

This publication is available from the Superintendent of Documents, U.S. Government Printing Office (GPO). Ordering information and purchase of this and other Energy Information Administration (EIA) publications may be obtained from the GPO or the EIA's National Energy Information Center (NEIC). Questions on energy statistics should be directed to the NEIC. Addresses and telephone numbers appear below.

National Energy Information Center, EI-231
Energy Information Administration
Forrestal Building
Room 1F-048
Washington, DC 20585
(202) 586-8800

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

Released for Printing August 4, 1988

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, Independence Avenue, SW, Washington, DC 20585.



Short-Term Energy Outlook

Quarterly Projections

July 1988

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

Contacts

The *Short-Term Energy Outlook* is prepared by the Energy Information Administration (EIA), Office of Energy Markets and End Use (EMEUE). General questions concerning the contents of the report may be referred to W. Calvin Kilgore (202/586-1617), Director of EMEUE; John D. Pearson (202/586-6160), Director of the Energy Analysis and Forecasting Division; Edward Flynn (202/586-5748), Chief of the Demand Analysis and Forecasting Branch; or Richard Farmer (202/586-1458), Chief of the Supply Analysis and Integration Branch.

Detailed questions may be referred to the following analysts, who can be reached at the Energy Analysis and Forecasting Division (202/586-5382).

Macroeconomic Forecast:	Kay A. Smith
Energy Product Prices:	Neil Gamson
International Petroleum Markets:	Michael Grillot
Petroleum Demands:	David Costello John Scott David J. Boomsma
Petroleum Supply:	Richard D. Farmer Stacy Sunderland
Natural Gas:	Alberto Jerardo
Coal:	Alberto Jerardo
Electricity:	Karen E. Elwell
Forecast Integration:	Paul Kondis

Forecasts for domestic crude oil production are made by the EIA Dallas Field Office, under the supervision of John H. Wood. Forecasts of nuclear electricity generation are produced by Roger Diedrich; hydroelectric generation and electricity imports are produced by Thomas Petersik; and coal production is produced by Frederick Freme--all of the EIA Office of Coal, Nuclear, Electric and Alternate Fuels. World petroleum forecasts are prepared by the International and Contingency Information Division, with Mark Rodekohr as Acting Director. The discussion concerning summer motor gasoline production capabilities was contributed by Robert Speir of the EIA Office of Oil and Gas.

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 analyzes current topics in short-term energy analysis and forecasting. 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 1989.

The forecasts are produced using the Short-Term Integrated Forecasting System (STIFS). The STIFS model uses two principal driving variables: a macroeconomic forecast and world oil price assumptions. Macroeconomic forecasts produced by Data Resources, Inc. (DRI) are adjusted by EIA to reflect EIA assumptions about the world price of crude oil, which differ from DRI estimates. EIA's Oil Market Simulation Model is used to project world oil prices. (These models are available on computer tape 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 on page 49. 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.

Important Notice

As required by Federal Government regulation, the Energy Information Administration (EIA) is conducting a review of its publications mailing list. If you are on the EIA mailing list, you will receive a renewal notice, which must be filled out and returned to us. If we do not receive a response by August 31, 1988, your name will be removed from the EIA mailing list. If you have any questions, you may call the National Energy Information Center at 202/586-8800.

Note: This review does not apply to paid subscription lists maintained by the U.S. Government Printing Office.

Contents

	Page
Highlights	1
Effects of the Drought	5
The Drought of 1988: Effect on Electricity Fuel Shares	7
Summer Drought Affects Outlook for Many Fuels	8
Assumptions	11
International Petroleum	13
World Oil Prices	15
Macroeconomic Activity	16
Energy Product Prices	18
U.S. Petroleum Outlook	21
Total Petroleum	23
Motor Gasoline	24
Distillate Fuel Oil	25
Residual Fuel Oil	26
Other Petroleum Products	27
Petroleum Supply Overview	28
Crude Oil and Natural Gas Liquids Production	29
Petroleum Stocks and Imports	30
Outlook for Other Major Energy Sources	31
Natural Gas	33
Coal	34
Electricity	35
Electricity Fuel Shares	36
Special Topics	37
Trends in Jet Fuel Demand	39
Summer Motor Gasoline Production Capabilities	40
Detailed Tables	43

Tables

	Page
1. Summary of Base Case Assumptions and Projections	3
2. International Petroleum Balance	45
3. International Economic Growth	45
4. Macroeconomic, Price, and Weather Data Assumptions for Low, Base, and High World Oil Price Cases	46
5. Quarterly Energy Prices (Nominal): History and Projections	47
6. Quarterly Supply and Disposition of Petroleum: Base Case	48
7. Petroleum Demand Sensitivity Differentials	49
8. Quarterly Supply and Disposition of Petroleum: Low World Oil Price Case	50
9. Quarterly Supply and Disposition of Petroleum: High World Oil Price Case	51
10. Quarterly Supply and Disposition of Motor Gasoline: Base Case	52
11. Quarterly Supply and Disposition of Distillate Fuel Oil: Base Case	53
12. Quarterly Supply and Disposition of Residual Fuel Oil: Base Case	54
13. Quarterly Supply and Disposition of Other Petroleum Products: Base Case	55
14. Quarterly Supply and Disposition of Natural Gas	56
15. Quarterly Supply and Disposition of Coal	57
16. Quarterly Supply and Disposition of Electricity	58
17. Quarterly Supply and Disposition of Total Energy	59
18. Conversion Factors	60

Illustrations

	Page
1. OPEC Oil Production and Production Capacity	14
2. World Oil Prices	15
3. Real GNP and Components of Change	16
4. Indices of Economic Activity	17
5. Motor Gasoline Prices	19
6. Distillate Prices	19
7. Utility Oil and Gas Prices	19
8. Total Petroleum Demand	23
9. Motor Gasoline Demand and Components	24
10. Distillate Fuel Oil Demand	25
11. Residual Fuel Oil Demand	26
12. Other Petroleum Products Demand	27
13. Changes in Sources of Petroleum Supply	28
14. Components of Domestic Petroleum Production	29
15. Stocks and Net Imports of Petroleum	30
16. Natural Gas Demand	33
17. Coal Supply and Disposition	34
18. Electricity Demand	35
19. Electricity Generation by Fuel Source	36

Highlights

The prospects for continued growth in domestic demand for petroleum in 1988 and 1989 continue to be good, as the economy expands in 1988 and as excess oil stocks worldwide indicate continued price weakness over the forecast horizon. Electricity demand is expected to continue growing at a strong pace through the end of this year and into next year. The severe drought this year is presenting special problems for both electricity supply (hydroelectric power availability has declined considerably) and for transportation of oil, coal, and other products that are partially dependent on waterway traffic for distribution.

Expectations for Lower World Oil Prices Are Reinforced

Excess supplies of crude oil are expected to keep world crude oil prices relatively low, rising from less than \$15 per barrel in the third quarter of this year to around \$17 per barrel by early next year, and then remaining at that level throughout 1989.

Petroleum Demand Likely to Average 17 Million Barrels per Day in 1988

Petroleum demand is expected to increase by 310,000 barrels per day in 1988 to 17.0 million barrels per day, an annual level not seen since 1980. Although abnormal weather was a factor in this growth, strong growth in the demand for jet fuel, motor gasoline, and petrochemical feedstocks should help push petroleum demand up by an additional 210,000 barrels per day in 1989, even if normal weather returns.

Imports Continue to Grow in Importance in Domestic Petroleum Supply

U.S. net imports of crude oil (including the Strategic Petroleum Reserve) and petroleum products are expected to continue rising through 1989, from 5.9 million barrels per day in 1987 to 6.3 in 1988 and 6.8 in 1989. These rates compare with a record high of 8.6 in 1977 and a low of 4.3 in 1985. The upward trend in imports is fueled by anticipated reductions in domestic production (120,000 barrels per day in 1988 and 230,000 in 1989). Slower growth in petroleum demand in 1989 is not sufficient to curb import growth because of the large drop in domestic production.

Adverse Weather and a Healthy Economy Keep Electricity Sales High in 1988 . . .

High residential and commercial use in the first quarter due to frigid temperatures, coupled with effects from high manufacturing output and commercial activity, points to electricity sales growth of 3.2 percent in 1988. Normal weather and a slowing of manufacturing growth next year may limit growth in electricity demand to 2.4 percent in 1989.

. . . But the Drought of 1988 May Alter Sources of Supply for Electricity and Overall Energy Needs

Low hydroelectric generation due to drought conditions this year has forced some utilities to turn to alternative fuels (natural gas, oil, coal, and nuclear power) and to other utilities to meet increased electricity demand. Distillate transportation has slowed considerably because of reliance on barges along shallow rivers (see "Effects of the Drought," pages 7-9).

Growth in Jet Fuel Demand May Slow in 1988, But Not by Much

After 5.9-percent growth in 1987, demand for jet fuel is expected to increase by another 5.8 percent this year. First-half estimates are already 6.3 percent above first-half 1987 levels. Additional growth is expected in 1989 (see "Trends in Jet Fuel Demand," page 39).

The forecasts previously discussed are the base case projections, summarized in Table 1 on page 3. Additional sensitivity cases, using alternative assumptions, are shown in Table 7 on page 49. Should imported crude oil prices, weather, or economic growth rates differ from the base case assumptions (with all other factors held constant), the following could occur:

- For a 10-percent decline in the price of imported crude oil from the base case level, petroleum consumption could increase by about 0.8 percent (about 140,000 barrels per day in 1989, for example).
- For a 10-percent increase in heating degree days from the base case level during the heating season, petroleum consumption could increase by about 0.9 percent (about 160,000 barrels per day between December 1988 and February 1989, for example).
- For a 1-percent increment in economic activity above the base-case level, petroleum consumption could increase by about 0.7 percent (about 120,000 barrels per day in 1989, for example).

Assuming no domestic production response, these petroleum demand sensitivities would translate directly into increased net imports of petroleum on a barrel-for-barrel basis.

Table 1. Summary of Base Case Assumptions and Projections

Assumptions and Projections	Year				Annual Percentage Change		
	1986	1987	1988	1989	1986-1987	1987-1988	1988-1989
Macroeconomic Indicators							
Real Gross National Product (billion 1982 dollars)	3,713	3,821	<i>3,943</i>	<i>4,037</i>	2.9	<i>3.2</i>	<i>2.4</i>
Index of Industrial Production (Mfg.) (index, 1977 = 1.000)	1.291	1.346	<i>1.415</i>	<i>1.465</i>	4.3	<i>5.1</i>	<i>3.5</i>
Imported Crude Oil Price (nominal dollars per barrel)	14.00	18.16	<i>15.40</i>	<i>17.00</i>	29.7	<i>-15.2</i>	<i>10.4</i>
Retail Prices (nominal) ^a							
Motor Gasoline ^b (dollars per gallon) .....	.93	.96	<i>.94</i>	<i>.96</i>	3.2	<i>-2.1</i>	<i>2.1</i>
Retail No. 2 Heating Oil (dollars per gallon) .....	.84	.80	<i>.80</i>	<i>.81</i>	-4.8	<i>.0</i>	<i>1.3</i>
Residential Natural Gas (dollars per thousand cubic feet)	5.83	5.56	<i>5.43</i>	<i>5.71</i>	-4.6	<i>-2.3</i>	<i>5.2</i>
Residential Electricity (cents per kilowatthour)	7.80	7.76	<i>7.71</i>	<i>7.99</i>	-5	<i>-6</i>	<i>3.6</i>
Petroleum Supply							
Crude Oil Production ^c (million barrels per day)	8.68	8.35	<i>8.23</i>	<i>8.00</i>	-3.8	<i>-1.4</i>	<i>-2.8</i>
Net Petroleum Imports, Including SPR (million barrels per day)	5.44	5.91	<i>6.30</i>	<i>6.78</i>	8.6	<i>6.6</i>	<i>7.6</i>
Consumption							
Total Market Economies Petroleum Consumption (million barrels per day)	47.97	48.78	<i>49.65</i>	<i>50.32</i>	1.7	<i>1.8</i>	<i>1.3</i>
Total U.S. Petroleum Consumption (million barrels per day)	16.28	16.67	<i>16.98</i>	<i>17.19</i>	2.4	<i>1.9</i>	<i>1.2</i>
Motor Gasoline	7.03	7.21	<i>7.29</i>	<i>7.42</i>	2.6	<i>1.1</i>	<i>1.8</i>
Distillate Fuel Oil	2.91	2.98	<i>3.08</i>	<i>3.16</i>	2.4	<i>3.4</i>	<i>2.6</i>
Residual Fuel Oil	1.42	1.26	<i>1.23</i>	<i>1.18</i>	-11.3	<i>-2.4</i>	<i>-4.1</i>
Other Petroleum ^d	4.92	5.22	<i>5.38</i>	<i>5.43</i>	6.1	<i>3.1</i>	<i>.9</i>
Coal Consumption (million short tons)	804	837	<i>865</i>	<i>871</i>	4.1	<i>3.3</i>	<i>.7</i>
Natural Gas Consumption (trillion cubic feet)	16.22	16.68	<i>18.27</i>	<i>18.41</i>	2.8	<i>9.5</i>	<i>.8</i>
Electricity Generation (billion kilowatthours)	2,487.3	2,572.1	<i>2,649.2</i>	<i>2,712.4</i>	3.4	<i>3.0</i>	<i>2.4</i>
Total Energy Consumption ^e (quadrillion Btu)	74.24	76.26	<i>79.57</i>	<i>80.94</i>	2.7	<i>4.3</i>	<i>1.7</i>
Thousand Btu/1982 Dollar of GNP	19.99	19.96	<i>20.18</i>	<i>20.05</i>	-2	<i>1.1</i>	<i>-6</i>

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

^b Average for all grades and services.

^c Includes lease condensate.

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

^e The conversion from physical units to Btu is calculated by STIFS using a subset of *Monthly Energy Review* (MER) conversion factors. Consequently, the historical data 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(88/04); *International Energy Annual 1986* DOE/EIA-0219(86); *Petroleum Marketing Monthly*, DOE/EIA-0380(88/04); *Petroleum Supply Monthly*, DOE/EIA-0109(88/04); *Petroleum Supply Annual 1987*, DOE/EIA-0340(87)/1; *Natural Gas Monthly*, DOE/EIA-0130(88/04); *Electric Power Monthly*, DOE/EIA-0226(88/04); and *Quarterly Coal Report*, DOE/EIA-0121(88/1Q); Organization for Economic Cooperation and Development, *Monthly Oil Statistics Database* through January 1988.

Macroeconomic projections are based on modifications to Data Resources, Inc., Forecast CONTROL0688.

Effects of the Drought

- *The Drought of 1988: Effect on Electricity Fuel Shares*

- *Summer Drought Affects Outlook for Many Fuels*

The Drought of 1988: Effect on Electricity Fuel Shares

Drought conditions this year have intensified a recent decline in the Nation's ability to deliver low-cost hydroelectric power to consumers. It is estimated that 1988 will be a year in which hydroelectric generation falls to an annual level lower than any year but one (1977) in the last 22. A decline in hydroelectric generation has been observed over the past 5 years, and in 1987 hydroelectric power levels reached a 10-year low. On the other hand, it is known that hydroelectric generation in 1983 and 1984 was extraordinarily high due to abnormally favorable water levels. The current situation is an extreme example of the variability that has characterized hydroelectric availability in the past two decades.

Important implications for alternative fuel use at utilities arise from the loss of hydroelectric generation, and this *Outlook* reports results for utility fuel use which stem from standard EIA procedures for modeling the effects of reduced hydroelectric availability at the national level. Because of the extent of the loss in hydropower (compared to expected availability when precipitation levels are normal), and because of the possibility of severe regional impacts, a closer look at the potential uncertainties in the current utility fuel demand forecast is warranted. The drought itself contributes additional impetus to the need for evaluating more closely the electricity production forecast, in that, aside from the loss of water to hydroelectric units, water availability for safe, reliable operation of large coal-fired, nuclear, and other power plants can be a problem.

- For the base case scenario, the following assumptions are made:
 - Hydroelectric generation falls to 230 billion kilowatthours in 1988, 8 percent less than 1987 and 21 percent below the average for 1980 through 1987.
 - For fossil-fueled and nuclear generating units, the capability of existing units and planned additions is not impeded by low water levels.
 - Nuclear generation is not affected by variations in hydroelectric generation.
 - For every 1 billion kilowatthours less hydroelectric power available, roughly 540 million kilowatthours of additional coal-based generation and 460 million kilowatthours of oil- and/or gas-fired generation is needed.
- Compared to a situation in which hydroelectric generation for 1988 is assumed to match the average for 1980 through 1987 (corresponding to hydroelectric generation levels of approximately 290 billion kilowatthours per year, but with all other exogenous conditions the same) the base case for this *Outlook* shows:
 - 2.6 percent (39 billion kilowatthours) more coal-fired generation, implying approximately 19 million tons additional coal consumed
 - 9.3 percent (10 billion kilowatthours) more oil-based generation, implying approximately 47,000 barrels per day additional oil consumed
 - 9.8 percent (24 billion kilowatthours) more gas-based generation, implying approximately 248 billion cubic feet additional natural gas consumed.
- The above calculations involve the implicit assumption that the current loss of hydroelectric power is distributed nationally in the same manner as average annual hydroelectric production for the period 1980 to 1987. A somewhat greater or smaller effect on coal-based generation than indicated above may prove to be the result of continued low hydroelectric generation this year if the regional distribution of hydroelectric availability is significantly different from the average for the past 8 years. More importantly, however, if the loss in hydroelectric power generation in the eastern part of the United States (including the Tennessee Valley Authority) is disproportionately large relative to the average share of U.S. hydroelectric output for the 1980 through 1987 period, then the above estimates of increased gas usage may be too high.
- In 1987, the average share of total U.S. hydroelectric generation for the western part of the United States (Rocky Mountain and West Coast States) was the lowest in 8 years, according to the EIA's *Electric Power Annual* (1984 through 1986) and estimates based on data from the EIA's *Electric Power Monthly* (December 1987). In 1988, however, it appears that some of the most severe effects of the drought on hydroelectric generation are being felt in the eastern half of the United States, particularly in the Tennessee Valley region. On balance, the methodology used here for determining the effects of low hydroelectric generation on the use of fossil fuels at electric utilities seems to be sound. To the extent that a more or less than proportionate amount of lost hydroelectric generation occurs in the western United States, then a greater or smaller positive effect on natural gas use may be implied than is indicated for this *Outlook*.

Summer Drought Affects Outlook for Many Fuels

Implications for the overall energy outlook of the dry weather and high temperatures in the Upper Midwest and the Southeast, as well as the low snow accumulation in the Far West last winter, are just now becoming clear.

Among the most obvious consequences of the low rainfall is the reduced supply of hydroelectricity (see related analysis above). At the same time, higher temperatures have increased the cooling demand for electricity throughout much of the country: preliminary data for the second quarter of 1988 indicate that total electricity generation is running about 4 billion kilowatt-hours, or 0.7 percent, above the level projected in the April *Outlook* (Table 16 on page 58). A further obvious result of the drought relates to reduced agricultural harvests and lower demand for diesel fuel to operate farm equipment (although energy demand for irrigation uses will be higher in some areas) and for propane to dry crops. Local economies dependent on agriculture have also suffered. The worsening crisis, however, is extending beyond the agricultural sector and is influencing, to varying degrees, the demand for and the supply (including production, storage, and/or movement) of most major forms of energy.

In the generation of electricity with steam units, water availability and water temperature have begun to constrain activities by several utilities. In July, several coal, natural gas, and nuclear generating units were indicated by industry publications to be threatened by water problems. Affected utilities may make up some of the loss by using their other plants more intensively and by increasing their purchases of electricity from other utilities, although high temperatures across the country have reduced the total pool of excess capacity.

The same water constraint applies to other industrial steam units, including petroleum refineries. A further dimension of the water availability problem for refineries south of New Orleans has been increasing salinity, as salt water from the Gulf of Mexico pushes north against the diminished flow of the Mississippi River. Refineries accounting for about 0.75 million barrels per day of distillation capacity are potentially affected by the threat of corrosive salt water. Fresh water must be used in boilers, although it may be possible to use brackish water for cooling. Some refiners are reportedly shipping in fresh water.

The reduced barge traffic on the Mississippi and its tributaries (due both to reduced movements and to lighter loads) is also affecting deliveries to coal-fired power plants, as new supplies of coal have been restricted in moving out of the coal-producing regions and up the river to the consuming utilities. So far, ample utility coal stocks have sustained operations. Low water levels on the rivers have not affected refiners greatly, since little crude oil is delivered by barge, and most major products move from Gulf Coast refineries into the Midwest by pipeline or over land. One exception here is distillates, but in this case agricultural demand is already restricted. Shipments of asphalt have also been curtailed. Products that normally move by truck, rail, and canal are facing increased competition from materials that have not been able to move on the river. (One of the biggest competitors for rail service in the Midwest has been the winter wheat crop, which apparently was helped by the dry weather this spring, along with shipments of grain out of storage.)

Inventories of coal and petroleum products have been pulled at by both supply and demand consequences of the drought. For example, while coal demand by utilities has apparently increased on net because of higher cooling demand and restrictions on hydroelectric generation, coal has had difficulties in reaching those utilities. As a result, estimated utility stocks of coal at mid-1988 are 17 million tons, or 9 percent, lower than projected in the April *Outlook*, while producer stocks are 5 million tons, or 17 percent, higher (Table 15 on page 57). Similarly for distillate stocks, agricultural demand has been reduced, but barge shipments of distillates have been restricted. The net effect for the Midwest (Petroleum Administration for Defense District II) is that second-quarter distillate stocks do not appear to be significantly different from last year (Table 11 on page 53).

As with inventories, many energy prices are simultaneously being pulled in different directions by the consequences of the drought. For electricity, however, all forces are pushing in the same direction--up. Higher electricity prices in the affected region will result because of greater reliance on steam units (in particular, oil and gas units) and purchased electricity, greater transmission and distribution costs, greater operation and maintenance costs (with the shutdown of units and less efficient operation of steam units with warmer water), as well as increased cooling demand. In the affected agricultural regions, lower distillate and propane prices should be affected as a consequence of reduced demand, despite increased transportation costs for product still moving into those States. Prices for distillates and

propane on the Gulf Coast should also be depressed, as supplies pile up in that area. Restricted coal movement is leading to higher coal prices. No clear evidence of the impact of increased utility demand for gas on natural gas prices has been seen--gas prices normally display a moderate summer increase.

The Far West has so far escaped the immediate consequences of the drought affecting the rest of the country. Despite a winter snowfall that was 30 percent below normal, a higher-than-normal water table in California's Central Valley has sustained agricultural activities, while reduced hydroelectric generation from northern California has been offset by increased coal-fired generation from the Four Corners area and by local plants. More serious problems, however, are likely to emerge this fall and winter, as hydro sources are depleted further. Longer-term consequences for the Midwest and Southeast will depend on when the rains come and how much of the current crops can be salvaged. Agricultural demand for diesel fuel will be sustained later this summer as farmers turn their soil under. And, if normal weather returns next year, some increase in acreage (and hence in energy use) should be expected, as farmers try to make up for this year's losses.

Assumptions

- *International Petroleum*

- *World Oil Prices*

- *Macroeconomic Activity*

- *Energy Product Prices*

International Petroleum

Recent Developments

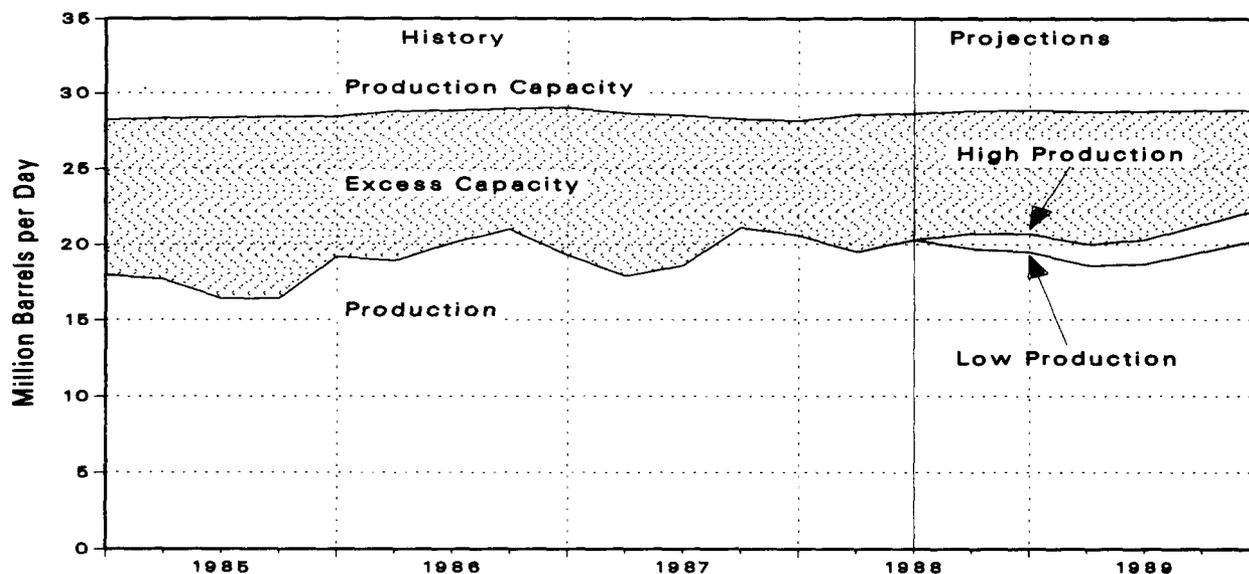
Oil market developments since early April appear to have moved the oil producers from the Organization of Petroleum Exporting Countries (OPEC) toward their most severe crisis since the oil price collapse of 1986. In the past 3 months, the OPEC member States, which had apparently abandoned their official crude oil prices, have: (1) increased their crude oil production well above their production ceiling, thereby adding to already sizable world petroleum inventories; (2) failed on two occasions, in late April and early June, to agree to any new course of action; and (3) become even more divided, as a split between the United Arab Emirates (U.A.E.) and other Persian Gulf Arab member States over the U.A.E production quota has been added to the already deep divisions between the Gulf Arab States and the eight other OPEC member States. As a result, spot prices for OPEC crude oils, which had ranged between \$13.50 and \$17.00 per barrel since mid-April, finally began a gradual decline in the second week of June, when it became apparent that OPEC would not take any decisive action at its June Ministerial Conference.

The key question after the Conference was: would the major Gulf Arab member States allow their crude oil sales to decline in the third quarter, in the face of seasonally weak demand, or would they attempt to maintain or even increase production by offering significantly lower prices? Press reports in late June detailing additional price discounts to some customers of Saudi Arabia and a decision to increase production by the U.A.E. seemed to indicate that the latter alternative had been chosen. As a result, oil prices dropped sharply, and by July 1, the spot prices for OPEC crude oil had fallen to a range between \$11.00 and \$14.50 per barrel, the lowest range since early March. Prices appeared poised to drop even lower, but this decline was averted, probably only temporarily, when news of the explosion of the Piper Alpha oil platform in the North Sea coincided with reports that Ecuador, Venezuela, and Algeria were discussing the possibility of requesting an Extraordinary Conference of the OPEC Oil Ministers.

