

DOE/EIA-0384(2003)
September 2004

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Annual Energy Review 2003



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Annual Energy Review 2003

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Printed with soy ink on recycled paper.

Annual Energy Review 2003

September 2004

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

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

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Preface

The *Annual Energy Review 2003* is a statistical history of energy activities in the United States in modern times. Data are presented for all major forms of energy by production (extraction of energy from the earth, water, and other parts of the environment), consumption by end-user sector, trade with other nations, storage changes, and pricing.

Much of the data provided covers the fossil fuels—coal, petroleum, and natural gas. Fossil fuels are nature's batteries; they have stored the sun's energy over millennia past. It is primarily that captured energy that we are drawing on today to fuel the activities of the modern economy. Data in this report measure the extraordinary expansion of our use of fossil fuels from 29 quadrillion British thermal units (Btu) in 1949 to 84 quadrillion Btu in 2003. In recent years, fossil fuels accounted for 86 percent of all energy consumed in the United States.

This report also records the development of an entirely new energy industry—the nuclear electric power industry. The industry got its start in this country in 1957 when the Shippingport, Pennsylvania, nuclear electric power plant came on line. Since that time, the industry has grown to account for 20 percent of our electrical output and 8 percent of all energy used in the country.

Renewable energy is a third major category of energy reported in this volume. Unlike fossil fuels, which are finite in supply, renewable energy is essentially inexhaustible because it can be replenished. Types of energy covered in the renewable category include conventional hydroelectric power, which is power derived from falling water; wood; waste; alcohol fuels; geothermal; solar; and wind. Together, these forms of energy accounted for about 6 percent of all U.S. energy consumption in recent years.

For many time series in the *Annual Energy Review 2003*, 55 years of history—more than will fit on our print-format data tables—are now available for analysis of resource trends. Analysts can find complete series of year-by-year data on the Energy Information Administration (EIA) Web site at: <http://www.eia.doe.gov/aer>.

Because the EIA is continually updating the time series with more current information as it becomes available, we recommend that users check the *Monthly Energy Review* at <http://www.eia.doe.gov/mer> for updates. And, for those interested in examining future energy scenarios, which are based on the historical data in this report, we suggest that you turn to EIA's *Annual Energy Outlook* at <http://www.eia.doe.gov/oiaf/aeo>.

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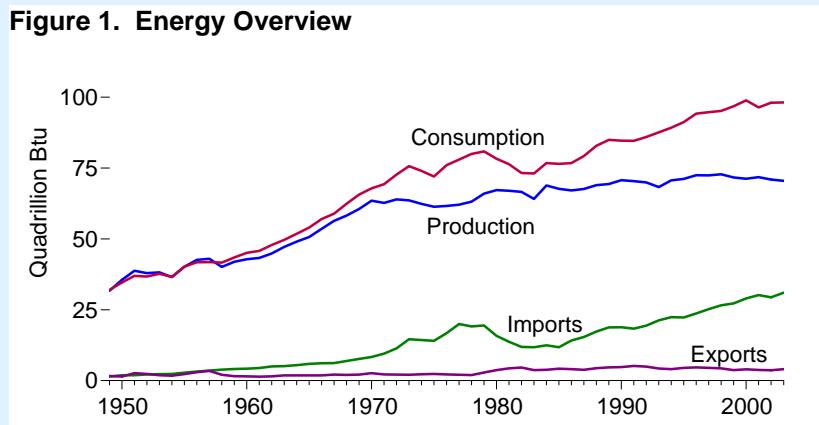
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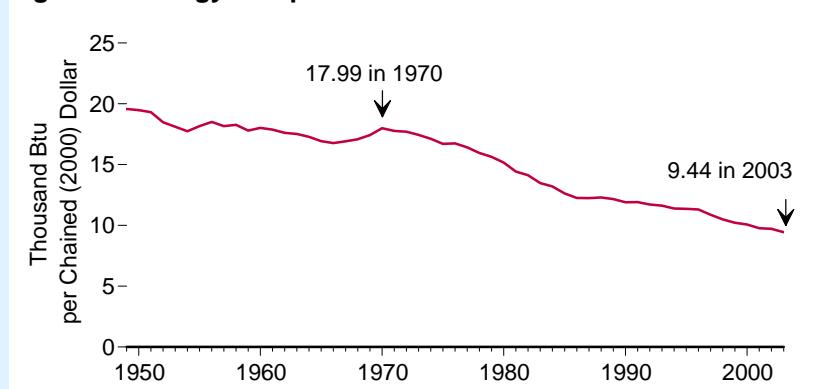
Overview

Figure 1. Energy Overview



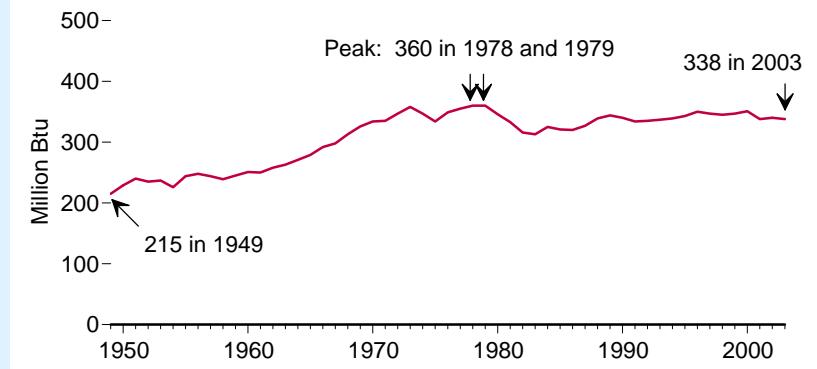
The United States was self-sufficient in energy until the late 1950s when energy consumption began to outpace domestic production. At that point, the Nation began to import more energy to fill the gap. In 2003, net imported energy accounted for 27 percent of all energy consumed.

Figure 3. Energy Use per Dollar of Gross Domestic Product



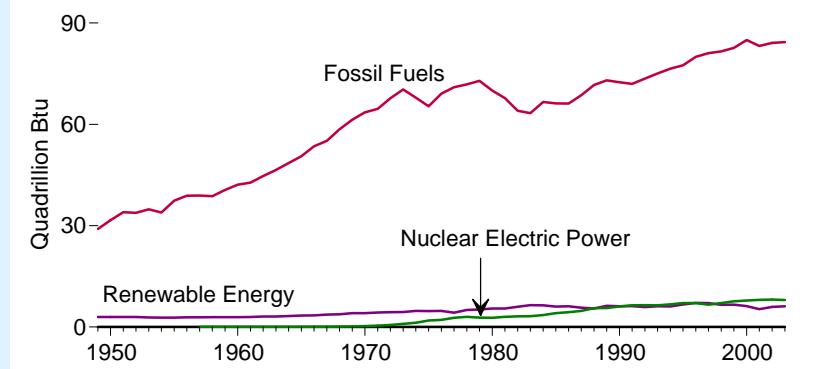
After 1970, the amount of energy consumed to produce a dollar's worth of the Nation's output of goods and services trended down. The decline resulted from efficiency improvements and structural changes in the economy. The level in 2003 was 48 percent below that of 1970.

Figure 2. Energy Consumption per Person



Energy use per person stood at 215 million Btu in 1949. The rate generally increased until the oil price shocks of the mid-1970s and early 1980s when the trend reversed for a few years. From 1988 on, the rate held fairly steady. In 2003, 338 million Btu of energy were consumed per person, 57 percent above the 1949 rate.

Figure 4. Energy Consumption by Source



Most energy consumed in the United States came from fossil fuels. Renewable energy resources supplied a relatively small but steady portion. In the late 1950s, nuclear fuel began to be used to generate electricity, and in most years since 1988, nuclear electric power surpassed renewable energy.

Consumption by Source

Figure 5. Energy Consumption by Source, 1635-2003

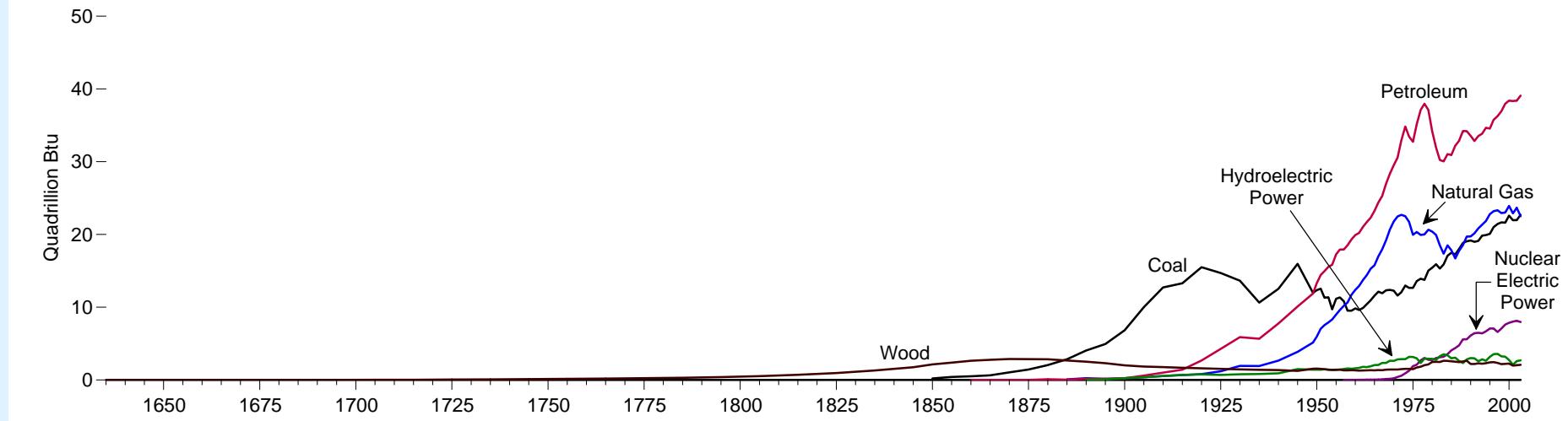
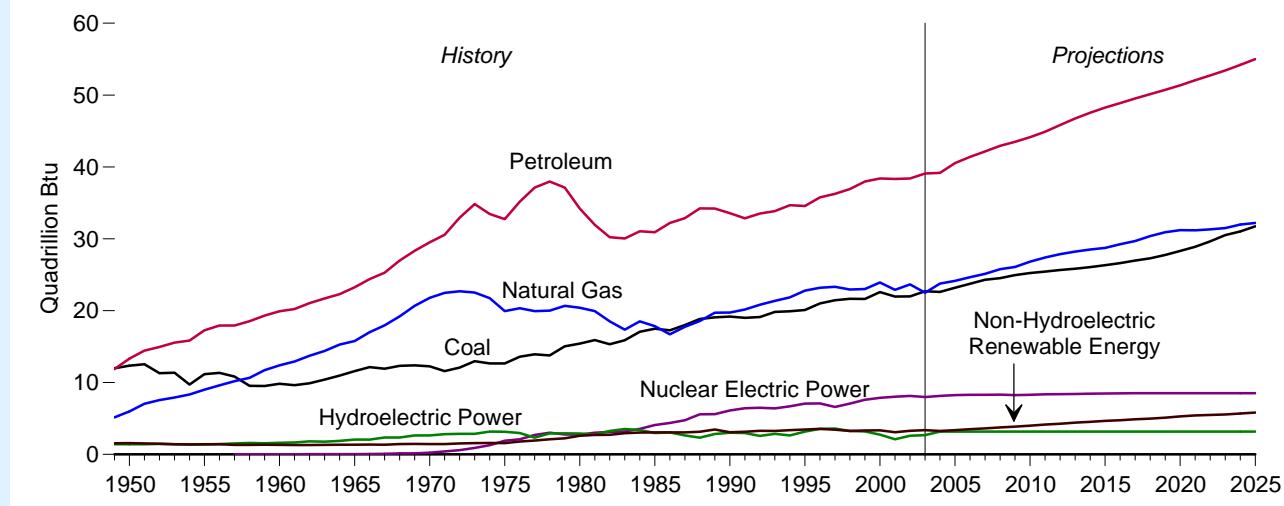


Figure 6. Energy Consumption History and Outlook, 1949-2025

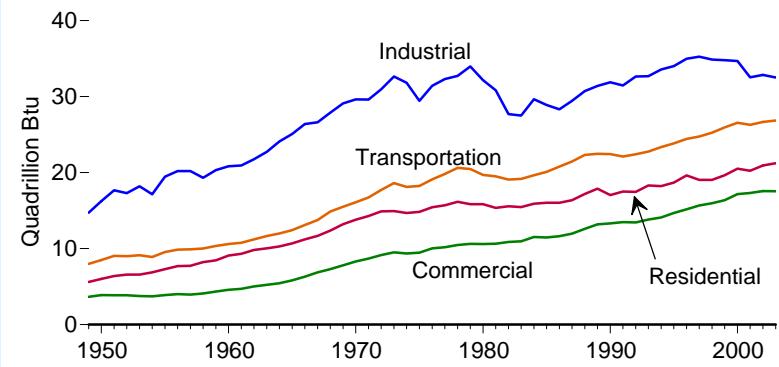


In the long view of American history, wood served as the preeminent form of energy for about half of the Nation's history. Around 1885, coal surpassed wood's usage. Despite its tremendous and rapid expansion, coal was, in turn, overtaken by petroleum in the middle of the 20th century. Natural gas, too, experienced rapid development into the second half of the 20th century, and coal began to expand again. Late in the 20th century still another form of energy, nuclear electric power, was developed and made significant contributions.

While the Nation's energy history is one of large-scale change as new forms of energy were developed, the outlook for the next couple of decades (assuming current laws, regulations, and policies) is for continued growth and reliance on the three major fossil fuels—petroleum, natural gas, and coal—modest expansion in renewable resources, and relatively flat generation from nuclear electric power.

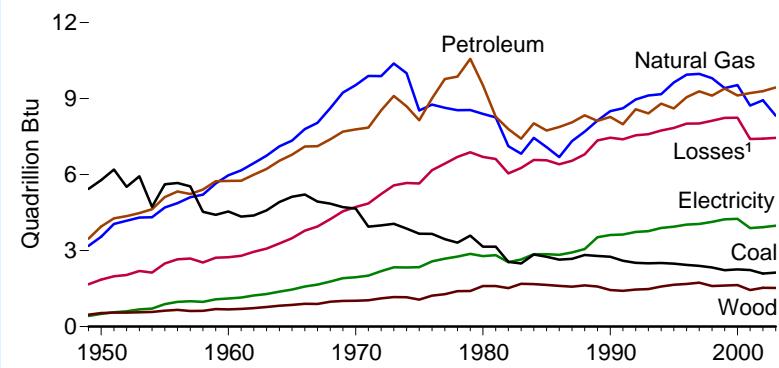
Consumption by Sector

Figure 7. Energy Consumption by End-Use Sector



All four major economic sectors of the economy recorded tremendous growth in their use of energy. The industrial sector used the biggest share of total energy and showed the greatest volatility; in particular, steep drops occurred in the sector in 1975 and 1980-1983 largely in response to high oil prices.

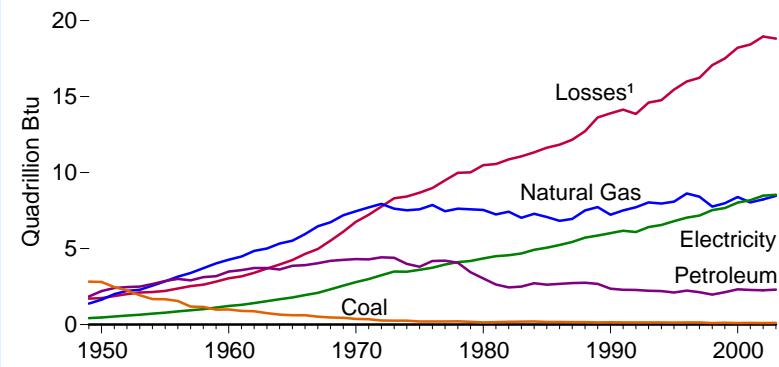
Figure 9. Industrial Energy Consumption



¹ Energy lost during generation, transmission, and distribution of electricity.

Coal, once the predominant form of energy in the industrial sector, gave way to natural gas and petroleum in the late 1950s. Both natural gas and petroleum use expanded rapidly until the early 1970s and then fluctuated widely over the following decades. Use of electricity and wood trended upward, but use of electricity grew at a faster rate than wood.

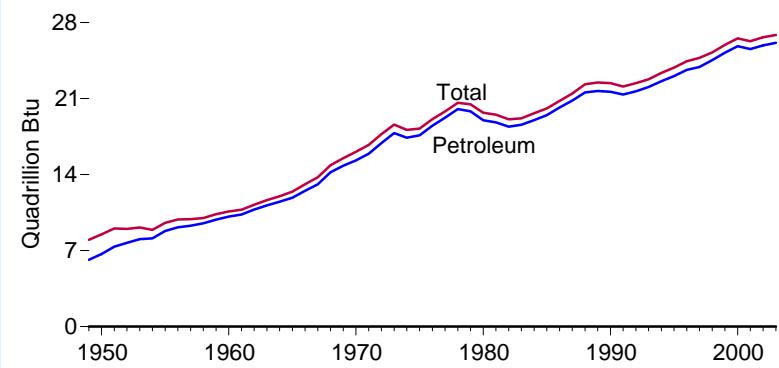
Figure 8. Residential and Commercial Energy Consumption



¹ Energy lost during generation, transmission, and distribution of electricity.

In the 1950s and 1960s, coal, which had been important to residential and commercial consumers, was gradually replaced by other forms of energy. Petroleum use peaked in the early 1970s. Natural gas grew fast until the early 1970s and then fluctuated around the 1970 level over the next three decades. Meanwhile, electricity's use (and related losses) expanded dramatically.

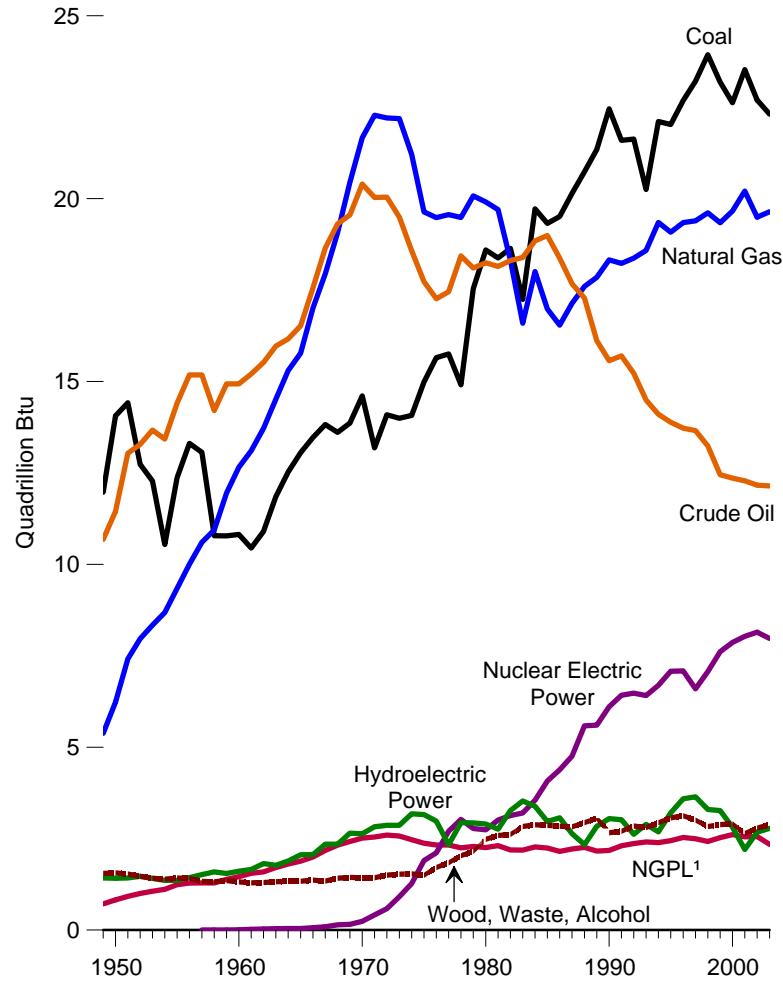
Figure 10. Transportation Energy Consumption



Transportation sector use of energy experienced tremendous growth overall, but registered noticeable pauses in 1974, 1979-1982, 1990 and 1991, and 2001. In 2003, petroleum accounted for 97 percent of the sector's energy, and motor gasoline accounted for two-thirds of all petroleum used in the sector.

Production and Trade

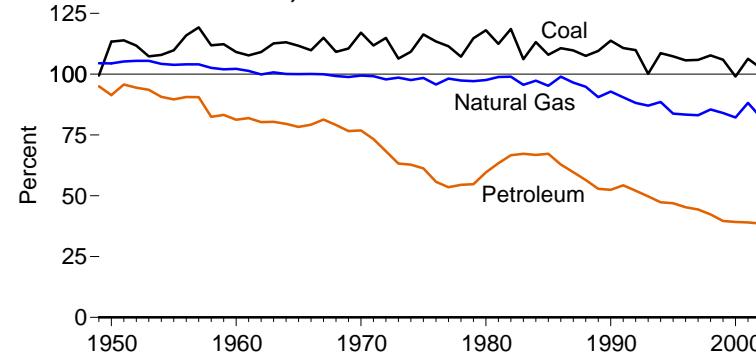
Figure 11. Energy Production by Major Source, 1949-2003



¹ Natural gas plant liquids.

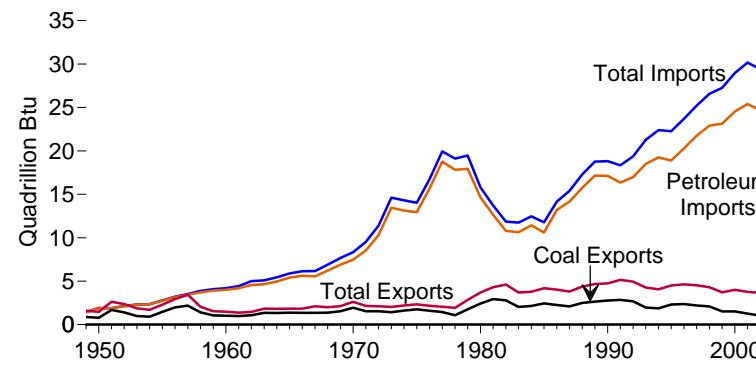
Most energy produced in the United States came from fossil fuels—coal, natural gas, and crude oil. Coal, the leading source at the middle of the 20th century, was surpassed by crude oil and natural gas for many years, but again became the leading source of energy in the mid-1980s, used primarily for electric generation. By the 1970s, electricity produced from nuclear fuel began to make a significant contribution.

Figure 12. Production as Share of Consumption for Coal, Natural Gas, and Petroleum



The Nation almost always produced more than enough coal for its own requirements. For many years, the United States was also self-sufficient in natural gas, but after 1967, it produced less than it consumed each year. Petroleum production fell far short of domestic demands, requiring the reliance on imported supplies.

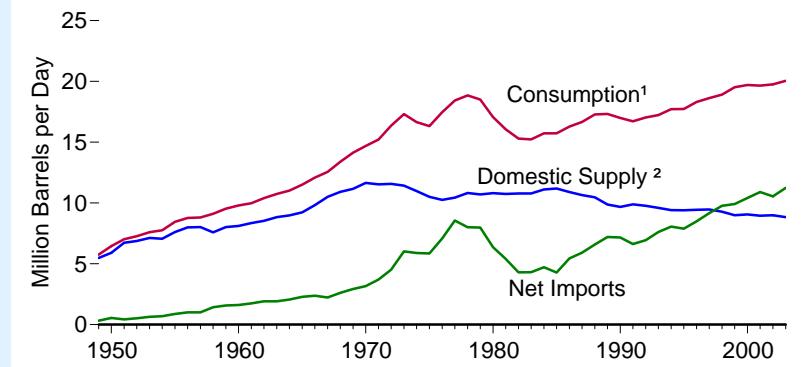
Figure 13. Energy Imports and Exports



Since the mid-1950s, the Nation imported more energy than it exported. In 2003, the United States imported 31 quadrillion Btu of energy and exported 4 quadrillion Btu. Most imported energy was in the form of petroleum; since 1986, natural gas imports expanded rapidly as well. Through 1992, most exported energy was in the form of coal; after that, petroleum exports often exceeded coal exports.

Petroleum Overview and Crude Oil Production

Figure 14. Petroleum Overview

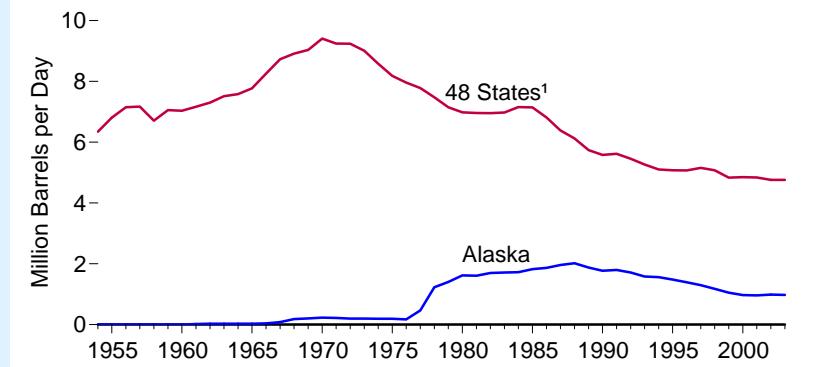


¹ Petroleum products supplied used as an approximation for consumption.

² Crude oil and natural gas plant liquids production; refinery gains; and field production of other components.

When U.S. domestic supply of petroleum peaked at 11.7 million barrels per day in 1970, net imports stood at 3.2 million barrels per day. As domestic supply declined, consumption grew. In 1998, for the first time, net imports surpassed domestic supply. In 2003, domestic supply was 8.8 million barrels per day and net imports were 11.2 million barrels per day.

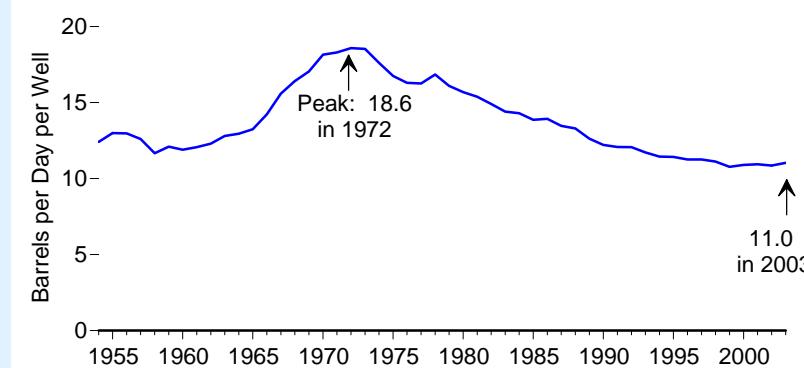
Figure 15. 48 States and Alaskan Crude Oil Production



¹ United States excluding Alaska and Hawaii.

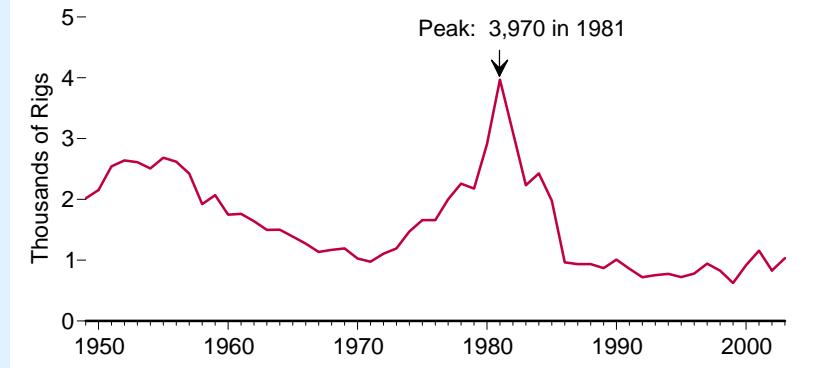
Crude oil production peaked in the 48 States at 9.4 million barrels per day in 1970. As production fell in the 48 States, Alaska's production came on line and helped supply U.S. needs. Alaskan production peaked at 2.0 million barrels per day in 1988, then fell to less than half the peak rate by 2000.

Figure 16. Crude Oil Well Productivity



The amount of crude oil produced per day per well rose sharply in the 1960s, reached a peak of 18.6 barrels per day per well in 1972, and, except for a brief recovery in 1978, fell through 1999. In 2003, productivity measured 11.0 barrels per day per well, 41 percent below the peak but up slightly from the year before.

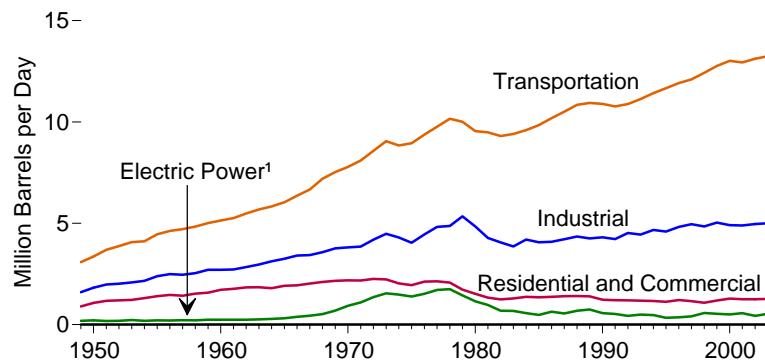
Figure 17. Crude Oil and Natural Gas Rotary Rigs in Operation



Rotary rig activity declined sharply from 1955 to 1971. After 1971, the number of rigs in operation began to climb again, and a peak of nearly 4 thousand rigs in operation was registered in 1981. A sharp decline followed, and the number of rigs in operation in 2003 was 74 percent below the peak level.

Petroleum Consumption and Prices

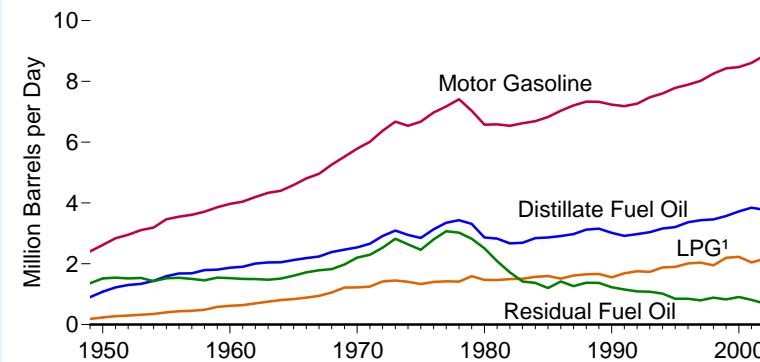
Figure 18. Petroleum Consumption by Sector



¹ Through 1988, electric utilities only; after 1988, includes independent power producers.

Transportation was the largest consuming sector of petroleum and the one showing the greatest expansion over the second half of the 20th century. In 2003, 13 million barrels per day of petroleum products were consumed for transportation purposes, accounting for 66 percent of all petroleum used.

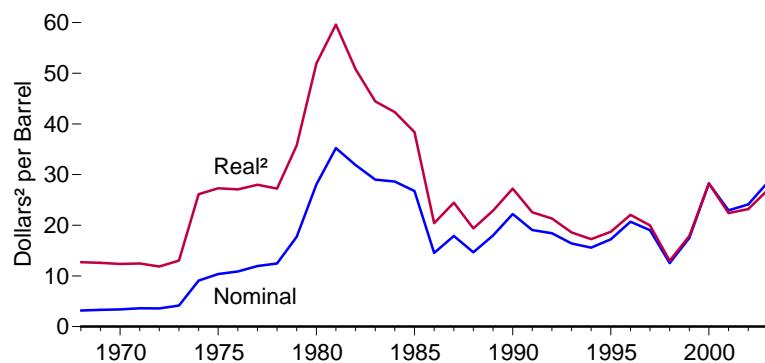
Figure 19. Petroleum Consumption by Selected Product



¹ Liquefied petroleum gases.

Motor gasoline was the single largest petroleum product consumed in the United States. Its consumption stood at 8.9 million barrels per day in 2003, 45 percent of all petroleum consumption. Distillate fuel oil and liquefied petroleum gases (LPG) were other important products. The use of residual fuel oil fell off sharply after 1977.

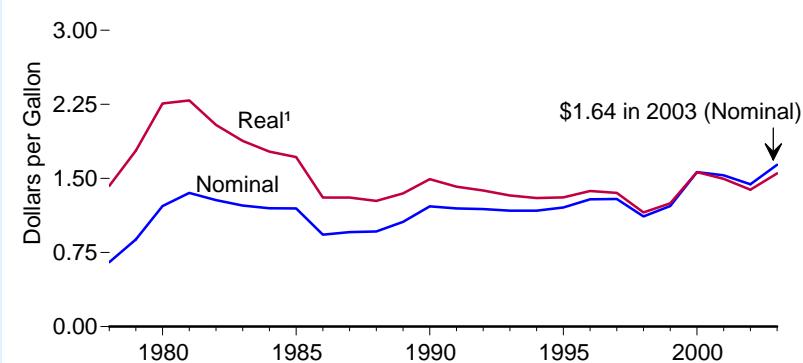
Figure 20. Crude Oil Refiner Acquisition Cost¹



¹ Composite of domestic and imported crude oil. ² In chained (2000) dollars, calculated by using gross domestic product implicit price deflator.

The refiner acquisition composite (domestic and foreign) cost of crude oil in nominal (unadjusted for inflation) dollars peaked at \$35.24 per barrel in 1981. The price fell dramatically over the years that followed, reaching a low of \$12.52 per barrel in 1998. The preliminary price reported for 2003 was \$28.50 per barrel.

Figure 21. Price of Motor Gasoline

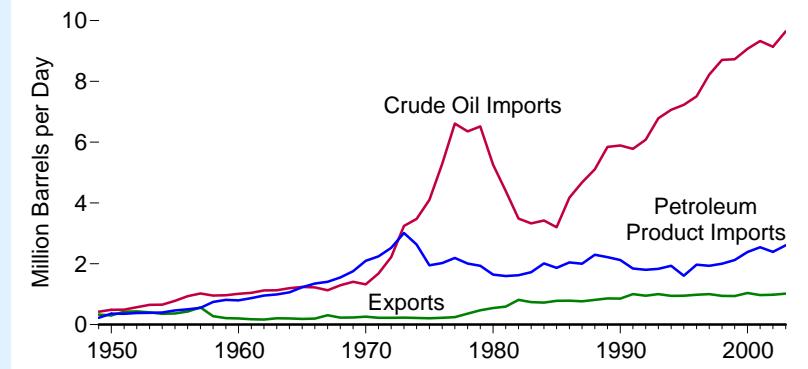


¹ In chained (2000) dollars, calculated by using gross domestic product implicit price deflator.

In nominal (unadjusted for inflation) dollars, Americans paid an average of 65¢ per gallon for motor gasoline in 1978. The 2003 average price of \$1.64 was 152 percent higher than the 1978 rate; adjusted for inflation, it was 8 percent higher.

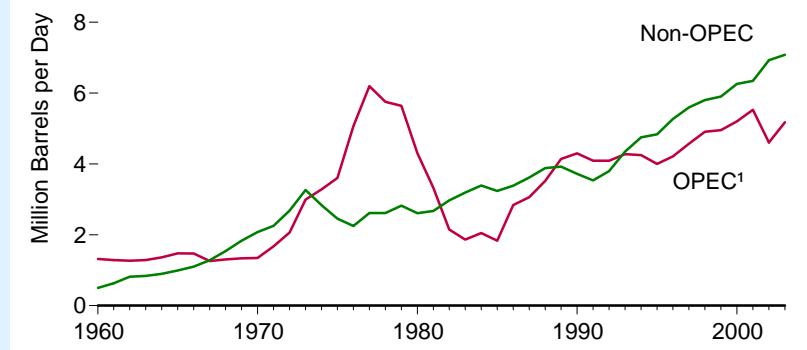
Petroleum Trade

Figure 22. Petroleum Trade



U.S. crude oil imports grew rapidly from mid-century until the late 1970s. From 1979 to 1985, imports fell sharply due to improved efficiency and conservation efforts. After 1985, the upward trend resumed. In 2003, crude oil imports reached a record-high level of 9.6 million barrels per day. Petroleum product imports were 2.6 million barrels per day in 2003. The United States exported 1.0 million barrels per day of petroleum in 2003.

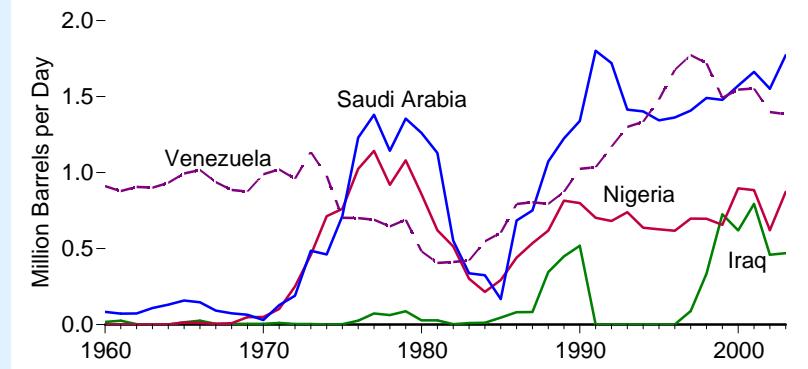
Figure 23. Imports From OPEC and Non-OPEC Countries



¹ Organization of Petroleum Exporting Countries.

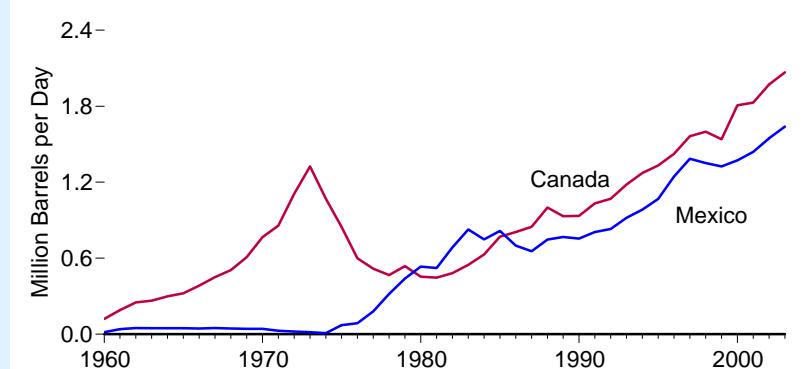
U.S. petroleum imports rose sharply in the 1970s, and reliance on petroleum from the Organization of Petroleum Exporting Countries (OPEC) grew. In 1977, 70 percent of U.S. petroleum imports came from OPEC countries versus 42 percent in 2003. From 1993 through 2003, more petroleum came from non-OPEC countries than OPEC countries.

Figure 24. Imports From Selected OPEC Countries



Among OPEC countries, Saudi Arabia, Venezuela, and Nigeria—nations from three different continents—were key suppliers of petroleum to the American market. Each experienced wide fluctuation in the amount of petroleum it sold to the United States over the decades. In 2003, 0.5 million barrels per day of petroleum came into the United States from Iraq.

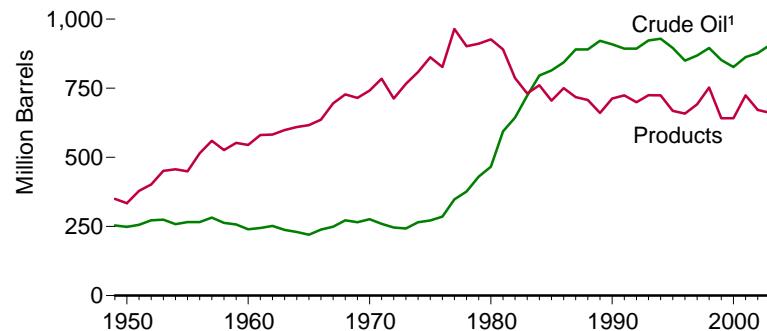
Figure 25. Imports From Canada and Mexico



Canada and Mexico, our national neighbors, supplied the largest quantities of petroleum from non-OPEC countries. In 2003, imports from Canada passed the 2.0 million barrels per day mark for the first time. Imports from Mexico were insignificant until the mid-1970s when they began to play a key role in U.S. supplies. Canadian and Mexican petroleum together accounted for 30 percent of all U.S. imports in 2003.

Petroleum Stocks

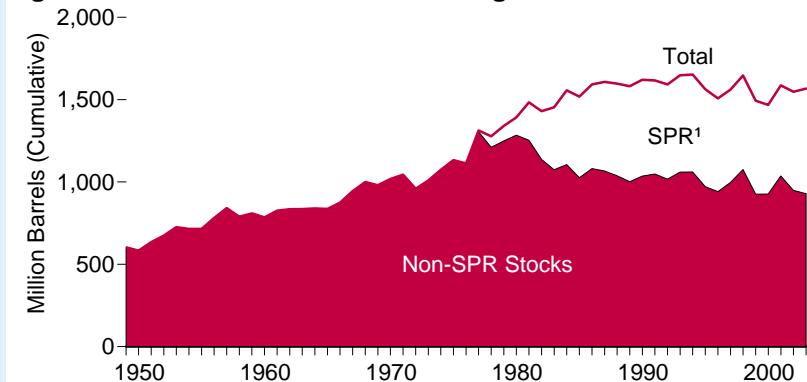
Figure 26. Stocks of Crude Oil and Products



¹ Includes crude oil stored in the Strategic Petroleum Reserve.

Through 1983, the Nation held most of its petroleum storage in the form of products, which were ready for the market. After that, most petroleum in storage was in the form of crude oil that still needed to be refined into usable end products. At the end of 2003, petroleum stocks totaled 1.6 billion barrels, 58 percent crude oil and 42 percent products.

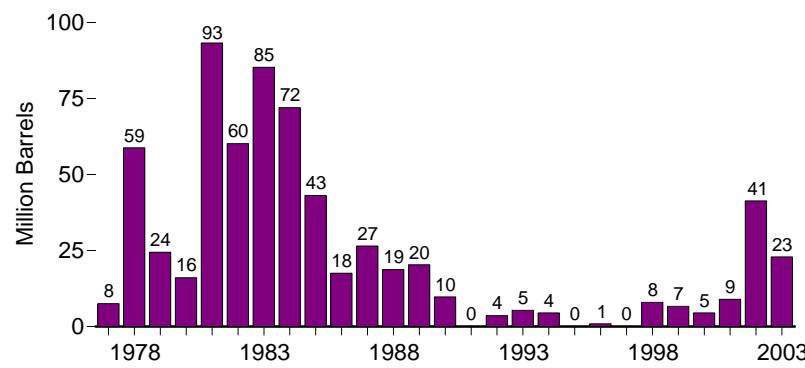
Figure 27. Total Stocks and the Strategic Petroleum Reserve



¹ Strategic Petroleum Reserve.

In 1977, the United States began filling the Strategic Petroleum Reserve (SPR), a national reserve of petroleum stocks in case of emergency. At the end of 2003, the SPR held 638 million barrels of crude oil, 41 percent of all U.S. petroleum stocks.

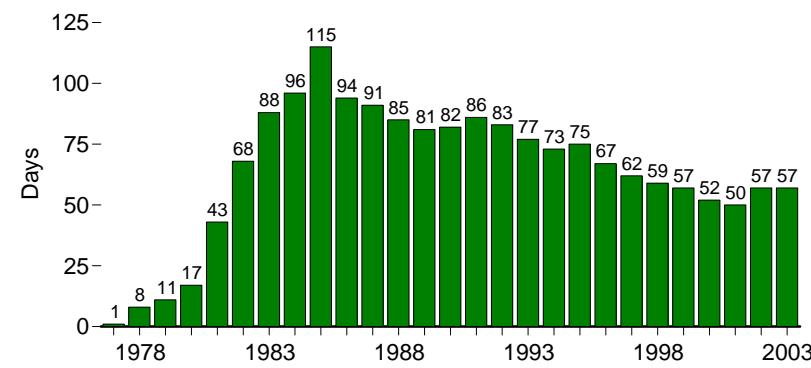
Figure 28. Crude Oil Imports for the SPR¹



¹ Imported by the SPR and imported by others for the SPR.

Most crude oil in the SPR was imported, and most of it came in during the early 1980s. In fact, from 1991 through 1997, only 14 million barrels were imported for the reserve, and in 3 of those years, no oil at all was imported for the reserve. SPR imports picked up in 2002 and 2003 when a sum of 64 million barrels came in.

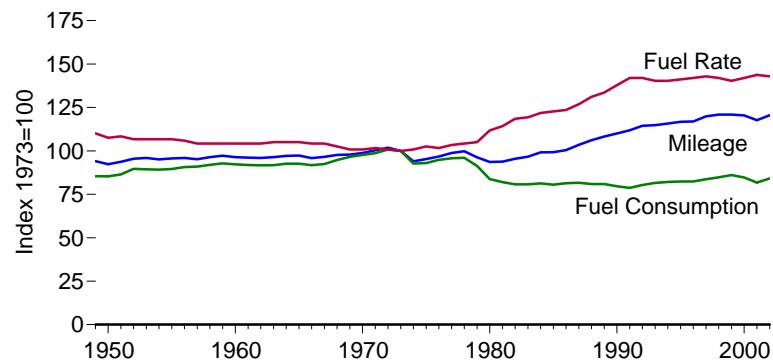
Figure 29. SPR Stocks as Days' Worth of Net Imports



An important SPR measure is the number of days' worth of total net imports of petroleum that could be met by the reserve in an emergency. The peak level occurred in 1985 when the reserve could have supplied 115 days of petroleum net imports, at the 1985 level. The rate trended down through 2001, but rose in 2002 and reached 57 days' worth in both 2002 and 2003.

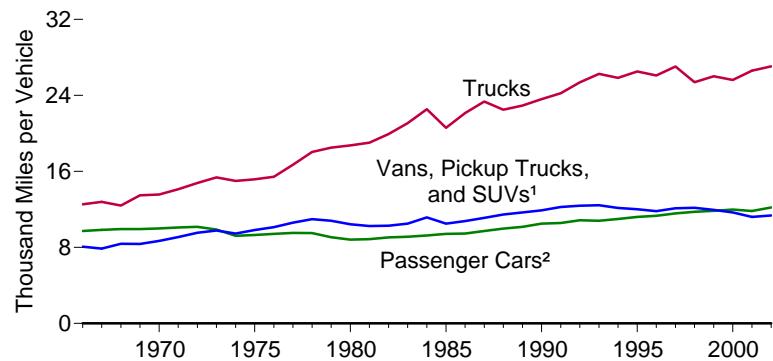
Motor Vehicles

Figure 30. Motor Vehicle Indicators



The composite motor vehicle fuel rate (miles per gallon) rose 42 percent from 1973 to 1991 and then leveled off for the next 12 years. Mileage (miles per vehicle) grew steadily from 1980 to 1998, declined from 1999 through 2001, and then grew again in 2002. Fuel consumption (gallons per vehicle) fell 21 percent from 1973 to 1991 but then grew 9 percent from 1991 to 1999.

Figure 32. Motor Vehicle Mileage

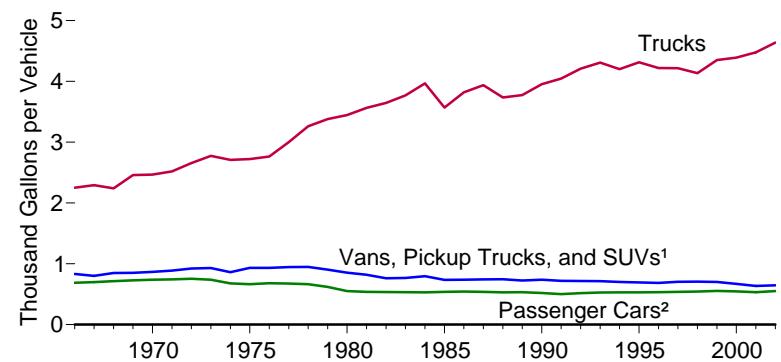


¹ Sport utility vehicle. ² Motorcycles are included through 1989.

Truck miles traveled per year greatly exceeded that of other vehicle types and grew sharply from 1966 to 2002, up 116 percent. In 2002, trucks averaged 27.1 thousand miles per vehicle per year, while passenger cars averaged 12.2 thousand miles per year and vans, pickup trucks, and sport utility vehicles averaged 11.4 thousand miles per year.

Note: Motor vehicles include passenger cars, motorcycles, vans, pickup trucks, sport utility vehicles, trucks, and buses.

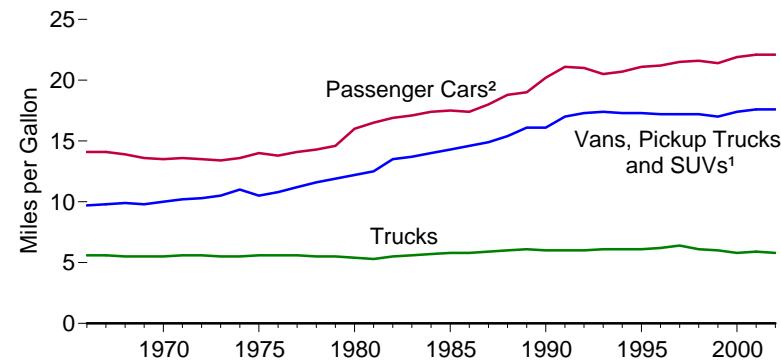
Figure 31. Motor Vehicle Fuel Consumption



¹ Sport utility vehicle. ² Motorcycles are included through 1989.

From 1966 to 2002, fuel consumption rates for trucks doubled, growing from 2.3 thousand gallons per truck to 4.6 thousand gallons per truck. Meanwhile, fuel consumption rates for other vehicle types fell, passenger cars down 20 percent and other vehicles down 17 percent.

Figure 33. Motor Vehicle Fuel Rates

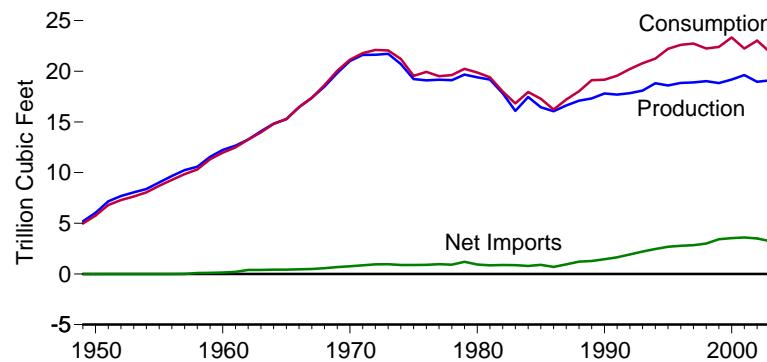


¹ Sport utility vehicle. ² Motorcycles are included through 1989.

Fuel rates (miles per gallon) for passenger cars and vans, pickup trucks, and sport utility vehicles rose noticeably from the late 1970s through the early 1990s and again from 2000 through 2002. Truck fuel rates, which were much lower than other vehicle rates, remained generally flat throughout the period.

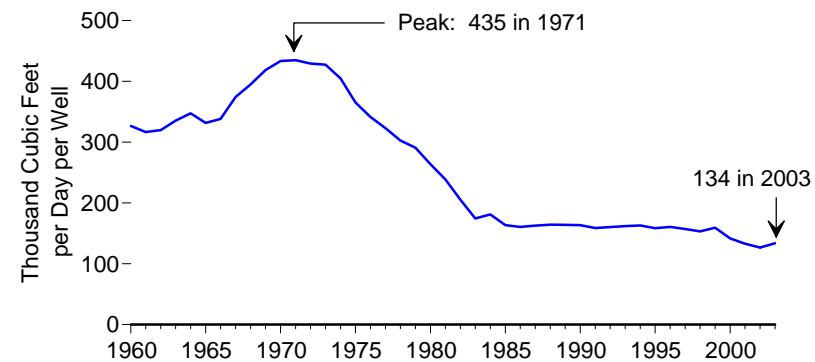
Natural Gas

Figure 34. Natural Gas Overview



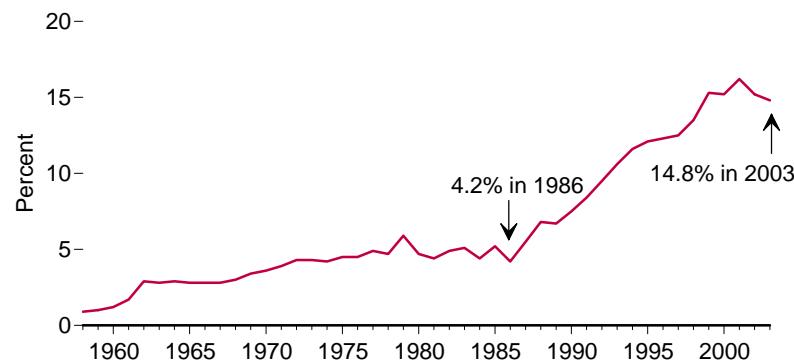
U.S. natural gas production and consumption were nearly in balance through 1986. When consumption began to outpace production, imports of natural gas rose to meet U.S. requirements for the fuel. In 2003, consumption stood at 21.9 trillion cubic feet (Tcf), production at 19.1 Tcf, and net imports at 3.2 Tcf.

Figure 35. Natural Gas Well Average Productivity



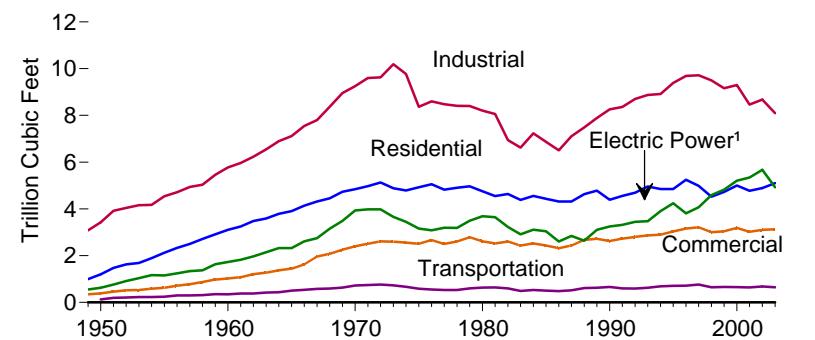
Gas well productivity, measured as gross withdrawals per day per well, grew rapidly in the late 1960s, peaked in 1971, and then fell sharply until the mid-1980s. Productivity remained nearly steady from 1985 through 1999, declined for three years, and then rose by 6 percent in 2003. Still, the 2003 rate was 69 percent below the 1971 peak level.

Figure 36. Net Imports as Share of Consumption



Net imports of natural gas as a share of consumption was in the 4-to-6 percent range from 1970 through 1987. Then, during a period when consumption outpaced production, the share rose from 4.2 percent in 1986 to 16.2 percent in 2001. The share fell in 2002 and 2003, and stood at 14.8 percent in 2003.

Figure 37. Natural Gas Consumption by Sector

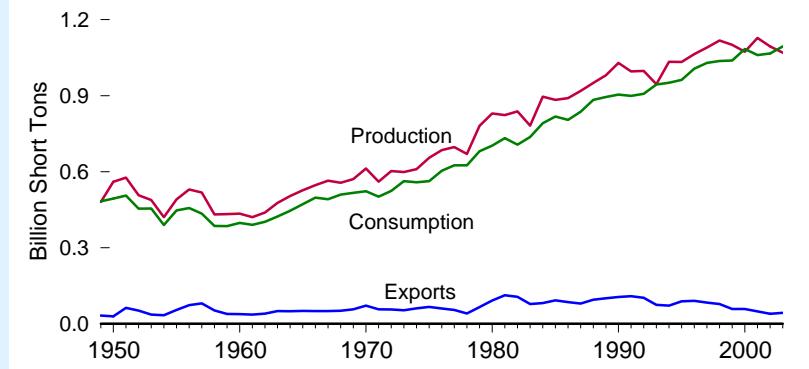


¹ Through 1988, electric utilities only; after 1988, includes independent power producers.

The industrial sector was both the largest consuming sector of natural gas and the sector with the greatest volatility due to variability in industrial output. In 2003, the industrial sector accounted for 37 percent of all natural gas consumption.

