

# SHORT-TERM --- ENERGY OUTLOOK

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Superintendent of Documents  
U.S. Government Printing Office  
Washington, DC 20402  
(202) 783-3238

The *Short-Term Energy Outlook* (ISSN 0743-0604) is published quarterly by the Energy Information Administration, 1000 Independence Avenue, SW, Washington, DC 20585, and sells for \$8.00 per year (price is subject to change without advance notice). Application to mail at second-class postage rates is pending at Washington, DC 20066-9998, and at additional mailing offices. POSTMASTER; Send address changes to *Short-Term Energy Outlook*, Energy Information Administration, EI-231, 1000 Independence Avenue, SW, Washington, DC 20585.

Released for Printing May 5, 1989



DOE/EIA-0202(89/2Q)  
Distribution Category UC-98

# Short-Term Energy Outlook

## Quarterly Projections

April 1989

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

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# Preface

The Energy Information Administration (EIA) quarterly forecasts of short-term energy supply, demand, and prices are revised in January, April, July, and October for publication in the *Short-Term Energy Outlook (Outlook)*. An annual supplement analyzes previous forecast errors, compares recent projections by other forecasters, and discusses current topics of the short-term energy markets (see *Short-Term Energy Outlook: Annual Supplement*, DOE/EIA-0202). The principal users of the *Outlook* are managers and energy analysts in private industry and government. The projections in this volume extend through the fourth quarter of 1990.

The forecasts are produced using the Short-Term Integrated Forecasting System (STIFS). The STIFS model uses two principal driving mechanisms: a macroeconomic forecast and world oil price assumptions. Macroeconomic forecasts produced by Data Resources, Inc. (DRI), are adjusted by EIA to reflect EIA's assumed world crude oil prices. EIA's Oil Market Simulation Model is used to project world oil prices. (The EIA models are available on computer tape and diskette from the National Technical Information Service.)

The three projections for petroleum supply and demand are based on low, middle, and high crude oil price trajectories. The discussion and tables in this volume refer primarily to the middle, or base case, scenario and, unless otherwise noted, to the domestic situation. Other cases examining the sensitivity of total petroleum demand to varying assumptions about prices, weather, and economic activity are shown in Table 7. Discussions of the world oil price refer to the cost of imported crude oil to U.S. refiners.

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



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## Highlights

Oil prices increased during the first quarter of this year, as production quotas agreed to by members of the Organization of Petroleum Exporting Countries (OPEC) resulted in lower production levels, and worldwide demand for petroleum products continued to be strong. The crude oil and product price forecasts presented in this *Outlook* reflect market conditions as of April 19, 1989. Warmer first-quarter temperatures helped to hold down demand for electricity and heating oil. Some significant switching from gas to oil at utilities appears to have carried over from late 1988 into early 1989. Hence, total petroleum consumption this year should expand by about another 150,000 barrels per day. Next year, however, a slowdown in the trade sector-led boom in the general economy and the assumption that oil will not maintain its recent level of use at utilities dampen projected growth in domestic oil demand. Nevertheless, since additional petroleum supplies will come from foreign production, net oil imports are anticipated to continue a strong increase over the period.

### *Oil Spill at Valdez, Alaska Causes Temporary Cut in North Slope Production*

The recent oil spill at Valdez, Alaska, led to sharply reduced tanker operations and forced a 60-percent cutback in North Slope crude oil production throughout the last week of March. During the first week of April, more normal tanker operations resumed, and North Slope production returned to its normal level of about 2 million barrels per day. A secondary effect of the oil spill was a temporary rise in the spot price of wholesale gasoline on the West Coast.

### *Imported Oil Prices Expected to Remain at New, Higher Levels*

World oil prices rose to \$16.65 in the first quarter of 1989 as OPEC appeared to maintain production levels that were slightly lower than rising demand. Over the forecast period, prices are projected to average \$17.50 during the second quarter 1989, drift gradually to \$17.00 per barrel, and remain at that level through 1990.

### *Net Oil Imports Continue to Increase*

U.S. net imports of crude oil (including the Strategic Petroleum Reserve) and petroleum products are expected to continue rising through 1990, reaching 7.2 million barrels per day or 41 percent of domestic consumption. The increase in net imports between 1988 and 1990 is expected to be about 760,000 barrels per day. This reflects continued increases in demand, declines in production, and the current belief that the preliminary crude oil import data for 1988 will rise by about 100,000 barrels per day when they are finalized.

### *Gasoline Prices Rise Sharply in Response to Increases in Crude Oil Prices*

Motor gasoline prices are expected to rise sharply in the second quarter as recent world oil price increases are passed through and various concerns regarding the ability of refiners to meet Reid Vapor Pressure regulations affect markets. By 1990, the average price should stabilize at about \$1.04 per gallon.

### *Natural Gas Use Remains Strong*

Natural gas consumption should continue to exceed 18 trillion cubic feet in 1989 and 1990. Although natural gas use at electric utilities lost ground to oil in 1988, gas use in industrial applications gained significantly last year, and should continue to grow through 1990. Residential and commercial consumption of gas was lower in early 1989 because of warmer weather, but in the forecast, electric utility use of gas should rebound from the depressed levels of 1988.

***Electricity Demand  
Expected to Slow***

The assumed return to normal (hence milder) temperature levels should produce lower year-over-year growth in electricity demand in 1989. Next year, with normal weather, electricity growth rates should pick up somewhat, reflecting persistent growth in overall electricity demand.

***Utilization Rates at  
Nuclear Plants Continue  
at Higher Levels***

Capacity utilization rates at nuclear plants averaged nearly 64 percent during 1988, substantially above the 58 percent average for 1987. Most of this improvement is expected to be sustained throughout the forecast period.

***Coal Production Approaches  
1 Billion Tons by 1990***

Coal consumption gains should be paced by the utility sector where coal continues to play the major role in meeting total electric power demand. As a result, domestic production requirements should approach 1 billion tons by 1990.

**Table 1. Summary of Base Case Assumptions and Projections**

Assumptions and Projections	Year				Annual Percentage Change		
	1987	1988	1989	1990	1987-1988	1988-1989	1989-1990
<b>Macroeconomic Indicators</b>							
Real Gross National Product (billion 1982 dollars) .....	<b>3,847</b>	<b>3,996</b>	<i>4,099</i>	<i>4,158</i>	<b>3.9</b>	<i>2.6</i>	<i>1.5</i>
Index of Industrial Production (Mfg.) (index, 1977=1.000) .....	<b>1.346</b>	<b>1.428</b>	<i>1.473</i>	<i>1.496</i>	<b>6.0</b>	<i>3.2</i>	<i>1.6</i>
Imported Crude Oil Price (nominal dollars per barrel) .....	<b>18.13</b>	<b>14.64</b>	<i>17.00</i>	<i>17.00</i>	<b>-19.2</b>	<i>16.1</i>	<i>.0</i>
<b>Retail Prices (nominal)<sup>a</sup></b>							
Motor Gasoline <sup>b</sup> (dollars per gallon) .....	<b>.96</b>	<b>.96</b>	<i>1.04</i>	<i>1.04</i>	<b>.0</b>	<i>8.3</i>	<i>.0</i>
No. 2 Heating Oil (dollars per gallon) .....	<b>.80</b>	<b>.81</b>	<i>.84</i>	<i>.87</i>	<b>1.3</b>	<i>3.7</i>	<i>3.6</i>
Residential Natural Gas (dollars per thousand cubic feet) .....	<b>5.55</b>	<b>5.46</b>	<i>5.62</i>	<i>5.71</i>	<b>-1.6</b>	<i>2.9</i>	<i>1.6</i>
Residential Electricity (cents per kilowatthour) .....	<b>7.41</b>	<b>7.50</b>	<i>7.57</i>	<i>7.88</i>	<b>1.2</b>	<i>.9</i>	<i>4.1</i>
<b>Petroleum Supply</b>							
Crude Oil Production <sup>c</sup> (million barrels per day) .....	<b>8.35</b>	<b>8.13</b>	<i>7.84</i>	<i>7.78</i>	<b>-2.6</b>	<i>-3.6</i>	<i>-8</i>
Net Petroleum Imports, Including SPR (million barrels per day) .....	<b>5.91</b>	<b>6.35</b>	<i>7.09</i>	<i>7.21</i>	<b>7.4</b>	<i>11.7</i>	<i>1.7</i>
<b>Energy Demands</b>							
Total Market Economies Petroleum (million barrels per day) .....	<b>49.05</b>	<i>50.40</i>	<i>51.21</i>	<i>51.92</i>	<b>2.8</b>	<i>1.6</i>	<i>1.4</i>
Total U.S. Petroleum Consumption (million barrels per day) .....	<b>16.67</b>	<b>17.17</b>	<i>17.32</i>	<i>17.45</i>	<b>3.0</b>	<i>.9</i>	<i>.8</i>
Motor Gasoline .....	<b>7.21</b>	<b>7.31</b>	<i>7.41</i>	<i>7.50</i>	<b>1.4</b>	<i>1.4</i>	<i>1.2</i>
Distillate Fuel Oil .....	<b>2.98</b>	<b>3.10</b>	<i>3.14</i>	<i>3.21</i>	<b>4.0</b>	<i>1.3</i>	<i>2.2</i>
Residual Fuel Oil .....	<b>1.26</b>	<b>1.33</b>	<i>1.25</i>	<i>1.18</i>	<b>5.6</b>	<i>-6.0</i>	<i>-5.6</i>
Other Petroleum <sup>d</sup> .....	<b>5.22</b>	<b>5.42</b>	<i>5.52</i>	<i>5.56</i>	<b>3.8</b>	<i>1.8</i>	<i>.7</i>
Coal Consumption (million short tons) .....	<b>837</b>	<b>882</b>	<i>884</i>	<i>901</i>	<b>5.4</b>	<i>.2</i>	<i>1.9</i>
Natural Gas Consumption (trillion cubic feet) .....	<b>17.14</b>	<b>18.04</b>	<i>18.32</i>	<i>18.77</i>	<b>5.3</b>	<i>1.6</i>	<i>2.5</i>
Electricity Sales (billion kilowatthours) .....	<b>2,455.4</b>	<b>2,566.2</b>	<i>2,619.9</i>	<i>2,702.1</i>	<b>4.5</b>	<i>2.1</i>	<i>3.1</i>
Gross Energy Consumption <sup>e</sup> (quadrillion Btus) .....	<b>76.77</b>	<b>79.96</b>	<i>81.07</i>	<i>82.70</i>	<b>4.2</b>	<i>1.4</i>	<i>2.0</i>
Thousand Btu/1982 Dollar of GNP .....	<b>19.96</b>	<b>20.01</b>	<i>19.78</i>	<i>19.89</i>	<b>.3</b>	<i>-1.1</i>	<i>.6</i>

<sup>a</sup> All prices include taxes, except prices for No. 2 heating oil and residential electricity.

<sup>b</sup> Average for all grades and services.

<sup>c</sup> Includes lease condensate.

<sup>d</sup> Includes crude oil, pentanes plus, other hydrocarbons and alcohol, unfinished oil, and gasoline blending components.

<sup>e</sup> The conversion from physical units to Btu is calculated by STIFS using a subset of *Monthly Energy Review* (MER) conversion factors. Consequently, the historical data may not precisely match that published in the MER.

SPR: Strategic Petroleum Reserve.

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

Sources: Historical data: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(89/01); *International Energy Annual 1987* DOE/EIA-0219(87); *Petroleum Marketing Monthly*, DOE/EIA-0380(89/01); *Petroleum Supply Monthly*, DOE/EIA-0109(89/01); *Petroleum Supply Annual 1987*, DOE/EIA-0340(87)/1; *Natural Gas Monthly*, DOE/EIA-0130(89/01); *Electric Power Monthly*, DOE/EIA-0226(89/01); and *Quarterly Coal Report*, DOE/EIA-0121(88/4Q); Organization for Economic Cooperation and Development, *Monthly Oil Statistics Database* through December 1988. Macroeconomic projections are based on modifications to Data Resources, Inc., Forecast CONTROL0489.



## **Assumptions**

- **International Petroleum**
- **World Oil Prices**
- **Macroeconomic Activity**
- **Energy Product Prices**



# International Petroleum

## ***Recent Developments***

The world oil market situation continues to confound market analysts, as spot prices, after declining in February, increased sharply in March. On March 31, spot prices for OPEC crude oils ranged from about \$16.50 to \$20 per barrel, the highest that this range has been since U.S. tanker escorts began in the Persian Gulf in July 1987. In fact, at the end of March, the spot prices of heavier Persian Gulf crude oils were within 25 cents per barrel of their now abandoned Official Selling Prices (OSP) and the spot prices of North African crude oils were as much as \$1.30 per barrel higher than their OSP. Why have prices not begun to weaken as many had expected and what will happen in future months?

One explanation for the stronger tone in the market is that recently available data and analyses indicate that the market was more in balance at the end of 1988 than was indicated in the last *Outlook*. The EIA now estimates that oil consumption by the OECD countries in the fourth quarter of 1988 was almost 38.8 million barrels per day, or 400,000 barrels per day higher than previous estimates. This increase in consumption more than offsets a corresponding 130,000-barrel-per-day increase in estimated fourth-quarter oil supply. As a result, it is currently estimated that oil stocks grew by only about 600,000 barrels per day in the fourth quarter, or 700,000 barrels per day less than was estimated in the last *Outlook*.

During the first quarter of 1989, fundamental market forces and certain psychological factors converged to keep oil prices high. On the supply side, an oil spill at Valdez, Alaska, brought on minor shortages on the U.S. West Coast: crude oil liftings were reduced from the normal level of 2.0 million barrels per day to 800,000 barrels per day for some 11 days. More significantly, accidents at a number of production facilities in the United Kingdom (U.K.) sector of the North Sea combined to reduce crude oil supply by nearly 800,000 barrels per day below the previous year's rate. At the same time, OPEC oil production in the first quarter decreased by almost 2.4 million barrels per day from the rate in the fourth quarter of 1988, averaging about 21.9 million barrels per day (including about 1.8 million barrels per day of condensate and liquefied petroleum gas production and refinery gain). Adding to this tightness on the supply side, at least psychologically, a group of non-OPEC oil producers agreed in February to decrease their crude oil production and/or exports by about 300,000 barrels per day during the second quarter of 1989.

On the demand side, much of the sentiment that has contributed to oil market strength is based on projecting results for 1988 into 1989. It is currently estimated that petroleum demand by the OECD countries averaged 36.7 million barrels per day in 1988, an increase of 950,000 barrels per day, or 2.7 percent, over the 1987 rate. In the developing countries, or Other Market Economies, the EIA estimates that consumption averaged almost 13.7 million barrels per day in 1988, an increase of 400,000 barrels per day, or 3.0 percent, over the 1987 rate. Obviously, if these trends continued into 1989, the demand for oil would remain very strong.

There are two reasons why these demand trends may not continue in 1989 and 1990. First, economic growth may slow, particularly in the second half of 1989 and again in 1990. Second, some of the increased consumption in 1988 was due to temporary or one-time events such as buildups of tertiary inventories in anticipation of tax increases, unavailability of nuclear and hydroelectric generating facilities, and fuel-switching induced by relatively low residual fuel oil prices. The influence of these factors and of abnormal weather patterns in 1988 suggest that it may be risky to project demand trends from 1988 into 1989 and 1990.

On the supply side, too, there are two factors which suggest that the oil prices may not remain as strong as they currently are. First, OPEC wellhead crude oil production for the first quarter of 1989, while well below the rate for the fourth quarter of 1988, may have exceeded the OPEC production ceiling of 18.5 million barrels per day by over 1.6 million barrels per day. While much of this excess may have gone into producer country stocks, it now appears that OPEC will continue to overproduce in the second quarter and that the OPEC oil ministers will decide on a significant increase in the production ceiling at their June Ministerial Conference. Second, even if the recent production loss of about 500,000 barrels per day from the Brent system in the U.K. sector of the North Sea continues for

4 weeks, additional production from new Norwegian oil fields and the return of production from previously damaged U.K. facilities may result in North Sea production for the second quarter that is about the same as the rate for the first quarter.

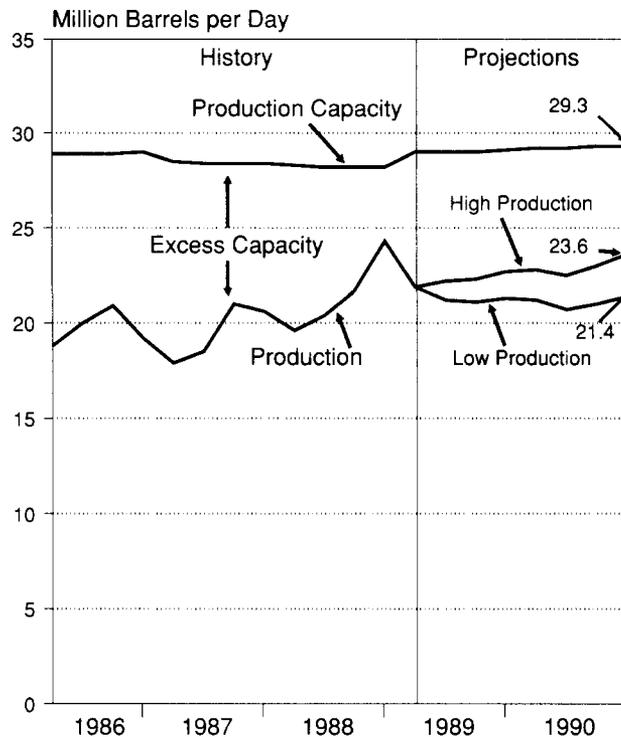
### Forecast

The demand for petroleum products by the Market Economies is expected to average 51.2 million barrels per day in 1989, an increase of 810,000 barrels per day, or 1.6 percent, from the 1988 rate (Table 2). In 1990, demand is expected to increase by 710,000 barrels per day, or 1.4 percent.

Petroleum demand by the OECD countries is expected to average almost 37.2 million barrels per day in 1989, an increase of 480,000 barrels per day, or 1.3 percent, from the current rate. This increase is based on the assumption that the OECD economies will grow at a 3.0 percent rate in 1989, down sharply from the 3.9 percent rate for 1988 (Table 3). The United States and Japan are each expected to account for about one-third of this increase, while Europe accounts for one-fourth. In 1990, as a result of a further slowing in OECD economic growth to only 2.1 percent and a partially offsetting return to colder winter weather and normal tertiary inventory patterns in Europe, petroleum demand is expected to increase by 440,000 barrels per day, or 1.2 percent. In the Other Market Economies, petroleum demand is expected to increase by about 330,000 barrels per day, or 2.4 percent, in 1989, and by only 280,000 barrels per day, or 2.0 percent, in 1990.

Oil production from the non-OPEC market economies should remain almost unchanged in 1989, and then increase by about 360,000 barrels per day in 1990 (Table 2). In 1989, significant production increases from Norway (300,000 barrels per day), Syria (80,000 barrels per day), and Colombia (60,000 barrels per day) will almost offset declines from the United States (260,000 barrels per day) and the United Kingdom (200,000 barrels per day). In 1990, production increases from Colombia, Norway, Syria, and North Yemen will more than offset declines from the United States and Canada, while production from the United Kingdom remains almost unchanged.

The forecast detailed above implies OPEC oil production in 1989 of over 21.8 million barrels per day, or 340,000 barrels per day above the rate for 1988. In 1990, OPEC production will probably increase, as Iraq, Iran, and Gabon use their new export and production capacities. A range of possible aggregate OPEC oil production levels is projected, based on a range of assumed inventory behavior, but these projections are not disaggregated to the country level (Figure 1). Significant excess oil production capacity is expected to persist in the OPEC member nations throughout the forecast period.



**Figure 1. OPEC Oil Production and Production Capacity**

Note: OPEC production includes crude oil, natural gas liquids, and refinery gain.  
Sources: **History:** Energy Information Administration, Office of Energy Markets and End Use, International and Contingency Information Division. **Projections:** Table 2.

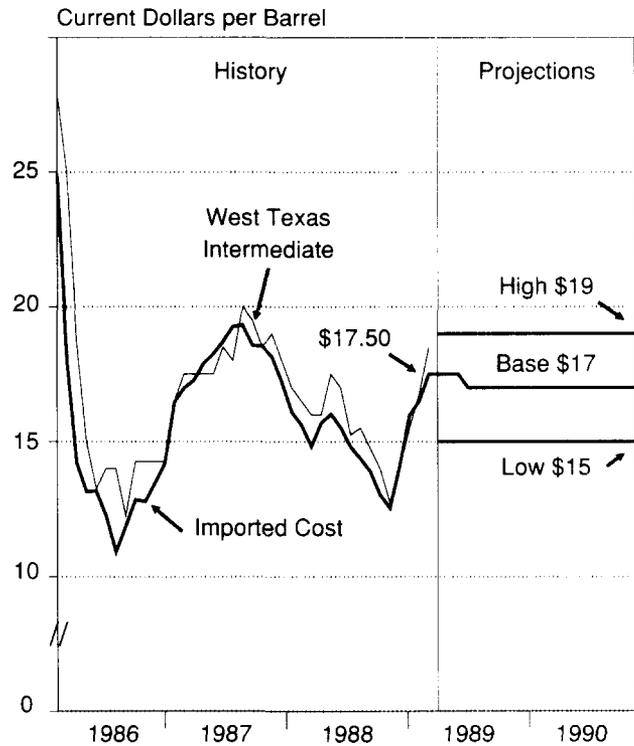
## World Oil Prices

One of the most uncertain factors affecting the domestic short-term energy outlook is the world oil price, defined here as the nominal price of imported crude oil delivered to U.S. refiners. Because of this uncertainty, three different world oil price scenarios are employed (Figure 2). These scenarios are used to develop a base case projection and two alternative projections that provide a range of projections for domestic supply and demand (Table 4).

In the base oil price scenario, the world oil price increases from about \$16.65 per barrel in the first quarter of 1989 to \$17.50 in the second quarter, decreases to \$17.00 in the third quarter of 1989, and remains at this level through 1990. This scenario is based on the assumption that OPEC production in 1989 will remain near the rate attained in the first quarter of the year and that OPEC production increases in 1990 will be held to very moderate levels.

In the low oil price scenario, the world oil price decreases to \$15.00 per barrel in the second quarter of 1989 and remains at that level throughout the forecast period. In this scenario, it is assumed that, after the first quarter of 1989, a combination of increased OPEC overproduction and slow growth in oil consumption, as a result of sharply lower economic growth, keeps oil prices at a low level. This level is not low enough, however, to force OPEC to implement production restraints capable of lifting prices significantly.

In the high oil price scenario, the world oil price increases to \$19.00 per barrel in the second quarter of 1989 and remains at that level throughout the forecast period. In this scenario, it is assumed that OPEC producers decide not to increase their production rates and that oil consumption remains very strong, as a result of continued high economic growth in both the developed and developing countries. As a result, the world oil price remains above the OPEC target price.



**Figure 2. World Oil Prices**

Note: Prices are defined as the cost of imported crude oil to U.S. refiners.

Sources: **History:** Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(89/01) (Washington, DC, 1989).

**Projections:** Table 4.

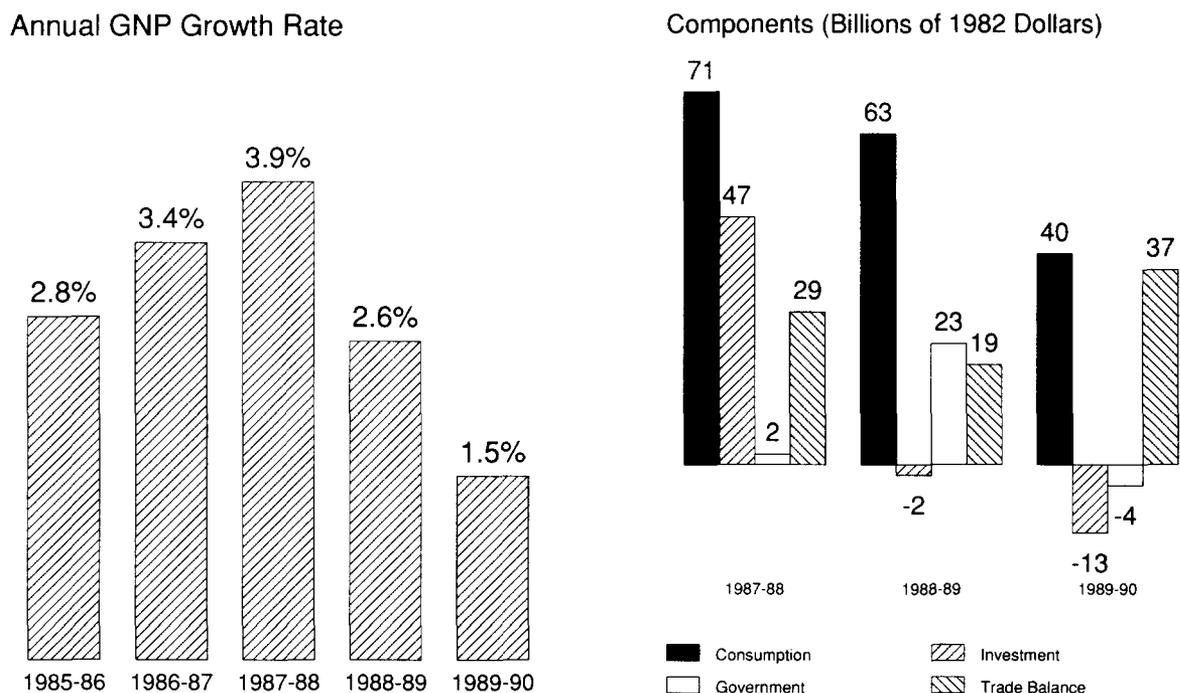
## Macroeconomic Activity

### GNP Outlook

Based on projections from Data Resources, Inc., adjusted for EIA world oil price estimates, real gross national product (GNP) is expected to increase by 2.6 percent this year, cooling down from the relatively rapid 3.9-percent pace experienced last year. It should continue to decelerate further in 1990 to 1.5 percent, the lowest rate in 8 years.

As projected, lower growth in the trade sector, rising interest rates, and accelerating inflation are the primary reasons for the gradual slowing of growth in GNP over the next 2 years.

As a result, investment and consumption slow considerably in the next 2 years as increases in interest rates cause residential fixed investment and interest-rate-sensitive sectors of the economy to experience slower growth. Consumption accounts for a larger proportion of real GNP change over the forecast period. In 1988, consumption contributed to 48 percent of the GNP growth. For the next 2 years, real consumption expenditures explain over 60 percent of GNP growth, as the investment share becomes negligible in 1989 and declines in 1990 (Figure 3).

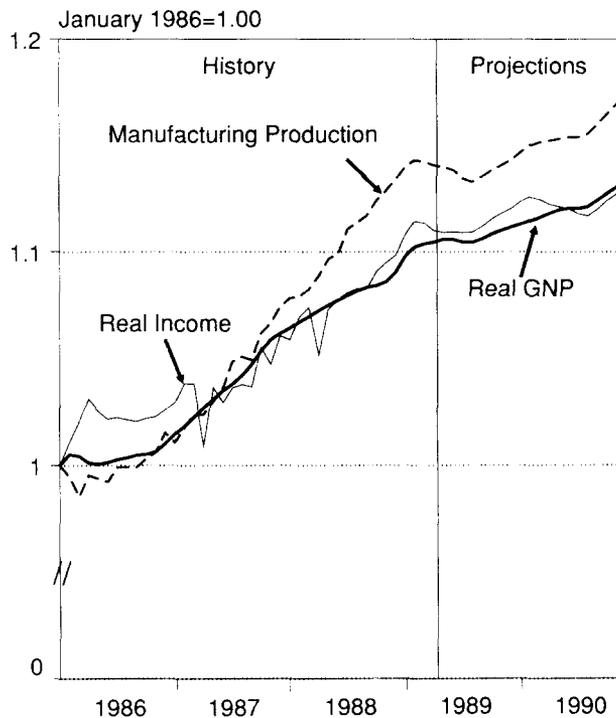


**Figure 3. Annual Changes in Real GNP and Components**

Sources: **History:** Bureau of Economic Analysis, U.S. Department of Commerce. **Projections:** 1989 and 1990, based on modifications to Data Resources, Inc., Forecast CONTROL0489.

The projected growth in real GNP is shown in Figure 4, along with projected real income and manufacturing production.

Since forecasting macroeconomic growth involves a considerable degree of uncertainty, and since the overall economic activity of a nation is one of the main determinants of energy demand, two additional GNP growth rates, roughly one percent higher and one percent lower than the base case, have been analyzed.



**Figure 4. Indices of Economic Activity**

Sources: **History:** Bureau of Economic Analysis, U.S. Department of Commerce, *Survey of Current Business*; Federal Reserve System, *Statistical Release G.12.3*. **Projections:** Table 4.