It currently appears that the Gulf Arab members of OPEC are not willing to attend an Extraordinary OPEC Conference unless agreements can be assured beforehand. However, a continued decline of spot prices for OPEC crude oil, holding with it the possibility that refiners might decide to begin rapid drawdowns of their large inventories, could help move the OPEC member States together. As the past has shown, OPEC often takes its strongest actions when least expected. (Recent developments toward a cease-fire in the Iran-Iraq war and the announced meeting of the OPEC Price Monitoring Committee in early August of this year are not expected to affect the range of world oil price assumptions used in this analysis.)

- In the first quarter of 1988, the price of imported crude oil delivered to U.S. refiners declined from \$16.10 per barrel in January to \$15.61 in February, and then to \$14.82 in March, averaging \$15.50 for the quarter. Imported oil increased to \$15.52 per barrel in April.
- It is estimated from current data that OPEC oil production (including about 1.7 million barrels per day of condensate and liquefied petroleum gas production and refinery gain) averaged about 20.3 million barrels per day in the second quarter of 1988, an increase of about 840,000 barrels per day from the estimated rate for the first quarter (Figure 1 on page 14 and Table 2 on page 45). OPEC crude oil production, which averaged about 18.0 million barrels per day in March, jumped to 18.5 million barrels per day in both April and May, as Saudi Arabia and the United Arab Emirates abandoned their defense of official prices. Subsequently, in June, OPEC crude oil production increased to about 18.7 million barrels per day.
- Some of the data for 1987 have undergone significant revisions since the last *Outlook* (Table 2). In addition to the revisions to the U.S. data, discussed elsewhere in this *Outlook*, numerous revisions have been made to product supplied data for the other countries in the Organization for Economic Cooperation and Development (OECD). Also, some OPEC supply and net Communist export data have been revised.

Figure 1. OPEC Oil Production and Production Capacity



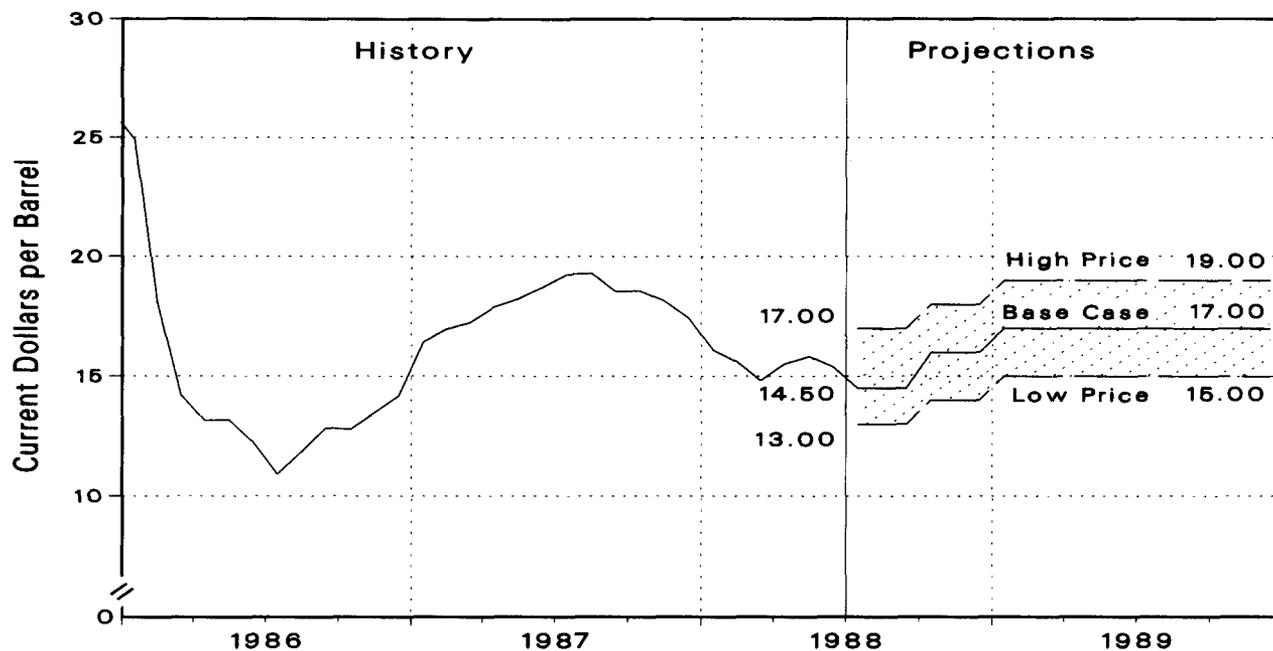
Note: OPEC production includes crude oil, natural gas liquids, and refinery gain.
Sources: • History: Energy Information Administration, Office of Energy Markets and End Use, International and Contingency Information Division. • Projections: Table 2.

Forecast

The demand for petroleum products by the market economies is expected to average 49.7 million barrels per day in 1988, an increase of about 870,000 barrels per day, or 1.8 percent, from the 1987 rate. In 1989, demand is expected to increase by about 670,000 barrels per day, or 1.3 percent (Table 2 on page 45).

- Petroleum demand by the OECD countries is expected to average 36.3 million barrels per day in 1988, an increase of about 540,000 barrels per day, or 1.5 percent. This increase is based on the assumption that the OECD economies will grow at a rate of 3.0 percent in 1988 (Table 3 on page 45). The United States is expected to account for over one-half of the 1988 increase in OECD petroleum demand. In 1989, as OECD economic growth slows to 2.4 percent, petroleum demand is expected to increase by only 310,000 barrels per day, or 0.9 percent. The United States is expected to account for two-thirds of this increase. Europe should account for one-fourth of the increase, assuming that the unseasonably warm winter of 1988 is not repeated.
- Oil production from the non-OPEC market economies should increase by about 450,000 barrels per day in 1988, followed by a further increase of about 210,000 barrels per day in 1989. These production projections assume that the decrease in production from the United Kingdom sector of the North Sea, as a result of the explosion on the Piper Alpha platform, will be about 290,000 barrels per day in the second half of 1988 and about 180,000 barrels per day throughout 1989. Most of the increase in non-OPEC production is expected to come from the developing countries, where production should increase by about 500,000 barrels per day in both 1988 and 1989. Notable contributions will come from North Yemen, Angola, and Malaysia in 1988 and from North Yemen, Syria, Mexico, and Colombia in 1989.
- Net oil exports from Communist countries to the market economies are expected to increase by about 50,000 barrels per day in 1988, because the mild European winter enabled the Soviet Union to achieve above-normal exports in the first quarter. A return to normal weather patterns in 1989 will reduce net Communist oil exports back to their 1987 rate.
- The forecast detailed above implies OPEC oil production in 1988 of 20.0 million barrels per day, or about 450,000 barrels per day more than the average OPEC oil production in 1987. The implied call on OPEC oil in 1989 is 20.1 million barrels per day. A range of possible aggregate OPEC oil production 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 2. World Oil Prices



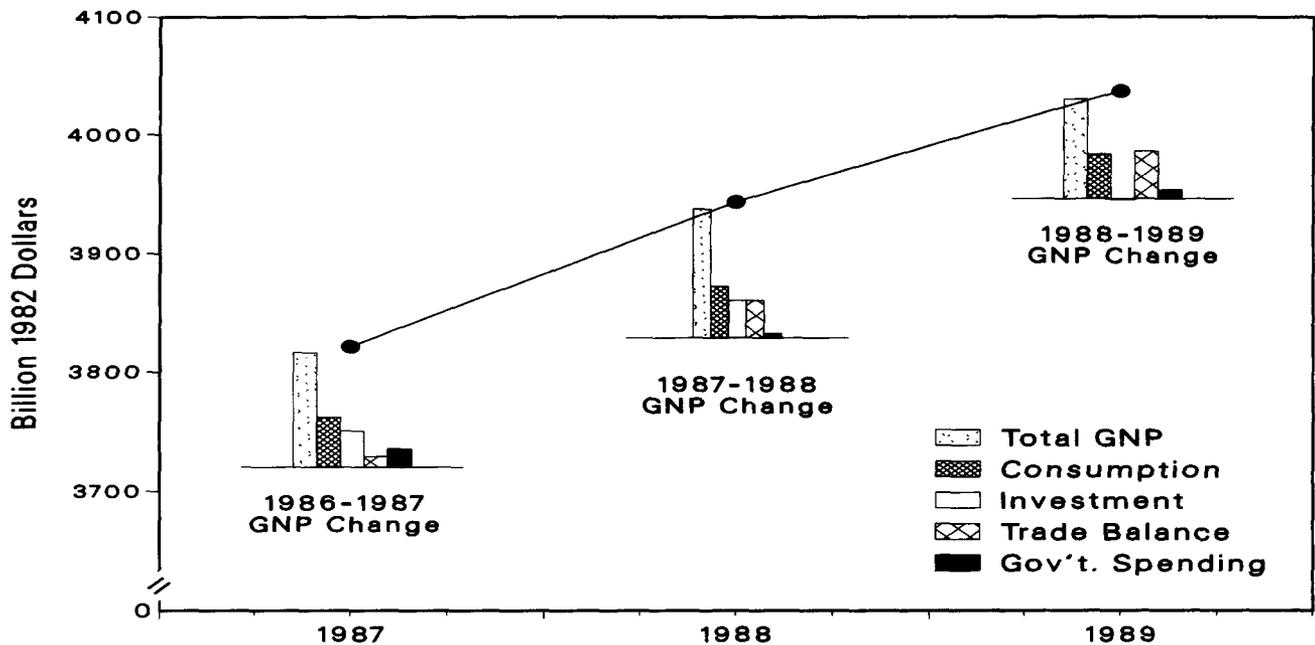
Note: Prices are defined as the cost of imported crude oil to U.S. refiners.
Sources: • History: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(88/04) (Washington, DC, 1988). • Projections: Table 4.

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 domestic energy projections. The same initial economic assumptions are used in all three cases, modified only for feedback effects resulting from the specific oil price scenarios (Table 4 on page 46). None of the scenarios addresses the potential effects on oil prices of a significant disruption in oil supplies from the Persian Gulf resulting from increased military hostilities.

- In the base oil price scenario, the world oil price falls from about \$15.60 per barrel in the second quarter of 1988 to \$14.50 in the third quarter, then rises to \$16 in the fourth quarter, and \$17 in 1989. This scenario is based on the assumption that the OPEC oil producers will take some action in the third quarter to restrain their overproduction. This restraint, combined with a seasonally high demand for OPEC oil in the fourth quarter, a smaller increase in non-OPEC oil supplies in 1989, and a willingness by refiners to hold higher levels of inventories, will allow the OPEC producers gradually to increase their prices over the projection period.
- In the low oil price scenario, the world oil price falls to \$13 per barrel in the third quarter of 1988, then rises to \$14 in the fourth quarter and \$15 in 1989. In this scenario, it is assumed that continued excessive OPEC overproduction and/or large stock drawdowns by refiners will offset much of the upward pressure on prices from the factors noted in the base oil price scenario.
- In the high oil price scenario, the world oil price increases to \$17 per barrel in the third quarter of 1988, \$18 in the fourth quarter, and \$19 in 1989. In this scenario, it is assumed that the OPEC countries will promptly agree on and implement sharp reductions in their production quotas. These actions, combined with strong increases in demand resulting from higher-than-expected economic growth, will, in turn, force refiners to draw down inventories to more normal levels.

Figure 3. Real GNP and Components of Change



Sources: • History: Bureau of Economic Analysis, U.S. Department of Commerce, *Survey of Current Business*, June 1988; Federal Reserve System, *Statistical Release G.12.3*, June 1988. • Projections: Table 4.

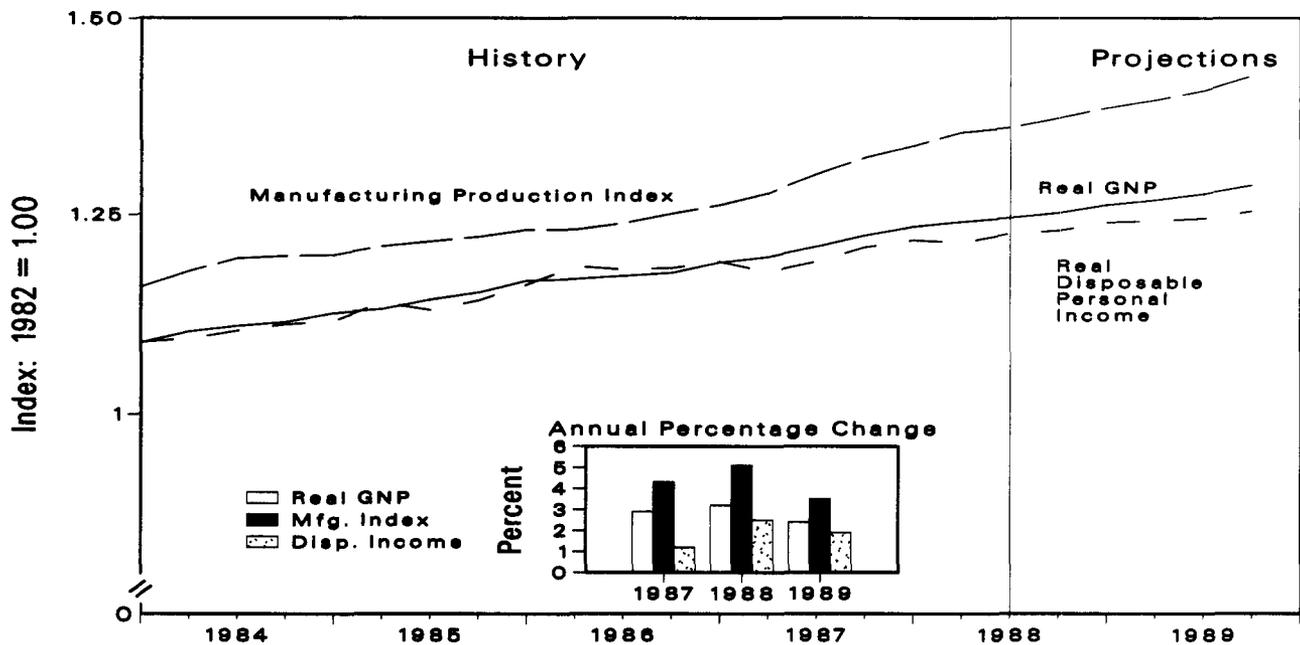
Macroeconomic Activity

The U.S. economy is expected to show improved performance in the near term, registering strong growth in 1988 but slower expansion in 1989. During the aftermath of the October 1987 stock market decline, the primary concern of monetary authorities was to provide sufficient liquidity. With the recent robust growth in macroeconomic activity, the focus now appears to have changed to controlling inflation. Currently, unemployment is at a 10-year low, and recent increases in commodity prices may indicate a return of inflation. The Federal Reserve Board's response to renewed inflationary pressure results in noticeably higher interest rates, particularly in 1989.

The current macroeconomic forecast calls for growth in real gross national product (GNP) to continue at a relatively healthy 3.2-percent rate in 1988 and then drop off to 2.4 percent in 1989 (Table 4 on page 46). Real investment spending is significantly higher in 1988, with both residential and nonresidential investment expenditures registering healthy gains.

- A relatively balanced growth pattern for GNP emerges in the near term. Because of the improved forecast for investment in 1988, consumption, investment, and the trade sector contribute similar percentage growth toward GNP. In 1989, it is mostly consumption and the trade sectors that fuel GNP growth (Figure 3).
- The tightening of Federal Reserve policy is expected to result in higher interest rates in both 1988 and 1989, with the latter year experiencing the highest increase. As a result, investment and interest-sensitive portions of consumer spending exhibit slower growth in 1989.

Figure 4. Indices of Economic Activity



Sources: • History: Bureau of Economic Analysis, U.S. Department of Commerce, *Survey of Current Business*, June 1988; Federal Reserve System, *Statistical Release G.12.3* June 1988. • Projections: Table 4.

- Higher investment and consumption contribute to healthy gains in manufacturing output in 1988 (5.1 percent). Growth in manufacturing output is expected to drop to 3.5 percent in 1989 (Figure 4); however, those industries geared to the export sector should still enjoy healthy growth. In 1989, the foreign sector contributes slightly less than one-half of the expected GNP growth. The energy-intensive industries should experience robust growth through the end of 1989.
- Real disposable income is expected to grow by 2.5 percent in 1988, but improves by only 1.9 percent in 1989. This slower growth in real income is due to higher overall personal income tax rates (due mainly to increased reliance by State and local governments on income taxes) and to higher growth in consumer prices in 1989, spurred in part by cumulative effects of the weaker dollar.

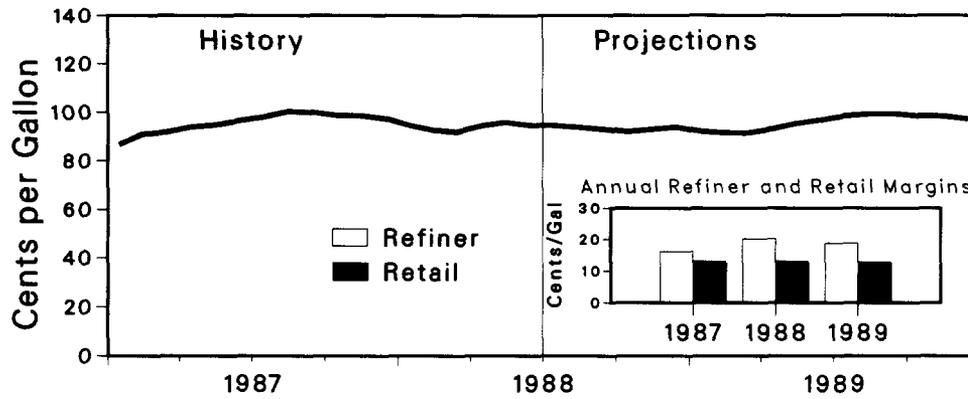
Energy Product Prices

After starting the year at just over \$16.00 per barrel, crude oil prices fell to less than \$15.00 per barrel in March, began rising in April, but fell again in June. Prices are assumed to resume increasing in August, stabilizing at \$17.00 per barrel for all of 1989. Most petroleum and natural gas product prices are expected to follow a similar pattern, but with their own unique lags and seasonal variations (Table 5 on page 47).

- Gasoline prices in 1988 are expected to decline by only 2 cents per gallon (Figure 5), as refiners' margins in the first half of the year appear strong, despite record high crude oil stocks. The projected increase in refiners' margins in 1988 reverses 2 years of decreasing refiners' margins. (The margin may be overstated, since some crude oil purchased at higher 1987 prices is still entering wholesale markets.) In the more competitive retail market, margins are expected to increase by less than 1 percent in 1988, compared to 25 percent for refiners. In 1989, projections of flat crude oil costs should stabilize the market, resulting in an annual price increase of 2 cents per gallon, all of it attributable to the difference in crude oil prices for the 2 years.
- Heating oil prices in 1988 are expected to remain relatively stable, even though crude costs are projected to fall (Figure 6). High margins in the first quarter of the year and a projected increase in crude oil costs in the fourth quarter (when the heating season begins) will skew prices upward on an annual basis. In 1989, the price of heating oil is projected to increase by 1 cent per gallon for the year, reflecting the crude oil price increase.
- Retail residual fuel oil stocks have been above the normal range for the first half of 1988, contributing to a price drop of nearly \$2.00 per barrel from January to April. The usual seasonal price variation was also a factor. For the remainder of 1988 and throughout 1989, prices are expected generally to follow the crude oil price path. However, the unusually hot and dry weather that has plagued much of the country may cause upward pressure on prices, since this fuel is used as a marginal fuel for electric utility generation in some regions. If the drought and hot weather continue throughout the summer, price increases for residual fuel oil are possible.
- Spot prices for natural gas settled down to about \$1.30 per thousand cubic feet in May,¹ after rising rapidly in the last 2 months of 1987 and in the beginning of this year, peaking at nearly \$1.90 per thousand cubic feet in late January and early February. With much of the uncertainty of the effects of the Federal Energy Regulatory Commission's Rule 500 eased, spot prices have begun to decrease. In 1989, the prices to residential customers and to electric utilities are projected to increase by 5.2 percent and 7.8 percent, respectively.
- Residential electricity prices in 1988 are projected to fall by less than 1 percent, as coal and oil prices to electric utilities also decline and utilization of existing plants increases. Some regions may experience higher prices for electricity due to the replacement of lost hydroelectricity with power from more costly generation sources. On balance, however, national average prices are expected to be affected more strongly by low fuel prices and high utilization rates than by additional incremental fuel costs, because of changes in the mix of electricity supply sources. In 1989, all fossil fuel prices are expected to rise and contribute to price increases slightly less than the expected overall rate of inflation (Figure 7).

¹ *Natural Gas Intelligence*, May 16, 1988. This price represents the average high and low spot price quotes for the Southwest region.

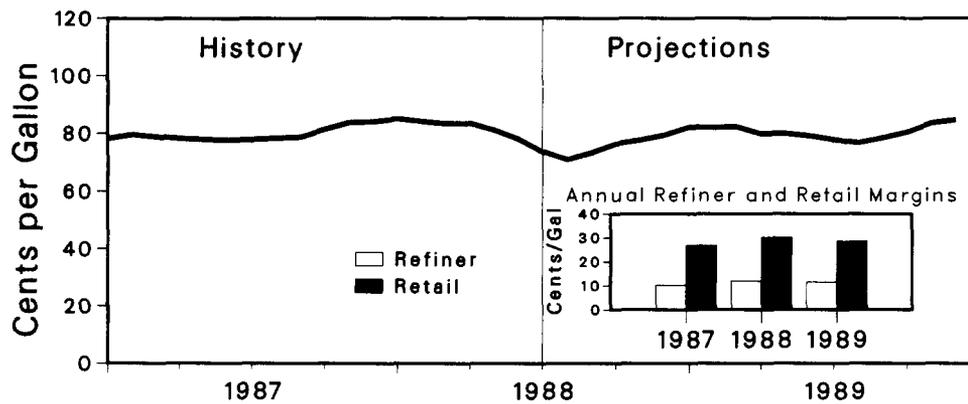
Figure 5. Motor Gasoline Prices



Gasoline Prices Should Fall in 1988 but Recover in 1989, Following the Price Path for Crude Oil

Sources: • History: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(88/04) (Washington, DC, 1988). • Projections: Table 5.

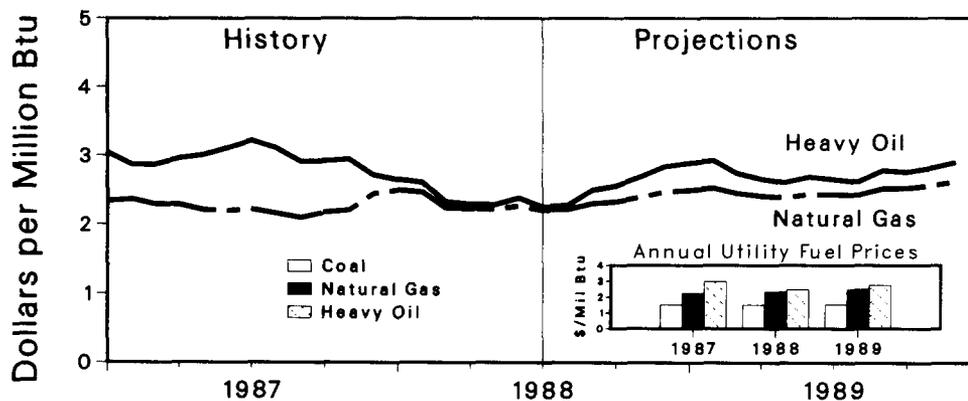
Figure 6. Distillate Prices



Prices for Heating Oil Should Inch Upward Slowly in 1989

Sources: • History: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(88/04) (Washington, DC, 1988). • Projections: Table 5.

Figure 7. Utility Oil and Gas Prices



The Gap Between Utility Oil and Gas Prices Has Narrowed, but is Expected to Widen in 1989

Sources: • History: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(88/04) (Washington, DC, 1988). • Projections: Table 5.

U.S. Petroleum Outlook

- *Total Petroleum*

- *Motor Gasoline*

- *Distillate Fuel Oil*

- *Residual Fuel Oil*

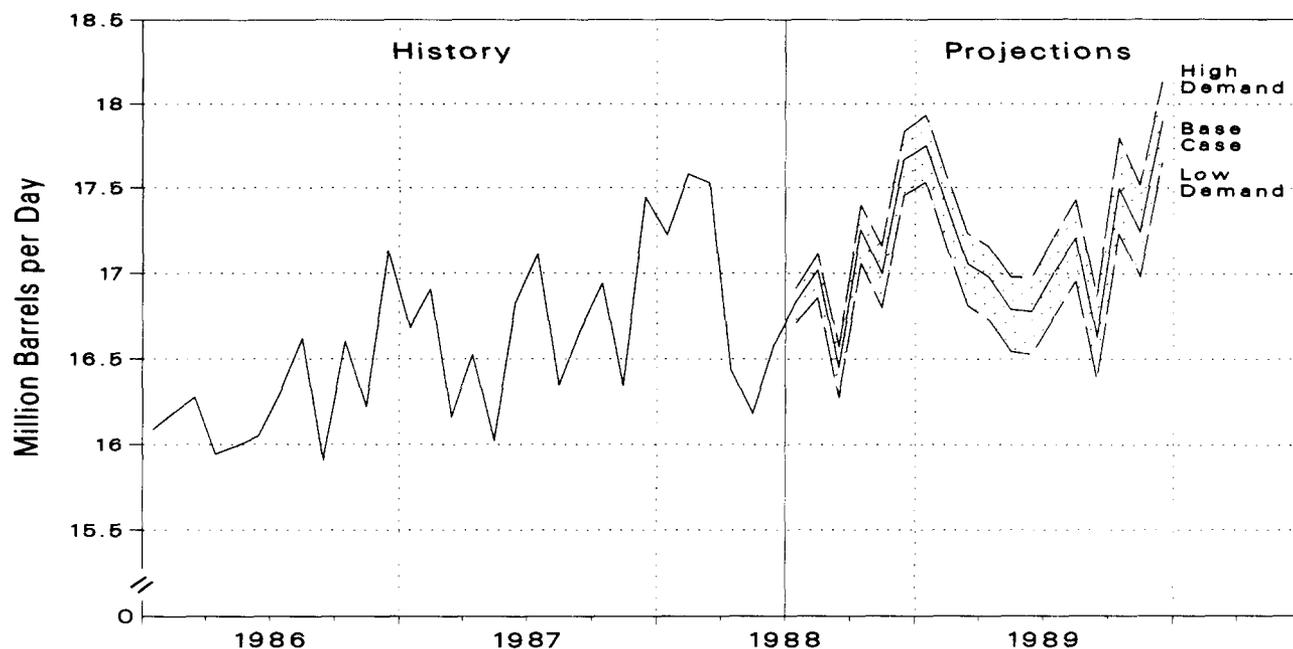
- *Other Petroleum Products*

- *Petroleum Supply Overview*

- *Crude Oil and Natural Gas Liquids
Production*

- *Petroleum Stocks and Imports*

Figure 8. Total Petroleum Demand



Sources: • History: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(88/04) (Washington, DC, 1988). • Projections: Tables 6, 8, and 9.

