.83 |
| Other Oils ^e | 4.60 | 4.41 | 4.54 | 4.74 | 4.31 | 4.20 | 4.50 | 4.52 | 4.38 | 4.26 | 4.56 | 4.60 | 4.57 | 4.38 | 4.45 |
| Total Demand | 18.29 | 17.91 | 18.09 | 18.61 | 18.26 | 17.95 | 18.22 | 18.57 | 18.50 | 18.19 | 18.50 | 18.81 | 18.23 | 18.25 | 18.50 |
| Total Petroleum Net Imports | 7.86 | 8.81 | 8.59 | 8.32 | 8.20 | 8.97 | 8.95 | 8.41 | 8.44 | 9.11 | 9.17 | 8.66 | 8.40 | 8.64 | 8.85 |
| Closing Stocks (million barrels) | | | | | | | | | | | | | | | |
| Crude Oil (excluding SPR) ^f | 300 | 314 | 304 | 293 | 301 | 314 | 311 | 314 | 321 | 324 | 317 | 317 | 293 | 314 | 317 |
| Total Motor Gasoline | 203 | 205 | 200 | 193 | 206 | 200 | 198 | 204 | 213 | 204 | 201 | 206 | 193 | 204 | 206 |
| Finished Motor Gasoline | 159 | 165 | 161 | 156 | 164 | 162 | 159 | 165 | 173 | 167 | 162 | 167 | 156 | 165 | 167 |
| Blending Components | 44 | 40 | 39 | 36 | 42 | 38 | 39 | 39 | 40 | 38 | 39 | 39 | 36 | 39 | 39 |
| Jet Fuel | 34 | 39 | 43 | 40 | 40 | 40 | 42 | 43 | 41 | 42 | 42 | 44 | 40 | 43 | 44 |
| Distillate Fuel Oil | 90 | 102 | 115 | 119 | 86 | 95 | 116 | 118 | 85 | 96 | 116 | 117 | 119 | 118 | 117 |
| Residual Fuel Oil | 32 | 35 | 38 | 42 | 35 | 40 | 43 | 43 | 35 | 37 | 39 | 41 | 42 | 43 | 41 |
| Other Oils ^g | 235 | 267 | 280 | 234 | 233 | 285 | 302 | 250 | 245 | 292 | 308 | 255 | 234 | 250 | 255 |
| Total Stocks (excluding SPR) | 893 | 961 | 980 | 922 | 901 | 973 | 1011 | 972 | 941 | 995 | 1024 | 980 | 922 | 972 | 980 |
| Crude Oil in SPR | 589 | 584 | 574 | 570 | 570 | 570 | 570 | 570 | 570 | 570 | 570 | 570 | 570 | 570 | 570 |
| Total Stocks (including SPR) | 1482 | 1546 | 1554 | 1492 | 1471 | 1543 | 1581 | 1541 | 1510 | 1565 | 1593 | 1550 | 1492 | 1541 | 1550 |

^aIncludes lease condensate.

^bNet imports equals gross imports plus SPR imports minus exports.

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

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

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

^fIncludes crude oil in transit to refineries.

^gIncludes 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 data are printed in bold, forecasts are in italic. The forecasts were generated by simulation of the Short-Term Integrated Forecasting System.

Sources: Historical data: Energy Information Administration, *Petroleum Supply Monthly*, DOE/EIA-0109(93/01-96/11); and *Weekly Petroleum Status Report*, DOE/EIA-0208(various issues).

Table 8. U.S. Petroleum Demand Sensitivities

| | 1997 | 1998 |
|---|----------------------------|----------------------------|
| | Four Quarters ^a | Four Quarters ^a |
| Economic Activity | | |
| Gross Domestic Product (billion 1987 dollars) | 6,981 - 71377 | 7,063 - 7,366 |
| Resulting Change in Petroleum Demand (million barrels per day) ^b | 0.24 | 0.54 |
| Energy Prices | | |
| Imported Crude Oil (nominal dollars per barrel) ^c | \$18.27 - \$23.79 | \$17.99 - \$24.92 |
| Resulting Change in Petroleum Demand (million barrels per day) ^b | | |
| Due to Changes in the Crude Oil Price | -0.28 | -0.61 |
| Weather | | |
| Heating Degree-Days (average per day) ^d | 20.28 - 24.00 | 20.28 - 24.00 |
| Resulting Change in Petroleum Demand (million barrels per day) | 0.38 | 0.59 |
| Cooling Degree-Days (average per day) ^d | 5.57 - 6.58 | 5.57 - 6.58 |
| Resulting Change in Petroleum Demand (million barrels per day) ^b | 0.08 | 0.19 |

^aIn the weather case, calculations apply to certain quarters only, as follows: for heating degree-days in 1997 and 1998, the average of first and fourth quarters is used; for cooling degree-days in 1997 and 1998, the average of the second and third quarters is used.

^bRanges of petroleum product supplied associated with varying each determinant (or determinants), holding other things equal.

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

^dHeating and cooling degree-days are U.S. 1990 population-weighted.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy Markets and Contingency Information Division, Short-Term Integrated Forecasting System.

Table 9. Forecast Components for U.S. Crude Oil Production
(Million Barrels per Day)

| | High Price Case | Low Price Case | Difference | | |
|-----------------------|-----------------|----------------|------------|-------------|--------------|
| | | | Total | Uncertainty | Price Impact |
| United States | 6.42 | 5.75 | 0.66 | 0.10 | 0.57 |
| Lower 48 States | 5.20 | 4.56 | 0.63 | 0.08 | 0.55 |
| Alaska | 1.22 | 1.19 | 0.03 | 0.02 | 0.02 |

Note: Components provided are for the fourth quarter 1998; totals are from Tables 5 and 7. Totals may not add to sum of components due to independent rounding.

Source: Energy Information Administration, Office of Oil and Gas, Reserves and Natural Gas Division.

Table 10. U.S. Natural Gas Supply and Demand: Mid World Oil Price Case
(Trillion Cubic Feet)

| | 1996 | | | | 1997 | | | | 1998 | | | | Year | | |
|---|-------------|--------------|--------------|--------------|-------------|--------------|--------------|--------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1996 | 1997 | 1998 |
| Supply | | | | | | | | | | | | | | | |
| Total Dry Gas Production ^a | 4.78 | 4.73 | 4.70 | <i>4.85</i> | <i>4.89</i> | <i>4.73</i> | <i>4.71</i> | <i>5.11</i> | <i>4.98</i> | <i>4.88</i> | <i>4.87</i> | <i>5.11</i> | <i>19.05</i> | <i>19.43</i> | <i>19.85</i> |
| Net Imports | 0.66 | 0.66 | 0.65 | <i>0.79</i> | <i>0.72</i> | <i>0.71</i> | <i>0.72</i> | <i>0.79</i> | <i>0.79</i> | <i>0.77</i> | <i>0.77</i> | <i>0.85</i> | <i>2.75</i> | <i>2.94</i> | <i>3.18</i> |
| Supplemental Gaseous Fuels | 0.04 | 0.03 | 0.03 | <i>0.03</i> | <i>0.04</i> | <i>0.03</i> | <i>0.03</i> | <i>0.04</i> | <i>0.04</i> | <i>0.03</i> | <i>0.03</i> | <i>0.04</i> | <i>0.13</i> | <i>0.13</i> | <i>0.13</i> |
| Total New Supply | 5.48 | 5.41 | 5.37 | <i>5.68</i> | <i>5.65</i> | <i>5.47</i> | <i>5.45</i> | <i>5.93</i> | <i>5.81</i> | <i>5.68</i> | <i>5.67</i> | <i>6.00</i> | <i>21.94</i> | <i>22.50</i> | <i>23.16</i> |
| Underground Working Gas Storage | | | | | | | | | | | | | | | |
| Opening | 6.50 | 5.04 | 5.86 | <i>6.93</i> | <i>6.40</i> | <i>5.21</i> | <i>6.06</i> | <i>6.91</i> | <i>6.40</i> | <i>5.25</i> | <i>6.10</i> | <i>6.95</i> | <i>6.50</i> | <i>6.40</i> | <i>6.40</i> |
| Closing | 5.04 | 5.86 | 6.93 | <i>6.40</i> | <i>5.21</i> | <i>6.06</i> | <i>6.91</i> | <i>6.40</i> | <i>5.25</i> | <i>6.10</i> | <i>6.95</i> | <i>6.39</i> | <i>6.40</i> | <i>6.40</i> | <i>6.39</i> |
| Net Withdrawals | 1.46 | -0.82 | -1.07 | <i>0.53</i> | <i>1.19</i> | <i>-0.85</i> | <i>-0.85</i> | <i>0.51</i> | <i>1.15</i> | <i>-0.85</i> | <i>-0.85</i> | <i>0.55</i> | <i>0.11</i> | <i>0.00</i> | <i>0.01</i> |
| Total Supply ^a | 6.94 | 4.59 | 4.31 | <i>6.21</i> | <i>6.84</i> | <i>4.62</i> | <i>4.61</i> | <i>6.43</i> | <i>6.96</i> | <i>4.83</i> | <i>4.83</i> | <i>6.55</i> | <i>22.04</i> | <i>22.50</i> | <i>23.17</i> |
| Balancing Item ^b | 0.18 | 0.29 | -0.07 | <i>-0.32</i> | <i>0.43</i> | <i>0.28</i> | <i>-0.12</i> | <i>-0.54</i> | <i>0.46</i> | <i>0.19</i> | <i>-0.22</i> | <i>-0.52</i> | <i>0.09</i> | <i>0.05</i> | <i>-0.11</i> |
| Total Primary Supply ^a | 7.13 | 4.88 | 4.23 | <i>5.89</i> | <i>7.26</i> | <i>4.90</i> | <i>4.49</i> | <i>5.90</i> | <i>7.42</i> | <i>5.02</i> | <i>4.60</i> | <i>6.02</i> | <i>22.13</i> | <i>22.55</i> | <i>23.06</i> |
| Demand | | | | | | | | | | | | | | | |
| Lease and Plant Fuel | 0.31 | 0.31 | 0.30 | <i>0.30</i> | <i>0.30</i> | <i>0.30</i> | <i>0.29</i> | <i>0.32</i> | <i>0.31</i> | <i>0.31</i> | <i>0.30</i> | <i>0.33</i> | <i>1.22</i> | <i>1.21</i> | <i>1.25</i> |
| Pipeline Use | 0.23 | 0.16 | 0.14 | <i>0.19</i> | <i>0.23</i> | <i>0.16</i> | <i>0.15</i> | <i>0.19</i> | <i>0.23</i> | <i>0.16</i> | <i>0.15</i> | <i>0.20</i> | <i>0.72</i> | <i>0.74</i> | <i>0.74</i> |
| Residential | 2.47 | 0.90 | 0.38 | <i>1.53</i> | <i>2.44</i> | <i>0.87</i> | <i>0.39</i> | <i>1.43</i> | <i>2.47</i> | <i>0.88</i> | <i>0.40</i> | <i>1.45</i> | <i>5.27</i> | <i>5.13</i> | <i>5.20</i> |
| Commercial | 1.36 | 0.63 | 0.40 | <i>0.92</i> | <i>1.35</i> | <i>0.61</i> | <i>0.41</i> | <i>0.88</i> | <i>1.38</i> | <i>0.62</i> | <i>0.41</i> | <i>0.90</i> | <i>3.31</i> | <i>3.25</i> | <i>3.31</i> |
| Industrial (Incl. Cogenerators) | 2.25 | 2.09 | 1.97 | <i>2.28</i> | <i>2.26</i> | <i>2.07</i> | <i>2.04</i> | <i>2.28</i> | <i>2.33</i> | <i>2.14</i> | <i>2.10</i> | <i>2.35</i> | <i>8.58</i> | <i>8.65</i> | <i>8.92</i> |
| Cogenerators ^c | 0.56 | 0.51 | 0.52 | <i>0.60</i> | <i>0.56</i> | <i>0.54</i> | <i>0.57</i> | <i>0.65</i> | <i>0.58</i> | <i>0.56</i> | <i>0.59</i> | <i>0.68</i> | <i>2.20</i> | <i>2.32</i> | <i>2.41</i> |
| Electricity Production | | | | | | | | | | | | | | | |
| Electric Utilities | 0.46 | 0.74 | 1.01 | <i>0.75</i> | <i>0.63</i> | <i>0.85</i> | <i>1.16</i> | <i>0.73</i> | <i>0.64</i> | <i>0.86</i> | <i>1.19</i> | <i>0.75</i> | <i>2.95</i> | <i>3.37</i> | <i>3.44</i> |
| Nonutilities (Excl. Cogen.) | 0.05 | 0.04 | 0.05 | <i>0.05</i> | <i>0.05</i> | <i>0.05</i> | <i>0.05</i> | <i>0.06</i> | <i>0.05</i> | <i>0.05</i> | <i>0.05</i> | <i>0.06</i> | <i>0.19</i> | <i>0.20</i> | <i>0.21</i> |
| Total Demand | 7.13 | 4.88 | 4.23 | <i>6.00</i> | <i>7.26</i> | <i>4.90</i> | <i>4.49</i> | <i>5.90</i> | <i>7.42</i> | <i>5.02</i> | <i>4.60</i> | <i>6.02</i> | <i>22.24</i> | <i>22.55</i> | <i>23.06</i> |

^aExcludes nonhydrocarbon gases.

^bThe balancing item represents the difference between the sum of the components of natural gas supply and the sum of components of natural gas demand.

