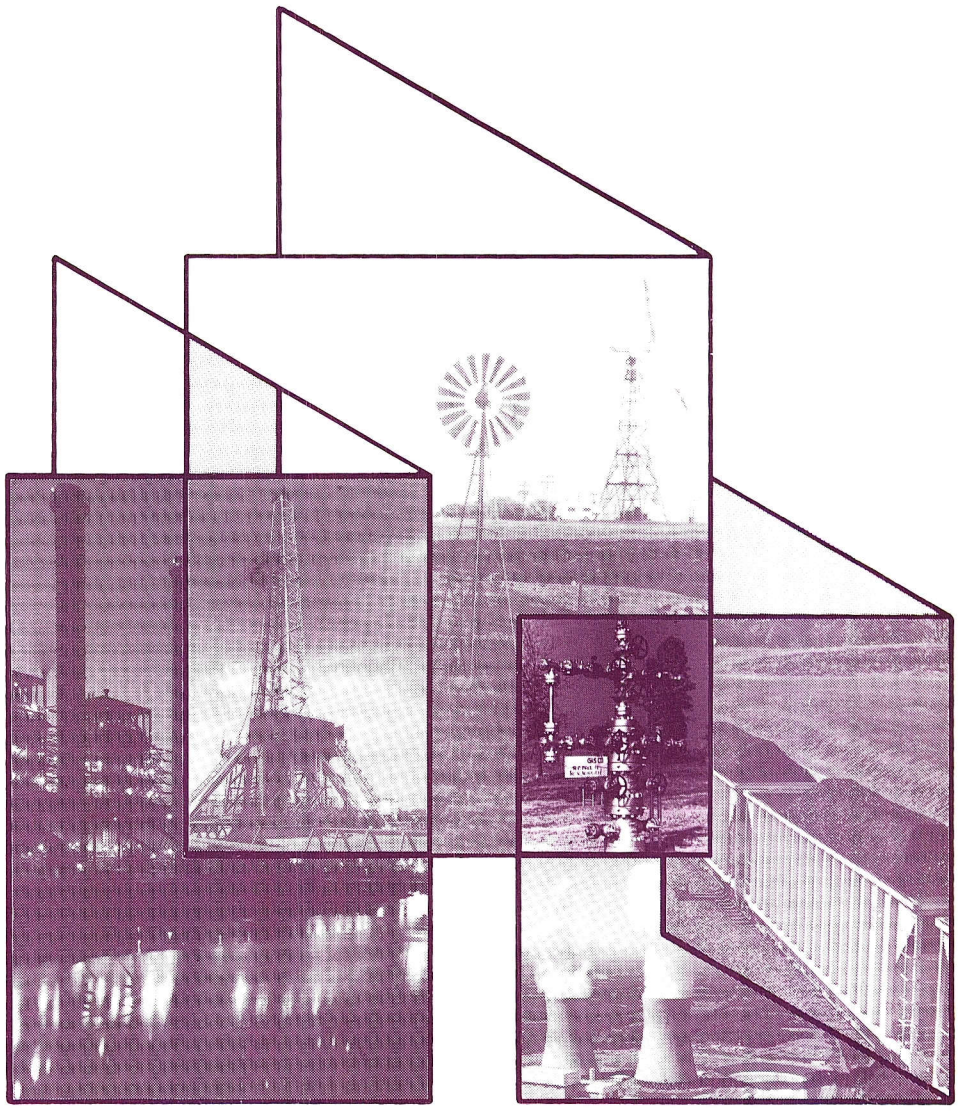
DOE/EIA-0035(91/04)

Monthly Energy Review

April 1991



Energy Information Administration

EIA

Monthly Energy Review

The *Monthly Energy Review* presents current data on production, consumption, stocks, imports, exports, and prices of the principal energy commodities in the United States. Also included are data on international production of crude oil, consumption of petroleum products, petroleum stocks, and production of electricity from nuclear-powered facilities.

Publication of this report is in keeping with responsibilities given the Energy Information Administration in Public Law 95-91 (Section 205(a)(2)), which states:

> *The Administrator shall be responsible for carrying out a central, comprehensive, and unified energy data and information program which will collect, evaluate, assemble, analyze and disseminate data and information . . .*

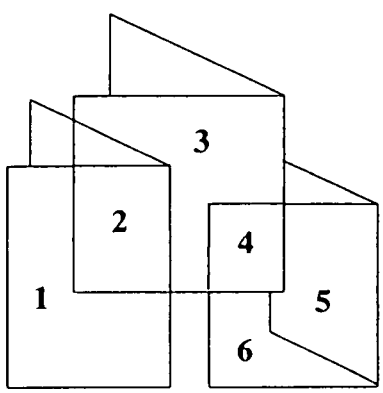
The *Monthly Energy Review* is intended to provide timely energy information to Members of Congress, to Federal and State agencies, and to the general public.

Subscriptions

This publication is available from the Superintendent of Documents, U.S. Government Printing Office (GPO). Prices and ordering information for this and other Energy Information Administration (EIA) publications may be obtained from the GPO or from EIA's National Energy Information Center (NEIC). Addresses and telephone and telecommunications device for the deaf (TDD) numbers appear below.

National Energy Information Center, EI-231
Energy Information Administration
Forrestal Building, Room 1F-048
Washington, DC 20585
202-586-8800 (TDD 202-586-1181)
Hours: 8 a.m.-5 p.m., eastern time, M-F

Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402
Order Desk: 202-783-3238
FAX: 1-202-275-0019



Cover Photo Credits

1. The Haynes Generating Station provides power in the Los Angeles area. Photograph courtesy of the Department of Water and Power, City of Los Angeles, California.
2. This is a drilling rig typical of those used by the oil industry.
3. An innovative wind turbine can be used to generate power more efficiently than the old-fashioned windmill.
4. A gas wellhead is referred to as a Christmas tree by the industry. Photograph courtesy of the Arkansas Louisiana Gas Company.
5. Unit trains are a primary transporter of coal. Photograph courtesy of the National Coal Association.
6. The cooling towers of the Susquehanna steam electric nuclear power plant. Photograph courtesy of Pennsylvania Power and Light Co./Allegheny Electric Cooperative, Inc.

The *Monthly Energy Review* (ISSN 0095-7356) is published monthly by the Energy Information Administration, 1000 Independence Avenue, SW, Washington, DC 20585, and sells for $62.00 per year (price is subject to change without advance notice). Second-class postage rates paid at Washington, DC 20066-9998, and at additional mailing offices. POSTMASTER: Send address changes to *Monthly Energy Review*, Energy Information Administration, EI-231, 1000 Independence Avenue, SW, Washington, DC 20585.

DOE/EIA-0035(91/04)
Distribution Category UC-98

Monthly Energy Review

April 1991

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

The *Monthly Energy Review* is prepared in the Statistics Branch of the Office of Energy Markets and End Use, Energy Information Administration, under the direction of Katherine E. Seiferlein 202-586-5692.

Questions and comments concerning the contents of the *Monthly Energy Review* may be directed to Diane D. Perritt 202-586-2788, Carol E. Swiggins 202-586-5743, or the following subject specialists:

Feature Articles, Highlights, and Special Summaries		Barbara T. Fichman	202-586-5737
Section 1.	**Energy Summary**	Alethea Jennings	202-586-9160
Section 2.	**Consumption**	Alethea Jennings	202-586-9160
Section 3.	**Petroleum**	Christine D. Gray	202-586-8995
Section 4.	**Natural Gas**	Sheila Lyles-Darnell	202-586-6165
Section 5.	**Oil and Gas Resource Development**	Lawrence R. Mangen	202-586-4804
Section 6.	**Coal**	Wayne Watson	202-254-5389
Section 7.	**Electric Utilities**		
	Generation, Consumption, and Stocks	Melvin Johnson	202-254-5665
	Sales	Stephen Calopedis	202-254-5661
Section 8.	**Nuclear**	Kenneth C. Wade	202-254-5514
Section 9.	**Price**		
	Petroleum	Elizabeth Scott	202-586-1258
	Natural Gas	Sheila Lyles-Darnell	202-586-6165
	Electricity		
	Retail Prices	Stephen Calopedis	202-254-5661
	Fossil Fuels	Sandra R. Smith	202-254-5632
Section 10.	**International**		
	Petroleum		
	Production	Patricia A. Smith	202-586-6925
	Consumption and Stocks	Justine Johnson	202-586-9412
	Nuclear Electricity Generation	Kenneth C. Wade	202-254-5514

Additional information on all energy statistics available from the Energy Information Administration may be obtained from the National Energy Information Center 202-586-8800.

• Released for printing: April 26, 1991

Contents

Feature Articles

Feature articles on energy-related subjects are occasionally included in this publication. The following is a complete list of all the feature articles that have been published to date.

Highlights

"Highlights"--special features that summarize the most important information presented in selected Energy Information Administration reports--are occasionally included in this publication. The following is a complete list of all the reports that have been summarized to date.

U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves, 1981 Annual Report	September 1982
Energy Company Development Patterns in the Postembargo Era, Volume One	November 1982
Residential Energy Consumption Survey: Consumption and Expenditures	January 1983
Residential Energy Consumption Survey: Housing Characteristics	February 1983
Energy Price and Expenditure Data Report, 1970-1980	July 1983
Railroad Deregulation: Impact on Coal	August 1983
Port Deepening and User Fees: Impact on U.S. Coal Exports	August 1983
U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves, 1982 Annual Report	September 1983
Annual Energy Review 1983	February 1984
State Energy Data Report, Consumption Estimates, 1960-1982	March 1984
Annual Energy Outlook 1983	March 1984
State Energy Price and Expenditure Report, 1970-1981	May 1984
Solar Collector Manufacturing Activity 1983	June 1984
Estimates of U.S. Wood Energy Consumption, 1980-1983	September 1984
International Energy Annual 1983	September 1984
Energy Conservation Indicators 1983 Annual Report	November 1984
Annual Energy Outlook 1984	December 1984
Annual Energy Review 1984	January 1985
Performance Profiles of Major Energy Producers 1983	February 1985
State Energy Price and Expenditure Report 1970-1982	March 1985
State Energy Data Report, Consumption Estimates, 1960-1983	April 1985
Annual Outlook for U.S. Electric Power 1985	June 1985
Short-Term Energy Outlook, Volume 1, October 1985	August 1985
Analysis of Growth in Electricity Demand, 1980-1984	August 1985
Profiles of Foreign Direct Investment in U.S. Energy 1984	November 1985
Performance Profiles of Major Energy Producers 1984	December 1985
International Energy Annual 1985	September 1986
Consumption and Expenditures, April 1984 Through March 1985, Part 1: National Data	April 1987
Consumption and Expenditures, April 1984 Through March 1985, Part 2: Regional Data	May 1987
Uranium Industry Annual 1986	September 1987
Potential Oil Production from the Coastal Plain of the Arctic National Wildlife Refuge (Revised Edition)	October 1987
Profiles of Foreign Direct Investment in U.S. Energy 1986	November 1987
Characteristics of Commercial Buildings 1986	June 1988
Manufacturing Energy Consumption Survey: Consumption of Energy, 1985	September 1988
Profiles of Foreign Direct Investment in U.S. Energy 1987	October 1988
Manufacturing Energy Consumption Survey: Fuel Switching, 1985	November 1988
Commercial Buildings Consumption and Expenditures 1986	May 1989
Potential Costs of Restricting Chlorofluorocarbon Use	September 1989
Manufacturing Energy Consumption Survey: Changes in Energy Efficiency, 1980-1985	October 1989
Household Energy Consumption and Expenditures 1987, Part 1: National Data	November 1989
U.S. Oil and Gas Reserves by Year of Field Discovery	August 1990
U.S. Energy Industry Financial Developments, 1990 Fourth Quarter	March 1991

U.S. Wholesale Electricity Transactions

The wholesale electricity market is a substantial part of the total market for electricity. In 1989, the most recent year for which data are available, the quantity of wholesale electricity traded approached 1.5 trillion kilowatthours,[1] equal to more than half the quantity of electricity sold to consumers in retail trade.

Only recently has the Energy Information Administration (EIA) begun publishing data on wholesale electricity transactions. Although a large volume of information has been collected for many years on a number of data forms, the information was not processed. Increased interest in the information has been spurred by the entrance of new sources of wholesale supply, including cogenerators, small power producers, and independent power producers, following passage of the Public Utility Regulatory Policies Act of 1978 (PURPA, Public Law 95-617). The data are published in two EIA reports, the *Electric Power Annual* and *Electric Trade in the United States.*[2]

This article summarizes these data and describes the general characteristics and patterns of the U.S. wholesale electricity market. It expands on the two data reports by making assumptions in order to aggregate the data to facilitate interpretation by region and ownership group. It also presents data on average revenues per kilowatthour of electricity sold in the wholesale market, data not contained in the other publications.

This article does not provide a complete explanation for the transactions, which awaits further research and data collection. The EIA, in cooperation with the Federal Energy Regulatory Commission (FERC), is revising the collections to improve the data series and to provide more relevant information.

The U.S. Wholesale Electricity Market Has Many Components

The U.S. wholesale electricity market today includes private, Federal, public, and cooperative utility components, which, along with growing nonutility and international trade (Canada and Mexico), shape the costs and distribution of U.S. electric power.

Privately owned electric utilities (also called investor-owned utilities or IOUs) dominated the early years of U.S. electric power. Rapidly improving technologies in electricity generation facilitated lower generating costs and much larger utilities. In these early years, most privately and publicly owned utilities generated their own electricity without relying on wholesale suppliers.

Large-scale Federal wholesale electricity suppliers emerged in the 1930's. These Federal utilities include the U.S. Army Corps of Engineers, the U.S Bureau of Reclamation, and the Tennessee Valley Authority (TVA). Federally generated power is marketed by the Federal power marketing administrations, such as the Bonneville Power Administration, and by the TVA. Except for TVA, virtually all Federally owned generating capacity is hydroelectric, historically a much less expensive source of electricity. The TVA owns the approximately one-third of Federal capacity that is non-hydroelectric (both fossil and nuclear fueled). Federally supplied wholesale electricity is sold in large quantities, particularly in the Southeast and throughout the West. It is often sold at prices below those of non-Federal utilities, reflecting lower costs of hydroelectric projects, Federal financing, and tax exemptions. By law, often called "municipal preference," Federally generated electricity is first offered for sale to utilities that are not IOUs.

Publicly owned electric utilities include municipal utilities, public power districts, irrigation districts, and other State authorities. Rural electric cooperatives were established with assistance from the Rural Electrification Administration and serve small towns and rural areas. Publicly and cooperatively owned utilities grew rapidly beginning in the 1930's as priority buyers of Federal wholesale electric power. Following the slowdown in Federal power growth starting in the 1950's, public and cooperative utilities began to build jointly owned large-scale generating utilities, adding public and cooperative components to wholesale elec-

[1]Energy Information Administration, *Electric Power Annual 1989* (EPA), DOE/EIA-0348(89) (Washington, DC, January 1991), pp. 87 and 89.

[2]Energy Information Administration, *Electric Power Annual 1989* (EPA), DOE/EIA-0348(89) (Washington, DC, January 1991), and preceding issue. Wholesale electricity trade data first appeared in the 1988 EPA. Energy Information Administration, *Electric Trade in the United States 1986*, DOE/EIA-0531(86) (Washington, DC, June 1990).

tricity supply. Publicly and cooperatively owned retail distribution utilities often purchase electricity in the wholesale market from publicly or cooperatively owned wholesale generating utilities or from Federal utilities or IOUs.

In recent years international sources and nonutility generators have also increasingly contributed to U.S. wholesale electricity supplies. Canadian utilities using predominantly hydroelectric resources are significant and growing contributors to Northeastern and Western wholesale electricity supplies and geothermal-based supplies from Mexico provide electricity to the U.S. West. In 1987, for example (before the effects of an extended drought in Canada in recent years), net electricity imports totalling 46 billion kilowatthours supplied nearly 2 percent of U.S. electricity demand. Imports from Canada provided nearly 13 percent of the Northeast's electricity demand and almost 3 percent of the demand in the West. Less than 1 percent of the West's demand was met by imports from Mexico.

Nonutility sources, including industrial cogenerators (producing steam for industrial uses and electricity generation), small power producers (small facilities using renewable resources such as wind, waste, or solar power), and other independent power producers are also adding major new quantities of wholesale electricity to U.S. electricity supply. Nonutility production has grown rapidly since passage of the Public Utility Regulatory Policies Act in 1978 began requiring electric utilities to purchase electricity from specific classes of nonutilities and opened the way for increased wholesale sales. Purchases from nonutilities have grown from 1 billion kilowatthours in 1980 to nearly 90 billion kilowatthours in 1989, meeting over 3 percent of U.S. electricity demand.

Wholesale Transactions Lower Costs

Wholesale electricity transactions occur when utilities can reduce the cost of electricity by trade rather than by generation. Trade occurs in long-term commitments of generating capacity and in short-term arrangements as brief as hourly. Utilities trade to reduce the costs of electricity and ensure reliability of service at lowest cost. The total volume of transactions in any region will reflect opportunities to reduce costs through trade.

In practice, opportunities to reduce cost through wholesale trade occur for five reasons:

First, the natural resources used for electricity generation are distributed unevenly. Utilities lacking access to lower cost natural resources often purchase wholesale electricity from utilities possessing them. For example, public, cooperative, and investor-owned utilities buy electricity from Federal utilities, which operate many of the largest hydroelectric dams. Similarly, utilities or regions with less expensive coal or natural gas resources sell electricity in the wholesale market to other utilities or regions. Electricity purchases from Canada and Mexico generally result from natural resource differences.

Second, variations in electricity demands within service areas result in changing utilities' production levels and costs, and sometimes allow cost reductions through wholesale trade. Utilities differ in their patterns of hourly, daily, weekly, and seasonal electricity demands and those patterns are subject to frequent variation, particularly in response to weather. As a result, neighboring utilities and regions buy or barter electricity when lower cost electricity is available. Barter may occur, for example, when trading utilities experience demand peaks at different times in a day; a utility will receive electricity earlier in the day and return a like amount later that same day. Seasonal trade between regions in the South with higher summer air conditioning demands and regions in the North with winter heating demands illustrates trade resulting from regional variations in demand.

In recent years, unexpected differences in long-term rates of growth in demand among utilities and regions have also spurred wholesale trade, as areas experiencing more rapid growth purchase electricity from others experiencing expansion in supply in excess of actual demand growth. For example, movement of electricity from the Midwest to the Eastern States has occurred because surplus Midwestern capacity could be used to meet requirements in the more rapidly growing East.

Third, laws and regulations may give rise to cost or price differences that stimulate trade. By law, the Federal Government controls U.S. waterways including the rights to hydroelectricity resources. The Federal Government is under legal obligation to market the electricity at wholesale, thereby creating a substantial wholesale electricity market. Similarly, PURPA requires utilities to purchase electricity from nonutility suppliers and has facilitated the rapidly growing nonutility segment of wholesale electricity trade.

Fourth, economies of scale induce wholesale electricity trade in surplus power. To produce electricity at the lowest cost, utilities may build generating capacity larger than necessary for their own requirements and sell the excess in the wholesale market. Smaller utilities or utilities needing minor additional capacity enter the wholesale market as electricity buyers. On occasion, as with some public and cooperative electric utilities, smaller utilities become joint owners of large-scale generating utilities and purchase wholesale power at prices below their individual production costs.

Finally, the presence or absence of transmission capacity affects the volume of trade. Electricity trade between the Midwest and New England, for example, does not occur partially because of the lack of viable transmission links between those two regions. On the other hand, wholesale electricity from British Colum-

bia to the U.S. Southwest will likely increase with the expected completion of an additional transmission intertie in the early 1990's.

Differences in natural resources, demands, laws and regulations, uses of economies of scale, and transmission availability, along with other factors, will all affect the volumes of trade occurring within and among regions.

The total volume of electricity transactions is also affected by the number of utilities and the degree of vertical integration of the electricity marketplace. All else being equal, the more utilities in a region, the more trade will occur. If an area were served by only one utility, internal transfers of electricity in that area would not constitute trade; if that area were then served by two or more utilities, some transfers formerly internal to the one firm would now involve two or more utilities and, therefore, involve trade. Thus, the more firms serving a region, the greater the likelihood of trade.

Similarly, the less vertically integrated the industry is in a region, the more likely is trade to occur. Vertically integrated utilities[3] generate the electricity needed to serve their consumers and do not need to trade to acquire it. Regions featuring less integrated utilities have generating utilities which may not serve retail consumers and retail distribution utilities without generating facilities. In these less integrated regions, trade is required to move generated electricity to ultimate consumers.

Wholesale Transactions Defined

Wholesale electricity includes all transactions for electricity except sales to ultimate consumers (the excluded portion is retail sales). Both the categories of transactions and the vocabulary assigned to the categories vary widely among utilities and data collections. For this article, the wholesale electricity market (also called the bulk power market) is divided into two categories of transactions, trade and wheeling, with trade further subdivided into trade for money and exchange:

- Trade
  - Sales or purchases (for money)
  - Exchanges (barter, for electricity to be returned at a later date)
- Wheeling (carriage of electricity)

Wholesale sales or purchases are wholesale trade in electricity for which payment is made with money. Exchanges are in-kind swaps of electricity between utilities in which utilities provide each other electricity at differing times of need. These barter exchanges often take advantage of the availability of less expensive generating capacity occurring at different times for participating utilities.

Wheeling, a wholesale transaction separate from electricity trade, is the third-party transmission of electricity from one place to another. Wheeling is performed by a third utility located between the two trading parties. It is usually measured only by the amount of electricity transmitted, not by the distance it is transmitted. Compensation for wheeling may be either in money or electricity.

The trade data used in this article are provided by the transacting utilities serving as either buyers or sellers in trade. As a result, the wholesale electricity data being presented here, in addition to the definitions above, are further distinguished as either receipts data--reported by the buyers in trade--or deliveries data--reported by the sellers in trade. Receipts data include both purchases for money and barter exchanges reported by buyers; deliveries data include both sales and barter exchanges reported by sellers:

- Receipts data
  - Purchases (for money)
  - Exchanges (barter)
- Deliveries data
  - Sales (for money)
  - Exchanges (barter)

Wholesale Transactions Data Vary

The data used in this article have been obtained from a number of sources, some describing all electric utilities, others describing various subgroups. The first section on trends presents information about large investor-owned electric utilities. The second section, showing region and ownership groups, describes all U.S. electric utilities. The final section contains detailed data about wholesale electricity trade relationships and average revenues. These detailed data include many, but not all, electric utilities reporting in a number of data collections and represent most wholesale electricity trade. Specific descriptions of the data are provided in each section of the report.

This article uses data on wholesale electricity receipts and deliveries to describe wholesale electricity purchases, sales, and exchanges. While in any single transaction receipts are equal to deliveries, in the reported aggregate data they are not necessarily equal. Inequalities occur because of differences in reporting by individual utilities, differences in the percentages of specific

[3]In general, vertically integrated firms incorporate many stages of production and distribution within the firm rather than relying on separate firms for each of the stages. For electric utilities, these stages include generation, transmission, and distribution of electricity.

utility groups asked to respond in the various data collections, and differences in the definitions and the requirements of the collections.

For example, from a total of about 2,000 publicly owned utilities only the approximately 460 largest (representing 83 percent of the wholesale electricity trade by publicly owned utilities in 1986) provide detailed data on specific wholesale electric power transactions because their data collection is based upon a restricted universe.[4] As a result, the other publicly owned utilities do not provide detailed data on their transactions, although information about their transactions with IOUs are reported in the IOU filings. Moreover, the Rural Electrification Administration provides EIA automated data for wholesale electricity purchases by cooperatives but not on wholesale sales by cooperatives.

The most important explanation for the differences in the aggregate receipts data from the aggregate deliveries data, however, is the restriction of the overall data collections to U.S. electric utilities, who represent most, but not all, wholesale electricity trade. Purchasers of wholesale electricity in the United States are almost always electric utilities; as a result, receipts data include most wholesale electricity transactions, including receipts from Canadian and Mexican utilities and from nonutilities. Deliveries data, on the other hand, which are reported only by the U.S. electric utilities, do not include deliveries by nonutilities or foreign utilities and result in fewer deliveries reported.

As a result of these differences in coverage and reporting, the data on receipts and deliveries shown throughout this article are usually not identical. Most differences are minor, amounting to only a few percent, such as those based on reports for all utilities comparing receipts and deliveries in Table FE1. Larger differences appear near the end of the article when data based on a number of survey collections with less than complete coverage are discussed. For example, the detailed 1986 receipts data discussed in the last section of the article exceed the detailed deliveries data by nearly 25 percent. Receipts data are generally used in this article; however, in some instances both receipts and deliveries data are included for comparison.

Table FE1. U.S. Wholesale Electricity Transactions and Utility Sales to Ultimate Consumers, 1989 (Billion Kilowatthours)

	Trade				Wheeling[a]		Sales to Ultimate Consumers
	Delivered		Received		Delivered	Received	
	Sales for Resale	Exchange	Purchases[b]	Exchange			
NERC Region[c]							
ECAR	152.7	72.2	91.0	93.9	21.0	21.1	415.0
ERCOT	32.4	35.0	58.4	34.7	9.3	9.4	195.6
MAAC	17.9	29.0	46.4	31.5	8.4	8.4	207.3
MAIN	23.7	35.7	33.7	28.9	1.2	1.2	188.4
MAPP	59.5	37.9	68.9	36.1	8.2	9.2	113.7
NPCC	99.7	22.6	126.0	15.1	42.4	42.9	233.6
SERC	277.7	75.7	278.8	82.2	21.9	22.7	571.6
SPP	96.2	18.6	107.1	13.5	19.9	19.6	223.1
WSCC	213.7	91.8	236.3	84.8	163.6	164.8	486.7
Alaska	2.2	*	2.3	*	0.5	0.5	4.1
Hawaii	0.0	*	0.4	*	0.0	0.0	7.6
Total	975.7	418.4	1,049.2	420.8	296.3	299.8	2,646.8
Utility Ownership							
Cooperative	219.6	16.1	286.1	15.3	4.4	4.1	190.2
Federal	184.9	51.0	14.9	44.5	49.5	50.4	52.7
Investor	378.8	329.6	450.5	339.5	208.6	211.1	2,031.7
Public[d]	192.4	21.7	297.6	21.5	33.9	34.2	372.2
Total	975.7	418.4	1,049.2	420.8	296.3	299.8	2,646.8

[a] Differences in wheeling delivered and wheeling received values for individual regions, ownership groups, and in total reflect differences in accounting for transmission losses; the differences generally fall within accepted ranges of reporting error.
[b] Includes domestic utilities, nonutilities, and foreign (Canadian and Mexican) sources.
[c] Figure FE2 shows a map identifying North American Electric Reliability Council (NERC) regions.
[d] Public utilities include municipal electric utilities, public power districts, state authorities and organizations, and irrigation districts.
* Value less than 0.05.
Note: Totals may not equal sum of components because of independent rounding.
Sources: **NERC Regional Distributions:** Energy Information Administration, *Electric Power Annual 1989*, DOE/EIA-0348(89) (Washington, DC, January 1991). **Distribution by Ownership Category:** Energy Information Administration, Form EIA-861, "Annual Electric Utility Report."

[4] A restricted universe is the complete coverage of a specifically defined portion of a universe. In this example, respondents include only publicly owned utilities with at least 100 million kilowatthours of sales either to ultimate consumers or in the wholesale market for the 2 prior years.

Growth in Wholesale Trade Matched That in Retail Sales

Overall, U.S. wholesale electricity trade by major investor-owned electric utilities (major IOUs)[5] has grown much the same as retail electricity sales over the last 15 years. National trends in wholesale electricity trade by such utilities are shown in Figure FE1. Since 1974, retail sales of electricity by major IOUs have grown at an annual rate of 2.8 percent. Over the same period, wholesale trade, as measured by purchases plus exchanges received, has grown at 3.0 percent annually.

However, the individual elements of wholesale electricity transactions by major IOUs have grown at quite varied rates. The growth in wheeling of wholesale electric energy has been the most noticeable, increasing at a annual rate of 8.0 percent from 1974 through 1989. Although the EIA has not analyzed this increase in electricity wheeling, its rapid expansion follows growth in nonutility deliveries and imports, improved high voltage transmission, experience in wheeling, and encouragement by regulatory bodies. Purchases of wholesale electricity by major IOUs have been growing briskly at the annual rate of 4.5 percent over the same period and are now the largest type of wholesale electricity trade (Table FE1). They include purchases from nonutilities and imports from Canada and Mexico.[6] In contrast, sales and exchanges of wholesale electricity by the major IOUs grew briskly through 1981 (averaging between 5.2 and 5.4 percent annually), but have not done so since.

Wholesale sales (reported as sales for resale), which include exports, grew at an annual rate of only 0.8 percent between 1981 and 1989. Exchanges grew slightly between 1981 and 1985; since then they have declined somewhat.[7] Data on wholesale electricity trade for all utilities in the United States from 1986 through 1989, the only years for which data are available for the entire industry, are published in the *Electric Power Annual* and show trends comparable to those of the major IOUs.[8]

These trends in wholesale electricity trade growth are complicated by two important factors. One is that in 1986 the FERC imposed fees on reported wholesale electricity transactions as required by the Omnibus Budget Reconciliation Act of 1986. This imposition may explain in part the substantial decline in the quantities of transactions reported beginning in that year. The other complicating factor is that these data cover only trade by major U.S. electric utilities, those that are large and investor-owned. These data have been collected for a long time. Bulk power trade information has been collected from all electric utilities only since 1984 and published since 1986 in the *Electric Power Annual.*

In 1989 U.S. Wholesale Trade Equaled Over Half Retail Sales

Some U.S. wholesale electricity data are collected from a census of all electric utilities on Form EIA-861, "Annual Electric Utility Report." The Form EIA-861 is used to collect information only on quantities of wholesale transactions received and delivered by the reporting electric utility. It collects little information on the revenues for trade or about the regions or parties with whom the reporting utilities traded. It covers virtually all wholesale electricity transactions in the United States, because an electric utility is nearly always at least one of the participants in a wholesale electricity trade. When separating wholesale trade geographically, the regions of the North American Electric Reliability Council (NERC), shown in Figure FE2, are used. The boundaries of these regions follow the operating borders of electric utilities that historically have worked together to ensure reliability.

Wholesale electricity transactions constitute a major market for electricity. The size of the U.S. wholesale electricity market is illustrated in Table FE1, which summarizes all U.S. wholesale electricity transactions in 1989. Wholesale electricity trade, measured by purchases plus exchanges received from utilities, nonutilities, and from foreign utilities, totaled nearly 1.5 trillion kilowatthours, an amount equal to 56 percent of sales to ultimate consumers.[9] The sum of utility sales for resale and exchange delivered equaled 53 percent. Thus, electricity bought at wholesale by utilities is a major contributor to local electricity supply.

Wheeling also occurs on a very large scale; in 1989, utilities wheeled nearly 300 billion kilowatthours, an amount equal to 11 percent of retail sales. The size of the wholesale electricity market shows that many util-

[5]Major electric utilities are defined as those investor-owned electric utilities with more than 1 million megawatthours of total annual sales, or 100 megawatthours of annual sales for resale, or 500 megawatthours of annual gross exchange out, or 500 megawatthours of wheeling for others in the past 3 consecutive years. Given this definition, the utilities included in the major category vary slightly from year to year as some utilities drop below and others rise above these cutoffs. These major IOUs accounted for nearly two-fifths of the wholesale sales, about four-fifths of the exchanges, and over two-thirds of the wheeling of all U.S. utilities in 1989.

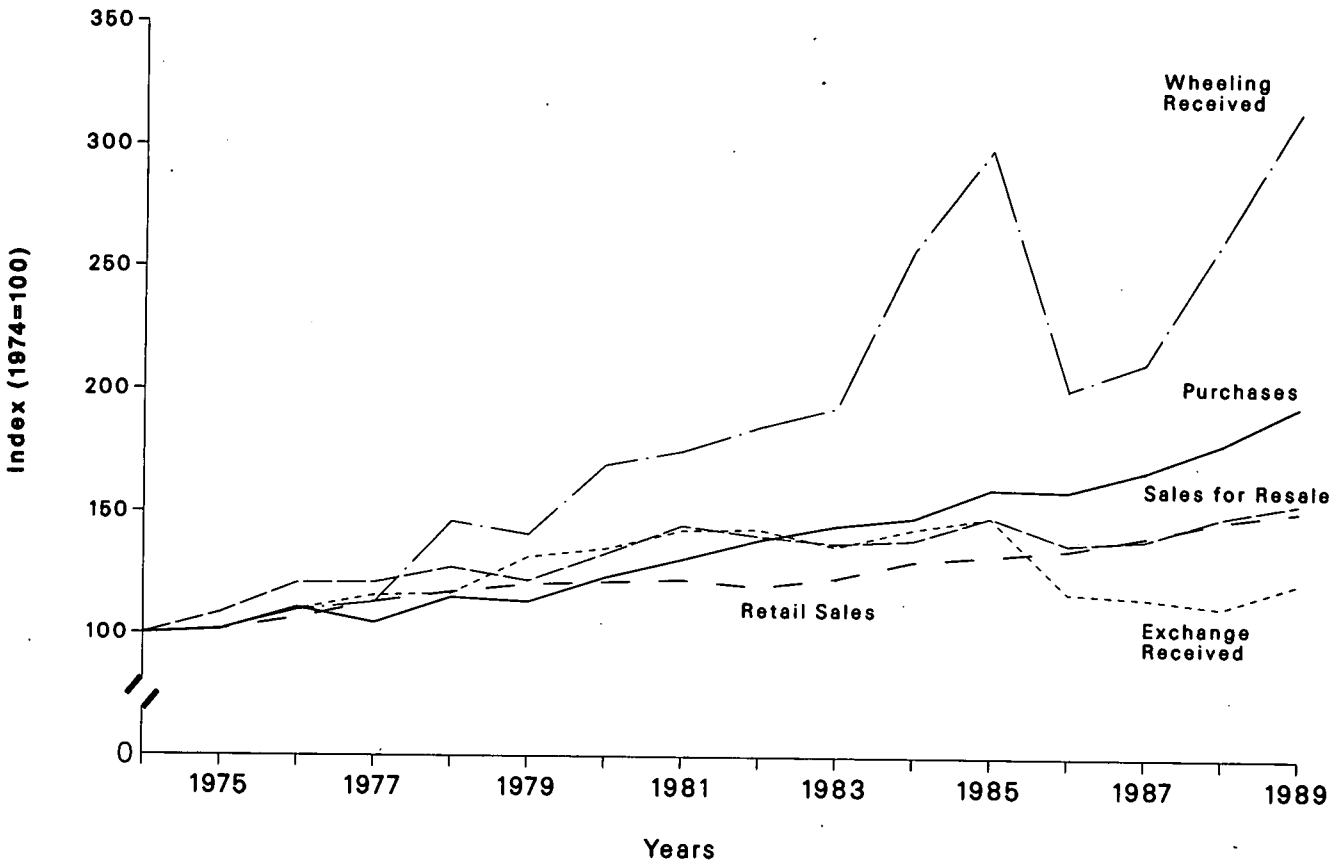
[6]Net electricity imports increased rapidly through most of the 1980's, rising from 21 billion kilowatthours in 1980 to 46 billion kilowatthours in 1987, before slipping in response to Canadian drought and other conditions to 11 billion kilowatthours in 1989.

[7]Wholesale exchanges are referred to as interchanges in *Financial Statistics of Selected Investor-Owned Electric Utilities 1989*, DOE/EIA-0437(89) (Washington, DC, January 1991), and preceding issues.

[8]Energy Information Administration, *Electric Power Annual 1989*, DOE/EIA-0348(89) (Washington, DC, January 1991), and preceding issue.

[9]Some electricity is transacted (traded or wheeled) more than once at wholesale, so that this percent is greater than the actual percent of retail sales transacted at wholesale.

Figure FE1. Indexes of Wholesale and Retail Electricity Transactions by Major U.S. Investor-Owned Electric Utilities, 1974-1989



Source: Energy Information Administration, *Financial Statistics of Selected Investor-Owned Electric Utilities 1989*, DOE/EIA-0437(89) (Washington, DC, January 1991), p. 44, and preceding issues.

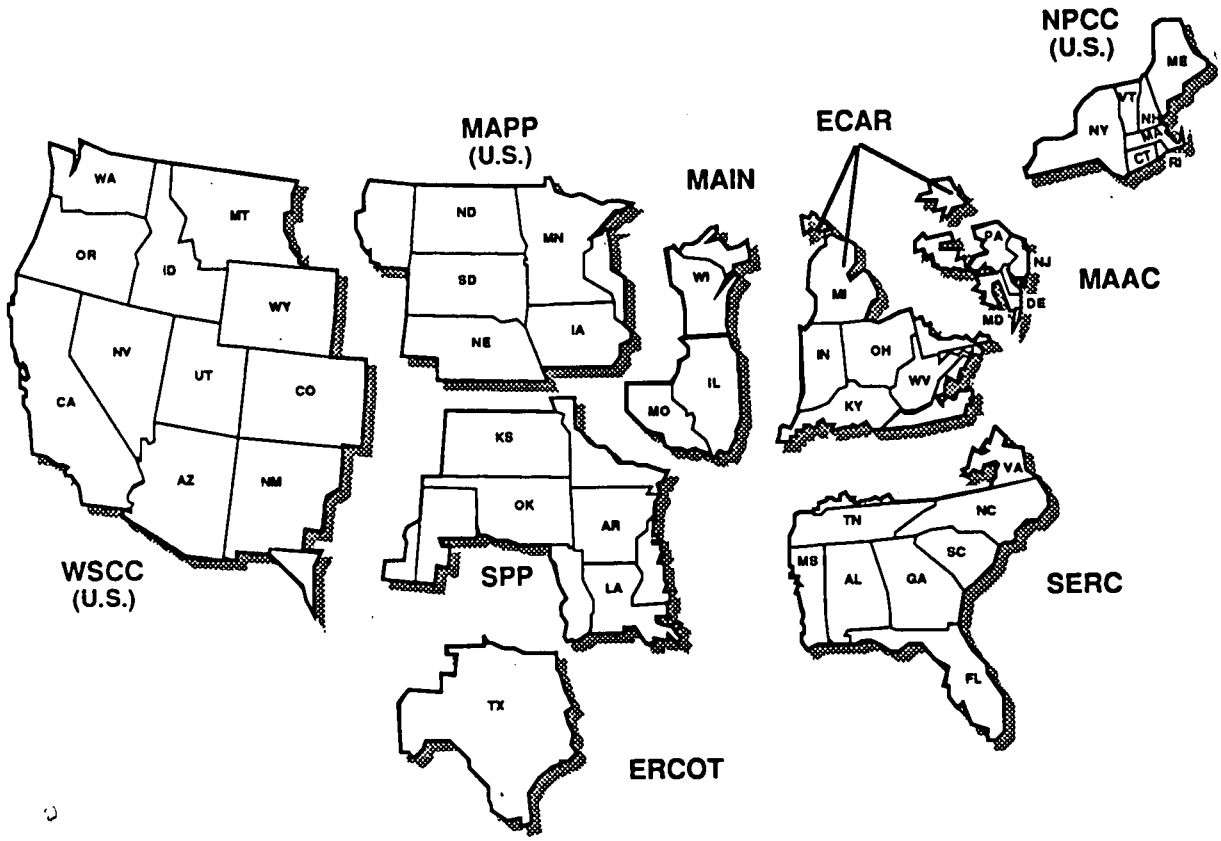
ities are not locally isolated, vertically integrated producers and distributors of electricity, but instead are part of interdependent groups of utilities that engage in a large amount of trade with each other and with nonutilities.

The extent to which utilities in different regions utilize wholesale electricity trade varies across the continental United States. (Alaska and Hawaii are not part of this discussion because their volumes are small and because they do not trade with other regions.) The greatest volumes of wholesale electricity, as measured by purchases plus exchanges received, were traded in two regions: the Southeast (SERC) and the West (WSCC). With more than 360 and 320 billion kilowatthours received, respectively, these regions accounted for nearly half (46 percent) of all U.S. wholesale electricity receipts in 1989. The greatest volume of retail electricity sales occurred in these regions as well. Viewed as a proportion of retail sales, most regions' (six of the nine) wholesale trade equaled between 44 and 66 percent of retail sales. However, the West North Central region (MAPP) had wholesale trade equal to over 90 percent of retail sales, while both the East North Central (MAIN) and Mid-Atlantic (MAAC) regions' wholesale trade averaged about 36 percent, reflecting differences in the regions' opportunities for trade, including differences in resources, demands, effects of laws and regulations, and other factors.

Wholesale electricity trade can be viewed among utility ownership types as well as among geographic regions. However, the shares of the overall wholesale electricity market held by publicly,[10] cooperatively, and Federally owned utilities are much greater than their respective shares of the retail electricity marketplace. The IOUs, while dominant in both the wholesale and retail electricity markets, hold a smaller share of the wholesale marketplace. In 1989, the IOUs accounted for over 50 percent of wholesale electricity

[10]Public utilities include municipal electric utilities, public power districts, State authorities and organizations, and irrigation districts.

Figure FE2. North American Electric Reliability Council (NERC) Region Map of the United States



Regional Electric Reliability Council Areas

ECAR – East Central Area Reliability Coordination Agreement
MAIN – Mid-American Interpool Network
MAAC – Mid-Atlantic Area Council
MAPP (U.S.) – Mid-Continent Area Power Pool
NPCC (U.S.) – Northeast Power Coordinating Council
SERC – Southeastern Electric Reliability Council
SPP – Southwest Power Pool
ERCOT – Electric Reliability Council of Texas
WSCC (U.S.) – Western Systems Coordinating Council

Source: North American Electric Reliability Council

deliveries; at the same time, however, they accounted for about three-fourths of total retail sales. Rural electric cooperatives and public utilities include large, jointly owned generating utilities which sell power primarily to the wholesale market, usually to distribution cooperatives or public utilities serving retail customers. Together these utilities accounted for nearly one-third of wholesale electricity deliveries in 1989 and over 40 percent of wholesale electricity receipts, despite accounting for only one-fifth of retail electricity sales. Because Federally owned utilities were established by law specifically to serve the U.S. wholesale electricity market, their 17-percent share of the wholesale market in 1989 is much greater than their 2-percent share of the retail market. The U.S. Army Corps of Engineers, the U.S. Bureau of Reclamation, the Tennessee Valley Authority, and the Federal Power Marketing Administrations primarily serve publicly and privately owned utilities as wholesale suppliers of electricity, with publicly owned utilities granted priority in obtaining Federal electricity supplies.

Most U.S. wholesale electricity trade occurs among domestic electric utilities with 8 percent coming from nonutilities and foreign sources in 1989. As shown in Table FE2, 92 percent of wholesale electricity received by U.S. electric utilities in 1989 was provided by other domestic utilities. The remaining wholesale electricity receipts (6 percent) were provided by nonutility producers such as industrial cogenerators, independent electricity producers, and small electricity producers (small nonutility generators using renewable power sources such as water, wind, wood, waste, biomass, solar, or geothermal energy) and by wholesale electricity imports from Canada or Mexico (2 percent). Almost all imports came from Canada, with only very small quantities entering from Mexico, mostly through Texas and California.

Table FE2. U.S. Utility Wholesale Electricity Balance of Trade, 1989 (Billion Kilowatthours)

	Deliveries				Receipts by Domestic Utilities				Balance of Trade (Net Deliveries)
	By Domestic Utilities		By Nonutilities	Total	From Domestic Utilities	Purchases from Nonutilities	Foreign Imports	Total	
	To Domestic Utilities	Foreign Exports							
NERC Region*									
ECAR	219.4	5.4	2.0	226.9	182.9	2.0	*	184.9	42.0
ERCOT	67.4	*	22.7	90.1	70.4	22.7	*	93.1	-3.0
MAAC	46.9	0.0	5.5	52.4	72.4	5.5	0.0	77.9	-25.5
MAIN	59.4	0.0	0.2	59.6	62.4	0.2	0.0	62.6	-3.0
MAPP	94.7	2.6	0.1	97.5	102.6	0.1	2.3	105.0	-7.6
NPCC	119.7	2.6	10.2	132.5	117.2	10.2	13.7	141.1	-8.6
SERC	353.4	0.0	8.9	362.3	352.0	8.9	0.0	360.9	1.3
SPP	114.8	0.0	2.8	117.6	117.8	2.8	0.0	120.6	-3.1
WSCC	301.0	4.5	37.1	342.7	273.8	37.1	10.1	321.0	21.6
Alaska	2.2	0.0	*	2.2	2.3	*	0.0	2.3	*
Hawaii	*	0.0	0.2	0.2	0.2	0.2	0.0	0.5	-0.2
Total	1,378.9	15.1	89.8	1,483.9	1,354.0	89.8	26.1	1,470.0	13.9

* For a map identifying North American Electric Reliability Council (NERC) regions, see Figure FE2.
* Absolute value less than 0.05.

Notes: Inconsistent reporting, particularly of transmission losses, by trading partners causes some imbalances in these data. Wheeling is not included in these data. Totals may not equal sum of components because of independent rounding.

Sources: **Imports and Exports:** U.S. Department of Energy, Form FE-781R, "Annual Report of International Electric Import/Export Data"; **Deliveries to and Receipts from Domestic Utilities and NUGS Purchases:** Energy Information Administration, Form EIA-861, "Annual Electric Utility Report."

In a few regions nonutilities contributed substantially to total wholesale electricity trade in 1989. In the West (WSCC), nonutilities provided 37 billion kilowatthours of wholesale electricity to utilities, nearly 12 percent of the receipts in that region; nonutilities provided nearly 23 billion kilowatthours to utilities in the Texas (ERCOT) region, almost one quarter of all wholesale receipts there. Both California and Texas are among those States with natural resources and industries that have facilitated nonutility generation. However, elsewhere, nonutilities were not large contributors to regional wholesale electricity supplies. They supplied the least amount of electricity to utilities in the East North Central (MAIN) and the West North Central (MAPP) regions.

Utilities in regions bordering Canada or Mexico trade wholesale electricity with those countries. In 1989, the United States exported 15 billion kilowatthours of electricity, mostly to Canada, and imported 26 billion kilowatthours, 24 billion from Canada. The Midwest (ECAR) region and the West (WSCC) region exported the most wholesale electricity to foreign countries, 5 and 4 billion kilowatthours, respectively. The largest importers were the Northeast (NPCC) region, whose imports of nearly 14 billion kilowatthours accounted for almost 10 percent of all their wholesale electricity receipts, and the West (WSCC) region, with just over 10 billion kilowatthours imported in 1989, 3 percent of that region's receipts. The Northeast (NPCC) region was the largest net foreign importer of wholesale electricity, receiving an amount equal to 5 percent of its retail sales, 11 billion kilowatthours more than it exported.[11] Much of this trade results from the natural resource advantages of the selling regions, such as hydroelectricity in Canada and the West, and coal in the Midwest.

The balance of trade--wholesale electricity deliveries minus receipts--was substantial for three NERC regions (Table FE2).[12] The balance of trade represents the net outflow of wholesale electric power to other regions. Two regions were large net sellers of electricity at wholesale: the Midwest (ECAR) and the West (WSCC). The Midwest, with the coal resources and some excess capacity, is the largest net exporter of electricity. Its net exports of 42 billion kilowatthours were 10 percent of its retail electricity sales. The Mid-Atlantic region (MAAC), a region of high demand growth, was a substantial net importer of electricity, with net electricity trade inflows of more than 25 billion kilowatthours, 12 percent of the region's retail electricity sales. The remaining NERC regions were, on balance, self-sustaining, being neither large net importers nor large net exporters of electricity. Of course, net balances provide no information regarding gross interregional flows of electricity.

[11]Imports may be resold by utilities in the importing region to utilities in other regions.

[12]For this discussion, it is assumed that nonutilities are located in the same region as the purchasing utility. In this case, the net balance-of-trade effect of nonutilities is zero.

Wheeling Was 20 Percent of Wholesale Trade

Nationwide, wheeling also plays an important role in electricity trade. The volume of electricity wheeled between delivering and receiving utilities, about 300 billion kilowatthours, was 11 percent of total retail electricity sales and 20 percent of total wholesale trade received in 1989 (Table FE1). Thus, the transmission of wholesale electricity is itself a sizable activity in the United States. Because wheeling occurs between trading utilities that are physically separated by another utility or group of utilities, its existence shows that on many occasions electricity is provided by a distant source, not by the local utility or an immediate neighbor.

Compared to wholesale electricity trade, wheeling is more concentrated geographically. Whereas the largest region for trade, the Southeast (SERC) accounted for only 25 percent of wholesale electricity trade receipts, wheeling was dominated by the West (WSCC), which accounted for 55 percent of the wheeling (165 billion kilowatthours) reported in the United States. The Northeast (NPCC) received 43 billion kilowatthours of wheeling, 14 percent of the total. These two regions share a characteristic that may in part explain their share of wheeling: each serves as a major gateway for electricity imports from Canada. No other region received more than 23 billion kilowatthours (8 percent of U.S. wheeling).

The investor-owned utilities accounted for 70 percent of wheeling in 1989. Federally and other publicly owned utilities accounted for most of the remainder, 17 and 11 percent, respectively, while rural electric cooperatives accounted for barely 1 percent. These national level wheeling statistics are consistent with the IOUs' ownership of about three-fourths of the large transmission lines in the United States.

Much Wholesale Electricity Trade Data Available

Additional information about U.S. wholesale electricity trade can be obtained by examining detailed 1986 wholesale electric trade data compiled by the EIA. Unless specifically noted, the remainder of the data presented in this article is combined from several distinct data collections that include revenue and destination as well as quantity and source information about U.S. wholesale electric power trade.[13] These wholesale electricity data were combined in order to provide further insights into the patterns and values of U.S. wholesale electricity trade. Currently these wholesale electricity data are available only for 1986; data for 1988 are now being compiled for publication. Data for 1990 and later will be available in biennial cycles.

The largest contributor to these wholesale electricity data is the FERC Form 1, which is used to collect detailed data from approximately 180 major investor-owned utilities. The form requests information on all three basic types of wholesale trade, including the identity of the trading partner and the quantity of electric energy traded as well as the associated revenue. Although the FERC Form 1 is filed only by investor-owned utilities, it includes data on their exchanges with all ownership classes.[14] Another source of wholesale electricity data is Form EIA-412, which is used to collect data from approximately 475 utilities that are owned by government agencies.[15] It collects less detailed but essentially similar information to that in the FERC Form 1. These government-owned utilities report data for their individual fiscal years, which vary among utilities.

The final source for wholesale electricity data is the Rural Electrification Administration (REA). The REA provides basic information about the wholesale electricity purchases of approximately 900 cooperatively owned utilities that are active borrowers from the REA. Such borrowers make up 95 percent of all cooperative utilities. These data do not include wholesale sales or exchanges.

Each of these forms is used to collect data from a restricted universe of utilities, not a statistically derived sample. These FERC and EIA collections include only those utilities that are larger than a specified cutoff size. The reporting cooperative utilities are limited to those that are active borrowers from the REA.

The wholesale electricity trade data are reported according to the fiscal years of the individual reporting utilities. The individual utility fiscal years do not all

[13]These data are published in Energy Information Administration, *Electric Trade in the United States 1986*, DOE/EIA-0531(86) (Washington, DC, June 1990). The data collection forms are the FERC Form 1, "Annual Report of Major Electric Utilities, Licensees and Others," the FERC Form 1-F, "Annual Report of Nonmajor Public Utilities and Licensees," the Form EIA-412, "Annual Report of Public Electric Utilities," and the Rural Electrification Administration, REA Form 7, "Financial and Statistical Report," 126 through 129, "Electric Distribution Borrowers with Generating Facilities."

[14]Data from several nonmajor investor-owned utilities are also included in the wholesale electricity data. Nonmajor electric utilities are those investor-owned utilities with 10,000 megawatthours or more of total annual sales in the previous calendar year that are not classified as major. These data are collected on the FERC Form 1 or the FERC Form 1-F, depending on the accounting system maintained by the respondent. The FERC Form 1-F collects wholesale electricity information similar to but less detailed and extensive than the FERC Form 1 on wholesale sales and purchases only.

[15]Utilities that are not investor or cooperatively owned have been required to submit Form EIA-412 when their wholesale or retail electricity sales exceed 100 million kilowatthours for the 2 previous years. (This cutoff quantity has been increased to 120 million kilowatthours beginning with reporting for 1989.)

begin on January 1 and end on December 31. Although the investor-owned and cooperatively owned utilities report on a calendar year basis, Federally owned electric utilities report on a fiscal year basis beginning on October 1 and ending on September 30; the fiscal years of other publicly owned utilities may begin in any month. The wholesale electricity trade data discussed below represent aggregations of calendar and fiscal 1986, but do not represent aggregations for just calendar 1986 or for any fixed 12-month period.

Nearly All 1986 Wholesale Electricity Trade Occurred Within NERC Regions

Data for a large proportion of wholesale electricity trade in 1986 provide additional information on the directions of trade among geographic (NERC) regions and among utility ownership types. Despite their limitations, noted above, these data show source and destination information for nearly 1.3 trillion kilowatthours of wholesale electricity trade receipts in 1986, representing 96 percent of all wholesale electricity receipts for that year.

These 1986 wholesale electricity data clearly show that most wholesale electricity trade occurs within the individual NERC regions and not across NERC boundaries. Ninety-five percent of all receipts reported, nearly 1.2 trillion kilowatthours, are reported to have taken place within the individual NERC regions. It is important to note that this amount overstates U.S. intraregional trade because the wholesale electricity data use NERC region boundaries as they extend across international boundaries. Thus, most international trade included in these data is recorded within a given NERC region. This finding is consistent with the determination of NERC boundaries, which were delineated largely to cluster utilities that historically had working relationships with each other.

Some interregional movement of wholesale electricity does occur. The wholesale electricity data show that 5 percent of wholesale electricity crossed NERC boundaries in 1986; receipts totaled 62 billion kilowatthours.

Reported wholesale deliveries data do not always match those reported for wholesale electricity receipts. Because the data collections represent less than complete coverage, these data represent less than complete coverage for both sides of each transaction. For example, the reported data may include receipt of wholesale electricity, but not include a report of the related delivery. Furthermore, inconsistencies occur in reporting by the trading partners, especially in the reporting of transmission losses. As a consequence, the aggregated data for receipts and deliveries differ. The following discussion of wholesale electricity trade will highlight flows of wholesale electricity received that are approximately confirmed by the data on deliveries.

Some regions are virtually independent, without substantial trade with neighboring regions. Other regions, whose neighbors have different resources, demands, or supplies, promote cost savings through trade and engage in noticeable quantities of interregional wholesale electricity transactions. Table FE3 presents interregional trade received data for the NERC regions. The largest recipients of wholesale electricity in 1986 were the Southeast (SERC), the East North Central (MAIN), the Mid-Atlantic (MAAC), the South Central (SPP), and the Midwest (ECAR) regions.[16] The largest sources of wholesale electricity were the Midwest (ECAR), the West North Central (MAPP), the Southeast (SERC), the East North Central (MAIN), and the South Central (SPP) regions.[17]

Table FE3. Selected U.S. Wholesale Electricity Trade Received, 1986 (Billion Kilowatthours)

	Interregional		Intraregional
	Recipient	Source	
NERC Region*			
ECAR	10.5	12.6	162.4
ERCOT	2.9	.1	65.2
MAAC	8.6	.5	44.1
MAIN	9.7	6.0	37.0
MAPP	9.6	11.9	96.1
NPCC	.4	1.9	134.9
SERC	11.7	6.5	250.3
SPP	7.3	9.4	115.6
WSCC	1.6	13.4	280.5
Alaska	.0	.0	1.6
Hawaii	.0	.0	.6
Total	62.4	62.4	1,188.4

* For a map identifying North American Electric Reliability Council (NERC) regions, see Figure FE2.

Notes: Occasionally there were substantial differences between trade received and delivered. This may be caused by the incomplete coverage of sampled utilities or inconsistent reporting by utilities. Differences as a recipient were especially notable for the West North Central (MAPP) and Midwest (ECAR) regions, which data on deliveries reported as recipients of only 2 and 6 billion kilowatthours, respectively. Differences as a source were especially notable for the West (WSCC) and South Central (SPP) regions, which data on deliveries reported as a source of only 3 and 5 billion kilowatthours, respectively. Totals may not equal sum of components because of independent rounding. Wheeling is not included in these data.

Sources: Energy Information Administration, *Electric Trade in the United States 1986,* DOE/EIA-0531(86) (Washington, DC, June 1990).

[16]The West North Central (MAPP) region was excluded from this text listing of large recipients because data on deliveries showed it as the recipient of only 2 billion kilowatthours. Data on deliveries were also substantially different for the Midwest (ECAR) region, showing it as the recipient of only 6 billion kilowatthours.

[17]The West (WSCC) region was excluded from this text listing of large sources because data on deliveries showed it as the source of only 3 billion kilowatthours. Data on deliveries were also substantially different for the South Central (SPP) region, showing it as the source of only 5 billion kilowatthours.

There is substantial bilateral trade among several pairs of regions. They include:

- the Midwest (ECAR) and the Southeast (SERC) regions; the only pair with large flows of trade in both directions, with the Midwest (ECAR) region sending south more than 4 billion kilowatthours, and the Southeast (SERC) region sending north almost 6 billion kilowatthours;
- the Midwest (ECAR) region sending almost 7 billion kilowatthours to its northeastern neighbor, the Mid-Atlantic (MAAC) region;
- and the West North Central (MAPP) region sending nearly 8 billion kilowatthours eastward to the East North Central (MAIN) region.

Two region pairs received considerable net wholesale electricity trade:

- 8 billion kilowatthours from the West North Central (MAPP) to the East North Central (MAIN) region,
- and 7 billion kilowatthours from the Midwest (ECAR) to the Mid-Atlantic (MAAC) region.

The West North Central (MAPP) region, with abundant low-sulfur coal and hydroelectric resources, and with access to imported power from Manitoba, serves higher cost markets to the east lacking these resources. The Midwest has abundant supplies of coal and some excess generating capacity, making Midwestern utilities attractive suppliers to rapidly growing areas in the Mid-Atlantic region.

Investor-Owned Utilities Were Largest Suppliers of Wholesale Electricity

Despite differences in coverage by the various data collection forms and occasional differences in quantities reported for the same transaction by two respondents, general patterns of flow have been determined from the data. The IOUs are by far the largest source of wholesale electricity, and they remain their own best customers, with over 40 percent of their receipts being provided by other IOUs. At the same time, however, the IOUs serve as substantial suppliers of electricity to the other ownership types. Federally owned utilities, in keeping with their statutory role as wholesale suppliers first to utilities other than investor-owned, provided just over 70 percent of their wholesale electricity supplies to cooperatively and publicly owned utilities. About 40 percent of Federal deliveries were made to municipally owned utilities, their largest customers.

While Federally owned utilities were the only type that was a net supplier, investor-owned and cooperative utilities supplied more electricity than Federal utilities on a gross basis. Wholesale electricity trade for rural electric cooperatives occurred primarily (more than half the trade) with other cooperatives; cooperatives have only minor trade with publicly owned utilities. Although publicly owned utilities are clearly net recipients of wholesale electricity, they do provide substantial amounts to themselves and to IOUs. Over 40 percent of the electricity received by publicly owned utilities comes from Federal utilities, with most of the remainder provided by other publicly owned and privately owned utilities. Municipal utilities trade very little electricity with other municipals or with rural electric cooperatives.

Little Wheeling Occurred Across NERC Boundaries

Virtually all wheeling occurs among utilities within each of the NERC regions rather than across NERC regional boundaries. Wheeling transaction data are available for 159 billion kilowatthours in 1986. These transactions represent about 82 percent of all wheeling that occurred in 1986. Of the total, 153 billion kilowatthours, 96 percent, was wheeled by one utility for another in the same NERC region. This does not mean that the electricity itself did not originate or terminate in a different region, only that the wheeling utility and the utility purchasing the wheeling services were in the same region. When electricity was wheeled across regional boundaries, the annual aggregate quantities reported were small; between 1 and 2 billion kilowatthours were wheeled by utilities in the West North Central (MAPP) region for the West (WSCC) region and by the South Central (SPP) region for the Southeast (SERC) region. Moreover, all cases of wheeling reported for another region, which totaled less than 6 billion kilowatthours, occurred among adjacent NERC regions.

Average Revenue Per Kilowatthour Varied By Region and Ownership Type

Because both the quantity of electricity transacted and the amount of revenue exchanged are reported in the detailed wholesale electricity data, average revenues can be calculated.[18] Based upon the purchases data, the average revenue per kilowatthour for wholesale electricity trade nationwide was 3.5 cents per kilowatthour in 1986. For the same period, data for all

[18]Since the REA has automated data on purchases of wholesale electricity but not on wholesale sales, the average revenues for trade rely on purchases rather than sales data. However, average revenues based solely on sales data yield similar values. Transactions for which either quantity or revenue is not reported are excluded from these calculations. Average revenue statistics including such values are generally similar for wholesale purchases.

utilities show an average revenue for retail electricity sales of 6.4 cents per kilowatthour.[19] Thus, on average, wholesale electricity was purchased for just over half the average revenue for retail sales. A number of reasons may underlie the differences in wholesale and retail average revenues. Many short-term wholesale transactions are based only on immediate production costs, particularly fuel, and do not include the fixed capital, operation, and maintenance charges that are captured in retail rates. Moreover, less expensive Federally marketed wholesale power is a much higher proportion of the wholesale electricity market than retail, thereby lowering the wholesale average revenue more than the overall average revenue for retail sales. Also, wholesale average revenues do not include the costs of distribution to retail consumers.

The average revenue for wholesale electricity trade nationwide was 3.5 cents per kilowatthour, with regional variation. The Southeast region (SERC) had the highest average revenue, 4.4 cents per kilowatthour. At the same time, however, four other regions, including Texas (ERCOT), the Mid-Atlantic (MAAC), East North Central (MAIN) and Southwest (SPP), all had average revenues between 3.7 and 4.2 cents per kilowatthour. Two regions remained far below the national average, the West North Central region (MAPP) averaging 3.0 cents per kilowatthour, and the West (WSCC), with the lowest regional average revenue, 2.6 cents per kilowatthour.

The average revenue per kilowatthour for wholesale electricity trade also varied by utility ownership. Cooperative utilities charged the most for purchases, an average of 4.4 cents per kilowatthour. Federally owned utilities charged the least, 2.9 cents per kilowatthour. Cooperatives also paid the highest average revenue for reported purchases, 4.1 cents per kilowatthour. Publicly and privately owned utilities both paid 3.4 cents per kilowatthour. In general, variations in average revenues are traceable to differences in costs of producing electricity. For example, the low cost hydroelectric power built by the Federal Government decades ago, supplemented by tax and financing advantages, serves to lower the average revenue per kilowatthour for both the West (WSCC) and for Federal wholesale sales. On the other hand, the rural electric cooperatives face higher costs than other ownership groups. The electricity demand of cooperatives has a higher proportion of residential peaking demand, resulting in higher cost generation. Moreover, their costs have risen more rapidly than those of the other ownership groups in recent years as a result of high-cost capacity constructed in the 1970's and 1980's. Because cooperatives began major construction programs during these years, the high-cost units make up a disproportionately large share of their total generating capacity.

In the wholesale electricity data, average revenues for wheeling were an order of magnitude smaller and more variable than the average revenues for the wholesale electricity itself. Overall, the average revenue for wholesale electricity wheeled was 0.4 cents per kilowatthour, excluding transactions for which an in-kind settlement was reported, for which no revenue was reported exchanged, or for which no energy was reported moved. The average revenue for wheeling ranged from a low of 0.1 cent per kilowatthour in the West North Central (MAPP) region[20] to a high of 0.7 cents per kilowatthour in the Northeast (NPCC) region.[21]

Summary and Conclusion

Over its 100-year history, the electric utility industry has evolved from small, usually privately owned, locally isolated utilities serving parts of cities, to integrated utilities including Federal, cooperative, and other public utilities serving cities and rural areas. The entry of large Federal electricity wholesalers in the 1930's dramatically increased Federal participation in the U.S. wholesale electric power market. Mandated Federal priority in selling wholesale electricity to publicly and cooperatively owned utilities spurred their growth and the expansion of electricity service to small communities and rural areas. Over the same period tremendous improvements in generating and transmission technologies helped utilities exploit less expensive resources, sometimes many hundreds of miles from areas of electricity demand.

Wholesale electricity transactions are a large and growing market, currently just over half the size of the retail electricity market. The market's size indicates that U.S. electric utilities are not independent entities generating solely for their own retail customers, but serve and are served by others in order to provide the lowest cost electricity. Increasing nonutility and foreign supplies suggest that the wholesale electricity market will continue to grow, increasing its contribution to U.S. electricity supply.

The shares and roles played by the various utility ownership groups in the wholesale market differ markedly from the retail market. Although privately owned utilities have the biggest share of both the retail and the wholesale markets, publicly, cooperatively, and Federally-owned utilities play a much larger proportionate role in the wholesale market, together contributing nearly half of all wholesale trade deliveries in 1989.

[19]Energy Information Administration, *Electric Power Annual 1989* (EPA), DOE/EIA-0348(89) (Washington, DC, January 1991), p. 55.
[20]The Texas (ERCOT) region had lower average revenues, but had very little wheeling.
[21]The inclusion of some distribution costs in the wheeling charges of one utility significantly raises the average revenue for wheeling in the Northeast.

Most U.S. wholesale electricity trade occurs within the geographic boundaries of the individual NERC regions, with far smaller but occasionally sizeable net flows between some regions, where demand can be satisfied using lower cost sources of supply. Because the NERC boundaries are defined to group utilities which are interconnected for reliability purposes, it is not surprising that most wholesale trade occurs inside the regions.

On average, in 1986 wholesale electricity was traded at 3.5 cents per kilowatthour, just over half the average revenue paid for retail electricity in that year. Federally owned utilities received the lowest average revenues, reflecting their large resources of less expensive hydroelectric power and favorable financing. Privately owned utilities wheeled the most electricity, consistent with their majority ownership of the nation's large transmission lines. Average revenue for wheeling was 0.4 cents per kilowatthour, about one-tenth that of wholesale electricity trade.

Economies of scale, lower-cost resources, rapid growth in some regions' demands, and regulatory changes contribute to the growth of the wholesale electricity market. Its growth is also affected by specific laws such as PURPA, by independent power producers, and by the anticipated expansion of electricity imports from Canada and Mexico.

Section 1. Energy Summary

Energy production during January 1991 totaled 5.9 quadrillion Btu a 2.1-percent decrease compared with the level of production during January 1990. Coal production decreased 5.2 percent, natural gas production dropped 2.1 percent, and petroleum production was down 0.4 percent. All other forms of energy production combined were up 1.7 percent from the level of production during January 1990.

Energy consumption during January 1991 totaled 7.9 quadrillion Btu, 4.4 percent above the level of consumption during January 1990. Natural gas consumption increased 9.6 percent, coal consumption rose 6.8 percent, and petroleum consumption dropped 0.5 percent. Consumption of all other forms of energy combined increased 3.1 percent compared with the level 1 year earlier.

Net imports of energy during January 1991 totaled 1.1 quadrillion Btu, 28.2 percent below the level of net imports 1 year earlier. Net imports of petroleum decreased 30.2 percent, and net imports of natural gas were down 0.7 percent. Net exports of coal decreased 18.1 percent compared with the level in January 1990.

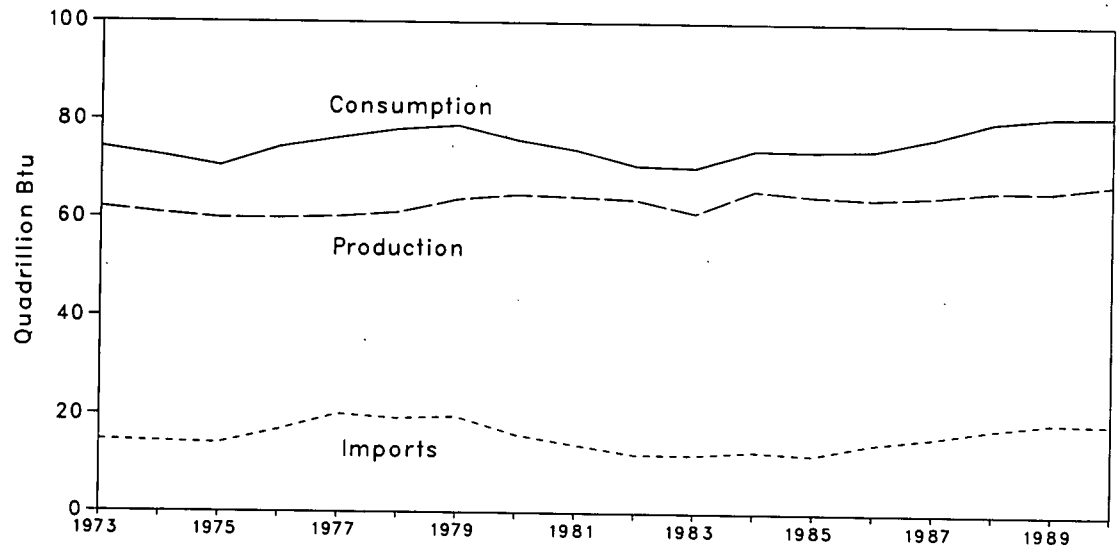
Table 1.1 Energy Summary for January 1991
(Quadrillion Btu)

	January				
	1991	1991 Daily Rate	1990	1990 Daily Rate	Percent Change[a]
Total Production[b]	**5.890**	**0.190**	**6.018**	**0.194**	**-2.1**
Petroleum[c]	1.527	.049	1.533	.049	-.4
Natural Gas (Dry)	1.621	.052	1.655	.053	-2.1
Coal	1.873	.060	1.976	.064	-5.2
Other[d]	.868	.028	.854	.028	1.7
Total Consumption[b]	**7.865**	**.254**	**7.533**	**.243**	**4.4**
Petroleum[e]	2.852	.092	2.866	.092	-.5
Natural Gas[f]	2.384	.077	2.174	.070	9.6
Coal	1.753	.057	1.641	.053	6.8
Other[g]	.877	.028	.851	.027	3.1
Net Imports	**1.055**	**.034**	**1.469**	**.047**	**-28.2**
Petroleum[h]	1.062	.034	1.521	.049	-30.2
Natural Gas	.140	.005	.141	.005	-.7
Coal[i]	-.156	-.005	-.191	-.006	-18.1
Other[j]	.009	.000	-.003	.000	-411.0

[a]Based on daily rates prior to rounding.
[b]Production and consumption totals exclude wood, waste, geothermal, wind, photovoltaic, and solar thermal energy except for small amounts used by electric utilities to generate electricity for distribution.
[c]Includes crude oil, lease condensate, and natural gas plant liquids.
[d]Other is hydroelectric and nuclear electric power, and electricity generated for distribution from wood, waste, geothermal, wind, photovoltaic, and solar thermal energy.
[e]Includes petroleum products.
[f]Includes supplemental gaseous fuels.
[g]Other is hydroelectric and nuclear electric power; electricity generated for distribution from wood, waste, geothermal, wind, photovoltaic, and solar thermal energy; and net imports of electricity and coal coke.
[h]Includes crude oil, lease condensate, petroleum products, pentanes plus, unfinished oils, gasoline blending components, and imports of crude oil for the Strategic Petroleum Reserve.
[i]Minus sign indicates exports are greater than imports.
[j]Other is net imports of electricity and coal coke.
Note: Totals may not equal sum of components due to independent rounding.
Sources: Table 1.3, 1.4, and 1.5.

Figure 1.1 Energy Overview

Yearly



Monthly

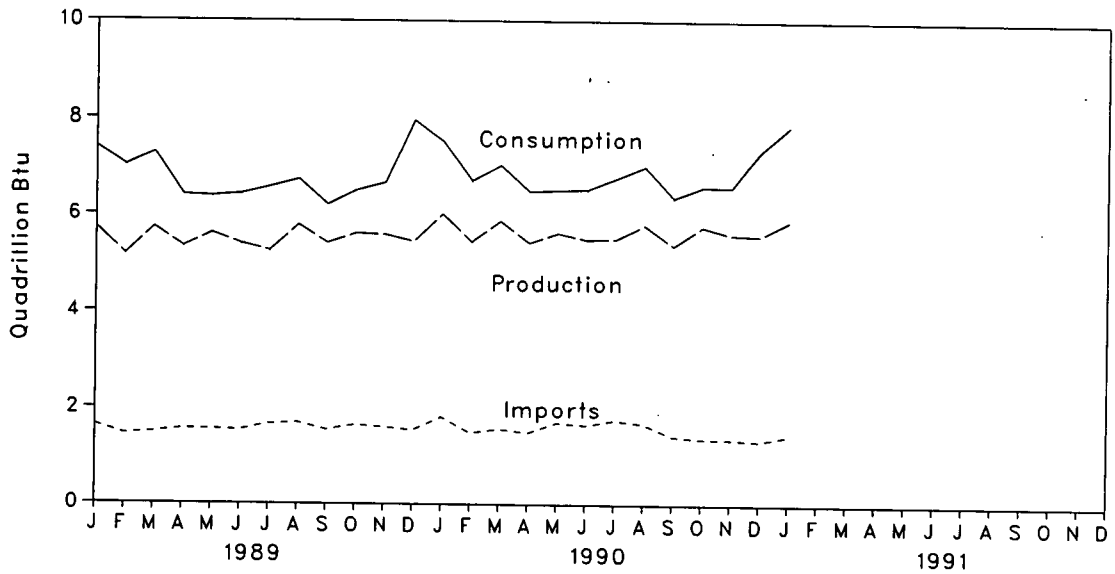


Table 1.2 Energy Overview[a]
(Quadrillion Btu)

	Production[b]	Consumption[b] [c]	Imports	Exports	Net Imports
1973 Total	62.060	74.282	14.731	2.051	12.680
1974 Total	60.835	72.543	14.413	2.223	12.190
1975 Total	59.860	70.546	14.111	2.359	11.752
1976 Total	59.892	74.362	16.837	2.188	14.648
1977 Total	60.219	76.288	20.090	2.071	18.019
1978 Total	61.103	78.089	19.254	1.931	17.323
1979 Total	63.801	78.898	19.616	2.870	16.746
1980 Total	64.761	75.955	15.971	3.723	12.247
1981 Total	64.421	73.990	13.975	4.329	9.646
1982 Total	63.898	70.848	12.092	4.633	7.460
1983 Total	61.215	70.524	12.028	3.717	8.311
1984 Total	65.847	74.101	12.763	3.804	8.959
1985 Total	64.765	73.945	12.098	4.231	7.868
1986 Total	64.225	74.237	14.430	4.055	10.376
1987 Total	64.823	76.844	15.755	3.852	11.903
1988 Total	66.006	80.196	17.561	4.415	13.146
1989 January	5.731	7.391	1.642	.319	1.323
February	5.164	6.995	1.452	.337	1.116
March	5.732	7.265	1.494	.404	1.090
April	5.331	6.386	1.558	.405	1.152
May	5.614	6.363	1.556	.420	1.136
June	5.395	6.409	1.535	.440	1.095
July	5.247	6.556	1.665	.327	1.338
August	5.789	6.710	1.697	.408	1.288
September	5.410	6.191	1.550	.389	1.161
October	5.613	6.488	1.649	.419	1.230
November	5.590	6.644	1.605	.460	1.145
December	5.449	7.946	1.543	.435	1.108
Total	**66.065**	**81.346**	**18.947**	**4.766**	**14.182**
1990 January	6.018	R 7.533	1.820	.351	1.469
February	R 5.446	6.708	1.490	.328	1.162
March	R 5.876	R 7.029	1.570	.422	1.148
April	R 5.427	R 6.490	1.497	.386	1.111
May	R 5.630	R 6.516	1.707	.411	1.296
June	R 5.496	R 6.535	1.661	.415	1.246
July	R 5.511	R 6.766	1.763	.388	1.375
August	R 5.803	R 7.011	1.694	.441	1.253
September	R 5.374	R 6.371	1.436	.440	.996
October	R 5.773	R 6.598	1.387	.420	.966
November	R 5.610	R 6.587	1.380	.463	.918
December	R 5.586	R 7.352	R 1.345	.450	R .895
Total	**R 67.548**	**R 81.497**	**R 18.750**	**4.914**	**R 13.836**
1991 January	5.890	7.865	1.450	.395	1.055

[a]For definitions, see Notes at end of section.

[b]Excludes wood, waste, geothermal, wind, photovoltaic, and solar thermal energy except for small amounts used by electric utilities to generate electricity for distribution.

[c]The sum of domestic energy production and net imports of energy does not equal domestic energy consumption. The difference is attributed to stock changes; losses and gains in conversion, transportation, and distribution; the addition of blending compounds; shipments of anthracite to U.S. Armed Forces in Europe; and adjustments to account for discrepancies between reporting systems.

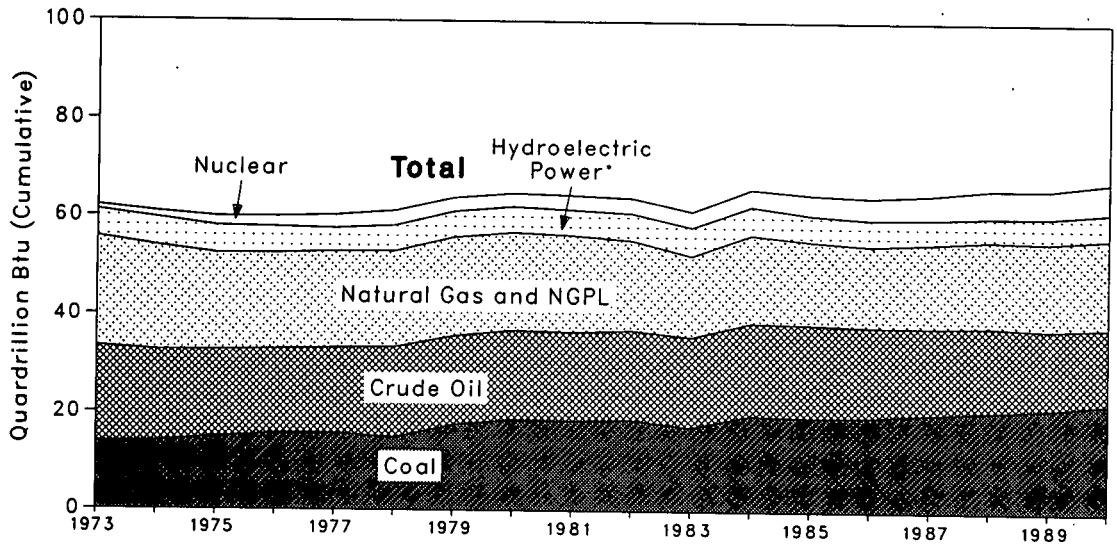
R=Revised data.

Notes: • Geographic coverage is the 50 States and the District of Columbia. • Totals may not equal sum of components due to independent rounding.