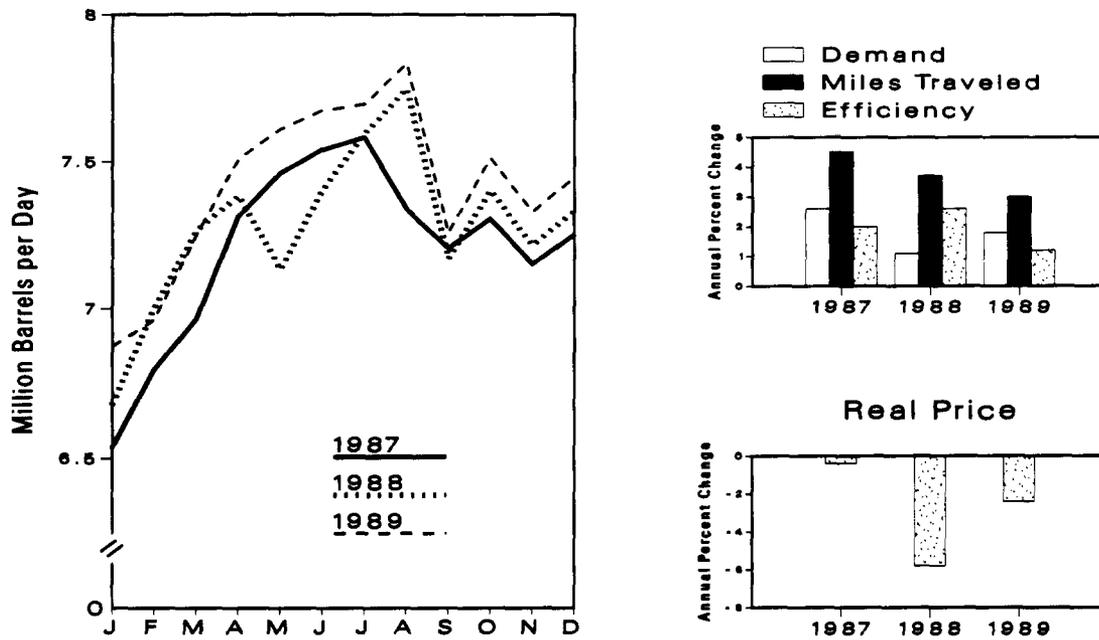
Total Petroleum

Much higher space-heating requirements in the first quarter of this year plus a significant break in oil prices from the 1987 rebound contribute to continued growth of 1.9 percent in domestic petroleum demand for 1988. Petroleum consumption should reach 17.0 million barrels per day this year, exceeding the 1987 level by more than 300,000 barrels per day (Table 6 on page 48 and Figure 8). In addition to the first quarter's cold weather, petroleum's growth in 1988 is attributable to healthy activity in two markets: transportation (primarily motor gasoline and jet fuel) and petrochemicals. Travel demand should remain strong this year, as favorable petroleum prices, a low dollar exchange rate, and moderate income growth continue. Furthermore, growth in industrial production, led by exports, will feature the chemical industry prominently, bringing substantial growth in the use of oil and/or LPG-based petrochemical feedstocks. This situation should carry through to 1989. Assuming normal weather conditions, total petroleum demand should increase by 1.2 percent in 1989, reaching 17.2 million barrels per day.

- Despite an assumed 2-percent average gain per year in vehicle travel efficiency (measured by average miles per gallon), motor gasoline demand is expected to grow by an average of 100,000 barrels per day on an annual basis over the forecast period. If this forecast holds, motor gasoline use will register 7 consecutive years of growth averaging 1.8 percent per year.
- Jet fuel demand is expected to gain in volume by 80,000 barrels per day in 1988 and close to 50,000 barrels per day in 1989. The average of these volumes is about equal to the average annual growth recorded for the past 5 years.
- Combined growth in the demand for LPG's and oil-based petrochemical feedstocks is 3.9 percent in 1988 and 1.9 percent in 1989. The latter figure reflects the effect of normal weather in 1989, which should result in lower growth in LPG demand relative to the high levels of early 1988.

The maximum world oil price spread between high and low price assumptions is \$4 per barrel, or 24 percent of the base-case price for 1989. As a result of these price assumptions, combined with alternative estimates for economic growth and weather, the average expected range over the forecast period for total petroleum demand is 540,000 barrels per day (Table 7 on page 49). Petroleum demand sensitivities relating to price and economic growth assumptions are detailed in Table 8 on page 50 and Table 9 on page 51.

Figure 9. Motor Gasoline Demand and Components



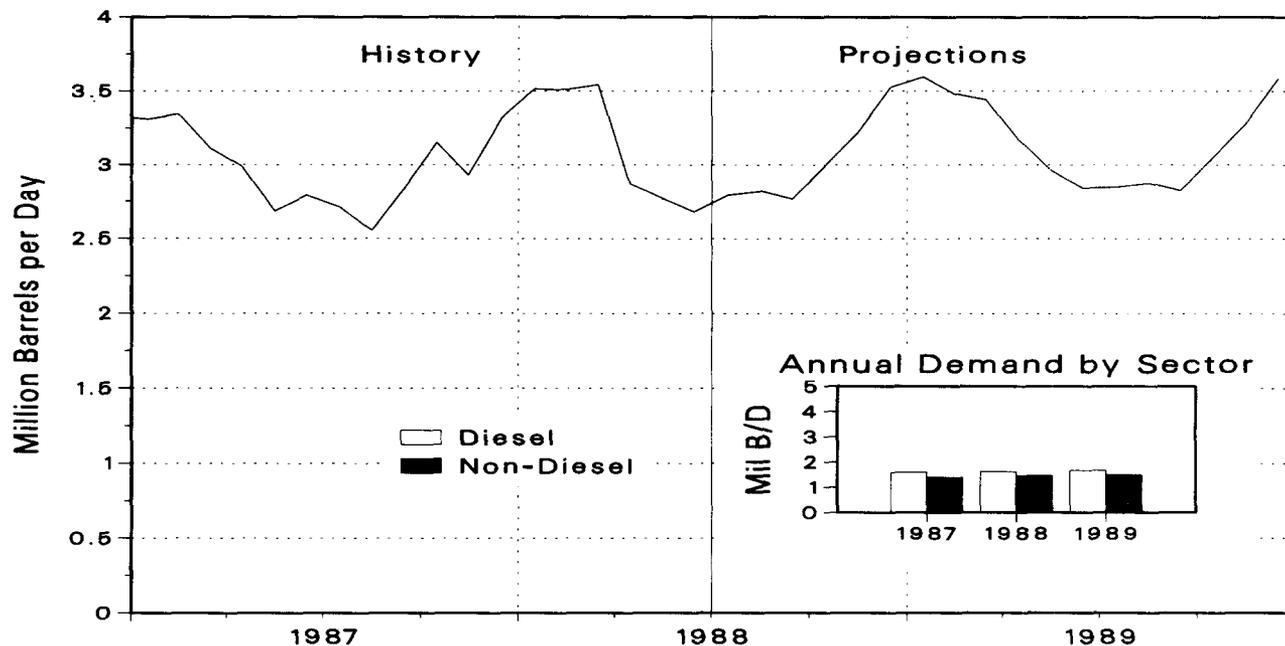
Note: Projections begin in the third quarter of 1988.
 Sources: • History: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(88/04) (Washington, DC, 1988). • Projections: Table 10.

Motor Gasoline

Lower gasoline prices and continued economic growth should boost motor gasoline demand by an additional 1.1 percent in 1988, following 2.6-percent growth in 1987 (Table 10 on page 52). It is estimated that travel for passenger cars and other gasoline-powered vehicles grew by more than 4 percent in 1987 (Figure 9). Travel growth should equal or exceed 3 percent in 1988 and 1989. Growth in gasoline demand is expected to exceed 1 percent again next year, reflecting the increase in travel demand and offsetting gains of more than 1 percent in vehicle efficiency.

- During the first quarter of 1988, motor gasoline product supplied surged by a remarkable 3.3 percent compared to the previous year's first quarter. The early-year pace for motor gasoline demand has proven to be an anomaly, and, at the half-year mark, gasoline demand appears to be ahead of the 1987 level by only 1 percent. Price uncertainty and evidence of strong overall growth in the economy may have spurred anticipatory stockpiling by downstream suppliers of gasoline early in the year, followed by secondary and tertiary stock declines in the second quarter, which would not be captured in the product supplied figures.
- Summer demand for gasoline appears to be approaching an increase of more than 100,000 barrels per day over the levels reached in the 1987 driving season. Continued low prices and a positive outlook for economic activity, in general, portend strong gains in the level of gasoline use in 1989 as well. Bolstering the expectation of solid growth in gasoline use this year is the impetus for greater domestic travel created by the weak dollar, which is expected to have fallen by 10 percent against the currencies of major trading partners this year and by 6 percent in 1989.

Figure 10. Distillate Fuel Oil Demand



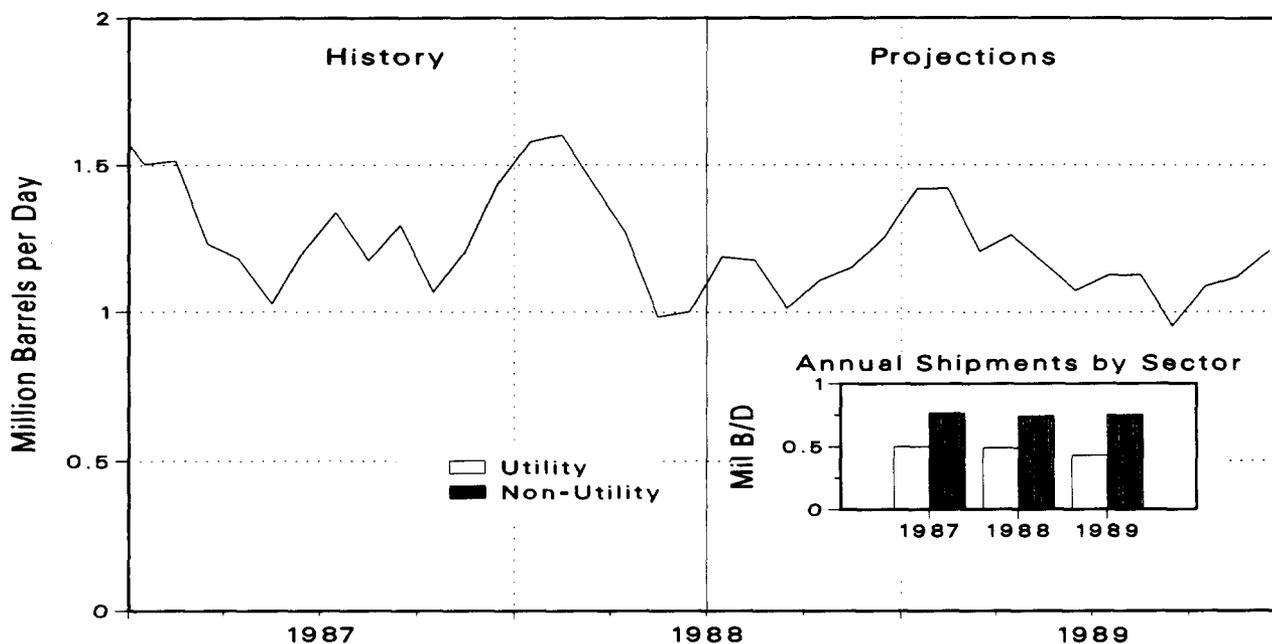
Sources: • History: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(88/04) (Washington, DC, 1988). • Projections: Table 11.

Distillate Fuel Oil

The growth rate for distillate demand is projected to be 3.4 percent in 1988, ahead of the 2.4-percent growth seen in 1987. With somewhat slower industrial growth rates projected for next year, distillate demand is expected to grow by 2.6 percent in 1989. Moderate inflation-adjusted prices for diesel and heating oil should marginally add to demand (Table 11 on page 53 and Figure 10).

- Increasing industrial and commercial activity buoyed diesel demand in the first quarter of 1988. In addition, efforts to avoid payment of a tax of 15.5 cents per gallon on diesel fuel (see "Effect of the Federal Motor Fuels Tax on Distillate Stocks," *Short-Term Energy Outlook*, April 1988, DOE/EIA-0202(88/2Q) (Washington, DC, 1988)) by farmers, oil drilling companies, and other off-road users led to a high call on stocks and, therefore, abnormally high product supplied figures for diesel fuel in the first quarter. The offset to this somewhat overstated first-quarter demand was lower-than-usual April demand. For the forecast period, diesel demand reflects growth in the level of industrial and commercial activity.
- Strong growth in the demand for non-diesel fuel is projected for the second half of 1988. On balance, non-diesel distillate demand should grow by about 2 percent in 1989.

Figure 11. Residual Fuel Oil Demand



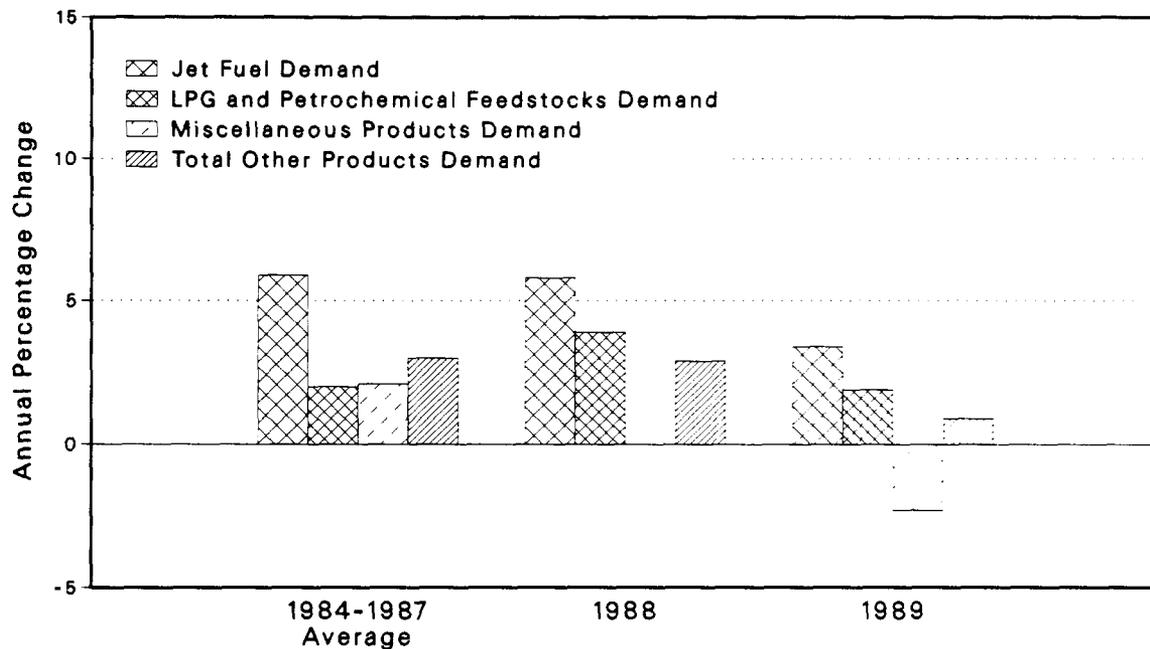
Sources: • History: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(88/04) (Washington, DC, 1988). • Projections: Table 12.

Residual Fuel Oil

Consumption of residual fuel oil in 1988 should decline by about 2 percent, compared to 1987 levels (Table 12 on page 54). In 1989, consumption is expected to decline by about 4 percent, with most of the decrease occurring in the electric utility sector (Figure 11).

- In the first quarter of 1988, shipments of residual fuel oil to electric utilities were 24 percent higher than for the first quarter of 1987. Low oil prices and cold weather, coupled with interruptions of gas shipments to utilities, were the primary reasons for the increase in shipments. For the remainder of the year, shipments to utilities are expected to fall compared to the same period in the previous year. This is due largely to the assumption that normal weather for the rest of this summer will produce relatively low usage rates for oil and gas at utilities, compared with the third quarter of 1987. However, an extremely hot summer could cause utility demand to surge in the third quarter. Utility demand for oil would be even lower this year if not for the current low availability of hydroelectricity (see "Effects of the Drought," pages 7-9).
- Nonutility demand in the first half of 1988 was 3.1 percent lower than for year-earlier levels, due mainly to the competitive price advantage held by natural gas, particularly in the industrial sector. This trend is expected to continue through the second half of the year.
- In 1989, the increase of 3.5 percent in industrial production should cause nonutility shipments to increase by 1 percent, despite projected higher prices.

Figure 12. Other Petroleum Products Demand



Sources: • History: Energy Information Administration, *Petroleum Supply Monthly*, DOE/EIA-0109(88/04) (Washington, DC, 1988). • Projections: Table 13.

Other Petroleum Products

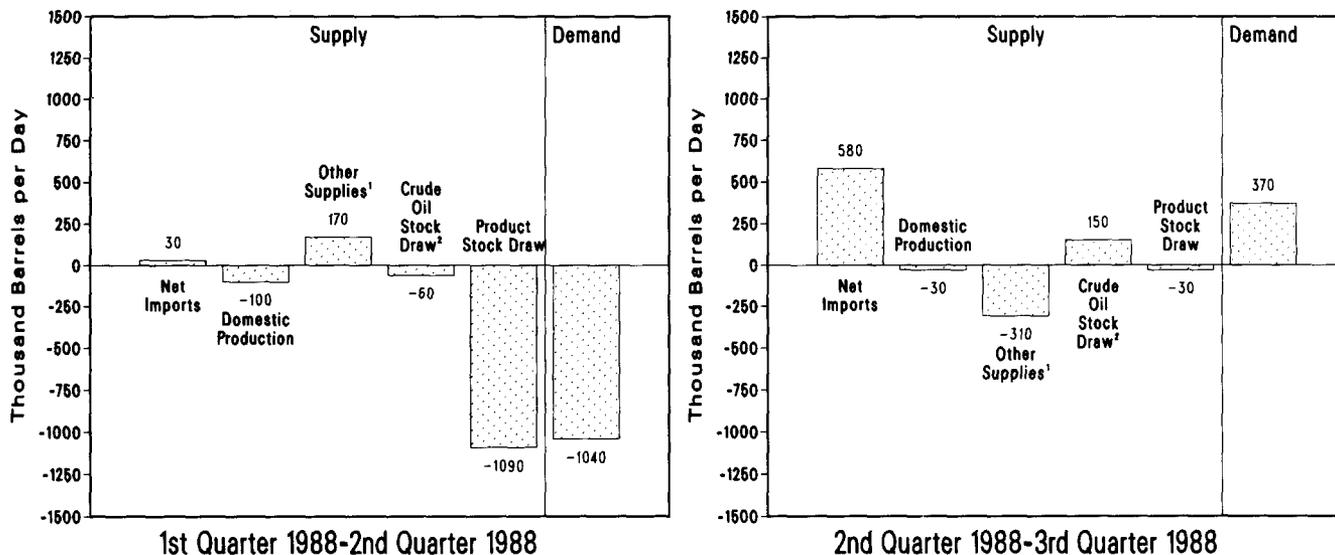
Strong growth in key components of other petroleum products has led to substantial increases so far this year in this category, which is expected to grow by 2.9 percent in 1988 (Table 13 on page 55 and Figure 12). For the first half of 1988, demand for other petroleum products exhibited 3.6-percent growth, due in part to the effect of cold weather on the demand for some products.

- Assuming steady growth in average commercial aircraft efficiency² of about 3 percent per year, increased commercial air traffic should boost total jet fuel demand by 5.8 percent in 1988 and 3.4 percent in 1989. Efficiency gains and somewhat higher utilization of available airline capacity partially offset projected increases in domestic airline traffic of 10 and 9.4 percent in 1988 and 1989, respectively (see "Trends in Jet Fuel Demand," page 39).
- Demand for liquefied petroleum gas (LPG) (including ethane)³ is expected to increase by 5.6 percent in 1988, after 6.6-percent growth in 1987. Compared to the first quarter of 1987, there was 8.5 percent more demand in the first quarter of 1988, due to increased space heating requirements and growth in chemical industry output. With chemical ethylene production close to short-term capacity, LPG use as a chemical feedstock increased, since it permits higher product yields. Propane use as a feedstock has also grown. In 1989, normal first-quarter weather and limits on ethylene production are expected to contribute to a 1.8-percent decline in LPG use.
- Demand for petrochemical feedstocks declined by 5.4 percent in 1987 and by 7.0 percent in the first quarter of 1988 (from the first quarter of 1987). Demand is expected to pick up in the second half of 1988, however, resulting in an annual level for 1988 that is very similar to that for 1987. Demand should remain strong through 1989, reflecting the anticipated strength of the chemical industry.

²Average aircraft efficiency is calculated by dividing the number of revenue ton-miles by the quantity of jet fuel supplied.

³The LPG statistics reported in this *Outlook* include ethane, which in previous *Outlooks* was classified as a petrochemical feedstock. The definitional change for LPG was made to provide conformity of the *Short-Term Energy Outlook* to other EIA publications.

Figure 13. Changes in Sources of Petroleum Supply



¹ Includes change in crude oil supplied as product, unaccounted for crude oil, other hydrocarbon inputs, and refinery gains.

² Includes change in Strategic Petroleum Reserve build rate.

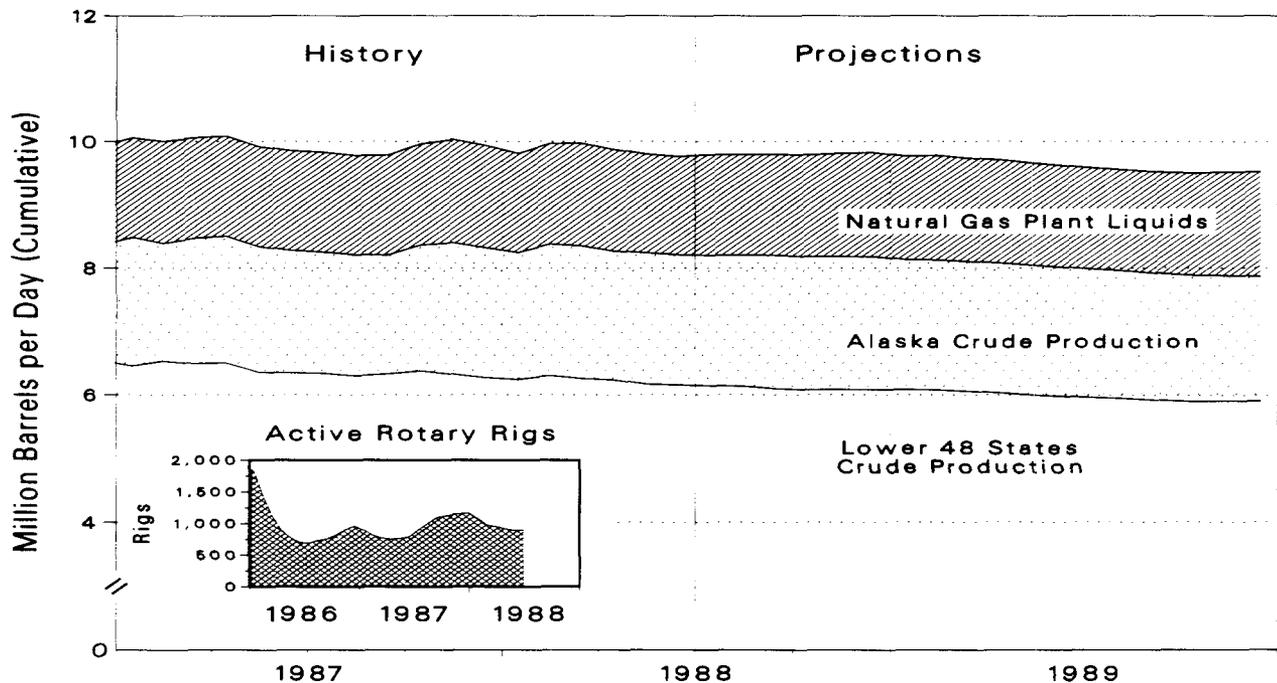
Sources: • History: Energy Information Administration, *Petroleum Supply Annual*, 1986, and 1987, DOE/EIA-0340(86,87)/1; *Petroleum Supply Monthly*, DOE/EIA-0109, January 1988 to April 1988; and *Weekly Petroleum Status Report*, DOE/EIA-0208(88-24,28) (Washington, DC). • Projections: Table 6.

Petroleum Supply Overview

Little change for either the rate of stock withdrawal or domestic crude oil production between the second and third quarters of this year means that summer increases in transportation demand for petroleum will be accommodated mainly by higher net imports in the next few months (Table 6 on page 48 and Figure 13). Higher imports will come mainly in the form of crude oil, as domestic refineries continue to operate at high utilization rates. This situation is projected to change in the fourth quarter, when increased stock withdrawals and increased imports will be required to meet growing winter demand; refinery capacity utilization should remain high.

- Private stocks of crude oil, which attained a 5-year high in the second quarter of 1988, are expected to remain near that level until heating season demand picks up in the fourth quarter. Little change in the rate of withdrawal, for either crude oil or product stocks, is expected for the third quarter of this year.
- Until the industry begins to draw on its accumulated crude oil stocks later this year, seasonal swings in petroleum demand will be met mainly by increased net petroleum imports. Net imports of crude oil and refined products are projected to increase by 580,000 barrels per day between the second and third quarters of this year.
- Domestic crude oil production should slow its decline significantly between the second and third quarters of 1988, despite crude oil prices at levels lower than expected, but still should drop by about 40,000 barrels per day in that period. This drop is offset partially by a small increase in the production of natural gas liquids.