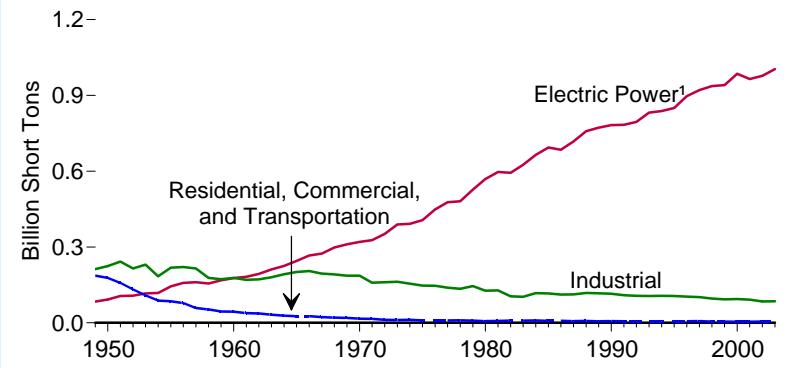
Coal

Figure 38. Coal Overview



Unlike petroleum or natural gas, domestic production of coal nearly always exceeded U.S. consumption of coal, but in 2003, consumption was 2 percent higher than production. U.S. exports to other countries totaled 43 million short tons in 2003, well below the peak export level of 113 million short tons that occurred in 1981.

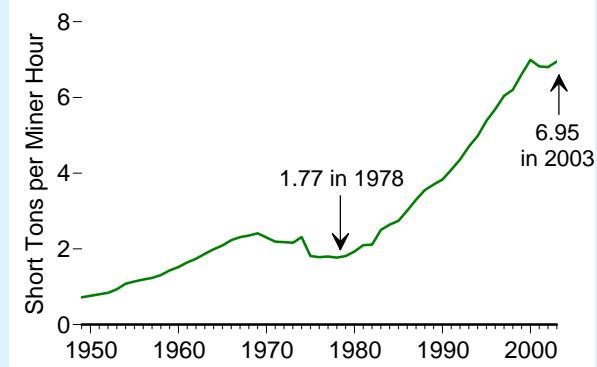
Figure 39. Coal Consumption by Sector



¹ Through 1988, electric utilities only; after 1988, includes independent power producers.

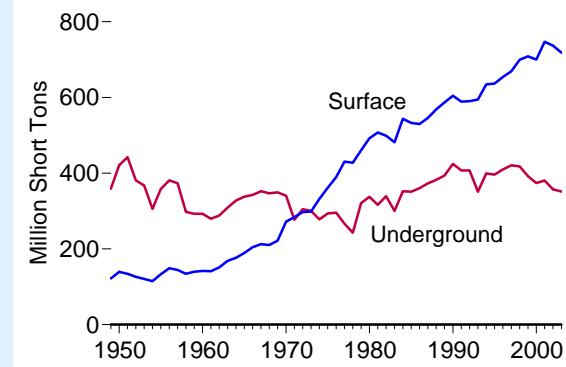
In the 1950s, most coal was consumed in the industrial sector, many homes were still heated by coal, and the transportation sector consumed coal in steam-driven trains and ships. By the 1960s, most coal was used for generating electricity and by 2003 the electric power sector accounted for 92 percent of all coal consumption.

Figure 40. Coal Mining Productivity



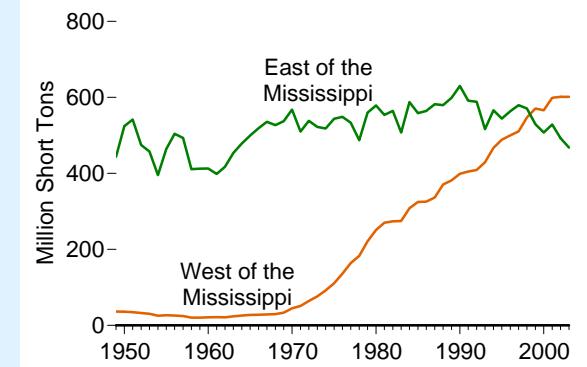
Improved mining technology and the shift toward more surface-mined coal promoted dramatic improvement in productivity from the Nation's mines after 1978.

Figure 41. Production by Mining Method



Beginning in 1974, production from surface mines consistently exceeded production from underground mines, and surface-mine production grew at a faster rate.

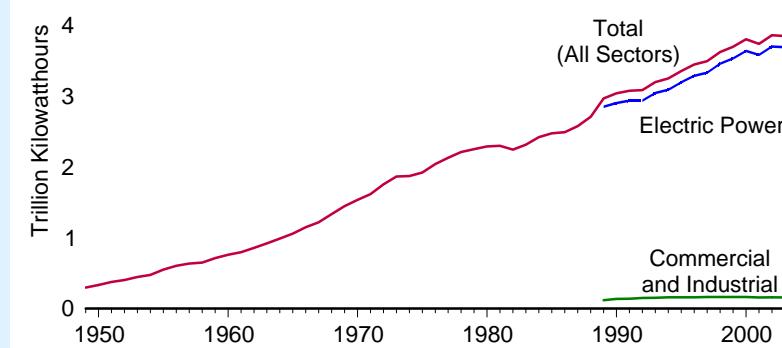
Figure 42. Production by Location



Western coal production expanded tremendously after 1969 and surpassed Eastern production beginning in 1999.

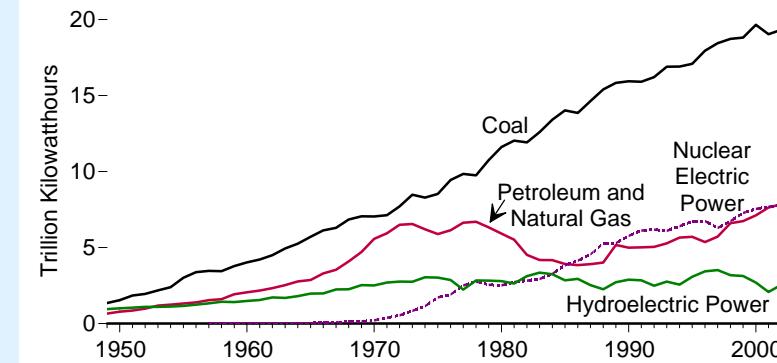
Electricity Net Generation and Useful Thermal Output

Figure 43. Electricity Net Generation by Sector



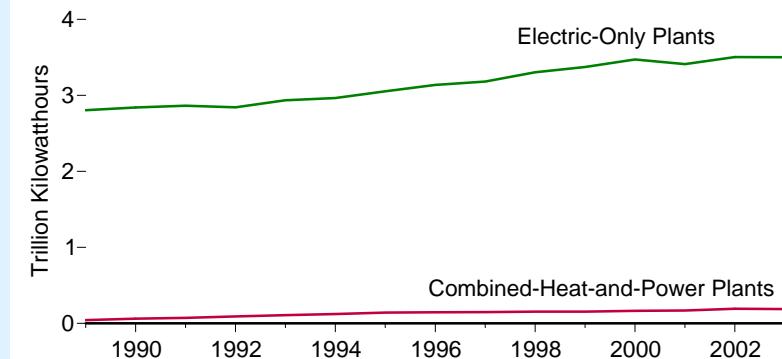
Total electric power net generation grew from 0.3 trillion kilowatthours in 1949 to 3.8 trillion kilowatthours in 2003, failing to increase in only three years (1982, 2001, and 2003) over the entire span. Most generation was in the electric power sector, but some occurred directly in the commercial and industrial sectors.

Figure 44. Major Sources of Total Electricity Net Generation



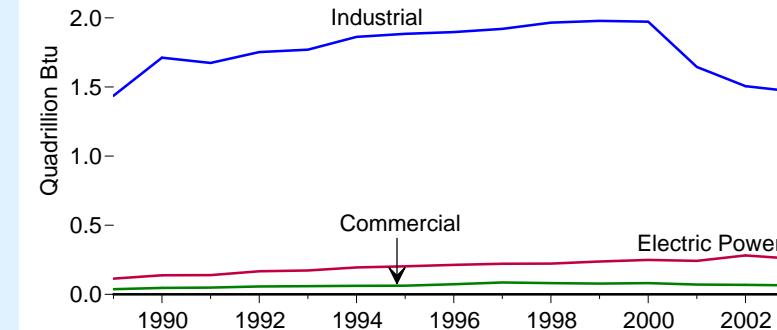
Most electricity net generation came from coal. In 2003, fossil fuels (coal, petroleum, and natural gas) accounted for 71 percent of all net generation, while nuclear electric power contributed 20 percent, and renewable energy resources 9 percent. Over three-fourths of the net generation from renewable energy resources was derived from hydroelectric power.

Figure 45. Electric Power Sector by Plant Type



Most generating facilities exist to produce only electricity but some function as combined-heat-and-power (CHP) plants that produce both electricity and heat from a single heat source. Rather than being wasted, the heat from a CHP plant is used for processes and applications other than electrical generation.

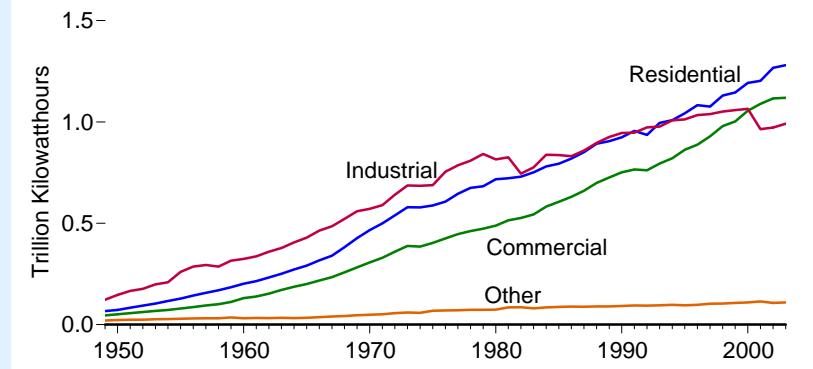
Figure 46. Useful Thermal Output at Combined-Heat-and-Power Plants by Sector



The non-electrical output at a combined-heat-and-power (CHP) plant is called useful thermal output. Useful thermal output is thermal energy that is available from the plant for use in industrial or commercial processes or heating or cooling applications. In 2003, 1.5 quadrillion Btu of useful thermal output was created by the industrial sector, and much smaller amounts by the electric power and commercial sectors.

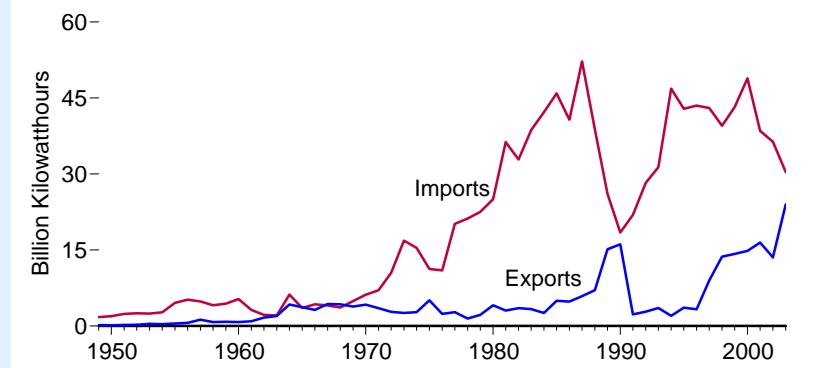
Electricity Sales, Prices, and Trade

Figure 47. Retail Sales by Sector



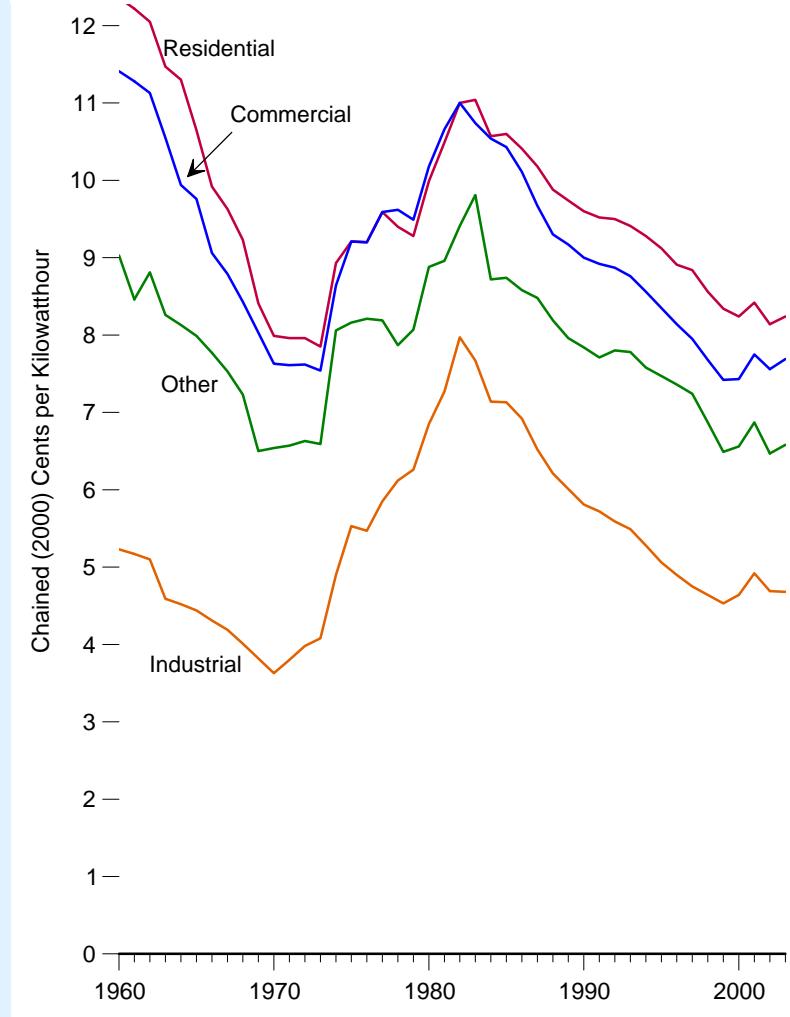
Enormous growth occurred in electricity sales in all three major sectors—residential, commercial, and industrial. Beginning in 1993, residential sales surpassed industrial sales, and commercial sales exceeded industrial sales from 2001 through 2003. Industrial sector sales showed the greatest volatility of all the sectors.

Figure 49. Electricity Trade



Except for a few years in the 1960s when imported and exported electricity were nearly equal, the United States imported more electricity than it exported. Most electricity trade occurred with Canada, with smaller exchanges between the United States and Mexico. In 2003, net imported electricity was less than 1 percent of all electricity used in the United States.

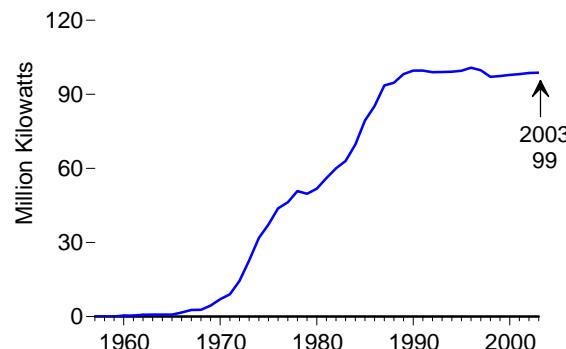
Figure 48. Average Real Retail Prices of Electricity by Sector



Over the decades, industrial consumers paid the lowest rates for electricity; residential customers usually paid the highest prices. In 2003, all sectors paid lower rates than they had in 1960, when adjusted for inflation.

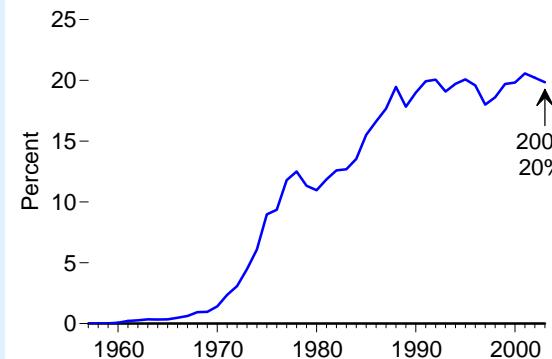
Nuclear Electric Power

Figure 50. Nuclear Net Summer Capacity



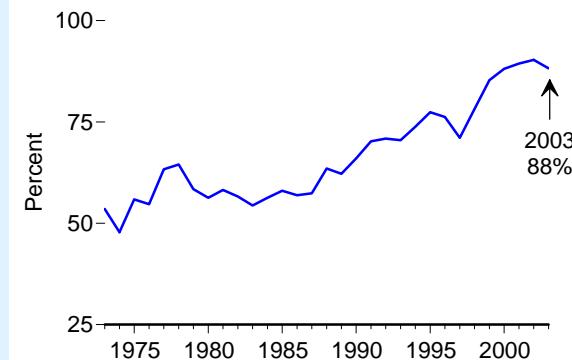
The U.S. nuclear industry's first commercial plant opened in Shippingport, Pennsylvania, in 1957. Nuclear capacity expanded sharply in the 1970s and 1980s.

Figure 51. Nuclear Share of Electricity



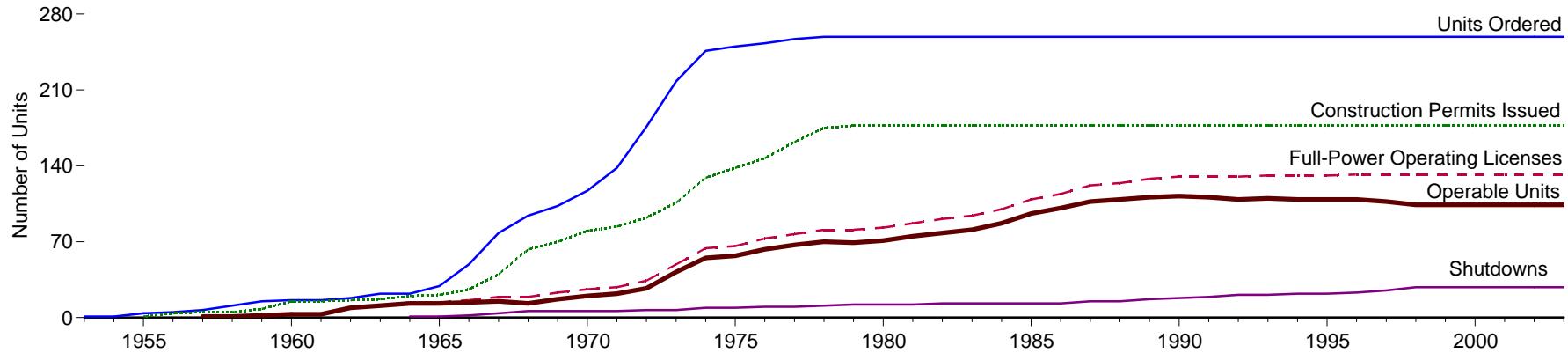
Over the latter part of the last century, nuclear electric power played a key role in meeting the Nation's rapidly growing electricity requirement. In 2003, 20 percent of all U.S. electricity generation came from nuclear electric power.

Figure 52. Capacity Factor



Capacity factors measure actual power generation as a share of maximum possible output. Factors for the industry, which were in the 50-to-60 percent range through the 1980s, generally improved in later years and stood at 88 percent in 2003.

Figure 53. Operable Units and Cumulative Orders, Permits, Licenses, and Shutdowns, 1953-2003

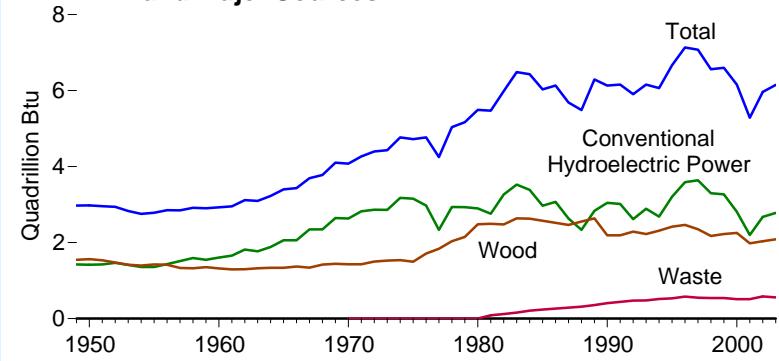


A total of 259 nuclear electric power units were ordered since the industry got its start in the United States in the 1950s. The last new orders were placed in 1978. Of the 259 orders, 177 advanced to the issuance of construction permits and, of those, 132 eventually gained full-power operating licenses.

Out of the 132 units that were granted full-power operating licenses, over time, 28 were permanently shut down. The largest number of units ever operable in the United States was 112 in 1990. From 1998 through 2003, 104 units were operable.

Renewable Energy

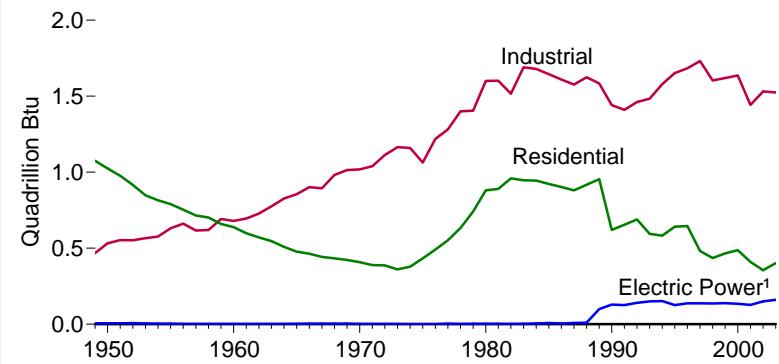
Figure 54. Renewable Energy Total Consumption and Major Sources



Note: Wood includes wood, black liquor, and other wood waste.

Consumption of renewable energy in the United States recovered in 2002 and 2003 after two years of decline. The upturn reflected gains in hydroelectric power, which accounted for 45 percent of all renewable energy in 2003. Wood was the next largest source of renewable energy, followed by waste, geothermal, alcohol fuels, wind, and solar.

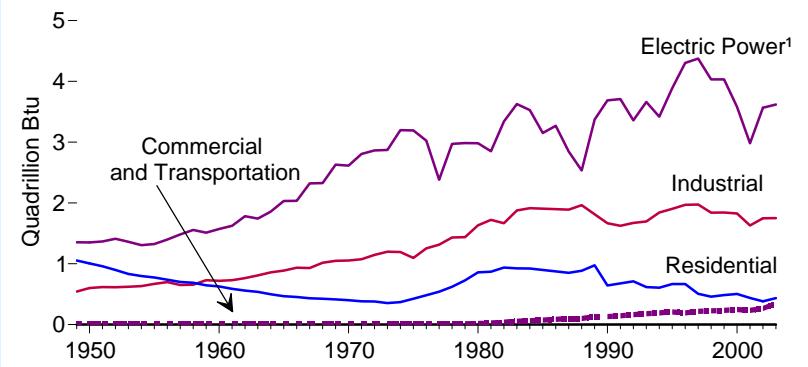
Figure 56. Wood Consumption by Major Sectors



¹ Through 1988, electric utilities only; after 1988, includes independent power producers.

In recent decades, the industrial sector was the largest consuming sector of wood as an energy source. Residential use of wood recovered sharply from 1974 through 1982, but then generally resumed its previous downward trend.

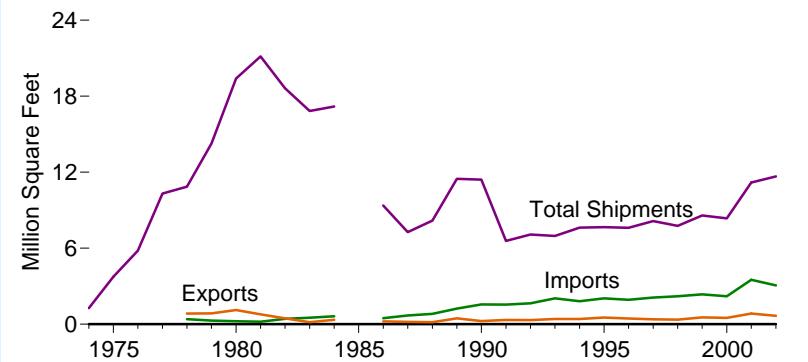
Figure 55. Renewable Energy Consumption by Sector



¹ Through 1988, electric utilities only; after 1988, includes independent power producers.

Most renewable energy was consumed by the electric power sector to generate electricity. After 1958, the industrial sector was the second largest consuming sector of renewable energy. Residential sector usage of renewable energy was the third largest consuming sector.

Figure 57. Solar Collector Shipments and Trade

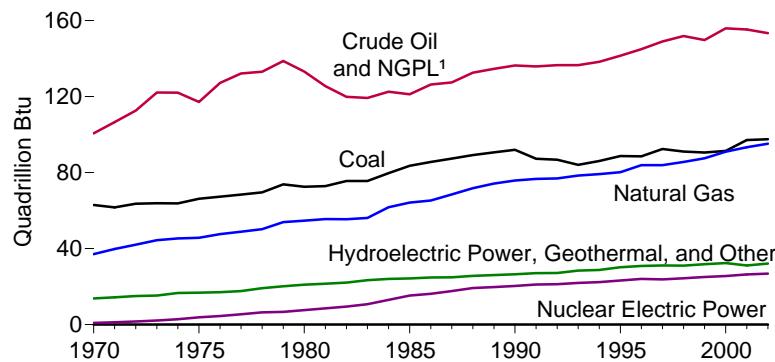


Note: Data were not collected for 1985. Shipments include all domestically manufactured collectors plus imports.

Shipments of solar collectors grew strongly in the 1970s and reached a peak of 21 million square feet in 1981. Uneven performance was recorded over the next decade, followed by a mild upward trend during the 1990s and a bump up in 2001 and 2002.

International Energy

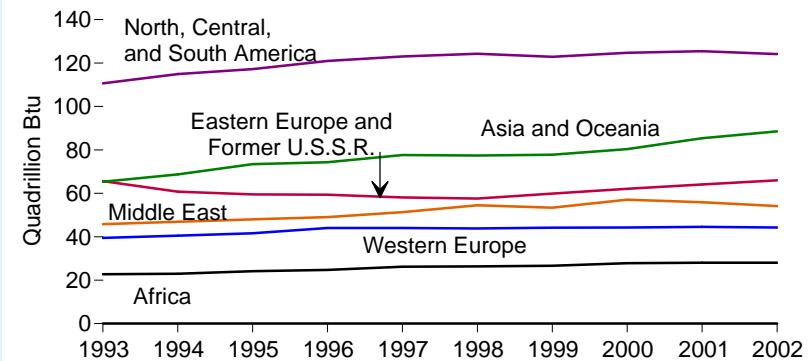
Figure 58. World Primary Energy Production By Source



¹ Natural gas plant liquids.

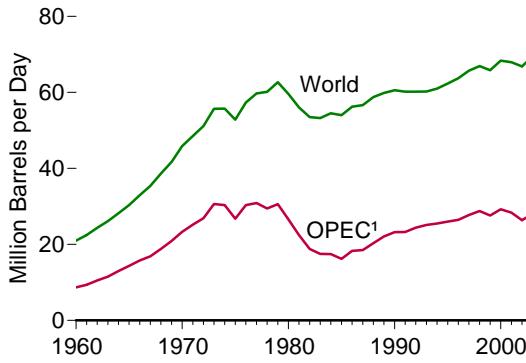
From 1970 to 2002, world primary energy production grew by 88 percent, reaching 405 quadrillion Btu in 2002. Growth occurred in all types of energy. In 2002, fossil fuels accounted for 85 percent of all energy produced worldwide, renewable energy 8 percent, and nuclear electric power 7 percent.

Figure 59. World Primary Energy Production by Region



Thirty-one percent of the 405 quadrillion Btu of energy produced worldwide in 2002 came from North, Central, and South America. The second largest regional energy producer was Asia and Oceania with 22 percent of the world total in 2002.

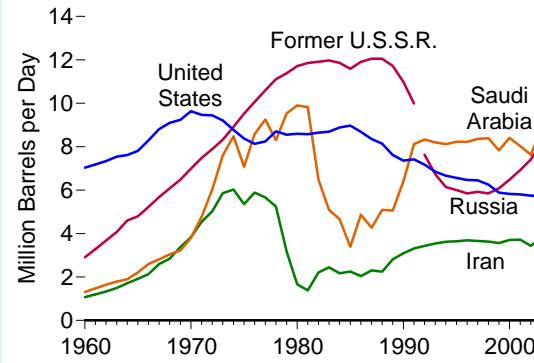
Figure 60. World Crude Oil Production



¹ Organization of Petroleum Exporting Countries.

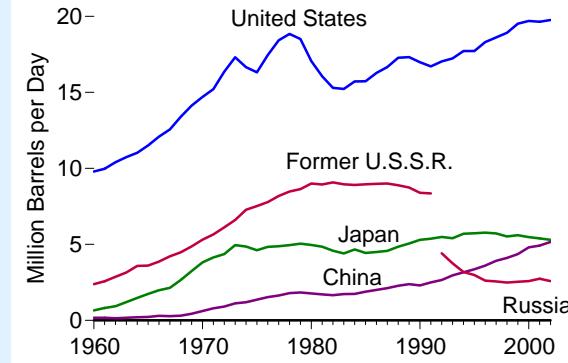
World crude oil production totaled 70 million barrels per day in 2003, up 4 percent over the previous year. OPEC's share of the world total in 2003 was 40 percent compared to 55 percent in 1973.

Figure 61. Leading Crude Oil Producers



After 1991, Saudi Arabia was the world's largest producer of crude oil, closely followed by Russia in 2002 and 2003. U.S. production peaked in 1970.

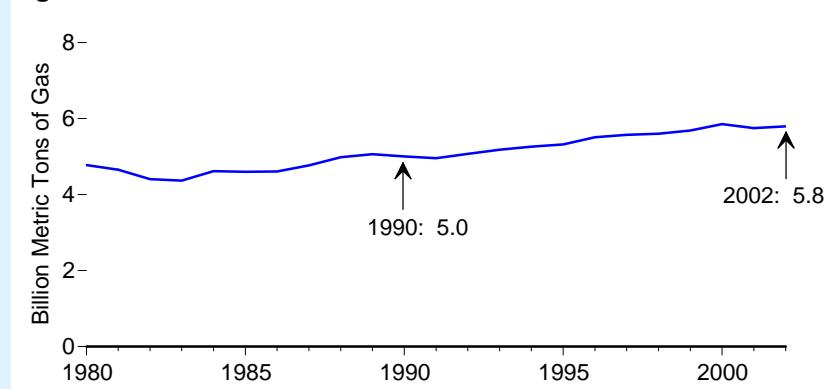
Figure 62. Leading Petroleum Consumers



The United States accounted for 25 percent of world consumption of petroleum in 2002. Japan and China, the next two leading consumers, together accounted for 13 percent.

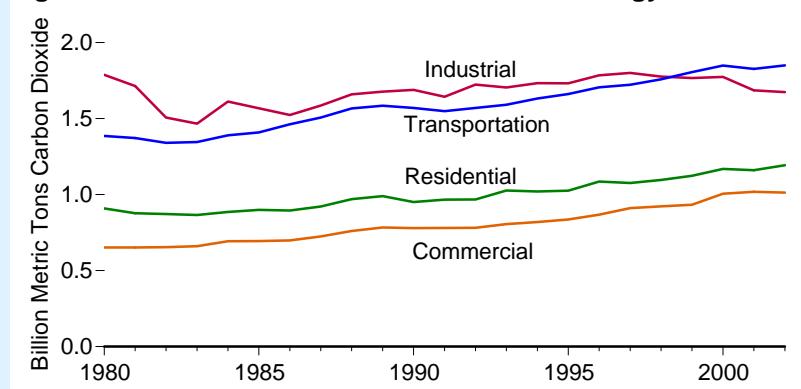
Emissions

Figure 63. Carbon Dioxide Emissions



The combustion of fossil fuels—coal, petroleum, and natural gas—to release their energy creates carbon dioxide emissions, the most significant greenhouse gas. Total carbon dioxide emissions reached 5.8 billion metric tons of gas in 2002, 16 percent higher than the 1990 level.

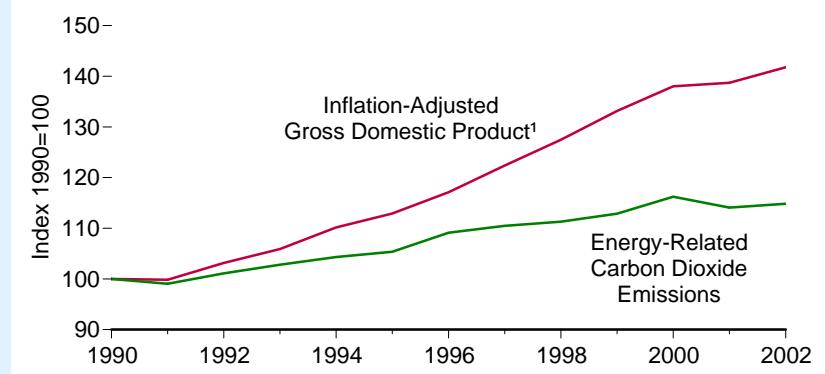
Figure 64. Carbon Dioxide Emissions From Energy Use



Note: Electric power sector emissions are distributed to the end-use sectors.

In 1999, transportation sector carbon dioxide emissions overtook industrial sector emissions. Of the major sectors, the commercial sector generated the lowest quantities of carbon dioxide emissions but recorded the fastest rate of growth.

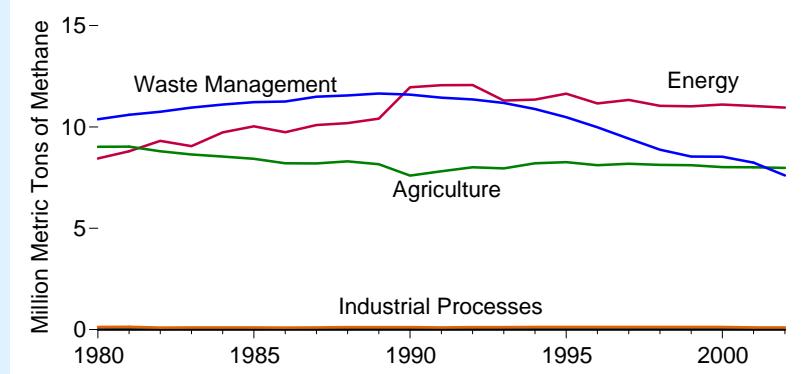
Figure 65. GDP Growth and Carbon Dioxide Emissions



¹ Based on chained (2000) dollars.

While gross domestic product (GDP) grew by 42 percent from 1990 to 2002, energy-related carbon dioxide emissions grew by 15 percent. It was primarily the use of less energy per unit of economic output, rather than the use of low-carbon fuels, that held the carbon dioxide emissions growth rate well below the inflation-adjusted gross domestic product growth rate.

Figure 66. Methane Emissions by Source



In 2002, methane emissions accounted for 9 percent of total U.S. greenhouse gas emissions, weighted by global warming potential. Most methane emissions came from energy, waste management, and agricultural activities. The production, processing, and distribution of natural gas accounted for 59 percent of all energy-related methane emissions in 2002.

Figure Sources

Data for “Energy Perspectives” figures and text are derived from the following *Annual Energy Review 2003* tables and additional sources:

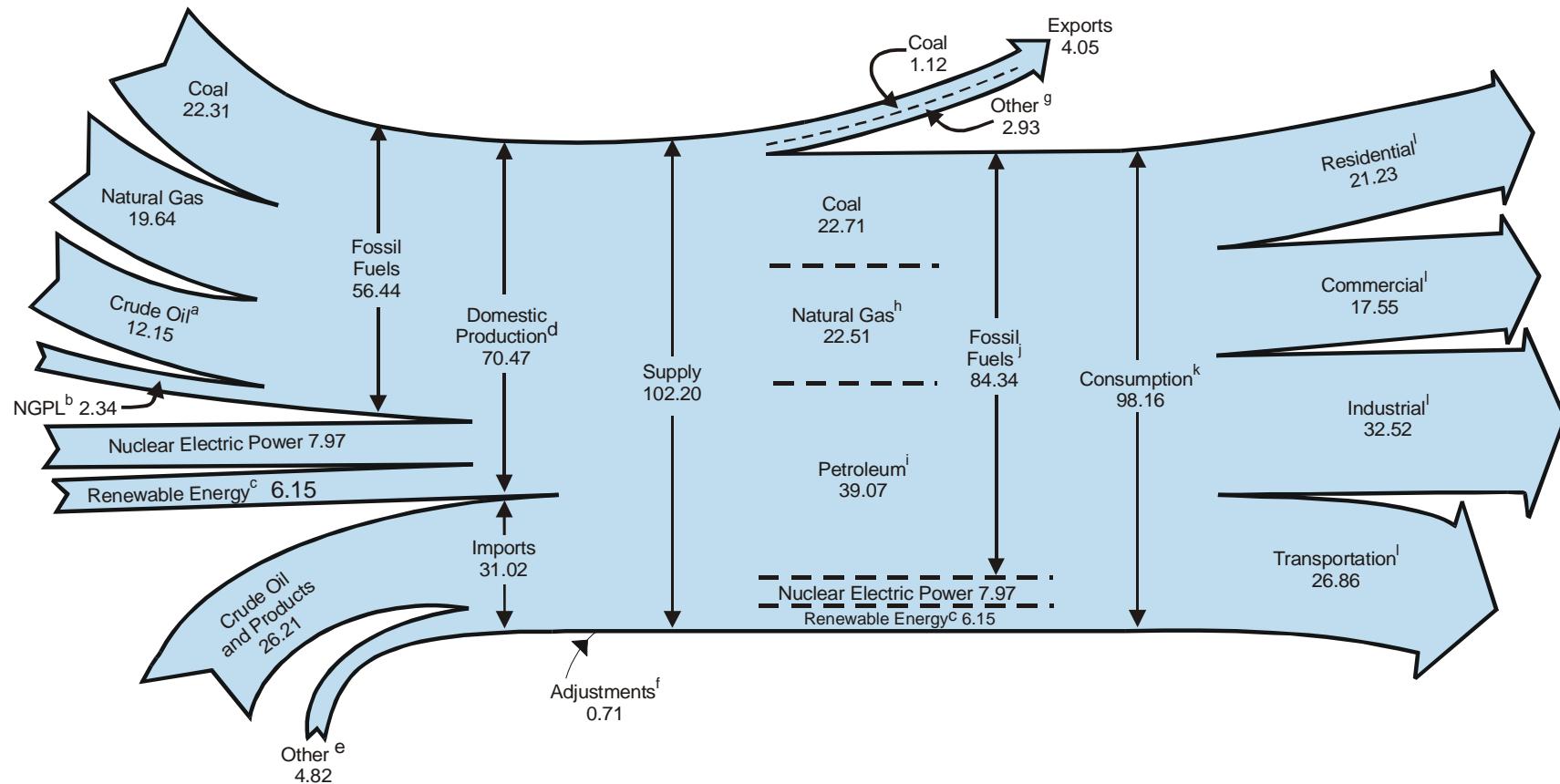
1. Table 1.1.
2. Table 1.5.
3. Table 1.5.
4. Table 1.3.
5. Tables 1.3, 10.1, and E1.
6. Historical data: Table 1.3. Projections: Energy Information Administration (EIA), *Annual Energy Outlook 2004* (January 2004), Tables A1, A8, and A18 (<http://www.eia.doe.gov/oiaf/aeo/results.html>).
7. Table 2.1a.
8. Tables 2.1b and 2.1c.
9. Table 2.1d.
10. Tables 2.1e and 5.14c.
11. Table 1.2.
12. Tables 5.1, 6.1, and 7.1.
13. Table 1.4.
14. Table 5.1.
15. Table 5.2.
16. Table 5.2.
17. Table 4.3.
18. Tables 5.13a, 5.13b, 5.13c, and 5.13d.
19. Table 5.11.
20. Table 5.21.
21. Table 5.24.
22. Tables 5.3 and 5.5.
23. Table 5.4.
24. Table 5.4.
25. Table 5.4.
26. Table 5.16.
27. Table 5.16.
28. Table 5.17.
29. Table 5.17.
30. Table 2.8.
31. Table 2.8.
32. Table 2.8.
33. Table 2.8.
34. Table 6.1.
35. Table 6.4.
36. Table 6.3.
37. Table 6.5.
38. Tables 7.1 and 7.4.
39. Table 7.3.
40. Table 7.6.
41. Table 7.2.
42. Table 7.2.
43. Tables 8.2a, 8.2b, and 8.2d.
44. Table 8.2a.
45. Table 8.2c.
46. Tables 8.3b and 8.3c.
47. Table 8.9.
48. Table 8.10.
49. Table 8.1.
50. Table 9.2.
51. Table 9.2.
52. Table 9.2.
53. Table 9.1.
54. Table 10.1.
55. Tables 10.2a and 10.2b.
56. Tables 10.2a and 10.2b.
57. Table 10.3.
58. Table 11.1.
59. Table 11.2.
60. Table 11.5.
61. Table 11.5.
62. Table 11.10.
63. Table 12.1.
64. Table 12.2.
65. Tables 1.5 and 12.2, and EIA, *Emissions of Greenhouse Gases in the United States 2002* (October 2003), page 24.
66. Tables 12.1 and 12.5, and EIA, *Emissions of Greenhouse Gases in the United States 2002* (October 2003), page 33.

Energy Overview



The United States at night from orbit. Source: National Oceanographic and Atmospheric Administration satellite imagery; mosaic provided by U.S. Geological Survey.

Diagram 1. Energy Flow, 2003
 (Quadrillion Btu)



^a Includes lease condensate.

^b Natural gas plant liquids.

^c Conventional hydroelectric power, wood, waste, ethanol blended into motor gasoline, geothermal, solar, and wind.

^d Includes -0.09 quadrillion Btu hydroelectric pumped storage.

^e Natural gas, coal, coal coke, and electricity.

^f Stock changes, losses, gains, miscellaneous blending components, and unaccounted-for supply.

^g Crude oil, petroleum products, natural gas, electricity, and coal coke.

^h Includes supplemental gaseous fuels.

ⁱ Petroleum products, including natural gas plant liquids.

^j Includes 0.05 quadrillion Btu of coal coke net imports.

^k Includes, in quadrillion Btu, -0.09 hydroelectric pumped storage; -0.24 ethanol blended into motor gasoline, which is accounted for in both fossil fuels and renewable energy but counted only once in total consumption; and 0.02 electricity net imports.

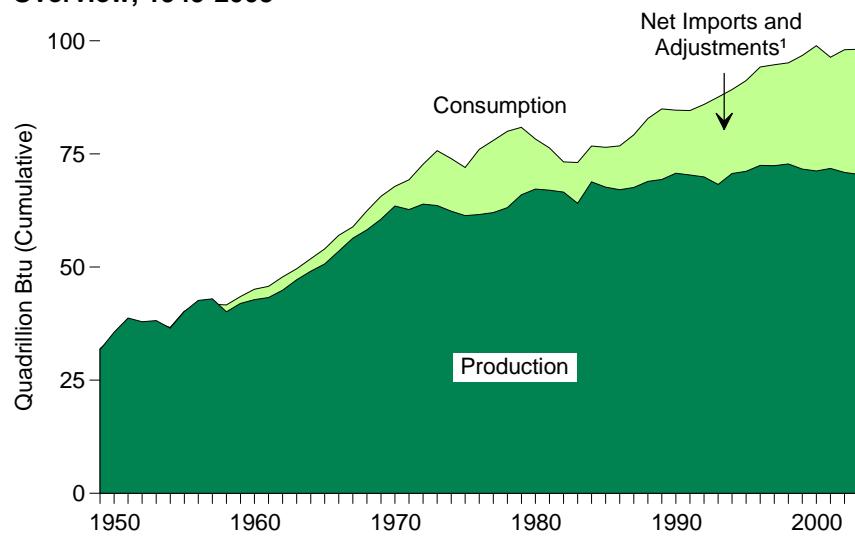
^l Primary consumption, electricity retail sales, and electrical system energy losses, which are allocated to the end-use sectors in proportion to each sector's share of total electricity retail sales. See note at end of Section 2.

Notes: • Data are preliminary. • Totals may not equal sum of components due to independent rounding.

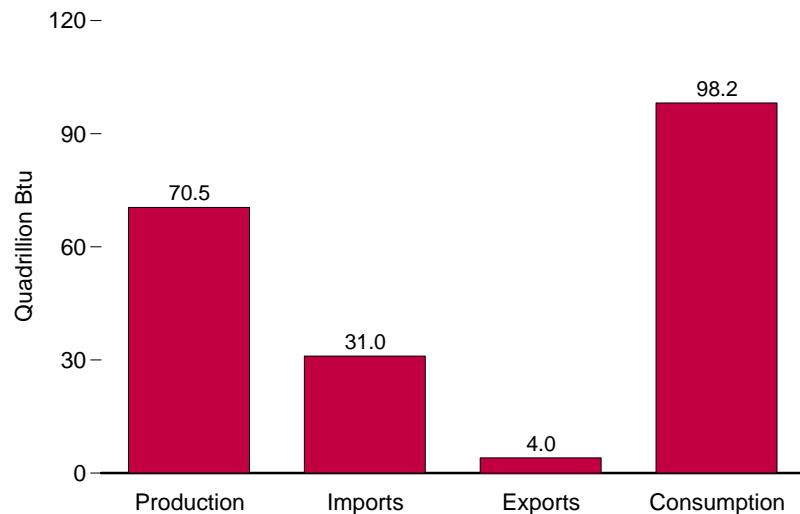
Sources: Tables 1.1, 1.2, 1.3, 1.4, and 2.1a.

Figure 1.1 Energy Overview

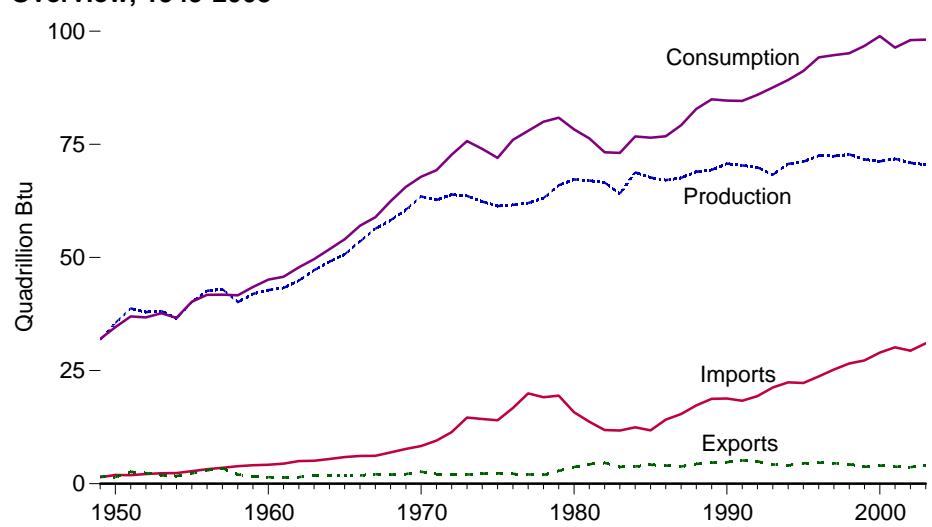
Overview, 1949-2003



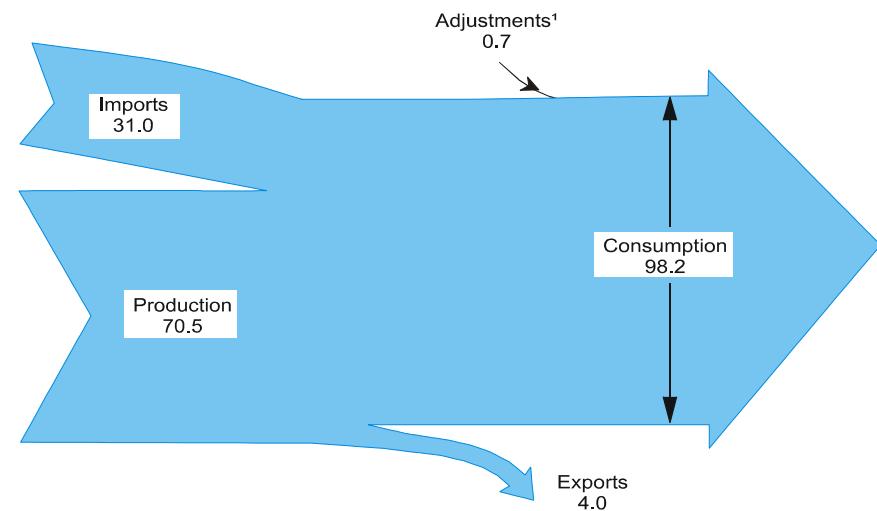
Overview, 2003



Overview, 1949-2003



Energy Flow, 2003
(Quadrillion Btu)



¹ Stock changes, losses, gains, miscellaneous blending components, and unaccounted-for supply.

Source: Table 1.1.

Table 1.1 Energy Overview, Selected Years, 1949-2003

(Quadrillion Btu)

Year	Production				Imports		Exports		Adjustments ⁷	Consumption			
	Fossil Fuels ¹	Nuclear Electric Power	Renewable Energy ²	Total ³	Petroleum ⁴	Total ⁵	Coal	Total ⁶		Fossil Fuels ^{8,9}	Nuclear Electric Power	Renewable Energy ^{2,9}	Total ^{9,10}
1949	28.75	0.00	2.97	31.72	1.43	1.45	0.88	1.59	0.40	29.00	0.00	2.97	31.98
1950	32.56	0.00	2.98	35.54	1.89	1.91	0.79	1.47	-1.37	31.63	0.00	2.98	34.62
1955	37.36	0.00	2.78	40.15	2.75	2.79	1.46	2.29	-0.44	37.41	0.00	2.78	40.21
1960	39.87	0.01	2.93	42.80	4.00	4.19	1.02	1.48	-0.43	42.14	0.01	2.93	45.09
1965	47.23	0.04	3.40	50.68	5.40	5.89	1.38	1.83	-0.72	50.58	0.04	3.40	54.02
1970	59.19	0.24	4.08	63.50	7.47	8.34	1.94	2.63	-1.37	63.52	0.24	4.08	67.84
1971	58.04	0.41	4.27	62.72	8.54	9.53	1.55	2.15	-0.82	64.60	0.41	4.27	69.29
1972	58.94	0.58	4.40	63.92	10.30	11.39	1.53	2.12	-0.48	67.70	0.58	4.40	72.70
1973	58.24	0.91	4.43	63.58	13.47	14.61	1.43	2.03	-0.46	70.32	0.91	4.43	75.71
1974	56.33	1.27	4.77	62.37	13.13	14.30	1.62	2.20	-0.48	67.91	1.27	4.77	73.99
1975	54.73	1.90	4.72	61.36	12.95	14.03	1.76	2.32	-1.07	65.35	1.90	4.72	72.00
1976	54.72	2.11	4.77	61.60	15.67	16.76	1.60	2.17	-0.18	69.10	2.11	4.77	76.01
1977	55.10	2.70	4.25	62.05	18.76	19.95	1.44	2.05	-1.95	70.99	2.70	4.25	78.00
1978	55.07	3.02	5.04	63.14	17.82	19.11	1.08	1.92	-0.34	71.86	3.02	5.04	79.99
1979	58.01	2.78	5.17	65.95	17.93	19.46	1.75	2.86	-1.65	72.89	2.78	5.17	80.90
1980	59.01	2.74	5.49	67.24	14.66	15.80	2.42	3.69	-1.05	69.98	2.74	5.49	78.29
1981	58.53	3.01	5.47	67.01	12.64	13.72	2.94	4.31	-0.08	67.75	3.01	5.47	R76.34
1982	57.46	3.13	5.99	66.57	10.78	11.86	2.79	4.61	R-0.57	64.04	3.13	5.99	R73.25
1983	54.42	3.20	6.49	64.11	10.65	11.75	2.04	3.69	R0.94	63.29	3.20	6.49	R73.10
1984	58.85	3.55	6.43	68.83	11.43	12.47	2.15	3.79	R-0.78	66.62	3.55	6.43	R76.74
1985	57.54	4.08	6.03	67.65	10.61	11.78	2.44	4.20	R1.24	66.22	4.08	6.03	R76.47
1986	56.58	4.38	6.13	67.09	13.20	14.15	2.25	4.02	R-0.44	66.15	4.38	6.13	R76.78
1987	57.17	4.75	5.69	67.61	14.16	15.40	2.09	3.81	R0.03	68.63	4.75	5.69	R79.23
1988	57.87	5.59	5.49	68.95	15.75	17.30	2.50	4.37	R0.96	71.66	5.59	5.49	R82.84
1989	57.47	5.60	6.29	69.36	17.16	18.77	2.64	4.66	R1.49	73.02	5.60	6.29	R84.96
1990	58.53	6.10	6.13	70.73	17.12	18.82	2.77	4.75	R-0.13	72.46	6.10	6.13	R84.67
1991	57.83	6.42	6.16	70.36	16.35	18.33	2.85	5.14	R1.04	72.00	6.42	6.16	R84.60
1992	57.59	6.48	5.91	69.93	16.97	19.37	2.68	4.94	R1.58	73.52	6.48	5.91	R85.95
1993	55.74	6.41	6.16	68.26	18.51	21.27	1.96	4.26	2.30	975.05	6.41	6.16	987.58
1994	57.95	6.69	6.06	70.68	19.24	22.39	1.88	4.06	0.24	76.48	6.69	6.06	89.25
1995	57.44	7.08	6.67	71.16	18.88	22.26	2.32	4.51	2.32	77.49	7.08	6.67	91.22
1996	58.28	7.09	7.14	72.47	20.29	23.70	2.37	4.63	2.68	79.98	7.09	7.14	94.22
1997	58.76	6.60	7.08	72.39	21.74	25.22	2.19	4.51	1.64	81.09	6.60	7.08	94.73
1998	59.20	7.07	6.56	72.79	22.91	26.58	2.09	4.30	0.08	81.59	7.07	6.56	95.15
1999	57.51	7.61	6.60	71.65	23.13	27.25	1.53	3.71	1.58	82.65	7.61	6.60	96.77
2000	57.25	7.86	6.16	71.22	24.53	28.97	1.53	4.01	R2.72	R84.96	7.86	6.16	R98.90
2001	R58.56	8.03	R5.29	R71.79	25.40	R30.16	1.27	R3.77	R-1.80	R83.22	8.03	R5.29	R96.38
2002	R56.91	R8.14	RP5.96	R70.93	R24.68	R29.41	1.03	R3.66	R1.35	R84.10	R8.14	RP5.96	R98.03
2003	R56.44	R7.97	R6.15	R70.47	R26.21	R31.02	R1.12	R4.05	R0.71	R84.34	R7.97	R6.15	R98.16

¹ Coal, natural gas (dry), crude oil, and natural gas plant liquids.

² Electricity net generation from conventional hydroelectric power, geothermal, solar, and wind; consumption of wood, waste, and alcohol fuels; geothermal heat pump and direct use energy; and solar thermal direct use energy.

³ Also includes hydroelectric pumped storage.

⁴ Crude oil and petroleum products. Includes imports into the Strategic Petroleum Reserve.

⁵ Also includes natural gas, coal, coal coke, and electricity.

⁶ Also includes natural gas, petroleum, coal coke, and electricity.

⁷ A balancing item. Includes stock changes, losses, gains, miscellaneous blending components, and

unaccounted-for supply.

⁸ Coal, coal coke net imports, natural gas, and petroleum.

⁹ Beginning in 1993, ethanol blended into motor gasoline is included in consumption values for both "Fossil Fuels" and "Renewable Energy," but is counted only once in total consumption.

¹⁰ Also includes hydroelectric pumped storage and electricity net imports.

R=Revised. P=Preliminary.

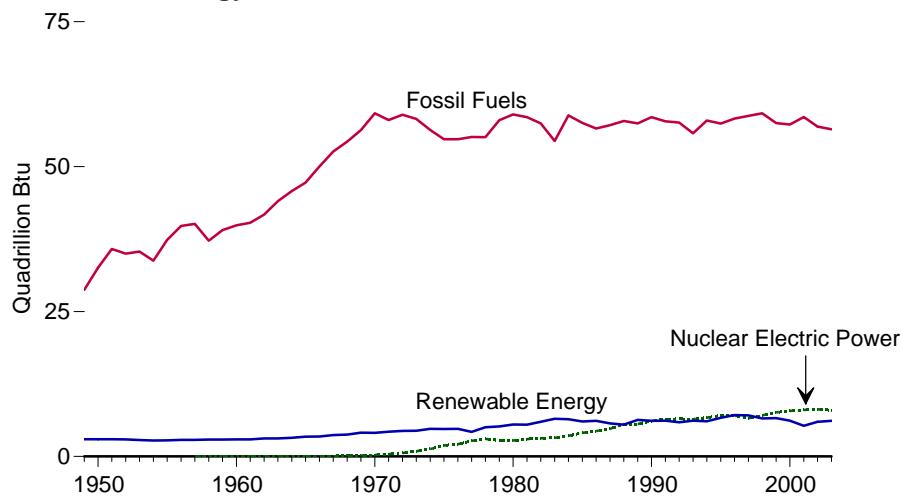
Note: Totals may not equal sum of components due to independent rounding.