^cQuarterly estimates and projections for gas consumption by nonutility generators are based on estimates for quarterly gas-fired generation at nonutilities, supplied by the Office of Coal, Nuclear, Electric and Alternate Fuels (CNEAF), Energy Information Administration (EIA), based on annual data reported to EIA on Form EIA-867 (Annual Nonutility Power Producer Report). Annual projections for nonutility gas consumption, as well as the detail on independent power producers' share of gas consumption, are provided by CNEAF.

Notes: Minor discrepancies with other EIA published historical data are due to rounding. Historical data are printed in bold; forecasts are in italic. The forecasts were generated by simulation of the Short-Term Integrated Forecasting System.

Sources: Historical data: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(96/11); *Natural Gas Monthly*, DOE/EIA-0130(96/11); *Electric Power Monthly*, DOE/EIA-0226(96/11); Projections: Energy Information Administration, Short-Term Integrated Forecasting System database, and Office of Oil and Gas, Reserves and Natural Gas Division.

Table 11. U.S. Coal Supply and Demand: Mid World Oil Price Case
(Million Short Tons)

| | 1996 | | | | 1997 | | | | 1998 | | | | Year | | |
|--|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|---------------|
| | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1996 | 1997 | 1998 |
| Supply | | | | | | | | | | | | | | | |
| Production | 258.1 | 261.6 | 272.5 | <i>264.2</i> | <i>267.1</i> | <i>268.4</i> | <i>270.6</i> | <i>265.4</i> | <i>273.6</i> | <i>270.2</i> | <i>275.0</i> | <i>269.2</i> | <i>1056.4</i> | <i>1071.5</i> | <i>1088.0</i> |
| Appalachia | 109.8 | 109.8 | 110.6 | <i>108.0</i> | <i>111.3</i> | <i>110.2</i> | <i>106.9</i> | <i>106.0</i> | <i>111.5</i> | <i>108.3</i> | <i>106.0</i> | <i>104.9</i> | <i>438.3</i> | <i>434.3</i> | <i>430.7</i> |
| Interior | 43.8 | 40.5 | 42.5 | <i>41.4</i> | <i>44.0</i> | <i>39.8</i> | <i>40.7</i> | <i>39.5</i> | <i>43.7</i> | <i>38.3</i> | <i>39.2</i> | <i>38.0</i> | <i>168.3</i> | <i>164.0</i> | <i>159.1</i> |
| Western | 104.4 | 111.2 | 119.4 | <i>114.7</i> | <i>111.8</i> | <i>118.5</i> | <i>123.0</i> | <i>119.9</i> | <i>118.4</i> | <i>123.6</i> | <i>129.7</i> | <i>126.4</i> | <i>449.8</i> | <i>473.2</i> | <i>498.1</i> |
| Primary Stock Levels ^a | | | | | | | | | | | | | | | |
| Opening | 34.4 | 36.9 | 37.3 | <i>31.5</i> | <i>32.5</i> | <i>35.0</i> | <i>35.0</i> | <i>33.0</i> | <i>32.0</i> | <i>34.0</i> | <i>34.0</i> | <i>32.0</i> | <i>34.4</i> | <i>32.5</i> | <i>32.0</i> |
| Closing | 36.9 | 37.3 | 31.5 | <i>32.5</i> | <i>35.0</i> | <i>35.0</i> | <i>33.0</i> | <i>32.0</i> | <i>34.0</i> | <i>34.0</i> | <i>32.0</i> | <i>31.0</i> | <i>32.5</i> | <i>32.0</i> | <i>31.0</i> |
| Net Withdrawals | -2.4 | -0.5 | 5.8 | <i>-1.0</i> | <i>-2.5</i> | <i>(S)</i> | <i>2.0</i> | <i>1.0</i> | <i>-2.0</i> | <i>(S)</i> | <i>2.0</i> | <i>1.0</i> | <i>1.9</i> | <i>0.5</i> | <i>1.0</i> |
| Imports | 1.7 | 1.6 | 2.1 | <i>1.9</i> | <i>1.9</i> | <i>1.9</i> | <i>1.9</i> | <i>1.9</i> | <i>1.9</i> | <i>1.9</i> | <i>1.9</i> | <i>1.9</i> | <i>7.2</i> | <i>7.5</i> | <i>7.5</i> |
| Exports | 20.5 | 23.0 | 23.5 | <i>22.9</i> | <i>22.3</i> | <i>23.0</i> | <i>23.3</i> | <i>23.2</i> | <i>22.5</i> | <i>23.2</i> | <i>23.4</i> | <i>23.3</i> | <i>90.0</i> | <i>91.9</i> | <i>92.4</i> |
| Total Net Domestic Supply | 236.8 | 239.6 | 257.0 | <i>242.1</i> | <i>244.1</i> | <i>247.3</i> | <i>251.2</i> | <i>245.0</i> | <i>251.0</i> | <i>248.9</i> | <i>255.4</i> | <i>248.8</i> | <i>975.5</i> | <i>987.6</i> | <i>1004.1</i> |
| Secondary Stock Levels ^b | | | | | | | | | | | | | | | |
| Opening | 134.6 | 124.5 | 134.3 | <i>126.7</i> | <i>125.7</i> | <i>122.8</i> | <i>135.8</i> | <i>122.1</i> | <i>121.7</i> | <i>122.2</i> | <i>132.5</i> | <i>118.6</i> | <i>134.6</i> | <i>125.7</i> | <i>121.7</i> |
| Closing | 124.5 | 134.3 | 126.7 | <i>125.7</i> | <i>122.8</i> | <i>135.8</i> | <i>122.1</i> | <i>121.7</i> | <i>122.2</i> | <i>132.5</i> | <i>118.6</i> | <i>118.7</i> | <i>125.7</i> | <i>121.7</i> | <i>118.7</i> |
| Net Withdrawals | 10.1 | -9.8 | 7.5 | <i>1.1</i> | <i>2.9</i> | <i>-13.0</i> | <i>13.7</i> | <i>0.4</i> | <i>-0.5</i> | <i>-10.3</i> | <i>13.9</i> | <i>-0.1</i> | <i>9.0</i> | <i>4.0</i> | <i>3.0</i> |
| Total Supply | 247.0 | 229.8 | 264.5 | <i>243.2</i> | <i>247.0</i> | <i>234.2</i> | <i>264.9</i> | <i>245.5</i> | <i>250.4</i> | <i>238.6</i> | <i>269.3</i> | <i>248.7</i> | <i>984.5</i> | <i>991.6</i> | <i>1007.0</i> |
| Demand | | | | | | | | | | | | | | | |
| Coke Plants | 8.0 | 8.0 | 8.3 | <i>8.3</i> | <i>7.8</i> | <i>8.0</i> | <i>8.2</i> | <i>8.2</i> | <i>7.7</i> | <i>8.2</i> | <i>8.4</i> | <i>8.2</i> | <i>32.5</i> | <i>32.1</i> | <i>32.4</i> |
| Electricity Production | | | | | | | | | | | | | | | |
| Electric Utilities | 214.8 | 203.0 | 232.9 | <i>209.0</i> | <i>213.5</i> | <i>203.0</i> | <i>233.1</i> | <i>211.1</i> | <i>216.5</i> | <i>206.4</i> | <i>236.9</i> | <i>213.8</i> | <i>859.7</i> | <i>860.7</i> | <i>873.5</i> |
| Nonutilities (Excl. Cogen.) ^c | 5.0 | 5.0 | 5.0 | <i>5.0</i> | <i>5.5</i> | <i>5.5</i> | <i>5.5</i> | <i>5.5</i> | <i>6.0</i> | <i>6.0</i> | <i>6.0</i> | <i>6.0</i> | <i>20.0</i> | <i>22.0</i> | <i>24.0</i> |
| Retail and General Industry ^d | 20.3 | 18.0 | 18.3 | <i>21.0</i> | <i>20.3</i> | <i>17.7</i> | <i>18.2</i> | <i>20.7</i> | <i>20.2</i> | <i>18.1</i> | <i>18.1</i> | <i>20.7</i> | <i>77.5</i> | <i>76.9</i> | <i>77.1</i> |
| Total Demand | 248.0 | 233.9 | 264.5 | <i>243.2</i> | <i>247.0</i> | <i>234.2</i> | <i>264.9</i> | <i>245.5</i> | <i>250.4</i> | <i>238.6</i> | <i>269.3</i> | <i>248.7</i> | <i>989.7</i> | <i>991.6</i> | <i>1007.0</i> |
| Discrepancy ^e | -1.0 | -4.1 | (S) | <i>(S)</i> | <i>(S)</i> | <i>(S)</i> | <i>(S)</i> | <i>(S)</i> | <i>(S)</i> | <i>(S)</i> | <i>(S)</i> | <i>(S)</i> | <i>-5.2</i> | <i>(S)</i> | <i>(S)</i> |

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

^bSecondary stocks are held by users.

^cConsumption of coal by Independent Power Producers (IPPs). In 1994, IPP consumption was estimated to be 3.775 million tons per quarter. Quarterly estimates and projections for coal consumption by nonutility generators are based on estimates for annual coal-fired generation at nonutilities, supplied by the Office of Coal, Nuclear, Electric and Alternate Fuels, Energy Information Administration (EIA), based on annual data reported to EIA on Form EIA-867 (Annual Nonutility Power Producer Report). Data for 1996 are estimates.

^dSynfuels plant demand in 1993 was 1.7 million tons per quarter and is assumed to remain at that level in 1994, 1995, 1996, 1997 and 1998.

^eHistorical period discrepancy reflects an unaccounted-for shipper and receiver reporting difference. Forecast discrepancy identically zero by assumption.

(S) indicates amounts of less than 50,000 tons in absolute value.

Notes: Rows and columns may not add due to independent rounding. Historical data are printed in bold; forecasts are in italic. The forecasts were generated by simulation of the Short-Term Integrated Forecasting System.

Sources: Historical data: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(96/11); and *Quarterly Coal Report*, DOE/EIA-0121(96/1Q); Projections: Energy Information Administration, Short-Term Integrated Forecasting System database, and Office of Coal, Nuclear, Electric and Alternate Fuels.

Table 12. U.S. Electricity Supply and Demand: Mid World Oil Price Case
(Billion Kilowatthours)