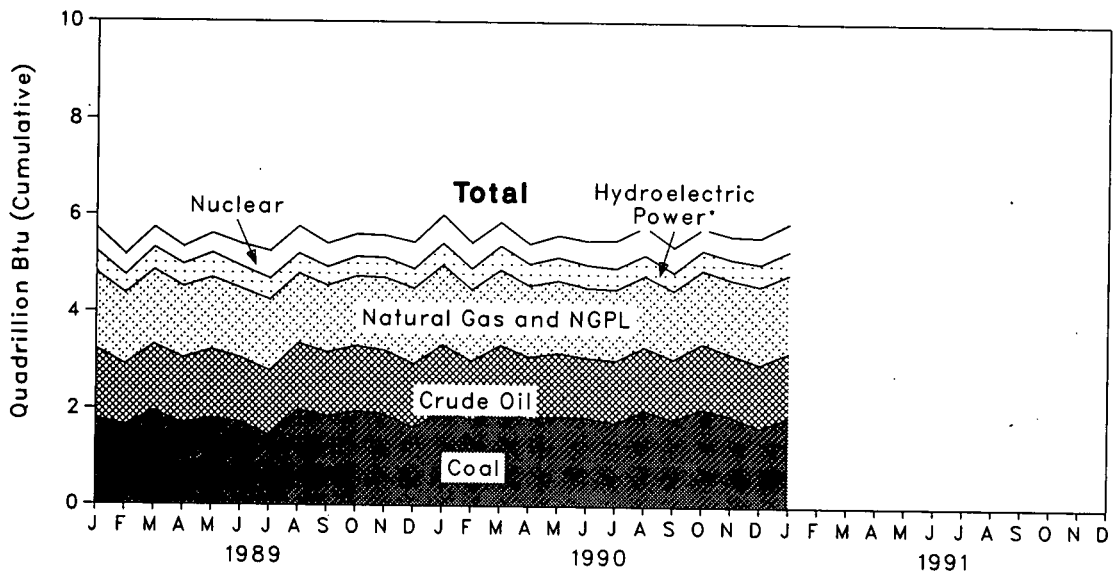
Source: Tables 1.3, 1.4, and 1.5.

Figure 1.2 Production of Energy by Source

Yearly



Monthly



*Includes other.

Table 1.3 Production of Energy by Source
(Quadrillion Btu)

	Coal	Crude Oil[a]	NGPL[b]	Natural Gas (Dry)	Hydro-electric Power[c]	Nuclear Electric Power	Other[d]	Total[e]	Year to Date
1973 Total	**13.993**	**19.493**	**2.569**	**22.187**	**2.861**	**0.910**	**0.046**	**62.060**	
1974 Total	**14.074**	**18.575**	**2.471**	**21.210**	**3.177**	**1.272**	**.056**	**60.835**	
1975 Total	**14.990**	**17.729**	**2.374**	**19.640**	**3.155**	**1.900**	**.072**	**59.860**	
1976 Total	**15.654**	**17.262**	**2.327**	**19.480**	**2.976**	**2.111**	**.081**	**59.892**	
1977 Total	**15.755**	**17.454**	**2.327**	**19.565**	**2.333**	**2.702**	**.082**	**60.219**	
1978 Total	**14.910**	**18.434**	**2.245**	**19.485**	**2.937**	**3.024**	**.068**	**61.103**	
1979 Total	**17.539**	**18.104**	**2.286**	**20.076**	**2.931**	**2.776**	**.089**	**63.801**	
1980 Total	**18.597**	**18.249**	**2.254**	**19.908**	**2.900**	**2.739**	**.114**	**64.761**	
1981 Total	**18.376**	**18.146**	**2.307**	**19.699**	**2.758**	**3.008**	**.127**	**64.421**	
1982 Total	**18.639**	**18.309**	**2.191**	**18.255**	**3.266**	**3.131**	**.108**	**63.898**	
1983 Total	**17.246**	**18.392**	**2.184**	**16.530**	**3.527**	**3.203**	**.133**	**61.215**	
1984 Total	**19.719**	**18.848**	**2.274**	**17.931**	**3.348**	**3.553**	**.174**	**65.847**	
1985 Total	**19.325**	**18.992**	**2.241**	**16.906**	**2.939**	**4.149**	**.213**	**64.765**	
1986 Total	**19.510**	**18.376**	**2.149**	**16.471**	**3.017**	**4.471**	**.231**	**64.225**	
1987 Total	**20.142**	**17.675**	**2.215**	**17.049**	**2.593**	**4.906**	**.244**	**64.823**	
1988 Total	**20.737**	**17.279**	**2.260**	**17.520**	**2.314**	**5.661**	**.235**	**66.006**	
1989 January	1.792	1.427	.197	1.579	.219	.497	.019	5.731	5.731
February	1.641	1.265	.172	1.459	.195	.415	.017	5.164	10.895
March	1.946	1.362	.196	1.547	.237	.425	.020	5.732	16.627
April	1.686	1.352	.192	1.472	.252	.359	.017	5.331	21.958
May	1.802	1.405	.192	1.492	.293	.411	.018	5.614	27.572
June	1.715	1.327	.173	1.431	.271	.461	.018	5.395	32.967
July	1.449	1.338	.183	1.459	.237	.561	.019	5.247	38.214
August	1.988	1.356	.178	1.448	.211	.589	.018	5.789	44.003
September	1.853	1.313	.170	1.378	.198	.481	.017	5.410	49.413
October	1.956	1.340	.175	1.446	.210	.467	.018	5.613	55.025
November	1.899	1.311	.170	1.506	.221	.465	.017	5.590	60.615
December	1.618	1.319	.159	1.561	.228	.545	.018	5.449	66.064
Total	**21.345**	**16.117**	**2.158**	**17.780**	**2.771**	**5.677**	**.217**	**66.065**	
1990 January	1.976	1.352	.181	1.655	.245	.591	.018	6.018	6.018
February	1.790	1.212	.167	R 1.472	.252	.536	.016	R 5.446	R 11.464
March	R 1.999	1.330	.180	R 1.562	.293	.494	.018	R 5.876	R 17.339
April	1.815	1.276	.170	R 1.473	.265	.413	.014	R 5.427	R 22.766
May	1.888	1.305	.178	R 1.499	.282	.461	.017	R 5.630	R 28.396
June	1.846	1.231	.167	R 1.450	.289	.497	.017	R 5.496	R 33.892
July	R 1.742	1.284	.175	R 1.469	.247	.575	.017	R 5.511	R 39.403
August	R 2.005	1.297	.185	R 1.481	.220	.598	.017	R 5.803	R 45.205
September	R 1.814	1.247	.182	R 1.417	.178	R .520	.016	R 5.374	R 50.579
October	R 2.039	1.340	.196	R 1.521	.194	.465	.017	R 5.773	R 56.352
November	R 1.894	1.272	.194	R 1.542	.209	.483	.016	R 5.610	R 61.962
December	R 1.652	1.309	.190	R 1.615	.250	.553	.017	R 5.586	R 67.548
Total	**R 22.461**	**15.456**	**2.163**	**R 18.155**	**2.924**	**R 6.186**	**.202**	**R 67.548**	
1991 January	1.873	1.334	.194	1.621	.268	.583	.017	5.890	5.890

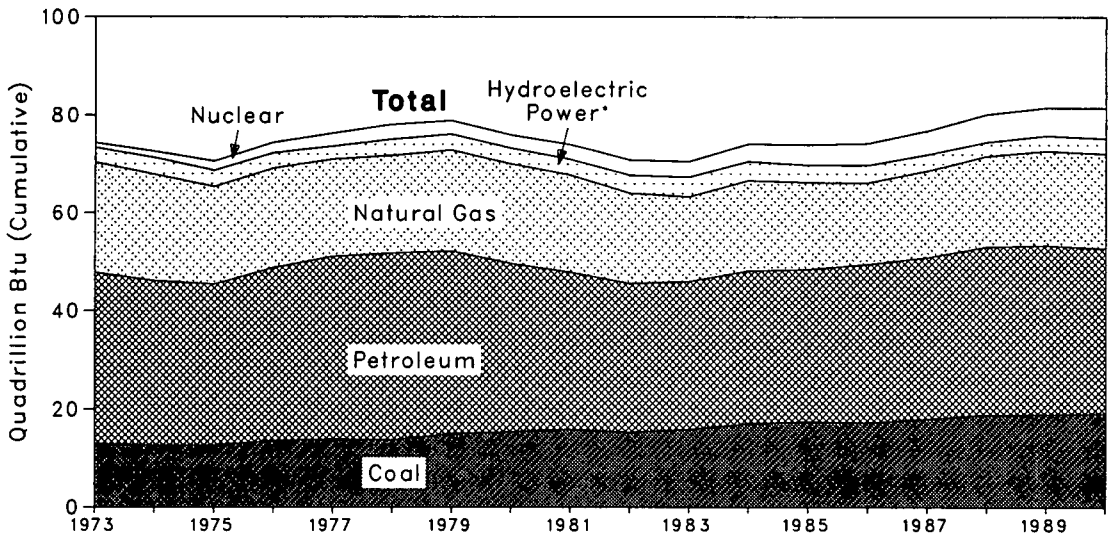
[a]Includes lease condensate.
[b]Natural gas plant liquids.
[c]Includes electric utility and industrial production of hydroelectric power.
[d]Other is electricity generated for distribution from wood, waste, geothermal, wind, photovoltaic, and solar thermal energy.
[e]Excludes wood, waste, geothermal, wind, photovoltaic, and solar thermal energy except for small amounts used by electric utilities to generate electricity for distribution.
R=Revised data.

Notes: • Geographic coverage is the 50 States and the District of Columbia. • Totals may not equal sum of components due to independent rounding.

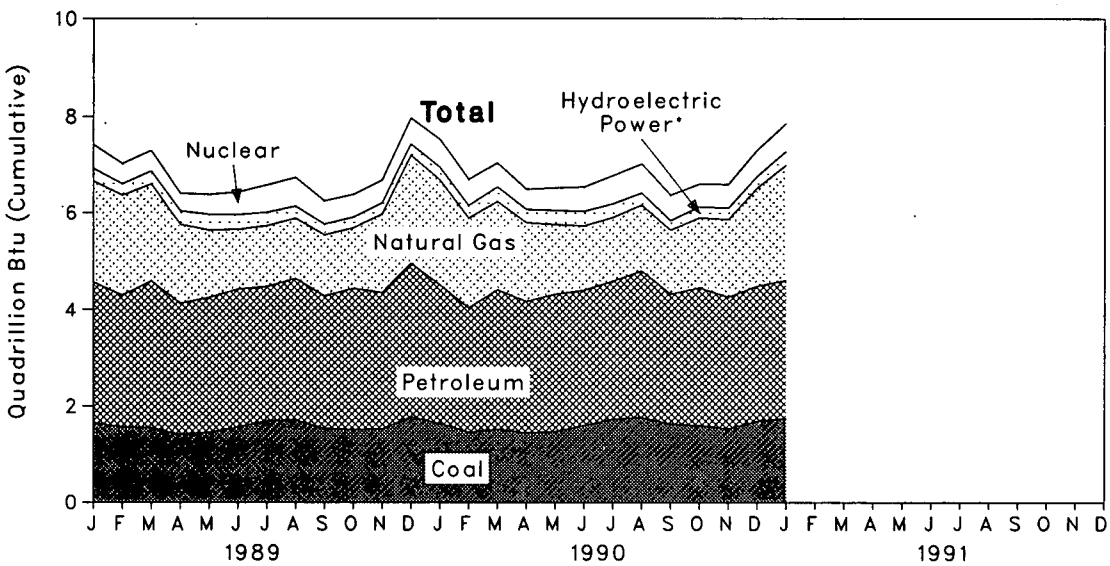
Sources: • **Coal:** Tables 6.1 and A6 through A8. • **Crude Oil and NGPL:** Tables 3.1a and A3. • **Natural Gas (Dry):** Tables 4.1 and A5. • **Hydroelectric Power:** Table 7.1; Section 2, "Consumption Notes and Sources," Note 7; and Table A9. • **Nuclear Electric Power:** Tables 7.1 and A9. • **Other:** Section 2, "Consumption Notes and Sources," Note 8, and Table A9.

Figure 1.3 Consumption of Energy by Source

Yearly



Monthly



*Includes other.

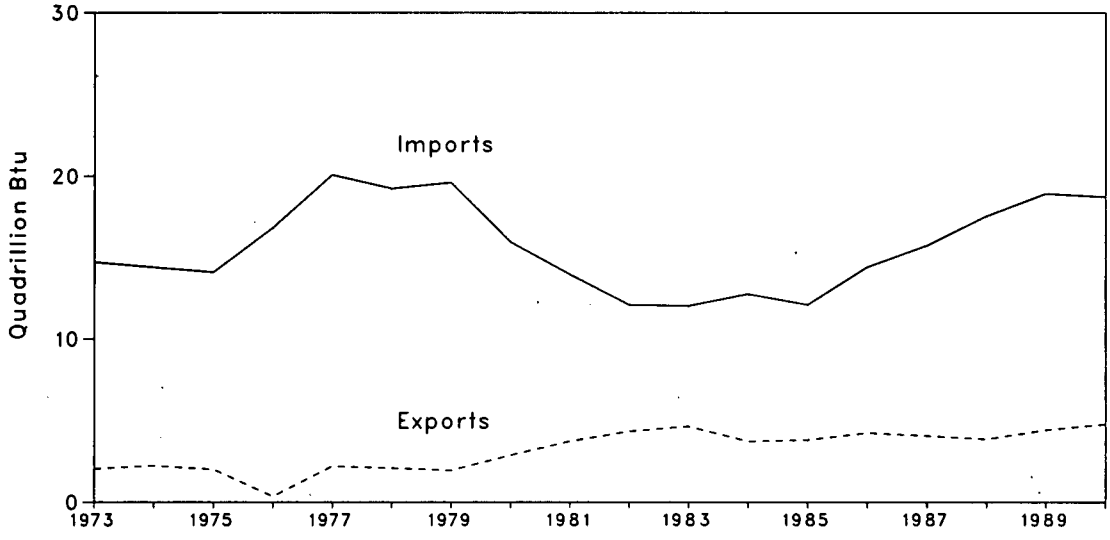
Table 1.4 Consumption of Energy by Source
(Quadrillion Btu)

	Coal	Natural Gas[a]	Petroleum	Hydroelectric Power[b]	Nuclear Electric Power	Other[c]	Total[d]	Year to Date
1973 Total	**12.971**	**22.512**	**34.840**	**3.010**	**0.910**	**0.039**	**74.282**	
1974 Total	**12.663**	**21.732**	**33.455**	**3.309**	**1.272**	**.112**	**72.543**	
1975 Total	**12.663**	**19.948**	**32.731**	**3.219**	**1.900**	**.086**	**70.546**	
1976 Total	**13.584**	**20.345**	**35.175**	**3.066**	**2.111**	**.081**	**74.362**	
1977 Total	**13.922**	**19.931**	**37.122**	**2.515**	**2.702**	**.097**	**76.288**	
1978 Total	**13.765**	**20.000**	**37.965**	**3.141**	**3.024**	**.193**	**78.089**	
1979 Total	**15.039**	**20.666**	**37.123**	**3.141**	**2.776**	**.152**	**78.898**	
1980 Total	**15.423**	**20.394**	**34.202**	**3.118**	**2.739**	**.079**	**75.955**	
1981 Total	**15.907**	**19.928**	**31.931**	**3.105**	**3.008**	**.111**	**73.990**	
1982 Total	**15.322**	**18.505**	**30.231**	**3.572**	**3.131**	**.086**	**70.848**	
1983 Total	**15.894**	**17.357**	**30.054**	**3.899**	**3.203**	**.118**	**70.524**	
1984 Total	**17.070**	**18.507**	**31.051**	**3.757**	**3.553**	**.163**	**74.101**	
1985 Total	**17.478**	**17.834**	**30.922**	**3.363**	**4.149**	**.199**	**73.945**	
1986 Total	**17.262**	**16.708**	**32.196**	**3.385**	**4.471**	**.215**	**74.237**	
1987 Total	**18.008**	**17.744**	**32.865**	**3.068**	**4.906**	**.253**	**76.844**	
1988 Total	**18.846**	**18.553**	**34.222**	**2.639**	**5.661**	**.274**	**80.196**	
1989 January	1.652	2.087	2.896	.234	.497	.026	7.391	7.391
February	1.561	2.071	2.714	.214	.415	.019	6.995	14.386
March	1.549	2.007	3.017	.243	.425	.023	7.265	21.651
April	1.412	1.631	2.698	.262	.359	.024	6.386	28.037
May	1.456	1.392	2.775	.306	.411	.024	6.363	34.400
June	1.561	1.238	2.840	.287	.461	.022	6.409	40.809
July	1.694	1.260	2.759	.259	.561	.022	6.556	47.365
August	1.705	1.255	2.912	.229	.589	.021	6.710	54.075
September	1.540	1.219	2.726	.207	.481	.019	6.191	60.266
October	1.514	1.381	2.902	.210	.467	.014	6.488	66.755
November	1.524	1.617	2.810	.212	.465	.016	6.644	73.399
December	1.776	2.224	3.163	.223	.545	.016	7.946	81.345
Total	**18.944**	**19.382**	**34.211**	**2.884**	**5.677**	**.248**	**81.346**	
1990 January	R 1.641	R 2.174	2.866	.242	.591	.018	R 7.533	R 7.533
February	1.457	1.861	2.597	.241	.536	.016	6.708	R 14.241
March	R 1.519	R 1.833	2.886	.279	.494	.019	R 7.029	R 21.270
April	R 1.445	R 1.635	2.724	.259	.413	.014	R 6.490	R 27.760
May	R 1.473	R 1.444	2.845	.276	.461	.017	R 6.516	R 34.276
June	R 1.599	R 1.340	2.797	.284	.497	.018	R 6.535	R 40.810
July	R 1.734	1.330	2.847	.259	.575	.021	R 6.766	R 47.576
August	R 1.770	R 1.367	3.030	.229	.598	.017	R 7.011	R 54.587
September	R 1.632	R 1.328	2.687	.186	R .520	.017	R 6.371	R 60.958
October	R 1.600	1.459	2.846	.209	.465	.018	R 6.598	R 67.556
November	R 1.531	1.614	2.727	.218	.483	.015	R 6.587	R 74.143
December	R 1.692	2.037	2.790	.262	.553	.018	R 7.352	R 81.496
Total	**R 19.094**	**R 19.424**	**33.644**	**2.942**	**R 6.186**	**.207**	**R 81.497**	
1991 January	1.753	2.384	2.852	.276	.583	.018	7.865	7.865

[a]Includes supplemental gaseous fuels.
[b]Includes electric utility and industrial production and net imports of electricity.
[c]Other is net imports of coal coke and electricity generated for distribution from wood, waste, geothermal, wind, photovoltaic, and solar thermal energy.
[d]Excludes wood, waste, geothermal, wind, photovoltaic, and solar thermal energy except for small amounts used by electric utilities to generate electricity for distribution.
R=Revised data.
Notes: • Geographic coverage is the 50 States and the District of Columbia. • Totals may not equal sum of components due to independent rounding.
Sources: • **Coal:** Tables 6.1 and A6 through A8. • **Natural Gas:** Tables 4.2 and A5. • **Petroleum:** Tables 3.1a and A4. • **Hydroelectric Power:** Table 7.1; Section 2, "Consumption Notes and Sources," Note 7; and Table A9. • **Nuclear Electric Power:** Tables 7.1 and A9. • **Other:** Section 2, "Consumption Notes and Sources," Note 8, and Table A9.

Figure 1.4 Energy Imports and Exports

Yearly



Monthly

Table 1.5 Net Imports[a] of Energy by Source
(Quadrillion Btu)

	Coal	Crude Oil[b]	Petroleum Products[c]	Natural Gas	Electricity[d]	Coal Coke	Total	Year to Date
1973 Total	**-1.422**	**6.883**	**6.097**	**0.981**	**0.148**	**-0.007**	**12.680**	
1974 Total	**-1.568**	**7.389**	**5.273**	**.907**	**.133**	**.056**	**12.190**	
1975 Total	**-1.738**	**8.708**	**3.800**	**.904**	**.064**	**.014**	**11.752**	
1976 Total	**-1.567**	**11.221**	**3.982**	**.922**	**.089**	**.000**	**14.648**	
1977 Total	**-1.401**	**13.921**	**4.321**	**.981**	**.182**	**.015**	**18.019**	
1978 Total	**-1.004**	**13.125**	**3.932**	**.941**	**.204**	**.125**	**17.323**	
1979 Total	**-1.702**	**13.328**	**3.603**	**1.243**	**.211**	**.063**	**16.746**	
1980 Total	**-2.391**	**10.586**	**2.912**	**.957**	**.217**	**-.035**	**12.247**	
1981 Total	**-2.918**	**8.854**	**2.522**	**.857**	**.347**	**-.016**	**9.646**	
1982 Total	**-2.768**	**6.917**	**2.128**	**.898**	**.306**	**-.022**	**7.460**	
1983 Total	**-2.013**	**6.731**	**2.351**	**.887**	**.372**	**-.016**	**8.311**	
1984 Total	**-2.119**	**6.918**	**2.970**	**.792**	**.409**	**-.011**	**8.959**	
1985 Total	**-2.389**	**6.381**	**2.570**	**.896**	**.423**	**-.013**	**7.868**	
1986 Total	**-2.193**	**8.676**	**2.855**	**.686**	**.368**	**-.017**	**10.376**	
1987 Total	**-2.049**	**9.748**	**2.784**	**.937**	**.475**	**.009**	**11.903**	
1988 Total	**-2.446**	**10.698**	**3.308**	**1.221**	**.325**	**.040**	**13.146**	
1989 January	-.163	1.012	.340	.112	.014	.007	1.323	1.323
February	-.173	.843	.321	.103	.019	.002	1.116	2.438
March	-.211	.894	.295	.102	.006	.003	1.090	3.529
April	-.234	.994	.276	.099	.010	.007	1.152	4.681
May	-.246	1.025	.238	.100	.012	.006	1.136	5.817
June	-.247	1.016	.210	.095	.016	.004	1.095	6.912
July	-.153	1.125	.248	.092	.022	.004	1.338	8.250
August	-.206	1.173	.202	.099	.018	.003	1.288	9.538
September	-.245	1.062	.224	.108	.009	.002	1.161	10.699
October	-.239	1.122	.237	.113	.000	-.004	1.230	11.929
November	-.249	1.073	.217	.115	-.009	-.001	1.145	13.074
December	-.199	.956	.221	.137	-.005	-.002	1.108	14.182
Total	**-2.566**	**12.296**	**3.029**	**1.278**	**.113**	**.030**	**14.182**	
1990 January	-.191	1.113	.408	.141	E -.003	.000	1.469	1.469
February	-.157	.953	.267	.110	E -.012	.000	1.162	2.631
March	-.220	1.098	.178	.105	E -.014	.001	1.148	3.779
April	-.220	.998	.226	.114	E -.007	-.001	1.111	4.890
May	-.254	1.159	.296	.100	E -.006	.000	1.296	6.186
June	-.235	1.122	.259	.105	E -.005	.001	1.246	7.432
July	-.236	1.232	.253	.111	E .011	.003	1.375	8.807
August	-.261	1.167	.228	.110	E .009	-.001	1.253	10.061
September	-.263	.991	.147	.112	E .009	.001	.996	11.057
October	-.222	.921	.121	.131	E .015	.001	.966	12.023
November	-.246	.874	.155	.127	E .009	-.001	.918	12.941
December	-.198	.801	.132	R .147	E .012	.001	R .895	R 13.836
Total	**-2.704**	**12.429**	**2.671**	R **1.417**	E **.018**	**.005**	R **13.836**	
1991 January	-.156	.962	.099	.140	E .008	.001	1.055	1.055

[a]Net imports equals imports minus exports. Minus sign indicates exports are greater than imports.
[b]Includes crude oil, lease condensate, and imports of crude oil for the Strategic Petroleum Reserve.
[c]Includes petroleum products, unfinished oils, pentanes plus, and gasoline blending components.
[d]Assumed to be hydroelectricity and estimated at the average input heat rate for fossil-fuel steam-electric power plant generation, which has ranged from 10.2 thousand Btu to 10.5 thousand Btu per kilowatthour since 1973. Actual rates applied in converting kilowatthours to Btu are listed by year in Table A9.

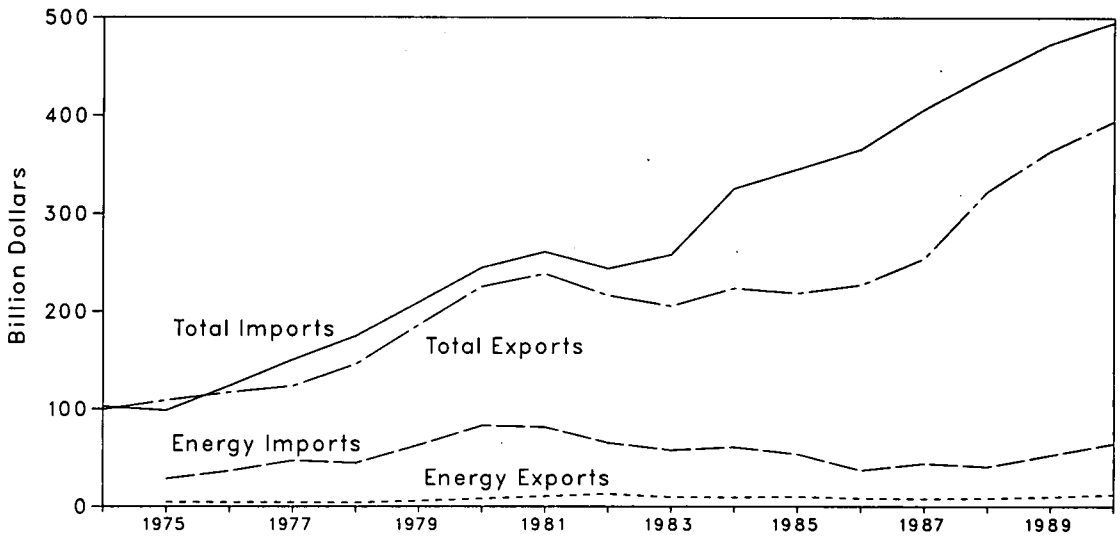
R=Revised data. E=Estimate.

Notes: • Geographic coverage is the 50 States and the District of Columbia. • Totals may not equal sum of components due to independent rounding.

Sources: • **Coal:** Tables 6.1 and A6 through A8. • **Crude Oil and Petroleum Products:** Tables 3.1b and A3. • **Natural Gas:** Tables 4.2 and A5. • **Electricity:** Section 2, "Consumption Notes and Sources," Note 7, and Table A9. • **Coal Coke:** Section 2, "Consumption Notes and Sources," Note 9, and Table A8.

Figure 1.5 Merchandise Trade Value

Yearly



Monthly

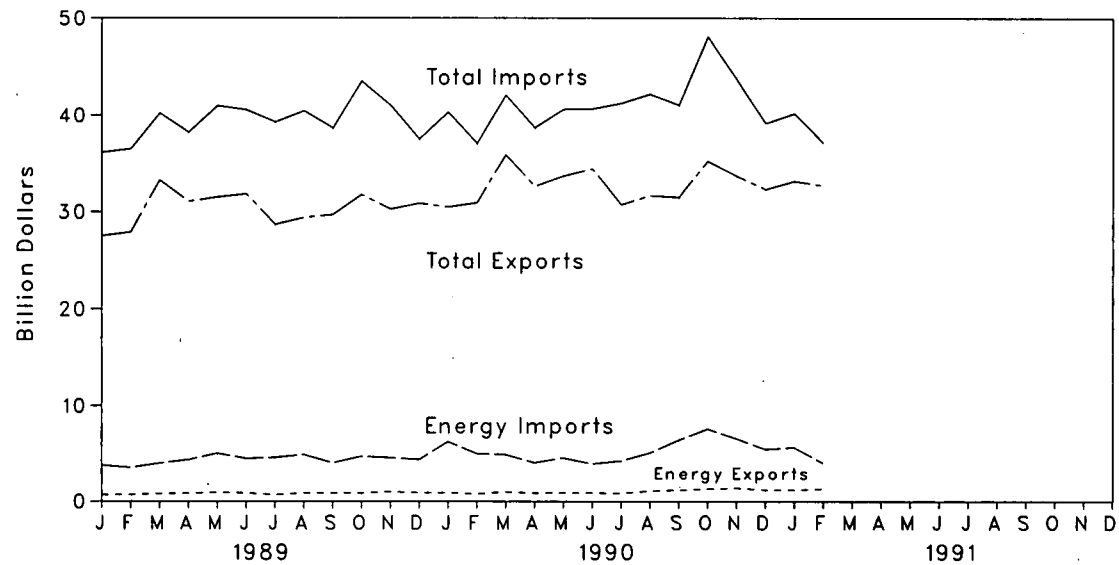


Table 1.6 Merchandise Trade Value
(Million Dollars)

	Exports			Imports			Trade Balance		
	Energy	All Other	Total	Energy	All Other	Total	Energy	All Other	Total
1974 Total	**NA**	**NA**	**99,437**	**NA**	**NA**	**102,559**	**NA**	**NA**	**-3,122**
1975 Total	**4,470**	**104,386**	**108,856**	**28,325**	**70,178**	**98,503**	**-23,855**	**34,208**	**10,353**
1976 Total	**4,226**	**112,568**	**116,794**	**36,384**	**87,093**	**123,477**	**-32,158**	**25,475**	**-6,683**
1977 Total	**4,184**	**118,998**	**123,182**	**47,153**	**103,237**	**150,390**	**-42,969**	**15,761**	**-27,208**
1978 Total	**3,882**	**141,965**	**145,847**	**44,763**	**129,994**	**174,757**	**-40,881**	**11,971**	**-28,910**
1979 Total	**5,675**	**180,688**	**186,363**	**63,077**	**146,381**	**209,458**	**-57,402**	**34,307**	**-23,095**
1980 Total	**7,982**	**217,584**	**225,566**	**82,924**	**161,947**	**244,871**	**-74,942**	**55,637**	**-19,305**
1981 Total	**10,279**	**228,436**	**238,715**	**81,360**	**179,622**	**260,982**	**-71,081**	**48,814**	**-22,267**
1982 Total	**12,729**	**203,713**	**216,442**	**65,409**	**178,543**	**243,952**	**-52,680**	**25,170**	**-27,510**
1983 Total	**9,500**	**196,139**	**205,639**	**57,952**	**200,096**	**258,048**	**-48,452**	**-3,957**	**-52,409**
1984 Total	**9,311**	**214,665**	**223,976**	**60,980**	**264,746**	**325,726**	**-51,669**	**-50,081**	**-101,750**
1985 Total	**9,971**	**208,844**	**218,815**	**53,917**	**291,359**	**345,276**	**-43,946**	**-82,515**	**-126,461**
1986 Total	**8,115**	**219,044**	**227,159**	**37,310**	**328,128**	**365,438**	**-29,195**	**-109,084**	**-138,279**
1987 Total	**7,713**	**246,409**	**254,122**	**44,220**	**362,021**	**406,241**	**-36,507**	**-115,612**	**-152,119**
1988 Total	**8,235**	**314,191**	**322,426**	**41,042**	**399,910**	**440,952**	**-32,807**	**-85,720**	**-118,526**
1989 January	678	26,863	27,541	3,816	32,363	36,179	-3,138	-5,501	-8,639
February	673	27,254	27,927	3,567	32,982	36,549	-2,894	-5,728	-8,622
March	783	32,460	33,243	4,024	36,173	40,197	-3,241	-3,712	-6,954
April	814	30,238	31,052	4,392	33,851	38,243	-3,578	-3,613	-7,191
May	905	30,591	31,496	5,057	35,902	40,959	-4,152	-5,311	-9,463
June	854	30,966	31,820	4,523	36,021	40,544	-3,670	-5,054	-8,724
July	676	28,032	28,708	4,629	34,661	39,290	-3,953	-6,629	-10,582
August	865	28,541	29,406	4,925	35,515	40,440	-4,060	-6,975	-11,034
September	852	28,858	29,710	4,074	34,606	38,680	-3,222	-5,749	-8,971
October	853	30,903	31,756	4,757	38,779	43,536	-3,904	-7,876	-11,780
November	990	29,289	30,279	4,616	36,417	41,033	-3,626	-7,128	-10,754
December	885	29,989	30,874	4,430	33,131	37,561	-3,545	-3,142	-6,687
Total	**9,869**	**353,942**	**363,812**	***52,779**	**420,432**	**473,211**	***-42,910**	**-66,490**	**-109,399**
1990 January	886	29,610	30,496	6,286	34,024	40,310	-5,400	-4,415	-9,814
February	766	30,155	30,921	5,042	32,088	37,130	-4,276	-1,933	-6,209
March	964	34,991	35,955	4,943	37,139	42,082	-3,979	-2,148	-6,126
April	849	31,751	32,600	4,099	34,613	38,712	-3,251	-2,861	-6,112
May	866	32,812	33,678	4,593	36,010	40,603	-3,727	-3,198	-6,925
June	869	33,588	34,457	3,976	36,677	40,653	-3,107	-3,089	-6,196
July	831	29,898	30,729	4,287	36,951	41,238	-3,456	-7,054	-10,510
August	1,057	30,607	31,664	5,115	37,064	42,179	-4,058	-6,457	-10,515
September	1,176	30,311	31,487	6,469	34,590	41,059	-5,293	-4,279	-9,573
October	1,300	33,996	35,296	7,621	40,480	48,101	-6,322	-6,483	-12,805
November	1,394	32,295	33,689	6,616	37,069	43,685	-5,222	-4,774	-9,996
December	1,216	31,707	32,923	5,514	33,639	39,152	-4,298	-1,932	-6,230
Total	**12,175**	**381,719**	**393,893**	**64,562**	**430,342**	**494,903**	**-52,387**	**-48,623**	**-101,010**
1991 January	1,206	R 31,944	R 33,150	5,696	R 34,471	R 40,167	-4,490	R -2,527	R -7,017
February	1,305	31,362	32,666	4,072	33,065	37,137	-2,767	-1,703	-4,471
2-Month Total	**2,510**	**63,306**	**65,816**	**9,768**	**67,536**	**77,304**	**-7,258**	**-4,230**	**-11,488**

* Annual value is not equal to the sum of the months because some monthly revisions are not available for publication.
R=Revised data. NA=Not available.
Notes: • Monthly data are not adjusted for seasonal variations. • The U.S. import statistics reflect both government and nongovernment imports of merchandise from foreign countries into the U.S. customs territory (which comprises the 50 States, the District of Columbia, and Puerto Rico) and the Virgin Islands.
Additional Notes and Sources: See end of section.

Figure 1.6 Energy Consumption per Dollar of Gross National Product

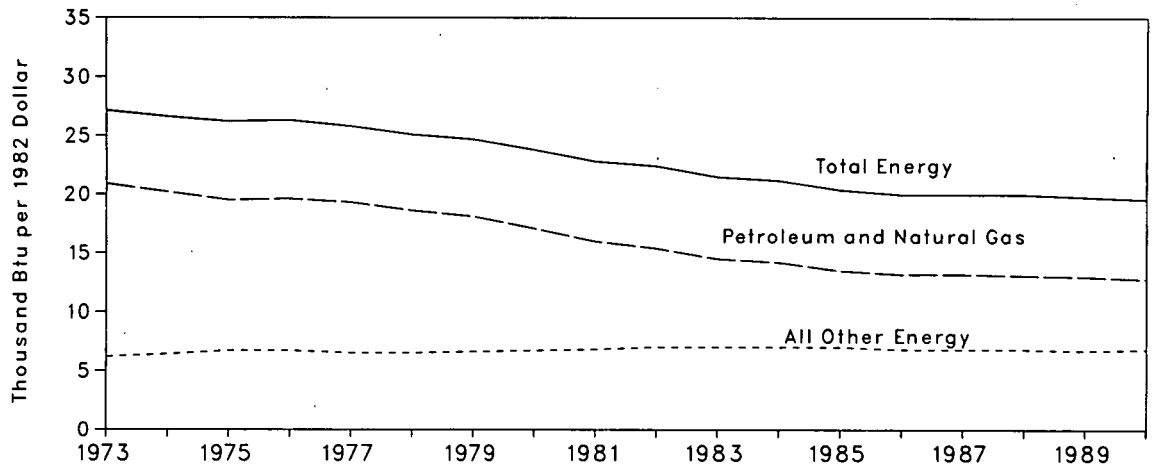


Table 1.7 Energy Consumption per Dollar of Gross National Product (Seasonally Adjusted at Annual Rates)

	Energy Consumption			Gross National Product (GNP)	Energy Consumption per Dollar of GNP		
	Petroleum and Natural Gas	Other Energy	Total[a]		Petroleum and Natural Gas	Other Energy	Total
	Quadrillion Btu			Trillion 1982 Dollars	Thousand Btu per 1982 Dollar		
1973 Year	**57.352**	**16.930**	**74.282**	**2.744**	**20.9**	**6.2**	**27.1**
1974 Year	**55.187**	**17.356**	**72.543**	**2.729**	**20.2**	**6.4**	**26.6**
1975 Year	**52.678**	**17.868**	**70.546**	**2.695**	**19.5**	**6.6**	**26.2**
1976 Year	**55.520**	**18.842**	**74.362**	**2.827**	**19.6**	**6.7**	**26.3**
1977 Year	**57.053**	**19.235**	**76.288**	**2.959**	**19.3**	**6.5**	**25.8**
1978 Year	**57.966**	**20.123**	**78.089**	**3.115**	**18.6**	**6.5**	**25.1**
1979 Year	**57.789**	**21.109**	**78.898**	**3.192**	**18.1**	**6.6**	**24.7**
1980 Year	**54.596**	**21.359**	**75.955**	**3.187**	**17.1**	**6.7**	**23.8**
1981 Year	**51.859**	**22.131**	**73.990**	**3.249**	**16.0**	**6.8**	**22.8**
1982 Year	**48.736**	**22.112**	**70.848**	**3.166**	**15.4**	**7.0**	**22.4**
1983 Year	**47.411**	**23.113**	**70.524**	**3.279**	**14.5**	**7.0**	**21.5**
1984 Year	**49.558**	**24.543**	**74.101**	**3.501**	**14.2**	**7.0**	**21.2**
1985 Year	**48.756**	**25.189**	**73.945**	**3.619**	**13.5**	**7.0**	**20.4**
1986 Year	**48.904**	**25.333**	**74.237**	**3.718**	**13.2**	**6.8**	**20.0**
1987 Year	**50.609**	**26.235**	**76.844**	**3.845**	**13.2**	**6.8**	**20.0**
1988 Year	**52.775**	**27.421**	**80.196**	**4.017**	**13.1**	**6.8**	**20.0**
1989 1st Quarter[b]	53.886	27.464	81.350	4.096	13.2	6.7	19.9
2nd Quarter[b]	53.543	27.643	81.186	4.112	13.0	6.7	19.7
3rd Quarter[b]	52.318	27.569	79.887	4.130	12.7	6.7	19.3
4th Quarter[b]	54.631	28.323	82.954	4.133	13.2	6.9	20.1
Year	**53.593**	**27.753**	**81.346**	**4.118**	**13.0**	**6.7**	**19.8**
1990 1st Quarter[b]	R 51.615	R 28.150	R 79.765	4.151	12.4	6.8	19.2
2nd Quarter[b]	R 54.273	R 28.406	R 82.679	4.155	13.1	6.8	19.9
3rd Quarter[b]	R 54.131	R 28.462	R 82.593	4.170	13.0	6.8	19.8
4th Quarter[b]	R 52.231	R 28.692	R 80.923	R 4.153	12.6	6.9	19.5
Year	**R 53.068**	**R 28.429**	**R 81.497**	**R 4.157**	**12.8**	**6.8**	**19.6**

[a]Excludes wood, waste, geothermal, wind, photovoltaic, and solar thermal energy except for small amounts used by electric utilities to generate electricity for distribution.

[b]Quarterly data are seasonally adjusted and shown at annual rates.

R=Revised data.

Notes: • Geographic coverage is the 50 States and the District of Columbia. • Yearly data may not equal average of quarters due to seasonality adjustments and independent rounding.

Sources: See end of section.

Figure 1.7 U.S. Dependence on Petroleum Net Imports

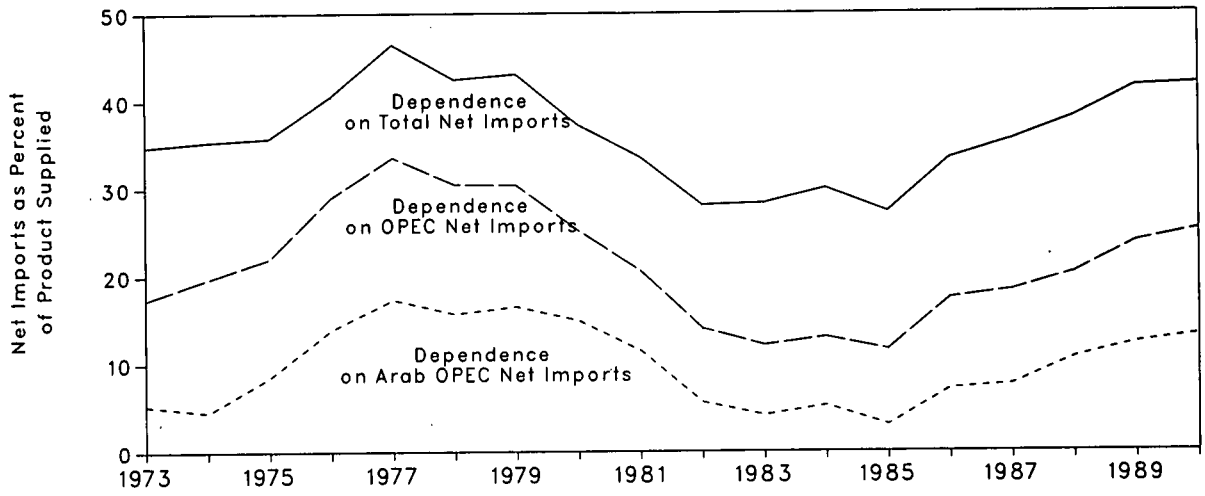


Table 1.8 U.S. Dependence on Petroleum Net Imports[a]

Annual Rate	Net Imports[b]			Petroleum Products Supplied	Net Imports as Percent of U.S. Petroleum Products Supplied		
	From Arab OPEC[c]	From OPEC[d]	From All Countries		From Arab OPEC[c]	From OPEC[d]	From All Countries
	Thousand Barrels per Day				Percent		
1973 Average	**914**	**2,991**	**6,025**	**17,308**	**5.3**	**17.3**	**34.8**
1974 Average	**752**	**3,277**	**5,892**	**16,653**	**4.5**	**19.7**	**35.4**
1975 Average	**1,382**	**3,599**	**5,846**	**16,322**	**8.5**	**22.0**	**35.8**
1976 Average	**2,423**	**5,063**	**7,090**	**17,461**	**13.9**	**29.0**	**40.6**
1977 Average	**3,184**	**6,190**	**8,565**	**18,431**	**17.3**	**33.6**	**46.5**
1978 Average	**2,962**	**5,747**	**8,002**	**18,847**	**15.7**	**30.5**	**42.5**
1979 Average	**3,054**	**5,633**	**7,985**	**18,513**	**16.5**	**30.4**	**43.1**
1980 Average	**2,549**	**4,293**	**6,365**	**17,056**	**14.9**	**25.2**	**37.3**
1981 Average	**1,844**	**3,315**	**5,401**	**16,058**	**11.5**	**20.6**	**33.6**
1982 Average	**852**	**2,136**	**4,298**	**15,296**	**5.6**	**14.0**	**28.1**
1983 Average	**630**	**1,843**	**4,312**	**15,231**	**4.1**	**12.1**	**28.3**
1984 Average	**817**	**2,037**	**4,715**	**15,726**	**5.2**	**13.0**	**30.0**
1985 Average	**470**	**1,821**	**4,286**	**15,726**	**3.0**	**11.6**	**27.3**
1986 Average	**1,160**	**2,828**	**5,439**	**16,281**	**7.1**	**17.4**	**33.4**
1987 Average	**1,272**	**3,053**	**5,914**	**16,665**	**7.6**	**18.3**	**35.5**
1988 Average	**1,837**	**3,513**	**6,587**	**17,283**	**10.6**	**20.3**	**38.1**
1989 1st Quarter	2,046	3,911	7,080	17,719	11.5	22.1	40.0
2nd Quarter	2,055	4,015	7,084	16,885	12.2	23.8	42.0
3rd Quarter	2,318	4,383	7,512	16,870	13.7	26.0	44.5
4th Quarter	2,091	4,180	7,127	17,830	11.7	23.4	40.0
Average	**2,128**	**4,124**	**7,202**	**17,325**	**12.3**	**23.8**	**41.6**
1990 1st Quarter	2,399	4,578	7,661	17,025	14.1	26.9	45.0
2nd Quarter	2,233	4,382	7,648	16,873	13.2	26.0	45.3
3rd Quarter	2,501	4,597	7,475	17,083	14.6	26.9	43.8
4th Quarter	1,791	3,508	5,596	16,684	10.7	21.0	33.5
Average	**2,230**	**4,264**	**7,090**	**16,916**	**13.2**	**25.2**	**41.9**

[a]Beginning in October 1977, Strategic Petroleum Reserves are included.

[b]Net imports is imports minus exports. Imports from members of the Organization of Petroleum Exporting Countries (OPEC) exclude indirect imports, which are petroleum products primarily from Caribbean and West European areas and refined from crude oil produced by OPEC.

[c]The Arab members of OPEC are Algeria, Iraq, Kuwait, Libya, Qatar, Saudi Arabia, and the United Arab Emirates. Net imports from the Neutral Zone between Kuwait and Saudi Arabia are included in net imports from "Arab OPEC."

[d]OPEC consists of Ecuador, Gabon, Indonesia, Iran, Nigeria, and Venezuela, as well as the Arab members.

Notes: • Geographic coverage is the 50 States and the District of Columbia. • Annual averages may not equal average of quarters due to independent rounding.

Sources: See end of section.

Figure 1.8 Cost of Fuels to End Users in Constant (1982-84) Dollars

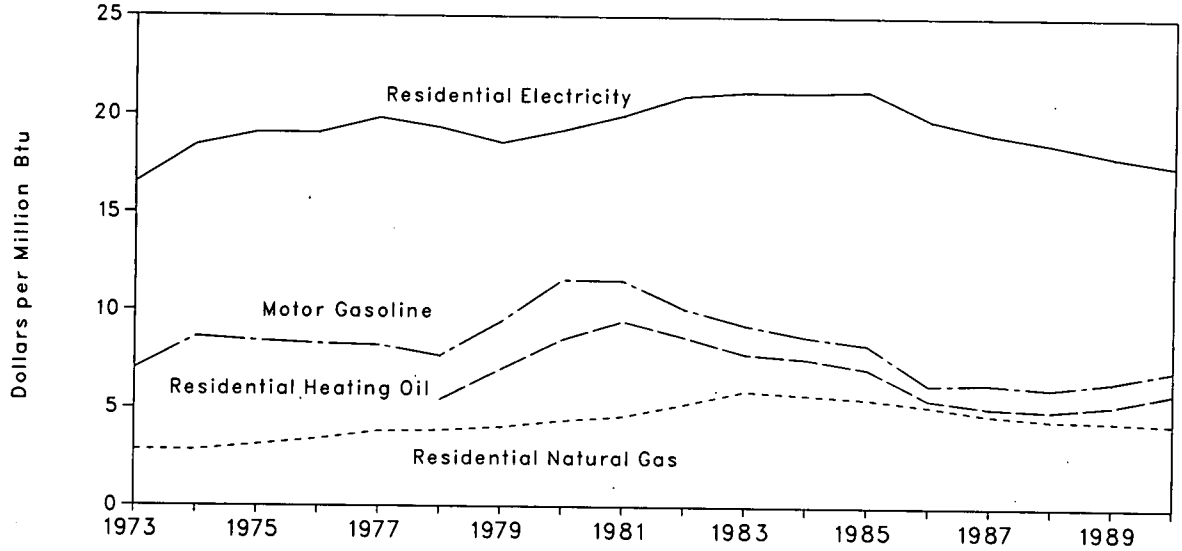


Table 1.9 Cost of Fuels to End Users in Constant (1982-84) Dollars[a]

	Leaded Regular Motor Gasoline		Residential Heating Oil		Residential Natural Gas		Residential Electricity	
	Cents/Gal	$/MMBtu	Cents/Gal	$/MMBtu	Cents/Mcf	$/MMBtu	Cents/kWh	$/MMBtu
1973 Average	**87.4**	**6.99**	**NA**	**NA**	**290.5**	**2.85**	**5.6**	**16.50**
1974 Average	**107.9**	**8.63**	**NA**	**NA**	**290.1**	**2.83**	**6.3**	**18.43**
1975 Average	**105.4**	**8.43**	**NA**	**NA**	**317.8**	**3.12**	**6.5**	**19.07**
1976 Average	**103.7**	**8.29**	**NA**	**NA**	**348.0**	**3.41**	**6.5**	**19.06**
1977 Average	**102.6**	**8.21**	**NA**	**NA**	**387.8**	**3.81**	**6.8**	**19.83**
1978 Average	**96.0**	**7.68**	**75.2**	**5.42**	**392.6**	**3.86**	**6.6**	**19.33**
1979 Average	**118.0**	**9.44**	**97.0**	**6.99**	**410.5**	**4.03**	**6.3**	**18.57**
1980 Average	**144.5**	**11.56**	**118.2**	**8.52**	**446.6**	**4.36**	**6.6**	**19.21**
1981 Average	**144.2**	**11.53**	**131.4**	**9.47**	**471.9**	**4.60**	**6.8**	**19.99**
1982 Average	**126.6**	**10.12**	**120.2**	**8.67**	**535.8**	**5.22**	**7.2**	**20.96**
1983 Average	**116.2**	**9.29**	**108.2**	**7.80**	**608.4**	**5.90**	**7.2**	**21.19**
1984 Average	**108.7**	**8.69**	**105.0**	**7.57**	**589.0**	**5.72**	**7.2**	**21.16**
1985 Average	**103.6**	**8.29**	**97.9**	**7.06**	**568.8**	**5.52**	**7.2**	**21.25**
1986 Average	**78.2**	**6.25**	**76.3**	**5.50**	**531.9**	**5.17**	**6.8**	**19.79**
1987 Average	**79.0**	**6.31**	**70.7**	**5.10**	**487.7**	**4.73**	**6.5**	**19.09**
1988 Average	**76.0**	**6.08**	**68.7**	**4.96**	**462.4**	**4.49**	**6.3**	**18.58**
1989 1st Quarter	73.1	5.85	70.5	5.08	444.5	4.32	5.9	17.34
2nd Quarter	87.2	6.97	69.7	5.02	486.7	4.72	6.3	18.32
3rd Quarter	83.3	6.66	65.5	4.72	555.7	5.40	6.5	18.96
4th Quarter	77.8	6.22	74.5	5.37	448.0	4.35	6.0	17.61
Average	**80.4**	**6.43**	**72.6**	**5.23**	**454.8**	**4.42**	**6.1**	**17.96**
1990 1st Quarter	78.5	6.28	79.5	5.73	432.8	4.20	5.8	17.02
2nd Quarter	81.1	6.49	69.7	5.02	467.9	4.55	6.1	17.98
3rd Quarter	90.8	7.26	75.1	5.41	529.6	5.15	6.3	18.34
4th Quarter	100.7	8.06	R 91.8	R 6.62	432.3	4.20	5.9	17.17
Average	**87.9**	**7.03**	**R 81.3**	**R 5.86**	**441.5**	**4.29**	**6.0**	**17.49**

[a]Fuel costs are calculated using the Urban Consumer Price Index (CPI) developed by the Bureau of Labor Statistics. See Note 6 at end of section.

R=Revised data. NA=Not available.

Notes: • Geographic coverage is the 50 States and the District of Columbia. • Annual averages may not equal average of quarters due to independent rounding. • Quarterly values are simple averages of the monthly data in Tables 9.4, 9.8c, 9.11, and 9.9 (Monthly Series), adjusted by the CPI. The annual values are from the four source tables, adjusted by the CPI.

Sources: See end of section.

Figure 1.9 Passenger Car Efficiency

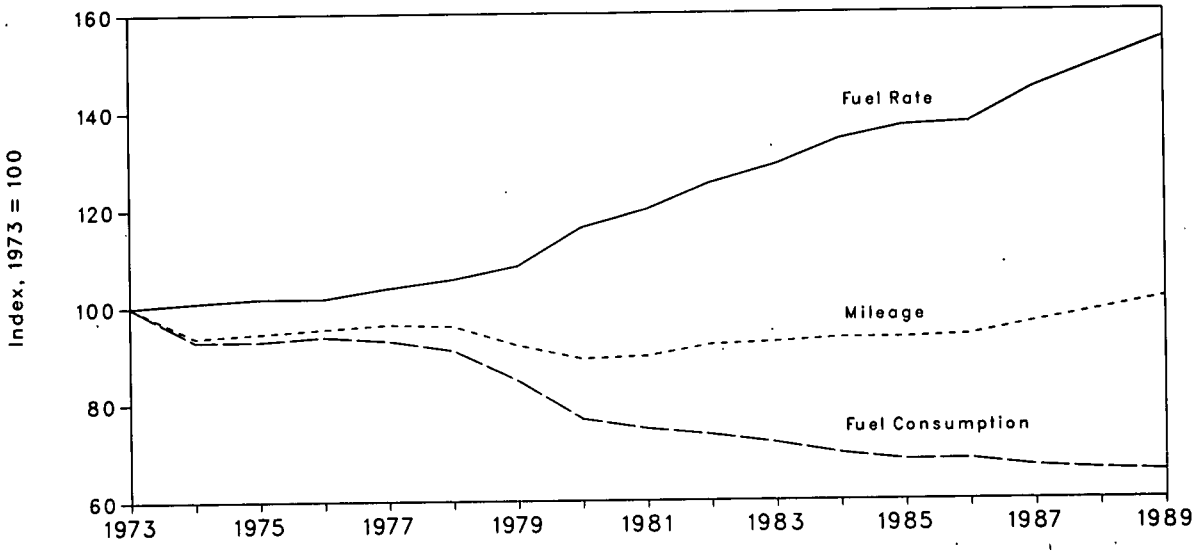


Table 1.10 Passenger Car Efficiency

	Mileage		Fuel Consumption		Fuel Rate	
	Miles per Car	Index 1973=100.0	Gallons per Car	Index 1973=100.0	Miles per Gallon	Index 1973=100.0
1973	10,256	100.0	771	100.0	13.30	100.0
1974	9,606	93.7	716	92.9	13.42	100.9
1975	9,690	94.5	716	92.9	13.52	101.7
1976	9,785	95.4	723	93.8	13.53	101.7
1977	9,879	96.3	716	92.9	13.80	103.8
1978	9,835	95.9	701	90.9	14.04	105.6
1979	9,403	91.7	653	84.7	14.41	108.3
1980	9,141	89.1	591	76.7	15.46	116.2
1981	9,186	89.6	576	74.7	15.94	119.8
1982	9,428	91.9	566	73.4	16.65	125.2
1983	9,475	92.4	553	71.7	17.14	128.9
1984	9,558	93.2	536	69.5	17.83	134.1
1985	9,560	93.2	525	68.1	18.20	136.8
1986	9,608	93.7	526	68.2	18.27	137.4
1987	9,878	96.3	514	66.7	19.20	144.4
1988	10,121	98.7	509	66.0	19.87	149.4
1989[a]	10,382	101.2	506	65.6	20.54	154.4

[a]Preliminary data.

Note: Geographic coverage is the 50 States and the District of Columbia.

Sources: Indices are prepared from statistics published by the U.S. Department of Transportation, Federal Highway Administration, Federal Highway Statistics Division. 1973 through 1985: *Highway Statistics Summary to 1985*, Table VM-201A; 1986 forward: *Highway Statistics*, Table VM-1.

Table 1.11 Population-Weighted Heating Degree-Days

Census Division	March 1 through March 31					Cumulative July 1 through March 31				
				Percent Change					Percent Change	
	Normal[a]	1990	1991	Normal to 1991	1990 to 1991	Normal[a]	1990	1991	Normal to 1991	1990 to 1991
New England CT, ME, MA, NH, RI, VT	920	857	812	-11.7	-5.3	5,643	5,606	4,968	-12.0	-11.4
Middle Atlantic NJ, NY, PA	834	725	720	-13.7	-.7	5,127	4,854	4,386	-14.5	-9.6
East North Central IL, IN, MI, OH, WI	894	731	755	-15.5	3.3	5,631	5,397	5,184	-7.9	-3.9
West North Central IA, KS, MN, MO, NE, ND, SD	914	748	738	-19.3	-1.3	5,975	5,637	5,560	-6.9	-1.4
South Atlantic DE, FL, GA, MD and DC, NC, SC, VA, WV	408	302	328	-19.6	8.6	2,773	2,459	2,230	-19.6	-9.3
East South Central AL, KY, MS, TN	466	344	375	-19.5	9.0	3,294	2,932	2,778	-15.7	-5.3
West South Central AR, LA, OK, TX	287	231	203	-29.3	-12.1	2,217	2,040	1,999	-9.8	-2.0
Mountain AZ, CO, ID, MT, NV, NM, UT, WY	724	631	678	-6.4	7.4	4,728	4,478	4,578	-3.2	2.2
Pacific CA, OR, WA	452	396	517	14.4	30.6	2,692	2,555	2,610	-3.0	2.2
U.S. Average[b]	**647**	**540**	**562**	**-13.1**	**4.1**	**4,151**	**3,911**	**3,715**	**-10.5**	**-5.0**

[a]Normal is based on calculations of data from 1951 through 1980.
[b]Excludes Alaska and Hawaii.
Source: See Note 7 at end of section.

Energy Summary Notes and Additional Sources

Notes

1. Energy Production: Production of energy includes production of coal, crude oil and lease condensate, natural gas plant liquids, natural gas (dry), electric utility and industrial production of hydroelectric power, and electricity generated from nuclear power. Production also includes electricity generated for distribution from wood, waste, geothermal, wind, photovoltaic, and solar thermal energy but excludes other energy obtained from those sources because consistent historical data are not available. The volumetric data are converted to approximate heat contents (Btu values) of these energy sources using the conversion factors provided in the Appendix.

2. Energy Consumption: Consumption of energy includes consumption of coal, natural gas (including supplemental gaseous fuels), petroleum products supplied, electric utility and industrial production of hydroelectric power, net imports of electricity (assumed to be hydroelectricity), net imports of coal coke, and electricity generated from nuclear power. Consumption also includes electricity generated for distribution from wood, waste, geothermal, wind, photovoltaic, and solar thermal energy but excludes other energy obtained from those sources because consistent historical data are not available. Approximate heat contents (Btu values) are derived using the conversion factors provided in the Appendix.

3. Energy Imports: Energy imports include imports of coal, crude oil (including crude oil imported for the Strategic Petroleum Reserve), petroleum products, natural gas, electricity (assumed to be hydroelectricity), and coal coke. Approximate heat contents (Btu values) are derived using the conversion factors provided in the Appendix. For further information on electricity, see "Note for imports and exports of electricity" under Note 7 of the Notes and Sources for the Consumption Section.

4. Energy Exports: Energy exports include coal, crude oil, petroleum products, natural gas, electricity produced from hydroelectric power, and coal coke. Approximate heat contents (Btu values) are derived using the conversion factors provided in the Appendix. For more information on electricity, see "Note for imports and exports of electricity" under Note 7 of the Notes and Sources for the Consumption Section.

5. Merchandise Trade Value: Import data presented are based on the customs value. That value does not include insurance and freight and is consequently lower than the cost, insurance, and freight (CIF) value, which is also reported by the Bureau of the Census. All export data, and import data prior to 1981, are on a free alongside ship (f.a.s.) basis.

"Trade Balance" is exports minus imports; a positive balance indicates a surplus trade value and a negative balance indicates a deficit trade value. The "Energy" columns include mineral fuels, lubricants, and related material. "All Other" and "Total" columns include foreign exports (i.e., reexports) and nonmonetary gold and Department of Defense Grant-Aid shipments. The "All Other" columns are calculated by subtracting "Energy" from "Total."

"Imports" consist of government and nongovernment shipments of merchandise into the 50 States, the District of Columbia, Puerto Rico, the U.S. Virgin Islands, and the U.S. Foreign Trade Zones. They reflect the total arrival from foreign countries of merchandise that immediately entered consumption channels, warehouses, the Foreign Trade Zones, or the Strategic Petroleum Reserve. They exclude shipments between the United States, Puerto Rico, and U.S. possessions, shipments to U.S. Armed Forces and diplomatic missions abroad for their own use, U.S. goods returned to the United States by its Armed Forces, and in-transit shipments.

6. The Consumer Price Index: The values for the Consumer Price Index, All Urban Consumers, All Items, 1982-84=100, are as follows:

1973	44.4	1988:	1st Quarter	116.1
1974	49.3		2nd Quarter	117.5
1975	53.8		3rd Quarter	119.1
1976	56.9		4th Quarter	120.3
1977	60.6		Year	118.3
1978	65.2	1989:	1st Quarter	121.7
1979	72.6		2nd Quarter	123.7
1980	82.4		3rd Quarter	124.7
1981	90.9		4th Quarter	125.9
1982	96.5		Year	124.0
1983	99.6	1990:	1st Quarter	128.0
1984	103.9		2nd Quarter	129.3
1985	107.6		3rd Quarter	131.6
1986	109.6		4th Quarter	133.7
1987	113.6		Year	130.7

7. Degree-Days: Degree-days are relative measurements of outdoor air temperature. Cooling degree-days are defined as deviations of the mean daily temperature at a sampling station above a base temperature equal to 65 °F by convention. Heating degree-days are deviations of the mean daily temperature below 65 °F. For example, if a weather station recorded a mean daily temperature of 78 °F, cooling degree-days for that station would be 13 (and heating degree-days, 0). A weather station recording a mean daily temperature of 40 °F would report 25 heating degree-days (and 0 cooling degree-days).

There are several degree-day data bases maintained by the National Oceanic and Atmospheric Administration. The information published in the *Monthly Energy Review (MER)* is developed by the National Weather Service Climate Analysis Center, Camp Springs, MD. The data are available weekly with monthly summaries and are based on mean daily temperatures recorded at about 200 major weather stations around the country. The temperature information recorded at those weather stations is used to calculate statewide degree-day averages based on population. The State figures are then aggregated into Census Divisions and into the national average. The population weights currently used represent resident State population data estimated for 1980 by the U.S. Department of Commerce, Bureau of the Census. The data shown in the *MER* are available sooner than the Historical Climatology Series 5-1 and 5-2 developed by the National Climatic Center, Asheville, NC, which compiles data from some 8,000 weather stations.

Additional Sources

Merchandise Trade Value: 1974 through 1980: U.S. Department of Commerce (DOC), Bureau of the Census, "Highlights of U.S. Export and Import Trade," FT990 (January 1982), Appendix for total imports and exports. Energy imports and exports from DOC, Bureau of the Census, "Summary of U.S. Export and Import Merchandise Trade," December issues, plus Bureau of the Census reports EA691 "Exports from the Virgin Islands to Foreign Countries," and IA245V "U.S. Imports for Consumption and General Imports into the Virgin Islands." 1981 forward: DOC, Bureau of the Census, "Summary of U.S. Export and Import Merchandise Trade," most recent monthly issue.

Gross National Product: 1973 through 1989: *Economic Report of the President,* February 1991, Table B-7; 1990 forward: DOC, Bureau of Economic Analysis, *United States Department of Commerce News,* February 27, 1991, Table 2.

U.S. Dependence on Petroleum Net Imports: Imports and Products Supplied--Section 3 of this publication. Exports--1973 through 1976: U.S. Department of the Interior, Bureau of Mines, *Mineral Industry Surveys.* 1977 through 1980: Energy Information Administration (EIA), *Energy Data Reports* , "Petroleum Statement, Annual." 1981-1989: EIA, *Petroleum Supply Annual.* 1990 forward: EIA, *Petroleum Supply Monthly.*

Cost of Fuels to End Users in Constant (1982-84) Dollars:

- Leaded Regular Motor Gasoline--U.S. Department of Labor (DOL), Bureau of Labor Statistics (BLS), *Consumer Prices: Energy,* monthly.
- Residential Heating Oil--1983 forward: EIA, Form EIA-782-A, "Refiners/Gas Plant Operators' Monthly Petroleum Product Sales Report" and Form EIA-782B, "Resellers/Retailers' Monthly Petroleum Product Sales Report." Prices prior to 1983 are EIA estimates using data from Form FEA-P112-M1/EIA-9, "No. 2 Heating Oil Supply/Price Monitoring Report" and Form EIA-9A, "No. 2 Distillate Price Monitoring Report." See Note 6 in the Notes and Sources *Monthly Energy Review* Section 9, Price, for additional information.
- Residential Natural Gas--Annual data from EIA, Form EIA-176, "Annual Report of Natural and Supplemental Gas Supply and Disposition." Monthly data from EIA, Form EIA-857, "Monthly Report of Natural Gas Purchases and Deliveries to Consumers."
- Residential Electricity--1973 through February 1980: Federal Energy Regulatory Commission (FERC), Form FPC-5, "Monthly Statement of Electric Operating Revenue and Income"; March 1980 forward: FERC, Form FERC-5, "Electric Utility Company Monthly Statement."
- Deflator--1973 through 1989: *Economic Report of the President,* February 1991, Table B-60; 1990 forward: Council of Economic Advisers, *Economic Indicators,* January 1991, table titled, "Consumer Prices - All Urban Consumers."

Section 2. Consumption

U.S. total energy consumption in January 1991 was 7.9 quadrillion Btu. Petroleum products accounted for 36 percent[22] of the energy consumed in January 1991, while natural gas accounted for 30 percent and coal accounted for 22 percent.

Residential and commercial sector consumption was 3.4 quadrillion Btu in January 1991, up 6 percent from the January 1990 level. The sector accounted for 44 percent of January 1991 total consumption, up 1 percentage point from its 43 percent share in January 1990.

Industrial sector consumption was 2.7 quadrillion Btu in January 1991, up 6 percent from the January 1990 level. The industrial sector accounted for 34 percent of January 1991 total consumption, up 1 percentage point from its 33 percent share in January 1990.

Transportation sector consumption of energy was 1.8 quadrillion Btu in January 1991, down slightly from the January 1990 level. The sector accounted for 23 percent of January 1991 total consumption, down 1 percentage point from its 24 percent share in January 1990.

Electric utility consumption of energy totaled 2.6 quadrillion Btu in January 1991, up 5 percent from the January 1990 level. Coal contributed 56 percent of the energy consumed by electric utilities in January 1991, while nuclear electric power contributed 22 percent; hydroelectric power 10 percent; natural gas 7 percent; petroleum, 4 percent; and wood, waste, geothermal, wind, photovoltaic, and solar thermal energy, about 1 percent.

Table 2.1 Energy Consumption Summary for January 1991
(Quadrillion Btu)

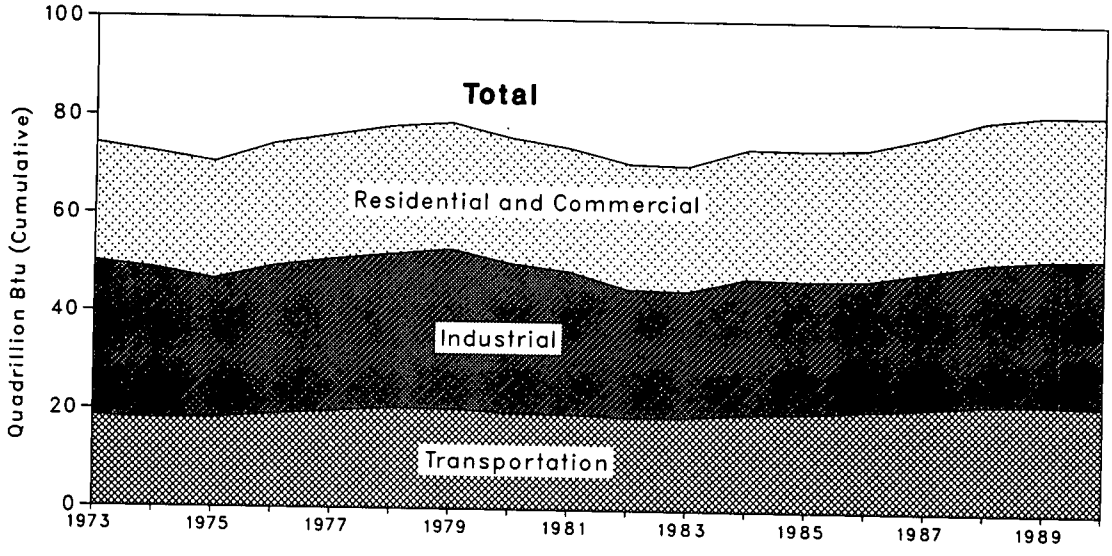
Energy Source	Sector				Total
	Residential and Commercial	Industrial	Transportation	Electric Utilities	
Coal	0.019	0.242	[a]	1.491	1.753
Natural Gas[b]	1.319	.826	0.060	.177	2.384
Petroleum Products	.278	.769	1.706	.099	2.852
Hydroelectric Power	-	.003	-	.273	.276
Nuclear Electric Power	-	-	-	.583	.583
Net Imports of Coal Coke	-	.001	-	-	.001
Other[c]	-	-	-	.017	.017
Primary Consumption	**1.616**	**1.841**	**1.766**	**2.640**	**7.865**
Electricity	.562	.258	.001		
Net Consumption	**2.178**	**2.099**	**1.767**		**6.047**
Electrical System Energy Losses	1.244	.572	.003		1.819
Total Consumption[d]	**3.422**	**2.671**	**1.770**		**7.865**

[a]Small amounts of coal consumed for transportation are reported as industrial sector consumption.
[b]Includes supplemental gaseous fuels. Transportation sector is pipeline fuel only.
[c]Other is electricity generated for distribution from wood, waste, geothermal, wind, photovoltaic, and solar thermal energy.
[d]Excludes wood, waste, geothermal, wind, photovoltaic, and solar thermal energy except for small amounts used by electric utilities to generate electricity for distribution.
Note: Totals may not equal sum of components due to independent rounding and the use of sector-specific conversion factors for natural gas and coal.
Additional Notes and Sources: See end of section.

[22]Percentage changes are based on numbers in the following tables.

Figure 2.1 Consumption of Energy by End-Use Sector

Yearly



Monthly

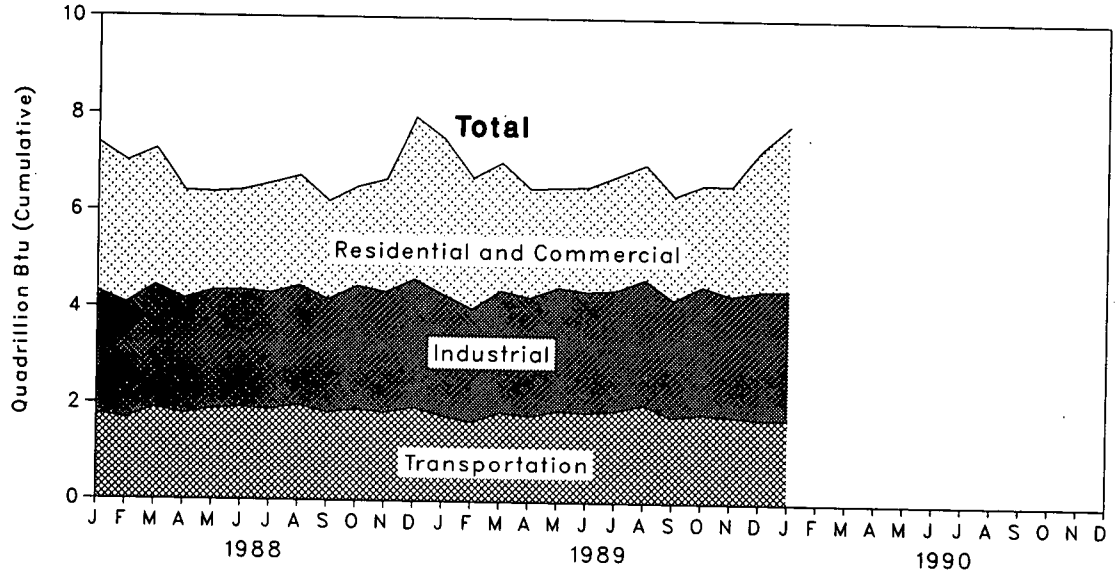


Table 2.2 Consumption of Energy by End-Use Sector
(Quadrillion Btu)

	Residential and Commercial		Industrial		Transportation		Total Net	Total Gross
	Net	Gross	Net	Gross	Net	Gross		
1973 Total	**15.766**	**24.143**	**25.917**	**31.528**	**18.584**	**18.605**	**60.274**	**74.282**
1974 Total	**15.246**	**23.724**	**24.994**	**30.696**	**18.095**	**18.117**	**58.341**	**72.543**
1975 Total	**15.200**	**23.900**	**22.737**	**28.401**	**18.219**	**18.244**	**56.157**	**70.546**
1976 Total	**15.997**	**25.020**	**24.038**	**30.234**	**19.076**	**19.101**	**59.119**	**74.362**
1977 Total	**15.828**	**25.387**	**24.593**	**31.075**	**19.794**	**19.819**	**60.223**	**76.288**
1978 Total	**16.023**	**26.088**	**24.637**	**31.388**	**20.589**	**20.611**	**61.251**	**78.089**
1979 Total	**15.709**	**25.809**	**25.679**	**32.615**	**20.447**	**20.472**	**61.836**	**78.898**
1980 Total	**15.075**	**25.653**	**23.854**	**30.609**	**19.669**	**19.695**	**58.597**	**75.955**
1981 Total	**14.541**	**25.243**	**22.533**	**29.238**	**19.480**	**19.507**	**56.556**	**73.990**
1982 Total	**14.629**	**25.630**	**20.020**	**26.144**	**19.043**	**19.069**	**53.697**	**70.848**
1983 Total	**14.395**	**25.630**	**19.401**	**25.756**	**19.109**	**19.135**	**52.907**	**70.524**
1984 Total	**15.014**	**26.501**	**21.064**	**27.727**	**19.843**	**19.871**	**55.923**	**74.101**
1985 Total	**14.889**	**26.732**	**20.439**	**27.120**	**20.066**	**20.097**	**55.391**	**73.945**
1986 Total	**14.812**	**26.834**	**20.135**	**26.642**	**20.728**	**20.758**	**55.678**	**74.237**
1987 Total	**15.177**	**27.621**	**21.175**	**27.870**	**21.328**	**21.357**	**57.678**	**76.844**
1988 Total	**16.096**	**28.999**	**22.113**	**29.008**	**22.155**	**22.186**	**60.366**	**80.196**
1989 January	1.971	3.094	1.954	2.510	1.784	1.786	5.710	7.391
February	1.895	2.936	1.839	2.377	1.678	1.681	5.413	6.995
March	1.768	2.837	1.957	2.517	1.910	1.912	5.633	7.265
April	1.304	2.233	1.819	2.368	1.786	1.788	4.905	6.386
May	1.037	2.042	1.812	2.433	1.887	1.890	4.734	6.363
June	.955	2.068	1.791	2.412	1.925	1.928	4.673	6.409
July	.973	2.268	1.754	2.389	1.894	1.897	4.623	6.556
August	.997	2.268	1.821	2.458	1.977	1.980	4.800	6.710
September	.980	2.033	1.771	2.324	1.831	1.833	4.583	6.191
October	1.061	2.049	1.951	2.546	1.893	1.895	4.903	6.488
November	1.336	2.323	1.890	2.479	1.840	1.842	5.065	6.644
December	2.074	3.352	2.008	2.641	1.946	1.949	6.032	7.946
Total	**16.350**	**29.501**	**22.368**	**29.457**	**22.350**	**22.380**	**61.076**	**81.346**
1990 January	2.074	R 3.238	R 1.993	R 2.516	1.775	1.777	5.842	R 7.533
February	1.716	2.702	1.816	2.342	1.662	1.665	5.194	6.708
March	1.603	R 2.649	1.937	R 2.519	1.861	1.863	5.399	R 7.029
April	1.299	R 2.248	R 1.894	R 2.452	1.790	1.792	R 4.981	R 6.490
May	1.046	R 2.062	R 1.937	R 2.551	1.902	1.905	R 4.883	R 6.516
June	.976	R 2.163	R 1.853	R 2.500	1.869	1.871	R 4.698	R 6.535
July	1.027	R 2.356	R 1.861	2.491	1.913	1.916	R 4.804	R 6.766
August	R 1.044	R 2.366	R 1.943	R 2.600	2.039	2.042	R 5.029	R 7.011
September	1.025	R 2.148	R 1.871	R 2.430	1.788	1.791	R 4.686	R 6.371
October	R 1.068	R 2.092	R 2.055	R 2.649	1.855	1.858	R 4.977	R 6.598
November	1.305	R 2.271	R 1.943	R 2.507	1.809	R 1.811	R 5.055	R 6.587
December	R 1.777	R 2.938	R 2.045	R 2.651	1.759	1.762	R 5.583	R 7.352
Total	**R 15.961**	**R 29.235**	**R 23.149**	**R 30.208**	**22.022**	**22.054**	**R 61.133**	**R 81.497**
1991 January	2.178	3.422	2.099	2.671	1.767	1.770	6.047	7.865

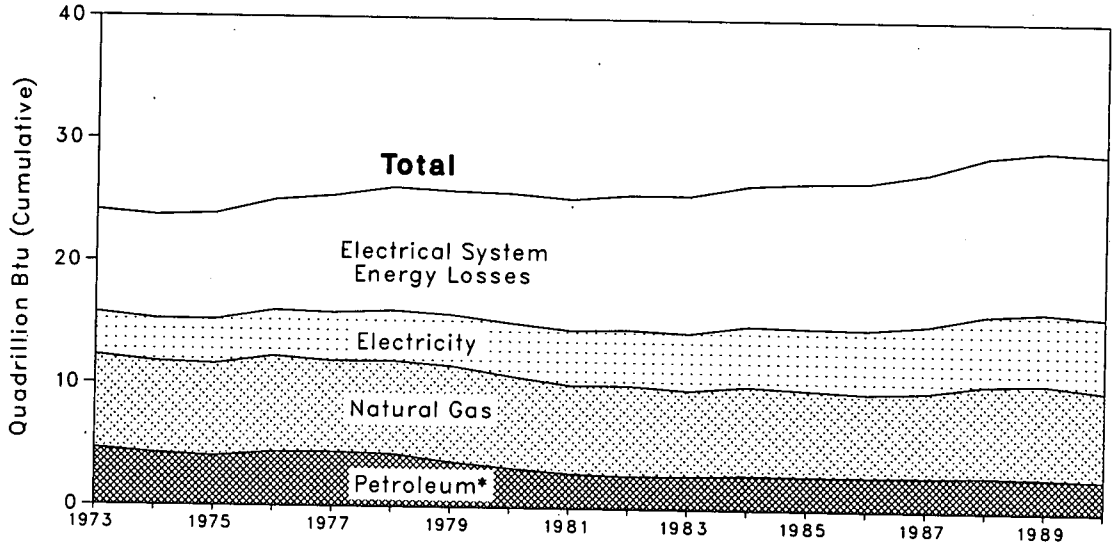
R=Revised data.

Notes: • Geographic coverage is the 50 States and the District of Columbia. • Totals may not equal sum of components due to independent rounding and the use of sector-specific conversion factors for natural gas and coal.