Web Page: For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/overview.html>.

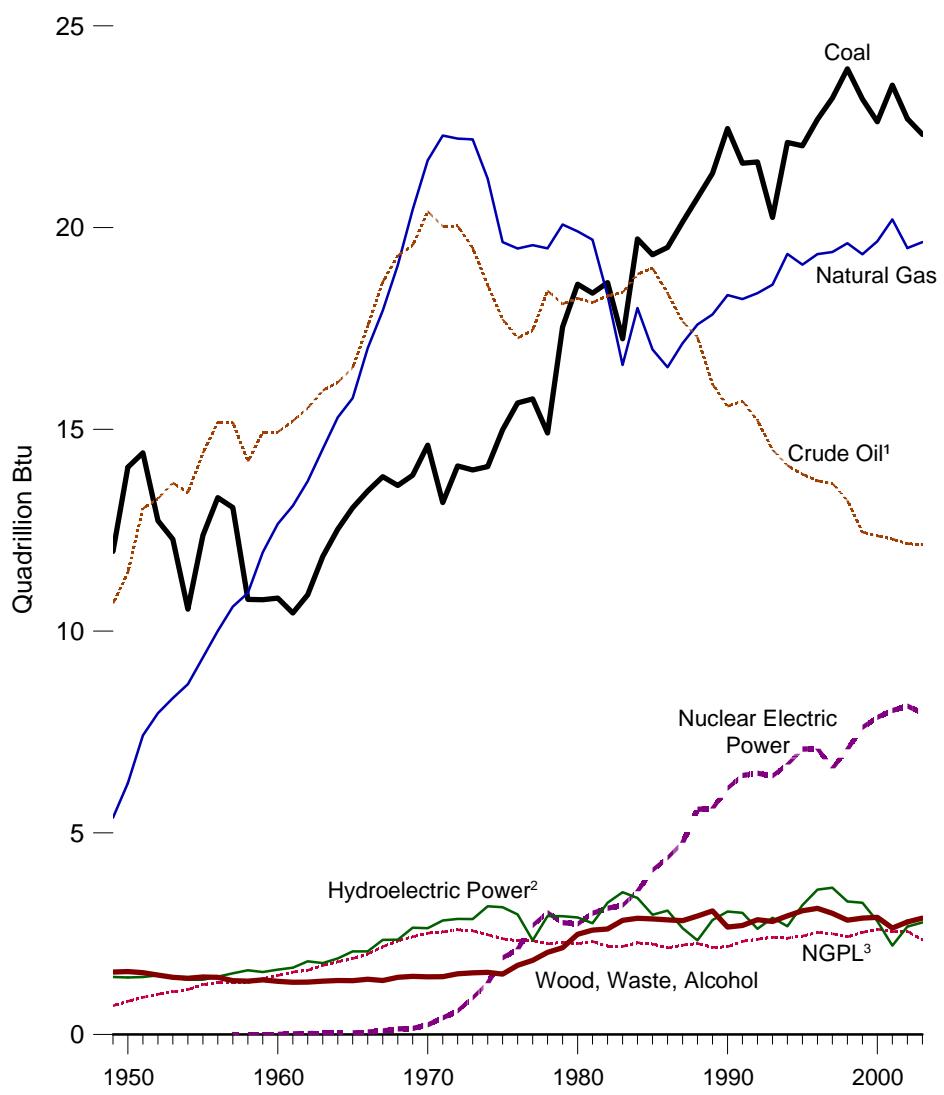
Sources: Tables 1.2, 1.3, and 1.4.

Figure 1.2 Energy Production by Source

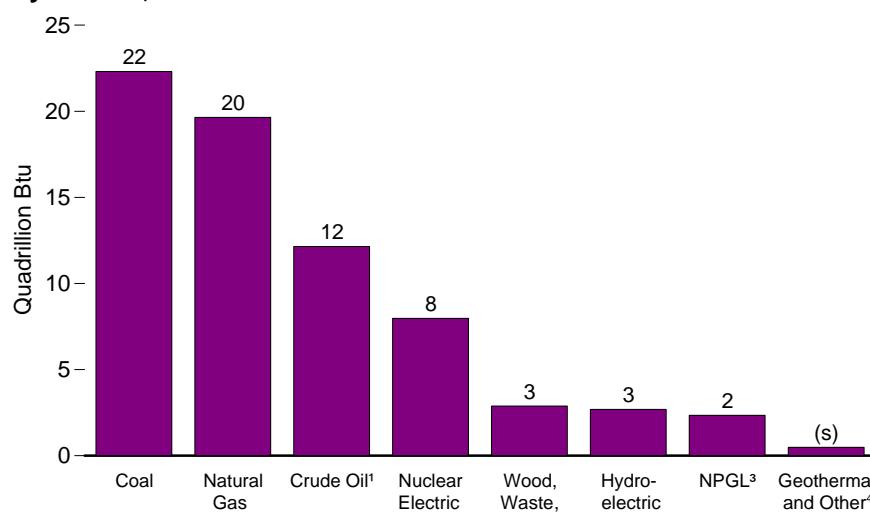
By Fossil Fuels, Nuclear Electric Power, and Renewable Energy, 1949-2003



By Major Source, 1949-2003



By Source, 2003



¹ Includes lease condensate.

² Conventional and pumped-storage hydroelectric power.

³ Natural gas plant liquids.

⁴ Solar and wind.

(s)=Less than 0.5 quadrillion Btu.

Note: Because vertical scales differ, graphs should not be compared.

Source: Table 1.2.

Table 1.2 Energy Production by Source, Selected Years, 1949-2003
 (Quadrillion Btu)

Year	Fossil Fuels					Nuclear Electric Power	Hydro-electric Pumped Storage ³	Renewable Energy ¹					Total	
	Coal	Natural Gas (Dry)	Crude Oil ²	Natural Gas Plant Liquids	Total			Conventional Hydroelectric Power	Wood, Waste, Alcohol ⁴	Geothermal	Solar	Wind		
1949	11.974	5.377	10.683	0.714	28.748	0.000	(⁵)	1.425	1.549	NA	NA	NA	2.974	31.722
1950	14.060	6.233	11.447	0.823	32.563	0.000	(⁵)	1.415	1.562	NA	NA	NA	2.978	35.540
1955	12.370	9.345	14.410	1.240	37.364	0.000	(⁵)	1.360	1.424	NA	NA	NA	2.784	40.148
1960	10.817	12.656	14.935	1.461	39.869	0.006	(⁵)	1.608	1.320	0.001	NA	NA	2.929	42.804
1965	13.055	15.775	16.521	1.883	47.235	0.043	(⁵)	2.059	1.335	0.004	NA	NA	3.398	50.676
1970	14.607	21.666	20.401	2.512	59.186	0.239	(⁵)	2.634	1.431	0.011	NA	NA	4.076	63.501
1971	13.186	22.280	20.033	2.544	58.042	0.413	(⁵)	2.824	1.432	0.012	NA	NA	4.268	62.723
1972	14.092	22.208	20.041	2.598	58.938	0.584	(⁵)	2.864	1.503	0.031	NA	NA	4.398	63.920
1973	13.992	22.187	19.493	2.569	58.241	0.910	(⁵)	2.861	1.529	0.043	NA	NA	4.433	63.585
1974	14.074	21.210	18.575	2.471	56.331	1.272	(⁵)	3.177	1.540	0.053	NA	NA	4.769	62.372
1975	14.989	19.640	17.729	2.374	54.733	1.900	(⁵)	3.155	1.499	0.070	NA	NA	4.723	61.357
1976	15.654	19.480	17.262	2.327	54.723	2.111	(⁵)	2.976	1.713	0.078	NA	NA	4.768	61.602
1977	15.755	19.565	17.454	2.327	55.101	2.702	(⁵)	2.333	1.838	0.077	NA	NA	4.249	62.052
1978	14.910	19.485	18.434	2.245	55.074	3.024	(⁵)	2.937	2.038	0.064	NA	NA	5.039	63.137
1979	17.540	20.076	18.104	2.286	58.006	2.776	(⁵)	2.931	2.152	0.084	NA	NA	5.166	65.948
1980	18.598	19.908	18.249	2.254	59.008	2.739	(⁵)	2.900	2.485	0.110	NA	NA	5.494	67.241
1981	18.377	19.699	18.146	2.307	58.529	3.008	(⁵)	2.758	2.590	0.123	NA	NA	5.471	67.007
1982	18.639	18.319	18.309	2.191	57.458	3.131	(⁵)	3.266	2.615	0.105	NA	NA	5.985	66.574
1983	17.247	16.593	18.392	2.184	54.416	3.203	(⁵)	3.527	2.831	0.129	NA	(s)	6.488	64.106
1984	19.719	18.008	18.848	2.274	58.849	3.553	(⁵)	3.386	2.880	0.165	(s)	(s)	6.431	68.832
1985	19.325	16.980	18.992	2.241	57.539	4.076	(⁵)	2.970	2.864	0.198	(s)	(s)	6.033	67.647
1986	19.509	16.541	18.376	2.149	56.575	4.380	(⁵)	3.071	2.841	0.219	(s)	(s)	6.132	67.087
1987	20.141	17.136	17.675	2.215	57.167	4.754	(⁵)	2.635	2.823	0.229	(s)	(s)	5.687	67.608
1988	20.738	17.599	17.279	2.260	57.875	5.587	(⁵)	2.334	2.937	0.217	(s)	(s)	5.489	68.951
1989	21.346	17.847	16.117	2.158	57.468	5.602	(⁵)	2.837	3.062	0.317	0.055	0.022	6.294	69.364
1990	22.456	18.326	15.571	2.175	58.529	6.104	-0.036	3.046	2.662	0.336	0.060	0.029	6.133	70.729
1991	21.594	18.229	15.701	2.306	57.829	6.422	-0.047	3.016	2.702	0.346	0.063	0.031	6.158	70.362
1992	21.629	18.375	15.223	2.363	57.590	6.479	-0.043	2.617	2.847	0.349	0.064	0.030	5.907	69.933
1993	20.249	18.584	14.494	2.408	55.736	6.410	-0.042	2.892	R ^{2.803}	0.364	0.066	0.031	R ^{6.156}	R ^{68.260}
1994	22.111	19.348	14.103	2.391	57.952	6.694	-0.035	2.683	2.939	0.338	0.069	0.036	6.065	70.676
1995	22.029	19.082	13.887	2.442	57.440	7.075	-0.028	3.205	3.068	0.294	0.070	0.033	6.669	71.156
1996	22.684	19.344	13.723	2.530	58.281	7.087	-0.032	3.590	3.127	0.316	0.071	0.033	7.137	72.472
1997	23.211	19.394	13.658	2.495	58.758	6.597	-0.041	3.640	3.006	0.325	0.070	0.034	7.075	72.389
1998	23.935	19.613	13.235	2.420	59.204	7.068	-0.046	3.297	2.835	0.328	0.070	0.031	6.561	72.787
1999	23.186	19.341	12.451	2.528	57.505	7.610	-0.062	3.268	2.885	0.331	0.069	0.046	6.599	71.652
2000	22.623	19.662	12.358	2.611	57.254	7.862	-0.057	2.811	2.907	0.317	0.066	0.057	6.158	71.218
2001	R ^{23.529}	R ^{20.205}	12.282	2.547	R ^{58.563}	R ^{8.033}	-0.090	2.201	R ^{2.640}	0.311	0.065	0.068	R ^{5.286}	R ^{71.792}
2002	R ^{22.698}	R ^{19.495}	R ^{12.163}	R ^{2.559}	R ^{56.915}	R ^{8.143}	R ^{P-0.088}	R ^{P2.675}	R ^{2.791}	R ^{0.328}	R ^{P0.064}	R ^{P0.105}	R ^{5.963}	R ^{70.933}
2003	R ^{22.311}	R ^{19.641}	R ^{12.145}	R ^{P2.343}	R ^{P56.440}	R ^{P7.973}	R ^{P-0.088}	R ^{P2.779}	R ^{P2.884}	R ^{P0.314}	R ^{P0.063}	R ^{P0.108}	R ^{P6.150}	R ^{P70.474}

¹ Electricity net generation from conventional hydroelectric power, geothermal, solar, and wind; consumption of wood, waste, and alcohol fuels; geothermal heat pump and direct use energy; and solar thermal direct use energy.

² Includes lease condensate.

³ Pumped storage facility production minus energy used for pumping.

⁴ "Alcohol" is ethanol blended into motor gasoline.

⁵ Included in "Conventional Hydroelectric Power."

R=Revised. P=Preliminary. NA=Not available. (s)=Less than 0.0005 quadrillion Btu.

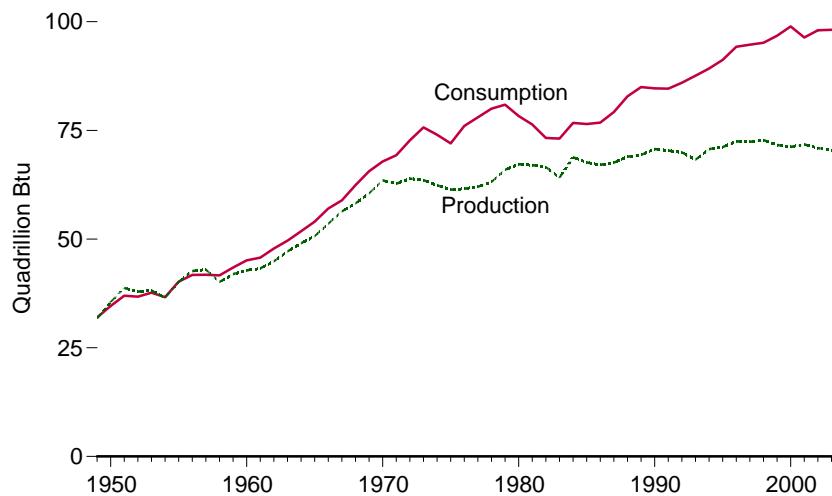
Note: Totals may not equal sum of components due to independent rounding.

Web Page: For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/overview.html>.

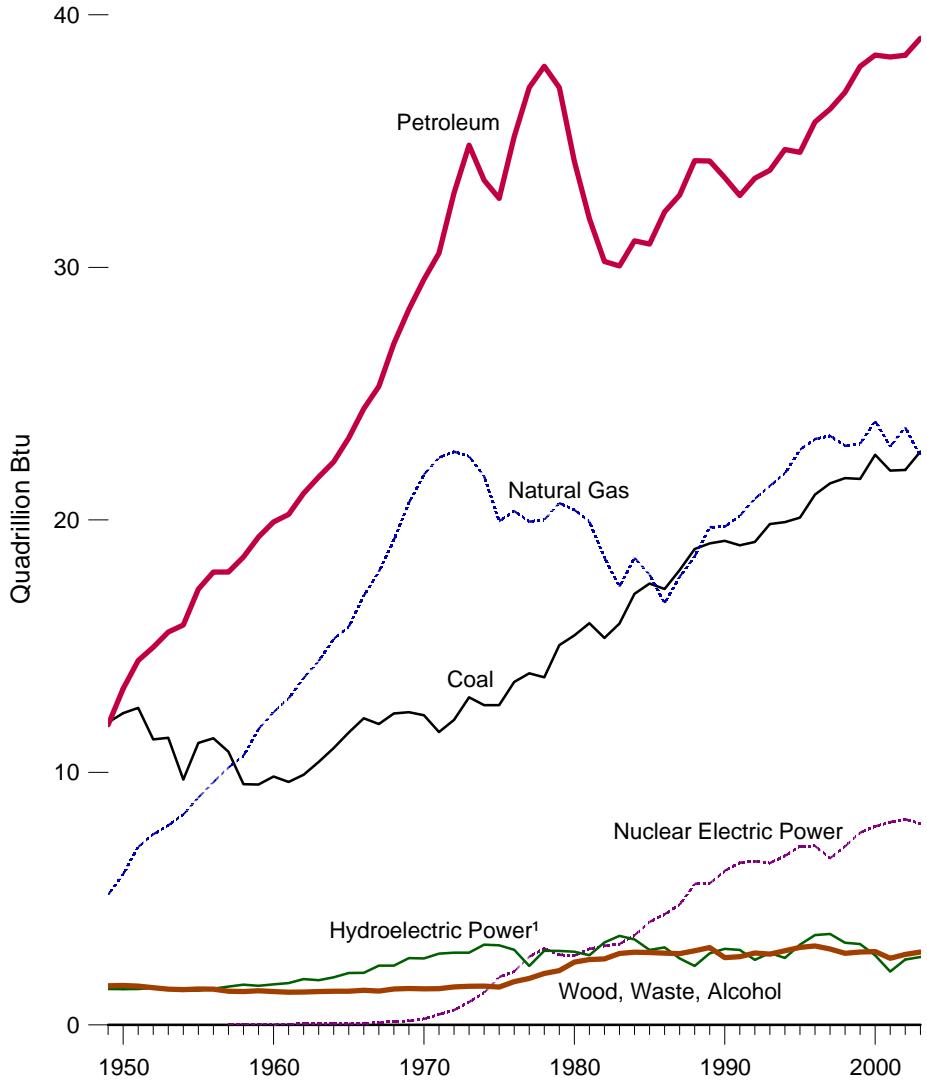
Sources: Tables 5.1, 6.1, 7.1, 8.2a, 10.1, A2, A4, A5, and A6.

Figure 1.3 Energy Consumption by Source

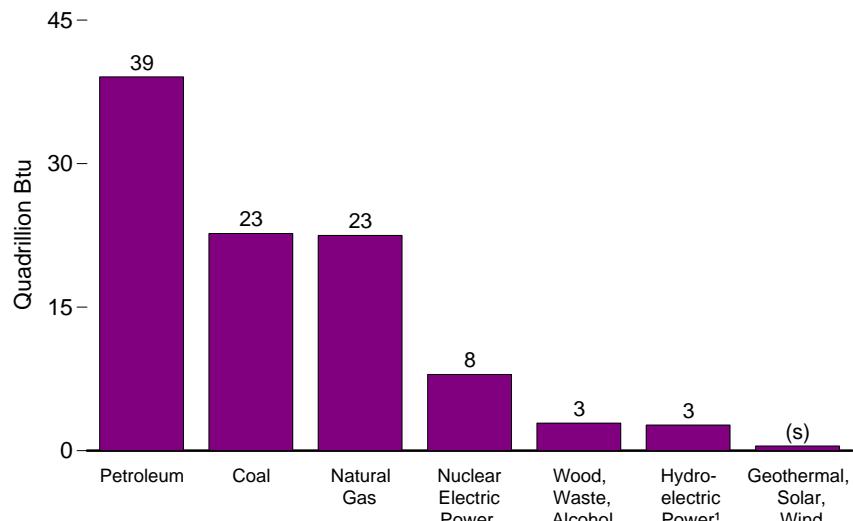
Production and Consumption, 1949-2003



By Major Source, 1949-2003



By Source, 2003



¹ Conventional and pumped-storage hydroelectric power.

(s)= Less than 0.5 quadrillion Btu.

Note: Because vertical scales differ, graphs should not be compared.

Sources: Tables 1.2 and 1.3.

Table 1.3 Energy Consumption by Source, Selected Years, 1949-2003
 (Quadrillion Btu)

Year	Fossil Fuels					Nuclear Electric Power	Hydro- electric Pumped Storage ⁵	Renewable Energy ¹					Electricity Net Imports	Total ^{4,6}	
	Coal	Coal Coke Net Imports	Natural Gas ²	Petroleum ^{3,4}	Total			Conventional Hydroelectric Power	Wood, Waste, Alcohol ^{4,6}	Geothermal	Solar	Wind			
1949	11.981	-0.007	5.145	11.883	29.002	0.000	(7)	1.425	1.549	NA	NA	NA	2.974	0.005	31.982
1950	12.347	0.001	5.968	13.315	31.632	0.000	(7)	1.415	1.562	NA	NA	NA	2.978	0.006	34.616
1955	11.167	-0.010	8.998	17.255	37.410	0.000	(7)	1.360	1.424	NA	NA	NA	2.784	0.014	40.208
1960	9.838	-0.006	12.385	19.919	42.137	0.006	(7)	1.608	1.320	0.001	NA	NA	2.929	0.015	45.087
1965	11.581	-0.018	15.769	23.246	50.577	0.043	(7)	2.059	1.335	0.004	NA	NA	3.398	(s)	54.017
1970	12.265	-0.058	21.795	29.521	63.522	0.239	(7)	2.634	1.431	0.011	NA	NA	4.076	0.007	67.844
1971	11.598	-0.033	22.469	30.561	64.596	0.413	(7)	2.824	1.432	0.012	NA	NA	4.268	0.012	69.289
1972	12.077	-0.026	22.698	32.947	67.696	0.584	(7)	2.864	1.503	0.031	NA	NA	4.398	0.026	72.704
1973	12.971	-0.007	22.512	34.840	70.316	0.910	(7)	2.861	1.529	0.043	NA	NA	4.433	0.049	75.708
1974	12.663	0.056	21.732	33.455	67.906	1.272	(7)	3.177	1.540	0.053	NA	NA	4.769	0.043	73.991
1975	12.663	0.014	19.948	32.731	65.355	1.900	(7)	3.155	1.499	0.070	NA	NA	4.723	0.021	71.999
1976	13.584	(s)	20.345	35.175	69.104	2.111	(7)	2.976	1.713	0.078	NA	NA	4.768	0.029	76.012
1977	13.922	0.015	19.931	37.122	70.989	2.702	(7)	2.333	1.838	0.077	NA	NA	4.249	0.059	78.000
1978	13.766	0.125	20.000	37.965	71.856	3.024	(7)	2.937	2.038	0.064	NA	NA	5.039	0.067	79.986
1979	15.040	0.063	20.666	37.123	72.892	2.776	(7)	2.931	2.152	0.084	NA	NA	5.166	0.069	80.903
1980	15.423	-0.035	20.394	34.202	69.984	2.739	(7)	2.900	2.485	0.110	NA	NA	5.494	0.071	78.289
1981	15.908	-0.016	19.928	31.931	67.750	3.008	(7)	2.758	2.590	0.123	NA	NA	5.471	0.113	R76.342
1982	15.322	-0.022	18.505	30.232	64.037	3.131	(7)	3.266	2.615	0.105	NA	NA	5.985	0.100	R73.253
1983	15.894	-0.016	17.357	30.054	63.290	3.203	(7)	3.527	2.831	0.129	NA	(s)	6.488	0.121	R73.101
1984	17.071	-0.011	18.507	31.051	66.617	3.553	(7)	3.386	2.880	0.165	(s)	(s)	6.431	0.135	R76.736
1985	17.478	-0.013	17.834	30.922	66.221	4.076	(7)	2.970	2.864	0.198	(s)	(s)	6.033	0.140	R76.469
1986	17.260	-0.017	16.708	32.196	66.148	4.380	(7)	3.071	2.841	0.219	(s)	(s)	6.132	0.122	R76.782
1987	18.008	0.009	17.744	32.865	68.626	4.754	(7)	2.635	2.823	0.229	(s)	(s)	5.687	0.158	R79.225
1988	18.846	0.040	18.552	34.222	71.660	5.587	(7)	2.334	2.937	0.217	(s)	(s)	5.489	0.108	R82.844
1989	19.070	0.030	19.712	34.211	73.023	5.602	(7)	2.837	3.062	0.317	0.055	0.022	6.294	0.037	R84.957
1990	19.173	0.005	19.730	33.553	72.460	6.104	-0.036	3.046	2.662	0.336	0.060	0.029	6.133	0.008	R84.668
1991	18.992	0.010	20.149	32.845	71.996	6.422	-0.047	3.016	2.702	0.346	0.063	0.031	6.158	0.067	R84.595
1992	19.122	0.035	20.835	33.527	73.519	6.479	-0.043	2.617	2.847	0.349	0.064	0.030	5.907	0.087	R85.949
1993	19.835	0.027	21.351	43.841	75.055	6.410	-0.042	2.892	4.R2.803	0.364	0.066	0.031	R6.156	0.095	4.R87.578
1994	19.909	0.058	21.842	34.670	76.480	6.694	-0.035	2.683	2.939	0.338	0.069	0.036	6.065	0.153	89.248
1995	20.089	0.061	22.784	34.553	77.488	7.075	-0.028	3.205	3.068	0.294	0.070	0.033	6.669	0.134	91.221
1996	21.002	0.023	23.197	35.757	79.978	7.087	-0.032	3.590	3.127	0.316	0.071	0.033	7.137	0.137	94.224
1997	21.445	0.046	23.329	36.266	81.086	6.597	-0.041	3.640	3.006	0.325	0.070	0.034	7.075	0.116	94.727
1998	21.656	0.067	22.936	36.934	81.592	7.068	-0.046	3.297	2.835	0.328	0.070	0.031	6.561	0.088	95.146
1999	21.623	0.058	23.010	37.960	82.650	7.610	-0.062	3.268	2.885	0.331	0.069	0.046	6.599	0.099	96.774
2000	22.580	0.065	R23.916	38.404	R84.965	7.862	-0.057	2.811	2.907	0.317	0.066	0.057	6.158	R0.115	R98.905
2001	R21.952	R0.029	R22.906	38.333	R83.221	R8.033	-0.090	2.201	R2.640	R0.311	0.065	0.068	R5.286	0.075	R96.378
2002	R21.980	R0.061	R23.662	R38.401	R84.104	R8.143	R-0.088	R2.675	R2.791	R0.328	R0.064	R0.105	R5.963	0.078	R98.026
2003	R22.707	R0.051	R22.507	R39.074	R84.338	R7.973	R-0.088	R2.779	R2.884	R0.314	R0.063	R0.108	R6.150	R0.022	R98.156

¹ Electricity net generation from conventional hydroelectric power, geothermal, solar, and wind; consumption of wood, waste, and alcohol fuels; geothermal heat pump and direct use energy; and solar thermal direct use energy.

² Natural gas, plus a small amount of supplemental gaseous fuels that cannot be identified separately.

³ Petroleum products supplied, including natural gas plant liquids and crude oil burned as fuel. Beginning in 1993, also includes ethanol blended into motor gasoline.

⁴ Beginning in 1993, ethanol blended into motor gasoline is included in both "Petroleum" and "Wood, Waste, Alcohol," but is counted only once in total consumption.

⁵ Pumped storage facility production minus energy used for pumping.

⁶ "Alcohol" is ethanol blended into motor gasoline.

⁷ Included in "Conventional Hydroelectric Power."

R=Revised. P=Preliminary. NA=Not available. (s)=Less than 0.0005 and greater than -0.0005 quadrillion Btu.

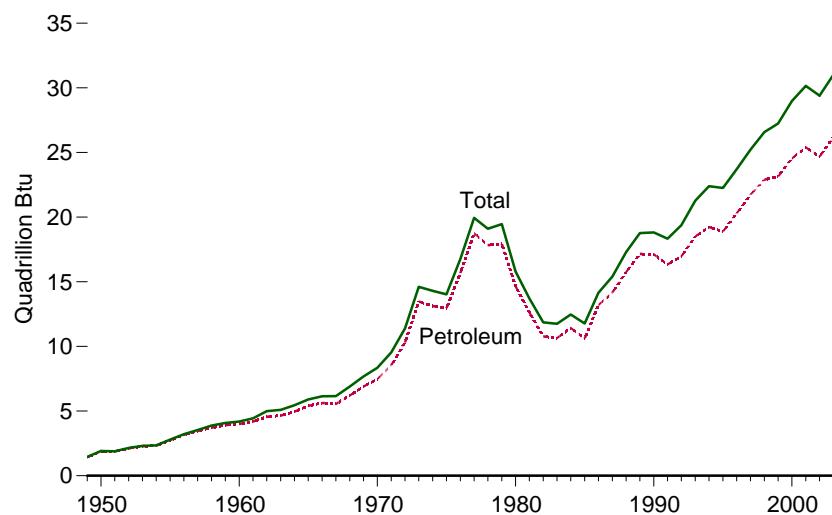
Notes: • See Table E1 for estimated energy consumption for 1635-1945. • See Note 3, "Electricity Imports and Exports," at end of Section 8. • Totals may not equal sum of components due to independent rounding.

Web Page: For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/overview.html>.

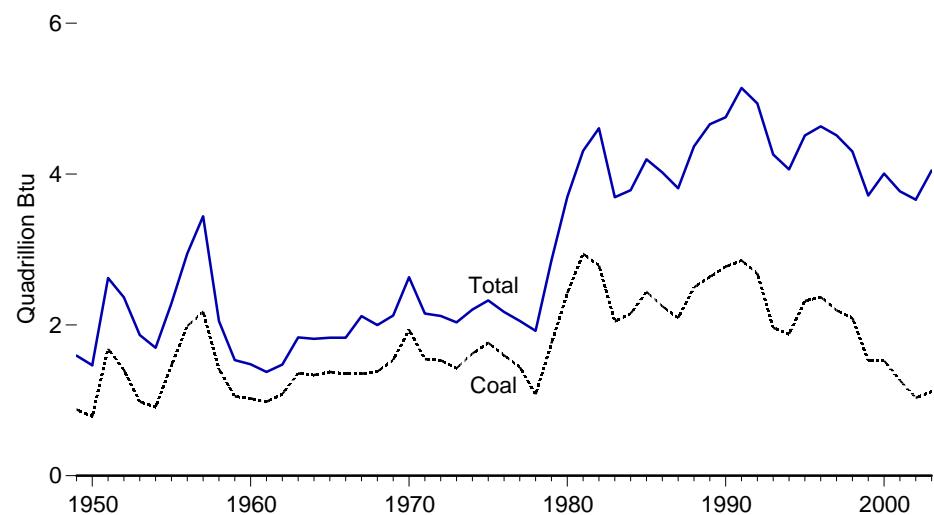
Sources: Tables 5.12, 6.1, 7.1, 7.7, 8.1, 8.2a, 10.1, A4, A5, and A6.

Figure 1.4 Energy Imports, Exports, and Net Imports, 1949-2003

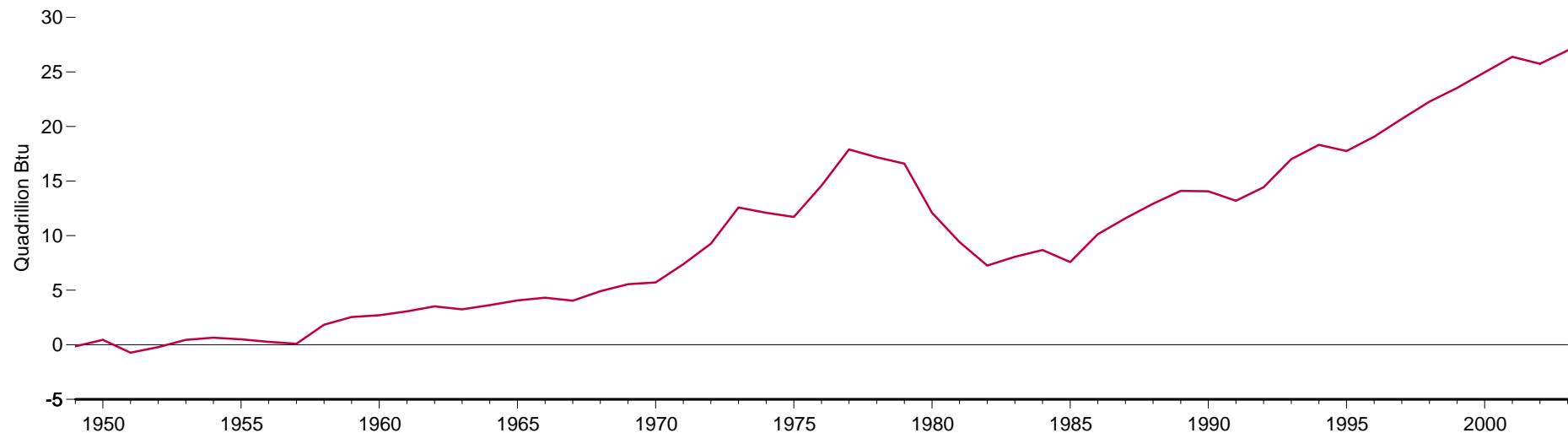
Energy Imports



Energy Exports



Energy Net Imports



Notes: • Negative net imports are net exports. • Because vertical scales differ, graphs should not be compared.

Source: Table 1.4.

Table 1.4 Energy Imports, Exports, and Net Imports, Selected Years, 1949-2003
 (Quadrillion Btu)

Year	Imports					Exports					Net Imports				
	Coal	Natural Gas	Petroleum ¹	Other ²	Total	Coal	Natural Gas	Petroleum	Other ²	Total	Coal	Natural Gas	Petroleum ¹	Other ²	Total
1949	0.01	0.00	1.43	0.01	1.45	0.88	0.02	0.68	0.01	1.59	-0.87	-0.02	0.75	(s)	-0.14
1950	0.01	0.00	1.89	0.02	1.91	0.79	0.03	0.64	0.01	1.47	-0.78	-0.03	1.24	0.01	0.45
1955	0.01	0.01	2.75	0.02	2.79	1.46	0.03	0.77	0.01	2.29	-1.46	-0.02	1.98	(s)	0.50
1960	0.01	0.16	4.00	0.02	4.19	1.02	0.01	0.43	0.01	1.48	-1.02	0.15	3.57	0.01	2.71
1965	(s)	0.47	5.40	0.01	5.89	1.38	0.03	0.39	0.03	1.83	-1.37	0.44	5.01	-0.02	4.06
1970	(s)	0.85	7.47	0.02	8.34	1.94	0.07	0.55	0.08	2.63	-1.93	0.77	6.92	-0.05	5.71
1971	(s)	0.96	8.54	0.03	9.53	1.55	0.08	0.47	0.05	2.15	-1.54	0.88	8.07	-0.02	7.38
1972	(s)	1.05	10.30	0.04	11.39	1.53	0.08	0.47	0.04	2.12	-1.53	0.97	9.83	(s)	9.27
1973	(s)	1.06	13.47	0.08	14.61	1.43	0.08	0.49	0.04	2.03	-1.42	0.98	12.98	0.04	12.58
1974	0.05	0.99	13.13	0.14	14.30	1.62	0.08	0.46	0.04	2.20	-1.57	0.91	12.66	0.10	12.10
1975	0.02	0.98	12.95	0.08	14.03	1.76	0.07	0.44	0.05	2.32	-1.74	0.90	12.51	0.03	11.71
1976	0.03	0.99	15.67	0.07	16.76	1.60	0.07	0.47	0.04	2.17	-1.57	0.92	15.20	0.03	14.59
1977	0.04	1.04	18.76	0.11	19.95	1.44	0.06	0.51	0.04	2.05	-1.40	0.98	18.24	0.07	17.90
1978	0.07	0.99	17.82	0.21	19.11	1.08	0.05	0.77	0.02	1.92	-1.00	0.94	17.06	0.19	17.19
1979	0.05	1.30	17.93	0.18	19.46	1.75	0.06	1.00	0.04	2.86	-1.70	1.24	16.93	0.13	16.60
1980	0.03	1.01	14.66	0.10	15.80	2.42	0.05	1.16	0.07	3.69	-2.39	0.96	13.50	0.04	12.10
1981	0.03	0.92	12.64	0.14	13.72	2.94	0.06	1.26	0.04	4.31	-2.92	0.86	11.38	0.10	9.41
1982	0.02	0.95	10.78	0.12	11.86	2.79	0.05	1.73	0.04	4.61	-2.77	0.90	9.05	0.08	7.25
1983	0.03	0.94	10.65	0.13	11.75	2.04	0.06	1.57	0.03	3.69	-2.01	0.89	9.08	0.10	8.06
1984	0.03	0.85	11.43	0.16	12.47	2.15	0.06	1.54	0.03	3.79	-2.12	0.79	9.89	0.12	8.68
1985	0.05	0.95	10.61	0.17	11.78	2.44	0.06	1.66	0.04	4.20	-2.39	0.90	8.95	0.13	7.58
1986	0.06	0.75	13.20	0.15	14.15	2.25	0.06	1.67	0.04	4.02	-2.19	0.69	11.53	0.11	10.13
1987	0.04	0.99	14.16	0.20	15.40	2.09	0.05	1.63	0.03	3.81	-2.05	0.94	12.53	0.17	11.59
1988	0.05	1.30	15.75	0.20	17.30	2.50	0.07	1.74	0.05	4.37	-2.45	1.22	14.01	0.15	12.93
1989	0.07	1.39	17.16	0.15	18.77	2.64	0.11	1.84	0.08	4.66	-2.57	1.28	15.33	0.07	14.11
1990	0.07	1.55	17.12	0.08	18.82	2.77	0.09	1.82	0.07	4.75	-2.70	1.46	15.29	0.01	14.06
1991	0.08	1.80	16.35	0.10	18.33	2.85	0.13	2.13	0.03	5.14	-2.77	1.67	14.22	0.08	13.19
1992	0.10	2.16	16.97	0.15	19.37	2.68	0.22	2.01	0.03	4.94	-2.59	1.94	14.96	0.12	14.44
1993	0.20	2.40	18.51	0.16	21.27	1.96	0.14	2.12	0.04	4.26	-1.76	2.25	16.40	0.12	17.01
1994	0.22	2.68	19.24	0.24	22.39	1.88	0.16	1.99	0.03	4.06	-1.66	2.52	17.26	0.21	18.33
1995	0.24	2.90	18.88	0.24	22.26	2.32	0.16	1.99	0.05	4.51	-2.08	2.74	16.89	0.19	17.75
1996	0.20	3.00	20.29	0.21	23.70	2.37	0.16	2.06	0.05	4.63	-2.17	2.85	18.23	0.16	19.07
1997	0.19	3.06	21.74	0.22	25.22	2.19	0.16	2.10	0.06	4.51	-2.01	2.90	19.64	0.16	20.70
1998	0.22	3.22	22.91	0.23	26.58	2.09	0.16	1.97	0.07	4.30	-1.87	3.06	20.94	0.16	22.28
1999	0.23	3.66	23.13	0.23	27.25	1.53	0.16	1.95	0.07	3.71	-1.30	3.50	21.18	0.16	23.54
2000	0.31	3.87	24.53	0.26	28.97	1.53	0.25	2.15	0.08	4.01	-1.21	3.62	22.38	0.18	24.97
2001	0.49	4.07	25.40	0.19	R30.16	1.27	0.38	2.04	R0.09	R3.77	-0.77	3.69	23.36	R0.10	26.39
2002	0.42	4.10	R24.68	0.20	R29.41	1.03	0.52	2.04	R0.07	R3.66	-0.61	3.58	R22.63	0.14	R25.74
2003 ^P	0.63	4.02	26.21	0.17	31.02	1.12	0.70	2.13	0.10	4.05	-0.49	3.32	24.07	0.07	26.97

¹ Includes imports into the Strategic Petroleum Reserve, which began in 1977.

² Coal coke and small amounts of electricity transmitted across U.S. borders with Canada and Mexico.

R=Revised. P=Preliminary. (s)=Less than 0.005 quadrillion Btu and greater than -0.005 quadrillion Btu.

Notes: • Includes trade between the United States (50 States and the District of Columbia) and its

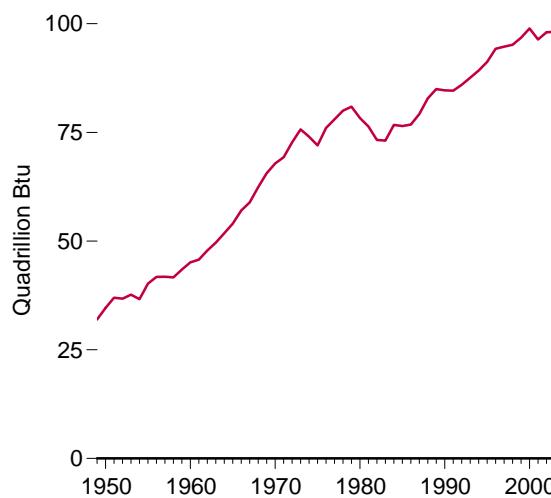
territories and possessions. • See Note 3, "Electricity Imports and Exports," at end of Section 8. • Totals or net import items may not equal sum of components due to independent rounding.

Web Page: For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/overview.html>.

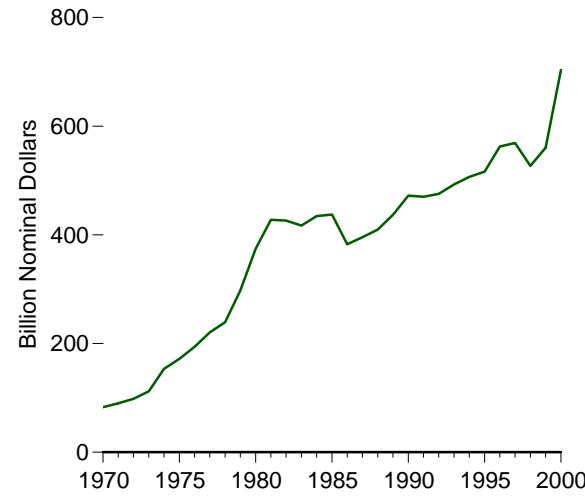
Sources: Tables 5.1, 6.1, 7.1, 7.7, 8.1, A2, A4, A5, and A6.

Figure 1.5 Energy Consumption and Expenditures Indicators

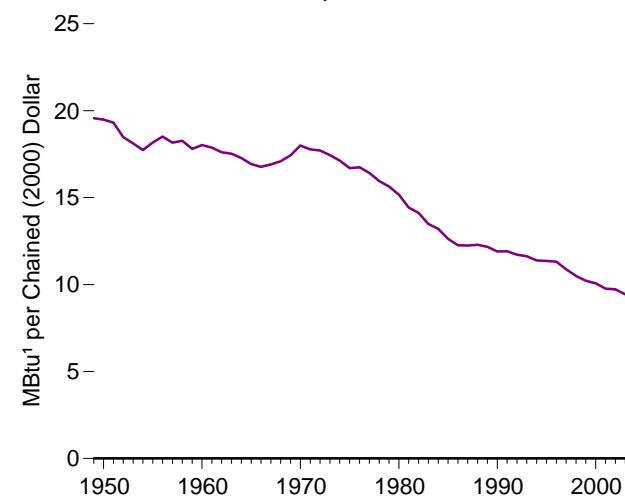
Energy Consumption, 1949-2003



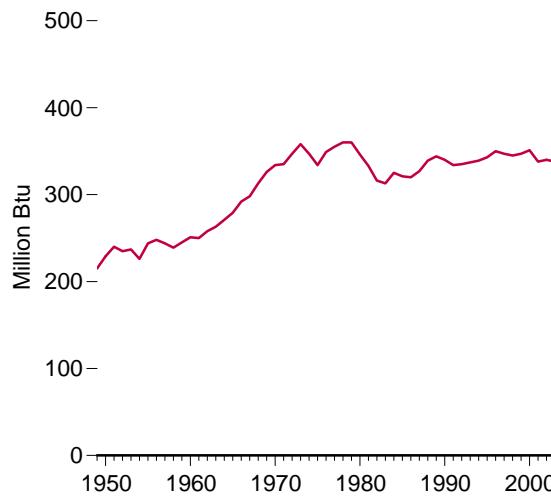
Energy Expenditures, 1970-2000



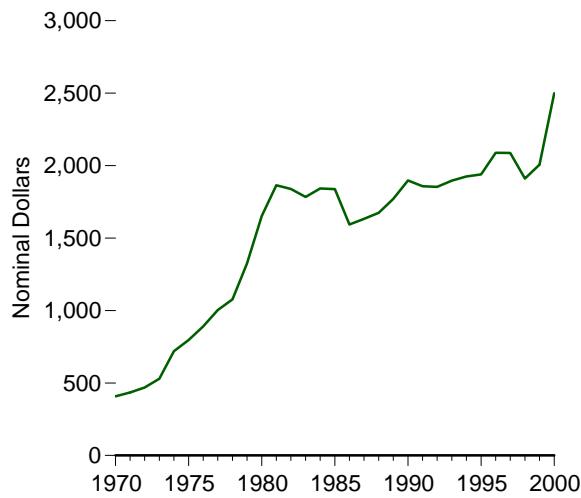
Energy Consumption per Dollar of Gross Domestic Product, 1949-2003



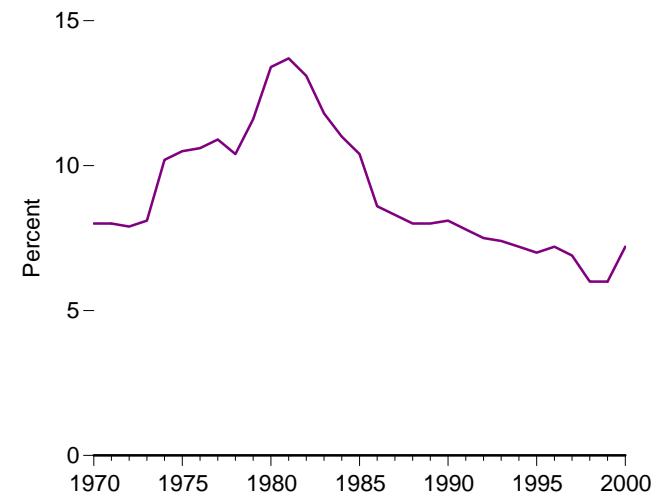
Energy Consumption per Person, 1949-2003



Energy Expenditures per Person, 1970-2000



Energy Expenditures as Share of Gross Domestic Product, 1970-2000



¹ Thousand Btu.

Source: Table 1.5.

Table 1.5 Energy Consumption, Expenditures, and Emissions Indicators, Selected Years

Year	Energy Consumption	Energy Consumption per Person	Energy Expenditures	Energy Expenditures per Person	Gross Domestic Product (GDP)	Energy Expenditures as Share of GDP	Gross Domestic Product (GDP)	Energy Consumption per Dollar of GDP	Greenhouse Gas Emissions ¹ per Dollar of GDP	Carbon Dioxide Emissions ² per Dollar of GDP
	Quadrillion Btu	Million Btu	Million Nominal Dollars	Nominal Dollars	Billion Nominal Dollars	Percent	Billion Chained (2000) Dollars	Thousand Btu per Chained (2000) Dollar	Metric Tons Carbon Dioxide Equivalent per Million Chained (2000) Dollars	Metric Tons Carbon Dioxide per Million Chained (2000) Dollars
1949	31.98	215	NA	NA	R267.3	NA	R1,634.6	R19.57	NA	NA
1950	34.62	229	NA	NA	R293.8	NA	R1,777.3	R19.48	NA	NA
1955	40.21	244	NA	NA	R414.8	NA	R2,212.8	R18.17	NA	NA
1960	45.09	251	NA	NA	R526.4	NA	R2,501.8	R18.02	NA	NA
1965	54.02	279	NA	NA	R719.1	NA	R3,191.1	R16.93	NA	NA
1970	67.84	334	82,898	408	R1,038.5	8.0	R3,771.9	R17.99	NA	NA
1971	69.29	335	90,051	435	R1,127.1	8.0	R3,898.6	R17.77	NA	NA
1972	72.70	347	98,088	469	R1,238.3	7.9	R4,105.0	R17.71	NA	NA
1973	75.71	358	111,910	529	R1,382.7	8.1	R4,341.5	R17.44	NA	NA
1974	73.99	347	153,350	719	R1,500.0	10.2	R4,319.6	R17.13	NA	NA
1975	72.00	334	171,802	797	R1,638.3	10.5	R4,311.2	R16.70	NA	NA
1976	76.01	349	193,852	891	R1,825.3	10.6	R4,540.9	R16.74	NA	NA
1977	78.00	355	220,391	1,003	R2,030.9	R10.9	R4,750.5	R16.42	NA	NA
1978	79.99	360	239,175	1,077	R2,294.7	10.4	R5,015.0	R15.95	NA	NA
1979	80.90	360	297,518	1,325	R2,563.3	11.6	R5,173.4	R15.64	NA	NA
1980	78.29	346	374,319	1,652	R2,789.5	13.4	R5,161.7	R15.17	R1,068	R917
1981	R76.34	333	427,697	1,864	R3,128.4	13.7	R5,291.7	R14.43	R1,023	R872
1982	R73.25	316	426,109	1,839	R3,255.0	13.1	R5,189.3	R14.12	R989	R843
1983	R73.10	313	417,047	1,784	R3,536.7	11.8	R5,423.8	R13.48	R942	R800
1984	R76.74	325	434,379	1,842	R3,933.2	11.0	R5,813.6	R13.20	R928	R788
1985	R76.47	321	437,271	1,838	R4,220.3	10.4	R6,053.7	R12.63	R912	R755
1986	R76.78	R320	382,741	1,594	R4,462.8	8.6	R6,263.6	R12.26	R882	R731
1987	R79.23	327	395,730	1,633	R4,739.5	8.3	R6,475.1	R12.24	R878	R732
1988	R82.84	339	409,572	1,675	R5,103.8	8.0	R6,742.7	R12.29	R877	R735
1989	R84.96	344	436,752	1,770	R5,484.4	8.0	R6,981.4	R12.17	R862	R721
1990	R84.67	340	472,214	1,898	R5,803.1	8.1	R7,112.5	R11.90	R865	R701
1991	R84.60	334	470,095	1,858	R5,995.9	R7.8	R7,100.5	R11.91	R860	R696
1992	R85.95	335	475,298	1,853	R6,337.7	7.5	R7,336.6	R11.72	R850	R687
1993	87.58	337	492,816	1,896	R6,657.4	7.4	R7,532.7	R11.63	R840	R681
1994	89.25	339	506,553	1,925	R7,072.2	7.2	R7,835.5	R11.39	R820	R664
1995	91.22	343	516,207	1,939	R7,397.7	7.0	R8,031.7	R11.36	R806	R654
1996	94.22	350	562,600	2,088	R7,816.9	7.2	R8,328.9	R11.31	R798	R654
1997	94.73	347	569,011	2,087	R8,304.3	R6.9	R8,703.5	R10.88	R770	R633
1998	95.15	345	527,028	1,911	R8,747.0	6.0	R9,066.9	R10.49	R741	R612
1999	96.77	347	560,161	2,007	R9,268.4	6.0	R9,470.3	R10.22	R718	R595
2000	R98.90	R351	703,188	2,499	R9,817.0	7.2	R9,817.0	R10.07	R709	R591
2001	R96.38	338	NA	NA	R10,100.8	NA	R9,866.6	R9.77	R692	R577
2002	R98.03	R340	NA	NA	R10,480.8	NA	R10,083.0	R9.72	681	568
2003 ^P	98.16	338	NA	NA	10,987.9	NA	10,398.0	9.44	NA	NA

¹ Greenhouse gas emissions from anthropogenic sources. See Table 12.1.

² Carbon dioxide emissions from energy consumption. See Table 12.2.

R=Revised. P=Preliminary. NA=Not available.

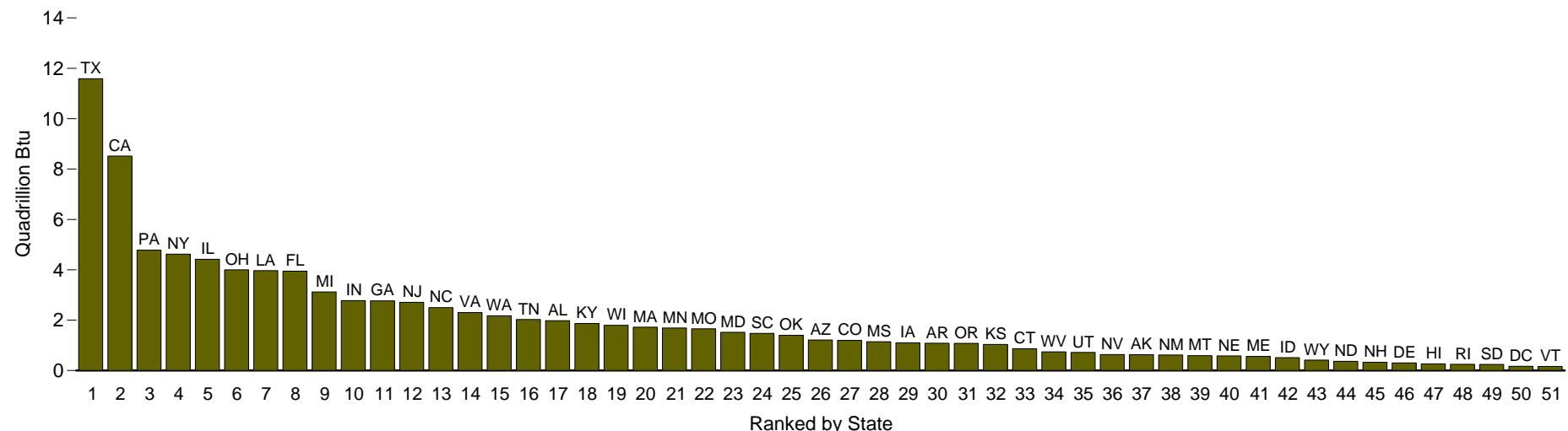
Note: See "Chained Dollars" in Glossary.

Web Page: For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/overview.html>.

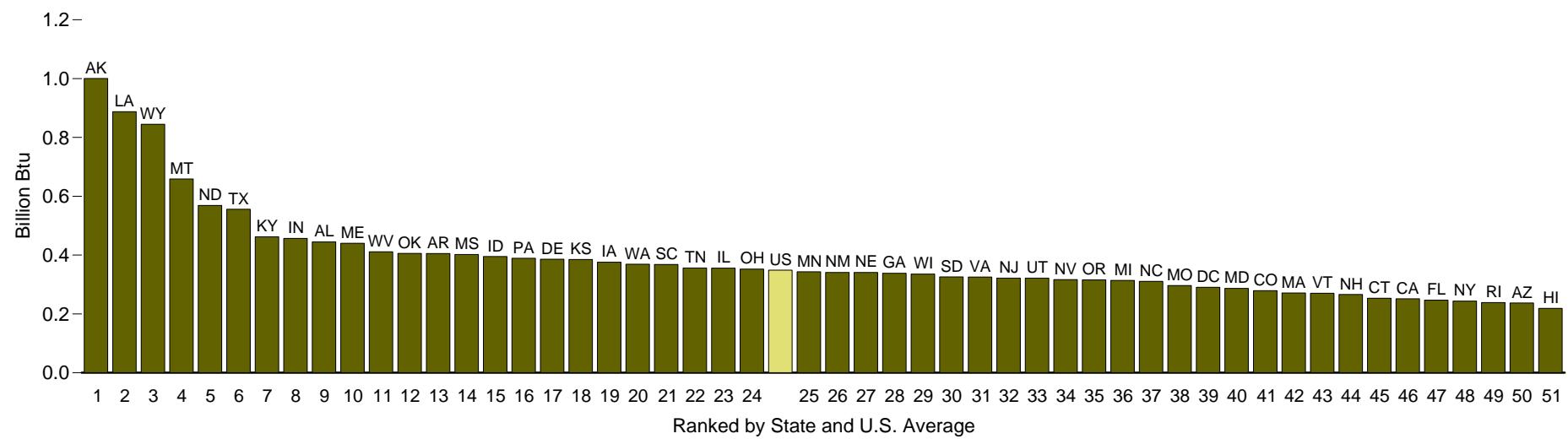
Sources: **Energy Consumption:** Table 1.3. **Energy Expenditures:** Table 3.4. **Gross Domestic Product:** Table D1. **Population Data:** Table D1. **Greenhouse Gas Emissions:** Table 12.1. **Carbon Dioxide Emissions:** Table 12.2. **Other Columns:** Calculated by EIA.

Figure 1.6 State-Level Energy Consumption and Consumption per Person, 2000

Consumption



Consumption per Person



Note: Because vertical scales differ, graphs should not be compared.

Source: Table 1.6.