## Energy Product Prices

Many energy product prices tend to follow the crude oil price path, with short-term divergences reflecting seasonal changes in demand and supply as well as unexpected developments. A notable example in the latter category was the 10.1-million gallon oil spill in Alaska's Prince William Sound on March 24, and the subsequent disruption in oil shipments from Alaska.

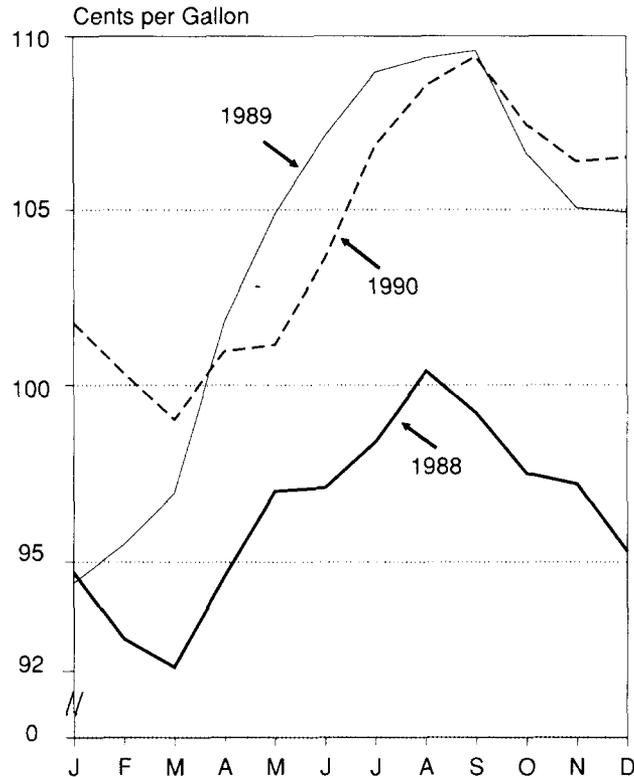
### **Oil Spill Has Temporary Effect on Wholesale Gasoline Prices**

Last month, consumers in some parts of the country saw a sharp increase in retail gasoline prices. Californians experienced an average increase in retail prices of 22 cents per gallon from mid-March to mid-April. This was a delayed reaction to rising crude oil prices which, between early November 1988 and mid-April 1989, had risen by 23 cents per gallon. Only wholesale prices in the spot market shot up disproportionately, but they returned to normal levels within two and one-half weeks.

Interruptions to tanker traffic in Prince William Sound lasted five days. The Alaska North Slope resumed full production of two million barrels per day on April 5th and is expected to maintain that production rate in the foreseeable future. Furthermore, tanker shipments following the refloating of the Exxon Valdez on April 5th have returned to near-normal volume. As a result, the actual loss of Alaskan crude was approximately 13 million barrels of oil. This amount is small by national standards, about 17 hours of total national consumption. However, 10 million of the 13 million barrels were destined for West Coast refiners, and, as mentioned, that region experienced a nervous reaction in the spot markets. In the two weeks following the spill, West Coast crude oil losses were offset by crude oil from other producing regions, by drawdown of refinery crude oil stocks, and by product imports.

### **Spring Demand, Refinery Costs Also Push Gasoline Prices Up**

Observed wholesale gasoline price increases, which began in January, long before the spill, can be attributed to several causes. Crude oil prices rose from a two-year low of \$12.58 per barrel (West Texas Intermediate) in early October 1988 to slightly above \$20 per barrel on March 23, the day before the Valdez incident—equivalent to a product price increase of 18 cents per gallon. Wholesale gasoline price increases due to oil price increases had begun to appear before the spill, but average retail prices for the Nation at large remained essentially unchanged since October (Figure 5). That is, the retail price of gasoline lagged the crude oil price increase by some four months. Other factors contributing to the rise in gasoline prices included strong seasonal gasoline demand, lower refinery gasoline inventories due to routine seasonal refinery maintenance, and new gasoline specifications that will reduce vapor emissions this summer, but are increasing refining costs now. In the past couple of



**Figure 5. Motor Gasoline Prices**

Note: Prices are average retail prices, all types.

Sources: **History:** Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(89/01) (Washington, DC, 1989), Table 9.4. **Projections:** Table 5.

years, high refinery utilization rates and a growing demand for the higher-octane premium grades have helped push refining costs up.

In 1989, gasoline inventories, currently unseasonably low, are forecast to return to their normal levels, with refiners better prepared to meet the high demand of the peak driving season. However, capacity constraints are not likely to change much in the short term, and the drift toward higher-octane premium blends is likely to continue. A new rule by the Environmental Protection Agency (EPA) designed to reduce urban smog will go into effect in June of this year. This rule will require refiners to reduce their use of butane and similar volatile additives in gasoline. It may require new equipment for some refiners.

Finally, European demand for low-lead high octane blends of gasoline is rising as the U.K. in particular has placed incentives on the sales of high octane unleaded versus leaded blends. This could lead to tighter supplies and higher priced imports to the U.S. from Europe.

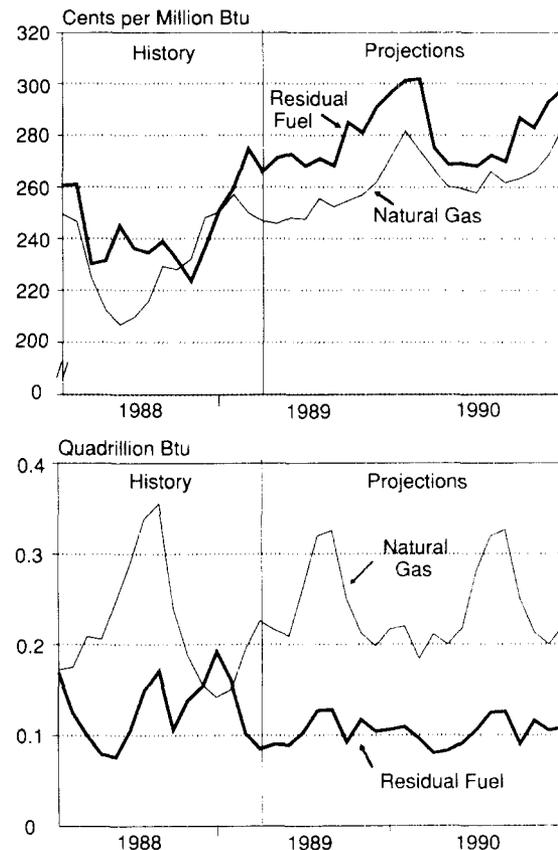
Therefore, the outlook for gasoline prices in 1989 and 1990 largely reflects the forecast for changes in crude oil prices and normal seasonal variations off last year's high refiner margins.

### **Electricity Prices Steady**

Under the current forecast, residential electricity prices will have remained essentially flat in nominal terms from 1986 through 1989, because the cost of capital and the average cost of fuel will have been relatively stable. The excessively hot summer of 1988 had little effect on average prices, even though demand soared, because world oil prices at the time were falling. This helped keep electric utility fuel prices for both residual fuel oil and natural gas low for electric utilities. In 1990, electricity prices are expected to increase at about the rate of inflation, as fossil fuel costs and capital costs rise moderately. The weighted average fossil fuel price is expected to increase by 3.6 percent from 1989 to 1990. This fuel component represents about one-third of the electricity price.

### **Seasonal Variability in Fuel Oil and Gas Prices Related to Utility Use**

Prices for residual fuel oil in the last quarter of 1988 were higher than usual relative to the price of crude oil, even after discounting seasonality (Figure 6 and Table 5). Prices reflected tight supplies (fuel oil inventories had not recovered from the drawdown by electric utilities during the preceding hot summer) and high utility demand, especially in December.



**Figure 6. Utility Fossil Fuel Prices and Consumption**

Sources: **History:** Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(89/01) (Washington, DC, 1989). **Projections:** Table 5.

Residual fuel oil demand was high because natural gas, a substitute for this fuel at many electric utilities and historically the less expensive of the two fuels, had become the more expensive by October of last year. The price change was pushed by heavy industrial demand for natural gas. In the forecast period, the retail price of residual fuel oil is expected to follow the price of crude oil, with only normal seasonal variations. A similar projection for the price of this fuel to electric utilities is expected.

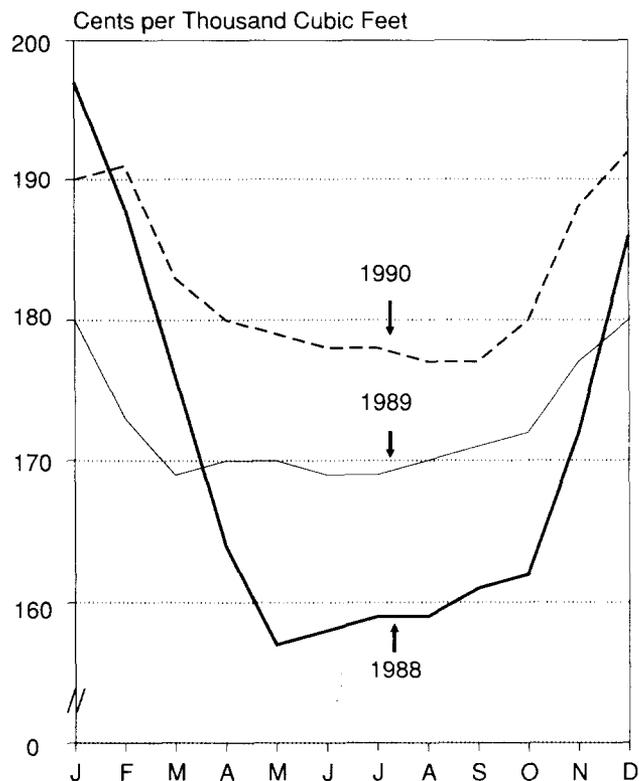
The price of natural gas to electric utilities is expected to closely parallel that of residual fuel oil, particularly if weather patterns are normal. However, the national average prices of the two fuels to utilities are not expected to remain as close as during the past winter. Gas reclaims a clear advantage on the basis of energy content, as regional price differences between oil and gas become more pronounced with rising world oil prices in 1989.

Over the past few years, the price of coal to electric utilities has remained soft, partly because of excess mining capacity, low prices for the other fossil fuels, and partly because the increase in new generation from nuclear power plants helped contain coal requirements. A utility stock buildup in the winter of 1987/1988 in anticipation of a miners' strike (which never occurred), followed by a drawdown in 1988, have also helped ease prices. Coal prices are expected to remain soft over the forecast period.

### **A New Seasonality Emerges in Natural Gas Wellhead Prices**

Average wellhead prices for natural gas increasingly are following spot prices, especially over the past year, as a greater proportion of total purchases are made on the spot market or under longer term contracts with flexible price provisions. One result of this trend is the pronounced increase in the seasonality of average wellhead prices. During periods of peak demand, like the winter, prices tend to be higher (Figure 7). This seasonality has long been established for delivered prices to electric utilities and to industrial users, but is a relatively new phenomenon for wellhead prices. Developments in the past year underscore the market basis for the new trend.

Spot prices for natural gas climbed steadily from \$1.30 per thousand cubic feet in May 1988 to \$1.86 in December, in response to a combination of factors: heavy gas use caused by an early cold spell; low underground storage levels, depleted partly because of a second consecutive hot summer causing strong electric utility demand; and below-normal hydroelectric generation.<sup>1</sup> This resulted in large purchases on the spot market, which in turn bid the price up nationwide. By February 1989, however,



**Figure 7. Natural Gas Wellhead Prices**

Sources: **History:** Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(89/01) (Washington, DC, 1989). **Projections:** Table 5.

<sup>1</sup>Natural Gas Intelligence, May 16, 1988 and February 27, 1989 issues. The price represents the average high and for spot price quotes for the Southwest (Texas and Gulf, Oklahoma, and Louisiana).

prices had fallen to \$1.50 per thousand cubic feet, as warmer-than-normal weather on the East Coast lowered demand.<sup>2</sup>

Wellhead prices are forecast to increase by an average of 3 percent per year over the next 2 years (the result of higher world oil prices). The seasonality observed in 1988, which was influenced by extreme weather in both winter and summer, is expected to be dampened somewhat in 1989 and 1990. Residential prices are projected to follow the expected wellhead price increase, and show growth of about 2 percent per year over the next 2 years.

### ***No Pressure on Heating Oil Prices***

Residential heating oil prices stayed relatively high in the first half of 1988, due to the colder-than-normal winter and to the higher-than-expected demand for diesel fuel oil, another middle distillate. Prices followed normal seasonal patterns for the remainder of 1988 and for the beginning of 1989, with the mild winter on the East Coast keeping a lid on prices. As long as stock levels remain within the normal range, and the next winter's weather does not become unusually cold, heating oil price increases should be quite moderate in the forecast period, rising only as much as the expected increase in the price of crude oil.

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<sup>2</sup>*Natural Gas Intelligence*, February 27, 1989.



## **U.S. Petroleum Outlook**

- **Total Petroleum Demand**
- **Motor Gasoline**
- **Distillate Fuel Oil**
- **Residual Fuel Oil**
- **Other Petroleum Products**
- **Total Petroleum Supply**



## Total Petroleum Demand

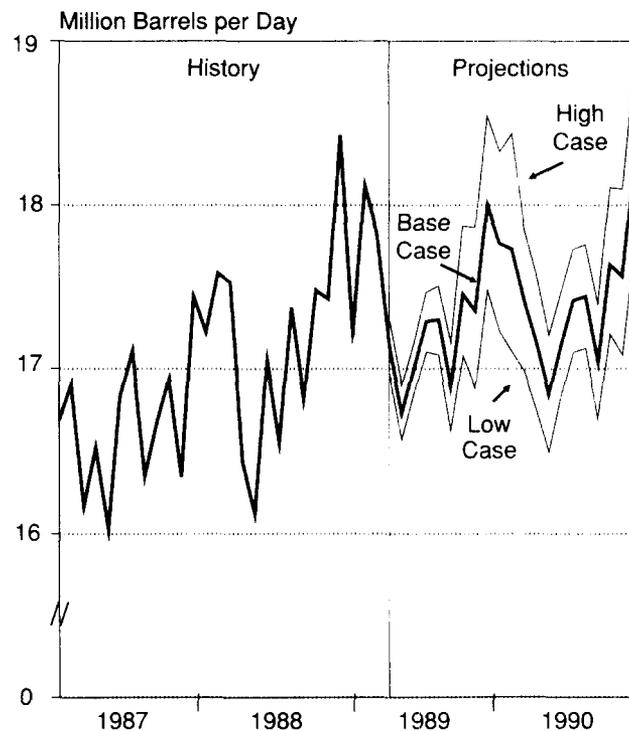
Total petroleum demand surged by 3.0 percent in 1988 but should show a much more modest 0.9-percent growth this year. Figure 8 illustrates the rapid growth in oil demand in 1988, particularly in the fourth quarter. Last year's increase resulted from a combination of strong economic growth, relatively severe weather conditions in winter and summer, and a sharp swing to residual fuel use at electric utilities due to plunging oil prices and low hydroelectric power availability. The assumed slowing economy, milder weather, and higher oil prices this year portend far less dramatic increases in overall petroleum demand in 1989. Demand should increase by 150,000 barrels per day, compared to the 500,000-barrel-per-day average increase in 1988. Another 130,000 barrels per day is expected for 1990 as more fuel for the transportation sector continues to be required (Table 6).

Despite a current tight supply situation in motor gasoline markets and labor trouble in the airline industry, demand for petroleum in the transportation sector should expand apace, contributing at least 170,000 barrels per day to demand this year. About 240,000 barrels per day of additional demand was attributable to this sector in 1988. Since industrial and commercial activity will generally grow at about half the rate for last year, increases in freight and business-related air and highway travel are not expected to be as robust in 1989. In the case of motor gasoline, somewhat slower highway travel growth over the next 2 years will be accompanied by slower average fuel efficiency improvements, leading to continued demand growth of about 100,000 barrels per year.

Weather-related oil use is expected to decline in 1989, as the demands for propane and home heating oil for the year have already been negatively affected by the relatively mild weather in January. Also, under the assumption that temperatures this summer will not reach the extremes experienced during the third quarter last year, less pressure on oil as a peaking fuel at electric utilities is expected.

Patterns of oil use in the nonutility industrial sector were varied amidst last year's oil demand boom. While some increases in distillate use even beyond heating oil and transport use was apparent, nonutility residual fuel oil use declined by a significant 60,000 barrels per day in 1988. While no sharp additional declines in oil use by the industrial sector are anticipated for this forecast, only a flat or weak positive prognosis is offered. Natural gas and electricity are expected to meet most if not all of the additional net energy requirements of the industrial sector in the short run.

An exception to the industrial story for 1988 was miscellaneous product use, which advanced by about 130,000 barrels per day. To a large extent, this reflected increased refinery fuel use (largely still gas). As relatively little room for additional domestic refinery output remains, additional increases in this area are expected to be limited. While propane use is expected to slacken this year, liquefied



**Figure 8. Total Petroleum Demand**

Sources: **History:** Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(89/01) (Washington, DC, 1989). **Projections:** Tables 6, 8, and 9.

petroleum gases used as feedstocks will continue to increase along with output in the chemicals industry, marginally adding to demand over the forecast.

### **Petroleum Sensitivities**

This *Outlook* implements a new approach for developing high and low petroleum demand cases, which now contain estimates for the possible extreme range of macroeconomic, weather and world oil price pressures on the United States. The range of macroeconomic assumptions has already been discussed (page 11) and reflects an assessment of macroeconomic forecast risk, as measured by the root mean squared error of past base case macroeconomic forecasts. (See Table 4.) Scenario construction for the world oil price cases has not been changed. The rationale for the world oil price scenarios presented in this issue is discussed on page 9.

Because of the relative severity of recent weather patterns, new weather sensitivity cases were also developed for this forecast. In order to provide a tangible basis for dealing with the weather in a forecasting context, it is assumed for the adverse weather case that the worst weather observed for the various seasons since 1975 would recur during the forecast quarters. Here, the "worst" weather was chosen considering the four quarters of the year individually; an entirely analogous procedure was used to develop the favorable weather case. A recurrence in 1989 of the worst third quarter seen in the last 15 years would lead to petroleum demand that is 0.3 percent higher for the quarter than the base case, all else the same. If the worst first quarter seen since 1975 is repeated in 1990, petroleum demand would exceed the base case level by 300,000 barrels per day, 2.2 percent above the rather mild first quarter 1989.

### **Sensitivity Results**

Table 7 provides a summary of the estimated sensitivity of domestic petroleum demand to variations in the world oil price, alternative macroeconomic growth assumptions and weather conditions. The table also provides an explicit decomposition of the differences between the current alternative petroleum demand cases and the base case into price, macroeconomic, and weather sources. For the current *Outlook*, about 13 percent of the overall difference in petroleum demand cases is explained by oil price variation, 51 percent is due to different assumptions about economic growth, and the remainder is due to weather variance. For the purpose of constructing sensitivity cases, the three sources of uncertainty are assumed to be strictly additive.

Combining the information from Table 4 with that in Tables 7, 8 and 9, the sensitivities of domestic petroleum demand to changes in the three determinants discussed above can be summarized as shown in the following box.

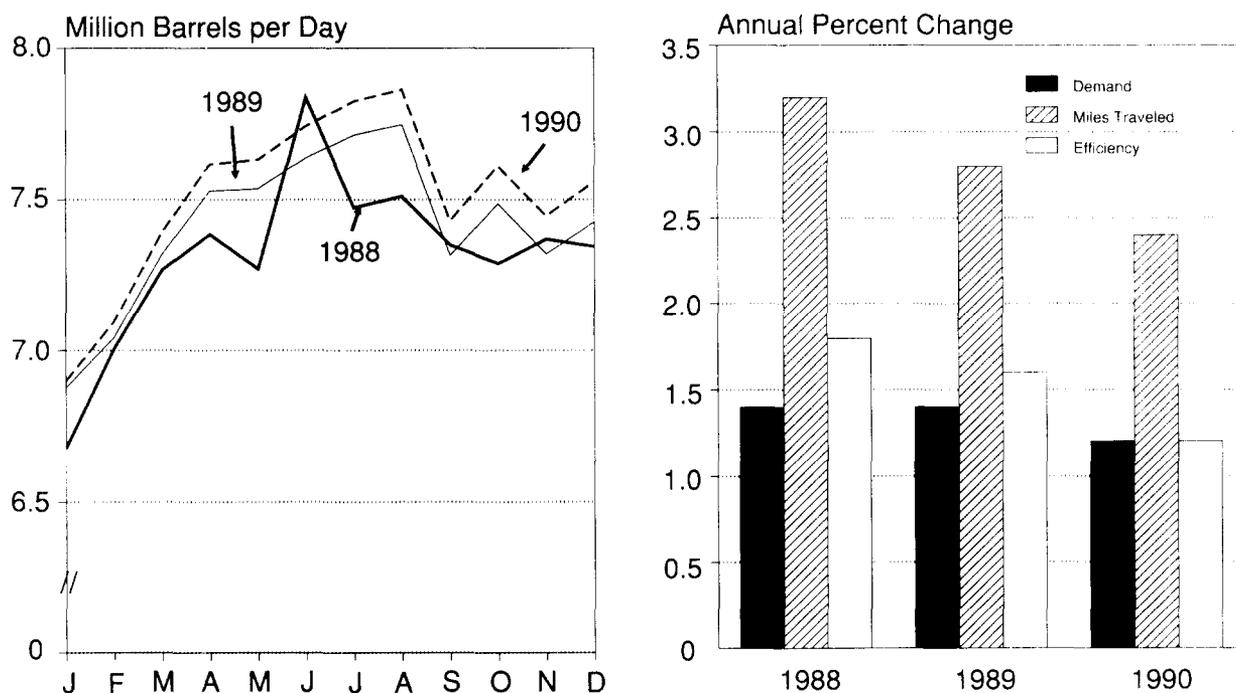
- For every \$1.00 increase in world oil price, petroleum demand can be expected to fall by approximately 30,000 barrels per day;
- For every 1 percentage point of additional growth in real GNP, petroleum demand can be expected to increase by about 100,000 barrels per day, or 0.6 percent;
- For every 1 percent increase of cooling degree-days over normal levels, petroleum demand is expected to increase by 0.02 percent; for heating degree-days, petroleum demand is expected to increase by 0.11 percent.

## Motor Gasoline

Motor gasoline demand is expected to continue its 6-year growth trend, at a pace similar to the 1.4-percent rate for 1988, through 1990. Domestic gasoline use is expected to gain about 100,000 barrels per day in 1989 and another 90,000 barrels per day on average next year (Table 10). Increases in motor vehicle travel are expected to slacken as the economy slows down from the rapid growth exhibited in 1988. However, average vehicle efficiency (mpg), which has apparently been growing by between 1.5 and 2.0 percent over the last several years, is not expected to advance as quickly in 1989 and 1990, averaging slightly under 1.5 percent during that period (Figure 9). Continued increases in demand may be expected to exacerbate some gasoline supply problems now facing refiners and to keep gasoline prices relatively high. Nevertheless, real (inflation-adjusted) fuel costs are expected to decline between 1988 and 1990.

Gasoline demand began growing steadily in 1983, achieving an average rate of growth of 1.9 percent between 1982 and 1988. A fairly rapid acceleration in gasoline demand occurred between 1984 to 1986, rising from 1.1 percent in 1984 (a 70,000 barrel-per-day increase) to 3.0 percent in 1986 (a boost of over 200,000 barrels per day). During this period, total motor vehicle travel had been increasing at nearly-constant rates ranging between 3.6 and 3.8 percent. Either a growing percentage of total travel growth was associated with gasoline-powered vehicle travel in the 1984 to 1986 period, or average fleet mpg improvement was decelerating.

The 2 years following 1986 have brought steadily declining gasoline growth rates. Demand increased by 2.4 percent in 1987 and 1.4 percent in 1988. In 1987, vehicle travel increased by a remarkable 4.7 percent, the highest rate since 1982, followed by 3.2 percent in 1988 (the lowest growth rate in 6 years).



**Figure 9. Motor Gasoline Demand and Components**

Note: Projections begin in the second quarter of 1989.

Sources: **History:** Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(89/01) (Washington, DC, 1989); Federal Highway Administration, U.S. Department of Transportation, *Traffic Volume Trends*, various issues. **Projections:** Table 10.

All indicators point to some slowing in travel growth this year, but it should be noted that growth in domestic highway travel has been persistent in a variety of economic environments. In fact, total highway travel growth has not slipped below 3 percent since 1982. Despite some upward pressure on gasoline prices (even on an inflation-adjusted basis) this year, growth in gasoline demand should continue, as persistence in travel demand growth is not entirely offset by gains in mpg. Once the expected long-term effects of lower real gasoline prices occur, fleet efficiency improvements should be lower. This expectation contributes to a bullish outlook for gasoline demand.

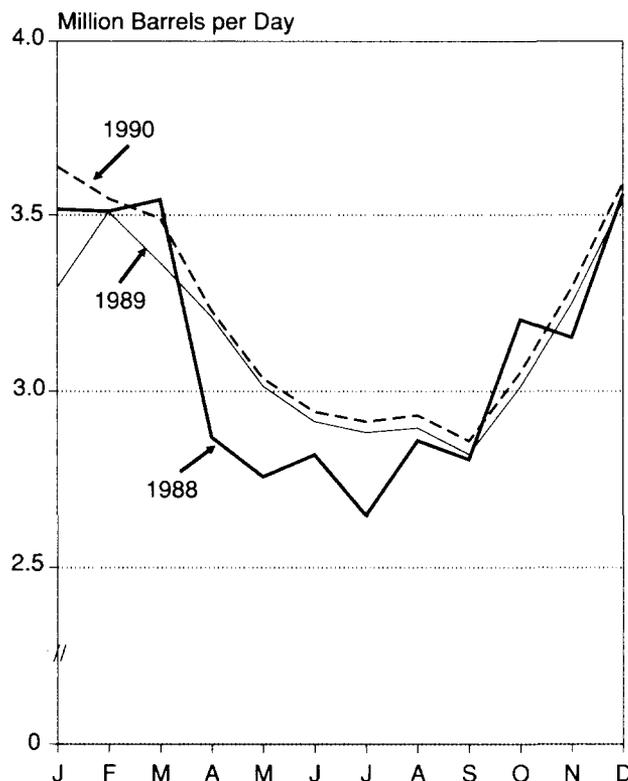
### Distillate Fuel Oil

After increasing by 4.0 percent during 1988, annual growth in distillate demand is projected to be less during the forecast period. With expected normal weather, slower gains in manufacturing, and slightly higher fuel oil prices, growth in distillate demand averages 1.3 and 2.2 percent in 1989 and 1990, respectively (Table 11 and Figure 10).

Transportation demand for diesel fuel showed annual growth of over 3.0 percent during 1988. Slower industrial growth and higher diesel prices should cause growth rates to slow accordingly in 1989 and in 1990.

Residential and commercial demand for distillate is expected to decline in 1989, reflecting the assumption (and so far the reality) of milder weather this year. It is estimated that this January was 17.8 percent warmer than normal (in terms of heating degree-days) and 23.0 percent warmer than in 1988. The first quarter of this year was apparently 7.3 percent warmer than 1988, and the weather assumptions for the fourth quarter imply 3.5-percent warmer weather for that period.

Industrial use of distillate apparently increased significantly during 1988. Demand growth in this sector is expected to moderate over the next 2 years, as industrial growth slows.



**Figure 10. Distillate Fuel Oil Demand**

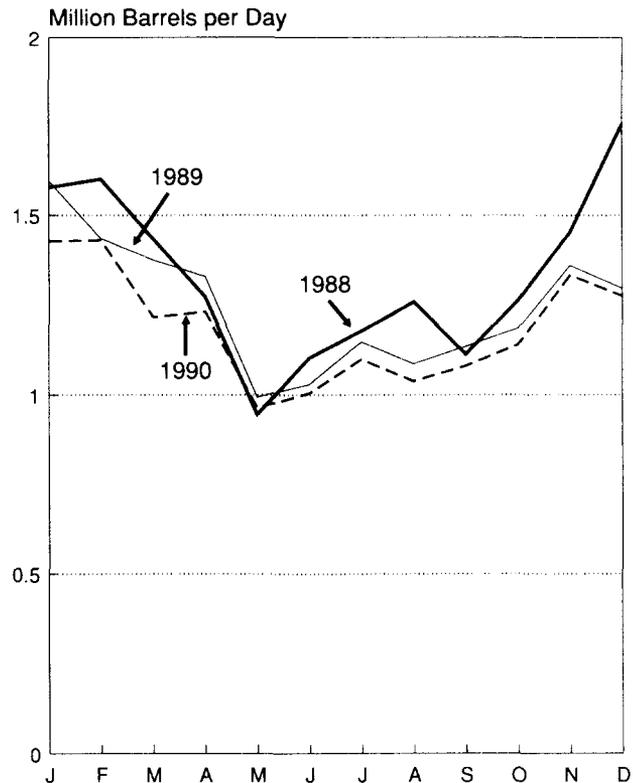
Note: Projections begin with the second quarter of 1989.  
Sources: **History:** Energy Information Administration, *Electric Power Monthly*, DOE/EIA-0226(89/01), and *Monthly Energy Review*, DOE/EIA-0035(89/01) (Washington, DC, 1989). **Projections:** Table 11.