| | 1996 | | | | 1997 | | | | 1998 | | | | Year | | |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|
| | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1996 | 1997 | 1998 |
| Supply | | | | | | | | | | | | | | | |
| Net Utility Generation | | | | | | | | | | | | | | | |
| Coal | 427.5 | 405.1 | 462.2 | 415.6 | 427.3 | 406.9 | 465.0 | 420.7 | 433.1 | 413.2 | 472.2 | 425.4 | 1710.5 | 1720.0 | 1743.9 |
| Petroleum | 22.4 | 12.8 | 18.6 | 15.7 | 19.0 | 15.3 | 17.7 | 16.2 | 21.3 | 17.1 | 18.5 | 16.4 | 69.6 | 68.2 | 73.3 |
| Natural Gas | 44.6 | 71.3 | 96.7 | 70.1 | 59.2 | 79.7 | 109.5 | 69.0 | 60.7 | 81.1 | 111.5 | 70.1 | 282.6 | 317.3 | 323.4 |
| Nuclear | 174.4 | 163.5 | 177.0 | 169.2 | 176.9 | 159.4 | 185.9 | 167.9 | 178.4 | 160.7 | 187.4 | 169.3 | 684.0 | 690.1 | 695.9 |
| Hydroelectric | 91.1 | 92.6 | 73.1 | 68.4 | 76.5 | 78.5 | 64.0 | 63.5 | 72.8 | 76.3 | 63.7 | 63.8 | 325.2 | 282.4 | 276.6 |
| Geothermal and Other ^a | 1.5 | 1.5 | 2.2 | 1.9 | 1.8 | 1.7 | 1.7 | 1.7 | 1.6 | 1.6 | 1.6 | 1.6 | 7.0 | 6.9 | 6.5 |
| Subtotal | 761.4 | 746.7 | 829.8 | 741.0 | 760.7 | 741.5 | 843.7 | 738.9 | 767.9 | 749.9 | 855.1 | 746.7 | 3078.9 | 3084.9 | 3119.6 |
| Nonutility Generation ^b | | | | | | | | | | | | | | | |
| Coal | 16.1 | 14.7 | 15.1 | 17.4 | 15.9 | 15.5 | 16.3 | 18.7 | 16.4 | 16.0 | 16.8 | 19.3 | 63.3 | 66.4 | 68.5 |
| Petroleum | 4.4 | 4.0 | 4.1 | 4.7 | 4.5 | 4.4 | 4.6 | 5.3 | 4.9 | 4.8 | 5.0 | 5.7 | 17.3 | 18.8 | 20.4 |
| Natural Gas | 52.3 | 47.9 | 49.1 | 56.5 | 52.3 | 50.8 | 53.3 | 61.2 | 54.2 | 52.7 | 55.3 | 63.6 | 205.8 | 217.6 | 225.9 |
| Other Gaseous Fuels ^c | 3.2 | 2.9 | 3.0 | 3.4 | 3.0 | 2.9 | 3.1 | 3.5 | 3.0 | 2.9 | 3.1 | 3.5 | 12.5 | 12.5 | 12.6 |
| Hydroelectric | 3.9 | 3.6 | 3.7 | 4.2 | 4.0 | 3.8 | 4.0 | 4.6 | 4.1 | 4.0 | 4.2 | 4.9 | 15.3 | 16.4 | 17.3 |
| Geothermal and Other ^d | 20.5 | 18.7 | 19.2 | 22.1 | 19.9 | 19.4 | 20.3 | 23.4 | 20.2 | 19.7 | 20.6 | 23.7 | 80.5 | 83.0 | 84.3 |
| Subtotal | 100.3 | 91.8 | 94.2 | 108.3 | 99.6 | 96.9 | 101.6 | 116.7 | 103.0 | 100.1 | 105.0 | 120.7 | 394.7 | 414.7 | 428.8 |
| Total Generation | 861.8 | 838.6 | 924.0 | 849.3 | 860.4 | 838.4 | 945.3 | 855.6 | 870.9 | 850.0 | 960.1 | 867.4 | 3473.6 | 3499.6 | 3548.3 |
| Net Imports ^e | 7.1 | 9.5 | 12.6 | 7.6 | 6.9 | 9.3 | 12.3 | 7.4 | 7.7 | 9.1 | 10.6 | 7.3 | 36.8 | 35.9 | 34.7 |
| Total Supply | 868.9 | 848.0 | 936.6 | 856.9 | 867.3 | 847.6 | 957.6 | 863.1 | 878.6 | 859.1 | 970.7 | 874.6 | 3510.5 | 3535.6 | 3583.0 |
| Losses and Unaccounted for ^f | 55.1 | 77.9 | 58.3 | 64.3 | 50.0 | 72.5 | 66.2 | 64.5 | 50.6 | 73.4 | 67.0 | 65.3 | 255.6 | 253.1 | 256.4 |
| Demand | | | | | | | | | | | | | | | |
| Electric Utility Sales | | | | | | | | | | | | | | | |
| Residential | 290.5 | 239.2 | 302.2 | 255.4 | 293.1 | 241.0 | 308.7 | 257.7 | 300.1 | 247.3 | 315.7 | 264.1 | 1087.3 | 1100.5 | 1127.2 |
| Commercial | 209.9 | 216.5 | 247.0 | 213.4 | 214.0 | 215.1 | 248.5 | 214.1 | 215.5 | 216.6 | 250.4 | 215.3 | 886.8 | 891.7 | 897.8 |
| Industrial | 247.7 | 252.4 | 263.7 | 253.8 | 245.2 | 255.9 | 266.6 | 255.1 | 245.9 | 257.2 | 268.2 | 256.6 | 1017.7 | 1022.7 | 1027.8 |
| Other | 24.6 | 24.3 | 26.8 | 25.6 | 25.2 | 24.5 | 27.2 | 25.0 | 25.8 | 25.1 | 27.9 | 25.6 | 101.3 | 101.9 | 104.4 |
| Subtotal | 772.7 | 732.5 | 839.7 | 748.2 | 777.5 | 736.5 | 850.9 | 751.9 | 787.3 | 746.1 | 862.1 | 761.6 | 3093.0 | 3116.8 | 3157.2 |
| Nonutility Gener. for Own Use ^g | 41.1 | 37.6 | 38.6 | 44.4 | 39.8 | 38.7 | 40.6 | 46.6 | 40.7 | 39.6 | 41.5 | 47.7 | 161.8 | 165.6 | 169.5 |
| Total Demand | 813.8 | 770.1 | 878.3 | 792.6 | 817.3 | 775.2 | 891.4 | 798.5 | 828.0 | 785.7 | 903.6 | 809.3 | 3254.8 | 3282.4 | 3326.6 |
| Memo: | | | | | | | | | | | | | | | |
| Nonutility Sales to Electric Utilities ^h | 59.2 | 54.2 | 55.6 | 63.9 | 59.8 | 58.2 | 61.0 | 70.1 | 62.3 | 60.6 | 63.5 | 73.0 | 232.9 | 249.1 | 259.3 |

^a"Other" includes generation from wind, wood, waste, and solar sources.

^bElectricity from nonutility sources, including cogenerators and small power producers. Quarterly estimates and projections for nonutility net sales, own use, and generation by fuel source supplied by the Office of Coal, Nuclear, Electric and Alternate Fuels, Energy Information Administration (EIA), based on annual data reported to EIA on Form EIA-867, "Annual Nonutility Power Producer Report." Data for 1994 and 1995 are estimates.

^cIncludes refinery still gas and other process or waste gases, and liquefied petroleum gases.

^dIncludes geothermal, solar, wind, wood, waste, nuclear, hydrogen, sulfur, batteries, chemicals and spent sulfite liquor.

^eData for 1996 are estimates.

^fBalancing item, mainly transmission and distribution losses.

Notes: Minor discrepancies with other EIA published historical data are due to rounding. Historical data are printed in bold; forecasts are in italic. The forecasts were generated by simulation of the Short-Term Integrated Forecasting System.

Sources: Historical data: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(96/11); *Electric Power Monthly*, DOE/EIA-0226(96/11); Projections: Energy Information Administration, Short-Term Integrated Forecasting System database, and Office of Coal, Nuclear, Electric and Alternate Fuels.

Table 13. U.S. Renewable Energy Use by Sector: Mid World Oil Price Case
(Quadrillion Btu)

| | Year | | | | Annual Percentage Change | | |
|--|--------------|--------------|--------------|--------------|--------------------------|-----------|-----------|
| | 1995 | 1996 | 1997 | 1998 | 1995-1996 | 1996-1997 | 1997-1998 |
| Electric Utilities | | | | | | | |
| Hydroelectric Power ^a | 3.054 | 3.382 | <i>2.937</i> | <i>2.876</i> | 10.7 | -13.2 | -2.1 |
| Geothermal, Solar and Wind Energy ^b | 0.099 | 0.107 | <i>0.105</i> | <i>0.096</i> | 8.1 | -1.9 | -8.6 |
| Biofuels ^c | 0.017 | 0.020 | <i>0.019</i> | <i>0.019</i> | 17.6 | -5.0 | 0.0 |
| Total | 3.170 | 3.508 | <i>3.061</i> | <i>2.991</i> | 10.7 | -12.7 | -2.3 |
| Nonutility Power Generators | | | | | | | |
| Hydroelectric Power ^a | 0.152 | 0.158 | <i>0.169</i> | <i>0.177</i> | 3.9 | 7.0 | 4.7 |
| Geothermal, Solar and Wind Energy ^b | 0.248 | 0.276 | <i>0.287</i> | <i>0.295</i> | 11.3 | 4.0 | 2.8 |
| Biofuels ^c | 0.585 | 0.628 | <i>0.645</i> | <i>0.653</i> | 7.4 | 2.7 | 1.2 |
| Total | 0.985 | 1.061 | <i>1.101</i> | <i>1.125</i> | 7.7 | 3.8 | 2.2 |
| Total Power Generation | 4.156 | 4.570 | <i>4.163</i> | <i>4.116</i> | 10.0 | -8.9 | -1.1 |
| Other Sectors | | | | | | | |
| Residential and Commercial ^d | 0.677 | 0.713 | <i>0.695</i> | <i>0.697</i> | 5.3 | -2.5 | 0.3 |
| Industrial ^e | 1.545 | 1.546 | <i>1.586</i> | <i>1.620</i> | 0.1 | 2.6 | 2.1 |
| Transportation ^f | 0.088 | 0.068 | <i>0.088</i> | <i>0.088</i> | -22.7 | 29.4 | 0.0 |
| Total | 2.310 | 2.327 | <i>2.368</i> | <i>2.405</i> | 0.7 | 1.8 | 1.6 |
| Net Imported Electricity ^g | 0.386 | 0.378 | <i>0.369</i> | <i>0.356</i> | -2.1 | -2.4 | -3.5 |
| Total Renewable Energy Demand | 6.852 | 7.275 | <i>6.900</i> | <i>6.877</i> | 6.2 | -5.2 | -0.3 |

^aConventional hydroelectric power only. Hydroelectricity generated by pumped storage is not included in renewable energy.

^bAlso includes photovoltaic and solar thermal energy.

^cBiofuels are fuelwood, wood byproducts, waste wood, municipal solid waste, manufacturing process waste, and alcohol fuels.

^dIncludes biofuels and solar energy consumed in the residential and commercial sectors.

^eConsists primarily of biofuels for use other than in electricity cogeneration.

^fEthanol blended into gasoline.

^gNet imports of electricity are included in renewables because they stem principally from hydroelectric power generators in Canada. However, it should be noted that in actuality, only about 77 percent of gross imports of electricity from Canada were attributable to renewable energy sources in 1993, based on statistics from Natural Resources Canada, *Electric Power in Canada 1993* (Ottawa: 1994), p. 89.

(S) Less than 500 billion Btu.

NM indicates percent change calculations are not meaningful or undefined at the precision level of this table.

Notes: Minor discrepancies with other published EIA historical data are due to independent rounding. Historical data are printed in bold, forecasts are in italic. The forecasts were generated by simulation of the Short-Term Integrated Forecasting System.

Sources: Historical data: 1996: Estimates derived from Energy Information Administration, Short-Term Integrated Forecasting System database, and Office of Coal, Nuclear, Electric and Alternate Fuels Energy Information Administration; Projections: Renewables growth in sectors other than electric utilities taken from Energy Information Administration, *Annual Energy Outlook 1996* database and Office of Coal, Nuclear, Electric and Alternate Fuels Energy Information Administration.

Table A1. Annual U.S. Energy Supply and Demand

| | Year | | | | | | | | | | | | | | |
|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 |
| Real Gross Domestic Product (GDP) (billion chained 1992 dollars) | 5136 | 5330 | 5490 | 5648 | 5863 | 6060 | 6139 | 6079 | 6244 | 6384 | 6604 | 6739 | 6904 | 7059 | 7215 |
| Imported Crude Oil Price ^b (nominal dollars per barrel) | 29.30 | 28.88 | 26.99 | 14.00 | 14.57 | 18.08 | 21.75 | 18.70 | 18.20 | 16.14 | 15.52 | 17.15 | 20.57 | 21.04 | 21.45 |
| Petroleum Supply | | | | | | | | | | | | | | | |
| Crude Oil Production ^c (million barrels per day) | 8.88 | 8.97 | 8.68 | 8.35 | 8.14 | 7.61 | 7.36 | 7.42 | 7.17 | 6.85 | 6.66 | 6.56 | 6.48 | 6.35 | 6.15 |
| Total Petroleum Net Imports (including SPR) (million barrels per day) | 4.72 | 4.29 | 5.44 | 5.91 | 6.59 | 7.20 | 7.16 | 6.63 | 6.94 | 7.62 | 8.05 | 7.89 | 8.40 | 8.91 | 9.30 |
| Energy Demand | | | | | | | | | | | | | | | |
| World Petroleum (million barrels per day) | 20.0 | 59.9 | 60.6 | 62.2 | 63.4 | 65.2 | 66.0 | 66.2 | 66.8 | 66.6 | 66.2 | 68.7 | 70.2 | 71.9 | 73.4 |
| U.S. Petroleum (million barrels per day) | 15.76 | 15.78 | 16.33 | 16.72 | 17.34 | 17.37 | 17.04 | 16.77 | 17.10 | 17.24 | 17.72 | 17.72 | 18.23 | 18.36 | 18.69 |
| Natural Gas (trillion cubic feet) | 17.95 | 17.28 | 16.22 | 17.21 | 18.03 | 18.80 | 18.72 | 19.03 | 19.54 | 20.28 | 20.71 | 21.58 | 22.24 | 22.55 | 23.06 |
| Coal (million short tons) | 791 | 818 | 804 | 837 | 884 | 891 | 897 | 894 | 902 | 938 | 945 | 959 | 990 | 992 | 1007 |
| Electricity (billion kilowatthours) Utility Sales | 2286 | 2324 | 2369 | 2457 | 2578 | 2647 | 2713 | 2762 | 2763 | 2861 | 2935 | 3009 | 3093 | 3117 | 3157 |
| Nonutility Own Use | NA | NA | NA | NA | NA | 108 | 113 | 122 | 132 | 138 | 150 | 158 | 162 | 166 | 169 |
| Total | NA | NA | NA | NA | NA | 2755 | 2826 | 2884 | 2895 | 3000 | 3085 | 3167 | 3255 | 3282 | 3327 |
| Total Energy Demand ¹ (quadrillion Btu) | 70.5 | 74.1 | 74.0 | 74.3 | 76.9 | 80.2 | 81.3 | 81.0 | 81.9 | 83.6 | 85.0 | 87.1 | 89.7 | 90.0 | 91.5 |
| Total Energy Demand per Dollar of GDP (thousand Btu per 1992 Dollar) | 13.72 | 13.91 | 13.48 | 13.15 | 13.11 | 13.24 | 13.25 | 13.32 | 13.12 | 13.10 | 12.87 | 12.92 | 13.00 | 12.75 | 12.68 |
| Adjusted Total Energy Demand ¹ (quadrillion Btu) | NA | NA | NA | NA | NA | NA | 84.1 | 84.0 | 85.2 | 86.9 | 88.5 | 90.6 | 93.3 | 93.6 | 95.1 |
| Adjusted Total Energy Demand per Dollar of GDP (thousand Btu per 1992 Dollar) | NA | NA | NA | NA | NA | NA | 1.37 | 13.81 | 13.64 | 13.61 | 13.40 | 13.44 | 13.52 | 13.27 | 13.19 |

¹In accordance with the January 1996 revisions of the National Income and Product Accounts by the Bureau of Economic Analysis, macroeconomic measures have been changed from fixed-weighted to chain-weighted, and base year has been changed from 1987 to 1992.