Table 1.6 State-Level Energy Consumption, Expenditures, and Prices, 2000

Rank	Consumption		Consumption per Person		Expenditures		Expenditures per Person		Prices	
	State	Trillion Btu	State	Million Btu	State	Million Dollars	State	Dollars	State	Dollars per Million Btu
1	Texas	11,588.6	Alaska	1,000.6	Texas	74,045	Louisiana	4,638	District of Columbia	14.85
2	California	8,518.7	Louisiana	887.3	California	71,058	Wyoming	4,541	Vermont	13.68
3	Pennsylvania	4,779.9	Wyoming	844.7	New York	42,563	Alaska	4,341	Hawaii	13.39
4	New York	4,620.0	Montana	659.0	Florida	31,178	Texas	3,551	New Hampshire	13.32
5	Illinois	4,417.9	North Dakota	569.0	Pennsylvania	30,484	North Dakota	3,233	Arizona	12.81
6	Ohio	4,001.8	Texas	555.8	Illinois	30,122	Montana	3,162	Connecticut	12.66
7	Louisiana	3,965.2	Kentucky	462.2	Ohio	29,645	Maine	2,959	New York	11.75
8	Florida	3,943.8	Indiana	456.8	Michigan	22,704	Iowa	2,841	Florida	11.72
9	Michigan	3,121.9	Alabama	444.6	New Jersey	21,639	Kentucky	2,810	Rhode Island	11.60
10	Indiana	2,777.6	Maine	440.1	Louisiana	20,726	Indiana	2,801	California	11.29
11	Georgia	2,769.9	West Virginia	411.4	Georgia	19,782	Kansas	2,749	Nevada	11.23
12	New Jersey	2,706.6	Oklahoma	405.9	North Carolina	19,351	Arkansas	2,740	Massachusetts	11.23
13	North Carolina	2,501.9	Arkansas	405.4	Indiana	17,033	Alabama	2,719	North Carolina	11.21
14	Virginia	2,303.6	Mississippi	402.1	Virginia	16,791	Oklahoma	2,706	Missouri	10.91
15	Washington	2,173.8	Idaho	395.0	Massachusetts	15,459	District of Columbia	2,675	New Mexico	10.79
16	Tennessee	2,025.9	Pennsylvania	389.2	Tennessee	13,792	Vermont	2,675	South Carolina	10.43
17	Alabama	1,977.3	Delaware	386.1	Missouri	13,277	Delaware	2,644	Kansas	10.38
18	Kentucky	1,868.2	Kansas	385.3	Washington	13,180	Mississippi	2,623	Maryland	10.37
19	Wisconsin	1,799.7	Iowa	375.7	Wisconsin	13,059	Ohio	2,611	South Dakota	10.35
20	Massachusetts	1,722.8	Washington	368.8	Minnesota	12,224	New Hampshire	2,611	Ohio	10.28
21	Minnesota	1,688.0	South Carolina	368.2	Alabama	12,094	South Dakota	2,585	Oregon	10.27
22	Missouri	1,659.2	Tennessee	356.1	Maryland	11,796	New Jersey	2,572	Virginia	10.19
23	Maryland	1,520.1	Illinois	355.7	Kentucky	11,356	South Carolina	2,536	Georgia	10.16
24	South Carolina	1,477.1	Ohio	352.5	Arizona	10,562	Nebraska	2,526	Maine	10.04
25	Oklahoma	1,400.5	Minnesota	343.1	South Carolina	10,176	Minnesota	2,485	Tennessee	9.95
26	Arizona	1,215.8	New Mexico	341.2	Oklahoma	9,337	Pennsylvania	2,482	Nebraska	9.94
27	Colorado	1,199.9	Nebraska	341.0	Colorado	8,690	West Virginia	2,452	Colorado	9.94
28	Mississippi	1,143.8	Georgia	338.4	Iowa	8,314	Idaho	2,441	New Jersey	9.93
29	Iowa	1,099.3	Wisconsin	335.5	Connecticut	8,275	Massachusetts	2,435	Minnesota	9.92
30	Arkansas	1,083.7	South Dakota	325.9	Oregon	7,644	Wisconsin	2,435	Wisconsin	9.90
31	Oregon	1,079.7	Virginia	325.4	Mississippi	7,462	Connecticut	2,430	Delaware	9.88
32	Kansas	1,035.7	New Jersey	321.7	Kansas	7,392	Illinois	2,425	Iowa	9.87
33	Connecticut	863.0	Utah	321.6	Arkansas	7,326	Tennessee	2,424	Mississippi	9.85
34	West Virginia	744.0	Nevada	316.7	Nevada	4,834	Nevada	2,419	Oklahoma	9.75
35	Utah	718.2	Oregon	315.6	Utah	4,561	Georgia	2,416	Arkansas	9.61
36	Nevada	632.8	Michigan	314.1	West Virginia	4,434	North Carolina	2,404	Michigan	9.56
37	Alaska	627.3	North Carolina	310.8	Nebraska	4,323	Missouri	2,373	Alabama	9.22
38	New Mexico	620.7	Missouri	296.5	New Mexico	4,109	Virginia	2,372	Idaho	9.09
39	Montana	594.5	District of Columbia	290.6	Maine	3,772	Michigan	2,284	Washington	8.92
40	Nebraska	583.5	Maryland	287.0	New Hampshire	3,227	Rhode Island	2,271	Texas	8.82
41	Maine	561.2	Colorado	279.0	Idaho	3,158	New Mexico	2,259	Illinois	8.68
42	Idaho	511.1	Massachusetts	271.3	Montana	2,852	New York	2,243	Utah	8.64
43	Wyoming	417.1	Vermont	270.4	Alaska	2,721	Washington	2,236	West Virginia	8.57
44	North Dakota	365.4	New Hampshire	266.3	Hawaii	2,634	Oregon	2,234	Kentucky	8.53
45	New Hampshire	329.1	Connecticut	253.4	Rhode Island	2,381	Maryland	2,227	Alaska	8.10
46	Delaware	302.6	California	251.5	Wyoming	2,242	Hawaii	2,174	Pennsylvania	8.07
47	Hawaii	264.8	Florida	246.8	North Dakota	2,077	California	2,098	Indiana	8.06
48	Rhode Island	250.4	New York	243.5	Delaware	2,072	Arizona	2,059	Wyoming	7.96
49	South Dakota	246.0	Rhode Island	238.8	South Dakota	1,952	Utah	2,042	Louisiana	7.62
50	District of Columbia	166.2	Arizona	237.0	Vermont	1,629	Colorado	2,020	North Dakota	7.42
51	Vermont	164.6	Hawaii	218.6	District of Columbia	1,530	Florida	1,951	Montana	6.50
	United States	198,216.2	United States	349.0	United States	2703,188	United States	2,499	United States	9.85

¹ Includes 65.4 trillion Btu of coal coke net imports, which are not allocated to the States. Does not include 725.8 trillion Btu of energy consumed by independent power producers and combined-heat-and-power plants that are included in total consumption on Tables 1.1, 1.3, and 1.5.

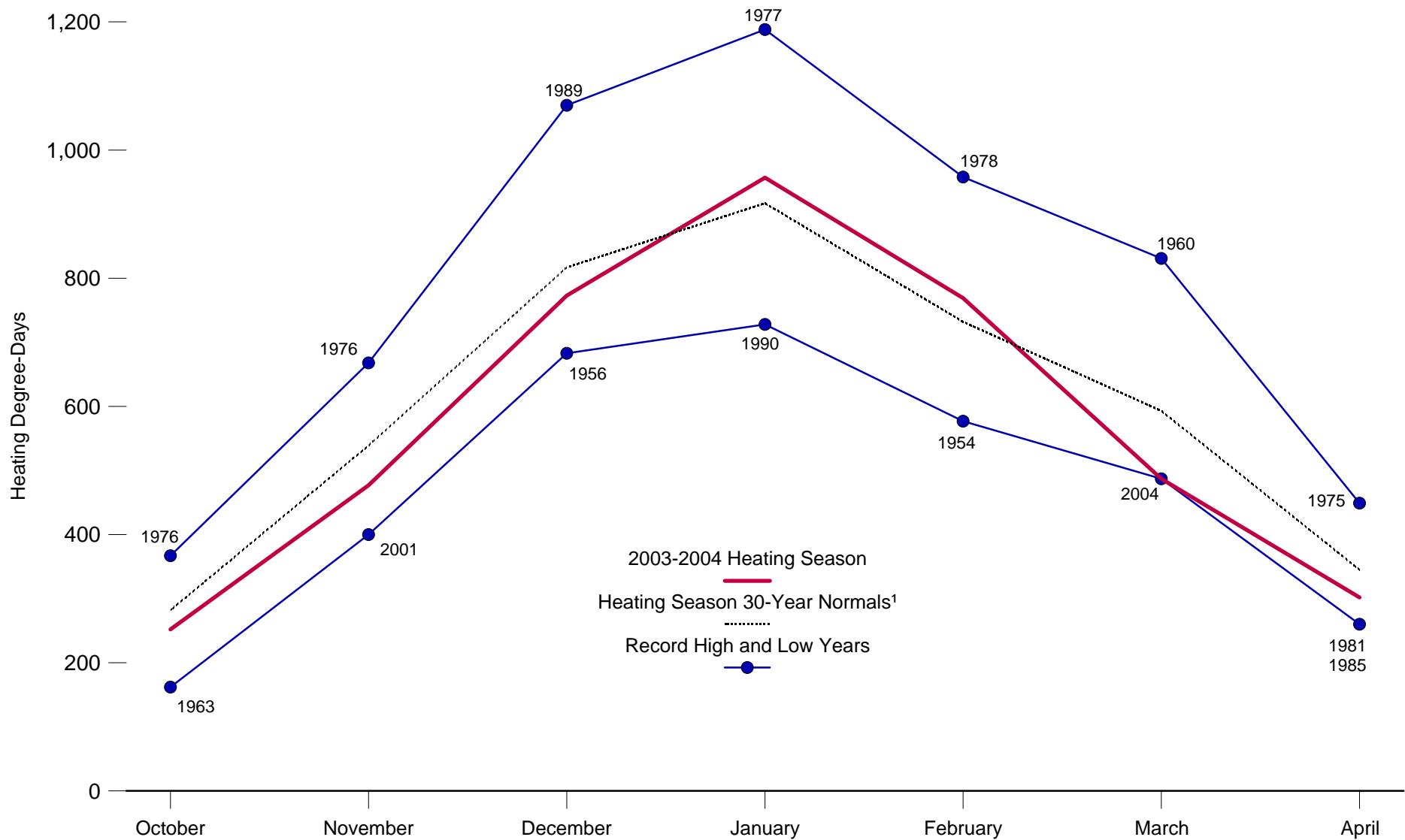
² Includes \$146 million for coal coke net imports, which are not allocated to the States.

Note: Rankings based on unrounded data.

Web Page: http://www.eia.doe.gov/emeu/states/_states.html.

Sources: • **Consumption:** Energy Information Administration (EIA), *State Energy Data Report 2000, Consumption Estimates* (May 2002), Tables 9 and 10. • **Expenditures and Prices:** EIA, *State Energy Price and Expenditure Report 2000* (November 2002), Table 1. • Both publications include State-level data by end-use sector and type of energy. Consumption estimates are annual 1960 through 2000, and price and expenditures estimates are annual 1970 through 2000.

Figure 1.7 Heating Degree-Days by Month, 1949-2004



¹ Based on calculations of data from 1971 through 2000.

Source: Table 1.7.

Table 1.7 Heating Degree-Days by Month, Selected Years, 1949-2004

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total
1949	858	701	611	330	128	21	7	9	94	209	503	763	4,234
1950	761	721	693	412	162	40	11	18	85	196	565	872	4,536
1955	927	759	600	272	121	48	9	6	56	237	600	886	4,521
1960	884	780	831	278	160	33	7	11	48	254	502	936	4,724
1965	907	780	738	355	114	48	11	14	78	271	494	739	4,549
1970	1,063	758	685	344	120	31	4	9	55	253	541	801	4,664
1971	976	760	681	375	194	29	10	12	47	187	553	723	4,547
1972	890	785	608	377	137	49	7	12	65	330	613	832	4,705
1973	893	772	504	356	182	22	6	9	61	212	497	799	4,313
1974	838	754	556	310	171	42	6	13	94	303	524	795	4,406
1975	821	742	686	449	117	37	5	13	100	235	462	805	4,472
1976	974	609	544	309	178	28	8	19	81	367	668	941	4,726
1977	1,188	751	529	270	119	38	6	13	59	295	493	844	4,605
1978	1,061	958	677	350	157	31	7	11	59	283	517	847	4,958
1979	1,079	950	575	364	148	37	6	15	58	271	528	750	4,781
1980	887	831	680	338	142	49	5	10	54	316	564	831	4,707
1981	984	689	620	260	165	25	6	11	76	327	504	845	4,512
1982	1,067	776	620	408	114	62	7	19	75	264	515	692	4,619
1983	874	706	588	421	189	35	6	5	53	251	509	990	4,627
1984	1,000	645	704	371	172	28	7	7	88	223	565	704	4,514
1985	1,057	807	557	260	123	47	5	17	69	243	506	951	4,642
1986	859	734	542	295	123	30	9	18	76	258	558	793	4,295
1987	920	714	573	309	107	20	8	13	61	345	491	773	4,334
1988	1,004	778	594	344	134	30	3	5	72	352	506	831	4,653
1989	789	832	603	344	163	32	5	14	73	259	542	1,070	4,726
1990	728	655	535	321	184	29	6	10	56	246	457	789	4,016
1991	921	639	564	287	98	30	6	7	69	242	586	751	4,200
1992	852	644	603	345	152	46	14	24	74	301	564	822	4,441
1993	860	827	664	368	128	38	11	9	89	302	580	824	4,700
1994	1,031	813	594	293	174	21	6	16	65	268	479	723	4,483
1995	847	750	556	375	174	31	4	7	77	233	605	872	4,531
1996	945	748	713	360	165	27	8	9	72	276	630	760	4,713
1997	932	672	552	406	198	31	7	16	63	273	592	800	4,542
1998	765	623	596	331	109	41	4	5	33	245	482	717	3,951
1999	861	647	645	319	139	31	5	12	62	275	413	760	4,169
2000	886	643	494	341	115	29	12	12	69	244	610	1,005	4,460
2001	935	725	669	302	115	29	8	6	71	267	400	696	4,223
2002	R778	R670	R624	R282	R185	23	R3	R8	R38	R299	R561	R813	R4,284
2003P	R940	R819	R564	R351	162	39	2	2	59	252	477	773	4,440
2004P	957	769	487	302	NA	NA	NA	NA	NA	NA	NA	NA	NA
Normals ¹	917	732	593	345	159	39	9	15	77	282	539	817	4,524

¹ Based on calculations of data from 1971 through 2000.

R=Revised. P=Preliminary. NA=Not available.

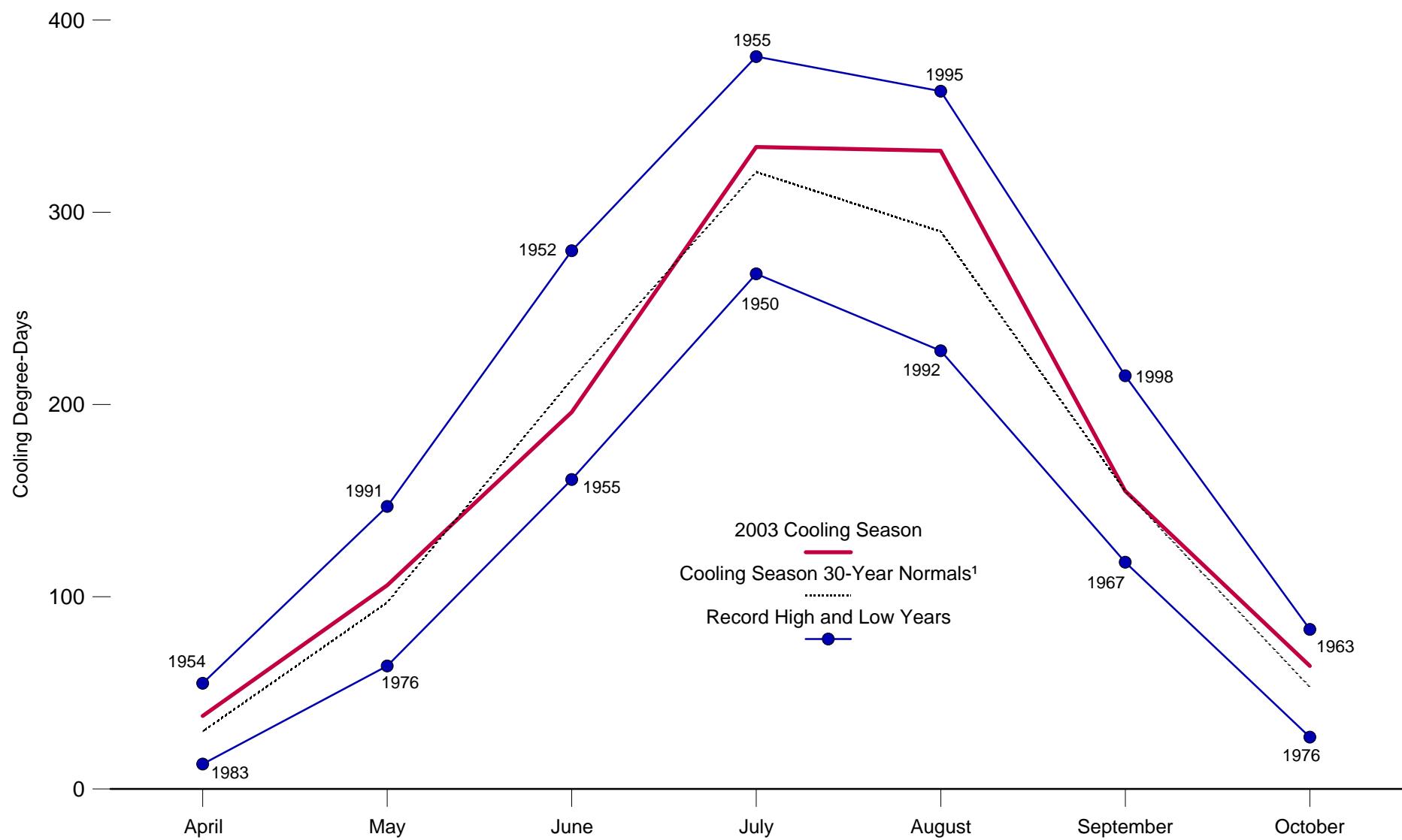
Notes: • This table excludes Alaska and Hawaii. • Degree-days are relative measurements of outdoor air temperature. Heating degree-days are deviations below the mean daily temperature of 65° F. For example, a weather station recording a mean daily temperature of 40° F would report 25 heating degree-days. • Temperature information recorded by weather stations is used to calculate State-wide degree-day averages based on resident State population. Beginning in 2002, data are weighted by the estimated 2000 population. The population-weighted State figures are aggregated into Census divisions

and the national average.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/overview.html>. • For current data, see <http://www.eia.doe.gov/emeu/mer/overview.html>.

Sources: • 1949-2002 and Normals—U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), National Climatic Data Center, Asheville, North Carolina. Historical Climatology Series 5-1. • 2003 and 2004—Energy Information Administration, *Monthly Energy Review*, June 2003-May 2004 issues, Table 1.10, which reports data from NOAA, National Weather Service Climate Analysis Center, Camp Springs, Maryland.

Figure 1.8 Cooling Degree-Days by Month, 1949-2003



¹ Based on calculations of data from 1971 through 2000.

Source: Table 1.8.

Table 1.8 Cooling Degree-Days by Month, Selected Years, 1949-2004

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total
1949	16	14	14	27	110	253	367	294	131	70	12	10	1,318
1950	27	12	13	21	105	201	268	244	128	78	9	4	1,110
1955	6	7	20	45	121	161	381	355	182	50	10	6	1,344
1960	7	4	6	37	76	215	301	302	181	59	15	3	1,206
1965	9	7	10	42	125	179	280	273	155	48	19	6	1,153
1970	3	4	10	36	104	201	323	313	185	48	6	9	1,242
1971	8	7	10	22	68	244	288	269	182	77	12	17	1,204
1972	15	6	22	36	88	174	299	276	169	44	9	8	1,146
1973	7	3	24	18	75	236	318	303	166	66	21	4	1,241
1974	21	6	28	29	101	173	317	267	120	40	10	5	1,117
1975	14	11	14	24	117	203	301	296	120	55	12	5	1,172
1976	5	11	23	27	64	208	282	243	127	27	8	4	1,029
1977	2	5	21	35	121	212	351	293	180	44	15	6	1,285
1978	3	1	10	31	93	218	310	300	180	52	19	9	1,226
1979	4	4	13	32	82	187	295	266	160	53	11	6	1,113
1980	9	4	13	23	95	199	374	347	192	42	10	5	1,313
1981	3	6	10	52	75	257	333	275	138	43	12	5	1,209
1982	6	10	21	26	115	165	318	262	140	47	15	11	1,136
1983	6	5	9	13	72	193	353	362	172	58	12	5	1,260
1984	5	6	14	24	92	233	291	312	143	70	9	15	1,214
1985	3	5	22	39	108	193	313	269	145	68	25	4	1,194
1986	8	10	17	33	106	231	340	259	161	52	23	9	1,249
1987	5	7	13	23	127	244	334	298	156	40	14	8	1,269
1988	5	5	13	28	89	218	359	348	149	45	18	6	1,283
1989	15	7	19	36	88	208	312	266	138	49	16	2	1,156
1990	15	14	21	29	86	234	316	291	172	57	16	9	1,260
1991	10	9	19	42	147	235	336	305	149	62	8	9	1,331
1992	6	10	15	29	77	170	286	228	150	49	13	7	1,040
1993	13	5	11	19	91	207	347	317	146	47	11	4	1,218
1994	7	9	18	37	76	262	328	263	141	50	20	9	1,220
1995	7	7	18	29	91	202	348	363	150	61	12	5	1,293
1996	7	6	8	26	116	226	299	287	139	45	14	7	1,180
1997	8	11	31	19	81	189	315	268	171	48	10	5	1,156
1998	12	7	10	23	135	228	350	337	215	62	20	11	1,410
1999	12	11	12	40	94	219	374	305	152	55	17	6	1,297
2000	10	10	25	28	131	221	284	302	156	50	8	4	1,229
2001	3	12	11	37	114	220	302	333	138	46	18	11	1,245
2002	8	R6	R17	R53	R92	R242	369	R331	R202	R57	11	R5	R1,393
2003 ^P	2	6	R20	R38	106	196	334	332	155	64	24	4	1,281
2004 ^P	5	5	26	41	NA	NA	NA	NA	NA	NA	NA	NA	NA
Normals ¹	9	8	18	30	97	213	321	290	155	53	15	8	1,215

¹ Based on calculations of data from 1971 through 2000.

R=Revised. P=Preliminary. NA=Not available.

Notes: • This table excludes Alaska and Hawaii. • Degree-days are relative measurements of outdoor air temperature. Cooling degree-days are deviations above the mean daily temperature of 65° F. For example, a weather station recording a mean daily temperature of 78° F would report 13 cooling degree-days. • Temperature information recorded by weather stations is used to calculate State-wide degree-day averages based on resident State population. Beginning in 2002, data are weighted by the estimated 2000 population. The population-weighted State figures are aggregated into Census divisions

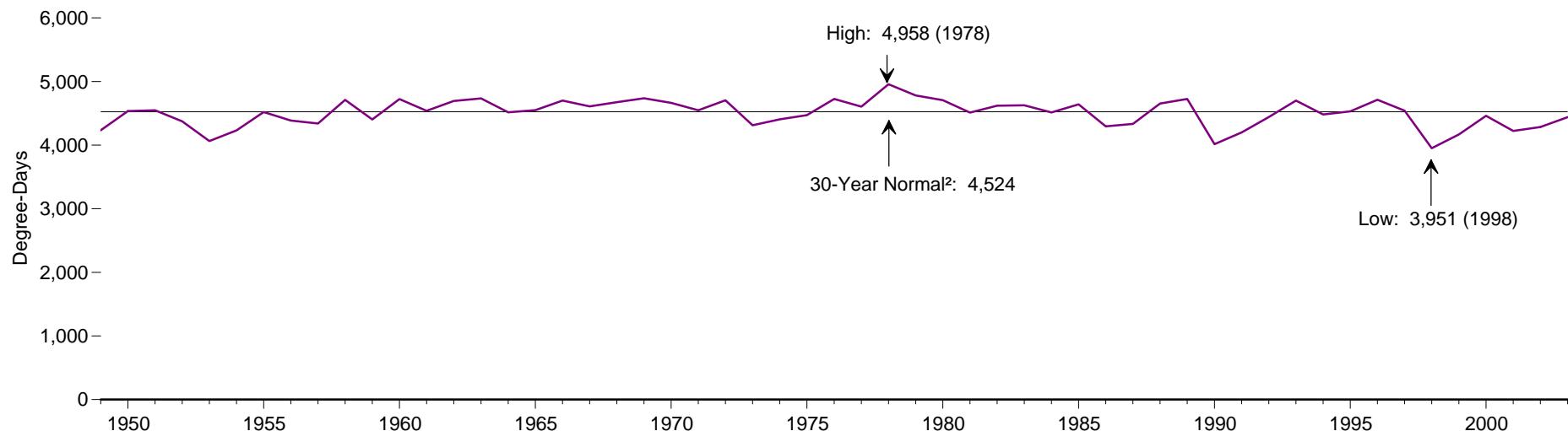
and the national average.

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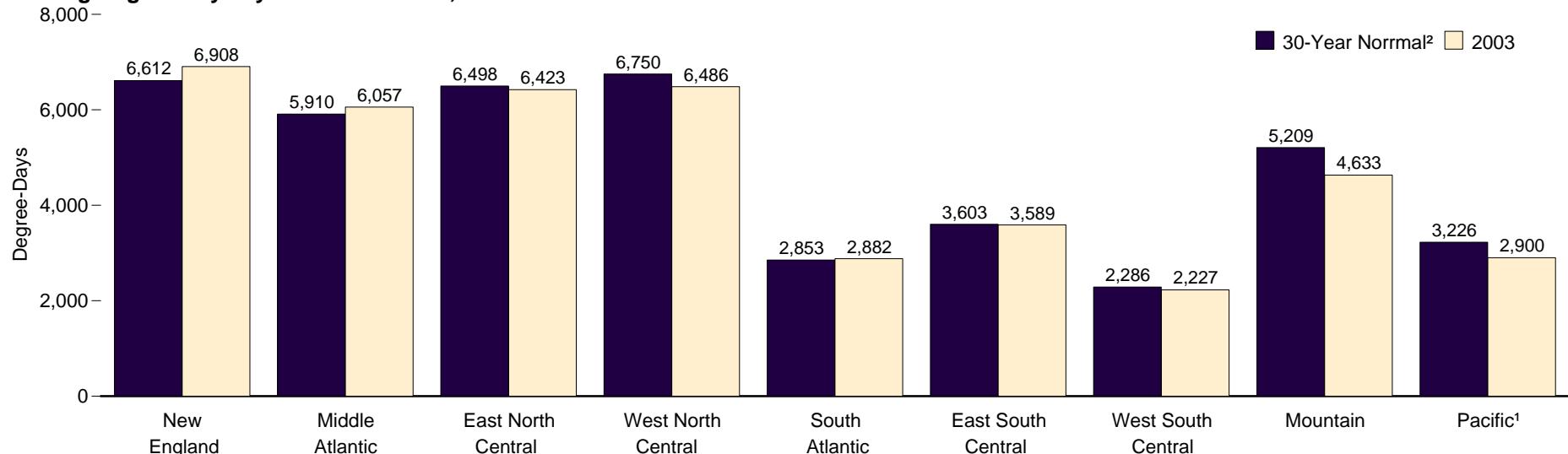
Sources: • 1949-2002 and Normals—U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), National Climatic Data Center, Asheville, North Carolina. Historical Climatology Series 5-2. • 2003 and 2004—Energy Information Administration, *Monthly Energy Review*, June 2003-May 2004 issues, Table 1.11, which reports data from NOAA, National Weather Service Climate Analysis Center, Camp Springs, Maryland.

Figure 1.9 Heating Degree-Days by Census Division

U.S.¹ Heating Degree-Days, 1949-2003



Heating Degree-Days by Census Division, 2003



¹ Excludes Alaska and Hawaii.

² Normals are based on calculations of data from 1971 through 2000.

Note: See Appendix C for Census Divisions.

Source: Table 1.9.

Table 1.9 Heating Degree-Days by Census Division, Selected Years, 1949-2003

Year	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific ¹	United States ¹
1949	5,829	5,091	5,801	6,479	2,367	2,942	2,133	5,483	3,729	4,234
1950	6,470	5,765	6,619	7,136	2,713	3,315	1,974	4,930	3,355	4,536
1955	6,577	5,708	6,101	6,630	2,786	3,314	2,083	5,517	3,723	4,521
1960	6,561	5,901	6,544	6,884	3,147	3,958	2,551	5,328	3,309	4,724
1965	6,825	5,933	6,284	6,646	2,830	3,374	2,078	5,318	3,378	4,549
1970	6,839	5,943	6,455	6,835	2,997	3,685	2,396	5,436	3,257	4,664
1971	6,695	5,761	6,236	6,594	2,763	3,395	1,985	5,585	3,698	4,547
1972	7,001	6,064	6,772	7,094	2,759	3,438	2,259	5,352	3,376	4,705
1973	6,120	5,327	5,780	6,226	2,718	3,309	2,256	5,562	3,383	4,313
1974	6,621	5,670	6,259	6,478	2,551	3,171	2,080	5,281	3,294	4,406
1975	6,362	5,477	6,169	6,678	2,640	3,336	2,187	5,693	3,623	4,472
1976	6,839	6,097	6,768	6,670	3,040	3,881	2,446	5,303	3,115	4,726
1977	6,579	5,889	6,538	6,506	3,047	3,812	2,330	5,060	3,135	4,605
1978	7,061	6,330	7,095	7,324	3,187	4,062	2,764	5,370	3,168	4,958
1979	6,348	5,851	6,921	7,369	2,977	3,900	2,694	5,564	3,202	4,781
1980	6,900	6,143	6,792	6,652	3,099	3,855	2,378	5,052	2,986	4,707
1981	6,612	5,989	6,446	6,115	3,177	3,757	2,162	4,671	2,841	4,512
1982	6,697	5,866	6,542	7,000	2,721	3,357	2,227	5,544	3,449	4,619
1983	6,305	5,733	6,423	6,901	3,057	3,892	2,672	5,359	3,073	4,627
1984	6,442	5,777	6,418	6,582	2,791	3,451	2,194	5,592	3,149	4,514
1985	6,571	5,660	6,546	7,119	2,736	3,602	2,466	5,676	3,441	4,642
1986	6,517	5,665	6,150	6,231	2,686	3,294	2,058	4,870	2,807	4,295
1987	6,546	5,699	5,810	5,712	2,937	3,466	2,292	5,153	3,013	4,334
1988	6,715	6,088	6,590	6,634	3,122	3,800	2,346	5,148	2,975	4,653
1989	6,887	6,134	6,834	6,996	2,944	3,713	2,439	5,173	3,061	4,726
1990	5,848	4,998	5,681	6,011	2,230	2,929	1,944	5,146	3,148	4,016
1991	5,960	5,177	5,906	6,319	2,503	3,211	2,178	5,259	3,109	4,200
1992	6,844	5,964	6,297	6,262	2,852	3,498	2,145	5,054	2,763	4,441
1993	6,728	5,948	6,646	7,168	2,981	3,768	2,489	5,514	3,052	4,700
1994	6,672	5,934	6,378	6,509	2,724	3,394	2,108	5,002	3,155	4,483
1995	6,559	5,831	6,664	6,804	2,967	3,626	2,145	4,953	2,784	4,531
1996	6,679	5,986	6,947	7,345	3,106	3,782	2,285	5,011	2,860	4,713
1997	6,662	5,809	6,617	6,762	2,845	3,664	2,418	5,189	2,754	4,542
1998	5,680	4,812	5,278	5,774	2,429	3,025	2,021	5,059	3,255	3,951
1999	5,952	5,351	5,946	5,921	2,652	3,142	1,835	4,768	3,158	4,169
2000	6,489	5,774	6,284	6,456	2,959	3,548	2,194	4,881	3,012	4,460
2001	6,059	5,297	5,824	6,185	2,666	3,314	2,200	4,954	3,129	4,223
2002	R6,099	5,372	R6,122	R6,625	R2,671	R3,420	R2,307	R5,028	R3,132	R4,284
2003 ^P	6,908	6,057	6,423	6,486	2,882	3,589	2,227	4,633	2,900	4,440
Normals ²	6,612	5,910	6,498	6,750	2,853	3,603	2,286	5,209	3,226	4,524

¹ Excludes Alaska and Hawaii.

² Normals are based on calculations of data from 1971 through 2000.

R=Revised. P=Preliminary.

Notes: • Degree-days are relative measurements of outdoor air temperature. Heating degree-days are deviations below the mean daily temperature of 65° F. For example, a weather station recording a mean daily temperature of 40° F would report 25 heating degree-days. • Temperature information recorded by weather stations is used to calculate State-wide degree-day averages based on resident State population. Beginning in 2002, data are weighted by the estimated 2000 population. The population-weighted State figures are aggregated into Census divisions and the national average. • See Appendix C for Census

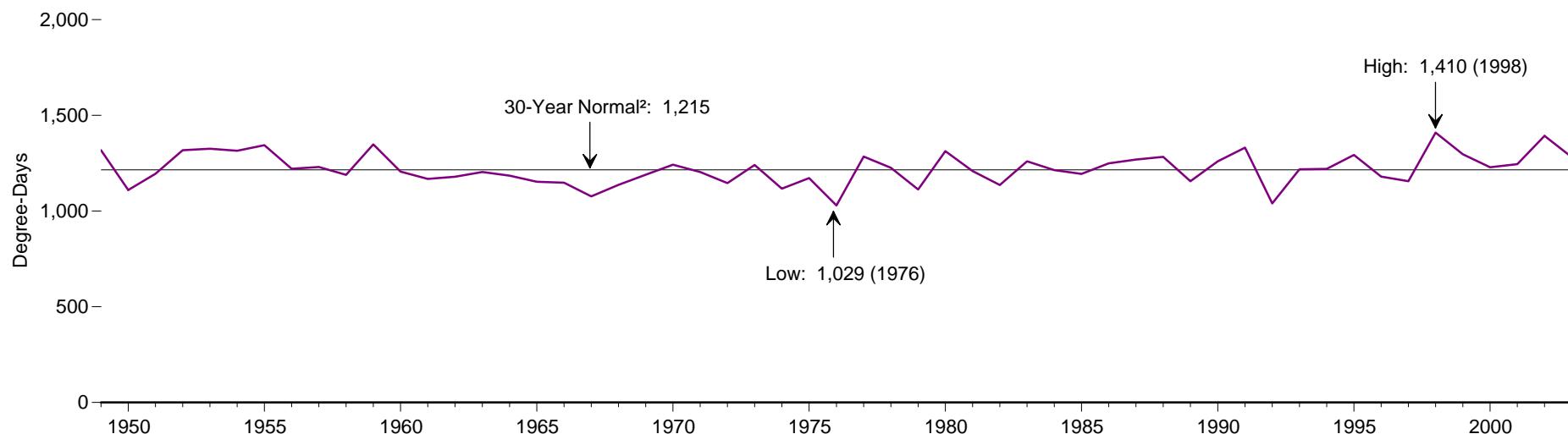
divisions.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/overview.html>. • For current data, see <http://www.eia.doe.gov/emeu/mer/overview.html>.

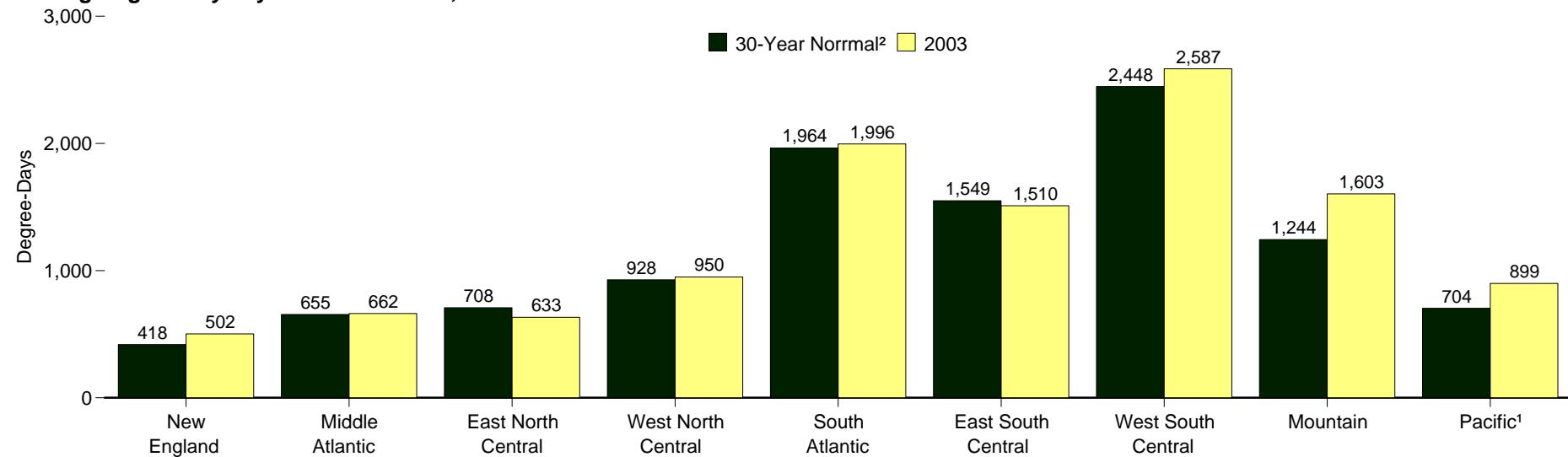
Sources: • 1949-2002 and Normals—U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), National Climatic Data Center, Asheville, North Carolina. Historical Climatology Series 5-1. • 2003—Energy Information Administration, *Monthly Energy Review (MER)*, June 2003-May 2004 issues, Table 1.10, which reports data from NOAA, National Weather Service Climate Analysis Center, Camp Springs, Maryland. Census Division data for 2003 are the sums of the current year monthly statistics shown in the cited issues of the *MER*.

Figure 1.10 Cooling Degree-Days by Census Division

U.S.¹ Cooling Degree-Days, 1949-2003



Cooling Degree-Days by Census Division, 2003



¹ Excludes Alaska and Hawaii.

² Normals are based on calculations of data from 1971 through 2000.

Note: See Appendix C for Census Divisions.

Source: Table 1.10.

Table 1.10 Cooling Degree-Days by Census Division, Selected Years, 1949-2003

Year	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific ¹	United States ¹
1949	654	901	949	1,038	2,128	1,776	2,510	1,198	593	1,318
1950	353	542	602	729	1,919	1,568	2,473	1,120	597	1,110
1955	602	934	1,043	1,238	2,045	1,791	2,643	1,124	560	1,344
1960	368	640	722	961	1,926	1,613	2,492	1,308	770	1,206
1965	352	638	688	914	1,931	1,634	2,579	961	542	1,153
1970	479	779	827	1,066	2,007	1,662	2,375	1,163	689	1,242
1971	465	730	783	960	1,932	1,577	2,448	1,074	685	1,204
1972	364	614	643	908	1,843	1,525	2,513	1,141	698	1,146
1973	551	830	864	1,009	2,000	1,665	2,359	1,123	624	1,241
1974	393	614	626	878	1,842	1,382	2,342	1,188	690	1,117
1975	467	708	788	1,003	2,011	1,520	2,261	1,031	547	1,172
1976	402	597	619	939	1,675	1,232	2,035	1,058	620	1,029
1977	407	689	823	1,122	2,020	1,808	2,720	1,256	715	1,285
1978	378	615	741	1,027	1,972	1,685	2,638	1,174	738	1,226
1979	434	588	618	871	1,833	1,412	2,242	1,164	770	1,113
1980	487	793	816	1,217	2,075	1,834	2,734	1,202	658	1,313
1981	436	657	658	924	1,889	1,576	2,498	1,331	876	1,209
1982	321	541	643	859	1,958	1,537	2,502	1,121	619	1,136
1983	538	799	934	1,178	1,925	1,579	2,288	1,174	776	1,260
1984	468	649	724	955	1,865	1,508	2,469	1,190	956	1,214
1985	372	627	643	830	2,004	1,596	2,599	1,210	737	1,194
1986	301	626	738	1,021	2,149	1,792	2,618	1,188	664	1,249
1987	406	729	918	1,115	2,067	1,718	2,368	1,196	706	1,269
1988	545	782	975	1,230	1,923	1,582	2,422	1,320	729	1,283
1989	426	658	652	864	1,977	1,417	2,295	1,330	685	1,156
1990	477	656	647	983	2,143	1,622	2,579	1,294	827	1,260
1991	511	854	959	1,125	2,197	1,758	2,499	1,182	672	1,331
1992	276	460	449	637	1,777	1,293	2,201	1,206	905	1,040
1993	486	764	735	817	2,092	1,622	2,369	1,113	708	1,218
1994	548	722	664	887	2,005	1,448	2,422	1,436	801	1,220
1995	507	803	921	985	2,081	1,671	2,448	1,234	754	1,293
1996	400	623	629	821	1,867	1,474	2,515	1,381	856	1,180
1997	395	586	574	873	1,886	1,393	2,361	1,335	921	1,156
1998	505	788	889	1,138	2,277	1,928	3,026	1,271	732	1,410
1999	631	882	855	970	2,024	1,733	2,645	1,242	635	1,297
2000	317	542	658	1,023	1,929	1,736	2,787	1,488	756	1,229
2001	519	722	744	1,028	1,891	1,535	2,565	1,498	794	1,245
2002	R ⁵⁷⁰	R ⁸⁶³	R ⁹³³	R ^{1,049}	R ^{2,209}	R ^{1,808}	R ^{2,545}	R ^{1,543}	R ⁷³⁹	R ^{1,393}
2003 ^P	502	662	633	950	1,996	1,510	2,587	1,603	899	1,281
Normals ²	418	655	708	928	1,964	1,549	2,448	1,244	704	1,215

¹ Excludes Alaska and Hawaii.

² Normals are based on calculations of data from 1971 through 2000.

R=Revised. P=Preliminary.

Notes: • Degree-days are relative measurements of outdoor air temperature. Cooling degree-days are deviations above the mean daily temperature of 65° F. For example, a weather station recording a mean daily temperature of 78° F would report 13 cooling degree-days. • Temperature information recorded by weather stations is used to calculate State-wide degree-day averages based on resident State population. Beginning in 2002, data are weighted by the estimated 2000 population. The population-weighted State figures are aggregated into Census divisions and the national average. • See Appendix C for Census

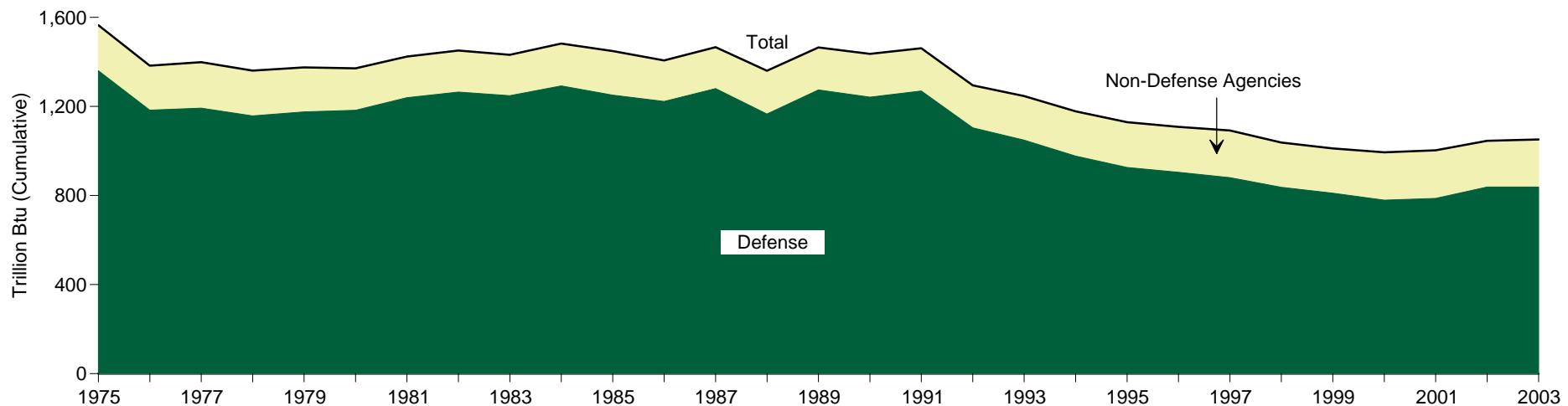
divisions.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/overview.html>. • For current data, see <http://www.eia.doe.gov/emeu/mer/overview.html>.

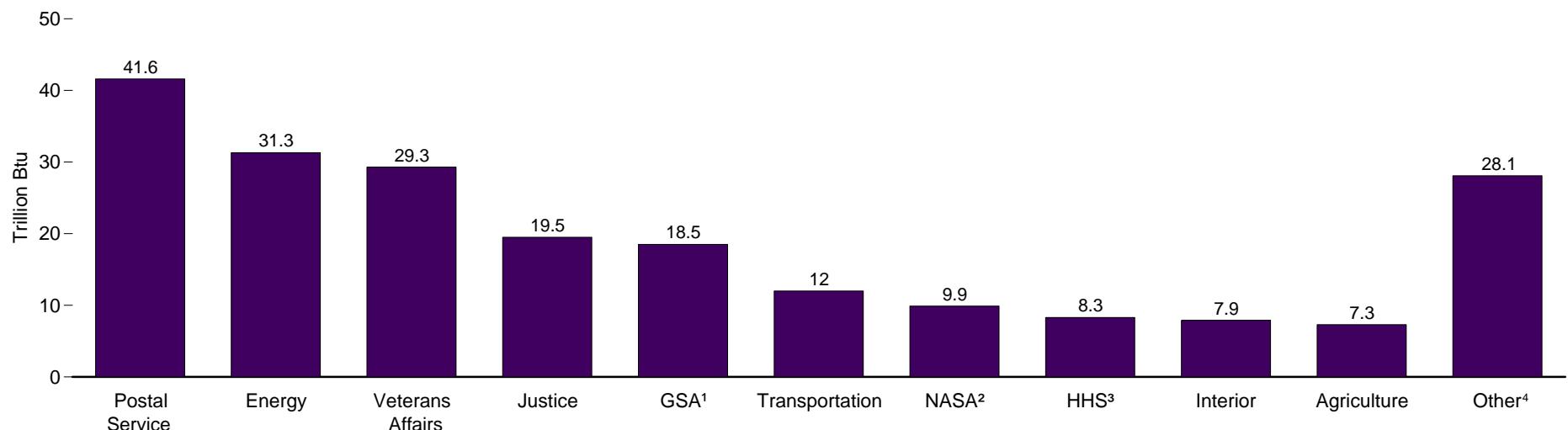
Sources: • 1949-2002 and Normals—U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), National Climatic Data Center, Asheville, North Carolina. Historical Climatology Series 5-2. • 2003—Energy Information Administration, *Monthly Energy Review*, June 2003-May 2004 issues, Table 1.11, which reports data from NOAA, National Weather Service Climate Analysis Center, Camp Springs, Maryland.

Figure 1.11 U.S. Government Energy Consumption by Agency

Total and U.S. Department of Defense, Fiscal Years 1975-2003



Non-Defense Agencies, Fiscal Year 2003



¹ General Services Administration.

² National Aeronautics and Space Administration.

³ Health and Human Services.

⁴ See Table 1.11 for list of agencies.

Notes: • The U.S. Government's fiscal year was October 1 through September 30, except in 1975 and 1976 when it was July 1 through June 30. • Because vertical scales differ, graphs should not be compared.

Source: Table 1.11.

Table 1.11 U.S. Government Energy Consumption by Agency, Fiscal Years 1975-2003
(Trillion Btu)

Year	Agencies												
	Agriculture	Defense	Energy	GSA ¹	HHS ²	Interior	Justice	NASA ³	Postal Service	Trans- portation	Veterans Affairs	Other ⁴	Total
1975	9.5	1,360.2	50.4	22.3	6.5	9.4	5.9	13.4	30.5	19.3	27.1	10.5	1,565.0
1976	9.3	1,183.3	50.3	20.6	6.7	9.4	5.7	12.4	30.0	19.5	25.0	11.2	1,383.4
1977	8.9	1,192.3	51.6	20.4	6.9	9.5	5.9	12.0	32.7	20.4	25.9	11.9	1,398.5
1978	9.1	1,157.8	50.1	20.4	6.5	9.2	5.9	11.2	30.9	20.6	26.8	12.4	1,360.9
1979	9.2	1,175.8	49.6	19.6	6.4	10.4	6.4	11.1	29.3	19.6	25.7	12.3	1,375.4
1980	8.6	1,183.1	47.4	18.1	6.0	8.5	5.7	10.4	27.2	19.2	24.8	12.3	1,371.2
1981	7.9	1,239.5	47.3	18.0	6.7	7.6	5.4	10.0	27.9	18.8	24.0	11.1	1,424.2
1982	7.6	1,264.5	49.0	18.1	6.4	7.4	5.8	10.1	27.5	19.1	24.2	11.6	1,451.4
1983	7.4	1,248.3	49.5	16.1	6.2	7.7	5.5	10.3	26.5	19.4	24.1	10.8	1,431.8
1984	7.9	1,292.1	51.6	16.2	6.4	8.4	6.4	10.6	27.7	19.8	24.6	10.7	1,482.5
1985	8.4	1,250.6	52.2	19.3	6.0	7.8	8.2	10.9	27.8	19.6	25.1	R13.0	R1,448.7
1986	6.8	1,222.8	R46.9	14.0	6.2	6.9	8.6	11.2	28.0	19.4	25.0	10.8	R1,406.7
1987	7.3	1,280.5	48.5	13.1	6.6	6.6	8.1	11.3	28.5	19.0	24.9	11.9	1,466.3
1988	7.8	1,165.8	49.9	12.4	6.4	7.0	9.4	11.3	29.6	18.7	26.3	15.8	1,360.3
1989	8.7	1,274.4	44.2	12.7	6.7	7.1	7.7	12.4	30.3	18.5	26.2	15.6	1,464.7
1990	9.6	1,241.7	43.4	15.7	7.1	7.4	7.0	12.4	30.6	19.0	24.9	R17.3	R1,436.0
1991	9.6	1,269.3	42.1	14.0	6.2	7.1	8.0	12.5	30.8	19.0	25.1	18.0	1,461.6
1992	9.1	1,104.0	44.3	13.8	6.8	7.0	7.5	12.6	31.7	17.0	25.3	15.6	1,294.7
1993	9.3	1,048.8	43.4	14.1	7.2	7.5	9.1	12.4	33.7	19.4	25.7	16.1	1,246.7
1994	9.4	977.0	42.1	14.0	7.5	7.9	10.3	12.6	35.0	19.8	25.6	17.0	1,178.1
1995	9.0	926.0	47.3	13.7	6.1	6.4	10.2	12.4	36.2	18.7	25.4	R17.8	1,129.2
1996	9.1	904.5	R44.6	14.5	6.6	4.3	12.1	11.5	36.4	19.6	26.8	18.4	R1,108.4
1997	7.4	880.0	43.1	14.4	7.9	6.6	12.0	12.0	40.8	19.1	27.3	R21.5	R1,091.9
1998	7.9	837.1	31.5	14.1	7.4	6.4	15.8	11.7	39.5	18.5	27.6	R20.2	R1,037.8
1999	7.8	810.7	R27.0	14.4	7.1	7.5	15.4	11.4	39.8	22.6	27.5	R20.5	R1,011.5
2000	7.4	779.1	30.5	17.6	8.0	7.8	19.7	11.1	43.3	21.2	27.0	R20.9	R993.7
2001	7.4	787.2	31.1	18.4	8.5	9.5	19.7	R10.9	43.4	17.8	27.7	R21.3	R1,002.9
2002	7.1	R837.9	R30.8	17.5	R8.0	R8.1	R18.2	R10.6	42.0	R18.4	27.7	R19.8	R1,045.9
2003 ^P	7.3	837.9	31.3	18.5	8.3	7.9	19.5	9.9	41.6	12.0	29.3	28.1	1,051.6

¹ General Services Administration.

² Health and Human Services.

³ National Aeronautics and Space Administration.

⁴ Includes National Archives and Records Administration, U.S. Department of Commerce, Panama Canal Commission, Tennessee Valley Authority, U.S. Department of Labor, National Science Foundation, Federal Trade Commission, Federal Communications Commission, Environmental Protection Agency, U.S. Department of Homeland Security, U.S. Department of Housing and Urban Development, Railroad Retirement Board, Commodity Futures Trading Commission, Equal Employment Opportunity Commission, Nuclear Regulatory Commission, U.S. Department of State, U.S. Department of the Treasury, Small Business Administration, Office of Personnel Management, Federal Emergency Management Agency, Central Intelligence Agency, Social Security Administration, and U.S. Information Agency (International

Broadcasting Bureau).

R = Revised. P = Preliminary.

Notes: • The U.S. Government's fiscal year was October 1 through September 30, except in 1975 and 1976, when it was July 1 through June 30. • Data include energy consumed at foreign installations and in foreign operations, including aviation and ocean bunkering, primarily by the U.S. Department of Defense.

U.S. Government energy use for electricity generation and uranium enrichment is excluded.

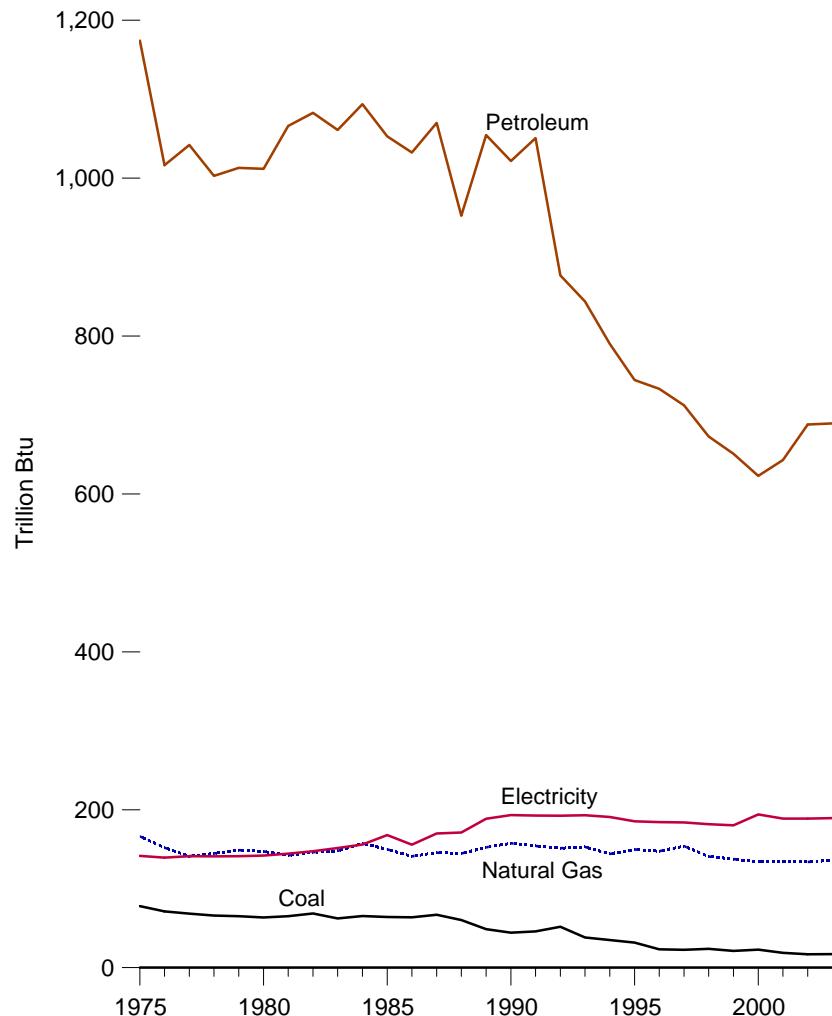
• Totals may not equal sum of components due to independent rounding.

Web Page: See http://www.eere.energy.gov/femp/aboutfemp/annual_reports/ann_overview.html for related information.