Figure 14. Components of Domestic Petroleum Production



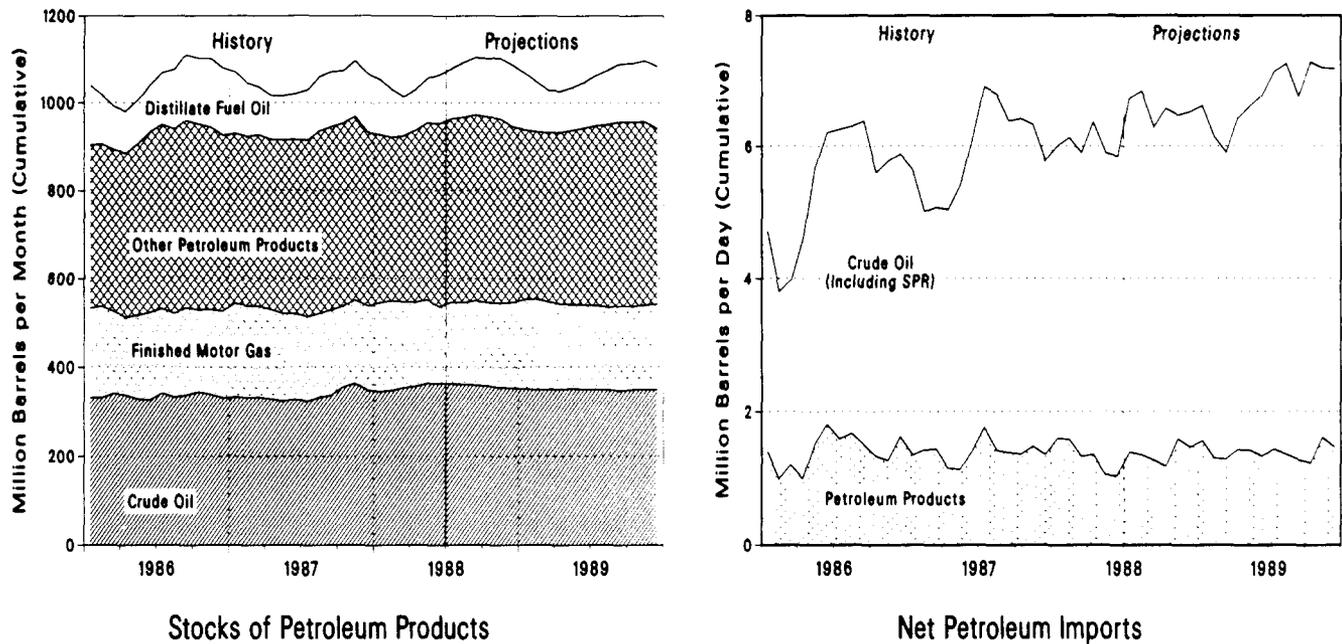
Note: Crude oil production includes lease condensate.
 Sources: • History: Energy Information Administration, *Petroleum Supply Annual*, 1986 and 1987 DOE/EIA-0340(86,87)/1; *Petroleum Supply Monthly*, DOE/EIA-0109, January 1988 to April 1988; and *Weekly Petroleum Status Report*, DOE/EIA-0208(88-24,28) (Washington, DC). • Projections: Table 6.

Crude Oil and Natural Gas Liquids Production

The combination of low drilling levels and weak oil prices is projected to result in a decline in domestic oil production of 120,000 barrels per day in 1988 (Table 6 on page 48 and Figure 14). The drop in production is expected to moderate in the second half of the year, on the strength of increased output from Alaska and offshore California, as well as higher oil prices in the fourth quarter.

- Declines in oil production continue to be led by onshore fields of the lower 48 States. Total production from the lower 48 States, which is expected to drop by 3.4 percent on average for 1988, is projected to fall by another 3.1 percent in 1989, tracking the average annual rate of decline of about 3 percent in the 1970's.
- Alaskan production continues to record small increases in 1988, as a result of continued developments in the new Endicott field and sustained output from the giant Prudhoe Bay field. A projected decline in Prudhoe Bay output is expected to lead to the first reductions in total Alaskan production in early 1989.
- The number of active rotary rigs in the country remained low throughout the spring (Figure 14). The figure of 897 rigs reported for June 1988 was 23 percent below the level in December 1987. Except for a small seasonal increase this summer, little change is expected in the level of drilling activity for the rest of this year.

Figure 15. Stocks and Net Imports of Petroleum



Sources: • History: Energy Information Administration, *Petroleum Supply Annual*, 1986 and 1987, DOE/EIA-0340(86,87)/1; *Petroleum Supply Monthly*, DOE/EIA-0109, January 1988 to April 1988; and *Weekly Petroleum Status Report*, DOE/EIA-0208(88-24,27) (Washington, DC). • Projections: Table 6.

Petroleum Stocks and Imports

The second quarter of 1988 was marked by a buildup of 50 million barrels in crude oil and refined product stocks (excluding the Strategic Petroleum Reserve) from the prior quarter (Table 6 on page 48 and Figure 15). This build helped sustain net petroleum imports near their first-quarter level of 6.0 million barrels per day. Almost 85 percent of the total stock build was in the form of refined products. That fact, along with information that domestic refineries were operating, on average, at a high utilization rate (85 percent), indicates that refiners were buying and processing significant volumes of bargain-priced crude oil. The third quarter is expected to bring further increases in product stocks and oil imports.

- Private stocks of crude oil are projected to remain high through the third quarter, near the 5-year high recorded at the end of the second quarter. Consistent with the base case price scenario, it is assumed that OPEC suppliers of below-market crude oil will refrain from further production increases in the face of growing heating-season demand. Oil stocks will begin to be drawn down in the fourth quarter.
- Net petroleum imports (mainly in the form of crude oil) are projected to increase by about 600,000 barrels per day to 6.6 million barrels per day between the second and third quarters of this year, accommodating most of the increased seasonal demand for transportation fuels.
- By the fourth quarter of 1988, the new drawdown of crude oil stocks can be used to meet growing heating-season demand, as net imports remain near their average third-quarter level.
- Growing net imports and continued high refinery activity (approaching 90 percent utilization rates) are expected for the rest of the year and in 1989. Net petroleum imports are projected to average 6.8 million barrels per day in 1989, the highest annual level since 1979.
- Most of the increase in product stocks in the second quarter of 1988 consisted of unfinished oils (consistent with the high refinery activity), liquefied petroleum gases and feedstocks for the growing industrial sector, and distillates. Further growth in stocks of these products is projected for the third quarter. Stocks of motor gasoline, jet fuel, and residual fuel will vary little from recent historical levels.

Outlook for Other Major Energy Sources

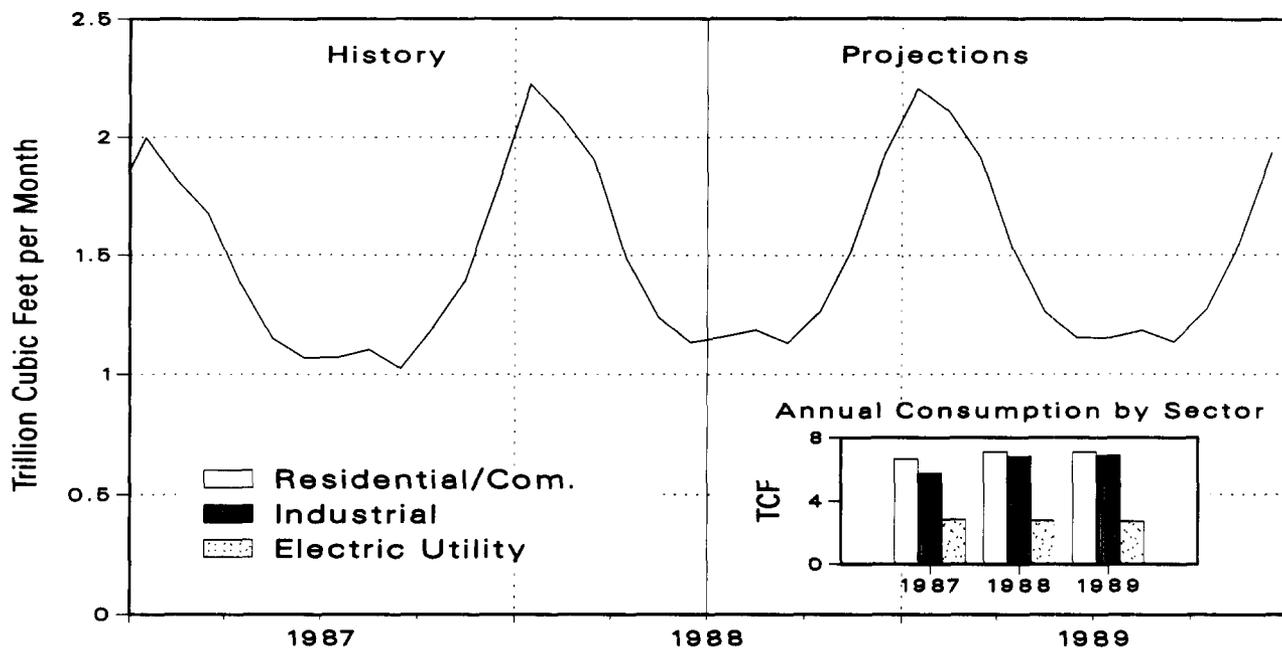
- *Natural Gas*

- *Coal*

- *Electricity*

- *Electricity Fuel Shares*

Figure 16. Natural Gas Demand



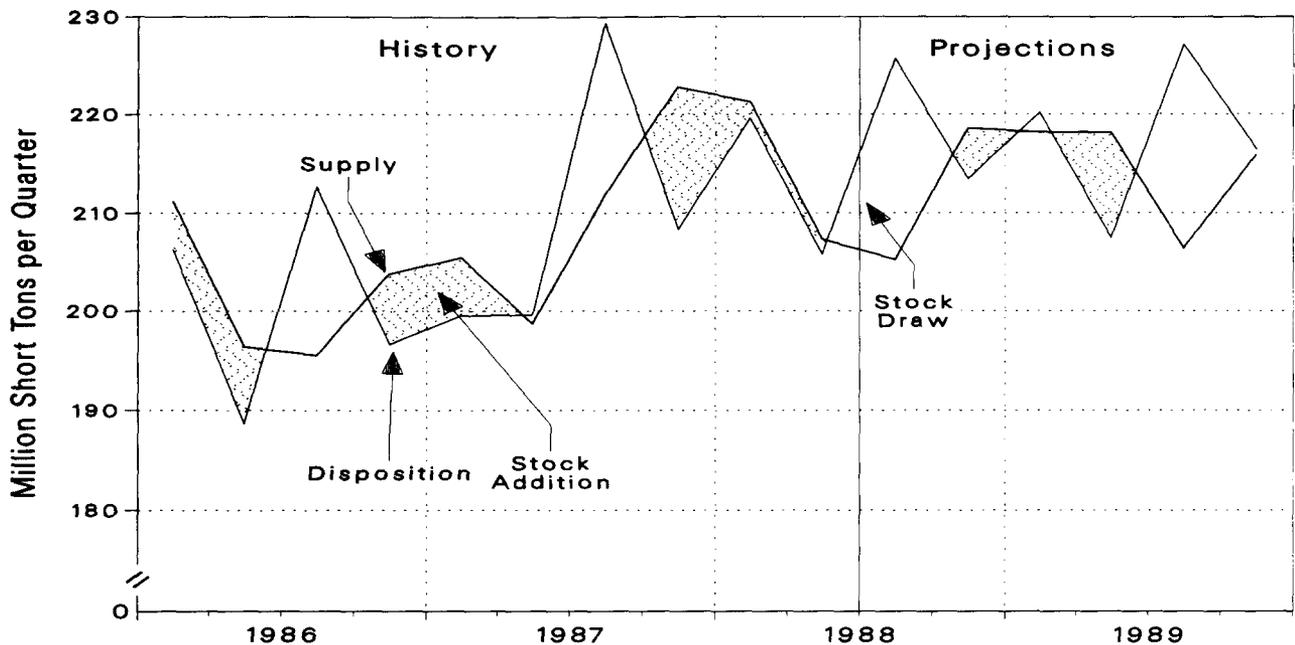
Note: Consumption excludes lease and plant fuel and pipeline compressor fuel.
 Sources: • History: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(88/04) (Washington, DC, 1988). • Projections: Table 14.

Natural Gas

Sectoral gas demands, particularly industrial use, appear to be at unexpectedly high levels in 1988, partly because of the impact of the new sampling and estimation procedures instituted by EIA's Gas Data System (Table 14 on page 56 and Figure 16). High apparent growth in 1988 is partly due to incompatibility in the data series relative to 1987 and earlier. In response to the changing nature of gas marketing generally, the basis for reporting monthly data on gas consumption was revised for the collection of 1988 data from an equity basis (sales) to a custody basis (deliveries).

- Industrial gas use in the first quarter of 1988 was 24 percent higher than in the same period of 1987. From analysis based solely on old series data, the April *Outlook* estimate for first-quarter industrial gas demand was only 11 percent above the first-quarter 1987 level. However, the July *Outlook* is benchmarked entirely to new first-quarter 1988 industrial sales estimates, which may distort comparisons with 1987. Small additional growth in industrial gas use is expected for 1989 as manufacturing growth tapers off.
- Residential and commercial natural gas demand showed large weather-related increases in the first quarter of 1988, contributing most of the 7-percent combined increase expected for these sectors in 1988. A minor increase in residential demand is expected for 1989.
- Natural gas use at electric utilities is projected to decline by over 2 percent per year through 1989. This decline follows a period of robust growth in 1987. The turnaround in demand in 1988 is due partly to weak oil prices in 1988, on average, which will have eroded much of the relative price advantage enjoyed by gas in 1987. Utility gas use would be even lower in 1988 if not for the current low availability of hydroelectricity (see "Effects of the Drought," pages 7-9).
- Both domestic production and net imports of natural gas should increase to meet higher demand. Higher imports continue the trend already seen in the first half of 1988.
- Higher domestic gas production is projected, along with stable prices. One source of price uncertainty, however, concerns the handling of take-or-pay costs. The potential passthrough of costs associated with the settlement of pipeline companies' take-or-pay liabilities may offset some of the price relief occurring as a result of regulatory and market changes.

Figure 17. Coal Supply and Disposition



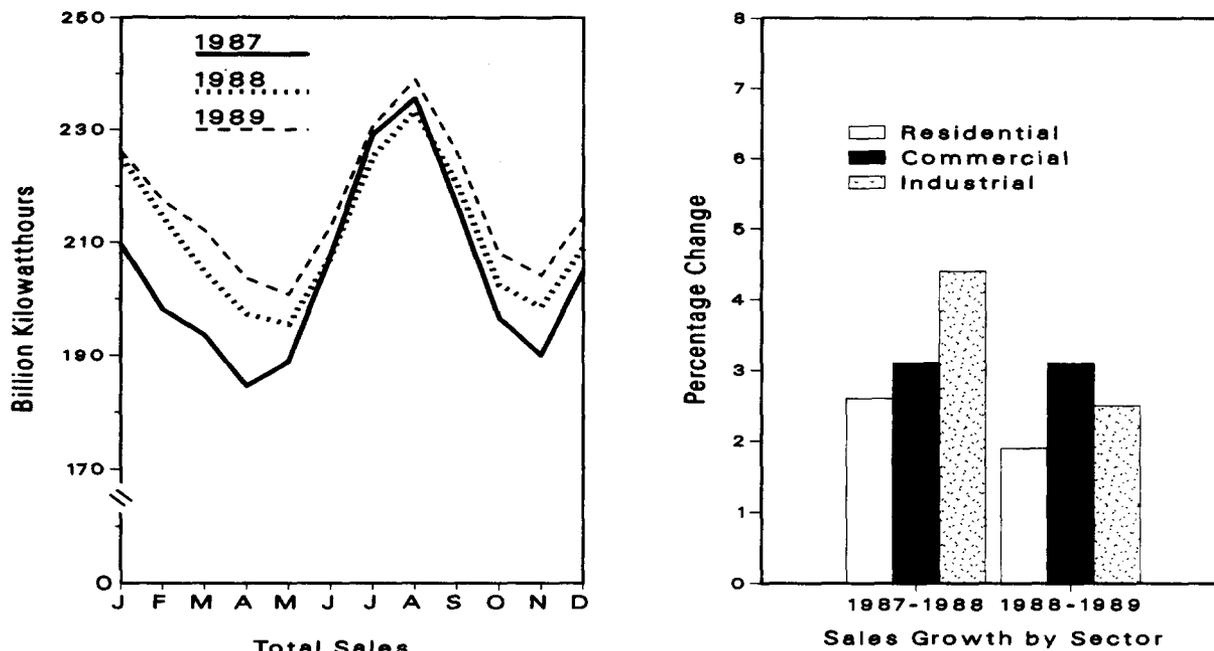
Sources: • History: Energy Information Administration, *Quarterly Coal Report*, DOE/EIA-0121(88/1Q) (Washington, DC, 1988). • Projections: Table 15.

Coal

Following a 4.1-percent rise in 1987, growth in domestic coal demand in 1988 is expected to continue at a 3.3-percent rate (Table 15 on page 57 and Figure 17). A large part of this growth is attributed to high coal use by electric utilities in the first quarter of 1988 relative to the first quarter of 1987--a 10-percent jump. Coal also is expected to play a significant role in the efforts of domestic utilities to replace lost hydroelectric power this year. Total demand growth in 1989 should slow to a 0.7-percent pace.

- Electric utility coal use is projected to grow by 3.5 percent in 1988 and by 0.8 percent in 1989. Coal's share of total electricity generation should remain constant in 1988 despite a 12-percent increase in nuclear generation this year, which ordinarily would have displaced a significant amount of coal-fired generation. Low water levels coming into 1988 and drought conditions this year have kept coal-fired plant utilization rates high in order to replace a significant loss of hydroelectric power. It is expected that about one-fourth of the growth in utility coal use this year is due to this effect. The smaller growth of total electricity generation along with higher hydroelectric generation should slow utility coal demand in 1989.
- Coking coal use is expected to remain relatively unchanged in 1988 but grow slightly in 1989. There is only a limited capability to expand domestic production of coke. As a result, coke imports should continue to exceed exports through 1989.
- Due mainly to growth in industrial production, retail and general industry coal consumption should increase by 3.7 percent in 1988 and remain flat in 1989. A slight rise in other industrial coal consumption in 1989 is offset by a downward trend in residential and commercial coal demand.
- Domestic coal production is expected to increase slightly, by about 1 percent, in 1988 and 1989. Rising domestic demand in 1988 should more than offset the continued decrease in coal exports, thus raising domestic suppliers' requirements by about 1 percent. Slower growth in domestic coal demand in 1989 and a 1-percent growth in coal exports should raise supply requirements by about 1 percent.

Figure 18. Electricity Demand



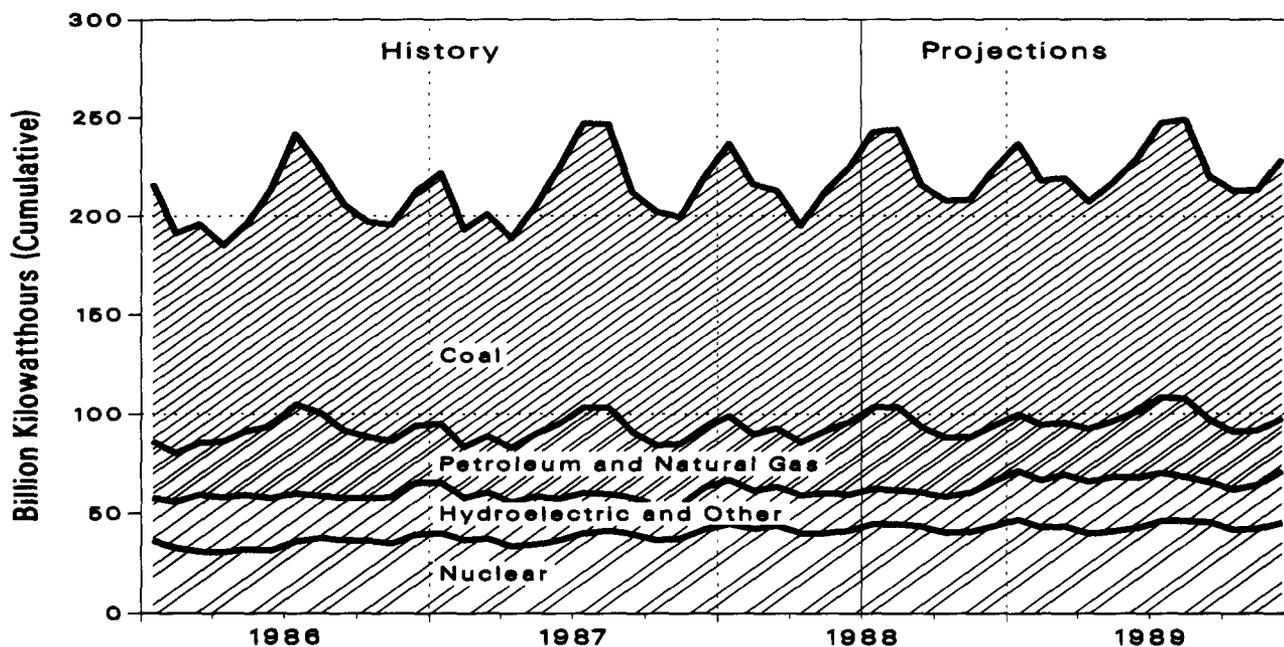
Note: Projections begin with the third quarter of 1988.
 Sources: • History: Energy Information Administration, *Electric Power Monthly*, DOE/EIA-0226(88/04) and *Monthly Energy Review*, DOE/EIA-0035(88/04) (Washington, DC, 1988). • Projections: Table 16.

Electricity

Electricity demand should continue expanding at a steady pace for the remainder of this year and into next, based on optimistic economic expectations (Table 16 on page 58 and Figure 18). The industrial sector should provide a major impetus for electricity growth through the remainder of 1988. More conservative growth in electricity demand is expected next year, as economic expansion slows and weather expectations return to normal.

- Cold temperatures for the first quarter of this year helped push electricity sales up by around 8 percent over last year in the residential and commercial sectors. Growth in industrial electricity sales has mirrored industrial output growth over this period.
- With weather assumed normal for the second half of this year and industrial output expected to continue gaining, total electricity sales should be 3.2 percent higher than last year, compared to 4.5-percent growth last year. Due to warmer-than-normal weather in the third quarter of 1987 and an assumed return to normal weather in the third quarter of this year, electricity demand is expected to decline between these two periods. If high temperatures dominate the remainder of the summer, however, this projection could be an underestimate. Weekly estimates from the Edison Electric Institute for July indicate positive growth in electricity output thus far.
- With a slowdown in growth expected in the manufacturing sector in 1989, growth in industrial electricity sales should be lower next year. Total electricity sales should increase by 2.4 percent in 1989 from the 1988 projection.
- Electricity imports are expected to maintain a constant share of the total electricity supply through 1988 and 1989.

Figure 19. Electricity Generation by Fuel Source



Sources: • History: Energy Information Administration, *Electric Power Monthly*, DOE/EIA-0226(88/04) (Washington, DC, 1988). • Projections: Table 16.

Electricity Fuel Shares

Growth in total electricity generation of 3.0 percent in 1988 will be met by increased use of coal, nuclear power, and petroleum (Table 16 on page 58 and Figure 19). In 1989, coal, nuclear, and hydroelectric generation will support 2.4-percent growth in total generation. Hydroelectric generation is projected to rebound in 1989, assuming that precipitation levels return to normal.

- Low water levels at many U.S. watersheds have reduced hydroelectric power availability this year. Generation from this source is expected to fall by 7.8 percent from the level in 1987 (also a dry year). Assuming normal precipitation patterns in 1989, hydroelectric generation should increase dramatically, with a projected increase of 25 percent relative to 1988 (see "Effects of the Drought," pages 7-9).
- Electric utility coal generation is projected to grow by 3.2 percent in 1988, with higher overall electricity demand and lost hydroelectric power providing the impetus. In 1989, coal generation should increase by only 1.1 percent, reflecting slower growth in total generation and the return of hydroelectric power.
- Nuclear generation is projected to grow by 12 percent this year, primarily reflecting higher utilization. In 1989, nuclear generation is projected to grow by only 2.5 percent. Between 1987 and 1989, 4 new nuclear units should become operable. These additions will be partially offset, however, by the scheduled retirement of 2 units, resulting in 109 units in operable status and a net increase of 4.0 percent in nuclear generating capacity.
- The combined share of petroleum and natural gas in the electric utility market is projected to decline by 1.0 percent in 1988 and by 6.2 percent in 1989. The 1988 decline is slight because of upward pressure on all fossil-fuel-based generation due to low hydroelectric power availability. Petroleum-fired generation is projected to grow by 1.6 percent in 1988, largely as a result of a stimulation of first-quarter electricity demand by colder-than-normal weather. Natural gas use did not respond in a similar fashion because of seasonal constraints on supplies to utilities. Assuming normal weather in 1989, the use of petroleum at electric utilities should decline.

Special Topics

● *Trends in Jet Fuel Demand*

● *Summer Motor Gasoline Production Capabilities*

Trends in Jet Fuel Demand

There has been a dramatic increase in the demand for jet fuel in the 1980's. Between 1983 and 1987, demand surged by more than 30 percent, following vigorous growth in the demand for airline services. The current forecast projects a continuation of strong growth in jet fuel demand, with 4.7-percent average annual growth expected for 1988 and 1989. Preliminary estimates indicate that jet fuel demand increased by 6.2 percent in the first half of 1988, compared to 1987. Nevertheless, there are indications that this growth trend might be slowed if the real airline yield (airline revenue divided by revenue passenger-miles) does not follow its historical downward trend.

Over the past 10 years, deregulation has clearly had its impact on jet fuel usage. In 1978, President Carter signed the Airline Deregulation Act (ADA) into law, thereby changing the rules by which the airlines compete in the marketplace. By removing restrictions on market entry, service routes, and prices, the ADA allowed for increased competition among commercial air carriers. As a result, there was a substantial reduction in real airline yields, and a massive restructuring of the routes by which airline traffic flows. The decline in yields, combined with one of the longest peacetime economic expansions in U.S. history, generated a voluminous increase in airline traffic during the 1980's.

It is not clear, however, that the demand for airline services will continue to grow at such a robust pace. In the short run, it seems likely that these trends will continue, but several factors might mitigate growth in the long run. For example, at several key airports, there is little room for the airlines to increase flights, because the airports are operating at near capacity. Thus, for these saturated routes, the airlines have little reason to lower yields to increase travel demand. Furthermore, whereas the proliferation of new market entrants caused price competition to be fierce at the outset of deregulation, the trend in recent years has been toward consolidation of smaller companies into "mega-carriers." In fact, the four-firm concentration ratio for the industry (measured as the sum of the revenues for the four largest firms divided by total airline industry revenues) increased from 54 percent in 1978 to 60 percent in 1986. If this trend toward consolidation continues, price competition may suffer, especially in smaller markets where the demand cannot handle more than one mega-carrier.

In view of the uncertainty about the direction the airline industry will take, it is helpful to examine the effects of alternative assumptions on the demand for jet fuel. The current forecast shows a 4.7-percent average annual increase in demand for 1988 and 1989. Over this 2-year period, revenue ton-miles are projected to grow at an average annual rate of 9.8 percent. According to the forecast, average aircraft efficiency would grow at an annual rate of 2.9 percent, load factor (a gauge of the total aircraft capacity used by passengers and freight) would increase slightly (0.4 percent annually), and real airline yield would decline by 3.5 percent per year.

If higher yields (higher ticket prices) are assumed, then the demand for jet fuel would grow at a slower rate. For example, if real yields are assumed to increase by 5 percent in 1988 and by 5 percent in 1989, jet fuel demand would grow by only 1.7 percent annually in these 2 years. However, if real airline yields are assumed to remain at their 1987 level in 1988 and 1989, the growth in airline service demand would decrease less dramatically, and jet fuel demand would grow at an average annual growth rate of 3.5 percent over this 2-year period.