^bRefers to the imported cost of crude oil to U.S. refiners assumed for the scenario depicted. In all cases on this table, the mid macroeconomic case and normal weather are used.

^cIncludes lease condensate.

^dTotal annual electric utility sales for historical periods are derived from the sum of monthly sales figures based on submissions by electric utilities of Form EIA-826, "Monthly Electric Utility Sales and Revenue Report with State Distributions." These historical values differ from annual sales totals based on Form EIA-861, reported in several EIA publications, but match alternate annual totals reported in EIA's *Electric Power Monthly*, DOE/EIA-0226.

^eDefined as the difference between total nonutility electricity generation and sales to electric utilities by nonutility generators, reported on Form EIA-867, "Annual Nonutility Power Producer Report." Data for 1996 are estimates.

^f"Total Energy Demand" refers to the aggregate energy concept presented in Energy Information Administration, *Annual Energy Review*, 1995, DOE/EIA-0384(95), Tables 1.1, 1.3 and 2.1. "Adjusted Total Energy Demand" refers to the aggregate energy demand concept reported in the same tables for 1990 and beyond. The former concept is extended here in order to provide a more consistent long-term energy demand series. The latter concept is more comprehensive and is intended as the primary energy demand aggregate for assessing energy intensity trends since 1990. The adjusted measure incorporates information on renewable energy consumption among households, commercial establishments, and electricity generating facilities other than electric utilities (including industrial cogenerators). The conversion from physical units to Btu is calculated using a subset of conversion factors used in the calculations performed for gross energy consumption in Energy Information Administration, *Monthly Energy Review (MER)*. Consequently, the historical data may not precisely match those published in the MER or the AER.

SPR: Strategic Petroleum Reserve.

Notes: Minor discrepancies with other published EIA historical data are due to independent rounding. Historical data are printed in bold; forecasts are in italic. The forecasts were generated by simulation of the Short-Term Integrated Forecasting System.

Sources: Historical data: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(96/11); *Petroleum Supply Monthly*, DOE/EIA-0109(96/11); *Petroleum Supply Annual 1996*, DOE/EIA-0340(96)/2; *Natural Gas Monthly*, DOE/EIA-0130(96/11); *Electric Power Monthly*, DOE/EIA-0121(96/1Q). Macroeconomic projections are based on DR/McGraw-Hill Forecast CONTROL196.

Table A2. Annual U.S. Macroeconomic and Weather Indicators

| | Year | | | | | | | | | | | | | | |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 |
| Macroeconomic ^a | | | | | | | | | | | | | | | |
| Real Gross Domestic Product (billion chained 1992 dollars) | 5138 | 5330 | 5490 | 5648 | 5863 | 6060 | 6139 | 6079 | 6244 | 6384 | 6604 | 6739 | 6904 | 7059 | 7215 |
| GDP Implicit Price Deflator (index, 1992=1,000) | 0.759 | 0.786 | 0.806 | 0.831 | 0.861 | 0.897 | 0.936 | 0.973 | 1.000 | 1.026 | 1.049 | 1.076 | 1.099 | 1.125 | 1.150 |
| Real Disposable Personal Income (billion chained 1992 Dollars) | 3842 | 3959 | 4087 | 4154 | 4318 | 4404 | 4485 | 4486 | 4614 | 4666 | 4776 | 4935 | 5086 | 5225 | 5340 |
| Manufacturing Production (index, 1987=1,000) | 0.893 | 0.916 | 0.943 | 1.000 | 1.047 | 1.064 | 1.061 | 1.038 | 1.083 | 1.125 | 1.198 | 1.240 | 1.279 | 1.316 | 1.365 |
| Real Fixed Investment (billion chained 1992 dollars) | 762 | 799 | 805 | 799 | 818 | 832 | 806 | 741 | 783 | 836 | 921 | 977 | 1037 | 1073 | 1107 |
| Real Exchange Rate (index) | NA | NA | NA | NA | NA | NA | 1.000 | 1.012 | 1.015 | 1.063 | 1.040 | 0.960 | 1.014 | 1.025 | 1.004 |
| Business Inventory Change (billion chained 1992 dollars) | 28.9 | -4.5 | -4.2 | 5.1 | 9.5 | 19.2 | 6.6 | -6.1 | -9.3 | 5.5 | 8.4 | 11.9 | 9.1 | 4.2 | 2.6 |
| Producer Price Index (index, 1980-1984=1,000) | 1.037 | 1.032 | 1.002 | 1.028 | 1.069 | 1.122 | 1.163 | 1.165 | 1.172 | 1.189 | 1.205 | 1.248 | 1.276 | 1.285 | 1.298 |
| Consumer Price Index (index, 1980-1984=1,000) | 1.039 | 1.076 | 1.097 | 1.137 | 1.184 | 1.240 | 1.308 | 1.363 | 1.404 | 1.446 | 1.483 | 1.525 | 1.570 | 1.619 | 1.666 |
| Petroleum Product Price Index (index, 1980-1984=1,000) | 0.874 | 0.832 | 0.532 | 0.568 | 0.539 | 0.612 | 0.748 | 0.671 | 0.647 | 0.620 | 0.591 | 0.608 | 0.707 | 0.722 | 0.716 |
| Non-Farm Employment (millions) | 94.4 | 97.4 | 99.3 | 102.0 | 105.2 | 107.9 | 109.4 | 108.3 | 108.6 | 110.7 | 114.2 | 117.2 | 119.5 | 121.4 | 123.0 |
| Commercial Employment (millions) | 58.0 | 60.8 | 62.9 | 65.2 | 67.8 | 70.0 | 71.3 | 70.8 | 71.2 | 73.2 | 76.1 | 78.8 | 81.2 | 83.1 | 84.6 |
| Total Industrial Production (index, 1987=1,000) | 0.928 | 0.944 | 0.953 | 1.000 | 1.045 | 1.061 | 1.061 | 1.042 | 1.078 | 1.116 | 1.181 | 1.220 | 1.258 | 1.293 | 1.337 |
| Housing Stock (millions) | 94.5 | 96.3 | 98.0 | 99.8 | 101.6 | 102.9 | 103.5 | 104.5 | 105.5 | 106.8 | 108.2 | 109.8 | 111.2 | 112.7 | 114.1 |
| Weather ^b | | | | | | | | | | | | | | | |
| Heating Degree-Days | | | | | | | | | | | | | | | |
| U.S. | 4514 | 4642 | 4295 | 4334 | 4653 | 4726 | 4016 | 4200 | 4441 | 4700 | 4483 | 4531 | 4832 | 4576 | 4576 |
| New England | 6442 | 6571 | 6517 | 6546 | 6715 | 6887 | 5848 | 5960 | 6844 | 6728 | 6672 | 6559 | 6994 | 6621 | 6621 |
| Middle Atlantic | 5777 | 5660 | 5665 | 5699 | 6088 | 6134 | 4998 | 5177 | 5964 | 5948 | 5934 | 5831 | 6177 | 5839 | 5839 |
| U.S. Gas-Weighted | 4704 | 4856 | 4442 | 4391 | 4779 | 4856 | 4139 | 4337 | 4458 | 4754 | 4659 | 4707 | 5094 | 4732 | 4732 |
| Cooling Degree-Days (U.S.) | 1214 | 1194 | 1249 | 1269 | 1283 | 1156 | 1260 | 1331 | 1040 | 1218 | 1220 | 1293 | 1150 | 1193 | 1193 |

^aIn accordance with the January 1996 revisions of the National Income and Product Accounts by the Bureau of Economic Analysis, macroeconomic measures have been changed from fixed-weighted to chain-weighted, and base year has been changed from 1987 to 1992.

^bPopulation-weighted degree days. A degree day indicates the temperature variation from 65 degrees Fahrenheit (calculated as the simple average of the daily minimum and maximum temperatures) weighted by 1990 population. Normal is used for the forecast period and is defined as the average number of degree days between 1961 and 1990 for a given period.

Notes: Historical data are printed in bold; forecasts are in italics.

Sources: Historical data: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(96/11); U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, October 1996; U.S. Department of Commerce, National Oceanic and Atmospheric Administration, *Monthly State, Regional, and National Heating/Cooling Degree Days Weighted by Population*, Federal Reserve System, *Statistical Release G.17(4/19)*, October 1996. Macroeconomic projections are based on DRIMcGraw-Hill Forecast CONTROL0116.

Table A3. Annual International Petroleum Supply and Demand Balance
(Millions Barrels per Day Except Closing Stocks)

| | Year | | | | | | | | | | | | | | | |
|---|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|
| | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | |
| Demand* | | | | | | | | | | | | | | | | |
| OECD | 15.8 | 15.8 | 16.3 | 16.7 | 17.3 | 17.4 | 17.0 | 16.8 | 17.1 | 17.2 | 17.7 | 17.7 | 18.2 | 18.4 | 18.7 | |
| U.S. (50 States) | 12.1 | 12.0 | 12.5 | 12.6 | 12.7 | 12.8 | 12.6 | 13.4 | 13.6 | 13.5 | 13.6 | 14.1 | 14.3 | 14.5 | 14.7 | |
| Europe ^b | 4.6 | 4.4 | 4.4 | 4.5 | 4.8 | 5.0 | 5.1 | 5.3 | 5.4 | 5.4 | 5.7 | 5.7 | 5.8 | 5.8 | 6.0 | |
| Japan | 2.5 | 2.5 | 2.5 | 2.5 | 2.6 | 2.7 | 2.7 | 2.7 | 2.7 | 2.8 | 2.9 | 3.0 | 2.9 | 3.0 | 3.0 | |
| Other OECD | 34.9 | 34.7 | 35.7 | 36.3 | 37.5 | 37.9 | 37.5 | 38.1 | 38.8 | 39.0 | 39.9 | 40.5 | 41.3 | 41.7 | 42.3 | |
| Non-OECD | | | | | | | | | | | | | | | | |
| Former Soviet Union | 8.9 | 9.0 | 9.0 | 9.0 | 8.9 | 8.7 | 8.4 | 8.4 | 6.8 | 5.4 | 4.8 | 4.7 | 4.7 | 4.8 | 4.8 | |
| Europe | 1.8 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.0 | 1.3 | 1.2 | 1.2 | 1.4 | 1.4 | 1.4 | 1.5 | 1.5 | |
| China | 1.7 | 1.9 | 2.0 | 2.1 | 2.3 | 2.4 | 2.3 | 2.5 | 2.7 | 3.0 | 3.2 | 3.4 | 3.6 | 3.8 | 4.0 | |
| Other Asia | 3.7 | 3.7 | 3.9 | 4.1 | 4.4 | 4.9 | 5.3 | 5.7 | 6.4 | 7.4 | 7.4 | 8.0 | 8.4 | 9.0 | 9.6 | |
| Other Non-OECD | 8.9 | 9.1 | 9.5 | 9.7 | 10.0 | 10.4 | 10.7 | 10.8 | 10.9 | 11.2 | 12.0 | 12.2 | 12.4 | 12.7 | 13.0 | |
| Total Non-OECD | 25.1 | 25.9 | 26.5 | 27.1 | 27.7 | 28.5 | 28.7 | 28.6 | 27.8 | 27.2 | 28.8 | 29.7 | 30.6 | 31.7 | 32.8 | |
| Total World Demand | 59.9 | 60.6 | 62.2 | 63.4 | 65.2 | 66.4 | 66.2 | 66.8 | 66.6 | 66.2 | 68.7 | 70.2 | 71.9 | 73.4 | 75.2 | |
| Supply* | | | | | | | | | | | | | | | | |
| OECD | 11.1 | 11.2 | 10.9 | 10.6 | 10.5 | 9.9 | 9.7 | 9.9 | 9.8 | 9.6 | 9.4 | 9.4 | 9.4 | 9.3 | 9.1 | |
| U.S. (50 States) | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 2.0 | 2.0 | 2.0 | 2.1 | 2.2 | 2.3 | 2.4 | 2.5 | 2.5 | 2.6 | |
| Canada | 3.4 | 3.6 | 3.8 | 3.8 | 3.8 | 3.7 | 3.9 | 4.0 | 4.3 | 4.6 | 5.4 | 5.8 | 6.2 | 6.7 | 7.1 | |
| North Sea ^d | 1.3 | 1.4 | 1.3 | 1.4 | 1.4 | 1.3 | 1.5 | 1.5 | 1.5 | 1.3 | 1.5 | 1.6 | 1.6 | 1.6 | 1.7 | |
| Other OECD | 17.6 | 18.0 | 17.9 | 17.8 | 17.7 | 17.0 | 17.0 | 17.5 | 17.8 | 17.8 | 18.6 | 19.2 | 19.7 | 20.2 | 20.5 | |
| Non-OECD | | | | | | | | | | | | | | | | |
| OPEC | 18.4 | 17.2 | 19.3 | 19.6 | 21.5 | 23.5 | 24.2 | 24.7 | 25.9 | 26.9 | 27.2 | 27.6 | 28.2 | 29.1 | 29.5 | |
| Former Soviet Union | 12.2 | 11.9 | 12.3 | 12.5 | 12.5 | 12.1 | 11.4 | 10.4 | 8.9 | 8.1 | 7.0 | 7.0 | 7.1 | 7.2 | 7.5 | |
| China | 2.3 | 2.5 | 2.6 | 2.7 | 2.7 | 2.8 | 2.8 | 2.8 | 2.8 | 2.9 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | |
| Mexico | 3.1 | 3.0 | 2.8 | 2.9 | 2.9 | 2.9 | 3.0 | 3.2 | 3.2 | 3.2 | 3.2 | 3.1 | 3.3 | 3.4 | 3.5 | |
| Other Non-OECD | 6.1 | 11.0 | 6.8 | 6.9 | 7.4 | 7.5 | 7.7 | 8.4 | 8.4 | 8.7 | 9.9 | 9.9 | 10.2 | 10.5 | 11.0 | |
| Total Non-OECD | 42.0 | 41.2 | 43.9 | 44.6 | 47.0 | 48.9 | 49.4 | 49.2 | 49.2 | 49.8 | 49.4 | 50.6 | 51.9 | 53.4 | 54.7 | |
| Total World Supply | 59.6 | 59.3 | 61.8 | 62.4 | 64.7 | 65.9 | 66.4 | 66.7 | 66.9 | 67.6 | 68.0 | 69.8 | 71.6 | 73.6 | 75.2 | |
| Total Stock Withdrawals | -0.2 | 0.3 | -0.9 | -0.1 | -0.4 | -0.2 | -0.2 | 0.1 | -0.3 | -1.4 | 0.7 | 0.4 | 0.3 | -0.2 | 0.0 | |
| Closing Stocks, OECD only (billion barrels) | 2.7 | 2.6 | 2.7 | 2.7 | 2.6 | 2.6 | 2.7 | 2.7 | 2.7 | 2.8 | 2.8 | 2.7 | 2.6 | 2.6 | 2.6 | |
| Net Exports from Former Soviet Union | 3.3 | 3.0 | 3.4 | 3.5 | 3.6 | 3.4 | 3.0 | 2.1 | 2.1 | 2.7 | 2.2 | 2.2 | 2.3 | 2.4 | 2.7 | |