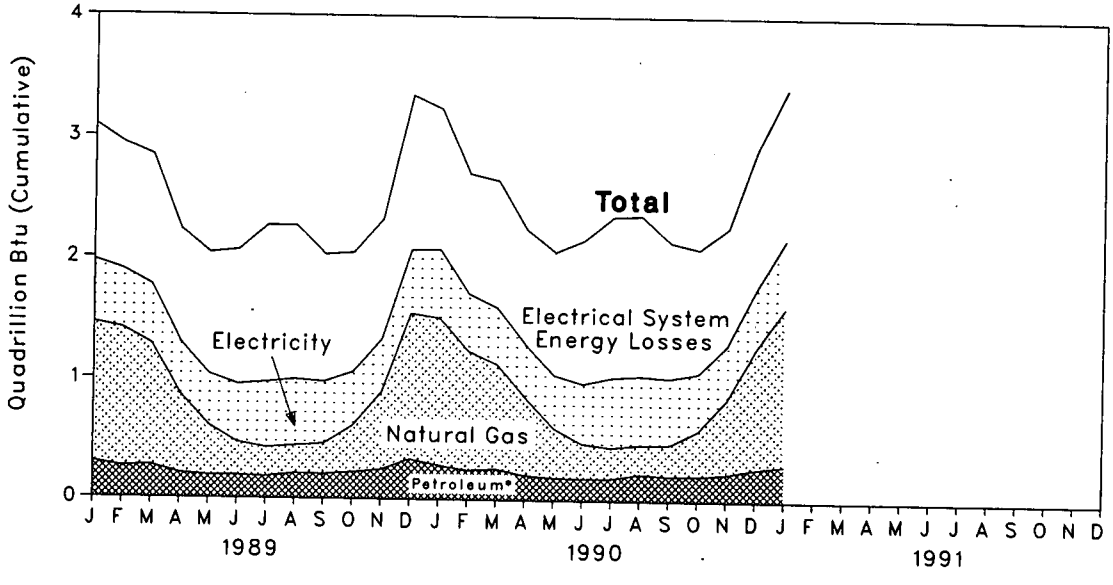
Additional Notes and Sources: See end of section.

Figure 2.2 Consumption of Energy by the Residential and Commercial Sector

Yearly



Monthly



*Includes coal.

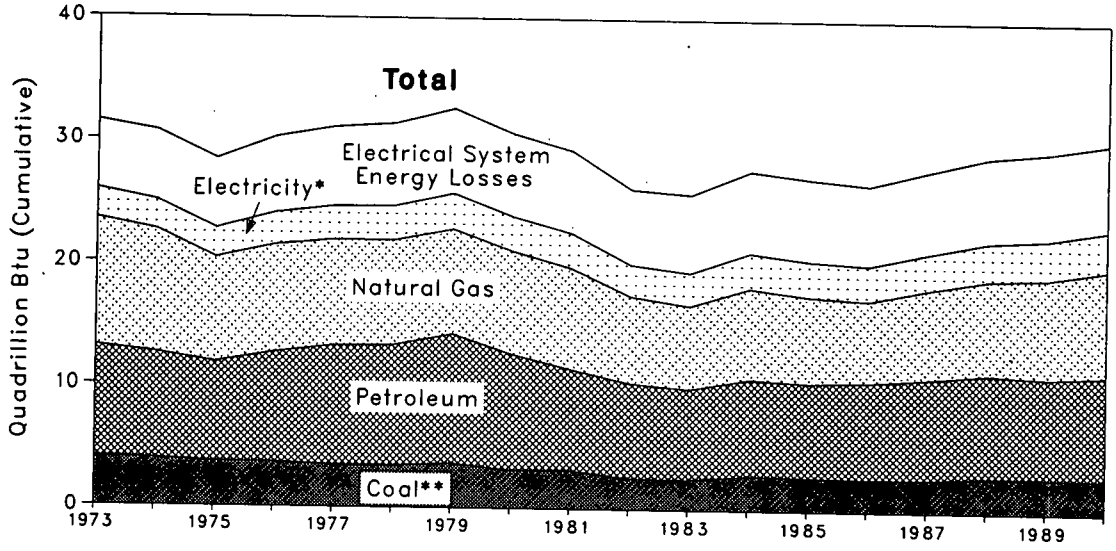
Table 2.3 Consumption of Energy by the Residential and Commercial Sector
(Quadrillion Btu)

	Coal	Natural Gas[a]	Petroleum	Electricity	Net Consumption	Electrical System Energy Losses	Total Consumption[b]	Year to Date
1973 Total	0.254	7.626	4.391	3.495	15.766	8.377	24.143	
1974 Total	.257	7.518	3.996	3.475	15.246	8.478	23.724	
1975 Total	.209	7.581	3.805	3.604	15.200	8.700	23.900	
1976 Total	.203	7.866	4.181	3.747	15.997	9.023	25.020	
1977 Total	.205	7.461	4.206	3.955	15.828	9.559	25.387	
1978 Total	.214	7.624	4.070	4.116	16.023	10.065	26.088	
1979 Total	.187	7.891	3.448	4.184	15.709	10.101	25.809	
1980 Total	.145	7.540	3.035	4.355	15.075	10.578	25.653	
1981 Total	.167	7.243	2.634	4.497	14.541	10.703	25.243	
1982 Total	.187	7.427	2.449	4.566	14.629	11.001	25.630	
1983 Total	.192	7.024	2.498	4.680	14.395	11.235	25.630	
1984 Total	.209	7.292	2.585	4.928	15.014	11.487	26.501	
1985 Total	.176	7.079	2.573	5.061	14.889	11.843	26.732	
1986 Total	.176	6.825	2.576	5.235	14.812	12.022	26.834	
1987 Total	.162	6.954	2.618	5.443	15.177	12.443	27.621	
1988 Total	.168	7.512	2.693	5.724	16.096	12.903	28.999	
1989 January	.015	1.160	.281	.514	1.971	1.123	3.094	3.094
February	.016	1.156	.239	.483	1.895	1.042	2.936	6.030
March	.012	1.017	.255	.484	1.768	1.069	2.837	8.867
April	.012	.667	.192	.432	1.304	.929	2.233	11.100
May	.008	.428	.176	.425	1.037	1.005	2.042	13.142
June	.007	.285	.179	.485	.955	1.112	2.068	15.210
July	.012	.246	.166	.549	.973	1.295	2.268	17.478
August	.011	.238	.195	.553	.997	1.271	2.268	19.746
September	.007	.260	.194	.518	.980	1.053	2.033	21.778
October	.005	.392	.215	.450	1.061	.988	2.049	23.827
November	.013	.655	.229	.439	1.336	.988	2.323	26.151
December	.028	1.216	.303	.526	2.074	1.278	3.352	29.502
Total	**.146**	**7.721**	**2.625**	**5.859**	**16.350**	**13.150**	**29.501**	
1990 January	.017	1.229	.264	.565	2.074	R 1.164	R 3.238	R 3.238
February	R .016	1.001	.226	.473	1.716	.986	2.702	R 5.940
March	.013	.880	.242	.467	1.603	R 1.046	R 2.649	R 8.589
April	.013	.657	.191	.439	1.299	R .949	R 2.248	R 10.837
May	.009	.420	.177	.441	1.046	R 1.016	R 2.062	R 12.899
June	.009	.299	.171	.497	.976	R 1.186	R 2.163	R 15.062
July	R .013	.265	.170	.580	1.027	R 1.329	R 2.356	R 17.418
August	R .012	.250	.209	.573	R 1.044	R 1.322	R 2.366	R 19.784
September	R .010	.266	.196	.553	1.025	R 1.123	R 2.148	R 21.932
October	R .010	.382	.198	.479	R 1.068	R 1.024	R 2.092	R 24.024
November	.015	.628	.211	.451	1.305	R .965	R 2.271	R 26.295
December	R .025	1.011	.244	R .498	R 1.777	R 1.160	R 2.938	R 29.232
Total	**R .159**	**7.288**	**2.499**	**R 6.015**	**R 15.961**	**R 13.274**	**R 29.235**	
1991 January	.019	1.319	.278	.562	2.178	1.244	3.422	3.422

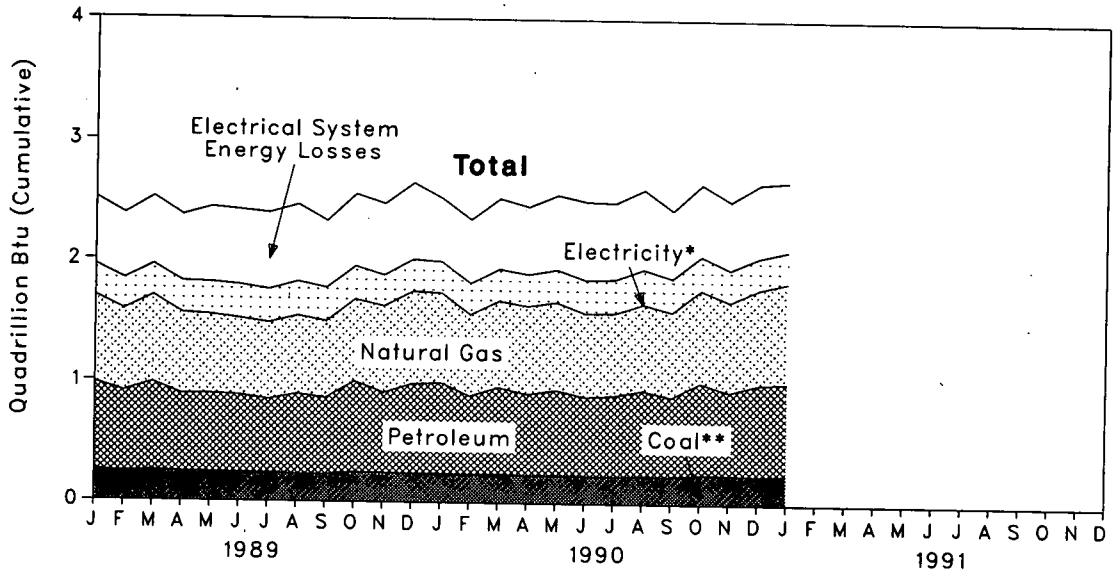
[a]Includes supplemental gaseous fuels.
[b]Excludes wood, waste, geothermal, wind, photovoltaic, and solar thermal energy except for small amounts used by electric utilities to generate electricity for distribution.
R=Revised data.
Notes: • Geographic coverage is the 50 States and the District of Columbia. • Totals may not equal sum of components due to independent rounding.
Additional Notes and Sources: See end of section.

Figure 2.3 Consumption of Energy by the Industrial Sector

Yearly



Monthly



*Includes hydroelectric power.
**Includes net imports of coal coke.

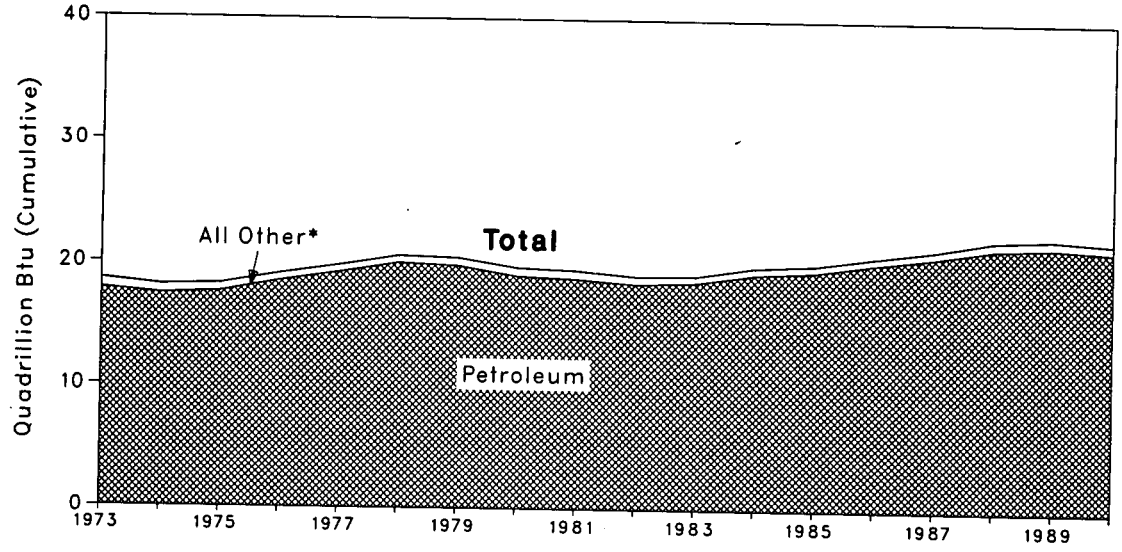
Table 2.4 Consumption of Energy by the Industrial Sector
(Quadrillion Btu)

	Coal	Natural Gas[a]	Petroleum	Hydroelectric Power	Net Imports of Coal Coke	Electricity	Net Consumption	Electrical System Energy Losses	Total Consumption[b]	Year to Date
1973 Total	4.057	10.388	9.104	0.035	-0.007	2.341	25.917	5.611	31.528	
1974 Total	3.870	10.004	8.694	.033	.056	2.337	24.994	5.701	30.696	
1975 Total	3.667	8.532	8.146	.032	.014	2.346	22.737	5.664	28.401	
1976 Total	3.661	8.762	9.010	.033	.000	2.573	24.038	6.196	30.234	
1977 Total	3.454	8.635	9.774	.033	.015	2.682	24.593	6.481	31.075	
1978 Total	3.314	8.539	9.867	.032	.125	2.761	24.637	6.751	31.388	
1979 Total	3.593	8.549	10.568	.034	.063	2.873	25.679	6.935	32.615	
1980 Total	3.155	8.395	9.525	.033	-.035	2.781	23.854	6.755	30.609	
1981 Total	3.157	8.257	8.285	.033	-.016	2.817	22.533	6.705	29.238	
1982 Total	2.552	7.121	7.794	.033	-.022	2.542	20.020	6.124	26.144	
1983 Total	2.490	6.826	7.420	.033	-.016	2.648	19.401	6.356	25.756	
1984 Total	2.842	7.448	7.894	.033	-.011	2.859	21.064	6.663	27.727	
1985 Total	2.760	7.080	7.725	.033	-.013	2.855	20.439	6.681	27.120	
1986 Total	2.643	6.690	7.953	.032	-.017	2.834	20.135	6.507	26.642	
1987 Total	2.673	7.323	8.210	.032	.009	2.928	21.175	6.694	27.870	
1988 Total	2.828	7.697	8.456	.032	.040	3.059	22.113	6.895	29.008	
1989 January	.245	.714	.731	.003	.007	.254	1.954	.555	2.510	2.510
February	.236	.677	.672	.003	.002	.249	1.839	.538	2.377	4.887
March	.247	.716	.734	.003	.003	.254	1.957	.560	2.517	7.404
April	.233	.670	.650	.003	.007	.255	1.819	.549	2.368	9.772
May	.230	.652	.658	.003	.006	.263	1.812	.622	2.433	12.205
June	.226	.633	.654	.003	.004	.271	1.791	.621	2.412	14.617
July	.226	.632	.620	.003	.004	.269	1.754	.635	2.389	17.006
August	.221	.645	.673	.002	.003	.277	1.821	.637	2.458	19.464
September	.220	.632	.643	.002	.002	.272	1.771	.553	2.324	21.788
October	.249	.675	.758	.002	-.004	.271	1.951	.595	2.546	24.334
November	.241	.714	.672	.002	-.001	.262	1.890	.589	2.479	26.813
December	.237	.762	.749	.002	-.002	.261	2.008	.633	2.641	29.454
Total	**2.810**	**8.123**	**8.214**	**.033**	**.030**	**3.158**	**22.368**	**7.089**	**29.457**	
1990 January	.236	.739	.760	.003	.000	.254	R 1.993	R .524	R 2.516	R 2.516
February	R .229	.673	.660	.003	.000	.252	1.816	.526	2.342	R 4.858
March	.236	.712	.726	.003	.001	.260	1.937	R .582	R 2.519	R 7.377
April	R .225	.727	.682	.003	-.001	.258	R 1.894	R .558	R 2.452	R 9.829
May	R .229	.724	.714	.003	.000	.266	R 1.937	R .615	R 2.551	R 12.380
June	R .225	.689	.664	.003	.001	.271	R 1.853	.647	R 2.500	R 14.880
July	R .224	R .678	.678	.003	.003	.275	R 1.861	R .630	2.491	R 17.371
August	R .228	.713	.716	.002	-.001	.285	R 1.943	R .657	R 2.600	R 19.972
September	R .224	.703	.667	.002	.001	.275	R 1.871	R .559	R 2.430	R 22.402
October	R .246	.762	.766	.002	.001	.278	R 2.055	.594	R 2.649	R 25.051
November	R .243	.743	.692	.002	-.001	.264	R 1.943	R .564	R 2.507	R 27.559
December	R .235	.783	.764	.002	.001	R .260	R 2.045	.606	R 2.651	R 30.210
Total	**R 2.780**	**8.645**	**8.488**	**.033**	**.005**	**R 3.199**	**R 23.149**	**R 7.059**	**R 30.208**	
1991 January	.242	.826	.769	.003	.001	.258	2.099	.572	2.671	2.671

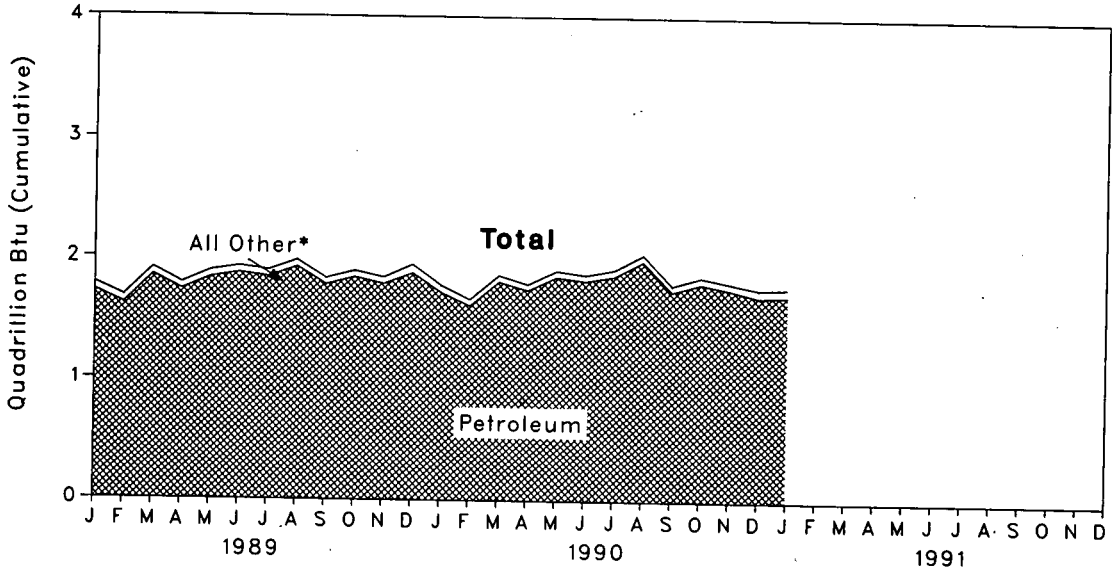
[a]Includes supplemental gaseous fuels.
[b]Excludes wood, waste, geothermal, wind, photovoltaic, and solar thermal energy, except for small amounts used by electric utilities to generate electricity for distribution.
R=Revised data.
Notes: • Geographic coverage is the 50 States and the District of Columbia. • Totals may not equal sum of components due to independent rounding.
Additional Notes and Sources: See end of section.

Figure 2.4 Consumption of Energy by the Transportation Sector

Yearly



Monthly



*Includes coal, natural gas, electricity, and electrical system energy losses.

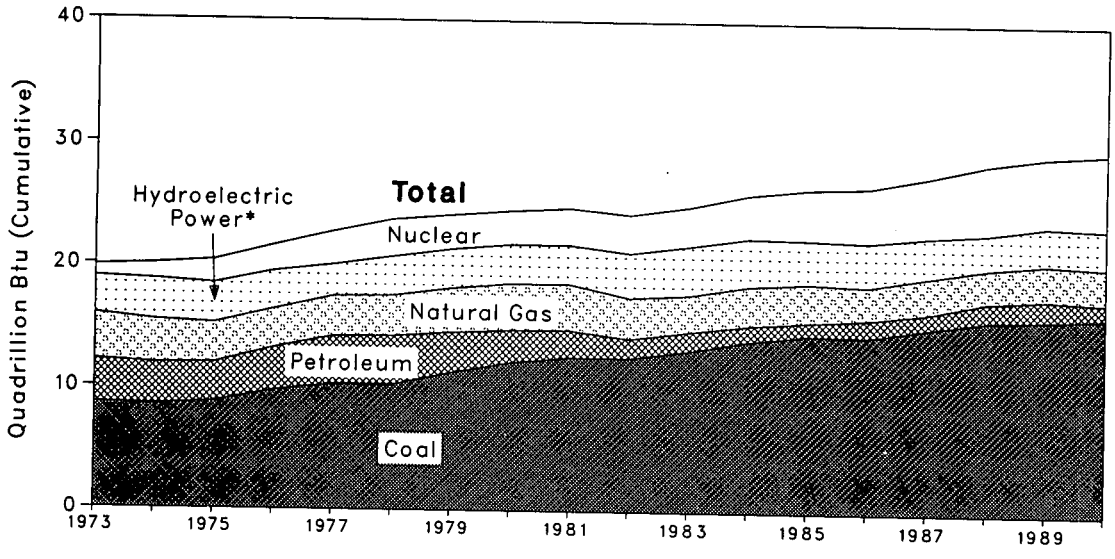
Table 2.5 Consumption of Energy by the Transportation Sector
(Quadrillion Btu)

	Coal	Natural Gas[a]	Petroleum	Electricity	Net Consumption	Electrical System Energy Losses	Total Consumption[b]	Year to Date
1973 Total	0.003	0.743	17.831	0.008	18.584	0.020	18.605	
1974 Total	.002	.685	17.399	.009	18.095	.022	18.117	
1975 Total	.001	.595	17.614	.010	18.219	.025	18.244	
1976 Total	[c]	.559	18.506	.010	19.076	.025	19.101	
1977 Total	[c]	.543	19.241	.010	19.794	.025	19.819	
1978 Total	[d]	.539	20.041	.009	20.589	.022	20.611	
1979 Total	[d]	.612	19.825	.010	20.447	.025	20.472	
1980 Total	[d]	.650	19.008	.011	19.669	.026	19.695	
1981 Total	[d]	.658	18.811	.011	19.480	.026	19.507	
1982 Total	[d]	.612	18.420	.011	19.043	.026	19.069	
1983 Total	[d]	.505	18.593	.011	19.109	.026	19.135	
1984 Total	[d]	.545	19.286	.012	19.843	.028	19.871	
1985 Total	[d]	.519	19.534	.013	20.066	.030	20.097	
1986 Total	[d]	.499	20.215	.013	20.728	.030	20.758	
1987 Total	[d]	.535	20.780	.013	21.328	.029	21.357	
1988 Total	[d]	.632	21.510	.014	22.155	.031	22.186	
1989 January	[d]	.059	1.724	.001	1.784	.002	1.786	1.786
February	[d]	.059	1.618	.001	1.678	.002	1.681	3.467
March	[d]	.056	1.853	.001	1.910	.002	1.912	5.379
April	[d]	.050	1.734	.001	1.786	.002	1.788	7.167
May	[d]	.053	1.834	.001	1.887	.003	1.890	9.057
June	[d]	.052	1.873	.001	1.925	.003	1.928	10.985
July	[d]	.052	1.841	.001	1.894	.003	1.897	12.881
August	[d]	.052	1.925	.001	1.977	.003	1.980	14.862
September	[d]	.049	1.780	.001	1.831	.002	1.833	16.695
October	[d]	.050	1.841	.001	1.893	.002	1.895	18.590
November	[d]	.052	1.787	.001	1.840	.002	1.842	20.432
December	[d]	.067	1.878	.001	1.946	.003	1.949	22.380
Total	[d]	**.649**	**21.687**	**.014**	**22.350**	**.031**	**22.380**	
1990 January	[d]	.055	1.719	.001	1.775	.003	1.777	1.777
February	[d]	.049	1.612	.001	1.662	.002	1.665	3.442
March	[d]	.049	1.810	.001	1.861	.003	1.863	5.305
April	[d]	.045	1.743	.001	1.790	.002	1.792	7.097
May	[d]	.048	1.853	.001	1.902	.003	1.905	9.002
June	[d]	.045	1.822	.001	1.869	.003	1.871	10.873
July	[d]	.050	1.862	.001	1.913	.003	1.916	12.790
August	[d]	.050	1.987	.001	2.039	.003	2.042	14.832
September	[d]	.048	1.739	.001	1.788	.002	1.791	[R] 16.622
October	[d]	.049	1.805	.001	1.855	.003	1.858	[R] 18.480
November	[d]	.050	[R] 1.757	.001	1.809	.002	[R] 1.811	20.292
December	[d]	.061	1.697	.001	1.759	.003	1.762	22.054
Total	[d]	**.603**	[R] **21.405**	**.014**	**22.022**	**.031**	**22.054**	
1991 January	[d]	.060	1.706	.001	1.767	.003	1.770	1.770

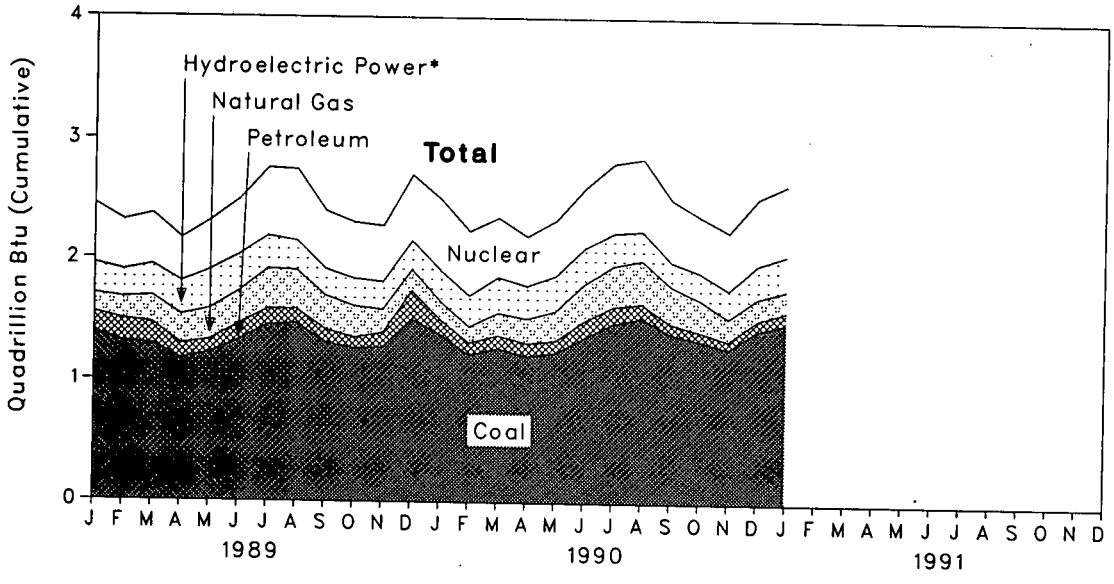
[a]Pipeline fuel only, including supplemental gaseous fuels.
[b]Excludes wood, waste, geothermal, wind, photovoltaic, and solar thermal energy except for small amounts used by electric utilities to generate electricity for distribution.
[c]Less than 0.5 trillion Btu.
[d]Since 1978, the small amounts of coal consumed for transportation have been reported as industrial sector consumption.
R=Revised data.
Notes: • Geographic coverage is the 50 States and the District of Columbia. • Totals may not equal sum of components due to independent rounding.
Additional Notes and Sources: See end of section.

Figure 2.5 Energy Input at Electric Utilities

Yearly



Monthly



*Includes other.

Table 2.6 Energy Input at Electric Utilities
(Quadrillion Btu)

	Coal	Natural Gas[a]	Petro-leum[b]	Hydro-electric Power[c]	Nuclear Electric Power	Other[d]	Total	Year to Date
1973 Total	**8.658**	**3.748**	**3.515**	**2.975**	**0.910**	**0.046**	**19.852**	
1974 Total	**8.534**	**3.519**	**3.365**	**3.276**	**1.272**	**.056**	**20.022**	
1975 Total	**8.786**	**3.240**	**3.166**	**3.187**	**1.900**	**.072**	**20.350**	
1976 Total	**9.720**	**3.152**	**3.477**	**3.032**	**2.111**	**.081**	**21.574**	
1977 Total	**10.262**	**3.284**	**3.901**	**2.482**	**2.702**	**.082**	**22.713**	
1978 Total	**10.238**	**3.297**	**3.987**	**3.110**	**3.024**	**.068**	**23.724**	
1979 Total	**11.260**	**3.613**	**3.283**	**3.107**	**2.776**	**.089**	**24.128**	
1980 Total	**12.123**	**3.810**	**2.634**	**3.085**	**2.739**	**.114**	**24.505**	
1981 Total	**12.583**	**3.768**	**2.202**	**3.072**	**3.008**	**.127**	**24.760**	
1982 Total	**12.582**	**3.342**	**1.568**	**3.539**	**3.131**	**.108**	**24.270**	
1983 Total	**13.213**	**2.998**	**1.544**	**3.866**	**3.203**	**.133**	**24.956**	
1984 Total	**14.020**	**3.220**	**1.286**	**3.725**	**3.553**	**.174**	**25.977**	
1985 Total	**14.542**	**3.160**	**1.090**	**3.330**	**4.149**	**.213**	**26.484**	
1986 Total	**14.444**	**2.691**	**1.452**	**3.353**	**4.471**	**.231**	**26.642**	
1987 Total	**15.173**	**2.935**	**1.257**	**3.035**	**4.906**	**.244**	**27.551**	
1988 Total	**15.850**	**2.709**	**1.563**	**2.607**	**5.661**	**.235**	**28.626**	
1989 January	1.392	.152	.161	.231	.497	.019	2.451	2.451
February	1.309	.178	.185	.211	.415	.017	2.316	4.767
March	1.293	.218	.175	.240	.425	.020	2.371	7.138
April	1.170	.243	.121	.259	.359	.017	2.170	9.307
May	1.220	.259	.107	.302	.411	.018	2.318	11.625
June	1.327	.269	.134	.284	.461	.018	2.493	14.118
July	1.454	.331	.132	.256	.561	.019	2.752	16.870
August	1.470	.320	.118	.226	.589	.018	2.742	19.612
September	1.312	.277	.109	.205	.481	.017	2.400	22.012
October	1.263	.263	.089	.208	.467	.018	2.307	24.318
November	1.272	.195	.121	.210	.465	.017	2.281	26.599
December	1.508	.177	.233	.220	.545	.018	2.702	29.301
Total	**15.988**	**2.882**	**1.685**	**2.852**	**5.677**	**.217**	**29.301**	
1990 January	R 1.388	R .151	.123	.239	.591	.018	R 2.510	R 2.510
February	1.215	.136	.100	.238	.536	.016	2.241	R 4.751
March	R 1.272	R .190	.108	.276	.494	.018	R 2.359	R 7.110
April	R 1.210	R .206	.108	R .255	.413	.014	R 2.207	R 9.317
May	R 1.239	R .252	.101	.273	.461	.017	R 2.341	R 11.658
June	1.365	R .307	.141	.280	.497	.017	R 2.607	R 14.265
July	R 1.495	R .337	.138	.256	.575	.017	R 2.818	R 17.083
August	R 1.528	R .354	.117	.227	.598	.017	R 2.841	R 19.924
September	R 1.398	R .311	.086	.184	R .520	.016	R 2.515	R 22.439
October	1.346	.265	.077	.207	.465	.017	2.378	R 24.816
November	R 1.276	.191	.067	.215	.483	.016	R 2.248	R 27.065
December	R 1.431	.181	.085	.259	.553	.017	R 2.528	R 29.592
Total	**R 16.162**	**R 2.881**	**1.251**	**R 2.909**	**R 6.186**	**.202**	**R 29.592**	
1991 January	1.491	.177	.099	.273	.583	.017	2.640	2.640

[a]Includes supplemental gaseous fuels.
[b]Includes petroleum products reported as "oil consumed in steam plants" through 1979 and "heavy oil" from 1980 forward, which are assumed to be residual fuel oil; petroleum products reported as "oil consumed in gas turbine and internal combustion engine plants" through 1979 and "light oil" from 1980 forward, which are assumed to be distillate fuel oil and kerosene; and petroleum coke.
[c]Includes net imports of electricity.
[d]Other is electricity generated for distribution from wood, waste, geothermal, wind, photovoltaic, and solar thermal energy.
R=Revised data.
Notes: • Geographic coverage is the 50 States and the District of Columbia. • Totals may not equal sum of components due to independent rounding.
Additional Notes and Sources: See end of section.

Consumption Notes and Sources

1. Total Energy Consumed: Total energy consumed includes coal, natural gas (including supplemental gaseous fuels), petroleum products supplied, electric utility and industrial generation of hydroelectric power, net imports of electricity generated from hydroelectric power, and electricity generated from nuclear power. Total energy consumed also includes electricity generated from wood, waste, geothermal, wind, photovoltaic, and solar thermal energy but excludes other energy obtained from those sources because consistent historical data are not available.

2. Economic Sectors: Energy use is assigned to the major economic sectors according to the following guidelines as closely as possible:

- Residential and Commercial--Private household establishments (which consume energy primarily for space heating, water heating, air conditioning, lighting, refrigeration, cooking, and clothes drying); nonmanufacturing business establishments, including hotels, motels, restaurants, wholesale businesses, retail stores, laundries, and other service enterprises; health, social, and educational institutions; and Federal, State, and local governments. Street lights, pumps, bridges, and public services are also included.
- Industrial--Manufacturing, construction, mining, agriculture, fishing, and forestry establishments.
- Transportation--Private and public vehicles that move people and commodities. Included are automobiles, trucks, buses, motorcycles, railroads and railways (including streetcars), aircraft, ships, barges, and natural gas pipelines.
- Electric Utilities--Privately and publicly owned establishments that generate electricity primarily for use by the public.

3. Conversion Factors: See the conversion factors listed in the Appendix.

4. Coal: Coal is anthracite, bituminous coal, (including sub-bituminous coal), and lignite. Sources:

- 1973 through September 1977: U.S. Department of the Interior (DOI), Bureau of Mines (BOM), *Minerals Yearbook* and *Minerals Industry Surveys.*
- Electric Utilities--October 1977 forward: Energy Information Administration (EIA), Form EIA-759 (formerly Form FPC-4), "Monthly Power Plant Report."
- Other Industrial--October 1977 through December 1979: EIA, Form EIA-3, "Monthly Coal Consumption Report - Manufacturing Plants"; January 1980 forward: EIA, Form EIA-3, "Quarterly Coal Consumption Report - Manufacturing Plants" and Form EIA-6, "Coal Distribution Report."
- Coke Plants--October 1977 through December 1980: EIA, Form EIA-5/5A, "Coke and Coal Chemicals - Monthly/Annual"; January 1981 through December 1984: EIA, Form EIA-5/5A, "Coke Plant Report - Quarterly/Annual Supplement"; January 1985 forward: EIA, Form EIA-5/5A, "Coke Plant Report," quarterly.
- Residential and Commercial--October 1977 through December 1979: EIA, Form EIA-2, "Monthly Coal Report, Retail Dealers - Upper Lake Docks"; January 1980 forward: EIA, Form EIA-6, "Coal Distribution Report."

5. Natural Gas: Natural gas consumption by end use is based on data presented in Table 4.3 of this report. For Section 2 calculations, lease and plant fuel consumption are added to industrial deliveries, and pipeline fuel represents transportation use of natural gas. Values in Btu are derived using the conversion factors provided in the Appendix. Sources:

- 1973 through 1975: DOI, BOM, *Minerals Yearbook,* "Natural Gas" chapter.
- 1976 through 1978: EIA, *Energy Data Reports,* "Natural Gas, Annual."
- 1979: EIA, *Natural Gas Production and Consumption 1979.*
- 1980 through 1989: EIA, *Natural Gas Annual.*
- 1990 forward: EIA, Form EIA-857, "Monthly Report of Natural Gas Purchases and Deliveries to Consumers," and EIA computations.
- Electric Utilities--1973 through 1976: Form FPC-4, "Monthly Power Plant Report." 1977 through 1981: Federal Energy Regulatory Commission (FERC), Form FPC-4, "Monthly Power Plant Report." 1982 forward: EIA, Form EIA-759, "Monthly Power Plant Report."
- American Gas Association, "Monthly Gas Utility Statistical Report," residential and commercial monthly sales data for 1973 through 1979 used to estimate monthly consumption values from EIA annual consumption values.

6. Petroleum: Petroleum consumption by end use is the sum of all individual petroleum products estimated to be consumed in each end-use sector. First, total consumption by product is determined. Petroleum consumption in this section of the *Monthly Energy Review (MER)* is the series called "petroleum products supplied" in Section 3. Sources for petroleum products supplied by individual products are:

- 1973 through 1975: DOI, BOM, *Mineral Industry Surveys,* "Petroleum Statement, Annual."
- 1976 through 1980: EIA, *Energy Data Reports,* "Petroleum Statement, Annual."
- 1981 through 1989: EIA, *Petroleum Supply Annual.*
- 1990 forward: EIA, *Petroleum Supply Monthly.*

Specific petroleum products' end-use allocation procedures follow:

- **Aviation Gasoline**--All product supplied is assigned to the transportation sector.
- **Asphalt**--All product supplied is assigned to the industrial sector.
- **Distillate Fuel**

Electric Utilities, All Periods.

Monthly and annual consumption in 1973 through 1979 is assumed to be the amount of oil (minus small amounts of kerosene and kerosene-type jet fuel deliveries) reported as consumed in internal combustion and gas turbine engine plants. From January 1980, electric utility consumption of distillate fuel is assumed to be the petroleum products reported as "light oil" (minus small amounts of kerosene deliveries through 1982) consumed at electric utilities.
Sources: 1973 through September 1977--FPC, Form FPC-4, "Monthly Power Plant Report"; October 1977 through 1981--FERC, Form FPC-4, "Monthly Power Plant Report"; 1982 forward--EIA, Form EIA-759, "Monthly Power Plant Report."

Non-Electric Utilities, Annual Estimates Through 1989.

The aggregate non-electric utility use of distillate fuel is total distillate fuel supplied minus the electric utility consumption. The non-electric utility annual totals are allocated into the individual non-electric utility sectors in proportion to the amount of distillate fuel delivered to end users, grouped into sectors from EIA's "Deliveries of Fuel Oil and Kerosene" ("Deliveries") reports (based primarily on data collected by Form EIA-821, previously Form EIA-172) as follows:

- Residential deliveries are directly from the "Deliveries" reports for 1979 through 1989. Prior to 1979, each year's deliveries subtotal of the heating plus industrial category is split into residential, commercial, and industrial (including farm) in proportion to the 1979 shares.

- Commercial deliveries are directly from the "Deliveries" reports for 1979 through 1989. Prior to 1979, each year's deliveries subtotal of the heating plus industrial category is split into residential, commercial, and industrial (including farm) in proportion to the 1979 shares.

- Industrial deliveries for 1979 through 1989 are the sum of deliveries for industrial, farm, oil company, off-highway, diesel, and all other uses. Prior to 1979, each year's deliveries subtotal of the heating plus industrial category is split into residential, commercial, and industrial (including farm) in proportion to the 1979 shares, and this estimated industrial portion is added to oil company, off-highway diesel, and all other uses.

- Transportation deliveries are the sum of deliveries for railroad, vessel bunkering, and on-highway diesel, and military uses for all years.

Non-Electric Utilities, Monthly Estimates Through 1989.

- Residential and commercial monthly consumption is estimated by allocating the annual estimates described above into months in proportion to each month's share of the year's sales of No. 2 heating oil as reported in the "Monthly Report of Heating Oil Sales" by the Ethyl Corporation from 1973 through 1980 and the American Petroleum Institute for 1981 and 1982, and the EIA, Form EIA-782A, "Refiners/Gas Plant Operators' Monthly Petroleum Product Sales Report," No. 2 Fuel Oil Sales to End Users and for Resale, for 1983 through 1989.

- The transportation highway use portion is allocated into the months in proportion to each month's share of the year's total sales for highway use as reported by the Federal Highway Administration's Table MF-25, "Private and Commercial Highway Use of Special Fuels by Months." The remaining transportation use of distillate fuel (i.e., for railroads, vessel bunkering, and military use) is evenly distributed over the months, adjusted for the number of days per month.

- Industrial monthly estimates are made by subtracting the residential and commercial, transportation, and electric utility sector estimates from each month's total distillate fuel supplied.

Non-Electric Utilities, 1990 Forward.

Each month's non-electric utility consumption subtotal is disaggregated into the major end-use sectors in proportion to the shares each sector held of the non-electric utility subtotal in the same month in 1989.

- **Jet Fuel**--Through 1982, small amounts of kerosene-type jet fuel were consumed by electric utilities. Kerosene-type jet fuel deliveries to electric utilities as reported on the Form FERC-423 (formerly Form FPC-423) were used as estimates of this consumption. All remaining jet fuel (kerosene-type and naphtha-type) is consumed by the transportation sector.
- **Kerosene**--Total product supplied monthly is allocated to the major end-use sectors in proportion to annual deliveries grouped into end-use

sectors from EIA's "Deliveries of Fuel Oil and Kerosene" ("Deliveries") reports (based primarily on data collected by Form EIA-821, previously Form EIA-172) as follows:

- Residential deliveries are directly from the "Deliveries" reports for 1979 through 1989. Deliveries for 1989 are used as estimates for succeeding periods. Prior to 1979, each year's deliveries category called "heating" is split into residential, commercial, and industrial in proportion to the 1979 shares.
- Commercial deliveries are directly from the "Deliveries" reports for 1979 through 1989. Deliveries for 1989 are used as estimates for succeeding periods. Prior to 1979, each year's deliveries category called "heating" is split into residential, commercial, and industrial in proportion to the 1979 shares.
- Industrial deliveries are directly from the "Deliveries" reports for 1979 through 1989. Deliveries for 1989 are used as estimates for succeeding periods. Prior to 1979, each year's deliveries category called "heating" is split into residential, commercial and industrial in proportion to the 1979 shares, and this estimated industrial (including farm) portion is added to "all other uses."

• **Liquefied Petroleum Gases (LPG)**--The annual shares of LPG's total consumption that are estimated to be consumed by each end-use sector are applied to each month's total LPG consumption (i.e., product supplied) to create monthly end-use consumption estimates. The annual end-use shares are calculated in the following manner:

- Sales of LPG to the residential and commercial sector are converted from thousand gallons per year to thousand barrels per year and are assumed to be the annual consumption of LPG by the sector.
- The quantity of LPG sold each year for consumption in internal combustion engines is allocated between the transportation and industrial sectors based on data for special fuels used on highways published by the U.S. Department of Transportation, Federal Highway Administration, in *Highway Statistics.* The allocations of LPG sold for internal combustion engine use to the transportation sector range from a high of 67 percent in 1981 to a low of 33 percent in 1987.
- LPG consumed annually by the industrial sector is estimated as the difference between LPG's total supplied and the estimated consumption by the sum of the residential and commercial sector and the transportation sector. The industrial sector includes LPG used by chemical plants as raw materials or solvents and for use in the production of synthetic rubber; refinery fuel use; use as synthetic natural gas feedstock and use in secondary recovery projects; all farm use; LPG sold to gas utility companies for distribution through the mains; and a portion of the use of LPG as an internal combustion engine fuel.

The sources of the annual sales data for creating annual end-use shares are:

- 1973 through 1982: EIA's "Sales of Liquefied Petroleum Gases and Ethane" reports, based primarily on data collected by Form EIA-174.
- 1983: End-use consumption estimates for 1983 are based on 1982 end-use consumption because the collection of data under Form EIA-174 was discontinued after data year 1982.
- 1984 through 1989: American Petroleum Institute (API), "Sales of Natural Gas Liquids and Liquefied Refinery Gases" based on an LPG sales survey jointly sponsored by API, the Gas Processors Association, and the National Liquefied Petroleum Gas Association.
- 1990 forward: The 1989 source is used to estimate succeeding periods.

- **Lubricants**--Total product supplied is allocated to the industrial and transportation sectors for all months according to proportions developed from annual sales of lubricants to the two sectors from U.S. Department of Commerce, Bureau of the Census, *Current Industrial Reports,* "Sales of Lubricating and Industrial Oils and Greases." The 1973 shares are applied to 1973 and 1974; the 1975 shares are applied to 1975 and 1976; and the 1977 shares are applied to 1977 forward.

• **Motor Gasoline**--Total product supplied monthly is allocated to the major end-use sectors in proportion to aggregations of annual sales categories formed from the U.S. Department of Transportation, Federal Highway Administration *Highway Statistics,* Tables MF-21, MF-24, and MF-25, as follows:

- Commercial sales are the sum of sales for public non-highway use and miscellaneous and unclassified uses.
- Industrial sales are the sum of sales for agriculture, construction, and industrial and commercial use as classified in the *Highway Statistics.*
- Transportation sales are the sum of sales for highway use (minus the sales of special fuels, which are primarily diesel fuel and are accounted for in the transportation sector of distillate fuel) and sales for marine use.

• **Petroleum Coke**--The portion consumed by electric utilities is from Form EIA-759, "Monthly Power Plant Report" (formerly Form FPC-4). The remaining petroleum coke is assigned to the industrial sector.

- **Residual Fuel**

Electric Utilities, All Periods.

Monthly and annual consumption 1973 through 1979 is assumed to be the amount of oil reported as consumed in steam-electric power plants. From January 1980, electric utility consumption of residual fuel is assumed to be the petroleum products reported as "heavy oil" consumed at electric utilities.

Sources: 1973 through September 1977--Form FPC-4, "Monthly Power Plant Report"; October 1977 through 1981--FERC, Form FPC-4, "Monthly Power Plant Report"; 1982 forward--EIA, Form EIA-759, "Monthly Power Plant Report."

Non-Electric Utilities, Annual Estimates Through 1989.

The aggregate non-electric utility use of residual fuel is total residual fuel supplied minus the electric utility consumption. The non-electric utility annual totals are allocated into the individual non-electric utility sectors in proportion to the amount of residual fuel delivered to end users, grouped into sectors from EIA's "Deliveries of Fuel Oil and Kerosene" ("Deliveries") reports (based primarily on data collected by Form EIA-821, previously Form EIA-172) as follows:

- Commercial deliveries are directly from the "Deliveries" reports for 1979 through 1989. Prior to 1979, each year's deliveries subtotal of the heating plus industrial category is split into commercial and industrial in proportion to the 1979 shares.

- Industrial deliveries for 1979 through 1989 are the sum of deliveries for industrial, oil company, and all other uses. Prior to 1979, each year's deliveries subtotal of the heating plus industrial category is split into commercial and industrial in proportion to the 1979 shares; and this estimated industrial portion is added to oil company and all other uses.

- Transportation deliveries are the sum of deliveries for railroad, vessel bunkering, and military uses for all years.

Non-Electric Utilities, Monthly Estimates Through 1989.

- Commercial sector monthly consumption is estimated by allocating the annual commercial sector estimates described above into months in proportion to each month's share of the year's sales of No. 2 fuel oil as reported in the "Monthly Report of Heating Oil Sales" by the Ethyl Corporation for 1973 through 1980 and the American Petroleum Institute for 1981 and 1982, and the EIA, Form EIA-782A, "Refiners/Gas Plant Operators' Monthly Petroleum Product Sales Report," No. 2 Fuel Oil Sales to End Users and for Resale, 1983 through 1989.

- Transportation monthly estimates are made by evenly distributing the annual sector estimate over the months, adjusted for the number of days per month.

- Industrial monthly estimates are made by subtracting the commercial, transportation, and electric utility sector estimates from each month's total residual fuel supplied.

Non-Electric Utilities, 1990 Forward.

Each month's non-electric utility consumption subtotal is disaggregated into the major end-use sectors in proportion to the shares each sector held of the non-electric utility subtotal in the same month in 1989.

- **Road Oil**--All product supplied is assigned to the industrial sector.
- **All Other Petroleum Products**--The product supplied of all remaining petroleum products is assigned to the industrial sector.

7. Hydroelectric Power: Includes electricity generated by hydroelectric power at electric utilities, small amounts in the industrial sector, and net imports of electricity, which are assumed to be generated by hydroelectric power and are included in the electric utilities sector.

Sources for electric utilities sector:

- 1973 through 1976: FPC, Form FPC-4, "Monthly Power Plant Report."
- 1977 through 1981: FERC, Form FPC-4, "Monthly Power Plant Report."
- 1982 forward: EIA, Form EIA-759, "Monthly Power Plant Report."

Sources for industrial sector:

- 1973 through 1978: FPC, Form FPC-4, "Monthly Power Plant Report" for plants with generating capacity exceeding 10 megawatts and FPC, Form FPC-12C, *Industrial Electric Generating Capacity*, for all other plants.
- 1979: FPC, Form FPC-4, "Monthly Power Plant Report" for plants with generating capacity exceeding 10 megawatts and EIA estimates for all other plants.
- 1980 forward: Annual generation estimated by EIA as the average generation over the 6-year

period of 1974 through 1979; monthly generation estimated to be in proportion to each month's hydroelectricity generation in the electric utility industry in 1980.

Sources for imports and exports of electricity:

- 1973 through September 1977: Unpublished Federal Power Commission data.
- October 1977 through 1980: Unpublished Economic Regulatory Administration data.
- 1981: DOE, Office of Energy Emergency Operations, "Report on Electric Energy Exchanges with Canada and Mexico for Calendar Year 1981," April 1982 (revised June 1982).
- 1982 and 1983: DOE, Economic Regulatory Administration, *Electrticity Exchanges Across International Borders.*
- 1984 through 1986: DOE, Economic Regulatory Administration, *Electricity Transactions Across International Borders.*
- 1987 and 1988: DOE, Economic Regulatory Administration, Form ERA-781R, "Annual Report of International Electrical Export/Import Data."
- 1989: DOE, Assistant Secretary for Fossil Energy, Form FE-781-R, "Annual Report of International Electrical Export/Import Data."
- 1990 forward: EIA estimates based on preliminary data from the National Energy Board of Canada and DOE, Assistant Secretary for Fossil Energy.

8. Nuclear Electric Power and Wood, Waste, Geothermal, Wind, Photovoltaic, and Solar Thermal Energy Sources Connected to Electric Utility Distribution Systems: Sources:

- 1973 through 1976: FPC, Form FPC-4, "Monthly Power Plant Report."
- 1977 through 1981: FERC, Form FPC-4, "Monthly Power Plant Report."
- 1982 forward: EIA, Form EIA-759, "Monthly Power Plant Report."

9. Net Imports of Coal Coke: Net imports means imports minus exports, and a minus sign indicates that exports are greater than imports. Sources:

- 1973 through 1975: DOI, BOM, *Minerals Yearbook,* "Coke and Coal Chemicals," chapter.
- 1976 through 1980: EIA, *Energy Data Report,* "Coke and Coal Chemicals," annual.
- 1981: EIA, *Energy Data Report,* "Coke Plant Report," quarterly.
- 1982 forward: EIA, *Quarterly Coal Report.*

10. Electricity: End-use consumption of electricity is based on Table 7.2 sales data. "Other," which is primarily for use in government buildings, is added to the commercial sector except for approximately 4 percent used by railroads and railways and attributed to the transportation sector. For 1973 through 1983 and 1989 forward, "Monthly Series" data are used directly. For 1984 through 1988, monthly estimates are created by dividing each month's "Monthly Series" value by the "Monthly Series" total for the year and multiplying by the "Annual Series" value for the year. Kilowatthours are converted to Btu at the rate of 3,412 Btu per kilowatthour. See Table 7.2 for sources of the electricity sales data.

11. Electrical System Energy Losses: Electrical system energy losses are calculated as the difference between total energy input at electric utilities and the total energy content of electricity sold to end-use consumers. Most of those losses occur at steam-electric power plants (conventional and nuclear) in the conversion of heat energy into mechanical energy to turn electric generators. The loss is a thermodynamically necessary feature of the steam-electric cycle. Part of the energy input-to-output losses are a result of imputing fossil energy equivalent inputs for hydroelectric and other energy sources, since there is no generally accepted practice for measuring those thermal conversion rates. In addition to conversion losses, other losses include power plant use of electricity, transmission and distribution of electricity from power plants to end-use consumers (also called "line losses"), and unaccounted for electricity. Total losses are allocated to the end-use sectors in proportion to each sector's share of total electricity sales. Overall, approximately 67 percent of total energy input is lost in conversion; of electricity generated, approximately 5 percent is lost in plant use and 9 percent in transmission and distribution. Calculated electrical system energy losses may be less than actual losses, because primary consumption does not include the energy equivalent of utility purchases of electricity from non-electric utilities and from Canada and Mexico, although they are included in electricity sales.

Section 3. Petroleum

Total petroleum imports[23] averaged 6.7 million barrels per day in March 1991, 2 percent[24] lower than the February 1991 rate and 15 percent lower than the March 1990 rate.

In March 1991, 16.9 million barrels per day of petroleum products were supplied for domestic use, 4 percent higher than the previous month but 1 percent lower than the March 1990 rate. Motor gasoline accounted for 42 percent of the total; distillate fuel oil, 18 percent; and residual fuel oil, 7 percent.

Motor gasoline supplied during March 1991 averaged 7.0 million barrels per day, 3 percent higher than the previous month but 4 percent lower than the March 1990 rate. Stocks of total motor gasoline totaled 210 million barrels at the end of March 1991, 12 million barrels below the stock level in the previous month and 18 million barrels below the level 1 year earlier.

In March 1991, 3.0 million barrels of distillate fuel oil were supplied per day, 1 percent below the February 1991 rate and 9 percent below the March 1990 rate. Distillate fuel oil ending stocks for March 1991 were 97 million barrels, 4 million barrels below the stock level in the previous month and 3 million barrels below the stock level 1 year earlier.

Residual fuel oil supplied in March 1991 averaged 1.1 million barrels per day, 11 percent lower than the previous month and 8 percent lower than the March 1990 rate. Residual fuel oil stocks measured 45 million barrels at the end of March 1991, the same level as the previous month and 1 million barrels below the level 1 year earlier.

Estimates (except of crude production) for the most current month are based on Energy Information Administration (EIA) weekly data and will be revised to conform with data from the EIA Petroleum Reporting System as available. For the most recent month, crude production is an EIA estimate based on historical and provisional data through December 1990.

[23]Total import data include imports into the Strategic Petroleum Reserve.
[24]Percentage changes are based on numbers shown in the following tables.

Table 3.1a Crude Oil[a] and Petroleum Products Overview

	Field Production			Stock Change[b]		Petroleum Products Supplied	Ending Stocks[c]
	Total Domestic[d]	Crude Oil	Natural Gas Plant Production	Crude Oil[e]	Petroleum Products		Crude Oil[e] and Petroleum Products
	Thousand Barrels per Day						Million Barrels
1973 Average	**10,975**	**9,208**	**1,738**	**-11**	**146**	**17,308**	**1,008**
1974 Average	**10,498**	**8,774**	**1,688**	**62**	**117**	**16,653**	**I 1,074**
1975 Average	**10,045**	**8,375**	**1,633**	**I 17**	**I 15**	**16,322**	**1,133**
1976 Average	**9,774**	**8,132**	**h 1,604**	**39**	**-96**	**17,461**	**1,112**
1977 Average	**9,913**	**8,245**	**1,618**	**170**	**378**	**18,431**	**1,312**
1978 Average	**10,328**	**8,707**	**1,567**	**78**	**-172**	**18,847**	**1,278**
1979 Average	**10,179**	**8,552**	**1,584**	**148**	**25**	**18,513**	**1,341**
1980 Average	**10,214**	**8,597**	**1,573**	**98**	**42**	**17,056**	**I 1,392**
1981 Average	**10,230**	**8,572**	**1,609**	**I 290**	**I -130**	**16,058**	**1,484**
1982 Average	**10,252**	**8,649**	**1,550**	**136**	**-283**	**15,296**	**I 1,430**
1983 Average	**10,299**	**8,688**	**1,559**	**I 214**	**I -234**	**15,231**	**1,454**
1984 Average	**10,554**	**8,879**	**1,630**	**199**	**81**	**15,726**	**1,556**
1985 Average	**10,636**	**8,971**	**1,609**	**50**	**-153**	**15,726**	**1,519**
1986 Average	**10,289**	**8,680**	**1,551**	**78**	**124**	**16,281**	**1,593**
1987 Average	**10,008**	**8,349**	**1,595**	**128**	**-87**	**16,665**	**1,607**
1988 Average	**9,818**	**8,140**	**1,625**	**1**	**-29**	**17,283**	**1,597**
1989 January	9,678	7,937	1,664	179	563	17,269	1,620
February	9,441	7,788	1,607	47	-733	17,920	1,601
March	9,284	7,575	1,650	-127	-924	17,989	1,568
April	9,501	7,772	1,674	494	413	16,624	1,596
May	9,498	7,816	1,620	271	598	16,546	1,623
June	9,188	7,624	1,507	-434	-64	17,497	1,608
July	9,055	7,444	1,541	148	1,182	16,453	1,649
August	9,106	7,544	1,504	283	-104	17,360	1,654
September	9,096	7,548	1,480	-144	577	16,795	1,667
October	8,983	7,453	1,478	73	-378	17,304	1,658
November	9,084	7,536	1,483	541	-367	17,311	1,663
December	8,734	7,337	1,343	-302	-2,335	18,858	1,581
Average	**9,219**	**7,613**	**1,546**	**86**	**-129**	**17,325**	
1990 January	E 9,113	E 7,522	1,525	377	1,189	16,968	1,632
February	E 9,093	E 7,465	1,558	-316	577	17,024	1,639
March	E 8,986	E 7,394	1,519	1,030	-883	17,083	1,643
April	E 8,883	E 7,331	1,481	-94	-25	16,666	1,640
May	E 8,838	E 7,259	1,499	501	505	16,843	1,671
June	E 8,602	E 7,076	1,453	75	348	17,112	1,684
July	E 8,694	E 7,144	1,480	-152	1,019	16,856	1,711
August	E 8,842	E 7,215	1,562	-227	-92	17,936	1,701
September	E 8,819	E 7,167	1,587	-884	901	16,437	1,701
October	E 9,192	E 7,454	1,654	101	-829	16,851	1,679
November	E 9,080	E 7,308	1,692	-364	-323	16,681	1,658
December	E 8,961	E 7,282	1,602	-523	-591	16,518	1,624
Average	**E 8,925**	**E 7,301**	**1,551**	**-34**	**145**	**16,916**	
1991 January	E 9,135	E 7,418	1,635	-94	-1,094	16,882	1,587
February	RE 9,334	RE 7,548	R 1,690	R 250	R -688	R 16,284	R 1,574
March	PE 9,080	PE 7,392	E 1,613	E -117	E -986	E 16,889	E 1,555
3-Month Average	**PE 9,178**	**PE 7,450**	**E 1,644**	**E 5**	**E -930**	**E 16,698**	
1990 3-Month Average	**E 9,063**	**E 7,460**	**1,533**	**386**	**285**	**17,025**	
1989 3-Month Average	**9,469**	**7,766**	**1,642**	**32**	**-352**	**17,719**	

[a]Includes lease condensate.
[b]A negative number indicates a decrease in stocks and a positive number indicates an increase.
[c]Stocks are totals as of end of period.
[d]Includes crude oil, natural gas plant liquids, other hydrocarbons, and alcohol.
[e]Includes stocks located in the Strategic Petroleum Reserve.
[f]Includes crude oil for storage in the Strategic Petroleum Reserve.
[g]Net imports equals imports minus exports.
[h]Due to a rounding difference, this value is 1,603 in the *Petroleum Supply Annual* and *Petroleum Supply Monthly.*
[I]In January 1975, 1981, and 1983, numerous respondents were added to surveys affecting stocks reported and stock change calculations. See Note 4 at end of section.

Footnotes continued on following page.

Table 3.1b Crude Oil[a] and Petroleum Products Overview (Continued)

	Imports			Exports			Net Imports[g]
	Total	Crude Oil[f]	Petroleum Products	Total	Crude Oil	Petroleum Products	
	Thousand Barrels per Day						
1973 Average	**6,256**	**3,244**	**3,012**	**231**	**2**	**229**	**6,025**
1974 Average	**6,112**	**3,477**	**2,635**	**221**	**3**	**218**	**5,892**
1975 Average	**6,056**	**4,105**	**1,951**	**209**	**6**	**204**	**5,846**
1976 Average	**7,313**	**5,287**	**2,026**	**223**	**8**	**215**	**7,090**
1977 Average	**8,807**	**6,615**	**2,193**	**243**	**50**	**193**	**8,565**
1978 Average	**8,363**	**6,356**	**2,008**	**362**	**158**	**204**	**8,002**
1979 Average	**8,456**	**6,519**	**1,937**	**471**	**235**	**236**	**7,985**
1980 Average	**6,909**	**5,263**	**1,646**	**544**	**287**	**258**	**6,365**
1981 Average	**5,996**	**4,396**	**1,599**	**595**	**228**	**367**	**5,401**
1982 Average	**5,113**	**3,488**	**1,625**	**815**	**236**	**579**	**4,298**
1983 Average	**5,051**	**3,329**	**1,722**	**739**	**164**	**575**	**4,312**
1984 Average	**5,437**	**3,426**	**2,011**	**722**	**181**	**541**	**4,715**
1985 Average	**5,067**	**3,201**	**1,866**	**781**	**204**	**577**	**4,286**
1986 Average	**6,224**	**4,178**	**2,045**	**785**	**154**	**631**	**5,439**
1987 Average	**6,678**	**4,674**	**2,004**	**764**	**151**	**613**	**5,914**
1988 Average	**7,402**	**5,107**	**2,295**	**815**	**155**	**661**	**6,587**
1989 January	8,255	5,661	2,594	761	137	624	7,494
February	8,032	5,305	2,727	875	208	666	7,157
March	7,456	5,035	2,421	860	156	704	6,596
April	8,078	5,750	2,328	810	139	670	7,268
May	7,778	5,729	2,049	791	131	661	6,986
June	7,977	5,976	2,002	975	243	732	7,002
July	8,369	6,214	2,155	780	69	711	7,589
August	8,560	6,565	1,995	967	162	805	7,593
September	8,002	6,028	1,975	655	32	623	7,347
October	8,301	6,187	2,115	791	61	730	7,511
November	8,341	6,171	2,170	975	120	855	7,366
December	7,579	5,463	2,116	1,067	247	821	6,512
Average	**8,061**	**5,843**	**2,217**	**859**	**142**	**717**	**7,202**
1990 January	9,147	6,206	2,941	710	132	578	8,437
February	8,306	5,858	2,447	822	102	720	7,483
March	7,925	6,125	1,800	881	133	748	7,045
April	7,758	5,740	2,018	761	112	649	6,997
May	8,738	6,438	2,300	690	112	578	8,048
June	8,690	6,413	2,276	804	88	715	7,886
July	8,893	6,812	2,081	696	89	606	8,197
August	8,558	6,432	2,127	850	64	785	7,709
September	7,336	5,656	1,680	847	68	779	6,489
October	6,701	5,132	1,569	949	104	844	5,752
November	6,968	5,062	1,906	1,085	138	948	5,882
December	6,431	4,611	1,821	1,268	242	1,026	5,164
Average	**7,954**	**5,876**	**2,079**	**864**	**116**	**748**	**7,090**
1991 January	7,066	5,303	1,763	1,199	50	1,149	5,867
February	R 6,844	R 5,498	R 1,346	R 1,441	R 153	R 1,288	R 5,403
March	E 6,721	E 5,272	E 1,449	E 847	E 163	E 685	E 5,873
3-Month Average	**E 6,878**	**E 5,353**	**E 1,525**	**E 1,153**	**E 121**	**E 1,032**	**E 5,725**
1990 3-Month Average	**8,464**	**6,070**	**2,395**	**804**	**123**	**681**	**7,661**
1989 3-Month Average	**7,910**	**5,335**	**2,575**	**830**	**166**	**665**	**7,080**

Footnotes continued.

PE=Preliminary estimate. R=Revised data. E=Estimate.

Notes: • Geographic coverage is the 50 States and the District of Columbia. • Totals may not equal sum of components due to independent rounding.

Sources: See end of section.

Figure 3.1 Crude Oil and Natural Gas Liquids Production

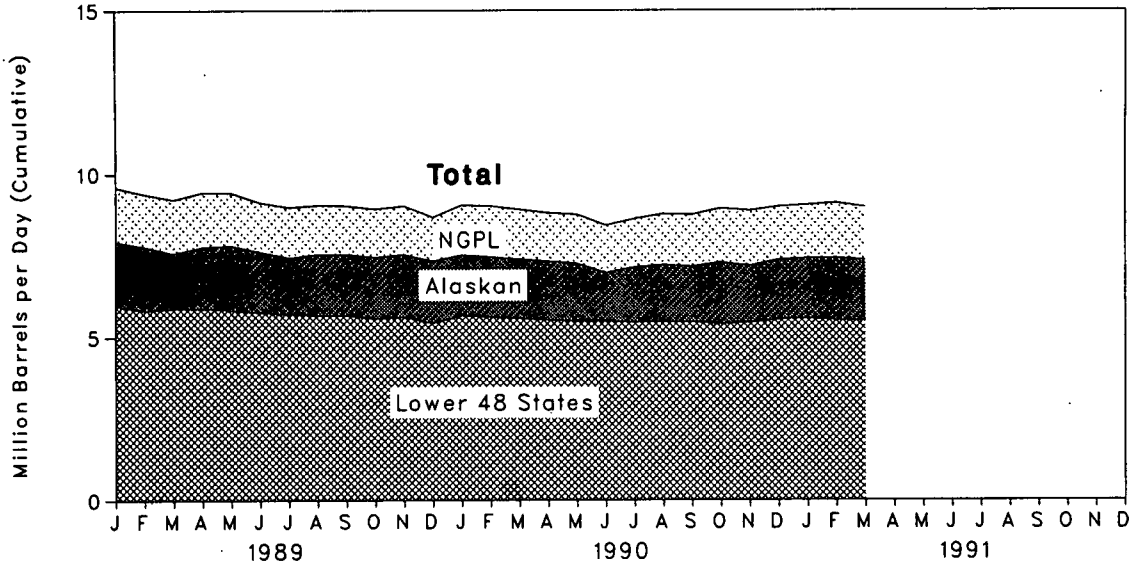


Figure 3.2 Petroleum Stocks

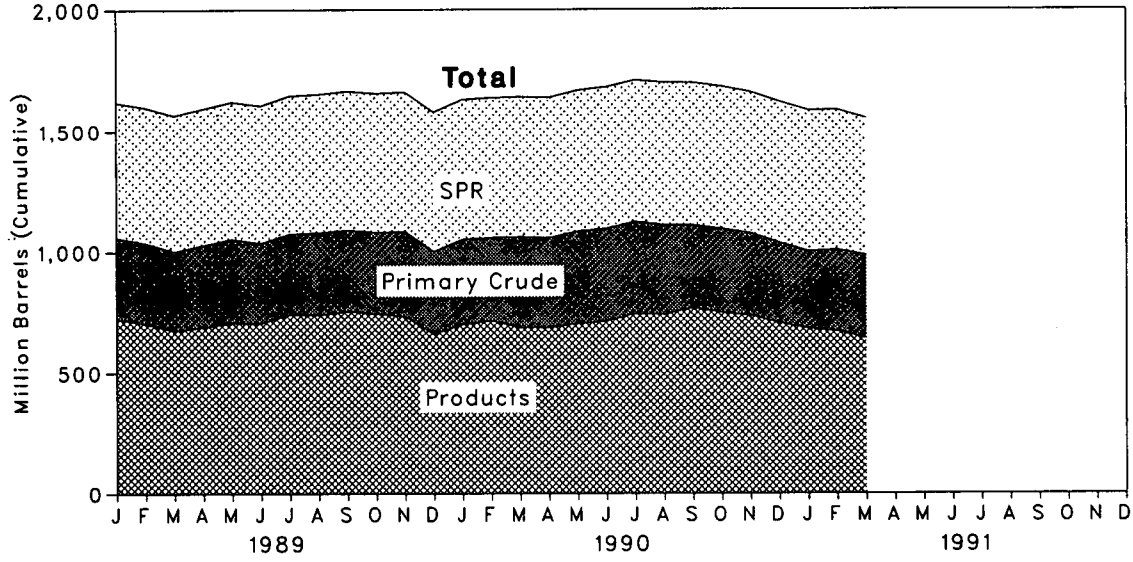


Figure 3.3 Petroleum Products Supplied and Imports

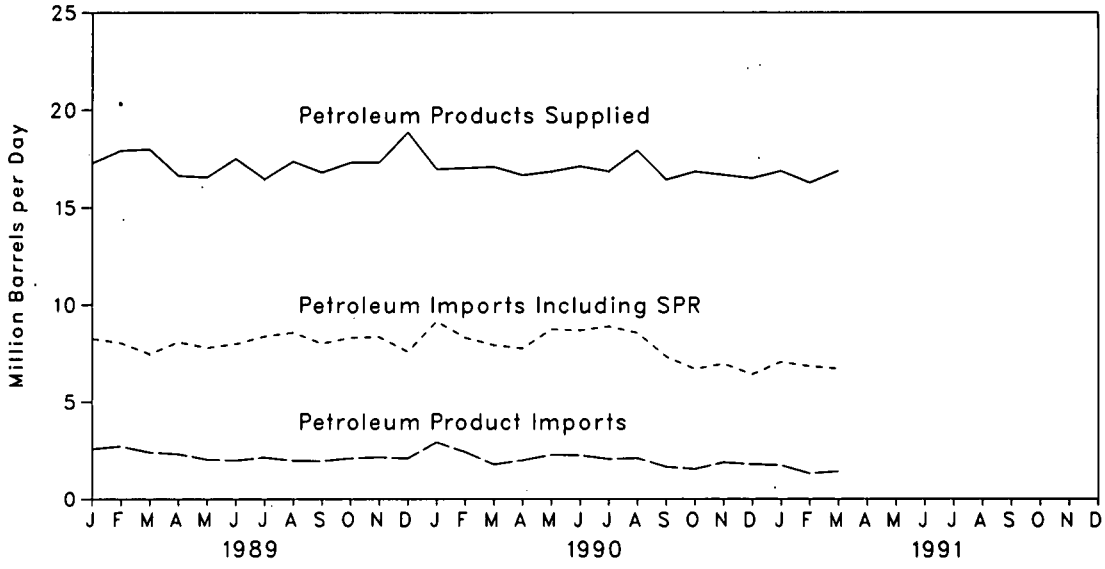


Figure 3.4 Petroleum Imports by Source

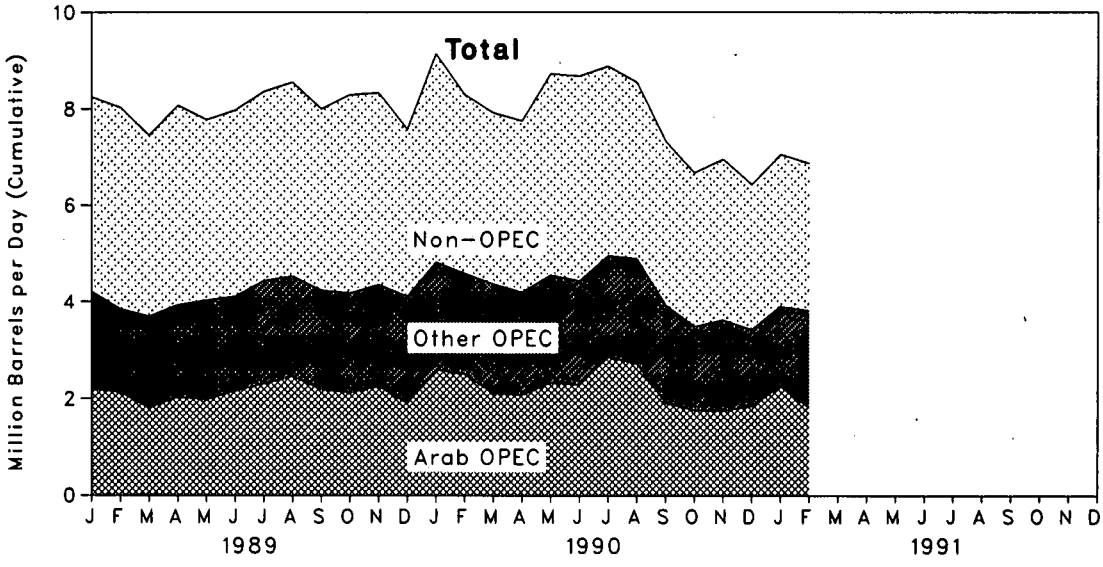


Table 3.2a Crude Oil[a] Supply and Disposition
(Thousand Barrels per Day)

	Supply						
	Field Production		Imports			Unaccounted-for Crude Oil[e]	Crude Oil Used Directly[f]
	Total Domestic	Alaskan	Total	SPR[d]	Other		
1973 Average	**9,208**	**198**	**3,244**		**3,244**	**3**	**-19**
1974 Average	**8,774**	**193**	**3,477**		**3,477**	**-25**	**-15**
1975 Average	**8,375**	**191**	**4,105**		**4,105**	**17**	**-17**
1976 Average	**8,132**	**173**	**5,287**		**5,287**	**77**	**-18**
1977 Average	**8,245**	**464**	**6,615**	**21**	**6,594**	**-6**	**-14**
1978 Average	**8,707**	**1,229**	**6,356**	**162**	**6,195**	**-57**	**-14**
1979 Average	**8,552**	**1,401**	**6,519**	**67**	**6,452**	**-11**	**-13**
1980 Average	**8,597**	**1,617**	**5,263**	**44**	**5,219**	**34**	**-13**
1981 Average	**8,572**	**1,609**	**4,396**	**256**	**4,141**	**83**	**-58**
1982 Average	**8,649**	**1,696**	**3,488**	**165**	**3,323**	**71**	**-59**
1983 Average	**8,688**	**1,714**	**3,329**	**234**	**3,096**	**114**	**NA**
1984 Average	**8,879**	**1,722**	**3,426**	**197**	**3,229**	**185**	**NA**
1985 Average	**8,971**	**1,825**	**3,201**	**118**	**3,083**	**145**	**NA**
1986 Average	**8,680**	**1,867**	**4,178**	**48**	**4,130**	**139**	**NA**
1987 Average	**8,349**	**1,962**	**4,674**	**73**	**4,601**	**145**	**NA**
1988 Average	**8,140**	**2,017**	**5,107**	**51**	**5,055**	**196**	**NA**
1989 January	7,937	1,958	5,661	65	5,596	94	NA
February	7,788	1,962	5,305	84	5,221	-26	NA
March	7,575	1,686	5,035	75	4,960	426	NA
April	7,772	1,890	5,750	59	5,690	91	NA
May	7,816	1,973	5,729	77	5,652	280	NA
June	7,624	1,861	5,976	55	5,920	135	NA
July	7,444	1,725	6,214	75	6,139	426	NA
August	7,544	1,870	6,565	32	6,533	213	NA
September	7,548	1,875	6,028	59	5,969	121	NA
October	7,453	1,877	6,187	37	6,149	-125	NA
November	7,536	1,915	6,171	41	6,131	397	NA
December	7,337	1,904	5,463	12	5,452	343	NA
Average	**7,613**	**1,874**	**5,843**	**56**	**5,787**	**200**	**NA**
1990 January	E 7,522	E 1,864	6,206	24	6,182	321	NA
February	E 7,465	E 1,834	5,858	12	5,847	-9	NA
March	E 7,394	E 1,819	6,125	44	6,081	544	NA
April	E 7,331	E 1,803	5,740	38	5,702	22	NA
May	E 7,259	E 1,766	6,438	89	6,349	335	NA
June	E 7,076	E 1,613	6,413	17	6,397	394	NA
July	E 7,144	E 1,687	6,812	0	6,812	220	NA
August	E 7,215	E 1,736	6,432	95	6,337	348	NA
September	E 7,167	E 1,702	5,656	0	5,656	480	NA
October	E 7,454	E 1,885	5,132	0	5,132	460	NA
November	E 7,308	E 1,746	5,062	0	5,062	372	NA
December	E 7,282	E 1,838	4,611	0	4,611	550	NA
Average	**E 7,301**	**E 1,774**	**5,876**	**27**	**5,849**	**340**	**NA**
1991 January	E 7,418	E 1,848	5,303	0	5,303	-14	NA
February	RE 7,548	RE 1,908	R 5,498	0	R 5,498	R 424	NA
March	PE 7,392	PE 1,887	E 5,272	E 0	E 5,272	E 203	NA
3-Month Average	**PE 7,450**	**PE 1,880**	**E 5,353**	**E 0**	**E 5,353**	**E 197**	**NA**
1990 3-Month Average	**E 7,460**	**E 1,839**	**6,070**	**27**	**6,043**	**295**	**NA**
1989 3-Month Average	**7,766**	**1,866**	**5,335**	**75**	**5,260**	**171**	**NA**

[a]Includes lease condensate.
[b]Stocks are totals as of end of period.
[c]A negative number indicates a decrease in stocks and a positive number indicates an increase.
[d]Strategic Petroleum Reserve.
[e]A balancing item.
[f]Beginning in January 1983, crude oil used directly as fuel is shown as product supplied.
[g]Stocks of Alaskan crude oil in transit are included beginning in January 1981. See Note 5 at end of section.
[h]Stock change is calculated using new basis stock levels. See Note 4 at end of section.
Footnotes continued on following page.