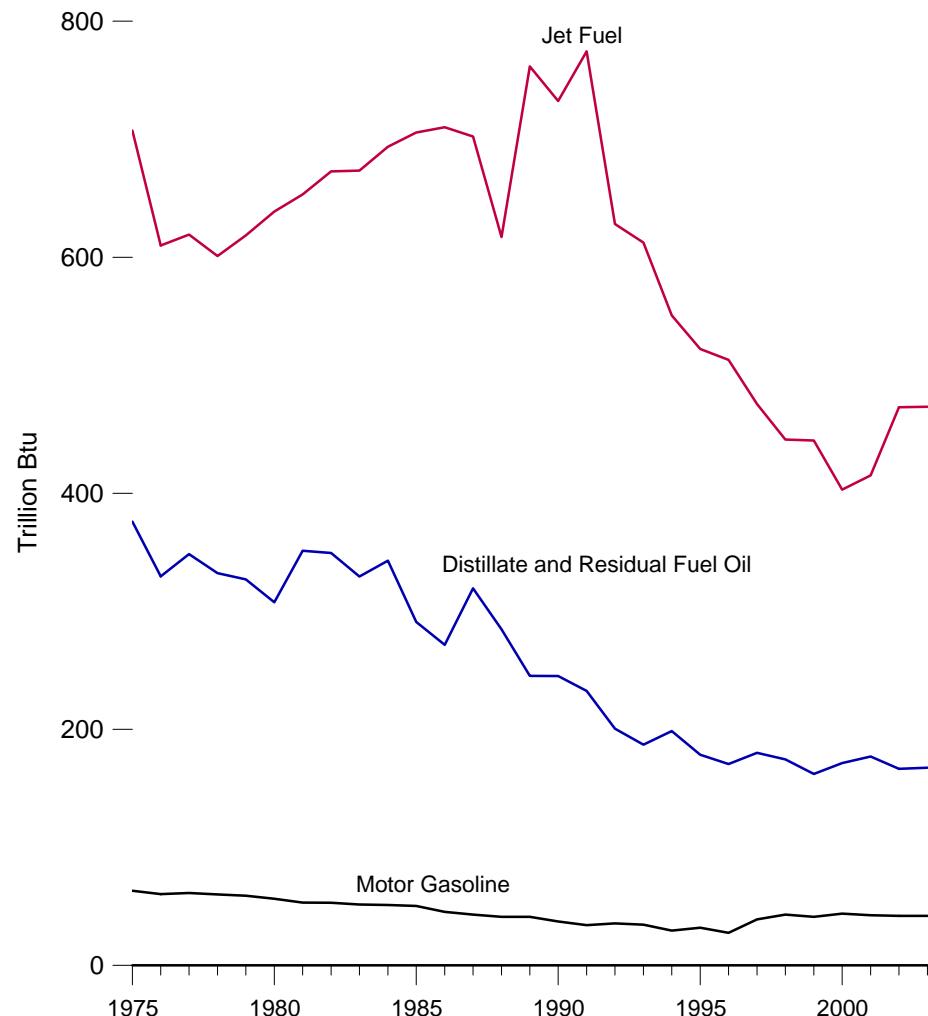
Source: U.S. Department of Energy, Energy Efficiency and Renewable Energy, Office of Federal Energy Management Programs.

Figure 1.12 U.S. Government Energy Consumption by Source, Fiscal Years 1975-2003

By Major Energy Source



By Petroleum Product



Notes: • The U.S. Government's fiscal year was October 1 through September 30, except in 1975 and 1976 when it was July 1 through June 30. • Because vertical scales differ, graphs should not be compared.

Source: Table 1.12.

Table 1.12 U.S. Government Energy Consumption by Source, Fiscal Years 1975-2003
 (Trillion Btu)

Year	Coal	Natural Gas	Petroleum					Electricity	Purchased Steam and Other ³	Total	
			Aviation Gasoline	Distillate and Residual Fuel Oil	Jet Fuel	Motor Gasoline	LPG ¹ and Other ²				
1975	77.9	166.2	22.0	376.0	707.4	63.2	5.6	1,174.2	141.5	5.1	1,565.0
1976	71.3	151.8	11.6	329.7	610.0	60.4	4.7	1,016.4	139.3	4.6	1,383.4
1977	68.4	141.2	8.8	348.5	619.2	61.4	4.1	1,042.1	141.1	5.7	1,398.5
1978	66.0	144.7	6.2	332.3	601.1	60.1	3.0	1,002.9	141.0	6.4	1,360.9
1979	65.1	148.9	4.7	327.1	618.6	59.1	3.7	1,013.1	141.2	7.1	1,375.4
1980	63.5	147.3	4.9	307.7	638.7	56.5	4.0	1,011.8	141.9	6.8	1,371.2
1981	65.1	142.2	4.6	351.3	653.3	53.2	3.7	1,066.2	144.5	6.2	1,424.2
1982	68.6	146.2	3.6	349.4	672.7	53.1	3.9	1,082.8	147.5	6.2	1,451.4
1983	62.4	147.8	2.6	329.5	673.4	51.6	4.0	1,061.1	151.5	9.0	1,431.8
1984	65.3	157.4	1.9	342.9	693.7	51.2	4.1	1,093.8	155.9	10.1	1,482.5
1985	64.2	R149.8	1.9	R291.0	705.7	50.4	4.0	R1,053.0	R167.9	13.9	R1,448.7
1986	63.8	140.9	1.4	271.6	710.2	45.3	3.9	1,032.4	R155.8	13.7	R1,406.7
1987	67.0	145.6	1.0	319.5	702.3	43.1	4.0	1,069.9	169.9	13.9	1,466.3
1988	60.2	144.6	6.0	284.8	617.2	41.2	3.2	952.4	171.2	32.0	1,360.3
1989	48.7	152.4	0.8	245.3	761.7	41.1	5.7	1,054.5	188.6	20.6	1,464.7
1990	44.2	R157.6	0.5	R245.2	732.4	37.2	6.4	R1,021.8	R193.3	19.1	R1,436.0
1991	45.9	154.1	0.4	232.6	774.5	34.1	9.0	1,050.7	192.6	18.3	1,461.6
1992	51.7	151.2	1.0	200.6	628.2	35.6	11.4	876.8	192.5	22.5	1,294.7
1993	38.3	152.9	0.7	187.0	612.4	34.5	9.3	843.9	193.0	18.6	1,246.7
1994	35.0	143.9	0.6	198.5	550.7	29.5	10.9	790.2	190.9	18.2	1,178.1
1995	31.7	149.7	0.3	178.5	522.3	31.9	11.4	744.4	185.3	18.2	1,129.2
1996	23.3	R147.4	0.2	170.6	513.0	27.6	21.7	733.2	184.4	20.1	R1,108.4
1997	22.5	154.0	0.3	180.1	475.7	39.0	17.2	712.2	R183.9	19.2	R1,091.9
1998	23.9	R140.7	0.2	174.6	445.5	43.1	9.4	672.8	R181.7	18.8	R1,037.8
1999	21.2	R137.6	0.1	162.2	444.7	41.1	2.9	650.9	R180.3	R21.5	R1,011.5
2000	22.7	R134.0	0.2	171.4	403.1	43.9	4.3	622.9	R194.0	R20.2	R993.7
2001	18.8	133.9	0.2	177.0	R415.2	42.5	R7.9	R642.9	R188.7	R18.6	R1,002.9
2002	R16.9	R133.9	0.2	R166.6	R472.9	R42.0	R6.1	R687.9	R188.7	R18.5	R1,045.9
2003 ^P	17.1	135.9	0.2	167.5	473.3	42.0	6.3	689.4	189.3	19.8	1,051.6

¹ Liquefied petroleum gases.

² Other types of fuel used in vehicles and equipment, primarily alternative fuels like methanol, ethanol, compressed natural gas, and biodiesel.

³ "Other" is chilled water, renewable energy, and other fuels reported as used in facilities.

R = Revised. P = Preliminary.

Notes: • The U.S. Government's fiscal year was October 1 through September 30, except in 1975 and 1976, when it was July 1 through June 30. • This table uses a conversion factor for electricity of 3,412 Btu per kilowatthour and a conversion factor for purchased steam of 1,000 Btu per pound. • Data include

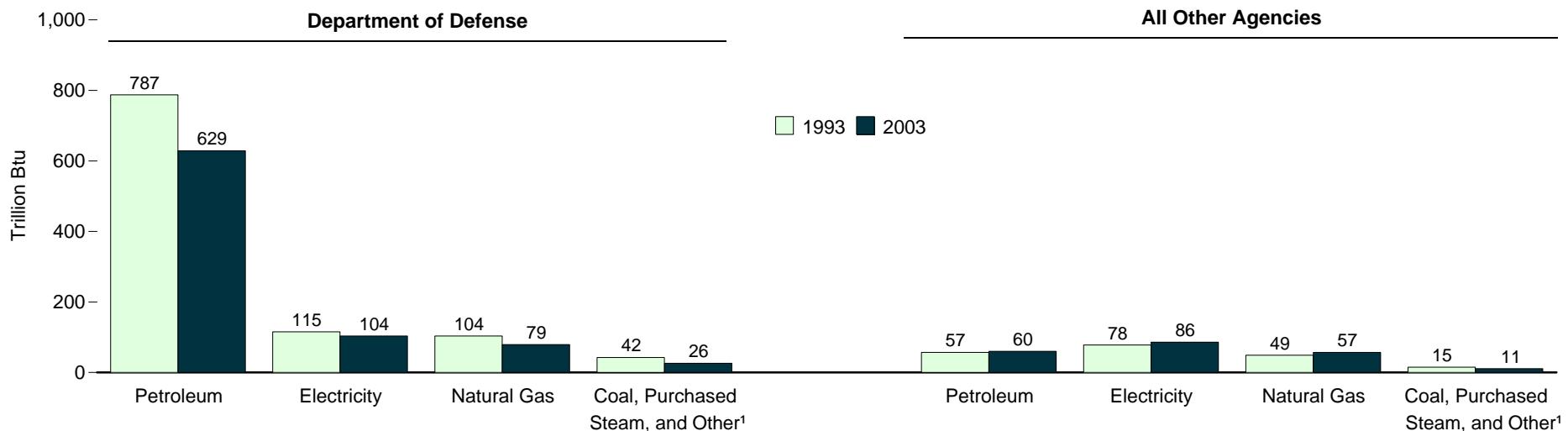
energy consumed at foreign installations and in foreign operations, including aviation and ocean bunkering, primarily by the U.S. Department of Defense. U.S. Government energy use for electricity generation and uranium enrichment is excluded. • Totals may not equal sum of components due to independent rounding.

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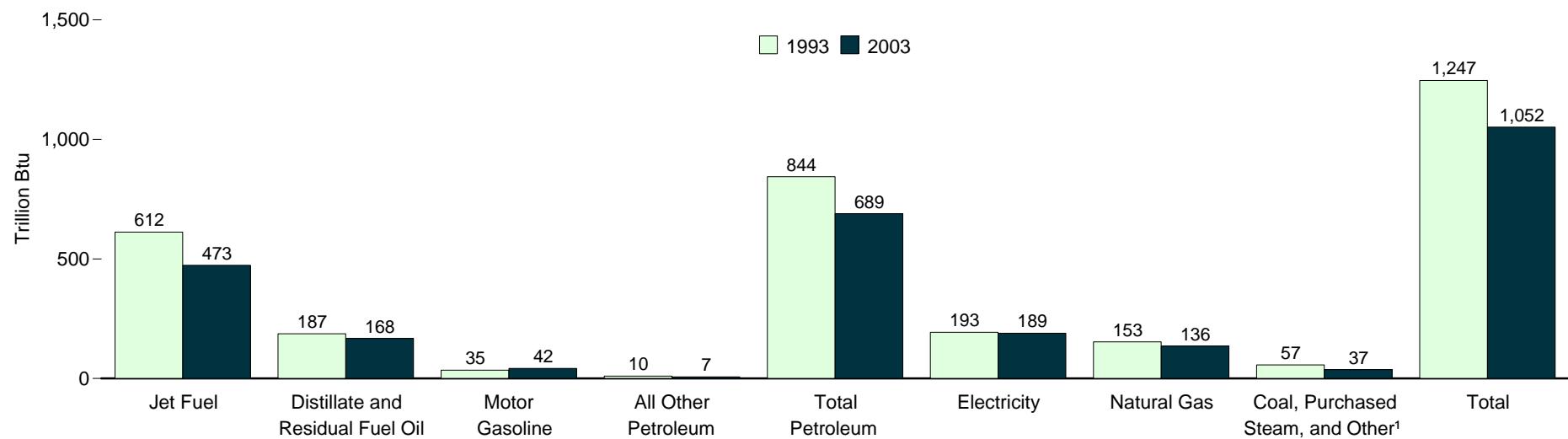
Source: U.S. Department of Energy, Energy Efficiency and Renewable Energy, Office of Federal Energy Management Programs.

Figure 1.13 U.S. Government Energy Consumption by Agency and Source, Fiscal Years 1993 and 2003

By Agency



By Source



¹ Chilled water, renewable energy, and other fuels reported as used in facilities.

Notes: • The U.S. Government's fiscal year runs from October 1 through September 30.

• Because vertical scales differ, graphs should not be compared.

Source: Table 1.13.

Table 1.13 U.S. Government Energy Consumption by Agency and Source, Fiscal Years 1993 and 2003
 (Trillion Btu)

Agency	Coal	Natural Gas	Petroleum						Electricity	Purchased Steam and Other ³	Total
			Aviation Gasoline	Distillate and Residual Fuel Oil	Jet Fuel	Motor Gasoline	LPG ¹ and Other ²	Total			
Total, 1993	38.3	152.9	0.7	187.0	612.4	34.5	9.3	843.9	193.0	18.6	1,246.7
Defense	28.7	103.6	0.0	171.5	602.9	10.7	2.3	787.4	115.4	13.7	1,048.8
Energy	9.2	11.9	0.0	2.3	0.4	1.2	0.5	4.4	17.5	0.4	43.4
Postal Service	0.0	6.0	0.0	3.2	0.0	10.3	0.0	13.6	13.6	0.5	33.7
Veterans Affairs	0.1	13.8	0.0	1.6	0.0	0.6	0.0	2.2	8.4	1.2	25.7
Transportation	0.0	1.5	0.1	1.0	5.6	0.6	4.4	11.8	6.0	0.1	19.4
General Services Administration	0.0	2.8	0.0	0.4	0.0	0.1	0.0	0.5	9.3	1.5	14.1
NASA	0.0	2.4	0.0	1.0	1.4	0.3	0.0	2.7	7.0	0.3	12.4
Agriculture	0.0	1.7	0.1	0.6	0.0	4.6	0.2	5.4	2.1	0.1	9.3
Justice	0.2	3.2	0.1	0.3	0.6	2.0	0.0	3.1	2.4	0.2	9.1
Interior	0.1	0.8	0.0	1.2	0.1	1.8	1.5	4.7	1.8	0.1	7.5
Health and Human Services	0.0	2.6	0.0	1.4	0.0	0.2	0.3	1.9	2.7	0.1	7.2
Other ⁴	0.0	2.5	0.3	2.4	1.3	2.2	0.0	6.2	6.8	0.6	16.1
Total, 2003 P	17.1	135.9	0.2	167.5	473.3	42.0	6.3	689.4	189.3	19.8	1,051.6
Defense	14.9	79.2	0.0	145.7	465.3	13.9	4.2	629.0	103.6	11.3	837.9
Energy	2.0	6.7	0.0	2.2	0.0	0.9	0.2	3.3	17.7	1.6	31.3
Postal Service	0.0	7.5	0.0	5.2	0.0	11.7	0.2	17.1	16.4	0.6	41.6
Veterans Affairs	0.2	14.9	0.0	1.8	0.0	0.7	0.0	2.4	10.0	1.7	29.3
Transportation	0.0	0.7	0.0	6.6	0.6	0.7	0.1	8.0	3.2	0.0	12.0
General Services Administration	0.0	6.8	0.0	0.1	0.0	0.1	0.0	0.2	9.8	1.8	18.5
NASA	0.0	2.9	0.0	0.5	0.6	0.1	0.1	1.2	5.7	0.2	9.9
Agriculture	0.0	1.7	0.0	0.3	0.0	2.3	0.2	2.9	2.3	0.4	7.3
Justice	0.0	6.3	0.1	0.7	1.5	5.6	0.1	7.9	4.6	0.7	19.5
Interior	0.0	1.4	0.0	1.2	0.1	2.4	0.8	4.6	1.8	0.1	7.9
Health and Human Services	0.0	3.6	0.0	0.8	0.0	0.1	0.2	1.1	3.2	0.4	8.3
Other ⁵	0.0	4.2	0.0	2.5	5.2	3.5	0.4	11.6	11.1	1.2	28.1

¹ Liquefied petroleum gases.

² Other types of fuel used in vehicles and equipment, primarily alternative fuels like methanol, ethanol, compressed natural gas, and biodiesel.

³ "Other" is chilled water, renewable energy, and other fuels reported as used in facilities.

⁴ Includes U.S. Department of Commerce, Panama Canal Commission, Tennessee Valley Authority, U.S. Department of Labor, U.S. Information Agency, U.S. Department of Housing and Urban Development, Federal Communications Commission, Office of Personnel Management, U.S. Department of State, Federal Emergency Management Agency, U.S. Department of the Treasury, National Archives and Records Administration, Nuclear Regulatory Commission, Railroad Retirement Board, Federal Trade Commission, Commodity Futures Trading Commission, Equal Employment Opportunity Commission, and Environmental Protection Agency.

⁵ Includes National Archives and Records Administration, U.S. Department of Commerce, U.S. Department of Labor, U.S. Department of State, Environmental Protection Agency, Federal Communications Commission, Federal Trade Commission, Social Security Administration, International Broadcasting Bureau, Equal Employment Opportunity Commission, Nuclear Regulatory Commission, Office

of Personnel Management, U.S. Department of Homeland Security, U.S. Department of Housing and Urban Development, U.S. Department of the Treasury, Railroad Retirement Board, Tennessee Valley Authority, Federal Emergency Management Agency, Central Intelligence Agency, and National Science Foundation.

P=Preliminary.

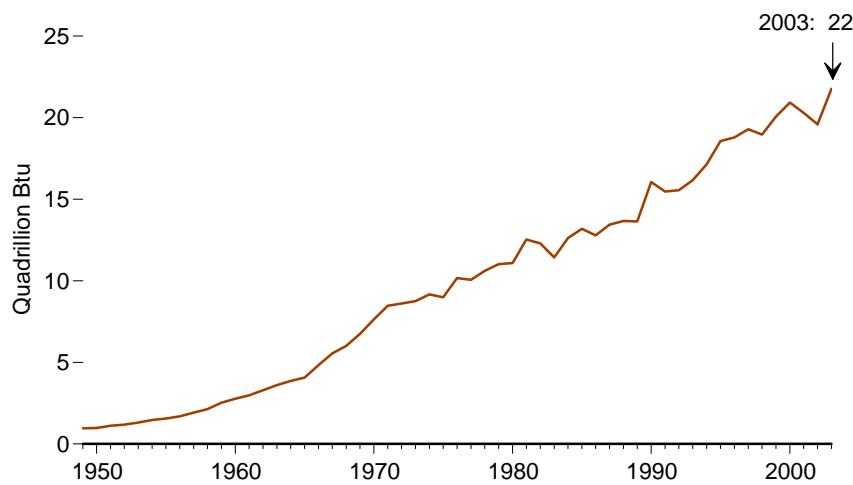
Notes: • The U.S. Government's fiscal year runs from October 1 through September 30. • This table uses a conversion factor for electricity of 3,412 Btu per kilowatthour and a conversion factor for purchased steam of 1,000 Btu per pound. • Data include energy consumed at foreign installations and in foreign operations, including aviation and ocean bunkering, primarily by the U.S. Department of Defense. U.S. Government energy use for electricity generation and uranium enrichment is excluded. • Totals may not equal sum of components due to independent rounding.

Web Page: See http://www.eere.energy.gov/femp/aboutfemp/annual_reports/ann_overview.html for related information.

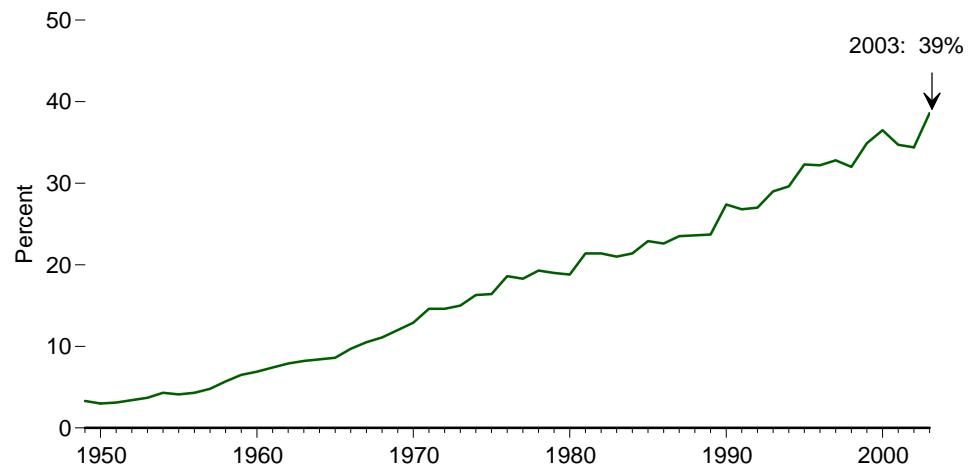
Source: U.S. Department of Energy, Energy Efficiency and Renewable Energy, Office of Federal Energy Management Programs.

Figure 1.14 Fossil Fuel Production on Federally Administered Lands

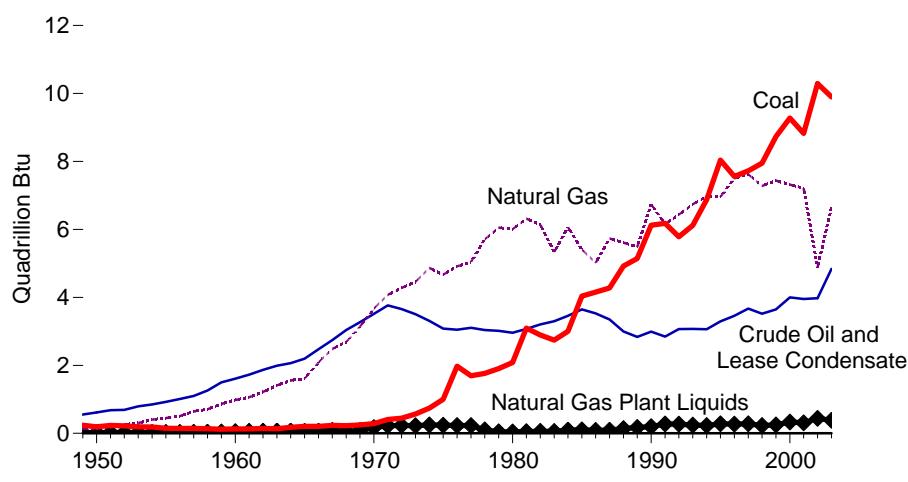
Total, 1949-2003



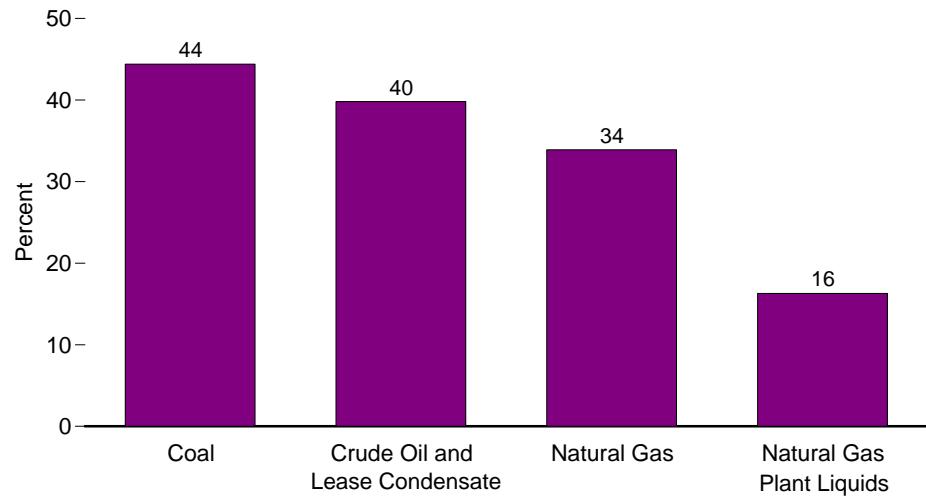
Federal Lands Fossil Fuel Production as a Share of U.S. Fossil Fuel Production, 1949-2003



By Source, 1949-2003



Federal Lands Fossil Fuel Production as a Share of U.S. Fossil Fuel Production, By Source, 2003



Notes: • All data are on a calendar-year basis except 2001, which is on a fiscal-year basis (October 2000–September 2001). • “Federally Administered Lands” include all classes of land owned by the Federal Government, including acquired military, Outer Continental Shelf, and public lands.

• Because vertical scales differ, graphs should not be compared.

Source: Table 1.14.

Table 1.14 Fossil Fuel Production on Federally Administered Lands, Selected Years, 1949-2003

Year	Crude Oil and Lease Condensate ¹			Natural Gas Plant Liquids ²			Natural Gas ³			Coal			Fossil Fuels	
	Million Barrels	Quadrillion Btu ⁴	Percent U.S. Total ⁵	Million Barrels	Quadrillion Btu ⁴	Percent U.S. Total ⁵	Trillion Cubic Feet	Quadrillion Btu ⁴	Percent U.S. Total ⁵	Million Short Tons	Quadrillion Btu ⁴	Percent U.S. Total ⁵	Quadrillion Btu ⁴	Percent U.S. Total
1949	95.2	0.55	5.2	4.4	0.02	2.8	0.15	0.15	2.8	9.5	R0.24	2.0	R0.96	R3.3
1950	105.9	0.61	5.4	4.4	0.02	2.4	0.14	0.15	2.4	7.7	R0.19	1.4	R0.98	R3.0
1955	159.5	0.92	6.4	6.0	0.03	2.1	0.43	0.45	4.8	5.9	R0.15	1.2	R1.55	4.1
1960	277.3	1.61	10.8	11.6	0.05	3.4	0.95	0.98	7.8	5.2	R0.13	1.2	R2.77	6.9
1965	378.6	2.20	13.3	14.3	0.06	3.2	1.56	1.61	10.2	8.2	R0.20	1.6	R4.07	R8.6
1970	605.6	3.51	17.2	40.6	0.17	6.7	3.56	3.67	16.9	12.0	R0.29	2.0	R7.64	R12.9
1971	648.9	3.76	18.8	54.0	0.22	8.7	3.95	4.08	18.3	17.3	R0.41	3.1	R8.47	R14.6
1972	630.5	3.66	18.2	56.7	0.23	8.9	4.17	4.28	19.3	19.0	R0.44	3.1	R8.61	R14.6
1973	604.3	3.51	18.0	54.9	0.22	8.7	4.37	4.46	20.1	24.2	R0.57	4.1	R8.75	R15.0
1974	570.2	3.31	17.8	61.9	0.25	10.1	4.75	4.87	22.9	32.1	R0.74	5.3	R9.16	R16.3
1975	531.5	3.08	17.4	59.7	0.24	10.0	4.57	4.67	23.8	43.6	R1.00	6.7	R8.99	R16.4
1976	525.7	3.05	17.7	57.2	0.23	9.7	4.81	4.91	25.2	86.4	R1.98	12.6	R10.16	R18.6
1977	535.0	3.10	17.8	57.4	0.23	9.7	4.94	5.04	25.8	74.8	R1.69	10.7	R10.06	R18.3
1978	523.6	3.04	16.5	25.9	0.10	4.5	5.60	5.71	29.3	79.2	R1.76	11.8	R10.61	R19.3
1979	519.8	3.01	16.7	11.9	0.05	2.1	5.93	6.05	30.1	84.9	R1.91	10.9	R11.02	R19.0
1980	510.4	2.96	16.2	10.5	0.04	1.8	5.85	6.01	30.2	92.9	R2.08	11.2	R11.09	R18.8
1981	529.3	3.07	16.9	12.3	0.05	2.1	6.15	6.31	32.1	138.8	R3.10	16.8	R12.53	R21.4
1982	552.3	3.20	17.5	15.0	0.06	2.7	5.97	6.14	33.5	130.0	R2.89	15.5	R12.29	R21.4
1983	568.8	3.30	17.9	14.0	0.05	2.5	5.17	5.33	32.1	124.3	R2.74	15.9	R11.43	R21.0
1984	595.8	3.46	18.3	25.4	0.10	4.3	5.88	6.07	33.7	136.3	R3.00	15.2	R12.62	R21.4
1985	628.3	3.64	19.2	26.6	0.10	4.5	5.24	5.41	31.8	184.6	R4.04	20.9	R13.19	R22.9
1986	608.4	3.53	19.2	23.3	0.09	4.1	4.87	5.01	30.3	189.7	R4.16	21.3	R12.79	R22.6
1987	577.3	3.35	18.9	23.7	0.09	4.1	5.56	5.73	33.4	195.2	R4.28	21.2	R13.45	R23.5
1988	516.3	2.99	17.3	37.0	0.14	6.2	5.45	5.61	31.9	225.4	R4.92	23.7	R13.67	R23.6
1989	488.9	2.84	17.6	45.1	0.17	8.0	5.32	5.49	30.7	236.3	R5.14	24.1	R13.64	R23.7
1990	515.9	2.99	19.2	50.9	0.19	8.9	6.55	6.74	36.8	280.6	R6.12	27.3	R16.05	R27.4
1991	491.0	2.85	18.1	72.7	0.28	12.0	5.99	6.17	33.8	285.1	R6.18	28.6	R15.47	R26.8
1992	529.1	3.07	20.2	70.7	0.27	11.4	6.25	6.43	35.0	266.7	R5.78	26.7	R15.55	R27.0
1993	529.3	3.07	21.2	64.4	0.24	10.2	6.56	6.74	36.3	285.7	R6.12	30.2	R16.17	R29.0
1994	527.7	3.06	21.7	60.0	0.23	9.5	6.78	6.97	36.0	321.4	R6.88	31.1	R17.14	R29.6
1995	567.4	3.29	23.7	74.0	0.28	11.5	6.78	6.96	36.4	376.9	R8.04	36.5	R18.56	R32.3
1996	596.5	3.46	25.2	71.2	0.27	10.6	7.31	7.50	38.8	354.5	R7.56	33.3	R18.79	R32.2
1997	632.8	3.67	26.9	74.7	0.28	11.3	7.43	7.62	39.3	362.6	R7.72	33.3	R19.29	R32.8
1998	⁶ 606.3	3.52	26.6	⁶ 60.3	0.23	9.4	⁶ 7.06	7.27	37.1	371.1	R7.95	33.2	R18.97	R32.0
1999	⁷ 628.9	⁷ 3.65	⁷ 29.3	⁷ 66.5	⁷ 0.25	⁷ 9.9	⁷ 7.24	⁷ 7.44	⁷ 38.4	414.5	R8.73	37.7	⁷ 20.07	⁷ 34.9
2000	689.2	4.00	32.3	88.9	0.33	12.7	7.14	7.32	37.2	440.2	R9.27	41.0	R20.92	36.5
2001	681.8	3.95	32.2	82.0	0.31	12.0	7.00	R7.21	R35.7	422.9	R8.82	37.5	R20.29	R34.7
2002 ^E	R685.7	R3.98	R32.7	R117.5	R0.44	R17.1	R4.75	R4.89	R25.1	R496.0	R10.29	R45.3	R19.59	R34.4
2003 ^P	834.3	4.84	39.8	102.0	0.38	16.3	6.47	6.65	33.9	474.4	9.90	44.4	21.77	38.6

¹ Production from Naval Petroleum Reserve No. 1 for 1974 and earlier years is for fiscal years (July through June).

² Includes only those quantities for which the royalties were paid on the basis of the value of the natural gas plant liquids produced. Additional quantities of natural gas plant liquids were produced; however, the royalties paid were based on the value of natural gas processed. These latter quantities are included with natural gas.

³ Includes some quantities of natural gas processed into liquids at natural gas processing plants and fractionators.

⁴ Converted to British thermal units (Btu) using approximate heat contents for total U.S. production. See Tables A2, A4, and A5.

⁵ Based on physical units.

⁶ There is a discontinuity in this time series between 1997 and 1998 due to the sale of "Elk Hills," Naval Petroleum Reserve No. 1.

⁷ There is a discontinuity in this time series between 1998 and 1999; beginning in 1999 Naval Petroleum Reserve data have become insignificant and are no longer included.

R=Revised. P=Preliminary. E=Estimate.

Note: "Federally Administered Lands" include all classes of land owned by the Federal Government, including acquired military, Outer Continental Shelf, and public lands.

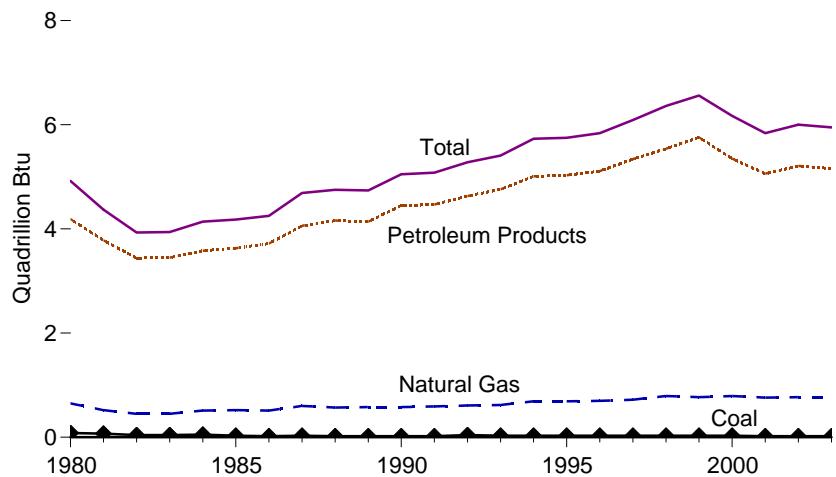
Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/overview.html>.

Sources: • 1949-1980—U.S. Geological Survey, *Oil and Gas Production, Royalty Income, and Production, Royalty Income, and Related Statistics*, and *Coal, Phosphate, Potash, Sodium, and Other Mineral Production, Royalty Income, and Related Statistics* (June 1981); Department of Energy (DOE), Office of Naval Petroleum and Oil Shale Reserves (NPOS), unpublished data; and U.S. Geological Survey, National Petroleum Reserve in Alaska, unpublished data. • 1981-1983—U.S. Department of Interior (DOI), U.S. Minerals Management Service (MMS), *Mineral Revenues Report on Receipts from Federal and Indian Leases*, annual reports; DOI, NPOS, unpublished data; and U.S. Geological Survey, National Petroleum Reserve in Alaska, unpublished data. • 1984-1998—DOI, MMS, *Mineral Revenues Report on Receipts from Federal and Indian Leases*, annual reports; and DOI, NPOS, unpublished data.

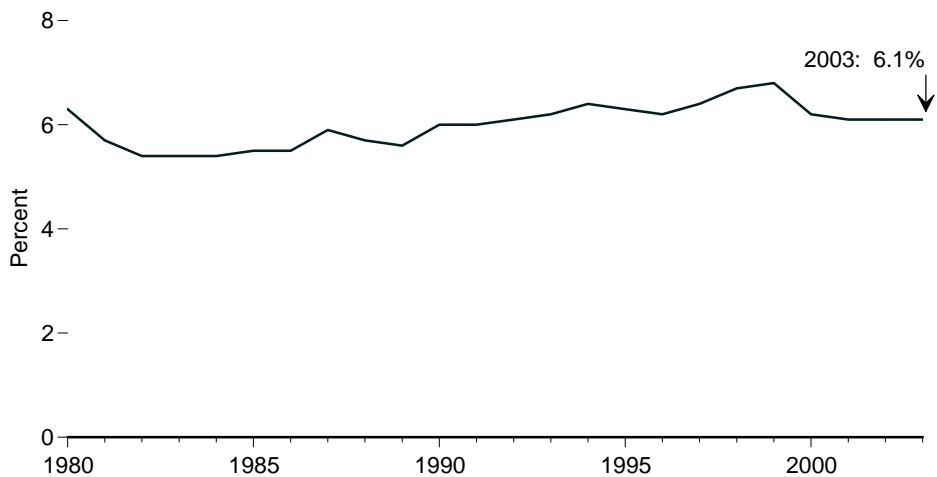
• 1999-2001—DOI, MMS, *Mineral Revenues Report on Receipts from Federal and American Indian Leases*, annual reports. • 2002 and 2003—DOI, MMS unpublished data.

Figure 1.15 Fossil Fuel Consumption for Nonfuel Use

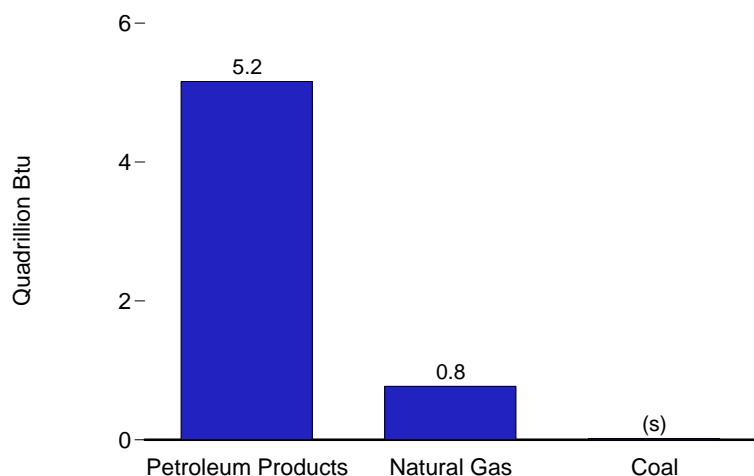
Total, 1980-2003



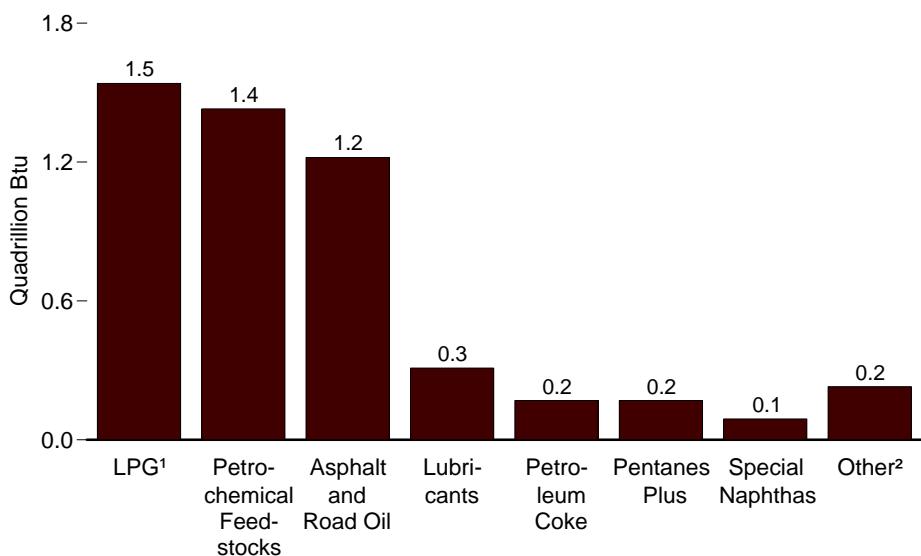
As Share of Total Energy Consumption, 1980-2003



By Fuel, 2003



By Petroleum Product, 2003



¹ Liquefied petroleum gases.

² Distillate fuel oil, residual fuel oil, waxes, and miscellaneous products.

(s)=Less than 0.05 quadrillion Btu.

Notes: • See Note, "Nonfuel Use of Fossil Fuels," at end of section. • Because vertical scales differ, graphs should not be compared.

Source: Table 1.15.

Table 1.15 Fossil Fuel Consumption for Nonfuel Use, 1980-2003

Year	Petroleum Products								Natural Gas	Coal	Total	Percent of Total Energy Consumption
	Asphalt and Road Oil	Liquefied Petroleum Gases	Pentanes Plus	Lubricants	Petrochemical Feedstocks	Petroleum Coke	Special Naphthas	Other ¹				
Physical Units ²												
1980	145	230	(³)	58	253	24	37	58	805	639	2.4	—
1981	125	229	(³)	56	216	29	27	54	736	507	2.1	—
1982	125	256	(³)	51	157	23	25	48	686	438	1.4	—
1983	136	264	(³)	53	151	10	30	45	689	441	1.2	—
1984	150	247	10	57	145	16	40	41	705	495	1.5	—
1985	156	265	13	53	144	15	30	41	718	500	1.1	—
1986	164	248	17	52	169	14	25	38	727	496	0.7	—
1987	170	303	12	59	170	24	28	36	802	578	0.8	—
1988	171	319	21	57	173	25	22	40	827	554	0.7	—
1989	165	332	17	58	172	23	20	39	827	563	0.6	—
1990	176	344	18	60	199	30	20	39	886	R562	0.6	—
1991	162	394	10	53	200	25	17	44	906	573	0.6	—
1992	166	397	13	54	214	38	20	35	938	594	1.2	—
1993	174	389	60	55	216	21	20	33	969	R607	0.9	—
1994	176	437	56	58	222	23	15	35	1,022	673	0.9	—
1995	178	450	66	57	215	22	13	34	1,035	R668	0.9	—
1996	177	470	69	55	217	25	14	34	1,061	R680	0.9	—
1997	184	473	65	58	250	20	14	35	1,100	R705	0.9	—
1998	190	494	44	61	252	35	20	39	1,137	762	0.8	—
1999	200	520	57	62	238	47	28	37	1,188	R753	0.8	—
2000	192	R479	51	61	243	23	19	38	R1,106	R768	0.8	—
2001	R189	R445	44	56	214	34	15	39	R1,036	R736	0.7	—
2002	187	R465	37	55	R229	R39	R20	40	R1,072	R749	0.8	—
2003 ^p	183	440	37	52	256	29	16	40	1,052	748	0.8	—
Quadrillion Btu												
1980	0.96	0.78	(³)	0.35	1.43	0.14	0.19	0.34	4.19	0.65	0.08	4.92
1981	0.83	0.77	(³)	0.34	1.21	0.17	0.14	0.31	3.78	0.52	0.07	4.37
1982	0.83	0.87	(³)	0.31	0.88	0.14	0.13	0.28	3.44	0.45	0.04	3.93
1983	0.90	0.89	(³)	0.32	0.85	0.06	0.16	0.26	3.45	0.45	0.04	3.94
1984	0.99	0.84	0.05	0.35	0.82	0.09	0.21	0.24	3.58	0.51	0.05	4.14
1985	1.03	0.90	0.06	0.32	0.82	0.09	0.16	0.24	3.63	0.52	0.03	4.18
1986	1.09	0.85	0.08	0.31	0.95	0.08	0.13	0.22	3.72	0.51	0.02	4.25
1987	1.13	1.06	0.06	0.36	0.96	0.14	0.14	0.21	4.06	0.60	0.03	4.69
1988	1.14	1.11	0.10	0.34	0.97	0.15	0.11	0.23	4.16	0.57	0.02	4.75
1989	1.10	1.18	0.08	0.35	0.96	0.14	0.11	0.23	4.14	0.58	0.02	4.74
1990	1.17	1.20	0.08	0.36	1.12	0.18	0.11	0.23	4.45	R0.58	0.02	R5.05
1991	1.08	1.38	0.04	0.32	1.15	0.15	0.09	0.26	4.47	0.59	0.02	5.08
1992	1.10	1.39	0.06	0.33	1.20	0.23	0.10	0.20	4.63	0.61	0.04	5.28
1993	1.15	1.35	0.28	0.34	1.22	0.12	0.10	0.20	4.76	R0.62	0.03	R5.41
1994	1.17	1.55	0.26	0.35	1.26	0.14	0.08	0.20	5.01	0.69	0.03	5.73
1995	1.18	1.59	0.30	0.35	1.21	0.13	0.07	0.20	5.03	R0.69	0.03	R5.75
1996	1.18	1.65	0.32	0.34	1.21	0.15	0.07	0.20	5.11	R0.70	0.03	R5.84
1997	1.22	1.67	0.30	0.35	1.40	0.12	0.07	0.21	5.34	R0.72	0.03	R6.09
1998	1.26	1.74	0.20	0.37	1.40	0.21	0.11	0.23	5.54	0.79	0.03	6.36
1999	1.32	1.82	0.26	0.37	1.33	0.28	0.15	0.22	5.76	R0.77	0.03	R6.56
2000	1.28	R1.67	0.24	0.37	1.35	0.14	0.10	0.22	R5.35	R0.79	0.03	R6.17
2001	1.26	R1.55	0.20	0.34	1.19	0.21	0.08	0.23	R5.06	R0.76	0.02	R5.84
2002	1.24	R1.62	0.17	0.33	R1.27	0.23	0.10	0.23	R5.21	R0.77	0.02	R6.00
2003 ^p	1.22	1.54	0.17	0.31	1.43	0.17	0.09	0.23	5.16	0.77	0.02	5.95

¹ Distillate fuel oil, residual fuel oil, waxes, and miscellaneous products.

² Petroleum—million barrels; natural gas—billion cubic feet; and coal—million short tons.

³ Included in "Liquefied Petroleum Gases."

R=Revised. P=Preliminary. — = Not applicable.

Notes: • Estimates of consumption for nonfuel use shown in this table are included in total energy consumption (see Table 1.3). • See Note, "Nonfuel Use of Fossil Fuels," at end of section. • Because of changes in methodology, data series may be revised annually. • Estimates of nonfuel use in this table are considered industrial uses with the exception of approximately half of the lubricants which are considered transportation use. • Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/environment.html>.

Sources: **Petroleum Products:** • 1980—Energy Information Administration (EIA), Energy Data Reports, *Petroleum Statement, Annual and Sales of Liquefied Petroleum Gases and Ethane in 1980*. • 1981 forward—EIA, *Petroleum Supply Annual*, annual reports, and unpublished data. **Natural Gas:** • 1980—Bureau of the Census, 1980 Survey of Manufactures, *Hydrocarbon, Coal, and Coke Materials Consumed*. • 1981 forward—U.S. Department of Commerce, *Coal*. **Coal:** • 1960-1995—U.S. International Trade Commission, *Synthetic Organic Chemicals, United States Production and Sales, 1995* (January 1997). • 1996 forward—EIA estimates. **Percent of Total Energy Consumption:** Derived by dividing total by total consumption on Table 1.3.

Energy Overview

Note. Nonfuel Use of Fossil Fuels. Most fossil fuels consumed in the United States and elsewhere are combusted to produce heat and power. However, some are used directly for nonfuel use as construction materials, lubricants, chemical feedstocks, solvents, and waxes. For example, asphalt and road oil are used for roofing and paving; liquefied petroleum gases are used to create intermediate products that are used in making plastics; lubricants, including motor oil and greases, are used in

vehicles and various industrial processes; petrochemical feedstocks are used to make plastics, synthetic fabrics, and related products; and natural gas is used to make nitrogenous fertilizers and as feedstock in the chemical industry. For more information, see Energy Information Administration, “Emissions of Greenhouse Gases in the United States” (“Nonfuel Use of Energy Inputs” section in Chapter 2), at <http://www.eia.doe.gov/environment.html>.

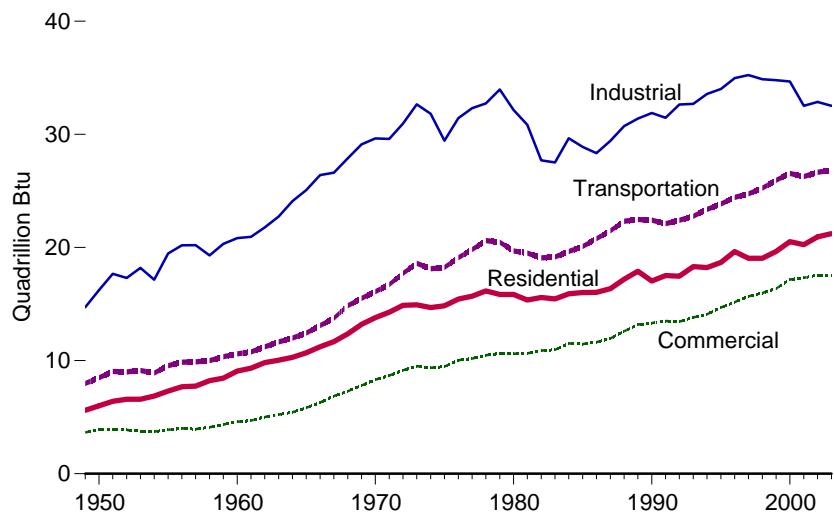
Energy Consumption by Sector



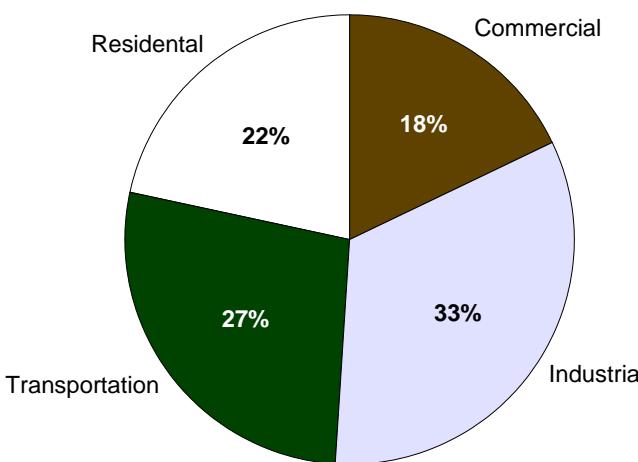
Office buildings, industries, residences, and transport systems, Baltimore, Maryland; east view from the inner harbor.
Source: U.S. Department of Energy.

Figure 2.1a Energy Consumption by Sector Overview

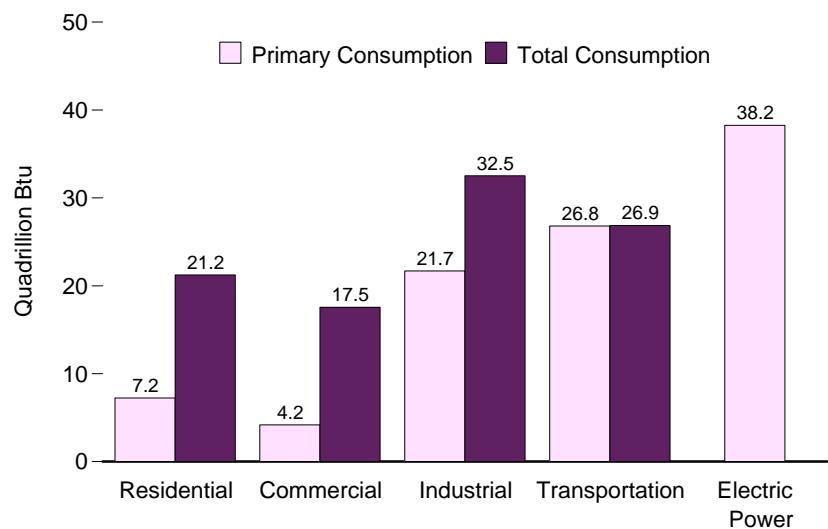
Total Consumption by End-Use Sector, 1949-2003



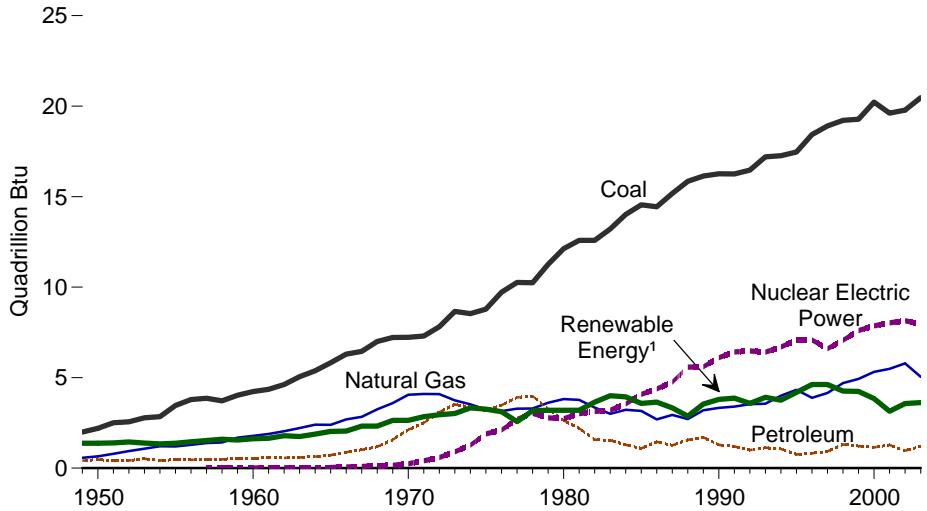
End-Use Sector Shares of Total Consumption, 2003



Primary and Total Consumption by Sector, 2003



Electric Power Sector, 1949-2003



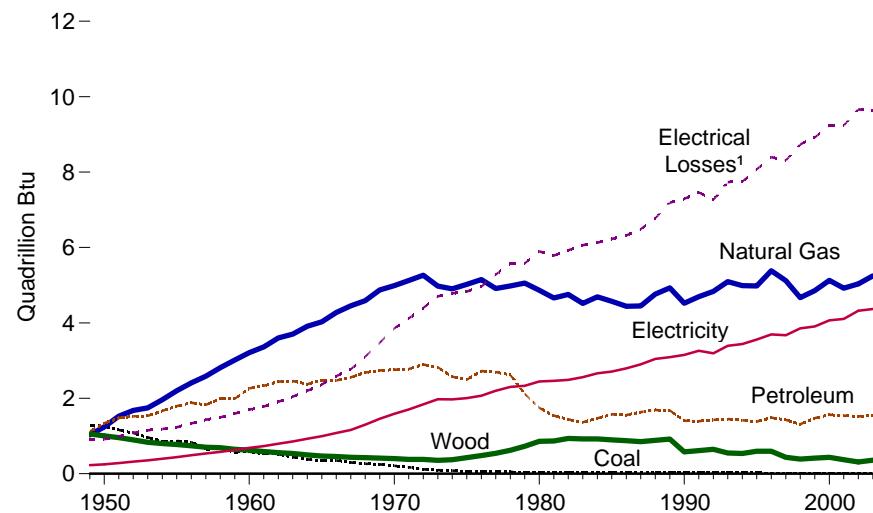
¹ Conventional hydroelectric power, wood, waste, geothermal, solar, and wind.

Note: Because vertical scales differ, graphs should not be compared.

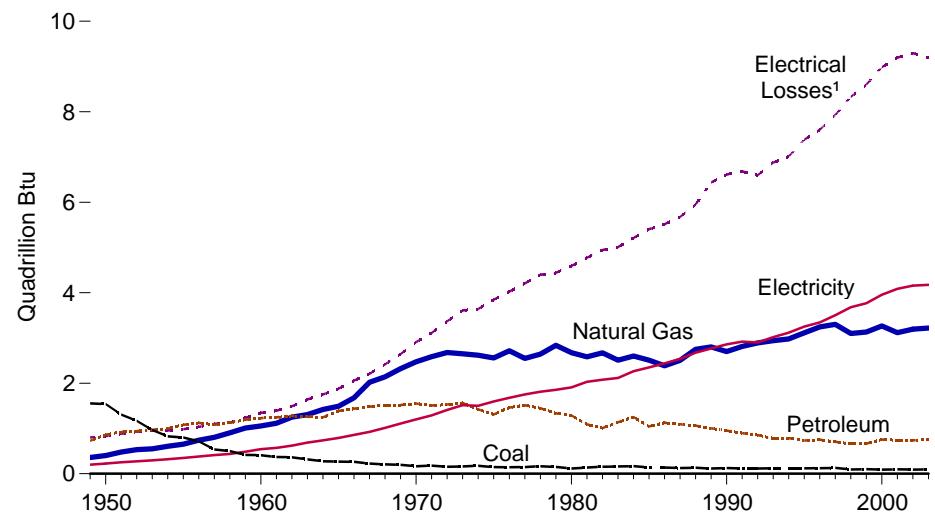
Sources: Tables 2.1a and 2.1f.