## Residual Fuel Oil

Residual fuel oil demand received a significant boost last year, increasing by an average of 70,000 barrels per day, led strongly by increased reliance by electric utilities on oil to produce power. However, demand is expected to fall at an average rate of 5.8 percent during the forecast period (Figure 11 and Table 12). The main factors that increased utility oil use in 1988 will be absent or lessened in importance this year. Hydroelectric generation is expected to increase from low, drought-induced levels to normal levels by the fourth quarter. In 1989, oil prices should not remain as competitive with gas as in 1988, and no natural gas shortages are expected to arise that might cause unusual restrictions on gas use by utilities. The data for 1988 imply that industrial fuel switching to residual fuel has peaked and may be declining. Still, continued growth in manufacturing production may bring about increases in nonutility demand in 1989.

Nonutility demand for residual fuel oil fell by almost 8 percent during 1988, although manufacturing demand was strong. Since the price of residual fuel during this time became relatively competitive with natural gas, there was an indication of reduced willingness of industrial users to burn oil. During 1989, nonutility demand for residual fuel oil is expected to increase somewhat from the extremely sluggish pace of 1988. The downward trend continues in 1990, as demand declines by 4 percent.

Demand for residual fuel oil by electric utilities showed a weather-related increase during 1988, growing at an annual rate of 24 percent. This increase was due, in part, to favorable prices of residual fuel oil compared with alternative fuels, particularly during the fourth quarter. With milder temperatures, less fuel switching, and more use of hydroelectric power expected this year, shipments to utilities are expected to decline by 16 percent this year. In 1990, growth is expected to show a trend similar to that for industrial use of residual fuel oil, declining by 6 percent.



**Figure 11. Residual Fuel Oil Demand**

Sources: **History:** Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0036(89/01) (Washington, DC, 1989). **Projections:** Table 12.

## Other Petroleum Products

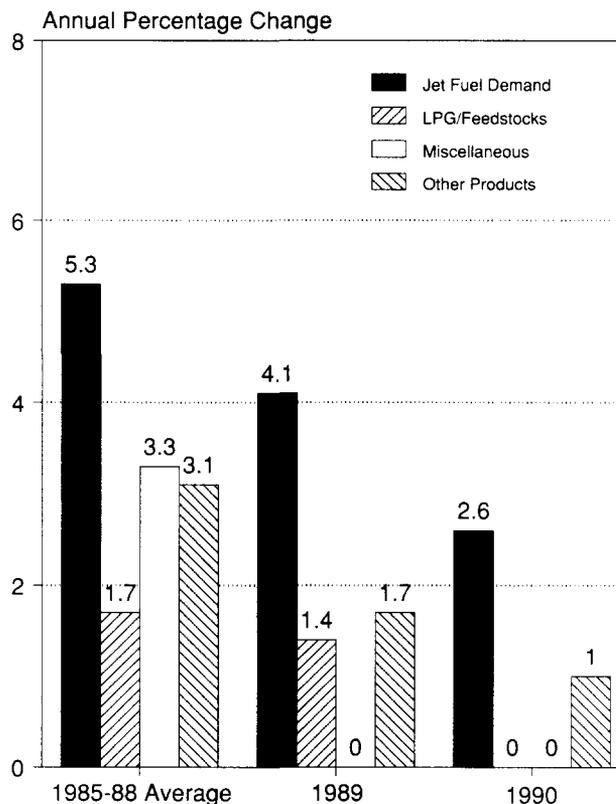
Demand growth for other petroleum products, including jet fuel, liquefied petroleum gas, and miscellaneous products, averaged 3.8 percent in 1988. A modest gain in demand is expected during the forecast period; moderate growth in transportation jet fuel is offset by slower growth for industrial petroleum products (Figure 12 and Table 13).

Jet fuel demand, after exhibiting an estimated 5.1-percent growth in 1988, is projected to grow by 4.1 percent in 1989 and 2.6 percent in 1990. Slower economic growth and relatively firm ticket prices are expected to keep growth in revenue ton-miles (a measure of air traffic volume) down to 4.5 percent in 1989 and 3.7 percent in 1990. Because of the difficulty in quantifying the size of the effect of the machinists' strike at Eastern Airlines, the forecast is not adjusted for the strike. An upper limit on the size of the effect can be given by assuming that the revenue ton-miles of the industry was reduced by the entire amount of Eastern's 1988 market share. In this case, jet fuel demand could be reduced by 80,000 barrels per day. However, to the extent that Eastern will be able to continue some of its service or other airlines will schedule new routes, jet fuel demand should not decrease by the full amount. Nevertheless, since competing airlines have few idle aircraft, most of the air traffic demand will be met by filling up already scheduled flights. This increase in utilization should put upward pressure on ticket prices and thus downward pressure on industry-wide air traffic demand.

Growth in demand for liquefied petroleum gas (LPG) will reflect the relative strength of the chemical industry to other manufacturing activities, as this product is used as petrochemical feedstock. Slower growth in other manufacturing uses of LPG will offset some of this gain.

The recent demand slide in oil-based petrochemical feedstocks is expected to begin leveling during the forecast period. Although oil feedstock prices are competitive with LPG, capacity constraints in the chemical industry, resulting in high margins on chemical products, continue to be a factor in favoring yield-maximizing LPG as feedstock.

The miscellaneous products showed unexpectedly strong growth of 7.5 percent during 1988, growing at a faster pace than overall manufacturing. Demand for these products is expected to show a more normal growth trend in 1989 and in 1990, due to slower growth in manufacturing and oil refining activity.



**Figure 12. Other Petroleum Products Demand**

Sources: **History:** Energy Information Administration, *Petroleum Supply Monthly*, DOE/EIA-0109(89/01) (Washington, DC, 1989). **Projections:** Table 13.

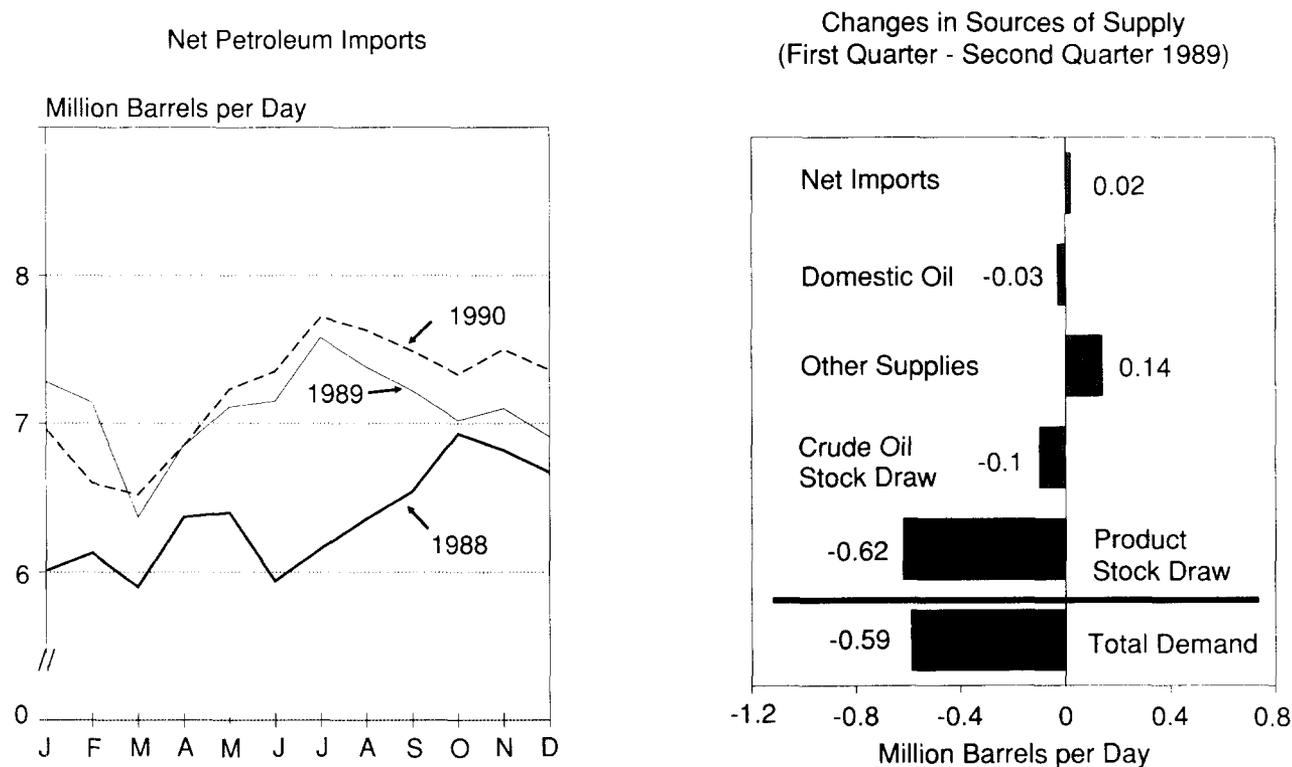
## Total Petroleum Supply

The short-term outlook for sources of petroleum supply to meet projected demand entails increases in the level of imports of both refined product and crude oil (Figure 13 and Table 6). Normal patterns of stock drawdowns in motor gasoline during the 1989 and 1990 driving seasons should occur, with supplies in storage being adequate to meet peak demands. Domestic refinery utilization rates should remain high throughout the forecast period. In the second quarter 1989, falling seasonal demand for several petroleum products result in a 620-thousand-barrel-per-day drop in the rate of withdrawal of product stocks. The biggest second-quarter change is in demand and inventory withdrawals for distillate and liquefied petroleum gases, and demand for residual fuel oil.

Although United States net imports of crude oil, including Strategic Petroleum Reserve (SPR) purchases, are expected to increase throughout the forecast period, growth in imports will begin to level off in 1990, as demand growth slows and crude oil production levels decline only slightly.

Crude oil stocks are expected to remain relatively level throughout 1989 and 1990, based on the assumption of a stable world oil market and only moderate increases in oil prices. Crude oil stock levels (excluding SPR holdings) are forecast to reach 337 million barrels by the end of 1989, 6 million barrels above the 1988 level, and to close at approximately the same level in 1990. SPR inventories will increase by about 70,000 barrels per day in 1989 and 1990.

Focusing for the moment on the second quarter of 1989, a net decrease, from the first quarter, in petroleum demand of 590 thousand barrels per day will be absorbed principally by a change in the rate of drawdown of product stocks.



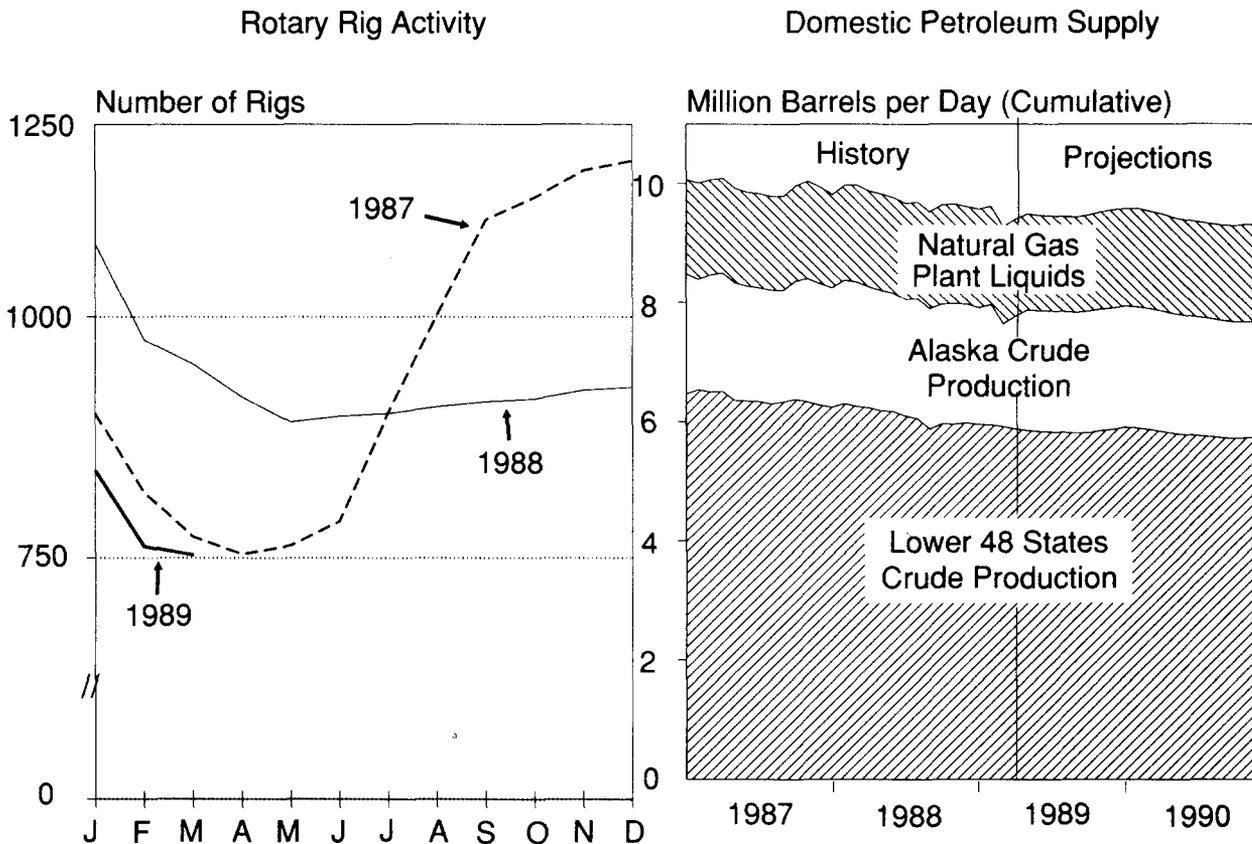
**Figure 13. Imports and Changes in Sources of Petroleum Supply**

Sources: **History:** Energy Information Administration, *Petroleum Supply Annual 1987*, DOE/EIA-0340(87)/1; *Petroleum Supply Monthly*, DOE/EIA-0109, January 1988 to January 1989; and *Weekly Petroleum Status Report*, DOE/EIA-0208(89/11, 89/15) (Washington, DC). **Projections:** Table 6.

Motor gasoline inventories are expected to drop by about 4 million barrels to 184 million barrels by the end of the second quarter of 1989, and then build slowly again by a comparable amount through the end of the third quarter. This relatively flat profile for stocks, in contrast to nearly triple seasonal movements a year earlier, supports the outlook for higher refinery production and imports of gasoline in the second quarter this year, and for lower levels in the peak-demand third quarter. A more moderate operating environment this summer should help ease pressures on gasoline prices.

An increase in the price of oil during the forecast period is expected to stimulate development and exploration, slowing the current annual rate of decline in crude production to about 1 percent in 1990. The oil spill-related disruption of Alaskan supplies combined with a weather-related slowdown of shipments from the port of Valdez in March contributed to a 130,000-barrel-per-day drop in the average production rate for that region in the first quarter of 1989. A forecast of any sustained Alaskan disruption is not included in this *Outlook*.

Declines in total domestic oil production are expected in all major United States producing areas, with the possible exception of the Pacific and Gulf Coast Federal offshore areas (Figure 14). The Arctic North Slope is expected to maintain its production at about 2.0 million barrels per day. In the forecast, U.S. crude oil production drops to 7.8 million barrels per day in 1989, a 3.6-percent decline from 1988.



**Figure 14. Drilling Activity and Domestic Petroleum Production**

Note: Crude oil production includes lease condensate.

Sources: **History:** Energy Information Administration, *Petroleum Supply Annual 1987*, DOE/EIA-0340(87)/1; *Petroleum Supply Monthly*, DOE/EIA-0109, January 1988 to January 1989; and *Weekly Petroleum Status Report*, DOE/EIA-0208(89/11, 89/15) (Washington, DC). **Projections:** Table 6.

## **Outlook for Other Major Energy Sources**

- **Natural Gas**
- **Coal**
- **Electricity**
- **Electric Utility Fuel Consumption**



## Natural Gas

Total natural gas consumption for 1989 is projected to expand by only 1.6 percent, less than one-third of last year's pace. As in 1988, 57 percent of this year's demand growth would come from the industrial sector. As general economic activity slackens, and with 5 percent fewer heating degree-days assumed for all of 1989, the outlook for gas demand this year appears less favorable than it is for new gas supply, which is expected to expand by 4.4 percent (Figure 15 and Table 14).

Because of the mild weather in the first quarter of 1989, which had 5.4 percent fewer heating degree-days than "normal," residential natural gas use for this year will grow by less than 1 percent, to 4.7 trillion cubic feet. This rise is due largely to a projected 2.1-percent increase in the number of residential customers, an addition of 1 million new gas-meter hookups, which include conversions to gas heating or cooling. Since multiple-housing units may share a single gas meter, the number of new gas hookups may not reflect completely additions to the housing stock.

In contrast to the 10.8-percent jump last year, commercial gas use in 1989 should decline by 2.6 percent, notwithstanding a 2.9-percent increase in commercial gas hookups. This sharp drop in demand is directly related to the assumed decrease in the number of heating and cooling degree-days in 1989.

Industrial natural gas use is expected to increase by 2.5 percent this year reflecting a drop in the gas-to-oil price ratio and a 3.2-percent rise in industrial production. In 1990, as manufacturing activity slows, and as the difference between the price of gas and the price of oil stabilizes, industrial gas demand slows to less than 2 percent per year.

The use of natural gas at electric utilities is expected to rebound in 1989, after relatively low generation levels in 1988. Gas-fired generation is projected to increase by 2.3 percent in 1989 and by 1.8 percent in 1990, partially displacing higher-priced oil.

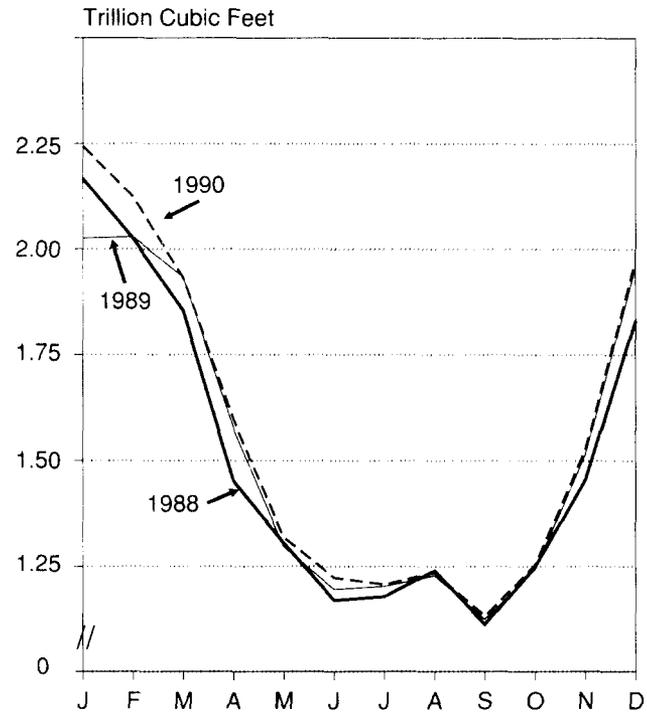


Figure 15. Natural Gas Consumption

Note: Consumption excludes lease and plant fuel and pipeline compressor fuel.

Sources: **History:** Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(89/01) (Washington, DC, 1989).

**Projections:** Table 14.

## Coal

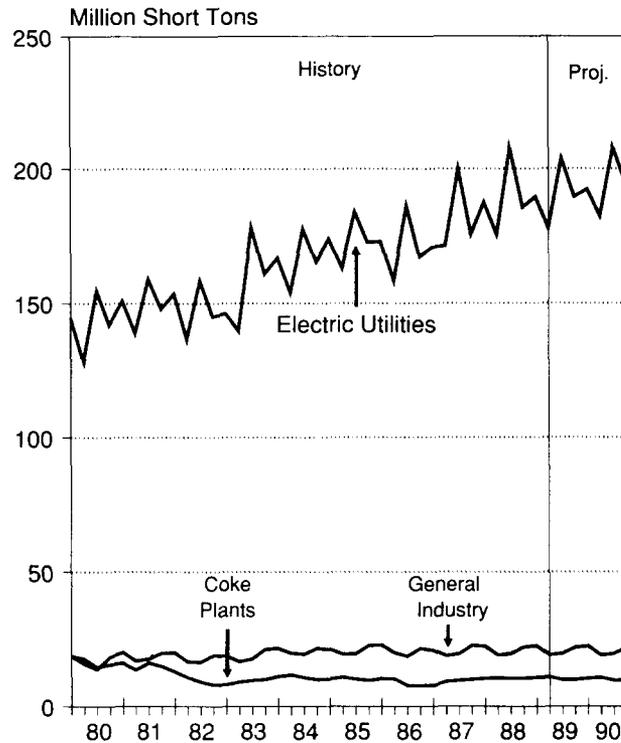
The current forecast calls for this year's demand for **domestically produced coal** (defined as domestic consumption plus United States net exports of coal) to remain virtually at last year's level. Gains from electric utility use offset a drop in coal exports. The slight demand increase indicated for 1990 directly reflects coal's net gain from electric utility use, which more than offsets losses from nonutility consumers. The domestic supply of coal posts a 4.0-percent jump in 1989, as coal production continues last year's growth pattern (Figure 16 and Table 15). Faced with a significant slowdown in demand, part of the additional 34 million tons in domestic supply results in a stock buildup.

After increasing by more than 5 percent in 1988, **coal use at electric utilities** should grow by only 0.3 percent in 1989 and 2.4 percent in 1990. The assumption of normal weather, combined with a resurgence in hydroelectric power and slower growth in total electricity generation, keeps the demand for coal generation restrained in the forecast period. Most of the increase in coal generation is met by increased capacity utilization, although some new capacity should become available this year.

The strong demand for **coking coal** by steel producers in 1988 reflected higher steel-production capacity as well as the healthy market for steel-using products. However, as the supply of steel-intensive products outpaced actual demand, inventories began to build up. The expectation of working off these inventories in 1989 and 1990 is partly responsible for lower steel production through 1990. Consequently, even assuming no significant rise in coke imports, domestic coking coal demand is likely to weaken.

Under assumptions of normal weather throughout the forecast period, space-heating requirements abate in 1989, and **coal demand in the residential and commercial sectors** drops accordingly. In the industrial sector, while manufacturing production advances at a 3.2 percent rate in 1989 (Table 4), coal use is not expected to expand proportionately.

With the expected easing of labor-related problems in the major coal-exporting countries, United States coal exports will not continue to enjoy last year's strong foreign demand. By 1990, exports should be 5 percent lower than in 1988.



**Figure 16. Coal Consumption**

Sources: **History:** Energy Information Administration, *Quarterly Coal Report*, DOE/EIA-0121(88/4Q) (Washington, DC, 1989). **Projections:** Table 15.

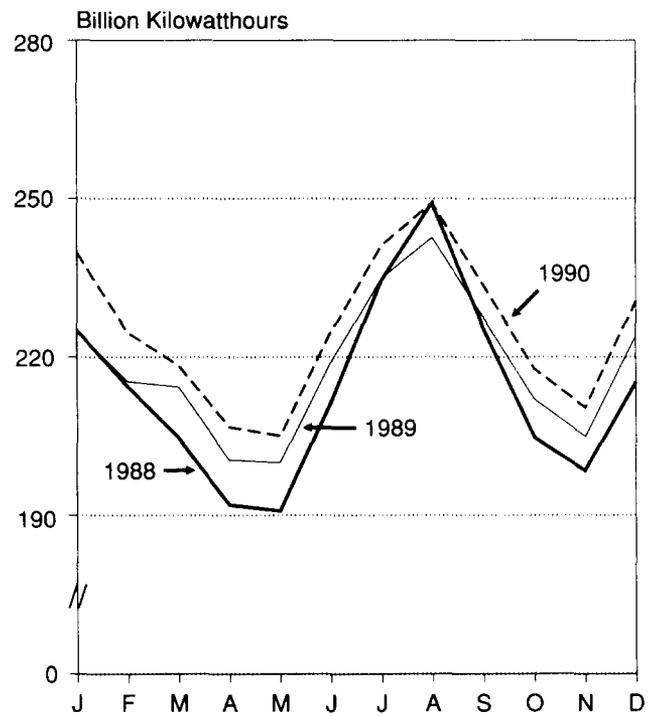
## Electricity

Annual sales of electricity this year are expected to exceed 1988 levels, despite assumptions of milder weather. However, sales in the third quarter of 1989 should decline somewhat from last year, because of the extreme temperatures reached during last summer (Figure 17). The underlying trend for short-term growth in electricity demand (weather factors held constant) is now estimated to be approximately 3 percent per year. Thus, given the severity of weather conditions experienced last year, combined with a warmer-than-normal first quarter for 1989, expectations for electric power use this year may seem high, at 2.1 percent (Table 16). Slower economic expansion in 1990 should moderate growth in the industrial sector, but should not affect the total picture significantly. The continued electrification of commercial establishments and households is the rationale behind this projection.

**Total electricity sales** are expected to increase by 2.1 percent in 1989 and 3.1 percent in 1990. **Residential demand** should slacken considerably in 1989 due to normal (milder) weather assumptions, but return to trend growth levels by 1990. **Commercial sector power use** should remain consistently high, as this sector is not affected drastically by weather. **Industrial use** should follow the general trend of the manufacturing sector and taper off somewhat by 1990.

Electricity demand is expected to grow at rates which will tend to exceed the growth rate of the overall economy as measured by GNP. While it has been observed that, over the long run, average growth rates in GNP and electricity tend toward equality (a ratio of electricity demand growth to GNP growth of 1.0), when the economy takes a short-run dip (a recession or growth slowdown) electricity demand often does not follow in tandem, as seen during the recessions of 1970, 1975, and 1980. For the current forecast, the ratio of electricity to GNP growth swings from 0.81 in 1989 to 2.07 in 1990, averaging 1.44. The wide variance is largely explained by swings in the weather from above normal in 1988 to below normal in 1989 (due to a warm first quarter) to assumed normal in 1990. The relatively high value of 1.44 stems from the tendency of longer term movements in the residential and commercial sectors to persist in the short run, despite sluggish growth in GNP.

Below normal precipitation levels in midwestern Canada have reduced water surpluses in Quebec, and environmental restrictions on coal-based electricity generation in Ontario caused **imports** to drop approximately 36 percent in 1988 from 1987. The latter two effects are expected to continue into 1989, dampening somewhat the outlook for electricity imports into the United States in 1989. Net electricity imports are expected to average 1.3 percent of the total United States supply this year. Assuming the return of normal precipitation in Canada by 1990, this share should be to 1.5 percent of total supply.



**Figure 17. Electricity Demand**

Sources: **History:** Energy Information Administration, *Electric Power Monthly*, DOE/EIA-0226(89/01), and *Monthly Energy Review*, DOE/EIA-0035(89/01) (Washington, DC, 1989). **Projections:** Table 16.

## Electric Utility Fuel Consumption

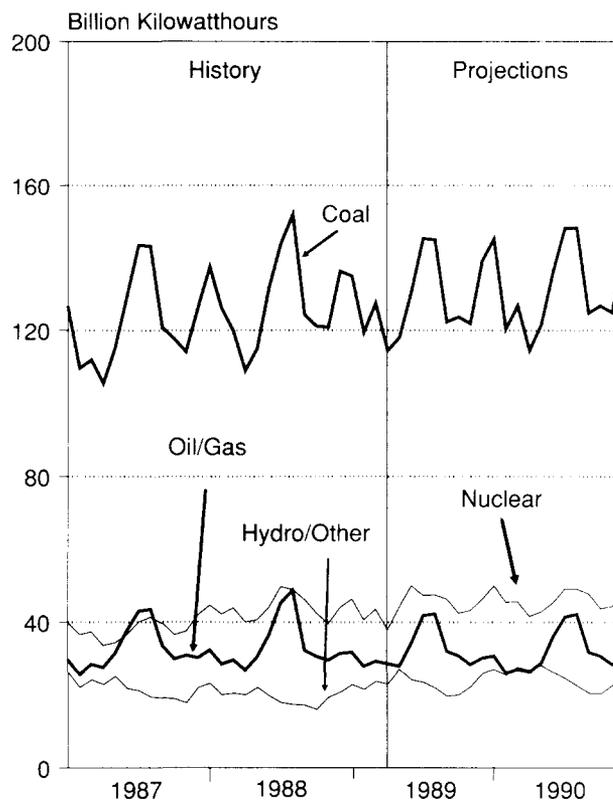
Total electricity generation is projected to grow by 1.3 percent in 1989 and by 2.8 percent in 1990. Hydroelectric power is projected to rebound in 1989, although output levels are not likely to return to normal in all regions until 1990. After a banner year in 1988, nuclear generation should continue to grow, but at much more modest rates, in 1989 and 1990, reflecting primarily new capacity additions but also continued high capacity factors (Figure 18 and Table 16).