Table 3.2b Crude Oil[a] Supply and Disposition (Continued)

	Disposition						Ending Stocks[b]		
	Crude Losses	Stock Change[c] SPR[d]	Stock Change[c] Other	Refinery Input	Exports	Product Supplied[f]	Total	SPR[d]	Other Primary
	Thousand Barrels per Day						Million Barrels		
1973 Average	13		-11	12,431	2		242		242
1974 Average	13		62	12,133	3		265		265
1975 Average	13		17	12,442	6		271		271
1976 Average	15		39	13,416	8		285		285
1977 Average	16	20	150	14,602	50		348	7	340
1978 Average	16	163	-84	14,739	158		376	67	309
1979 Average	16	67	81	14,648	235		430	91	339
1980 Average	15	45	52	13,481	287		[g] 466	108	[g] 358
1981 Average	5	336	[g] -46	12,470	228		594	230	363
1982 Average	3	174	-38	11,774	236		[h] 644	294	[h] 350
1983 Average	2	234	[h] -20	11,685	164	66	723	379	344
1984 Average	2	195	4	12,044	181	64	796	451	345
1985 Average	1	117	-67	12,002	204	60	814	493	321
1986 Average	(s)	50	28	12,716	154	49	843	512	331
1987 Average	(s)	80	49	12,854	151	34	890	541	349
1988 Average	(s)	52	-51	13,246	155	40	890	560	330
1989 January	(s)	65	115	13,330	137	47	895	562	334
February	(s)	85	-38	12,765	208	48	897	564	333
March	(s)	75	-202	12,963	156	45	893	566	327
April	(s)	60	434	12,956	139	23	908	568	340
May	(s)	77	194	13,405	131	19	916	570	346
June	(s)	44	-478	13,905	243	20	903	572	331
July	(s)	86	62	13,848	69	19	908	574	333
August	(s)	32	251	13,861	162	17	916	575	341
September	1	59	-203	13,791	32	18	912	577	335
October	(s)	37	36	13,360	61	21	914	578	336
November	(s)	41	500	13,420	120	25	930	579	351
December	(s)	12	-313	13,165	247	33	921	580	341
Average	(s)	56	30	13,401	142	28			
1990 January	(s)	24	353	13,499	132	40	933	581	352
February	0	12	-328	13,494	102	36	924	581	343
March	0	44	986	12,876	133	24	956	582	374
April	(s)	38	-132	13,051	112	24	953	583	370
May	0	89	412	13,389	112	30	969	586	382
June	(s)	16	59	13,690	88	29	971	587	384
July	0	0	-152	14,208	89	31	966	587	380
August	(s)	94	-321	14,140	64	18	959	590	370
September	(s)	(s)	-884	14,105	68	14	933	590	343
October	(s)	-8	109	12,825	104	15	936	589	346
November	(s)	-111	-252	12,955	138	13	925	586	339
December	(s)	-10	-512	12,708	242	15	909	586	323
Average	(s)	16	-50	13,411	116	24			
1991 January	[R] 0	0	-94	12,727	50	23	906	586	320
February	[R] 0	[R] -147	[R] 397	[R] 13,052	[R] 153	[R] 17	[R] 913	582	[R] 331
March	[E] (s)	[E] -368	[E] 251	[E] 12,801	[E] 163	[E] 18	[E] 914	[E] 570	[E] 344
3-Month Average	[E] (s)	[E] -173	[E] 178	[E] 12,854	[E] 121	[E] 19			
1990 3-Month Average	(s)	27	359	13,283	123	33			
1989 3-Month Average	(s)	75	-42	13,027	166	47			

Footnotes continued.
PE=Preliminary estimate. R=Revised data. NA=Not available. E=Estimate. (s)=Less than 500 barrels per day.
Notes: • Geographic coverage is the 50 States and the District of Columbia. • Totals may not equal sum of components due to independent rounding.
Sources: See end of section.

Table 3.3a Crude Oil and Petroleum Product Imports
(Thousand Barrels per Day)

	Imports from OPEC Sources[a]										
	Algeria	Libya	Saudi Arabia[b]	United Arab Emirates	Indonesia	Iran	Nigeria	Venezuela	Other OPEC[b]	Total OPEC[c]	Total Arab OPEC[d]
1973 Average	**136**	**164**	**486**	**71**	**213**	**223**	**459**	**1,135**	**106**	**2,993**	**915**
1974 Average	**190**	**4**	**461**	**74**	**300**	**469**	**713**	**979**	**88**	**3,280**	**752**
1975 Average	**282**	**232**	**715**	**117**	**390**	**280**	**762**	**702**	**122**	**3,601**	**1,383**
1976 Average	**432**	**453**	**1,230**	**254**	**539**	**298**	**1,025**	**700**	**134**	**5,066**	**2,424**
1977 Average	**559**	**723**	**1,380**	**335**	**541**	**535**	**1,143**	**690**	**287**	**6,193**	**3,185**
1978 Average	**649**	**654**	**1,144**	**385**	**573**	**555**	**919**	**646**	**226**	**5,751**	**2,963**
1979 Average	**636**	**658**	**1,356**	**281**	**420**	**304**	**1,080**	**690**	**212**	**5,637**	**3,058**
1980 Average	**488**	**554**	**1,261**	**172**	**348**	**9**	**857**	**481**	**130**	**4,300**	**2,551**
1981 Average	**311**	**319**	**1,129**	**81**	**366**	**0**	**620**	**406**	**90**	**3,323**	**1,848**
1982 Average	**170**	**26**	**552**	**92**	**248**	**35**	**514**	**412**	**97**	**2,146**	**854**
1983 Average	**240**	**0**	**337**	**30**	**338**	**48**	**302**	**422**	**144**	**1,862**	**632**
1984 Average	**323**	**1**	**325**	**117**	**343**	**10**	**216**	**548**	**166**	**2,049**	**819**
1985 Average	**187**	**4**	**168**	**45**	**314**	**27**	**293**	**605**	**187**	**1,830**	**472**
1986 Average	**271**	**0**	**685**	**44**	**318**	**19**	**440**	**793**	**265**	**2,837**	**1,162**
1987 Average	**295**	**0**	**751**	**61**	**285**	**98**	**535**	**804**	**231**	**3,060**	**1,274**
1988 Average	**300**	**0**	[R] **1,073**	**29**	**205**	[•] **(s)**	**618**	**794**	[R] **501**	**3,520**	**1,839**
1989 January	335	0	1,449	59	218	0	782	941	429	4,212	2,219
February	310	0	1,290	17	292	0	567	775	593	3,845	2,126
March	272	0	1,108	64	167	0	702	909	471	3,693	1,805
April	235	0	1,226	14	128	0	750	831	743	3,927	2,030
May	272	0	1,155	61	264	0	789	853	630	4,025	1,977
June	205	0	1,249	17	138	0	864	778	856	4,106	2,164
July	263	0	1,182	0	113	0	1,094	794	992	4,437	2,308
August	216	0	1,316	44	115	0	946	834	1,060	4,531	2,453
September	256	0	1,109	20	113	0	867	914	957	4,236	2,195
October	250	0	1,158	14	167	0	713	1,004	872	4,177	2,122
November	323	0	1,342	0	231	0	770	924	762	4,353	2,257
December	288	0	1,115	26	263	0	915	903	602	4,111	1,905
Average	**269**	**0**	**1,224**	**28**	**183**	**0**	**815**	**873**	**748**	**4,140**	**2,130**
1990 January	418	0	1,212	37	137	0	830	1,138	1,047	4,819	2,592
February	280	0	1,557	18	260	0	833	890	753	4,590	2,504
March	301	0	1,157	17	138	0	1,054	878	824	4,368	2,115
April	234	0	1,149	9	88	0	969	1,005	742	4,196	2,073
May	247	0	1,225	73	77	0	1,008	1,087	836	4,554	2,337
June	333	0	1,137	20	138	0	778	1,070	960	4,435	2,293
July	308	0	1,369	13	143	0	830	999	1,291	4,954	2,853
August	349	0	1,189	0	83	0	881	1,013	1,378	4,894	2,716
September	279	0	1,286	0	111	0	755	1,054	452	3,936	1,915
October	173	0	1,613	0	88	0	557	979	99	3,509	1,786
November	177	0	1,576	0	72	0	574	1,142	83	3,624	1,753
December	242	0	1,587	14	45	0	499	975	65	3,428	1,843
Average	**279**	**0**	**1,337**	**17**	**114**	**0**	**797**	**1,020**	**712**	**4,275**	**2,232**
1991 January	327	0	1,934	0	61	0	504	1,021	53	3,899	2,261
February	246	0	1,566	0	162	0	721	959	161	3,815	1,812
2-Month Average	**289**	**0**	**1,759**	**0**	**109**	**0**	**607**	**992**	**104**	**3,859**	**2,048**
1990 2-Month Average	**352**	**0**	**1,376**	**28**	**195**	**0**	**831**	**1,021**	**908**	**4,710**	**2,550**
1989 2-Month Average	**323**	**0**	**1,374**	**39**	**253**	**0**	**680**	**863**	**507**	**4,038**	**2,175**

[a]Excludes petroleum imported into the United States indirectly from members of the Organization of Petroleum Exporting Countries (OPEC), primarily from Caribbean and West European areas, as petroleum products that were refined from crude oil produced by OPEC.

[b]"Other OPEC" consists of Ecuador, Gabon, Iraq, Kuwait, and Qatar. Imports from the Neutral Zone between Kuwait and Saudi Arabia are included in imports from Saudi Arabia.

[c]"Total OPEC" consists of Ecuador, Gabon, Indonesia, Iran, Nigeria, and Venezuela, as well as the Arab members.

[d]"Total Arab OPEC" consists of Algeria, Iraq, Kuwait, Libya, Qatar, Saudi Arabia, and the United Arab Emirates. Imports from the Neutral Zone are included in imports from "Total Arab OPEC."

[•]A small amount of Iranian crude oil entered the United States (defined in this publication as the 50 States and the District of Columbia) in January 1988 from the Virgin Islands. The oil originated in Iran and was exported to the Virgin Islands prior to the signing of Executive Order 12613 on October 29, 1987.

Footnotes continued on following page.

Table 3.3b Crude Oil and Petroleum Product Imports (Continued)
(Thousand Barrels per Day)

	Imports from Non-OPEC Sources[r]										
	Bahamas	Canada	Mexico	Nether-lands Antilles	Trinidad and Tobago	United Kingdom	Puerto Rico	Virgin Islands	Other Non-OPEC	Total Non-OPEC	Total Imports
1973 Average	174	1,325	16	585	255	15	99	329	465	3,263	6,256
1974 Average	164	1,070	8	511	251	8	90	391	340	2,832	6,112
1975 Average	152	846	71	332	242	14	90	406	300	2,454	6,056
1976 Average	118	599	87	275	274	31	88	422	353	2,247	7,313
1977 Average	171	517	179	211	289	126	105	466	550	2,614	8,807
1978 Average	160	467	318	229	253	180	94	428	484	2,612	8,363
1979 Average	147	538	439	231	190	202	92	431	548	2,819	8,456
1980 Average	78	455	533	225	176	176	88	388	491	2,609	6,909
1981 Average	74	447	522	197	133	375	62	327	534	2,672	5,996
1982 Average	65	482	685	175	112	456	50	316	627	2,968	5,113
1983 Average	125	547	826	189	96	382	40	282	701	3,189	5,051
1984 Average	88	630	748	188	94	402	42	294	902	3,388	5,437
1985 Average	40	770	816	40	113	310	28	247	873	3,237	5,067
1986 Average	37	807	699	25	125	350	21	244	1,080	3,387	6,224
1987 Average	37	848	655	29	106	352	21	272	1,296	3,617	6,678
1988 Average	32	999	747	36	97	315	22	242	1,392	3,882	7,402
1989 January	53	1,065	809	59	105	215	30	415	1,293	4,043	8,255
February	24	1,007	756	44	92	221	24	369	1,649	4,186	8,032
March	41	961	667	52	82	174	38	324	1,424	3,763	7,456
April	55	877	1,002	14	117	148	24	407	1,507	4,151	8,078
May	29	901	808	32	68	202	46	379	1,288	3,753	7,778
June	28	921	688	34	143	181	32	363	1,481	3,871	7,977
July	32	849	758	49	89	328	39	331	1,458	3,932	8,369
August	19	911	806	43	101	370	21	239	1,519	4,029	8,560
September	8	949	721	35	95	191	33	190	1,545	3,766	8,002
October	44	857	837	38	71	309	32	180	1,756	4,124	8,301
November	41	911	743	72	91	165	42	279	1,645	3,988	8,341
December	29	973	610	29	81	78	24	377	1,266	3,468	7,579
Average	34	931	767	42	94	215	32	321	1,484	3,921	8,061
1990 January	74	952	789	9	109	219	35	409	1,732	4,328	9,147
February	74	919	722	27	89	74	32	323	1,456	3,716	8,306
March	35	823	812	10	103	273	32	264	1,205	3,557	7,925
April	51	908	466	29	114	274	33	283	1,404	3,562	7,758
May	29	994	778	20	88	347	38	285	1,604	4,184	8,738
June	36	927	912	21	118	249	27	299	1,666	4,255	8,690
July	25	882	695	30	107	211	35	252	1,701	3,939	8,893
August	40	941	773	41	108	170	29	230	1,331	3,665	8,558
September	45	916	871	33	89	155	20	240	1,031	3,399	7,336
October	9	910	828	43	83	81	29	204	1,006	3,192	6,701
November	0	894	746	46	81	112	50	312	1,103	3,343	6,968
December	13	979	637	53	62	33	29	291	907	3,003	6,431
Average	36	921	752	30	96	184	32	282	1,345	3,679	7,954
1991 January	25	967	779	103	75	32	22	261	903	3,167	7,066
February	14	1,123	742	23	76	34	20	222	777	3,030	R 6,844
2-Month Average	20	1,041	762	65	75	33	21	242	843	3,102	6,961
1990 2-Month Average	74	936	757	17	100	150	33	368	1,601	4,037	8,748
1989 2-Month Average	39	1,037	784	52	99	217	27	393	1,462	4,111	8,149

Footnotes continued.

[r]Includes petroleum imported into the United States indirectly from members of OPEC, primarily from Caribbean and West European areas, as petroleum products that were refined from crude oil produced by OPEC.

R=Revised data. (s)=Less than 500 barrels per day.

Notes: • Geographic coverage is the 50 States and the District of Columbia. • Totals may not equal sum of components due to independent rounding. • Beginning in October 1977, Strategic Petroleum Reserve imports are included.

Sources: See end of section.

Figure 3.5 Finished Motor Gasoline Product Supplied, Production, and Imports

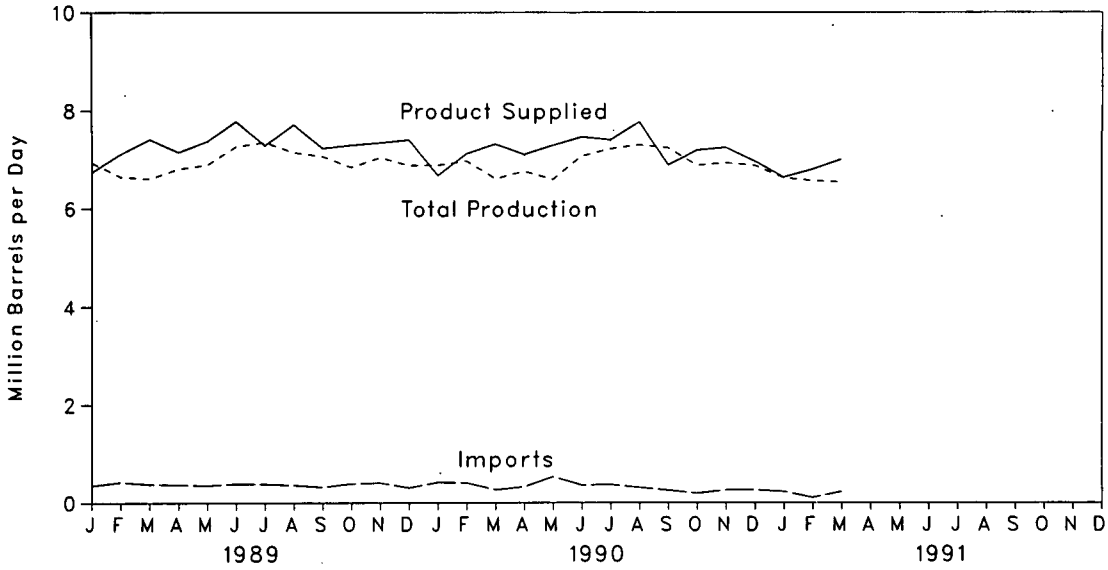


Figure 3.6 Motor Gasoline Ending Stocks

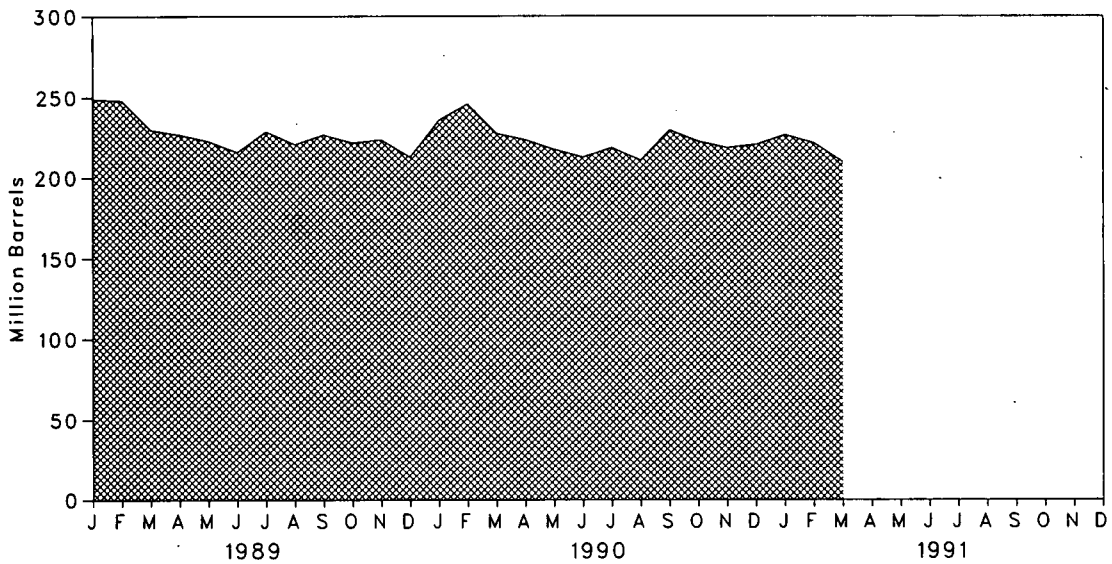


Table 3.4 Finished Motor Gasoline Supply and Disposition

	Supply		Disposition					Ending Stocks[a]	
					Product Supplied				
	Total Production	Imports[b]	Stock Change[b,c]	Exports	Total	Unleaded[d]	Unleaded	Total Motor Gasoline[e]	Finished Motor Gasoline
	Thousand Barrels per Day						Percent of Total	Million Barrels	
1973 Average	**6,535**	**134**	**-9**	**4**	**6,674**			**209**	
1974 Average	**6,360**	**204**	**24**	**2**	**6,537**			**[f] 218**	
1975 Average	**6,520**	**184**	**[f] 28**	**2**	**6,675**			**235**	
1976 Average	**6,841**	**131**	**-10**	**3**	**6,978**			**231**	
1977 Average	**7,033**	**217**	**72**	**2**	**7,177**	**1,976**	**27.5**	**258**	
1978 Average	**7,169**	**190**	**-54**	**1**	**7,412**	**2,521**	**34.0**	**238**	
1979 Average	**6,852**	**181**	**-2**	**(s)**	**7,034**	**2,798**	**39.8**	**237**	
1980 Average	**6,506**	**140**	**66**	**1**	**6,579**	**3,067**	**46.6**	**[f] 261**	
1981 Average[g]	**6,405**	**157**	**[f] -28**	**2**	**6,588**	**3,264**	**49.5**	**253**	
1982 Average	**6,338**	**197**	**-25**	**20**	**6,539**	**3,409**	**52.1**	**[f] 235**	
1983 Average	**6,340**	**247**	**[f] -45**	**10**	**6,622**	**3,647**	**55.1**	**222**	**186**
1984 Average	**6,453**	**299**	**54**	**6**	**6,693**	**3,987**	**59.6**	**243**	**205**
1985 Average	**6,419**	**381**	**-41**	**10**	**6,831**	**4,406**	**64.5**	**223**	**190**
1986 Average	**6,752**	**326**	**11**	**33**	**7,034**	**4,854**	**69.0**	**233**	**194**
1987 Average	**6,841**	**384**	**-15**	**35**	**7,206**	**5,470**	**75.9**	**226**	**189**
1988 Average	**6,956**	**405**	**3**	**22**	**7,336**	**5,995**	**81.7**	**228**	**190**
1989 January	6,937	353	512	33	6,745	5,754	85.3	249	206
February	6,650	423	-70	24	7,119	6,141	86.3	248	204
March	6,612	381	-471	43	7,421	6,380	86.0	230	189
April	6,811	370	-22	46	7,157	6,248	87.3	227	188
May	6,894	355	-163	31	7,381	6,454	87.5	223	183
June	7,275	386	-180	60	7,780	6,864	88.2	216	178
July	7,360	383	390	57	7,296	6,509	89.2	229	190
August	7,155	360	-260	58	7,717	6,934	89.8	221	182
September	7,069	320	118	31	7,240	6,443	89.0	227	186
October	6,845	389	-97	29	7,302	6,642	91.0	222	183
November	7,046	406	81	18	7,353	6,756	91.9	224	185
December	6,884	306	-257	37	7,410	6,927	93.5	213	177
Average	**6,963**	**369**	**-35**	**39**	**7,328**	**6,507**	**88.8**		
1990 January	6,889	417	599	31	6,675	6,272	94.0	236	196
February	6,978	407	204	53	7,129	6,657	93.4	246	201
March	6,612	265	-493	45	7,325	6,881	93.9	228	186
April	6,764	327	-52	28	7,116	6,696	94.1	224	184
May	6,599	535	-196	25	7,304	6,884	94.2	218	178
June	7,084	361	-86	52	7,478	7,059	94.4	213	176
July	7,230	372	146	41	7,415	7,012	94.6	219	180
August	7,315	313	-220	77	7,771	7,360	94.7	211	174
September	7,251	254	505	103	6,897	6,574	95.3	230	189
October	6,890	192	-210	90	7,201	6,854	95.2	223	182
November	6,941	259	-123	66	7,257	6,956	95.9	219	178
December	6,887	261	118	53	6,976	6,709	96.2	221	182
Average	**6,952**	**330**	**14**	**55**	**7,213**	**6,828**	**94.7**		
1991 January	6,629	227	164	50	6,643	6,361	95.8	227	187
February	[R] 6,573	[R] 106	[R] -229	[R] 102	[R] 6,806	[R] 6,592	[R] 96.9	[R] 222	[R] 181
March	[E] 6,544	[E] 225	[E] -299	[E] 52	[E] 7,016	[E] 6,763	[E] 96.4	[E] 210	[E] 171
3-Month Average	**[E] 6,583**	**[E] 188**	**[E] -118**	**[E] 67**	**[E] 6,822**	**[E] 6,572**	**[E] 96.3**		
1990 3-Month Average	**6,821**	**362**	**100**	**43**	**7,040**	**6,602**	**93.8**		
1989 3-Month Average	**6,736**	**384**	**-8**	**34**	**7,094**	**6,090**	**85.8**		

[a]Stocks are totals as of end of period.
[b]Beginning in 1981, excludes blending components.
[c]A negative number indicates a decrease in stocks and a positive number indicates an increase.
[d]Includes gasohol.
[e]Includes motor gasoline blending components.
[f]In January 1975, 1981, and 1983, numerous respondents were added to surveys affecting stocks reported and stock change calculations. See Note 4 at end of section.
[g]Beginning in January 1981, survey forms were modified. See Notes 1 and 2 at end of section.
R=Revised data. E=Estimate. (s)=Less than 500 barrels per day.
Notes: • Geographic coverage is the 50 States and the District of Columbia. • Totals may not equal sum of components due to independent rounding.
Sources: See end of section.

Figure 3.7 Distillate Fuel Oil Product Supplied, Production, and Imports

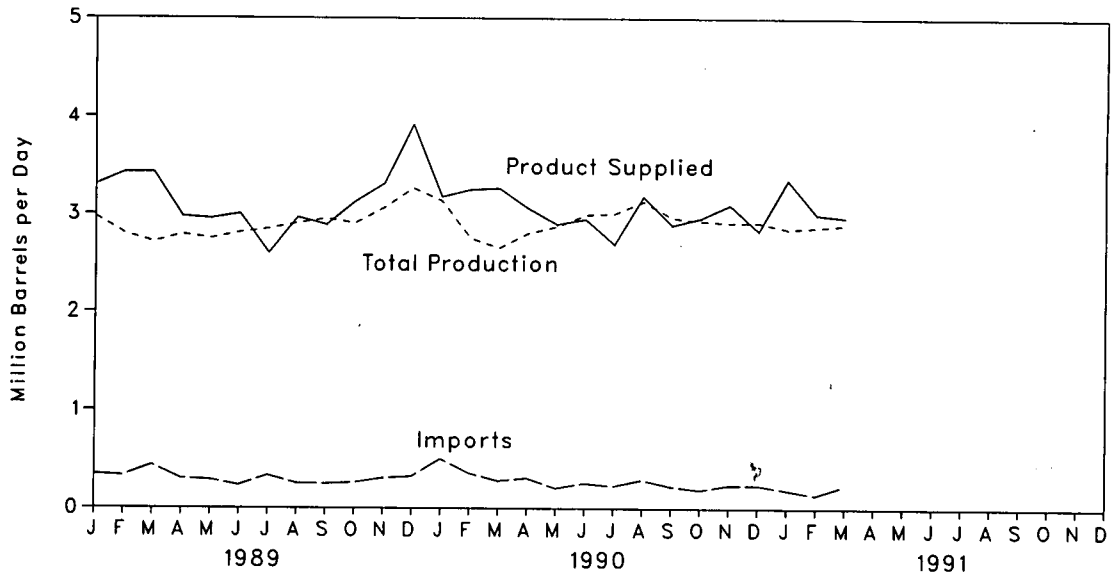


Figure 3.8 Distillate Fuel Oil Ending Stocks

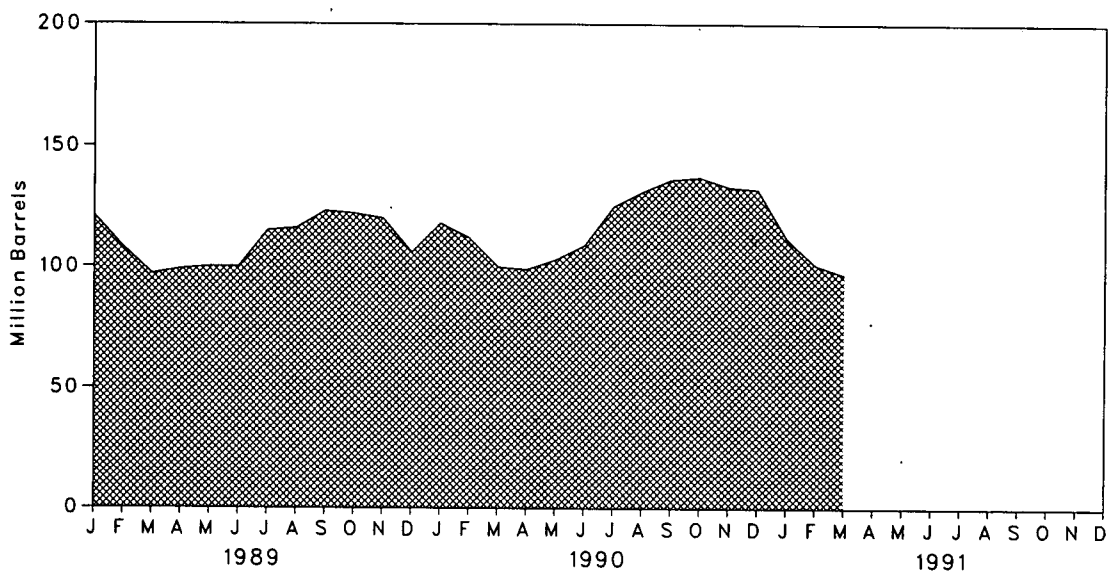


Table 3.5 Distillate Fuel Oil Supply and Disposition

	Supply			Disposition			
	Total Production	Imports	Crude Used Directly[a]	Stock Change[b]	Exports	Product Supplied[a]	Ending Stocks[c]
	Thousand Barrels per Day						Million Barrels
1973 Average	**2,822**	**392**	**2**	**115**	**9**	**3,092**	**196**
1974 Average	**2,669**	**289**	**2**	**9**	**2**	**2,948**	**[d] 200**
1975 Average	**2,654**	**155**	**2**	**[d] -41**	**1**	**2,851**	**209**
1976 Average	**2,924**	**146**	**1**	**-62**	**1**	**3,133**	**186**
1977 Average	**3,278**	**250**	**1**	**176**	**1**	**3,352**	**250**
1978 Average	**3,167**	**173**	**1**	**-93**	**3**	**3,432**	**216**
1979 Average	**3,153**	**193**	**1**	**34**	**3**	**3,311**	**229**
1980 Average	**2,662**	**142**	**1**	**-64**	**3**	**2,866**	**[d] 205**
1981 Average[e]	**2,613**	**173**	**10**	**[d] -38**	**5**	**2,829**	**192**
1982 Average	**2,606**	**93**	**10**	**-35**	**74**	**2,671**	**[d] 179**
1983 Average	**2,456**	**174**	**NA**	**[d] -124**	**64**	**2,690**	**140**
1984 Average	**2,681**	**272**	**NA**	**57**	**51**	**2,845**	**161**
1985 Average	**2,687**	**200**	**NA**	**-48**	**67**	**2,868**	**144**
1986 Average	**2,798**	**247**	**NA**	**31**	**100**	**2,914**	**155**
1987 Average	**2,731**	**255**	**NA**	**-56**	**66**	**2,976**	**134**
1988 Average	**2,859**	**302**	**NA**	**-30**	**69**	**3,122**	**124**
1989 January	2,974	346	NA	-93	110	3,303	121
February	2,797	331	NA	-463	164	3,427	108
March	2,713	439	NA	-352	76	3,428	97
April	2,789	301	NA	60	56	2,975	99
May	2,750	290	NA	35	51	2,954	100
June	2,809	233	NA	(s)	39	3,002	100
July	2,848	334	NA	498	89	2,596	115
August	2,907	254	NA	41	154	2,966	116
September	2,952	249	NA	231	81	2,889	123
October	2,906	261	NA	-50	90	3,127	122
November	3,063	307	NA	-64	123	3,311	120
December	3,266	324	NA	-454	130	3,914	106
Average	**2,899**	**306**	**NA**	**-49**	**97**	**3,157**	
1990 January	3,136	501	NA	398	62	3,177	118
February	2,753	357	NA	-204	65	3,250	112
March	2,655	280	NA	-405	75	3,265	100
April	2,802	308	NA	-8	59	3,059	99
May	2,873	207	NA	109	75	2,897	103
June	2,995	257	NA	219	84	2,949	109
July	3,006	229	NA	512	30	2,693	125
August	3,131	292	NA	188	51	3,184	131
September	2,967	226	NA	180	123	2,890	136
October	2,933	190	NA	10	150	2,963	137
November	2,916	238	NA	-132	188	3,098	133
December	2,918	239	NA	-21	347	2,831	132
Average	**2,925**	**277**	**NA**	**73**	**109**	**3,020**	
1991 January	2,851	190	NA	-648	332	3,356	112
February	[R] 2,867	[R] 138	NA	[R] -388	[R] 393	[R] 3,000	[R] 101
March	[E] 2,894	[E] 233	NA	[E] -183	[E] 342	[E] 2,969	[E] 97
3-Month Average	**[E] 2,871**	**[E] 189**	**NA**	**[E] -407**	**[E] 354**	**[E] 3,112**	
1990 3-Month Average	**2,851**	**380**	**NA**	**-66**	**67**	**3,230**	
1989 3-Month Average	**2,829**	**373**	**NA**	**-298**	**115**	**3,385**	

[a]Beginning in January 1983, product supplied for distillate fuel oil does not include crude oil used directly. See Note 3 at end of section.
[b]A negative number indicates a decrease in stocks and a positive number indicates an increase.
[c]Stocks are totals as of end of period.
[d]In January 1975, 1981, and 1983, numerous respondents were added to surveys affecting stocks reported and stock change calculations. See Note 4 at end of section. Due to a rounding difference, the 1975 stock change value is -40 in the *Petroleum Supply Annual* and the *Petroleum Supply Monthly*.
[e]Beginning in January 1981, survey forms were modified. See Note 1 at end of section.
R=Revised data. NA=Not available. E=Estimate.
Notes: • Geographic coverage is the 50 States and the District of Columbia. • Totals may not equal sum of components due to independent rounding.
Sources: See end of section.

Figure 3.9 Residual Fuel Oil Product Supplied, Production, and Imports

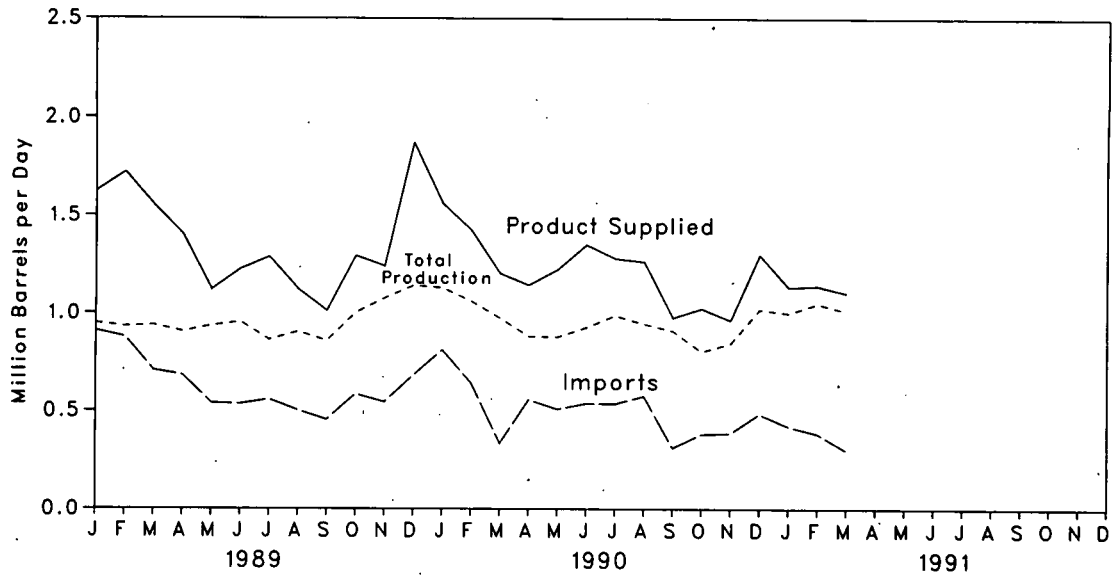


Figure 3.10 Residual Fuel Oil Ending Stocks

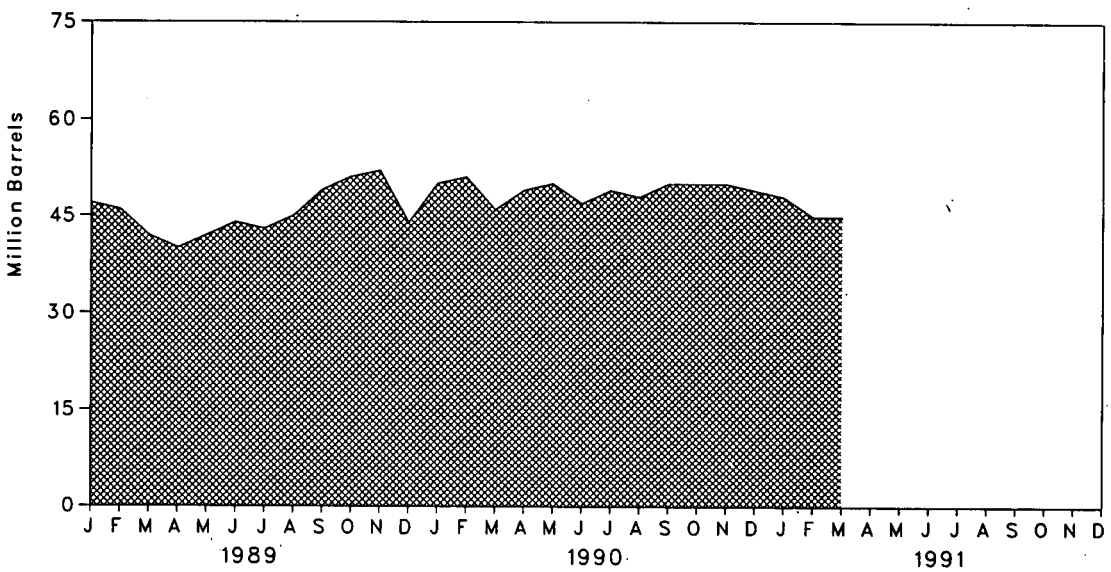


Table 3.6 Residual Fuel Oil Supply and Disposition

	Supply			Disposition			Ending Stocks[c]
	Total Production	Imports	Crude Used Directly[a]	Stock Change[b]	Exports	Product Supplied[a]	
	Thousand Barrels per Day						Million Barrels
1973 Average	971	1,853	17	-5	23	2,822	53
1974 Average	1,070	1,587	13	17	14	2,639	[d] 60
1975 Average	1,235	1,223	15	[d] -2	15	2,462	74
1976 Average	1,377	1,413	17	-5	12	2,801	72
1977 Average	1,754	1,359	13	48	6	3,071	90
1978 Average	1,667	1,355	13	1	13	3,023	90
1979 Average	1,687	1,151	12	15	9	2,826	96
1980 Average	1,580	939	12	-10	33	2,508	[d] 92
1981 Average[e]	1,321	800	48	[d] -37	118	2,088	78
1982 Average	1,070	776	48	-32	209	1,716	[d] 66
1983 Average	852	699	NA	[d] -55	185	1,421	49
1984 Average	891	681	NA	12	190	1,369	53
1985 Average	882	510	NA	-7	197	1,202	50
1986 Average	889	669	NA	-8	147	1,418	47
1987 Average	885	565	NA	(s)	186	1,264	47
1988 Average	926	644	NA	-8	200	1,378	45
1989 January	949	909	NA	84	151	1,623	47
February	930	877	NA	-58	146	1,719	46
March	937	706	NA	-128	220	1,551	42
April	904	681	NA	-52	236	1,401	40
May	934	538	NA	77	276	1,119	42
June	953	533	NA	54	208	1,223	44
July	862	556	NA	-44	176	1,286	43
August	903	501	NA	58	225	1,121	45
September	856	454	NA	162	137	1,010	49
October	1,001	583	NA	50	243	1,292	51
November	1,075	543	NA	48	330	1,240	52
December	1,140	680	NA	-275	226	1,870	44
Average	**954**	**629**	**NA**	**-2**	**215**	**1,370**	
1990 January	1,129	809	NA	191	186	1,561	50
February	1,060	640	NA	63	214	1,424	51
March	974	334	NA	-171	277	1,202	46
April	880	555	NA	93	200	1,142	49
May	877	507	NA	21	141	1,222	50
June	926	536	NA	-96	207	1,350	47
July	987	535	NA	72	171	1,279	49
August	945	574	NA	-25	280	1,263	48
September	909	311	NA	43	200	977	50
October	802	381	NA	(s)	160	1,023	50
November	845	386	NA	25	243	963	50
December	1,019	484	NA	-54	259	1,299	49
Average	**946**	**504**	**NA**	**13**	**211**	**1,225**	
1991 January	1,000	422	NA	-32	320	1,133	48
February	[R] 1,049	[R] 384	NA	[R] -106	[R] 299	[R] 1,239	[R] 45
March	[E] 1,010	[E] 299	NA	[E] -73	[E] 279	[E] 1,103	[E] 45
3-Month Average	**[E] 1,019**	**[E] 367**	**NA**	**[E] -69**	**[E] 300**	**[E] 1,156**	
1990 3-Month Average	**1,054**	**593**	**NA**	**26**	**226**	**1,395**	
1989 3-Month Average	**939**	**829**	**NA**	**-33**	**173**	**1,628**	

[a]Beginning in January 1983, product supplied for residual fuel oil does not include crude oil used directly. See Note 3 at end of section.
[b]A negative number indicates a decrease in stocks and a positive number indicates an increase.
[c]Stocks are totals as of end of period.
[d]In January 1975, 1981, and 1983, numerous respondents were added to surveys affecting stocks reported and stock change calculations. See Note 4 at end of section.
[e]Beginning in January 1981, survey forms were modified. See Note 1 at end of section.
R=Revised data. NA=Not available. E=Estimate. (s)=Less than 500 barrels per day.
Notes: • Geographic coverage is the 50 States and the District of Columbia. • Totals may not equal sum of components due to independent rounding.
Sources: See end of section.

Figure 3.11 Jet Fuel Product Supplied, Production, and Imports

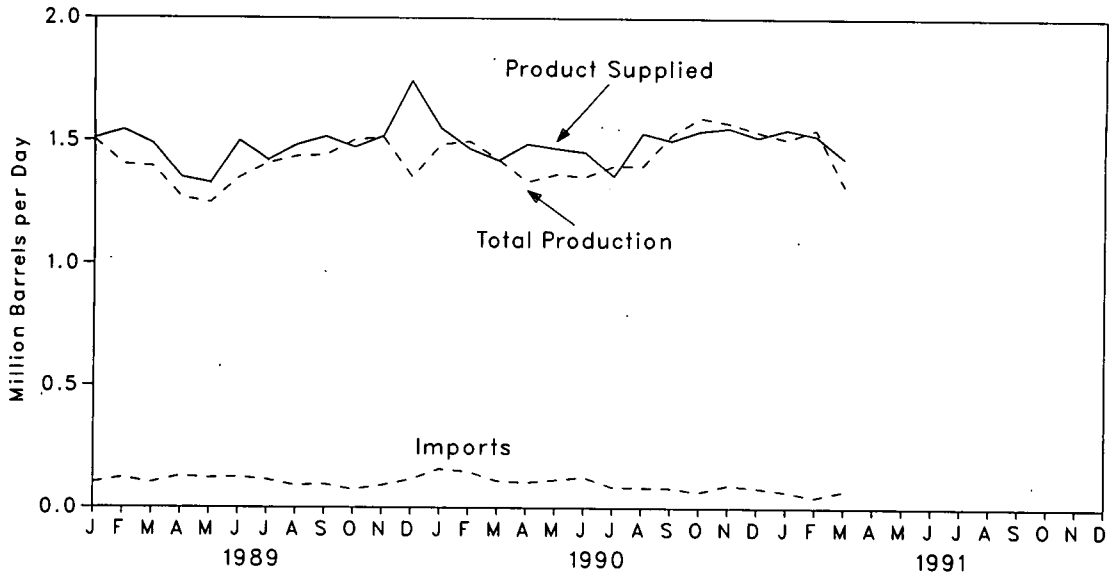


Figure 3.12 Jet Fuel Ending Stocks

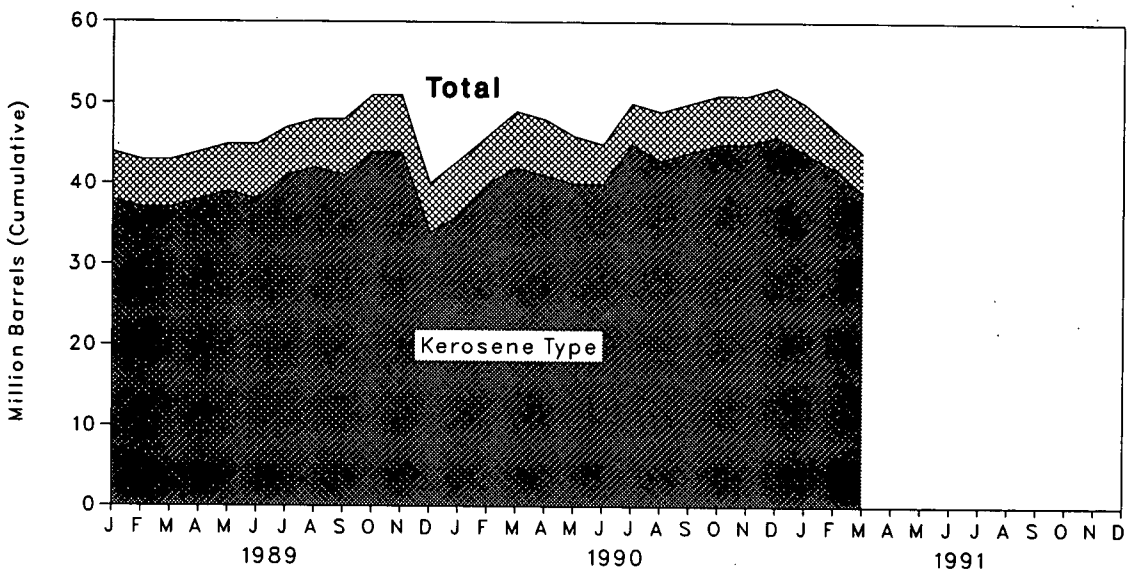


Table 3.7 Jet Fuel Supply and Disposition

	Supply			Disposition				Ending Stocks[a]	
	Production		Imports	Stock Change[b]	Exports	Product Supplied		Total	Kerosene Type
	Total	Kerosene Type				Total	Kerosene Type		
	Thousand Barrels per Day							Million Barrels	
1973 Average	**859**	**679**	**212**	**8**	**4**	**1,059**	**842**	**29**	**23**
1974 Average	**836**	**641**	**163**	**3**	**3**	**993**	**771**	[c] **29**	[c] **24**
1975 Average	**871**	**691**	**133**	[c] **2**	**2**	**1,001**	**791**	**30**	**25**
1976 Average	**918**	**731**	**76**	**5**	**2**	**987**	**789**	**32**	**26**
1977 Average	**973**	**787**	**75**	**7**	**2**	**1,039**	**831**	**35**	**28**
1978 Average	**970**	**791**	**86**	**-2**	**1**	**1,057**	**858**	**34**	**28**
1979 Average	**1,012**	**835**	**78**	**13**	**1**	**1,076**	**876**	**39**	**33**
1980 Average	**999**	**811**	**80**	**10**	**1**	**1,068**	**851**	[c] **42**	[c] **36**
1981 Average	**968**	**775**	**38**	[c] **-4**	**2**	**1,007**	**809**	**41**	**34**
1982 Average	**978**	**778**	**29**	**-12**	**6**	**1,013**	**804**	[c] **37**	[c] **31**
1983 Average	**1,022**	**817**	**29**	[c] **(s)**	**6**	**1,046**	**839**	**39**	**32**
1984 Average	**1,132**	**919**	**62**	**9**	**9**	**1,175**	**953**	**42**	**35**
1985 Average	**1,189**	**983**	**39**	**-4**	**13**	**1,218**	**1,005**	**40**	**34**
1986 Average	**1,293**	**1,097**	**57**	**25**	**18**	**1,307**	**1,105**	**50**	**43**
1987 Average	**1,343**	**1,138**	**67**	**(s)**	**24**	**1,385**	**1,181**	**50**	**42**
1988 Average	**1,370**	**1,164**	**90**	**-17**	**28**	**1,449**	**1,236**	**44**	**38**
1989 January	1,503	1,312	101	21	75	1,508	1,334	44	38
February	1,404	1,214	120	-40	21	1,542	1,342	43	37
March	1,396	1,188	101	-2	11	1,488	1,277	43	37
April	1,270	1,074	127	31	16	1,351	1,150	44	38
May	1,249	1,031	120	40	1	1,328	1,103	45	39
June	1,350	1,139	124	-27	1	1,500	1,286	45	38
July	1,410	1,194	113	90	11	1,422	1,219	47	41
August	1,437	1,237	90	28	15	1,484	1,260	48	42
September	1,442	1,218	95	-13	34	1,516	1,316	48	41
October	1,504	1,300	74	74	30	1,474	1,252	50	44
November	1,514	1,305	91	34	52	1,519	1,337	51	44
December	1,354	1,149	115	-335	59	1,745	1,541	41	34
Average	**1,403**	**1,197**	**106**	**-8**	**27**	**1,489**	**1,284**		
1990 January	1,486	1,299	157	62	30	1,551	1,369	43	36
February	1,498	1,298	147	128	50	1,468	1,264	46	40
March	1,425	1,224	109	82	30	1,422	1,257	49	42
April	1,335	1,156	103	-70	19	1,488	1,292	47	41
May	1,365	1,167	113	(s)	8	1,470	1,288	47	40
June	1,355	1,181	125	14	10	1,456	1,286	47	40
July	1,400	1,274	85	117	10	1,358	1,210	51	45
August	1,400	1,226	83	-86	37	1,531	1,343	48	43
September	1,526	1,316	81	58	47	1,502	1,297	50	44
October	1,597	1,430	65	44	77	1,541	1,362	51	45
November	1,575	1,414	93	-26	141	1,554	1,345	51	45
December	1,538	1,379	82	44	60	1,516	1,353	52	46
Average	**1,458**	**1,280**	**103**	**30**	**43**	**1,488**	**1,306**		
1991 January	1,508	1,353	67	-46	73	1,548	1,367	50	44
February	[R] 1,548	[R] 1,384	[R] 44	[R] -91	[R] 159	[R] 1,523	[R] 1,342	48	42
March	[E] 1,317	[E] 1,172	[E] 70	[E] -107	[E] 64	[E] 1,430	[E] 1,268	[E] 44	[E] 39
3-Month Average	[E] **1,455**	[E] **1,300**	[E] **61**	[E] **-81**	[E] **97**	[E] **1,500**	[E] **1,325**		
1990 3-Month Average	**1,469**	**1,273**	**137**	**89**	**36**	**1,481**	**1,298**		
1989 3-Month Average	**1,435**	**1,239**	**107**	**-6**	**36**	**1,512**	**1,317**		

[a]Stocks are totals as of end of period.

[b]A negative number indicates a decrease in stocks and a positive number indicates an increase.

[c]In January 1975, 1981, and 1983, a new stock basis was established affecting stocks reported and stock change calculations. See Note 4 at end of section.

E=Estimate. (s)=Less than 500 barrels per day.

Notes: • Geographic coverage is the 50 States and the District of Columbia. • Totals may not equal sum of components due to independent rounding.

Sources: See end of section.

Figure 3.13 Liquefied Petroleum Gases Product Supplied, Production, and Imports

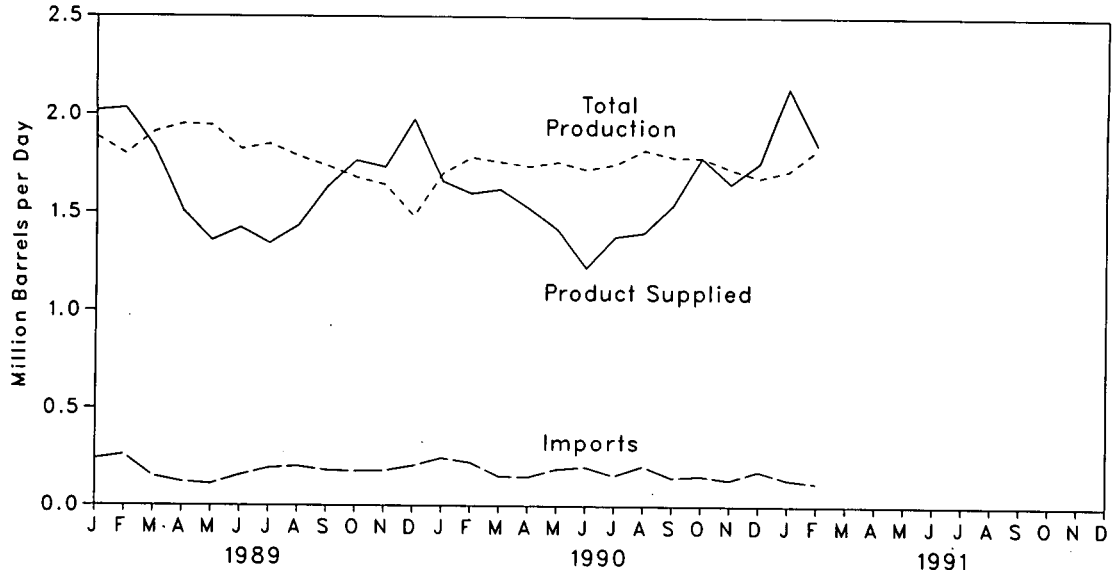


Figure 3.14 Liquefied Petroleum Gases Ending Stocks

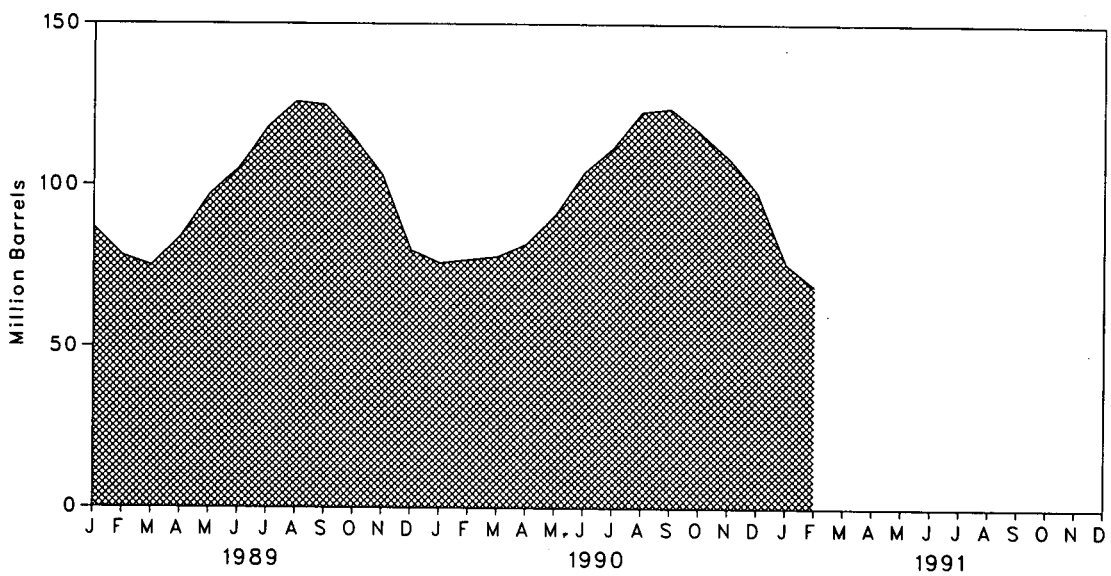


Table 3.8 Liquefied Petroleum Gases[a] Supply and Disposition

	Supply		Disposition				Ending Stocks[c]
	Total Production	Imports	Stock Change[b]	Refinery Inputs	Exports	Product Supplied	
	Thousand Barrels per Day						Million Barrels
1973 Average	1,600	132	35	220	27	1,449	99
1974 Average	1,565	123	38	220	25	1,406	[d] 113
1975 Average	1,527	112	[d] 35	246	26	1,333	125
1976 Average	1,535	130	-24	260	25	1,404	116
1977 Average	1,566	161	55	233	18	1,422	136
1978 Average	1,537	123	-12	239	20	1,413	132
1979 Average	1,556	217	-70	236	15	1,592	111
1980 Average	1,535	216	27	233	21	1,469	[d] 120
1981 Average	1,571	244	[d] 18	289	42	1,466	135
1982 Average	[e] 1,527	226	-111	300	65	1,499	[d] 94
1983 Average	1,642	190	[d] -4	253	73	1,509	[d] 101
1984 Average	1,697	195	[d] -19	291	48	1,572	101
1985 Average	1,704	187	-75	304	62	1,599	74
1986 Average	1,695	242	80	302	42	1,512	103
1987 Average	1,748	190	-15	304	38	1,612	97
1988 Average	1,817	209	1	321	49	1,656	97
1989 January	1,885	239	-335	422	19	2,018	87
February	1,798	260	-333	328	31	2,032	78
March	1,909	150	-85	274	43	1,827	75
April	1,950	121	294	242	27	1,507	84
May	1,943	110	428	226	43	1,357	97
June	1,824	155	269	254	35	1,422	105
July	1,850	192	407	247	45	1,343	118
August	1,787	202	272	245	40	1,433	126
September	1,737	182	-46	303	31	1,631	125
October	1,679	176	-313	371	31	1,766	115
November	1,643	179	-389	446	33	1,732	103
December	1,483	205	-749	424	37	1,975	80
Average	**1,791**	**181**	**-47**	**315**	**35**	**1,668**	
1990 January	1,700	245	-174	416	44	1,660	76
February	1,784	223	20	346	42	1,599	77
March	1,760	152	42	205	44	1,620	78
April	1,738	148	136	200	25	1,525	82
May	1,760	189	279	216	36	1,417	91
June	1,722	201	451	220	28	1,223	104
July	1,750	156	259	230	36	1,379	112
August	1,823	206	334	253	43	1,400	123
September	1,788	147	55	298	41	1,540	124
October	1,784	155	-234	352	38	1,784	117
November	1,726	135	-252	425	39	1,650	109
December	1,681	180	-372	417	58	1,758	98
Average	**1,751**	**178**	**45**	**298**	**40**	**1,547**	
1991 January	1,716	137	-700	359	56	2,139	76
February	1,829	119	-267	304	60	1,850	69
2-Month Average	**1,770**	**129**	**-494**	**333**	**58**	**2,002**	
1990 2-Month Average	**1,740**	**235**	**-82**	**383**	**43**	**1,631**	
1989 2-Month Average	**1,843**	**249**	**-334**	**377**	**25**	**2,025**	

[a]Includes ethane, propane, normal butane, and isobutane.
[b]A negative number indicates a decrease in stocks and a positive number indicates an increase.
[c]Stocks are totals as of end of period.
[d]In January 1975, 1981, 1983, and 1984, a new stock basis was established affecting stocks reported and stock change calculations. See Note 4 at end of section.
[e]Due to a rounding difference, this value is 1,528 in the *Petroleum Supply Annual* and the *Petroleum Supply Monthly*.
Notes: • Geographic coverage is the 50 States and the District of Columbia. • Totals may not equal sum of components due to independent rounding.
Sources: See end of section.

Table 3.9 Other Petroleum Products[a] Supply and Disposition

	Supply		Disposition				
	Total Production	Imports	Stock Change[b]	Refinery Inputs	Exports	Products Supplied	Ending Stocks[c]
	Thousand Barrels per Day						Million Barrels
1973 Average	**2,833**	**290**	**1**	**750**	**162**	**2,211**	**179**
1974 Average	**2,722**	**269**	**25**	**665**	**172**	**2,129**	**[d] 188**
1975 Average	**2,547**	**144**	**[d] -6**	**537**	**158**	**2,001**	**188**
1976 Average	**2,725**	**129**	**(s)**	**524**	**172**	**2,158**	**188**
1977 Average	**2,939**	**130**	**20**	**514**	**164**	**2,371**	**195**
1978 Average	**3,076**	**80**	**-12**	**492**	**165**	**2,511**	**191**
1979 Average	**3,141**	**116**	**24**	**352**	**208**	**2,673**	**200**
1980 Average	**2,957**	**130**	**15**	**310**	**197**	**2,566**	**[d] 205**
1981 Average	**2,771**	**188**	**[d] -42**	**723**	**197**	**2,081**	**241**
1982 Average	**2,475**	**305**	**-68**	**787**	**205**	**1,857**	**[d] 216**
1983 Average	**2,437**	**382**	**[d] -6**	**712**	**236**	**1,877**	**[d] 217**
1984 Average	**2,500**	**503**	**[d] -32**	**791**	**236**	**2,007**	**198**
1985 Average	**2,532**	**550**	**22**	**886**	**227**	**1,947**	**206**
1986 Average	**2,704**	**504**	**-15**	**888**	**291**	**2,045**	**201**
1987 Average	**2,737**	**543**	**-1**	**829**	**264**	**2,187**	**200**
1988 Average	**2,773**	**645**	**22**	**799**	**294**	**2,303**	**208**
1989 January	2,696	646	375	706	236	2,024	220
February	2,553	717	231	726	281	2,032	226
March	2,671	644	114	660	311	2,230	230
April	2,683	727	102	808	290	2,210	233
May	2,882	635	181	688	258	2,391	239
June	3,025	571	-179	838	388	2,549	233
July	3,044	576	-159	955	333	2,491	228
August	2,998	587	-244	893	313	2,623	221
September	2,986	675	125	737	309	2,490	224
October	2,687	632	-42	730	308	2,323	223
November	2,608	645	-77	900	299	2,131	221
December	2,409	486	-266	918	332	1,910	213
Average	**2,771**	**627**	**12**	**797**	**305**	**2,285**	
1990 January	2,529	813	114	699	225	2,303	217
February	2,757	672	368	645	298	2,119	227
March	2,689	660	61	787	276	2,224	229
April	2,790	576	-125	861	318	2,312	225
May	2,870	748	292	531	292	2,502	234
June	2,912	798	-155	904	334	2,626	229
July	3,181	704	-87	954	317	2,702	227
August	3,119	658	-285	997	297	2,768	218
September	3,034	661	59	753	265	2,617	220
October	2,844	587	-439	1,216	329	2,324	206
November	2,816	794	185	1,008	270	2,146	212
December	2,663	574	-305	1,170	249	2,123	202
Average	**2,851**	**687**	**-30**	**879**	**289**	**2,399**	
1991 January	2,640	720	167	835	317	2,041	207
February	2,683	555	391	723	275	1,849	218
2-Month Average	**2,660**	**642**	**273**	**782**	**297**	**1,950**	
1990 2-Month Average	**2,637**	**746**	**235**	**673**	**260**	**2,216**	
1989 2-Month Average	**2,628**	**680**	**307**	**715**	**257**	**2,028**	

[a]Includes pentanes plus, other hydrocarbons and alcohol, unfinished oil, gasoline blending components, and all finished petroleum products except finished motor gasoline, distillate fuel oil, residual fuel oil, liquefied petroleum gases, and jet fuel.
[b]A negative number indicates a decrease in stocks and a positive number indicates an increase.
[c]Stocks are totals as of end of period.
[d]In January 1975, 1981, 1983, and 1984, a new stock basis was established affecting stocks reported and stock change calculations. See Note 4 at end of this section.
(s)=Less than 500 barrels per day.
Notes: • Geographic coverage is the 50 States and the District of Columbia. • Totals may not equal sum of components due to independent rounding.
Sources: See end of section.

Petroleum Notes and Sources

Notes

1. The Energy Information Administration (EIA) uses a number of sources and methods to maintain the survey respondent lists. On a regular basis, survey managers review industry publications such as the *Oil and Gas Journal* and *Oil Daily* for information on facilities or companies starting up or closing down operations. Those sources are augmented by articles in newspapers, letters from respondents indicating changes in status, and information received from survey systems.

Every 3 years an extensive survey is conducted to update the frames completely. The updating involves consolidating information from every known source including State agencies, Federal agencies (e.g., Environmental Protection Agency, Corps of Engineers, Census Bureau, etc.), and private industry directories. The effort also includes the evaluation of the impact of potential frame changes on the historical time series of data published from these respondents. The results of this frame study are usually implemented in January to provide a full year under the same frame.

2. Motor Gasoline: Beginning in January 1981, the EIA expanded its universe to include non-refinery blenders; redefined motor gasoline into two categories (finished leaded and finished unleaded); and separated blending components from finished motor gasoline as a reporting category. Also, survey forms were modified to describe refinery operations more accurately. For further details, see the EIA, *Petroleum Supply Monthly.*

3. Distillate and Residual Fuel Oils: The requirement to report crude oil burned on leases and pipelines as either distillate or residual fuel oil has been eliminated. Prior to January 1981, the refinery input of unfinished oils number typically exceeded the number for available supply of unfinished oils. That discrepancy was assumed to be due to the redesignation of distillate and residual fuel oils received as such, but used as an unfinished oil input by the receiving refinery. The imbalance between supply and disposition of unfinished oils would then be subtracted from the production of distillate and residual fuel oils. Two-thirds of that difference was subtracted from distillate and one-third from residual. Beginning in January 1981, the EIA modified its survey forms to account for redesignated product and discontinued the above-mentioned adjustment. For further details, see the EIA, *Petroleum Supply Monthly.*

4. New Stock Basis: In January 1975, 1981, and 1983, numerous respondents were added to bulk terminal and pipeline surveys affecting subsequent stocks reported and stock change calculations. Using the expanded coverage (new basis), the end-of-year stocks, in million barrels, would have been:

- Crude Oil: 1982--645 (Total) and 351 (Other Primary).
- Crude Oil and Petroleum Products: 1974--1,121; 1980--1,425; and 1982--1,462.
- Motor Gasoline: 1974--225; 1980--263; 1982--244 (Total) and 203 (Finished).
- Distillate Fuel Oil: 1974--224; 1980--205; and 1982--186.
- Residual Fuel Oil: 1974--75; 1980--91; and 1982--68.
- Jet Fuel: 1974--30 (Total) and 24 (Kerosene Type); 1980-- 42 (Total) and 36 (Kerosene Type); and 1982--39 (Total) and 32 (Kerosene Type).
- Liquefied Petroleum Gases: 1974--113; 1980--128; and 1982--103.
- Other Petroleum Products: 1974--190; 1980--207; and 1982--219.
- Stock change calculations beginning in 1975, 1981, and 1983, were made using new basis stock levels.

In January 1984, changes were made in the reporting of natural gas liquids. As a result, unfractionated stream, which was formerly included in "Other Petroleum Products Supply and Disposition" table, is now reported on a component basis (ethane, propane, normal butane, isobutane, and pentanes plus). Most of these stocks now appear in the "Liquefied Petroleum Gases Supply and Disposition" table. This change affects stocks reported and stock change calculations in each table. Under the new basis, end-of-year 1983 stocks, in million barrels would have been:

- Liquefied Petroleum Gases: 1983--108.
- Other Petroleum Products: 1983--210.

5. Stocks of Alaskan Crude Oil: Stocks of Alaskan Crude oil in transit were included for the first time in January 1981. The major impact of this change is on the reporting of stock change calculations. Using the expanded coverage (new basis), 1980 end-of-year stocks, in million barrels, would have been 488 (Total) and 380 (Other Primary).

Sources

- 1973 through 1976: U.S. Department of the Interior, Bureau of Mines, *Mineral Industry Surveys*, "Petroleum Statement, Annual" and "PAD Districts Supply/Demand, Annual."
- 1977 through 1980: Energy Information Administration (EIA), *Energy Data Reports*, "Petroleum Statement, Annual" and "PAD Districts Supply/Demand, Annual" and unleaded gasoline data from *Monthly Petroleum Statistics Report.*
- 1981 through 1989: EIA, *Petroleum Supply Annual.*
- January 1990 through February 1991: Detailed Statistics in appropriate issues of the *Petroleum Supply Monthly.*
- March 1991: Estimates based on EIA weekly data (except domestic crude oil production).
- January 1990 through March 1991: Domestic crude oil production estimate based on historical statistics from State conservation agencies and the Minerals Management Service of the U.S. Department of the Interior.

Section 4. Natural Gas

Total dry natural gas production in the United States during February 1991 was an estimated 1.5 trillion cubic feet, 2 percent[25] higher than the previous February.

Consumption of natural and supplemental gas in February 1991 was 2.1 trillion cubic feet, 19 percent above the level in February 1990.

Deliveries to residential consumers in January 1991 (latest data available) were 848 billion cubic feet, 7 percent higher than the previous January. Total deliveries to industrial consumers during January 1991 were 694 billion cubic feet, 15 percent higher than the previous January.

Imports of natural gas in February 1991 were 126 billion cubic feet, 7 percent above the previous February.

Stocks of working gas[26] in underground natural gas storage reservoirs at the end of February 1991 totaled 2.3 trillion cubic feet, 15 percent above the level of stocks available 1 year earlier. Net withdrawals from storage during February 1991 were 219 billion cubic feet, 13 percent below the amount withdrawn during the previous February.

[25]Percentage changes are calculated using unrounded data.
[26]Gas available for withdrawal.

Table 4.1 Natural Gas Production
(Billion Cubic Feet)

	Gross Withdrawals[a]	Repressuring[b]	Nonhydrocarbon Gases Removed[c]	Vented and Flared[d]	Marketed Production (Wet)[e]	Extraction Loss	Total Dry Gas Production[f]
1973 Total	**24,067**	**1,171**	**NA**	**248**	**[g] 22,648**	**917**	**[g] 21,731**
1974 Total	**22,850**	**1,080**	**NA**	**169**	**[g] 21,601**	**887**	**[g] 20,713**
1975 Total	**21,104**	**861**	**NA**	**134**	**[g] 20,109**	**872**	**[g] 19,236**
1976 Total	**20,944**	**859**	**NA**	**132**	**[g] 19,952**	**854**	**[g] 19,098**
1977 Total	**21,097**	**935**	**NA**	**137**	**[g] 20,025**	**863**	**[g] 19,163**
1978 Total	**21,309**	**1,181**	**NA**	**153**	**[g] 19,974**	**852**	**[g] 19,122**
1979 Total	**21,883**	**1,245**	**NA**	**167**	**[g] 20,471**	**808**	**[g] 19,663**
1980 Total	**21,870**	**1,365**	**199**	**125**	**20,180**	**777**	**19,403**
1981 Total	**21,587**	**1,312**	**222**	**98**	**19,956**	**775**	**19,181**
1982 Total	**20,210**	**1,388**	**208**	**93**	**18,520**	**762**	**17,758**
1983 Total	**18,597**	**1,458**	**222**	**95**	**16,822**	**790**	**16,033**
1984 Total	**20,192**	**1,630**	**224**	**108**	**18,230**	**838**	**17,392**
1985 Total	**19,534**	**1,915**	**326**	**95**	**17,198**	**816**	**16,382**
1986 Total	**19,063**	**1,838**	**337**	**98**	**16,791**	**800**	**15,991**
1987 Total	**20,056**	**2,208**	**376**	**124**	**17,349**	**812**	**16,536**
1988 Total	**20,922**	**2,478**	**460**	**143**	**17,841**	**816**	**17,026**
1989 January	1,866	219	34	11	1,602	70	1,532
February	1,712	193	29	11	1,479	64	1,415
March	1,809	197	31	13	1,568	68	1,500
April	1,737	203	29	12	1,493	65	1,428
May	1,770	214	31	12	1,513	66	1,447
June	1,683	192	28	12	1,451	63	1,388
July	1,720	199	30	12	1,479	64	1,415
August	1,715	207	28	12	1,468	63	1,404
September	1,644	207	28	12	1,397	60	1,337
October	1,719	211	29	12	1,467	64	1,403
November	1,784	214	31	12	1,527	66	1,461
December	1,850	219	33	12	1,586	72	1,514
Total	**21,009**	**2,475**	**362**	**142**	**18,029**	**785**	**17,245**
1990 January	1,936	205	32	15	1,684	79	1,605
February	[R] 1,714	180	27	9	[R] 1,498	70	[R] 1,428
March	[R] 1,836	207	30	10	[R] 1,589	74	[R] 1,515
April	[R] 1,739	201	29	10	[R] 1,499	70	[R] 1,429
May	[R] 1,774	203	35	11	[R] 1,525	71	[R] 1,454
June	[R] 1,705	191	29	10	[R] 1,475	69	[R] 1,406
July	[R] 1,729	194	30	10	[R] 1,495	[R] 70	[R] 1,425
August	[R] 1,743	196	31	10	[R] 1,506	[R] 70	[R] 1,436
September	[R] 1,670	189	30	10	[R] 1,441	67	[R] 1,374
October	[R] 1,783	197	31	10	[R] 1,545	[R] 70	[R] 1,475
November	[R] 1,815	203	32	11	[R] 1,569	73	[R] 1,496
December	[R] 1,901	[R] 213	34	11	[R] 1,643	[R] 77	[R] 1,566
Total	**[R] 21,345**	**2,379**	**370**	**127**	**[R] 18,469**	**[R] 860**	**[R] 17,609**
1991 January	[E] 1,901	[E] 213	[E] 34	[E] 11	[E] 1,643	[E] 71	[E] 1,572
February	[E] 1,754	[E] 196	[E] 31	[E] 10	[E] 1,517	[E] 66	[E] 1,451
2-Month Total	**[E] 3,655**	**[E] 409**	**[E] 65**	**[E] 21**	**[E] 3,160**	**[E] 137**	**[E] 3,023**
1990 2-Month Total	**3,650**	**385**	**59**	**24**	**3,182**	**149**	**3,033**
1989 2-Month Total	**3,578**	**412**	**63**	**22**	**3,080**	**134**	**2,947**

[a]Gas withdrawn from gas and oil wells.
[b]The injection of natural gas into oil and gas formations for pressure maintenance and cycling purposes.
[c]See Note 1 at end of section.
[d]Vented: Natural gas released into the air on the base site or at processing plants. Flared: Natural gas burned in flares on the base site or at gas processing plants.
[e]Gross Withdrawals minus Repressuring, Nonhydrocarbon Gases Removed, and Vented and Flared. See Note 2 at end of section.
[f]Marketed Production (Wet) minus Extraction Loss.
[g]May include unknown quantities of nonhydrocarbon gases.
R=Revised data. NA=Not available. E=Estimate.
Notes: • Geographic coverage is the 50 States and the District of Columbia. • Totals may not equal sum of components due to independent rounding.
Sources: • 1973 through 1987: Energy Information Administration (EIA), *Natural Gas Annual 1988, Volume II*, Table 1. • 1988 forward: EIA, *Natural Gas Monthly*, April 1991, Table 1.

Table 4.2 Natural Gas Supply and Disposition
(Billion Cubic Feet)

	Supply					Disposition			
	Total Dry Gas Production	Withdrawals from Storage[a]	Supplemental Gaseous Fuels[b]	Imports[b]	Total Supply/ Disposition[c]	Additions to Storage[a]	Exports[b]	Consumption[b]	Unaccounted for[d]
1973 Total	• 21,731	1,533	NA	1,033	24,297	1,974	77	22,049	196
1974 Total	• 20,713	1,701	NA	959	23,373	1,784	77	21,223	289
1975 Total	• 19,236	1,760	NA	953	21,949	2,104	73	19,538	235
1976 Total	• 19,098	1,921	NA	964	21,983	1,756	65	19,946	216
1977 Total	• 19,163	1,750	NA	1,011	21,924	2,307	56	19,521	41
1978 Total	• 19,122	2,158	NA	966	22,245	2,278	53	19,627	287
1979 Total	• 19,663	2,047	NA	1,253	22,964	2,295	56	20,241	372
1980 Total	19,403	1,972	155	985	22,515	1,949	49	• 19,877	640
1981 Total	19,181	1,930	176	904	22,191	2,228	59	19,404	500
1982 Total	17,758	2,164	145	933	21,000	2,472	52	18,001	475
1983 Total	16,033	2,270	132	920	19,354	1,822	55	16,835	[d] 641
1984 Total	17,392	2,098	110	843	20,443	2,295	55	17,951	[d] 143
1985 Total	16,382	2,397	126	950	19,855	2,163	55	17,281	356
1986 Total	15,991	1,837	113	750	18,692	1,984	61	16,221	427
1987 Total	16,536	1,905	101	993	19,534	1,911	54	17,211	359
1988 Total	17,026	2,270	101	1,294	20,691	2,211	74	18,030	376
1989 January	1,532	426	11	119	2,088	53	7	2,024	4
February	1,415	614	10	110	2,149	32	7	2,009	101
March	1,500	369	10	113	1,992	106	11	1,947	-72
April	1,428	138	8	110	1,684	184	11	1,582	-93
May	1,447	44	8	108	1,607	326	8	1,350	-77
June	1,388	20	7	104	1,519	381	9	1,201	-72
July	1,415	29	8	101	1,553	377	9	1,222	-55
August	1,404	29	8	108	1,549	362	9	1,217	-39
September	1,337	39	7	117	1,500	325	9	1,182	-16
October	1,403	96	9	123	1,631	225	10	1,339	57
November	1,461	227	9	123	1,820	105	8	1,568	139
December	1,514	821	12	145	2,492	52	8	2,157	275
Total	**17,245**	**2,850**	**107**	**1,382**	**21,584**	**2,529**	**107**	**18,799**	**149**
1990 January	1,605	339	11	149	2,104	91	8	[R] 2,109	[R] -104
February	[R] 1,428	324	9	118	[R] 1,879	70	8	1,805	[R] -4
March	[R] 1,515	256	10	115	[R] 1,896	124	10	[R] 1,778	[R] -16
April	[R] 1,429	140	9	122	[R] 1,700	183	8	[R] 1,586	[R] -77
May	[R] 1,454	45	8	108	[R] 1,615	289	8	[R] 1,401	[R] -83
June	[R] 1,406	42	7	114	[R] 1,569	327	9	[R] 1,300	[R] -67
July	[R] 1,425	27	[R] 9	119	[R] 1,580	325	8	1,290	[R] -43
August	[R] 1,436	37	8	118	[R] 1,599	321	8	[R] 1,326	[R] -56
September	[R] 1,374	36	[R] 8	120	[R] 1,538	284	8	[R] 1,288	[R] -42
October	[R] 1,475	61	8	139	[R] 1,681	214	8	1,415	[R] 44
November	[R] 1,496	144	9	135	[R] 1,784	136	8	1,565	[R] 75
December	[R] 1,566	467	11	[R] 155	[R] 2,199	72	8	1,976	[R] 143
Total	[R] **17,609**	**1,918**	**105**	[R] **1,512**	[R] **21,144**	**2,436**	**99**	[R] **18,840**	[R] **-231**
1991 January	[E] 1,572	530	10	147	2,259	59	7	[R] 2,312	[R] -119
February	[E] 1,451	260	9	126	1,846	41	6	2,143	-344
2-Month Total	[E] **3,023**	**790**	**19**	**273**	**4,105**	**100**	**13**	**4,455**	**-463**
1990 2-Month Total	**3,033**	**663**	**20**	**267**	**3,983**	**161**	**16**	**3,914**	**-108**
1989 2-Month Total	**2,947**	**1,040**	**21**	**229**	**4,237**	**85**	**14**	**4,033**	**105**

[a]Data for 1980 through 1989 include underground storage and liquefied natural gas storage. All other data include underground storage only. Computation procedures are discussed in Note 8 at end of section.
[b]See Notes at end of section.
[c]Data for 1978 forward do not include in-transit receipts and deliveries.
[d]See Note 7 at end of section.
•May include unknown quantities of nonhydrocarbon gases.
R=Revised data. NA=Not available. E=Estimate.
Notes: • Geographic coverage is the 50 States and the District of Columbia. • Totals may not equal sum of components due to independent rounding.
Sources: • 1973 through 1987: Energy Information Administration (EIA), *Natural Gas Annual 1988, Volume II*, Tables 2 and 12. • 1988 forward: EIA, *Natural Gas Monthly*, April 1991, Table 2.