Other important factors influencing the demand for jet fuel include aircraft efficiency and the aircraft load factor. If the average aircraft efficiency is assumed to remain constant over 1988 and 1989, jet fuel demand would rise at an average annual rate of 6.9 percent; however, if efficiency grows at a 5-percent annual rate, jet fuel demand would grow by only 2.5 percent per year during this time period. If the load factor is assumed to increase by 2.5 percent per year, then jet fuel demand would increase by an annual average of only 2.5 percent in 1988 and 1989. An increase in the load factor would be possible if the airlines became more proficient at "yield management," the process by which more discount seats are made available for flights that are not filling up as expected.

The growth in the economy has a strong impact on jet fuel demand. The current forecast was based on the assumption of an average annual growth rate in real disposable income of 2.2 percent in 1988 and 1989. In the low growth scenario (1.7 percent growth in disposable income), jet fuel demand would grow at an annual average of 3.9 percent in this time period. Under the high growth scenario (2.5 percent growth in disposable income), jet fuel demand would grow at an annual average of 5.0 percent in this time period.

Thus, depending on the underlying model assumptions, the demand for jet fuel could grow at widely varying rates. Under the most reasonable assumptions, the demand is projected to grow an average annual rate of 4.7 percent. These assumptions include a declining real airline yield and moderate growth in the economy. It is possible, nevertheless, that the airlines will be able push through enough new fare increases and fuel surcharges to keep the real airline yield constant. In this case, the growth in demand for jet fuel would drop by a little more than one percentage point from the baseline projections.

Summer Motor Gasoline Production Capabilities

By the end of June 1988, expected summer growth in gasoline demand had not yet been realized, although the demand for non-gasoline products was up by almost 6 percent. In fact, preliminary statistics indicate that gasoline demand in May and June this year was slightly lower than last year. A primary difference between 1987 and 1988 is that gasoline production by U.S. refineries has been noticeably lower this year. Despite 3 to 6 percent higher refinery inputs, gasoline production in May and June was down by 200,000 to 300,000 barrels per day from a year earlier.⁴

Some of the decrease in early summer gasoline production may be due to unusually frequent maintenance problems that have developed this year, as well as the fire-related closing of a major Shell Oil Company refinery in Louisiana; but changes in refinery product yields (production divided by refinery inputs) indicate that some more fundamental shift in refinery operations is responsible.

For the country as a whole, average 1988 gasoline yields have been significantly lower than a year earlier (45.2 percent versus 47.7 percent in the second quarter).⁵ The yield situation is similar in Petroleum Administration for Defense District III (PADD III), which includes the Gulf Coast and accounts for 45 percent of the Nation's gasoline production.⁶ A lower gasoline yield could indicate either that refinery downstream units used to produce gasoline are not being fully utilized or, as appears to be the case, that product fractions from those downstream units that otherwise would go into gasoline are being diverted to other uses. In either case, as the summer driving season of 1988 develops, gasoline supplies are fairly tight, as witnessed by relative product prices.

Gulf Coast spot prices clearly reflect the difference in gasoline supply this year. Whereas unleaded regular gasoline sold in the Texas Gulf Coast spot market last summer for 3 to 4 cents per gallon more than No. 2 fuel, the difference was 6 to 9 cents in late June of this year. In addition, increased octane costs were reflected in a cost differential of 9 cents per gallon between premium and unleaded regular gasoline, compared with 4 to 5 cents last year.⁷ Since demand was relatively low at midsummer, while production appeared to be constrained, questions arise as to how well U.S. refiners would be able to meet a late-summer surge in gasoline demand, should it materialize. Increases in gasoline production are possible, but only at the cost of reduced output of other fuels.

To analyze this cost, a simple refinery model (based on EIA's Refinery Evaluation Modeling System) was structured to represent an aggregation of those PADD III refineries that have straight catalytic crackers, hydrocrackers, and thermal cracking equipment (such as cokers and visbreakers). The aggregate distillation capacity of these refineries represents about 39 percent of the national total.⁸

The model first was benchmarked against detailed EIA refinery data for summer 1987, then employed to simulate the refinery activities associated with producing the estimated output slate of these refineries in June 1988. In simulating the processing of a given product slate, this type of model can provide useful insights into the likely utilization of specific downstream units, for which timely data are otherwise generally not available.

Given the high levels of refinery inputs this year, production of light products (gasoline, distillate, and jet fuel) in the aggregate seems low. The model confirms this observation. The model results suggest that crackers (catalytic and hydrocrackers) were operating early this summer at or below the rates seen last year. Since these units break

⁴Energy Information Administration, *Petroleum Supply Annual 1987--Volume 2*, DOE/EIA-0340(87/2), Tables 2 and 11; and *Weekly Petroleum Status Report*, DOE/EIA-0208(88-24 and 88-28), Table 16.

⁵Energy Information Administration, *Petroleum Supply Annual 1987--Volume 2*; and *Weekly Petroleum Status Report*.

⁶Energy Information Administration, *Petroleum Supply Annual 1987--Volume 2*, Table 5.

⁷*Platt's Oilgram Price Report*, various issues.

⁸Energy Information Administration, *Petroleum Supply Annual 1987--Volume 2*, Table 11.

distillate-range material into gasoline components, lower utilization would raise distillate yield and lower gasoline yield, in general agreement with EIA's weekly refinery statistics for June and July 1988.

A possible explanation for lower gasoline yields is that refiners have increased production of naphtha and distillate-grade petrochemical feedstocks or other products that are sensitive to industrial demand, at the expense of gasoline. It is also possible that gasoline yields have been lowered by increased production of higher octane mid-grade and premium unleaded gasoline.

There are two obvious ways of increasing gasoline yields this summer. One is to increase cracker and coker utilization so that distillate and residual oil are transformed into lighter products. Starting with the yield pattern indicated by the June 1988 weekly EIA statistics, increasing downstream utilization would raise gasoline yields by about one percentage point for every two points lost by distillate--a substantial cost for additional gasoline. Higher kerosene and lower residual fuel yields also are byproducts of increased cracker and coker use.

A second method of increasing refinery gasoline output would be to sacrifice naphtha- and distillate-grade petrochemicals to the gasoline and distillate blending pools. However, this would clearly come at the expense of petrochemical output, which has contributed significantly to overall refinery profitability this year.

In conclusion, gasoline yields probably can be raised from their midsummer levels, but at a considerable sacrifice of distillate or some other product, such as naphtha-grade petrochemical feedstock. Some of the decrease in early summer gasoline production may be due to unusually frequent maintenance problems that have developed this year, but a reorientation of refineries' product slates may also have been a factor. A final resolution of these questions will not be possible until more detailed monthly EIA refinery statistics are available for the summer months.

Detailed Tables

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

	1987				1988				1989				Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1987	1988	1989
Supply ^a															
Production															
U.S. (50 States)	10.76	10.64	10.50	10.69	10.66	<i>10.54</i>	<i>10.52</i>	<i>10.52</i>	<i>10.45</i>	<i>10.37</i>	<i>10.28</i>	<i>10.24</i>	10.65	<i>10.56</i>	<i>10.34</i>
OPEC	17.93	18.58	21.09	20.62	19.47	<i>20.31</i>	<i>20.23</i>	<i>20.07</i>	<i>19.27</i>	<i>19.54</i>	<i>20.36</i>	<i>21.27</i>	19.57	<i>20.02</i>	<i>20.12</i>
Other Non-OPEC	16.18	15.93	16.26	16.49	16.90	<i>16.77</i>	<i>16.62</i>	<i>16.75</i>	<i>17.31</i>	<i>17.06</i>	<i>17.14</i>	<i>17.25</i>	16.22	<i>16.76</i>	<i>17.19</i>
Total Market Economies	44.87	45.15	47.85	47.80	47.03	<i>47.61</i>	<i>47.37</i>	<i>47.34</i>	<i>47.04</i>	<i>46.97</i>	<i>47.78</i>	<i>48.76</i>	46.43	<i>47.33</i>	<i>47.64</i>
Net Communist Exports	1.90	2.20	2.60	2.30	2.10	<i>2.20</i>	<i>2.60</i>	<i>2.30</i>	<i>1.90</i>	<i>2.20</i>	<i>2.60</i>	<i>2.30</i>	2.25	<i>2.30</i>	<i>2.25</i>
Total Supply	46.77	47.35	50.45	50.10	49.13	<i>49.81</i>	<i>49.97</i>	<i>49.64</i>	<i>48.94</i>	<i>49.17</i>	<i>50.38</i>	<i>51.06</i>	48.68	<i>49.64</i>	<i>49.90</i>
Net Stock Withdrawals or Additions (-)															
U.S. (50 States Excluding SPR) .....	.49	.18	-.55	.05	.59	<i>-.56</i>	<i>-.45</i>	<i>.20</i>	<i>.65</i>	<i>-.21</i>	<i>-.45</i>	<i>.06</i>	.04	<i>-.06</i>	<i>.01</i>
U.S. SPR	-.09	-.08	-.07	-.07	-.05	<i>-.05</i>	<i>-.04</i>	<i>-.05</i>	<i>-.05</i>	<i>-.05</i>	<i>-.05</i>	<i>-.10</i>	-.08	<i>-.05</i>	<i>-.06</i>
Other Market Economies	1.31	-.14	-1.29	-.09	.86	<i>-1.19</i>	<i>-1.01</i>	<i>.85</i>	<i>1.40</i>	<i>-.64</i>	<i>-.80</i>	<i>.29</i>	-.06	<i>-.12</i>	<i>.06</i>
Total Stock Withdrawals	1.71	-.04	-1.91	-.11	1.40	<i>-1.80</i>	<i>-1.50</i>	<i>1.00</i>	<i>2.00</i>	<i>-.90</i>	<i>-1.30</i>	<i>.25</i>	-1.10	<i>-.23</i>	<i>.00</i>
Product Supplied															
U.S. (50 States)	16.57	16.45	16.71	16.92	17.44	<i>16.40</i>	<i>16.77</i>	<i>17.31</i>	<i>17.40</i>	<i>16.85</i>	<i>16.95</i>	<i>17.55</i>	16.67	<i>16.98</i>	<i>17.19</i>
U.S. Territories .....	.19	.22	.21	.23	.19	<i>.23</i>	<i>.21</i>	<i>.24</i>	<i>.19</i>	<i>.23</i>	<i>.21</i>	<i>.24</i>	.21	<i>.22</i>	<i>.22</i>
Canada	1.51	1.52	1.61	1.65	1.58	<i>1.58</i>	<i>1.66</i>	<i>1.71</i>	<i>1.58</i>	<i>1.60</i>	<i>1.67</i>	<i>1.73</i>	1.57	<i>1.63</i>	<i>1.64</i>
Japan	4.89	3.90	4.17	4.77	5.09	<i>3.95</i>	<i>4.15</i>	<i>4.89</i>	<i>5.03</i>	<i>3.97</i>	<i>4.17</i>	<i>4.92</i>	4.43	<i>4.52</i>	<i>4.52</i>
Australia and New Zealand .....	.69	.72	.72	.74	.69	<i>.73</i>	<i>.73</i>	<i>.74</i>	<i>.71</i>	<i>.75</i>	<i>.74</i>	<i>.76</i>	.72	<i>.72</i>	<i>.74</i>
OECD Europe	12.70	11.46	11.97	12.52	12.50	<i>11.67</i>	<i>12.11</i>	<i>12.61</i>	<i>12.75</i>	<i>11.69</i>	<i>12.13</i>	<i>12.63</i>	12.16	<i>12.22</i>	<i>12.30</i>
Total OECD	36.54	34.28	35.38	36.83	37.49	<i>34.56</i>	<i>35.63</i>	<i>37.50</i>	<i>37.67</i>	<i>35.08</i>	<i>35.89</i>	<i>37.82</i>	35.76	<i>36.30</i>	<i>36.61</i>
Other Market Economies	13.00	12.93	12.93	13.21	13.33	<i>13.26</i>	<i>13.26</i>	<i>13.55</i>	<i>13.70</i>	<i>13.62</i>	<i>13.62</i>	<i>13.92</i>	13.02	<i>13.35</i>	<i>13.71</i>
Total Market Economies	49.54	47.21	48.31	50.04	50.83	<i>47.82</i>	<i>48.89</i>	<i>51.05</i>	<i>51.36</i>	<i>48.70</i>	<i>49.50</i>	<i>51.74</i>	48.78	<i>49.65</i>	<i>50.32</i>
Statistical Discrepancy	1.06	-.10	-.23	.05	.30	<i>-.18</i>	<i>.42</i>	<i>.42</i>	<i>.43</i>	<i>.43</i>	<i>.42</i>	<i>.42</i>	0.19	<i>0.24</i>	<i>0.42</i>
Closing Stocks (billion barrels)	4.89	4.90	5.07	5.08	4.95	<i>5.12</i>	<i>5.26</i>	<i>5.16</i>	<i>4.98</i>	<i>5.07</i>	<i>5.18</i>	<i>5.16</i>	5.08	<i>5.16</i>	<i>5.16</i>

^a 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(88/04); and *International Energy Annual 1986*, DOE/EIA-0219(86); Organization for Economic Cooperation and Development, Monthly Oil Statistics Database through January 1988.

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

	Annual Average 1976-1986	1987	1988	1989
OECD Total ^a	2.7	3.0	<i>3.0</i>	<i>2.4</i>
United States ^b	2.8	2.9	<i>3.2</i>	<i>2.4</i>
Western Europe	2.2	2.6	<i>2.5</i>	<i>2.0</i>
Japan	4.2	3.9	<i>4.3</i>	<i>3.8</i>
Other OECD ^c	2.8	3.8	<i>2.8</i>	<i>2.1</i>

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

^b Gross national product.

^c Canada, Australia, and New Zealand.

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

Sources: U.S. historical data and forecasts: Data Resources, Inc., United States Forecast, CONTROL0688; Non-U.S. historical data: The WFA Group, *World Economic Service: Historical Data*, April 1988 and *World Economic Outlook: Developed Economies Volume*, July 1988. 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	1987				1988		World Oil Price Case	1988		1989				Year		
	1st	2nd	3rd	4th	1st	2nd		3rd	4th	1st	2nd	3rd	4th	1987	1988	1989
Macroeconomic ^a																
Real Gross National Product (billion 1982 dollars)	3,772	3,795	3,836	3,881	3,915	3,936	Low	<i>3,952</i>	<i>3,975</i>	<i>4,010</i>	<i>4,032</i>	<i>4,057</i>	<i>4,097</i>		<i>3,945</i>	<i>4,049</i>
							Base	<i>3,950</i>	<i>3,969</i>	<i>4,001</i>	<i>4,020</i>	<i>4,045</i>	<i>4,081</i>	3,821	<i>3,943</i>	<i>4,037</i>
							High	<i>3,948</i>	<i>3,962</i>	<i>3,991</i>	<i>4,010</i>	<i>4,033</i>	<i>4,069</i>		<i>3,940</i>	<i>4,026</i>
Percentage Change from Prior Year	2.0	2.4	3.2	4.0	3.8	3.7	Low	<i>3.0</i>	<i>2.4</i>	<i>2.4</i>	<i>2.4</i>	<i>2.7</i>	<i>3.1</i>		<i>3.2</i>	<i>2.6</i>
							Base	<i>3.0</i>	<i>2.3</i>	<i>2.2</i>	<i>2.2</i>	<i>2.4</i>	<i>2.8</i>	2.9	<i>3.2</i>	<i>2.4</i>
							High	<i>2.9</i>	<i>2.1</i>	<i>1.9</i>	<i>1.9</i>	<i>2.2</i>	<i>2.7</i>		<i>3.1</i>	<i>2.2</i>
GNP Implicit Price Deflator (index, 1982=1.000)	1.161	1.171	1.179	1.187	1.191	1.207	Low	<i>1.215</i>	<i>1.223</i>	<i>1.234</i>	<i>1.246</i>	<i>1.259</i>	<i>1.269</i>		<i>1.209</i>	<i>1.252</i>
							Base	<i>1.217</i>	<i>1.227</i>	<i>1.238</i>	<i>1.251</i>	<i>1.265</i>	<i>1.277</i>	1.175	<i>1.211</i>	<i>1.258</i>
							High	<i>1.219</i>	<i>1.230</i>	<i>1.244</i>	<i>1.257</i>	<i>1.272</i>	<i>1.285</i>		<i>1.212</i>	<i>1.264</i>
Percentage Change from Prior Year	2.8	3.0	2.8	3.3	2.6	3.0	Low	<i>3.1</i>	<i>3.1</i>	<i>3.6</i>	<i>3.3</i>	<i>3.6</i>	<i>3.8</i>		<i>2.9</i>	<i>3.6</i>
							Base	<i>3.2</i>	<i>3.3</i>	<i>4.0</i>	<i>3.7</i>	<i>4.0</i>	<i>4.1</i>	3.0	<i>3.0</i>	<i>4.0</i>
							High	<i>3.4</i>	<i>3.7</i>	<i>4.4</i>	<i>4.2</i>	<i>4.4</i>	<i>4.5</i>		<i>3.2</i>	<i>4.4</i>
Real Disposable Personal Income ^b (billion 1982 dollars)	2,675	2,646	2,675	2,714	2,737	2,728	Low	<i>2,762</i>	<i>2,775</i>	<i>2,799</i>	<i>2,806</i>	<i>2,813</i>	<i>2,835</i>		<i>2,751</i>	<i>2,813</i>
							Base	<i>2,753</i>	<i>2,762</i>	<i>2,784</i>	<i>2,790</i>	<i>2,797</i>	<i>2,816</i>	2,678	<i>2,745</i>	<i>2,797</i>
							High	<i>2,744</i>	<i>2,748</i>	<i>2,768</i>	<i>2,774</i>	<i>2,781</i>	<i>2,799</i>		<i>2,739</i>	<i>2,781</i>
Percentage Change from Prior Year	2.5	-0.6	0.8	2.1	2.3	3.1	Low	<i>3.2</i>	<i>2.3</i>	<i>2.3</i>	<i>2.8</i>	<i>1.9</i>	<i>2.2</i>		<i>2.7</i>	<i>2.3</i>
							Base	<i>2.9</i>	<i>1.8</i>	<i>1.7</i>	<i>2.3</i>	<i>1.6</i>	<i>2.0</i>	1.2	<i>2.5</i>	<i>1.9</i>
							High	<i>2.6</i>	<i>1.3</i>	<i>1.1</i>	<i>1.7</i>	<i>1.4</i>	<i>1.9</i>		<i>2.3</i>	<i>1.5</i>
Index of Industrial Production (Mfg.) (index, 1977=1.000)	1.316	1.332	1.357	1.380	1.396	1.413	Low	<i>1.423</i>	<i>1.439</i>	<i>1.456</i>	<i>1.467</i>	<i>1.483</i>	<i>1.506</i>		<i>1.418</i>	<i>1.478</i>
							Base	<i>1.420</i>	<i>1.432</i>	<i>1.446</i>	<i>1.456</i>	<i>1.469</i>	<i>1.488</i>	1.346	<i>1.415</i>	<i>1.465</i>
							High	<i>1.417</i>	<i>1.426</i>	<i>1.438</i>	<i>1.446</i>	<i>1.456</i>	<i>1.473</i>		<i>1.413</i>	<i>1.453</i>
Percentage Change from Prior Year	2.4	3.7	5.1	5.9	6.1	6.1	Low	<i>4.8</i>	<i>4.2</i>	<i>4.3</i>	<i>3.8</i>	<i>4.2</i>	<i>4.7</i>		<i>5.3</i>	<i>4.2</i>
							Base	<i>4.6</i>	<i>3.8</i>	<i>3.6</i>	<i>3.0</i>	<i>3.4</i>	<i>3.9</i>	4.3	<i>5.1</i>	<i>3.5</i>
							High	<i>4.4</i>	<i>3.3</i>	<i>3.0</i>	<i>2.4</i>	<i>2.8</i>	<i>3.3</i>		<i>5.0</i>	<i>2.9</i>
Oil Price																
Imported Crude Oil Price ^c (U.S. dollars/barrel)	16.85	18.30	19.04	18.09	15.50	15.58	Low	<i>13.00</i>	<i>14.00</i>	<i>15.00</i>	<i>15.00</i>	<i>15.00</i>	<i>15.00</i>		<i>14.50</i>	<i>15.00</i>
							Base	<i>14.50</i>	<i>16.00</i>	<i>17.00</i>	<i>17.00</i>	<i>17.00</i>	<i>17.00</i>	18.16	<i>15.40</i>	<i>17.00</i>
							High	<i>17.00</i>	<i>18.00</i>	<i>19.00</i>	<i>19.00</i>	<i>19.00</i>	<i>19.00</i>		<i>16.60</i>	<i>19.00</i>
U.S. Refiners' Cost ^d (U.S. dollars/barrel)	16.67	17.91	19.02	17.89	15.47	15.58	Low	<i>13.00</i>	<i>14.00</i>	<i>15.00</i>	<i>15.00</i>	<i>15.00</i>	<i>15.00</i>		<i>14.50</i>	<i>15.00</i>
							Base	<i>14.50</i>	<i>16.00</i>	<i>17.00</i>	<i>17.00</i>	<i>17.00</i>	<i>17.00</i>	17.87	<i>15.40</i>	<i>17.00</i>
							High	<i>17.00</i>	<i>18.00</i>	<i>19.00</i>	<i>19.00</i>	<i>19.00</i>	<i>19.00</i>		<i>16.60</i>	<i>19.00</i>
Weather ^e																
Heating Degree Days	2,266	449	85	1,654	2,451	524		<i>88</i>	<i>1,669</i>	<i>2,401</i>	<i>536</i>	<i>88</i>	<i>1,669</i>	4,454	<i>4,732</i>	<i>4,694</i>
Cooling Degree Days	24	385	774	53	22	336		<i>755</i>	<i>63</i>	<i>28</i>	<i>327</i>	<i>755</i>	<i>63</i>	1,236	<i>1,176</i>	<i>1,172</i>

^a 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.

^b Seasonally adjusted at annual rates.

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

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

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

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

Sources: Historical data: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(88/04); U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, June 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*, June 1988. Macroeconomic projections are based on modifications to Data Resources, Inc., Forecast CONTROL0688.

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

Product	1987				1988		World Oil Price Case	1988		1989				Year		
	1st	2nd	3rd	4th	1st	2nd		3rd	4th	1st	2nd	3rd	4th	1987	1988	1989
Petroleum																
Imported Crude Oil Price ^a (dollars per barrel)	16.85	18.30	19.04	18.09	15.50	15.58	Low	<i>13.00</i>	<i>14.00</i>	<i>15.00</i>	<i>15.00</i>	<i>15.00</i>	<i>15.00</i>	<i>14.50</i>	<i>15.00</i>	
							Base	<i>14.50</i>	<i>16.00</i>	<i>17.00</i>	<i>17.00</i>	<i>17.00</i>	<i>17.00</i>	18.16	<i>15.40</i>	
							High	<i>17.00</i>	<i>18.00</i>	<i>19.00</i>	<i>19.00</i>	<i>19.00</i>	<i>19.00</i>	<i>16.60</i>	<i>19.00</i>	
Gasoline ^b (dollars per gallon) .....	.90	.95	.99	.98	.93	.95	Low	<i>.92</i>	<i>.89</i>	<i>.86</i>	<i>.89</i>	<i>.93</i>	<i>.92</i>	<i>.92</i>	<i>.90</i>
							Base	<i>.94</i>	<i>.93</i>	<i>.92</i>	<i>.95</i>	<i>.99</i>	<i>.98</i>	.96	<i>.94</i>	
							High	<i>.97</i>	<i>.99</i>	<i>.98</i>	<i>1.01</i>	<i>1.05</i>	<i>1.04</i>	<i>.96</i>	<i>1.02</i>	
No. 2 Diesel Oil, Retail (dollars per gallon) .....	.89	.91	.95	.97	.93	.93	Low	<i>.88</i>	<i>.85</i>	<i>.87</i>	<i>.89</i>	<i>.90</i>	<i>.89</i>	<i>.90</i>	<i>.89</i>
							Base	<i>.89</i>	<i>.89</i>	<i>.92</i>	<i>.94</i>	<i>.94</i>	<i>.94</i>	.93	<i>.91</i>	
							High	<i>.93</i>	<i>.93</i>	<i>.96</i>	<i>.99</i>	<i>.99</i>	<i>.99</i>	<i>.93</i>	<i>.98</i>	
No. 2 Heating Oil, Wholesale (dollars per gallon) .....	.50	.51	.54	.56	.50	.50	Low	<i>.42</i>	<i>.45</i>	<i>.47</i>	<i>.46</i>	<i>.46</i>	<i>.47</i>	<i>.47</i>	<i>.47</i>
							Base	<i>.45</i>	<i>.49</i>	<i>.52</i>	<i>.52</i>	<i>.51</i>	<i>.53</i>	.53	<i>.49</i>	
							High	<i>.51</i>	<i>.55</i>	<i>.58</i>	<i>.57</i>	<i>.56</i>	<i>.58</i>	<i>.51</i>	<i>.57</i>	
No. 2 Heating Oil, Retail (dollars per gallon) .....	.79	.78	.78	.83	.84	.81	Low	<i>.70</i>	<i>.72</i>	<i>.76</i>	<i>.73</i>	<i>.71</i>	<i>.76</i>	<i>.78</i>	<i>.75</i>
							Base	<i>.73</i>	<i>.78</i>	<i>.82</i>	<i>.80</i>	<i>.78</i>	<i>.83</i>	.80	<i>.80</i>	
							High	<i>.77</i>	<i>.84</i>	<i>.89</i>	<i>.86</i>	<i>.84</i>	<i>.90</i>	<i>.82</i>	<i>.88</i>	
No. 6 Residual Fuel Oil ^c (dollars per barrel)	17.11	18.19	18.48	16.97	14.76	13.75	Low	<i>12.07</i>	<i>13.67</i>	<i>14.52</i>	<i>13.44</i>	<i>13.62</i>	<i>14.42</i>	<i>13.60</i>	<i>14.04</i>	
							Base	<i>13.90</i>	<i>16.24</i>	<i>17.15</i>	<i>15.86</i>	<i>16.08</i>	<i>17.02</i>	17.68	<i>14.71</i>	
							High	<i>16.63</i>	<i>18.93</i>	<i>19.89</i>	<i>18.38</i>	<i>18.63</i>	<i>19.74</i>	<i>16.07</i>	<i>19.22</i>	
Electric Utility Fuels																
Coal (dollars per million Btu)	1.52	1.54	1.50	1.48	1.48	1.49	Low	<i>1.45</i>	<i>1.46</i>	<i>1.46</i>	<i>1.47</i>	<i>1.48</i>	<i>1.48</i>	<i>1.47</i>	<i>1.47</i>	
							Base	<i>1.50</i>	<i>1.51</i>	<i>1.52</i>	<i>1.52</i>	<i>1.54</i>	<i>1.54</i>	1.51	<i>1.50</i>	
							High	<i>1.53</i>	<i>1.54</i>	<i>1.55</i>	<i>1.55</i>	<i>1.55</i>	<i>1.57</i>	<i>1.52</i>	<i>1.56</i>	
Heavy Oil ^d (dollars per million Btu)	2.93	3.03	3.10	2.85	2.56	2.32	Low	<i>2.05</i>	<i>2.28</i>	<i>2.45</i>	<i>2.27</i>	<i>2.29</i>	<i>2.41</i>	<i>2.30</i>	<i>2.35</i>	
							Base	<i>2.33</i>	<i>2.69</i>	<i>2.87</i>	<i>2.66</i>	<i>2.68</i>	<i>2.82</i>	2.98	<i>2.48</i>	
							High	<i>2.77</i>	<i>3.11</i>	<i>3.30</i>	<i>3.06</i>	<i>3.09</i>	<i>3.25</i>	<i>2.70</i>	<i>3.17</i>	
Natural Gas (dollars per million Btu)	2.33	2.23	2.16	2.27	2.39	2.24	Low	<i>2.12</i>	<i>2.22</i>	<i>2.31</i>	<i>2.25</i>	<i>2.29</i>	<i>2.39</i>	<i>2.23</i>	<i>2.30</i>	
							Base	<i>2.24</i>	<i>2.40</i>	<i>2.49</i>	<i>2.42</i>	<i>2.46</i>	<i>2.57</i>	2.23	<i>2.30</i>	
							High	<i>2.51</i>	<i>2.67</i>	<i>2.77</i>	<i>2.67</i>	<i>2.71</i>	<i>2.84</i>	<i>2.43</i>	<i>2.84</i>	
Other Residential																
Natural Gas (dollars per 1,000 cu. ft.)	5.35	5.84	6.76	5.37	5.11	5.74	Low	<i>6.42</i>	<i>5.23</i>	<i>5.18</i>	<i>5.81</i>	<i>6.72</i>	<i>5.49</i>	<i>5.33</i>	<i>5.51</i>	
							Base	<i>6.65</i>	<i>5.42</i>	<i>5.37</i>	<i>6.02</i>	<i>6.96</i>	<i>5.69</i>	5.56	<i>5.43</i>	
							High	<i>6.85</i>	<i>5.59</i>	<i>5.53</i>	<i>6.20</i>	<i>7.17</i>	<i>5.86</i>	<i>5.52</i>	<i>5.88</i>	
Electricity (cents per kilowatthour)	7.33	7.86	8.20	7.65	7.19	7.71	Low	<i>8.04</i>	<i>7.63</i>	<i>7.36</i>	<i>7.85</i>	<i>8.24</i>	<i>7.88</i>	<i>7.63</i>	<i>7.83</i>	
							Base	<i>8.19</i>	<i>7.79</i>	<i>7.51</i>	<i>8.01</i>	<i>8.41</i>	<i>8.04</i>	7.76	<i>7.71</i>	
							High	<i>8.35</i>	<i>7.95</i>	<i>7.67</i>	<i>8.17</i>	<i>8.58</i>	<i>8.20</i>	<i>7.79</i>	<i>8.15</i>	

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

^b Average retail for all grades and services.