*Demand for petroleum by the OECD countries is synonymous with "petroleum product supplied," which is defined in the glossary of the EIA *Petroleum Supply Monthly*, DOE/EIA-0109. Demand for petroleum by the non-OECD countries is "apparent consumption," which includes internal consumption, refinery fuel and loss, and bunkering.

^bOECD Europe includes the former East Germany.
^cincludes production of crude oil (including lease condensates), natural gas plant liquids, other hydrogen and hydrocarbons for refinery feedstocks, refinery gains, alcohol, and liquids produced from coal and other sources.
^dincludes offshore supply from Denmark, Germany, the Netherlands, Norway, and the United Kingdom.

OECD: Organization for Economic Cooperation and Development; Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States. Mexico is also a member but OECD data do not yet include Mexico.

OPEC: Organization of Petroleum Exporting Countries; Algeria, Gabon, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, the United Arab Emirates, and Venezuela.
 SPR: Strategic Petroleum Reserve

Former Soviet Union: Armenia, Azerbaijan, Belarus, Estonia, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine and Uzbekistan.
 Notes: Minor discrepancies with other published EIA historical data are due to rounding. Historical data are printed in bold; forecasts are in italic. The forecasts were generated by simulation of the Short-Term Integrated Forecasting System.

Sources: Energy Information Administration, *International Petroleum Statistics Report*, DOE/EIA-0520(96/11); and *International Energy Annual 1995*, DOE/EIA-0219(95); Organization for Economic Cooperation and Development, Annual and Monthly Oil Statistics Database, October 1996.

Table A4. Annual Average U.S. Energy Prices
(Nominal Dollars)

| | Year | | | | | | | | | | | | | | |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 |
| Imported Crude Oil ^a (dollars per barrel) | 28.88 | 26.99 | 14.00 | 18.13 | 14.57 | 18.08 | 21.75 | 18.70 | 18.20 | 16.14 | 15.52 | 17.15 | 20.57 | 21.04 | 21.45 |
| Natural Gas Wellhead (dollars per thousand cubic feet) | 2.65 | 2.51 | 1.94 | 1.66 | 1.69 | 1.69 | 1.71 | 1.64 | 1.74 | 2.04 | 1.85 | 1.55 | 2.17 | 2.09 | 1.98 |
| Petroleum Product | | | | | | | | | | | | | | | |
| Gasoline Retail ^b (dollars per gallon) | 1.20 | 1.20 | 0.93 | 0.96 | 0.96 | 1.06 | 1.22 | 1.20 | 1.19 | 1.17 | 1.17 | 1.21 | 1.29 | 1.32 | 1.32 |
| No. 2 Diesel Oil, Retail (dollars per gallon) | 1.16 | 1.16 | 0.88 | 0.93 | 0.91 | 0.99 | 1.16 | 1.12 | 1.10 | 1.11 | 1.11 | 1.10 | 1.23 | 1.25 | 1.26 |
| No. 2 Heating Oil, Wholesale (dollars per gallon) | 0.82 | 0.78 | 0.49 | 0.53 | 0.47 | 0.56 | 0.70 | 0.62 | 0.58 | 0.54 | 0.51 | 0.51 | 0.64 | 0.65 | 0.66 |
| No. 2 Heating Oil, Retail (dollars per gallon) | 1.09 | 1.05 | 0.84 | 0.80 | 0.81 | 0.90 | 1.06 | 1.02 | 0.93 | 0.91 | 0.89 | 0.87 | 0.99 | 1.04 | 1.05 |
| No. 6 Residual Fuel Oil, Retail ^c (dollars per barrel) | 28.89 | 25.57 | 14.46 | 17.76 | 14.04 | 16.20 | 18.66 | 14.32 | 14.21 | 14.00 | 14.79 | 16.49 | 19.34 | 20.13 | 20.52 |
| Electric Utility Fuel | | | | | | | | | | | | | | | |
| Coal (dollars per million Btu) | 1.66 | 1.65 | 1.58 | 1.51 | 1.47 | 1.44 | 1.45 | 1.45 | 1.41 | 1.38 | 1.36 | 1.32 | 1.29 | 1.27 | 1.26 |
| Heavy Fuel Oil ^d (dollars per million Btu) | 4.81 | 4.26 | 2.40 | 2.98 | 2.41 | 2.85 | 3.22 | 2.49 | 2.46 | 2.36 | 2.40 | 2.60 | 3.11 | 3.24 | 3.30 |
| Natural Gas (dollars per million Btu) | 3.58 | 3.43 | 2.35 | 2.24 | 2.26 | 2.36 | 2.32 | 2.15 | 2.33 | 2.56 | 2.23 | 1.98 | 2.61 | 2.53 | 2.48 |
| Other Residential | | | | | | | | | | | | | | | |
| Natural Gas (dollars per thousand cubic feet) | 6.12 | 6.12 | 5.83 | 5.55 | 5.47 | 5.64 | 5.80 | 5.82 | 5.89 | 6.17 | 6.41 | 6.06 | 6.41 | 6.49 | 6.49 |
| Electricity (cents per kilowatthour) | 7.6 | 7.8 | 7.4 | 7.4 | 7.5 | 7.6 | 7.8 | 8.1 | 8.2 | 8.3 | 8.4 | 8.4 | 8.4 | 8.3 | 8.2 |

^aCost of imported crude oil to U.S.

^bAverage for all grades and services.

^cAverage for all sulfur contents.

^dIncludes fuel oils No. 4, No. 5, and No. 6 and topped crude fuel oil prices.

Notes: Data are estimated for the fourth quarter of 1996. Prices exclude taxes, except prices for gasoline, residential natural gas, and diesel. Price cases are derived by simulating all energy product price models under the assumptions of the three world oil price cases using the mid macroeconomic case and normal weather assumptions for all simulations. The forecasts were generated by simulation of the Short-Term Integrated Forecasting System.

Sources: Historical data: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(96/11); and *Petroleum Marketing Monthly*, DOE/EIA-0380(96/11).

Table A5. Annual U.S. Petroleum Supply and Demand
(Million Barrels per Day Except Closing Stocks)

| | Year | | | | | | | | | | | | | | |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 |
| Supply | | | | | | | | | | | | | | | |
| Crude Oil Supply | | | | | | | | | | | | | | | |
| Domestic Production ^a | 8.88 | 8.97 | 8.68 | 8.35 | 8.14 | 7.61 | 7.36 | 7.42 | 7.17 | 6.85 | 6.66 | 6.56 | 6.48 | 6.35 | 6.15 |
| Alaska | 1.72 | 1.83 | 1.87 | 1.96 | 2.02 | 1.87 | 1.77 | 1.80 | 1.71 | 1.58 | 1.56 | 1.48 | 1.39 | 1.31 | 1.22 |
| Lower 48 | 7.16 | 7.15 | 6.81 | 6.39 | 6.12 | 5.74 | 5.58 | 5.62 | 5.46 | 5.26 | 5.10 | 5.08 | 5.09 | 5.05 | 4.93 |
| Net Imports (including SPR) ^b | 3.25 | 3.00 | 4.02 | 4.52 | 4.95 | 5.70 | 5.79 | 5.67 | 5.99 | 6.69 | 6.96 | 7.14 | 7.41 | 7.76 | 8.16 |
| Other SPR Supply | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Stock Draw (including SPR) | -0.20 | -0.05 | -0.08 | -0.12 | 0.00 | -0.09 | 0.02 | -0.01 | 0.01 | -0.06 | -0.02 | 0.09 | 0.03 | -0.06 | 0.00 |
| Product Supplied and Losses | -0.07 | -0.06 | -0.05 | -0.03 | -0.04 | -0.03 | -0.02 | -0.02 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 |
| Unaccounted-for Crude Oil | 0.18 | 0.15 | 0.14 | 0.14 | 0.20 | 0.20 | 0.26 | 0.20 | 0.26 | 0.17 | 0.27 | 0.19 | 0.24 | 0.27 | 0.28 |
| Total Crude Oil Supply | 12.04 | 12.00 | 12.72 | 12.85 | 13.25 | 13.40 | 13.41 | 13.30 | 13.41 | 13.61 | 13.87 | 13.97 | 14.20 | 14.32 | 14.57 |
| Other Supply | | | | | | | | | | | | | | | |
| NGL Production | 1.63 | 1.61 | 1.55 | 1.59 | 1.62 | 1.55 | 1.56 | 1.66 | 1.70 | 1.74 | 1.73 | 1.76 | 1.81 | 1.84 | 1.84 |
| Other Hydrocarbon and Alcohol Inputs | 0.08 | 0.11 | 0.11 | 0.12 | 0.11 | 0.11 | 0.13 | 0.15 | 0.20 | 0.25 | 0.26 | 0.30 | 0.30 | 0.32 | 0.33 |
| Crude Oil Product Supplied | 0.06 | 0.06 | 0.05 | 0.03 | 0.04 | 0.03 | 0.02 | 0.02 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Processing Gain | 0.55 | 0.56 | 0.62 | 0.64 | 0.66 | 0.66 | 0.70 | 0.71 | 0.77 | 0.76 | 0.77 | 0.77 | 0.82 | 0.80 | 0.81 |
| Net Product Imports ^c | 1.47 | 1.29 | 1.41 | 1.39 | 1.63 | 1.50 | 1.38 | 0.96 | 0.94 | 1.08 | 1.02 | 0.85 | 0.85 | 0.89 | 0.90 |
| Product Stock Withdrawn or Added (-) ^d | -0.08 | 0.15 | -0.12 | 0.09 | 0.03 | 0.13 | -0.14 | -0.04 | 0.06 | -0.05 | 0.00 | 0.15 | 0.11 | -0.07 | -0.01 |
| Total Supply | 15.76 | 15.78 | 16.33 | 16.72 | 17.33 | 17.37 | 17.05 | 16.76 | 17.10 | 17.25 | 17.72 | 17.72 | 18.23 | 18.36 | 18.69 |
| Demand | | | | | | | | | | | | | | | |
| Motor Gasoline ^e | 6.69 | 6.78 | 6.94 | 7.19 | 7.36 | 7.40 | 7.31 | 7.23 | 7.38 | 7.48 | 7.60 | 7.79 | 7.85 | 8.01 | 8.14 |
| Jet Fuel | 1.18 | 1.22 | 1.31 | 1.38 | 1.45 | 1.49 | 1.52 | 1.47 | 1.45 | 1.47 | 1.53 | 1.51 | 1.59 | 1.61 | 1.64 |
| Distillate Fuel Oil | 2.84 | 2.87 | 2.91 | 2.98 | 3.12 | 3.16 | 3.02 | 2.92 | 2.98 | 3.04 | 3.16 | 3.21 | 3.37 | 3.46 | 3.53 |
| Residual Fuel Oil | 1.37 | 1.20 | 1.42 | 1.26 | 1.38 | 1.37 | 1.23 | 1.16 | 1.09 | 1.08 | 1.02 | 0.86 | 0.85 | 0.89 | 0.90 |
| Other Oils ^f | 3.68 | 3.71 | 3.75 | 3.90 | 4.03 | 4.03 | 3.95 | 3.99 | 4.20 | 4.17 | 4.41 | 4.36 | 4.57 | 4.40 | 4.48 |
| Total Demand ^g | 15.76 | 15.78 | 16.33 | 16.72 | 17.34 | 17.37 | 17.04 | 16.77 | 17.10 | 17.24 | 17.72 | 17.72 | 18.23 | 18.36 | 18.69 |
| Total Petroleum Net Imports | 4.72 | 4.29 | 5.44 | 5.91 | 6.59 | 7.20 | 7.16 | 6.63 | 6.94 | 7.62 | 8.05 | 7.89 | 8.40 | 8.91 | 9.30 |
| Closing Stocks (million barrels) | | | | | | | | | | | | | | | |
| Crude Oil (excluding SPR) ^h | 345 | 321 | 331 | 349 | 330 | 341 | 323 | 325 | 318 | 335 | 337 | 303 | 293 | 314 | 317 |
| Total Motor Gasoline | 243 | 223 | 233 | 226 | 228 | 213 | 220 | 219 | 216 | 226 | 215 | 202 | 193 | 204 | 206 |
| Jet Fuel | 42 | 40 | 50 | 50 | 44 | 41 | 52 | 49 | 43 | 40 | 47 | 40 | 40 | 43 | 44 |
| Distillate Fuel Oil | 161 | 144 | 155 | 134 | 124 | 106 | 132 | 144 | 141 | 141 | 145 | 130 | 119 | 117 | 115 |
| Residual Fuel Oil | 53 | 50 | 47 | 47 | 45 | 44 | 49 | 50 | 43 | 44 | 42 | 37 | 42 | 43 | 41 |
| Other Oils ^h | 261 | 247 | 265 | 260 | 267 | 257 | 261 | 267 | 263 | 273 | 275 | 258 | 234 | 250 | 254 |

^aIncludes lease condensate.