Table 4.3 Natural Gas[a] Consumption by End-Use Sector
(Billion Cubic Feet)

	Lease and Plant Fuel	Pipeline Fuel[b]	Delivered to Consumers					Total Consumption
			Residential	Commercial	Industrial	Electric Utilities	Total	
1973 Total	**1,496**	**728**	**4,879**	**2,597**	**8,689**	**3,660**	**19,825**	**22,049**
1974 Total	**1,477**	**669**	**4,786**	**2,556**	**8,292**	**3,443**	**19,077**	**21,223**
1975 Total	**1,396**	**583**	**4,924**	**2,508**	**6,968**	**3,158**	**17,558**	**19,538**
1976 Total	**1,634**	**548**	**5,051**	**2,668**	**6,964**	**3,081**	**17,764**	**19,946**
1977 Total	**1,659**	**533**	**4,821**	**2,501**	**6,815**	**3,191**	**17,329**	**19,521**
1978 Total	**1,648**	**530**	**4,903**	**2,601**	**6,757**	**3,188**	**17,449**	**19,627**
1979 Total	**1,499**	**601**	**4,965**	**2,786**	**6,899**	**3,491**	**18,141**	**20,241**
1980 Total	**1,026**	**635**	**4,752**	**2,611**	**7,172**	**3,682**	**18,216**	**19,877**
1981 Total	**928**	**642**	**4,546**	**2,520**	**7,128**	**3,640**	**17,834**	**19,404**
1982 Total	**1,109**	**596**	**4,633**	**2,606**	**5,831**	**3,226**	**16,295**	**18,001**
1983 Total	**978**	**490**	**4,381**	**2,433**	**5,643**	**2,911**	**15,367**	**16,835**
1984 Total	**1,077**	**529**	**4,555**	**2,524**	**6,154**	**3,111**	**16,345**	**17,951**
1985 Total	**966**	**504**	**4,433**	**2,432**	**5,901**	**3,044**	**15,811**	**17,281**
1986 Total	**923**	**485**	**4,314**	**2,318**	**5,579**	**2,602**	**14,814**	**16,221**
1987 Total	**1,149**	**519**	**4,315**	**2,430**	**5,953**	**2,844**	**15,542**	**17,211**
1988 Total	**1,096**	**614**	**4,630**	**2,670**	**6,383**	**2,636**	**16,320**	**18,030**
1989 January	95	57	751	376	598	147	1,872	2,024
February	88	57	742	380	570	172	1,864	2,009
March	93	54	645	342	602	211	1,800	1,947
April	88	49	414	233	563	235	1,445	1,582
May	89	51	256	159	544	251	1,210	1,350
June	86	50	155	121	529	260	1,065	1,201
July	88	50	129	110	525	320	1,084	1,222
August	87	50	121	110	539	310	1,080	1,217
September	82	48	139	113	532	268	1,052	1,182
October	87	49	228	152	568	254	1,203	1,339
November	90	50	405	231	603	189	1,428	1,568
December	97	65	790	391	643	171	1,995	2,157
Total	**1,070**	**630**	**4,777**	**2,719**	**6,816**	**2,787**	**17,099**	**18,799**
1990 January	111	53	789	404	606	R 146	R 1,945	R 2,109
February	99	48	634	338	554	R 132	1,658	1,805
March	105	48	550	305	586	R 184	R 1,625	R 1,778
April	99	44	398	239	606	R 199	R 1,443	R 1,586
May	101	47	247	160	602	R 244	R 1,253	R 1,401
June	97	44	162	128	571	R 297	R 1,159	R 1,300
July	97	49	129	128	562	R 326	1,144	1,290
August	98	49	124	118	594	R 342	R 1,179	R 1,326
September	95	47	135	124	587	R 301	R 1,146	R 1,288
October	102	48	217	153	638	R 256	1,265	1,415
November	104	49	381	230	617	R 185	1,412	1,565
December	108	59	642	339	653	175	1,809	1,976
Total	**1,216**	**585**	**4,409**	**2,667**	**7,178**	**R 2,786**	**R 17,039**	**R 18,840**
1991 January	109	58	848	433	694	171	2,145	R 2,312

[a]Includes supplemental gaseous fuels.
[b]Natural gas consumed in the operation of pipelines, primarily in compressors.
R=Revised data.
Notes: • Geographic coverage is the 50 States and the District of Columbia. • Totals may not equal sum of components due to independent rounding.
Sources: • 1973 through 1987: Energy Information Administration (EIA), *Natural Gas Annual 1988, Volume II*, Table 3. • 1988 forward: EIA, *Natural Gas Monthly*, April 1991, Table 3.

Table 4.4 Underground Storage of Natural Gas
(Volumes in Billion Cubic Feet)

	Natural Gas in Underground Storage, End of Period			Change in Working Gas from Same Period Previous Year		Storage Activity		
	Base Gas	Working Gas	Total[a]	Volume	Percent	Injections[b]	Withdrawals[b]	Net[c]
1973 Total	**2,864**	**2,034**	**4,898**	**305**	**17.6**	**1,974**	**1,533**	**442**
1974 Total	**2,912**	**2,050**	**4,962**	**16**	**.8**	**1,784**	**1,701**	**84**
1975 Total	**3,162**	**2,212**	**5,374**	**162**	**7.9**	**2,104**	**1,760**	**344**
1976 Total	**3,323**	**1,926**	**5,250**	**-286**	**-12.9**	**1,756**	**1,921**	**-165**
1977 Total	**3,391**	**2,475**	**5,866**	**549**	**28.5**	**2,307**	**1,750**	**557**
1978 Total	**3,473**	**2,547**	**6,020**	**72**	**2.9**	**2,278**	**2,158**	**120**
1979 Total	**3,553**	**2,753**	**6,306**	**207**	**8.1**	**2,295**	**2,047**	**248**
1980 Total	**3,642**	**2,655**	**6,297**	**-99**	**-3.6**	**1,896**	**1,910**	**-14**
1981 Total	**3,752**	**2,817**	**6,569**	**162**	**6.1**	**2,180**	**1,887**	**293**
1982 Total	**3,808**	**3,071**	**6,879**	**255**	**9.0**	**2,399**	**2,094**	**306**
1983 Total	**3,847**	**2,595**	**6,442**	**-476**	**-15.5**	**1,700**	**2,142**	**-442**
1984 Total	**3,830**	**2,876**	**6,706**	**281**	**10.8**	**2,252**	**2,064**	**188**
1985 Total	**3,842**	**2,607**	**6,448**	**-270**	**-9.4**	**2,128**	**2,359**	**-231**
1986 Total	**3,819**	**2,749**	**6,567**	**142**	**5.5**	**1,952**	**1,812**	**140**
1987 Total	**3,792**	**2,756**	**6,548**	**7**	**.3**	**1,887**	**1,881**	**6**
1988 Total	**3,800**	**2,850**	**6,650**	**94**	**3.4**	**2,174**	**2,244**	**-69**
1989 January	3,798	2,509	6,307	281	12.6	53	418	-365
February	3,801	1,994	5,796	168	9.2	32	602	-570
March	3,801	1,776	5,578	94	5.6	106	362	-256
April	3,801	1,823	5,624	54	3.0	181	138	43
May	3,802	2,062	5,863	34	1.7	321	44	277
June	3,802	2,374	6,176	82	3.6	375	20	355
July	3,802	2,644	6,446	77	3.0	371	29	341
August	3,802	2,938	6,740	103	3.6	356	29	328
September	3,802	3,187	6,990	67	2.2	320	39	281
October	3,792	3,268	7,061	25	.8	221	96	124
November	3,809	3,199	7,008	28	.9	105	223	-118
December	3,812	2,513	6,325	-337	-11.8	52	805	-752
Total						**2,493**	**2,804**	**-311**
1990 January	3,818	2,265	6,083	-243	-9.7	91	339	-248
February	3,814	2,013	5,827	19	.9	70	324	-253
March	3,818	1,878	5,695	101	5.7	124	256	-131
April	3,839	1,932	5,771	109	6.0	183	140	43
May	3,823	2,159	5,982	97	4.7	289	45	245
June	3,844	2,454	6,297	79	3.3	327	42	285
July	3,850	2,747	6,597	103	3.9	325	27	298
August	3,851	2,995	6,846	57	1.9	321	37	283
September	3,852	3,267	7,119	80	2.5	284	36	248
October	3,852	3,426	7,277	158	4.8	214	61	153
November	3,868	3,417	7,285	218	6.8	136	144	-8
December	3,868	3,009	6,876	496	19.7	72	467	-395
Total						**2,436**	**1,918**	**520**
1991 January	3,858	2,538	6,396	273	12.1	59	530	-471
February	3,852	2,319	6,171	306	15.2	41	260	-219

[a]Total underground storage capacity at the end of each calendar year (in billion cubic feet): 1975--6,280 (first data available); 1976--6,544; 1977--6,678; 1978--6,890; 1979--6,929; 1980--7,434; 1981--7,805; 1982--7,915; 1983--7,985; 1984--8,043; 1985--8,087; 1986--8,145; 1987 and 1988--8,124; and 1989--8,124. Current capacity is 8,125.

[b]For 1980 through 1989, data differ from those shown on Table 4.2, which includes liquefied natural gas storage for that period.

[c]Positive numbers indicate injections are greater than withdrawals. Negative numbers indicate withdrawals are greater than injections. Net injections or withdrawals may not equal the difference between applicable ending stocks. See Note 8 at end of section.

Notes: • Geographic coverage is the 50 States and the District of Columbia. • Totals may not equal sum of components independent rounding.

Sources: • **Storage Activity**—1973 through 1975: Energy Information Administration (EIA), *Natural Gas Annual 1988, Volume II,* Table 9. 1976 through 1979: EIA, *Natural Gas Production and Consumption 1979,* Table 1. 1980 through 1988: EIA, *Natural Gas Annual 1988, Volume II,* Table 11. 1989 forward: EIA, *Natural Gas Monthly,* April 1991, Table 17. • **Other Data**—1973: American Gas Association (AGA), *Gas Facts, 1973 Data,* Table 57. 1974: AGA, *Gas Facts, 1974 Data,* Table 40. 1975 and 1976: Federal Energy Administration, Form FEA-G318-M-O, and Federal Power Commission (FPC), Form FPC-8. 1977 and 1978: EIA, Form FEA-G318-M-O, and Federal Energy Regulatory Commission (FERC), Form FERC-8. 1979 through 1987: EIA, Form EIA-191, and FERC, Form FERC-8. 1988 forward: EIA, *Natural Gas Monthly,* April 1991, Table 17.

Figure 4.1 Natural Gas Consumption, Production, and Imports

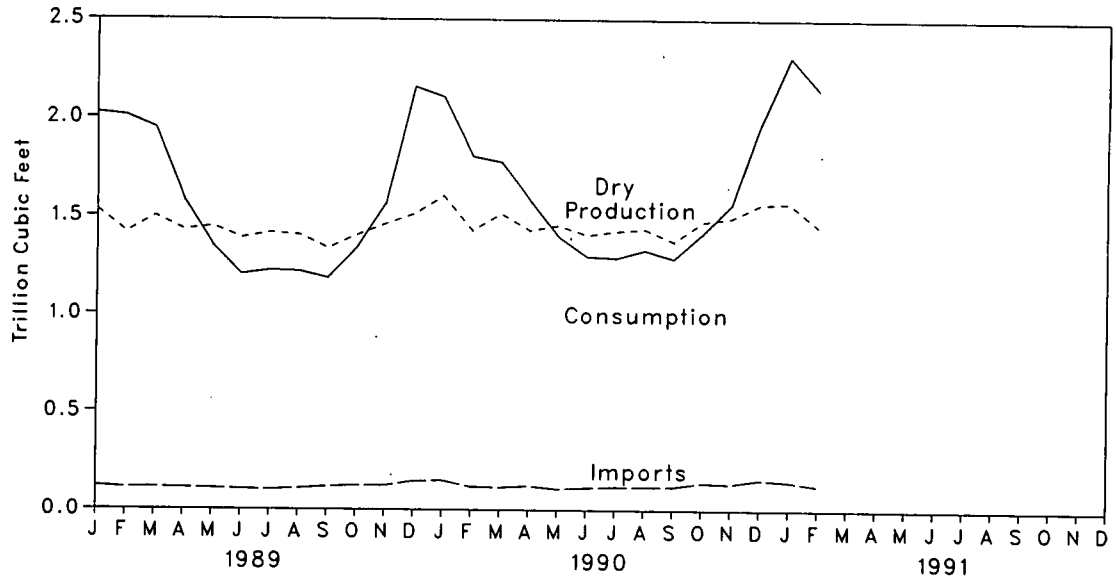
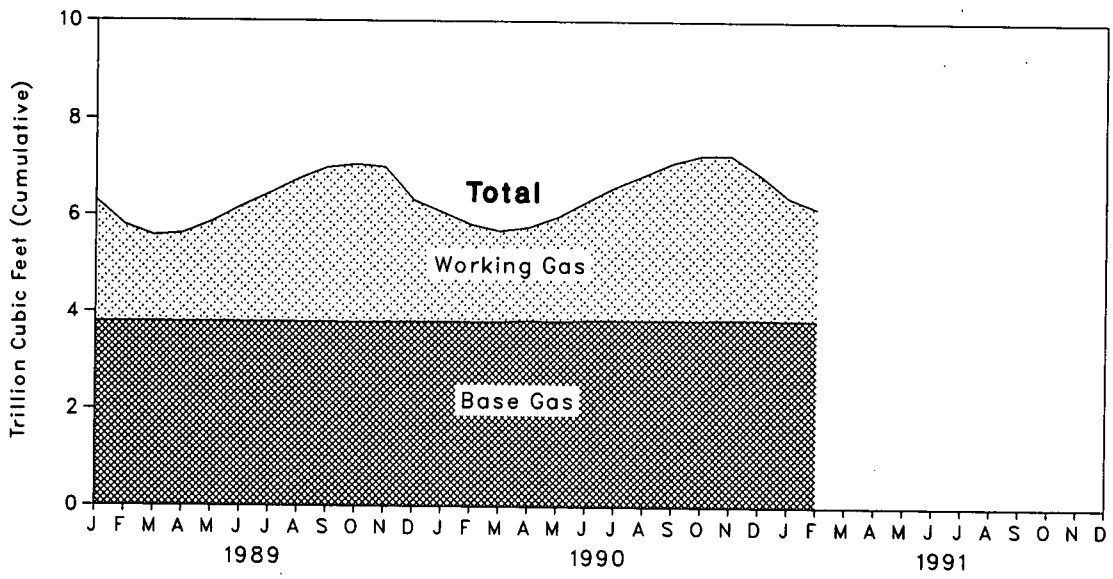


Figure 4.2 Natural Gas in Storage, End of Period



Natural Gas Notes

1. Nonhydrocarbon Gases Removed: Annual data on nonhydrocarbon gases removed from marketed production--carbon dioxide, helium, hydrogen sulfide, and nitrogen--are from the Energy Information Administration (EIA) *Natural Gas Annual (NGA) 1989.* Data are not available for periods prior to 1980. Monthly data are reported by three States and computed for six States. Monthly data are preliminary until after publication of the EIA *NGA.* Differences between annual data published in the EIA *NGA* and the sum of the preliminary monthly data (January-December) are allocated proportionally to the months to create final monthly data. For further information on methods of estimating preliminary monthly data, see the EIA *Natural Gas Mothly (NGM).*

2. Production: Annual data. Final annual data are from the EIA *NGA.*

Estimated monthly data. Data for the two most recent months presented are estimated. Some of the data for earlier months are also estimated or computed. For a discussion of computation and estimation procedures, see the EIA *NGM.*

Preliminary monthly data. Monthly data are considered preliminary until after publication of the EIA *NGA.* Preliminary monthly data are gathered from reports to the Interstate Oil Compact Commission and the U.S. Minerals Management Service. Volumetric data are converted, as necessary, to a standard 14.73 psia pressure base. Unless there are major changes, data are not revised until after publication of the EIA *NGA.*

Final monthly data. Differences between annual data in the EIA *NGA* and the sum of preliminary monthly data (January-December) are allocated proportionally to the months to create final monthly data.

3. Extraction Loss: Extraction loss is the reduction in volume of natural gas resulting from the removal of natural gas liquids constituents at natural gas processing plants.

Annual data for extraction loss are from the EIA *NGA* for which they have been estimated based on the type and quantity of liquid products extracted from the gas stream and the calculated volume of such products at standard conditions. For a detailed explanation of the calculations used to derive estimated extraction losses, see the EIA *NGA.*

Preliminary monthly data are estimated based on extraction loss as an annual percentage of marketed production. This percentage is applied to each month's marketed production to estimate monthly extraction loss.

Monthly data are revised and considered final after the publication of the EIA *NGA.* Final monthly data are estimated by allocating annual extraction loss data to the months based on total natural gas disposition data from the EIA *NGA.*

4. Supplemental Gaseous Fuels: Supplemental gaseous fuels are mainly synthetic natural gas, propane-air, and refinery gas. Other gases may also be included such as coke oven gas, biomass gas, manufactured gas, and air injected for Btu stabilization.

Annual data beginning with 1980 are from the EIA *NGA.* Unknown quantities of supplemental gaseous fuels are included in consumption data for 1979 and earlier years.

Monthly data are considered preliminary until after the publication of the EIA *NGA.* Monthly estimates are based on the annual ratio of supplemental gaseous fuels to the sum of dry gas production, net imports, and net withdrawals from storage. The ratio is applied to the monthly sum of the three elements to compute a monthy supplemental gaseous fuels figure.

5. Imports and Exports: The United States imported natural gas via pipeline from Mexico (until 1984) and Canada and liquefied natural gas (LNG) (except in 1986) via tanker from Algeria. One shipment of LNG was received in December 1986 from Indonesia. The United States exports natural gas via pipeline to Mexico and Canada and LNG via tanker to Japan.

Annual and final monthly data are from the annual Form FPC-14, "Annual Report for Importers and Exporters of Natural Gas," which requires data to be reported by month for the calendar year.

Preliminary monthly data are EIA estimates. For a discussion of estimation procedures, see the EIA *NGM.* Preliminary data are revised after the publication of the EIA *U.S. Imports and Exports of Natural Gas.*

6. Consumption: Consumption includes pipeline fuel use, lease and plant fuel use, and deliveries to consuming sectors.

Final data are from the EIA *NGA.* Monthly data are considered preliminary until after publication of the EIA *NGA.* For more detailed information on the methods of estimating preliminary and final monthly data, see the EIA *NGM.*

7. Unaccounted For: Unaccounted for natural gas represents the difference between the sum of the components of natural gas supply and the sum of components of natural gas disposition. The differences may be due to quantities lost or to the effects of data reporting problems. Reporting problems include differences due to the net result of conversions of flow data metered at varying temperature and pressure bases and converted to a standard temperature and pressure base;

the effect of variations in company accounting and billing practices; differences between billing cycle and calendar period time frames; and imbalances resulting from the merger of data reporting systems which vary in scope, format, definitions, and type of respondents.

The increase of 0.2 trillion cubic feet (Tcf) in the "Unaccounted for" category in 1983 followed by a decline of 0.5 trillion cubic feet in 1984 reflected unusually large differences resulting from the use of the annual billing cycle (essentially December 15, through the following December 14) consumption data in conjuction with calendar year supply data. Record cold temperatures during the last half of December 1983 resulted in a reported 0.3 Tcf increase in net withdrawals from underground storage for peak shaving as compared with the same period in 1982, but the effect of this cold weather was reflected primarily in 1984 consumption data. For underground storage data, see Table F2 in the May 1985 *NGM,* which was published in July 1985.

8. Natural Gas Storage: Gas in storage at the end of a reporting period may not equal the quantity derived by adding or subtracting net injections or withdrawals from the quantity in storage at the end of the previous period. The difference is due to changes in the quantity of native gas included in the base gas and/or losses in base gas due to migration from storage reservoirs.

Monthly underground storage data are collected from the Forms FERC-8 (interstate data) and EIA-191 (intrastate data). Monthly data are revised after publication of the EIA *Underground Natural Gas Storage in the United States* for that heating year (April through March). In addition, injection and withdrawal data from the FERC-8/EIA-191 survey are adjusted to correspond to data from Form EIA-176 following publication of the EIA *NGA.*

The final monthly and annual storage and withdrawal data for 1980 through 1989 include both underground and liquefied natural gas (LNG) storage. Annual data on LNG additions and withdrawals are from Form EIA-176. Monthly data are estimated by computing the ratio of each month's underground storage additions and withdrawals to annual underground storage additions and withdrawals and applying the ratio to the annual LNG data.

Section 5. Oil and Gas Resource Development

In March 1991, the number of crews engaged in seismic exploration decreased by 6 from the previous month. The March 1991 total of 112 crews was 16 less than the previous March. Of the total, 88 were land crews and 24 were marine vessels. The number of land crews was down by 19, but the number of marine vessels increased by 3 from March 1990.

The March 1991 rotary rig count of 929 was 6 percent lower than in the previous month but 3 percent higher than in March 1990. Of the total number of rigs in operation, 848 were onshore and 81 were offshore. The number of onshore rigs was up 6 percent from the number in March 1990, but the number of offshore rigs was down 25 percent.

Exploratory and development well completions during February 1991 totaled an estimated 2,160, 12 percent lower than the previous month but 2 percent higher than the February 1990 total. Oil well completions were 760, down 14 percent from the level in February 1990, and gas well completions totaled 830, up 17 percent from the February 1990 total. Total footage drilled in February 1991 was 10.83 million feet, down 14 percent from the total in January 1991 and up less than 1 percent from the total in February 1990.

Figure 5.1 Seismic Crews, Rotary Rigs, and Footage Drilled

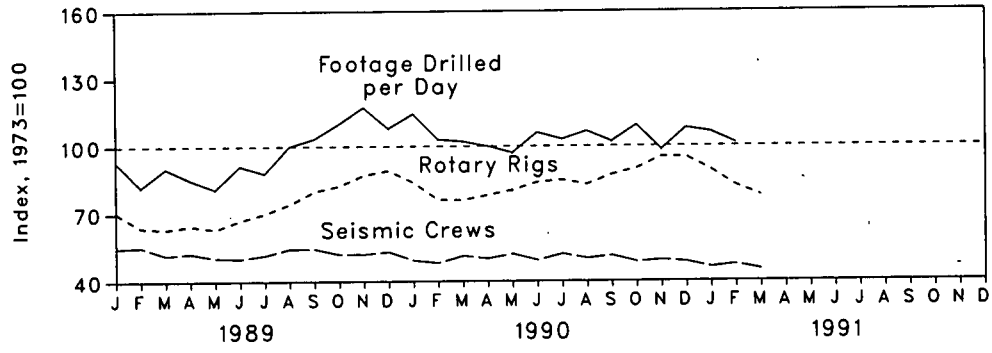


Figure 5.2 Oil and Gas Exploratory and Development Wells Completed

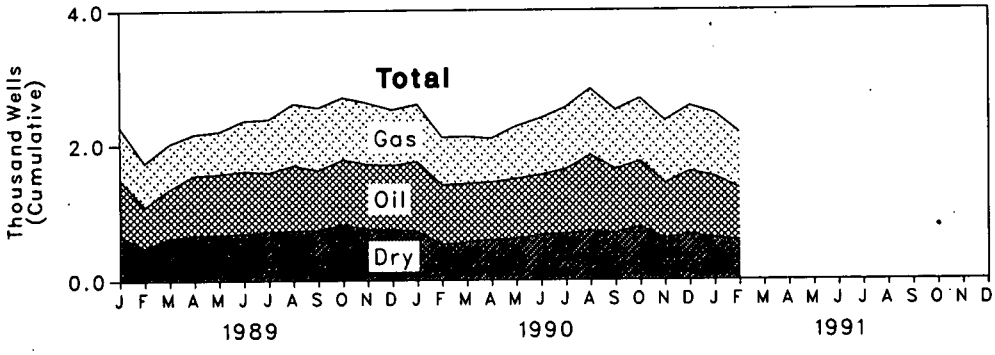


Table 5.1 Seismic Crews and Rotary Rigs

	Crews Engaged in Seismic Exploration			Rotary Rigs in Operation[a]		
	Offshore	Onshore	Total	Offshore	Onshore	Total
	Monthly Average			Weekly Average		
1973 Average	**23**	**227**	**250**	**84**	**1,110**	**1,194**
1974 Average	**31**	**274**	**305**	**94**	**1,378**	**1,472**
1975 Average	**30**	**254**	**284**	**106**	**1,554**	**1,660**
1976 Average	**25**	**237**	**262**	**129**	**1,529**	**1,658**
1977 Average	**27**	**281**	**308**	**167**	**1,834**	**2,001**
1978 Average	**25**	**327**	**352**	**185**	**2,074**	**2,259**
1979 Average	**30**	**370**	**400**	**207**	**1,970**	**2,177**
1980 Average	**37**	**493**	**530**	**231**	**2,678**	**2,909**
1981 Average	**44**	**637**	**681**	**256**	**3,714**	**3,970**
1982 Average	**57**	**531**	**588**	**243**	**2,862**	**3,105**
1983 Average	**47**	**426**	**473**	**199**	**2,033**	**2,232**
1984 Average	**49**	**445**	**494**	**213**	**2,215**	**2,428**
1985 Average	**45**	**333**	**378**	**206**	**1,774**	**1,980**
1986 Average	**24**	**176**	**201**	**99**	**865**	**964**
1987 Average	**24**	**153**	**176**	**95**	**841**	**936**
1988 Average	**29**	**153**	**182**	**123**	**813**	**936**
1989 January	25	112	137	110	731	841
February	23	115	138	95	667	762
March	21	108	129	93	660	753
April	22	109	131	92	679	771
May	22	104	126	92	662	754
June	22	102	124	103	692	795
July	22	107	129	114	718	832
August	26	110	136	114	772	886
September	24	114	138	107	848	955
October	21	109	130	106	878	984
November	20	109	129	119	922	1,041
December	20	112	132	117	948	1,065
Average	**23**	**109**	**132**	**105**	**764**	**869**
1990 January	20	103	123	113	885	998
February	20	100	120	105	806	911
March	21	107	128	108	797	905
April	24	101	125	111	824	935
May	25	104	129	120	841	961
June	23	100	123	113	886	999
July	24	105	129	108	902	1,010
August	23	102	125	108	879	987
September	25	101	126	107	935	1,042
October	23	98	121	99	974	1,073
November	23	100	123	106	1,031	1,137
December	23	98	121	101	1,035	1,136
Average	**23**	**102**	**125**	**108**	**902**	**1,010**
1991 January	22	92	114	91	977	1,068
February	21	97	118	88	896	984
March	24	88	112	81	848	929
3-Month Average	**22**	**92**	**114**	**87**	**907**	**994**
1990 3-Month Average	**21**	**103**	**124**	**109**	**834**	**943**
1989 3-Month Average	**23**	**112**	**135**	**100**	**690**	**790**

[a]Monthly data are averages of 4- or 5-week reporting periods, not calendar months.

Note: Geographic coverage is the 50 States and the District of Columbia.

Sources • Crews Engaged in Seismic Exploration: Society of Exploration Geophysicists, "Monthly Seismic Crew Count" and annual reports in *Geophysics: The Leading Edge of Exploration.* • Rotary Rigs in Operation: Hughes Tool Company, "Rotary Rigs Running--by State."

Table 5.2 Oil and Gas Exploratory and Development Wells

	Wells Completed				Footage Drilled
	Oil	Gas	Dry	Total	
	Thousand Wells				Million Feet
1973 Total	**10.25**	**6.98**	**10.47**	**27.69**	**139.42**
1974 Total	**13.66**	**7.17**	**12.21**	**33.04**	**153.79**
1975 Total	**16.98**	**8.17**	**13.74**	**38.89**	**181.05**
1976 Total	**17.70**	**9.44**	**13.81**	**40.94**	**187.29**
1977 Total	**18.70**	**12.12**	**15.04**	**45.86**	**215.70**
1978 Total	**19.07**	**14.41**	**16.59**	**50.06**	**238.39**
1979 Total	**20.70**	**15.17**	**16.04**	**51.91**	**243.69**
1980 Total	**32.28**	**17.22**	**20.34**	**69.84**	**312.30**
1981 Total	**42.84**	**19.91**	**27.28**	**90.03**	**408.84**
1982 Total	**39.13**	**18.94**	**26.38**	**84.45**	**378.39**
1983 Total	**37.12**	**14.53**	**24.30**	**75.95**	**318.09**
1984 Total	**42.51**	**16.99**	**25.73**	**85.23**	**370.20**
1985 Total	**34.94**	**14.23**	**21.09**	**70.26**	**311.77**
1986 Total	**18.76**	**8.20**	**12.89**	**39.85**	**178.19**
1987 Total	**16.22**	**7.82**	**11.63**	**35.68**	**162.17**
1988 Total	**13.44**	**8.33**	**10.13**	**31.90**	**153.40**
1989 January	.84	.79	.66	2.29	11.19
February	.61	R .66	R .49	R 1.75	R 9.03
March	.71	.67	.63	2.00	9.64
April	.89	.61	.66	2.16	10.00
May	.90	.63	.67	2.19	9.95
June	.87	.75	.72	2.34	10.64
July	.88	.79	.71	2.37	10.57
August	.99	.86	.73	2.59	11.39
September	.85	.86	.74	2.46	11.37
October	.96	.88	.82	2.66	12.14
November	.96	.86	.75	2.57	12.06
December	.94	.83	.75	2.53	12.43
Total	**10.40**	**9.18**	**8.33**	R **27.91**	R **130.41**
1990 January	1.03	.85	.72	2.59	13.12
February	R .88	R .71	R .52	R 2.11	R 10.78
March	.87	.70	.55	2.12	10.38
April	.85	.65	.59	2.09	10.13
May	.89	.78	.60	2.27	10.70
June	.89	.84	.66	2.39	10.81
July	.95	.92	.68	2.55	11.61
August	R 1.13	R .98	R .71	R 2.82	R 12.01
September	.94	.88	.69	2.52	11.68
October	.97	.93	.78	2.68	12.52
November	.82	.93	.60	2.34	11.26
December	.93	.97	.67	2.57	12.78
Total	R **11.14**	R **10.14**	R **7.77**	R **29.04**	R **137.78**
1991 January	.91	.94	.61	2.45	12.58
February	.76	.83	.58	2.16	10.83
2-Month Total	**1.66**	**1.76**	**1.19**	**4.62**	**23.42**
1990 2-Month Total	**1.90**	**1.56**	**1.24**	**4.70**	**23.91**
1989 2-Month Total	**1.45**	**1.44**	**1.15**	**4.04**	**20.22**

R=Revised data.

Notes: • Includes exploratory and development wells; excludes service wells, stratigraphic tests, and core tests. • Geographic coverage is the 50 States and the District of Columbia. • Totals and averages may not equal sum of components due to subsequent revisions and independent rounding. • Due to the method of estimation, data shown on this page are frequently revised. See end of section.

Sources: Energy Information Administration computations based on well reports submitted to the American Petroleum Institute by the Petroleum Information Corporation.

Oil and Gas Resource Development Notes

Beginning in the March 1985 *Monthly Energy Review (MER)*, the Energy Information Administration (EIA) revised the exploratory and development wells drilled data series. In order to present a consistent series, historical as well as current statistics were adjusted.

In previous issues, the *MER* published statistics based on data on well completions reported to the American Petroleum Institute during a given month, as opposed to data on wells actually completed during the month. Because of the time lag from date of well completion to date of reporting, data on well completions reported are not as accurate an indicator of drilling activity as are data on well completions. For example, during 1982 well completions reported continued to rise even though the number of wells actually completed fell. Starting in the March 1985 issue of the *MER*, published figures have been EIA estimates of the number of wells actually completed in a given month and are shown in thousands, rounded to two decimal places. The associated footage drilled is shown in millions, also rounded to two decimal places.

The EIA estimates are calculated using an adjustment process that imputes total well counts and footage by type and class based on partial counts of well completions available from the reported data. That is, based on statistical analysis of the incomplete reported data, the process imputes the missing portions to determine values for total well completions and footage. Estimates for a given month are first published in the *MER* for that month, that is estimates for June 1984 are first published in the June 1984 *MER*. Revisions to the estimates are scheduled for the 6th, 12th, and 24th months following initial publication, as newly reported data refine the accuracy of the estimate. Unscheduled revisions to the published data will also be made when the latest estimate differs by more than 15 percent during the first 5 months, more than 10 percent during the next 6 months, more than 5 percent during the following 6 months, or more than 2 percent thereafter through 5 years. After 5 years, the actual reported data will be published.

The three well types considered are oil, gas, and dry. By convention, wells with both oil and gas zones are categorized as oil. Well classes are either development or exploratory; wells in any other class have been deleted. Exploratory well categories considered are new field wildcat, new pool wildcat, deeper pool test, or extension (American Association of Petroleum Geologists well classification codes 1 through 5).

Additional information may be obtained from "Estimating Well Completions," the feature article published in the March 1985 *MER*.

Section 6. Coal

Coal production in February 1991 totaled 83 million short tons, less than 1 percent[27] higher than the 82 million short tons produced in February 1990.

Electric utility coal consumption in January 1991 totaled 71 million short tons, 5 million tons higher than in January 1990.

Electric utility coal stocks were 149 million short tons at the end of January 1991, compared with 137 million short tons at the end of January 1990.

Exports of coal in January 1991 totaled 6 million short tons, 1 million short tons lower than in January 1990. Coal imports for January 1991 totaled 263 thousand short tons, 88 thousand short tons higher than imports for January 1990.

[27]Percentage changes are calculated using unrounded data.

Figure 6.1 Coal Production, Consumption, and Exports

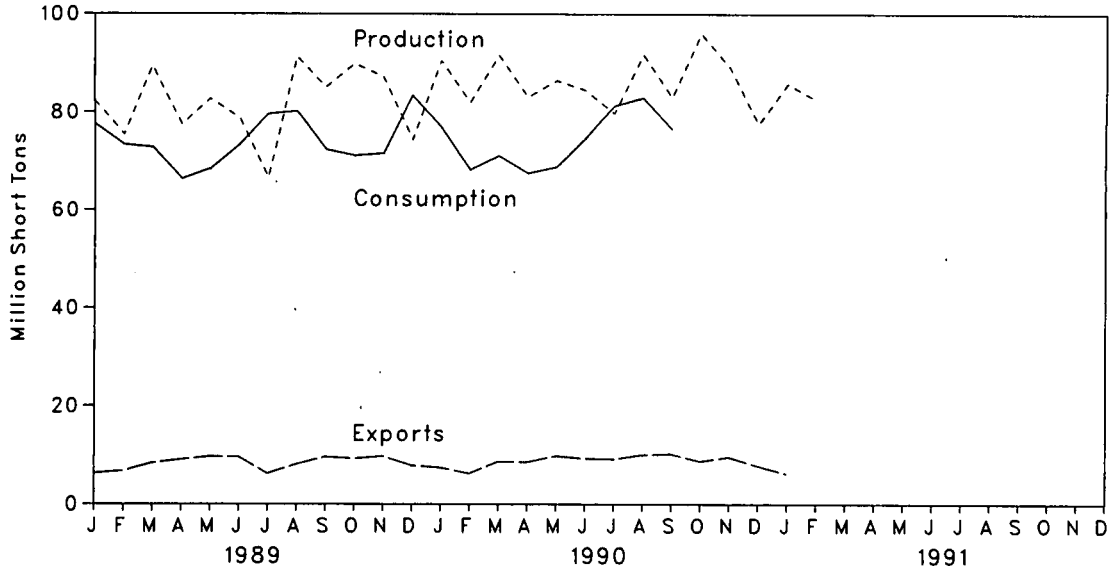


Figure 6.2 Coal Stocks, End of Period

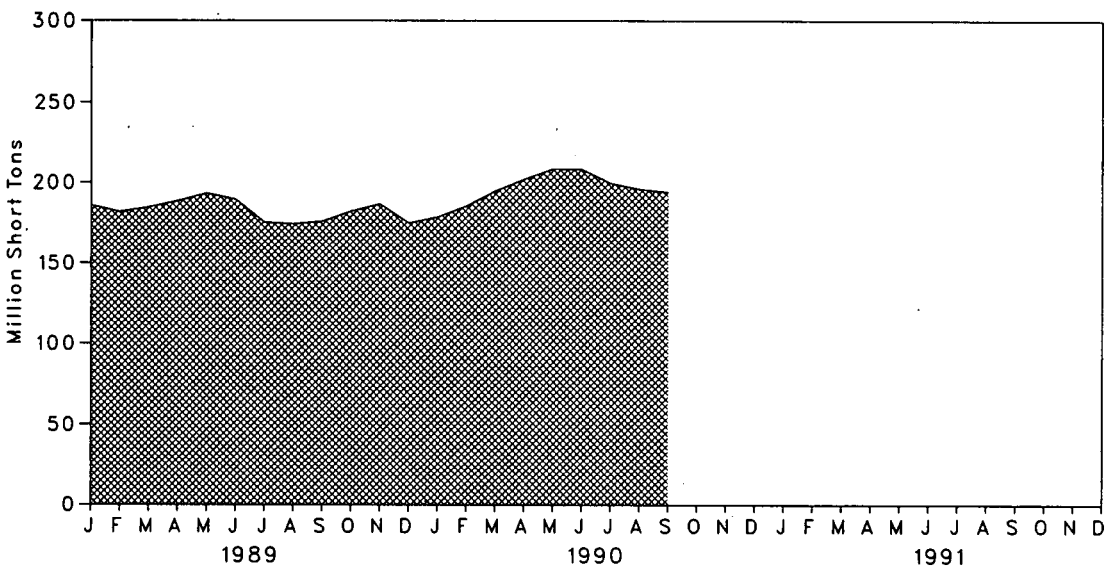


Table 6.1 Coal Overview
(Thousand Short Tons)

	Production	Consumption	Imports[a]	Exports	Stocks[b]
1973 Total	**598,568**	**562,584**	**127**	**53,587**	**NA**
1974 Total	**610,023**	**558,402**	**2,080**	**60,661**	**NA**
1975 Total	**654,641**	**562,640**	**940**	**66,309**	**NA**
1976 Total	**684,913**	**603,790**	**1,203**	**60,021**	**NA**
1977 Total	**697,205**	**625,291**	**1,647**	**54,312**	**NA**
1978 Total	**670,164**	**625,225**	**2,953**	**40,714**	**NA**
1979 Total	**781,134**	**680,524**	**2,059**	**66,042**	**202,472**
1980 Total	**829,700**	**702,729**	**1,194**	**91,742**	**228,407**
1981 Total	**823,775**	**732,628**	**1,043**	**112,541**	**209,423**
1982 Total	**838,111**	**706,910**	**742**	**106,277**	**232,037**
1983 Total	**782,091**	**736,671**	**1,271**	**77,772**	**202,585**
1984 Total	**895,921**	**791,291**	**1,286**	**81,483**	**231,300**
1985 Total	**883,638**	**818,049**	**1,952**	**92,680**	**203,367**
1986 Total	**890,315**	**804,312**	**2,212**	**85,518**	**207,319**
1987 Total	**918,762**	**836,941**	**1,747**	**79,607**	**213,780**
1988 Total	**950,265**	**883,664**	**2,134**	**95,023**	**188,831**
1989 January	82,331	77,638	66	6,306	185,952
February	75,414	73,391	131	6,748	181,866
March	89,421	72,834	334	8,375	184,630
April	77,456	66,355	158	9,104	188,578
May	82,776	68,438	312	9,685	193,282
June	78,795	73,372	218	9,657	189,507
July	66,601	79,619	375	6,209	175,341
August	91,349	80,170	247	8,122	174,372
September	85,115	72,413	303	9,661	176,013
October	89,873	71,200	160	9,293	182,271
November	87,236	71,653	245	9,768	186,815
December	74,363	83,478	303	7,888	175,087
Total	**980,729**	**890,559**	**2,851**	**100,815**	
1990 January	R 90,551	R 76,890	175	7,447	R 178,947
February	R 82,012	R 68,252	268	6,243	R 185,956
March	R 91,596	R 71,171	292	8,693	R 195,381
April	R 83,164	R 67,690	182	8,590	R 202,748
May	R 86,507	R 69,007	144	9,827	R 209,274
June	R 84,584	R 74,908	348	9,316	R 209,195
July	R 79,809	R 81,260	200	9,194	R 200,308
August	R 91,838	R 82,951	120	10,065	R 196,623
September	R 83,107	R 76,469	194	10,238	R 194,687
October	R 93,418	R 74,982	284	8,756	200,602
November	R 86,772	R 71,729	224	9,621	205,332
December	R 75,676	R 79,247	268	7,813	200,626
Total	**R 1,029,035**	**R 894,556**	**2,699**	**105,804**	
1991 January	85,834	NA	263	6,214	NA
February	82,588	NA	NA	NA	NA
2-Month Total	**168,422**				
1990 2-Month Total	**172,563**	**145,142**	**443**	**13,690**	
1989 2-Month Total	**157,745**	**151,029**	**197**	**13,054**	

[a]Includes Puerto Rico.

[b]Stocks held by electric utilities, coke plants, general industry, and coal producers and distributors at end of period. Excludes stocks held at retail dealers for consumption by the residential and commercial sector.

R=Revised data. NA=Not available.

Notes: • Geographic coverage is the 50 States and the District of Columbia. • Data through 1988 are final. Subsequent data are preliminary. • Totals may not equal sum of components due to independent rounding. • See Notes 1, 2, and 3 at end of section for methodology used to calculate production, consumption, and stocks.

Sources: • **Production: 1973 through September 1977**—U.S. Department of the Interior, Bureau of Mines, *Minerals Yearbook* and *Minerals Industry Surveys*. **October 1977 forward**—Energy Information Administration, *Weekly Coal Production*. • **Consumption**—See Table 6.2. • **Imports and Exports**—U.S. Department of Commerce, Bureau of the Census, Monthly Reports IM-145 (Imports) and EM-522 (Exports). • **Stocks**—See Table 6.3.

Table 6.2 Coal Consumption by End-Use Sector[a]
(Thousand Short Tons)

	Electric Utilities	Industrial		Residential and Commercial	Total
		Coke Plants	Other Industrial including Transportation		
1973 Total	**389,212**	**94,101**	**68,154**	**11,117**	**562,584**
1974 Total	**391,811**	**90,191**	**64,983**	**11,417**	**558,402**
1975 Total	**405,962**	**83,598**	**63,670**	**9,410**	**562,640**
1976 Total	**448,371**	**84,704**	**61,799**	**8,916**	**603,790**
1977 Total	**477,126**	**77,739**	**61,472**	**8,954**	**625,291**
1978 Total	**481,235**	**71,394**	**63,085**	**9,511**	**625,225**
1979 Total	**527,051**	**77,368**	**67,717**	**8,388**	**680,524**
1980 Total	**569,274**	**66,657**	**60,347**	**6,452**	**702,729**
1981 Total	**596,797**	**61,015**	**67,395**	**7,422**	**732,628**
1982 Total	**593,666**	**40,908**	**64,096**	**8,240**	**706,910**
1983 Total	**625,211**	**37,033**	**65,979**	**8,448**	**736,671**
1984 Total	**664,399**	**44,022**	**73,744**	**9,128**	**791,291**
1985 Total	**693,841**	**41,056**	**75,372**	**7,779**	**818,049**
1986 Total	**685,056**	**36,006**	**75,583**	**7,667**	**804,312**
1987 Total	**717,894**	**36,957**	**75,175**	**6,914**	**836,941**
1988 Total	**758,372**	**41,910**	**76,252**	**7,130**	**883,664**
1989 January	66,767	3,568	6,671	632	77,638
February	62,784	3,295	6,619	693	73,391
March	62,005	3,722	6,595	512	72,834
April	56,144	3,613	6,088	511	66,355
May	58,527	3,525	6,050	336	68,438
June	63,635	3,368	6,073	296	73,372
July	69,720	3,527	5,875	496	79,619
August	70,493	3,336	5,891	449	80,170
September	62,910	3,320	5,865	318	72,413
October	60,561	3,599	6,829	210	71,200
November	61,006	3,301	6,815	530	71,653
December	72,336	3,195	6,764	1,184	83,478
Total	**766,888**	**41,369**	**76,134**	**6,167**	**890,559**
1990 January	R 66,290	3,354	R 6,533	R 713	R 76,890
February	R 57,996	3,025	R 6,576	R 656	R 68,252
March	R 60,748	3,369	R 6,504	R 551	R 71,171
April	R 57,776	R 3,357	R 6,025	532	R 67,690
May	R 59,140	R 3,501	R 6,007	R 360	R 69,007
June	65,167	R 3,331	R 6,037	373	R 74,908
July	R 71,376	3,275	R 6,075	R 535	R 81,260
August	R 72,942	3,397	R 6,113	R 498	R 82,951
September	R 66,727	3,276	R 6,056	R 409	R 76,469
October	64,264	3,450	6,853	R 413	R 74,982
November	R 60,916	3,351	6,838	R 624	R 71,729
December	R 68,335	3,139	6,713	R 1,059	R 79,247
Total	**R 771,678**	**39,824**	**76,330**	**R 6,724**	**R 894,556**
1991 January	71,190	NA	NA	NA	NA

[a]See Note 2 at end of section.

R=Revised data. NA=Not available.

Notes: • Geographic coverage is the 50 States and the District of Columbia. • Data through 1988 are final. Subsequent data are preliminary. • Totals may not equal sum of components due to independent rounding.

Sources: • **Electric Utilities, 1973 through September 1977**—U.S. Department of the Interior (DOI), Bureau of Mines (BOM), *Minerals Yearbook* and *Minerals Industry Surveys*. **October 1977 forward**—Energy Information Administration (EIA), Form EIA-759 (formerly Form FPC-4), "Monthly Power Plant Report." • **Coke Plants, 1973 through September 1977**—DOI, BOM, *Minerals Yearbook* and *Minerals Industry Surveys*. **October 1977 through 1980**—EIA, Form EIA-5/5A, "Coke and Coal Chemicals-Monthly/Annual." **1981 through 1984**—EIA, Form EIA-5/5A, "Coke Plant Report-Quarterly/Annual Supplement." **1985 forward**—EIA, Form EIA-5, "Coke Plant Report," quarterly. • **Other Industrial, 1973 through September 1977**—DOI, BOM, *Minerals Yearbook* and *Minerals Industry Surveys*. **October 1977 through 1979**—EIA, Form EIA-3, "Monthly Coal Consumption Report-Manufacturing Plants." **1980 forward**—EIA, Form EIA-3, "Quarterly Coal Consumption Report-Manufacturing Plants," and Form EIA-6, "Coal Distribution Report." • **Residential and Commercial, 1973 through 1976**—DOI, BOM, *Minerals Yearbook*. **January through September 1977**—DOI, BOM, Form 6-1400, "Monthly Coal Report, Retail Dealers-Upper Lake Docks." **October 1977 through 1979**—EIA, Form EIA-2, "Monthly Coal Report, Retail Dealers-Upper Lake Docks." **1980 forward**—EIA, Form EIA-6, "Coal Distribution Report."

Table 6.3 Coal Stocks, End of Period
(Thousand Short Tons)

	Consumer				Producers and Distributors	Total[a]
	Electric Utilities	Coke Plants	Other Industrial	Total[a]		
1973 Year	**86,967**	**6,998**	**10,370**	**104,335**	**NA**	**NA**
1974 Year	**83,509**	**6,209**	**6,605**	**96,323**	**NA**	**NA**
1975 Year	**110,724**	**6,797**	**8,529**	**128,050**	**NA**	**NA**
1976 Year	**117,436**	**9,902**	**7,100**	**134,438**	**NA**	**NA**
1977 Year	**133,219**	**12,816**	**11,063**	**157,098**	**NA**	**NA**
1978 Year	**126,225**	**8,278**	**9,048**	**145,551**	**NA**	**NA**
1979 Year	**159,714**	**10,155**	**11,777**	**181,646**	**20,826**	**202,472**
1980 Year	**183,010**	**9,067**	**11,951**	**204,028**	**24,379**	**228,407**
1981 Year	**168,893**	**6,475**	**9,906**	**185,274**	**24,149**	**209,423**
1982 Year	**181,132**	**4,642**	**9,479**	**195,253**	**36,784**	**232,037**
1983 Year	**155,598**	**4,346**	**8,710**	**168,654**	**33,931**	**202,585**
1984 Year	**179,727**	**6,166**	**11,317**	**197,210**	**34,090**	**231,300**
1985 Year	**156,376**	**3,420**	**10,438**	**170,234**	**33,133**	**203,367**
1986 Year	**161,806**	**2,992**	**10,429**	**175,226**	**32,093**	**207,319**
1987 Year	**170,797**	**3,884**	**10,777**	**185,459**	**28,321**	**213,780**
1988 Year	**146,507**	**3,137**	**8,768**	**158,413**	**30,418**	**188,831**
1989 January	142,538	3,264	8,073	153,876	32,076	185,952
February	137,363	3,391	7,378	148,132	33,734	181,866
March	139,036	3,518	6,683	149,238	35,392	184,630
April	144,674	3,466	6,679	154,819	33,759	188,578
May	151,067	3,413	6,675	161,155	32,127	193,282
June	148,981	3,361	6,671	159,013	30,494	189,507
July	134,865	3,476	7,054	145,395	29,946	175,341
August	133,948	3,591	7,436	144,975	29,397	174,372
September	135,640	3,707	7,818	147,165	28,848	176,013
October	142,280	3,426	7,666	153,372	28,899	182,271
November	147,207	3,145	7,515	157,866	28,949	186,815
December	135,860	2,864	7,363	146,087	29,000	175,087
1990 January	R 137,465	3,123	7,237	R 147,824	R 31,123	R 178,947
February	R 142,218	3,382	7,110	R 152,711	R 33,245	R 185,956
March	R 149,388	3,641	6,984	R 160,013	R 35,368	R 195,381
April	R 155,962	R 3,674	R 7,127	R 166,763	R 35,985	R 202,748
May	R 161,695	R 3,706	R 7,270	R 172,672	R 36,602	R 209,274
June	R 160,823	R 3,739	R 7,413	R 171,976	R 37,219	R 209,195
July	R 152,982	3,387	7,810	R 164,179	R 36,129	R 200,308
August	R 150,123	3,255	R 8,206	R 161,585	R 35,039	R 196,623
September	R 149,013	3,124	R 8,603	R 160,739	R 33,948	R 194,687
October	R 155,191	3,192	8,640	167,023	33,579	200,602
November	R 159,895	3,260	8,678	171,834	33,499	205,332
December	R 155,163	3,329	8,716	167,208	33,418	200,626
1991 January	148,736	NA	NA	NA	NA	NA

[a]Excludes stocks held at retail dealers for consumption by the residential and commercial sector.
R=Revised data. NA=Not available.
Notes: • Geographic coverage is the 50 States and the District of Columbia. • Data through 1988 are final. Subsequent data are preliminary. • Totals may not equal sum of components due to independent rounding.
Sources: • **Electric Utilities, 1973 through September 1977**—U.S. Department of the Interior (DOI), Bureau of Mines (BOM), *Minerals Yearbook* and *Minerals Industry Surveys*. **October 1977 forward**—Energy Information Administration (EIA), Form EIA-759 (formerly Form FPC-4), "Monthly Power Plant Report." • **Coke Plants, 1973 through September 1977**—DOI, BOM, *Minerals Yearbook* and *Minerals Industry Surveys*. **October 1977 through 1980**—EIA, Form EIA-5/5A, "Coke and Coal Chemicals-Monthly/Annual." **1981 through 1984**—EIA, Form EIA-5/5A, "Coke Plant Report-Quarterly/Annual Supplement." **1985 forward**—EIA, Form EIA-5, "Coke Plant Report," quarterly. • **Other Industrial, 1973 through September 1977**—DOI, BOM, *Minerals Yearbook* and *Minerals Industry Surveys*. **October 1977 through 1979**—EIA, Form EIA-3, "Monthly Coal Consumption Report-Manufacturing Plants." **1980 forward**—EIA, Form EIA-3, "Quarterly Coal Consumption Report-Manufacturing Plants," and Form EIA-6, "Coal Distribution Report." • **Residential and Commercial, 1973 through 1976**—DOI, BOM, *Minerals Yearbook*. **January through September 1977**—DOI, BOM, Form 6-1400, "Monthly Coal Report, Retail Dealers-Upper Lake Docks." **October 1977 through 1979**—EIA, Form EIA-2, "Monthly Coal Report, Retail Dealers-Upper Lake Docks." **1980 forward**—EIA, Form EIA-6, "Coal Distribution Report."
• **Producers and Disributors**—EIA, Form EIA-6, "Coal Distribution Report."

Coal Notes

1. Production: Preliminary monthly estimates of national coal production are the sum of weekly estimates developed by the Energy Information Administration (EIA) and published in the *Weekly Coal Production* report. When a week extends into a new month, production is allocated on a daily basis and added to the appropriate month. Weekly estimates are based on Association of American Railroads data showing the number of railcars loaded with coal during the week by Class I and certain other railroads. This number is converted into tons of coal by EIA using the average number of tons of coal per railcar loaded reported in the most recent "Quarterly Freight Commodity Statistics" from the Interstate Commerce Commission. If an average coal tonnage per railcar loaded is not available for a specific railroad, the national average is used. To derive the estimate of total weekly production, the total rail tonnage for the week is divided by the ratio of quarterly production shipped by rail and total quarterly production. Data for the corresponding quarter of previous years are used to derive this ratio. This method insures that the seasonal variations are preserved in the production estimates.

When preliminary quarterly data become available, the monthly and weekly estimates are adjusted to conform to the quarterly figure. The adjustment procedure uses State-level production data and is explained in EIA's *Quarterly Coal Report.* Initial estimates of annual production published in January of the following year are based on preliminary production data covering the first 9 months (three quarters) and weekly/monthly estimates for the fourth quarter. The fourth quarter estimates may or may not be revised when preliminary data become available in March of the following year, depending on the magnitude of the difference between the estimates and the preliminary data. In any event, all quarterly, monthly, and weekly production figures are adjusted to conform to the final annual production data published in the *Monthly Energy Review* in the fall of the following year.

2. Consumption: Coal consumption data are reported by major end-use sector.

- Electric Utilities--Both monthly and quarterly consumption data for electric utility plants are directly from reported data.
- Coke Plants--Prior to 1980, monthly coke plant consumption data were directly from reported data. From 1980 forward, coke plant consumption estimates were derived by proportioning reported quarterly data using the ratios of monthly-to-quarterly consumption data in 1979, the last year in which monthly data were reported. Beginning in January 1988, monthly coke plant consumption estimates are derived from the reported quarterly data using monthly ratios of raw steel production data from the American Iron and Steel Institute. The ratios are the monthly raw steel production from open hearth and basic oxygen process furnaces as a proportion of the quarterly production from those kinds of furnaces.
- Other Industrial--Prior to 1978, monthly consumption data for the other industrial sector (i.e., all industrial users minus coke plants) were derived by using reported data to modify baseline consumption figures from the most recent Bureau of the Census Annual Survey of Manufactures or Census of Manufactures. For 1978 and 1979, monthly estimates were derived from data reported on Forms EIA-3 and EIA-6. From 1980 forward, monthly figures were estimated by proportioning quarterly data using the ratios of monthly-to-quarterly consumption data in 1979, the last year in which monthly data were reported on Form EIA-3. Quarterly consumption data were derived by adding beginning stocks at manufacturing plants to current receipts and subtracting ending stocks at manufacturing plants. In this calculation, current receipts were the greater of either reported receipts from manufacturing plants (Form EIA-3) or reported shipments to the other industrial sector (Form EIA-6), thereby ensuring that agriculture, forestry, fishing, mining, and construction consumption were included where appropriate. Starting in January 1988, monthly consumption for the other industrial sector is estimated from reported quarterly data using ratios derived from industrial production indices published by the Board of Governors of the Federal Reserve System. Indices for six major industry groups are used as the basis for calculating the ratios: foods (SIC 20); paper and products (SIC 26); chemicals and products (SIC 28); petroleum products (SIC 29); clay, glass, and stone products (SIC 32); and primary metals (SIC 33). The monthly ratios are computed as the monthly sum of the weighted indices as a proportion of the quarterly sum of the weighted indices, using the 1977 proportion as the weights.
- Residential and Commercial--Prior to 1980, monthly consumption estimates for the residential and commercial sector were derived by using reported data to modify baseline figures developed by the Bureau of Mines. From 1980 forward, monthly estimates were derived by proportioning reported quarterly data using the ratios of monthly-to-quarterly consumption data in 1979, the last year in which monthly data were reported on Form EIA-2. During 1981 and 1982, the estimates were also modified to reflect air temperature degree-days. Quarterly consumption data were directly from reported data and were defined as distribution to the residential and commercial sector as reported by coal producers and distributors on Form EIA-6. Beginning in January 1988, monthly residential and commercial consumption estimates are derived from reported quarterly data using monthly national average population

weighted heating/cooling degree-days obtained from the National Oceanic and Atmospheric Administration. The monthly ratios are the monthly national sum of heating and cooling degree-days as a proportion of the quarterly national sum. Quarterly consumption data are directly from reported data.

3. Stocks: Coal stocks data are reported by major end-use sector.

- Electric Utilities--Both monthly and quarterly stocks at electric utility plants are directly from reported data.
- Coke Plants--Prior to 1980, monthly stocks at coke plants were directly from reported data. From 1980 forward, coke plant stocks are estimated by using one-third of the current quarterly change to indicate the monthly change in stocks. Quarterly stocks are directly from data reported on Form EIA-5.
- Other Industrial--Prior to 1978, stocks for the other industrial sector were derived by using reported data to modify baseline figures from a one-time Bureau of Mines survey of consumers. For 1978 through 1982, monthly estimates were derived by judgmentally proportioning reported quarterly data based on representative seasonal patterns of supply and demand. From 1983 forward, other industrial coal stocks are estimated as indicated above for coke plants. Quarterly stocks are directly from data reported on Form EIA-3 and therefore include only manufacturing industries; data for agriculture, forestry, fishing, mining, and construction stocks are not available.
- Residential and Commercial--Prior to 1980, monthly and quarterly stock data for the residential and commercial sector were directly from reported data. Monthly and quarterly stock data are not available for the residential and commercial sector after December 1979.
- Producers and Distributors--Quarterly stocks at producers and distributors are directly from reported data. Monthly data are estimated by using one-third of the current quarterly change to indicate the monthly change in stocks.

4. Imports and Exports: All coal import and export figures are directly from data reported monthly by the Bureau of the Census.

5. Additional Information: More information concerning coal production, consumption, and stocks data and estimation procedures may be obtained in EIA's *Quarterly Coal Report.*

Section 7. Electric Utilities

During January 1991, electric utilities generated 248 billion kilowatthours of electricity, 4 percent[28] above the January 1990 generation level. Coal-fired generation totaled 142 billion kilowatthours, 7 percent higher than the January 1990 level. Nuclear generation totaled 54 billion kilowatthours, 1 percent below the level 1 year earlier. Hydroelectric generation totaled 26 billion kilowatthours, 10 percent above the January 1990 level. Natural gas-fired generation was 16 billion kilowatthours, 18 percent higher than the January 1990 level. Petroleum-fired generation totaled 9 billion kilowatthours, 20 percent below the level 1 year earlier.

Sales of electricity to all ultimate consumers in the United States in January 1991 were 241 billion kilowatthours, slightly higher than the January 1990 sales. Sales to residential consumers during January 1991 were 94 billion kilowatthours, 1 percent below the previous year's figure. Sales to industrial consumers totaled 76 billion kilowatthours in January 1991, 2 percent above the level in January 1990. Commercial sales were 63 billion kilowatthours, 1 percent above the amount sold to commercial consumers 1 year earlier. In January 1991, other sales totaled 8 billion kilowatthours, slightly below the January 1990 level.

Electric utility consumption of petroleum (excluding petroleum coke) during January 1991 was 15 million barrels, 21 percent below the January 1990 level. Coal consumption during January 1991 was 71 million short tons, 7 percent higher than the consumption in January 1990. During January 1991, electric utilities consumed 171 billion cubic feet of natural gas, 18 percent above the January 1990 consumption level.

On January 31, 1991, electric utility stocks of all types of coal totaled 149 million short tons, 8 percent higher than the level on January 31, 1990. Stocks of petroleum (excluding petroleum coke) on January 31, 1991, totaled 81 million barrels, 16 percent above the level on January 31, 1990.

[28]Percentage changes are based on numbers shown in the following tables.

Table 7.1 Net Generation of Electricity by Electric Utilities
(Million Kilowatthours)

	Coal	Petroleum[a]	Natural Gas[b]	Nuclear Electric Power	Hydro-electric Power	Other[c]	Total
1973 Total	**847,651**	**314,343**	**340,858**	**83,479**	**272,083**	**2,294**	**1,860,710**
1974 Total	**828,433**	**300,931**	**320,065**	**113,976**	**301,032**	**2,703**	**1,867,140**
1975 Total	**852,786**	**289,095**	**299,778**	**172,505**	**300,047**	**3,437**	**1,917,649**
1976 Total	**944,391**	**319,988**	**294,624**	**191,104**	**283,707**	**3,883**	**2,037,696**
1977 Total	**985,219**	**358,179**	**305,505**	**250,883**	**220,475**	**4,063**	**2,124,323**
1978 Total	**975,742**	**365,060**	**305,391**	**276,403**	**280,419**	**3,315**	**2,206,331**
1979 Total	**1,075,037**	**303,525**	**329,485**	**255,155**	**279,783**	**4,387**	**2,247,372**
1980 Total	**1,161,562**	**245,994**	**346,240**	**251,116**	**276,021**	**5,506**	**2,286,439**
1981 Total	**1,203,203**	**206,421**	**345,777**	**272,674**	**260,684**	**6,054**	**2,294,812**
1982 Total	**1,192,004**	**146,797**	**305,260**	**282,773**	**309,213**	**5,164**	**2,241,211**
1983 Total	**1,259,424**	**144,499**	**274,098**	**293,677**	**332,130**	**6,456**	**2,310,285**
1984 Total	**1,341,681**	**119,808**	**297,394**	**327,634**	**321,150**	**8,638**	**2,416,304**
1985 Total	**1,402,128**	**100,202**	**291,946**	**383,691**	**281,149**	**10,724**	**2,469,841**
1986 Total	**1,385,831**	**136,585**	**248,508**	**414,038**	**290,844**	**11,503**	**2,487,310**
1987 Total	**1,463,781**	**118,493**	**272,621**	**455,270**	**249,695**	**12,267**	**2,572,127**
1988 Total	**1,540,653**	**148,900**	**252,801**	**526,973**	**222,940**	**11,984**	**2,704,250**
1989 January	135,181	15,332	14,014	46,328	20,930	961	232,747
February	127,187	17,748	16,672	38,725	18,620	874	219,826
March	126,725	16,667	20,072	39,636	22,642	1,000	226,742
April	115,451	11,561	22,571	33,495	24,077	886	208,042
May	119,108	9,939	23,747	38,339	28,049	942	220,124
June	128,615	12,591	24,680	42,976	25,882	945	235,689
July	138,638	12,081	30,351	52,331	22,671	977	257,050
August	141,901	10,983	29,709	54,948	20,187	959	258,687
September	126,898	10,072	25,515	44,837	18,919	909	227,150
October	122,393	8,263	24,664	43,558	20,076	956	219,910
November	124,338	11,343	18,107	43,399	21,186	927	219,300
December	147,227	21,737	16,496	50,784	21,823	972	259,038
Total	**1,553,661**	**158,318**	**266,598**	**529,355**	**265,063**	**11,309**	**2,784,304**
1990 January	R 132,672	11,515	R 13,687	55,119	R 23,412	933	R 237,339
February	115,898	9,385	R 12,450	49,963	R 24,151	861	R 212,708
March	122,958	R 10,172	R 17,647	46,087	R 28,042	R 948	R 225,854
April	R 117,278	R 10,141	R 18,991	38,516	R 25,387	R 775	R 211,088
May	R 119,785	R 9,442	R 22,867	42,945	R 27,001	868	R 222,908
June	R 132,461	R 13,353	R 28,285	46,332	R 27,621	R 883	R 248,935
July	R 144,225	R 12,824	R 30,969	53,645	R 23,658	907	R 266,228
August	R 147,135	R 11,020	R 32,603	R 55,758	R 21,048	R 919	R 268,483
September	R 135,345	7,981	R 28,213	R 48,485	R 16,971	875	R 237,869
October	R 130,282	R 7,225	24,381	43,395	R 18,605	905	R 224,794
November	123,841	R 6,221	R 17,647	45,034	R 19,993	860	R 213,596
December	136,576	7,902	16,326	51,582	R 23,952	919	R 237,257
Total	**R 1,558,457**	**R 117,182**	**R 264,067**	**R 576,862**	**R 279,839**	**R 10,651**	**R 2,807,058**
1991 January	141,677	9,206	16,165	54,369	25,671	897	247,984

[a]Includes fuel oil Nos. 2, 4, 5, and 6, crude oil, kerosene, and petroleum coke.
[b]Includes supplemental gaseous fuels.
[c]Other is electricity produced from geothermal, wood, waste, wind, photovoltaic, and solar thermal energy sources connected to electric utility distribution systems.
R=Revised data.
Notes: • Geographic coverage is the 50 States and the District of Columbia. • Totals may not equal sum of components due to independent rounding.
Sources: • 1973 through September 1977: Federal Power Commission, Form FPC-4, "Monthly Power Plant Report." • October 1977 through 1981: Federal Energy Regulatory Commission, Form FPC-4, "Monthly Power Plant Report." • 1982 forward: Energy Information Administration, Form EIA-759, "Monthly Power Plant Report."

Table 7.2 Electricity Sales[a] by End-Use Sector
(Million Kilowatthours)

	Residential		Commercial		Industrial		Other[b]		Total	
	Monthly Series[c]	Annual Series	Monthly Series[c]	Annual Series	Monthly Series[c]	Annual Series	Monthly Series[c]	Annual Series	Monthly Series[c]	Annual Series
1973 Total	**579,231**		**388,266**		**686,085**		**59,326**		**1,712,909**	
1974 Total	**578,184**		**384,826**		**684,875**		**58,039**		**1,705,924**	
1975 Total	**588,140**		**403,049**		**687,680**		**68,222**		**1,747,091**	
1976 Total	**606,452**		**425,094**		**754,069**		**69,631**		**1,855,246**	
1977 Total	**645,239**		**446,514**		**786,037**		**70,571**		**1,948,361**	
1978 Total	**674,466**		**461,163**		**809,078**		**73,215**		**2,017,922**	
1979 Total	**682,819**		**473,307**		**841,903**		**73,070**		**2,071,099**	
1980 Total	**717,495**		**488,155**		**815,067**		**73,732**		**2,094,449**	
1981 Total	**722,265**		**514,338**		**825,743**		**84,756**		**2,147,103**	
1982 Total	**729,520**		**526,397**		**744,949**		**85,575**		**2,086,441**	
1983 Total	**750,948**		**543,788**		**775,999**		**80,219**		**2,150,955**	
1984 Total	**777,654**	**780,092**	**578,281**	**582,621**	**840,588**	**837,836**	**81,849**	**85,248**	**2,278,372**	**2,285,796**
1985 Total	**790,977**	**793,934**	**608,968**	**605,989**	**824,523**	**836,772**	**85,075**	**87,279**	**2,309,543**	**2,323,974**
1986 Total	**817,663**	**819,088**	**641,469**	**630,520**	**808,292**	**830,531**	**83,409**	**88,615**	**2,350,835**	**2,368,753**
1987 Total	**849,613**	**850,410**	**673,707**	**660,433**	**845,266**	**858,233**	**86,854**	**88,196**	**2,455,440**	**2,457,272**
1988 Total	**892,125**	**892,866**	**697,711**	**699,100**	**895,751**	**896,498**	**82,362**	**89,598**	**2,567,949**	**2,578,062**
1989 January	85,075		58,324		74,590		7,597		225,587	
February	78,158		56,433		73,175		7,190		214,956	
March	77,215		57,453		74,448		7,484		216,600	
April	64,698		55,210		74,923		7,094		201,926	
May	61,108		56,428		77,119		7,278		201,933	
June	71,675		62,969		79,379		7,758		221,781	
July	85,596		67,624		79,011		8,033		240,263	
August	86,143		68,187		81,240		8,046		243,615	
September	78,725		65,532		79,845		7,824		231,926	
October	65,136		59,352		79,421		7,592		211,500	
November	64,844		56,716		76,788		7,394		205,742	
December	85,605		61,001		76,437		7,777		230,820	
Total	**903,979**	**905,525**	**725,229**	**725,861**	**926,376**	**925,659**	**91,066**	**89,765**	**2,646,651**	**2,646,809**
1990 January	R 95,245		R 62,633		R 74,539		R 7,992		R 240,409	
February	R 74,340		R 57,166		R 74,070		R 7,515		R 213,090	
March	R 71,742		R 58,253		R 76,263		R 7,516		R 213,774	
April	R 65,067		R 56,595		R 75,665		R 7,324		R 204,651	
May	R 62,763		R 59,092		R 78,173		R 7,725		R 207,753	
June	R 73,688		R 64,694		R 80,047		R 7,932		R 226,361	
July	R 90,629		R 71,121		R 80,540		R 8,652		R 250,942	
August	R 88,278		R 71,286		R 83,438		R 8,502		R 251,504	
September	R 86,014		R 69,346		R 81,051		R 8,136		R 244,548	
October	R 69,413		R 63,219		R 81,324		R 7,785		R 221,741	
November	R 66,275		R 58,763		R 77,045		R 7,298		R 209,381	
December	R 78,285		R 60,595		R 76,208		R 7,272		R 222,359	
Total	**R 921,739**	**NA**	**R 752,763**	**NA**	**R 938,362**	**NA**	**R 93,649**	**NA**	**R 2,706,512**	**NA**
1991 January	93,890		63,265		75,678		7,953		240,787	

[a]Electricity sales to all ultimate consumers.
[b]Includes sales of electricity to Government, railways, street lighting authorities, and sales not included elsewhere.
[c]Annual totals are the sums of the monthly values.
R=Revised data. NA=Not available.
Notes: • Geographic coverage is the 50 States and the District of Columbia. • Totals may not equal sum of components due to independent rounding.
Sources: **Monthly Series:** • 1973 through September 1977: Federal Power Commission, Form FPC-5, "Monthly Statement of Electric Operating Revenue and Income." • October 1977 through February 1980: Energy Information Administration (EIA), Form FPC-5, "Monthly Statement of Electric Operating Revenue and Income." • March 1980 through 1982: Federal Energy Regulatory Commission, Form FERC-5, "Electric Utility Company Monthly Statement." • 1983 through 1986: EIA, Form EIA-826, "Electric Utility Company Monthly Statement." • 1987 forward: EIA, Form EIA-826, "Monthly Electric Utility Sales and Revenue Report with State Distributions." • Data through 1988 reflect revisions received on subsequent form submissions. **Annual Series:** EIA, Form EIA-861, "Annual Electric Utility Report."

Figure 7.1 Coal Consumed to Produce Electricity

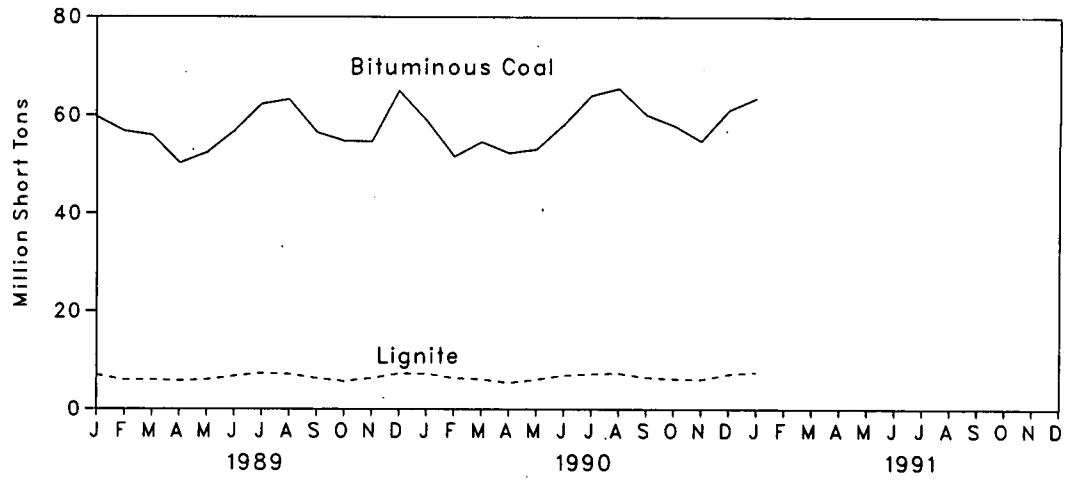


Figure 7.2 Petroleum Consumed to Produce Electricity

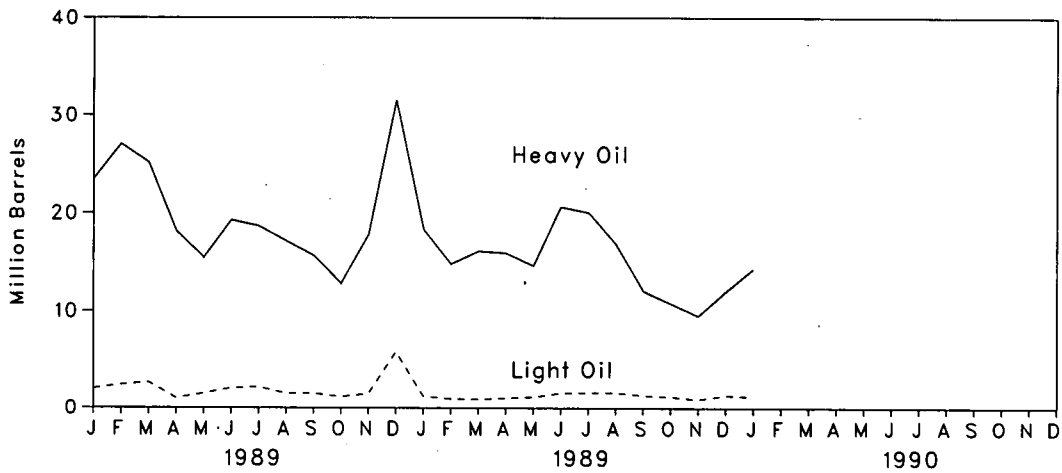


Figure 7.3 Natural Gas Consumed to Produce Electricity

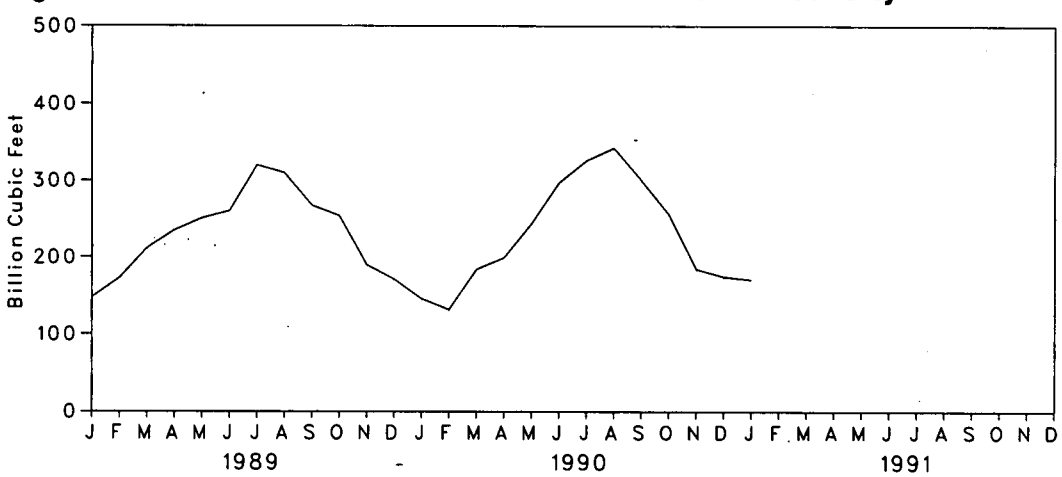


Table 7.3 Fossil Fuels Consumed by Electric Utilities To Generate Electricity

	Coal				Petroleum				Natural Gas[c]
	Anthracite	Bituminous Coal	Lignite	Total	Heavy Oil[a]	Light Oil[b]	Total Liquids	Petroleum Coke	
	Thousand Short Tons				Thousand Barrels			Thousand Short Tons	Million Cubic Feet
1973 Total	1,443	376,975	10,794	389,212	[d]	[d]	560,248	507	3,660,172
1974 Total	1,498	378,643	11,670	391,811	[d]	[d]	536,274	625	3,443,428
1975 Total	1,480	388,523	15,960	405,962	[d]	[d]	506,128	70	3,157,669
1976 Total	1,350	425,205	21,817	448,371	[d]	[d]	555,920	68	3,080,868
1977 Total	1,425	451,051	24,650	477,126	[d]	[d]	623,705	98	3,191,200
1978 Total	1,064	448,763	31,407	481,235	[d]	[d]	635,839	398	3,188,363
1979 Total	1,046	488,129	37,876	527,051	[d]	[d]	523,297	268	3,490,523
1980 Total	951	526,680	41,642	569,274	391,163	29,051	420,214	179	3,681,595
1981 Total	1,221	550,784	44,792	596,797	329,798	21,313	351,111	139	3,640,154
1982 Total	1,075	543,346	49,245	593,666	234,434	15,337	249,771	149	3,225,518
1983 Total	1,036	570,108	54,067	625,211	228,984	16,512	245,497	261	2,910,767
1984 Total	1,070	606,339	56,990	664,399	189,289	15,190	204,479	252	3,111,342
1985 Total	1,033	631,885	60,923	693,841	158,779	14,635	173,414	231	3,044,083
1986 Total	829	616,134	68,093	685,056	216,156	14,326	230,482	313	2,602,370
1987 Total	972	647,824	69,098	717,894	184,011	15,367	199,378	348	2,844,051
1988 Total	1,063	681,048	76,260	758,372	229,327	18,769	248,096	409	2,635,613
1989 January	98	59,707	6,962	66,767	23,425	2,055	25,479	47	147,141
February	75	56,764	5,945	62,784	27,056	2,427	29,483	33	172,379
March	82	55,937	5,986	62,005	25,133	2,691	27,824	35	211,095
April	96	50,259	5,789	56,144	18,144	1,045	19,190	38	234,726
May	98	52,420	6,009	58,527	15,448	1,522	16,970	36	250,555
June	75	56,841	6,719	63,635	19,253	2,070	21,322	38	259,941
July	97	62,322	7,302	69,720	18,643	2,180	20,822	58	319,709
August	95	63,278	7,121	70,493	17,133	1,530	18,663	58	309,597
September	81	56,533	6,295	62,910	15,642	1,526	17,168	54	267,545
October	87	54,775	5,699	60,561	12,807	1,180	13,987	39	254,074
November	85	54,628	6,294	61,006	17,762	1,484	19,247	33	188,924
December	81	65,040	7,215	72,336	31,514	5,781	37,295	50	171,326
Total	**1,049**	**688,504**	**77,335**	**766,888**	**241,960**	**25,491**	**267,451**	**517**	**2,787,012**
1990 January	92	R 58,978	7,220	R 66,290	18,294	1,234	19,528	40	R 145,641
February	85	R 51,598	6,313	R 57,996	14,769	974	15,743	62	R 131,593
March	91	R 54,557	6,101	R 60,748	16,068	R 916	R 16,984	62	R 183,982
April	81	R 52,319	5,376	R 57,776	15,882	1,035	16,917	61	R 198,996
May	90	R 53,062	5,988	R 59,140	R 14,586	1,146	R 15,732	77	R 243,760
June	90	58,184	6,892	65,167	R 20,619	1,555	R 22,174	66	R 297,052
July	96	R 64,097	R 7,183	R 71,376	R 20,041	R 1,615	R 21,655	74	R 325,760
August	93	R 65,532	7,317	R 72,942	16,835	1,618	R 18,454	72	R 342,469
September	84	R 60,187	6,455	R 66,727	12,037	1,318	13,354	79	R 300,596
October	82	58,002	6,181	64,264	R 10,772	1,186	R 11,958	86	R 256,480
November	71	R 54,802	6,043	R 60,916	R 9,473	910	R 10,383	61	R 184,820
December	75	R 61,129	7,132	R 68,335	11,979	1,313	13,292	78	175,003
Total	**1,031**	**R 692,447**	**R 78,201**	**R 771,678**	**R 181,354**	**R 14,821**	**R 196,175**	**819**	**R 2,786,153**
1991 January	74	63,563	7,553	71,190	14,264	1,189	15,453	74	171,140

[a]Heavy oil includes Grade Nos. 4, 5, and 6, and residual fuel oils.
[b]Light oil includes Grade No. 2 heating oil, kerosene, and jet fuel.
[c]Includes supplemental gaseous fuels.
[d]Prior to 1980, petroleum consumption data were not disaggregated by type of fuel. Disaggregation by prime mover type is provided in Table 7.5.
R=Revised data.

Notes: • Geographic coverage is the 50 States and the District of Columbia. • Totals may not equal sum of components due to independent rounding.

Sources: • 1973 through September 1977: Federal Power Commission, Form FPC-4, "Monthly Power Plant Report." • October 1977 through 1981: Federal Energy Regulatory Commission, Form FPC-4, "Monthly Power Plant Report." • 1982 forward: Energy Information Administration, Form EIA-759, "Monthly Power Plant Report."