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

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

Notes: Second quarter 1988 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(88/04); and *Petroleum Marketing Monthly*, DOE/EIA-0380(88/04).

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

Supply and Disposition	1987				1988				1989				Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1987	1988	1989
Supply															
<i>Crude Oil Supply</i>															
Domestic Production ^a	8.45	8.37	8.22	8.36	8.32	8.24	<i>8.20</i>	<i>8.18</i>	<i>8.12</i>	<i>8.04</i>	<i>7.95</i>	<i>7.88</i>	8.35	<i>8.23</i>	<i>8.00</i>
Alaska	1.95	1.97	1.90	2.03	2.05	2.05	<i>2.07</i>	<i>2.09</i>	<i>2.05</i>	<i>2.04</i>	<i>2.01</i>	<i>1.97</i>	1.96	<i>2.07</i>	<i>2.02</i>
Lower 48	6.50	6.40	6.32	6.33	6.27	6.19	<i>6.13</i>	<i>6.08</i>	<i>6.07</i>	<i>6.00</i>	<i>5.94</i>	<i>5.91</i>	6.39	<i>6.17</i>	<i>5.98</i>
Net Imports (Including SPR) ^b	3.85	4.28	5.17	4.77	4.51	4.88	<i>5.28</i>	<i>5.11</i>	<i>4.84</i>	<i>5.20</i>	<i>5.69</i>	<i>5.79</i>	4.52	<i>4.95</i>	<i>5.38</i>
Gross Imports (Excluding SPR)	3.94	4.35	5.24	4.86	4.65	4.98	<i>5.40</i>	<i>5.23</i>	<i>4.97</i>	<i>5.33</i>	<i>5.80</i>	<i>5.85</i>	4.60	<i>5.07</i>	<i>5.49</i>
SPR Imports .....	.08	.07	.07	.07	.05	.06	<i>.04</i>	<i>.05</i>	<i>.05</i>	<i>.05</i>	<i>.05</i>	<i>.10</i>	.07	<i>.05</i>	<i>.06</i>
Exports .....	.17	.14	.14	.16	.19	.15	<i>.16</i>	<i>.17</i>	<i>.18</i>	<i>.18</i>	<i>.16</i>	<i>.17</i>	.15	<i>.17</i>	<i>.17</i>
SPR Stock Withdrawn or Added (-)	-.09	-.08	-.07	-.07	-.05	-.05	<i>-.04</i>	<i>-.05</i>	<i>-.05</i>	<i>-.05</i>	<i>-.05</i>	<i>-.10</i>	-.08	<i>-.05</i>	<i>-.06</i>
Other Stock Withdrawn or Added (-)	-.01	.05	-.10	-.13	-.05	-.11	<i>.04</i>	<i>.08</i>	<i>.04</i>	<i>-.01</i>	<i>.04</i>	<i>-.03</i>	-.05	<i>-.01</i>	<i>.01</i>
Products Supplied and Losses	-.04	-.04	-.03	-.03	-.05	-.04	<i>-.05</i>	<i>-.05</i>	<i>-.05</i>	<i>-.05</i>	<i>-.05</i>	<i>-.05</i>	-.03	<i>-.05</i>	<i>-.05</i>
Unaccounted-for Crude .....	.17	.20	.14	.07	.24	.44	<i>.12</i>	<i>.12</i>	<i>.13</i>	<i>.13</i>	<i>.12</i>	<i>.12</i>	.14	<i>.23</i>	<i>.12</i>
Crude Oil Input to Refineries	12.31	12.79	13.33	12.98	12.93	13.36	<i>13.55</i>	<i>13.39</i>	<i>13.02</i>	<i>13.27</i>	<i>13.70</i>	<i>13.62</i>	12.85	<i>13.30</i>	<i>13.40</i>
<i>Other Supply</i>															
NGL Production	1.60	1.58	1.58	1.62	1.60	1.58	<i>1.59</i>	<i>1.63</i>	<i>1.64</i>	<i>1.62</i>	<i>1.60</i>	<i>1.63</i>	1.60	<i>1.60</i>	<i>1.62</i>
Other Hydrocarbon and Alcohol Inputs .....	.07	.05	.06	.07	.06	.06	<i>.06</i>	<i>.07</i>	<i>.06</i>	<i>.06</i>	<i>.07</i>	<i>.07</i>	.06	<i>.06</i>	<i>.06</i>
Crude Oil Product Supplied .....	.04	.04	.03	.03	.05	.04	<i>.05</i>	<i>.05</i>	<i>.05</i>	<i>.05</i>	<i>.05</i>	<i>.05</i>	.03	<i>.05</i>	<i>.05</i>
Processing Gain .....	.64	.64	.64	.64	.68	.66	<i>.66</i>	<i>.65</i>	<i>.63</i>	<i>.65</i>	<i>.67</i>	<i>.66</i>	.64	<i>.66</i>	<i>.65</i>
Net Product Imports ^c	1.41	1.23	1.53	1.40	1.50	1.15	<i>1.34</i>	<i>1.41</i>	<i>1.39</i>	<i>1.40</i>	<i>1.36</i>	<i>1.44</i>	1.39	<i>1.35</i>	<i>1.40</i>
Gross Product Imports ^c	2.03	1.82	2.10	2.06	2.18	1.79	<i>1.90</i>	<i>2.06</i>	<i>2.03</i>	<i>2.00</i>	<i>1.93</i>	<i>2.09</i>	2.00	<i>1.98</i>	<i>2.01</i>
Product Exports .....	.63	.59	.58	.66	.67	.64	<i>.56</i>	<i>.64</i>	<i>.64</i>	<i>.60</i>	<i>.57</i>	<i>.65</i>	.61	<i>.63</i>	<i>.61</i>
Product Stock Withdrawn or Added (-) ^d .....	.51	.12	-.45	.18	.64	-.45	<i>-.48</i>	<i>.12</i>	<i>.61</i>	<i>-.19</i>	<i>-.49</i>	<i>.09</i>	.09	<i>-.05</i>	<i>.00</i>
Total Product Supplied, Domestic Use	16.57	16.46	16.71	16.92	17.45	16.40	<i>16.77</i>	<i>17.31</i>	<i>17.40</i>	<i>16.85</i>	<i>16.95</i>	<i>17.55</i>	16.67	<i>16.98</i>	<i>17.19</i>
Disposition															
Motor Gasoline	6.76	7.44	7.38	7.24	6.98	7.37	<i>7.51</i>	<i>7.32</i>	<i>7.03</i>	<i>7.60</i>	<i>7.60</i>	<i>7.43</i>	7.21	<i>7.29</i>	<i>7.42</i>
Jet Fuel	1.38	1.34	1.39	1.43	1.48	1.41	<i>1.41</i>	<i>1.55</i>	<i>1.58</i>	<i>1.39</i>	<i>1.45</i>	<i>1.60</i>	1.38	<i>1.46</i>	<i>1.51</i>
Distillate Fuel Oil	3.25	2.82	2.70	3.14	3.52	2.77	<i>2.79</i>	<i>3.25</i>	<i>3.51</i>	<i>3.00</i>	<i>2.85</i>	<i>3.31</i>	2.98	<i>3.08</i>	<i>3.16</i>
Residual Fuel Oil	1.41	1.14	1.27	1.24	1.54	1.08	<i>1.13</i>	<i>1.17</i>	<i>1.35</i>	<i>1.17</i>	<i>1.07</i>	<i>1.14</i>	1.26	<i>1.23</i>	<i>1.18</i>
Other Oils Supplied ^e	3.76	3.72	3.97	3.88	3.92	3.77	<i>3.94</i>	<i>4.02</i>	<i>3.93</i>	<i>3.70</i>	<i>3.98</i>	<i>4.07</i>	3.83	<i>3.91</i>	<i>3.92</i>
Total Product Supplied	16.57	16.45	16.71	16.92	17.44	16.40	<i>16.77</i>	<i>17.31</i>	<i>17.40</i>	<i>16.85</i>	<i>16.95</i>	<i>17.55</i>	16.67	<i>16.98</i>	<i>17.19</i>
Total Petroleum Net Imports	5.25	5.51	6.70	6.17	6.01	6.04	<i>6.62</i>	<i>6.52</i>	<i>6.23</i>	<i>6.60</i>	<i>7.05</i>	<i>7.22</i>	5.91	<i>6.30</i>	<i>6.78</i>
Closing Stocks (million barrels)															
Crude Oil (Excluding SPR) ^f	332	328	337	349	354	363	<i>360</i>	<i>353</i>	<i>349</i>	<i>350</i>	<i>347</i>	<i>349</i>	349	<i>353</i>	<i>349</i>
Total Motor Gasoline	248	230	230	226	231	207	<i>229</i>	<i>231</i>	<i>236</i>	<i>226</i>	<i>228</i>	<i>231</i>	226	<i>231</i>	<i>231</i>
Finished Motor Gasoline	205	193	191	189	194	172	<i>190</i>	<i>193</i>	<i>198</i>	<i>189</i>	<i>190</i>	<i>193</i>	189	<i>193</i>	<i>193</i>
Blending Components	43	38	38	37	37	35	<i>39</i>	<i>38</i>	<i>38</i>	<i>37</i>	<i>38</i>	<i>38</i>	37	<i>38</i>	<i>38</i>
Jet Fuel	48	46	50	50	47	46	<i>49</i>	<i>49</i>	<i>47</i>	<i>47</i>	<i>49</i>	<i>49</i>	50	<i>49</i>	<i>49</i>
Distillate Fuel Oil	109	104	127	134	89	112	<i>133</i>	<i>142</i>	<i>98</i>	<i>106</i>	<i>134</i>	<i>142</i>	134	<i>142</i>	<i>142</i>
Residual Fuel Oil	39	41	44	47	44	43	<i>46</i>	<i>49</i>	<i>44</i>	<i>42</i>	<i>46</i>	<i>49</i>	47	<i>49</i>	<i>49</i>
Other Oils ^g	259	271	284	260	249	292	<i>288</i>	<i>264</i>	<i>255</i>	<i>276</i>	<i>285</i>	<i>264</i>	260	<i>264</i>	<i>264</i>
Total Stocks (Excluding SPR)	1037	1021	1072	1067	1014	1064	<i>1106</i>	<i>1087</i>	<i>1029</i>	<i>1048</i>	<i>1089</i>	<i>1083</i>	1067	<i>1087</i>	<i>1083</i>
Crude Oil in SPR	520	527	534	541	545	550	<i>554</i>	<i>558</i>	<i>563</i>	<i>567</i>	<i>572</i>	<i>581</i>	541	<i>558</i>	<i>581</i>
Total Stocks (Including SPR)	1557	1548	1606	1607	1559	1614	<i>1659</i>	<i>1646</i>	<i>1592</i>	<i>1615</i>	<i>1661</i>	<i>1665</i>	1607	<i>1646</i>	<i>1665</i>

^a Includes lease condensate.

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

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

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

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

^f Includes crude oil in transit to refineries.

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

SPR: Strategic Petroleum Reserve

NGL: Natural Gas Liquids

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

Sources: Historical data: Energy Information Administration, *Petroleum Supply Annual 1987*, DOE/EIA-0340(87)/1; *Petroleum Supply Monthly*, DOE/EIA-0109, Jan. 1988 to Apr. 1988; *Weekly Petroleum Status Report*, DOE/EIA-0208(88-24,28).

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

Sensitivities	1988		1989				Year	
	3rd	4th	1st	2nd	3rd	4th	1988	1989
Demand in 50 States								
Low Price	<i>16.91</i>	<i>17.48</i>	<i>17.56</i>	<i>17.00</i>	<i>17.10</i>	<i>17.71</i>	<i>17.06</i>	<i>17.34</i>
Base Case	<i>16.77</i>	<i>17.31</i>	<i>17.40</i>	<i>16.85</i>	<i>16.95</i>	<i>17.55</i>	<i>16.98</i>	<i>17.19</i>
High Price	<i>16.54</i>	<i>17.14</i>	<i>17.24</i>	<i>16.69</i>	<i>16.79</i>	<i>17.39</i>	<i>16.88</i>	<i>17.03</i>
Weather Sensitivity								
Adverse Weather	<i>.02</i>	<i>.12</i>	<i>.16</i>	<i>.03</i>	<i>.02</i>	<i>.12</i>	<i>.04</i>	<i>.08</i>
Favorable Weather	<i>-.02</i>	<i>-.12</i>	<i>-.16</i>	<i>-.03</i>	<i>-.02</i>	<i>-.12</i>	<i>-.04</i>	<i>-.08</i>
Economic Sensitivity								
High Economic Activity	<i>.04</i>	<i>.06</i>	<i>.07</i>	<i>.07</i>	<i>.07</i>	<i>.08</i>	<i>.03</i>	<i>.07</i>
Low Economic Activity	<i>-.04</i>	<i>-.06</i>	<i>-.07</i>	<i>-.07</i>	<i>-.07</i>	<i>-.07</i>	<i>-.03</i>	<i>-.07</i>
Combined Sensitivity Differentials ^a (excl. price)								
Upper Range	<i>.04</i>	<i>.13</i>	<i>.17</i>	<i>.08</i>	<i>.07</i>	<i>.14</i>	<i>.04</i>	<i>.12</i>
Lower Range	<i>.04</i>	<i>.13</i>	<i>.17</i>	<i>.08</i>	<i>.07</i>	<i>.14</i>	<i>.04</i>	<i>.12</i>
Range of Projected Demand								
High Demand ^b	<i>16.95</i>	<i>17.61</i>	<i>17.73</i>	<i>17.08</i>	<i>17.17</i>	<i>17.85</i>	<i>17.10</i>	<i>17.46</i>
Low Demand ^c	<i>16.50</i>	<i>17.01</i>	<i>17.07</i>	<i>16.61</i>	<i>16.72</i>	<i>17.25</i>	<i>16.83</i>	<i>16.91</i>

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

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

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

Note: Forecast values in *italics*.

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

Supply and Disposition	1987				1988				1989				Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1987	1988	1989
Supply															
Crude Oil Supply															
Domestic Production ^a	8.45	8.37	8.22	8.36	8.32	8.24	<i>8.15</i>	<i>8.06</i>	<i>7.94</i>	<i>7.77</i>	<i>7.63</i>	<i>7.53</i>	8.35	<i>8.19</i>	<i>7.71</i>
Alaska	1.95	1.97	1.90	2.03	2.05	2.05	<i>2.07</i>	<i>2.09</i>	<i>2.04</i>	<i>2.01</i>	<i>1.97</i>	<i>1.93</i>	1.96	<i>2.07</i>	<i>1.99</i>
Lower 48	6.50	6.40	6.32	6.33	6.27	6.19	<i>6.08</i>	<i>5.96</i>	<i>5.89</i>	<i>5.77</i>	<i>5.66</i>	<i>5.59</i>	6.39	<i>6.12</i>	<i>5.73</i>
Net Imports (Including SPR) ^b	3.85	4.28	5.17	4.77	4.51	4.88	<i>5.73</i>	<i>5.48</i>	<i>5.25</i>	<i>5.71</i>	<i>6.28</i>	<i>6.46</i>	4.52	<i>5.15</i>	<i>5.93</i>
Gross Imports															
(Excluding SPR)	3.94	4.35	5.24	4.86	4.65	4.98	<i>5.84</i>	<i>5.60</i>	<i>5.39</i>	<i>5.84</i>	<i>6.39</i>	<i>6.52</i>	4.60	<i>5.27</i>	<i>6.04</i>
SPR Imports .....	.08	.07	.07	.07	.05	.06	<i>.04</i>	<i>.05</i>	<i>.05</i>	<i>.05</i>	<i>.05</i>	<i>.10</i>	.07	<i>.05</i>	<i>.06</i>
Exports .....	.17	.14	.14	.16	.19	.15	<i>.16</i>	<i>.17</i>	<i>.18</i>	<i>.18</i>	<i>.16</i>	<i>.17</i>	.15	<i>.17</i>	<i>.17</i>
SPR Stock Withdrawn															
or Added (-)	-.09	-.08	-.07	-.07	-.05	-.05	<i>-.04</i>	<i>-.05</i>	<i>-.05</i>	<i>-.05</i>	<i>-.05</i>	<i>-.10</i>	-.08	<i>-.05</i>	<i>-.06</i>
Other Stock Withdrawn															
or Added (-)	-.01	.05	-.10	-.13	-.05	-.11	<i>-.04</i>	<i>.10</i>	<i>.04</i>	<i>-.01</i>	<i>.03</i>	<i>-.03</i>	-.05	<i>-.03</i>	<i>.01</i>
Products Supplied and Losses	-.04	-.04	-.03	-.03	-.05	-.04	<i>-.05</i>	<i>-.05</i>	<i>-.05</i>	<i>-.05</i>	<i>-.05</i>	<i>-.05</i>	-.03	<i>-.05</i>	<i>-.05</i>
Unaccounted-for Crude .....	.17	.20	.14	.07	.24	.44	<i>.12</i>	<i>.11</i>	<i>.12</i>	<i>.12</i>	<i>.11</i>	<i>.11</i>	.14	<i>.23</i>	<i>.12</i>
Crude Oil Input to Refineries	12.31	12.79	13.33	12.98	12.93	13.36	<i>13.87</i>	<i>13.64</i>	<i>13.25</i>	<i>13.49</i>	<i>13.95</i>	<i>13.92</i>	12.85	<i>13.45</i>	<i>13.66</i>
Other Supply															
NGL Production	1.60	1.58	1.58	1.62	1.60	1.58	<i>1.59</i>	<i>1.63</i>	<i>1.64</i>	<i>1.61</i>	<i>1.59</i>	<i>1.63</i>	1.60	<i>1.60</i>	<i>1.62</i>
Other Hydrocarbon and															
Alcohol Inputs .....	.07	.05	.06	.07	.06	.06	<i>.06</i>	<i>.06</i>	<i>.06</i>	<i>.06</i>	<i>.07</i>	<i>.07</i>	.06	<i>.06</i>	<i>.06</i>
Crude Oil Product Supplied .....	.04	.04	.03	.03	.05	.04	<i>.05</i>	<i>.05</i>	<i>.05</i>	<i>.05</i>	<i>.05</i>	<i>.05</i>	.03	<i>.05</i>	<i>.05</i>
Processing Gain .....	.64	.64	.64	.64	.68	.66	<i>.67</i>	<i>.65</i>	<i>.63</i>	<i>.65</i>	<i>.67</i>	<i>.67</i>	.64	<i>.66</i>	<i>.66</i>
Net Product Imports ^c	1.41	1.23	1.53	1.40	1.50	1.15	<i>1.29</i>	<i>1.34</i>	<i>1.33</i>	<i>1.35</i>	<i>1.33</i>	<i>1.41</i>	1.39	<i>1.32</i>	<i>1.35</i>
Gross Product Imports ^c	2.03	1.82	2.10	2.06	2.18	1.79	<i>1.85</i>	<i>1.98</i>	<i>1.97</i>	<i>1.95</i>	<i>1.90</i>	<i>2.06</i>	2.00	<i>1.95</i>	<i>1.97</i>
Product Exports .....	.63	.59	.58	.66	.67	.64	<i>.56</i>	<i>.64</i>	<i>.64</i>	<i>.60</i>	<i>.57</i>	<i>.65</i>	.61	<i>.63</i>	<i>.61</i>
Product Stock Withdrawn															
or Added (-) ^d .....	.51	.12	-.45	.18	.64	-.45	<i>-.66</i>	<i>.10</i>	<i>.63</i>	<i>-.18</i>	<i>-.49</i>	<i>.08</i>	.09	<i>-.09</i>	<i>.00</i>
Total Product Supplied, Domestic Use	16.57	16.46	16.71	16.92	17.45	16.40	<i>16.87</i>	<i>17.47</i>	<i>17.58</i>	<i>17.04</i>	<i>17.17</i>	<i>17.82</i>	16.67	<i>17.05</i>	<i>17.40</i>
Disposition															
Motor Gasoline	6.76	7.44	7.38	7.24	6.98	7.37	<i>7.52</i>	<i>7.35</i>	<i>7.06</i>	<i>7.63</i>	<i>7.65</i>	<i>7.50</i>	7.21	<i>7.31</i>	<i>7.46</i>
Jet Fuel	1.38	1.34	1.39	1.43	1.48	1.41	<i>1.41</i>	<i>1.56</i>	<i>1.59</i>	<i>1.40</i>	<i>1.47</i>	<i>1.62</i>	1.38	<i>1.46</i>	<i>1.52</i>
Distillate Fuel Oil	3.25	2.82	2.70	3.14	3.52	2.77	<i>2.80</i>	<i>3.26</i>	<i>3.53</i>	<i>3.02</i>	<i>2.87</i>	<i>3.34</i>	2.98	<i>3.09</i>	<i>3.19</i>
Residual Fuel Oil	1.41	1.14	1.27	1.24	1.54	1.08	<i>1.19</i>	<i>1.26</i>	<i>1.44</i>	<i>1.26</i>	<i>1.16</i>	<i>1.24</i>	1.26	<i>1.27</i>	<i>1.28</i>
Other Oils Supplied ^e	3.76	3.72	3.97	3.88	3.92	3.77	<i>3.95</i>	<i>4.04</i>	<i>3.96</i>	<i>3.72</i>	<i>4.02</i>	<i>4.12</i>	3.83	<i>3.92</i>	<i>3.96</i>
Total Product Supplied	16.57	16.45	16.71	16.92	17.44	16.40	<i>16.87</i>	<i>17.47</i>	<i>17.58</i>	<i>17.04</i>	<i>17.17</i>	<i>17.82</i>	16.67	<i>17.05</i>	<i>17.40</i>
Total Petroleum Net Imports	5.25	5.51	6.70	6.17	6.01	6.04	<i>7.02</i>	<i>6.81</i>	<i>6.58</i>	<i>7.06</i>	<i>7.61</i>	<i>7.86</i>	5.91	<i>6.47</i>	<i>7.28</i>
Closing Stocks (million barrels)															
Crude Oil (Excluding SPR) ^f	332	328	337	349	354	363	<i>367</i>	<i>358</i>	<i>355</i>	<i>356</i>	<i>353</i>	<i>356</i>	349	<i>358</i>	<i>356</i>
Total Motor Gasoline	248	230	230	226	231	207	<i>233</i>	<i>235</i>	<i>240</i>	<i>230</i>	<i>231</i>	<i>234</i>	226	<i>235</i>	<i>234</i>
Finished Motor Gasoline	205	193	191	189	194	172	<i>192</i>	<i>195</i>	<i>200</i>	<i>192</i>	<i>193</i>	<i>195</i>	189	<i>195</i>	<i>195</i>
Blending Components	43	38	38	37	37	35	<i>41</i>	<i>40</i>	<i>40</i>	<i>38</i>	<i>39</i>	<i>39</i>	37	<i>40</i>	<i>39</i>
Jet Fuel	48	46	50	50	47	46	<i>51</i>	<i>51</i>	<i>48</i>	<i>48</i>	<i>50</i>	<i>50</i>	50	<i>51</i>	<i>50</i>
Distillate Fuel Oil	109	104	127	134	89	112	<i>134</i>	<i>143</i>	<i>99</i>	<i>107</i>	<i>135</i>	<i>144</i>	134	<i>143</i>	<i>144</i>
Residual Fuel Oil	39	41	44	47	44	43	<i>49</i>	<i>52</i>	<i>47</i>	<i>45</i>	<i>50</i>	<i>52</i>	47	<i>52</i>	<i>52</i>
Other Oils ^g	259	271	284	260	249	292	<i>295</i>	<i>272</i>	<i>262</i>	<i>282</i>	<i>291</i>	<i>270</i>	260	<i>272</i>	<i>270</i>
Total Stocks (Excluding SPR)	1037	1021	1072	1067	1014	1064	<i>1129</i>	<i>1110</i>	<i>1050</i>	<i>1068</i>	<i>1111</i>	<i>1107</i>	1067	<i>1110</i>	<i>1107</i>
Crude Oil in SPR	520	527	534	541	545	550	<i>554</i>	<i>558</i>	<i>563</i>	<i>567</i>	<i>572</i>	<i>581</i>	541	<i>558</i>	<i>581</i>
Total Stocks (Including SPR)	1557	1548	1606	1607	1559	1614	<i>1683</i>	<i>1669</i>	<i>1613</i>	<i>1636</i>	<i>1683</i>	<i>1688</i>	1607	<i>1669</i>	<i>1688</i>

^a Includes lease condensate.