The growth in electric utility coal generation is projected to slow down in 1989 and 1990 as a result of lower rates of growth in total electricity generation and a large increase in the use of hydroelectric power in 1989. Coal generation is expected to grow by 0.3 percent in 1989 and by 2.5 percent in 1990.

After record high levels of generation in 1988, nuclear generation is projected to increase by 1.7 percent in 1989 and by 3.2 percent in 1990. This increase reflects the assumption that nuclear capacity factors will settle down to a rate higher than the rate previously assumed. Furthermore, five nuclear units are projected to become operable in 1989 and 1990 with an estimated net capacity addition of 5,594 megawatts.

Assuming that normal precipitation levels prevail for the remainder of 1989 and 1990, hydroelectric generation is projected to rebound sharply, growing by 18 percent in 1989 and 9.0 percent in 1990. Because of continued effects of the drought in 1987 and 1988 on reservoir levels, hydroelectric generation probably will not return to normal levels in all regions until 1990.

Combined generation from petroleum and natural gas is projected to decrease by 4.9 percent in 1989 and by 0.6 percent in 1990. The large increase in hydroelectric generation and modest increases in nuclear generation leave little room for increases in petroleum and natural gas generation. After high levels of petroleum use in 1988, oil generation is likely to decline by about 17 percent in 1989.



**Figure 18. Electricity Generation by Fuel Source**

Sources: **History:** Energy Information Administration, *Electric Power Monthly*, DOE/EIA-0226(89/01) (Washington, DC, 1989). **Projections:** Table 16.

## **Special Topics**

- **Summer Outlook for Motor Gasoline**
- **Effects of Regional Trends in Power Availability on Utility Fossil Fuel Consumption**
- **Will the 1989 Summer Be Hotter Than Normal?**



## Summer Outlook for Motor Gasoline

**Demand for motor gasoline** is expected to continue growing this summer and reach levels for the third quarter that are about 1.9 percent higher than last year's. This year's rate of growth in summer demand will be noticeably higher than the rate for 1987 to 1988, partly because of a slowing in the rate of improvement in vehicle efficiency (or mpg growth). Assumed average mpg growth of 1.0 percent will still offset, in part, projected increases in miles traveled. It is likely, given the strong growth in highway travel last summer, that the product supplied figures for last year were relatively low due to above-normal consumption from secondary and tertiary stocks for summer driving. Projected peak-period demand for 1989 represents a 10-year high, the result of a 1.9-percent average growth rate for 1982 to 1989.

As the summer driving season approaches, the situation for **gasoline stocks** appears to be good, with finished motor gasoline stocks expected to reach a level at the end of June that is 10.6 million barrels ahead of the same period in 1988. However, supply problems may appear as domestic refiners will be required to fine tune already-strained processing capabilities for higher octane and higher quality unleaded product. The ability of domestic refiners to meet this challenge may be a key factor in the determination of wholesale and pump price increases (and of domestic refining and marketing profits) this summer. Another factor will be the availability and price of gasoline imports.

Retail **gasoline prices** are expected to average \$1.09 per gallon during the third quarter, over 10 percent higher than last summer. The price jump fundamentally reflects pass-throughs of earlier increases in crude oil prices. This is only the second time in 9 years that retail gasoline prices will have increased in inflation-adjusted terms as well as in nominal terms. These prices are the base case prices for the current *Outlook* and are based on the assumption that, despite primary stocks being expected to fall well within the normal range at the end of spring, some upward pressure on gasoline prices at the wholesale level will be forthcoming. Higher crude oil and other variable costs and continued high refiner gross margins are expected to contribute to the higher prices at the pump this summer. No increase in the Federal excise tax on motor gasoline is assumed for this summer, although an estimated 1 cent per gallon in increased State gasoline levies is factored in.

Restrictions on **Reid Vapor Pressure** levels for highway motor gasoline are expected to go into effect in a number of States this spring, particularly in the northeast region of the country. The actual effect of the standard on gasoline prices will depend on the flexibility of the refiner to use a variety of alternative means to achieve it. Of the 140,000 barrels per day additional motor gasoline expected to be supplied during the third quarter compared to last summer, it is assumed that enough refining capacity will be available to allow half of the increase to be met by increased domestic production. This situation will be adequate if an expected increase in gasoline imports in 1989, averaging 60,000 barrels per day for the year, is attainable. For example, the increase in gasoline stockpiles anticipated for late spring (relative to 1988) depends entirely on increased imports in the second quarter.

Total domestic **motor vehicle-miles traveled** (VMT) is expected to be 3.0 percent higher this summer compared to last year, according to the current base case. In 1988, a 3.2-percent jump in VMT was accompanied by a 0.9-percent increase in motor gasoline demand during the peak season. This pattern was somewhat anomalous and probably reflects relatively low shipments from primary supply during the summer because of relatively high consumption out of secondary and tertiary storage during the 1988 third quarter. Continued growth in average fleet efficiency should hold this summer's increase in gasoline demand to 1.9 percent, or 0.14 million barrels per day.

## Effects of Regional Trends in Power Availability on Utility Fossil Fuel Consumption

Earlier in this *Outlook*, electricity fuel consumption patterns were discussed in general terms. However, there are regional trends in power availability which affect the use of fossil fuels at electric utilities over the short term. For instance, the resurgence of hydroelectric power is not uniform across all regions. Some regions had below normal precipitation in the fall of 1988 and early winter of 1989, which will impede the return of normal hydroelectric generation. Even when precipitation returns to normal, much of it will be used to replenish the reservoir levels. In 1989, the Pacific Northwest and the Southwest are both projected to show strong recoveries. In the Northeast, hydroelectric generation is projected to be near normal while in the mid-Pacific and many of the Central States complete recovery is not expected in 1989 due to continued below normal precipitation during early winter 1989.

National average historical trends indicate that a one kilowatthour increase in hydroelectric generation, displaces roughly one-half kilowatthour of coal generation and one-half kilowatthour of generation by other fuels, most notably petroleum and natural gas. Of course, regionally this rule depends more precisely on the mix of regional generation capability. In 1989, much of the increase in hydroelectric generation is from hydroelectricity generated in the Pacific Northwest which has relatively few coal plants. Nonetheless, some increase in hydroelectricity does occur in areas with significant coal usage.

After jumping from 57.5 percent in 1987 to 63.5 percent in 1988, nuclear capacity factors are projected to settle down to 62.6 percent in 1989. Because of this decrease in plant utilization, nuclear generation would be expected to decline in 1989, except that three new plants are due to come on line this year. South Texas 2 became operable in March 1989, adding 1,239 megawatts of capacity. Vogtle 2 in the South Atlantic region and Limerick 2 in the Middle Atlantic region are expected to become operable in April and November of 1989, respectively. Assuming that each of these units operates at 50 percent of capacity from the date of first operation, over 9 billion kilowatthours of generation will be provided from these plants in 1989. Also, Browns Ferry 2 in the East South Central region and Peach Bottom 2 and 3 in the Middle Atlantic region are expected to resume operations in 1989. Because nuclear power is not expected to increase its share of total generation significantly in 1989 and 1990, it should not displace fossil fuel generation to any great degree. Moreover, since the nuclear capacity additions are occurring in regions which have significant coal, petroleum, and gas use, the increase in nuclear generation should not cause a reduction in the use of any particular fuel in the aggregate.

Coal-fired generation was strong in 1988, showing a 5-percent growth rate compared to 1987. All regions showed growth in coal-fired generation, with the Mountain States showing particularly large increases because of their need to replace hydroelectric power. Due to lower growth in total electricity demand and the return of hydroelectric power, growth in coal-fired generation is projected to drop to 0.3 percent in 1989 and 2.5 percent in 1990. Most of the increase in coal generation will be met by an increase in capacity utilization, which is projected to average 1.3 percent per year over the 2-year forecast period. Some regions of the country will gain new capacity in 1989. In Alabama, 706 megawatts of new capacity came on line in February, and Indiana is expected to gain 1,300 megawatts in December.

The use of petroleum at electric utilities surged in 1988. Compared to 1987, large increases occurred in the first, third, and fourth quarters. Of the four regions which used petroleum to generate more than 10 billion kilowatthours in 1988, the Pacific region showed the largest increase in percentage terms, with a 152-percent increase in oil-fired generation in the fourth quarter of 1988. The other three large petroleum-using regions also had sizable increases in this quarter: New England, 20 percent; Middle Atlantic, 48 percent; and South Atlantic, 142 percent. Not surprisingly, these large increases in oil-fired generation were mirrored by large decreases in natural gas generation. This fuel switching phenomenon was very marked in the fourth quarter of 1988, because the price of oil actually fell below the price of gas in some markets.

## Will the 1989 Summer Be Hotter Than Normal?

An important assumption of the *Outlook* is that the monthly average temperature is assumed to equal the 30-year normal, and, in view of the severe weather patterns observed in recent years, this assumption needs to be put into perspective. During the warmest summer months (June through August) of 1988, the temperature averaged 15 percent above normal and caused greater use of air-conditioning. This article considers the 1988 summer weather in the context of other summers and examines the potential for similar weather in the 1989 summer. For the purpose of this analysis, two alternative historical periods were examined: 1951 to 1988 and 1979 to 1988. The mean and variance of June through August cumulative cooling degree-days were estimated.

### National Summer Cooling Degree-Days

Cooling Degree-Days <sup>a</sup>	Summer of Year	Percent Change From Average	Probability of Occurrence <sup>b</sup>
Average . . . . .	1951-1988	0	50%
Last Year . . . . .	1988	15	2%
Hottest Year . . . . .	1952	16	2%
Coollest Year . . . . .	1965	-12	7%

<sup>a</sup>Population-weighted

<sup>b</sup>The chance of matching or exceeding the extreme cooling degree-days of the hottest year, assuming that cooling degree-days are normally distributed.

Sources: Statistics provided by the Energy Information Administration, Energy Analysis and Forecasting Division, based on cooling degree-days information published by the National Oceanographic and Atmospheric Administration.

Compared to either a 38-year average or the most recent 10-year average, the summer weather of 1988 was unusually hot. To see how unusual last summer was consider the adjacent table.

Using the 38-year sample period, and assuming that cooling degree-days<sup>3</sup> are normally distributed across years, estimates of the probability of a repeat of the summer of 1988 can be deduced. The estimated mean cooling degree-days from the 38-year period is 812, and the standard deviation is estimated to be 62.

Based on this information, the probability of a recurrence of temperatures as severe or worse than last year is about 2 percent (a once in 50-year occurrence). This rivals in severity the absolutely hottest June through August period observed over the period (1952). Thus according

to the conventional 30-year average, last summer's weather was indeed unusual.

While it is true that last summer's weather was highly anomalous, it seems somewhat less so considering only the most recent 10 years, rather than the longer period. Mean peak summer month cooling degree-days for 1979 to 1988 is estimated as 831, or about 2 percent above the 38-year average (see the next table). However, a t-test performed to evaluate this difference failed to support the hypothesis that the means were different, at the 5-percent level of significance.

Despite these results, an even more striking pattern apparent in the cooling degree-day data is revealed in Figure 19. For the 38-year period examined here at least, a cycle for cooling degree-days can be discerned particularly if one considers a 3-year moving average (heavy line). From 1952 through 1966, temperatures tended to decline over time. Temperature change more or less leveled off until 1975. After 1975, summer temperature appeared to drift upward over time. There is also an apparent increased variability of temperature around the trend.

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<sup>3</sup> A cooling degree-day is the average temperature excess over 65 degrees Fahrenheit, calculated as the simple average of the daily minimum and maximum temperatures less 65. Resultant values less than zero are taken as 0.

**Expected Average Cooling Degree-Days  
in Summer 1989, Based on 38-Year  
and 10-Year Averages**

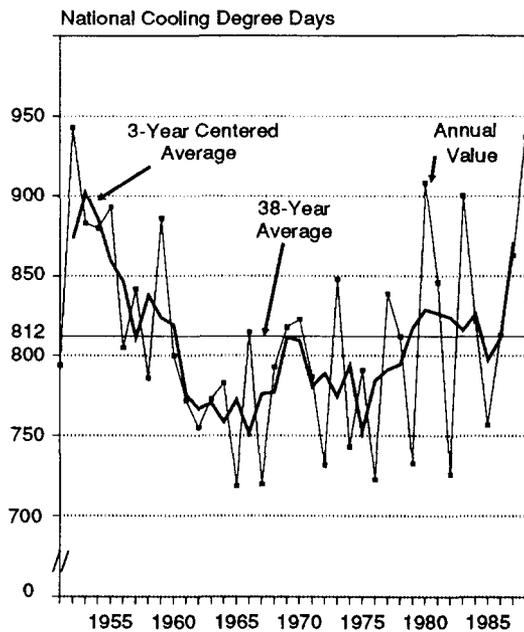
	38 Years (1951-1988)	10 Years (1979-1988)
Lower Confidence Limit . . . . .	711	708
Average . . . . .	812	831
Upper Confidence Limit* . . . . .	914	953

\*The lower and upper ranges represent the temperature range that is expected in 95 percent of the observations in a sample period.

Sources: Statistics provided by the Energy Information Administration, Energy Analysis and Forecasting Division, based on cooling degree-days information published by the National Oceanographic and Atmospheric Administration.

If Figure 19 can be taken as indicative of a true weather trend, it might be surmised that a summer significantly hotter than a mean value (38-year or 10-year) is not unlikely this year.

Last summer, the very hot temperature put a severe strain on the electricity supply system, particularly in the Northeast and Mid-Atlantic regions. In the absence of any other information beyond long-run temperature averages, it could be assumed that a recurrence of last summer's conditions is highly unlikely. This article provides the basis for counselling some caution in adopting such an assumption and provides an initial framework for further and more detailed research into the issue of weather variability and its potential impact on energy use. As the downward trend in the 1950's shows, the current warming trend could as easily be reversed this year.



**Figure 19. Four Decades of Cooling Degree-Days**

Sources: Statistics provided by the Energy Information Administration, Energy Analysis and Forecasting Division, based on cooling degree-days information published by the National Oceanographic and Atmospheric Administration.

## **Detailed Tables**



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

	1988				1989				1990				Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1988	1989	1990
<b>Supply <sup>a</sup></b>															
<b>Production</b>															
U.S. (50 States) .....	<b>10.66</b>	<b>10.54</b>	<b>10.33</b>	<b>10.36</b>	<i>10.17</i>	<i>10.19</i>	<i>10.20</i>	<i>10.26</i>	<i>10.28</i>	<i>10.18</i>	<i>10.09</i>	<i>10.06</i>	<b>10.47</b>	<i>10.21</i>	<i>10.15</i>
OPEC .....	<b>19.55</b>	<b>20.39</b>	<b>21.71</b>	<b>24.25</b>	<i>21.89</i>	<i>21.70</i>	<i>21.70</i>	<i>22.00</i>	<i>22.00</i>	<i>21.60</i>	<i>22.00</i>	<i>22.50</i>	<b>21.48</b>	<i>21.82</i>	<i>22.03</i>
Other Non-OPEC .....	<b>16.96</b>	<b>16.60</b>	<b>16.42</b>	<b>16.56</b>	<i>16.49</i>	<i>16.66</i>	<i>17.09</i>	<i>17.19</i>	<i>17.23</i>	<i>17.09</i>	<i>17.27</i>	<i>17.53</i>	<b>16.64</b>	<i>16.86</i>	<i>17.28</i>
Total Market Economies .....	<b>47.17</b>	<b>47.53</b>	<b>48.46</b>	<b>51.17</b>	<i>48.55</i>	<i>48.55</i>	<i>49.00</i>	<i>49.44</i>	<i>49.51</i>	<i>48.87</i>	<i>49.36</i>	<i>50.09</i>	<b>48.59</b>	<i>48.89</i>	<i>49.46</i>
Net Communist Exports .....	<b>2.06</b>	<b>2.54</b>	<b>2.61</b>	<b>2.25</b>	<i>1.95</i>	<i>2.45</i>	<i>2.60</i>	<i>2.35</i>	<i>1.95</i>	<i>2.45</i>	<i>2.60</i>	<i>2.35</i>	<b>2.37</b>	<i>2.34</i>	<i>2.34</i>
Total Supply .....	<b>49.22</b>	<b>50.07</b>	<b>51.08</b>	<b>53.42</b>	<i>50.50</i>	<i>51.00</i>	<i>51.60</i>	<i>51.80</i>	<i>51.46</i>	<i>51.32</i>	<i>51.97</i>	<i>52.44</i>	<b>50.95</b>	<i>51.23</i>	<i>51.80</i>
<b>Net Stock Withdrawals or Additions (-)</b>															
U.S. (50 States Excluding SPR) .....	<b>.58</b>	<b>-.52</b>	<b>-.13</b>	<b>.36</b>	<i>.38</i>	<i>-.34</i>	<i>-.51</i>	<i>.27</i>	<i>.59</i>	<i>-.35</i>	<i>-.47</i>	<i>.30</i>	<b>.07</b>	<i>-.05</i>	<i>.02</i>
U.S. SPR .....	<b>-.05</b>	<b>-.06</b>	<b>-.05</b>	<b>-.05</b>	<i>-.07</i>	-.07	-.07	-.07	-.07	-.07	-.07	<i>-.08</i>	<b>-.05</b>	<i>-.07</i>	<i>-.07</i>
Other Market Economies .....	<b>.84</b>	<b>-1.10</b>	<b>-1.42</b>	<b>-.90</b>	<i>1.01</i>	<i>-1.36</i>	<i>-.75</i>	<i>.36</i>	<i>.68</i>	<i>-1.06</i>	<i>-.51</i>	<i>.42</i>	<b>-.65</b>	<i>-.19</i>	<i>-.12</i>
Total Stock Withdrawals .....	<b>1.37</b>	<b>-1.67</b>	<b>-1.60</b>	<b>-.60</b>	<i>1.32</i>	<i>-1.77</i>	<i>-1.33</i>	<i>.56</i>	<i>1.20</i>	<i>-1.48</i>	<i>-1.06</i>	<i>.65</i>	<b>-.63</b>	<i>-.31</i>	<i>-.18</i>
<b>Product Supplied</b>															
U.S. (50 States) .....	<b>17.44</b>	<b>16.53</b>	<b>16.92</b>	<b>17.78</b>	<i>17.54</i>	<i>16.95</i>	<i>17.16</i>	<i>17.61</i>	<i>17.63</i>	<i>17.05</i>	<i>17.30</i>	<i>17.82</i>	<b>17.17</b>	<i>17.32</i>	<i>17.45</i>
U.S. Territories .....	<b>.19</b>	<b>.20</b>	<b>.20</b>	<b>.16</b>	<i>.19</i>	<i>.21</i>	<i>.20</i>	<i>.20</i>	<i>.19</i>	<i>.21</i>	<i>.20</i>	<i>.20</i>	<b>.19</b>	<i>.20</i>	<i>.20</i>
Canada .....	<b>1.57</b>	<b>1.52</b>	<b>1.61</b>	<b>1.72</b>	<i>1.58</i>	<i>1.60</i>	<i>1.66</i>	<i>1.73</i>	<i>1.59</i>	<i>1.61</i>	<i>1.67</i>	<i>1.75</i>	<b>1.61</b>	<i>1.64</i>	<i>1.65</i>
Japan .....	<b>5.24</b>	<b>4.15</b>	<b>4.27</b>	<b>5.30</b>	<i>5.46</i>	<i>4.31</i>	<i>4.52</i>	<i>5.32</i>	<i>5.57</i>	<i>4.40</i>	<i>4.61</i>	<i>5.43</i>	<b>4.74</b>	<i>4.90</i>	<i>5.00</i>
Australia and New Zealand .....	<b>.73</b>	<b>.75</b>	<b>.75</b>	<b>.77</b>	<i>.73</i>	<i>.77</i>	<i>.77</i>	<i>.78</i>	<i>.74</i>	<i>.78</i>	<i>.78</i>	<i>.79</i>	<b>.75</b>	<i>.76</i>	<i>.77</i>
OECD Europe .....	<b>12.26</b>	<b>11.69</b>	<b>12.02</b>	<b>13.06</b>	<i>12.56</i>	<i>11.80</i>	<i>12.35</i>	<i>12.80</i>	<i>12.97</i>	<i>11.89</i>	<i>12.45</i>	<i>12.90</i>	<b>12.26</b>	<i>12.38</i>	<i>12.55</i>
Total OECD .....	<b>37.43</b>	<b>34.84</b>	<b>35.77</b>	<b>38.79</b>	<i>38.05</i>	<i>35.64</i>	<i>36.65</i>	<i>38.43</i>	<i>38.69</i>	<i>35.94</i>	<i>37.01</i>	<i>38.88</i>	<b>36.71</b>	<i>37.19</i>	<i>37.63</i>
Other Market Economies .....	<b>13.68</b>	<b>13.60</b>	<b>13.60</b>	<b>13.90</b>	<i>14.01</i>	<i>13.93</i>	<i>13.92</i>	<i>14.23</i>	<i>14.28</i>	<i>14.20</i>	<i>14.20</i>	<i>14.51</i>	<b>13.69</b>	<i>14.02</i>	<i>14.30</i>
Total Market Economies .....	<b>51.10</b>	<b>48.44</b>	<b>49.36</b>	<b>52.69</b>	<i>52.06</i>	<i>49.57</i>	<i>50.57</i>	<i>52.66</i>	<i>52.97</i>	<i>50.14</i>	<i>51.20</i>	<i>53.39</i>	<b>50.40</b>	<i>51.21</i>	<i>51.92</i>
Statistical Discrepancy .....	<b>.51</b>	<b>.04</b>	<b>-.11</b>	<b>-.13</b>	<i>.24</i>	<i>.33</i>	<i>.31</i>	<i>.30</i>	<i>.30</i>	<i>.30</i>	<i>.29</i>	<i>.30</i>	<b>.07</b>	<i>.29</i>	<i>.30</i>
Closing Stocks (billion barrels) .....	<b>4.98</b>	<b>5.13</b>	<b>5.28</b>	<b>5.34</b>	<i>5.22</i>	<i>5.38</i>	<i>5.50</i>	<i>5.45</i>	<i>5.34</i>	<i>5.48</i>	<i>5.57</i>	<i>5.51</i>	<b>5.34</b>	<i>5.45</i>	<i>5.51</i>

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

SPR: Strategic Petroleum Reserve

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

Sources: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(89/01); and *International Energy Annual 1987*, DOE/EIA-0219(87); Organization for Economic Cooperation and Development, Monthly Oil Statistics Database through December 1988.

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

	Annual Average 1977-1987	1988	1989	1990
OECD Total <sup>a</sup> .....	<b>2.7</b>	<b>3.9</b>	<i>3.0</i>	<i>2.1</i>
United States <sup>b</sup> .....	<b>2.7</b>	<b>3.9</b>	<i>2.6</i>	<i>1.5</i>
Western Europe .....	<b>2.3</b>	<b>3.5</b>	<i>3.0</i>	<i>2.3</i>
Japan .....	<b>4.1</b>	<b>5.6</b>	<i>4.4</i>	<i>3.3</i>
Other OECD <sup>c</sup> .....	<b>3.0</b>	<b>3.7</b>	<i>2.6</i>	<i>1.6</i>

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

<sup>b</sup> Gross national product.

<sup>c</sup> Canada, Australia, and New Zealand.

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

Sources: U.S. historical data and forecasts: Data Resources, Inc., United States Forecast, CONTROL0489; Non-U.S. historical data: The WEFA Group, *World Economic Service: Historical Data*, April 1988 and *World Economic Outlook: Developed Economies Volume*, April 1989. Non-U.S. forecasts: Energy Information Administration, Office of Energy Markets and End Use, International and Contingency Information Division.