^bNet imports equals gross imports plus SPR imports minus exports.

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

^dIncludes an estimate of minor product stock changes based on monthly data.

^eFor years prior to 1993, motor gasoline includes an estimate of fuel ethanol blended into gasoline and certain product reclassifications, not reported elsewhere in EIA. See Appendix B in Energy Information Administration, *Short-Term Energy Outlook*, EIA/DOE-0202(93/30), for details on this adjustment.

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

^gIncludes 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.

^hIncludes crude oil in transit to refineries.

SPR: Strategic Petroleum Reserve

NGL: Natural Gas Liquids

Notes: Minor discrepancies with other EIA published historical data are due to rounding. Historical data are printed in bold, forecasts are in italic. The forecasts were generated by simulation of the Short-Term Integrated Forecasting System.

Sources: Historical data: Energy Information Administration, *Petroleum Supply Monthly*, DOE/EIA-0109(93/01-96/11); and *Weekly Petroleum Status Report*, DOE/EIA-0208(various issues).

Table A6. Annual U.S. Natural Gas Supply and Demand
(Trillion Cubic Feet)

| | Year | | | | | | | | | | | | | | |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 |
| Supply | | | | | | | | | | | | | | | |
| Total Dry Gas Production ^a | 17.47 | 16.45 | 16.06 | 16.62 | 17.10 | 17.31 | 17.81 | 17.70 | 17.84 | 18.10 | 18.82 | 18.60 | 19.05 | 19.43 | 19.85 |
| Net Imports | 0.79 | 0.89 | 0.69 | 0.94 | 1.22 | 1.27 | 1.45 | 1.64 | 1.92 | 2.21 | 2.46 | 2.68 | 2.75 | 2.94 | 3.18 |
| Supplemental Gaseous Fuels | 0.11 | 0.13 | 0.11 | 0.10 | 0.10 | 0.11 | 0.12 | 0.11 | 0.12 | 0.12 | 0.11 | 0.11 | 0.13 | 0.13 | 0.13 |
| Total New Supply | 18.36 | 17.47 | 16.86 | 17.66 | 18.42 | 18.69 | 19.38 | 19.45 | 19.88 | 20.42 | 21.40 | 21.39 | 21.94 | 22.50 | 23.16 |
| Underground Working Gas Storage | | | | | | | | | | | | | | | |
| Opening | 6.44 | 6.71 | 6.45 | 6.57 | 6.55 | 6.65 | 6.33 | 6.94 | 6.78 | 6.64 | 6.65 | 6.97 | 6.50 | 6.40 | 6.40 |
| Closing | 6.71 | 6.45 | 6.57 | 6.55 | 6.65 | 6.33 | 6.94 | 6.78 | 6.64 | 6.65 | 6.97 | 6.50 | 6.40 | 6.40 | 6.39 |
| Net Withdrawals | -0.26 | 0.26 | -0.12 | 0.02 | -0.10 | 0.33 | -0.61 | 0.16 | 0.14 | -0.01 | -0.32 | 0.46 | 0.11 | 0.00 | 0.01 |
| Total Supply ^a | 18.10 | 17.73 | 16.74 | 17.68 | 18.32 | 19.02 | 18.77 | 19.61 | 20.02 | 20.42 | 21.08 | 21.86 | 22.04 | 22.50 | 23.17 |
| Balancing Item ^b | -0.15 | -0.45 | -0.52 | -0.47 | -0.29 | -0.22 | -0.05 | -0.58 | -0.47 | -0.14 | -0.37 | -0.27 | 0.20 | 0.05 | -0.11 |
| Total Primary Supply ^a | 17.95 | 17.28 | 16.22 | 17.21 | 18.03 | 18.80 | 18.72 | 19.03 | 19.54 | 20.28 | 20.71 | 21.58 | 22.24 | 22.55 | 23.06 |
| Demand | | | | | | | | | | | | | | | |
| Lease and Plant Fuel | 1.08 | 0.97 | 0.92 | 1.15 | 1.10 | 1.07 | 1.24 | 1.13 | 1.17 | 1.17 | 1.12 | 1.22 | 1.22 | 1.21 | 1.25 |
| Pipeline Use | 0.53 | 0.50 | 0.49 | 0.52 | 0.61 | 0.63 | 0.66 | 0.60 | 0.59 | 0.62 | 0.69 | 0.70 | 0.72 | 0.74 | 0.74 |
| Residential | 4.56 | 4.43 | 4.31 | 4.31 | 4.63 | 4.78 | 4.39 | 4.56 | 4.69 | 4.96 | 4.85 | 4.85 | 5.27 | 5.13 | 5.20 |
| Commercial | 2.52 | 2.43 | 2.32 | 2.43 | 2.67 | 2.72 | 2.62 | 2.73 | 2.80 | 2.86 | 2.90 | 3.03 | 3.31 | 3.25 | 3.31 |
| Industrial (Incl. Nonutilities) | 6.15 | 5.90 | 5.58 | 5.95 | 6.38 | 6.82 | 7.02 | 7.23 | 7.53 | 7.98 | 8.17 | 8.58 | 8.78 | 8.85 | 9.13 |
| Cogenerators ^c | NA | NA | NA | NA | NA | 1.12 | 1.30 | 1.41 | 1.67 | 1.80 | 1.98 | 2.18 | 2.20 | 2.32 | 2.41 |
| Other Nonutil. Gen. ^c | NA | NA | NA | NA | NA | 0.06 | 0.09 | 0.16 | 0.18 | 0.22 | 0.17 | 0.17 | 0.19 | 0.20 | 0.21 |
| Electric Utilities | 3.11 | 3.04 | 2.60 | 2.84 | 2.64 | 2.79 | 2.79 | 2.79 | 2.77 | 2.68 | 2.99 | 3.20 | 2.95 | 3.37 | 3.44 |
| Total Demand | 17.95 | 17.28 | 16.22 | 17.21 | 18.03 | 18.80 | 18.72 | 19.03 | 19.54 | 20.28 | 20.71 | 21.58 | 22.24 | 22.55 | 23.06 |

^aExcludes nonhydrocarbon gases.

^bThe balancing item represents the difference between the sum of the components of natural gas supply and the sum of components of natural gas demand.

^cNonutility gas consumption data and projections provided by the office of Coal, Nuclear, Electric and Alternate Fuels, Energy Information Administration.

Notes: Minor discrepancies with other EIA published historical data are due to rounding. Historical data are printed in bold; forecasts are in italic. The forecasts were generated by simulation of the Short-Term Integrated Forecasting System.

Sources: Historical data: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(96/11); *Natural Gas Monthly*, DOE/EIA-0130(96/11); *Electric Power Monthly*, DOE/EIA-0226(96/11); Form EIA-867, *Annual Nonutility Power Producer Report.*

Table A7. Annual U.S. Coal Supply and Demand
(Million Short Tons)

| | Year | | | | | | | | | | | | | | |
|--|-------|-------|-------|-------|-------|-------|--------|-------|-------|-------|--------|--------|--------|--------|--------|
| | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 |
| Supply | | | | | | | | | | | | | | | |
| Production | 895.9 | 883.6 | 890.3 | 918.8 | 950.3 | 980.7 | 1029.1 | 996.0 | 997.5 | 945.4 | 1033.5 | 1033.0 | 1056.4 | 1071.5 | 1088.0 |
| Appalachia | 444.1 | 424.7 | 428.3 | 443.1 | 449.3 | 464.8 | 489.0 | 457.8 | 456.6 | 409.7 | 445.4 | 436.0 | 438.3 | 434.3 | 430.7 |
| Interior | 198.3 | 188.8 | 196.6 | 201.8 | 193.2 | 198.1 | 205.8 | 195.4 | 195.7 | 167.2 | 179.9 | 166.7 | 168.3 | 164.0 | 159.1 |
| Western | 253.5 | 270.1 | 265.3 | 273.9 | 307.8 | 317.9 | 334.3 | 342.8 | 345.3 | 368.5 | 408.3 | 430.2 | 449.8 | 473.2 | 498.1 |
| Primary Stock Levels ^a | | | | | | | | | | | | | | | |
| Opening | 33.9 | 34.1 | 33.1 | 32.1 | 28.3 | 30.4 | 29.0 | 33.4 | 33.0 | 34.0 | 25.3 | 33.2 | 34.4 | 32.5 | 32.0 |
| Closing | 34.1 | 33.1 | 32.1 | 28.3 | 30.4 | 29.0 | 33.4 | 33.0 | 34.0 | 25.3 | 33.2 | 34.4 | 32.5 | 32.0 | 31.0 |
| Net Withdrawals | -0.2 | 1.0 | 1.0 | 3.8 | -2.1 | 1.4 | -4.4 | 0.4 | -1.0 | 8.7 | -7.9 | -1.2 | 1.9 | 0.5 | 1.0 |
| Imports | 1.3 | 2.0 | 2.2 | 1.7 | 2.1 | 2.9 | 2.7 | 3.4 | 3.8 | 7.3 | 7.6 | 7.2 | 7.2 | 7.5 | 7.5 |
| Exports | 81.5 | 92.7 | 85.5 | 79.6 | 95.0 | 100.8 | 105.8 | 109.0 | 102.5 | 74.5 | 71.4 | 88.5 | 90.0 | 91.9 | 92.4 |
| Total Net Domestic Supply | 815.6 | 793.9 | 808.0 | 844.7 | 855.3 | 884.2 | 921.6 | 890.9 | 897.8 | 886.9 | 961.8 | 950.4 | 975.5 | 997.6 | 1004.1 |
| Secondary Stock Levels ^b | | | | | | | | | | | | | | | |
| Opening | 168.7 | 197.2 | 170.2 | 175.2 | 185.5 | 158.4 | 146.1 | 168.2 | 167.7 | 163.7 | 120.5 | 136.1 | 134.6 | 125.7 | 121.7 |
| Closing | 197.2 | 170.2 | 175.2 | 185.5 | 158.4 | 146.1 | 168.2 | 167.7 | 163.7 | 120.5 | 136.1 | 134.6 | 125.7 | 121.7 | 118.7 |
| Net Withdrawals | -28.6 | 27.0 | -5.0 | -10.2 | 27.0 | 12.3 | -22.1 | 0.5 | 4.0 | 43.2 | -15.7 | 1.5 | 9.0 | 4.0 | 3.0 |
| Total Supply | 787.0 | 820.8 | 803.1 | 834.4 | 882.3 | 896.5 | 899.4 | 891.4 | 901.8 | 930.2 | 946.1 | 951.9 | 984.5 | 991.6 | 1007.0 |
| Demand | | | | | | | | | | | | | | | |
| Coke Plants | 44.0 | 41.1 | 35.9 | 37.0 | 41.9 | 40.5 | 38.9 | 33.9 | 32.4 | 31.3 | 31.7 | 33.0 | 32.5 | 32.1 | 32.4 |
| Electricity Production | 664.4 | 693.8 | 685.1 | 717.9 | 758.4 | 766.9 | 773.5 | 772.3 | 779.9 | 813.5 | 817.3 | 829.0 | 859.7 | 860.7 | 873.5 |
| Electric Utilities | NA | NA | NA | NA | NA | 0.9 | 1.6 | 6.0 | 10.0 | 12.3 | 15.1 | 18.0 | 20.0 | 22.0 | 24.0 |
| Nonutilities (Excl. Cogen) | 82.9 | 83.2 | 83.3 | 82.1 | 83.4 | 82.3 | 83.1 | 81.5 | 80.2 | 81.1 | 81.2 | 78.6 | 77.5 | 76.9 | 77.1 |
| Retail and General Industry ^c | 791.3 | 818.0 | 804.2 | 836.9 | 883.6 | 890.6 | 897.1 | 893.6 | 902.4 | 938.3 | 945.3 | 956.6 | 989.7 | 991.6 | 1007.0 |
| Total Demand ^d | 4.3 | 2.8 | -1.2 | -2.5 | -1.3 | 5.9 | 2.3 | -2.3 | -0.6 | -8.1 | 0.8 | -6.7 | -5.2 | S | S |
| Discrepancy ^e | | | | | | | | | | | | | | | |

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

^bSecondary stocks are held by users.