Figure 7.4 Coal Stocks at Electric Utilities, End of Period

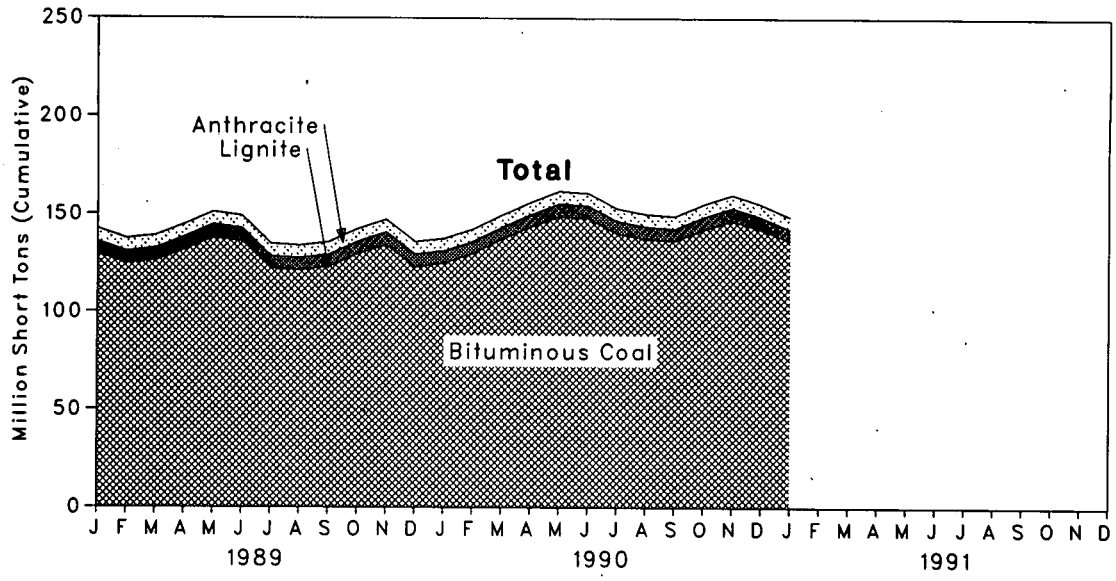


Figure 7.5 Petroleum Stocks at Electric Utilities, End of Period

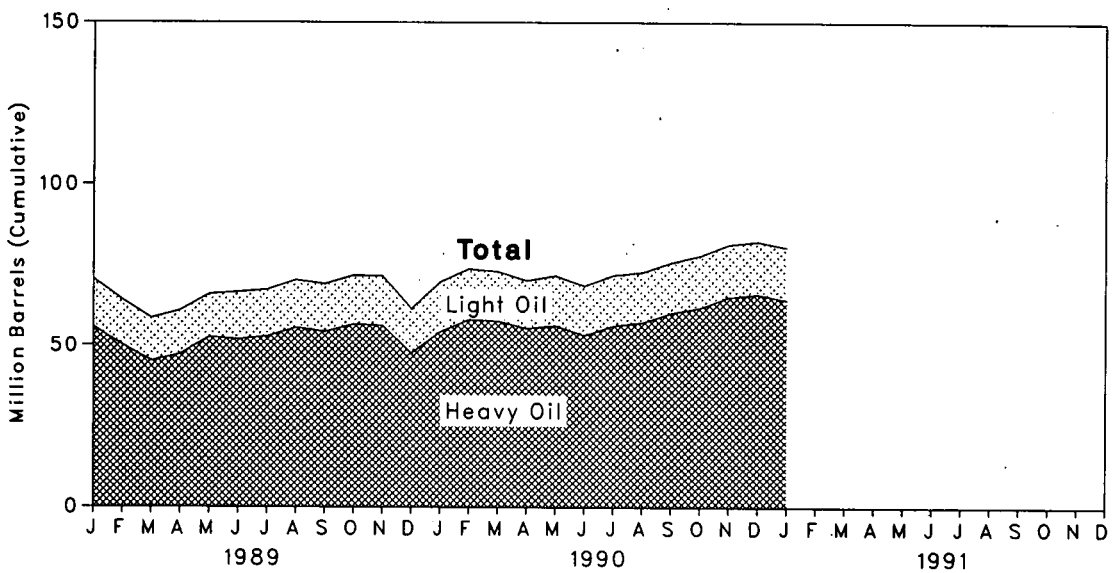


Table 7.4 Coal and Petroleum Stocks at Electric Utilities, End of Period

	Coal				Petroleum			
	Anthracite	Bituminous Coal	Lignite	Total	Heavy Oil[a]	Light Oil[b]	Total Liquids	Petroleum Coke
	Thousand Short Tons				Thousand Barrels			Thousand Short Tons
1973 Year	1,066	84,941	961	86,967	(c)	(c)	89,216	312
1974 Year	930	81,712	867	83,509	(c)	(c)	112,917	35
1975 Year	982	107,927	1,815	110,724	(c)	(c)	125,257	31
1976 Year	1,000	114,130	2,306	117,436	(c)	(c)	121,696	32
1977 Year	2,321	128,210	2,688	133,219	(c)	(c)	144,031	44
1978 Year	2,178	123,020	3,027	128,225	(c)	(c)	118,788	198
1979 Year	3,274	152,981	3,459	159,714	(c)	(c)	131,422	183
1980 Year	4,741	174,154	4,115	183,010	105,351	30,023	135,374	52
1981 Year	5,537	158,258	5,098	168,893	102,042	26,094	128,136	42
1982 Year	6,080	170,480	4,573	181,132	95,515	23,369	118,884	41
1983 Year	6,507	145,250	3,841	155,598	70,573	18,801	89,375	55
1984 Year	6,710	167,118	5,899	179,727	68,503	19,116	87,619	50
1985 Year	7,189	142,144	7,043	156,376	57,304	16,386	73,689	49
1986 Year	7,099	148,665	6,042	161,806	56,841	16,269	73,111	40
1987 Year	6,940	156,670	7,187	170,797	55,069	15,759	70,827	51
1988 Year	6,561	133,434	6,512	146,507	54,187	15,099	69,285	86
1989 January	6,513	129,937	6,088	142,538	55,845	14,809	70,654	58
February	6,494	124,652	6,217	137,363	50,063	13,980	64,043	56
March	6,475	126,195	6,367	139,036	45,142	13,370	58,513	62
April	6,447	131,750	6,477	144,674	47,237	13,607	60,844	102
May	6,416	137,884	6,767	151,067	52,595	13,279	65,873	64
June	6,427	136,126	6,428	148,981	51,922	14,621	66,544	77
July	6,413	122,227	6,226	134,865	52,883	14,405	67,289	81
August	6,440	121,281	6,227	133,948	55,608	14,724	70,332	69
September	6,437	122,912	6,291	135,640	54,346	14,825	69,171	92
October	6,437	129,679	6,164	142,280	56,660	15,090	71,750	107
November	6,423	134,309	6,475	147,207	56,258	15,332	71,590	115
December	6,403	122,967	6,490	135,860	47,446	13,824	61,270	105
1990 January	6,360	R 124,936	6,169	R 137,465	R 54,365	R 15,410	R 69,775	114
February	6,315	R 129,981	5,922	R 142,218	R 58,169	15,622	R 73,791	108
March	6,294	R 137,216	5,879	R 149,388	R 57,728	R 15,249	R 72,977	104
April	6,298	R 143,355	R 6,308	R 155,962	R 55,419	R 14,837	R 70,256	93
May	6,315	R 148,823	6,557	R 161,695	R 56,321	R 15,432	R 71,753	102
June	6,376	R 148,023	6,424	R 160,823	R 53,347	R 15,356	R 68,703	110
July	6,420	R 140,211	6,352	R 152,982	R 56,294	R 15,618	R 71,911	109
August	6,441	R 137,477	6,206	R 150,123	R 57,357	R 15,468	R 72,826	113
September	6,486	R 136,500	6,027	R 149,013	R 60,274	R 15,574	R 75,848	95
October	6,513	R 142,220	R 6,459	R 155,191	R 61,835	R 16,142	R 77,977	83
November	6,528	R 146,866	6,501	R 159,895	R 65,160	R 16,411	R 81,571	84
December	6,499	R 142,428	6,237	R 155,163	R 67,030	R 16,471	R 83,501	94
1991 January	6,470	136,584	5,681	148,736	64,240	16,450	80,690	103

[a]Heavy oil includes Grade Nos. 4, 5, and 6, and residual fuel oils.
[b]Light oil includes Grade No. 2 heating oil, kerosene, and jet fuel.
[c]Prior to 1980, petroleum stock data were not disaggregated by type of fuel. Disaggregation by prime mover type is provided in Table 7.5.
R=Revised data.
Notes: • Geographic coverage is the 50 States and the District of Columbia. • Totals may not equal sum of components due to independent rounding.
Sources: • 1973 through September 1977: Federal Power Commission, Form FPC-4, "Monthly Power Plant Report." • October 1977 through 1981: Federal Energy Regulatory Commission, Form FPC-4, "Monthly Power Plant Report." • 1982 forward: Energy Information Administration, Form EIA-759, "Monthly Power Plant Report."

Table 7.5 Petroleum Consumption and Stocks at Electric Utilities by Prime Mover Type
(Thousand Barrels)

	Petroleum Consumption			Petroleum Stocks, End of Period		
	Steam Plants	GT/IC[a]	Total Liquids	Steam Plants	GT/IC[a]	Total Liquids
1973 Total	**513,190**	**47,058**	**560,248**	**79,121**	**10,095**	**89,216**
1974 Total	**483,146**	**53,128**	**536,274**	**97,718**	**15,199**	**112,917**
1975 Total	**467,221**	**38,907**	**506,128**	**108,825**	**16,432**	**125,257**
1976 Total	**514,077**	**41,843**	**555,920**	**106,993**	**14,703**	**121,696**
1977 Total	**574,869**	**48,837**	**623,705**	**124,750**	**19,281**	**144,031**
1978 Total	**588,319**	**47,520**	**635,839**	**102,402**	**16,386**	**118,788**
1979 Total	**492,606**	**30,691**	**523,297**	**111,121**	**20,301**	**131,422**
1980 Total	**401,863**	**18,351**	**420,214**	**117,227**	**18,147**	**135,374**
1981 Total	**339,680**	**11,431**	**351,111**	**112,380**	**15,756**	**128,136**
1982 Total	**243,537**	**6,234**	**249,771**	**105,287**	**13,597**	**118,884**
1983 Total	**237,845**	**7,652**	**245,497**	**78,285**	**11,090**	**89,375**
1984 Total	**197,050**	**7,429**	**204,479**	**76,836**	**10,784**	**87,619**
1985 Total	**166,842**	**6,572**	**173,414**	**64,704**	**8,985**	**73,689**
1986 Total	**222,500**	**7,983**	**230,482**	**64,258**	**8,853**	**73,111**
1987 Total	**190,818**	**8,560**	**199,378**	**61,705**	**9,123**	**70,827**
1988 Total	**235,817**	**12,279**	**248,096**	**60,311**	**8,974**	**69,285**
1989 January	24,273	1,206	25,479	61,627	9,027	70,654
February	27,981	1,502	29,483	55,683	8,360	64,043
March	25,900	1,924	27,824	50,500	8,013	58,513
April	18,652	538	19,190	52,789	8,055	60,844
May	16,014	957	16,970	57,994	7,879	65,873
June	19,832	1,490	21,322	57,610	8,934	66,544
July	19,233	1,590	20,822	58,368	8,921	67,289
August	17,623	1,040	18,663	61,248	9,085	70,332
September	16,126	1,041	17,168	60,233	8,938	69,171
October	13,334	653	13,987	62,708	9,042	71,750
November	18,371	875	19,247	62,610	8,980	71,590
December	32,975	4,320	37,295	53,309	7,962	61,270
Total	**250,315**	**17,136**	**267,451**			
1990 January	18,900	628	19,528	R 60,421	R 9,353	R 69,775
February	15,194	549	15,743	R 64,454	R 9,337	R 73,791
March	16,541	R 442	R 16,984	R 63,746	R 9,231	R 72,977
April	16,364	554	16,917	R 61,314	R 8,942	R 70,256
May	R 15,113	619	R 15,732	R 62,341	R 9,412	R 71,753
June	R 21,145	1,028	R 22,174	R 59,397	R 9,306	R 68,703
July	R 20,514	1,141	R 21,655	R 62,386	R 9,525	R 71,911
August	17,333	R 1,121	R 18,454	R 63,380	R 9,446	R 72,826
September	12,491	863	13,354	R 66,336	R 9,512	R 75,848
October	R 11,272	686	R 11,958	R 68,143	R 9,833	R 77,977
November	R 9,998	385	R 10,383	R 71,414	R 10,157	R 81,571
December	12,785	507	13,292	R 73,306	R 10,195	R 83,501
Total	**R 187,651**	**R 8,523**	**R 196,175**			
1991 January	14,911	542	15,453	70,434	10,257	80,690

[a]GT/IC=Gas turbine and internal combustion plants.
R=Revised data.
Notes: • Geographic coverage is the 50 States and the District of Columbia. • Totals may not equal sum of components due to independent rounding.
Sources: • 1973 through September 1977: Federal Power Commission, Form FPC-4, "Monthly Power Plant Report." • October 1977 through 1981: Federal Energy Regulatory Commission, Form FPC-4, "Monthly Power Plant Report." • 1982 forward: Energy Information Administration, Form EIA-759, "Monthly Power Plant Report."

Section 8. Nuclear

In January 1991, U.S. nuclear generating units produced a total of 54 net terawatthours (billion kilowatthours) of electricity, 1 percent[29] less than in January 1990. Nuclear units generated at an average capacity factor of 73.4 percent, 2 percentage points less than in Janaury 1990. Nuclear power supplied 21.9 percent of the total electric utility-generated electricity in January 1991 compared with 23.2 percent in January 1990.

No low-power or full-power licenses were issued by the Nuclear Regulatory Commission (NRC) during January 1991.

On January 31, 1991, there were 111 operable nuclear generating units in the United States, with a collective net summer generating capability of 99.6 million kilowatts of electricity. Of the 111 operable units, 21 units generated at less than 25 percent of capacity due to maintenance, refueling, or repair outage. Seventeen of those units generated no electricity during the month.

Four units with full-power licenses have been shut down by the NRC for an extended period (1 year or more). The unit names, capacities, and dates of shutdown are as follow: Calvert Cliffs 2, (825 MWe), March 1989; Browns Ferry 1 and 3, (1,065 MWe each), March 1985; and Browns Ferry 2, (1,065 MWe), January 1984.

As of January 31, there were 120 domestic nuclear generating units in all stages of construction and operation, with an aggregate design capacity of 113 million net kilowatts.

[29]Percentage changes are based on numbers shown in the following tables.

Figure 8.1 Nuclear and Total Net Generation of Electricity

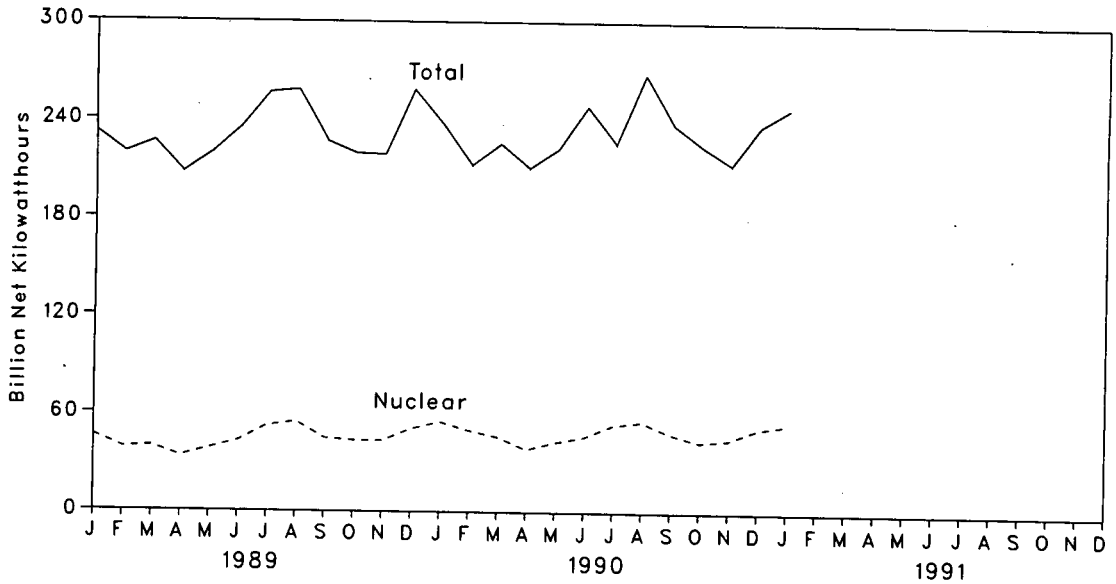


Figure 8.2 Nuclear Power Plants' Capacity Factor and Share of Total Net Generation

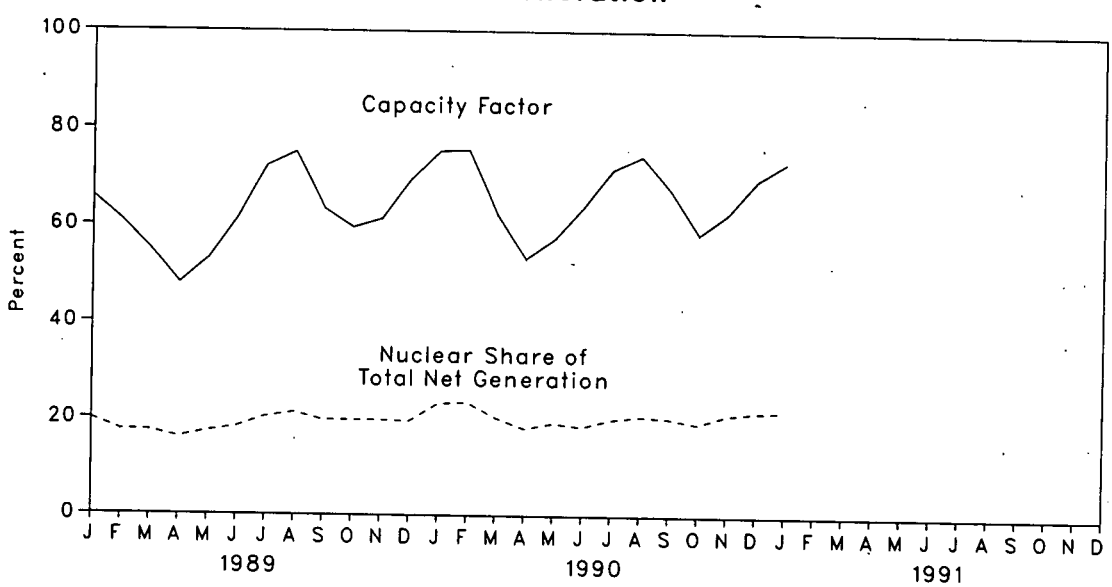


Table 8.1 Nuclear Power Plant Operations

	Operable Units[a] [b]	Nuclear Electricity Generation	Nuclear Portion of Domestic Electricity Generation	Net Summer Capability of Operable Units[a] [c]	Capacity Factor[d]
	Number	Million Net Kilowatthours	Percent	Million Net Kilowatts	Percent
1973 Year	**39**	**83,479**	**4.5**	**22.615**	**53.7**
1974 Year	**48**	**113,976**	**6.1**	**31.803**	**47.9**
1975 Year	**54**	**172,505**	**9.0**	**37.161**	**56.0**
1976 Year	**61**	**191,104**	**9.4**	**43.657**	**54.9**
1977 Year	**65**	**250,883**	**11.8**	**46.202**	**63.4**
1978 Year	**70**	**276,403**	**12.5**	**50.709**	**64.7**
1979 Year	**68**	**255,155**	**11.4**	**49.630**	**58.5**
1980 Year	**70**	**251,116**	**11.0**	**51.668**	**56.4**
1981 Year	**74**	**272,674**	**11.9**	**55.914**	**58.4**
1982 Year	**77**	**282,773**	**12.6**	**59.927**	**56.7**
1983 Year	**80**	**293,677**	**12.7**	**63.009**	**54.4**
1984 Year	**86**	**327,634**	**13.6**	**69.652**	**56.3**
1985 Year	**95**	**383,691**	**15.5**	**79.397**	**58.0**
1986 Year	**100**	**414,038**	**16.6**	**85.241**	**56.9**
1987 Year	**107**	**455,270**	**17.7**	**93.583**	**57.4**
1988 Year	**108**	**526,973**	**19.5**	**94.695**	**63.5**
1989 January	108	46,328	19.9	94.695	65.8
February	108	38,725	17.6	94.695	60.9
March	110	39,636	17.5	97.031	54.9
April	110	33,495	16.1	97.031	48.0
May	110	38,339	17.4	97.031	53.1
June	110	42,976	18.2	97.031	61.5
July	110	52,331	20.4	97.323	72.3
August	110	54,948	21.2	98.161	75.2
September	110	44,837	19.7	98.161	63.4
October	110	43,558	19.8	98.161	59.6
November	110	43,399	19.8	98.161	61.4
December	110	50,784	19.6	98.161	69.5
Year	**110**	**529,355**	**19.0**	**98.161**	**62.2**
1990 January	110	55,119	R 23.2	98.161	75.5
February	110	49,963	23.5	98.161	75.7
March	111	46,087	20.4	99.311	62.4
April	112	38,516	R 18.2	100.461	53.3
May	112	42,945	19.3	100.461	57.5
June	112	46,332	18.6	100.461	64.1
July	112	53,645	R 20.1	100.461	71.8
August	112	R 55,758	20.8	100.461	74.6
September	111	R 48,485	20.4	99.588	67.5
October	111	43,395	19.3	99.588	58.5
November	111	45,034	21.1	99.588	62.8
December	111	51,582	21.7	99.588	69.6
Year	**111**	**R 576,862**	**20.6**	**99.588**	**R 66.1**
1991 January	111	54,369	21.9	99.588	73.4

[a]At end of period.
[b]See Note 1 at end of section.
[c]For the definition of net summer capability, see Note 3 at end of section.
[d]For an explanation of the method of calculating the capacity factor, see Note 4 at end of section.
R=Revised data.
Note: Geographic coverage is the 50 States and the District of Columbia. Totals may not equal sum of components due to independent rounding.
Sources: See end of section.

Table 8.2 Status of Nuclear Generating Units[a]

	Licensed for Operation		Construction Permits		On Order	Announced	Total	Total Design Capacity[d]
	Operable[b]	In Startup[c]	Granted	Pending				
	Number of Units							Million Net Kilowatts
1973 Year	39	3	51	58	48	20	219	212
1974 Year	48	5	58	80	28	16	235	234
1975 Year	54	2	69	73	19	19	236	236
1976 Year	61	0	72	66	16	19	234	236
1977 Year	65	1	80	52	13	9	220	220
1978 Year	70	0	90	32	9	4	205	204
1979 Year	68	0	91	21	3	0	183	179
1980 Year	70	2	82	12	3	0	169	163
1981 Year	74	0	76	11	2	0	163	157
1982 Year	77	2	60	3	2	0	144	135
1983 Year	80	3	53	0	2	0	138	129
1984 Year	86	6	38	0	2	0	132	123
1985 Year	95	3	30	0	2	0	130	121
1986 Year	100	7	19	0	2	0	128	119
1987 Year	107	4	14	0	2	0	127	119
1988 Year	108	3	12	0	0	0	123	115
1989 January	108	3	12	0	0	0	123	115
February	108	3	12	0	0	0	123	115
March	110	2	11	0	0	0	123	115
April	[e] 110	1	11	0	0	0	[e] 122	114
May	110	1	11	0	0	0	122	114
June	110	1	11	0	0	0	122	114
July	110	2	10	0	0	0	122	114
August	110	1	10	0	0	0	121	113
September	110	1	10	0	0	0	121	113
October	110	1	10	0	0	0	121	113
November	110	1	10	0	0	0	121	113
December	110	1	10	0	0	0	121	113
1990 January	110	1	10	0	0	0	121	113
February	110	2	9	0	0	0	121	113
March	111	1	9	0	0	0	121	113
April	112	0	9	0	0	0	121	113
May	112	0	9	0	0	0	121	113
June	112	0	9	0	0	0	121	113
July	112	0	9	0	0	0	121	113
August	112	0	9	0	0	0	121	113
September	[f] 111	0	9	0	0	0	[f] 120	113
October	111	0	9	0	0	0	120	113
November	111	0	9	0	0	0	120	113
December	111	0	9	0	0	0	120	113
1991 January	111	0	9	0	0	0	120	113

[a]Monthly data are the status as of the last day of the month. Annual data are the status as of December 31 of each year.
[b]See Note 1 at end of section.
[c]See Note 2 at end of section.
[d]Net design electrical rating (DER) is used because many of the units were canceled prior to being assigned a net summer capability. See Note 3 at end of section.
[e]Shoreham received a full-power license in April 1989. Because the unit is not currently scheduled to operate, it is deleted from the total.
[f]As of September 1990, Rancho Seco has been deleted from this category. Because the unit is not currently scheduled to operate, it is deleted from the total.
Note: Geographic coverage is the 50 States and the District of Columbia.
Sources: See end of section.

Nuclear Notes and Sources

Notes

1. Operable Units: Nuclear generating units that have been issued a full-power license by the Nuclear Regulatory Commission (NRC).

Exceptions: The Shippingport (60 MWe) and the Hanford-N (840 MWe) nuclear units were included in the operable units until 1982 and 1988, respectively. The Shippingport unit was excluded from the operable category during March 1974 through August 1977, due to a major core modification outage. Hanford-N, an unlicensed unit used for defense material production, was included in the operable category because power was produced as by-product and sold commercially. Three Mile Island 2 (880 MWe) experienced a major accident in 1979 and, although that unit still retains its operating license and site cleanup continues, there is no plan to restart it. Therefore, it has not been included in the operable category since March 1979. Although Shoreham received a full-power license in April 1989, the unit is not currently scheduled to operate and, therefore, has not been included in the operable category. Rancho Seco, an 873 MWe unit, was shut down by the Sacramento Municipal Utility District (SMUD) in June 1989 following a referendum on its continued operation. Since there are currently no plans to operate it as a nuclear unit, it is no longer included as an operable unit but is identified as a unit shut down for an extended period. As soon as SMUD and the NRC formalize the plant's official retirement, it will be noted as such in this report. The Department of Energy-operated Experimental Breeder Reactor 2 (EBR-2) unit is not a commercial reactor and is therefore not included in the operable category.

In addition, six units have been retired and therefore removed from the operable category. Those units are: Peach Bottom 1 (40 MWe) and Indian Point 1 (265 MWe), both retired in 1974; Humboldt Bay (65 MWe), officially retired in 1976; Dresden 1 (200 MWe), retired in August 1979; LaCrosse (51 MWe), retired in May 1987; and Fort Saint Vrain (217 MWe), retired in August 1989.

2. In Startup: The period of time between a nuclear generating unit's initial fuel loading date and the issuance of its full-power license. During that period, the unit is undergoing low-power testing and the maximum level of operation is 5 percent of the unit's design thermal rating.

3. Capacity: Nuclear generating units may have more than one type of net capacity rating, including the following:

(a) Net Summer Capability--The steady hourly output that generating equipment is expected to supply to system load, exclusive of auxiliary power, as demonstrated by test at the time of summer peak demand. Auxiliary power of a typical nuclear power plant is about 5 percent of gross generation.

(b) Net Design Capacity or Net Design Electrical Rating (DER)--The nominal net electrical output of the unit, specified by the utility and used for plant design.

4. Monthly Capacity Factors: The monthly capacity factors are computed as the actual monthly generation divided by the maximum possible generation for that month. The maximum possible generation is the number of hours in the month multiplied by the monthly net summer capability. That fraction is then multiplied by 100 to obtain a percentage. Annual capacity factors are averages of the monthly values for that year.

Sources

Nuclear Units Licensed for Operation: Nuclear Regulatory Commission, "Licensed Operating Reactors" (NUREG-0020).

Electricity Generation: 1973 through September 1977--Federal Power Commission (FPC), Form FPC-4, "Monthly Power Plant Report." October 1977 through 1981--Federal Energy Regulatory Commission, Form FPC- 4, "Monthly Power Plant Report." 1982 forward--Energy Information Administration (EIA), Form EIA-759, "Monthly Power Plant Report."

Net Summer Capability: EIA, Form EIA-860, "Annual Electric Generator Report."

Capacity Factor: Calculated by EIA, Office of Coal, Nuclear, Electric and Alternate Fuels.

Unit Construction and Planning Data: 1973 through June 1982--Compiled from various sources, primarily Department of Energy, Office of Nuclear Reactor Programs, "U.S. Central Station Nuclear Electric Generating Units: Significant Milestones"; Nuclear Regulatory Commission, "Licensed Operating Reactors" (NUREG-0020); and EIA, Office of Coal, Nuclear, Electric and Alternate Fuels. July 1982 forward--Nuclear Regulatory Commission, "Summary Information Report" (NUREG-0871); Nuclear Regulatory Commission, "Licensed Operating Reactors" (NUREG-0020); and various trade journals.

Total Design Capacity: Nuclear Regulatory Commission, "Licensed Operating Reactors" (NUREG-0020); Nuclear Regulatory Commission, "Summary Information Report" (NUREG-0871); and EIA, Form EIA-860, "Annual Electric Generator Report."

Section 9. Price

Crude Oil. The average price of domestic crude oil purchased at the wellhead was $19.57 per barrel in January 1991, 6 percent above the level in January 1990. The refiner acquisition cost of imported crude oil in January 1991 was $22.57 per barrel, 10 percent above the January 1990 level. The cost of domestic crude oil in January 1991 was $23.24, an increase of 12 percent over the January 1990 average.

Motor Gasoline. The national city average retail price of leaded regular gasoline at all types of stations was $1.14 per gallon in February 1991, 12 percent higher than the price in February 1990. The price of unleaded regular gasoline at all types of stations was $1.14 per gallon in February 1991, 10 percent higher than the price in February 1990. The price of unleaded premium gasoline averaged $1.32 per gallon in February 1991, 8 percent higher than the price in February 1990.

Residual Fuel Oil. The average price, excluding taxes, of residual fuel oil sold to end users in January 1991 was 53 cents per gallon, 4 percent lower than the previous month's price but 3 percent above the January 1990 average. The average resale price, excluding taxes, of residual fuel oil in January 1991 was 50 cents per gallon, 2 percent higher than the December 1990 average and 3 percent higher than the price 1 year earlier.

Aviation Fuel. The average price, excluding taxes, of aviation gasoline sold to end users in January 1991 was $1.12 per gallon, 8 percent lower than the price in the previous month but 10 percent higher than the price in January 1990. The average price, excluding taxes, of kerosene-type jet fuel sold to end users in January 1991 was 82 cents per gallon, 11 percent lower than the previous month's price but 3 percent above the January 1990 average.

No. 2 Distillate Fuel Oil. The January 1991 national average price, excluding taxes, of heating oil sold to residential customers was $1.17 per gallon, 2 percent below the December 1990 price but 2 percent higher than the January 1990 price. The average price of No. 2 fuel oil sold to all end users was 85 cents per gallon in January 1991, 3 percent below the December 1990 price but 4 percent higher than the January 1990 price.

Electricity. Beginning with January 1986, there were new series of national average price estimates based on a statistically derived sample of both publicly and privately owned electric utilities. Previously, average price estimates were derived from selected privately owned electric utilities and were not national averages.

The mean price of electricity sold to all ultimate consumers in the United States in January 1991 was 6.4 cents per kilowatthour, 2 percent above the January 1990 mean price. The price of electricity sold to residential consumers in January 1991 averaged 7.4 cents per kilowatthour, 3 percent higher than the price 1 year earlier. The price of electricity sold to commercial consumers averaged 7.1 cents per kilowatthour in January 1991, 3 percent above the January 1990 price. The price of electricity sold to other consumers in January 1991 averaged 6.4 cents per kilowatthour, 10 percent above the January 1990 price. The price of electricity sold to industrial users in January 1991 averaged 4.7 cents per kilowatthour, 2 percent above the price 1 year earlier.

Natural Gas. In December 1990, the average wellhead price of natural gas was $2.07 per thousand cubic feet, 8 percent above the December 1989 price.

The average price of natural gas delivered to electric utility plants was $2.89 per thousand cubic feet in December 1990, 1 percent above the December 1989 price. The average price of natural gas used by residential consumers in January 1991 was $5.49 per thousand cubic feet, 1 percent higher than the January 1990 price. The average price of natural gas used by commercial consumers in January 1991 was $4.91 per thousand cubic feet, 2 percent below the January 1990 price. The average price of natural gas used by industrial consumers in January 1991 was $3.23 per thousand cubic feet, 8 percent below the January 1990 price.

Figure 9.1 Crude Oil Prices

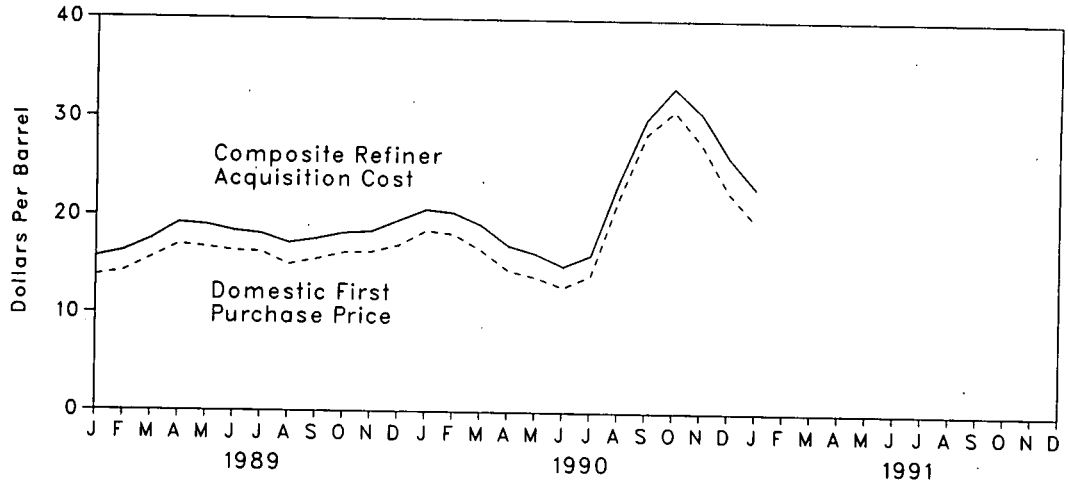


Figure 9.2 Refiner Sales Prices to End Users: Motor Gasoline, Diesel Fuel, and Jet Fuel

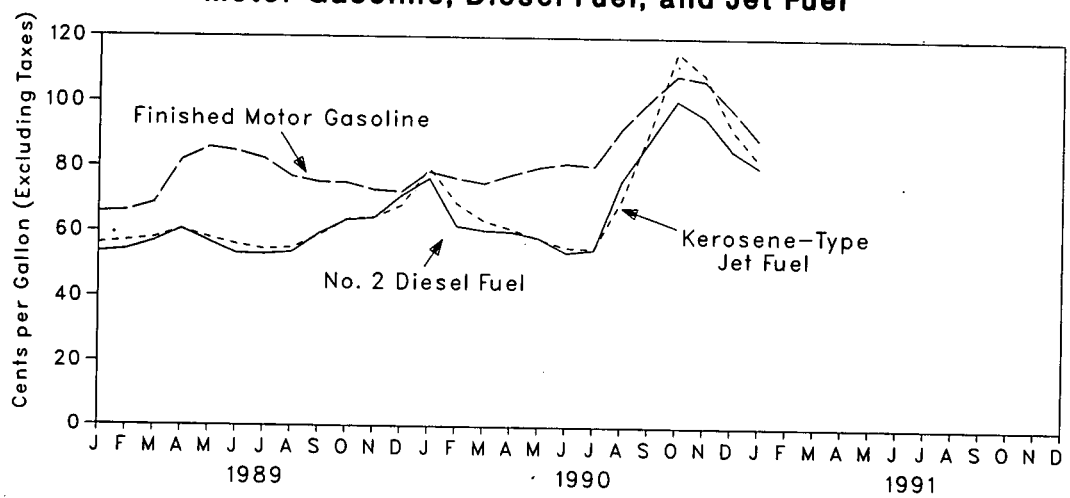


Figure 9.3 Refiner Sales Prices to End Users: No. 2 Fuel Oil, Propane, and Residual Fuel Oil

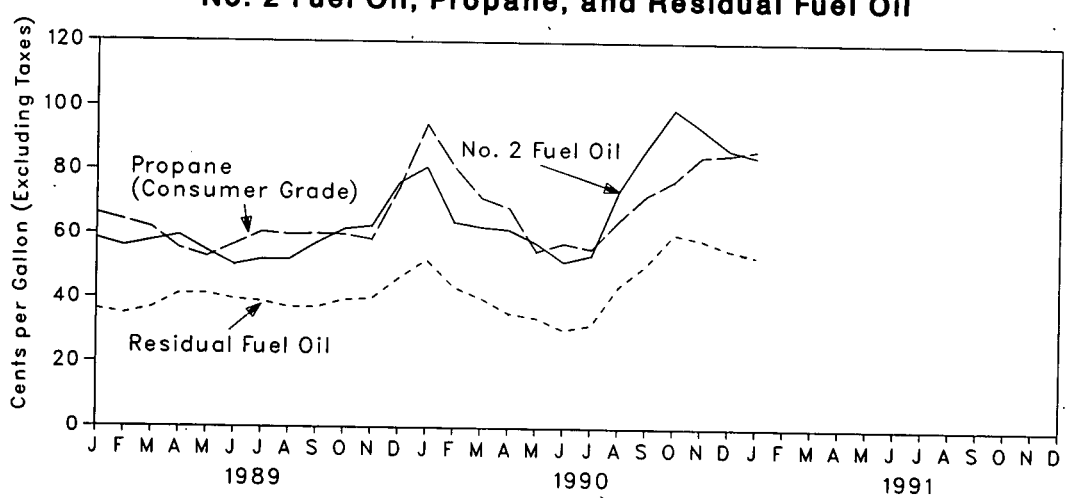


Table 9.1 Crude Oil Price Summary
(Dollars per Barrel)

	Domestic First Purchase Price[a]	F.O.B. Cost of Imports[b]	Landed Cost of Imports[c]	Refiner Acquisition Cost[d]		
				Domestic	Imported	Composite
1973 Average	**3.89**	**• 5.21**	**• 6.41**	**4.17**	**4.08**	**4.15**
1974 Average	**6.87**	**10.91**	**12.32**	**7.18**	**12.52**	**9.07**
1975 Average	**7.67**	**11.18**	**12.70**	**8.39**	**13.93**	**10.38**
1976 Average	**8.19**	**12.17**	**13.34**	**8.84**	**13.48**	**10.89**
1977 Average	**8.57**	**13.24**	**14.31**	**9.55**	**14.53**	**11.96**
1978 Average	**9.00**	**13.30**	**14.38**	**10.61**	**14.57**	**12.46**
1979 Average	**12.64**	**20.19**	**21.65**	**14.27**	**21.67**	**17.72**
1980 Average	**21.59**	**32.27**	**33.95**	**24.23**	**33.89**	**28.07**
1981 Average	**31.77**	**35.10**	**36.52**	**34.33**	**37.05**	**35.24**
1982 Average	**28.52**	**32.11**	**33.18**	**31.22**	**33.55**	**31.87**
1983 Average	**26.19**	**27.73**	**28.93**	**28.87**	**29.30**	**28.99**
1984 Average	**25.88**	**27.44**	**28.46**	**28.53**	**28.88**	**28.63**
1985 Average	**24.09**	**25.83**	**26.66**	**26.66**	**26.99**	**26.75**
1986 Average	**12.51**	**12.52**	**13.49**	**14.82**	**14.00**	**14.55**
1987 Average	**15.40**	**16.69**	**17.65**	**17.76**	**18.13**	**17.90**
1988 Average	**12.58**	**13.25**	**14.08**	**14.74**	**14.56**	**14.67**
1989 January	13.80	14.67	15.68	15.50	16.04	15.73
February	14.24	15.49	16.41	16.11	16.61	16.32
March	15.65	16.73	17.47	17.34	17.77	17.52
April	17.04	18.23	18.97	18.91	19.59	19.22
May	16.76	17.51	18.33	19.01	19.05	19.03
June	16.42	16.80	17.61	18.56	18.27	18.43
July	16.32	16.47	17.39	18.32	17.99	18.18
August	15.01	16.12	16.83	17.23	17.23	17.23
September	15.58	16.49	17.28	17.70	17.62	17.66
October	16.25	17.10	17.93	18.20	18.29	18.24
November	16.30	17.34	18.16	18.45	18.32	18.39
December	17.01	18.80	19.54	19.16	20.05	19.54
Average	**15.86**	**16.89**	**17.68**	**17.87**	**18.08**	**17.97**
1990 January	18.50	18.84	19.82	20.75	20.51	20.64
February	18.18	18.01	18.97	20.75	19.84	20.35
March	16.58	16.91	17.96	19.32	18.94	19.14
April	14.52	14.94	15.98	17.37	16.71	17.06
May	13.82	14.57	15.36	16.46	16.03	16.26
June	12.79	13.81	14.93	15.07	14.89	14.98
July	14.02	16.52	17.65	15.87	16.45	16.15
August	21.85	23.83	24.64	23.00	24.26	23.57
September	28.44	28.98	29.38	30.16	29.82	30.01
October	30.87	30.75	31.47	33.32	32.98	33.18
November	27.53	R 27.84	R 28.57	30.75	30.40	30.61
December	R 22.63	R 23.55	R 24.50	26.46	R 25.84	R 26.21
Average	**20.03**	**R 20.42**	**R 21.18**	**22.60**	**R 21.78**	**R 22.23**
1991 January	19.57	20.61	21.65	23.24	22.57	22.96

[a]See Note 1 at end of section.
[b]See Note 2 at end of section.
[c]See Note 3 at end of section.
[d]See Note 4 at end of section.
•Based on October, November, and December data only.
R=Revised data.

Notes: • Geographic coverage is the 50 States, the District of Columbia, Puerto Rico, the Virgin Islands, and all U.S. Territories and Possessions. • Values for Domestic First Purchase Price and Refiner Acquisition Cost for the current month and for F.O.B. and Landed Cost of Imports for the current 2 months are preliminary. • F.O.B. and landed costs through 1980 reflect the period of reporting; prices after 1980 reflect the period of loading. • Annual averages are the averages of the monthly prices, weighted by volumes.

Sources: See end of section.

Table 9.2 F.O.B. Cost of Crude Oil Imports from Selected Countries[a]
(Dollars per Barrel)

	Algeria	Indonesia	Iran	Mexico	Nigeria	Saudi Arabia	United Kingdom	Venezuela	Other Countries	Arab OPEC[b]	Total OPEC[c]
1973 Average[d] ..	**7.23**	**5.67**	**4.24**	**NA**	**7.81**	**3.25**	**NA**	**5.39**	**4.84**	**4.06**	**5.43**
1974 Average	**13.23**	**11.99**	**10.85**	**NA**	**12.44**	**10.17**	**NA**	**10.71**	**10.02**	**10.96**	**11.33**
1975 Average	**11.93**	**12.55**	**10.81**	**11.44**	**11.82**	**10.87**	**NA**	**11.04**	**10.86**	**11.18**	**11.34**
1976 Average	**13.05**	**12.76**	**11.61**	**12.22**	**13.08**	**11.69**	**13.09**	**11.32**	**11.92**	**12.06**	**12.23**
1977 Average	**14.36**	**13.57**	**12.67**	**13.42**	**14.44**	**12.37**	**14.11**	**12.68**	**13.19**	**13.13**	**13.29**
1978 Average	**14.10**	**13.64**	**12.65**	**13.24**	**14.04**	**12.70**	**13.82**	**12.45**	**13.35**	**13.28**	**13.30**
1979 Average	**20.65**	**19.35**	**23.71**	**20.29**	**21.80**	**17.63**	**21.20**	**17.37**	**21.43**	**19.25**	**19.91**
1980 Average	**36.57**	**32.37**	**27.20**	**31.11**	**35.82**	**28.53**	**34.58**	**24.78**	**34.24**	**31.61**	**32.25**
1981 Average	**39.09**	**35.93**	**(e)**	**33.13**	**38.53**	**32.48**	**36.08**	**28.86**	**36.69**	**34.73**	**35.11**
1982 Average	**34.23**	**35.27**	**30.93**	**28.07**	**35.13**	**33.50**	**33.46**	**23.77**	**31.96**	**33.84**	**33.45**
1983 Average	**30.06**	**29.93**	**28.25**	**25.19**	**29.78**	**28.03**	**29.84**	**21.48**	**27.96**	**28.38**	**28.45**
1984 Average	**28.04**	**29.10**	**26.93**	**26.37**	**29.39**	**27.60**	**28.90**	**24.16**	**27.65**	**27.68**	**27.59**
1985 Average	**26.84**	**27.12**	**W**	**25.33**	**28.04**	**22.04**	**27.63**	**23.64**	**26.11**	**24.30**	**25.66**
1986 Average	**13.62**	**13.19**	**W**	**11.84**	**14.35**	**11.36**	**13.84**	**10.92**	**13.32**	**11.59**	**12.21**
1987 Average	**16.79**	**17.40**	**W**	**16.36**	**18.47**	**15.12**	**18.28**	**15.08**	**17.11**	**15.80**	**16.43**
1988 Average	**W**	**13.81**	**NA**	**12.18**	**15.16**	**12.16**	**14.80**	**12.96**	**13.45**	**12.57**	**13.43**
1989 January	W	14.52	NA	13.98	16.11	W	W	13.10	15.05	14.91	14.77
February	W	17.14	NA	14.25	17.15	W	16.33	14.00	15.83	16.35	15.98
March	W	17.05	NA	14.98	18.37	W	W	16.62	17.29	17.45	17.37
April	W	17.78	NA	17.44	19.81	W	W	17.77	18.75	16.85	18.35
May	W	W	NA	16.95	18.60	W	W	16.78	17.97	15.98	17.28
June	W	17.78	NA	16.62	17.68	15.54	W	15.42	17.12	16.01	16.49
July	W	17.61	NA	16.41	17.67	W	17.66	14.34	16.74	15.66	16.02
August	W	W	NA	15.22	17.25	W	17.11	15.82	16.08	15.91	16.36
September	W	16.37	NA	15.37	18.00	W	17.22	16.02	16.62	16.50	16.68
October	W	16.35	NA	16.12	18.99	W	17.78	15.45	17.37	17.05	17.20
November .	W	17.28	NA	16.44	19.11	18.09	18.37	15.56	17.45	17.53	17.52
December .	W	W	NA	17.74	19.93	W	19.57	19.32	18.43	18.70	19.24
Average	**W**	**17.01**	**NA**	**15.96**	**18.31**	**16.29**	**17.89**	**16.09**	**17.12**	**16.72**	**17.06**
1990 January	W	19.25	NA	18.03	21.22	W	21.00	16.73	19.20	18.03	18.71
February	W	19.43	NA	16.68	20.41	W	W	16.01	18.36	16.64	18.11
March	W	18.98	NA	16.24	18.41	W	W	15.95	16.82	14.98	16.85
April	W	17.38	NA	13.30	16.79	12.37	16.13	15.57	14.77	13.24	15.10
May	W	16.19	NA	12.11	16.50	12.97	15.69	14.60	14.39	12.82	14.78
June	W	15.20	NA	10.68	15.58	W	W	13.11	13.92	14.63	14.58
July	W	15.06	NA	12.84	17.12	W	15.10	16.66	17.80	20.27	18.17
August	W	19.12	NA	21.16	25.65	29.70	21.18	24.33	22.63	28.34	25.39
September	W	W	NA	27.04	32.74	W	33.05	27.71	30.02	27.46	29.06
October	W	35.41	NA	29.15	37.31	28.73	32.53	26.39	33.13	29.85	30.39
November .	W	W	NA	27.23	33.56	R 24.11	W	R 22.96	29.56	R 25.51	R 27.30
December .	W	W	NA	R 22.58	R 29.38	R 16.84	W	R 20.39	R 25.25	R 18.23	R 22.52
Average	**W**	**R 21.28**	**NA**	**R 19.25**	**R 22.52**	**R 20.87**	**23.43**	**19.54**	**R 19.91**	**R 19.12**	**R 20.49**
1991 January	W	W	NA	19.59	25.23	18.89	W	17.01	21.16	20.30	20.65

[a]The Free on Board (F.O.B.) cost at the country of origin excludes all costs related to insurance and transportation. See Note 2 at end of section.
[b]The Arab members of OPEC are Algeria, Iraq, Kuwait, Libya, Qatar, Saudi Arabia, and the United Arab Emirates.
[c]"Total OPEC" consists of Ecuador, Gabon, Indonesia, Iran, Nigeria, and Venezuela, as well as the Arab members. The cost of imports from the Neutral Zone between Kuwait and Saudi Arabia is included in the cost of imports from "Total OPEC."
[d]Based on October, November, and December data only.
[e]No crude oil was imported.
R=Revised data. NA=Not available. W=Value withheld to avoid disclosure of individual company data.
Notes: • Values for the current 2 months are preliminary. • Prices through 1980 reflect the period of reporting; prices after 1980 reflect the period of loading. • Annual averages are averages of the monthly prices, including prices not published, weighted by volume. • Cargoes that are purchased on a "netback" basis, or under similar contractual arrangements whereby the actual purchase price is not established at the time the crude oil is acquired for importation into the United States, are not included in the published data until the actual prices have been determined and reported.
Sources: See end of section.

Table 9.3 Landed Cost of Crude Oil Imports from Selected Countries[a]
(Dollars per Barrel)

	Algeria	Canada	Indonesia	Iran	Mexico	Nigeria	Saudi Arabia	United Kingdom	Venezuela	Other Countries	Arab OPEC[b]	Total OPEC[c]
1973 Average[d] ..	**8.39**	**5.33**	**7.22**	**6.48**	**NA**	**9.08**	**5.37**	**NA**	**5.99**	**6.99**	**5.92**	**6.85**
1974 Average	**13.97**	**11.48**	**13.20**	**12.48**	**W**	**13.16**	**11.63**	**NA**	**11.25**	**12.93**	**12.39**	**12.49**
1975 Average	**12.72**	**12.72**	**13.79**	**12.21**	**12.61**	**12.62**	**12.30**	**NA**	**11.65**	**12.66**	**12.71**	**12.70**
1976 Average	**13.81**	**13.57**	**13.82**	**12.82**	**12.64**	**13.80**	**13.04**	**W**	**11.80**	**13.31**	**13.31**	**13.32**
1977 Average	**15.20**	**14.21**	**14.63**	**13.80**	**13.75**	**15.25**	**13.61**	**14.83**	**13.13**	**14.56**	**14.30**	**14.35**
1978 Average	**14.91**	**14.50**	**14.64**	**13.88**	**13.54**	**14.86**	**13.92**	**14.53**	**12.83**	**14.58**	**14.36**	**14.34**
1979 Average	**21.90**	**20.43**	**20.69**	**25.02**	**20.86**	**22.96**	**19.15**	**22.16**	**18.18**	**23.18**	**20.79**	**21.29**
1980 Average	**37.90**	**30.47**	**33.92**	**29.33**	**31.80**	**37.05**	**30.02**	**35.88**	**25.86**	**36.02**	**32.97**	**33.56**
1981 Average	**40.49**	**32.16**	**37.57**	**(e)**	**33.78**	**39.70**	**34.19**	**37.24**	**29.87**	**38.54**	**36.22**	**36.60**
1982 Average	**35.28**	**26.92**	**36.75**	**32.40**	**28.64**	**36.17**	**35.00**	**34.28**	**24.82**	**34.03**	**35.15**	**34.81**
1983 Average	**31.26**	**25.63**	**31.57**	**29.81**	**25.78**	**30.84**	**29.76**	**30.87**	**22.94**	**29.68**	**30.03**	**29.87**
1984 Average	**29.08**	**26.59**	**30.64**	**28.67**	**26.87**	**30.50**	**29.50**	**29.60**	**25.15**	**29.20**	**29.12**	**28.93**
1985 Average	**27.46**	**25.71**	**28.67**	**25.79**	**25.63**	**28.96**	**24.72**	**28.35**	**24.43**	**27.33**	**25.88**	**26.85**
1986 Average	**14.82**	**13.43**	**14.63**	**12.38**	**12.17**	**15.29**	**12.84**	**14.63**	**11.52**	**14.25**	**13.14**	**13.46**
1987 Average	**17.87**	**17.04**	**18.49**	**18.28**	**16.69**	**19.32**	**16.81**	**18.78**	**15.76**	**18.30**	**17.32**	**17.64**
1988 Average	**W**	**13.50**	**15.15**	**W**	**12.58**	**15.88**	**13.37**	**15.82**	**13.66**	**14.45**	**13.60**	**14.18**
1989 January	W	14.47	16.30	NA	14.48	17.54	15.90	17.17	14.05	15.88	15.73	15.98
February	W	14.97	17.86	NA	14.55	18.19	16.60	17.88	14.62	17.22	16.52	16.74
March	W	15.88	18.67	NA	15.37	19.32	17.00	17.90	17.30	18.34	17.33	17.80
April	22.13	17.42	19.11	NA	17.78	20.53	18.95	20.00	18.45	19.36	18.90	19.23
May	W	17.81	19.37	NA	17.35	19.65	17.43	20.04	17.32	18.79	17.58	18.15
June	W	17.69	18.92	NA	16.99	18.90	16.84	18.74	16.13	17.96	17.01	17.45
July	W	17.89	18.92	NA	16.84	18.68	16.72	18.81	15.13	17.44	16.73	17.13
August	W	16.62	W	NA	15.62	18.01	16.42	18.20	16.50	16.89	16.45	16.86
September	W	17.00	17.82	NA	15.76	18.72	16.84	18.11	16.67	17.54	16.97	17.29
October	W	17.44	17.70	NA	16.52	19.82	17.90	18.71	16.13	18.27	17.82	17.97
November .	18.55	17.08	18.16	NA	16.85	20.14	18.08	19.31	16.38	18.74	18.16	18.27
December .	W	17.49	19.20	NA	18.01	20.98	19.28	20.32	20.16	19.84	19.52	19.93
Average	**19.13**	**16.81**	**18.35**	**NA**	**16.35**	**19.19**	**17.34**	**18.74**	**16.78**	**18.08**	**17.41**	**17.78**
1990 January	W	18.52	20.86	NA	18.48	22.36	19.18	21.56	17.86	20.50	19.36	19.79
February	W	18.52	21.21	NA	17.13	21.46	18.32	W	16.69	19.59	18.28	18.99
March	W	17.30	20.65	NA	16.64	19.69	16.67	20.71	16.64	18.28	16.69	17.72
April	W	15.65	18.98	NA	13.83	18.06	14.58	17.92	16.30	16.19	14.74	15.86
May	W	15.52	17.83	NA	12.78	17.53	14.21	17.12	15.47	15.38	14.13	15.21
June	W	14.00	16.43	NA	11.23	16.63	16.04	17.01	14.00	15.25	15.45	15.47
July	17.67	15.03	15.96	NA	13.37	18.04	19.89	16.68	17.40	18.57	19.85	19.01
August	W	21.26	20.23	NA	21.50	26.71	28.72	23.80	25.08	23.23	26.94	26.31
September	W	27.80	25.50	NA	27.38	33.41	29.83	30.26	28.56	29.46	29.89	30.09
October	W	31.04	36.61	NA	29.61	37.72	30.46	33.75	27.00	34.51	30.75	31.08
November .	W	28.60	W	NA	27.69	34.55	R 27.25	W	R 23.77	R 30.42	R 27.51	R 28.19
December .	W	R 23.60	28.74	NA	R 23.00	R 30.45	R 22.13	W	R 21.28	R 28.22	R 22.50	R 23.95
Average	**W**	**20.51**	R **22.41**	**NA**	R **19.63**	R **23.38**	R **22.01**	**22.68**	**20.31**	R **20.55**	R **20.78**	R **21.32**
1991 January	W	20.96	W	NA	20.13	26.53	20.47	W	18.36	24.51	20.81	21.36

[a]See Note 3 at end of section.
[b]The Arab members of OPEC are Algeria, Iraq, Kuwait, Libya, Qatar, Saudi Arabia, and the United Arab Emirates.
[c]"Total OPEC" consists of Ecuador, Gabon, Indonesia, Iran, Nigeria, and Venezuela, as well as the Arab members. The cost of imports from the Neutral Zone between Kuwait and Saudi Arabia is included in the cost of imports from "Total OPEC."
[d]Based on October, November, and December data only.
[e]No crude oil was imported.
R=Revised data. NA=Not available. W=Value withheld to avoid disclosure of individual company data.
Notes: • Values for the current 2 months are preliminary. • Prices through 1980 reflect the period of reporting; prices after 1980 reflect the period of loading. • Annual averages are averages of the monthly prices, including prices not published, weighted by volume. • Cargoes that are purchased on a "netback" basis, or under similar contractual arrangements whereby the actual purchase price is not established at the time the crude oil is acquired for importation into the United States, are not included in the published data until the actual prices have been determined and reported.
Sources: See end of section.

Table 9.4 U.S. City Average Retail Prices of Motor Gasoline[a]
(Cents per Gallon, Including Taxes)

	Leaded Regular	Unleaded Regular	Unleaded Premium	Average for All Types[b]
1973 Average	**38.8**	**NA**	**NA**	**NA**
1974 Average	**53.2**	**NA**	**NA**	**NA**
1975 Average	**56.7**	**NA**	**NA**	**NA**
1976 Average	**59.0**	**61.4**	**NA**	**NA**
1977 Average	**62.2**	**65.6**	**NA**	**NA**
1978 Average	**62.6**	**67.0**	**NA**	**65.2**
1979 Average	**85.7**	**90.3**	**NA**	**88.2**
1980 Average	**119.1**	**124.5**	**NA**	**122.1**
1981 Average[c]	**131.1**	**137.8**	**[d] 147.0**	**135.3**
1982 Average	**122.2**	**129.6**	**141.5**	**128.1**
1983 Average	**115.7**	**124.1**	**138.3**	**122.5**
1984 Average	**112.9**	**121.2**	**136.6**	**119.8**
1985 Average	**111.5**	**120.2**	**134.0**	**119.6**
1986 Average	**85.7**	**92.7**	**108.5**	**93.1**
1987 Average	**89.7**	**94.8**	**109.3**	**95.7**
1988 Average	**89.9**	**94.6**	**110.7**	**96.3**
1989 January	87.6	91.8	109.1	94.4
February	88.6	92.6	110.0	95.5
March	90.7	94.0	111.5	97.4
April	104.7	106.5	122.1	109.8
May	109.8	111.9	127.8	115.2
June	109.3	111.4	127.8	115.0
July	107.5	109.2	126.4	113.2
August	103.4	105.7	123.3	109.6
September	100.7	102.9	121.3	107.3
October	100.1	102.7	120.9	107.1
November	97.5	99.9	118.7	104.6
December	96.1	98.0	117.0	103.0
Average	**99.8**	**102.1**	**119.7**	**106.0**
1990 January	100.6	104.2	123.0	109.0
February	101.1	103.7	122.7	108.6
March	99.9	102.3	121.8	107.6
April	102.7	104.4	123.3	109.6
May	104.4	106.1	124.8	111.4
June	107.7	108.8	127.1	114.0
July	108.9	108.4	127.2	113.9
August	119.8	119.0	136.9	124.6
September	129.7	129.4	146.7	134.7
October	135.4	137.8	155.4	143.1
November	135.1	137.7	155.9	143.2
December	133.5	135.4	153.7	141.0
Average	**114.9**	**116.4**	**134.9**	**121.7**
1991 January	124.6	124.7	143.1	130.4
February	113.7	114.3	132.1	119.8

[a]See Note 5 at end of section.
[b]Also includes types of gasoline not shown separately.
[c]In September 1981, the Bureau of Labor Statistics changed the weights used in the calculation of average motor gasoline prices. From September 1981 forward, gasohol is included in the average for all types and unleaded premium is weighted more heavily.
[d]Based on September through December data only.
NA=Not available.
Notes: • Geographic coverage for 1973 through 1977 is 56 urban areas. Geographic coverage for 1978 forward is 85 urban areas. • Annual values shown in this table are calculated by the Energy Information Administration as simple averages of monthly data.
Sources: See end of section.

Table 9.5 Refiner Sales Prices of Residual Fuel Oil
(Cents per Gallon, Excluding Taxes)

	Residual Fuel Oil Sulfur Content Less Than or Equal to 1 Percent		Residual Fuel Oil Sulfur Content Greater Than 1 Percent		Average	
	Sales for Resale	Sales to End Users	Sales for Resale	Sales to End Users	Sales for Resale	Sales to End Users
1978 Average	**29.3**	**31.4**	**24.5**	**27.5**	**26.3**	**29.8**
1979 Average	**45.0**	**46.8**	**36.6**	**38.9**	**39.9**	**43.6**
1980 Average	**60.8**	**67.5**	**47.9**	**52.3**	**52.8**	**60.7**
1981 Average	**74.8**	**82.9**	**62.2**	**67.3**	**66.3**	**75.6**
1982 Average	**69.5**	**74.7**	**57.2**	**61.1**	**61.2**	**67.6**
1983 Average	**64.3**	**69.5**	**59.1**	**61.1**	**60.9**	**65.1**
1984 Average	**68.5**	**72.0**	**63.9**	**65.9**	**65.4**	**68.7**
1985 Average	**61.0**	**64.4**	**56.0**	**58.2**	**57.7**	**61.0**
1986 Average	**32.8**	**37.2**	**28.9**	**31.7**	**30.5**	**34.3**
1987 Average	**41.2**	**44.7**	**36.2**	**39.6**	**38.5**	**42.3**
1988 Average	**33.3**	**37.2**	**27.1**	**30.0**	**30.0**	**33.4**
1989 January	38.8	41.7	29.1	30.5	32.8	35.4
February	37.0	39.8	30.5	29.9	33.2	34.3
March	38.8	42.0	28.1	29.7	32.1	36.1
April	44.1	46.6	34.2	34.9	38.1	40.3
May	43.6	46.5	34.7	36.3	37.6	40.5
June	39.3	42.8	33.9	36.2	35.5	39.1
July	39.0	42.1	34.0	35.5	35.7	38.5
August	37.3	39.6	33.0	34.5	34.4	36.8
September	38.2	40.2	32.3	34.2	35.1	36.5
October	40.2	43.2	34.5	35.9	36.9	38.8
November	40.5	44.1	34.2	36.2	36.6	39.3
December	47.7	53.4	38.3	39.5	42.1	45.7
Average	**40.7**	**43.6**	**33.1**	**34.4**	**36.0**	**38.5**
1990 January	56.0	60.0	41.9	45.1	48.1	52.0
February	44.6	51.3	34.7	37.2	38.2	43.6
March	39.8	45.3	31.2	35.4	34.4	40.1
April	36.1	39.6	31.1	32.5	33.3	35.5
May	34.2	37.9	28.5	31.4	30.5	34.1
June	31.4	34.2	24.8	27.6	27.2	30.4
July	33.4	36.3	25.3	28.3	29.1	31.9
August	49.5	50.7	41.1	39.5	44.4	44.1
September	56.8	59.4	46.1	46.2	50.8	50.7
October	63.4	68.6	53.1	54.6	57.3	60.5
November	63.3	66.5	49.7	53.9	55.6	58.7
December	56.6	R 62.2	R 44.1	R 50.2	R 48.6	R 55.5
Average	**47.1**	**50.4**	**37.2**	**39.9**	**41.2**	**44.4**
1991 January	51.4	59.4	48.6	49.7	49.7	53.4

R=Revised data.

Notes: • Sales for resale are those made to purchasers other than ultimate consumers. Sales to end users are those made directly to the ultimate consumer, including bulk customers such as agriculture, industry, and electric utilities, as well as commercial customers. • Geographic coverage is the 50 States and the District of Columbia. • Values for the current month are preliminary. • Prices prior to 1983 are Energy Information Administration estimates. See Note 6 at end of section.

Sources: See end of section.

Table 9.6 Refiner Sales Prices of Petroleum Products for Resale
(Cents per Gallon, Excluding Taxes)

	Finished Motor Gasoline[a]	Finished Aviation Gasoline	Kerosene-Type Jet Fuel	Kerosene	No. 2 Fuel Oil	No. 2 Diesel Fuel	Propane (Consumer Grade)
1978 Average	**43.4**	**53.7**	**38.6**	**40.4**	**36.9**	**36.5**	**23.7**
1979 Average	**63.7**	**72.1**	**66.0**	**62.4**	**56.9**	**57.4**	**29.1**
1980 Average	**94.1**	**112.8**	**86.8**	**86.4**	**80.3**	**80.1**	**41.5**
1981 Average	**106.4**	**125.0**	**101.2**	**106.6**	**97.6**	**97.2**	**46.6**
1982 Average	**97.3**	**122.8**	**95.3**	**101.8**	**91.4**	**91.4**	**42.7**
1983 Average	**88.2**	**117.8**	**85.4**	**89.2**	**81.5**	**80.8**	**48.4**
1984 Average	**83.2**	**116.5**	**83.0**	**91.6**	**82.1**	**80.3**	**45.0**
1985 Average	**83.5**	**113.0**	**79.4**	**87.4**	**77.6**	**77.2**	**39.8**
1986 Average	**53.1**	**91.2**	**49.5**	**60.6**	**48.6**	**45.2**	**29.0**
1987 Average	**58.9**	**85.9**	**53.8**	**59.2**	**52.7**	**53.4**	**25.2**
1988 Average	**57.7**	**85.0**	**49.5**	**54.9**	**47.3**	**47.3**	**24.0**
1989 January	56.3	84.8	56.2	63.1	53.2	51.1	24.0
February	57.4	86.0	55.4	59.5	51.1	52.8	22.7
March	61.2	86.6	56.5	61.3	54.4	56.0	22.5
April	74.0	94.2	59.5	60.3	56.5	59.5	22.7
May	76.3	101.8	56.6	55.9	52.6	54.0	22.1
June	73.8	101.3	54.4	53.8	49.6	50.8	21.4
July	69.0	100.9	53.5	57.0	50.4	50.5	20.7
August	62.7	97.7	54.5	59.9	51.2	52.4	21.7
September	65.7	96.2	58.6	63.6	56.4	58.5	23.1
October	64.2	93.3	63.2	67.5	60.1	62.2	24.4
November	61.4	92.5	63.4	68.5	60.4	62.0	24.3
December	61.6	92.8	67.3	81.7	72.8	68.4	36.4
Average	**65.4**	**95.0**	**58.3**	**66.9**	**56.5**	**56.7**	**24.7**
1990 January	69.2	96.8	77.0	87.0	73.8	69.3	54.5
February	67.2	95.0	66.9	67.9	57.7	57.1	34.0
March	66.3	93.8	61.7	64.8	57.9	57.7	27.1
April	69.7	96.4	59.9	62.4	57.5	57.5	25.2
May	72.6	97.4	57.4	59.2	54.5	55.4	24.0
June	72.2	99.6	54.8	53.9	49.4	50.5	24.9
July	70.6	100.2	56.0	57.1	51.9	52.0	27.3
August	85.6	110.4	71.3	80.7	72.1	73.7	36.3
September	95.0	122.3	93.2	100.4	85.2	87.3	43.6
October	98.6	127.9	114.4	115.6	95.0	99.4	53.5
November	95.4	126.2	107.0	106.5	90.7	93.6	50.5
December	80.3	116.1	R 90.1	92.6	R 80.9	R 79.8	R 44.7
Average	**78.6**	**106.3**	**77.3**	**83.9**	**69.7**	**69.4**	R **38.7**
1991 January	76.1	110.8	82.0	87.9	76.3	75.5	42.2

[a]See Note 5 at end of section.

R=Revised data.

Notes: • Sales for resale are those made to purchasers other than ultimate consumers. Sales to end users are those made directly to the ultimate consumer, including bulk customers such as agriculture, industry, and electric utilities, as well as residential and commercial customers. • Geographic coverage is the 50 States and the District of Columbia. • Values for the current month are preliminary. • Prices prior to 1983 are Energy Information Administration estimates. See Note 6 at end of section.

Sources: See end of section.

Table 9.7 Refiner Sales Prices of Petroleum Products to End Users
(Cents per Gallon, Excluding Taxes)

	Finished Motor Gasoline[a]	Finished Aviation Gasoline	Kerosene-Type Jet Fuel	Kerosene	No. 2 Fuel Oil	No. 2 Diesel Fuel	Propane (Consumer Grade)
1978 Average	**48.4**	**51.6**	**38.7**	**42.1**	**40.0**	**37.7**	**33.5**
1979 Average	**71.3**	**68.9**	**54.7**	**58.5**	**51.6**	**58.5**	**35.7**
1980 Average	**103.5**	**108.4**	**86.8**	**90.2**	**78.8**	**81.8**	**48.2**
1981 Average	**114.7**	**130.3**	**102.4**	**112.3**	**91.4**	**99.5**	**56.5**
1982 Average	**106.0**	**131.2**	**96.3**	**108.9**	**90.5**	**94.2**	**59.2**
1983 Average	**95.4**	**125.5**	**87.8**	**96.1**	**91.6**	**82.6**	**70.9**
1984 Average	**90.7**	**123.4**	**84.2**	**103.6**	**91.6**	**82.3**	**73.7**
1985 Average	**91.2**	**120.1**	**79.6**	**103.0**	**84.9**	**78.9**	**71.7**
1986 Average	**62.4**	**101.1**	**52.9**	**79.0**	**56.0**	**47.8**	**74.5**
1987 Average	**66.9**	**90.7**	**54.3**	**77.0**	**58.1**	**55.1**	**70.1**
1988 Average	**67.3**	**89.1**	**51.3**	**73.8**	**54.4**	**50.0**	**71.4**
1989 January	65.6	89.2	56.2	71.4	56.7	53.5	65.6
February	66.1	89.7	57.0	72.2	55.6	54.3	66.8
March	68.4	90.6	57.9	67.6	57.1	57.0	63.8
April	81.7	99.1	60.6	66.2	59.2	61.0	55.9
May	85.5	107.0	58.1	59.7	54.8	57.1	55.4
June	84.5	107.1	56.2	53.9	50.3	53.4	49.0
July	82.0	105.5	54.7	55.3	51.9	53.1	54.9
August	76.6	101.9	55.1	58.0	52.7	53.7	57.4
September	74.9	100.7	58.9	66.8	57.3	59.5	59.0
October	74.7	100.4	63.8	73.6	61.7	63.7	59.9
November	72.7	98.6	64.4	77.7	62.6	64.5	58.4
December	72.1	97.3	68.1	90.0	76.0	71.3	74.4
Average	**75.6**	**99.5**	**59.2**	**70.9**	**58.7**	**58.5**	**61.5**
1990 January	78.6	102.0	79.7	99.9	81.0	76.4	94.5
February	76.5	102.4	68.9	81.2	63.9	61.9	81.2
March	75.0	100.9	63.5	82.3	62.4	60.6	71.5
April	77.8	101.4	61.1	74.2	61.6	60.2	68.5
May	80.1	103.5	58.1	65.4	57.4	58.4	54.8
June	81.3	104.0	55.6	58.5	51.5	54.0	57.4
July	80.6	103.6	55.3	59.3	53.6	54.9	55.6
August	92.2	112.6	70.3	87.4	74.1	76.1	64.7
September	100.9	125.4	91.2	101.8	87.3	88.4	72.5
October	108.6	134.4	115.8	118.7	99.5	101.0	77.1
November	107.1	131.7	108.8	116.7	93.5	96.0	84.6
December	R 98.4	122.5	92.2	R 112.1	86.9	85.8	85.3
Average	**88.2**	**111.9**	**76.7**	**R 90.2**	**73.2**	**72.5**	**R 74.7**
1991 January	88.7	112.1	82.3	105.0	84.6	80.4	86.7

[a]See Note 5 at end of section.
R=Revised data.
Notes: • Sales for resale are those made to purchasers other than ultimate consumers. Sales to end users are those made directly to the ultimate consumer, including bulk customers such as agriculture, industry, and electric utilities, as well as residential and commercial customers. • Geographic coverage is the 50 States and the District of Columbia. • Values for the current month are preliminary. • Prices prior to 1983 are Energy Information Administration estimates. See Note 6 at end of section.
Sources: See end of section.

Table 9.8a Sales Prices of No. 2 Distillate to Residences, Northeastern States
(Cents per Gallon, Excluding Taxes)

	Maine	New Hampshire	Vermont	Massachusetts	Rhode Island	Connecticut	New York	New Jersey	Pennsylvania
1978 Average	**48.6**	**50.3**	**50.8**	**48.8**	**50.7**	**50.1**	**50.1**	**49.6**	**48.8**
1979 Average	**68.8**	**72.5**	**72.5**	**70.9**	**72.8**	**72.0**	**71.2**	**71.0**	**69.8**
1980 Average	**96.3**	**100.4**	**101.5**	**97.8**	**101.1**	**98.3**	**98.2**	**97.9**	**96.4**
1981 Average	**120.4**	**123.7**	**125.4**	**121.3**	**123.8**	**121.7**	**123.2**	**121.5**	**118.1**
1982 Average	**115.5**	**117.4**	**120.1**	**117.6**	**120.1**	**118.3**	**120.5**	**117.4**	**113.7**
1983 Average	**102.8**	**104.1**	**112.9**	**109.1**	**110.5**	**109.1**	**112.1**	**107.9**	**105.8**
1984 Average	**103.9**	**108.4**	**111.9**	**111.6**	**111.4**	**112.1**	**115.5**	**111.0**	**107.9**
1985 Average	**99.7**	**102.4**	**107.7**	**107.0**	**106.7**	**108.0**	**111.3**	**105.9**	**102.3**
1986 Average	**74.4**	**75.9**	**86.6**	**82.1**	**82.8**	**89.0**	**91.1**	**90.2**	**81.4**
1987 Average	**74.7**	**76.5**	**81.1**	**80.6**	**82.5**	**83.4**	**85.2**	**84.3**	**76.9**
1988 Average	**77.7**	**78.2**	**82.6**	**82.1**	**83.6**	**85.3**	**86.3**	**84.8**	**77.8**
1989 January	85.6	83.0	86.0	87.1	87.5	88.4	91.0	87.3	81.6
February	87.4	83.8	86.9	86.3	88.3	88.7	92.2	87.0	82.2
March	88.3	84.8	87.8	88.1	90.0	89.8	93.4	88.9	83.2
April	87.4	83.2	87.5	87.8	89.9	89.4	93.8	87.8	83.2
May	81.0	83.1	86.4	86.8	88.8	88.1	92.9	87.2	82.2
June	73.5	79.5	84.3	83.4	87.6	85.6	92.0	83.0	77.6
July	72.1	77.8	82.9	81.1	85.4	84.9	90.9	82.3	74.1
August	70.0	78.2	82.0	81.1	84.1	84.6	90.1	80.1	72.6
September	74.6	79.4	82.6	84.9	86.5	85.2	86.6	81.8	74.2
October	82.7	83.2	85.3	88.5	90.3	88.9	91.0	87.3	78.9
November	86.7	87.5	86.1	91.1	92.3	90.3	93.7	89.7	81.6
December	106.0	112.1	109.8	115.2	114.0	112.5	113.0	108.5	103.1
Average	**89.4**	**89.3**	**90.5**	**92.6**	**93.9**	**92.9**	**95.8**	**91.8**	**85.1**
1990 January	115.4	118.6	121.5	116.9	122.6	119.8	122.2	117.3	113.7
February	84.8	96.0	98.4	99.7	98.5	100.8	103.1	99.5	93.4
March	83.4	92.9	95.6	98.6	97.3	97.7	101.6	98.5	90.3
April	82.9	89.9	94.2	95.1	95.9	96.3	100.2	96.5	87.6
May	81.0	86.9	91.7	92.4	93.9	92.7	99.2	94.4	84.4
June	76.2	82.8	86.9	88.9	89.1	87.0	94.8	88.6	78.3
July	74.2	80.7	85.4	88.0	86.9	85.4	93.3	85.4	74.3
August	97.7	99.2	97.4	102.3	102.3	104.1	102.6	102.1	92.5
September	118.3	110.9	114.6	117.1	115.8	114.7	116.3	114.3	108.9
October	126.0	120.0	124.1	126.7	120.0	128.2	128.8	126.9	122.6
November	116.3	116.0	123.4	122.7	119.8	128.1	127.8	125.8	120.0
December	R 113.4	R 110.8	R 119.6	R 120.0	R 114.9	R 124.7	R 126.5	120.9	R 119.3
Average	**98.4**	**102.9**	R **107.0**	R **108.3**	**108.5**	R **109.7**	R **112.4**	**108.6**	R **102.5**
1991 January	114.3	107.2	117.5	117.1	113.3	122.6	123.6	119.2	117.1

See footnotes at end of Table 9.8c.