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

Assumptions	1988				1989	World Oil Price Case	1989			1990				Year		
	1st	2nd	3rd	4th	1st		2nd	3rd	4th	1st	2nd	3rd	4th	1988	1989	1990
<b>Macroeconomic <sup>a</sup></b>																
Real Gross National Product (billion 1982 dollars) .....	<b>3,956</b>	<b>3,985</b>	<b>4,009</b>	<b>4,033</b>	<b>4,083</b>	Low	<i>4,127</i>	<i>4,155</i>	<i>4,202</i>	<i>4,219</i>	<i>4,237</i>	<i>4,247</i>	<i>4,280</i>		<i>4,142</i>	<i>4,246</i>
						Base	<i>4,099</i>	<i>4,097</i>	<i>4,115</i>	<i>4,132</i>	<i>4,150</i>	<i>4,159</i>	<i>4,192</i>	<b>3,996</b>	<i>4,099</i>	<i>4,158</i>
						High	<i>4,070</i>	<i>4,040</i>	<i>4,029</i>	<i>4,045</i>	<i>4,063</i>	<i>4,072</i>	<i>4,104</i>		<i>4,056</i>	<i>4,071</i>
Percentage Change from Prior Year .....	<b>4.8</b>	<b>4.2</b>	<b>3.7</b>	<b>2.8</b>	<b>3.2</b>	Low	<i>3.6</i>	<i>3.6</i>	<i>4.2</i>	<i>3.3</i>	<i>2.7</i>	<i>2.2</i>	<i>1.9</i>		<i>3.6</i>	<i>2.5</i>
						Base	<i>2.8</i>	<i>2.2</i>	<i>2.0</i>	<i>1.2</i>	<i>1.3</i>	<i>1.5</i>	<i>1.9</i>	<b>3.9</b>	<i>2.6</i>	<i>1.5</i>
						High	<i>2.1</i>	<i>.8</i>	<i>-.1</i>	<i>-.9</i>	<i>-.2</i>	<i>.8</i>	<i>1.9</i>		<i>1.5</i>	<i>.4</i>
GNP Implicit Price Deflator (index, 1982=1.000) .....	<b>1.194</b>	<b>1.210</b>	<b>1.224</b>	<b>1.240</b>	<b>1.253</b>	Low	<i>1.266</i>	<i>1.280</i>	<i>1.286</i>	<i>1.300</i>	<i>1.316</i>	<i>1.333</i>	<i>1.344</i>		<i>1.271</i>	<i>1.323</i>
						Base	<i>1.269</i>	<i>1.285</i>	<i>1.295</i>	<i>1.309</i>	<i>1.325</i>	<i>1.342</i>	<i>1.353</i>	<b>1.217</b>	<i>1.276</i>	<i>1.332</i>
						High	<i>1.272</i>	<i>1.291</i>	<i>1.304</i>	<i>1.318</i>	<i>1.334</i>	<i>1.351</i>	<i>1.362</i>		<i>1.280</i>	<i>1.341</i>
Percentage Change from Prior Year .....	<b>2.7</b>	<b>3.2</b>	<b>3.6</b>	<b>4.3</b>	<b>4.9</b>	Low	<i>4.6</i>	<i>4.6</i>	<i>3.7</i>	<i>3.8</i>	<i>3.9</i>	<i>4.1</i>	<i>4.5</i>		<i>4.5</i>	<i>4.1</i>
						Base	<i>4.9</i>	<i>5.0</i>	<i>4.4</i>	<i>4.5</i>	<i>4.4</i>	<i>4.4</i>	<i>4.5</i>	<b>3.4</b>	<i>4.8</i>	<i>4.4</i>
						High	<i>5.1</i>	<i>5.5</i>	<i>5.2</i>	<i>5.2</i>	<i>4.9</i>	<i>4.6</i>	<i>4.4</i>		<i>5.2</i>	<i>4.8</i>
Real Disposable Personal Income <sup>b</sup> .....	<b>2,762</b>	<b>2,762</b>	<b>2,800</b>	<b>2,828</b>	<b>2,878</b>	Low	<i>2,892</i>	<i>2,915</i>	<i>2,957</i>	<i>2,975</i>	<i>2,966</i>	<i>2,958</i>	<i>2,982</i>		<i>2,911</i>	<i>2,970</i>
						Base	<i>2,871</i>	<i>2,873</i>	<i>2,893</i>	<i>2,910</i>	<i>2,902</i>	<i>2,894</i>	<i>2,918</i>	<b>2,788</b>	<i>2,879</i>	<i>2,906</i>
						High	<i>2,850</i>	<i>2,831</i>	<i>2,829</i>	<i>2,846</i>	<i>2,837</i>	<i>2,830</i>	<i>2,853</i>		<i>2,847</i>	<i>2,842</i>
Percentage Change from Prior Year .....	<b>3.1</b>	<b>4.1</b>	<b>4.3</b>	<b>3.6</b>	<b>4.2</b>	Low	<i>4.7</i>	<i>4.1</i>	<i>4.5</i>	<i>3.4</i>	<i>2.5</i>	<i>1.5</i>	<i>.9</i>		<i>4.4</i>	<i>2.1</i>
						Base	<i>3.9</i>	<i>2.6</i>	<i>2.3</i>	<i>1.1</i>	<i>1.1</i>	<i>.7</i>	<i>.9</i>	<b>3.8</b>	<i>3.2</i>	<i>.9</i>
						High	<i>3.2</i>	<i>1.1</i>	<i>.0</i>	<i>-1.1</i>	<i>-.4</i>	<i>.0</i>	<i>.9</i>		<i>2.1</i>	<i>-.2</i>
Index of Industrial Production (Mfg.) .....	<b>1.396</b>	<b>1.416</b>	<b>1.440</b>	<b>1.458</b>	<b>1.476</b>	Low	<i>1.497</i>	<i>1.513</i>	<i>1.544</i>	<i>1.556</i>	<i>1.561</i>	<i>1.566</i>	<i>1.584</i>		<i>1.508</i>	<i>1.567</i>
						Base	<i>1.474</i>	<i>1.467</i>	<i>1.475</i>	<i>1.486</i>	<i>1.491</i>	<i>1.495</i>	<i>1.513</i>	<b>1.428</b>	<i>1.473</i>	<i>1.496</i>
						High	<i>1.450</i>	<i>1.420</i>	<i>1.405</i>	<i>1.416</i>	<i>1.421</i>	<i>1.425</i>	<i>1.442</i>		<i>1.438</i>	<i>1.426</i>
Percentage Change from Prior Year .....	<b>6.1</b>	<b>6.3</b>	<b>6.1</b>	<b>5.7</b>	<b>5.7</b>	Low	<i>5.7</i>	<i>5.1</i>	<i>5.9</i>	<i>5.4</i>	<i>4.3</i>	<i>3.5</i>	<i>2.6</i>		<i>5.6</i>	<i>3.9</i>
						Base	<i>4.1</i>	<i>1.9</i>	<i>1.2</i>	<i>.7</i>	<i>1.2</i>	<i>1.9</i>	<i>2.6</i>	<b>6.0</b>	<i>3.2</i>	<i>1.6</i>
						High	<i>2.4</i>	<i>-1.4</i>	<i>-3.6</i>	<i>-4.1</i>	<i>-2.0</i>	<i>.4</i>	<i>2.6</i>		<i>.8</i>	<i>-.8</i>
<b>Oil Price</b>																
Imported Crude Oil Price <sup>c</sup> (U.S. dollars/barrel) .....	<b>15.48</b>	<b>15.75</b>	<b>14.36</b>	<b>13.21</b>	<b>16.65</b>	Low	<i>15.00</i>		<i>15.40</i>	<i>15.00</i>						
						Base	<i>17.50</i>	<i>17.00</i>	<i>17.00</i>	<i>17.00</i>	<i>17.00</i>	<i>17.00</i>	<i>17.00</i>	<b>14.64</b>	<i>17.00</i>	<i>17.00</i>
						High	19.00	19.00	19.00	19.00	19.00	19.00	<i>19.00</i>		<i>18.40</i>	<i>19.00</i>
U.S. Refiners' Cost <sup>d</sup> (U.S. dollars/barrel) .....	<b>15.51</b>	<b>15.74</b>	<b>14.36</b>	<b>13.22</b>	<b>16.65</b>	Low	<i>15.00</i>		<i>15.40</i>	<i>15.00</i>						
						Base	<i>17.50</i>	<i>17.00</i>	<i>17.00</i>	<i>17.00</i>	<i>17.00</i>	<i>17.00</i>	<i>17.00</i>	<b>14.71</b>	<i>17.00</i>	<i>17.00</i>
						High	<i>19.00</i>		<i>18.40</i>	<i>19.00</i>						
<b>Weather <sup>e</sup></b>																
Heating Degree Days .....	<b>2,451</b>	<b>523</b>	<b>83</b>	<b>1,729</b>	<b>2,271</b>		<i>536</i>	<i>88</i>	<i>1,669</i>	<i>2,401</i>	<i>536</i>	<i>88</i>	<i>1,669</i>	<b>4,786</b>	<i>4,565</i>	<i>4,694</i>
Cooling Degree Days .....	<b>22</b>	<b>327</b>	<b>845</b>	<b>61</b>	<b>28</b>		<i>327</i>	<i>755</i>	<i>63</i>	<i>28</i>	<i>327</i>	<i>755</i>	<i>63</i>	<b>1,255</b>	<i>1,172</i>	<i>1,172</i>

<sup>a</sup> Macroeconomic projections from the Data Resources, Inc., model forecasts are seasonally adjusted at annual rates and modified as appropriate to the three world oil price cases.

<sup>b</sup> Seasonally adjusted at annual rates.

<sup>c</sup> Cost of imported crude oil to U.S. refiners.

<sup>d</sup> U.S. Refiner Acquisition Cost of foreign and domestic crude oil.

<sup>e</sup> Population-weighted average degree days, revised December 1981. A degree day indicates the temperature variation from 65 degrees Fahrenheit (calculated as the simple average of the daily minimum and maximum temperatures).

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

Sources: Historical data: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(89/01); U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, December 1988; 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.12.3*, December 1988. Macroeconomic projections are based on modifications to Data Resources, Inc., Forecast CONTROL0489.

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

Product	1988				1989	World Oil Price Case	1989			1990				Year		
	1st	2nd	3rd	4th	1st		2nd	3rd	4th	1st	2nd	3rd	4th	1988	1989	1990
<b>Petroleum</b>																
Imported Crude Oil Price <sup>a</sup> (dollars per barrel) .....	<b>15.48</b>	<b>15.75</b>	<b>14.36</b>	<b>13.21</b>	<b>16.65</b>	Low	<i>15.00</i>		<i>15.40</i>	<i>15.00</i>						
						Base	<i>17.50</i>	<i>17.00</i>	<i>17.00</i>	<i>17.00</i>	<i>17.00</i>	<i>17.00</i>	<i>17.00</i>	<b>14.64</b>	<i>17.00</i>	<i>17.00</i>
						High	19.00	19.00	19.00	19.00	19.00	19.00	<i>19.00</i>		<i>18.40</i>	<i>19.00</i>
Gasoline <sup>b</sup> (dollars per gallon) .....	<b>.93</b>	<b>.96</b>	<b>.99</b>	<b>.97</b>	<b>.96</b>	Low	<i>1.03</i>	<i>1.03</i>	<i>.99</i>	<i>.93</i>	<i>.95</i>	<i>1.01</i>	<i>1.00</i>		<i>1.00</i>	<i>.97</i>
						Base	<i>1.05</i>	<i>1.09</i>	<i>1.06</i>	<i>1.00</i>	<i>1.02</i>	<i>1.08</i>	<i>1.07</i>	<b>.96</b>	<i>1.04</i>	<i>1.04</i>
						High	<i>1.07</i>	<i>1.14</i>	<i>1.12</i>	<i>1.07</i>	<i>1.08</i>	<i>1.15</i>	<i>1.13</i>		<i>1.07</i>	<i>1.11</i>
No. 2 Diesel Oil, Retail (dollars per gallon) .....	<b>.93</b>	<b>.93</b>	<b>.90</b>	<b>.89</b>	<b>.92</b>	Low	<i>.90</i>	<i>.89</i>	<i>.92</i>	<i>.91</i>	<i>.89</i>	<i>.89</i>	<i>.92</i>		<i>.91</i>	<i>.90</i>
						Base	<i>.92</i>	<i>.92</i>	<i>.95</i>	<i>.94</i>	<i>.92</i>	<i>.92</i>	<i>.95</i>	<b>.91</b>	<i>.93</i>	<i>.93</i>
						High	<i>.94</i>	<i>.95</i>	<i>.98</i>	<i>.97</i>	<i>.94</i>	<i>.95</i>	<i>.98</i>		<i>.95</i>	<i>.96</i>
No. 2 Heating Oil, Wholesale (dollars per gallon) .....	<b>.50</b>	<b>.49</b>	<b>.44</b>	<b>.46</b>	<b>.52</b>	Low	<i>.46</i>	<i>.47</i>	<i>.51</i>	<i>.49</i>	<i>.46</i>	<i>.47</i>	<i>.51</i>		<i>.50</i>	<i>.49</i>
						Base	<i>.52</i>	<i>.52</i>	<i>.57</i>	<i>.55</i>	<i>.51</i>	<i>.52</i>	<i>.57</i>	<b>.47</b>	<i>.53</i>	<i>.54</i>
						High	<i>.55</i>	<i>.57</i>	<i>.62</i>	<i>.60</i>	<i>.56</i>	<i>.57</i>	<i>.63</i>		<i>.57</i>	<i>.59</i>
No. 2 Heating Oil, Retail (dollars per gallon) .....	<b>.84</b>	<b>.82</b>	<b>.75</b>	<b>.78</b>	<b>.85</b>	Low	<i>.78</i>	<i>.75</i>	<i>.80</i>	<i>.83</i>	<i>.79</i>	<i>.77</i>	<i>.82</i>		<i>.80</i>	<i>.81</i>
						Base	<i>.84</i>	<i>.81</i>	<i>.87</i>	<i>.89</i>	<i>.85</i>	<i>.83</i>	<i>.88</i>	<b>.81</b>	<i>.84</i>	<i>.87</i>
						High	<i>.86</i>	<i>.87</i>	<i>.93</i>	<i>.96</i>	<i>.91</i>	<i>.89</i>	<i>.94</i>		<i>.88</i>	<i>.93</i>
No. 6 Residual Fuel Oil <sup>c</sup> (dollars per barrel) .....	<b>14.76</b>	<b>13.94</b>	<b>13.67</b>	<b>13.68</b>	<b>15.76</b>	Low	<i>14.55</i>	<i>14.49</i>	<i>15.21</i>	<i>15.61</i>	<i>14.23</i>	<i>14.54</i>	<i>15.28</i>		<i>15.30</i>	<i>14.98</i>
						Base	<i>16.04</i>	<i>16.15</i>	<i>16.97</i>	<i>17.39</i>	<i>15.87</i>	<i>16.21</i>	<i>17.03</i>	<b>14.05</b>	<i>16.22</i>	<i>16.69</i>
						High	<i>17.36</i>	<i>18.04</i>	<i>18.98</i>	<i>19.41</i>	<i>17.72</i>	<i>18.10</i>	<i>19.02</i>		<i>17.69</i>	<i>18.62</i>
<b>Electric Utility Fuels</b>																
Coal (dollars per million Btu) .....	<b>1.48</b>	<b>1.49</b>	<b>1.45</b>	<b>1.46</b>	<b>1.49</b>	Low	<i>1.48</i>	<i>1.47</i>	<i>1.46</i>	<i>1.46</i>	<i>1.46</i>	<i>1.46</i>	<i>1.45</i>		<i>1.47</i>	<i>1.46</i>
						Base	<i>1.52</i>	<i>1.53</i>	<i>1.54</i>	<i>1.56</i>	<i>1.57</i>	<i>1.58</i>	<i>1.59</i>	<b>1.47</b>	<i>1.52</i>	<i>1.58</i>
						High	<i>1.54</i>	<i>1.57</i>	<i>1.59</i>	<i>1.61</i>	<i>1.63</i>	<i>1.64</i>	<i>1.65</i>		<i>1.55</i>	<i>1.63</i>
Heavy Oil <sup>d</sup> (dollars per million Btu) .....	<b>2.53</b>	<b>2.37</b>	<b>2.36</b>	<b>2.39</b>	<b>2.66</b>	Low	<i>2.46</i>	<i>2.47</i>	<i>2.61</i>	<i>2.66</i>	<i>2.42</i>	<i>2.49</i>	<i>2.63</i>		<i>2.59</i>	<i>2.55</i>
						Base	<i>2.71</i>	<i>2.74</i>	<i>2.89</i>	<i>2.94</i>	<i>2.69</i>	<i>2.75</i>	<i>2.91</i>	<b>2.41</b>	<i>2.75</i>	<i>2.82</i>
						High	<i>2.92</i>	<i>3.04</i>	<i>3.22</i>	<i>3.27</i>	<i>2.98</i>	<i>3.06</i>	<i>3.23</i>		<i>2.99</i>	<i>3.13</i>
Natural Gas (dollars per million Btu) .....	<b>2.39</b>	<b>2.09</b>	<b>2.24</b>	<b>2.43</b>	<b>2.51</b>	Low	<i>2.33</i>	<i>2.34</i>	<i>2.41</i>	<i>2.52</i>	<i>2.38</i>	<i>2.42</i>	<i>2.51</i>		<i>2.41</i>	<i>2.45</i>
						Base	<i>2.47</i>	<i>2.54</i>	<i>2.64</i>	<i>2.74</i>	<i>2.59</i>	<i>2.64</i>	<i>2.74</i>	<b>2.27</b>	<i>2.54</i>	<i>2.67</i>
						High	<i>2.64</i>	<i>2.72</i>	<i>2.82</i>	<i>2.93</i>	<i>2.77</i>	<i>2.82</i>	<i>2.92</i>		<i>2.70</i>	<i>2.85</i>
<b>Other Residential</b>																
Natural Gas (dollars per 1,000 cu. ft.) .....	<b>5.13</b>	<b>5.72</b>	<b>6.72</b>	<b>5.50</b>	<b>5.35</b>	Low	<i>5.76</i>	<i>6.49</i>	<i>5.38</i>	<i>5.20</i>	<i>5.75</i>	<i>6.64</i>	<i>5.58</i>		<i>5.53</i>	<i>5.52</i>
						Base	<i>5.85</i>	<i>6.66</i>	<i>5.54</i>	<i>5.36</i>	<i>5.94</i>	<i>6.85</i>	<i>5.75</i>	<b>5.46</b>	<i>5.62</i>	<i>5.71</i>
						High	<i>5.98</i>	<i>6.88</i>	<i>5.76</i>	<i>5.58</i>	<i>6.19</i>	<i>7.14</i>	<i>5.98</i>		<i>5.72</i>	<i>5.95</i>
Electricity (cents per kilowatthour) .....	<b>7.00</b>	<b>7.59</b>	<b>7.91</b>	<b>7.47</b>	<b>7.13</b>	Low	<i>7.55</i>	<i>7.79</i>	<i>7.40</i>	<i>7.13</i>	<i>7.69</i>	<i>8.00</i>	<i>7.60</i>		<i>7.48</i>	<i>7.60</i>
						Base	<i>7.63</i>	<i>7.93</i>	<i>7.58</i>	<i>7.34</i>	<i>7.95</i>	<i>8.31</i>	<i>7.93</i>	<b>7.50</b>	<i>7.57</i>	<i>7.88</i>
						High	<i>7.70</i>	<i>8.05</i>	<i>7.73</i>	<i>7.48</i>	<i>8.14</i>	<i>8.52</i>	<i>8.15</i>		<i>7.64</i>	<i>8.07</i>

<sup>a</sup> Cost of imported crude oil to U.S. refiners.

<sup>b</sup> Average retail for all grades and services.

<sup>c</sup> Retail residual fuel oil—average, all sulfur contents.

<sup>d</sup> Heavy fuel oil prices include fuel oils No. 4., No. 5, and No. 6, and topped crude fuel oil prices.

Notes: First quarter 1989 is estimated for all fuels. All prices exclude taxes, except gasoline, residential natural gas, and diesel. Historical values are printed in **boldface**, forecasts in *italics*.

Sources: Historical data: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(89/01); and *Petroleum Marketing Monthly*, DOE/EIA-0380(89/01).

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

Supply and Disposition	1988				1989				1990				Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1988	1989	1990
<b>Supply</b>															
Crude Oil Supply															
Domestic Production <sup>a</sup>	<b>8.32</b>	<b>8.21</b>	<b>8.01</b>	<b>7.98</b>	<b>7.79</b>	<i>7.84</i>	<i>7.85</i>	<i>7.88</i>	<i>7.92</i>	<i>7.82</i>	<i>7.73</i>	<i>7.67</i>	<b>8.13</b>	<i>7.84</i>	<i>7.78</i>
Alaska	<b>2.05</b>	<b>2.01</b>	<b>2.00</b>	<b>2.01</b>	<b>1.88</b>	<i>1.99</i>	<i>2.03</i>	<i>2.04</i>	<i>2.03</i>	<i>2.01</i>	<i>1.98</i>	<i>1.95</i>	<b>2.02</b>	<i>1.98</i>	<i>1.99</i>
Lower 48	<b>6.27</b>	<b>6.20</b>	<b>6.01</b>	<b>5.97</b>	<b>5.92</b>	<i>5.86</i>	<i>5.82</i>	<i>5.84</i>	<i>5.89</i>	<i>5.81</i>	<i>5.75</i>	<i>5.73</i>	<b>6.11</b>	<i>5.86</i>	<i>5.79</i>
Net Imports (Including SPR) <sup>b</sup>	<b>4.51</b>	<b>5.01</b>	<b>4.92</b>	<b>5.11</b>	<b>5.21</b>	<i>5.42</i>	<i>5.76</i>	<i>5.40</i>	<i>5.07</i>	<i>5.47</i>	<i>5.93</i>	<i>5.66</i>	<b>4.89</b>	<i>5.45</i>	<i>5.53</i>
Gross Imports (Excluding SPR)	<b>4.65</b>	<b>5.08</b>	<b>5.02</b>	<b>5.21</b>	<b>5.28</b>	<i>5.52</i>	<i>5.86</i>	<i>5.50</i>	<i>5.18</i>	<i>5.57</i>	<i>6.01</i>	<i>5.75</i>	<b>4.99</b>	<i>5.54</i>	<i>5.63</i>
SPR Imports	<b>.05</b>	<b>.06</b>	<b>.05</b>	<b>.05</b>	<b>.07</b>	<i>.07</i>	<i>.07</i>	<i>.07</i>	<i>.07</i>	<i>.07</i>	<i>.07</i>	<i>.08</i>	<b>.05</b>	<i>.07</i>	<i>.07</i>
Exports	<b>.19</b>	<b>.13</b>	<b>.16</b>	<b>.15</b>	<b>.14</b>	<i>.17</i>	<i>.16</i>	<i>.17</i>	<i>.18</i>	<i>.17</i>	<i>.16</i>	<i>.17</i>	<b>.16</b>	<i>.16</i>	<i>.17</i>
SPR Stock Withdrawn or Added (-)	<b>-.05</b>	<b>-.06</b>	<b>-.05</b>	<b>-.05</b>	<b>-.07</b>	<i>-.07</i>	<i>-.07</i>	<i>-.07</i>	<i>-.07</i>	<i>-.07</i>	<i>-.07</i>	<i>-.08</i>	<b>-.05</b>	<i>-.07</i>	<i>-.07</i>
Other Stock Withdrawn or Added (-)	<b>-.05</b>	<b>-.06</b>	<b>.33</b>	<b>-.03</b>	<b>.03</b>	<i>-.07</i>	<i>-.06</i>	<i>.04</i>	<i>-.03</i>	<i>.01</i>	<i>-.03</i>	<i>.05</i>	<b>.05</b>	<i>-.02</i>	<i>.00</i>
Products Supplied and Losses	<b>-.05</b>	<b>-.04</b>	<b>-.03</b>	<b>-.04</b>	<b>-.04</b>	<i>-.05</i>	-.05	-.05	-.05	-.05	-.05	-.05	<b>-.04</b>	<i>-.05</i>	<i>-.05</i>
Unaccounted-for Crude	<b>.24</b>	<b>.33</b>	<b>.42</b>	<b>.31</b>	<b>.09</b>	<i>.18</i>	<i>.15</i>	<i>.15</i>	<i>.15</i>	<i>.15</i>	<i>.14</i>	<i>.15</i>	<b>.32</b>	<i>.14</i>	<i>.15</i>
Crude Oil Input to Refineries	<b>12.93</b>	<b>13.39</b>	<b>13.59</b>	<b>13.27</b>	<b>13.02</b>	<i>13.26</i>	<i>13.59</i>	<i>13.35</i>	<i>13.00</i>	<i>13.32</i>	<i>13.65</i>	<i>13.41</i>	<b>13.30</b>	<i>13.30</i>	<i>13.35</i>
<b>Other Supply</b>															
NGL Production	<b>1.60</b>	<b>1.61</b>	<b>1.62</b>	<b>1.66</b>	<b>1.64</b>	<i>1.61</i>	<i>1.60</i>	<i>1.63</i>	<i>1.64</i>	<i>1.61</i>	<i>1.60</i>	<i>1.63</i>	<b>1.62</b>	<i>1.62</i>	<i>1.62</i>
Other Hydrocarbon and Alcohol Inputs	<b>.06</b>	<b>.05</b>	<b>.06</b>	<b>.06</b>	<b>.06</b>	<i>.06</i>	<i>.07</i>	<i>.07</i>	<i>.06</i>	<i>.06</i>	<i>.07</i>	<i>.07</i>	<b>.06</b>	<i>.06</i>	<i>.07</i>
Crude Oil Product Supplied	<b>.05</b>	<b>.04</b>	<b>.03</b>	<b>.04</b>	<b>.04</b>	<i>.05</i>	.05	.05	.05	.05	.05	.05	<b>.04</b>	<i>.05</i>	<i>.05</i>
Processing Gain	<b>.68</b>	<b>.66</b>	<b>.64</b>	<b>.67</b>	<b>.67</b>	<i>.67</i>	<i>.69</i>	<i>.68</i>	<i>.66</i>	<i>.68</i>	<i>.70</i>	<i>.68</i>	<b>.66</b>	<i>.68</i>	<i>.68</i>
Net Product Imports <sup>c</sup>	<b>1.50</b>	<b>1.23</b>	<b>1.43</b>	<b>1.69</b>	<b>1.76</b>	<i>1.57</i>	<i>1.62</i>	<i>1.59</i>	<i>1.61</i>	<i>1.67</i>	<i>1.69</i>	<i>1.72</i>	<b>1.47</b>	<i>1.63</i>	<i>1.67</i>
Gross Product Imports <sup>c</sup>	<b>2.17</b>	<b>1.91</b>	<b>2.05</b>	<b>2.37</b>	<b>2.50</b>	<i>2.11</i>	<i>2.14</i>	<i>2.18</i>	<i>2.19</i>	<i>2.22</i>	<i>2.20</i>	<i>2.31</i>	<b>2.13</b>	<i>2.23</i>	<i>2.23</i>
Product Exports	<b>.67</b>	<b>.68</b>	<b>.62</b>	<b>.67</b>	<b>.74</b>	<i>.55</i>	<i>.52</i>	<i>.59</i>	<i>.58</i>	<i>.55</i>	<i>.52</i>	<i>.59</i>	<b>.66</b>	<i>.60</i>	<i>.56</i>
Product Stock Withdrawn or Added (-) <sup>d</sup>	<b>.64</b>	<b>-.46</b>	<b>-.46</b>	<b>.39</b>	<b>.35</b>	<i>-.27</i>	<i>-.45</i>	<i>.24</i>	<i>.62</i>	<i>-.36</i>	<i>-.44</i>	<i>.25</i>	<b>.02</b>	<i>-.03</i>	<i>.02</i>
Total Product Supplied, Domestic Use	<b>17.45</b>	<b>16.53</b>	<b>16.92</b>	<b>17.78</b>	<b>17.54</b>	<i>16.95</i>	<i>17.16</i>	<i>17.61</i>	<i>17.63</i>	<i>17.05</i>	<i>17.30</i>	<i>17.82</i>	<b>17.17</b>	<i>17.32</i>	<i>17.45</i>
<b>Disposition</b>															
Motor Gasoline	<b>6.98</b>	<b>7.49</b>	<b>7.45</b>	<b>7.33</b>	<b>7.09</b>	<i>7.57</i>	<i>7.59</i>	<i>7.39</i>	<i>7.12</i>	<i>7.65</i>	<i>7.70</i>	<i>7.51</i>	<b>7.31</b>	<i>7.41</i>	<i>7.50</i>
Jet Fuel	<b>1.48</b>	<b>1.39</b>	<b>1.42</b>	<b>1.49</b>	<b>1.57</b>	<i>1.45</i>	<i>1.48</i>	<i>1.54</i>	<i>1.59</i>	<i>1.49</i>	<i>1.53</i>	<i>1.59</i>	<b>1.45</b>	<i>1.51</i>	<i>1.55</i>
Distillate Fuel Oil	<b>3.52</b>	<b>2.81</b>	<b>2.77</b>	<b>3.31</b>	<b>3.39</b>	<i>3.05</i>	<i>2.87</i>	<i>3.27</i>	<i>3.56</i>	<i>3.07</i>	<i>2.90</i>	<i>3.31</i>	<b>3.10</b>	<i>3.14</i>	<i>3.21</i>
Residual Fuel Oil	<b>1.54</b>	<b>1.10</b>	<b>1.18</b>	<b>1.49</b>	<b>1.47</b>	<i>1.12</i>	<i>1.12</i>	<i>1.28</i>	<i>1.36</i>	<i>1.07</i>	<i>1.07</i>	<i>1.25</i>	<b>1.33</b>	<i>1.25</i>	<i>1.18</i>
Other Oils Supplied <sup>e</sup>	<b>3.92</b>	<b>3.72</b>	<b>4.10</b>	<b>4.16</b>	<b>4.02</b>	<i>3.78</i>	<i>4.10</i>	<i>4.13</i>	<i>4.01</i>	<i>3.77</i>	<i>4.10</i>	<i>4.15</i>	<b>3.98</b>	<i>4.01</i>	<i>4.01</i>
Total Product Supplied	<b>17.44</b>	<b>16.53</b>	<b>16.92</b>	<b>17.78</b>	<b>17.54</b>	<i>16.95</i>	<i>17.16</i>	<i>17.61</i>	<i>17.63</i>	<i>17.05</i>	<i>17.30</i>	<i>17.82</i>	<b>17.17</b>	<i>17.32</i>	<i>17.45</i>
Total Petroleum Net Imports	<b>6.01</b>	<b>6.24</b>	<b>6.35</b>	<b>6.81</b>	<b>6.97</b>	<i>6.99</i>	<i>7.38</i>	<i>7.00</i>	<i>6.68</i>	<i>7.14</i>	<i>7.61</i>	<i>7.39</i>	<b>6.35</b>	<i>7.09</i>	<i>7.21</i>
<b>Closing Stocks (million barrels)</b>															
Crude Oil (Excluding SPR) <sup>f</sup>	<b>354</b>	<b>359</b>	<b>328</b>	<b>331</b>	<b>329</b>	<i>335</i>	<i>341</i>	<i>337</i>	<i>340</i>	<i>339</i>	<i>342</i>	<i>337</i>	<b>331</b>	<i>337</i>	<i>337</i>
Total Motor Gasoline	<b>231</b>	<b>209</b>	<b>221</b>	<b>228</b>	<b>228</b>	<i>221</i>	<i>226</i>	<i>228</i>	<i>229</i>	<i>219</i>	<i>224</i>	<i>226</i>	<b>228</b>	<i>228</i>	<i>226</i>
Finished Motor Gasoline	<b>194</b>	<b>174</b>	<b>182</b>	<b>190</b>	<b>189</b>	<i>184</i>	<i>188</i>	<i>192</i>	<i>192</i>	<i>183</i>	<i>186</i>	<i>189</i>	<b>190</b>	<i>192</i>	<i>189</i>
Blending Components	<b>37</b>	<b>35</b>	<b>39</b>	<b>39</b>	<b>40</b>	<i>37</i>	<i>38</i>	<i>37</i>	<i>37</i>	<i>36</i>	<i>38</i>	<i>36</i>	<b>39</b>	<i>37</i>	<i>36</i>
Jet Fuel	<b>47</b>	<b>46</b>	<b>47</b>	<b>44</b>	<b>43</b>	<i>47</i>	<i>51</i>	<i>48</i>	<i>46</i>	<i>47</i>	<i>50</i>	<i>46</i>	<b>44</b>	<i>48</i>	<i>46</i>
Distillate Fuel Oil	<b>89</b>	<b>111</b>	<b>131</b>	<b>123</b>	<b>98</b>	<i>106</i>	<i>134</i>	<i>136</i>	<i>93</i>	<i>105</i>	<i>133</i>	<i>136</i>	<b>123</b>	<i>136</i>	<i>136</i>
Residual Fuel Oil	<b>44</b>	<b>42</b>	<b>44</b>	<b>45</b>	<b>44</b>	<i>41</i>	<i>42</i>	<i>45</i>	<i>42</i>	<i>41</i>	<i>42</i>	<i>45</i>	<b>45</b>	<i>45</i>	<i>45</i>
Other Oils <sup>g</sup>	<b>249</b>	<b>294</b>	<b>302</b>	<b>269</b>	<b>265</b>	<i>287</i>	<i>291</i>	<i>264</i>	<i>256</i>	<i>287</i>	<i>290</i>	<i>263</i>	<b>269</b>	<i>264</i>	<i>263</i>
Total Stocks (Excluding SPR)	<b>1014</b>	<b>1061</b>	<b>1073</b>	<b>1040</b>	<b>1006</b>	<i>1037</i>	<i>1084</i>	<i>1059</i>	<i>1006</i>	<i>1038</i>	<i>1081</i>	<i>1053</i>	<b>1040</b>	<i>1059</i>	<i>1053</i>
Crude Oil in SPR	<b>545</b>	<b>550</b>	<b>555</b>	<b>560</b>	<b>566</b>	<i>572</i>	<i>578</i>	<i>584</i>	<i>591</i>	<i>598</i>	<i>604</i>	<i>611</i>	<b>560</b>	<i>584</i>	<i>611</i>
Total Stocks (Including SPR)	<b>1559</b>	<b>1611</b>	<b>1627</b>	<b>1600</b>	<b>1572</b>	<i>1609</i>	<i>1662</i>	<i>1644</i>	<i>1597</i>	<i>1635</i>	<i>1685</i>	<i>1664</i>	<b>1600</b>	<i>1644</i>	<i>1664</i>

<sup>a</sup> Includes lease condensate.