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

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

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

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

^f Includes crude oil in transit to refineries.

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

SPR: Strategic Petroleum Reserve

NGL: Natural Gas Liquids

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

Sources: Historical data: Energy Information Administration, *Petroleum Supply Annual 1987*, DOE/EIA-0340(87)/1; *Petroleum Supply Monthly*, DOE/EIA-0109, Jan. 1988 to Apr. 1988; *Weekly Petroleum Status Report*, DOE/EIA-0208(88-24,28).

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

Supply and Disposition	1987				1988				1989				Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1987	1988	1989
Supply															
Crude Oil Supply															
Domestic Production ^a	8.45	8.37	8.22	8.36	8.32	8.24	<i>8.22</i>	<i>8.24</i>	<i>8.23</i>	<i>8.17</i>	<i>8.12</i>	<i>8.06</i>	8.35	<i>8.26</i>	<i>8.14</i>
Alaska	1.95	1.97	1.90	2.03	2.05	2.05	<i>2.07</i>	<i>2.09</i>	<i>2.07</i>	<i>2.07</i>	<i>2.07</i>	<i>2.03</i>	1.96	<i>2.07</i>	<i>2.06</i>
Lower 48	6.50	6.40	6.32	6.33	6.27	6.19	<i>6.15</i>	<i>6.14</i>	<i>6.15</i>	<i>6.10</i>	<i>6.05</i>	<i>6.03</i>	6.39	<i>6.19</i>	<i>6.08</i>
Net Imports (Including SPR) ^b	3.85	4.28	5.17	4.77	4.51	4.88	<i>5.08</i>	<i>4.84</i>	<i>4.49</i>	<i>4.83</i>	<i>5.26</i>	<i>5.35</i>	4.52	<i>4.83</i>	<i>4.98</i>
Gross Imports															
(Excluding SPR)	3.94	4.35	5.24	4.86	4.65	4.98	<i>5.19</i>	<i>4.95</i>	<i>4.62</i>	<i>4.95</i>	<i>5.37</i>	<i>5.42</i>	4.60	<i>4.95</i>	<i>5.09</i>
SPR Imports	.08	.07	.07	.07	.05	.06	<i>.04</i>	<i>.05</i>	<i>.05</i>	<i>.05</i>	<i>.05</i>	<i>.10</i>	.07	<i>.05</i>	<i>.06</i>
Exports	.17	.14	.14	.16	.19	.15	<i>.16</i>	<i>.17</i>	<i>.18</i>	<i>.18</i>	<i>.16</i>	<i>.17</i>	.15	<i>.17</i>	<i>.17</i>
SPR Stock Withdrawn or Added (-)	-.09	-.08	-.07	-.07	-.05	-.05	<i>-.04</i>	<i>-.05</i>	<i>-.05</i>	<i>-.05</i>	<i>-.05</i>	<i>-.10</i>	-.08	<i>-.05</i>	<i>-.06</i>
Other Stock Withdrawn or Added (-)	-.01	.05	-.10	-.13	-.05	-.11	<i>.06</i>	<i>.10</i>	<i>.05</i>	<i>-.01</i>	<i>.03</i>	<i>-.02</i>	-.05	<i>.00</i>	<i>.01</i>
Products Supplied and Losses	-.04	-.04	-.03	-.03	-.05	-.04	<i>-.05</i>	<i>-.05</i>	<i>-.05</i>	<i>-.05</i>	<i>-.05</i>	<i>-.05</i>	-.03	<i>-.05</i>	<i>-.05</i>
Unaccounted-for Crude	.17	.20	.14	.07	.24	.44	<i>.11</i>	<i>.11</i>	<i>.12</i>	<i>.13</i>	<i>.11</i>	<i>.12</i>	.14	<i>.22</i>	<i>.12</i>
Crude Oil Input to Refineries	12.31	12.79	13.33	12.98	12.93	13.36	<i>13.38</i>	<i>13.18</i>	<i>12.78</i>	<i>13.01</i>	<i>13.43</i>	<i>13.36</i>	12.85	<i>13.21</i>	<i>13.15</i>
Other Supply															
NGL Production	1.60	1.58	1.58	1.62	1.60	1.58	<i>1.59</i>	<i>1.63</i>	<i>1.64</i>	<i>1.62</i>	<i>1.60</i>	<i>1.63</i>	1.60	<i>1.60</i>	<i>1.62</i>
Other Hydrocarbon and Alcohol Inputs	.07	.05	.06	.07	.06	.06	<i>.06</i>	<i>.07</i>	<i>.06</i>	<i>.06</i>	<i>.07</i>	<i>.07</i>	.06	<i>.06</i>	<i>.06</i>
Crude Oil Product Supplied	.04	.04	.03	.03	.05	.04	<i>.05</i>	<i>.05</i>	<i>.05</i>	<i>.05</i>	<i>.05</i>	<i>.05</i>	.03	<i>.05</i>	<i>.05</i>
Processing Gain	.64	.64	.64	.64	.68	.66	<i>.65</i>	<i>.64</i>	<i>.62</i>	<i>.64</i>	<i>.66</i>	<i>.65</i>	.64	<i>.66</i>	<i>.65</i>
Net Product Imports ^c	1.41	1.23	1.53	1.40	1.50	1.15	<i>1.30</i>	<i>1.40</i>	<i>1.39</i>	<i>1.40</i>	<i>1.37</i>	<i>1.45</i>	1.39	<i>1.34</i>	<i>1.40</i>
Gross Product Imports ^c	2.03	1.82	2.10	2.06	2.18	1.79	<i>1.86</i>	<i>2.04</i>	<i>2.03</i>	<i>2.00</i>	<i>1.94</i>	<i>2.09</i>	2.00	<i>1.97</i>	<i>2.01</i>
Product Exports	.63	.59	.58	.66	.67	.64	<i>.56</i>	<i>.64</i>	<i>.64</i>	<i>.60</i>	<i>.57</i>	<i>.65</i>	.61	<i>.63</i>	<i>.61</i>
Product Stock Withdrawn or Added (-) ^d	.51	.12	-.45	.18	.64	-.45	<i>-.42</i>	<i>.15</i>	<i>.63</i>	<i>-.18</i>	<i>-.47</i>	<i>.08</i>	.09	<i>-.02</i>	<i>.01</i>
Total Product Supplied, Domestic Use	16.57	16.46	16.71	16.92	17.45	16.40	<i>16.62</i>	<i>17.11</i>	<i>17.17</i>	<i>16.60</i>	<i>16.70</i>	<i>17.29</i>	16.67	<i>16.89</i>	<i>16.94</i>
Disposition															
Motor Gasoline	6.76	7.44	7.38	7.24	6.98	7.37	<i>7.45</i>	<i>7.25</i>	<i>6.96</i>	<i>7.50</i>	<i>7.51</i>	<i>7.36</i>	7.21	<i>7.26</i>	<i>7.33</i>
Jet Fuel	1.38	1.34	1.39	1.43	1.48	1.41	<i>1.40</i>	<i>1.55</i>	<i>1.57</i>	<i>1.38</i>	<i>1.44</i>	<i>1.59</i>	1.38	<i>1.46</i>	<i>1.50</i>
Distillate Fuel Oil	3.25	2.82	2.70	3.14	3.52	2.77	<i>2.78</i>	<i>3.23</i>	<i>3.49</i>	<i>2.97</i>	<i>2.82</i>	<i>3.28</i>	2.98	<i>3.08</i>	<i>3.14</i>
Residual Fuel Oil	1.41	1.14	1.27	1.24	1.54	1.08	<i>1.06</i>	<i>1.08</i>	<i>1.25</i>	<i>1.08</i>	<i>.97</i>	<i>1.04</i>	1.26	<i>1.19</i>	<i>1.08</i>
Other Oils Supplied ^e	3.76	3.72	3.97	3.88	3.92	3.77	<i>3.93</i>	<i>4.00</i>	<i>3.90</i>	<i>3.66</i>	<i>3.94</i>	<i>4.03</i>	3.83	<i>3.90</i>	<i>3.89</i>
Total Product Supplied	16.57	16.45	16.71	16.92	17.44	16.40	<i>16.62</i>	<i>17.11</i>	<i>17.17</i>	<i>16.60</i>	<i>16.70</i>	<i>17.29</i>	16.67	<i>16.89</i>	<i>16.94</i>
Total Petroleum Net Imports	5.25	5.51	6.70	6.17	6.01	6.04	<i>6.38</i>	<i>6.23</i>	<i>5.87</i>	<i>6.23</i>	<i>6.63</i>	<i>6.80</i>	5.91	<i>6.17</i>	<i>6.38</i>
Closing Stocks (million barrels)															
Crude Oil (Excluding SPR) ^f	332	328	337	349	354	363	<i>358</i>	<i>349</i>	<i>345</i>	<i>346</i>	<i>342</i>	<i>344</i>	349	<i>349</i>	<i>344</i>
Total Motor Gasoline	248	230	230	226	231	207	<i>228</i>	<i>230</i>	<i>234</i>	<i>224</i>	<i>225</i>	<i>228</i>	226	<i>230</i>	<i>228</i>
Finished Motor Gasoline	205	193	191	189	194	172	<i>189</i>	<i>191</i>	<i>196</i>	<i>187</i>	<i>188</i>	<i>191</i>	189	<i>191</i>	<i>191</i>
Blending Components	43	38	38	37	37	35	<i>39</i>	<i>38</i>	<i>38</i>	<i>37</i>	<i>37</i>	<i>37</i>	37	<i>38</i>	<i>37</i>
Jet Fuel	48	46	50	50	47	46	<i>49</i>	<i>48</i>	<i>46</i>	<i>46</i>	<i>48</i>	<i>48</i>	50	<i>48</i>	<i>48</i>
Distillate Fuel Oil	109	104	127	134	89	112	<i>133</i>	<i>141</i>	<i>97</i>	<i>105</i>	<i>133</i>	<i>141</i>	134	<i>141</i>	<i>141</i>
Residual Fuel Oil	39	41	44	47	44	43	<i>43</i>	<i>45</i>	<i>41</i>	<i>39</i>	<i>42</i>	<i>45</i>	47	<i>45</i>	<i>45</i>
Other Oils ^g	259	271	284	260	249	292	<i>287</i>	<i>262</i>	<i>252</i>	<i>273</i>	<i>282</i>	<i>260</i>	260	<i>262</i>	<i>260</i>
Total Stocks (Excluding SPR)	1037	1021	1072	1067	1014	1064	<i>1098</i>	<i>1076</i>	<i>1014</i>	<i>1032</i>	<i>1072</i>	<i>1066</i>	1067	<i>1076</i>	<i>1066</i>
Crude Oil in SPR	520	527	534	541	545	550	<i>554</i>	<i>558</i>	<i>563</i>	<i>567</i>	<i>572</i>	<i>581</i>	541	<i>558</i>	<i>581</i>
Total Stocks (Including SPR)	1557	1548	1606	1607	1559	1614	<i>1652</i>	<i>1634</i>	<i>1577</i>	<i>1599</i>	<i>1644</i>	<i>1648</i>	1607	<i>1634</i>	<i>1648</i>

^a Includes lease condensate.
^b Net Imports equals Gross Imports plus SPR Imports minus Exports.
^c Includes finished petroleum products, unfinished oils, gasoline blending components, and natural gas plant liquids for processing.
^d Includes an estimate of minor product stock change based on monthly data.
^e Includes crude oil product supplied, natural gas liquids, liquefied refinery gases, other liquids, and all finished petroleum products except motor gasoline, jet fuels, and distillate and residual fuel oils.
^f Includes crude oil in transit to refineries.
^g Includes stocks of all other oils such as aviation gasoline, kerosene, natural gas liquids (including ethane), aviation gasoline blending components, naphtha and other oils for petrochemical feedstock use, special naphthas, lube oils, wax, coke, asphalt, road oil, and miscellaneous oils.
SPR: Strategic Petroleum Reserve
NGL: Natural Gas Liquids
Notes: Minor discrepancies with other EIA published historical data are due to rounding. Historical values are printed in **boldface**, forecasts in *italics*.
Sources: Historical data: Energy Information Administration, *Petroleum Supply Annual 1987*, DOE/EIA-0340(87)/1; *Petroleum Supply Monthly*, DOE/EIA-0109, Jan. 1988 to Apr. 1988; *Weekly Petroleum Status Report*, DOE/EIA-0208(87-50,88-41).

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

Supply and Disposition	1987				1988				1989				Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1987	1988	1989
Supply															
Domestic Production ^a	6.56	6.98	6.97	6.86	6.72	6.85	<i>7.30</i>	<i>7.01</i>	<i>6.76</i>	<i>7.09</i>	<i>7.22</i>	<i>7.11</i>	6.84	<i>6.97</i>	<i>7.05</i>
Imports .....	.36	.37	.42	.39	.34	.30	<i>.42</i>	<i>.35</i>	<i>.34</i>	<i>.42</i>	<i>.40</i>	<i>.36</i>	.38	<i>.35</i>	<i>.38</i>
Exports .....	.03	.05	.03	.04	.01	.02	<i>.01</i>	<i>.01</i>	<i>.01</i>	<i>.01</i>	<i>.01</i>	<i>.01</i>	.03	<i>.01</i>	<i>.01</i>
Net Imports .....	.33	.33	.40	.35	.32	.29	<i>.40</i>	<i>.34</i>	<i>.33</i>	<i>.40</i>	<i>.39</i>	<i>.35</i>	.35	<i>.34</i>	<i>.37</i>
Net Withdrawals	-1.54	-1.35	-1.57	-1.72	-1.81	-1.86	<i>-2.04</i>	<i>-1.77</i>	<i>-1.74</i>	<i>-1.67</i>	<i>-1.71</i>	<i>-1.73</i>	-42	<i>-45</i>	<i>-43</i>
Total Primary Supply	6.76	7.44	7.38	7.24	6.98	7.37	<i>7.51</i>	<i>7.32</i>	<i>7.03</i>	<i>7.60</i>	<i>7.60</i>	<i>7.43</i>	7.21	<i>7.29</i>	<i>7.42</i>
Disposition															
Leaded	1.74	1.89	1.73	1.59	1.38	1.42	<i>1.51</i>	<i>1.40</i>	<i>1.29</i>	<i>1.18</i>	<i>1.05</i>	<i>.95</i>	1.74	<i>1.43</i>	<i>1.12</i>
Unleaded	5.03	5.55	5.65	5.65	5.60	5.95	<i>6.00</i>	<i>5.91</i>	<i>5.74</i>	<i>6.41</i>	<i>6.55</i>	<i>6.48</i>	5.47	<i>5.87</i>	<i>6.30</i>
Total Product Supplied	6.76	7.44	7.38	7.24	6.98	7.37	<i>7.51</i>	<i>7.32</i>	<i>7.03</i>	<i>7.60</i>	<i>7.60</i>	<i>7.43</i>	7.21	<i>7.29</i>	<i>7.42</i>
Stocks															
Primary Finished Stock Levels ^b															
(million barrels)															
Opening	194.2	205.0	192.6	191.2	188.8	193.9	<i>172.2</i>	<i>189.9</i>	<i>192.7</i>	<i>198.2</i>	<i>189.3</i>	<i>190.2</i>	194.2	<i>188.8</i>	<i>192.7</i>
Closing	205.0	192.6	191.2	188.8	193.9	172.2	<i>189.9</i>	<i>192.7</i>	<i>198.2</i>	<i>189.3</i>	<i>190.2</i>	<i>192.9</i>	188.8	<i>192.7</i>	<i>192.9</i>

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

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

Notes: Minor discrepancies with other EIA published historical data are due to rounding. Historical values are printed in **boldface**, forecasts in *italics*.
Sources: Historical data: Energy Information Administration, *Petroleum Supply Annual 1987*, DOE/EIA-0340(87)/1; *Petroleum Supply Monthly*, DOE/EIA-0109, Jan. 1988 to Apr. 1988; *Weekly Petroleum Status Report*, DOE/EIA-0208(88-24,28).

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

Supply and Disposition	1987				1988				1989				Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1987	1988	1989
Supply															
Refinery Output	2.58	2.60	2.72	3.02	2.81	2.89	<i>2.89</i>	<i>3.04</i>	<i>2.86</i>	<i>2.90</i>	<i>2.96</i>	<i>3.08</i>	2.73	<i>2.91</i>	<i>2.95</i>
Imports .....	.26	.22	.28	.27	.31	.19	<i>.20</i>	<i>.36</i>	<i>.25</i>	<i>.24</i>	<i>.26</i>	<i>.39</i>	.26	<i>.27</i>	<i>.28</i>
Exports .....	.09	.06	.05	.07	.09	.06	<i>.07</i>	<i>.07</i>	<i>.09</i>	<i>.06</i>	<i>.07</i>	<i>.07</i>	.07	<i>.07</i>	<i>.07</i>
Net Imports .....	.17	.16	.23	.20	.22	.13	<i>.13</i>	<i>.30</i>	<i>.16</i>	<i>.18</i>	<i>.19</i>	<i>.32</i>	.19	<i>.20</i>	<i>.21</i>
Net Withdrawals	-4.05	-4.59	-4.67	-4.50	-4.51	-5.06	<i>-4.80</i>	<i>-4.62</i>	<i>-4.68</i>	<i>-5.16</i>	<i>-5.07</i>	<i>-4.86</i>	-1.06	<i>-1.16</i>	<i>-1.20</i>
Disposition															
Electric Utility Consumption .....	.04	.04	.05	.04	.05	.04	<i>.04</i>	<i>.04</i>	<i>.04</i>	<i>.04</i>	<i>.04</i>	<i>.04</i>	.04	<i>.04</i>	<i>.04</i>
Utility Stock Additions	-2.10	-1.94	-1.91	-1.88	-1.96	-1.73	<i>-1.90</i>	<i>-1.93</i>	<i>-2.04</i>	<i>-1.92</i>	<i>-1.91</i>	<i>-1.94</i>	-.47	<i>-.48</i>	<i>-.49</i>
Electric Utility Shipments .....	.04	.04	.05	.03	.04	.04	<i>.04</i>	<i>.04</i>	<i>.04</i>	<i>.04</i>	<i>.04</i>	<i>.04</i>	.04	<i>.04</i>	<i>.04</i>
Nonutility Shipments	3.22	2.78	2.65	3.10	3.48	2.73	<i>2.75</i>	<i>3.21</i>	<i>3.47</i>	<i>2.96</i>	<i>2.81</i>	<i>3.27</i>	2.94	<i>3.04</i>	<i>3.12</i>
Total Product Supplied	3.25	2.82	2.70	3.14	3.52	2.77	<i>2.79</i>	<i>3.25</i>	<i>3.51</i>	<i>3.00</i>	<i>2.85</i>	<i>3.31</i>	2.98	<i>3.08</i>	<i>3.16</i>
Stocks															
Electric Utility Stock Levels (million barrels)															
Opening	16.3	15.9	15.8	16.0	15.8	15.0	<i>15.1</i>	<i>14.9</i>	<i>14.7</i>	<i>14.6</i>	<i>14.4</i>	<i>14.3</i>	16.3	<i>15.8</i>	<i>14.7</i>
Closing	15.9	15.8	16.0	15.8	15.0	15.1	<i>14.9</i>	<i>14.7</i>	<i>14.6</i>	<i>14.4</i>	<i>14.3</i>	<i>14.3</i>	15.8	<i>14.7</i>	<i>14.3</i>
Primary Stock Levels (million barrels)															
Opening	155.1	109.3	104.4	126.8	134.5	89.3	<i>112.2</i>	<i>133.3</i>	<i>141.6</i>	<i>97.8</i>	<i>105.8</i>	<i>134.0</i>	155.1	<i>134.5</i>	<i>141.6</i>
Closing	109.3	104.4	126.8	134.5	89.3	112.2	<i>133.3</i>	<i>141.6</i>	<i>97.8</i>	<i>105.8</i>	<i>134.0</i>	<i>142.4</i>	134.5	<i>141.6</i>	<i>142.4</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 Apr. 1988; *Monthly Energy Review*, DOE/EIA-0035(88/04); *Electric Power Monthly*, DOE/EIA-0226(88/04); *Weekly Petroleum Status Report*, DOE/EIA-0208(88-24,28).

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

Supply and Disposition	1987				1988				1989				Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1987	1988	1989
Supply															
Refinery Output	0.87	0.84	0.90	0.94	0.98	0.89	<i>0.84</i>	<i>0.88</i>	<i>0.89</i>	<i>0.84</i>	<i>0.82</i>	<i>0.87</i>	0.89	<i>0.90</i>	<i>0.85</i>
Imports .....	.64	.49	.59	.54	.71	.38	<i>.47</i>	<i>.52</i>	<i>.60</i>	<i>.49</i>	<i>.45</i>	<i>.51</i>	.56	<i>.52</i>	<i>.51</i>
Exports .....	.19	.16	.18	.21	.19	.20	<i>.16</i>	<i>.20</i>	<i>.20</i>	<i>.18</i>	<i>.16</i>	<i>.20</i>	.19	<i>.19</i>	<i>.19</i>
Net Imports .....	.45	.33	.41	.33	.52	.18	<i>.32</i>	<i>.32</i>	<i>.40</i>	<i>.31</i>	<i>.29</i>	<i>.30</i>	.38	<i>.33</i>	<i>.33</i>
Net Withdrawals	-.69	-.72	-.93	-.98	-.46	-.75	<i>-.98</i>	<i>-1.04</i>	<i>-.54</i>	<i>-.68</i>	<i>-1.00</i>	<i>-1.05</i>	-.24	<i>-.26</i>	<i>-.26</i>
Disposition															
Electric Utility Consumption .....	.57	.45	.53	.47	.64	.44	<i>.50</i>	<i>.47</i>	<i>.42</i>	<i>.41</i>	<i>.48</i>	<i>.45</i>	.50	<i>.51</i>	<i>.44</i>
Utility Stock Additions .....	.45	.38	.35	.39	.44	.41	<i>.40</i>	<i>.38</i>	<i>.37</i>	<i>.36</i>	<i>.37</i>	<i>.35</i>	.11	<i>.11</i>	<i>.09</i>
Electric Utility Shipments .....	.49	.43	.57	.50	.61	.43	<i>.47</i>	<i>.44</i>	<i>.42</i>	<i>.41</i>	<i>.46</i>	<i>.44</i>	.50	<i>.49</i>	<i>.43</i>
Nonutility Shipments .....	.92	.71	.70	.74	.92	.66	<i>.65</i>	<i>.73</i>	<i>.93</i>	<i>.76</i>	<i>.61</i>	<i>.70</i>	.77	<i>.74</i>	<i>.75</i>
Total Product Supplied	1.41	1.14	1.27	1.24	1.54	1.08	<i>1.13</i>	<i>1.17</i>	<i>1.35</i>	<i>1.17</i>	<i>1.07</i>	<i>1.14</i>	1.26	<i>1.23</i>	<i>1.18</i>
Stocks															
Electric Utility Stock Levels (million barrels)															
Opening	56.8	50.0	48.0	51.9	55.1	52.8	<i>51.7</i>	<i>49.7</i>	<i>47.7</i>	<i>47.6</i>	<i>47.9</i>	<i>46.3</i>	56.8	<i>55.1</i>	<i>47.7</i>
Closing	50.0	48.0	51.9	55.1	52.8	51.7	<i>49.7</i>	<i>47.7</i>	<i>47.6</i>	<i>47.9</i>	<i>46.3</i>	<i>45.1</i>	55.1	<i>47.7</i>	<i>45.1</i>
Primary Stock Levels (million barrels)															
Opening	47.4	39.3	41.4	44.4	47.4	44.1	<i>43.2</i>	<i>45.9</i>	<i>48.8</i>	<i>43.8</i>	<i>42.0</i>	<i>45.8</i>	47.4	<i>47.4</i>	<i>48.8</i>
Closing	39.3	41.4	44.4	47.4	44.1	43.2	<i>45.9</i>	<i>48.8</i>	<i>43.8</i>	<i>42.0</i>	<i>45.8</i>	<i>48.6</i>	47.4	<i>48.8</i>	<i>48.6</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 Apr. 1988; *Monthly Energy Review*, DOE/EIA-0035(88/04); *Electric Power Monthly*, DOE/EIA-0226(88/04); *Weekly Petroleum Status Report*, DOE/EIA-0208(88-24,28).

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

Supply and Disposition	1987				1988				1989				Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1987	1988	1989
Supply															
Net Refinery Output ^b	2.95	3.01	3.39	2.80	3.10	3.39	<i>3.18</i>	<i>3.10</i>	<i>3.14</i>	<i>3.08</i>	<i>3.36</i>	<i>3.23</i>	3.04	<i>3.19</i>	<i>3.20</i>
Natural Gas Plant Output	1.60	1.58	1.58	1.62	1.60	1.57	<i>1.59</i>	<i>1.63</i>	<i>1.64</i>	<i>1.61</i>	<i>1.59</i>	<i>1.63</i>	1.59	<i>1.60</i>	<i>1.62</i>
Other Domestic ^c .....	.07	.05	.06	.07	.06	.06	<i>.06</i>	<i>.07</i>	<i>.06</i>	<i>.06</i>	<i>.07</i>	<i>.07</i>	.06	<i>.06</i>	<i>.06</i>
Net Imports .....	.46	.42	.50	.52	.44	.55	<i>.49</i>	<i>.46</i>	<i>.50</i>	<i>.50</i>	<i>.50</i>	<i>.46</i>	.47	<i>.49</i>	<i>.49</i>
Net Withdrawals	3.39	3.35	3.31	3.50	3.30	3.15	<i>3.52</i>	<i>3.56</i>	<i>3.39</i>	<i>3.22</i>	<i>3.38</i>	<i>3.52</i>	.83	<i>.81</i>	<i>.83</i>
Total Primary Supply	5.10	5.02	5.33	5.28	5.36	5.13	<i>5.29</i>	<i>5.53</i>	<i>5.47</i>	<i>5.04</i>	<i>5.39</i>	<i>5.63</i>	5.18	<i>5.33</i>	<i>5.38</i>
Disposition															
Jet Fuel	1.38	1.34	1.39	1.43	1.48	1.41	<i>1.41</i>	<i>1.55</i>	<i>1.58</i>	<i>1.39</i>	<i>1.45</i>	<i>1.60</i>	1.38	<i>1.46</i>	<i>1.51</i>
Liquefied Petroleum Gas ^d	1.77	1.39	1.51	1.78	1.92	1.42	<i>1.55</i>	<i>1.89</i>	<i>1.89</i>	<i>1.44</i>	<i>1.51</i>	<i>1.85</i>	1.61	<i>1.70</i>	<i>1.67</i>
Petrochemical Feedstocks ^e .....	.43	.48	.46	.40	.40	.44	<i>.44</i>	<i>.45</i>	<i>.47</i>	<i>.49</i>	<i>.50</i>	<i>.53</i>	.44	<i>.43</i>	<i>.50</i>
Miscellaneous ^f	1.52	1.81	1.98	1.67	1.56	1.86	<i>1.90</i>	<i>1.63</i>	<i>1.52</i>	<i>1.72</i>	<i>1.91</i>	<i>1.64</i>	1.74	<i>1.74</i>	<i>1.70</i>
Total Product Supplied	5.10	5.02	5.33	5.28	5.35	5.13	<i>5.29</i>	<i>5.53</i>	<i>5.47</i>	<i>5.04</i>	<i>5.39</i>	<i>5.63</i>	5.18	<i>5.33</i>	<i>5.38</i>
Stock															
Primary Stocks (million barrels)															
Opening	352.9	350.6	354.9	372.3	347.1	332.6	<i>373.3</i>	<i>376.2</i>	<i>351.3</i>	<i>339.7</i>	<i>360.0</i>	<i>372.1</i>	352.9	<i>347.1</i>	<i>351.3</i>
Closing	350.6	354.9	372.3	347.1	332.6	373.3	<i>376.2</i>	<i>351.3</i>	<i>339.7</i>	<i>360.0</i>	<i>372.1</i>	<i>350.4</i>	347.1	<i>351.3</i>	<i>350.4</i>

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

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

^c Field production of other hydrocarbons and alcohol.