Table 9.8b Sales Prices of No. 2 Distillate to Residences, Selected South Atlantic and Midwestern States
(Cents per Gallon, Excluding Taxes)

	Delaware	District of Columbia	Maryland	Virginia	West Virginia	Ohio	Michigan	Indiana	Illinois	Wisconsin	Minnesota
1978 Average	**47.8**	**50.7**	**49.2**	**49.1**	**46.2**	**47.4**	**47.9**	**48.5**	**46.5**	**44.7**	**47.8**
1979 Average	**68.2**	**74.2**	**70.1**	**70.4**	**65.1**	**68.6**	**70.9**	**72.7**	**68.8**	**67.3**	**72.4**
1980 Average	**95.4**	**102.6**	**97.9**	**98.5**	**92.2**	**91.9**	**97.8**	**99.6**	**95.8**	**91.5**	**99.9**
1981 Average	**117.3**	**127.4**	**121.4**	**120.5**	**115.0**	**113.2**	**118.3**	**118.5**	**114.9**	**109.1**	**118.4**
1982 Average	**111.3**	**124.5**	**117.1**	**117.7**	**109.3**	**110.2**	**113.9**	**114.3**	**110.9**	**107.8**	**115.1**
1983 Average	**106.0**	**117.0**	**110.3**	**108.7**	**101.0**	**101.3**	**106.4**	**100.7**	**100.4**	**101.2**	**103.1**
1984 Average	**109.6**	**118.7**	**113.5**	**110.5**	**102.1**	**102.1**	**105.0**	**103.1**	**100.1**	**101.0**	**104.1**
1985 Average	**104.6**	**114.3**	**108.8**	**106.3**	**98.0**	**99.7**	**102.1**	**99.1**	**97.5**	**98.3**	**101.9**
1986 Average	**85.0**	**93.1**	**91.4**	**86.6**	**74.6**	**77.7**	**81.0**	**74.8**	**NA**	**75.6**	**79.2**
1987 Average	**79.3**	**91.8**	**86.6**	**79.5**	**76.4**	**74.7**	**77.5**	**75.4**	**79.8**	**75.1**	**74.6**
1988 Average	**80.1**	**91.6**	**87.0**	**80.5**	**74.2**	**74.7**	**77.5**	**75.4**	**77.6**	**73.9**	**73.5**
1989 January	82.4	94.0	88.1	82.6	75.8	77.5	78.8	77.8	76.6	73.9	75.3
February	81.8	95.1	88.8	82.3	76.2	76.7	79.3	77.0	75.8	74.0	75.7
March	82.9	96.0	89.4	82.5	76.7	77.5	80.1	77.6	76.6	75.6	77.1
April	84.8	95.4	90.3	82.1	77.0	79.4	81.5	79.7	79.8	76.3	82.3
May	83.4	92.1	89.6	81.5	77.4	78.5	81.2	78.1	78.5	78.0	82.1
June	80.3	92.0	88.4	79.6	80.9	79.3	80.1	76.5	77.0	78.0	81.0
July	79.0	90.7	86.5	78.4	78.1	79.4	80.3	77.0	74.5	75.7	80.8
August	78.8	90.1	85.7	77.9	73.6	78.1	79.1	76.5	78.4	75.4	79.4
September	78.8	91.4	83.1	79.7	79.3	77.5	82.9	80.1	77.5	76.5	80.7
October	82.4	92.0	88.2	84.0	81.7	78.4	86.4	83.3	81.9	79.5	82.5
November	86.1	94.7	91.1	86.0	83.1	78.8	88.2	84.0	82.8	82.2	86.1
December	111.6	110.8	110.6	105.2	100.0	97.2	102.2	98.6	93.9	97.5	95.6
Average	**88.2**	**98.6**	**93.8**	**87.0**	**83.0**	**81.6**	**85.3**	**83.2**	**80.9**	**81.1**	**82.4**
1990 January	119.8	119.0	120.0	118.1	109.2	96.0	103.5	99.7	95.2	91.6	100.9
February	97.1	104.9	101.4	101.7	89.4	82.8	92.0	85.6	83.2	83.9	88.1
March	93.2	94.4	98.8	96.8	87.1	81.2	88.7	83.1	83.4	83.1	85.5
April	91.8	93.1	97.5	95.8	83.7	80.8	86.5	83.7	82.2	82.9	85.6
May	89.9	94.2	95.0	90.6	83.0	81.9	83.7	82.4	78.3	81.0	85.2
June	83.2	93.2	89.5	88.2	83.4	82.6	81.1	72.8	73.8	79.5	80.4
July	77.9	97.6	86.2	89.7	79.2	81.6	82.4	74.7	76.7	77.5	83.0
August	93.1	107.1	100.2	102.4	98.1	93.3	100.2	98.1	96.9	92.0	101.6
September	111.2	116.1	115.8	114.8	115.2	115.2	113.2	110.4	NA	107.0	111.7
October	122.3	134.9	130.6	128.3	124.4	120.9	123.9	123.3	117.8	117.1	121.7
November	118.8	134.3	130.4	126.1	121.7	117.0	121.0	119.1	113.1	114.8	119.7
December	113.7	R 128.4	R 125.3	R 122.8	R 112.9	111.8	113.5	R 111.4	105.0	R 108.3	111.1
Average	**106.0**	**R 108.5**	**111.9**	**110.5**	**98.9**	**97.8**	**100.9**	**R 98.8**	**96.1**	**94.2**	**101.7**
1991 January	112.9	125.2	122.7	117.9	110.4	105.4	108.1	106.3	102.4	101.9	105.7

See notes and sources at end of Table 9.8c.

Table 9.8c Sales Prices of No. 2 Distillate to Residences, Selected Western States and U.S. Average
(Cents per Gallon, Excluding Taxes)

	Idaho	Washington	Oregon	Alaska	U.S. Average
1978 Average	**43.6**	**48.6**	**45.8**	**53.2**	**49.0**
1979 Average	**62.1**	**69.7**	**68.0**	**68.2**	**70.4**
1980 Average	**91.6**	**100.8**	**97.3**	**97.8**	**97.4**
1981 Average	**110.4**	**116.5**	**111.4**	**118.0**	**119.4**
1982 Average	**110.4**	**117.6**	**111.6**	**117.4**	**116.0**
1983 Average	**101.8**	**109.0**	**103.6**	**108.8**	**107.8**
1984 Average	**98.5**	**102.6**	**99.3**	**106.9**	**109.1**
1985 Average	**97.2**	**101.1**	**97.1**	**108.3**	**105.3**
1986 Average	**73.8**	**77.5**	**70.4**	**94.9**	**83.6**
1987 Average	**68.8**	**79.5**	**72.5**	**86.5**	**80.3**
1988 Average	**68.8**	**78.5**	**70.9**	**86.9**	**81.3**
1989 January	68.1	76.9	66.3	86.7	84.9
February	71.5	86.0	76.7	90.9	85.5
March	78.3	92.8	84.2	96.0	87.1
April	85.8	94.2	87.3	99.5	87.8
May	83.5	87.3	79.6	100.1	86.6
June	80.3	77.6	74.9	101.5	84.1
July	77.3	74.7	71.1	105.8	82.1
August	77.2	78.2	71.2	101.6	81.5
September	80.3	83.9	81.5	96.0	81.5
October	82.2	91.7	86.4	97.8	85.6
November	84.9	93.4	86.4	97.9	88.3
December	84.5	93.1	86.1	98.1	107.6
Average	**77.8**	**96.4**	**80.2**	**96.4**	**90.0**
1990 January	85.7	96.0	88.7	98.6	114.0
February	80.8	89.0	83.9	99.6	96.3
March	80.9	88.6	84.4	104.2	94.7
April	81.7	90.0	85.1	97.9	93.1
May	79.4	84.3	84.6	101.7	90.7
June	74.6	85.0	81.9	102.1	86.4
July	70.5	76.3	79.3	97.8	83.8
August	90.7	90.0	95.3	116.8	98.8
September	108.3	115.3	111.9	119.3	113.7
October	121.0	133.3	128.2	128.9	125.4
November	127.1	134.4	126.8	127.5	123.4
December	R 119.7	122.0	R 109.2	128.2	R 119.6
Average	**R 97.4**	**102.7**	**97.0**	**112.6**	**R 106.2**
1991 January	111.5	118.9	108.1	129.1	116.7

Footnotes continued.
R=Revised data. NA=Not available.
Notes: • The States are grouped in Tables 9.8a, 9.8b, and 9.8c by geographic region of the country. • Values for the current month are preliminary. • Prices prior to 1983 are Energy Information Administration estimates. See Note 6 at end of section.
Sources: See end of section.

Table 9.9 Retail Prices[a] of Electricity
(Cents per kilowatthour)

	Residential		Commercial		Industrial		Other		Total[b]	
	Monthly Series[c]	Annual Series	Monthly Series[c]	Annual Series	Monthly Series[c]	Annual Series	Monthly Series[c]	Annual Series	Monthly Series[c]	Annual Series
1973 Average	**2.5**		**2.4**		**1.3**		**2.1**		**2.0**	
1974 Average	**3.1**		**3.0**		**1.7**		**2.8**		**2.5**	
1975 Average	**3.5**		**3.5**		**2.1**		**3.1**		**2.9**	
1976 Average	**3.7**		**3.7**		**2.2**		**3.3**		**3.1**	
1977 Average	**4.1**		**4.1**		**2.5**		**3.5**		**3.4**	
1978 Average	**4.3**		**4.4**		**2.8**		**3.6**		**3.7**	
1979 Average	**4.6**		**4.7**		**3.1**		**4.0**		**4.0**	
1980 Average	**5.4**		**5.5**		**3.7**		**4.8**		**4.7**	
1981 Average	**6.2**		**6.3**		**4.3**		**5.3**		**5.5**	
1982 Average	**6.9**		**6.9**		**5.0**		**5.9**		**6.1**	
1983 Average	**7.2**		**7.0**		**5.0**		**6.4**		**6.3**	
1984 Average	**7.5**	**7.2**	**7.3**	**7.1**	**5.0**	**4.8**	**6.8**	**5.9**	**6.5**	**6.3**
1985 Average	**7.8**	**7.4**	**7.5**	**7.3**	**5.2**	**5.0**	**7.0**	**6.1**	**6.7**	**6.4**
1986 Average	**7.4**	**7.4**	**7.1**	**7.2**	**4.9**	**4.9**	**6.6**	**6.1**	**6.4**	**6.4**
1987 Average	**7.4**	**7.4**	**7.0**	**7.1**	**4.7**	**4.8**	**6.6**	**6.2**	**6.3**	**6.4**
1988 Average	**7.5**	**7.5**	**7.1**	**7.0**	**4.6**	**4.7**	**6.0**	**6.2**	**6.3**	**6.4**
1989 January	7.2		6.9		4.5		6.5		6.2	
February	7.2		7.0		4.6		6.7		6.2	
March	7.2		7.0		4.6		6.6		6.2	
April	7.5		7.1		4.6		6.5		6.3	
May	7.7		7.2		4.6		6.3		6.3	
June	8.0		7.4		4.8		5.7		6.6	
July	8.1		7.5		5.0		5.6		6.8	
August	8.1		7.5		5.0		5.6		6.8	
September	8.0		7.5		4.9		6.1		6.7	
October	7.9		7.5		4.7		6.5		6.5	
November	7.5		7.1		4.5		6.5		6.2	
December	7.3		7.0		4.6		6.6		6.3	
Average	**7.6**	**7.6**	**7.2**	**7.2**	**4.7**	**4.7**	**6.2**	**6.2**	**6.4**	**6.5**
1990 January	7.2		6.9		4.6		5.8		6.3	
February	7.5		7.1		4.6		6.0		6.3	
March	7.6		7.2		4.6		6.1		6.4	
April	7.7		7.2		4.6		6.4		6.4	
May	8.0		7.3		4.6		6.2		6.5	
June	8.1		7.5		4.8		R 6.4		6.7	
July	8.2		7.5		5.0		R 6.3		6.9	
August	8.3		7.5		5.0		6.2		6.9	
September	8.2		7.5		5.0		R 6.4		6.9	
October	8.1		7.6		4.8		6.3		6.7	
November	7.8		7.3		4.7		R 6.3		6.5	
December	7.6		7.2		4.6		6.6		6.4	
Average	**7.8**	**NA**	**7.3**	**NA**	R **4.8**	**NA**	**6.2**	**NA**	**6.6**	**NA**
1991 January	7.4		7.1		4.7		6.4		6.4	

[a]Prices are calculated by dividing revenue by sales. Revenue may not correspond to sales for a particular month because of utility billing and accounting procedures. This could result in uncharacteristic increases or decreases in the monthly prices. See Note 7 at end of section.

[b]Average price for total sales to ultimate consumers.

[c]Annual values are the sum of the monthly revenue divided by the sum of the monthly sales. Data through 1979 cover privately owned electric utilities in Classes A and B. Data for 1980 through 1985 cover selected privately owned electric utilities in Class A whose electric operating revenue was $100 million or more during the previous year. See Note 7 at end of section.

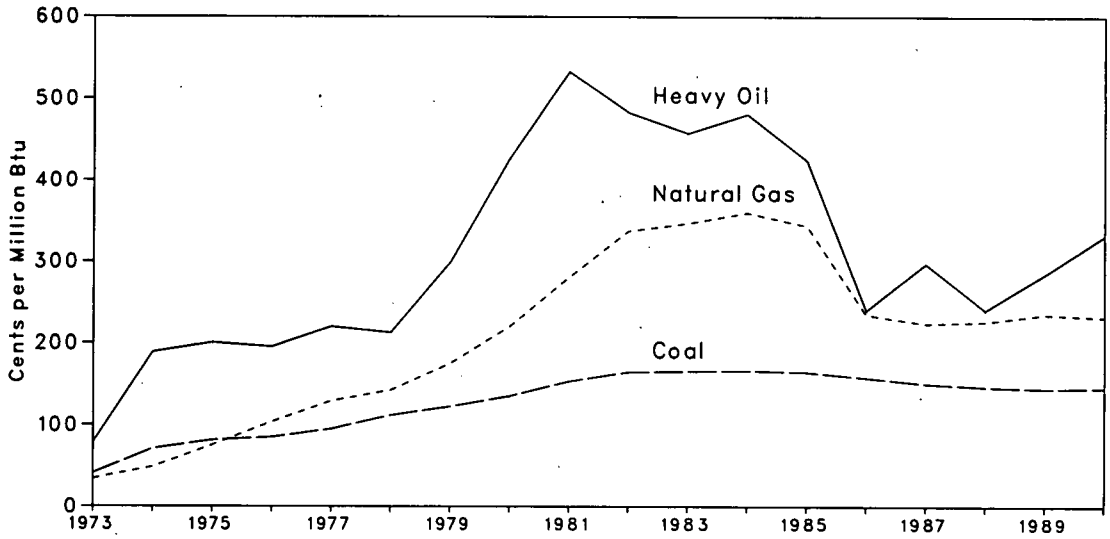
R=Revised data. NA=Not available.

Note: Geographic coverage is the 50 States and the District of Columbia.

Sources: See end of section.

Figure 9.4 Cost of Fossil Fuels Delivered to Steam-Electric Utility Plants

Yearly



Monthly

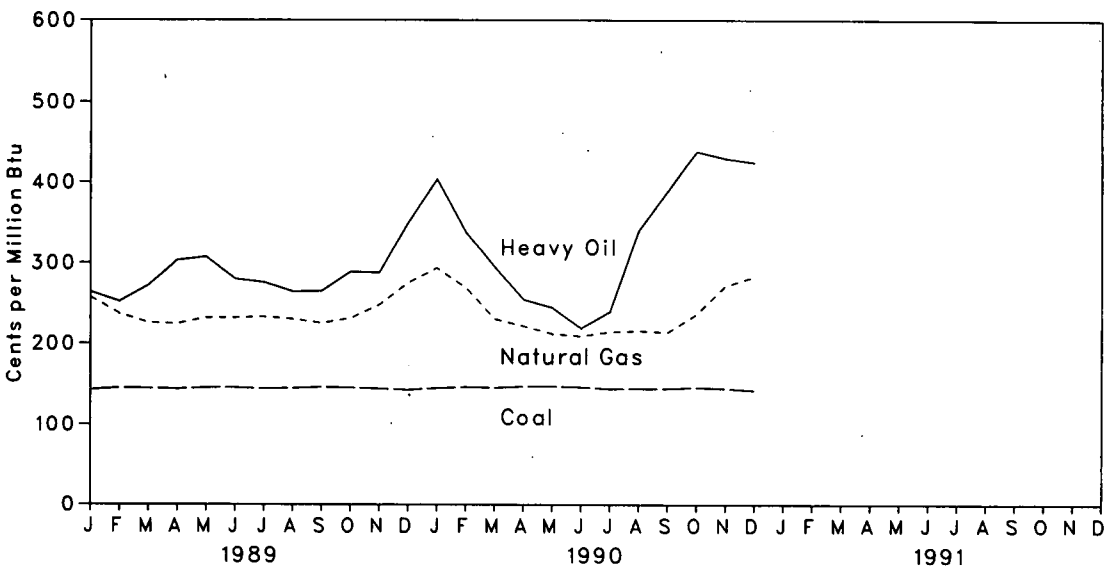


Table 9.10 Quantity and Cost of Fossil-Fuel Receipts at Steam-Electric Utility Plants[a]

	Coal		Petroleum				Gas[b]		All Fossil Fuels[c]
			Heavy Oil[c]		Total[c d]				
	Quantity (thousand short tons)	Cost (cents per million Btu)	Quantity (thousand barrels)	Cost (cents per million Btu)	Quantity (thousand barrels)	Cost (cents per million Btu)	Quantity (million cubic feet)	Cost (cents per million Btu)	Cost (cents per million Btu)
1973 Year	**374,842**	**40.5**	**512,650**	**78.5**	**535,859**	**80.0**	**3,382,677**	**33.8**	**47.6**
1974 Year	**384,868**	**70.9**	**479,166**	**189.0**	**515,217**	**191.0**	**3,225,203**	**48.2**	**91.4**
1975 Year	**431,527**	**81.4**	**457,582**	**200.5**	**510,352**	**202.3**	**3,034,808**	**75.2**	**104.4**
1976 Year	**454,858**	**84.8**	**495,363**	**195.2**	**549,973**	**199.0**	**2,962,811**	**103.4**	**111.9**
1977 Year	**490,415**	**94.7**	**563,685**	**219.8**	**635,556**	**224.9**	**3,106,403**	**129.1**	**129.7**
1978 Year	**476,169**	**111.6**	**546,197**	**212.5**	**616,040**	**219.1**	**3,140,654**	**142.2**	**141.1**
1979 Year	**556,558**	**122.4**	**479,705**	**298.8**	**515,695**	**307.2**	**3,368,976**	**174.9**	**163.9**
1980 Year	**593,995**	**135.1**	**394,159**	**426.7**	**419,140**	**435.1**	**3,588,814**	**219.9**	**192.8**
1981 Year	**579,374**	**153.2**	**327,477**	**533.4**	**345,544**	**542.5**	**3,573,558**	**280.5**	**225.6**
1982 Year	**601,427**	**164.7**	**228,200**	**483.2**	**239,111**	**492.2**	**3,161,348**	**337.6**	**224.9**
1983 Year	**592,728**	**165.6**	**211,705**	**457.8**	**219,652**	**462.8**	**2,732,248**	**347.4**	**220.6**
1984 Year	**684,111**	**166.4**	**193,832**	**481.2**	**202,372**	**486.3**	**2,878,808**	**360.3**	**219.1**
1985 Year	**666,743**	**164.8**	**156,410**	**424.4**	**164,947**	**431.7**	**2,808,921**	**344.4**	**209.4**
1986 Year	**686,964**	**157.9**	**220,585**	**240.1**	**228,522**	**243.7**	**2,387,622**	**235.1**	**175.0**
1987 Year	**721,298**	**150.6**	**187,300**	**297.6**	**194,578**	**301.1**	**2,605,191**	**224.0**	**170.6**
1988 Year	**727,775**	**146.6**	**230,234**	**240.5**	**236,924**	**243.9**	**2,362,721**	**226.3**	**164.3**
1989 January	62,443	142.7	25,855	264.1	26,516	267.4	124,572	257.5	164.8
February	56,634	145.0	20,489	251.9	21,179	256.0	150,950	237.2	164.6
March	63,218	144.4	22,427	271.8	23,199	276.0	180,668	225.7	165.0
April	62,076	143.6	19,831	303.0	20,292	305.6	207,401	224.6	166.7
May	64,796	145.3	20,569	307.2	21,211	310.1	226,859	232.0	169.7
June	61,272	145.5	18,677	279.9	19,354	283.5	234,010	232.1	168.5
July	55,429	144.1	19,778	275.6	20,364	278.6	285,117	233.3	172.2
August	70,147	144.7	19,701	264.2	20,563	268.9	282,481	230.6	166.6
September	64,539	146.0	14,967	264.8	15,609	270.6	239,696	225.4	164.9
October	66,578	145.4	15,779	289.1	16,495	295.6	230,629	231.6	166.1
November	65,570	144.2	16,862	288.0	17,602	294.5	162,361	248.1	164.9
December	60,515	142.8	22,734	350.2	24,040	359.0	147,763	275.4	176.7
Year	**753,217**	**144.5**	**237,668**	**284.6**	**246,422**	**289.3**	**2,472,506**	**235.5**	**167.5**
1990 January	67,637	145.0	26,481	403.8	27,416	409.5	126,832	293.8	182.6
February	62,280	146.4	19,190	338.2	19,683	340.7	113,436	269.3	171.0
March	67,518	145.5	15,028	295.2	15,499	299.3	165,802	231.0	162.9
April	63,888	147.1	13,521	254.7	13,978	260.5	180,912	221.9	161.9
May	64,958	147.5	15,003	244.8	15,551	250.8	220,164	212.4	162.2
June	63,604	146.3	18,065	219.4	18,609	224.1	267,993	209.3	161.7
July	63,427	144.3	22,150	239.9	22,788	243.8	294,672	214.6	164.5
August	70,571	144.5	18,768	341.0	19,320	346.2	304,424	215.9	169.1
September	65,728	144.6	13,452	389.5	13,968	397.5	268,756	214.2	168.4
October	69,159	146.1	13,254	438.8	13,970	452.4	225,850	236.8	173.1
November	65,401	144.8	13,378	430.0	13,901	439.0	164,781	271.8	173.9
December	62,386	142.4	13,923	424.7	14,625	434.0	156,263	283.3	174.3
Year	**786,557**	**145.4**	**202,214**	**331.9**	**209,309**	**338.3**	**2,489,885**	**232.1**	**168.8**

[a]Data through 1982 cover all steam-electric utility plants with a generator nameplate capacity of 25 megawatts or greater. From 1974 through 1982, data include peaking units. Beginning with 1983, data cover steam-electric utility plants with a generator nameplate capacity of 50 megawatts or greater.

[b]Includes supplemental gaseous fuels.

[c]Heavy fuel oil includes fuel oils No. 4, No. 5, and No. 6 and topped crude oil. The weighted averages for petroleum and all fossil fuels include both heavy and light oil (No. 2 fuel oil, kerosene, and jet fuel) prices. Data do not include petroleum coke.

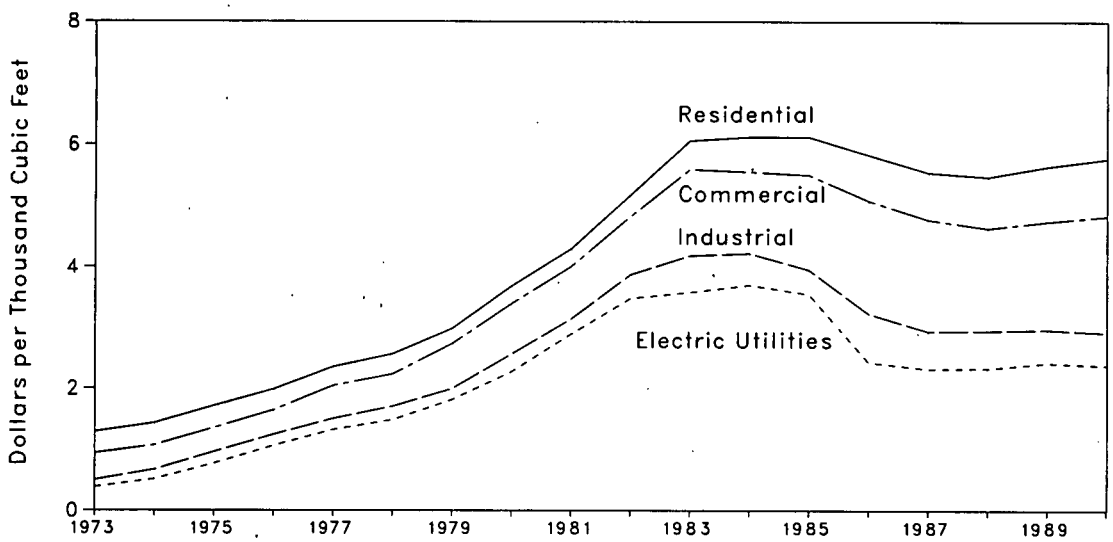
[d]Data for 1973 through 1982 do not include small quantities of rerefined motor oil, bunker oil, and liquefied petroleum gas.

Note: Geographic coverage — 1973 through 1981: the Lower-48 States and the District of Columbia. 1982 forward: the 50 States and the District of Columbia.

Sources: See end of section.

Figure 9.5 Natural Gas Prices

Yearly



Monthly

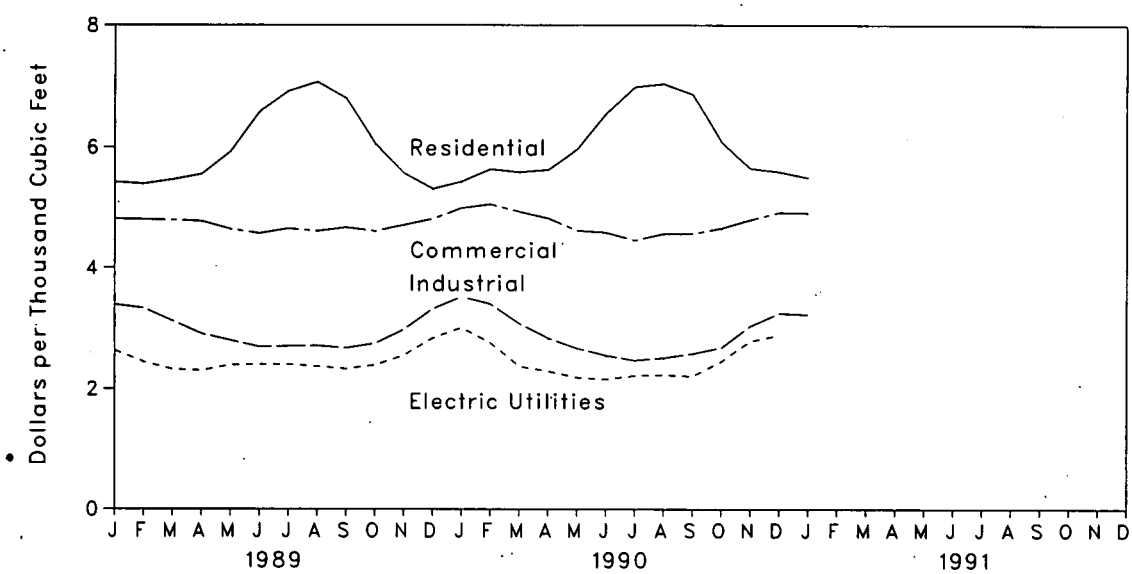


Table 9.11 Natural Gas Prices[a]
(Dollars per Thousand Cubic Feet)

	Wellhead	Major Interstate Pipeline Companies		City Gate	Delivered to Consumers[b] [c]				
		Imports	Purchases from Producers		Residential	Commercial	Industrial	Electric Utilities[d]	Average
1973 Average	**0.22**	**NA**	**NA**	**NA**	**1.29**	**0.94**	**0.50**	**0.38**	**0.73**
1974 Average	**.30**	**NA**	**NA**	**NA**	**1.43**	**1.07**	**.67**	**.51**	**.89**
1975 Average	**.44**	**NA**	**NA**	**NA**	**1.71**	**1.35**	**.96**	**.77**	**1.19**
1976 Average	**.58**	**NA**	**NA**	**NA**	**1.98**	**1.64**	**1.24**	**1.06**	**1.47**
1977 Average	**.79**	**NA**	**NA**	**NA**	**2.35**	**2.04**	**1.50**	**1.32**	**1.78**
1978 Average	**.91**	**2.21**	**0.83**	**NA**	**2.56**	**2.23**	**1.70**	**1.48**	**1.98**
1979 Average	**1.18**	**2.60**	**1.22**	**NA**	**2.98**	**2.73**	**1.99**	**1.81**	**2.34**
1980 Average	**1.59**	**4.42**	**1.63**	**NA**	**3.68**	**3.39**	**2.56**	**2.27**	**2.91**
1981 Average	**1.98**	**4.84**	**2.15**	**NA**	**4.29**	**4.00**	**3.14**	**2.89**	**3.51**
1982 Average	**2.46**	**4.94**	**2.72**	**NA**	**5.17**	**4.82**	**3.87**	**3.48**	**4.32**
1983 Average	**2.59**	**4.51**	**2.93**	**NA**	**6.06**	**5.59**	**4.18**	**3.58**	**4.82**
1984 Average	**2.66**	**4.08**	**2.91**	**3.95**	**6.12**	**5.55**	**4.22**	**3.70**	**4.85**
1985 Average	**2.51**	**3.19**	**2.85**	**3.75**	**6.12**	**5.50**	**3.95**	**3.55**	**4.72**
1986 Average	**1.94**	**2.53**	**2.39**	**3.22**	**5.83**	**5.08**	**3.23**	**2.43**	**4.13**
1987 Average	**1.67**	**2.17**	**2.10**	**2.87**	**5.54**	**4.77**	**2.94**	**2.32**	**4.05**
1988 Average	**1.69**	**2.00**	**2.13**	**2.92**	**5.47**	**4.63**	**2.95**	**2.33**	**4.09**
1989 January	1.99	1.77	2.35	3.17	5.41	4.81	3.39	2.63	4.67
February	1.81	2.20	2.16	3.10	5.38	4.80	3.33	2.44	4.60
March	1.69	1.99	2.14	2.89	5.45	4.79	3.12	2.32	4.46
April	1.56	2.01	2.19	2.83	5.54	4.77	2.91	2.31	4.18
May	1.61	2.00	2.11	2.94	5.93	4.64	2.80	2.39	3.94
June	1.65	2.04	2.05	2.98	6.58	4.57	2.69	2.40	3.72
July	1.65	1.88	2.00	3.08	6.92	4.65	2.70	2.40	3.59
August	1.61	2.27	2.11	3.04	7.07	4.61	2.71	2.38	3.57
September	1.55	2.02	2.08	2.99	6.80	4.67	2.67	2.33	3.67
October	1.58	2.17	2.13	2.84	6.06	4.61	2.75	2.39	3.86
November	1.66	2.13	2.23	2.98	5.56	4.71	2.98	2.56	4.30
December	1.92	2.08	2.39	3.10	5.30	4.81	3.32	2.85	4.61
Average	**1.69**	**2.04**	**2.18**	**3.01**	**5.64**	**4.74**	**2.97**	**2.42**	**4.22**
1990 January	2.22	2.04	2.42	3.25	5.42	4.99	3.52	3.01	4.77
February	1.85	2.25	2.18	3.10	5.63	5.05	3.40	2.76	4.82
March	1.56	1.99	1.94	2.95	5.58	4.93	3.08	2.37	4.50
April	1.50	2.00	2.17	2.84	5.62	4.82	2.84	2.29	4.23
May	1.47	2.08	1.98	2.81	5.97	4.62	2.67	2.19	3.84
June	1.49	1.91	2.18	3.00	6.55	4.59	2.55	2.16	3.53
July	1.50	1.88	2.00	3.03	6.99	4.46	2.47	2.22	3.39
August	1.51	1.92	1.86	2.91	7.04	4.57	2.51	2.23	3.35
September	[R] 1.57	1.89	1.93	2.92	6.87	4.57	2.58	2.21	3.47
October	1.79	1.90	2.18	2.81	6.09	4.66	2.68	2.45	3.82
November	[R] 1.99	2.21	2.45	3.14	5.65	4.80	3.04	2.79	4.35
December	[R] 2.07	2.27	2.58	3.19	5.59	4.92	3.25	2.89	4.67
Average	**1.72**	**2.03**	**2.19**	**3.03**	**5.77**	**4.83**	**2.92**	[R] **2.38**	[R] **4.20**
1991 January	NA	2.24	2.23	3.08	5.49	4.91	3.23	NA	NA

[a]Prices shown on this page are intended to include all taxes. See Note 8 at end of section.

[b]Includes supplemental gaseous fuels.

[c]Prices for 1987 forward represent natural gas delivered and sold to residential, commercial, industrial, and electric utility consumers. They do not include the price of natural gas delivered to industrial and commercial consumers on behalf of third parties. Volumes of natural gas delivered on behalf of third parties are included in the consumption data shown in Table 4.3. Additional information is available in the Energy Information Administration *Natural Gas Monthly*, Appendix C.

[d]Data through December 1982 cover all steam-electric utility plants with a capacity of 25 megawatts or greater. From 1974 through 1982, data include peaking units. Beginning with January 1983, data cover steam-electric utility plants with a capacity of 50 megawatts or greater.

R=Revised data. NA=Not available.

Notes: • Geographic coverage is the 50 States and the District of Columbia. • Data through 1988 final. Subsequent data are preliminary. • Wellhead and Major Interstate Pipeline Companies annual and year-to-date prices are simple averages of the monthly prices; City Gate and Delivered to Consumers annual and year-to-date prices are volume-weighted averages of the monthly prices.

Sources: See end of section.

Price Notes and Sources

Notes

1. The average domestic first purchase price represents the average price at which all domestic crude oil is purchased. Prior to February 1976, the price represented an estimate of the average of posted prices; beginning with February 1976, the price represents an average of actual first purchase prices. The data series was previously called "Actual Domestic Wellhead Price."

2. F.O.B. literally means "Free on Board." It denotes a transaction whereby the seller makes the product available with an agreement on a given port at a given price; it is the responsibility of the buyer to arrange for the transportation and insurance.

3. The landed cost of imported crude oil from selected countries does not represent the total cost of all imported crude. Prior to March 1975, imported crude costs to U.S. company-owned refineries in the Caribbean were not included in the landed cost, and costs of crude oil from countries that export only small amounts to the United States were also excluded. Beginning in March 1975, however, coverage was expanded to include U.S. company-owned refineries in the Caribbean. Landed costs do not include supplemental fees.

4. Beginning with January 1981, refiner acquisition costs of crude oil are from data collected on Form EIA-14, "Refiners' Monthly Cost Report." These prices were previously published from data collected on Form ERA-49, "Domestic Crude Oil Entitlements Program Refiners Monthly Report." Form ERA-49 was discontinued with the decontrol of crude oil on January 28, 1981. Crude oil purchases and costs are defined for Form EIA-14 in accordance with conventions used for Form ERA-49. Also, the respondents for the two forms are essentially the same. However, due to possible different interpretations of the filing requirements and a different method for handling prior period adjustments, care must be taken in comparing the data collected on the two forms.

The refiner acquisition cost of crude oil is the average price paid by refiners for crude oil booked into their refineries in accordance with accounting procedures generally accepted and consistently and historically applied by the refiners concerned. Domestic crude oil is that oil produced in the United States or from the outer continental shelf as defined in 43 USC Section 1331. Imported crude oil is either that oil reported on Form ERA-51, "Transfer Pricing Report," or any crude oil that is not domestic oil. The composite cost is the weighted average of domestic and imported crude oil costs.

Crude oil costs and volumes reported on Form ERA-49 excluded unfinished oils but included the Strategic Petroleum Reserve (SPR). Crude oil costs and volumes reported on Form FEA-P110-M-1 included unfinished oils but excluded SPR. Imported averages derived from Form ERA-49 exclude oil purchased for SPR, whereas the composite averages derived from Form ERA-49 include SPR. None of the prices derived from Form EIA-14 include either unfinished oils or SPR.

5. Several different series of motor gasoline prices are published in this section. U.S. City Average Retail Prices of Motor Gasoline are calculated monthly by the Bureau of Labor Statistics during the development of the Consumer Price Index (CPI). These prices include all Federal, State, and local taxes paid at the time of sale. For the period 1974 through 1977, prices were collected in 56 urban areas. For the period 1978 forward, prices were collected from a new sample of service stations in 85 urban areas selected to represent all urban consumers-about 80 percent of the total U.S. population. The service stations are selected initially, and on a replacement basis, in such a way that they represent the purchasing habits of the CPI population. Service stations in the current sample include those providing all types of service (i.e., full-, mini-, and self-serve).

Refiner and Gas Plant Operator Sales Prices of Finished Motor Gasoline for Resale and to End Users are determined by the Energy Information Administration (EIA) in a monthly survey of refiners and gas plant operators (Form EIA-782A). The prices do not include any Federal, State, or local taxes paid at the time of sale. Estimates of prices prior to January 1983 are based on Form FEA-P302-M-1/EIA-460, "Petroleum Industry Monthly Report for Product Prices," and also exclude all Federal, State, or local taxes paid at the time of sale. Sales for Resale are those made to purchasers who are other-than-ultimate consumers. Sales to End Users are sales made directly to the consumer of the product, including bulk consumers such as agriculture, industry, and utilities, as well as residential and commercial consumers.

6. Starting in January 1983, Form EIA-782, "Monthly Petroleum Product Sales Report," replaced 10 previous surveys. Every attempt was made to continue the most important price series. However, prices published through December 1982 and those published since January 1983 do not necessarily form continuous data series due to changes in survey forms, definitions, instructions, populations, samples, processing systems, and statistical procedures. To provide historical data, continuous annual data series have been generated for 1978-1980, and monthly series for 1981 and 1982, by estimating the prices that would have been published had Form EIA-782 survey and system been in operation at that time. This form of estimation was performed after detailed adjustment for product and sales type matching, and for discontinuity due to other factors. An important difference between the previous

and present prices is the distinction between wholesale and resale, and between retail and end user. The resale category continues to include sales among resellers. However, bulk sales to utility, industrial, and commercial accounts previously included in the wholesale category are now counted as made to end users. The end user category continues to include retail sales through company owned and operated outlets but also includes the bulk utility, industrial, and commercial sales. Additional information may be found in "Estimated Historic Time Series for the EIA-782," a feature article reprinted from the December 1983 [3] *Petroleum Marketing Monthly* published by EIA.

7. National average electricity prices are shown in two data series. The "Annual Series" is based on data from more than 3,000 publicly and privately owned electric utilities that report on Form EIA-861, "Annual Electric Utility Report." The "Monthly Series" is based on data from over 200 utilities statistically chosen as a stratified sample of the utilities that report on Form EIA-861. The selected utilities report monthly on Form EIA-826, "Monthly Electric Utility Sales and Revenue Report with State Distributions," formerly the "Electric Utility Company Monthly Statement." Annual values shown for the monthly series are the sum of the monthly revenue divided by the sum of the monthly sales. Prior to January 1986, only privately owned utilities were included in the monthly survey and the sample was chosen using cut-off rather than stratification techniques.

8. Natural gas prices are intended to include all taxes. Instructions on the data collection forms specifically direct that all U.S., State, and local taxes, surcharges, and/or adjustments billed to consumers are to be included. However, sales and other taxes itemized on consumers' bills are sometimes excluded by the reporting utilities.

Sources

Petroleum and Petroleum Products:

- **Domestic First Purchase Prices**--1973: Bureau of Mines, *Minerals Yearbook,* "Crude Oil and Petroleum Products" chapter. 1974 through January 1976: Federal Energy Administration (FEA), Form FEA-90, "Crude Petroleum Production Monthly Report"; February 1976 through September 1979: FEA, Form FEA-P124, "Domestic Crude Oil Purchaser's Report"; October 1979 through 1982: Economic Regulatory Administration, Form ERA-182, "Domestic Crude Oil First Purchase Report"; 1983 forward: Energy Information Administration (EIA), Form EIA-182, "Domestic Crude Oil First Purchase Report."

- **F.O.B. and Landed Costs of Crude Oil Imports**--October 1973 through September 1977, FEA, Form FEA-F701-M-0, "Transfer Pricing Report"; October 1977 through January 1979: EIA, Form FEA-F701-M-0, "Transfer Pricing Report"; February 1979 through September 1982: EIA, Form ERA-51, "Transfer Pricing Report"; October 1982 through June 1984: EIA, Form EP-51, "Monthly Foreign Crude Oil Transaction Report"; July 1984 forward: EIA, Form EIA-856, "Monthly Foreign Crude Oil Acquisition Report."

- **Refiner Acquisition Costs**--1973: EIA estimates. The domestic price was derived by adding estimated transportation costs to the reported domestic first purchase price. The imported price was derived by adding an estimated ocean transport cost to the average "Free Alongside Ship" value published by the U. S. Bureau of the Census. 1974 through January 1976: FEA, Form FEO-96, "Monthly Cost Allocation Report"; February 1976 through September 1977: FEA, Form FEA-P110-M-1, "Refiners' Monthly Cost Allocation Report"; October 1977 through June 1978: EIA, Form FEA-P110-M-1, "Refiners' Monthly Cost Allocation Report"; July 1978 through 1980: EIA, Form ERA-49, "Domestic Crude Oil Entitlements Program Refiners Monthly Report"; 1981 forward: EIA, Form EIA-14, "Refiners' Monthly Cost Report."

- **U.S. City Average Retail Prices of Motor Gasoline**--Monthly Data: U.S. Department of Labor, Bureau of Labor Statistics (BLS), *Consumer Prices: Energy,* except for leaded regular in January 1983; unleaded regular in September 1982, January 1983, March 1983, and October 1988; unleaded premium in September 1981 through December 1982; and average for all types in September 1982, January 1983, and October 1988, which include revisions from the BLS database. Annual Data: 1973 - *Platt's Oil Price Handbook and Oilmanac,* 1974, 51st Edition. 1974 forward - calculated by EIA as the simple averages of monthly data.

- **No. 2 Distillate to Residences**--1978 through 1982: EIA estimates using data from Form FEA-P112-M-1/EIA-9, "No. 2 Heating Oil Supply/Price Monitoring Report" and EIA, Form EIA-9A, "No. 2 Distillate Price Monitoring Report." See Note 6 on the previous page for additional information on the estimated data. 1983 forward: EIA, Form EIA-782A, "Refiners'/Gas Plant Operators' Monthly Petroleum Product Sales Report" and EIA, Form EIA-782B, "Reseller/Retailers' Monthly Petroleum Product Sales Report."

- **All Other Petroleum Products**--1978 through 1982: EIA estimates using data from Form FEA-302-M-1/EIA-460, "Petroleum Industry Monthly Report for Product Prices." See Note 6 on the previous page for additional information on the estimated data. 1983 forward: EIA, Form

EIA-782A, "Refiners/Gas Plant Operators' Monthly Petroleum Product Sales Report."

Natural Gas:

- **Average Wellhead Price**--Annual data through 1982: EIA, *Natural Gas Annual 1973* through *1987,* EIA, Form EIA-627, "Annual Quantity and Value of Natural Gas Report," and the U.S. Department of the Interior, Minerals Management Service. Monthly data from January 1990 forward and the 1990 average are estimated primarily on the basis of values reported by State agencies in Mississippi, New Mexico, Oklahoma, and Texas. These States together account for almost 50 percent of total U.S. marketed production. The monthly and annual estimates are adjusted to conform with final reported annual data.
- **Imports and Purchases from Producers by Major Interstate Pipeline Companies**--Form FERC-11, "Natural Gas Pipeline Company Monthly Statement."
- **City Gate**--October 1983 forward: EIA, Form EIA-857, "Monthly Report of Natural Gas Purchases and Deliveries to Consumers."
- **Residential, Commercial, Industrial and Consumer Average**--Annual data from EIA, Form EIA-176 "Annual Report of Natural and Supplemental Gas Supply and Disposition." Monthly data from EIA, Form EIA-857, "Monthly Report of Natural Gas Purchases and Deliveries to Consumers." Monthly data are adjusted to conform to final reported annual data.
- **Electric Utilities Average**--EIA, Form FPC-423, "Monthly Report of Cost and Quality of Fuels for Electric Plants."

Electricity:

- **Cost of Fossil Fuels**--EIA, Form FPC-423, "Monthly Report of Cost and Quality of Fuels for Electric Plants."
- **Retail Prices**-- *Monthly Series* - 1973 through September 1977: Federal Power Commission, Form FPC-5, "Monthly Statement of Electric Operating Revenue and Income"; October 1977 through February 1980: EIA, Form FPC-5, "Monthly Statement of Electric Operating Revenue and Income"; March 1980 through December 1982: EIA, Form FERC-5, "Electric Utility Company Monthly Statement"; January 1983 through December 1986: EIA, Form EIA-826, "Electric Utility Company Monthly Statement"; January 1987 forward: EIA, Form EIA-826, "Monthly Electric Utility Sales and Revenue Report with State Distributions." *Annual Series* - 1984 forward: EIA, *Electric Power Annual 1988,* Table 18.

Section 10. International

Crude Oil Production. World crude oil production during January 1991 was 60 million barrels per day, down 0.2 million barrels per day from the level in the previous month.

Organization of Petroleum Exporting Countries (OPEC) production during January 1991 averaged 24 million barrels per day, down 0.6 million barrels per day from the level during the previous month. Production by the Arab members of OPEC during January 1991 averaged 14 million barrels per day, down 0.6 million barrels per day from the December 1990 level. During January 1991, production increased in the United Arab Emirates by 50 thousand barrels per day. Production decreased in Saudi Arabia by 430 thousand barrels per day, in Iraq by 175 thousand barrels per day, and in Kuwait by 25 thousand barrels per day. Production was unchanged in Algeria, Libya, and Qatar. Among the non-Arab members of OPEC, production during January 1991 increased in both Indonesia and Venezuela by 50 thousand barrels per day. Production decreased in Iran by 100 thousand barrels per day. Production was unchanged in Nigeria.

Among the non-OPEC nations, production during January 1991 increased in the U.S.S.R. by 206 thousand barrels per day, in the United States by 136 thousand barrels per day, and in Canada by 10 thousand barrels per day. Production decreased in the United Kingdom by 15 thousand barrels per day and in Mexico by 10 thousand barrels per day. Production was unchanged in China.

Petroleum Consumption. In October 1990, consumption in all Organization for Economic Cooperation and Development (OECD) countries was 37 million barrels per day, 2 percent lower than the level in October 1989. Consumption was higher in Japan by 5 percent, lower in the United States by 3 percent, and essentially the same in Canada, compared with levels 1 year earlier. In October 1990, consumption in all European OECD countries combined was 12.3 million barrels per day, 5 percent lower than in the previous October. Consumption was lower in France by 13 percent, lower in the United Kingdom by 10 percent, and lower in both Italy and West Germany by 5 percent, compared with levels 1 year earlier.

Petroleum Stocks. For all OECD countries, petroleum stocks at the end of October 1990 totaled 3.6 billion barrels, 3 percent higher than the ending stock level in October 1989. Stocks were higher in Japan by 2 percent, and higher in the United States by 1 percent, but lower in Canada by 1 percent, compared with levels 1 year earlier. In October 1990, stock levels in all European OECD countries was 1.2 billion barrels, 6 percent higher than in the previous October. Stocks were higher in France by 10 percent, higher in Italy by 4 percent, higher in the United Kingdom by 2 percent, but lower in West Germany by 1 percent compared with levels 1 year earlier.

Nuclear Electricity Generation. Based on *Nucleonics Week* information for January 1991, the 20 reporting countries with nuclear capacity generated 167 gross terawatthours (billion kilowatthours) of nuclear-generated electricity, 5 percent more than in January 1990.

India's Narora 1 nuclear unit became commercially operable in January 1991. A specific date of operation was not available in time for publication.

As of January 31, 1991, there were 353 operable nuclear operating units in the 20 reporting countries. The units had a collective gross generating capacity of 296.5 gigawatts (million kilowatts). The 111 U.S. units accounted for 106.0 gross gigawatts, 35.8 percent of the total reported nuclear generating capacity.

Table 10.1a World Crude Oil[a] Production
(Thousand Barrels per Day)

	Algeria	Iraq	Kuwait[b]	Libya	Qatar	Saudi Arabia[b]	United Arab Emirates	Arab OPEC[c]	Indonesia	Iran	Nigeria	Venezuela
1973 Average	**1,097**	**2,018**	**3,020**	**2,175**	**570**	**7,596**	**1,533**	**18,009**	**1,339**	**5,861**	**2,054**	**3,366**
1974 Average	**1,009**	**1,971**	**2,546**	**1,521**	**518**	**8,480**	**1,679**	**17,724**	**1,375**	**6,022**	**2,255**	**2,976**
1975 Average	**983**	**2,262**	**2,084**	**1,480**	**438**	**7,075**	**1,664**	**15,985**	**1,307**	**5,350**	**1,783**	**2,346**
1976 Average	**1,075**	**2,415**	**2,145**	**1,933**	**497**	**8,577**	**1,936**	**18,579**	**1,504**	**5,883**	**2,067**	**2,294**
1977 Average	**1,152**	**2,348**	**1,969**	**2,063**	**445**	**9,245**	**1,999**	**19,221**	**1,686**	**5,663**	**2,085**	**2,238**
1978 Average	**1,231**	**2,563**	**2,131**	**1,983**	**487**	**8,301**	**1,831**	**18,525**	**1,635**	**5,242**	**1,897**	**2,165**
1979 Average	**1,224**	**3,477**	**2,500**	**2,092**	**508**	**9,532**	**1,831**	**21,163**	**1,591**	**3,168**	**2,302**	**2,356**
1980 Average	**1,106**	**2,514**	**1,656**	**1,787**	**472**	**9,900**	**1,709**	**19,144**	**1,577**	**1,662**	**2,055**	**2,168**
1981 Average	**1,002**	**1,000**	**1,125**	**1,140**	**405**	**9,815**	**1,474**	**15,961**	**1,605**	**1,380**	**1,433**	**2,102**
1982 Average	**987**	**1,012**	**823**	**1,150**	**330**	**6,483**	**1,250**	**12,035**	**1,339**	**2,214**	**1,295**	**1,895**
1983 Average	**968**	**1,005**	**1,064**	**1,105**	**295**	**5,086**	**1,149**	**10,672**	**1,343**	**2,440**	**1,241**	**1,801**
1984 Average	**1,014**	**1,209**	**1,157**	**1,087**	**394**	**4,663**	**1,146**	**10,670**	**1,412**	**2,174**	**1,388**	**1,798**
1985 Average	**1,037**	**1,433**	**1,023**	**1,059**	**301**	**3,388**	**1,193**	**9,434**	**1,325**	**2,250**	**1,495**	**1,677**
1986 Average	**945**	**1,690**	**1,419**	**1,034**	**308**	**4,870**	**1,330**	**11,596**	**1,390**	**2,035**	**1,467**	**1,787**
1987 Average	**1,048**	**2,079**	**1,585**	**972**	**293**	**4,265**	**1,541**	**11,783**	**1,343**	**2,298**	**1,341**	**1,752**
1988 Average	**1,040**	**2,685**	**1,492**	**1,175**	**346**	**5,086**	**1,565**	**13,389**	**1,342**	**2,240**	**1,450**	**1,903**
1989 January	1,090	2,650	1,250	1,097	400	4,918	1,735	13,140	1,401	2,800	1,454	1,862
February	1,090	2,650	1,350	1,097	420	4,673	1,650	12,929	1,401	2,850	1,454	1,862
March	1,090	2,650	1,390	1,097	340	4,515	1,675	12,757	1,401	3,200	1,604	1,862
April	1,090	2,750	1,695	1,149	330	4,914	1,705	13,633	1,401	2,900	1,654	1,862
May	1,090	2,750	2,005	1,149	410	5,022	1,705	14,131	1,401	2,500	1,654	1,862
June	1,090	2,700	2,105	1,149	420	4,825	1,975	14,264	1,401	2,800	1,754	1,913
July	1,110	2,850	1,905	1,149	400	4,923	1,921	14,258	1,384	2,800	1,854	1,875
August	1,110	3,000	1,905	1,149	400	5,022	1,961	14,546	1,434	3,000	1,754	1,926
September	1,110	2,900	1,905	1,149	400	5,218	2,156	14,838	1,384	2,850	1,754	1,926
October	1,110	3,000	1,905	1,149	400	5,317	2,256	15,136	1,434	2,950	1,654	1,977
November	1,110	2,950	2,095	1,201	380	5,701	2,356	15,792	1,434	2,800	1,854	1,977
December	1,110	3,000	2,090	1,201	395	5,696	2,406	15,897	1,434	2,900	1,854	1,977
Average	**1,100**	**2,822**	**1,802**	**1,145**	**391**	**5,064**	**1,960**	**14,284**	**1,409**	**2,863**	**1,693**	**1,907**
1990 January	1,160	2,900	1,995	1,200	370	5,595	2,055	15,275	1,250	2,700	1,750	1,990
February	1,160	2,900	1,995	1,350	380	5,695	2,030	15,510	1,250	3,000	1,750	2,140
March	1,160	2,900	2,175	1,300	400	5,825	2,055	15,815	1,350	3,000	1,750	2,040
April	1,160	2,950	1,950	1,250	400	5,950	2,100	15,760	1,400	2,900	1,850	2,040
May	1,160	3,100	1,950	1,250	365	5,450	2,110	15,385	1,350	3,200	1,750	2,040
June	1,160	3,200	1,755	1,250	365	5,455	2,050	15,235	1,350	3,100	1,750	2,040
July	1,160	3,400	1,850	1,250	370	5,450	2,050	15,530	1,380	3,050	1,750	2,040
August	1,160	1,000	100	1,400	400	5,850	1,650	11,560	1,450	3,300	1,850	2,090
September	1,190	500	100	1,400	400	7,740	2,200	13,530	1,470	3,300	1,900	2,290
October	1,210	450	75	1,550	400	7,810	2,310	13,805	1,475	3,000	1,950	2,275
November	1,210	425	75	1,500	400	8,310	R 2,375	R 14,295	1,500	3,200	1,950	2,320
December	1,210	425	75	1,500	370	8,570	R 2,450	R 14,600	1,550	3,300	1,950	2,340
Average	**1,175**	**2,008**	**1,170**	**1,350**	**385**	**6,477**	**R 2,120**	**R 14,685**	**1,399**	**3,088**	**1,829**	**2,137**
1991 January	1,210	250	50	1,500	370	8,140	2,500	14,020	1,600	3,200	1,950	2,390

[a]Includes lease condensate; excludes natural gas plant liquids.

[b]Includes about one-half of the production in the Kuwait-Saudi Arabia Neutral Zone from 1973 through July 1990. Kuwait Neutral Zone output was discontinued following Iraq's invasion of Kuwait on August 2, 1990. In January 1991, therefore, total production in the Kuwait-Saudi Arabia Neutral Zone, which amounted to approximately 40 thousand barrels per day, was all included in Saudi Arabian production.

[c]The Arab members of the Organization of Petroleum Exporting Countries (OPEC) are Algeria, Iraq, Kuwait, Libya, Qatar, Saudi Arabia, and the United Arab Emirates. Production in the Neutral Zone between Kuwait and Saudi Arabia is included in "Arab OPEC" production.

Footnotes continued on following page.

Table 10.1b World Crude Oil[a] Production (Continued)
(Thousand Barrels per Day)

	Total OPEC[d]	Persian Gulf Nations[e]	Canada	Mexico	United Kingdom	United States	China	U.S.S.R.	Other[f]	Market Economies[g]	World
1973 Average	**30,988**	**20,668**	**1,798**	**465**	**2**	**9,208**	**1,090**	**8,329**	**3,804**	**45,805**	**55,684**
1974 Average	**30,729**	**21,282**	**1,551**	**571**	**2**	**8,774**	**1,315**	**8,856**	**3,862**	**45,021**	**55,660**
1975 Average	**27,154**	**18,934**	**1,430**	**705**	**12**	**8,375**	**1,490**	**9,472**	**4,139**	**41,338**	**52,777**
1976 Average	**30,737**	**21,514**	**1,314**	**831**	**245**	**8,132**	**1,670**	**9,985**	**4,355**	**45,132**	**57,269**
1977 Average	**31,299**	**21,725**	**1,321**	**981**	**768**	**8,245**	**1,874**	**10,485**	**4,616**	**46,745**	**59,589**
1978 Average	**29,675**	**20,606**	**1,316**	**1,209**	**1,082**	**8,707**	**2,082**	**10,950**	**4,782**	**46,497**	**60,003**
1979 Average	**30,998**	**21,066**	**1,500**	**1,461**	**1,568**	**8,552**	**2,122**	**11,187**	**5,089**	**48,725**	**62,477**
1980 Average	**26,985**	**17,961**	**1,435**	**1,936**	**1,622**	**8,597**	**2,114**	**11,460**	**5,204**	**45,355**	**59,353**
1981 Average	**22,843**	**15,245**	**1,285**	**2,313**	**1,811**	**8,572**	**2,012**	**11,552**	**5,390**	**41,784**	**55,778**
1982 Average	**19,145**	**12,156**	**1,271**	**2,748**	**2,065**	**8,649**	**2,045**	**11,615**	**5,646**	**39,069**	**53,184**
1983 Average	**17,891**	**11,081**	**1,356**	**2,689**	**2,291**	**8,688**	**2,120**	**11,684**	**6,248**	**38,703**	**52,967**
1984 Average	**17,857**	**10,784**	**1,438**	**2,780**	**2,480**	**8,879**	**2,296**	**11,576**	**6,897**	**39,893**	**54,203**
1985 Average	**16,634**	**9,630**	**1,471**	**2,745**	**2,530**	**8,971**	**2,505**	**11,250**	**7,540**	**39,463**	**53,646**
1986 Average	**18,734**	**11,696**	**1,474**	**2,435**	**2,539**	**8,680**	**2,620**	**11,540**	**7,850**	**41,282**	**55,872**
1987 Average	**18,846**	**12,103**	**1,535**	**2,548**	**2,406**	**8,349**	**2,690**	**11,690**	**8,242**	**41,507**	**56,306**
1988 Average	**20,785**	**13,457**	**1,616**	**2,512**	**2,232**	**8,140**	**2,730**	**11,823**	**8,669**	**43,562**	**58,507**
1989 January	21,134	13,797	1,580	2,531	1,815	7,937	2,790	11,595	9,123	43,734	58,505
February	20,943	13,636	1,570	2,501	1,765	7,788	2,790	11,595	9,071	43,252	58,023
March	21,276	13,814	1,540	2,541	1,810	7,575	2,790	11,595	9,299	43,655	58,426
April	21,922	14,337	1,555	2,526	1,710	7,772	2,690	11,480	9,204	44,289	58,858
May	22,001	14,435	1,560	2,526	1,555	7,816	2,700	11,480	9,141	44,219	58,778
June	22,614	14,868	1,600	2,526	1,366	7,624	2,700	11,425	8,984	44,334	58,838
July	22,653	14,842	1,535	2,521	1,753	7,444	2,740	11,425	9,274	44,800	59,344
August	23,182	15,327	1,540	2,521	1,840	7,544	2,770	11,425	9,418	45,659	60,239
September	23,274	15,472	1,580	2,456	1,950	7,548	2,805	11,314	9,407	45,828	60,333
October	23,724	15,871	1,525	2,516	2,045	7,453	2,830	11,239	9,581	46,451	60,912
November	24,420	16,324	1,595	2,516	1,965	7,536	2,770	11,239	9,634	47,273	61,674
December	24,605	16,529	1,545	2,476	1,875	7,337	2,745	11,239	9,499	46,944	61,320
Average	**22,655**	**14,945**	**1,560**	**2,513**	**1,788**	**7,613**	**2,760**	**11,420**	**9,305**	**45,047**	**59,614**
1990 January	23,505	15,658	1,460	2,515	1,924	E 7,522	2,800	11,260	9,524	46,058	60,510
February	24,200	16,041	1,480	2,515	1,824	E 7,465	2,780	10,898	9,601	46,693	60,763
March	24,515	16,396	1,585	2,505	1,949	E 7,394	2,750	11,260	9,687	47,243	61,645
April	24,510	16,291	1,530	2,505	1,929	E 7,331	2,750	11,074	9,711	47,119	61,340
May	24,255	16,216	1,510	2,480	1,899	E 7,259	2,750	10,905	9,718	46,724	60,776
June	24,025	15,967	1,490	2,460	1,844	E 7,076	2,760	10,732	9,607	46,110	59,994
July	24,300	16,211	1,525	2,480	1,755	E 7,144	2,720	10,645	9,526	46,338	60,095
August	20,820	12,342	1,525	2,530	1,635	E 7,215	2,755	10,527	9,543	42,876	56,550
September	23,060	14,282	1,530	2,620	1,765	E 7,167	2,815	10,439	9,738	45,488	59,134
October	23,090	14,088	1,580	2,640	1,870	E 7,454	2,780	10,173	9,855	46,112	59,442
November	R 23,855	R 14,827	1,550	2,660	1,832	E 7,308	2,800	10,121	10,140	R 46,963	R 60,266
December	R 24,330	R 15,232	1,575	2,660	1,682	E 7,282	2,800	10,149	R 10,044	R 47,186	R 60,522
Average	**R 23,700**	**R 15,289**	**1,529**	**2,548**	**1,825**	**E 7,301**	**2,771**	**10,681**	**R 9,725**	**R 46,237**	**R 60,080**
1991 January	23,750	14,552	1,585	2,650	1,667	E 7,418	2,800	10,355	10,060	46,743	60,285

Footnotes continued.

[d]"Total OPEC" consists of Algeria, Ecuador, Gabon, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, the United Arab Emirates, and Venezuela. Production from the Neutral Zone between Kuwait and Saudi Arabia is included in "Total OPEC" production.

[e]The Persian Gulf Nations are Bahrain, Iran, Iraq, Kuwait, Qatar, Saudi Arabia, and the United Arab Emirates. Production from the Neutral Zone between Kuwait and Saudi Arabia is included in "Persian Gulf Nations" production.

[f]Other is a calculated total derived from the difference between World and the sum of production in Total OPEC, Canada, Mexico, the United Kingdom, the United States, China, and the U.S.S.R.

[g]World excluding Albania, Bulgaria, Cambodia, China, Cuba, Czechoslovakia, East Germany, Hungary, Laos, Mongolia, North Korea, Poland, Romania, U.S.S.R., Vietnam, and Yugoslavia.

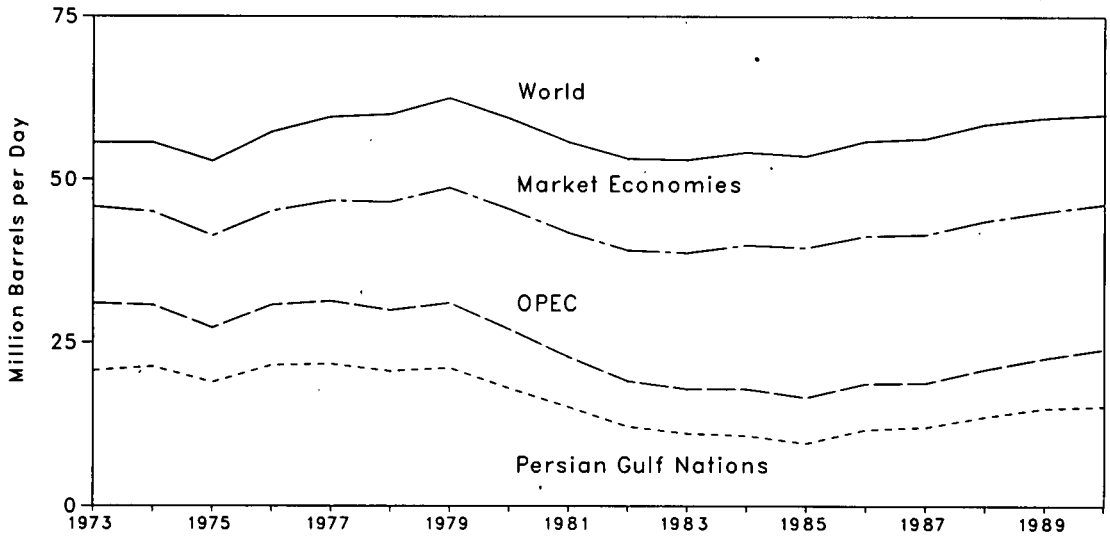
R=Revised data. E=Estimate.

Notes: • U.S. geographic coverage is the 50 States and the District of Columbia. • Monthly data are often preliminary figures and may not average to the annual totals because of rounding or because updates to the preliminary monthly data are not available.

Sources: • **United States**—1973 through 1989: Energy Information Administration (EIA), *Petroleum Supply Annual.* 1990 forward: EIA, *Petroleum Supply Monthly.* • **Other Countries**—1973 through 1989 annual data: EIA, *International Energy Annual.* 1990 annual data: average of monthly data. Monthly data: *Petroleum Intelligence Weekly,* the *Oil and Gas Journal,* and other industry sources. • **World**—1973 through 1989 annual data: *International Energy Annual.* 1990 annual data: average of monthly data. 1989 monthly data: EIA, Office of Energy Markets and End Use, International Energy Database. 1990 forward monthly data: EIA, *International Petroleum Statistics Report,* sum of all countries' monthly data.

Figure 10.1 World Crude Oil Production

Yearly



Monthly

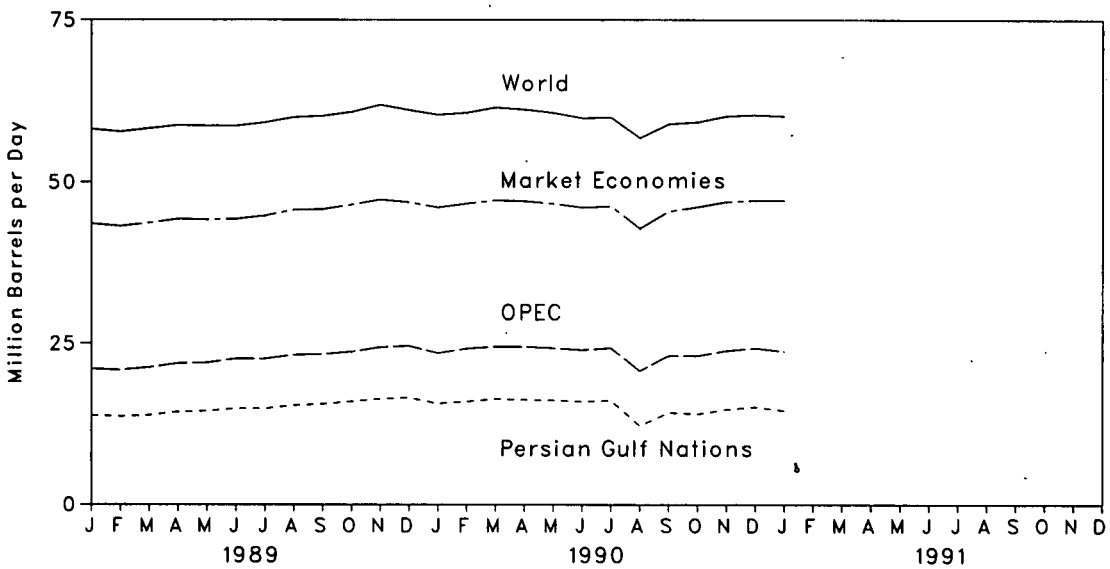
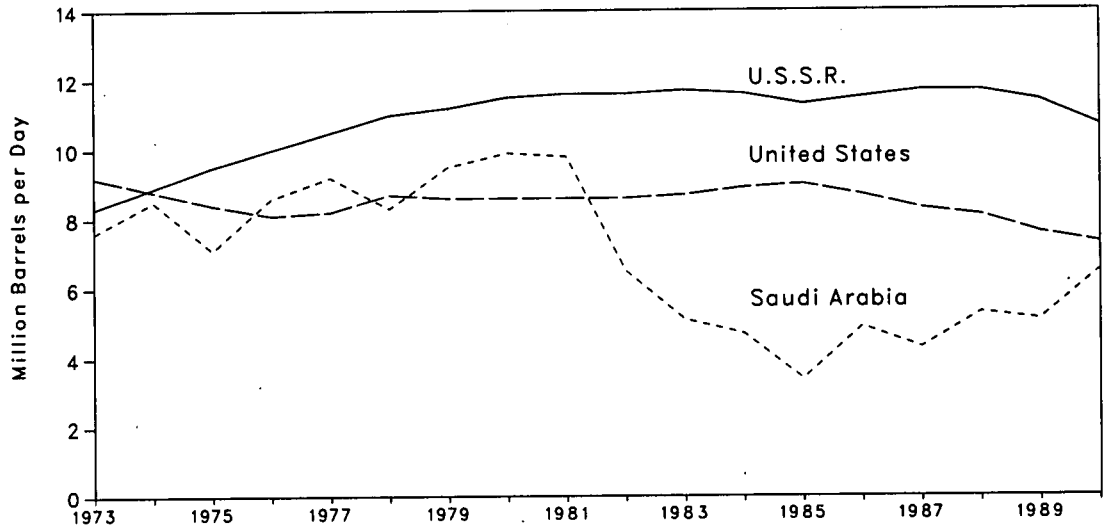


Figure 10.2 Crude Oil Production in Selected Countries

Yearly



Monthly

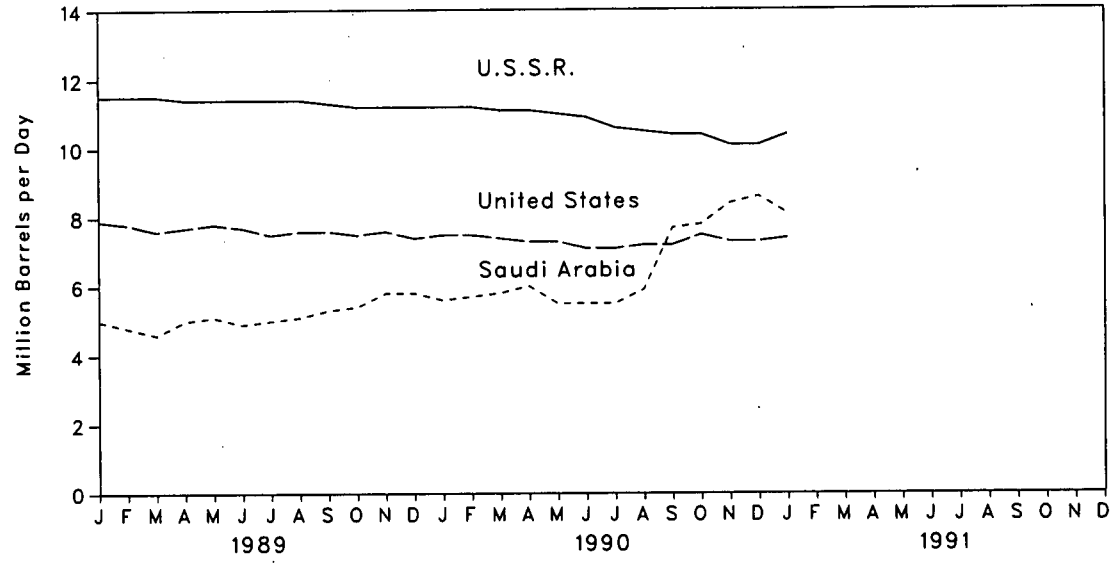


Figure 10.3 Petroleum Consumption in OECD Countries

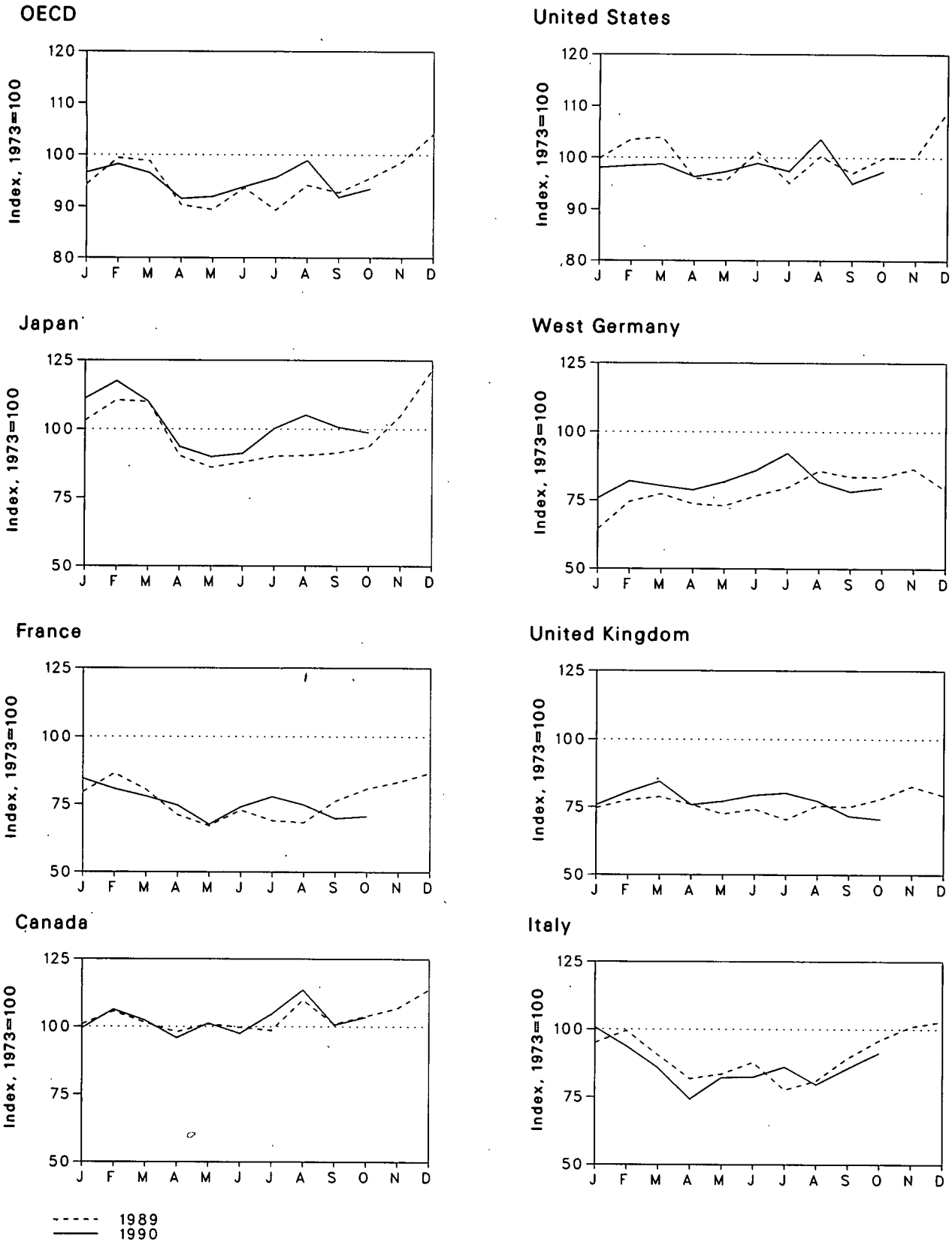


Table 10.2 Petroleum Consumption in OECD Countries[a]
(Thousand Barrels per Day)

	Canada	France	Italy	Japan	United Kingdom	United States	West Germany	OECD Europe[b]	Other OECD[c]	OECD[a]
1973 Average	**1,729**	**2,601**	**2,068**	**4,949**	**2,341**	**17,308**	**3,055**	**14,925**	**988**	**39,900**
1974 Average	**1,779**	**2,447**	**2,004**	**4,864**	**2,210**	**16,653**	**2,748**	**13,988**	**1,095**	**38,379**
1975 Average	**1,779**	**2,252**	**1,855**	**4,621**	**1,911**	**16,322**	**2,650**	**13,217**	**1,041**	**36,980**
1976 Average	**1,818**	**2,420**	**1,971**	**4,837**	**1,892**	**17,461**	**2,877**	**14,124**	**1,119**	**39,358**
1977 Average	**1,850**	**2,294**	**1,897**	**4,880**	**1,905**	**18,431**	**2,865**	**13,916**	**1,160**	**40,237**
1978 Average	**1,902**	**2,408**	**1,952**	**4,945**	**1,938**	**18,847**	**2,927**	**14,290**	**1,204**	**41,187**
1979 Average	**1,971**	**2,463**	**2,039**	**5,050**	**1,971**	**18,513**	**3,003**	**14,667**	**1,178**	**41,379**
1980 Average	**1,873**	**2,256**	**1,934**	**4,960**	**1,725**	**17,056**	**2,707**	**13,634**	**1,072**	**38,595**
1981 Average	**1,768**	**2,023**	**1,874**	**4,848**	**1,590**	**16,058**	**2,449**	**12,515**	**1,080**	**36,269**
1982 Average	**1,578**	**1,880**	**1,781**	**4,582**	**1,590**	**15,296**	**2,372**	**12,053**	**1,008**	**34,517**
1983 Average	**1,448**	**1,835**	**1,750**	**4,395**	**1,531**	**15,231**	**2,324**	**11,765**	**954**	**33,793**
1984 Average	**1,472**	**1,754**	**1,646**	**4,576**	**1,849**	**15,726**	**2,322**	**11,736**	**989**	**34,500**
1985 Average	**1,504**	**1,775**	**1,717**	**4,384**	**1,634**	**15,726**	**2,338**	**11,681**	**976**	**34,271**
1986 Average	**1,506**	**1,772**	**1,738**	**4,439**	**1,649**	**16,281**	**2,498**	**12,102**	**951**	**35,279**
1987 Average	**1,548**	**1,789**	**1,855**	**4,484**	**1,603**	**16,665**	**2,424**	**12,255**	**958**	**35,911**
1988 Average	**1,693**	**1,797**	**1,836**	**4,752**	**1,697**	**17,283**	**2,422**	**12,427**	**939**	**37,093**
1989 January	1,720	1,923	2,041	5,224	1,716	17,269	1,878	12,235	895	37,343
February	1,801	2,089	2,136	5,601	1,784	17,920	2,172	12,999	1,036	39,357
March	1,732	1,946	1,941	5,571	1,810	17,989	2,254	12,878	949	39,119
April	1,673	1,719	1,753	4,581	1,747	16,624	2,147	11,910	974	35,762
May	1,724	1,623	1,792	4,362	1,665	16,546	2,128	11,747	1,022	35,400
June	1,702	1,762	1,884	4,455	1,708	17,497	2,235	12,346	1,040	37,040
July	1,682	1,668	1,667	4,570	1,617	16,453	2,324	11,655	983	35,344
August	1,872	1,651	1,737	4,586	1,737	17,360	2,502	12,389	1,029	37,236
September	1,723	1,846	1,917	4,630	1,727	16,795	2,438	12,638	902	36,687
October	R 1,772	1,955	2,061	4,746	1,795	17,304	2,436	13,052	930	R 37,804
November	R 1,821	2,015	2,166	5,319	1,900	17,311	2,520	13,612	976	R 39,040
December	R 1,938	2,095	2,206	6,161	1,822	18,858	2,304	13,261	981	R 41,199
Average	**1,763**	**1,856**	**1,940**	**4,981**	**1,752**	**17,325**	**2,278**	**12,561**	**976**	**37,607**
1990 January	1,696	2,043	2,163	5,628	1,742	16,968	2,206	12,977	953	38,222
February	1,812	1,953	2,015	5,952	R 1,851	17,024	2,392	R 13,090	978	R 38,857
March	1,745	1,886	1,838	5,576	R 1,940	17,083	2,342	R 12,743	1,063	R 38,209
April	1,636	1,806	1,594	4,749	R 1,744	16,666	2,298	R 12,213	945	R 36,209
May	1,727	1,635	1,762	4,556	1,774	16,843	2,384	12,241	1,020	R 36,388
June	1,665	1,792	1,768	4,619	R 1,824	17,112	2,503	12,751	999	37,146
July	1,785	1,884	1,846	5,081	R 1,843	16,856	2,687	R 13,142	R 977	R 37,841
August	1,936	1,811	1,709	5,332	R 1,777	17,936	2,384	R 12,852	R 1,096	R 39,152
September	1,717	1,687	1,837	5,111	R 1,647	16,437	2,279	R 12,095	R 992	R 36,352
October	1,765	1,708	1,960	5,006	1,619	16,851	2,319	12,340	1,026	36,987
10-Mo. Average	**1,749**	**1,820**	**1,849**	**5,156**	**1,776**	**16,980**	**2,379**	**12,643**	**1,005**	**37,533**

[a]The Organization for Economic Cooperation and Development (OECD) consists of Canada, Japan, and the United States, as well as "OECD Europe" and "Other OECD."

[b]"OECD Europe" consists of Austria, Belgium, Denmark, Finland, France, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and West Germany.

[c]"Other OECD" consists of Australia, New Zealand, and the U.S. Territories.

R=Revised data.

Notes: • U.S. geographic coverage is the 50 States and the District of Columbia. • Totals may not equal sum of components due to independent rounding. • Data through 1988 are final. Subsequent data are preliminary.

Sources: • **United States**—Table 3.1a. • **All Other Data: 1973 through 1979**—International Energy Agency, *Annual Oil and Gas Statistics of OECD Countries*. **1980 forward**—International Energy Agency, quarterly and monthly computer tapes supporting *Quarterly Oil Statistics and Energy Balances of OECD Countries*.