<sup>b</sup> Net Imports equals Gross Imports plus SPR Imports minus Exports.

<sup>c</sup> Includes finished petroleum products, unfinished oils, gasoline blending components, and natural gas plant liquids for processing.

<sup>d</sup> Includes an estimate of minor product stock change based on monthly data.

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

<sup>f</sup> Includes crude oil in transit to refineries.

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

SPR: Strategic Petroleum Reserve

NGL: Natural Gas Liquids

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

Sources: Historical data: Energy Information Administration, *Petroleum Supply Annual 1987*, DOE/EIA-0340(87)/1; *Petroleum Supply Monthly*, DOE/EIA-0109, Jan. 1988 to Jan. 1989; *Weekly Petroleum Status Report*, DOE/EIA-0208(89-11,15).

**Table 7. Petroleum Demand Sensitivity Differentials**  
(Million Barrels per Day)

Sensitivities	1989			1990				Year	
	2nd	3rd	4th	1st	2nd	3rd	4th	1989	1990
Base Case .....	<i>16.95</i>	<i>17.16</i>	<i>17.61</i>	<i>17.63</i>	<i>17.05</i>	<i>17.30</i>	<i>17.82</i>	<i>17.32</i>	<i>17.45</i>
Price Sensitivity									
Low Price .....	<i>.02</i>	<i>.02</i>	<i>.04</i>	<i>.05</i>	<i>.06</i>	<i>.06</i>	<i>.06</i>	<i>.02</i>	<i>.06</i>
High Price .....	<i>-.02</i>	<i>-.03</i>	<i>-.03</i>	<i>-.04</i>	<i>-.05</i>	<i>-.05</i>	<i>-.05</i>	<i>-.02</i>	<i>-.05</i>
Weather Sensitivity									
Adverse Weather .....	<i>.09</i>	<i>.06</i>	<i>.24</i>	<i>.30</i>	<i>.09</i>	<i>.06</i>	<i>.25</i>	<i>.09</i>	<i>.18</i>
Favorable Weather .....	<i>-.07</i>	<i>-.04</i>	<i>-.20</i>	<i>-.25</i>	<i>-.08</i>	<i>-.05</i>	<i>-.19</i>	<i>-.08</i>	<i>-.14</i>
Economic Sensitivity									
High Economic Activity .....	<i>.06</i>	<i>.14</i>	<i>.21</i>	<i>.22</i>	<i>.21</i>	<i>.21</i>	<i>.21</i>	<i>.11</i>	<i>.21</i>
Low Economic Activity .....	<i>-.07</i>	<i>-.15</i>	<i>-.23</i>	<i>-.24</i>	<i>-.23</i>	<i>-.22</i>	<i>-.24</i>	<i>-.11</i>	<i>-.23</i>
Range of Projected Demand									
High Demand .....	<i>17.12</i>	<i>17.38</i>	<i>18.10</i>	<i>18.20</i>	<i>17.41</i>	<i>17.63</i>	<i>18.34</i>	<i>17.54</i>	<i>17.90</i>
Low Demand .....	<i>16.79</i>	<i>16.94</i>	<i>17.15</i>	<i>17.10</i>	<i>16.69</i>	<i>16.98</i>	<i>17.34</i>	<i>17.11</i>	<i>17.03</i>

Note: Forecast values in *italics*.

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

Supply and Disposition	1988				1989				1990				Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1988	1989	1990
<b>Supply</b>															
<b>Crude Oil Supply</b>															
Domestic Production <sup>a</sup> .....	<b>8.32</b>	<b>8.21</b>	<b>8.01</b>	<b>7.98</b>	<b>7.79</b>	<b>7.80</b>	<b>7.77</b>	<b>7.77</b>	<b>7.75</b>	<b>7.62</b>	<b>7.51</b>	<b>7.45</b>	<b>8.13</b>	<b>7.78</b>	<b>7.58</b>
Alaska .....	<b>2.05</b>	<b>2.01</b>	<b>2.00</b>	<b>2.01</b>	<b>1.88</b>	<b>1.97</b>	<b>2.00</b>	<b>2.01</b>	<b>1.98</b>	<b>1.94</b>	<b>1.91</b>	<b>1.88</b>	<b>2.02</b>	<b>1.97</b>	<b>1.93</b>
Lower 48 .....	<b>6.27</b>	<b>6.20</b>	<b>6.01</b>	<b>5.97</b>	<b>5.92</b>	<b>5.84</b>	<b>5.77</b>	<b>5.75</b>	<b>5.77</b>	<b>5.68</b>	<b>5.61</b>	<b>5.58</b>	<b>6.11</b>	<b>5.82</b>	<b>5.66</b>
Net Imports (Including SPR) <sup>b</sup> .....	<b>4.51</b>	<b>5.01</b>	<b>4.92</b>	<b>5.11</b>	<b>5.21</b>	<b>5.47</b>	<b>5.98</b>	<b>5.88</b>	<b>5.27</b>	<b>5.51</b>	<b>6.19</b>	<b>6.17</b>	<b>4.89</b>	<b>5.64</b>	<b>5.79</b>
Gross Imports (Excluding SPR) .....	<b>4.65</b>	<b>5.08</b>	<b>5.02</b>	<b>5.21</b>	<b>5.28</b>	<b>5.58</b>	<b>6.07</b>	<b>5.98</b>	<b>5.38</b>	<b>5.61</b>	<b>6.27</b>	<b>6.26</b>	<b>4.99</b>	<b>5.73</b>	<b>5.88</b>
SPR Imports .....	<b>.05</b>	<b>.06</b>	<b>.05</b>	<b>.05</b>	<b>.07</b>	.07	.07	.07	.07	.07	.07	<b>.08</b>	<b>.05</b>	<b>.07</b>	<b>.07</b>
Exports .....	<b>.19</b>	<b>.13</b>	<b>.16</b>	<b>.15</b>	<b>.14</b>	<b>.17</b>	<b>.16</b>	<b>.17</b>	<b>.18</b>	<b>.17</b>	<b>.16</b>	<b>.17</b>	<b>.16</b>	<b>.16</b>	<b>.17</b>
SPR Stock Withdrawn or Added (-) .....	<b>-.05</b>	<b>-.06</b>	<b>-.05</b>	<b>-.05</b>	-.07	-.07	-.07	-.07	-.07	-.07	<b>-.07</b>	<b>-.08</b>	<b>-.05</b>	<b>-.07</b>	<b>-.07</b>
Other Stock Withdrawn or Added (-) .....	<b>-.05</b>	<b>-.06</b>	<b>.33</b>	<b>-.03</b>	<b>.03</b>	<b>-.13</b>	<b>-.02</b>	<b>-.05</b>	<b>.01</b>	<b>.03</b>	<b>-.01</b>	<b>-.04</b>	<b>.05</b>	<b>-.04</b>	<b>.00</b>
Products Supplied and Losses .....	<b>-.05</b>	<b>-.04</b>	<b>-.03</b>	<b>-.04</b>	<b>-.04</b>	<b>-.05</b>	-.05	-.05	-.05	-.05	-.05	-.05	<b>-.04</b>	<b>-.05</b>	<b>-.05</b>
Unaccounted-for Crude .....	<b>.24</b>	<b>.33</b>	<b>.42</b>	<b>.31</b>	<b>.09</b>	<b>.16</b>	<b>.14</b>	<b>.14</b>	<b>.09</b>	<b>.09</b>	<b>.09</b>	<b>.10</b>	<b>.32</b>	<b>.13</b>	<b>.09</b>
Crude Oil Input to Refineries .....	<b>12.93</b>	<b>13.39</b>	<b>13.59</b>	<b>13.27</b>	<b>13.02</b>	<b>13.19</b>	<b>13.76</b>	<b>13.62</b>	<b>13.00</b>	<b>13.13</b>	<b>13.67</b>	<b>13.55</b>	<b>13.30</b>	<b>13.40</b>	<b>13.34</b>
<b>Other Supply</b>															
NGL Production .....	<b>1.60</b>	<b>1.61</b>	<b>1.62</b>	<b>1.66</b>	<b>1.64</b>	<b>1.62</b>	<b>1.60</b>	<b>1.64</b>	<b>1.66</b>	<b>1.63</b>	<b>1.60</b>	<b>1.64</b>	<b>1.62</b>	<b>1.63</b>	<b>1.63</b>
Other Hydrocarbon and Alcohol Inputs .....	<b>.06</b>	<b>.05</b>	<b>.06</b>	<b>.06</b>	<b>.06</b>	<b>.06</b>	<b>.07</b>	<b>.07</b>	<b>.06</b>	<b>.06</b>	<b>.07</b>	<b>.07</b>	<b>.06</b>	<b>.06</b>	<b>.07</b>
Crude Oil Product Supplied .....	<b>.05</b>	<b>.04</b>	<b>.03</b>	<b>.04</b>	<b>.04</b>	<b>.05</b>	.05	.05	.05	.05	.05	.05	<b>.04</b>	<b>.05</b>	<b>.05</b>
Processing Gain .....	<b>.68</b>	<b>.66</b>	<b>.64</b>	<b>.67</b>	<b>.67</b>	<b>.67</b>	<b>.69</b>	<b>.69</b>	<b>.67</b>	<b>.69</b>	<b>.71</b>	<b>.71</b>	<b>.66</b>	<b>.68</b>	<b>.70</b>
Net Product Imports <sup>c</sup> .....	<b>1.50</b>	<b>1.23</b>	<b>1.43</b>	<b>1.69</b>	<b>1.76</b>	<b>1.88</b>	<b>1.71</b>	<b>1.91</b>	<b>2.09</b>	<b>2.16</b>	<b>2.00</b>	<b>2.17</b>	<b>1.47</b>	<b>1.81</b>	<b>2.11</b>
Gross Product Imports <sup>c</sup> .....	<b>2.17</b>	<b>1.91</b>	<b>2.05</b>	<b>2.37</b>	<b>2.50</b>	<b>2.42</b>	<b>2.22</b>	<b>2.49</b>	<b>2.67</b>	<b>2.70</b>	<b>2.51</b>	<b>2.76</b>	<b>2.13</b>	<b>2.41</b>	<b>2.66</b>
Product Exports .....	<b>.67</b>	<b>.68</b>	<b>.62</b>	<b>.67</b>	<b>.74</b>	<b>.55</b>	<b>.52</b>	<b>.59</b>	<b>.58</b>	<b>.55</b>	<b>.52</b>	<b>.59</b>	<b>.66</b>	<b>.60</b>	<b>.56</b>
Product Stock Withdrawn or Added (-) <sup>d</sup> .....	<b>.64</b>	<b>-.46</b>	<b>-.46</b>	<b>.39</b>	<b>.35</b>	<b>-.35</b>	<b>-.49</b>	<b>.13</b>	<b>.66</b>	<b>-.31</b>	<b>-.46</b>	<b>.15</b>	<b>.02</b>	<b>-.09</b>	<b>.01</b>
Total Product Supplied, Domestic Use .....	<b>17.45</b>	<b>16.53</b>	<b>16.92</b>	<b>17.78</b>	<b>17.54</b>	<b>17.12</b>	<b>17.38</b>	<b>18.10</b>	<b>18.20</b>	<b>17.41</b>	<b>17.63</b>	<b>18.34</b>	<b>17.17</b>	<b>17.54</b>	<b>17.90</b>
<b>Disposition</b>															
Motor Gasoline .....	<b>6.98</b>	<b>7.49</b>	<b>7.45</b>	<b>7.33</b>	<b>7.09</b>	<b>7.58</b>	<b>7.62</b>	<b>7.44</b>	<b>7.17</b>	<b>7.71</b>	<b>7.76</b>	<b>7.58</b>	<b>7.31</b>	<b>7.43</b>	<b>7.56</b>
Jet Fuel .....	<b>1.48</b>	<b>1.39</b>	<b>1.42</b>	<b>1.49</b>	<b>1.57</b>	<b>1.45</b>	<b>1.48</b>	<b>1.54</b>	<b>1.59</b>	<b>1.49</b>	<b>1.54</b>	<b>1.60</b>	<b>1.45</b>	<b>1.51</b>	<b>1.55</b>
Distillate Fuel Oil .....	<b>3.52</b>	<b>2.81</b>	<b>2.77</b>	<b>3.31</b>	<b>3.39</b>	<b>3.12</b>	<b>2.94</b>	<b>3.48</b>	<b>3.79</b>	<b>3.21</b>	<b>3.00</b>	<b>3.53</b>	<b>3.10</b>	<b>3.23</b>	<b>3.38</b>
Residual Fuel Oil .....	<b>1.54</b>	<b>1.10</b>	<b>1.18</b>	<b>1.49</b>	<b>1.47</b>	<b>1.15</b>	<b>1.18</b>	<b>1.35</b>	<b>1.45</b>	<b>1.12</b>	<b>1.14</b>	<b>1.32</b>	<b>1.33</b>	<b>1.29</b>	<b>1.26</b>
Other Oils Supplied <sup>e</sup> .....	<b>3.92</b>	<b>3.72</b>	<b>4.10</b>	<b>4.16</b>	<b>4.02</b>	<b>3.82</b>	<b>4.16</b>	<b>4.29</b>	<b>4.20</b>	<b>3.88</b>	<b>4.19</b>	<b>4.32</b>	<b>3.98</b>	<b>4.08</b>	<b>4.15</b>
Total Product Supplied .....	<b>17.44</b>	<b>16.53</b>	<b>16.92</b>	<b>17.78</b>	<b>17.54</b>	<b>17.12</b>	<b>17.38</b>	<b>18.10</b>	<b>18.20</b>	<b>17.41</b>	<b>17.63</b>	<b>18.34</b>	<b>17.17</b>	<b>17.54</b>	<b>17.90</b>
Total Petroleum Net Imports .....	<b>6.01</b>	<b>6.24</b>	<b>6.35</b>	<b>6.81</b>	<b>6.97</b>	<b>7.35</b>	<b>7.68</b>	<b>7.79</b>	<b>7.37</b>	<b>7.67</b>	<b>8.18</b>	<b>8.34</b>	<b>6.35</b>	<b>7.45</b>	<b>7.89</b>
<b>Closing Stocks (million barrels)</b>															
Crude Oil (Excluding SPR) <sup>f</sup> .....	<b>354</b>	<b>359</b>	<b>328</b>	<b>331</b>	<b>329</b>	<b>341</b>	<b>342</b>	<b>347</b>	<b>346</b>	<b>344</b>	<b>344</b>	<b>348</b>	<b>331</b>	<b>347</b>	<b>348</b>
Total Motor Gasoline .....	<b>231</b>	<b>209</b>	<b>221</b>	<b>228</b>	<b>228</b>	<b>224</b>	<b>228</b>	<b>230</b>	<b>233</b>	<b>224</b>	<b>229</b>	<b>230</b>	<b>228</b>	<b>230</b>	<b>230</b>
Finished Motor Gasoline .....	<b>194</b>	<b>174</b>	<b>182</b>	<b>190</b>	<b>189</b>	<b>186</b>	<b>190</b>	<b>193</b>	<b>195</b>	<b>187</b>	<b>190</b>	<b>192</b>	<b>190</b>	<b>193</b>	<b>192</b>
Blending Components .....	<b>37</b>	<b>35</b>	<b>39</b>	<b>39</b>	<b>40</b>	<b>38</b>	<b>39</b>	<b>38</b>	<b>38</b>	<b>37</b>	<b>39</b>	<b>37</b>	<b>39</b>	<b>38</b>	<b>37</b>
Jet Fuel .....	<b>47</b>	<b>46</b>	<b>47</b>	<b>44</b>	<b>43</b>	<b>46</b>	<b>49</b>	<b>48</b>	<b>46</b>	<b>45</b>	<b>49</b>	<b>48</b>	<b>44</b>	<b>48</b>	<b>48</b>
Distillate Fuel Oil .....	<b>89</b>	<b>111</b>	<b>131</b>	<b>123</b>	<b>98</b>	<b>108</b>	<b>136</b>	<b>143</b>	<b>98</b>	<b>109</b>	<b>137</b>	<b>144</b>	<b>123</b>	<b>143</b>	<b>144</b>
Residual Fuel Oil .....	<b>44</b>	<b>42</b>	<b>44</b>	<b>45</b>	<b>44</b>	<b>42</b>	<b>44</b>	<b>47</b>	<b>44</b>	<b>43</b>	<b>44</b>	<b>47</b>	<b>45</b>	<b>47</b>	<b>47</b>
Other Oils <sup>g</sup> .....	<b>249</b>	<b>294</b>	<b>302</b>	<b>269</b>	<b>265</b>	<b>289</b>	<b>296</b>	<b>274</b>	<b>262</b>	<b>289</b>	<b>294</b>	<b>271</b>	<b>269</b>	<b>274</b>	<b>271</b>
Total Stocks (Excluding SPR) .....	<b>1014</b>	<b>1061</b>	<b>1073</b>	<b>1040</b>	<b>1006</b>	<b>1050</b>	<b>1096</b>	<b>1089</b>	<b>1029</b>	<b>1054</b>	<b>1097</b>	<b>1087</b>	<b>1040</b>	<b>1089</b>	<b>1087</b>
Crude Oil in SPR .....	<b>545</b>	<b>550</b>	<b>555</b>	<b>560</b>	<b>566</b>	<b>572</b>	<b>578</b>	<b>584</b>	<b>591</b>	<b>598</b>	<b>604</b>	<b>611</b>	<b>560</b>	<b>584</b>	<b>611</b>
Total Stocks (Including SPR) .....	<b>1559</b>	<b>1611</b>	<b>1627</b>	<b>1600</b>	<b>1572</b>	<b>1622</b>	<b>1674</b>	<b>1674</b>	<b>1620</b>	<b>1652</b>	<b>1702</b>	<b>1698</b>	<b>1600</b>	<b>1674</b>	<b>1698</b>

<sup>a</sup> Includes lease condensate.

<sup>b</sup> Net Imports equals Gross Imports plus SPR Imports minus Exports.

<sup>c</sup> Includes finished petroleum products, unfinished oils, gasoline blending components, and natural gas plant liquids for processing.

<sup>d</sup> Includes an estimate of minor product stock change based on monthly data.

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

<sup>f</sup> Includes crude oil in transit to refineries.

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

SPR: Strategic Petroleum Reserve

NGL: Natural Gas Liquids

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

Sources: Historical data: Energy Information Administration, *Petroleum Supply Annual 1987*, DOE/EIA-0340(87)/1; *Petroleum Supply Monthly*, DOE/EIA-0109, Jan. 1988 to Jan. 1989; *Weekly Petroleum Status Report*, DOE/EIA-0208(89-11,15).

**Table 9. Quarterly Supply and Disposition of Petroleum: High World Oil Price Case**  
(Million Barrels per Day, Except Stocks)

Supply and Disposition	1988				1989				1990				Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1988	1989	1990
<b>Supply</b>															
Crude Oil Supply															
Domestic Production <sup>a</sup> .....	<b>8.32</b>	<b>8.21</b>	<b>8.01</b>	<b>7.98</b>	<b>7.79</b>	<i>7.92</i>	<i>7.98</i>	<i>8.02</i>	<i>8.03</i>	<i>7.95</i>	<i>7.88</i>	<i>7.84</i>	<b>8.13</b>	<i>7.93</i>	<i>7.92</i>
Alaska .....	<b>2.05</b>	<b>2.01</b>	<b>2.00</b>	<b>2.01</b>	<b>1.88</b>	<i>1.98</i>	<i>2.03</i>	<i>2.04</i>	<i>2.03</i>	<i>2.02</i>	<i>1.99</i>	<i>1.96</i>	<b>2.02</b>	<i>1.98</i>	<i>2.00</i>
Lower 48 .....	<b>6.27</b>	<b>6.20</b>	<b>6.01</b>	<b>5.97</b>	<b>5.92</b>	<i>5.93</i>	<i>5.95</i>	<i>5.98</i>	<i>6.00</i>	<i>5.93</i>	<i>5.89</i>	<i>5.88</i>	<b>6.11</b>	<i>5.94</i>	<i>5.92</i>
Net Imports (Including SPR) <sup>b</sup> .....	<b>4.51</b>	<b>5.01</b>	<b>4.92</b>	<b>5.11</b>	<b>5.21</b>	<i>5.21</i>	<i>5.50</i>	<i>5.18</i>	<i>4.73</i>	<i>5.08</i>	<i>5.64</i>	<i>5.52</i>	<b>4.89</b>	<i>5.28</i>	<i>5.24</i>
Gross Imports															
(Excluding SPR) .....	<b>4.65</b>	<b>5.08</b>	<b>5.02</b>	<b>5.21</b>	<b>5.28</b>	<i>5.31</i>	<i>5.60</i>	<i>5.27</i>	<i>4.84</i>	<i>5.18</i>	<i>5.72</i>	<i>5.61</i>	<b>4.99</b>	<i>5.37</i>	<i>5.34</i>
SPR Imports .....	<b>.05</b>	<b>.06</b>	<b>.05</b>	<b>.05</b>	<b>.07</b>	<i>.07</i>	<i>.07</i>	<i>.07</i>	<i>.07</i>	<i>.07</i>	<i>.07</i>	<i>.08</i>	<b>.05</b>	<i>.07</i>	<i>.07</i>
Exports .....	<b>.19</b>	<b>.13</b>	<b>.16</b>	<b>.15</b>	<b>.14</b>	<i>.17</i>	<i>.16</i>	<i>.17</i>	<i>.18</i>	<i>.17</i>	<i>.16</i>	<i>.17</i>	<b>.16</b>	<i>.16</i>	<i>.17</i>
SPR Stock Withdrawn															
or Added (-) .....	<b>-.05</b>	<b>-.06</b>	<b>-.05</b>	<b>-.05</b>	<b>-.07</b>	<i>-.07</i>	<i>-.07</i>	<i>-.07</i>	<i>-.07</i>	<i>-.07</i>	<i>-.07</i>	<i>-.08</i>	<b>-.05</b>	<i>-.07</i>	<i>-.07</i>
Other Stock Withdrawn															
or Added (-) .....	<b>-.05</b>	<b>-.06</b>	<b>.33</b>	<b>-.03</b>	<b>.03</b>	<i>-.10</i>	<i>.00</i>	<i>.05</i>	<i>.01</i>	<i>-.03</i>	<i>-.01</i>	<i>.03</i>	<b>.05</b>	<i>-.01</i>	<i>.00</i>
Products Supplied and Losses .....	<b>-.05</b>	<b>-.04</b>	<b>-.03</b>	<b>-.04</b>	<b>-.04</b>	<i>-.05</i>	-.05	-.05	-.05	-.05	-.05	-.05	<b>-.04</b>	<i>-.05</i>	<i>-.05</i>
Unaccounted-for Crude .....	<b>.24</b>	<b>.33</b>	<b>.42</b>	<b>.31</b>	<b>.09</b>	<i>.15</i>	<i>.14</i>	<i>.13</i>	<i>.14</i>	<i>.14</i>	<i>.14</i>	<i>.13</i>	<b>.32</b>	<i>.13</i>	<i>.14</i>
Crude Oil Input to Refineries .....	<b>12.93</b>	<b>13.39</b>	<b>13.59</b>	<b>13.27</b>	<b>13.02</b>	<i>13.06</i>	<i>13.50</i>	<i>13.26</i>	<i>12.79</i>	<i>13.02</i>	<i>13.53</i>	<i>13.39</i>	<b>13.30</b>	<i>13.21</i>	<i>13.18</i>
Other Supply															
NGL Production .....	<b>1.60</b>	<b>1.61</b>	<b>1.62</b>	<b>1.66</b>	<b>1.64</b>	<i>1.61</i>	<i>1.59</i>	<i>1.62</i>	<i>1.63</i>	<i>1.61</i>	<i>1.59</i>	<i>1.62</i>	<b>1.62</b>	<i>1.62</i>	<i>1.61</i>
Other Hydrocarbon and															
Alcohol Inputs .....	<b>.06</b>	<b>.05</b>	<b>.06</b>	<b>.06</b>	<b>.06</b>	<i>.06</i>	<i>.07</i>	<i>.07</i>	<i>.06</i>	<i>.06</i>	<i>.07</i>	<i>.07</i>	<b>.06</b>	<i>.06</i>	<i>.07</i>
Crude Oil Product Supplied .....	<b>.05</b>	<b>.04</b>	<b>.03</b>	<b>.04</b>	<b>.04</b>	<i>.05</i>	.05	.05	.05	.05	.05	.05	<b>.04</b>	<i>.05</i>	<i>.05</i>
Processing Gain .....	<b>.68</b>	<b>.66</b>	<b>.64</b>	<b>.67</b>	<b>.67</b>	<i>.65</i>	<i>.67</i>	<i>.63</i>	<i>.63</i>	<i>.66</i>	<i>.67</i>	<i>.65</i>	<b>.66</b>	<i>.66</i>	<i>.65</i>
Net Product Imports <sup>c</sup> .....	<b>1.50</b>	<b>1.23</b>	<b>1.43</b>	<b>1.69</b>	<b>1.76</b>	<i>1.49</i>	<i>1.45</i>	<i>1.23</i>	<i>1.42</i>	<i>1.62</i>	<i>1.49</i>	<i>1.33</i>	<b>1.47</b>	<i>1.48</i>	<i>1.46</i>
Gross Product Imports <sup>c</sup> .....	<b>2.17</b>	<b>1.91</b>	<b>2.05</b>	<b>2.37</b>	<b>2.50</b>	<i>2.04</i>	<i>1.97</i>	<i>1.82</i>	<i>2.00</i>	<i>2.16</i>	<i>2.01</i>	<i>1.91</i>	<b>2.13</b>	<i>2.08</i>	<i>2.02</i>
Product Exports .....	<b>.67</b>	<b>.68</b>	<b>.62</b>	<b>.67</b>	<b>.74</b>	<i>.55</i>	<i>.52</i>	<i>.59</i>	<i>.58</i>	<i>.55</i>	<i>.52</i>	<i>.59</i>	<b>.66</b>	<i>.60</i>	<i>.56</i>
Product Stock Withdrawn															
or Added (-) <sup>d</sup> .....	<b>.64</b>	<b>-.46</b>	<b>-.46</b>	<b>.39</b>	<b>.35</b>	<i>-.13</i>	<i>-.39</i>	<i>.29</i>	<i>.53</i>	<i>-.33</i>	<i>-.42</i>	<i>.24</i>	<b>.02</b>	<i>.03</i>	<i>.00</i>
Total Product Supplied, Domestic Use .....	<b>17.45</b>	<b>16.53</b>	<b>16.92</b>	<b>17.78</b>	<b>17.54</b>	<i>16.79</i>	<i>16.94</i>	<i>17.15</i>	<i>17.10</i>	<i>16.69</i>	<i>16.98</i>	<i>17.34</i>	<b>17.17</b>	<i>17.11</i>	<i>17.03</i>
<b>Disposition</b>															
Motor Gasoline .....	<b>6.98</b>	<b>7.49</b>	<b>7.45</b>	<b>7.33</b>	<b>7.09</b>	<i>7.55</i>	<i>7.57</i>	<i>7.34</i>	<i>7.06</i>	<i>7.58</i>	<i>7.63</i>	<i>7.45</i>	<b>7.31</b>	<i>7.39</i>	<i>7.43</i>
Jet Fuel .....	<b>1.48</b>	<b>1.39</b>	<b>1.42</b>	<b>1.49</b>	<b>1.57</b>	<i>1.45</i>	<i>1.48</i>	<i>1.53</i>	<i>1.59</i>	<i>1.49</i>	<i>1.53</i>	<i>1.59</i>	<b>1.45</b>	<i>1.51</i>	<i>1.55</i>
Distillate Fuel Oil .....	<b>3.52</b>	<b>2.81</b>	<b>2.77</b>	<b>3.31</b>	<b>3.39</b>	<i>2.98</i>	<i>2.80</i>	<i>3.08</i>	<i>3.35</i>	<i>2.94</i>	<i>2.81</i>	<i>3.12</i>	<b>3.10</b>	<i>3.06</i>	<i>3.05</i>
Residual Fuel Oil .....	<b>1.54</b>	<b>1.10</b>	<b>1.18</b>	<b>1.49</b>	<b>1.47</b>	<i>1.08</i>	<i>1.07</i>	<i>1.22</i>	<i>1.28</i>	<i>1.03</i>	<i>1.02</i>	<i>1.19</i>	<b>1.33</b>	<i>1.21</i>	<i>1.13</i>
Other Oils Supplied <sup>e</sup> .....	<b>3.92</b>	<b>3.72</b>	<b>4.10</b>	<b>4.16</b>	<b>4.02</b>	<i>3.73</i>	<i>4.03</i>	<i>3.97</i>	<i>3.83</i>	<i>3.65</i>	<i>3.99</i>	<i>3.99</i>	<b>3.98</b>	<i>3.94</i>	<i>3.87</i>
Total Product Supplied .....	<b>17.44</b>	<b>16.53</b>	<b>16.92</b>	<b>17.78</b>	<b>17.54</b>	<i>16.79</i>	<i>16.94</i>	<i>17.15</i>	<i>17.10</i>	<i>16.69</i>	<i>16.98</i>	<i>17.34</i>	<b>17.17</b>	<i>17.11</i>	<i>17.03</i>
Total Petroleum Net Imports .....	<b>6.01</b>	<b>6.24</b>	<b>6.35</b>	<b>6.81</b>	<b>6.97</b>	<i>6.70</i>	<i>6.96</i>	<i>6.41</i>	<i>6.15</i>	<i>6.70</i>	<i>7.13</i>	<i>6.84</i>	<b>6.35</b>	<i>6.76</i>	<i>6.71</i>
<b>Closing Stocks (million barrels)</b>															
Crude Oil (Excluding SPR) <sup>f</sup> .....	<b>354</b>	<b>359</b>	<b>328</b>	<b>331</b>	<b>329</b>	<i>338</i>	<i>338</i>	<i>333</i>	<i>332</i>	<i>335</i>	<i>336</i>	<i>333</i>	<b>331</b>	<i>333</i>	<i>333</i>
Total Motor Gasoline .....	<b>231</b>	<b>209</b>	<b>221</b>	<b>228</b>	<b>228</b>	<i>217</i>	<i>221</i>	<i>222</i>	<i>227</i>	<i>215</i>	<i>219</i>	<i>221</i>	<b>228</b>	<i>222</i>	<i>221</i>
Finished Motor Gasoline .....	<b>194</b>	<b>174</b>	<b>182</b>	<b>190</b>	<b>189</b>	<i>182</i>	<i>184</i>	<i>187</i>	<i>191</i>	<i>180</i>	<i>183</i>	<i>185</i>	<b>190</b>	<i>187</i>	<i>185</i>
Blending Components .....	<b>37</b>	<b>35</b>	<b>39</b>	<b>39</b>	<b>40</b>	<i>36</i>	<i>37</i>	<i>35</i>	<i>36</i>	<i>35</i>	<i>37</i>	<i>35</i>	<b>39</b>	<i>35</i>	<i>35</i>
Jet Fuel .....	<b>47</b>	<b>46</b>	<b>47</b>	<b>44</b>	<b>43</b>	<i>44</i>	<i>47</i>	<i>47</i>	<i>45</i>	<i>44</i>	<i>47</i>	<i>46</i>	<b>44</b>	<i>47</i>	<i>46</i>
Distillate Fuel Oil .....	<b>89</b>	<b>111</b>	<b>131</b>	<b>123</b>	<b>98</b>	<i>105</i>	<i>130</i>	<i>129</i>	<i>91</i>	<i>104</i>	<i>129</i>	<i>131</i>	<b>123</b>	<i>129</i>	<i>131</i>
Residual Fuel Oil .....	<b>44</b>	<b>42</b>	<b>44</b>	<b>45</b>	<b>44</b>	<i>39</i>	<i>40</i>	<i>43</i>	<i>40</i>	<i>39</i>	<i>40</i>	<i>43</i>	<b>45</b>	<i>43</i>	<i>43</i>
Other Oils <sup>g</sup> .....	<b>249</b>	<b>294</b>	<b>302</b>	<b>269</b>	<b>265</b>	<i>283</i>	<i>287</i>	<i>258</i>	<i>248</i>	<i>278</i>	<i>284</i>	<i>257</i>	<b>269</b>	<i>258</i>	<i>257</i>
Total Stocks (Excluding SPR) .....	<b>1014</b>	<b>1061</b>	<b>1073</b>	<b>1040</b>	<b>1006</b>	<i>1027</i>	<i>1063</i>	<i>1032</i>	<i>983</i>	<i>1015</i>	<i>1055</i>	<i>1030</i>	<b>1040</b>	<i>1032</i>	<i>1030</i>
Crude Oil in SPR .....	<b>545</b>	<b>550</b>	<b>555</b>	<b>560</b>	<b>566</b>	<i>572</i>	<i>578</i>	<i>584</i>	<i>591</i>	<i>598</i>	<i>604</i>	<i>611</i>	<b>560</b>	<i>584</i>	<i>611</i>
Total Stocks (Including SPR) .....	<b>1559</b>	<b>1611</b>	<b>1627</b>	<b>1600</b>	<b>1572</b>	<i>1599</i>	<i>1641</i>	<i>1616</i>	<i>1574</i>	<i>1613</i>	<i>1659</i>	<i>1642</i>	<b>1600</b>	<i>1616</i>	<i>1642</i>