^d Includes ethane, propane, normal butane, and isobutane.

^e Includes naphthas and other oils designated for petrochemical feedstock use.

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

Notes: Historical values are printed in **boldface**, forecasts in *italics*. Data for May and June 1988 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 Apr. 1988; and *Weekly Petroleum Status Report*, DOE/EIA-0208(88-24,28).

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

Supply and Disposition	1987				1988				1989				Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1987	1988	1989
Supply															
Total Dry Gas Production ^a	4.27	3.93	3.88	4.25	4.35	4.05	<i>4.01</i>	<i>4.47</i>	<i>4.50</i>	<i>4.20</i>	<i>4.00</i>	<i>4.47</i>	16.33	<i>16.87</i>	<i>17.17</i>
Net Imports .....	.25	.17	.20	.30	.34	.28	<i>.29</i>	<i>.33</i>	<i>.37</i>	<i>.30</i>	<i>.29</i>	<i>.35</i>	.93	<i>1.25</i>	<i>1.31</i>
Supplemental Gaseous Fuels .....	.05	.03	.03	.04	.05	.04	<i>.03</i>	<i>.05</i>	<i>.05</i>	<i>.04</i>	<i>.04</i>	<i>.05</i>	.16	<i>.17</i>	<i>.17</i>
Total New Supply	4.57	4.13	4.11	4.60	4.74	4.36	<i>4.33</i>	<i>4.85</i>	<i>4.92</i>	<i>4.54</i>	<i>4.32</i>	<i>4.87</i>	17.42	<i>18.29</i>	<i>18.65</i>
Underground Working Gas Storage															
Opening	2.75	1.88	2.43	3.04	2.75	1.68	<i>2.25</i>	<i>3.34</i>	<i>2.78</i>	<i>1.90</i>	<i>2.34</i>	<i>3.40</i>	2.75	<i>2.75</i>	<i>2.78</i>
Closing	1.88	2.43	3.04	2.75	1.68	2.25	<i>3.34</i>	<i>2.78</i>	<i>1.90</i>	<i>2.34</i>	<i>3.40</i>	<i>2.81</i>	2.75	<i>2.78</i>	<i>2.81</i>
Net Withdrawals ^b .....	.88	-.56	-.61	.31	1.07	-.60	<i>-.79</i>	<i>.37</i>	<i>1.03</i>	<i>-.56</i>	<i>-.79</i>	<i>.37</i>	.02	<i>.05</i>	<i>.05</i>
Total Primary Supply ^a	5.45	3.58	3.50	4.91	5.81	3.76	<i>3.54</i>	<i>5.22</i>	<i>5.95</i>	<i>3.98</i>	<i>3.53</i>	<i>5.25</i>	17.44	<i>18.34</i>	<i>18.71</i>
Consumption															
Lease and Plant Fuel .....	.25	.23	.22	.25	.25	.24	<i>.25</i>	<i>.30</i>	<i>.31</i>	<i>.26</i>	<i>.26</i>	<i>.31</i>	.94	<i>1.04</i>	<i>1.13</i>
Pipeline Use .....	.14	.12	.11	.13	.14	.13	<i>.13</i>	<i>.16</i>	<i>.16</i>	<i>.14</i>	<i>.14</i>	<i>.16</i>	.50	<i>.56</i>	<i>.60</i>
Residential	2.03	.78	.37	1.18	2.21	.81	<i>.39</i>	<i>1.19</i>	<i>2.20</i>	<i>.85</i>	<i>.39</i>	<i>1.19</i>	4.37	<i>4.59</i>	<i>4.63</i>
Commercial .....	.99	.43	.27	.60	1.15	.45	<i>.29</i>	<i>.62</i>	<i>1.07</i>	<i>.47</i>	<i>.29</i>	<i>.62</i>	2.29	<i>2.51</i>	<i>2.45</i>
Industrial	1.55	1.32	1.29	1.57	1.92	1.52	<i>1.51</i>	<i>1.84</i>	<i>1.88</i>	<i>1.56</i>	<i>1.55</i>	<i>1.87</i>	5.73	<i>6.79</i>	<i>6.87</i>
Electric Utilities .....	.53	.73	.93	.65	.54	.72	<i>.91</i>	<i>.61</i>	<i>.61</i>	<i>.67</i>	<i>.85</i>	<i>.59</i>	2.84	<i>2.78</i>	<i>2.72</i>
Subtotal	5.49	3.61	3.20	4.38	6.21	3.86	<i>3.48</i>	<i>4.73</i>	<i>6.23</i>	<i>3.96</i>	<i>3.47</i>	<i>4.75</i>	16.68	<i>18.27</i>	<i>18.41</i>
Total Disposition	5.45	3.58	3.50	4.91	5.81	3.76	<i>3.54</i>	<i>5.22</i>	<i>5.95</i>	<i>3.98</i>	<i>3.53</i>	<i>5.25</i>	17.44	<i>18.34</i>	<i>18.71</i>
Unaccounted for	-.04	-.03	.30	.53	-.40	-.10	<i>.06</i>	<i>.50</i>	<i>-.28</i>	<i>.02</i>	<i>.06</i>	<i>.50</i>	.76	<i>.06</i>	<i>.30</i>

^a Excludes nonhydrocarbon gases removed.

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

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(88/04); *Natural Gas Monthly*, DOE/EIA-0130(88/04); and *Electric Power Monthly*, DOE/EIA-0226(88/04).

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

Supply and Disposition	1987				1988				1989				Year		
	1st	2nd	3rd	4th	1st	2nd ^a	3rd	4th	1st	2nd	3rd	4th	1987	1988	1989
Supply															
Production	222	218	232	244	237	227	<i>226</i>	<i>238</i>	<i>234</i>	<i>239</i>	<i>227</i>	<i>236</i>	917	<i>928</i>	<i>935</i>
Primary Stock Levels ^b															
Opening	32	37	34	29	28	37	<i>35</i>	<i>33</i>	<i>31</i>	<i>31</i>	<i>31</i>	<i>30</i>	32	<i>28</i>	<i>31</i>
Closing	37	34	29	28	37	35	<i>33</i>	<i>31</i>	<i>31</i>	<i>31</i>	<i>30</i>	<i>30</i>	28	<i>31</i>	<i>30</i>
Net Withdrawals	-4	3	5	0	-8	2	<i>2</i>	<i>2</i>	<i>0</i>	<i>0</i>	<i>1</i>	<i>0</i>	4	<i>-3</i>	<i>1</i>
Imports	0	0	0	0	1	1	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	2	<i>2</i>	<i>2</i>
Exports	17	20	21	22	16	21	<i>21</i>	<i>20</i>	<i>16</i>	<i>21</i>	<i>21</i>	<i>21</i>	80	<i>78</i>	<i>79</i>
Total New Domestic Supply	201	201	217	223	213	209	<i>207</i>	<i>221</i>	<i>218</i>	<i>218</i>	<i>207</i>	<i>216</i>	843	<i>850</i>	<i>860</i>
Secondary Stock Levels ^c															
Opening	175	173	176	166	185	174	<i>177</i>	<i>159</i>	<i>166</i>	<i>164</i>	<i>174</i>	<i>155</i>	175	<i>185</i>	<i>166</i>
Closing	173	176	166	185	174	177	<i>159</i>	<i>166</i>	<i>164</i>	<i>174</i>	<i>155</i>	<i>154</i>	185	<i>166</i>	<i>154</i>
Net Withdrawals	2	-3	10	-20	12	-3	<i>18</i>	<i>-7</i>	<i>2</i>	<i>-11</i>	<i>20</i>	<i>1</i>	-10	<i>20</i>	<i>12</i>
Total Indicated Consumption	203	198	228	203	225	206	<i>226</i>	<i>213</i>	<i>220</i>	<i>208</i>	<i>227</i>	<i>216</i>	833	<i>870</i>	<i>871</i>
Consumption															
Coke Plants	8	9	10	10	10	10	<i>9</i>	<i>9</i>	<i>10</i>	<i>10</i>	<i>9</i>	<i>9</i>	37	<i>37</i>	<i>38</i>
Electric Utilities	171	171	200	176	188	176	<i>198</i>	<i>182</i>	<i>188</i>	<i>177</i>	<i>199</i>	<i>185</i>	718	<i>743</i>	<i>749</i>
Retail and General Industry ^d	21	19	20	23	22	20	<i>20</i>	<i>23</i>	<i>23</i>	<i>20</i>	<i>20</i>	<i>23</i>	82	<i>85</i>	<i>85</i>
Subtotal	200	200	229	208	220	206	<i>226</i>	<i>213</i>	<i>220</i>	<i>208</i>	<i>227</i>	<i>216</i>	837	<i>865</i>	<i>871</i>
Total Disposition	203	198	228	203	225	206	<i>226</i>	<i>213</i>	<i>220</i>	<i>208</i>	<i>227</i>	<i>216</i>	833	<i>870</i>	<i>871</i>
Discrepancy ^e	4	-1	-2	-5	5	0	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	-4	<i>5</i>	<i>0</i>

^a Estimated.

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

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

^d Includes consumption at coal gasification plants of 6.8 million tons for 1987. Starting in 1987, synfuels account for 1.7 million tons per quarter.

^e Historical period discrepancy reflects an unaccounted shipper and receiver reporting difference.

Notes: Production values for 1987 are preliminary. 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(88/04); and *Quarterly Coal Report*, DOE/EIA-0121(88/1Q).

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

Supply and Disposition	1987				1988				1989				Year		
	1st	2nd	3rd	4th	1st	2nd ^a	3rd	4th	1st	2nd	3rd	4th	1987	1988	1989
Net Utility Generation															
Coal	348.2	350.0	407.5	358.1	383.4	357.4	<i>400.6</i>	<i>368.7</i>	<i>383.6</i>	<i>363.5</i>	<i>403.8</i>	<i>375.4</i>	1463.8	<i>1510.0</i>	<i>1526.4</i>
Petroleum	32.4	26.7	31.5	27.8	37.6	25.8	<i>29.4</i>	<i>27.6</i>	<i>24.2</i>	<i>23.8</i>	<i>28.3</i>	<i>26.7</i>	118.5	<i>120.4</i>	<i>103.1</i>
Natural Gas	51.3	69.9	88.5	63.0	52.5	68.8	<i>87.0</i>	<i>58.4</i>	<i>58.6</i>	<i>64.3</i>	<i>80.8</i>	<i>56.4</i>	272.6	<i>266.8</i>	<i>260.1</i>
Nuclear Power	113.9	104.4	121.1	115.9	130.8	121.4	<i>132.6</i>	<i>124.4</i>	<i>132.9</i>	<i>123.0</i>	<i>137.5</i>	<i>128.5</i>	455.3	<i>509.3</i>	<i>521.8</i>
Hydropower	69.9	67.1	56.8	55.9	60.9	57.3	<i>51.9</i>	<i>60.2</i>	<i>74.4</i>	<i>78.8</i>	<i>66.5</i>	<i>68.2</i>	249.7	<i>230.3</i>	<i>287.8</i>
Geothermal Power and Other ^b	3.0	3.0	3.2	3.0	3.0	3.0	<i>3.2</i>	<i>3.2</i>	<i>3.2</i>	<i>3.2</i>	<i>3.4</i>	<i>3.4</i>	12.3	<i>12.4</i>	<i>13.2</i>
Total Utility Generation	618.6	621.2	708.6	623.8	668.2	633.7	<i>704.7</i>	<i>642.6</i>	<i>676.9</i>	<i>656.7</i>	<i>720.2</i>	<i>658.6</i>	2572.1	<i>2649.2</i>	<i>2712.4</i>
Net Imports	10.2	9.5	12.6	12.1	7.8	8.7	<i>11.6</i>	<i>11.1</i>	<i>9.2</i>	<i>8.6</i>	<i>11.5</i>	<i>11.0</i>	44.5	39.3	40.3
Nonutility Supply ^c	11.3	11.4	13.0	11.4	14.3	13.7	<i>15.1</i>	<i>13.8</i>	<i>16.6</i>	<i>16.1</i>	<i>17.7</i>	<i>16.1</i>	47.1	56.8	66.5
Total Supply	640.1	642.1	734.2	647.3	690.4	656.1	<i>731.4</i>	<i>667.5</i>	<i>702.7</i>	<i>681.4</i>	<i>749.3</i>	<i>685.8</i>	2663.7	<i>2745.4</i>	<i>2819.2</i>
Losses and Unaccounted For ^d	38.7	60.8	53.0	55.7	46.2	55.8	<i>52.5</i>	<i>57.4</i>	<i>47.0</i>	<i>64.1</i>	<i>53.7</i>	<i>58.9</i>	208.2	211.8	223.7
Utility Sales	601.4	581.3	681.1	591.6	644.2	600.3	<i>678.9</i>	<i>610.1</i>	<i>655.7</i>	<i>617.3</i>	<i>695.6</i>	<i>626.9</i>	2455.5	<i>2533.5</i>	<i>2595.5</i>

^a Estimated.

^b Includes wind, wood, waste, photovoltaic, and solar.

^c Electricity purchased from nonutility sources, including cogenerators and small power producers.

^d Balancing item, mainly transmission and distribution losses.

Notes: Values for net imports, nonutility supply, and losses and unaccounted for are estimated for 1987. 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(88/04); and *Electric Power Monthly*, DOE/EIA-0226(88/04).

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

Supply and Disposition	1987				1988				1989				Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1987	1988	1989
Supply															
Production															
Petroleum ^a	4.96	4.97	4.94	5.03	4.94	4.89	4.93	4.93	4.80	4.81	4.80	4.78	19.89	19.71	19.18
Natural Gas ^b	4.40	4.04	4.00	4.38	4.48	4.17	4.13	4.60	4.63	4.32	4.12	4.61	16.83	17.38	17.68
Coal	4.87	4.79	5.10	5.36	5.20	4.99	4.95	5.23	5.13	5.24	4.97	5.19	20.12	20.37	20.53
Nuclear Power	1.23	1.13	1.31	1.25	1.41	1.31	1.43	1.34	1.44	1.33	1.49	1.39	4.92	5.50	5.64
Hydropower ^c .....	.73	.70	.59	.58	.64	.60	.54	.63	.78	.82	.69	.71	2.61	2.41	3.00
Geothermal Power and Other ^d .....	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.07	.07	.24	.25	.27
Subtotal	16.24	15.69	16.00	16.67	16.73	16.03	16.05	16.81	16.84	16.58	16.14	16.74	64.61	65.62	66.30
Net Imports															
Crude Oil	2.04	2.30	2.81	2.59	2.42	2.62	2.87	2.78	2.57	2.80	3.09	3.14	9.75	10.69	11.60
Other Petroleum .....	.70	.62	.78	.71	.76	.58	.68	.72	.69	.70	.69	.73	2.81	2.73	2.82
Natural Gas .....	.25	.17	.20	.30	.34	.28	.29	.33	.37	.30	.29	.35	.92	1.24	1.31
Coal and Coke	-.43	-.52	-.54	-.56	-.40	-.52	-.53	-.51	-.40	-.52	-.52	-.53	-2.04	-1.95	-1.97
Electricity .....	.11	.10	.13	.13	.08	.09	.12	.11	.10	.09	.12	.11	.46	.41	.42
Subtotal	2.67	2.67	3.38	3.17	3.20	3.05	3.44	3.43	3.33	3.37	3.67	3.81	11.89	13.12	14.18
Primary Stocks															
Net Withdrawals	1.02	-.39	-.78	.29	1.18	-.81	-1.25	.68	1.20	-.51	-1.27	.60	.14	-.20	.01
SPR Fill Rate Additions(-)	-.05	-.04	-.04	-.04	-.03	-.03	-.02	-.03	-.03	-.03	-.03	-.05	-.17	-.10	-.13
Secondary Stocks ^e															
Net Withdrawals .....	.08	-.05	.20	-.44	.27	-.06	.42	-.12	-.02	-.19	.44	.03	-.22	.51	.26
Total Supply ^f	19.97	17.88	18.76	19.65	21.35	18.18	<i>18.63</i>	<i>20.77</i>	<i>21.33</i>	<i>19.22</i>	<i>18.95</i>	<i>21.12</i>	76.26	78.94	80.62
Disposition															
Nonutility Uses															
Petroleum	7.71	7.81	7.97	8.12	8.18	7.79	8.02	8.31	8.21	8.03	8.13	8.44	31.61	32.31	32.80
Natural Gas ^g	5.10	2.96	2.34	3.84	5.84	3.24	2.64	4.23	5.79	3.38	2.70	4.28	14.24	15.95	16.15
Coal ^h .....	.67	.66	.70	.76	.76	.71	.70	.77	.76	.70	.70	.76	2.79	2.93	2.92
Industrial Hydropower .....	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.03	.03	.03
Subtotal	13.49	11.44	11.01	12.73	14.78	11.75	11.37	13.32	14.76	12.12	11.53	13.49	48.67	51.22	51.90
Electric Utility Inputs															
Petroleum .....	.35	.28	.34	.29	.39	.27	.31	.29	.26	.25	.30	.28	1.26	1.27	1.10
Natural Gas .....	.55	.76	.96	.67	.56	.74	.94	.63	.63	.70	.87	.61	2.94	2.87	2.82
Coal	3.61	3.63	4.23	3.72	3.97	3.72	4.16	3.83	3.98	3.77	4.19	3.90	15.19	15.67	15.84
Nuclear Power	1.23	1.13	1.31	1.25	1.41	1.31	1.43	1.34	1.44	1.33	1.49	1.39	4.92	5.50	5.64
Hydropower ⁱ .....	.83	.79	.72	.70	.71	.68	.65	.74	.86	.90	.80	.82	3.04	2.78	3.39
Geothermal Power and Other .....	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.07	.07	.24	.25	.27
Subtotal	6.63	6.65	7.62	6.70	7.10	6.78	7.56	6.90	7.24	7.02	7.72	7.07	27.59	28.35	29.04
Gross Energy Consumption ^f	20.12	18.08	18.63	19.42	21.89	18.54	<i>18.93</i>	<i>20.22</i>	<i>22.00</i>	<i>19.14</i>	<i>19.25</i>	<i>20.55</i>	76.26	79.57	80.94
Electrical System Energy Losses ^j	4.61	4.70	5.34	4.72	4.95	4.78	5.30	4.86	5.06	4.97	5.41	4.98	19.37	19.90	20.42
Total Net Energy	15.51	13.38	13.29	14.71	16.93	13.75	<i>13.63</i>	<i>15.35</i>	<i>16.94</i>	<i>14.17</i>	<i>13.84</i>	<i>15.57</i>	56.89	59.67	60.53
Total Disposition	19.97	17.88	18.76	19.65	21.35	18.18	<i>18.63</i>	<i>20.77</i>	<i>21.33</i>	<i>19.22</i>	<i>18.95</i>	<i>21.12</i>	76.26	78.94	80.62
Unaccounted for	-.15	-.20	.13	.23	-.53	-.35	-.30	.55	-.67	.08	-.30	.57	.00	-.63	-.32

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

^b Total dry gas production excluding nonhydrocarbon gases removed.

^c Includes industrial production.

^d Includes wood and waste used to generate electricity.

^e Primarily electric utility stocks.

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

^g Includes natural gas used as refinery fuel.

^h Includes net imports of coal coke.

ⁱ Includes net imports of electricity.

^j Includes plant use and transmission and distribution losses.

SPR: Strategic Petroleum Reserve.

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

Sources: Historical data: Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(88/04); and *Electric Power Monthly*, DOE/EIA-0226(88/04).

Table 18. Conversion Factors

Fuel	Units	Heat Content
Coal		
Production	Million Btu/short ton	21,946
Consumption	Million Btu/short ton	21,467
Coke Plants	Million Btu/short ton	26,800
Industrial and Retail	Million Btu/short ton	22,312
Electric Utilities	Million Btu/short ton	21,157
Imports	Million Btu/short ton	25,000
Exports	Million Btu/short ton	26,344
Coal Coke	Million Btu/short ton	24,800
Crude Oil		
Production	Million Btu/barrel	5,800
Imports	Million Btu/barrel	5,901
Petroleum Products		
Consumption	Million Btu/barrel	5,403
Motor Gasoline	Million Btu/barrel	5,253
Jet Fuel	Million Btu/barrel	5,622
Distillate Fuel Oil	Million Btu/barrel	5,825
Residual Fuel Oil	Million Btu/barrel	6,287
Liquefied Petroleum Gas	Million Btu/barrel	3,659
Unfinished Oils	Million Btu/barrel	5,825
Imports	Million Btu/barrel	5,633
Exports	Million Btu/barrel	5,873
Natural Gas Plant Liquids		
Production	Million Btu/barrel	3,804
Natural Gas		
Production, Dry	Btu/cubic foot	1,030
Consumption	Btu/cubic foot	1,030
Non-electric Utilities	Btu/cubic foot	1,029
Electric Utilities	Btu/cubic foot	1,034
Imports	Btu/cubic foot	997
Exports	Btu/cubic foot	1,008

Electricity Component	Heat Rate (Btu per kilowatthour)
Plant Generation Efficiency	
Coal	10,379
Petroleum	
Distillate Fuel Oil	11,666
Residual Fuel Oil	10,539
Natural Gas	10,783
Nuclear Energy	10,807
Hydropower	10,320
Geothermal and Other Energy	21,263
Electricity Consumption	3,412

Get the facts!

A quick reference to U.S. and international oil, gas, coal, electricity, and nuclear energy data.

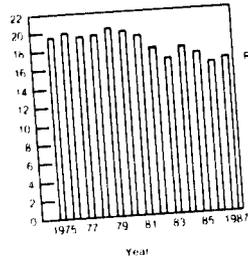
U.S. Natural Gas Consumption (Trillion Cubic Feet)

Year	Residential	Commercial	Industrial	Electric Utilities	Trans- portation	Total
1975	4.92	2.51	8.36	3.16	0.58	19.54
1976	5.05	2.67	8.60	3.08	.55	19.95
1977	4.82	2.50	8.47	3.19	.53	19.52
1978	4.90	2.60	8.40	3.19	.60	19.63
1979	4.97	2.79	8.40	3.49	.60	20.24
1980	4.75	2.61	8.20	3.68	.63	19.88
1981	4.55	2.52	8.06	3.64	.64	19.40
1982	4.63	2.61	8.94	3.23	.60	18.00
1983	4.38	2.43	6.62	2.91	.49	16.83
1984	4.56	2.52	7.23	3.11	.50	17.95
1985	4.43	2.43	6.87	3.04	.49	16.22
1986	4.31	2.32	6.50	2.60	.50	16.88
1987P	4.37	2.29	6.68	2.84		

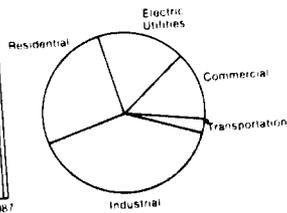
P - Preliminary data
 Note: Total may not equal sum of components due to independent rounding
 Source: Energy Information Administration, Annual Energy Review 1987

Total Consumption

Trillion Cubic Feet

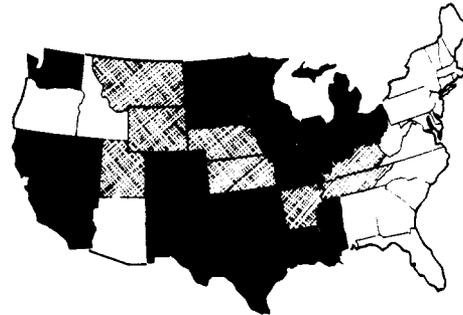


1987 Consumption



24

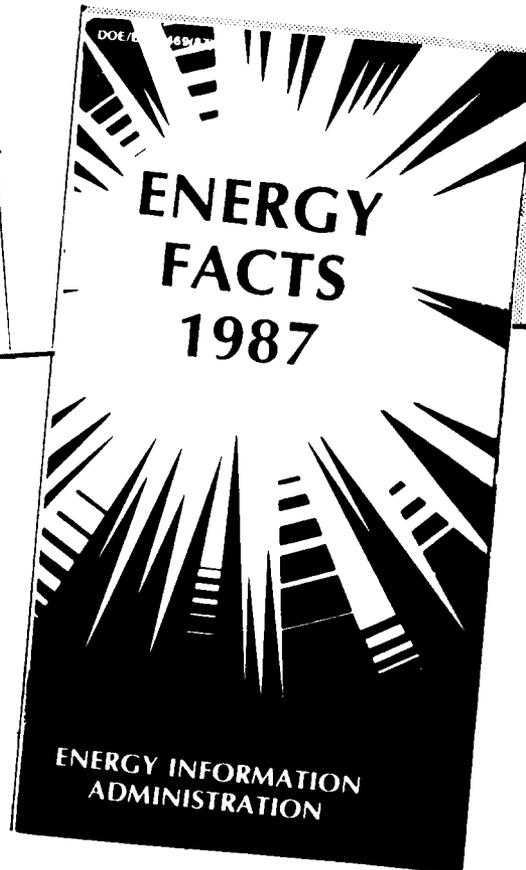
Average Price of Natural Gas to Residential Consumers in 1986 (Dollars per Thousand Cubic Feet)



- U.S. Average \$5.83
- \$3.89 to \$4.99
- \$5.00 to \$5.99
- \$6.00 to \$6.99
- \$7.00 to \$7.99
- \$8.00 to \$8.85

Source: Energy Information Administration, Natural Gas Annual 1986

25



Available for \$2.00 from:

Energy Information Administration
 National Energy Information Center, EI-231
 Washington, DC 20585

(202) 586-8800

Make checks payable to:
 U.S. Government Printing Office

Information

Information from the Federal Government on subjects ranging from agriculture to zoology is available at Depository Libraries across the nation.

You can visit these libraries and use the Depository collections without charge.

To find one in your area, contact your local library or write:
Federal Depository
Library Program,
Office of the Public
Printer, Washington,
DC 20401.



**Federal Depository
Library Program**

Short-Term Energy Outlook, (ISBN 0-745-0004)
Quarterly Projections
Energy Information Administration
U.S. Department of Energy
Forrestal Building, EI-231
Washington, DC 20585

APPLICATION TO MAIL
AT SECOND-CLASS
RATES PENDING

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, \$300