^cSynfuels plant demand in 1993 was 1.7 million tons per quarter and is assumed to remain at that level in 1994, 1995, 1996, 1997 and 1998.

^dTotal excludes any shipments to independent power producers not calculated in Retail and General Industry for years prior to 1993.

^eHistorical period discrepancy reflects an unaccounted-for shipper and receiver reporting difference, plus any shipment to independent power producers not captured in Retail and General Industry.

(S) Indicates amounts of less than 50,000 tons.

Notes: Rows and columns may not add due to independent rounding. Historical data are printed in bold; forecasts are in italic. The forecasts were generated by simulation of the Short-Term Integrated Forecasting System.

Sources: Historical data: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(96/11); and *Quartermly Coal Report*, DOE/EIA-0121(96/1Q); and Form EIA-867. *Annual Nonutility Power Producer Report.*

Table A8. Annual U.S. Electricity Supply and Demand
(Billion Kilowatthours)

| | Year | | | | | | | | | | | | | | |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 |
| Supply | | | | | | | | | | | | | | | |
| Net Utility Generation | | | | | | | | | | | | | | | |
| Coal | 1341.7 | 1402.1 | 1385.8 | 1463.8 | 1540.7 | 1553.7 | 1559.6 | 1551.2 | 1575.9 | 1639.2 | 1635.5 | 1652.9 | 1710.5 | 1720.0 | 1743.9 |
| Petroleum | 119.8 | 100.2 | 136.6 | 118.5 | 148.9 | 158.3 | 117.0 | 111.5 | 88.9 | 99.5 | 91.0 | 60.8 | 69.6 | 68.2 | 73.3 |
| Natural Gas | 297.4 | 291.9 | 248.5 | 272.6 | 252.8 | 266.6 | 264.1 | 264.2 | 263.9 | 258.9 | 291.1 | 307.3 | 282.6 | 317.3 | 323.4 |
| Nuclear | 327.6 | 383.7 | 414.0 | 455.3 | 527.0 | 529.4 | 576.9 | 612.6 | 618.8 | 610.3 | 640.4 | 673.4 | 684.0 | 690.1 | 695.9 |
| Hydroelectric | 321.2 | 281.1 | 290.8 | 249.7 | 222.9 | 265.1 | 279.9 | 275.5 | 239.6 | 265.1 | 243.7 | 293.7 | 325.2 | 282.4 | 276.6 |
| Geothermal and Other ^a | 8.6 | 10.7 | 11.5 | 12.3 | 12.0 | 11.3 | 10.7 | 10.1 | 10.2 | 9.6 | 8.9 | 6.4 | 7.0 | 6.9 | 6.5 |
| Subtotal | 2416.3 | 2469.8 | 2487.3 | 2572.1 | 2704.3 | 2784.3 | 2808.2 | 2825.0 | 2797.2 | 2882.5 | 2910.7 | 2994.5 | 3078.9 | 3084.9 | 3119.6 |
| Nonutility Generation ^b | NA | NA | NA | NA | NA | 191.3 | 221.8 | 253.7 | 296.0 | 325.5 | 354.9 | 374.4 | 394.7 | 414.7 | 428.8 |
| Total Generation | NA | NA | NA | NA | NA | 2975.6 | 3030.0 | 3078.7 | 3093.2 | 3208.1 | 3265.6 | 3369.0 | 3473.6 | 3499.6 | 3548.3 |
| Net Imports | 39.7 | 40.9 | 35.9 | 46.3 | 31.8 | 11.0 | 2.0 | 22.3 | 28.3 | 28.4 | 44.6 | 37.6 | 36.8 | 35.9 | 34.7 |
| Total Supply | NA | NA | NA | NA | NA | 2986.6 | 3032.0 | 3101.0 | 3121.6 | 3236.5 | 3310.3 | 3406.6 | 3510.5 | 3535.6 | 3583.0 |
| Losses and Unaccounted for ^c | NA | NA | NA | NA | NA | NA | 206.1 | 217.1 | 226.6 | 236.9 | 225.5 | 240.0 | 255.6 | 253.1 | 256.4 |
| Demand | | | | | | | | | | | | | | | |
| Electric Utility Sales | | | | | | | | | | | | | | | |
| Residential | 780.1 | 793.9 | 819.1 | 850.4 | 892.9 | 905.5 | 924.0 | 955.4 | 935.9 | 994.8 | 1008.5 | 1043.3 | 1087.3 | 1100.5 | 1127.2 |
| Commercial | 582.6 | 606.0 | 630.5 | 660.4 | 699.1 | 725.9 | 751.0 | 765.7 | 761.3 | 794.6 | 820.3 | 854.7 | 886.8 | 891.7 | 897.8 |
| Industrial | 837.8 | 836.8 | 830.5 | 858.2 | 896.5 | 925.7 | 945.5 | 946.6 | 972.7 | 977.2 | 1008.0 | 1013.1 | 1017.7 | 1022.7 | 1027.8 |
| Other | 85.2 | 87.3 | 88.6 | 88.2 | 89.6 | 89.8 | 92.0 | 94.3 | 93.4 | 94.9 | 97.8 | 97.5 | 101.3 | 101.9 | 104.4 |
| Subtotal | 2285.8 | 2324.0 | 2368.8 | 2457.3 | 2578.1 | 2646.8 | 2712.6 | 2762.0 | 2763.4 | 2861.5 | 2934.6 | 3008.6 | 3093.0 | 3116.8 | 3157.2 |
| Nonutility Own Use ^b | NA | NA | NA | NA | NA | 108.4 | 113.4 | 121.9 | 131.6 | 138.1 | 150.2 | 157.9 | 161.8 | 165.6 | 169.5 |
| Total Demand | NA | NA | NA | NA | NA | 2755.2 | 2825.9 | 2883.9 | 2895.0 | 2999.6 | 3084.8 | 3166.6 | 3254.8 | 3282.4 | 3326.6 |
| Memo: | | | | | | | | | | | | | | | |
| Nonutility Sales | | | | | | | | | | | | | | | |
| to Electric Utilities ^d | 18.0 | 26.0 | 39.9 | 50.0 | 68.0 | 83.0 | 108.5 | 131.9 | 164.4 | 187.4 | 204.7 | 216.5 | 232.9 | 249.1 | 259.3 |

^aOther includes generation from wind, wood, waste, and solar sources.

^bFor 1989 to 1991, estimates for nonutility generation are estimates made by the Energy Markets and Contingency Information Division, based on Form EIA-867 data. History and Projections for the same items are from the Office of Coal, Nuclear, Electric and Alternate Fuels, Energy Information Administration, based on Form EIA-867 (Annual Nonutility Power Producer Report).

^cBalancing item, mainly transmission and distribution losses.

^dHistorical data for nonutility sales to electric utilities are from the Energy Information Administration, Annual Energy Review, DOE/EIA-0389, Table 8.1, for 1982 to 1988; from Form EIA-867 (Annual Nonutility Power Producer Report) for 1989 to 1993.

Notes: Minor discrepancies with other EIA published historical data are due to rounding. Historical data are printed in bold; forecasts are in italic. The forecasts were generated by simulation of the Short-Term Integrated Forecasting System.

Sources: Historical data: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(96/11); *Electric Power Monthly*, DOE/EIA-0226(96/11); Form EIA-867 ("Annual Nonutility Power Producer Report*"); Projections: Energy Information Administration, Short-Term Integrated Forecasting System database, and Office of Coal, Nuclear, Electric and Alternate Fuels, Energy Information Administration.

International Oil Demand

¹"Other Asia" includes: Afghanistan, American Samoa, Bangladesh, Bhutan, Brunei, Burma, Cambodia, Cook Islands, Fiji, French Polynesia, Hong Kong, India, Indonesia, Kiribati, North Korea, South Korea, Laos, Macau, Malaysia, Maldives, Mongolia, Nauru, Nepal, New Caledonia, Niue, Pakistan, Papua New Guinea, Philippines, Singapore, Solomon Islands, Sri Lanka, Taiwan, Thailand, Tonga, U.S. Pacific Islands, Vanuatu, Vietnam, Wake Island, Western Samoa.

²Latin America is defined as including all of the countries of Central and South America, plus Mexico, but excluding Puerto Rico and the U.S. Virgin Islands.

³Energy Information Administration, Energy Markets and Contingency Information Division.

International Oil Supply

⁴Energy Information Administration, Energy Markets and Contingency Information Division.

World Oil Stocks and Net Trade

⁵Energy Information Administration, Energy Markets and Contingency Information Division.

⁶Energy Information Administration, Energy Markets and Contingency Information Division.

⁷Energy Information Administration, Energy Markets and Contingency Information Division.

U.S. Oil Supply

⁸New Federal Offshore production in the Auger and Mars fields contributed to an increase in lower-48 production in 1996 over 1995.

⁹Energy Information Administration, *Historical Monthly Energy Review*, 1973-1992, August 1994, Table 3.1b, p. 83.

¹⁰Estimate provided by the Energy Information Administration, Reserves and Natural Gas Division.

¹¹Estimate provided by the Energy Information Administration, Reserves and Natural Gas Division.

¹²Drilling rig projections provided by the Energy Information Administration, Reserves and Natural Gas Division.

U.S. Energy Prices

¹³Energy Information Administration, *Weekly Petroleum Status Report*, DOE/EIA-0208(96-45), Table 14, p. 25.

¹⁴*Natural Gas Week*, October 28, 1996, page 4.

¹⁵Wall Street Journal, November 21, 1996, page C16.

¹⁶Energy Information Administration, *Monthly Energy Review*, DOE/EIA--0035(96/02), Table 9.10.

U.S. Natural Gas Demand

¹⁷Electric utility output from gas-fired generating units fell an estimated 9.6 percent in 1996, partly because of reduced availability and higher prices attending the prolonged winter conditions in the early part of the year. Contributing to this, however, was record-high hydroelectric generating levels in the Pacific Northwest, which backed out significant gas use at California utilities. For the Pacific region (California, Oregon and Washington) estimated gas-fired generation in 1996 was 41.8 billion kilowatthours, which was markedly below the 67.2 billion kilowatthours generated in 1994 under drought conditions. Projected reductions in excess hydroelectric energy in 1997 explain about half of the recovery in U.S. gas-fired generation in 1997.

¹⁸Energy Information Administration, *Historical Monthly Energy Review 1973-1992*, DOE/EIA-0035(73-92), Table 4.2.

Text References and Notes

U.S. Natural Gas Supply

¹⁹Energy Information Administration, *Natural Gas Productive Capacity for the Lower 48 States, 1985 through 1997*, December 1996, p. ix.

²⁰Energy Information Administration, *Natural Gas Monthly*, June 1996, p. 6.

²¹Energy Information Administration, Office of Oil and Gas, *Natural Gas Weekly Market Update*, June 24, 1996.

²²*Natural Gas Week*, December 2, 1996, p. 13.

²³Sidney Sharpe, "Pipeline Fever Grips Energy Patch," *The Financial Post* (Calgary, Canada), November 8, 1996, p. 7.

U.S. Coal Demand and Supply

²⁴Total raw steel production was 105.0 million short tons in 1996. Coal-based steel production was 61.2 million short tons and electric-arc production was 43.7 million short tons. Source: American Iron and Steel Institute.

²⁵The States in the Appalachian region are: Alabama, Georgia, Eastern Kentucky, Maryland, Ohio, Pennsylvania, Tennessee, Virginia, and West Virginia. The Interior region is composed of: Arkansas, Illinois, Indiana, Iowa, Kansas, Western Kentucky, Louisiana, Missouri, Oklahoma, and Texas. The Western region states are: Alaska, Arizona, California, Colorado, Montana, New Mexico, North Dakota, Utah, Washington, and Wyoming.

U.S. Electricity Demand and Supply

²⁶Energy Information Administration, Office of Coal, Nuclear, Electric and Alternate Fuels.

Figure References

The following is a list of references for the figures appearing in this issue of the *Short-Term Energy Outlook*. Except where noted, all data for figures are taken from datasets containing monthly values of each variable depicted, aggregated to quarterly or annual values as required and using appropriate weights. The datasets are created by particular runs of the Short-Term Integrated Forecasting System (STIFS) Model, depending on the scenario or set of scenarios depicted. Also, except when noted, all figures refer to the base or "BBB" case. Other cases referred to are: the high world oil price, "BHB"; low world oil price, "BLB"; severe weather, "BBL"; mild weather, "BBS"; strong economic growth, "HBB"; weak economic growth, "LBB"; weak economic growth with high world oil prices, "WHB"; and strong economic growth with low world oil prices, "PLB."