<sup>a</sup> Includes lease condensate.  
<sup>b</sup> Net Imports equals Gross Imports plus SPR Imports minus Exports.  
<sup>c</sup> Includes finished petroleum products, unfinished oils, gasoline blending components, and natural gas plant liquids for processing.  
<sup>d</sup> Includes an estimate of minor product stock change based on monthly data.  
<sup>e</sup> Includes crude oil product supplied, natural gas liquids, liquefied refinery gases, other liquids, and all finished petroleum products except motor gasoline, jet fuels, and distillate and residual fuel oils.  
<sup>f</sup> Includes crude oil in transit to refineries.  
<sup>g</sup> Includes stocks of all other oils such as aviation gasoline, kerosene, natural gas liquids (including ethane), aviation gasoline blending components, naphtha and other oils for petrochemical feedstock use, special naphthas, lube oils, wax, coke, asphalt, road oil, and miscellaneous oils.  
SPR: Strategic Petroleum Reserve  
NGL: Natural Gas Liquids  
Notes: Minor discrepancies with other EIA published historical data are due to rounding. Historical values are printed in **boldface**, forecasts in *italics*.  
Sources: Historical data: Energy Information Administration, *Petroleum Supply Annual 1987*, DOE/EIA-0340(87)/1; *Petroleum Supply Monthly*, DOE/EIA-0109, Jan. 1988 to Jan. 1989; *Weekly Petroleum Status Report*, DOE/EIA-0208(89-11,15).

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

Supply and Disposition	1988				1989				1990				Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1988	1989	1990
<b>Supply</b>															
Domestic Production <sup>a</sup> .....	<b>6.72</b>	<b>6.91</b>	<b>7.11</b>	<b>7.08</b>	<b>6.72</b>	<i>7.03</i>	<i>7.18</i>	<i>7.06</i>	<i>6.77</i>	<i>7.05</i>	<i>7.22</i>	<i>7.11</i>	<b>6.95</b>	<i>7.00</i>	<i>7.04</i>
Imports .....	<b>.34</b>	<b>.40</b>	<b>.44</b>	<b>.36</b>	<b>.39</b>	<i>.50</i>	<i>.46</i>	<i>.38</i>	<i>.36</i>	<i>.52</i>	<i>.52</i>	<i>.45</i>	<b>.38</b>	<i>.44</i>	<i>.46</i>
Exports .....	<b>.01</b>	<b>.03</b>	<b>.01</b>	<b>.02</b>	<b>.04</b>	<i>.01</i>	.01	.01	.01	.01	.01	.01	<b>.02</b>	<i>.02</i>	<i>.01</i>
Net Imports .....	<b>.32</b>	<b>.36</b>	<b>.43</b>	<b>.34</b>	<b>.36</b>	<i>.49</i>	<i>.45</i>	<i>.37</i>	<i>.35</i>	<i>.51</i>	<i>.51</i>	<i>.44</i>	<b>.36</b>	<i>.42</i>	<i>.45</i>
Net Withdrawals .....	<b>-.06</b>	<b>.22</b>	<b>-.09</b>	<b>-.08</b>	<b>.01</b>	<i>.05</i>	<i>-.04</i>	<i>-.04</i>	<i>.00</i>	<i>.09</i>	<i>-.03</i>	<i>-.04</i>	<b>.00</b>	<i>-.01</i>	<i>.01</i>
Total Primary Supply .....	<b>6.98</b>	<b>7.49</b>	<b>7.45</b>	<b>7.33</b>	<b>7.09</b>	<i>7.57</i>	<i>7.59</i>	<i>7.39</i>	<i>7.12</i>	<i>7.65</i>	<i>7.70</i>	<i>7.51</i>	<b>7.31</b>	<i>7.41</i>	<i>7.50</i>
<b>Disposition</b>															
Leaded .....	<b>1.38</b>	<b>1.46</b>	<b>1.32</b>	<b>1.21</b>	<b>.98</b>	<i>1.18</i>	<i>1.14</i>	<i>1.06</i>	<i>.98</i>	<i>1.01</i>	<i>.98</i>	<i>.91</i>	<b>1.34</b>	<i>1.09</i>	<i>.97</i>
Unleaded .....	<b>5.60</b>	<b>6.04</b>	<b>6.13</b>	<b>6.12</b>	<b>6.11</b>	<i>6.39</i>	<i>6.46</i>	<i>6.33</i>	<i>6.14</i>	<i>6.64</i>	<i>6.72</i>	<i>6.60</i>	<b>5.97</b>	<i>6.32</i>	<i>6.53</i>
Total Product Supplied .....	<b>6.98</b>	<b>7.49</b>	<b>7.45</b>	<b>7.33</b>	<b>7.09</b>	<i>7.57</i>	<i>7.59</i>	<i>7.39</i>	<i>7.12</i>	<i>7.65</i>	<i>7.70</i>	<i>7.51</i>	<b>7.31</b>	<i>7.41</i>	<i>7.50</i>
<b>Stocks</b>															
Primary Finished Stock Levels <sup>b</sup> (million barrels)															
Opening .....	<b>188.8</b>	<b>193.9</b>	<b>173.8</b>	<b>181.9</b>	<b>189.7</b>	<i>188.9</i>	<i>184.4</i>	<i>187.8</i>	<i>191.5</i>	<i>191.9</i>	<i>183.2</i>	<i>186.1</i>	<b>188.8</b>	<i>189.7</i>	<i>191.5</i>
Closing .....	<b>193.9</b>	<b>173.8</b>	<b>181.9</b>	<b>189.7</b>	<b>188.9</b>	<i>184.4</i>	<i>187.8</i>	<i>191.5</i>	<i>191.9</i>	<i>183.2</i>	<i>186.1</i>	<i>189.3</i>	<b>189.7</b>	<i>191.5</i>	<i>189.3</i>

<sup>a</sup> Refinery Production plus production at natural gas processing plants.

<sup>b</sup> Includes stocks at natural gas processing plants. Excludes stocks of reclassified motor gasoline blending components.

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

Sources: Historical data: Energy Information Administration, *Petroleum Supply Annual 1987*, DOE/EIA-0340(87)/1; *Petroleum Supply Monthly*, DOE/EIA-0109, Jan. 1988 to Jan. 1989; *Weekly Petroleum Status Report*, DOE/EIA-0208(89-11,15).

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

Supply and Disposition	1988				1989				1990				Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1988	1989	1990
<b>Supply</b>															
Refinery Output .....	<b>2.81</b>	<b>2.90</b>	<b>2.80</b>	<b>2.93</b>	<b>2.83</b>	<i>2.89</i>	<i>2.94</i>	<i>3.04</i>	<i>2.86</i>	<i>2.92</i>	<i>2.96</i>	<i>3.07</i>	<b>2.86</b>	<i>2.92</i>	<i>2.95</i>
Imports .....	<b>.31</b>	<b>.22</b>	<b>.26</b>	<b>.35</b>	<b>.38</b>	<i>.30</i>	<i>.30</i>	<i>.31</i>	<i>.31</i>	<i>.33</i>	<i>.32</i>	<i>.34</i>	<b>.28</b>	<i>.32</i>	<i>.33</i>
Exports .....	<b>.09</b>	<b>.06</b>	<b>.07</b>	<b>.06</b>	<b>.11</b>	<i>.06</i>	<i>.07</i>	<i>.07</i>	<i>.09</i>	<i>.06</i>	<i>.07</i>	<i>.07</i>	<b>.07</b>	<i>.07</i>	<i>.07</i>
Net Imports .....	<b>.22</b>	<b>.15</b>	<b>.19</b>	<b>.29</b>	<b>.28</b>	<i>.24</i>	<i>.24</i>	<i>.25</i>	<i>.22</i>	<i>.28</i>	<i>.25</i>	<i>.27</i>	<b>.21</b>	<i>.25</i>	<i>.26</i>
Net Withdrawals .....	<b>.50</b>	<b>-.23</b>	<b>-.22</b>	<b>.08</b>	<b>.28</b>	<i>-.08</i>	<i>-.31</i>	<i>-.02</i>	<i>.47</i>	<i>-.13</i>	<i>-.31</i>	<i>-.03</i>	<b>.03</b>	<i>-.03</i>	<i>.00</i>
<b>Disposition</b>															
Electric Utility Consumption .....	<b>.05</b>	<b>.04</b>	<b>.07</b>	<b>.05</b>	<b>.05</b>	<i>.04</i>	<i>.05</i>	<i>.05</i>	<i>.04</i>	<i>.04</i>	<i>.05</i>	<i>.05</i>	<b>.05</b>	<i>.05</i>	<i>.04</i>
Utility Stock Additions .....	<b>-.01</b>	<b>.00</b>	<b>.00</b>	<b>.00</b>	<b>.00</b>	<i>.00</i>	<b>.00</b>	<i>.00</i>	.00	.00	.00	.00	.00	.00	<i>.00</i>
Electric Utility Shipments .....	<b>.04</b>	<b>.04</b>	<b>.07</b>	<b>.05</b>	<b>.05</b>	<i>.04</i>	<i>.05</i>	<i>.05</i>	<i>.04</i>	<i>.04</i>	<i>.05</i>	<i>.05</i>	<b>.05</b>	<i>.05</i>	<i>.04</i>
Nonutility Shipments .....	<b>3.48</b>	<b>2.77</b>	<b>2.70</b>	<b>3.26</b>	<b>3.34</b>	<i>3.01</i>	<i>2.82</i>	<i>3.22</i>	<i>3.52</i>	<i>3.03</i>	<i>2.85</i>	<i>3.27</i>	<b>3.05</b>	<i>3.10</i>	<i>3.17</i>
Total Product Supplied .....	<b>3.52</b>	<b>2.81</b>	<b>2.77</b>	<b>3.31</b>	<b>3.39</b>	<i>3.05</i>	<i>2.87</i>	<i>3.27</i>	<i>3.56</i>	<i>3.07</i>	<i>2.90</i>	<i>3.31</i>	<b>3.10</b>	<i>3.14</i>	<i>3.21</i>
<b>Stocks</b>															
Electric Utility Stock Levels (million barrels)															
Opening .....	<b>15.8</b>	<b>15.0</b>	<b>15.3</b>	<b>15.5</b>	<b>15.2</b>	<i>14.9</i>	<i>14.8</i>	<i>14.7</i>	<i>14.6</i>	<i>14.6</i>	<i>14.4</i>	<i>14.3</i>	<b>15.8</b>	<i>15.2</i>	<i>14.6</i>
Closing .....	<b>15.0</b>	<b>15.3</b>	<b>15.5</b>	<b>15.2</b>	<b>14.9</b>	<i>14.8</i>	<i>14.7</i>	<i>14.6</i>	<i>14.6</i>	<i>14.4</i>	<i>14.3</i>	<i>14.2</i>	<b>15.2</b>	<i>14.6</i>	<i>14.2</i>
Primary Stock Levels (million barrels)															
Opening .....	<b>134.5</b>	<b>89.3</b>	<b>110.7</b>	<b>131.0</b>	<b>123.5</b>	<i>98.1</i>	<i>105.5</i>	<i>134.0</i>	<i>135.7</i>	<i>93.0</i>	<i>104.7</i>	<i>133.3</i>	<b>134.5</b>	<i>123.5</i>	<i>135.7</i>
Closing .....	<b>89.3</b>	<b>110.7</b>	<b>131.0</b>	<b>123.5</b>	<b>98.1</b>	<i>105.5</i>	<i>134.0</i>	<i>135.7</i>	<i>93.0</i>	<i>104.7</i>	<i>133.3</i>	<i>136.0</i>	<b>123.5</b>	<i>135.7</i>	<i>136.0</i>

Notes: Minor discrepancies with other EIA published historical data are due to rounding. Historical values are printed in **boldface**, forecasts in *italics*.  
Sources: Historical data: Energy Information Administration, *Petroleum Supply Annual 1987*, DOE/EIA-0340(87)/1; *Petroleum Supply Monthly*, DOE/EIA-0109, Jan. 1988 to Jan. 1989; *Monthly Energy Review*, DOE/EIA-0035(89/01); *Electric Power Monthly*, DOE/EIA-0226(89/01); *Weekly Petroleum Status Report*, DOE/EIA-0208(89-11,15).

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

Supply and Disposition	1988				1989				1990				Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1988	1989	1990
<b>Supply</b>															
Refinery Output .....	<b>0.98</b>	<b>0.90</b>	<b>0.88</b>	<b>0.95</b>	<b>0.93</b>	<i>0.83</i>	<i>0.81</i>	<i>0.93</i>	<i>0.93</i>	<i>0.82</i>	<i>0.80</i>	<i>0.91</i>	<b>0.93</b>	<i>0.87</i>	<i>0.87</i>
Imports .....	<b>.71</b>	<b>.41</b>	<b>.51</b>	<b>.74</b>	<b>.75</b>	<i>.44</i>	<i>.48</i>	<i>.59</i>	<i>.59</i>	<i>.42</i>	<i>.44</i>	<i>.57</i>	<b>.59</b>	<i>.56</i>	<i>.51</i>
Exports .....	<b>.19</b>	<b>.23</b>	<b>.18</b>	<b>.20</b>	<b>.21</b>	<i>.18</i>	<i>.16</i>	<i>.20</i>	<i>.20</i>	<i>.18</i>	<i>.16</i>	<i>.20</i>	<b>.20</b>	<i>.19</i>	<i>.19</i>
Net Imports .....	<b>.52</b>	<b>.18</b>	<b>.33</b>	<b>.54</b>	<b>.53</b>	<i>.25</i>	<i>.32</i>	<i>.39</i>	<i>.40</i>	<i>.23</i>	<i>.28</i>	<i>.36</i>	<b>.39</b>	<i>.37</i>	<i>.32</i>
Net Withdrawals .....	<b>.04</b>	<b>.02</b>	<b>-.02</b>	<b>.00</b>	<b>.01</b>	<i>.03</i>	<i>-.01</i>	<i>-.03</i>	<i>.03</i>	<i>.01</i>	<i>-.01</i>	<i>-.03</i>	<b>.01</b>	<i>.00</i>	<i>.00</i>
<b>Disposition</b>															
Electric Utility Consumption .....	<b>.64</b>	<b>.41</b>	<b>.67</b>	<b>.79</b>	<b>.56</b>	<i>.45</i>	<i>.55</i>	<i>.52</i>	<i>.46</i>	<i>.45</i>	<i>.54</i>	<i>.52</i>	<b>.63</b>	<i>.52</i>	<i>.49</i>
Utility Stock Additions .....	<b>-.02</b>	<b>.01</b>	<b>.01</b>	<b>.00</b>	<b>.00</b>	<i>-.01</i>	<i>.00</i>	<i>.01</i>	<i>.00</i>	<i>-.01</i>	<i>.00</i>	<i>.01</i>	<b>.00</b>	<i>.00</i>	<i>.00</i>
Electric Utility Shipments .....	<b>.61</b>	<b>.42</b>	<b>.68</b>	<b>.78</b>	<b>.56</b>	<i>.45</i>	<i>.55</i>	<i>.53</i>	<i>.46</i>	<i>.44</i>	<i>.55</i>	<i>.54</i>	<b>.62</b>	<i>.52</i>	<i>.49</i>
Nonutility Shipments .....	<b>.92</b>	<b>.68</b>	<b>.50</b>	<b>.71</b>	<b>.91</b>	<i>.67</i>	<i>.57</i>	<i>.75</i>	<i>.90</i>	<i>.63</i>	<i>.53</i>	<i>.71</i>	<b>.70</b>	<i>.72</i>	<i>.69</i>
Total Product Supplied .....	<b>1.54</b>	<b>1.10</b>	<b>1.18</b>	<b>1.49</b>	<b>1.47</b>	<i>1.12</i>	<i>1.12</i>	<i>1.28</i>	<i>1.36</i>	<i>1.07</i>	<i>1.07</i>	<i>1.25</i>	<b>1.33</b>	<i>1.25</i>	<i>1.18</i>
<b>Stocks</b>															
Electric Utility Stock Levels (million barrels)															
Opening .....	<b>55.1</b>	<b>52.8</b>	<b>53.5</b>	<b>54.6</b>	<b>54.2</b>	<i>53.9</i>	<i>53.1</i>	<i>53.5</i>	<i>54.6</i>	<i>54.6</i>	<i>53.3</i>	<i>53.6</i>	<b>55.1</b>	<i>54.2</i>	<i>54.6</i>
Closing .....	<b>52.8</b>	<b>53.5</b>	<b>54.6</b>	<b>54.2</b>	<b>53.9</b>	<i>53.1</i>	<i>53.5</i>	<i>54.6</i>	<i>54.6</i>	<i>53.3</i>	<i>53.6</i>	<i>54.9</i>	<b>54.2</b>	<i>54.6</i>	<i>54.9</i>
Primary Stock Levels (million barrels)															
Opening .....	<b>47.4</b>	<b>44.1</b>	<b>42.1</b>	<b>44.2</b>	<b>44.5</b>	<i>43.7</i>	<i>40.9</i>	<i>41.8</i>	<i>44.9</i>	<i>42.0</i>	<i>41.0</i>	<i>42.1</i>	<b>47.4</b>	<i>44.5</i>	<i>44.9</i>
Closing .....	<b>44.1</b>	<b>42.1</b>	<b>44.2</b>	<b>44.5</b>	<b>43.7</b>	<i>40.9</i>	<i>41.8</i>	<i>44.9</i>	<i>42.0</i>	<i>41.0</i>	<i>42.1</i>	<i>45.0</i>	<b>44.5</b>	<i>44.9</i>	<i>45.0</i>

Notes: Minor discrepancies with other EIA published historical data are due to rounding. Historical values are printed in **boldface**, forecasts in *italics*.  
Sources: Historical data: Energy Information Administration, *Petroleum Supply Annual 1987*, DOE/EIA-0340(87)/1; *Petroleum Supply Monthly*, DOE/EIA-0109, Jan. 1988 to Jan. 1989; *Monthly Energy Review*, DOE/EIA-0035(89/01); *Electric Power Monthly*, DOE/EIA-0226(89/01); *Weekly Petroleum Status Report*, DOE/EIA-0208(89-11,15).

**Table 13. Quarterly Supply and Disposition of Other Petroleum Products:  
Base Case<sup>a</sup>  
(Million Barrels per Day, Except Stocks)**

Supply and Disposition	1988				1989				1990				Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1988	1989	1990
<b>Supply</b>															
Net Refinery Output <sup>b</sup> .....	<b>3.10</b>	<b>3.35</b>	<b>3.45</b>	<b>2.98</b>	<b>3.21</b>	<i>3.19</i>	<i>3.35</i>	<i>3.00</i>	<i>3.10</i>	<i>3.22</i>	<i>3.36</i>	<i>3.00</i>	<b>3.22</b>	<i>3.19</i>	<i>3.17</i>
Natural Gas Plant Output .....	<b>1.60</b>	<b>1.61</b>	<b>1.62</b>	<b>1.65</b>	<b>1.64</b>	<i>1.61</i>	<i>1.59</i>	<i>1.63</i>	<i>1.64</i>	<i>1.61</i>	<i>1.60</i>	<i>1.63</i>	<b>1.62</b>	<i>1.62</i>	<i>1.62</i>
Other Domestic <sup>c</sup> .....	<b>.06</b>	<b>.05</b>	<b>.06</b>	<b>.06</b>	<b>.06</b>	<i>.06</i>	<i>.07</i>	<i>.07</i>	<i>.06</i>	<i>.06</i>	<i>.07</i>	<i>.07</i>	<b>.06</b>	<i>.06</i>	<i>.07</i>
Net Imports .....	<b>.44</b>	<b>.54</b>	<b>.49</b>	<b>.52</b>	<b>.59</b>	<i>.58</i>	<i>.62</i>	<i>.59</i>	<i>.64</i>	<i>.65</i>	<i>.65</i>	<i>.65</i>	<b>.50</b>	<i>.59</i>	<i>.65</i>
Net Withdrawals .....	<b>.16</b>	<b>-.47</b>	<b>-.13</b>	<b>.39</b>	<b>.05</b>	<i>-.27</i>	<i>-.10</i>	<i>.33</i>	<i>.12</i>	<i>-.33</i>	<i>-.09</i>	<i>.35</i>	<b>-.01</b>	<i>.00</i>	<i>.01</i>
<b>Total Primary Supply</b> .....	<b>5.36</b>	<b>5.08</b>	<b>5.49</b>	<b>5.61</b>	<b>5.55</b>	<i>5.17</i>	<i>5.53</i>	<i>5.62</i>	<i>5.55</i>	<i>5.21</i>	<i>5.58</i>	<i>5.70</i>	<b>5.38</b>	<i>5.47</i>	<i>5.51</i>
<b>Disposition</b>															
Jet Fuel .....	<b>1.48</b>	<b>1.39</b>	<b>1.42</b>	<b>1.49</b>	<b>1.57</b>	<i>1.45</i>	<i>1.48</i>	<i>1.54</i>	<i>1.59</i>	<i>1.49</i>	<i>1.53</i>	<i>1.59</i>	<b>1.45</b>	<i>1.51</i>	<i>1.55</i>
Liquefied Petroleum Gas <sup>d</sup> .....	<b>1.92</b>	<b>1.34</b>	<b>1.54</b>	<b>1.86</b>	<b>1.93</b>	<i>1.40</i>	<i>1.54</i>	<i>1.92</i>	<i>1.95</i>	<i>1.40</i>	<i>1.54</i>	<i>1.93</i>	<b>1.67</b>	<i>1.69</i>	<i>1.70</i>
Petrochemical Feedstocks <sup>e</sup> .....	<b>.40</b>	<b>.40</b>	<b>.39</b>	<b>.42</b>	<b>.44</b>	<i>.44</i>	<i>.40</i>	<i>.35</i>	<i>.39</i>	<i>.43</i>	<i>.39</i>	<i>.35</i>	<b>.40</b>	<i>.41</i>	<i>.39</i>
Miscellaneous <sup>f</sup> .....	<b>1.56</b>	<b>1.94</b>	<b>2.13</b>	<b>1.84</b>	<b>1.62</b>	<i>1.88</i>	<i>2.11</i>	<i>1.81</i>	<i>1.62</i>	<i>1.89</i>	<i>2.11</i>	<i>1.82</i>	<b>1.87</b>	<i>1.86</i>	<i>1.86</i>
<b>Total Product Supplied</b> .....	<b>5.35</b>	<b>5.08</b>	<b>5.49</b>	<b>5.61</b>	<b>5.55</b>	<i>5.17</i>	<i>5.53</i>	<i>5.62</i>	<i>5.55</i>	<i>5.21</i>	<i>5.58</i>	<i>5.70</i>	<b>5.38</b>	<i>5.47</i>	<i>5.51</i>
<b>Stock</b>															
Primary Stocks (million barrels)															
Opening .....	<b>347.1</b>	<b>332.6</b>	<b>375.0</b>	<b>387.2</b>	<b>351.1</b>	<i>346.8</i>	<i>371.1</i>	<i>379.9</i>	<i>349.4</i>	<i>339.0</i>	<i>369.4</i>	<i>377.9</i>	<b>347.1</b>	<i>351.1</i>	<i>349.4</i>
Closing .....	<b>332.6</b>	<b>375.0</b>	<b>387.2</b>	<b>351.1</b>	<b>346.8</b>	<i>371.1</i>	<i>379.9</i>	<i>349.4</i>	<i>339.0</i>	<i>369.4</i>	<i>377.9</i>	<i>345.6</i>	<b>351.1</b>	<i>349.4</i>	<i>345.6</i>

<sup>a</sup> Excludes crude oil product supplied and other components of the crude oil supply/demand balance, all of which are accounted for under the total petroleum supply and disposition table.