Figure 10.4 Petroleum Stocks in OECD Countries, End of Period

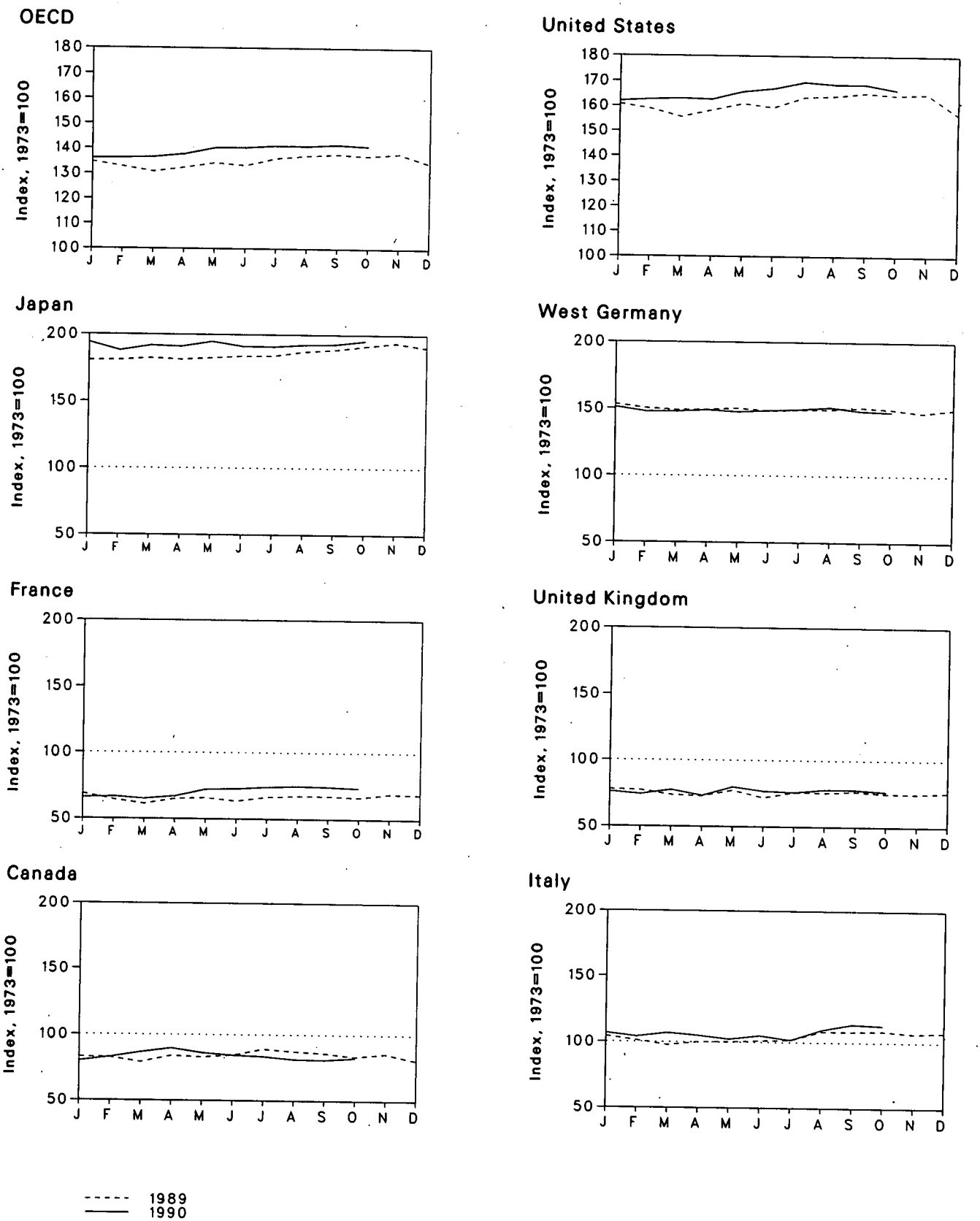


Table 10.3 Petroleum Stocks[a] in OECD Countries,[b] End of Period
(Million Barrels)

	Canada	France	Italy	Japan	United Kingdom	United States	West Germany	OECD Europe[c]	Other OECD[d]	OECD[b]
1973 Year	140	201	152	303	156	1,008	181	1,070	67	2,588
1974 Year	145	249	167	370	161	1,074	213	1,227	64	2,880
1975 Year	174	225	143	375	165	1,133	187	1,154	67	2,903
1976 Year	153	234	143	380	165	1,112	208	1,205	68	2,918
1977 Year	167	239	161	409	148	1,312	225	1,268	68	3,224
1978 Year	144	201	154	413	157	1,278	238	1,219	68	3,122
1979 Year	150	226	163	460	169	1,341	272	1,353	75	3,379
1980 Year	164	243	170	495	168	1,392	319	1,464	72	3,587
1981 Year	161	214	167	482	143	1,484	297	1,337	67	3,531
1982 Year	136	193	179	484	125	1,430	272	1,258	68	3,376
1983 Year	121	153	149	470	118	1,454	249	1,142	68	3,255
1984 Year	128	152	159	479	112	1,556	239	1,130	69	3,362
1985 Year	113	139	157	494	123	1,519	233	1,092	66	3,284
1986 Year	111	127	155	509	124	1,593	252	1,133	72	3,418
1987 Year	126	127	169	540	121	1,607	259	1,130	72	3,474
1988 Year	116	140	155	538	112	1,597	266	1,118	71	3,440
1989 January	117	138	159	547	121	1,620	277	1,133	69	3,486
February	116	129	154	548	121	1,601	272	1,103	69	3,437
March	111	123	148	552	115	1,568	270	1,085	68	3,384
April	118	131	152	549	114	1,596	271	1,091	71	3,425
May	117	132	152	553	121	1,623	272	1,111	73	3,476
June	119	128	154	557	112	1,608	269	1,096	71	3,450
July	125	133	155	557	119	1,649	270	1,120	70	3,521
August	123	135	165	567	118	1,654	271	1,133	72	3,549
September	121	135	165	572	120	1,667	274	1,137	66	3,563
October	117	134	165	580	117	1,658	272	1,121	70	3,547
November	121	139	163	588	117	1,663	267	1,125	75	3,571
December	114	138	164	577	118	1,581	271	1,133	71	3,476
1990 January	112	132	162	588	119	1,632	273	1,120	68	3,521
February	116	134	158	569	116	1,639	267	R 1,127	74	3,525
March	121	130	163	581	121	1,643	268	1,118	71	3,534
April	126	135	159	578	114	1,640	270	1,143	77	3,564
May	121	145	155	590	125	1,671	268	1,171	77	3,630
June	119	146	160	579	120	1,684	270	1,174	75	3,631
July	117	149	155	578	R 119	1,711	271	R 1,171	71	R 3,650
August	114	150	167	583	122	1,701	274	1,176	72	3,646
September	114	150	173	584	122	1,701	269	1,191	72	3,662
October	116	148	172	592	119	1,679	268	1,184	76	3,648

[a]Petroleum stocks include crude oil (including strategic reserves), unfinished oils, natural gas plant liquids, and refined products. Petroleum stocks include all nonmilitary petroleum held for storage, regardless of ownership, within each country in bulk terminals, refinery tanks, pipeline tankage, intercoastal tankers, tankers in port, and inland ship bunkers. Data exclude oil held in pipelines (except for the United States), rail and truck cars, sea-going ships' bunkers, service stations, retail stores, and tankers at sea.

[b]The Organization for Economic Cooperation and Development (OECD) consists of Canada, Japan, and the United States, as well as "OECD Europe" and "Other OECD."

[c]"OECD Europe" consists of Austria, Belgium, Denmark, Finland, France, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and West Germany.

[d]"Other OECD" consists of Australia, New Zealand, and the U.S. Territories.

R=Revised data.

Notes: • U.S. geographic coverage is the 50 States and the District of Columbia. • Totals may not equal sum of components due to independent rounding. • In the United States in January 1975, 1981, and 1983, numerous respondents were added to bulk terminal and pipeline surveys affecting subsequent stocks reported. Using the new basis, the end-of-year U.S. stocks, in million barrels, would have been 1,121 in 1974, 1,420 in 1980, and 1,462 in 1982. • Data through 1988 are final. Subsequent data are preliminary.

Sources: • **United States**—Table 3.1a. • **All Other Data**—International Energy Agency, *Quarterly Oil Statistics* and *Monthly Oil Statistics.*

Table 10.4a Nuclear Electricity Generation by Reporting Countries[a]
(Billion Gross Kilowatthours)

	Argentina	Belgium	Brazil	Canada	Finland	France	India	Italy	Japan	Netherlands	Pakistan
1973 Total	0.0	0.0	0.0	15.3	0.0	14.7	2.5	3.1	9.4	1.1	0.5
1974 Total	1.0	.1	.0	15.4	.0	14.7	1.9	3.4	18.9	3.3	.6
1975 Total	2.5	6.8	.0	13.2	.0	18.3	2.5	3.8	21.3	3.3	.5
1976 Total	2.6	10.0	.0	18.0	.0	15.8	3.2	3.8	36.6	3.9	.5
1977 Total	1.6	11.9	.0	26.6	2.7	17.9	2.8	3.4	28.2	3.7	.3
1978 Total	2.9	12.5	.0	33.0	3.3	30.6	2.3	4.5	53.1	4.1	.2
1979 Total	2.7	11.4	.0	38.4	6.7	39.9	3.2	2.6	62.0	3.5	(s)
1980 Total	2.3	12.5	.0	40.4	7.0	61.2	2.9	2.2	82.8	4.2	.1
1981 Total	2.8	12.8	.0	43.3	14.5	105.2	3.1	2.7	86.0	3.7	.2
1982 Total	1.9	15.6	.1	42.6	16.5	108.9	2.2	6.8	104.5	3.9	.1
1983 Total	3.4	24.1	.2	53.0	17.4	144.2	2.9	5.8	109.1	3.6	.2
1984 Total	4.5	27.7	2.1	53.8	18.5	191.2	4.1	6.9	127.2	3.8	.3
1985 Total	5.8	34.5	3.4	62.9	18.8	224.0	4.5	7.0	152.0	3.9	.3
1986 Total	5.7	38.6	.1	74.6	18.8	254.3	5.1	8.7	164.8	4.2	.5
1987 Total	5.2	41.9	1.0	80.6	19.4	265.5	5.5	.2	182.8	3.6	.3
1988 Total	5.1	43.1	.3	85.6	19.3	274.9	6.1	.0	173.6	3.7	.2
1989 January	.5	4.1	.2	8.1	1.8	30.5	.3	.0	15.2	.4	.0
February	.4	3.4	.2	6.9	1.6	27.1	.3	.0	14.4	(s)	.0
March	.5	3.6	.2	7.7	1.8	27.8	.3	.0	16.2	.2	.0
April	.4	3.0	.3	7.3	1.7	25.5	.4	.0	13.3	.4	.0
May	.5	3.0	(s)	6.2	1.2	23.2	.4	.0	13.8	.4	.0
June	.5	3.0	.2	5.8	1.6	23.9	.4	.0	14.3	.4	.0
July	.5	3.2	.2	7.1	1.4	23.7	.3	.0	17.4	.4	.0
August	(s)	3.7	.0	6.9	1.5	21.0	.2	.0	18.1	.4	.0
September	.5	3.3	.2	6.6	1.3	22.6	.3	.0	15.5	.4	.0
October	.5	3.6	.0	6.6	1.4	24.6	.4	.0	14.8	.4	(s)
November	.5	3.6	.0	6.3	1.7	24.9	.5	.0	14.7	.4	(s)
December	.4	3.6	.0	7.6	1.8	27.8	.4	.0	16.0	.4	(s)
Total	5.0	41.2	1.6	83.2	18.8	302.5	4.0	.0	183.7	4.0	.1
1990 January	.5	3.9	.1	7.3	1.8	28.7	.4	.0	15.0	.3	(s)
February	.4	3.5	.2	5.8	1.6	23.5	.5	.0	12.0	(s)	(s)
March	.7	4.2	.0	6.2	1.7	25.8	.5	.0	14.6	(s)	(s)
April	.6	3.6	.1	5.4	1.7	E 26.5	.5	.0	15.6	(s)	(s)
May	.6	2.9	E .0	4.4	1.3	23.9	.4	.0	16.6	.4	.1
June	.7	2.9	.2	5.1	1.3	E 23.8	.4	.0	16.0	.3	.1
July	.7	3.5	E .0	6.6	1.6	23.9	.5	.0	18.5	.4	.1
August	.7	3.7	.3	5.9	1.2	23.3	.5	.0	19.2	.4	.1
September	.5	3.3	.1	5.5	1.4	26.5	.5	.0	15.8	.4	(s)
October	E .2	3.4	.2	7.1	1.8	27.6	.5	.0	15.8	.4	.0
November	E .2	3.6	.3	7.0	1.7	25.8	.5	.0	14.8	E (s)	(s)
December	E .2	4.3	.2	7.2	1.8	30.4	.6	.0	16.7	.4	(s)
Total	E 6.1	42.7	E 1.7	73.5	18.9	E 309.8	5.9	.0	190.6	E 3.1	.4
1991 January	E .2	4.2	.2	7.6	1.8	33.5	.5	.0	18.0	.3	(s)

[a]Figures are for gross generation, as opposed to net generation. Net figures are generally less than gross figures by about 5 percent, the difference being the energy consumed by the generating plants themselves.
[b]Monthly data for the United Kingdom are totals for 4- or 5-week reporting periods, not calendar months.
[c]Total equals all countries with nuclear generating capacity except Bulgaria, China, Cuba, Czechoslovakia, the German Democratic Republic, Hungary, North Korea, Poland, Romania, the U.S.S.R., and Yugoslavia.
[d]Some Central Electricity Generating Board figures were unavailable for March 1988. This number does not reflect the total generation for March.
[e]Total nuclear generation for August 1990 forward is not equal to the sum of the generation from the reporting countries listed because Mexico, which began generating nuclear electricity in August 1990, is not shown separately in the table.
E=Estimate. (s)=Less than 0.05 billion gross kilowatthours.
Footnotes continued on following page.

Table 10.4b Nuclear Electricity Generation by Reporting Countries[a] (Continued)
(Billion Gross Kilowatthours)

	South Africa	South Korea	Spain	Sweden	Switzerland	Taiwan	United Kingdom[b]	West Germany	Total[c] Excluding U.S.	United States	Total[c]
1973 Total	**0.0**	**0.0**	**6.5**	**2.1**	**6.2**	**0.0**	**28.2**	**11.9**	**101.4**	**87.8**	**189.3**
1974 Total	**.0**	**.0**	**7.2**	**2.3**	**7.0**	**.0**	**33.8**	**12.0**	**121.7**	**124.3**	**246.0**
1975 Total	**.0**	**.0**	**7.5**	**12.0**	**7.7**	**.0**	**30.5**	**21.7**	**151.8**	**182.3**	**334.1**
1976 Total	**.0**	**.0**	**7.6**	**16.0**	**7.9**	**.0**	**36.8**	**24.5**	**187.1**	**201.8**	**388.9**
1977 Total	**.0**	**.1**	**6.5**	**19.9**	**8.1**	**.1**	**38.1**	**36.0**	**207.8**	**264.2**	**472.0**
1978 Total	**.0**	**2.3**	**7.6**	**23.8**	**8.3**	**2.7**	**36.6**	**35.7**	**263.5**	**292.4**	**555.9**
1979 Total	**.0**	**3.2**	**6.7**	**21.0**	**11.8**	**6.3**	**38.5**	**42.2**	**300.1**	**270.6**	**570.7**
1980 Total	**.0**	**3.5**	**5.2**	**26.7**	**14.3**	**8.2**	**37.2**	**43.7**	**354.3**	**265.4**	**619.8**
1981 Total	**.0**	**2.9**	**9.4**	**37.7**	**15.2**	**10.7**	**38.9**	**53.4**	**442.4**	**288.5**	**730.9**
1982 Total	**.0**	**3.8**	**8.8**	**38.8**	**15.0**	**13.1**	**44.1**	**63.4**	**489.9**	**298.6**	**788.5**
1983 Total	**.0**	**9.0**	**10.7**	**40.4**	**15.5**	**18.9**	**49.6**	**65.8**	**573.9**	**313.6**	**887.5**
1984 Total	**4.2**	**11.8**	**23.1**	**51.3**	**16.3**	**24.3**	**54.1**	**92.6**	**717.7**	**343.8**	**1,061.5**
1985 Total	**5.7**	**16.5**	**28.0**	**58.6**	**22.4**	**28.7**	**59.6**	**125.8**	**862.4**	**402.6**	**1,265.0**
1986 Total	**9.3**	**26.1**	**37.5**	**69.9**	**22.5**	**26.9**	**58.2**	**118.9**	**944.8**	**432.9**	**1,377.8**
1987 Total	**6.6**	**37.8**	**41.3**	**67.2**	**23.0**	**33.1**	**56.2**	**130.2**	**1,001.3**	**478.5**	**1,479.8**
1988 Total	**11.1**	**38.7**	**49.2**	**69.4**	**22.7**	**29.9**	**59.4**	**145.2**	**1,037.5**	**554.1**	**1,591.6**
1989 January	1.1	3.4	4.9	7.2	2.3	2.4	6.8	13.0	102.1	48.7	150.9
February	.5	3.7	4.2	6.5	2.1	1.8	6.3	13.5	92.9	40.8	133.7
March	.6	4.4	4.2	6.7	2.3	1.7	6.7	14.8	99.8	41.8	141.6
April	.7	3.7	4.8	5.6	2.2	2.2	5.9	13.4	90.9	35.3	126.2
May	.7	3.8	4.7	3.9	2.0	2.1	5.7	11.1	82.7	40.8	123.5
June	1.1	3.4	4.2	3.3	1.2	2.0	6.7	9.6	81.6	45.1	126.7
July	1.1	4.0	5.4	2.6	1.1	2.7	4.8	8.7	84.4	55.2	139.7
August	1.1	4.9	5.2	3.3	1.0	2.9	4.8	11.4	86.4	57.6	144.0
September	1.3	4.1	4.6	5.0	1.9	2.5	6.6	11.0	87.8	47.0	134.8
October	1.3	4.5	4.7	6.8	2.3	2.7	5.2	13.5	93.2	45.7	138.8
November	1.2	3.6	4.6	7.0	2.2	2.6	5.3	14.2	93.2	45.6	138.8
December	1.1	3.6	4.7	7.5	2.3	2.8	6.9	14.4	101.3	53.3	154.6
Total	**11.7**	**47.2**	**56.1**	**65.6**	**22.8**	**28.3**	**71.6**	**148.7**	**1,096.2**	**557.0**	**1,653.2**
1990 January	.6	4.0	5.4	7.4	2.3	2.6	6.0	15.4	101.7	57.7	159.4
February	.5	4.6	4.5	6.6	2.1	2.1	5.8	12.8	86.6	52.3	138.8
March	.5	4.1	4.5	6.4	2.3	2.6	6.2	13.2	93.5	48.4	141.9
April	.6	4.3	4.8	5.4	2.2	2.2	5.2	12.8	E 91.6	40.6	E 132.2
May	1.2	4.0	4.1	4.8	2.1	2.8	5.2	12.2	E 87.0	45.1	E 132.1
June	1.2	4.4	3.5	4.3	1.3	2.9	5.2	9.8	E 83.5	48.5	E 132.0
July	1.1	5.2	4.4	2.7	1.7	3.5	E 4.2	10.0	E 88.7	55.3	E 144.0
August	.8	4.4	5.0	4.2	1.0	3.4	4.9	9.3	• 88.3	57.9	• 146.2
September	.6	4.2	4.1	5.2	1.9	3.0	E 5.0	9.6	Ee 87.6	53.3	Ee 140.8
October	.6	4.4	3.9	6.7	2.3	3.0	4.8	13.0	Ee 95.5	45.6	Ee 141.2
November	.5	4.0	4.7	4.8	2.2	2.3	6.4	13.9	Ee 93.3	45.6	Ee 138.9
December	.6	3.8	5.4	7.4	2.3	2.4	6.9	15.2	Ee 105.9	54.2	Ee 160.1
Total	**8.9**	**51.4**	**54.3**	**65.9**	**23.6**	**32.9**	**E 65.6**	**147.2**	**Ee 1,103.1**	**604.4**	**Ee 1,707.5**
1991 January	.6	4.1	5.3	7.6	2.3	2.4	6.4	15.2	Ee 110.3	56.6	Ee 166.9

Footnotes continued.

Notes: • U.S. geographic coverage is the 50 States and the District of Columbia. • Monthly data may not sum to annual totals due to independent rounding, revisions in annual data not reflected in the monthly data, or both. Data for countries may not sum to world totals due to independent rounding.

Source: *Nucleonics Week* (New York: McGraw-Hill Publishing Company).

Appendix. Conversion Factors

Using Conversion Factors

Physical conversion factors can be used to compare energy quantities expressed in units of volume and weight. For example, 6.65 barrels of crude oil weighs approximately 1 short ton, as indicated in Table A1.

However, the heat content of a "short ton" of crude oil is greater than the heat content of a short ton of coal. The heat content, measured in British thermal units (Btu), of a given quantity of energy can be calculated using the thermal conversion factors presented in Tables A2 through A9.

Based on the thermal conversion factor shown for crude oil (production) in Table A2, a short ton of crude oil has a heat content of approximately 39 million Btu (6.65 barrels $\times$ 5.8 million Btu per barrel = 38.57 million Btu, which rounds to 39). As calculated from the thermal conversion factor for coal (production) in Table A6, a short ton of coal has a heat content of 22 million Btu (1 short ton $\times$ 21.922 million Btu per short ton = 21.922 million Btu, which rounds to 22). A short ton of crude oil, therefore, has a heat content almost two times greater than does a short ton of coal.

The thermal conversion factors in Tables A2 through A9 are computed from final annual data. When the current year's final data are not yet available for publication, thermal conversion factors for the current year are computed from the best available data and are labeled "preliminary." The source of each factor is described in a section entitled "Thermal Conversion Factor Source Documentation," which follows Table A9 in this appendix.

Thermal conversion factors for hydrocarbon mixes (Table A2) are weighted averages of the thermal conversion factors for each hydrocarbon included in the mix. For example, in calculating the thermal conversion factor for a 60/40 butane/propane mixture, the thermal conversion factor for butane is weighted 1.5 times more heavily than the thermal conversion factor for propane.

Table A1. Physical Conversion Factors for Energy Units

Unit	Equivalent	
Crude Oil (Average Gravity)		
1 U.S. barrel	42	U.S. gallons
1 short ton	6.65	barrels
1 metric ton	7.33	barrels
Coal		
1 short ton	2,000	pounds
1 long ton	2,240	pounds
1 metric ton	2,204.62	pounds
1 metric ton	1,000	kilograms
Uranium		
1 short ton U_3O_8	0.769	metric ton of uranium
1 short ton UF_6	0.613	metric ton of uranium
1 metric ton UF_6	0.676	metric ton of uranium
Wood (Average Dry Hardwood)		
1 cord	1.25	short tons
1 cord	128	cubic feet
1 cubic foot	0.028	cubic meters

Sources: See "Thermal Conversion Factor Source Documentation," which follows Table A9.

Table A2. Approximate Heat Content of Petroleum Products
(Million Btu per Barrel)

Petroleum Product	Heat Content	Petroleum Product	Heat Content
Asphalt	6.636	Petrochemical Feedstocks	
Aviation Gasoline	5.048	Naphtha Less Than 401 °F	5.248
Butane	4.326	Other Oils Equal to or Greater Than 401 °F	5.825
Butane-Propane Mixture[a]	4.130	Still Gas	6.000
Distillate Fuel Oil	5.825	Petroleum Coke	6.024
Ethane	3.082	Plant Condensate	5.418
Ethane-Propane Mixture[b]	3.308	Propane	3.836
Isobutane	3.974	Residual Fuel Oil	6.287
Jet Fuel, Kerosene Type	5.670	Road Oil	6.636
Jet Fuel, Naphtha Type	5.355	Special Naphthas	5.248
Kerosene	5.670	Still Gas	6.000
Lubricants	6.065	Unfinished Oils	5.825
Motor Gasoline	5.253	Unfractionated Stream	5.418
Natural Gasoline and Isopentane	4.620	Waxes	5.537
Pentanes Plus	4.620	Miscellaneous	5.796

[a]60 percent butane and 40 percent propane.
[b]70 percent ethane and 30 percent propane.
Sources: See "Thermal Conversion Factor Source Documentation," which follows Table A9.

Table A3. Approximate Heat Content of Crude Oil,[a] Crude Oil and Products, and Natural Gas Plant Liquids
(Million Btu per Barrel)

	Crude Oil Only			Crude Oil and Products		Natural Gas Plant Liquids
	Production	Imports	Exports	Imports	Exports	
1973	5.800	5.817	5.800	5.897	5.752	4.049
1974	5.800	5.827	5.800	5.884	5.774	4.011
1975	5.800	5.821	5.800	5.858	5.748	3.984
1976	5.800	5.808	5.800	5.856	5.745	3.964
1977	5.800	5.810	5.800	5.834	5.797	3.941
1978	5.800	5.802	5.800	5.839	5.808	3.925
1979	5.800	5.810	5.800	5.810	5.832	3.955
1980	5.800	5.812	5.800	5.796	5.820	3.914
1981	5.800	5.818	5.800	5.775	5.821	3.930
1982	5.800	5.826	5.800	5.775	5.820	3.872
1983	5.800	5.825	5.800	5.774	5.800	3.839
1984	5.800	5.823	5.800	5.745	5.850	3.812
1985	5.800	5.832	5.800	5.736	5.814	3.815
1986	5.800	5.903	5.800	5.808	5.832	3.797
1987	5.800	5.901	5.800	5.820	5.858	3.804
1988	5.800	5.900	5.800	5.820	5.840	3.800
1989	5.800	5.906	5.800	5.833	5.857	3.826
1990[b]	5.800	5.910	5.800	5.834	5.833	3.821
1991[b]	5.800	5.910	5.800	5.834	5.833	3.821

[a]Includes lease condensate.
[b]Preliminary.
Sources: See "Thermal Conversion Factor Source Documentation," which follows Table A9.

Table A4. Approximate Heat Content of Petroleum Product Weighted Averages[a]
(Million Btu per Barrel)

	Consumption					Imports	Exports	LPG Consumption
	Residential and Commercial	Industrial	Transportation	Electric Utilities	Total			
1973	5.387	5.568	5.395	6.245	5.515	5.983	5.752	3.746
1974	5.377	5.538	5.394	6.238	5.504	5.959	5.773	3.730
1975	5.358	5.528	5.392	6.250	5.494	5.935	5.747	3.715
1976	5.383	5.538	5.395	6.251	5.504	5.980	5.743	3.711
1977	5.389	5.555	5.400	6.249	5.518	5.908	5.796	3.677
1978	5.382	5.553	5.404	6.251	5.519	5.955	5.814	3.669
1979	5.471	5.418	5.428	6.258	5.494	5.811	5.864	3.680
1980	5.468	5.376	5.440	6.254	5.479	5.748	5.841	3.674
1981	5.409	5.313	5.432	6.258	5.448	5.659	5.837	3.643
1982	5.392	5.263	5.422	6.258	5.415	5.664	5.829	3.615
1983	5.286	5.273	5.415	6.255	5.406	5.677	5.800	3.614
1984	5.261	5.253	5.424	6.251	5.395	5.613	5.867	3.599
1985	5.203	5.258	5.424	6.247	5.387	5.572	5.819	3.603
1986	5.238	5.330	5.425	6.257	5.418	5.624	5.839	3.640
1987	5.245	5.285	5.427	6.249	5.403	5.599	5.860	3.659
1988	5.216	5.293	5.430	6.250	5.410	5.618	5.842	3.652
1989	5.151	5.287	5.434	6.241	5.410	5.641	5.869	3.683
1990[b]	5.154	5.470	5.437	6.247	5.449	5.621	5.838	3.628
1991[b]	5.154	5.470	5.437	6.247	5.449	5.621	5.838	3.628

[a]Weighted averages of the products included in each category are calculated using heat content values shown in Table A1.
[b]Preliminary.
Sources: See "Thermal Conversion Factor Source Documentation," which follows Table A9.

Table A5. Approximate Heat Content of Natural Gas
(Btu per Cubic Foot)

	Production		Consumption			Imports	Exports
	Dry	Marketed (Wet)	Non-Electric Utility Users	Electric Utilities	Total		
1973	1,021	1,093	1,020	1,024	1,021	1,026	1,023
1974	1,024	1,097	1,024	1,022	1,024	1,027	1,016
1975	1,021	1,095	1,020	1,026	1,021	1,026	1,014
1976	1,020	1,093	1,019	1,023	1,020	1,025	1,013
1977	1,021	1,093	1,019	1,029	1,021	1,026	1,013
1978	1,019	1,088	1,016	1,034	1,019	1,030	1,013
1979	1,021	1,092	1,018	1,035	1,021	1,037	1,013
1980	1,026	1,098	1,024	1,035	1,026	1,022	1,013
1981	1,027	1,103	1,025	1,035	1,027	1,014	1,011
1982	1,028	1,107	1,026	1,036	1,028	1,018	1,011
1983	1,031	1,115	1,031	1,030	1,031	1,024	1,010
1984	1,031	1,109	1,030	1,035	1,031	1,005	1,010
1985	1,032	1,112	1,031	1,038	1,032	1,002	1,011
1986	1,030	1,110	1,029	1,034	1,030	997	1,008
1987	1,031	1,112	1,031	1,032	1,031	999	1,011
1988	1,029	1,109	1,029	1,028	1,029	1,002	1,018
1989	1,031	1,107	1,030	1,034	1,031	1,004	1,019
1990[a]	1,031	1,107	1,030	1,034	1,031	1,004	1,019
1991[a]	1,031	1,107	1,030	1,034	1,031	1,004	1,019

[a]Preliminary.
Sources: See "Thermal Conversion Factor Source Documentation," which follows Table A9.

Table A6. Approximate Heat Content of Coal
(Million Btu per Short Ton)

	Production	Consumption					Imports	Exports
		Residential and Commercial	Coke Plants	Other Industrial[a]	Electric Utilities[b]	Total		
1973	23.376	22.831	26.780	22.586	22.246	23.057	25.000	26.596
1974	23.072	22.479	26.778	22.419	21.781	22.677	25.000	26.700
1975	22.897	22.261	26.782	22.436	21.642	22.506	25.000	26.562
1976	22.855	22.774	26.781	22.530	21.679	22.498	25.000	26.601
1977	22.597	22.919	26.787	22.322	21.508	22.265	25.000	26.548
1978	22.248	22.466	26.789	22.207	21.275	22.017	25.000	26.478
1979	22.454	22.242	26.788	22.452	21.364	22.100	25.000	26.548
1980	22.415	22.543	26.790	22.690	21.295	21.947	25.000	26.384
1981	22.308	22.474	26.794	22.585	21.085	21.713	25.000	26.160
1982	22.239	22.695	26.797	22.712	21.194	21.674	25.000	26.223
1983	22.052	22.775	26.798	22.691	21.133	21.576	25.000	26.291
1984	22.010	22.844	26.799	22.543	21.101	21.573	25.000	26.402
1985	21.870	22.646	26.798	22.020	20.959	21.366	25.000	26.307
1986	21.913	22.947	26.798	22.198	21.084	21.462	25.000	26.292
1987	21.922	23.404	26.799	22.381	21.136	21.517	25.000	26.291
1988	21.823	23.571	26.799	22.360	20.900	21.328	25.000	26.299
1989	21.765	23.650	26.800	22.347	20.848	21.272	25.000	26.160
1990[c]	21.827	23.574	26.801	22.428	20.945	21.344	25.000	26.197
1991[c]	21.827	23.574	26.801	22.428	20.945	21.344	25.000	26.197

[a]Includes transportation.
[b]Data shown in this column are not the same as those shown in the *Electric Power Monthly* (EPM). The EPM data report coal receipts; the data shown here represent coal consumption.
[c]Preliminary.
Sources: See "Thermal Conversion Factor Source Documentation," which follows Table A9.

Table A7. Approximate Heat Content of Bituminous Coal and Lignite
(Million Btu per Short Ton)

	Production	Consumption					Imports	Exports
		Residential and Commercial	Coke Plants	Other Industrial[a]	Electric Utilities	Total		
1973	23.391	22.887	26.800	22.585	22.262	23.073	25.000	26.612
1974	23.087	22.523	26.800	22.420	21.799	22.694	25.000	26.716
1975	22.910	22.258	26.800	22.439	21.659	22.522	25.000	26.573
1976	22.863	22.819	26.800	22.528	21.692	22.509	25.000	26.613
1977	22.597	22.594	26.800	22.290	21.521	22.266	25.000	26.561
1978	22.242	22.078	26.800	22.175	21.284	22.014	25.000	26.501
1979	22.449	21.884	26.800	22.436	21.372	22.100	25.000	26.570
1980	22.411	22.488	26.800	22.690	21.301	21.950	25.000	26.404
1981	22.301	22.010	26.800	22.572	21.091	21.710	25.000	26.176
1982	22.233	22.226	26.800	22.695	21.200	21.670	25.000	26.231
1983	22.048	22.438	26.800	22.680	21.141	21.576	25.000	26.300
1984	22.005	22.406	26.800	22.525	21.108	21.570	25.000	26.410
1985	21.867	22.568	26.800	22.013	20.965	21.368	25.000	26.320
1986	21.908	22.669	26.800	22.185	21.091	21.462	25.000	26.308
1987	21.918	22.800	26.800	22.360	21.143	21.514	25.000	26.304
1988	21.817	23.135	26.800	22.341	20.905	21.324	25.000	26.308
1989	21.759	22.917	26.800	22.324	20.854	21.268	25.000	26.166
1990[b]	21.823	22.755	26.800	22.407	20.951	21.340	25.000	26.202
1991[b]	21.823	22.755	26.800	22.407	20.951	21.340	25.000	26.202

[a]Includes transportation.
[b]Preliminary.
Sources: See "Thermal Conversion Factor Source Documentation," which follows Table A9.

Table A8. Approximate Heat Content of Anthracite and Coal Coke
(Million Btu per Short Ton)

	Anthracite					Coal Coke Imports and Exports
	Production	Consumption			Imports and Exports	
		Non-Electric Utility Users	Electric Utilities	Total		
1973	22.132	22.674	17.920	21.464	25.400	24.800
1974	21.711	22.330	17.200	20.919	25.400	24.800
1975	21.582	22.272	17.064	20.762	25.400	24.800
1976	22.045	22.618	17.526	21.254	25.400	24.800
1977	22.661	24.101	17.244	22.066	25.400	24.800
1978	23.079	24.388	17.104	22.398	25.400	24.800
1979	23.170	24.272	17.454	22.069	25.400	24.800
1980	22.869	22.719	17.652	21.405	25.400	24.800
1981	23.291	23.749	18.168	22.080	25.400	24.800
1982	23.289	24.578	18.160	22.518	25.400	24.800
1983	22.734	24.536	16.516	21.583	25.400	24.800
1984	23.107	25.128	17.018	22.322	25.400	24.800
1985	22.428	23.031	16.784	20.817	25.400	24.800
1986	23.084	24.399	15.578	21.512	25.400	24.800
1987	23.108	26.293	15.962	22.435	25.400	24.800
1988	23.266	26.021	17.312	22.423	25.400	24.800
1989	23.385	27.196	16.310	22.623	25.400	24.800
1990[a]	23.385	27.751	16.108	22.731	25.400	24.800
1991[a]	23.385	27.751	16.108	22.731	25.400	24.800

[a]Preliminary.
Sources: See "Thermal Conversion Factor Source Documentation," which follows Table A9.

Table A9. Approximate Heat Rates for Electricity
(Btu per Kilowatthour)

	By Type of Generation			Electricity Consumption
	Fossil Fuel Steam-Electric Power Plant Generation[a]	Nuclear Power Plant Generation	Geothermal Energy Power Plant Generation	
1973	10,389	10,903	21,674	3,412
1974	10,442	11,161	21,674	3,412
1975	10,406	11,013	21,611	3,412
1976	10,373	11,047	21,611	3,412
1977	10,435	10,769	21,611	3,412
1978	10,361	10,941	21,611	3,412
1979	10,353	10,879	21,545	3,412
1980	10,388	10,908	21,639	3,412
1981	10,453	11,030	21,639	3,412
1982	10,454	11,073	21,629	3,412
1983	10,520	10,905	21,290	3,412
1984	10,323	10,843	21,303	3,412
1985	10,339	10,813	21,263	3,412
1986	10,261	10,799	21,263	3,412
1987	10,253	10,776	21,263	3,412
1988	10,235	10,743	21,096	3,412
1989	10,331	10,724	21,096	3,412
1990[b]	10,331	10,724	21,096	3,412
1991[b]	10,331	10,724	21,096	3,412

[a]This thermal conversion factor is used for hydroelectric power generation and for wood and waste, wind, photovoltaic, and solar thermal energy consumed at electric utilities.
[b]Preliminary.
Sources: See "Thermal Conversion Factor Source Documentation," which follows this table.

Thermal Conversion Factor Source Documentation

Approximate Heat Content of Petroleum Products

Asphalt. The Energy Information Administration (EIA) adopted the thermal conversion factor of 6.636 million British thermal units (Btu) per barrel as estimated by the Bureau of Mines and first published in the *Petroleum Statement, Annual, 1956.*

Aviation Gasoline. EIA adopted the thermal conversion factor of 5.048 million Btu per barrel as adopted by the Bureau of Mines from the Texas Eastern Transmission Corporation publication *Competition and Growth in American Energy Markets 1947-1985,* 1968.

Butane. EIA adopted the Bureau of Mines thermal conversion factor of 4.326 million Btu per barrel as published in the *California Oil World and Petroleum Industry,* First Issue, April 1942.

Butane-Propane Mixture. EIA adopted the Bureau of Mines calculation of 4.130 million Btu per barrel based on an assumed mixture of 60 percent butane and 40 percent propane. See "Butane" and "Propane."

Distillate Fuel Oil. EIA adopted the Bureau of Mines thermal conversion factor of 5.825 million Btu per barrel as reported in a Bureau of Mines internal memorandum, *Bureau of Mines Standard Average Heating Value of Various Fuels, adopted January 3, 1950.*

Ethane. EIA adopted the Bureau of Mines thermal conversion factor of 3.082 million Btu per barrel as published in the *California Oil World and Petroleum Industry,* First Issue, April 1942.

Ethane-Propane Mixture. EIA calculated 3.308 million Btu per barrel based on an assumed mixture of 70 percent ethane and 30 percent propane. See "Ethane" and "Propane."

Isobutane. EIA adopted the Bureau of Mines thermal conversion factor of 3.974 million Btu per barrel as published in the *California Oil World and Petroleum Petroleum Industry,* First Issue, April 1942.

Jet Fuel, Kerosene Type. EIA adopted the Bureau of Mines thermal conversion factor of 5.670 million Btu per barrel as published for "Jet Fuel, Commercial" by the Texas Eastrn Transmission Corporation in the report *Competition and Growth in American Energy Markets 1947-1985,* 1968.

Jet Fuel, Naphtha Type. EIA adopted the Bureau of Mines thermal conversion factor of 5.355 million Btu per barrel as published for "Jet Fuel, Military" by the Texas Eastern Transmission Corporation in the report *Competition and Growth in American Energy Markets 1947-1985,* 1968.

Kerosene. EIA adopted the Bureau of Mines thermal conversion factor of 5.670 million Btu per barrel as reported in a Bureau of Mines internal memorandum, *Bureau of Mines Standard Average Heating Values of Various Fuels,* adopted January 3, 1950.

Lubricants. EIA adopted the thermal conversion factor of 6.065 million Btu per barrel as estimated by the Bureau of Mines and first published in the *Petroleum Statement, Annual, 1956.*

Miscellaneous Products. EIA adopted the thermal conversion factor of 5.796 million Btu per barrel as estimated by the Bureau of Mines and first published in the *Petroleum Statement, Statement, Annual, 1956.*

Motor Gasoline. EIA adopted the Bureau of Mines thermal conversion factor of 5.253 million Btu per barrel as published for "Gasoline, Motor Fuel" by the Texas Eastern Transmission Corporation in the report *Competion and Growth in American Energy Markets 1947-1985,* 1968.

Natural Gasoline. EIA adopted the thermal conversion factor of 4.620 million Btu per barrel as estimated by the Bureau of Mines and first published in the *Petroleum Statement, Annual, 1956.*

Pentanes Plus. EIA assumed the thermal conversion factor to be 4.620 million Btu per barrel or equal to that for natural gasoline. See "Natural Gasoline."

Petrochemical Feedstocks, Naphtha Less Than 401 Degrees Fahrenheit. Assumed by EIA to be 5.248 million Btu per barrel, equal to the thermal conversion to the thermal conversion factor for special naphtha. See "Special Naphtha."

Petrochemical Feedstocks, Oils Equal to or Greater Than 401 Degrees Fahrenheit. Assumed by EIA to be 5.825 million Btu per barrel, equal to the thermal conversion factor for distillate fuel oil. See "Distillate Fuel Oil."

Petrochemical Feedstocks, Still Gas. Assumed by EIA to be 6.000 million Btu per barrel, equal to the thermal conversion factor for still gas. See "Still Gas."

Petroleum Coke. EIA adopted the thermal conversion factor of 6.024 million Btu per barrel as reported in Btu per short ton in the Bureau of Mines internal Bureau of Mines internal memorandum *Bureau of Mines Standard Average Heating Value of Various Fuels, adopted January 3, 1950.* The Bureau of Mines calculated this factor by dividing the 30,120,000 Btu per

short ton as given in the referenced Bureau of Mines internal memorandum by 5.0 barrels per short ton as given in the Bureau of Mines Form 6-1300-M and successor EIA forms.

Plant Condensate. Estimated to be 5.418 million Btu per barrel by EIA from data provided by McClanahan Consultants, Inc., Houston, Texas.

Propane. EIA adopted the Bureau of Mines thermal conversion factor of 3.836 million Btu per barrel as published in the *California Oil World and Petroleum Industry,* First Issue, April 1942.

Residual Fuel Oil. EIA adopted the therml conversion factor of 6.287 million Btu per barrel as reported in the Bureau of Mines internal memorandum *Bureau of Mines Standard Average Heating Values of Various Fuels,* adopted January 3, 1950.

Road Oil. EIA adopted the Bureau of Mines thermal conversion factor of 6.636 million Btu per barrel which was assumed to be equal to that of asphalt (see "Asphalt") and was first published by the Bureau of Mines in the *Petroleum Statement, Annual, 1970.*

Special Naphtha. EIA adopted the Bureau of Mines thermal conversion factor of 5.248 million Btu per barrel which was assumed to be equal to that of total gasoline (avaiation and motor) factor and was first published in the *Petroleum Statement, Annual, 1970.*

Still Gas. EIA adopted the Bureau of Mines estimated thermal adopted the Bureau of Mines estimated thermal conversion factor of 6.000 million Btu per barrel and first published in the *Petroleum Statement, Annual, 1970.*

Unfinished Oil. EIA assumed the thermal conversion factor to be 5.825 million Btu per barrel or equal to that for distillate fuel oil (see "Distillate Fuel Oil") and first published in the *Annual Report to Congress, Volume 3, 1977.*

Unfractionated Stream. EIA assumed the thermal conversion factor to be 5.418 million Btu per barrel or equal to that for plant condensate (see "Plant Condensate") and first published in the *Annual Report to Congress, Volume 2, 1981.*

Waxes. EIA adopted the thermal conversion factor of 5.537 million Btu per barrel as estimated by the Bureau of Mines and first published in the *Petroleum Statement, Annual, 1956.*

Approximate Heat Content of Fuels

Petroleum

Crude Oil, Exports. Assumed by EIA to be 5.800 million Btu per barrel or equal to the thermal conversion factor for crude oil produced in the United States. See "Crude Oil and Lease Condensate, Production."

Crude Oil, Imports. Calculated annually by EIA by weighting the thermal conversion factor of each type of crude oil imported by the quantity imported. Thermal conversion factors for each type were calculated on a foreign country basis, by determining the average American Petroleum Institute (API) gravity of crude imported from each foreign country from Form ERA-60 in 1977 and converting average API gravity to average Btu content using National Bureau of Standards, Miscellaneous Publication No. 97, *Thermal Properties of Petroleum Products,* 1933.

Crude Oil and Lease Condensate, Production. EIA adopted the thermal conversion factor of 5.800 million Btu per barrel as reported in a Bureau of Mines internal memorandum *Bureau of Mines Standard Average Heating Values of Various Fuels, adopted January 3, 1950.*

Crude Oil and Petroleum Products, Exports. Calculated annually by EIA as the average of the thermal conversion factors for each petroleum product exported and crude oil exported weighted by the quantity of each petroleum product and crude oil exported. See "Crude Oil, Exports," and "Petroleum Products, Exports."

Crude Oil and Petroleum Products, Imports. Calculated annually by EIA as the average of the thermal conversion factors for each petroleum product and each type of crude oil imported weighted by the quantity of each petroleum product and each type of crude oil imported. See "Crude Oil, Imports" and "Petroleum Products, Imports."

Natural Gas Plant Liquids, Production. Calculated annually by EIA as the average of the thermal conversion factors of each natural gas plant liquid produced weighted by the quantity of each natural gas plant liquid produced.

Petroleum Products, Consumption. Calculated annually by EIA as the average of the thermal conversion factors for all petroleum products consumed, weighted by the quantity of each petroleum product consumed.

Petroleum Products, Consumption by Electric Utilities. 1973-1989: Calculated annually by EIA as the average of the thermal conversion factors for all petroleum products consumed at electric utilities, weighted by the quantity of each petroleum product consumed at electric utilities. The quantity of petroleum consumed

is estimated in the State Energy Data System as documented in the *State Energy Data Report.* 1990 forward: EIA, Integrated Modeling Data System output for the *Monthly Energy Review* (March 1991).

Petroleum Products, Consumption by Industrial Users. 1973-1989: Calculated annually by EIA as the average of the thermal conversion factors for all petroleum products consumed in the industrial sector, weighted by the estimated quantity of each petroleum product consumed in the industrial sector. The quantity of petroleum products consumed is estimated in the States Energy Data System as documented in the *State Energy Data Report.* 1990 forward: EIA, Integrated Modeling Data System output for the *Monthly Energy Review* (March 1991).

Petroleum Products, Consumption by Residential and Commercial Users. 1973-1989: Calculated annually by EIA as the average of the thermal conversion factors for all petroleum products consumed by the residential and commercial sector, weighted by the estimated quantity of each petroleum product consumed in the residential and commercial sector. The quantity of petroleum products consumed is estimated in the State Energy Data System as documented in the *State Energy Data Report.* 1990 forward: EIA, Integrated Modeling Data System output for the *Monthly Energy Review* (March 1991).

Petroleum Products, Consumption by Transportation Users. 1973-1989: Calculated annually by EIA as the average of the thermal conversion factor for all petroleum products consumed in the transportation sector, weighted by the estimated quantity of each petroleum product consumed in the transportation sector. The quantity of petroleum products consumed is estimated in the State Energy Data System as documented in the *State Energy Data Report.* 1990 forward: EIA, Integrated Modeling Data System output for the *Monthly Energy Review* (March 1991).

Petroleum Products, Exports. Calculated annually by EIA as the average of the thermal conversion factors for each petroleum product weighted by the quantity of each petroleum product exported.

Petroleum Products, Imports. Calculated annually by EIA as the average of the thermal conversion factors for each petroleum product imported weighted by the quantity of each petroleum product imported.

Petroleum Products, Liquefied Petroleum Gases (LPG) Consumption. Calculated annually by EIA as the average of the thermal conversion factors of each liquefied petroleum gas consumed weighted by the quantity of each liquefield petroleum gas consumed.

Natural Gas

Natural Gas, Consumption. 1973-1979: EIA adopted the thermal conversion factor calculated annually by the American Gas Association (AGA) and published in *Gas Facts,* an AGA annual publication. 1980 forward: Calculated annually by EIA by dividing the total heat content of natural gas consumed by the total quantity of natural gas consumed. The heat content and quantity consumed are from Form EIA-176. Published sources are: 1980-1984: EIA *Natural Gas Annual 1988, Volume II,* Table 15. 1985-1989: EIA, *Natural Gas Annual 1989,* Table B1. 1990 forward: Estimated to be the same as 1989.

Natural Gas, Consumption by Electric Utilities. Calculated annually by EIA by dividing the total heat content of natural gas received at electric utilities by the total quantity received at electric utilities. The heat contents and receipts are from Form FERC-423 and predecessor forms.

Natural Gas, Consumption by Non-Electric Utility Users. Calculated annually by EIA by dividing the heat content of natural gas consumed by non-electric utility consumers by the quantity of non-electric utility natural gas consumed. Data are from Forms EIA-176, FERC-423, EIA-759, and predecessor forms.

Natural Gas, Exports. Calculated annually by EIA by dividing the heat content of exported natural gas by the quantity of natural gas exported, both reported on Form FPC-14.

Natural Gas, Imports. Calculated annually by EIA by dividing the heat content of imported natural gas by the quantity of natural gas imported, both reported on Form FPC-14.

Natural Gas Production, Dry. Assumed by EIA to be equal to the thermal conversion factor for the consumption of dry natural gas. See "Natural Gas, Consumption."

Natural Gas Production, Marketed (Wet). Calculated annually by EIA by adding the heat content of dry natural gas production and the total heat content of natural gas plant liquids production and dividing this sum by the total quantity of marketed (wet) natural gas production.

Coal and Coal Coke

Anthracite, Consumption. Calculated annually by EIA by dividing the sum of the heat content of anthracite consumed by electric utilities and non-electric utilities by the total quantity of anthracite consumed.

Anthracite, Consumption by Electric Utilities. Calculated annually by EIA by dividing the heat content of

anthracite receipts at electric utilities by the quantity of anthracite received at electric utilities. Heat contents and receipts are from Form FERC-423 and predecessor forms.

Anthracite, Consumption by Non-Electric Utility Users. Calculated annually by EIA by dividing the heat content of anthracite production less the heat content of the anthracite consumed at electric utilities, net exports, and shipments to U.S. Armed Forces overseas by the quantity of non-electric utility anthracite consumption less the quantity of anthracite stock changes, losses, and unaccounted for.

Anthracite, Imports and Exports. EIA assumed the anthracite imports and exports to be freshly mined anthracite having an estimated heat content of 25.40 million Btu per short ton.

Anthracite, Production. Calculated annually by EIA by dividing the sum of the heat content of freshly mined anthracite (estimated to have an average heat content of 25.400 million Btu per short ton) and the heat content of anthracite recovered from culm banks and river dredging (estimated to have a heat content of 17.500 million Btu per short ton) by the total quantity of anthracite production.

Bituminous Coal and Lignite, Consumption. Calculated annually by EIA by dividing the sum of the heat content of bituminous coal and lignite consumed by electric utilities, coal coke plants, other industrial plants, the residential and commercial sector, and the transportation sector by the sum of their respective tonnages.

Bituminous Coal and Lignite, Consumption by Coke Plants. Estimated by EIA to be 26.800 million Btu per short ton based on an input/output analysis of coal carbonization.

Bituminous Coal and Lignite, Consumption by Electric Utilities. Calculated annually by EIA by dividing the total heat content of bituminous coal and lignite received at electric utilities by the total quantity received at electric utilities. Heat contents and receipts are from Form FERC-423 and predecessor forms.

Bituminous Coal and Lignite, Consumption by Other Industrial and Transportation Users. 1973: Calculated by EIA through regression analysis measuring the difference between the average Btu value of coal consumed by other industrial users and that of coal consumed at electric utilities in the 1974-1982 period. 1974 forward: Calculated annually by EIA assuming that the bituminous coal and lignite delivered to other industrial users from each coal-producing district (reported on Form EIA-6 and predecessor Bureau of Mines Form 6-1419-Q) contained a heat value equal to bituminous coal and lignite received at electric utilities from each of the same coal-producing districts (reported on Form FERC-423). The average Btu value of coal by coal-producing district was applied to the volume of deliveries to other industrial users from each coal-producing district, and the sum total of the heat content was divided by the total volume of deliveries.

Bituminous Coal and Lignite, Consumption by Residential and Commercial Users. 1973: Calculated by EIA through regression analysis measuring the difference between the average Btu value of coal consumed by residential and commercial users and that of coal consumed by electric utilities in the 1974-1982 period. 1974 forward: Calculated annually by EIA by assuming that the bituminous coal and lignite delivered to residential and commercial users from each coal-producing district (reported on Form EIA-6 and predecessor Bureau of Mines Form 6-1419-Q) contained a heat value equal to bituminous coal and lignite received at electric utilities from each of the same coal-producing districts (reported on Form FERC-423). The average Btu value of coal by coal-producing district was applied to the volume of deliveries to residential and commercial users from each coal-producing district, and the total of the heat value was divided by the total volume of deliveries.

Bituminous Coal and Lignite, Exports. Calculated annually by EIA by dividing the sum of the heat content of exported metallurgical coal (estimated to average 27.000 million Btu per short ton) and the heat content of exported steam coal (estimated to have an average thermal content of 25.000 million Btu per short ton) by the total quantity of bituminous coal and lignite exported.

Bituminous Coal and Lignite, Imports. EIA estimated the average thermal conversion factor to be 25.000 million Btu per short ton.

Bituminous Coal and Lignite, Production. Calculated annually by EIA by dividing the sum of the heat content of bituminous coal and lignite consumption, net exports, stock changes, and unaccounted for by the sum of their respective tonnages. Consumers' stock changes by sectors were assumed to have the same conversion factor as the consumption sector. Producers' stock changes and unaccounted for were assumed to have the same conversion factor as consumption by all users.

Coal, Consumption. Calculated annually by EIA by dividing the sum of the heat content of bituminous coal and lignite and anthracite consumption by the sum of their respective tonnages.

Coal, Consumption by Electric Utilities. Calculated annually by EIA by dividing the sum of the heat content of bituminous coal and lignite and anthracite received at electric utilities by the sum of their respective tonnages received.

Coal, Consumption by Non-Electric Utility Users. Calculated annually by EIA by dividing the sum of the

heat content of bituminous coal and lignite and anthracite consumed by non-electric utility users by the sum of their respective tonnages.

Coal, Exports. Calculated annually by EIA by dividing the sum of the heat content of bituminous coal and lignite and anthracite exported by the sum of their respective tonnages.

Coal, Imports. Calculated annually by EIA by dividing the sum of the heat content of bituminous coal and lignite and anthracite imported by the sum of their respective tonnages.

Coal, Production. Calculated annually by EIA by dividing the sum of the total heat content of bituminous coal and lignite and anthracite production by the sum of their respective tonnages.

Coal Coke, Imports and Exports. EIA adopted the Bureau of Mines estimate of 24.800 million Btu per short ton.

Approximate Heat Rates for Electricity

Fossil Fuel Steam-Electric Power Plant Generation. There is no generally accepted practice for measuring the thermal conversion rates for power plants that generate electricity from hydroelectric, wood and waste, wind, photovoltaic, or solar thermal energy sources. EIA has selected a rate that is equal to the prevailing annual average heat rate factor for fossil-fueled steam-electric power plants in the United States. By using that factor, it is possible to evaluate fossil fuel requirements for replacing those sources during periods of interruption such as droughts. The heat content of a kilowatthour of electricity produced, regardless of the generation process, is 3,412 Btu per kilowatthour. 1973-1988: The weighted annual average heat rate for fossil-fueled steam-electric power plants in the United States, as published by EIA in *Electric Plant Cost and Power Production Expenses 1988,* Table 11. 1989: Prepublished data. 1990 forward: Estimated to be the same as 1989.

Geothermal Energy Power Plant Generation. 1973-1981: Calculated annually by EIA by weighting the average annual heat rates of operating geothermal units by the installed nameplate capacities as reported on Form FPC-12. 1982 forward: Estimated annually by EIA based on an informal survey of relevant plants.

Nuclear Power Plant Generation. Calculated annually by EIA by dividing the total heat content consumed in reactors at nuclear plants by the total (net) electricity generated by nuclear plants. The heat content and electricity generation are reported on Form FERC-1, Form EIA-412, and predecessor forms. The factors, beginning with 1982 data, are published in the following EIA reports -- 1982: *Historical Plant Cost and Annual Production Expenses for Selected Electric Plants 1982,* page 215. 1983-1988: *Electric Plant Cost and Power Production Expenses 1988,* Table 15. 1989: Prepublished data. 1990 forward: Estimated to be the same as 1989.

Glossary

Anthracite: A hard, black, lustrous coal containing a high percentage of fixed carbon and a low percentage of volatile matter. It is often referred to as hard coal. It includes meta-anthracite and semianthracite and conforms to ASTM Specification D388 for anthracite.

ASTM: The acronym for the American Society for Testing and Materials.

Base Gas: The volume of gas needed as a permanent inventory to maintain adequate underground storage reservoir pressures and deliverability rates throughout the withdrawal season. All native gas is included in the base gas volume.

Bituminous Coal: A coal that is high in carbonaceous matter having a volatility greater than anthracite and a calorific value greater than lignite. In the United States, it is often referred to as soft coal. In this report, "bituminous coal" conforms to ASTM Specification D388 for bituminous and subbituminous coal. It is used primarily for electricity generation, coke production, and space heating.

British Thermal Unit (Btu): The amount of energy required to raise the temperature of 1 pound of water 1 °F at or near 39.2 °F. One Btu is equivalent to about 252 International Steam Table calories. An average Btu content of fuel is a heat value per unit quantity of fuel as determined from tests of fuel samples.

Butane: A normally gaseous, paraffinic hydrocarbon (C_4H_{10}) extracted from natural gas or refinery gas streams. It includes isobutane (branch-chain) and normal butane (straight-chain) and is covered by ASTM Specification 1835 and Natural Gas Processors Specifications for commercial butane. It is used primarily for blending into high-octane gasoline, for residential and commercial heating, and for industrial purposes, especially the manufacture of chemicals and synthetic rubber.

Butylene: A normally gaseous, olefinic hydrocarbon (C_4H_8) recovered from refinery processes. Quantities are included with "normal butane" data.

City Gate Price of Natural Gas: Price of natural gas at the point it is transferred from a pipeline company to a local distribution company.

Coal: Includes all ranks of coal--anthracite, bituminous coal, subbituminous coal, and lignite--conforming to ASTM Specification D388.

Coal Coke: The strong, porous residue, consisting of carbon and mineral ash, that is formed when the volatile constituents of bituminous coal are driven off by heat in the absence of or in a limited supply of air. It is used primarily in blast furnaces for smelting ores, especially iron ore.

Commercial Sector: Nonmanufacturing business establishments, including hotels, motels, restaurants, wholesale businesses, retail stores, laundries, and other service enterprises; health, social, and educational institutions; and Federal, State, and local governments. Street lights, pumps, bridges, and public services are also included. (For allocation of individual fuels to end-use sectors, see the Notes and Sources for Section 2.)

Crude Oil Average Domestic First Purchase Price: The average price at which all domestic crude oil is purchased. Prior to February 1976, the price represented an estimate of the average of posted prices; after February 1976, the price represents an average of actual first purchase prices. This price is frequently called the wellhead price.

Crude Oil (including lease condensate): A mixture of hydrocarbons that exists in liquid phase in underground reservoirs and remains liquid at atmospheric pressure after passing through surface separating facilities. Included are lease condensate and liquid hydrocarbons produced from tar sands, gilsonite, and oil shale. Drip gases are also included, but topped crude oil (residual oil) and other unfinished oils are excluded. Liquids produced at natural gas processing plants and mixed with crude oil are excluded where identifiable.

Crude Oil Refinery Input: Total crude oil (including lease condensate) input to crude oil distillation units and other processing units.

Crude Oil Stocks: Stocks of crude oil and lease condensate held at refineries, in pipelines, at pipeline terminals, and on leases.

Degree-Day Normals: Simple arithmetic averages of monthly or annual degree-days over a long period of time (usually the 30-year period 1951-1980). These may

be simple degree-day normals or population-weighted degree-day normals.

Degree-Days, Cooling: The number of degrees per day that the daily average temperature is above 65 °F. The daily average temperature is the mean of the maximum and minimum temperatures for a 24-hour period.

Degree-Days, Heating: The number of degrees per day that the daily average temperature is below 65 °F. The daily average temperature is the mean of the maximum and minimum temperatures for a 24-hour period.

Degree-Days, Population-Weighted: Heating or cooling degree-days weighted by the population of the area in which the degree-days are recorded. To compute State population-weighted degree-days, each State is divided into from one to nine climatically homogeneous divisions which are assigned weights based on the ratio of the population of the division to the total population of the State. Degree-day readings for each division are multipliedby the corresponding population weight for each division and these products are then summed to arrive at the State population-weighted degree-day figure.

To compute national population-weighted degree-days, the Nation is divided into nine Census regions, each composed of from three to eight States. The regions are assigned weights based on the ratio of the population of the region to the total population of the Nation. Degree-day readings for each region are multiplied by the corresponding population weight for each region and these products are then summed to arrive at the national pupulation-weighted degree-day figure.

Development Well: A well drilled within the proved area of an oil or gas reservoir to the depth of a stratigraphic horizon known to be productive.

Distillate Fuel Oil: Light fuel oils distilled during the refining process and used primarily for space heating, on- and off-highway diesel engine fuel (including railroad engine fuel and fuel for agricultural machinery), and electric power generation. Included are products known as No.1, No. 2, and No. 4 fuel oils, and No. 1, No. 2, and No. 4 diesel fuels, conforming to ASTM Specifications D396 or D975, respectively. No. 1 fuel oil is a light distillate fuel oil used in vaporizing pot-type burners. No. 2 fuel oil is used in atomizing-type burners for domestic heating or for moderate capacity commercial-industrial burner units. No. 4 fuel oil is a blend of distillate fuel oil and residual fuel oil that is used in commercial burner installations not equipped with preheating facilities; it is used extensively in industrial plants. Diesel fuel oils are used in compression-ignition engines.

Dry Hole: An exploratory or development well found to be incapable of producing either oil or gas in sufficient quantities to justify completion as an oil or gas well.

Electrical System Energy Losses: The amount of energy lost during generation, transmission, and distribution of electricity, including plant use and unaccounted for electrical energy.

Electricity Generation: Net electricity (gross electricity output measured at the generator terminals, minus power plant use) generated at electric utilities. Excluded industrial electricity generation. International data are gross electricity output.

Electricity Sales: The gross electricity output measured at the generator terminals, minus power plant use and transmission and distribution losses. Included in each end-use sector are the following: commercial sales of electricity to businesses that generally require less than 1,000 kilowatts of service; industrial sales of electricity to businesses that generally require more than 1,000 kilowatts of service; residential sales of electricity to residences for household purposes; "other" sales of electricity to government, railways, street lighting authorities, and sales not elsewhere included.

Electric Utility: A corporation, person, agency, authority, or other entity that owns or operates facilities for the generation, transmission, distribution, or sale of electricity, primarily for use by the public.

Electric Utility Sector: Privately and publicly owned establishments that generate electricity primarily for use by the public.

Ethane: A normally gaseous, paraffinic hydrocarbon (C_2H_6) extracted from natural gas or refinery gas streams. It is used primarily as petrochemical feedstock for production of chemicals and plastic materials.

Ethylene: A normally gaseous, olefinic hydrocarbon (C_2H_4) recovered from refinery processes. Quantities are included with "ethane" data.

Exploratory Well: A well drilled to find and produce oil or gas in an unproved area; to find a new reservoir in a field previously found to be productive of oil or gas in another reservoir; or to extend the limit of a known oil or gas reservoir.

Exports: Shipments of goods from the 50 States and the District of Columbia to foreign countries, Puerto Rico, the Virgin Islands, and other U.S. possessions and territories.

F.o.b. (free on board) Price of Imported Crude Oil: The f.o.b. price is the price actually charged at the producing country's port of loading. The reported price includes deductions for any rebates and discounts and additions of premiums where applicable; it should be the actual price paid with no adjustments for credit terms.

Fossil Fuel Steam-Electric Power Plant: An electricity generation plant in which the prime mover is a turbine rotated by high-pressure steam produced in a boiler by heat from burning fossil fuels.

Gas Well: A well completed for the production of natural gas from one or more gas zones or reservoirs. (Wells producing both crude oil and natural gas are classified as oil wells.)

Geothermal Energy (as used at electric utilities): Hot water or steam, extracted from geothermal reservoirs in the earth's crust, which is supplied to steam turbines at electric utilities that drive generators to produce electricity.

Gross Energy Consumption: Total energy use including electrical system energy losses.

Gross National Product (GNP): The total value of goods and services produced by the Nation's economy, before deduction of depreciation charges and other allowances for capital consumption. It includes the total purchases of goods and services by private consumers and government, gross private domestic capital investment, and net foreign trade.

Gross Wet Gas Withdrawal: Full well stream volume, including all natural gas plant liquid and nonhydrocarbon gases, but excluding lease condensate. Also includes amounts delivered as royalty payments or consumed in field operations.

Hydroelectric Power: Electricity generated by an electric power plant whose turbines are driven by falling water.

Imports: Receipts of goods into the 50 States and the District of Columbia from foreign countries, Puerto Rico, the Virgin Islands, and other U.S. possessions and territories. (See **Petroleum Imports.**)

Industrial Sector: Manufacturing, construction, mining, agriculture, fishing and forestry establishments. (For allocation of individual fuels to end-use sectors, see the Notes and Sources for Section 2.)

Isobutane: See **Butane.**

Landed Cost of Crude Oil Imports: The price of imported crude oil at the port of discharge. It includes the purchase price at the foreign port plus charges for transporting and insuring the crude oil from the purchase point to the port of discharge. It does not include import tariffs or fees, wharfage charges, or demurrage costs. Coverage includes the United States and its territories.

Lease and Plant Fuel: Natural gas used in lease operations, as gas processing plant fuel, and as net used for gas lift.

Lease Condensate: A natural gas liquid recovered from gas-well gas (associated and nonassociated) in lease separators or natural gas field facilities. Lease condensate consists primarily of pentanes and heavier hydrocarbons. Generally, it is blended with crude oil for refining.

Lignite: A brownish-black coal of low rank with high inherent moisture and volatile matter. It is also referred to as brown coal. It conforms to ASTM Specification D388 for lignite and is used almost exclusively for electric power generation.

Liquefied Petroleum Gases (LPG): Ethane, propane, normal butane, ethane-propane mixtures, propane-butane mixtures, and isobutane produced at natural gas processing plants, including plants that fractionate raw natural gas plant liquids. LPG also included liquefied refinery gases (ethylene, propylene, butylene, and isobutylene produced from crude oil at refineries).

Motor Gasoline, Finished: A complex mixture of relatively volatile hydrocarbons, with or without small quantities of additives, that have been blended to form a fuel suitable for use in spark-ignition engines and conforming to ASTM Specification D439. Included are finished leaded gasoline, finished unleaded gasoline, and gasohol. Excluded are blendstock that has not been blended into finished motor gasoline and alcohol that has not been blended into gasohol.

Motor Gasoline, Leaded Premium: A gasoline having an antiknock index of 93 with the use of lead additives or which contains more than 0.05 grams of lead per gallon or more than 0.005 grams of phosphorus per gallon. Includes gasohol.

Motor Gasoline, Leaded Regular: A gasoline having an antiknock index of 89 with the use of lead additives or which contains more than 0.05 grams of lead per gallon or more than 0.005 grams of phosphorus per gallon.

Motor Gasoline, Total: Includes finished leaded motor gasoline (premium and regular), finished unleaded motor gasoline (premium and regular), motor gasoline blending components, and gasohol.

Motor Gasoline, Unleaded Premium: A gasoline having an antiknock index of 90 containing not more than 0.05 grams of lead per gallon and not more than 0.005 grams of phosphorous per gallon. Includes gasohol.

Motor Gasoline, Unleaded Regular: A gasoline having an antiknock index of 87 containing not more than 0.05 grams of lead per gallon and not more than 0.005 grams of phosphorous per gallon.

Natural Gas: A mixture of hydrocarbons (principally methane) and small quantities of various nonhydrocarbons existing in the gaseous phase or in solution with crude oil in underground reservoirs.

Natural Gas Plant Liquids (NGPL): Those natural gas liquids that are recovered from natural gas processing plants, and in some situations, from natural gas field facilities, as well as those that are extracted by fractionators. Natural gas plant liquids are defined according to the published specifications of the ASTM and the Gas Processors Association and are classified as follows: ethane, propane, normal butane, isobutane, pentanes plus, and other products from natural gas processing plants (i.e., products meeting the standards for finished petroleum products produced at natural gas processing plants, such as finished motor gasoline, finished aviation gasoline, special naphthas, kerosene, distillate fuel oil, and miscellaneous products).

Natural Gas Wellhead Price: The annual wellhead price of natural gas is calculated by dividing the total reported value at the wellhead by the total quantity produced as reported by the appropriate agencies of individual producing States, as well as the U.S. Geological Survey (through 1981) and the U.S. Minerals Management Service (from 1982 forward). The price includes all costs prior to shipment from the lease including gathering and compression costs in addition to State production, severance, and similar charges.

An estimate of the U.S. natural gas price is made each month based on monthly natural gas prices from four States: Mississippi, New Mexico, Oklahoma, and Texas.

Net Generation of Electricity: Gross generation less electricity consumed at the generating plant for station use. Electricity required for pumping at pumped-storage plants is regarded as plant use and is deducted from gross generation.

Net Consumption of Energy: Total energy use excluding electrical system energy losses.

Normal Butane: See **Butane.**

Nuclear Energy: Electricity generated by an electric power plant whose turbines are driven by steam generated in a reactor by heat from the fissioning of nuclear fuel.

Oil Well: A well completed for the production of crude oil from one or more oil zones or reservoirs. Wells producing both crude oil and natural gas are classified as oil wells.

Organization for Economic Cooperation and Development (OECD): Current members: Australia, Austria, Belgium, Canada, Denmark, Finland, France, West Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom, and the United States and its territories (Guam, Puerto Rico, and the Virgin Islands).

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

Pentanes Plus: A mixture of hydrocarbons, mostly pentanes and heavier, extracted from natural gas. This product includes isopentane, natural gasoline, and plant condensate.

Petroleum: A generic term applied to oil and oil products in all forms, such as crude oil, lease condensate, unfinished oils, petroleum products, natural gas plant liquids, and nonhydrocarbon compounds blended into finished petroleum products.

Petroleum Coke: A solid residue that is the final product of the condensation process in cracking. It consists of aromatic hydrocarbons very poor in hydrogen. Calcination of petroleum coke can yield almost pure carbon or artificial graphite suitable for production of carbon or graphite electrodes, structural graphite, motor brushes, dry cells, and similar products. This product is reported as marketable or catalyst coke.

Petroleum Imports: Imports of petroleum into the 50 States and the District of Columbia from foreign countries, Puerto Rico, the Virgin Islands, and other U.S. territories and possessions. Included are imports for the Strategic Petroleum Reserve and withdrawals from bonded warehouses for onshore consumption, offshore bunker use, and military use. Excluded are receipts of foreign petroleum into bonded warehouses and into U.S. territories and U.S. Foreign Trade Zones.

Petroleum Products: Petroleum products are obtained from the processing of crude oil (including lease condensate), natural gas, and other hydrocarbon compounds. Petroleum products include unfinished oils, liquefied petroleum gases, pentanes plus, aviation gasoline, motor gasoline, naphtha-type jet fuel, kerosene-type jet fuel, kerosene, distillate fuel oil, residual fuel oil, naphtha less than 401 °F end-point, other oils equal to or greater than 401 °F end-point, special naphthas, lubricants, waxes, petroleum coke, asphalt, road oil, still gas, and miscellaneous products.

Petroleum Products Supplied: Total petroleum products supplied is the sum of all petroleum products supplied. For each product, the amount supplied is calculated by summing production, crude oil burned directly, imports, and net withdrawals from primary stocks and subtracting exports.

Petroleum Stocks, Primary: Stocks of crude oil or petroleum products held in storage at (or in) leases, refineries, natural gas processing plants, pipelines, tankfarms, and bulk terminals that can store at least 50,000 barrels of petroleum products or that can receive petroleum products by tanker, barge, or pipeline. Crude oil that is in transit from Alaska, or that is stored on Federal leases or in the Strategic Petroleum Reserve, is included. Excluded are stocks of foreign origin that are held in bonded warehouse storage.

Photovoltaic and Solar Thermal Energy (as used at electric utilities): Energy radiated by the sun as electromagnetic waves (electromagnetic radiation) that is converted at electric utilities into electricity by means of solar (photovoltaic) cells or concentrating (focusing) collectors.

Propane: A normally gaseous, paraffinic hydrocarbon (C_3H_8). It is extracted from natural gas or refinery gas streams, and includes all products covered by Gas Processors Association Specifications for commercial propane and HD-5 propane and ASTM Specification D1835. Propane is used primarily for residential and commercial heating and cooling, and also as a fuel for transportation. Industrial uses of propane include use as a petrochemical feedstock.

Propylene: A normally gaseous, olefinic hydrocarbon (C_3H_6) recovered from refinery processes. Quantities are included with "propane" data.

Refiner Acquisition Cost: The cost of crude oil to the refiner, including transportation and fees. The composite cost is the weighted average of domestic and imported crude oil costs.

Renewable Energy: Energy obtained from sources that are essentially inexhaustible (unlike, for example, the fossil fuels, of which there is a finite supply). Renewable sources of energy include wood, waste, geothermal, wind, photovoltaic, and solar thermal energy.

Reservoir Repressuring: The injection of natural gas into oil and gas reservoir formations for pressure maintenance and cycling.

Residential Sector: Private household establishments, which consume energy primarily for space heating, water heating, air conditioning, lighting, refrigeration, cooking, and clothes drying. (For allocation of individual fuels to end-use sectors, see the Notes and Sources for Section 2.)

Residual Fuel Oil: The heavier oils that remain after the distillate fuel oils and lighter hydrocarbons are distilled away in refinery operations and that conform to ASTM Specifications D396 and 975. Included are No. 5, a residual fuel oil of medium viscosity; Navy Special, for use in steam-powered vessels in government service and in shore power plants; and No. 6, which includes Bunker C fuel oil, and is used for commercial and industrial heating and electricity generation. Imports of residual fuel oil include imported crude oil burned as fuel.

Rotary Rig: A machine, used for drilling wells, that employs a rotating tube attached to a bit for boring holes through rock.

Strategic Petroleum Reserve (SPR): Petroleum stocks maintained by the Federal Government for use during periods of major supply interruption.

Subbituminous Coal: A dull black coal of rank intermediate between lignite and bituminous coal. It conforms to ASTM Specification D388 for subbituminous coal, and is used almost exclusively for electric power generation. In this report, quantities are included with "bituminous coal" data.

Supplemental Gaseous Fuels: Consist primarily of synthetic natural gas, propane-air, and refinery (still) gas. May also include coke oven gas, biomass gas, manufactured gas, and air injected for Btu stabilization.

Synthetic Natural Gas (SNG): A product resulting from the manufacture, conversion, or reforming of hydrocarbons that may be easily substituted for, or interchanged with, pipeline-quality natural gas.

Transportation Sector: Private and public vehicles that move people and commodities. Included are automobiles, trucks, buses, motorcycles, railroads and railways (including streetcars), aircraft, ships, barges, and natural gas pipelines.

Unaccounted for Crude Oil: Represents the arithmetic difference between the indicated demand for crude oil and the total disposition of crude oil. Indicated demand is the sum of crude oil production and imports less changes in crude oil stocks. Total disposition of crude oil is the sum of crude oil input to refineries, crude oil exports, crude oil burned as fuel, and crude oil losses.

United States: Unless otherwise noted, "United States" in this publication means the 50 States and the District of Columbia. U.S. exports include shipments to U.S. Territories, and imports include receipts from U.S. Territories.

Wind Energy (as used at electric utilities): The kinetic energy of wind converted at electric utilities into mechanical energy by wind turbines (i.e., blades rotating from a hub) that drive generators to produce electricity for distribution.

Wood and Waste (as used at electric utilities): Wood energy (see **Wood Energy**), garbage, bagasse, sewerage gas and other industrial, agricultural, and urban refuse used to generate electricity for distribution.

Wood Energy: Wood and wood products used as fuel. Included are round wood (cord wood), limb wood, wood chips, bark, sawdust, forest residues, charcoal, pulp waste, and spent pulping liquor.

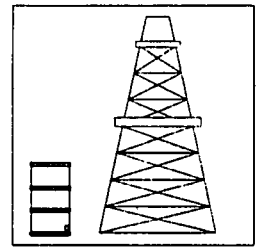
Working Gas: The volume of gas in an underground storage reservoir above the designed level of the base. It may or may not be completely withdrawn during any particular withdrawal season. Conditions permitting, the total working capacity could be used more than once during any season.

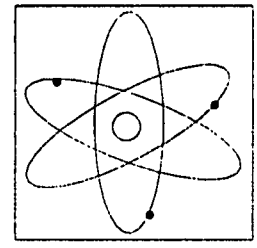
* U.S. G.P.O.:1991-281-696-20008

MONTHLY ENERGY REVIEW

Provides current data on:

Production Consumption
Imports Exports
Stocks Prices

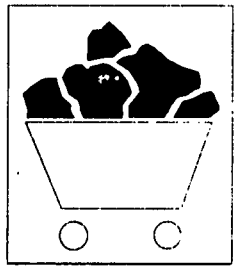




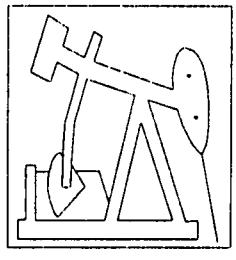
of principal energy commodities
in the U.S. and other countries around the world.

These data are now available to you on

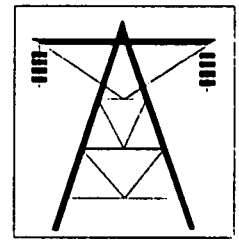
D I S K E T T E S



The information is offered monthly on a single 5-1/4" high-density diskette in ASCII comma-delimited format. Each release supersedes all previous releases.



Complete this order form and mail it to the National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161. To place a charge order, call 703-487-4650.



-MONTHLY ENERGY REVIEW DISKETTES-

☐ Subscription - PB90-591650 (12 issues per year) $600.00
☐ Current Issue - PB90-591651 - $50.00

Total Amount Due _____

☐ Check or money order enclosed.
☐ Charge to my Deposit Account
No. ☐☐☐☐ ☐☐

☐ Visa ☐ MasterCard ☐ American Ex
Card No.
☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Expiration Date (Mo./Yr.) ☐☐☐☐

Company or Personal Name

Address Daytime Phone

☐ City, State, Zip Code

Signature

Energy Information Administration

EIA Consumption Data

Triennial surveys of manufacturing establishments, commercial buildings, and residential households and vehicles, reporting energy characteristics, consumption, and expenditure patterns, and providing important statistics related to fuel switching, energy efficiency, cogeneration, building attributes, and household demographics.

Survey Titles:	Most Recent Year:
Manufacturing Energy Consumption Survey (MECS)	**1985**
Commercial Buildings Energy Consumption Survey (CBECS)	**1986**
Residential Energy Consumption Survey (RECS)	**1987**
Residential Transportation Energy Consumption Survey (RTECS)	**1988**

For information about survey data, contact: John Preston, 202-586-1128 (MECS); Julia Oliver, 202-586-5744 (CBECS); Wendel Thompson, 202-586-1119 (RECS); and Martha Johnson, 202-586-1135 (RTECS). For copies of reports on the survey data, call the National Energy Information Center, 202-586-8800.

Energy Information Administration
U.S. Department of Energy
Forrestal Building, EI-231
Washington, DC 20585

SECOND-CLASS MAIL
POSTAGE & FEES PAID
U.S. DEPARTMENT OF ENERGY
ISSN 0095-7356

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300