Figure 2.1b Energy Consumption by End-Use Sector, 1949-2003

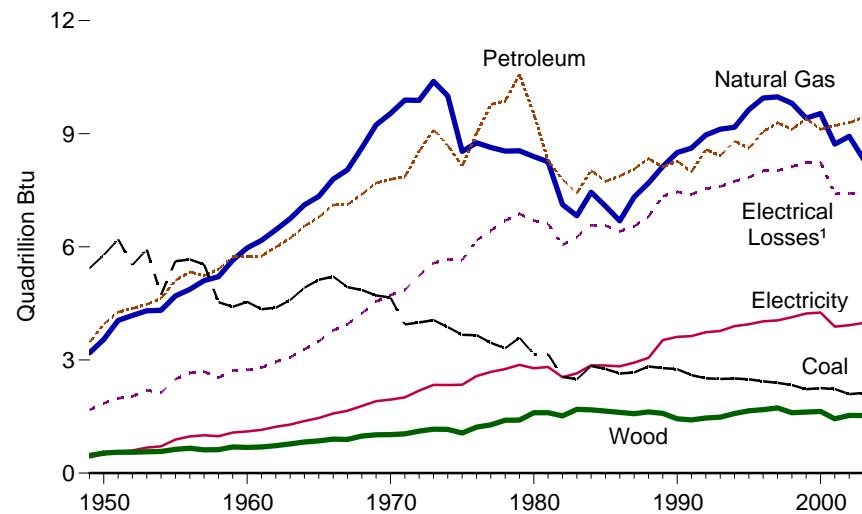
Residential



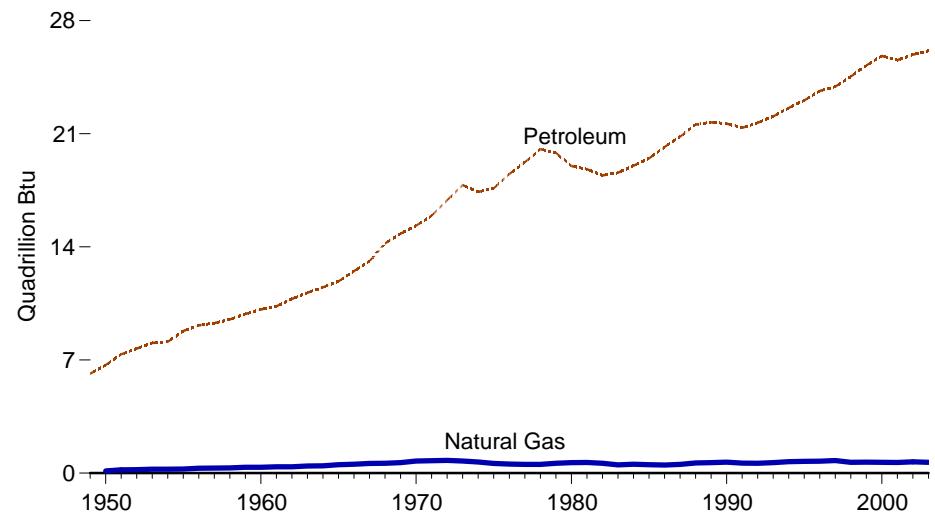
Commercial



Industrial



Transportation



¹ Electrical system energy losses associated with the generation, transmission, and distribution of energy in the form of electricity.

Note: Because vertical scales differ, graphs should not be compared.
Sources: Tables 2.1b–2.1e.

Table 2.1a Energy Consumption by Sector, Selected Years, 1949-2003
 (Trillion Btu)

Year	End-Use Sectors								Electric Power Sector ³	Adjustments ⁴	Total			
	Residential		Commercial ¹		Industrial ²		Transportation							
	Primary	Total	Primary	Total	Primary	Total	Primary	Total						
1949	4,475	5,614	2,661	3,661	12,627	14,717	7,880	7,990	4,339	(s)	31,982			
1950	4,848	6,007	2,824	3,883	13,881	16,233	8,384	8,493	4,679	(s)	34,616			
1955	5,633	7,303	2,548	3,882	16,091	19,472	9,475	9,551	6,461	(s)	40,208			
1960	6,689	9,078	2,702	4,589	16,977	20,823	10,560	10,597	8,158	(s)	45,087			
1965	7,328	10,689	3,150	5,820	20,124	25,075	12,400	12,434	11,014	(s)	54,017			
1970	8,353	13,798	4,196	8,307	22,975	29,641	16,061	16,098	16,259	(s)	67,844			
1971	8,457	14,278	4,283	8,681	22,732	29,601	16,693	16,729	17,124	(s)	69,289			
1972	8,655	14,891	4,369	9,145	23,532	30,953	17,681	17,716	18,466	(s)	72,704			
1973	8,250	14,930	4,381	9,507	24,741	32,653	18,576	18,612	19,753	7	75,708			
1974	7,928	14,683	4,221	9,363	23,816	31,819	18,086	18,119	19,933	7	73,991			
1975	8,006	14,842	4,023	9,466	21,454	29,447	18,209	18,244	20,307	1	71,999			
1976	8,408	15,441	4,333	10,035	22,685	31,430	19,065	19,099	21,513	8	76,012			
1977	8,207	15,689	4,217	10,177	23,193	32,307	19,784	19,820	22,591	7	78,000			
1978	8,272	16,156	4,269	10,481	23,276	32,733	20,580	20,615	23,587	2	79,986			
1979	7,934	15,842	4,333	10,627	24,211	33,962	20,436	20,471	23,987	2	80,903			
1980	7,504	15,848	4,097	10,594	22,673	32,152	19,658	19,696	24,359	-1	78,289			
1981	7,103	15,353	3,831	10,638	21,404	30,836	R19,476	R19,513	24,525	3	R76,342			
1982	7,163	15,577	3,859	10,880	19,113	27,704	R19,051	R19,088	24,063	4	R73,253			
1983	6,834	15,459	3,827	10,952	18,598	27,511	R19,133	R19,176	24,705	3	R73,101			
1984	7,123	15,908	4,043	11,517	20,219	29,654	R19,608	R19,655	25,741	3	R76,736			
1985	7,086	16,023	3,714	11,471	19,473	28,891	R20,042	R20,089	26,158	-4	R76,469			
1986	6,912	16,026	3,674	11,628	19,092	28,334	R20,741	R20,790	26,359	3	R76,782			
1987	6,972	16,359	3,752	11,965	19,960	29,433	R21,421	R21,471	27,124	-3	R79,225			
1988	7,377	17,197	3,974	12,597	20,868	30,728	R22,268	R22,320	28,354	3	R82,844			
1989	7,614	17,893	3,981	13,185	20,883	31,390	R22,426	R22,480	R84,957					
1990	6,604	17,043	3,850	13,321	21,209	31,891	R22,368	R22,421	30,647	-9	R84,668			
1991	6,791	17,514	3,896	13,494	20,843	31,467	R22,067	R22,120	30,999	1	R84,595			
1992	6,999	17,456	3,941	13,438	21,770	32,637	R22,365	R22,418	30,873	(s)	R85,949			
1993	7,185	18,312	3,923	13,819	R21,758	R32,688	22,716	22,770	32,006	-10	R87,578			
1994	7,036	18,223	3,970	14,099	22,384	33,565	23,312	23,367	32,551	-6	89,248			
1995	7,049	18,679	4,054	14,687	22,706	34,003	23,793	23,849	33,616	3	91,221			
1996	7,555	19,642	4,226	15,170	23,428	34,969	24,384	24,439	34,626	4	94,224			
1997	7,068	19,047	4,248	15,679	23,684	35,243	24,697	24,752	35,024	6	94,727			
1998	6,454	19,044	3,963	15,972	23,166	34,876	25,203	25,258	36,363	-3	95,146			
1999	6,831	19,654	4,008	16,371	22,938	34,791	25,894	25,951	37,097	6	96,774			
2000	7,204	20,511	R4,223	R17,160	22,805	34,681	26,492	26,552	R38,180	2	R98,905			
2001	R6,909	R20,247	R4,044	R17,323	R21,834	R32,527	R26,216	R26,276	R37,372	R4	R96,378			
2002	R6,949	20,937	R4,116	R17,566	R22,126	R32,859	R26,596	R26,653	R38,228	R11	R98,026			
2003 ^P	7,242	21,229	4,178	17,548	21,690	32,524	26,800	26,857	38,248	-3	98,156			

¹ Commercial sector, including commercial combined-heat-and-power (CHP) and commercial electricity-only plants.

² Industrial sector, including industrial combined-heat-and-power (CHP) and industrial electricity-only plants.

³ Electricity-only and combined-heat-and-power (CHP) plants within the NAICS (North American Industry Classification System) 22 category whose primary business is to sell electricity, or electricity and heat, to the public. Through 1988, data are for electric utilities only; beginning in 1989, data are for electric utilities and independent power producers.

⁴ A balancing item. The sum of primary consumption in the five energy-use sectors equals the sum of total consumption in the four end-use sectors. However, total energy consumption does not equal the sum

of the sectoral components due to the use of sector-specific conversion factors for natural gas and coal.

R=Revised. P=Preliminary. (s)=Less than 0.5 trillion Btu.

Notes: • Primary consumption includes coal, natural gas, petroleum, nuclear electric power, hydroelectric power, wood, waste, alcohol fuels, geothermal, solar, wind, coal coke net imports, and electricity net imports. • Total consumption includes primary consumption, electricity retail sales, and electrical system energy losses. See Note, "Electrical System Energy Losses," at end of section. • See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 8. • Totals may not equal sum of components due to independent rounding.

Web Page: For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/enduse.html>.

Sources: Tables 2.1b-2.1f.

Table 2.1b Residential Sector Energy Consumption, Selected Years, 1949-2003
 (Trillion Btu)

Year	Primary Consumption								Total Primary	Electricity Retail Sales ⁵	Electrical System Energy Losses ⁶	Total				
	Fossil Fuels				Renewable Energy ¹											
	Coal	Natural Gas ²	Petroleum	Total	Wood	Geothermal ³	Solar ⁴	Total								
1949	1,272	1,027	1,121	3,420	1,055	NA	NA	1,055	4,475	228	911	5,614				
1950	1,261	1,240	1,340	3,842	1,006	NA	NA	1,006	4,848	246	913	6,007				
1955	867	2,198	1,792	4,858	775	NA	NA	775	5,633	438	1,232	7,303				
1960	585	3,212	2,265	6,062	627	NA	NA	627	6,689	687	1,701	9,078				
1965	352	4,028	2,481	6,860	468	NA	NA	468	7,328	993	2,368	10,689				
1970	209	4,987	2,755	7,952	401	NA	NA	401	8,353	1,591	3,854	13,798				
1971	172	5,126	2,777	8,075	382	NA	NA	382	8,457	1,704	4,116	14,278				
1972	116	5,264	2,895	8,276	380	NA	NA	380	8,655	1,838	4,397	14,891				
1973	94	4,977	2,825	7,896	354	NA	NA	354	8,250	1,976	4,703	14,930				
1974	82	4,901	2,573	7,557	371	NA	NA	371	7,928	1,973	4,783	14,683				
1975	63	5,023	2,495	7,580	425	NA	NA	425	8,006	2,007	4,829	14,842				
1976	59	5,147	2,720	7,927	482	NA	NA	482	8,408	2,069	4,963	15,441				
1977	57	4,913	2,695	7,666	542	NA	NA	542	8,207	2,202	5,280	15,689				
1978	49	4,981	2,620	7,651	622	NA	NA	622	8,272	2,301	5,582	16,156				
1979	37	5,055	2,114	7,206	728	NA	NA	728	7,934	2,330	5,578	15,842				
1980	31	4,866	1,748	6,645	859	NA	NA	859	7,504	2,448	5,897	15,848				
1981	30	4,660	1,543	6,234	869	NA	NA	869	7,103	2,464	5,786	15,353				
1982	32	4,753	1,441	6,226	937	NA	NA	937	7,163	2,489	5,925	15,577				
1983	31	4,516	1,362	5,909	925	NA	NA	925	6,834	2,562	6,063	15,459				
1984	40	4,692	1,468	6,200	923	NA	NA	923	7,123	2,662	6,123	15,908				
1985	39	4,571	1,578	6,187	899	NA	NA	899	7,086	2,709	6,227	16,023				
1986	40	4,439	1,556	6,036	876	NA	NA	876	6,912	2,795	6,320	16,026				
1987	37	4,449	1,634	6,120	852	NA	NA	852	6,972	2,902	6,485	16,359				
1988	37	4,765	1,690	6,492	885	NA	NA	885	7,377	3,046	6,774	17,197				
1989	31	4,929	1,679	6,639	918	5	53	976	7,614	3,090	7,189	17,893				
1990	31	4,523	1,407	5,961	581	6	56	642	6,604	3,153	7,287	17,043				
1991	25	4,697	1,392	6,114	613	6	58	677	6,791	3,260	7,463	17,514				
1992	26	4,835	1,427	6,288	645	6	60	711	6,999	3,193	7,263	17,456				
1993	26	5,095	1,448	6,569	548	7	62	616	7,185	3,394	7,733	18,312				
1994	21	4,988	1,420	6,429	537	6	64	607	7,036	3,441	7,746	18,223				
1995	17	4,981	1,383	6,382	596	7	65	667	7,049	3,557	8,073	18,679				
1996	17	5,383	1,488	6,888	595	7	65	667	7,555	3,694	8,393	19,642				
1997	16	5,118	1,428	6,562	433	8	65	506	7,068	3,671	8,308	19,047				
1998	12	4,669	1,314	5,995	387	8	65	459	6,454	3,856	8,733	19,044				
1999	14	4,858	1,473	6,345	414	9	64	486	6,831	3,906	8,917	19,654				
2000	11	5,126	1,563	6,701	433	9	61	503	7,204	4,069	9,238	20,511				
2001	12	R4,919	1,539	R6,470	R370	9	60	R439	R6,909	4,103	R9,234	R20,247				
2002	R11	R5,036	1,519	R6,567	R313	10	R59	R382	R6,949	R4,323	R9,665	20,937				
2003 ^P	12	5,249	1,546	6,807	359	18	58	435	7,242	4,367	9,620	21,229				

¹ All values are estimated; see Table 10.2a.

² Natural gas, plus a small amount of supplemental gaseous fuels that cannot be identified separately.

³ Geothermal heat pump and direct use energy.

⁴ Solar thermal direct use energy and photovoltaic electricity generation. Includes a small amount of commercial sector use.

⁵ Electricity retail sales to ultimate customers reported by electric utilities and, beginning in 1996, other energy service providers.

⁶ Total losses are calculated as the primary energy consumed by the electric power sector minus the

energy content of electricity retail sales. Total losses are allocated to the end-use sectors in proportion to each sector's share of total electricity retail sales. See Note, "Electrical System Energy Losses," at end of section.

R=Revised. P=Preliminary. NA=Not available.

Note: Totals may not equal sum of components due to independent rounding.

Web Page: For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/enduse.html>.

Sources: Tables 2.1f, 5.14a, 6.5, 7.3, 8.9, 10.2a, A4, A5, and A6.

Table 2.1c Commercial Sector Energy Consumption, Selected Years, 1949-2003
 (Trillion Btu)

Year	Primary Consumption										Electricity Retail Sales ⁵	Electrical System Energy Losses ⁶	Total			
	Fossil Fuels				Renewable Energy ¹											
	Coal	Natural Gas ²	Petroleum	Total	Hydropower ³	Wood	Waste	Geothermal ⁴	Total	Total Primary						
1949	1,554	360	727	2,641	NA	20	NA	NA	20	2,661	200	800	3,661			
1950	1,542	401	862	2,805	NA	19	NA	NA	19	2,824	225	834	3,883			
1955	801	651	1,081	2,533	NA	15	NA	NA	15	2,548	350	984	3,882			
1960	407	1,056	1,228	2,690	NA	12	NA	NA	12	2,702	543	1,344	4,589			
1965	265	1,490	1,386	3,142	NA	9	NA	NA	9	3,150	789	1,880	5,820			
1970	165	2,473	1,551	4,189	NA	8	NA	NA	8	4,196	1,201	2,910	8,307			
1971	179	2,587	1,510	4,276	NA	7	NA	NA	7	4,283	1,288	3,111	8,681			
1972	153	2,678	1,530	4,362	NA	7	NA	NA	7	4,369	1,408	3,368	9,145			
1973	160	2,649	1,565	4,374	NA	7	NA	NA	7	4,381	1,517	3,609	9,507			
1974	175	2,617	1,423	4,214	NA	7	NA	NA	7	4,221	1,501	3,640	9,363			
1975	147	2,558	1,310	4,015	NA	8	NA	NA	8	4,023	1,598	3,845	9,466			
1976	144	2,718	1,461	4,323	NA	9	NA	NA	9	4,333	1,678	4,025	10,035			
1977	148	2,548	1,511	4,207	NA	10	NA	NA	10	4,217	1,754	4,206	10,177			
1978	165	2,643	1,450	4,257	NA	12	NA	NA	12	4,269	1,813	4,398	10,481			
1979	149	2,836	1,334	4,319	NA	14	NA	NA	14	4,333	1,854	4,439	10,627			
1980	115	2,674	1,287	4,076	NA	21	NA	NA	21	4,097	1,906	4,591	10,594			
1981	137	2,583	1,090	3,810	NA	21	NA	NA	21	3,831	2,033	4,774	10,638			
1982	155	2,673	1,008	3,837	NA	22	NA	NA	22	3,859	2,077	4,944	10,880			
1983	162	2,508	1,136	3,805	NA	22	NA	NA	22	3,827	2,116	5,008	10,952			
1984	169	2,600	1,252	4,021	NA	22	NA	NA	22	4,043	2,264	5,209	11,517			
1985	137	2,508	1,045	3,690	NA	24	NA	NA	24	3,714	2,351	5,405	11,471			
1986	135	2,386	1,126	3,647	NA	27	NA	NA	27	3,674	2,439	5,515	11,628			
1987	125	2,505	1,093	3,723	NA	29	NA	NA	29	3,752	2,539	5,674	11,965			
1988	131	2,748	1,063	3,942	NA	32	NA	NA	32	3,974	2,675	5,948	12,597			
1989	115	2,802	1,002	3,919	1	36	22	3	61	3,981	2,767	6,437	13,185			
1990	124	2,701	953	3,779	1	39	28	3	71	3,850	2,860	6,611	13,321			
1991	116	2,813	895	3,824	1	41	26	3	72	3,896	2,918	6,681	13,494			
1992	117	2,890	854	3,860	1	44	32	3	81	3,941	2,900	6,596	13,438			
1993	117	2,942	780	3,839	1	46	33	3	84	3,923	3,019	6,877	13,819			
1994	118	2,979	787	3,885	1	46	35	4	86	3,970	3,116	7,013	14,099			
1995	117	3,113	732	3,962	1	46	40	5	92	4,054	3,252	7,381	14,687			
1996	122	3,244	751	4,116	1	50	53	5	110	4,226	3,344	7,599	15,170			
1997	129	3,302	704	4,135	1	49	58	6	113	4,248	3,503	7,928	15,679			
1998	93	3,098	661	3,853	1	48	54	7	111	3,963	3,678	8,330	15,972			
1999	103	3,130	661	3,894	1	52	54	7	114	4,008	3,766	8,597	16,371			
2000	92	R3,265	756	R4,113	1	53	47	8	109	R4,223	3,956	8,982	R17,160			
2001	97	R3,116	742	R3,955	1	R40	39	8	89	R4,044	R4,086	R9,194	R17,323			
2002	R91	R3,196	R736	R4,023	RP(s)	R42	R42	9	RPF93	R4,116	R4,157	R9,293	R17,566			
2003	P99	P3,220	P753	P4,072	P1	P42	P48	P15	P106	P4,178	P4,174	P9,195	P17,548			

¹ All values are estimated; see Table 10.2a.

² Natural gas, plus a small amount of supplemental gaseous fuels that cannot be identified separately.

³ Conventional hydroelectric power.

⁴ Geothermal heat pump and direct use energy.

⁵ Electricity retail sales to ultimate customers reported by electric utilities and, beginning in 1996, other energy service providers.

⁶ Total losses are calculated as the primary energy consumed by the electric power sector minus the energy content of electricity retail sales. Total losses are allocated to the end-use sectors in proportion to

each sector's share of total electricity retail sales. See Note, "Electrical System Energy Losses," at end of section.

R=Revised. P=Preliminary. NA=Not available. (s)=Less than 0.5 trillion Btu.

Notes: • The commercial sector includes commercial combined-heat-and-power (CHP) and commercial electricity-only plants. See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 8. • Totals may not equal sum of components due to independent rounding.

Web Page: For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/enduse.html>.

Sources: Tables 2.1f, 5.14a, 6.5, 7.3, 8.9, 10.2a, A4, A5, and A6.

Table 2.1d Industrial Sector Energy Consumption, Selected Years, 1949-2003
 (Trillion Btu)

Year	Primary Consumption										Electricity Retail Sales ⁵	Electrical System Energy Losses ⁶	Total			
	Fossil Fuels					Renewable Energy ¹										
	Coal	Coal Coke Net Imports	Natural Gas ²	Petroleum	Total	Hydropower ³	Wood	Waste	Geothermal ⁴	Total						
1949	5,433	-7	3,188	3,468	12,083	76	468	NA	NA	544	12,627	418	1,672	14,717		
1950	5,781	1	3,546	3,951	13,279	69	532	NA	NA	602	13,881	500	1,852	16,233		
1955	5,620	-10	4,701	5,111	15,421	38	631	NA	NA	669	16,091	887	2,495	19,472		
1960	4,543	-6	5,973	5,747	16,258	39	680	NA	NA	719	16,977	1,107	2,739	20,823		
1965	5,127	-18	7,339	6,789	19,236	33	855	NA	NA	888	20,124	1,463	3,488	25,075		
1970	4,656	-58	9,536	7,787	21,922	34	1,019	NA	NA	1,053	22,975	1,948	4,719	29,641		
1971	3,944	-33	9,892	7,856	21,659	34	1,040	NA	NA	1,074	22,732	2,011	4,857	29,601		
1972	3,993	-26	9,884	8,534	22,385	34	1,113	NA	NA	1,147	23,532	2,187	5,233	30,953		
1973	4,057	-7	10,388	9,104	23,541	35	1,165	NA	NA	1,200	24,741	2,341	5,571	32,653		
1974	3,870	56	10,004	8,694	22,624	33	1,159	NA	NA	1,192	23,816	2,337	5,666	31,819		
1975	3,667	14	8,532	8,146	20,359	32	1,063	NA	NA	1,096	21,454	2,346	5,647	29,447		
1976	3,661	(s)	8,762	9,010	21,432	33	1,220	NA	NA	1,253	22,685	2,573	6,171	31,430		
1977	3,454	15	8,635	9,774	21,879	33	1,281	NA	NA	1,314	23,193	2,682	6,432	32,307		
1978	3,314	125	8,539	9,867	21,845	32	1,400	NA	NA	1,432	23,276	2,761	6,696	32,733		
1979	3,593	63	8,549	10,568	22,773	34	1,405	NA	NA	1,439	24,211	2,873	6,878	33,962		
1980	3,155	-35	8,395	9,525	21,040	33	1,600	NA	NA	1,633	22,673	2,781	6,698	32,152		
1981	3,157	-16	8,257	8,285	19,682	33	1,602	87	NA	1,722	21,404	2,817	6,615	30,836		
1982	2,552	-22	7,121	7,795	17,446	33	1,516	118	NA	1,667	19,113	2,542	6,050	27,704		
1983	2,490	-16	6,826	7,420	16,720	33	1,690	155	NA	1,879	18,598	2,648	6,265	27,511		
1984	2,842	-11	7,448	8,025	18,303	33	1,679	204	NA	1,916	20,219	2,859	6,576	29,654		
1985	2,760	-13	7,080	7,738	17,565	33	1,645	230	NA	1,908	19,473	2,855	6,563	28,891		
1986	2,641	-17	6,690	7,880	17,194	33	1,610	256	NA	1,899	19,092	2,834	6,408	28,334		
1987	2,673	9	7,323	8,065	18,069	33	1,576	282	NA	1,891	19,960	2,928	6,545	29,433		
1988	2,828	40	7,696	8,339	18,902	33	1,625	308	NA	1,965	20,868	3,059	6,801	30,728		
1989	2,787	30	8,131	8,120	19,068	28	1,584	200	2	1,814	20,883	3,158	7,349	31,390		
1990	2,756	5	8,502	8,278	19,542	31	1,442	192	2	1,667	21,209	3,226	7,457	31,891		
1991	2,601	10	8,619	7,987	19,216	30	1,410	185	2	1,626	20,843	3,230	7,394	31,467		
1992	2,515	35	8,967	8,581	20,098	31	1,461	179	2	1,672	21,770	3,319	7,548	32,637		
1993	2,496	27	9,120	8,418	20,062	30	R ¹ ,483	181	2	R ¹ ,696	R ²¹ ,758	3,334	7,596	R ³² ,688		
1994	2,510	58	9,172	8,801	20,540	62	1,580	199	3	1,844	22,384	3,439	7,742	33,565		
1995	2,488	61	9,637	8,614	20,801	55	1,652	195	3	1,905	22,706	3,455	7,842	34,003		
1996	2,434	23	9,947	9,053	21,457	61	1,683	224	3	1,971	23,428	3,527	8,014	34,969		
1997	2,395	46	9,976	9,290	21,708	58	1,731	184	3	1,976	23,684	3,542	8,017	35,243		
1998	2,335	67	9,806	9,116	21,324	55	1,603	180	3	1,841	23,166	3,587	8,124	34,876		
1999	2,227	58	9,415	9,396	21,095	49	1,620	171	4	1,843	22,938	3,611	8,242	34,791		
2000	2,256	65	9,535	9,120	20,977	42	1,636	145	4	1,828	22,805	3,631	8,245	34,681		
2001	2,230	R ²⁹	R ^{8,725}	9,220	R ^{20,204}	32	1,443	150	5	1,630	R ²¹ ,834	3,290	R ^{7,404}	R ^{32,527}		
2002	R ^{2,094}	R ⁶¹	R ^{8,931}	R ^{9,291}	R ^{20,377}	R ³⁹	R ^{1,531}	R ¹⁷⁴	5	R ^{1,748}	R ^{22,126}	R ^{3,317}	R ^{7,416}	R ^{32,859}		
2003	R ^{2,129}	R ⁵¹	R ^{8,324}	R ^{9,436}	R ^{19,940}	R ⁵⁷	R ^{1,524}	R ¹⁶⁴	R ⁵	R ^{1,750}	R ^{21,690}	R ^{3,383}	R ^{7,451}	R ^{32,524}		

¹ All values are estimated; see Table 10.2a.

² Natural gas, plus a small amount of supplemental gaseous fuels that cannot be identified separately.

³ Conventional hydroelectric power.

⁴ Geothermal heat pump and direct use energy.

⁵ Electricity retail sales to ultimate customers reported by electric utilities and, beginning in 1996, other energy service providers.

⁶ Total losses are calculated as the primary energy consumed by the electric power sector minus the energy content of electricity retail sales. Total losses are allocated to the end-use sectors in proportion to each sector's share of total electricity retail sales. See Note, "Electrical System Energy Losses," at end of

section.

R=Revised. P=Preliminary. NA=Not available. (s)=Less than +0.5 trillion Btu and greater than -0.5 trillion Btu.

Notes: • The industrial sector includes industrial combined-heat-and-power (CHP) and industrial electricity-only plants. See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 8. • Totals may not equal sum of components due to independent rounding.

Web Page: For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/enduse.html>.

Sources: Tables 2.1f, 5.14b, 6.5, 7.3, 8.9, 10.2a, A4, A5, and A6.

Table 2.1e Transportation Sector Energy Consumption, Selected Years, 1949-2003
 (Trillion Btu)

Year	Primary Consumption						Electricity Retail Sales ⁶	Electrical System Energy Losses ⁷	Total ⁴			
	Fossil Fuels			Renewable Energy ¹	Total Primary ⁴							
	Coal	Natural Gas ²	Petroleum ^{3,4}		Alcohol Fuels ^{4,5}							
1949	1,727	NA	6,152	7,880	NA	7,880	22	88	7,990			
1950	1,564	130	6,690	8,384	NA	8,384	23	86	8,493			
1955	421	254	8,800	9,475	NA	9,475	20	56	9,551			
1960	75	359	10,126	10,560	NA	10,560	10	26	10,597			
1965	16	517	11,868	12,400	NA	12,400	10	24	12,434			
1970	7	745	15,310	16,061	NA	16,061	11	26	16,098			
1971	5	766	15,923	16,693	NA	16,693	10	25	16,729			
1972	4	787	16,891	17,681	NA	17,681	10	25	17,716			
1973	3	743	17,831	18,576	NA	18,576	11	25	18,612			
1974	2	685	17,399	18,086	NA	18,086	10	24	18,119			
1975	1	595	17,614	18,209	NA	18,209	10	24	18,244			
1976	(s)	559	18,506	19,065	NA	19,065	10	24	19,099			
1977	(s)	543	19,241	19,784	NA	19,784	10	25	19,820			
1978	(⁸)	539	20,041	20,580	NA	20,580	10	24	20,615			
1979	(⁸)	612	19,825	20,436	NA	20,436	10	24	20,471			
1980	(⁸)	650	19,008	19,658	NA	19,658	11	27	19,696			
1981	(⁸)	658	18,811	19,469	7	R19,476	11	26	R19,513			
1982	(⁸)	612	18,420	19,032	19	R19,051	11	26	R19,088			
1983	(⁸)	505	18,593	19,098	35	R19,133	13	30	R19,176			
1984	(⁸)	545	19,020	19,565	43	R19,608	14	33	R19,655			
1985	(⁸)	519	19,471	19,990	52	R20,042	14	33	R20,089			
1986	(⁸)	499	20,182	20,681	60	R20,741	15	34	R20,790			
1987	(⁸)	535	20,816	21,352	69	R21,421	16	35	R21,471			
1988	(⁸)	632	21,567	22,198	70	R22,268	16	35	R22,320			
1989	(⁸)	649	21,706	22,355	71	R22,426	16	38	R22,480			
1990	(⁸)	680	21,625	22,305	63	R22,368	16	37	R22,421			
1991	(⁸)	620	21,373	21,994	73	R22,067	16	37	R22,120			
1992	(⁸)	608	21,674	22,282	83	R22,365	16	37	R22,418			
1993	(⁸)	645	42,072	22,716	497	R22,716	16	37	R22,770			
1994	(⁸)	709	22,603	23,312	109	23,312	17	38	23,367			
1995	(⁸)	724	23,069	23,793	117	23,793	17	39	23,849			
1996	(⁸)	737	23,647	24,384	84	24,384	17	38	24,439			
1997	(⁸)	780	23,917	24,697	106	24,697	17	38	24,752			
1998	(⁸)	666	24,537	25,203	117	25,203	17	38	25,258			
1999	(⁸)	675	25,218	25,894	122	25,894	17	40	25,951			
2000	(⁸)	672	25,820	26,492	139	26,492	18	42	26,552			
2001	(⁸)	R659	25,556	R26,216	147	R26,216	19	R42	R26,276			
2002	(⁸)	R702	R25,894	R26,596	174	R26,596	18	39	R26,653			
2003 ^P	(⁸)	669	26,131	26,800	239	26,800	18	40	26,857			

¹ All values are estimated; see Table 10.2a.

² Natural gas consumed in the operation of pipelines (primarily in compressors) and small amounts consumed as vehicle fuel. See Table 6.5.

³ Beginning in 1993, includes ethanol blended into motor gasoline.

⁴ Beginning in 1993, ethanol blended into motor gasoline is included in both "Petroleum" and "Alcohol Fuels," but is counted only once in both total primary consumption and total consumption.

⁵ "Alcohol Fuels" is ethanol blended into motor gasoline.

⁶ Electricity retail sales to ultimate customers reported by electric utilities and, beginning in 1996, other energy service providers.

⁷ Total losses are calculated as the primary energy consumed by the electric power sector minus the

energy content of electricity retail sales. Total losses are allocated to the end-use sectors in proportion to each sector's share of total electricity retail sales. See Note, "Electrical System Energy Losses," at end of section.

⁸ Since 1978, the small amounts of coal consumed for transportation are reported as industrial sector consumption.

R=Revised. P=Preliminary. NA=Not available. (s)=Less than 0.5 trillion Btu.

Note: Totals may not equal sum of components due to independent rounding.

Web Page: For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/enduse.html>.

Sources: Tables 2.1f, 5.14c, 6.5, 7.3, 8.9, 10.2a, A4, A5, and A6.

Table 2.1f Electric Power Sector Energy Consumption, Selected Years, 1949-2003
 (Trillion Btu)

Year	Primary Consumption													Electricity Net Imports	Total Primary		
	Fossil Fuels				Nuclear Electric Power	Hydro-electric Pumped Storage ²	Renewable Energy										
	Coal	Natural Gas ¹	Petroleum	Total			Conventional Hydroelectric Power	Wood	Waste	Geothermal	Solar	Wind	Total				
1949	1,995	569	415	2,979	0	(³)	1,349	6	NA	NA	NA	NA	1,355	5	4,339		
1950	2,199	651	472	3,322	0	(³)	1,346	5	NA	NA	NA	NA	1,351	6	4,679		
1955	3,458	1,194	471	5,123	0	(³)	1,322	3	NA	NA	NA	NA	1,325	14	6,461		
1960	4,228	1,785	553	6,565	6	(³)	1,569	2	NA	1	NA	NA	1,571	15	8,158		
1965	5,821	2,395	722	8,938	43	(³)	2,026	3	NA	4	NA	NA	2,033	(s)	11,014		
1970	7,227	4,054	2,117	13,399	239	(³)	2,600	1	2	11	NA	NA	2,615	7	16,259		
1971	7,299	4,099	2,495	13,893	413	(³)	2,790	1	2	12	NA	NA	2,806	12	17,124		
1972	7,811	4,084	3,097	14,992	584	(³)	2,829	1	2	31	NA	NA	2,864	26	18,466		
1973	8,658	3,748	3,515	15,921	910	(³)	2,827	1	2	43	NA	NA	2,873	49	19,753		
1974	8,534	3,519	3,365	15,418	1,272	(³)	3,143	1	2	53	NA	NA	3,199	43	19,933		
1975	8,786	3,240	3,166	15,191	1,900	(³)	3,122	(s)	2	70	NA	NA	3,194	21	20,307		
1976	9,720	3,152	3,477	16,349	2,111	(³)	2,943	1	2	78	NA	NA	3,024	29	21,513		
1977	10,262	3,284	3,901	17,446	2,702	(³)	2,301	3	2	77	NA	NA	2,383	59	22,591		
1978	10,238	3,297	3,987	17,522	3,024	(³)	2,905	2	1	64	NA	NA	2,973	67	23,587		
1979	11,260	3,613	3,283	18,156	2,776	(³)	2,897	3	2	84	NA	NA	2,986	69	23,987		
1980	12,123	3,810	2,634	18,567	2,739	(³)	2,867	3	2	110	NA	NA	2,982	71	24,359		
1981	12,583	3,768	2,202	18,553	3,008	(³)	2,725	3	1	123	NA	NA	2,852	113	24,525		
1982	12,582	3,342	1,568	17,491	3,131	(³)	3,233	2	1	105	NA	NA	3,341	100	24,063		
1983	13,213	2,998	1,544	17,754	3,203	(³)	3,494	2	2	129	NA	(s)	3,627	121	24,705		
1984	14,019	3,220	1,286	18,526	3,553	(³)	3,353	5	4	165	(s)	(s)	3,527	135	25,741		
1985	14,542	3,160	1,090	18,792	4,076	(³)	2,937	8	7	198	(s)	(s)	3,150	140	26,158		
1986	14,444	2,691	1,452	18,586	4,380	(³)	3,038	5	7	219	(s)	(s)	3,270	122	26,359		
1987	15,173	2,935	1,257	19,365	4,754	(³)	2,602	8	7	229	(s)	(s)	2,846	158	27,124		
1988	15,850	2,709	1,563	20,123	5,587	(³)	2,302	10	8	217	(s)	(s)	2,536	108	28,354		
1989 ⁴	16,137	3,192	1,703	21,032	5,602	(³)	2,808	100	132	308	3	22	3,372	37	30,044		
1990	16,261	3,332	1,289	20,883	6,104	-36	3,014	129	188	326	4	29	3,689	8	30,647		
1991	16,250	3,399	1,198	20,847	6,422	-47	2,985	126	229	335	5	31	3,710	67	30,999		
1992	16,466	3,534	991	20,990	6,479	-43	2,586	140	262	338	4	30	3,360	87	30,873		
1993	17,196	3,560	1,124	21,880	6,410	-42	2,861	150	265	351	5	31	3,662	95	32,006		
1994	17,261	4,000	1,059	22,320	6,694	-35	2,620	152	282	325	5	36	3,420	153	32,551		
1995	17,466	4,325	755	22,546	7,075	-28	3,149	125	296	280	5	33	3,889	134	33,616		
1996	18,429	3,883	817	23,129	7,087	-32	3,528	138	300	300	5	33	4,305	137	34,626		
1997	18,905	4,146	927	23,977	6,597	-41	3,581	137	309	309	5	34	4,375	116	35,024		
1998	19,216	4,698	1,306	25,220	7,068	-46	3,241	137	308	311	5	31	4,032	88	36,363		
1999	19,279	4,926	1,211	25,416	7,610	-62	3,218	138	315	312	5	46	4,034	99	37,097		
2000	20,220	5,316	1,144	26,680	7,862	-57	2,768	134	318	296	5	57	3,579	R115	R38,180		
2001	R19,614	R5,481	1,277	R26,371	R8,033	-90	2,169	126	324	289	6	68	2,982	75	R37,372		
2002	R19,783	R5,785	R961	R26,529	R8,143	RP-88	RP2,636	R150	R365	R305	P6	RP105	RP3,567	78	R38,228		
2003	P20,468	P5,047	P1,207	P26,723	P7,973	P-88	P2,722	P161	P346	P276	P5	P108	P3,619	P22	P38,248		

¹ Natural gas, plus a small amount of supplemental gaseous fuels that cannot be identified separately.

² Pumped storage facility production minus energy used for pumping.

³ Included in "Conventional Hydroelectric Power."

⁴ Through 1988, data are for electric utilities only. Beginning in 1989, data are for electric utilities and independent power producers.

R=Revised. P=Preliminary. NA=Not available. (s)=Less than 0.5 trillion Btu.

Notes: • Data are for fuels consumed to produce electricity and useful thermal output. • The electric

power sector comprises electricity-only and combined-heat-and-power (CHP) plants within the NAICS (North American Industry Classification System) 22 category whose primary business is to sell electricity, or electricity and heat, to the public. • See Note 3, "Electricity Imports and Exports," at end of Section 8.

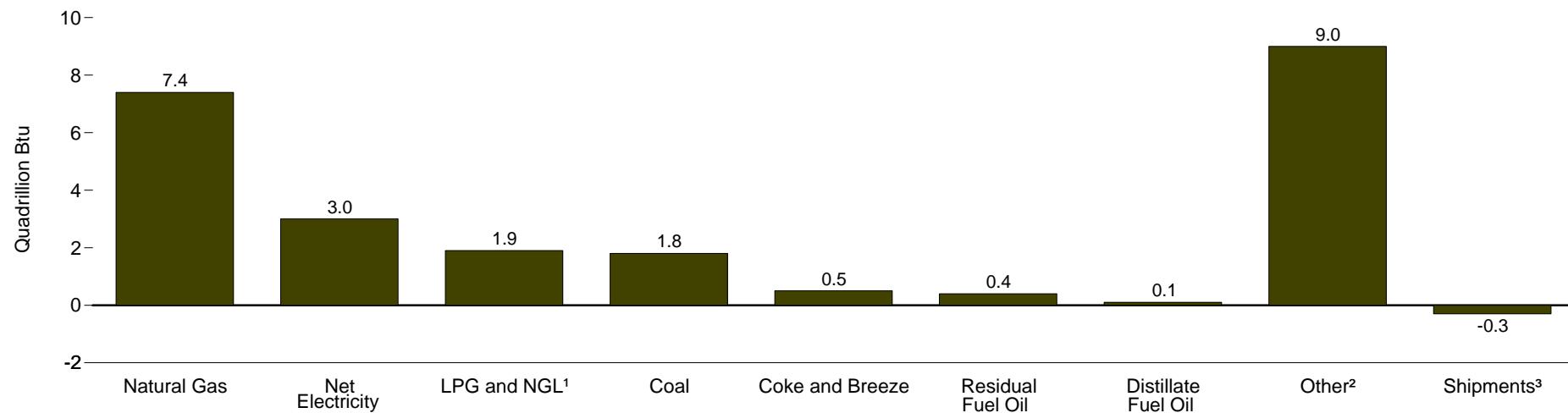
• Totals may not equal sum of components due to independent rounding.

Web Page: For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/enduse.html>.

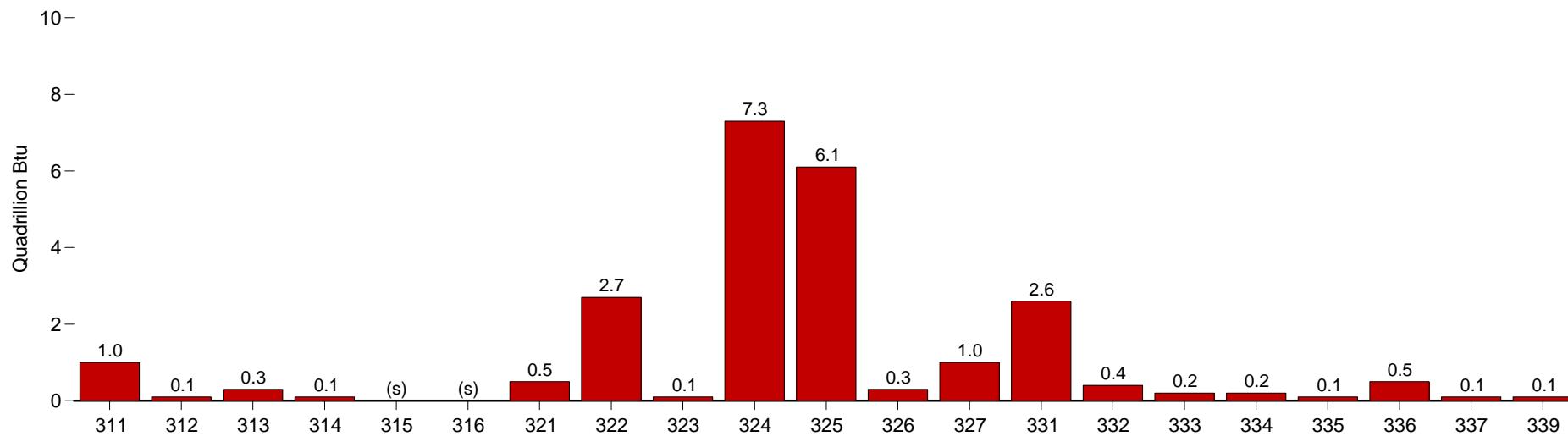
Sources: Tables 5.14c, 6.5, 7.3, 8.1, 10.2b, A4, A5, and A6.

Figure 2.2 Manufacturing Consumption of Energy for All Purposes, 1998

By Energy Source



By North American Industry Classification System (NAICS)⁴



¹ Liquefied petroleum gases and natural gas liquids.

² Includes all other types of energy that respondents indicated were consumed or allocated.

³ Energy sources produced onsite from the use of other energy sources but sold or transferred to another entity.

⁴ See Table 2.2 for Major Group titles of industries that correspond to the 3-digit NAICS codes.

(s)=Less than 0.05 quadrillion Btu.

Source: Table 2.2.

Table 2.2 Manufacturing Consumption of Energy for All Purposes, 1998
 (Trillion Btu)

NAICS ¹ Code	Major Group	Coal	Coal Coke and Breeze	Natural Gas	Distillate Fuel Oil	LPG ² and NGL ³	Residual Fuel Oil	Net Electricity ⁴	Other ⁵	Shipments of Energy Sources ⁶	Total ⁷
311	Food	129	2	568	16	5	14	213	97	0	1,044
312	Beverage and Tobacco Products	29	0	45	2	1	2	24	4	0	108
313	Textile Mills	20	0	103	4	2	12	102	14	0	256
314	Textile Product Mills	3	0	25	Q	(s)	3	18	(s)	0	50
315	Apparel	1	0	23	1	1	2	18	4	0	48
316	Leather and Allied Products	0	0	4	(s)	(s)	(s)	3	(s)	0	8
321	Wood Products	2	0	73	13	4	1	72	343	0	509
322	Paper	277	0	586	9	5	151	240	1,478	0	2,747
323	Printing and Related Support	(s)	0	44	(s)	1	(s)	51	2	0	98
324	Petroleum and Coal Products	12	0	1,007	28	39	72	126	6,082	47	7,320
325	Chemicals	300	7	2,709	10	1,796	98	577	677	110	6,064
326	Plastics and Rubber Products	3	0	126	1	5	5	183	5	0	328
327	Nonmetallic Mineral Products	284	11	444	17	3	4	134	82	0	979
331	Primary Metals	715	437	933	9	3	30	545	82	192	2,560
332	Fabricated Metal Products	3	3	241	6	5	2	176	10	0	445
333	Machinery	6	0	99	3	3	1	96	7	0	217
334	Computer and Electronic Products	(s)	0	64	1	(s)	1	137	1	0	205
335	Electrical Equipment, Appliances, and Components	1	(s)	53	1	2	1	55	30	0	143
336	Transportation Equipment	29	1	212	15	4	5	195	31	0	492
337	Furniture and Related Products	2	0	27	1	1	(s)	30	28	0	88
339	Miscellaneous	(s)	0	40	2	1	1	40	4	0	89
—	Total Manufacturing	1,814	461	7,426	142	1,882	406	3,035	8,980	349	23,796

¹ The Standard Industrial Classification (SIC) system has been replaced by the North American Industry Classification System (NAICS).

² Liquefied petroleum gases.

³ Natural gas liquids.

⁴ "Net Electricity" is the sum of purchases, transfers in, and onsite generation from noncombustible renewable energy sources, minus quantities sold and transferred out; it excludes onsite generation from combustible fuels.

⁵ Includes all other types of energy that respondents indicated were consumed or allocated, such as asphalt and road oil, lubricants, naphtha < 40° F, other oils >= 40° F, special naphthas, waxes, and miscellaneous nonfuel products, which are nonfuel products assigned to the petroleum refining industry group (NAICS 324110).

⁶ Energy sources produced onsite from the use of other energy sources but sold or transferred to another entity.

⁷ The sum of coal, coal coke and breeze, natural gas, distillate fuel oil, liquefied petroleum gases, natural gas liquids, residual fuel oil, net electricity, and other, minus shipments of energy sources.

(s)=Less than 0.5 trillion Btu. Q=Data withheld because the relative standard error was greater than 50 percent.

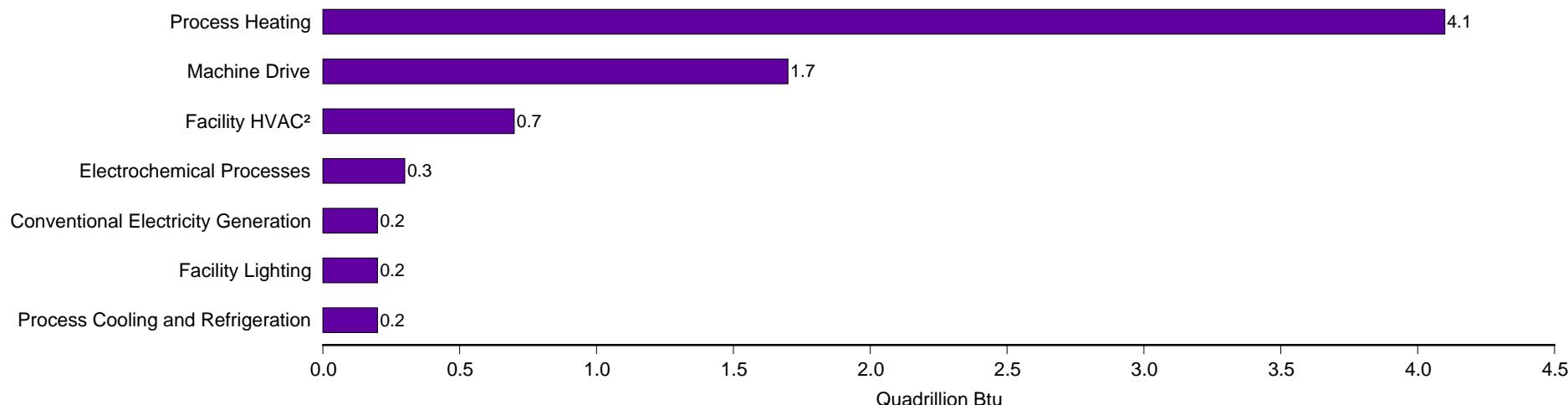
Notes: • "Consumption of Energy" was "First Use of Energy" in previous releases of this table. The estimates are for the first use of energy for heat and power and as feedstocks or raw material inputs. "First use" is the consumption of energy that was originally produced offsite or was produced onsite from input materials not classified as energy. • Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/emeu/mecs>.

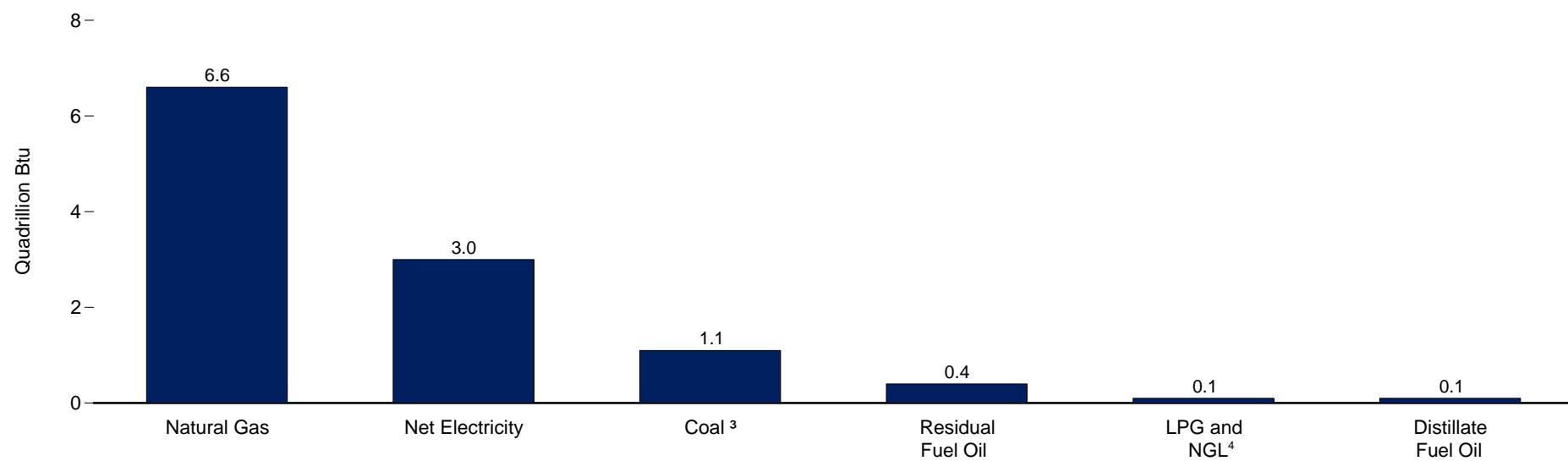
Source: Energy Information Administration, Form EIA-846, "1998 Manufacturing Energy Consumption Survey."

Figure 2.3 Manufacturing Inputs for Heat, Power, and Electricity Generation, 1998

By Selected End Use¹



By Energy Source



¹ Excludes inputs of unallocated energy sources (6,248 trillion Btu).

² Heating, ventilation, and air conditioning.

³ Excluding coal coke and breeze.

⁴ Liquefied petroleum gases and natural gas liquids.

Source: Table 2.3.

Table 2.3 Manufacturing Inputs for Heat, Power, and Electricity Generation by End Use, 1998

End-Use Category	Net Electricity ¹	Residual Fuel Oil	Distillate Fuel Oil	Liquefied Petroleum Gases and Natural Gas Liquids	Natural Gas	Coal (Excluding Coal Coke and Breeze)	Total ²
	Million Kilowatthours	Million Barrels			Billion Cubic Feet	Million Short Tons	
Indirect End Use (Boiler Fuel)	5,568	39	6	7	2,471	35	—
Direct End Use							
All Process Uses	705,697	16	6	22	3,272	15	—
Process Heating	103,299	15	3	19	3,104	15	—
Process Cooling and Refrigeration	54,473	(s)	(s)	1	21	(s)	—
Machine Drive	457,344	1	2	2	96	(s)	—
Electrochemical Processes	87,200	—	—	—	—	—	—
Other Process Uses	3,380	(s)	1	(s)	51	(s)	—
All Non-Process Uses	157,736	1	9	8	656	1	—
Facility Heating, Ventilation, and Air Conditioning ³	79,355	1	1	1	393	(s)	—
Facility Lighting	61,966	—	—	—	—	—	—
Other Facility Support	14,338	(s)	1	(s)	39	(s)	—
Onsite Transportation	1,380	—	6	7	5	—	—
Conventional Electricity Generation	—	(s)	1	(s)	204	1	—
Other Non-Process Use	696	(s)	(s)	(s)	Q	0	—
End Use Not Reported	20,473	(s)	1	1	70	(s)	—
Total	889,474	57	23	38	6,469	51	—
Trillion Btu							
Indirect End Use (Boiler Fuel)	19	246	38	24	2,538	770	3,635
Direct End Use							
All Process Uses	2,408	103	37	78	3,361	338	6,325
Process Heating	352	97	20	68	3,187	331	4,055
Process Cooling and Refrigeration	186	(s)	(s)	2	22	(s)	210
Machine Drive	1,560	5	13	7	99	7	1,691
Electrochemical Processes	298	—	—	—	—	—	298
Other Process Uses	12	1	3	1	52	(s)	69
All Non-Process Uses	538	8	52	29	673	30	1,330
Facility Heating, Ventilation, and Air Conditioning ³	271	4	6	4	403	4	692
Facility Lighting	211	—	—	—	—	—	211
Other Facility Support	49	1	6	(s)	40	(s)	96
Onsite Transportation	5	—	35	24	5	—	69
Conventional Electricity Generation	—	3	3	(s)	210	27	243
Other Non-Process Use	2	(s)	1	(s)	Q	0	3
End Use Not Reported	70	1	7	4	72	3	157
Total	3,035	357	133	135	6,644	1,143	11,447

¹ "Net Electricity" is the sum of purchases, transfers in, and onsite generation from noncombustible renewable energy sources, minus quantities sold and transferred out; it excludes onsite generation from combustible fuels.

² Total of listed energy sources. Excludes inputs of unallocated energy sources (6,248 trillion Btu).

³ Excludes steam and hot water.

— = Not applicable. (s)=Estimate less than 0.5. Q=Withheld because relative standard error is greater than 50 percent.

Notes: • Totals may not equal sum of components due to independent rounding. • The estimates presented in this table are for the total consumption of energy for the production of heat, power, and

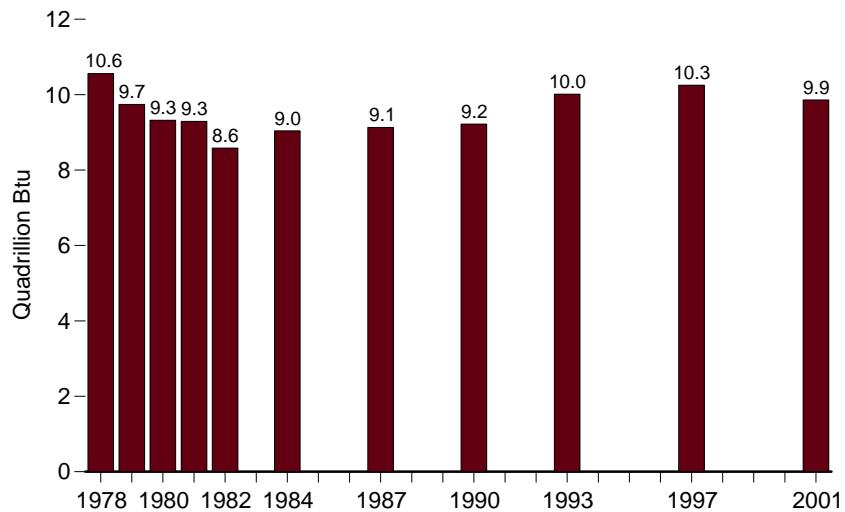
electricity generation, regardless of where the energy was produced. Specifically, the estimates include the quantities of energy that were originally produced offsite and purchased by or transferred to the establishment, plus those that were produced onsite from other energy or input materials not classified as energy, or were extracted from captive (onsite) mines or wells. • Allocations to end uses are made on the basis of reasonable approximations by respondents.