<sup>b</sup> Includes refinery production of all other products less natural gas liquids, liquefied refinery gases, and "other liquids" input to refineries.

<sup>c</sup> Field production of other hydrocarbons and alcohol.

<sup>d</sup> Includes ethane, propane, normal butane, and isobutane.

<sup>e</sup> Includes naphthas and other oils designated for petrochemical feedstock use.

<sup>f</sup> Includes all petroleum products supplied except motor gasoline, distillate, residual fuel, liquefied petroleum gases, petrochemical feedstocks, and jet fuel.

Notes: Historical values are printed in **boldface**, forecasts in *italics*. Data for February and March 1989 are preliminary.

Sources: Historical data: Energy Information Administration, *Petroleum Supply Annual 1987*, DOE/EIA-0340(87)/1; *Petroleum Supply Monthly*, DOE/EIA-0109, Jan. 1988 to Jan. 1989; and *Weekly Petroleum Status Report*, DOE/EIA-0208(89-11,15).

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

Supply and Disposition	1988				1989				1990				Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1988	1989	1990
<b>Supply</b>															
Total Dry Gas Production <sup>a</sup> .....	4.40	4.03	3.91	4.33	4.50	4.20	4.22	4.48	4.54	4.24	4.21	4.49	<b>16.68</b>	17.41	17.49
Net Imports .....	.35	.27	.27	.34	.32	.29	.34	.40	.35	.32	.37	.37	<b>1.23</b>	1.26	1.43
Supplemental Gaseous Fuels .....	.04	.03	.03	.04	.05	.04	.04	.05	.05	.04	.04	.05	<b>.14</b>	.17	.18
Total New Supply .....	<b>4.80</b>	<b>4.33</b>	<b>4.21</b>	<b>4.70</b>	<b>4.87</b>	<b>4.56</b>	<b>4.55</b>	<b>4.87</b>	<b>4.99</b>	<b>4.63</b>	<b>4.57</b>	<b>4.91</b>	<b>18.04</b>	<b>18.84</b>	<b>19.10</b>
<b>Underground Working Gas Storage</b>															
Opening .....	2.76	1.68	2.29	3.12	2.87	1.90	2.49	3.31	2.95	1.92	2.50	3.32	<b>2.76</b>	2.87	2.95
Closing .....	1.68	2.29	3.12	2.87	1.90	2.49	3.31	2.95	1.92	2.50	3.32	2.96	<b>2.87</b>	2.95	2.96
Net Withdrawals <sup>b</sup> .....	1.08	-.61	-.83	.23	.97	-.58	-.82	.36	1.02	-.58	-.82	.36	<b>-.12</b>	-.07	-.02
Total Primary Supply <sup>a</sup> .....	<b>5.88</b>	<b>3.72</b>	<b>3.39</b>	<b>4.94</b>	<b>5.84</b>	<b>3.98</b>	<b>3.72</b>	<b>5.23</b>	<b>6.02</b>	<b>4.05</b>	<b>3.74</b>	<b>5.27</b>	<b>17.92</b>	<b>18.77</b>	<b>19.08</b>
<b>Consumption</b>															
Lease and Plant Fuel .....	.31	.28	.27	.30	.30	.29	.33	.36	.31	.30	.34	<b>1.16</b>	1.22	1.30	
Pipeline Use .....	.15	.13	.13	.14	.16	.14	.13	.15	.16	.14	.13	.15	<b>.54</b>	.58	.59
Residential .....	2.19	.81	.37	1.27	2.10	.91	.42	1.25	2.20	.93	.43	1.25	<b>4.64</b>	4.68	4.80
Commercial .....	1.15	.50	.33	.70	1.07	.52	.33	.68	1.12	.53	.33	.68	<b>2.67</b>	2.60	2.66
Industrial .....	1.71	1.49	1.53	1.66	1.81	1.54	1.50	1.70	1.86	1.57	1.52	1.73	<b>6.39</b>	6.55	6.67
Electric Utilities .....	.54	.72	.91	.47	.55	.67	.87	.61	.60	.68	.87	.61	<b>2.63</b>	2.70	2.75
Subtotal .....	<b>6.05</b>	<b>3.93</b>	<b>3.53</b>	<b>4.54</b>	<b>5.99</b>	<b>4.07</b>	<b>3.55</b>	<b>4.71</b>	<b>6.30</b>	<b>4.14</b>	<b>3.57</b>	<b>4.75</b>	<b>18.04</b>	<b>18.32</b>	<b>18.77</b>
Total Disposition .....	<b>5.88</b>	<b>3.72</b>	<b>3.39</b>	<b>4.94</b>	<b>5.84</b>	<b>3.98</b>	<b>3.72</b>	<b>5.23</b>	<b>6.02</b>	<b>4.05</b>	<b>3.74</b>	<b>5.27</b>	<b>17.92</b>	<b>18.77</b>	<b>19.08</b>
Unaccounted for .....	-.17	-.21	-.14	.40	-.15	-.09	.17	.52	-.28	-.09	.17	.52	<b>-.12</b>	.44	.31

<sup>a</sup> Excludes nonhydrocarbon gases removed.

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

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

Sources: Historical data: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(89/01); *Natural Gas Monthly*, DOE/EIA-0130(89/01); and *Electric Power Monthly*, DOE/EIA-0226(89/01).

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

Supply and Disposition	1988				1989				1990				Year		
	1st	2nd	3rd	4th	1st <sup>a</sup>	2nd	3rd	4th	1st	2nd	3rd	4th	1988	1989	1990
<b>Supply</b>															
Production .....	237	227	241	245	243	249	239	247	243	250	242	254	950	978	989
<b>Primary Stock Levels <sup>b</sup></b>															
Opening .....	28	37	36	31	30	30	29	29	29	28	27	27	28	30	29
Closing .....	37	36	31	30	30	29	29	29	28	27	27	27	30	29	27
Net Withdrawals .....	-8	1	5	1	0	1	0	0	1	1	0	0	-2	1	2
Imports .....	1	1	0	1	0	1	0	1	0	1	1	1	2	2	2
Exports .....	16	25	28	26	19	24	24	25	19	24	24	23	95	92	90
Total New Domestic Supply .....	213	203	219	220	225	226	215	223	226	228	218	231	855	889	903
<b>Secondary Stock Levels <sup>c</sup></b>															
Opening .....	185	174	173	154	158	163	181	162	163	164	180	161	185	158	163
Closing .....	174	173	154	158	163	181	162	163	164	180	161	165	158	163	165
Net Withdrawals .....	12	1	19	-4	-4	-18	19	-1	0	-16	19	-5	27	-5	-2
<b>Total Indicated Consumption</b> .....	224	204	238	216	221	208	234	222	225	212	237	226	882	884	901
<b>Consumption</b>															
Coke Plants .....	10	11	10	11	11	11	10	10	10	11	10	10	42	42	41
Electric Utilities .....	188	176	208	186	187	178	204	190	192	182	208	194	757	759	777
Retail and General Industry <sup>d</sup> .....	22	19	20	22	23	19	20	22	23	19	20	22	83	84	83
Subtotal .....	220	205	238	218	221	208	234	222	225	212	237	226	882	884	901
<b>Total Disposition</b> .....	224	204	238	216	221	208	234	222	225	212	237	226	882	884	901
<b>Discrepancy <sup>e</sup></b> .....	4	-2	0	-2	0	0	0	0	0	0	0	0	0	0	0

<sup>a</sup> Estimated.

<sup>b</sup> Primary stocks are held at the mines, preparation plants, and distribution points.

<sup>c</sup> Secondary stocks are held by users. Most of the secondary stocks are held by electric utilities.

<sup>d</sup> Includes consumption at coal gasification plants of 6.3 million tons for 1988. Synfuels plant consumption is assumed to be 1.5 million tons per quarter through June 1989, and 1.4 million tons per quarter thereafter.

<sup>e</sup> Historical period discrepancy reflects an unaccounted shipper and receiver reporting difference.

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

Sources: Historical data: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(89/01); and *Quarterly Coal Report*, DOE/EIA-0121(88/4Q).

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

Supply and Disposition	1988				1989				1990				Year		
	1st	2nd	3rd	4th	1st <sup>a</sup>	2nd	3rd	4th	1st	2nd	3rd	4th	1988	1989	1990
Net Utility Generation															
Coal .....	<b>383.4</b>	<b>355.7</b>	<b>420.0</b>	<b>378.2</b>	<b>381.8</b>	<i>362.8</i>	<i>412.5</i>	<i>384.7</i>	<i>392.3</i>	<i>372.1</i>	<i>421.2</i>	<i>394.5</i>	<b>1537.3</b>	<i>1541.8</i>	<i>1580.2</i>
Petroleum .....	<b>37.6</b>	<b>24.4</b>	<b>40.1</b>	<b>46.6</b>	<b>33.1</b>	<i>26.7</i>	<i>32.6</i>	<i>30.9</i>	<i>26.7</i>	<i>26.4</i>	<i>32.2</i>	<i>31.0</i>	<b>148.8</b>	<i>123.4</i>	<i>116.4</i>
Natural Gas .....	<b>52.5</b>	<b>69.2</b>	<b>86.2</b>	<b>44.9</b>	<b>53.1</b>	<i>63.9</i>	<i>83.5</i>	<i>58.3</i>	<i>57.0</i>	<i>64.7</i>	<i>83.2</i>	<i>58.5</i>	<b>252.8</b>	<i>258.7</i>	<i>263.4</i>
Nuclear Power .....	<b>130.8</b>	<b>124.8</b>	<b>145.1</b>	<b>126.2</b>	<b>130.5</b>	<i>132.1</i>	<i>141.3</i>	<i>132.1</i>	<i>141.2</i>	<i>129.9</i>	<i>146.2</i>	<i>135.8</i>	<b>526.9</b>	<i>536.0</i>	<i>553.2</i>
Hydropower .....	<b>60.9</b>	<b>59.2</b>	<b>49.6</b>	<b>53.5</b>	<b>63.5</b>	<i>71.6</i>	<i>62.4</i>	<i>65.5</i>	<i>77.3</i>	<i>78.3</i>	<i>64.7</i>	<i>66.4</i>	<b>223.2</b>	<i>263.0</i>	<i>286.7</i>
Geothermal Power and Other <sup>b</sup> .....	<b>3.0</b>	<b>2.9</b>	<b>3.1</b>	<b>3.0</b>	<b>2.9</b>	<i>2.9</i>	<i>3.1</i>	<i>3.1</i>	<i>3.1</i>	<i>3.1</i>	<i>3.3</i>	<i>3.3</i>	<b>12.0</b>	<i>12.1</i>	<i>12.8</i>
Total Utility Generation .....	<b>668.2</b>	<b>636.1</b>	<b>744.2</b>	<b>652.3</b>	<b>665.0</b>	<i>660.0</i>	<i>735.4</i>	<i>674.5</i>	<i>697.6</i>	<i>674.6</i>	<i>750.8</i>	<i>689.6</i>	<b>2700.9</b>	<i>2735.0</i>	<i>2812.6</i>
Net Imports .....	<b>7.0</b>	<b>6.6</b>	<b>8.4</b>	<b>7.8</b>	<b>8.7</b>	<i>8.2</i>	<i>10.4</i>	<i>9.7</i>	<i>10.6</i>	<i>10.0</i>	<i>12.7</i>	<i>11.8</i>	<b>29.9</b>	<i>36.9</i>	<i>45.1</i>
Purchases from Nonutilities <sup>c</sup> .....	<i>14.7</i>	<i>14.0</i>	<i>15.5</i>	<i>14.2</i>	<i>17.1</i>	<i>16.6</i>	<i>18.2</i>	<i>16.6</i>	<i>19.6</i>	<i>19.0</i>	<i>20.9</i>	<i>19.1</i>	<i>58.4</i>	<i>68.5</i>	<i>78.6</i>
Total Supply .....	<i>689.9</i>	<i>656.8</i>	<i>768.2</i>	<i>674.3</i>	<i>690.8</i>	<i>684.8</i>	<i>764.0</i>	<i>700.8</i>	<i>727.8</i>	<i>703.6</i>	<i>784.4</i>	<i>720.5</i>	<i>2789.2</i>	<i>2840.4</i>	<i>2936.3</i>
Losses and Unaccounted For <sup>d</sup> .....	<i>45.7</i>	<i>62.6</i>	<i>58.8</i>	<i>55.9</i>	<i>36.2</i>	<i>65.4</i>	<i>58.9</i>	<i>60.0</i>	<i>45.0</i>	<i>67.2</i>	<i>60.5</i>	<i>61.7</i>	<i>223.0</i>	<i>220.5</i>	<i>234.3</i>
Utility Sales .....	<b>644.2</b>	<b>594.2</b>	<b>709.4</b>	<b>618.4</b>	<b>654.6</b>	<i>619.4</i>	<i>705.1</i>	<i>640.9</i>	<i>682.9</i>	<i>636.4</i>	<i>723.9</i>	<i>658.8</i>	<b>2566.2</b>	<i>2619.9</i>	<i>2702.1</i>

<sup>a</sup> Estimated.

<sup>b</sup> Includes wind, wood, waste, photovoltaic, and solar.

<sup>c</sup> Electricity received from nonutility sources, including cogenerators and small power producers.

<sup>d</sup> Balancing item, mainly transmission and distribution losses.

Notes: Values for net imports, nonutility supply, and losses and unaccounted for are estimated for 1988. Minor discrepancies with other EIA published historic data are due to rounding. Historical values are printed in **boldface**, forecasts in *italics*.

Sources: Historical data: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(89/01); and *Electric Power Monthly*, DOE/EIA-0226(89/01).

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

Supply and Disposition	1988				1989				1990				Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1988	1989	1990
<b>Supply</b>															
<b>Production</b>															
Petroleum <sup>a</sup> .....	4.95	4.89	4.84	4.84	4.63	4.70	4.75	4.78	4.70	4.69	4.68	4.67	19.52	18.86	18.73
Natural Gas <sup>b</sup> .....	4.54	4.15	4.03	4.46	4.64	4.33	4.35	4.62	4.69	4.37	4.34	4.63	17.19	17.95	18.03
Coal .....	5.17	4.95	5.27	5.35	5.31	5.44	5.21	5.39	5.32	5.46	5.28	5.54	20.74	21.35	21.59
Nuclear Power .....	1.41	1.34	1.56	1.36	1.41	1.42	1.52	1.42	1.52	1.40	1.58	1.46	5.68	5.78	5.96
Hydropower <sup>c</sup> .....	.63	.62	.52	.56	.66	.74	.65	.68	.80	.81	.67	.69	2.32	2.73	2.97
Geothermal Power and Other <sup>d</sup> .....	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.07	.07	.24	.24	.26
Subtotal .....	16.76	16.01	16.29	16.62	16.71	16.70	16.54	16.95	17.08	16.80	16.61	17.05	65.68	66.90	67.55
<b>Net Imports</b>															
Crude Oil .....	2.41	2.67	2.65	2.76	2.75	2.89	3.11	2.92	2.68	2.92	3.20	3.06	10.49	11.67	11.85
Other Petroleum .....	.75	.61	.72	.86	.87	.79	.82	.81	.80	.84	.86	.87	2.95	3.29	3.37
Natural Gas .....	.35	.27	.27	.34	.32	.32	.29	.34	.40	.35	.32	.37	1.22	1.26	1.43
Coal and Coke .....	-.40	-.63	-.70	-.67	-.48	-.62	-.62	-.62	-.48	-.60	-.61	-.59	-2.41	-2.34	-2.28
Electricity .....	.07	.07	.09	.08	.09	.08	.11	.10	.11	.10	.13	.12	.31	.38	.46
Subtotal .....	3.18	2.99	3.03	3.36	3.55	3.46	3.71	3.53	3.50	3.61	3.90	3.82	12.56	14.26	14.83
<b>Primary Stocks</b>															
Net Withdrawals .....	1.18	-.83	-.77	.42	1.16	-.71	-1.08	.47	1.34	-.71	-1.06	.48	.00	-.16	.06
SPR Fill Rate Additions(-) .....	-.03	-.03	-.03	-.03	-.04	-.04	-.03	-.04	-.04	-.04	-.04	-.04	-.11	-.15	-.16
<b>Secondary Stocks <sup>e</sup></b>															
Net Withdrawals .....	.30	.01	.39	-.07	-.13	-.35	.41	-.04	-.05	-.30	.43	-.11	.63	-.10	-.04
<b>Total Supply <sup>f</sup> .....</b>	<b>21.39</b>	<b>18.15</b>	<b>18.92</b>	<b>20.30</b>	<b>21.25</b>	<b>19.07</b>	<b>19.55</b>	<b>20.88</b>	<b>21.84</b>	<b>19.35</b>	<b>19.84</b>	<b>21.21</b>	<b>78.75</b>	<b>80.75</b>	<b>82.24</b>
<b>Disposition</b>															
<b>Nonutility Uses</b>															
Petroleum .....	8.18	7.87	7.99	8.36	8.18	8.05	8.19	8.43	8.29	8.10	8.26	8.53	32.40	32.85	33.19
Natural Gas <sup>g</sup> .....	5.68	3.31	2.70	4.19	5.60	3.51	2.76	4.23	5.88	3.57	2.79	4.27	15.88	16.10	16.51
Coal <sup>h</sup> .....	.79	.71	.74	.78	.79	.71	.74	.77	.78	.71	.74	.77	3.03	3.01	2.99
Industrial Hydropower .....	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.03	.03	.03
Subtotal .....	14.66	11.90	11.44	13.34	14.58	12.28	11.70	13.44	14.96	12.39	11.79	13.58	51.34	52.00	52.73
<b>Electric Utility Inputs</b>															
Petroleum .....	.39	.26	.43	.48	.35	.28	.35	.33	.28	.28	.34	.33	1.56	1.30	1.23
Natural Gas .....	.56	.74	.93	.48	.57	.69	.90	.63	.61	.70	.90	.63	2.72	2.79	2.84
Coal .....	3.93	3.67	4.35	3.89	3.93	3.74	4.25	3.96	4.04	3.83	4.34	4.06	15.84	15.88	16.28
Nuclear Power .....	1.41	1.34	1.56	1.36	1.41	1.42	1.52	1.42	1.52	1.40	1.58	1.46	5.68	5.78	5.96
Hydropower <sup>i</sup> .....	.70	.67	.60	.63	.74	.82	.75	.77	.90	.91	.79	.80	2.59	3.07	3.40
Geothermal Power and Other .....	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.07	.07	.24	.24	.26
Subtotal .....	7.04	6.75	7.93	6.90	7.06	7.01	7.83	7.17	7.42	7.18	8.01	7.36	28.63	29.07	29.97
<b>Gross Energy Consumption <sup>f</sup> .....</b>	<b>21.70</b>	<b>18.65</b>	<b>19.37</b>	<b>20.24</b>	<b>21.64</b>	<b>19.29</b>	<b>19.53</b>	<b>20.61</b>	<b>22.39</b>	<b>19.57</b>	<b>19.81</b>	<b>20.93</b>	<b>79.96</b>	<b>81.07</b>	<b>82.70</b>
Electrical System Energy Losses <sup>j</sup> .....	4.89	4.77	5.56	4.84	4.88	4.95	5.48	5.04	5.16	5.07	5.61	5.17	20.07	20.36	21.02
<b>Total Net Energy .....</b>	<b>16.80</b>	<b>13.88</b>	<b>13.81</b>	<b>15.40</b>	<b>16.76</b>	<b>14.34</b>	<b>14.04</b>	<b>15.57</b>	<b>17.22</b>	<b>14.50</b>	<b>14.19</b>	<b>15.76</b>	<b>59.89</b>	<b>60.71</b>	<b>61.68</b>
<b>Total Disposition .....</b>	<b>21.39</b>	<b>18.15</b>	<b>18.92</b>	<b>20.30</b>	<b>21.25</b>	<b>19.07</b>	<b>19.55</b>	<b>20.88</b>	<b>21.84</b>	<b>19.35</b>	<b>19.84</b>	<b>21.21</b>	<b>78.75</b>	<b>80.75</b>	<b>82.24</b>
<b>Unaccounted for .....</b>	<b>-.31</b>	<b>-.51</b>	<b>-.45</b>	<b>.06</b>	<b>-.38</b>	<b>-.22</b>	<b>.02</b>	<b>.27</b>	<b>-.55</b>	<b>-.21</b>	<b>.04</b>	<b>.27</b>	<b>-1.21</b>	<b>-.32</b>	<b>-.45</b>

<sup>a</sup> Includes crude oil and lease condensate, natural gas liquids, hydrogen, etc., input to oil refineries.

<sup>b</sup> Total dry gas production excluding nonhydrocarbon gases removed.

<sup>c</sup> Includes industrial production.

<sup>d</sup> Includes wood and waste used to generate electricity.

<sup>e</sup> Primarily electric utility stocks.

<sup>f</sup> This total excludes approximately 2 quadrillion Btu of wood.

<sup>g</sup> Includes natural gas used as refinery fuel.

<sup>h</sup> Includes net imports of coal coke.

<sup>i</sup> Includes net imports of electricity.

<sup>j</sup> Includes plant use and transmission and distribution losses.

SPR: Strategic Petroleum Reserve.

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

Sources: Historical data: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(89/01); and *Electric Power Monthly*, DOE/EIA-0226(89/01).

**Table 18. Conversion Factors**

Fuel	Units	Heat Content
<b>Coal</b>		
Production .....	Million Btu/short ton	21.833
Consumption .....	Million Btu/short ton	21.340
Coke Plants .....	Million Btu/short ton	26.788
Industrial .....	Million Btu/short ton	22.367
Residential and Commercial .....	Million Btu/short ton	23.111
Electric Utilities .....	Million Btu/short ton	20.924
Imports .....	Million Btu/short ton	25.000
Exports .....	Million Btu/short ton	26.316
Coal Coke .....	Million Btu/short ton	24.800
<b>Crude Oil</b>		
Production .....	Million Btu/barrel	5.800
Imports .....	Million Btu/barrel	5.865
<b>Petroleum Products</b>		
Consumption .....	Million Btu/barrel	5.404
Motor Gasoline .....	Million Btu/barrel	5.253
Jet Fuel .....	Million Btu/barrel	5.624
Distillate Fuel Oil .....	Million Btu/barrel	5.825
Residual Fuel Oil .....	Million Btu/barrel	6.287
Liquefied Petroleum Gas .....	Million Btu/barrel	3.658
Unfinished Oils .....	Million Btu/barrel	5.825
Imports .....	Million Btu/barrel	5.597
Exports .....	Million Btu/barrel	5.841
<b>Natural Gas Plant Liquids</b>		
Production .....	Million Btu/barrel	3.813
<b>Natural Gas</b>		
Production, Dry .....	Btu/cubic foot	1,031
Consumption .....	Btu/cubic foot	1,031
Non-electric Utilities .....	Btu/cubic foot	1,031
Electric Utilities .....	Btu/cubic foot	1,032
Imports .....	Btu/cubic foot	999
Exports .....	Btu/cubic foot	1,011

Electricity Component	Heat Rate (Btu per kilowatthour)
<b>Plant Generation Efficiency</b>	
Coal .....	10,301
<b>Petroleum</b>	
Distillate Fuel Oil .....	11,529
Residual Fuel Oil .....	10,533
Natural Gas .....	10,766
Nuclear Energy .....	10,776
Hydropower .....	10,253
Geothermal and Other Energy .....	21,263
Electricity Consumption .....	3,412

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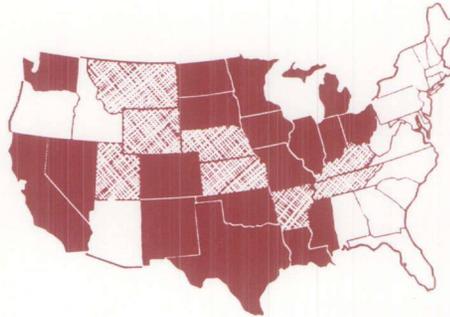
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## U.S. Natural Gas Consumption (Trillion Cubic Feet)

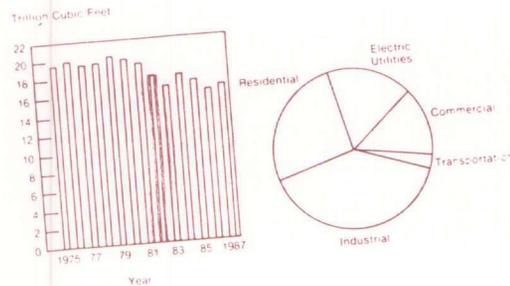
Year	Residential	Commercial	Industrial	Electric Utilities	Transportation	Total
1975	4.92	2.51	8.36	3.16	0.58	19.54
1976	5.05	2.67	8.60	3.08	.53	19.52
1977	4.82	2.50	8.47	3.19	.53	19.63
1978	4.90	2.60	8.40	3.49	.60	20.24
1979	4.97	2.79	8.40	3.49	.63	19.88
1980	4.75	2.61	8.20	3.68	.64	19.40
1981	4.55	2.52	8.06	3.64	.60	18.00
1982	4.63	2.63	6.94	3.23	.49	16.83
1983	4.38	2.43	6.62	2.91	.53	17.95
1984	4.56	2.52	7.23	3.11	.50	17.28
1985	4.43	2.43	6.87	3.04	.49	16.22
1986	4.31	2.39	6.50	2.60	.50	16.68
1987P	4.37	2.29	6.68	2.84		

P = Preliminary data.  
Note: "Total" may not equal sum of components due to independent rounding.  
Source: Energy Information Administration, Annual Energy Review 1987.

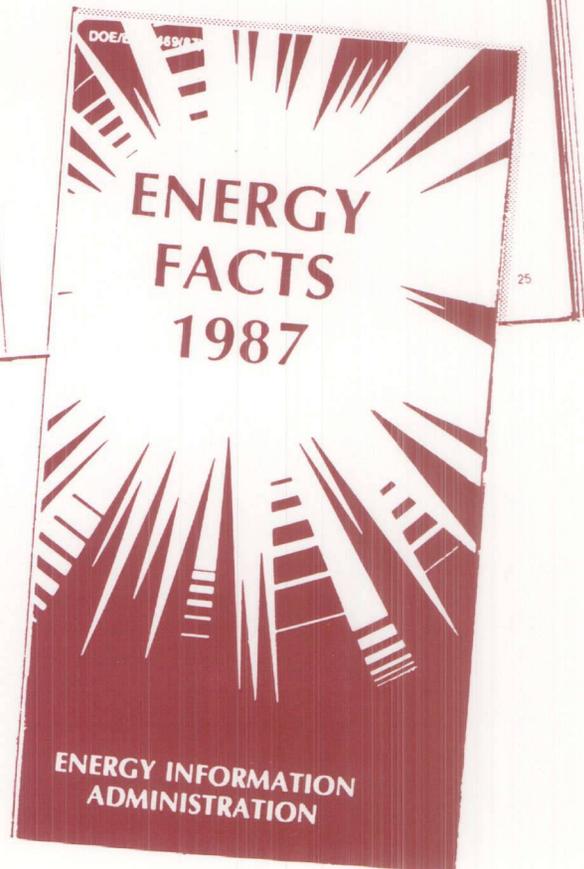
## Average Price of Natural Gas to Residential Consumers in 1986 (Dollars per Thousand Cubic Feet)



## Total Consumption 1987 Consumption



24



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