1. **History:** Import cost: Compiled from monthly data for the refiner acquisition cost of imported crude oil used in publication of Energy Information Administration, *Petroleum Marketing Annual*, DOE/EIA-0487, Table 1, for historical series; for recent values, *Petroleum Marketing Monthly*, DOE/EIA-0380, Table 1; West Texas Intermediate spot price, *Oil and Gas Journal Database*, February 6, 1995. **Projections:** First quarter 1997 STIFS database, BBB, BLB, and BHB cases; and Energy Information Administration, Office of Energy Markets and End Use, Energy Markets and Contingency Information Division.
2. **History:** Manufacturing Production: Federal Reserve System, Statistical Release G 17; GDP: U.S. Department of Commerce, Bureau of Economic Analysis, *National Income and Product Accounts of the U.S.* **Projections:** DRI/McGraw-Hill Forecast CONTROL1196, modified by EIA's Office of Integrated Analysis and Forecasting with STIFS energy price forecasts.
3. **History:** Compiled from annual data used in publication of Energy Information Administration, *International Energy Annual*, DOE/EIA-0219, Table 8, for historical series; for recent values, *International Petroleum Statistics Report*, DOE/EIA-0520, Table 2.4; Energy Information Administration, Office of Energy Markets and End Use, Energy Markets and Contingency Information Division. **Projections:** Energy Information Administration, Office of Energy Markets and End Use, Energy Markets and Contingency Information Division.
4. **History:** Compiled from annual data used in publication of Energy Information Administration, *International Energy Annual*, DOE/EIA-0219, Table 8, for historical series; for recent values, *International Petroleum Statistics Report*, DOE/EIA-0520, Table 2.4; and Energy Information Administration, Office of Energy Markets and End Use, Energy Markets and Contingency Information Division. **Projections:** Energy Information Administration, Office of Energy Markets and End Use, Energy Markets and Contingency Information Division.
5. **History:** Compiled from annual data used in publication of Energy Information Administration, *International Petroleum Statistics Report*, DOE/EIA-0520, Table 4.1, for historical series and recent data; and Energy Information Administration, Office of Energy Markets and End Use, Energy Markets and Contingency Information Division. **Projections:** Energy Information Administration, Office of Energy Markets and End Use, Energy Markets and Contingency Information Division.
6. **History:** Compiled from annual data used in publication of Energy Information Administration, *International Petroleum Statistics Report*, DOE/EIA-0520, Table 4.2, for historical series and recent data; Energy Information Administration, Office of Energy Markets and End Use, Energy Markets and Contingency Information Division. **Projections:** Energy Information Administration, Office of Energy Markets and End Use, Energy Markets and Contingency Information Division.

Figure References

7. **History:** Compiled from annual data used in publication of Energy Information Administration, *International Petroleum Statistics Report*, DOE/EIA-0520, Table 4.2, for historical series and recent data; Energy Information Administration, Office of Energy Markets and End Use, Energy Markets and Contingency Information Division. **Projections:** Energy Information Administration, Office of Energy Markets and End Use, Energy Markets and Contingency Information Division.
8. **History:** Compiled from annual data used in publication of Energy Information Administration, *International Petroleum Statistics Report*, DOE/EIA-0520, Table 4.1, for historical series and recent data; and Energy Information Administration, Office of Energy Markets and End Use, Energy Markets and Contingency Information Division. **Projections:** Energy Information Administration, Office of Energy Markets and End Use, Energy Markets and Contingency Information Division.
9. **History:** Compiled from annual data used in publication of Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035, Table 10.3, for historical series and recent data. **Projections:** Energy Information Administration, Office of Energy Markets and End Use, Energy Markets and Contingency Information Division.
10. **History:** Compiled from annual data used in publication of Energy Information Administration, *International Energy Annual*, DOE/EIA-0219, Table 1; Energy Information Administration, Office of Energy Markets and End Use, Energy Markets and Contingency Information Division. **Projections:** Energy Information Administration, Office of Energy Markets and End Use, Energy Markets and Contingency Information Division.
11. First quarter 1997 STIFS database, case BBB; and Energy Information Administration, Office of Energy Markets and End Use, Energy Markets and Contingency Information Division.
12. First quarter 1997 STIFS database, case BBB; and Energy Information Administration, Office of Energy Markets and End Use, Energy Markets and Contingency Information Division.
13. First quarter 1997 STIFS database, case BBB; and Energy Information Administration, Office of Energy Markets and End Use, Energy Markets and Contingency Information Division.
14. **History:** Compiled from monthly data used in publication of Energy Information Administration, *Petroleum Supply Annual, Volume 1*, DOE/EIA-0340/1, Tables S4 through S10; *Petroleum Supply Monthly*, DOE/EIA-0109, Tables S4 through S10, adjusted in years prior to 1993 for new (1993) reporting basis for fuel ethanol blended into motor gasoline (See *Short-Term Energy Outlook*, DOE/EIA-0202(93/3Q), Appendix B). **Projections:** First quarter 1997 STIFS database, case "BBB."
15. **History:** Gasoline Demand: Compiled from monthly data used in publication of Energy Information Administration, *Petroleum Supply Annual, Volume 1*, DOE/EIA-0340/1, Table S4, for historical series, adjusted for 1993 reporting basis (see note 11 above); for recent values, *Petroleum Supply Monthly*, DOE/EIA-0109, Table S4. **Projections:** First quarter 1997 STIFS database, case "BBB."
16. **History:** Compiled from monthly data used in publication of Energy Information Administration, *Petroleum Supply Annual, Volume 1*, DOE/EIA-0340/1, Table S1, for historical series; for recent values, *Petroleum Supply Monthly*, DOE/EIA-0109, Table S1. **Projections:** First quarter 1997 STIFS database, cases "BBB," "WHB," and "PLB;" and EIA's Reserves and Natural Gas Division.

Figure References

17. **History:** Compiled from monthly data used in publication of Energy Information Administration, *Petroleum Supply Annual, Volume 1*, DOE/EIA-0340/1, Table S1, for historical series; for recent values, *Petroleum Supply Monthly*, DOE/EIA-0109, Table S1. **Projections:** First quarter 1997 STIFS database, case "BBB."
18. **History:** Compiled from monthly data used in publication of Energy Information Administration, *Petroleum Marketing Annual*, DOE/EIA-0487, Table 1, and *Natural Gas Monthly*, DOE/EIA-0130, Table 4, for historical series; for recent values, *Petroleum Marketing Monthly*, DOE/EIA-0380, Table 1. **Projections:** First quarter 1997 STIFS database.
19. **History:** Compiled from monthly data used in publication of Energy Information Administration, *Petroleum Marketing Annual*, DOE/EIA-0487, Tables 2, 4, and 15, for historical series; for recent values, *Petroleum Marketing Monthly*, DOE/EIA-0380, Tables 2, 4 and 15. **Projections:** First quarter 1997 STIFS database.
20. **History:** Compiled from monthly data used in publication of Energy Information Administration, *Natural Gas Monthly*, DOE/EIA-0130, Table 4, and *Natural Gas Week*, October 28, 1995, p. 4. **Projections:** First quarter 1997 STIFS database, case "BBB."
21. **History:** Compiled from monthly data used in publication of Energy Information Administration, *Electric Power Monthly*, DOE/EIA-0226, Table 60. **Projections:** First quarter 1997 STIFS database, case "BBB."
22. **History:** Compiled from monthly data used in publication of Energy Information Administration, *Petroleum Supply Annual, Volume 1*, DOE/EIA-0340/1, Table S1, for historical series adjusted for 1993 reporting basis (see note 11 above); for recent values, *Petroleum Supply Monthly*, DOE/EIA-0109, Table S1. **Projections:** First quarter 1997 STIFS database, cases "BBB," "BBS," and "BBL."
23. **History:** Compiled from monthly data used in publication of Energy Information Administration, *Petroleum Supply Annual, Volume 1*, DOE/EIA-0340/1, Table S1, for historical series adjusted for 1993 reporting basis (see note 11 above); for recent values, *Petroleum Supply Monthly*, DOE/EIA-0109, Table S1. **Projections:** First quarter 1997 STIFS database, cases "BBB," "HBB," and "LBB."
24. First quarter 1997 STIFS database, case BBB; and Energy Information Administration, Office of Energy Markets and End Use, Energy Markets and Contingency Information Division.
25. **History:** Compiled from monthly data used in publication of Energy Information Administration, *Natural Gas Annual, Volume 2*, DOE/EIA-0131, Table 3, for historical series; for recent values, Energy Information Administration, *Natural Gas Monthly*, DOE/EIA-0130. **Projections:** First quarter 1997 database, case "BBB."
26. **History:** Nonutility Generators, 1989-1993: Energy Information Administration, Form EIA-867 (1993); other volumes compiled from monthly data used in publication of Energy Information Administration, *Natural Gas Annual, Volume 2*, DOE/EIA-0131, Table 3, for historical series; for recent values, Energy Information Administration, *Natural Gas Monthly*, DOE/EIA-0130. **Projections:** Nonutility Generators: Office of Coal, Nuclear, Electric and Alternate Fuels, Energy Information Administration; other volumes: First quarter 1997 STIFS database, case "BBB."
27. **History:** Production and net imports of natural gas compiled from monthly data used in publication of Energy Information Administration, *Natural Gas Annual, Volume 2*, DOE/EIA-0131/2, Table 2, for

Figure References

- historical series; for recent production data, *Natural Gas Monthly*, DOE/EIA-0130. **Projections:** First quarter 1997 STIFS database, case "BBB."
28. **History:** Compiled from monthly data used in publication of Energy Information Administration, *Natural Gas Annual, Volume 2*, DOE/EIA-0131, Table 3, for historical series; for recent values, Energy Information Administration, *Natural Gas Monthly*, DOE/EIA-0130. **Projections:** First quarter 1997 STIFS database, case "BBB."
29. **History:** Compiled from quarterly data used in publication of Energy Information Administration, *Quarterly Coal Report*, DOE/EIA-0121, Table 45. **Projections:** First quarter 1997 STIFS database, case "BBB." Note: Nonutility, coke plant, retail, and general industry demand for coal is included in "Other."
30. **History:** Compiled from quarterly data used in publication of Energy Information Administration, *Quarterly Coal Report*, DOE/EIA-0121, Table 1. **Projections:** First quarter 1997 STIFS database, case "BBB"; and Energy Information Administration, Office of Coal, Nuclear, Electric and Alternate Fuels.
31. **History:** Compiled from monthly data used in publication of Energy Information Administration, *Electric Power Monthly*, DOE/EIA-0226, Table 51. **Projections:** First quarter 1997 STIFS database, case "BBB."
32. **History:** Compiled from monthly data used in publication of Energy Information Administration, *Electric Power Monthly*, DOE/EIA-0226, Table 3, and Form EIA-759. **Projections:** First quarter 1997 STIFS database, case "BBB"; and Energy Information Administration, Office of Coal, Nuclear, Electric and Alternate Fuels for hydroelectric and nuclear power forecasts.
33. **History:** Compiled from data used in publication of Energy Information Administration, *Annual Energy Review*, DOE/EIA-0384, Table 10.1; First quarter 1997 STIFS database; and Energy Information Administration, Office of Coal, Nuclear, Electric and Alternate Fuels. **Projections:** First quarter 1997 STIFS database and Energy Information Administration, Office of Coal, Nuclear, Electric and Alternate Fuels.
34. **History:** Compiled from data used in publication of Energy Information Administration, *Annual Energy Review*, DOE/EIA-0384, Table 10.1; First quarter 1997 STIFS database; and Energy Information Administration, Office of Coal, Nuclear, Electric and Alternate Fuels. **Projections:** First quarter 1997 STIFS database and Energy Information Administration, Office of Coal, Nuclear, Electric and Alternate Fuels.

Computation of Petroleum Demand Sensitivities

Table 8 summarizes the response of forecasts of U.S. total petroleum demand to changes in assumptions for economic growth, world crude oil prices, and weather. The values in this table are computed by using the Short-Term Integrated Forecasting Model (STIFS). The STIFS model is documented in EIA's *Short-Term Integrated Forecasting System: 1993 Model Documentation Report* (DOE/EIA-M041, May 1993). The purpose of the model is to generate forecasts of U.S. energy supply, demand, and prices. Key inputs include assumptions for the imported price of crude oil, the rate of U.S. economic growth, and weather (cooling and heating degree-days). Forecasts are generated for production, imports, exports, demand, and prices for refined petroleum products, natural gas, coal, and electricity.

A key relationship between petroleum demand and economic activity is shown in Table 8. Gross domestic product (GDP) is varied from low to high for each of the 2 projection years, and the resulting change in petroleum demand is calculated. For each of the 2 years, the percentage difference in GDP is computed as the difference between the low and high case levels shown in Table 8, divided by the midpoint of this range. Thus, the percentage difference in GDP for 1997 is as follows: $(7137 - 6981) / ((7137 + 6981) / 2)$, or 2.2 percent. For each period, the petroleum demand difference (in million barrels per day) is divided by the percentage difference in GDP. For 1996, the average petroleum demand difference is 242,000 barrels per day; thus, a 1-percent change in GDP corresponds to a change in demand of $(242,000/2.2)$, or 110,000 barrels per

day. For 1998, a 4.2-percent change in GDP corresponds to a change in demand of 542,000 barrels per day; thus, a 1-percent change in GDP corresponds to a demand change of 129,000 barrels per day. The average of the 1997 and 1998 results (weighting the 1997 results by 365 days and the 1998 results by 365 days) is 120,000 barrels per day per 1 percent difference in GDP. Table 8 also shows the differences in petroleum demand due to changes in energy prices caused by varying the world crude oil price. The change in petroleum demand (in million barrels per day) is divided by the change in the crude oil price (in dollars per barrel), and the result is averaged over the two projection years to get an estimate of the change in petroleum demand per dollar of change in the crude oil price.

The influence of weather on petroleum demand is also calculated; the mid-case values for economic activity and imported crude oil prices are used. The percentage changes in heating or cooling degree-days are computed and divided by the changes in petroleum demand, and the result is averaged over the two projection periods to get an estimate of the change in petroleum demand per 1-percent change in heating and cooling degree-days. The changes in demand due to changes in heating degree-days apply only to the heating season, roughly the first and fourth quarters of the year, while the changes in demand due to changes in cooling degree-days apply only to the cooling season, roughly the second and third quarters of the year.