Web Page: For related information, see <http://www.eia.doe.gov/emeu/meccs>.

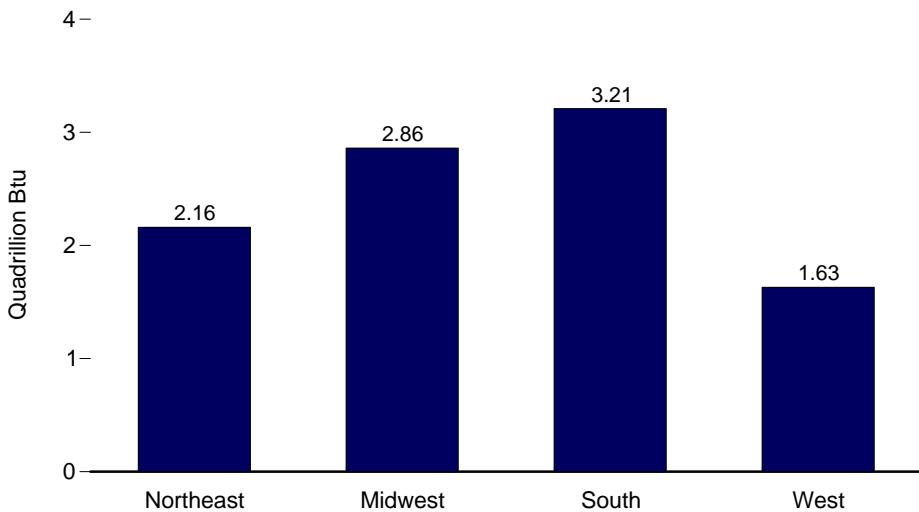
Source: Energy Information Administration, Form EIA-846, "1998 Manufacturing Energy Consumption Survey."

Figure 2.4 Household Energy Consumption

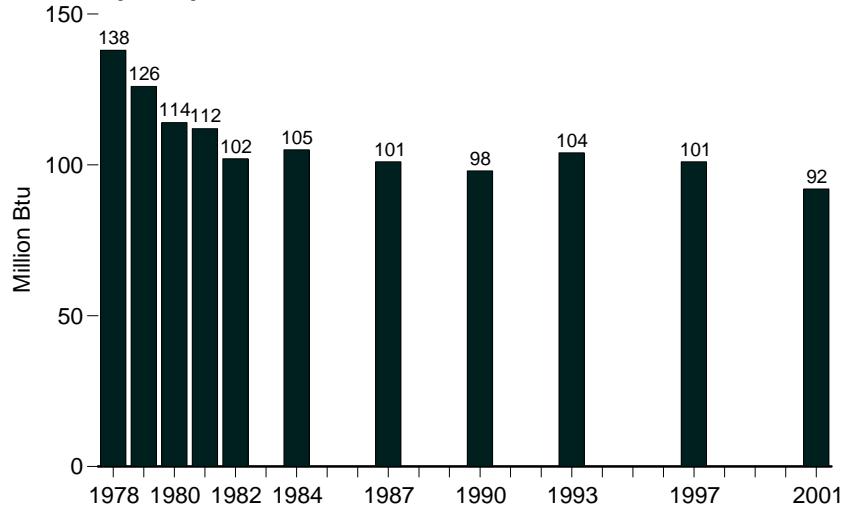
Consumption by All Households, Selected Years, 1978-2001



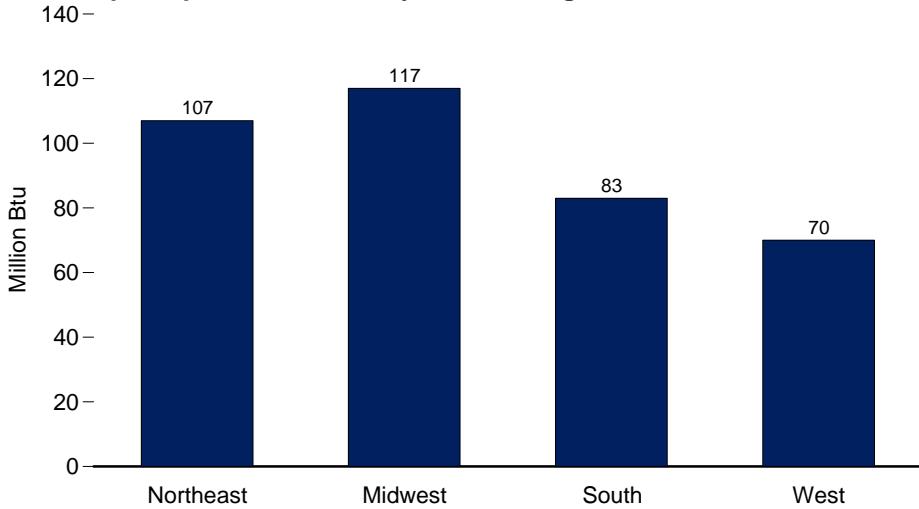
Consumption by All Households, by Census Region, 2001



Consumption per Household, Selected Years, 1978-2001



Consumption per Household, by Census Region, 2001



Notes: • For years not shown, there are no data available. Data for 1978 through 1984 are for April of the year shown through March of the following year; data for 1987, 1990, 1993, 1997, and 2001 are for the calendar year. • Because vertical scales differ, graphs should not be compared. • See Appendix C for Census regions.

Source: Table 2.4.

Table 2.4 Household Energy Consumption by Census Region, Selected Years, 1978-2001
 (Quadrillion Btu, Except as Noted)

Census Region ¹	1978	1979	1980	1981	1982	1984	1987	1990	1993	1997	2001
Northeast	2.89	2.50	2.44	2.36	2.19	2.29	2.37	2.30	2.38	2.38	2.16
Natural Gas	1.14	1.05	0.94	1.01	0.96	0.93	1.03	1.03	1.11	1.03	0.98
Electricity ²	0.39	0.39	0.41	0.40	0.37	0.41	0.44	0.47	0.47	0.49	0.53
Distillate Fuel Oil and Kerosene	1.32	1.03	1.07	0.93	0.83	0.93	0.87	0.78	0.78	0.84	0.60
Liquefied Petroleum Gases	0.03	0.03	0.03	0.03	0.02	0.03	0.02	0.02	0.03	0.03	0.05
Consumption per Household (million Btu)	166	145	138	132	122	125	124	120	122	121	107
Midwest	3.70	3.48	2.96	3.09	2.61	2.80	2.73	2.81	3.13	3.22	2.86
Natural Gas	2.53	2.48	2.05	2.22	1.78	1.99	1.83	1.88	2.07	2.20	1.84
Electricity ²	0.60	0.59	0.60	0.56	0.56	0.55	0.61	0.66	0.74	0.75	0.81
Distillate Fuel Oil and Kerosene	0.46	0.31	0.17	0.19	0.16	0.13	0.16	0.13	0.13	0.11	0.06
Liquefied Petroleum Gases	0.12	0.10	0.15	0.13	0.11	0.13	0.13	0.13	0.19	0.17	0.15
Consumption per Household (million Btu)	180	168	141	146	122	129	123	122	134	134	117
South	2.43	2.30	2.57	2.41	2.45	2.50	2.61	2.60	2.95	3.01	3.21
Natural Gas	0.96	0.91	1.12	1.15	1.14	1.15	1.09	1.03	1.18	1.13	1.13
Electricity ²	1.00	0.97	1.06	1.01	1.01	1.06	1.22	1.36	1.51	1.67	1.89
Distillate Fuel Oil and Kerosene	0.32	0.28	0.25	0.14	0.18	0.16	0.17	0.11	0.13	0.10	0.08
Liquefied Petroleum Gases	0.15	0.14	0.14	0.12	0.12	0.12	0.12	0.10	0.13	0.12	0.12
Consumption per Household (million Btu)	99	92	95	87	87	85	84	81	88	84	83
West	1.54	1.47	1.34	1.42	1.33	1.45	1.42	1.51	1.55	1.63	1.63
Natural Gas	0.95	0.88	0.86	0.90	0.85	0.91	0.88	0.92	0.91	0.93	0.90
Electricity ²	0.48	0.47	0.41	0.46	0.41	0.47	0.48	0.54	0.56	0.64	0.66
Distillate Fuel Oil and Kerosene	0.09	0.09	0.04	0.03	0.03	0.04	0.02	0.02	0.03	0.03	0.02
Liquefied Petroleum Gases	0.03	0.04	0.04	0.04	0.04	0.03	0.05	0.03	0.04	0.04	0.06
Consumption per Household (million Btu)	110	100	84	87	81	85	78	78	76	75	70
United States	10.56	9.74	9.32	9.29	8.58	9.04	9.13	9.22	10.01	10.25	9.86
Natural Gas	5.58	5.31	4.97	5.27	4.74	4.98	4.83	4.86	5.27	5.28	4.84
Electricity ²	2.47	2.42	2.48	2.42	2.35	2.48	2.76	3.03	3.28	3.54	3.89
Distillate Fuel Oil and Kerosene	2.19	1.71	1.52	1.28	1.20	1.26	1.22	1.04	1.07	1.07	0.75
Liquefied Petroleum Gases	0.33	0.31	0.35	0.31	0.29	0.31	0.32	0.28	0.38	0.36	0.38
Consumption per Household (million Btu)	138	126	114	112	102	105	101	98	104	101	92

¹ See Appendix C for Census regions.

² One kilowatthour = 3,412 Btu.

Notes: • This table shows major energy items only. • For years not shown, there are no data available. • Data for 1978-1984 are for April of year shown through March of following year; data for 1987 forward

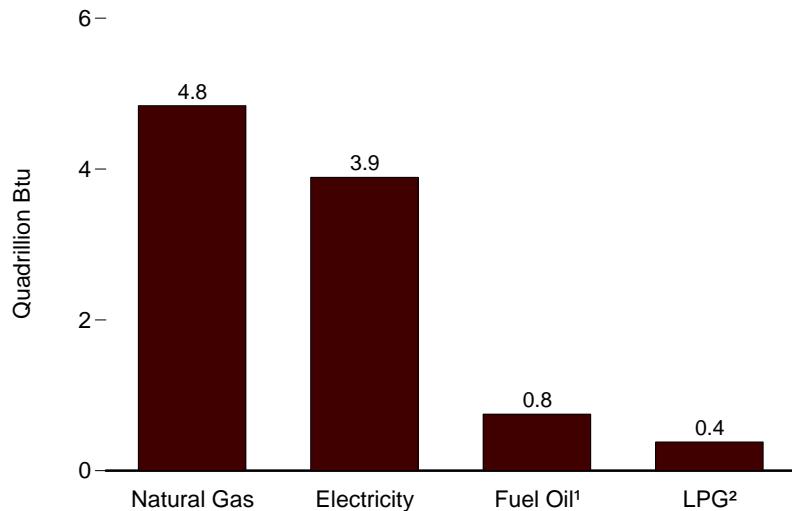
are for the calendar year. • Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/emeu/recs>.

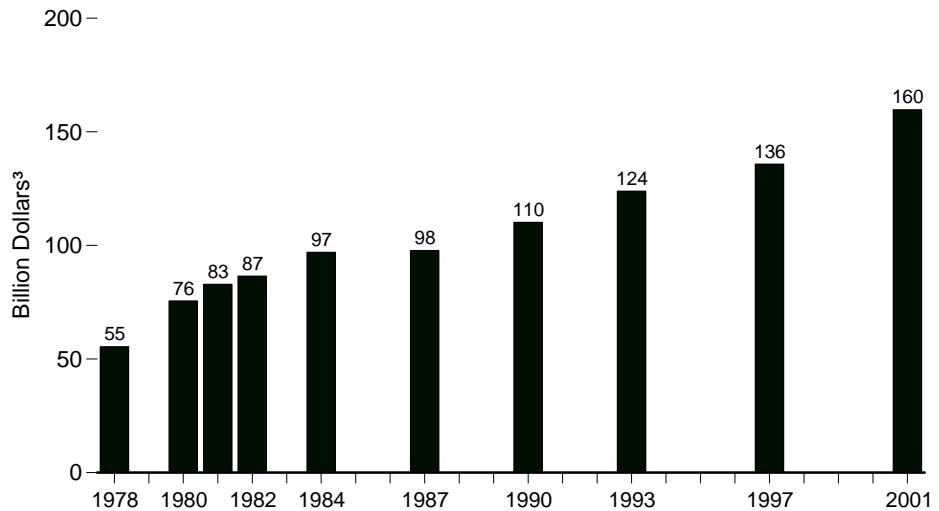
Sources: • 1978 and 1979—Energy Information Administration (EIA), Form EIA-84, "Residential Energy Consumption Survey." • 1980 forward—EIA, Form EIA-457, "Residential Energy Consumption Survey."

Figure 2.5 Household Energy Consumption and Expenditures

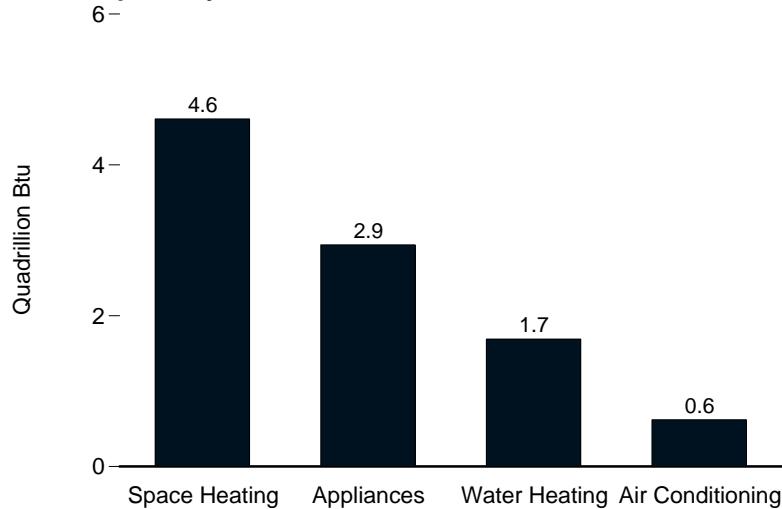
Consumption by Energy Source, 2001



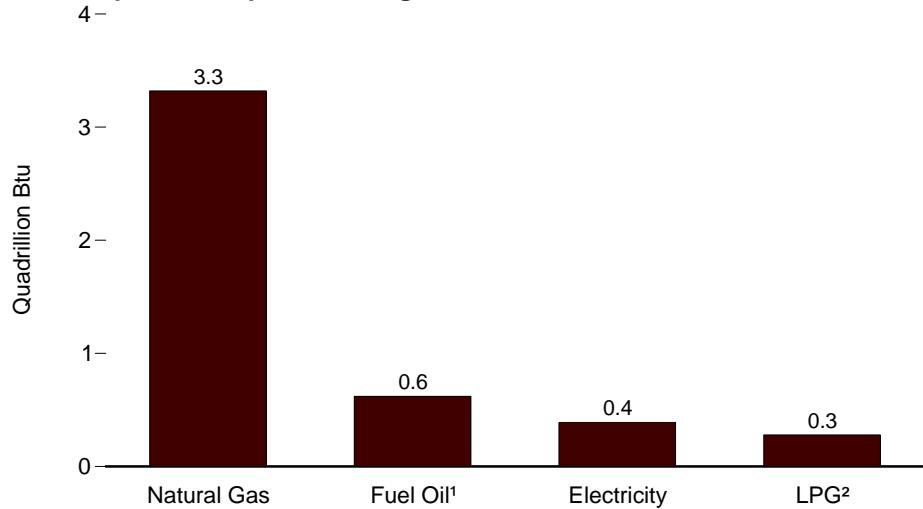
Expenditures, Selected Years, 1978-2001



Consumption by End Use, 2001



Consumption for Space Heating, 2001



¹ Distillate fuel oil and kerosene.

² Liquefied petroleum gases.

³ Nominal dollars.

Notes: • For years not shown, there are no data available. • Because vertical scales differ, graphs should not be compared.

Source: Table 2.5.

Table 2.5 Household Energy Consumption and Expenditures by End Use and Energy Source, Selected Years, 1978-2001

Year	Space Heating				Air Conditioning ¹	Water Heating				Appliances ^{2,3}			Total			
	Natural Gas	Electricity ⁴	Fuel Oil ⁵	LPG ⁶		Natural Gas	Electricity ⁴	Fuel Oil ⁵	LPG ⁶	Natural Gas	Electricity ⁴	LPG ⁶	Natural Gas ¹	Electricity ⁴	Fuel Oil ^{3,5}	LPG ⁶
Consumption (quadrillion Btu)																
1978	4.26	0.40	2.05	0.23	0.32	1.04	0.29	0.14	0.06	0.28	1.45	0.03	5.58	2.47	2.19	0.33
1980	3.41	0.27	1.30	0.23	0.36	1.15	0.30	0.22	0.07	0.36	1.54	0.05	4.97	2.48	1.52	0.35
1981	3.69	0.26	1.06	0.21	0.34	1.13	0.30	0.22	0.06	0.43	1.52	0.05	5.27	2.42	1.28	0.31
1982	3.14	0.25	1.04	0.19	0.31	1.15	0.28	0.15	0.06	0.43	1.50	0.05	4.74	2.35	1.20	0.29
1984	3.51	0.25	1.11	0.21	0.32	1.10	0.32	0.15	0.06	0.35	1.59	0.04	4.98	2.48	1.26	0.31
1987	3.38	0.28	1.05	0.22	0.44	1.10	0.31	0.17	0.06	0.34	1.72	0.04	4.83	2.76	1.22	0.32
1990	3.37	0.30	0.93	0.19	0.48	1.16	0.34	0.11	0.06	0.33	1.91	0.03	4.86	3.03	1.04	0.28
1993	3.67	0.41	0.95	0.30	0.46	1.31	0.34	0.12	0.05	0.29	2.08	0.03	5.27	3.28	1.07	0.38
1997	3.61	0.40	0.91	0.26	0.42	1.29	0.39	0.16	0.08	0.37	2.33	0.02	5.28	3.54	1.07	0.36
2001	3.32	0.39	0.62	0.28	0.62	1.15	0.36	0.13	0.05	0.37	2.52	0.05	4.84	3.89	0.75	0.38
Expenditures (billion dollars ⁷)																
1978	11.49	3.53	8.06	1.05	4.12	2.88	3.14	0.56	0.36	0.93	19.10	0.25	15.30	29.89	8.62	1.66
1980	13.22	3.78	10.48	1.78	5.84	4.51	4.45	1.76	0.57	1.91	26.74	0.44	19.77	40.81	12.24	2.80
1981	16.62	3.93	9.44	1.78	6.23	5.13	4.94	1.94	0.51	2.17	29.70	0.52	24.03	44.80	11.29	2.81
1982	17.74	4.21	8.80	1.69	6.23	6.51	5.00	1.28	0.54	2.58	31.29	0.52	26.96	46.74	10.07	2.75
1984	20.66	4.62	8.51	2.00	7.06	6.63	6.44	1.09	0.58	2.31	36.36	0.54	29.78	54.48	9.60	3.12
1987	18.05	5.53	6.25	1.85	9.77	6.02	6.45	0.94	0.50	2.02	39.83	0.46	26.15	61.58	7.21	2.81
1990	18.59	6.16	7.42	2.01	11.23	6.59	7.21	0.83	0.65	2.03	46.95	0.48	27.26	71.54	8.25	3.14
1993	21.95	8.66	6.24	2.81	11.31	8.08	7.58	0.74	0.58	1.98	53.52	0.42	32.04	81.08	6.98	3.81
1997	24.11	8.56	6.57	2.79	10.20	8.84	8.99	1.04	0.89	2.86	60.57	0.36	35.81	88.33	7.61	4.04
2001	31.84	8.98	5.66	4.04	15.94	11.31	8.47	1.15	0.69	3.83	66.94	0.86	46.98	100.34	6.83	5.60

¹ A small amount of natural gas used for air conditioning is included in "Natural Gas" under "Total."

² Includes refrigerators.

³ A small amount of distillate fuel oil and kerosene used for appliances is included in "Fuel Oil" under "Total."

⁴ One kilowatthour = 3,412 Btu.

⁵ Distillate fuel oil and kerosene.

⁶ Liquefied petroleum gases.

⁷ Nominal dollars.

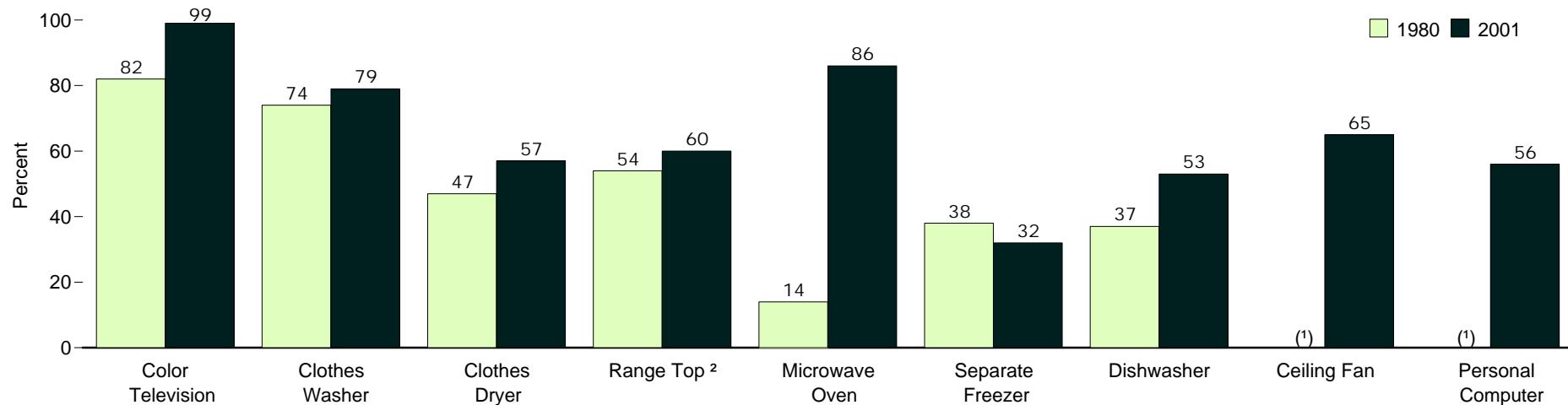
Notes: • For years not shown, there are no data available. Consumption data by energy source for 1979 are available on Table 2.4. • Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/emeu/recs>.

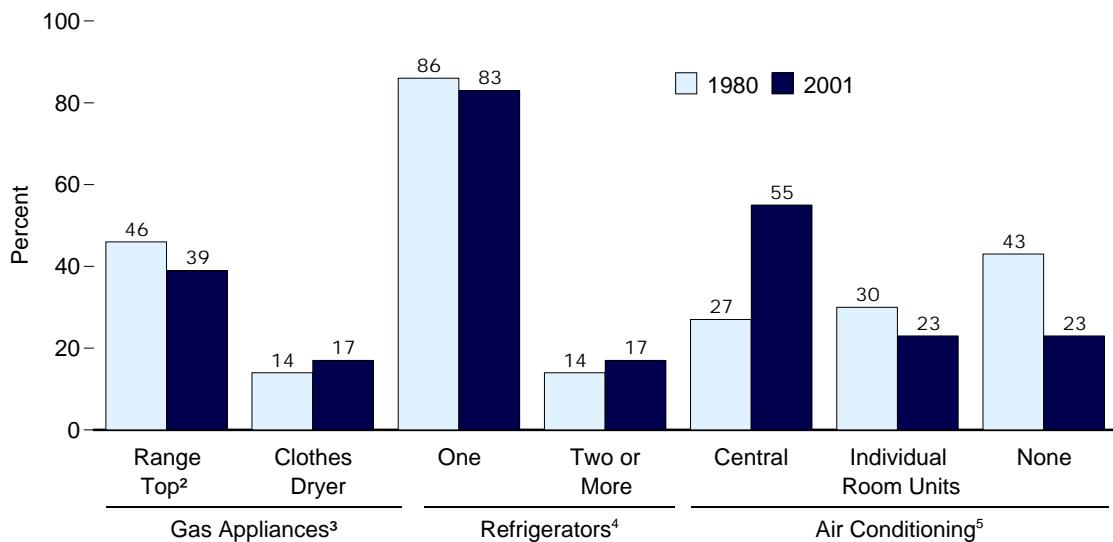
Sources: • 1978—Energy Information Administration (EIA), Form EIA-84, "Residential Energy Consumption Survey." • 1980 forward—EIA, Form EIA-457, "Residential Energy Consumption Survey."

Figure 2.6 Households With Selected Appliances and Types of Main Heating Fuel

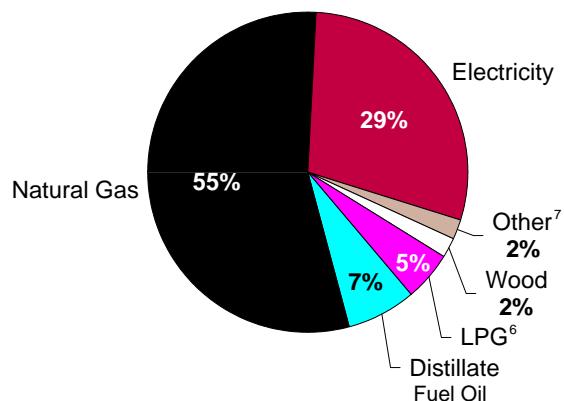
Households With Selected Electric Appliances, 1980 and 2001



Households With Other Selected Appliances, 1980 and 2001



Type of Main Heating Fuel, 2001



¹ Not collected in 1980.

² Or burners.

³ Natural gas or liquefied petroleum gases.

⁴ Fewer than 0.5 percent of the households do not have a refrigerator.

⁵ Households with both central and individual room units are counted only under "Central."

⁶ Liquefied Petroleum Gas.

⁷ No heat, kerosene, district steam, coal, and solar.

Source: Table 2.6.

Table 2.6 Households With Selected Appliances and Types of Main Heating Fuel, Selected Years, 1978-2001

Appliance	Year											Change
	1978	1979	1980	1981	1982	1984	1987	1990	1993	1997	2001	
Total Households (millions)	77	78	82	83	84	86	91	94	97	101	107	26
Percent of Households												
Type of Main Heating Fuel												
Natural Gas	55	55	55	56	57	55	55	55	53	53	55	R 1
Electricity	16	17	18	17	16	17	20	23	26	29	R 29	R 11
Liquefied Petroleum Gases	4	5	5	4	5	5	5	5	5	5	5	R 0
Distillate Fuel Oil	20	17	15	14	13	12	12	11	11	9	R 7	R -8
Wood	2	4	6	6	7	7	6	4	3	2	2	-4
Type of Appliances												
Electric Appliances												
Television Set (Color)	NA	NA	82	83	85	88	93	96	98	99	99	17
Television Set (B/W)	NA	NA	51	48	46	43	36	31	20	NA	NA	NA
Television Set (Any)	NA	NA	98	98	98	98	98	99	99	NA	NA	NA
Clothes Washer	74	NA	74	73	71	73	75	76	77	77	79	R 4
Range Top or Burners	53	NA	54	54	53	54	57	58	61	60	R 60	R 6
Oven, Microwave	8	NA	14	17	21	34	61	79	84	83	86	72
Clothes Dryer	45	NA	47	45	45	46	51	53	57	55	57	10
Separate Freezer	35	NA	38	38	37	37	34	34	35	33	32	-6
Dishwasher	35	NA	37	37	36	38	43	45	45	50	53	16
Dehumidifier	NA	NA	9	9	9	9	10	12	9	NA	11	2
Waterbed Heaters	NA	NA	NA	NA	NA	10	14	15	12	8	5	NA
Window or Ceiling Fan	NA	NA	NA	NA	NA	28	35	46	51	60	NA	NA
Ceiling Fan	NA	54	61	65	NA							
Whole House Fan	NA	NA	NA	NA	NA	8	8	9	10	4	NA	NA
Evaporative Cooler	NA	NA	4	4	4	4	3	4	3	NA	3	-1
Personal Computer	NA	16	23	35	56	NA						
Pump for Well Water	NA	15	13	14	13	NA						
Swimming-Pool Pump ¹	NA	NA	3	4	3	NA	NA	5	5	5	6	3
Gas ² Appliances												
Range Top or Burners	48	NA	46	46	47	45	43	42	38	39	R 39	R -7
Clothes Dryer	14	NA	14	16	15	16	15	16	15	16	R 17	2
Outdoor Gas Grill	6	NA	9	9	11	13	20	26	29	NA	NA	NA
Outdoor Gas Light	2	NA	2	2	2	1	1	1	1	1	(s)	R -1
Swimming Pool Heater ³	NA	NA	(s)	(s)	(s)	1	1	1	1	1	1	0
Refrigerators ⁴												
One	86	NA	86	87	86	88	86	84	85	85	83	R -3
Two or More	14	NA	14	13	13	12	14	15	15	15	17	R 3
Air Conditioning (A/C)												
Central ⁵	23	24	27	27	28	30	34	39	44	47	55	28
Individual Room Units ⁵	33	31	30	31	30	30	30	29	25	25	23	-7
None	44	45	43	42	42	40	36	32	32	28	23	-20
Portable Kerosene Heaters	(s)	NA	(s)	1	3	6	6	5	3	2	R 2	R 2

¹ Through 1990, data are for all reported swimming pools, which were assumed to have an electric pump for filtering and circulating the water. Beginning in 1993, data are explicitly for pools with filters.

² Natural gas or liquefied petroleum gases.

³ In 1984 and 1987, also includes heaters for jacuzzis and hot tubs.

⁴ Fewer than 0.5 percent of the households do not have a refrigerator.

⁵ Households with both central and individual room units are counted only under "Central."

R=Revised data. NA=Not available. (s)=Less than 0.5 percent.

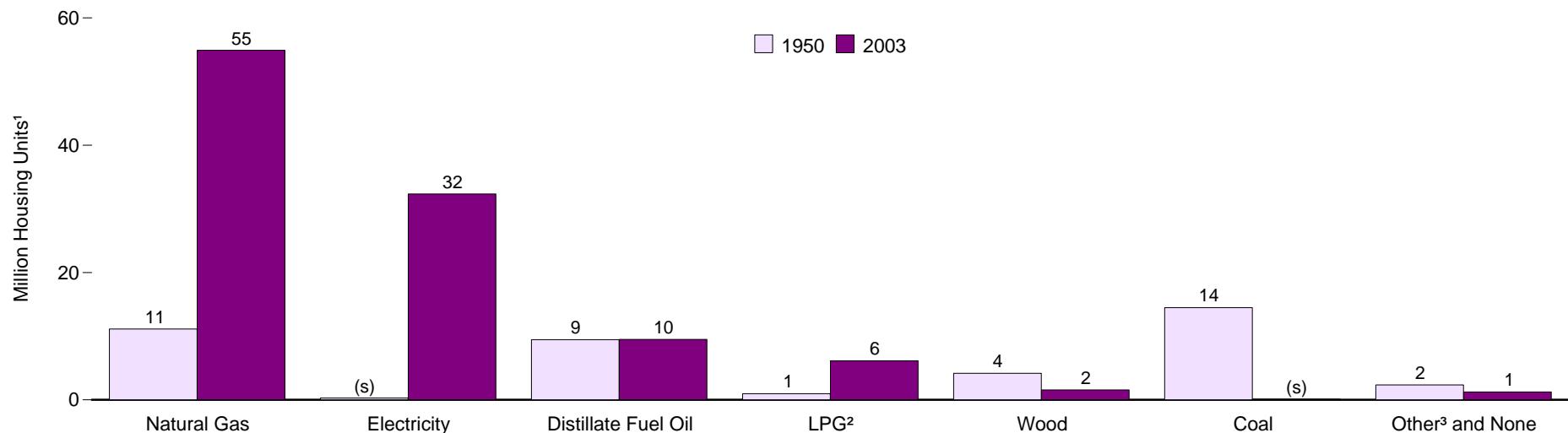
Note: For years not shown, there are no data available.

Web Page: For related information, see <http://www.eia.doe.gov/emeu/recs>.

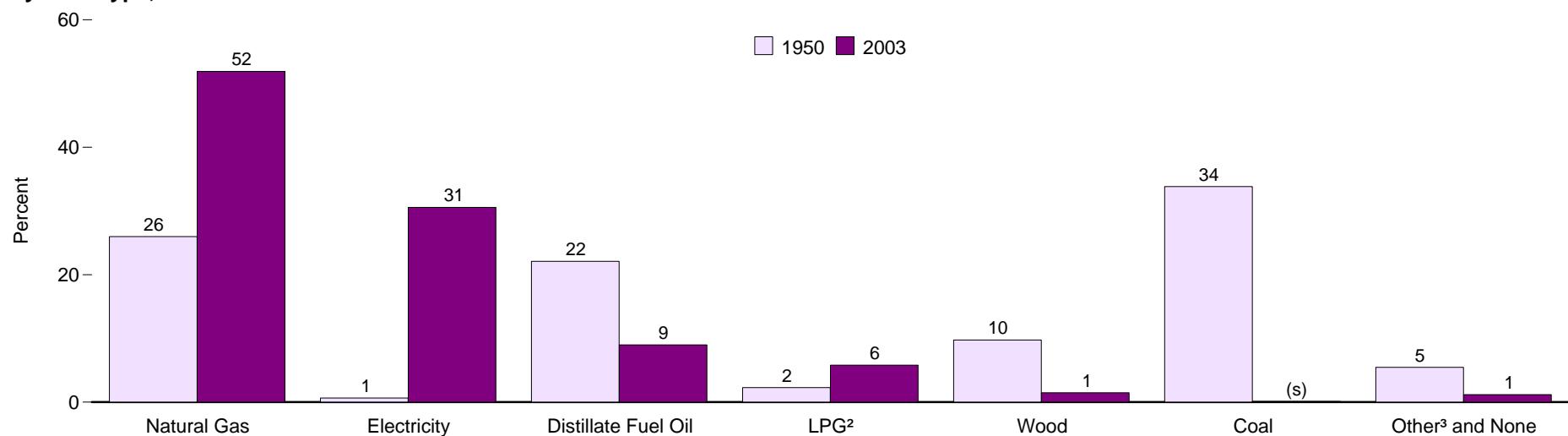
Sources: • 1978 and 1979—Energy Information Administration (EIA), Form EIA-84, "Residential Energy Consumption Survey." • 1980 forward—EIA, Form EIA-457, "Residential Energy Consumption Survey."

Figure 2.7 Type of Heating in Occupied Housing Units, 1950 and 2003

By Fuel Type



By Fuel Type, Share of Total



¹ Sum of components do not equal total due to independent rounding.

² Liquefied petroleum gases.

³ Kerosene, solar, and other.

(s)=Less than 0.5.

Source: Table 2.7.

Table 2.7 Type of Heating in Occupied Housing Units, Selected Years, 1950-2003

Year	Coal ¹	Distillate Fuel Oil	Kerosene	Liquefied Petroleum Gases	Natural Gas	Electricity	Wood	Solar	Other ²	None ³	Total
Millions											
1950	14.48	9.46	(4)	0.98	11.12	0.28	4.17	NA	0.77	1.57	42.83
1960	6.46	17.16	(4)	2.69	22.85	0.93	2.24	NA	0.22	0.48	53.02
1970	1.82	16.47	(4)	3.81	35.01	4.88	0.79	NA	0.27	0.40	63.45
1973	0.80	17.24	(4)	4.42	38.46	7.21	0.60	NA	0.15	0.45	69.34
1974	0.74	16.84	(4)	4.14	39.47	8.41	0.66	NA	0.09	0.48	70.83
1975	0.57	16.30	(4)	4.15	40.93	9.17	0.85	NA	0.08	0.47	72.52
1976	0.48	16.45	(4)	4.24	41.22	10.15	0.91	NA	0.09	0.46	74.01
1977	0.45	15.62	0.44	4.18	41.54	11.15	1.24	NA	0.15	0.51	75.28
1978	0.40	15.65	0.42	4.13	42.52	12.26	1.07	NA	0.12	0.60	77.17
1979	0.36	15.30	0.41	4.13	43.32	13.24	1.14	NA	0.10	0.57	78.57
1980	0.33	14.50	0.37	4.17	44.40	14.21	1.38	NA	0.11	0.61	80.07
1981	0.36	14.13	0.37	4.17	46.08	15.49	1.89	NA	0.10	0.59	83.18
1983 ⁵	0.43	12.59	0.45	3.87	46.70	15.68	4.09	NA	0.16	0.68	84.64
1985	0.45	12.44	1.06	3.58	45.33	18.36	6.25	0.05	0.37	0.53	88.43
1987	0.41	12.74	1.08	3.66	45.96	20.61	5.45	0.05	0.28	0.66	90.89
1989	0.34	12.47	1.07	3.66	47.40	23.06	4.59	0.04	0.40	0.66	93.68
1991	0.32	11.47	0.99	3.88	47.02	23.71	4.44	0.03	0.41	0.86	93.15
1993	0.30	11.17	1.02	3.92	47.67	25.11	4.10	0.03	0.50	0.91	94.73
1995	0.21	10.98	1.06	4.25	49.20	26.77	3.53	0.02	0.64	1.04	97.69
1997	0.18	10.10	0.75	5.40	51.05	29.20	1.79	0.03	0.36	0.62	99.49
1999	0.17	10.03	0.72	5.91	52.37	31.14	1.70	0.02	0.21	0.54	102.80
2001 ⁶	0.13	R9.81	0.65	R6.04	R54.13	R32.41	R1.67	0.02	0.19	R0.39	R105.44
2003	0.13	9.50	0.64	6.13	54.93	32.34	1.56	0.02	0.16	0.44	105.84
Percent											
1950	33.8	22.1	(4)	2.3	26.0	0.6	9.7	NA	1.8	3.7	100.0
1960	12.2	32.4	(4)	5.1	43.1	1.8	4.2	NA	0.4	0.9	100.0
1970	2.9	26.0	(4)	6.0	55.2	7.7	1.3	NA	0.4	0.6	100.0
1973	1.2	24.9	(4)	6.4	55.5	10.4	0.9	NA	0.2	0.7	100.0
1974	1.0	23.8	(4)	5.8	55.7	11.9	0.9	NA	0.1	0.7	100.0
1975	0.8	22.5	(4)	5.7	56.4	12.6	1.2	NA	0.1	0.6	100.0
1976	0.7	22.2	(4)	5.7	55.7	13.7	1.2	NA	0.1	0.6	100.0
1977	0.6	20.7	0.6	5.6	55.2	14.8	1.6	NA	0.2	0.7	100.0
1978	0.5	20.3	0.5	5.4	55.1	15.9	1.4	NA	0.2	0.8	100.0
1979	0.5	19.5	0.5	5.3	55.1	16.9	1.4	NA	0.1	0.7	100.0
1980	0.4	18.1	0.5	5.2	55.4	17.7	1.7	NA	0.1	0.8	100.0
1981	0.4	17.0	0.4	5.0	55.4	18.6	2.3	NA	0.1	0.7	100.0
1983 ⁵	0.5	14.9	0.5	4.6	55.2	18.5	4.8	NA	0.2	0.8	100.0
1985	0.5	14.1	1.2	4.1	51.3	20.8	7.1	0.1	0.4	0.6	100.0
1987	0.4	14.0	1.2	4.0	50.6	22.7	6.0	0.1	0.3	0.7	100.0
1989	0.4	13.3	1.1	3.9	50.6	24.6	4.9	(s)	0.4	0.7	100.0
1991	0.3	12.3	1.1	4.2	50.5	25.5	4.8	(s)	0.4	0.9	100.0
1993	0.3	11.8	1.1	4.1	50.3	26.5	4.3	(s)	0.5	1.0	100.0
1995	0.2	11.2	1.1	4.4	50.4	27.4	3.6	(s)	0.7	1.1	100.0
1997	0.2	10.2	0.8	5.4	51.3	29.4	1.8	(s)	0.4	0.6	100.0
1999	0.2	9.8	0.7	5.7	50.9	30.3	1.7	(s)	0.2	0.5	100.0
2001 ⁶	0.1	R9.3	0.6	5.7	R51.3	30.7	1.6	(s)	0.2	0.4	100.0
2003	0.1	9.0	0.6	5.8	51.9	30.6	1.5	(s)	0.1	0.4	100.0

¹ Includes coal coke.

² Includes briquettes (made of pitch and sawdust), coal dust, waste material (such as corncobs), purchased steam, and other fuels not separately displayed.

³ In 1950 and 1960, also includes nonreporting units, which totaled 997 and 2,000 units, respectively.

⁴ Included in "Distillate Fuel Oil."

⁵ Since 1983, the *American Housing Survey for the United States* has been a biennial survey.

⁶ Beginning in 2001, data are consistent with the 2000 Census. For 2001 data consistent with the 1990 Census, see *American Housing Survey for the United States: 2001*.

R=Revised data. NA=Not available. (s)=Less than 0.05 percent.

Notes: • Includes mobile homes and individual housing units in apartment buildings. Housing units with more than one type of heating system are classified according to the principal type of heating system.

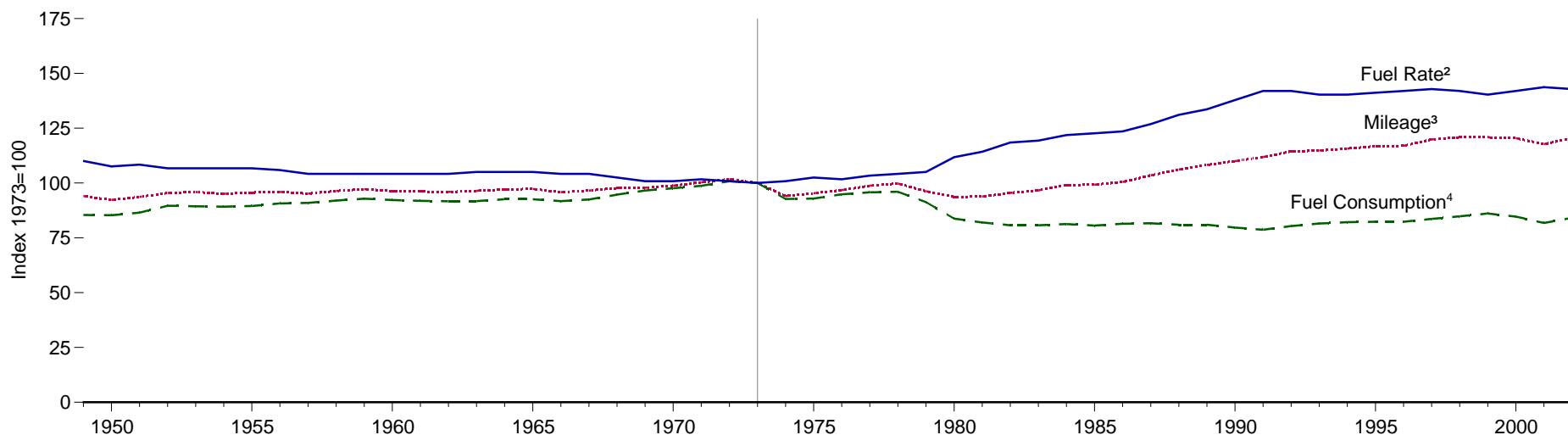
• Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.census.gov/hhes/www/ahs.html>.

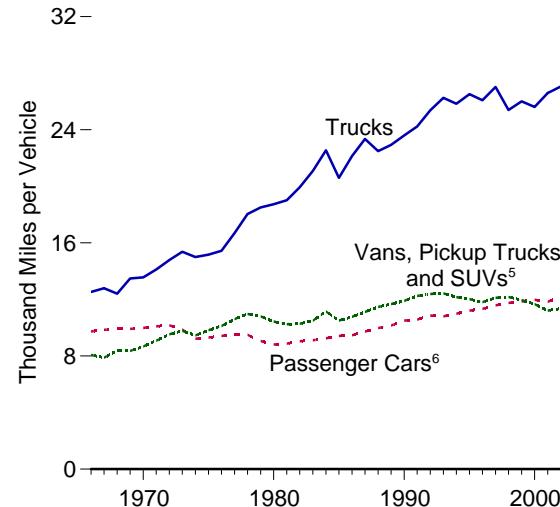
Sources: • 1950, 1960, and 1970—Bureau of the Census, *Census of Population and Housing*. • 1973 forward—Bureau of the Census, *American Housing Survey for the United States*, biennial surveys, Table 2-5.

Figure 2.8 Motor Vehicle Mileage, Fuel Consumption, and Fuel Rates

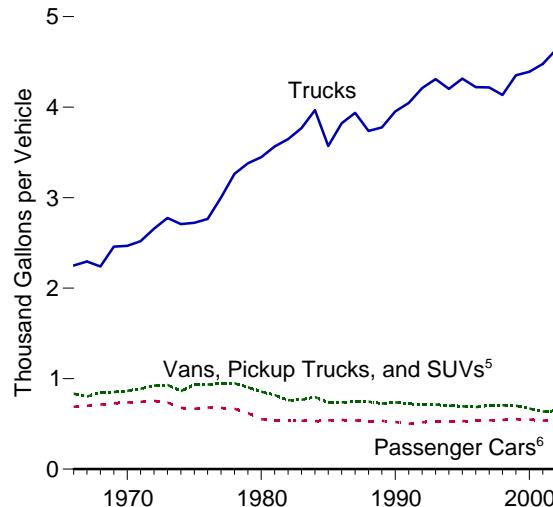
All Motor Vehicles,¹ 1949-2002



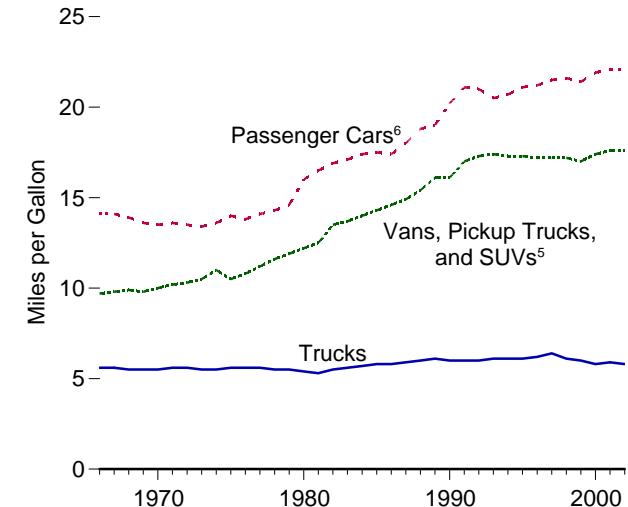
Mileage, 1966-2002



Fuel Consumption, 1966-2002



Fuel Rates, 1966-2002



¹ Passenger cars, motorcycles, vans, pickup trucks, sport utility vehicles, trucks, and buses.

² Miles per gallon.

³ Miles per vehicle.

⁴ Gallons per vehicle.

⁵ Sport utility vehicle.

⁶ Motorcycles are included with passenger cars through 1989.

Source: Table 2.8.

Table 2.8 Motor Vehicle Mileage, Fuel Consumption, and Fuel Rates, Selected Years, 1949-2002

Year	Passenger Cars ¹			Vans, Pickup Trucks, and Sport Utility Vehicles ²			Trucks ³			All Motor Vehicles ⁴		
	Mileage (miles per vehicle)	Fuel Consumption (gallons per vehicle)	Fuel Rate (miles per gallon)	Mileage (miles per vehicle)	Fuel Consumption (gallons per vehicle)	Fuel Rate (miles per gallon)	Mileage (miles per vehicle)	Fuel Consumption (gallons per vehicle)	Fuel Rate (miles per gallon)	Mileage (miles per vehicle)	Fuel Consumption (gallons per vehicle)	Fuel Rate (miles per gallon)
1949	9,388	627	15.0	(⁵)	(⁵)	(⁵)	9,712	1,080	9.0	9,498	726	13.1
1950	9,060	603	15.0	(⁵)	(⁵)	(⁵)	10,316	1,229	8.4	9,321	725	12.8
1955	9,447	645	14.6	(⁵)	(⁵)	(⁵)	10,576	1,293	8.2	9,661	761	12.7
1960	9,518	668	14.3	(⁵)	(⁵)	(⁵)	10,693	1,333	8.0	9,732	784	12.4
1965	9,603	661	14.5	(⁵)	(⁵)	(⁵)	10,851	1,387	7.8	9,826	787	12.5
1970	9,989	737	13.5	8,676	866	10.0	13,565	2,467	5.5	9,976	830	12.0
1971	10,097	743	13.6	9,082	888	10.2	14,117	2,519	5.6	10,133	839	12.1
1972	10,171	754	13.5	9,534	922	10.3	14,780	2,657	5.6	10,279	857	12.0
1973	9,884	737	13.4	9,779	931	10.5	15,370	2,775	5.5	10,099	850	11.9
1974	9,221	677	13.6	9,452	862	11.0	14,995	2,708	5.5	9,493	788	12.0
1975	9,309	665	14.0	9,829	934	10.5	15,167	2,722	5.6	9,627	790	12.2
1976	9,418	681	13.8	10,127	934	10.8	15,438	2,764	5.6	9,774	806	12.1
1977	9,517	676	14.1	10,607	947	11.2	16,700	3,002	5.6	9,978	814	12.3
1978	9,500	665	14.3	10,968	948	11.6	18,045	3,263	5.5	10,077	816	12.4
1979	9,062	620	14.6	10,802	905	11.9	18,502	3,380	5.5	9,722	776	12.5
1980	8,813	551	16.0	10,437	854	12.2	18,736	3,447	5.4	9,458	712	13.3
1981	8,873	538	16.5	10,244	819	12.5	19,016	3,565	5.3	9,477	697	13.6
1982	9,050	535	16.9	10,276	762	13.5	19,931	3,647	5.5	9,644	686	14.1
1983	9,118	534	17.1	10,497	767	13.7	21,083	3,769	5.6	9,760	686	14.2
1984	9,248	530	17.4	11,151	797	14.0	22,550	3,967	5.7	10,017	691	14.5
1985	9,419	538	17.5	10,506	735	14.3	20,597	3,570	5.8	10,020	685	14.6
1986	9,464	543	17.4	10,764	738	14.6	22,143	3,821	5.8	10,143	692	14.7
1987	9,720	539	18.0	11,114	744	14.9	23,349	3,937	5.9	10,453	694	15.1
1988	9,972	531	18.8	11,465	745	15.4	22,485	3,736	6.0	10,721	688	15.6
1989	¹ 10,157	¹ 533	¹ 19.0	11,676	724	16.1	22,926	3,776	6.1	10,932	688	15.9
1990	10,504	520	20.2	11,902	738	16.1	23,603	3,953	6.0	11,107	677	16.4
1991	10,571	501	21.1	12,245	721	17.0	24,229	4,047	6.0	11,294	669	16.9
1992	10,857	517	21.0	12,381	717	17.3	25,373	4,210	6.0	11,558	683	16.9
1993	10,804	527	20.5	12,430	714	17.4	26,262	4,309	6.1	11,595	693	16.7
1994	10,992	531	20.7	12,156	701	17.3	25,838	4,202	6.1	11,683	698	16.7
1995	11,203	530	21.1	12,018	694	17.3	26,514	4,315	6.1	11,793	700	16.8
1996	11,330	534	21.2	11,811	685	17.2	26,092	4,221	6.2	11,813	700	16.9
1997	11,581	539	21.5	12,115	703	17.2	27,032	4,218	6.4	12,107	711	17.0
1998	11,754	544	21.6	12,173	707	17.2	25,397	4,135	6.1	12,211	721	16.9
1999	11,848	553	21.4	11,957	701	17.0	26,014	4,352	6.0	12,206	732	16.7
2000	11,976	547	21.9	11,672	669	17.4	25,617	4,391	5.8	12,164	720	16.9
2001	R ¹ 11,831	R ⁵ 534	22.1	R ¹ 11,204	R ⁶ 636	17.6	R ² 6,602	R ⁴ ,477	5.9	R ¹ 11,887	R ⁶ 95	17.1
2002 ^P	12,203	551	22.1	11,365	645	17.6	27,062	4,637	5.8	12,172	715	17.0

¹ Through 1989, includes motorcycles.

² Includes a small number of trucks with 2 axles and 4 tires, such as step vans.

³ Single-unit trucks with 2 axles and 6 or more tires, and combination trucks.

⁴ Includes buses and motorcycles, which are not separately displayed.

⁵ Included in "Trucks."

R=Revised. P=Preliminary.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/enduse.html>.

• For related information, see <http://www.fhwa.dot.gov/policy/ohpi/hss/index.htm>.

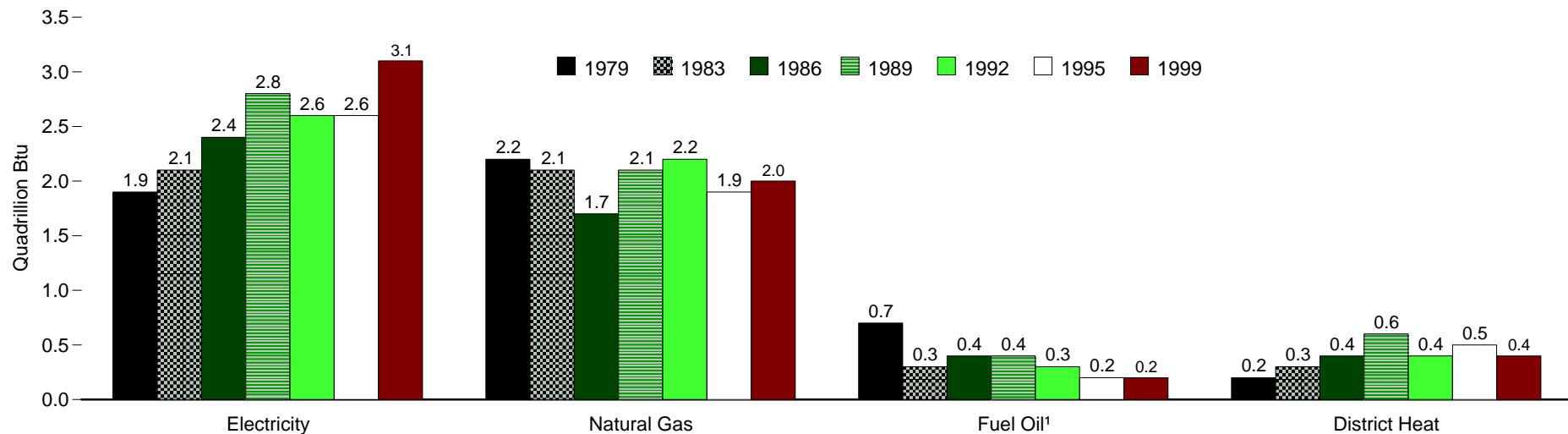
Sources: **Passenger Cars, 1990-1994:** U.S. Department of Transportation, Bureau of Transportation Statistics, *National Transportation Statistics* 1998, Table 4-13. **All Other Data:** • 1949-1994—Federal

Highway Administration (FHWA), *Highway Statistics Summary to 1995*, Table VM-201A. • 1995

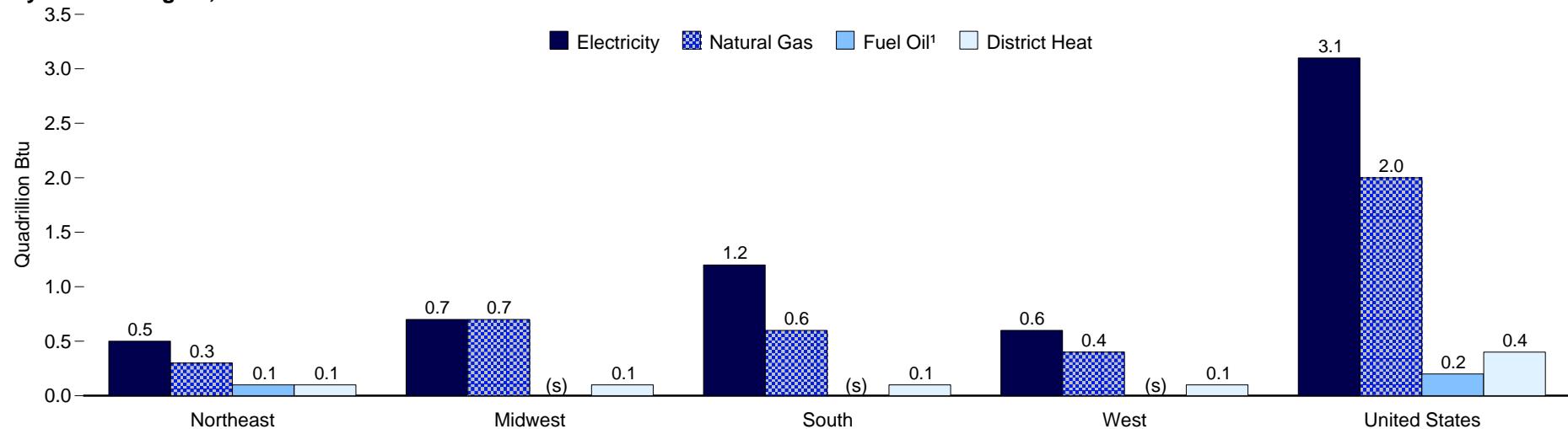
forward—FHWA, *Highway Statistics*, annual reports, Table VM-1.

Figure 2.9 Commercial Buildings Consumption by Energy Source

By Survey Year



By Census Region, 1999



¹ Distillate fuel oil, residual fuel oil, and kerosene.

(s)=Less than 0.05 quadrillion Btu.

Note: See Appendix C for Census regions.

Source: Table 2.9.

Table 2.9 Commercial Buildings Consumption by Energy Source, Selected Years, 1979-1999
 (Trillion Btu)

Energy Source and Year	Square Footage Category			Principal Building Activity								Census Region ¹				All Buildings
	1,001 to 10,000	10,001 to 100,000	Over 100,000	Education	Food Sales	Food Service	Health Care	Lodging	Mercantile and Service	Office	All Other	Northeast	Midwest	South	West	
Major Sources ²																
1979	1,255	2,202	1,508	511	(³)	336	469	278	894	861	1,616	1,217	1,826	1,395	526	4,965
1983	1,242	1,935	1,646	480	(³)	414	463	362	812	1,018	1,274	858	1,821	1,462	682	4,823
1986	1,273	2,008	1,696	633	147	247	456	299	985	1,008	1,202	1,037	1,585	1,459	896	4,977
1989	1,259	2,402	2,127	704	139	255	449	425	1,048	1,230	1,538	1,354	1,659	1,648	1,126	5,788
1992	1,258	2,301	1,932	637	137	307	403	463	892	1,247	1,404	1,090	1,578	1,825	998	5,490
1995 ⁴	1,332	2,152	1,888	614	137	332	561	461	973	1,019	1,225	1,035	1,497	1,684	1,106	5,321
1999	1,381	2,300	2,053	649	201	447	515	450	1,145	1,089	1,237	1,116	1,509	1,961	1,147	5,733
Electricity																
1979	429	872	608	163	(³)	171	129	119	361	424	543	425	593	662	227	1,908
1983	469	903	758	152	(³)	212	147	151	426	509	532	324	673	801	331	2,129
1986	654	927	809	179	99	121	132	120	536	641	563	430	584	867	510	2,390
1989	572	1,145	1,056	217	105	113	154	138	550	781	715	586	609	975	604	2,773
1992	586	991	1,033	235	113	138	138	189	444	704	649	419	622	1,002	566	2,609
1995 ⁴	618	1,064	926	221	119	166	211	187	508	676	521	436	558	1,027	587	2,608
1999	698	1,235	1,164	257	165	216	232	196	659	767	606	543	662	1,247	645	3,098
Natural Gas																
1979	646	996	532	214	(³)	145	221	115	422	272	784	443	1,007	470	255	2,174
1983	684	809	597	246	(³)	188	218	170	327	365	576	278	978	523	311	2,091
1986	485	715	523	254	45	114	205	105	332	258	409	244	742	426	311	1,723
1989	568	836	670	323	27	128	186	187	417	238	566	353	831	498	391	2,073
1992	572	1,017	586	291	24	157	189	193	381	388	552	354	747	697	376	2,174
1995 ⁴	535	830	580	245	18	158	258	213	395	239	420	297	750	528	371	1,946
1999	604	803	616	227	31	216	217	181	446	219	486	299	709	618	396	2,023
Fuel Oil ⁵																
1979	177	272	231	107	(³)	15	97	20	103	107	232	285	133	237	26	681
1983	85	140	90	61	(³)	Q	28	18	43	75	79	172	28	104	Q	314
1986	114	206	121	103	Q	Q	Q	20	105	39	130	270	63	86	23	442
1989	101	170	86	71	Q	Q	17	10	76	43	122	237	61	50	Q	357
1992	86	111	75	62	Q	Q	21	16	55	47	67	194	26	48	Q	272
1995 ⁴	71	104	60	57	Q	Q	21	Q	49	28	70	168	16	45	7	235
1999	29	73	60	48	Q	Q	19	Q	18	29	65	138	5	29	8	179
District Heat ⁶																
1979	Q	61	136	27	(³)	Q	22	24	Q	58	57	64	93	Q	Q	201
1983	Q	83	202	21	(³)	Q	70	22	Q	68	87	84	141	34	30	289
1986	Q	159	243	97	Q	Q	80	Q	12	71	99	94	196	81	51	422
1989	19	252	315	Q	Q	Q	92	Q	Q	167	134	179	159	126	121	585
1992	Q	182	238	49	NC	Q	55	65	Q	109	135	123	183	78	51	435
1995 ⁴	Q	154	271	91	Q	Q	70	57	Q	75	214	135	173	83	Q	533
1999	Q	158	213	117	2	Q	46	68	Q	74	126	136	132	67	98	433
Propane																
1979	23	15	5	2	(³)	8	Q	Q	10	Q	18	Q	16	15	10	43
1983	20	12	2	2	(³)	8	Q	Q	6	Q	14	Q	7	21	Q	34
1986	44	18	1	3	Q	12	Q	12	17	Q	13	9	19	26	Q	63

¹ See Appendix C for Census regions.

² Includes electricity, natural gas, distillate fuel oil, residual fuel oil, kerosene, and district heat; excludes propane, for which consumption statistics were collected through 1986.

³ Included in "Food Service."

⁴ Beginning in 1995, excludes commercial buildings at multi-building manufacturing facilities, and parking garages.

⁵ Distillate fuel oil, residual fuel oil, and kerosene.

⁶ Through 1983, includes purchased steam only. Beginning in 1986, includes purchased and nonpurchased steam, and purchased and nonpurchased hot water.

Q=Data withheld because either the relative standard error was greater than 50 percent or fewer than 20

buildings were sampled. NC=No cases in the sample.

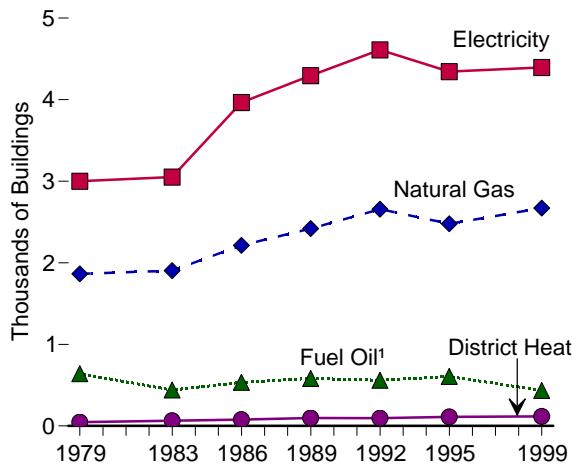
Note: Statistics for individual fuels are for all buildings using each fuel. Statistics for "Major Sources" are for the sum of "Electricity," "Natural Gas," "Fuel Oil," and "District Heat," across all buildings using any of those fuels.

Web Page: For related information, see <http://www.eia.doe.gov/emeu/cbebs>.

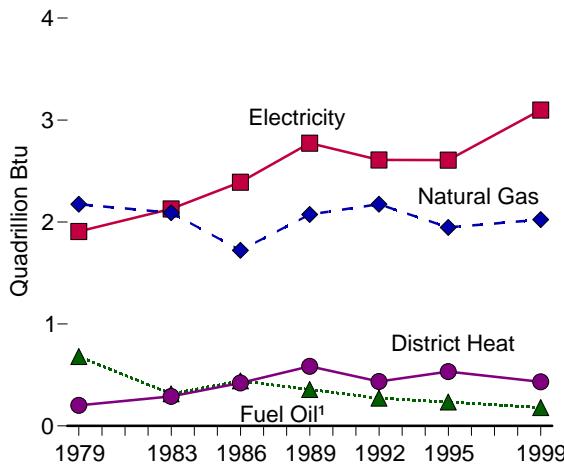
Sources: • 1979—Energy Information Administration (EIA), Form EIA-143, "Nonresidential Buildings Energy Consumption Survey." • 1983—EIA, Form EIA-788, "Nonresidential Buildings Energy Consumption Survey." • 1986—EIA, Form EIA-871, "Nonresidential Buildings Energy Consumption Survey." • 1989, 1992, 1995, and 1999—EIA, Form EIA-871A-F, "Commercial Buildings Energy Consumption Survey."

Figure 2.10 Commercial Buildings Energy Consumption and Expenditure Indicators, Selected Years, 1979-1999

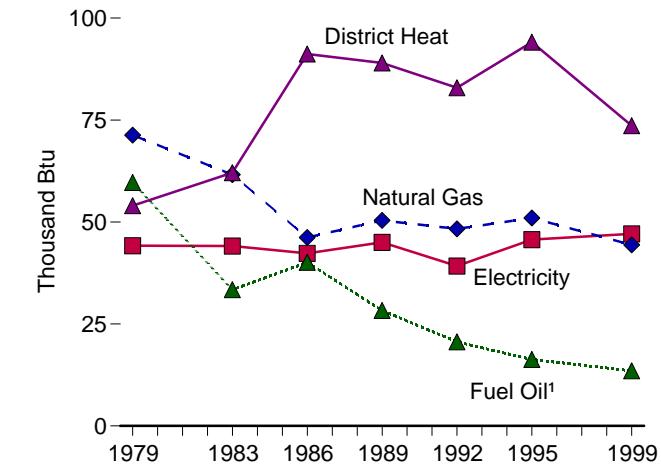
Buildings by Energy Source Used



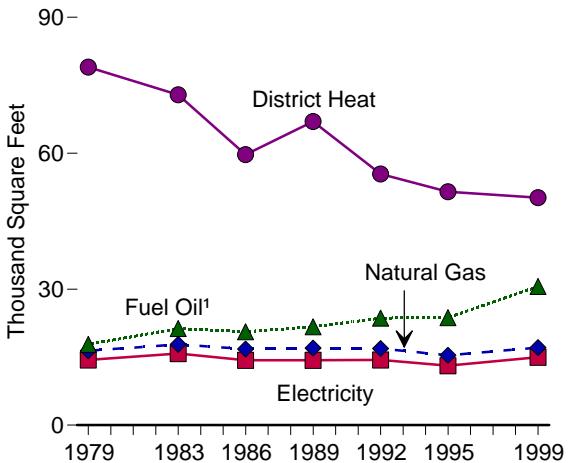
Consumption



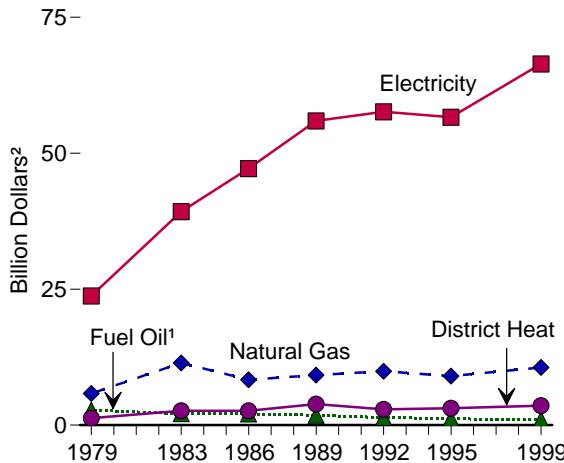
Consumption per Square Foot



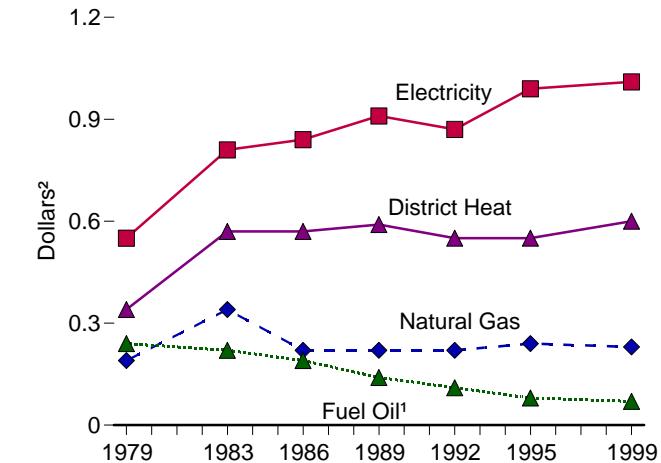
Square Footage per Building by Energy Source Used



Expenditures



Expenditures Per Square Foot



¹ Distillate fuel oil, residual fuel oil, and kerosene.

² Nominal dollars.

Notes: • For years not shown, there are no data available. • Because vertical scales differ, graphs should not be compared.

Source: Table 2.10.

Table 2.10 Commercial Buildings Energy Consumption and Expenditure Indicators, Selected Years, 1979-1999

Energy Source and Year	Building Characteristics			Energy Consumption				Energy Expenditures			
	Number of Buildings (thousand)	Total Square Feet (million)	Square Feet per Building (thousand)	Total (trillion Btu)	Per Building (million Btu)	Per Square Foot (thousand Btu)	Per Employee (million Btu)	Total (million dollars ¹)	Per Building (thousand dollars ¹)	Per Square Foot (dollars ¹)	Per Million Btu (dollars ¹)
Major Sources²											
1979	3,073	43,546	14.2	5,008	1,630	115.0	85.0	33,821	11.0	0.78	6.75
1983	3,185	49,471	15.5	4,856	1,525	98.2	65.7	55,764	17.5	1.13	11.48
1986	4,154	58,199	14.0	5,040	1,213	86.6	68.6	60,762	14.6	1.04	12.06
1989	4,528	63,184	14.0	5,788	1,278	91.6	81.9	70,826	15.6	1.12	12.24
1992	4,806	67,876	14.1	5,490	1,142	80.9	77.1	71,821	14.9	1.06	13.08
1995 ³	4,579	58,772	12.8	5,321	1,162	90.5	69.3	69,918	15.3	1.19	13.14
1999	4,657	67,338	14.5	5,733	1,231	85.1	70.0	81,552	17.5	1.21	14.22
Electricity											
1979	3,001	43,153	14.4	1,908	636	44.2	32.4	23,751	7.9	0.55	12.45
1983	3,052	48,327	15.8	2,129	697	44.1	28.9	39,279	12.9	0.81	18.45
1986	3,965	56,508	14.3	2,390	603	42.3	32.7	47,186	11.9	0.84	19.74
1989	4,294	61,563	14.3	2,773	646	45.0	39.3	55,943	13.0	0.91	20.17
1992	4,611	66,525	14.4	2,609	566	39.2	36.6	57,619	12.5	0.87	22.09
1995 ³	4,343	57,076	13.1	2,608	600	45.7	34.1	56,621	13.0	0.99	21.71
1999	4,395	65,716	15.0	3,098	706	47.1	37.9	66,424	15.1	1.01	21.44
Natural Gas											
1979	1,864	30,477	16.4	2,174	1,167	71.3	52.5	5,814	3.1	0.19	2.67
1983	1,904	33,935	17.8	2,091	1,098	61.6	40.6	11,443	6.0	0.34	5.47
1986	2,214	37,263	16.8	1,723	778	46.2	35.2	8,355	3.8	0.22	4.85
1989	2,420	41,143	17.0	2,073	857	50.4	43.2	9,204	3.8	0.22	4.44
1992	2,657	44,994	16.9	2,174	818	48.3	42.5	9,901	3.7	0.22	4.55
1995 ³	2,478	38,145	15.4	1,946	785	51.0	38.7	9,018	3.6	0.24	4.63
1999	2,670	45,525	17.1	2,023	758	44.4	36.0	10,609	4.0	0.23	5.24
Fuel Oil⁴											
1979	641	11,397	17.8	681	1,063	59.7	40.5	2,765	4.3	0.24	4.06
1983	441	9,409	21.3	314	714	33.4	19.8	2,102	4.8	0.22	6.68
1986	534	11,005	20.6	442	827	40.1	27.7	2,059	3.9	0.19	4.66
1989	581	12,600	21.7	357	614	28.3	21.0	1,822	3.1	0.14	5.11
1992	560	13,215	23.6	272	487	20.6	15.1	1,400	2.5	0.11	5.14
1995 ³	607	14,421	23.7	235	387	16.3	10.2	1,175	1.9	0.08	5.00
1999	434	13,285	30.6	179	412	13.5	9.1	956	2.2	0.07	5.35
District Heat⁵											
1979	47	3,722	79.0	201	4,267	54.0	26.5	1,267	26.9	0.34	6.30
1983	64	4,643	72.9	289	4,530	62.1	34.4	2,627	41.2	0.57	9.10
1986	77	4,625	59.7	422	5,446	91.2	52.4	2,620	33.8	0.57	6.21
1989	98	6,578	67.0	585	5,964	89.0	56.5	3,857	39.3	0.59	6.59
1992	95	5,245	55.4	435	4,596	82.9	60.9	2,901	30.7	0.55	6.67
1995 ³	110	5,658	51.5	533	4,849	94.1	51.2	3,103	28.3	0.55	5.83
1999	117	5,891	50.2	433	3,692	73.6	50.1	3,564	30.4	0.60	8.23
Propane											
1979	214	2,797	13.1	43	202	15.5	12.9	225	1.1	0.08	5.19
1983	191	2,562	13.4	34	176	13.1	8.5	313	1.6	0.12	9.29
1986	344	3,213	9.3	63	184	19.7	17.6	543	1.6	0.17	8.59
1989	348	4,695	13.5	NA	NA	NA	NA	NA	NA	NA	NA
1992	337	3,393	10.1	NA	NA	NA	NA	NA	NA	NA	NA
1995	589	5,344	9.1	NA	NA	NA	NA	NA	NA	NA	NA
1999	451	6,290	14.0	NA	NA	NA	NA	NA	NA	NA	NA

¹ Nominal dollars.

² Includes electricity, natural gas, fuel oil, and district heat. Propane consumption statistics were collected in 1979, 1983, and 1986, but are not included in the Major Sources.

³ Beginning with the 1995 survey, commercial buildings on multibuilding manufacturing facilities and parking garages were excluded.

⁴ Distillate fuel oil, residual fuel oil, and kerosene.

⁵ For 1979 and 1983, includes only purchased steam. Beginning with the 1986 survey, includes purchased and nonpurchased steam and purchased and nonpurchased hot water.

NA=Not available.

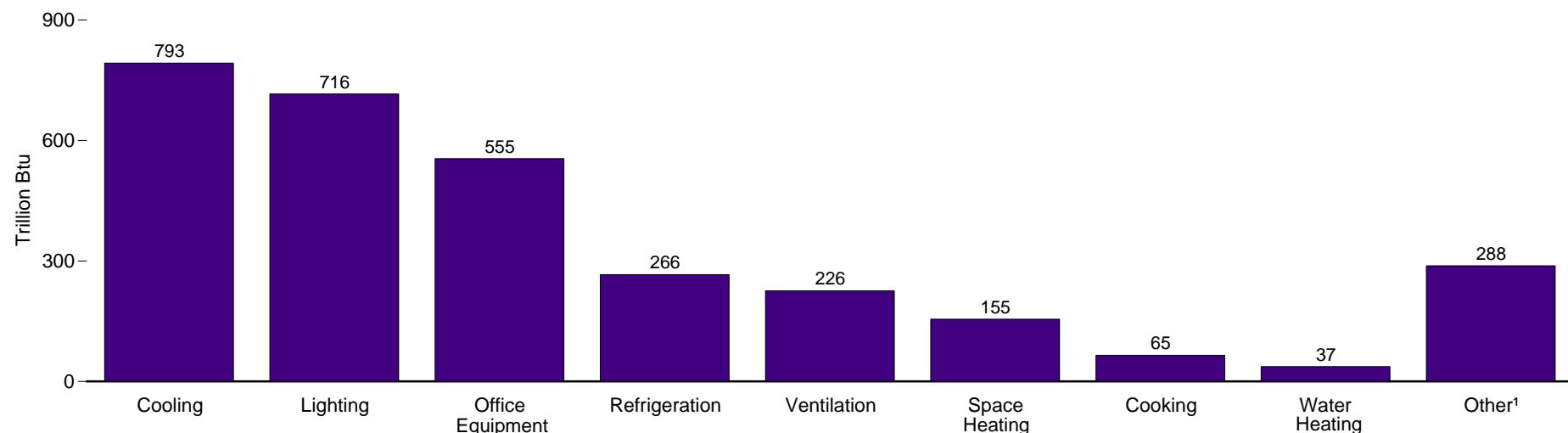
Note: Statistics for individual fuels are for all buildings using each fuel. Statistics for major sources are for all buildings, even buildings using no major fuel.

Web Page: For related information, see <http://www.eia.doe.gov/emeu/cbecs>.

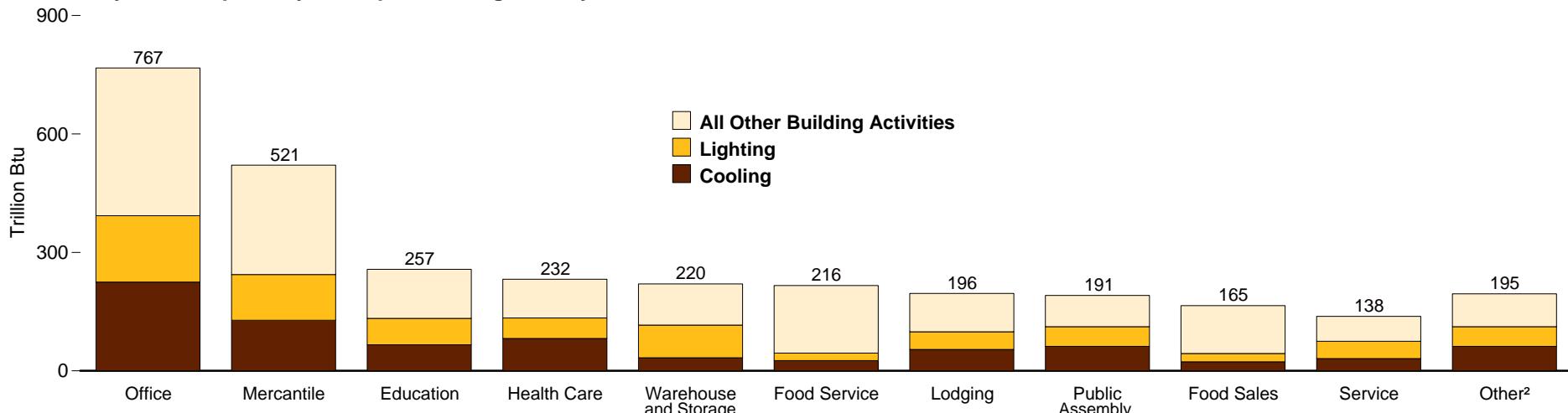
Sources: • 1979—Energy Information Administration (EIA), Form EIA-143, "Nonresidential Buildings Energy Consumption Survey." • 1983—EIA, Form EIA-788, "Nonresidential Buildings Energy Consumption Survey." • 1986—EIA, Form EIA-871, "Nonresidential Buildings Energy Consumption Survey." • 1989, 1992, 1995, and 1999—EIA, Form EIA-871A-F, "Commercial Buildings Energy Consumption Survey."

Figure 2.11 Commercial Buildings Electricity Consumption by End Use, 1999

Electricity Consumption by End Use



Electricity Consumption by Principal Building Activity



¹ Examples of "other" include medical, electronic, and testing equipment; conveyors, wrappers, hoists, and compactors; washers, disposals, dryers and cleaning equipment; escalators, elevators, dumb waiters, and window washers; shop tools and electronic testing equipment; sign motors, time clocks, vending machines, phone equipment, and sprinkler

controls; scoreboards, fire alarms, intercoms, television sets, radios, projectors, and door operators.

² Religious worship, public order and safety, vacant, and other, including buildings that do not fit into any of the other named categories.

Source: Table 2.11.

Table 2.11 Commercial Buildings Electricity Consumption by End Use, 1999
 (Trillion Btu)

Building Characteristic	Space Heating	Cooling	Ventilation	Water Heating	Lighting	Cooking	Refrigeration	Office Equipment	Other ¹	All End Uses
All Buildings	155	793	226	37	716	65	266	555	288	3,098
Principal Building Activity										
Education	12	66	19	2	67	3	11	52	26	257
Food Sales	4	23	6	1	21	4	72	28	7	165
Food Service	5	26	7	1	19	38	82	30	7	216
Health Care	6	82	19	1	52	3	8	40	21	232
Lodging	21	54	14	10	45	2	12	14	25	196
Mercantile	35	128	35	6	116	6	52	104	40	521
Office	45	225	53	8	168	5	6	200	58	767
Public Assembly	8	62	15	2	50	3	9	21	21	191
Public Order and Safety	1	12	3	Q	11	Q	Q	5	5	40
Religious Worship	2	16	4	(s)	11	(s)	1	2	6	42
Service	6	31	12	2	44	Q	Q	20	21	138
Warehouse and Storage	6	33	29	2	83	Q	9	19	39	220
Other ²	Q	31	9	1	27	Q	Q	18	11	101
Vacant	(s)	3	1	Q	1	Q	Q	2	3	10

¹ Examples of "other" include medical, electronic, and testing equipment; conveyors, wrappers, hoists, and compactors; washers, disposals, dryers and cleaning equipment; escalators, elevators, dumb waiters, and window washers; shop tools and electronic testing equipment; sign motors, time clocks, vending machines, phone equipment, and sprinkler controls; scoreboards, fire alarms, intercoms, television sets, radios, projectors, and door operators.

² Includes buildings that do not fit into any of the other named categories.

(s)=Less than 0.5 trillion Btu. Q=Data withheld because either the relative standard error was greater

than 50 percent or fewer than 20 buildings were sampled.

Notes: • Data are preliminary estimates. • Data in this table cover only the end-use energy consumption for electricity.

Web Page: For related information, see <http://www.eia.doe.gov/emeu/cbecs>.

Source: Energy Information Administration, Form EIA-871A-F, "Commercial Buildings Energy Consumption Survey."

Energy Consumption by Sector

Note. Electrical System Energy Losses. Electrical system energy losses are calculated as the difference between total primary consumption by the electric power sector—see Table 2.1f—and the total energy content of electricity retail sales—see Tables 8.9 and A6. Most of these 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 is a result of imputing fossil energy equivalent inputs for hydroelectric, solar, and wind 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 is lost in transmission and distribution.

3

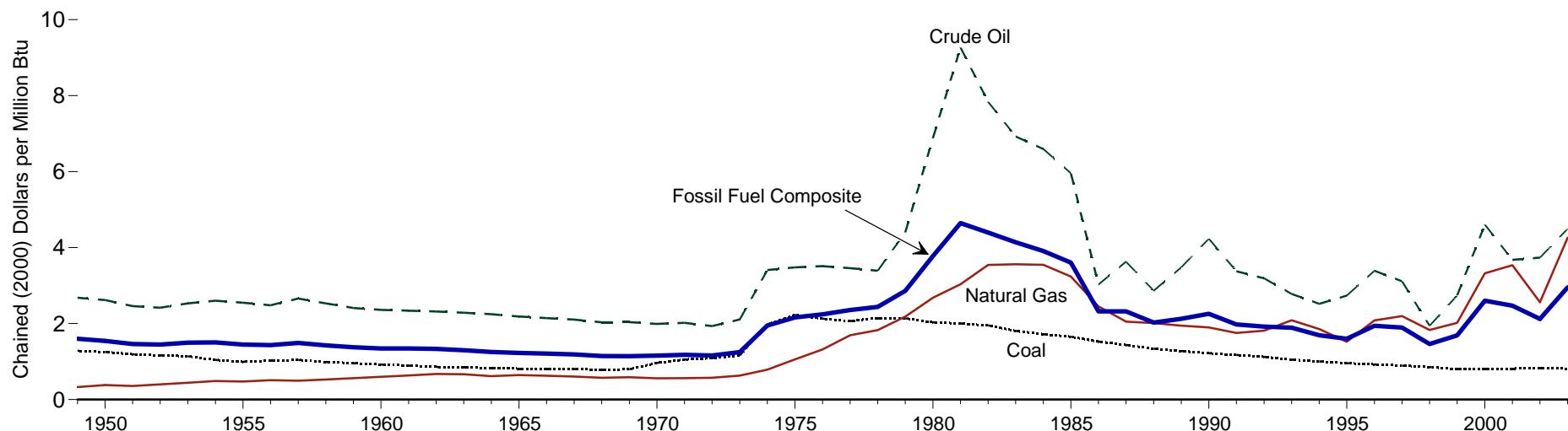
Financial Indicators



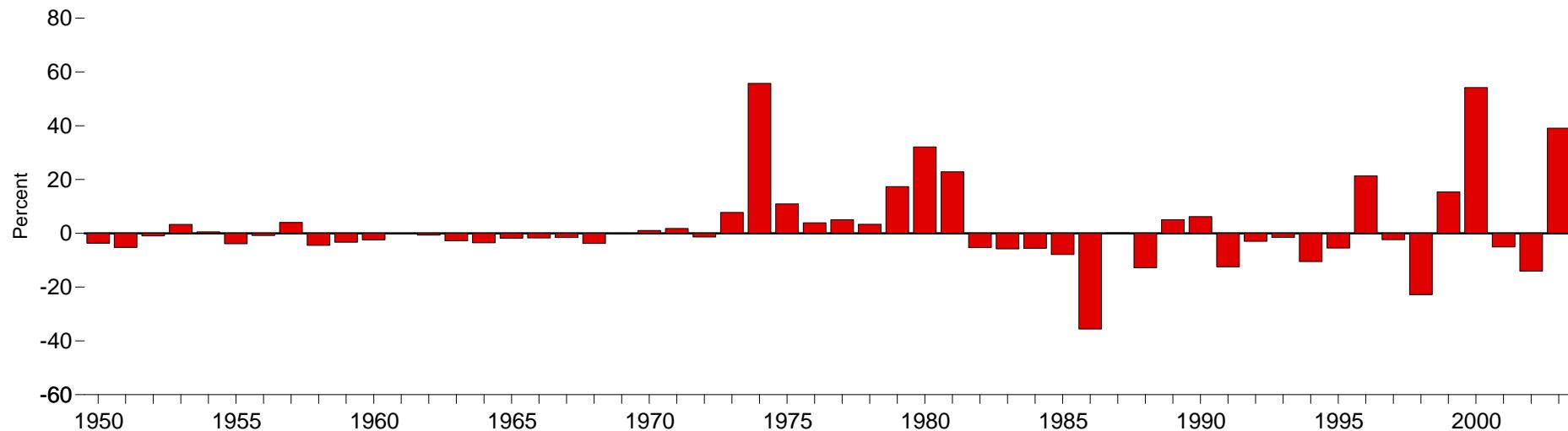
Gas Station, North Carolina, April 1999.

Figure 3.1 Fossil Fuel Production Prices

Prices, 1949-2003



Fossil Fuel Composite Price, Change From Previous Year, 1950-2003



Note: Prices are in chained (2000) dollars, calculated by using gross domestic product implicit price deflators. See Table D1.

Source: Table 3.1.

Table 3.1 Fossil Fuel Production Prices, Selected Years, 1949-2003

(Dollars per Million Btu)

Year	Coal ¹		Natural Gas ²		Crude Oil ³		Fossil Fuel Composite ⁴		
	Nominal	Real ⁵	Nominal	Real ⁵	Nominal	Real ⁵	Nominal	Real ⁵	Percent Change ⁶
1949	0.21	R1.28	0.05	R0.33	0.44	R2.68	0.26	R1.60	—
1950	0.21	R1.25	0.06	R0.38	0.43	R2.62	0.26	R1.54	R-3.7
1955	0.19	R0.99	0.09	R0.48	0.48	R2.55	0.27	R1.45	-3.9
1960	0.19	R0.92	0.13	R0.60	0.50	R2.36	0.28	R1.35	-2.4
1965	0.18	R0.82	0.15	R0.64	0.49	R2.19	0.28	R1.23	R-1.8
1970	0.27	R0.97	0.15	R0.56	0.55	R1.99	0.32	R1.16	R1.0
1971	0.30	R1.05	0.16	R0.56	0.58	R2.02	0.34	R1.18	1.8
1972	0.33	R1.09	0.17	R0.57	0.58	R1.94	0.35	R1.16	R-1.4
1973	0.37	R1.15	0.20	R0.63	0.67	R2.11	0.40	R1.25	R7.8
1974	0.69	R1.98	0.27	R0.79	1.18	R3.41	0.68	R1.95	55.8
1975	0.85	R2.22	0.40	R1.06	1.32	R3.48	0.82	R2.16	R10.9
1976	0.86	R2.13	0.53	R1.32	1.41	R3.51	0.90	R2.24	3.9
1977	0.88	R2.07	0.72	R1.69	1.48	R3.46	1.01	R2.36	R5.1
1978	0.98	R2.15	0.84	R1.83	1.55	R3.39	1.12	R2.44	R3.3
1979	1.06	R2.14	1.08	R2.18	2.18	R4.40	1.42	R2.86	R17.4
1980	1.10	R2.04	1.45	R2.68	3.72	R6.89	2.04	R3.78	R32.1
1981	1.18	R2.00	1.80	R3.04	5.48	R9.27	2.75	R4.64	22.9
1982	1.23	R1.95	2.22	R3.54	4.92	R7.84	2.76	R4.40	R-5.3
1983	1.18	R1.81	2.32	R3.56	4.52	R6.93	2.70	R4.14	-5.8
1984	1.16	R1.72	2.40	R3.55	4.46	R6.60	2.65	R3.91	R-5.6
1985	1.15	R1.65	2.26	R3.24	4.15	R5.96	2.51	R3.60	R-7.9
1986	1.09	R1.52	1.75	R2.45	2.16	R3.03	1.65	R2.32	-35.6
1987	1.05	R1.44	1.50	R2.05	2.66	R3.63	1.70	R2.32	R0.1
1988	1.01	R1.34	1.52	R2.01	2.17	R2.87	1.53	R2.03	-12.8
1989	1.00	R1.28	1.53	R1.94	2.73	R3.48	1.67	R2.13	5.0
1990	1.00	R1.22	1.55	R1.90	3.45	R4.23	1.84	R2.26	R6.2
1991	0.99	R1.17	1.48	R1.75	2.85	R3.38	1.67	R1.98	R-12.4
1992	0.97	R1.12	1.57	R1.82	2.76	R3.19	1.66	R1.92	R-3.0
1993	0.93	R1.05	1.84	R2.09	2.46	R2.78	1.67	R1.89	R-1.5
1994	0.91	R1.01	1.67	R1.86	2.27	R2.52	1.53	R1.69	-10.5
1995	0.88	R0.96	1.40	R1.52	2.52	R2.74	1.47	R1.60	-5.5
1996	0.87	R0.93	1.96	R2.09	3.18	R3.39	1.82	R1.94	R21.4
1997	0.85	R0.89	2.10	R2.20	2.97	R3.11	1.81	R1.90	R-2.4
1998	0.83	R0.86	1.77	R1.83	1.87	R1.94	1.41	R1.46	R-22.8
1999	0.79	R0.81	1.98	R2.02	2.68	R2.74	1.65	R1.69	15.4
2000	0.80	R0.80	R3.32	R3.32	4.61	R4.61	R2.60	R2.60	R54.2
2001	R0.83	R0.81	R3.62	R3.54	3.77	R3.68	R2.53	R2.47	R-5.1
2002	R0.87	R0.83	2.67	R2.56	3.88	R3.73	R2.21	R2.12	R-14.0
2003 ^P	0.86	0.82	4.50	4.26	4.75	4.50	3.12	2.95	39.1

¹ Free-on-board (f.o.b.) rail/barge prices, which are the f.o.b. prices of coal at the point of first sale, excluding freight or shipping and insurance costs. See "Free on Board (F.O.B.)" in Glossary.

² Wellhead prices. See "Natural Gas Wellhead Price" in Glossary.

³ Domestic first purchase prices. See "Crude Oil Domestic First Purchase Price" in Glossary.

⁴ Derived by multiplying the price per Btu of each fossil fuel by the total Btu content of the production of each fossil fuel and dividing this accumulated value of total fossil fuel production by the accumulated Btu content of total fossil fuel production.

⁵ In chained (2000) dollars, calculated by using gross domestic product implicit price deflators. See Table D1.

⁶ Based on real values.

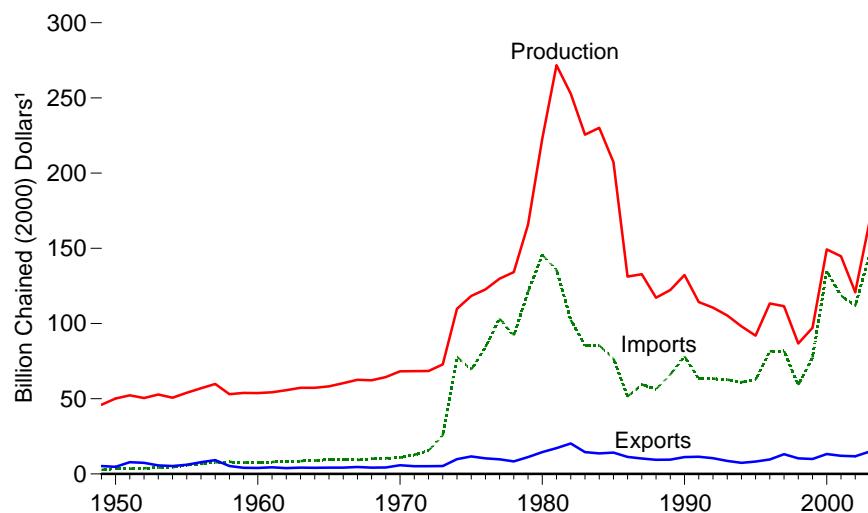
R=Revised. P=Preliminary. — = Not applicable.

Web Page: For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/finan.html>.

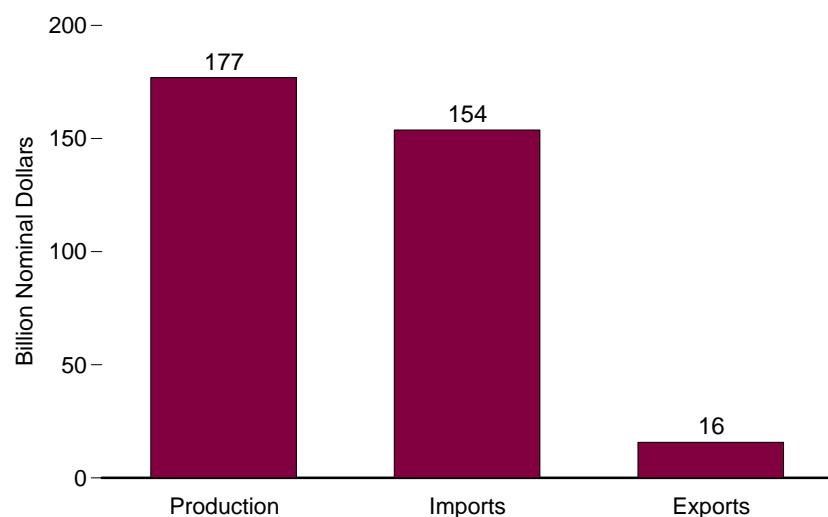
Sources: Tables 5.18, 6.7, 7.8, A2, A4, and A5.

Figure 3.2 Value of Fossil Fuel Production

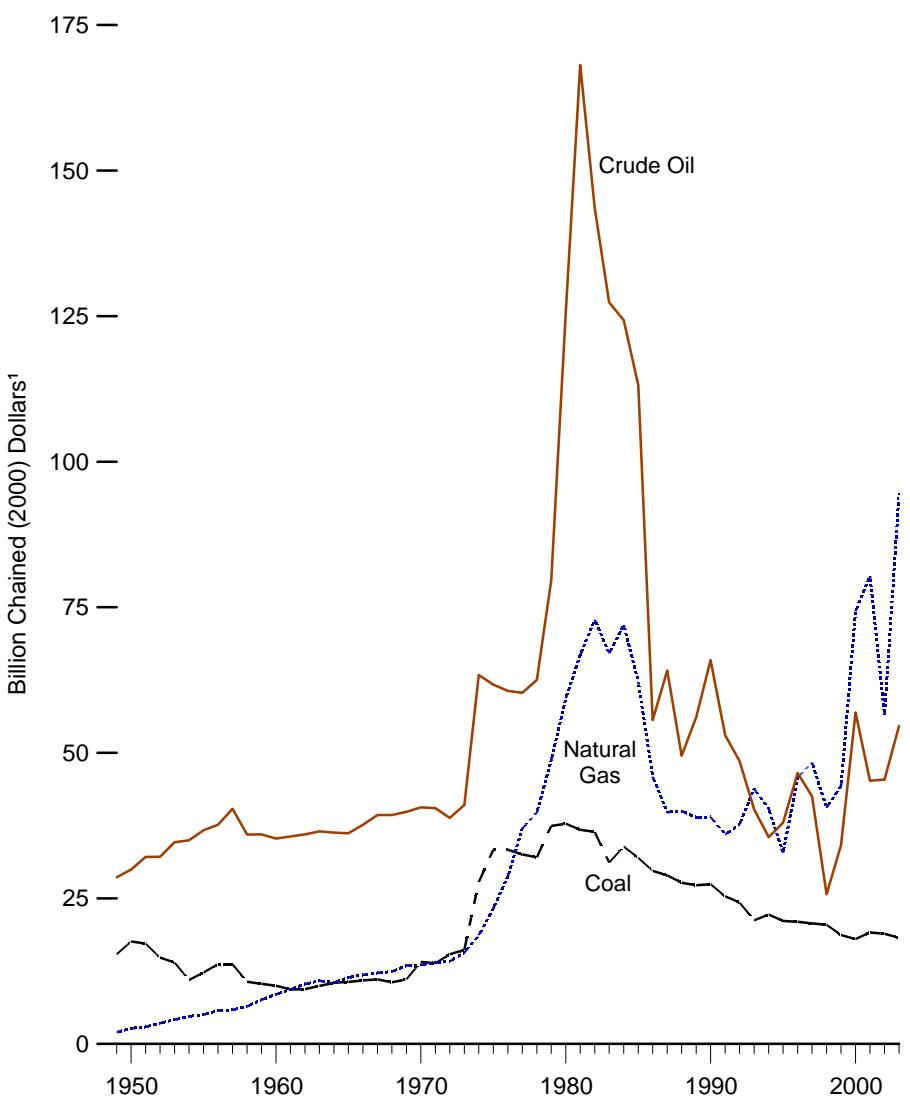
Overview, 1949-2003



Overview, 2003



By Fuel, 1949-2003



¹ Prices are in chained (2000) dollars, calculated by using gross domestic product implicit price deflators. See Table D1.

Note: Because vertical scales differ, graphs should not be compared.
Sources: Tables 3.2, 3.5, and 3.6.

Table 3.2 Value of Fossil Fuel Production, Selected Years, 1949-2003
(Billion Dollars)

Year	Coal ¹		Natural Gas ²		Crude Oil ^{3,4}		Total	
	Nominal	Real ⁵	Nominal	Real ⁵	Nominal	Real ⁵	Nominal	Real ⁵
1949	2.52	R15.41	0.33	R2.02	4.68	R28.62	7.53	R46.05
1950	2.91	R17.60	0.44	R2.66	4.95	R29.94	8.30	R50.20
1955	2.30	R12.27	0.94	R5.02	6.88	R36.71	10.12	R54.00
1960	2.10	R9.98	1.79	R8.51	7.42	R35.26	11.31	R53.75
1965	2.40	R10.65	2.57	R11.40	8.15	R36.17	13.12	R58.22
1970	3.88	R14.09	3.73	R13.55	11.19	R40.64	18.80	R68.28
1971	4.01	R13.87	4.05	R14.01	11.71	R40.50	19.77	R68.38
1972	4.65	R15.41	4.28	R14.19	11.71	R38.82	20.64	R68.42
1973	5.14	R16.14	4.98	R15.64	13.07	R41.04	23.19	R72.82
1974	9.65	R27.79	6.48	R18.66	22.00	R63.35	38.13	R109.80
1975	12.67	R33.34	8.85	R23.29	23.45	R61.71	44.97	R118.34
1976	13.40	R33.34	11.57	R28.78	24.37	R60.63	49.34	R122.75
1977	13.91	R32.54	15.82	R37.00	25.79	R60.32	55.52	R129.86
1978	14.65	R32.02	18.18	R39.73	28.60	R62.50	61.43	R134.25
1979	18.55	R37.44	24.16	R48.76	39.45	R79.62	82.16	R165.82
1980	20.45	R37.84	32.09	R59.38	67.93	R125.70	120.47	R222.92
1981	21.75	R36.79	39.51	R66.83	99.40	R168.14	160.66	R271.76
1982	22.84	R36.41	45.71	R72.87	90.03	R143.53	158.58	R252.81
1983	20.32	R31.16	43.73	R67.06	83.05	R127.36	147.10	R225.58
1984	22.94	R33.91	48.69	R71.97	84.10	R124.31	155.73	R230.19
1985	22.27	R31.95	43.35	R62.18	78.88	R113.15	144.50	R207.28
1986	21.18	R29.73	32.71	R45.91	39.63	R55.62	93.52	R131.26
1987	21.20	R28.96	29.11	R39.77	46.93	R64.12	97.24	R132.85
1988	20.97	R27.70	30.28	R40.00	37.48	R49.52	88.73	R117.22
1989	21.40	R27.24	30.58	R38.93	44.07	R56.10	96.05	R122.27
1990	22.39	R27.44	31.80	R38.98	53.77	R65.90	107.96	R132.32
1991	21.40	R25.34	30.39	R35.99	44.77	R53.02	96.56	R114.35
1992	20.98	R24.29	32.56	R37.69	41.97	R48.58	95.51	R110.56
1993	18.77	R21.24	38.72	R43.81	35.61	R40.29	93.10	R105.34
1994	20.06	R22.22	36.46	R40.39	32.07	R35.53	88.59	R98.14
1995	19.45	R21.12	30.24	R32.83	35.00	R38.00	84.69	R91.95
1996	19.68	R20.97	42.99	R45.81	43.68	R46.54	106.35	R113.32
1997	19.77	R20.72	46.09	R48.31	40.57	R42.52	106.43	R111.55
1998	19.75	R20.47	39.12	R40.55	24.80	R25.71	83.67	R86.73
1999	18.30	R18.70	43.37	R44.31	33.40	R34.13	95.07	R97.14
2000	18.02	R18.02	R74.33	R74.33	56.93	R56.93	R149.28	R149.28
2001	19.60	R19.15	R82.28	R80.37	46.25	R45.18	R148.13	R144.70
2002	R19.68	R18.93	R58.77	R56.54	R47.21	R45.42	R125.66	R120.89
2003 ^p	19.23	18.20	99.95	94.58	57.71	54.61	176.89	167.39

¹ Coal values are based on free-on-board (f.o.b.) rail/barge prices, which are the f.o.b. prices of coal at the point of first sale, excluding freight or shipping and insurance costs. See "Free on Board (F.O.B.)" in Glossary.

² Natural gas values are for marketed production based on wellhead prices. See "Natural Gas Marketed Production" and "Natural Gas Wellhead Price" in Glossary.

³ Includes lease condensate.

⁴ Crude oil values are based on domestic first purchase prices. See "Crude Oil Domestic First

Purchase Price" in Glossary.

⁵ In chained (2000) dollars, calculated by using gross domestic product implicit price deflators. See Table D1.

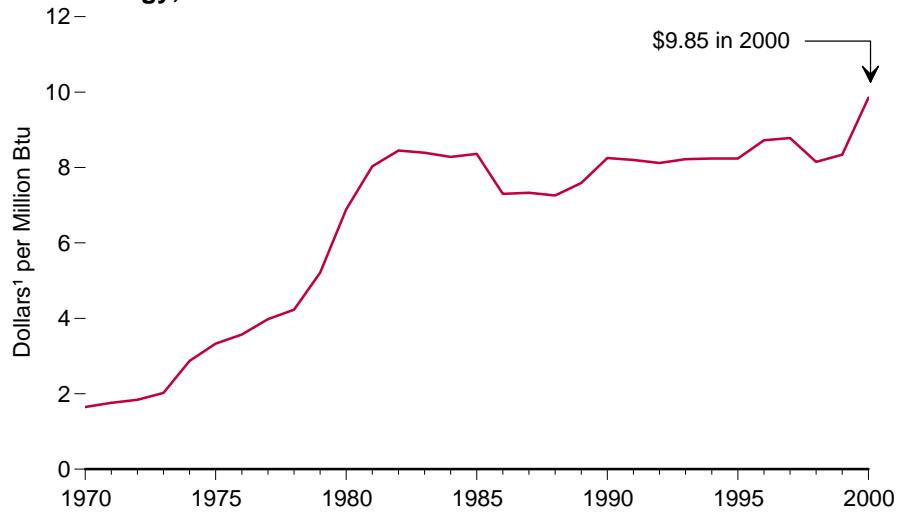
R=Revised. P=Preliminary.

Web Page: For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/finan.html>.

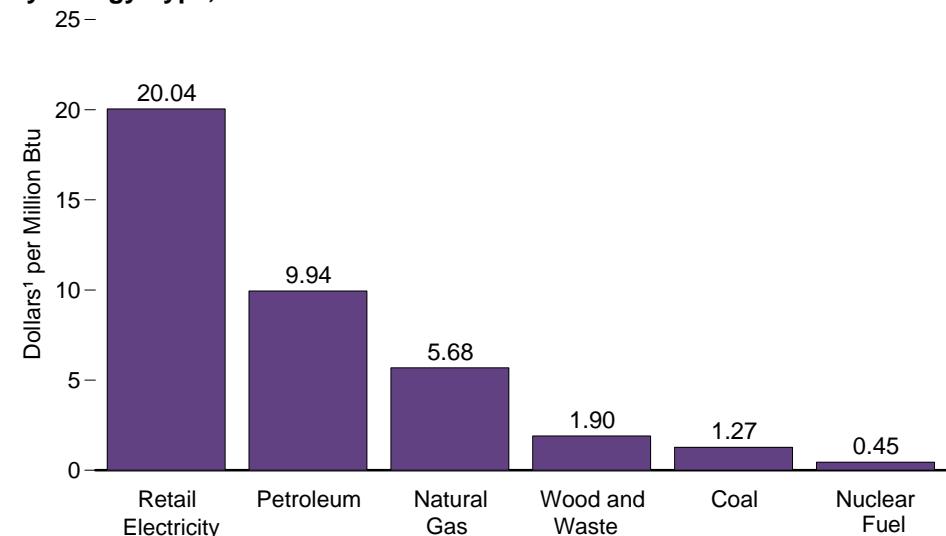
Sources: Tables 5.1, 5.18, 6.2, 6.7, 7.2, and 7.8.

Figure 3.3 Consumer Price Estimates for Energy

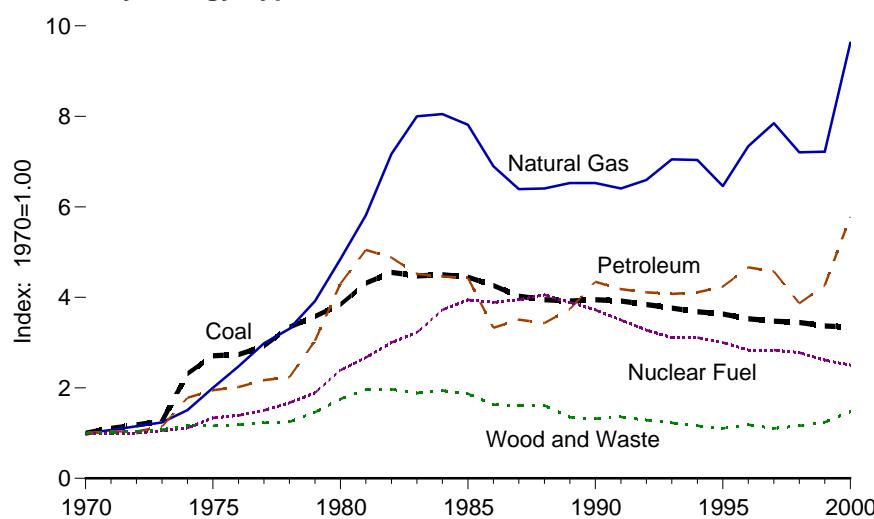
Total Energy, 1970-2000



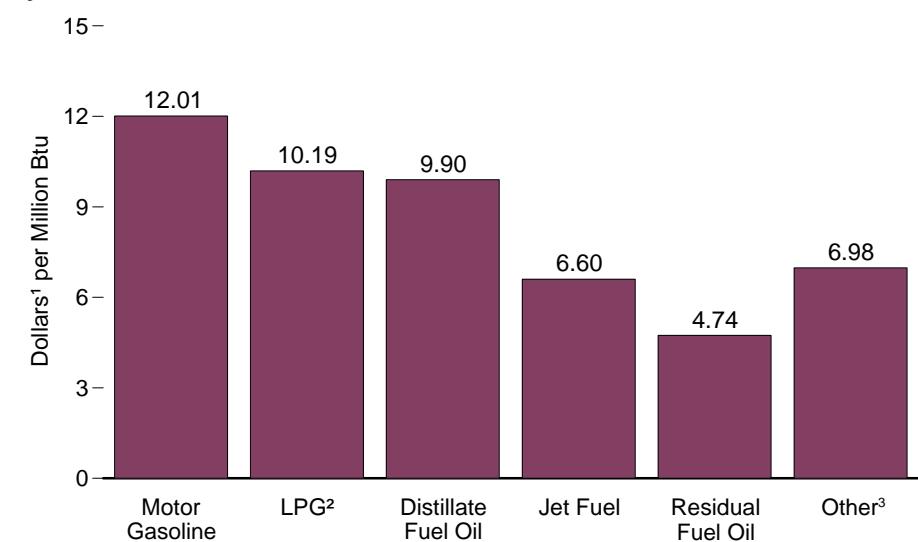
By Energy Type, 2000



Prices¹ by Energy Type, Indexed, 1970-2000



By Petroleum Product, 2000



¹ Nominal dollars.

² Liquefied petroleum gases.

³ Consumption-weighted average price for asphalt and road oil, aviation gasoline, kerosene, lubricants, petrochemical feedstocks, petroleum coke, special naphthas, waxes, and miscellaneous petroleum products.

Note: Because vertical scales differ, graphs should not be compared.

Source: Table 3.3.

Table 3.3 Consumer Price Estimates for Energy, 1970-2000

(Nominal Dollars per Million Btu)

Year	Primary Energy ¹											Electric Utility Fuel ^{5,6}	Retail Electricity ⁷	Total Energy ^{4,8}		
	Coal	Natural Gas	Petroleum							Nuclear Fuel	Wood and Waste	Total ^{4,5}				
			Distillate Fuel Oil	Jet Fuel	LPG ²	Motor Gasoline	Residual Fuel Oil	Other ³	Total							
1970	0.38	0.59	1.16	0.73	1.46	2.85	0.42	1.38	1.72	0.18	1.29	1.08	0.32	4.98	1.65	
1971	0.42	0.63	1.22	0.77	1.49	2.90	0.58	1.44	1.79	0.18	1.31	1.15	0.38	5.30	1.76	
1972	0.45	0.68	1.22	0.79	1.52	2.88	0.62	1.49	1.78	0.18	1.33	1.18	0.41	5.54	1.84	
1973	0.48	0.73	1.46	0.92	2.02	3.10	0.75	1.57	1.97	0.19	1.39	1.29	0.46	5.86	2.02	
1974	0.88	0.89	2.44	1.58	2.81	4.32	1.82	2.59	3.06	0.20	1.50	1.94	0.86	7.42	2.87	
1975	1.03	1.18	2.60	2.05	2.97	4.65	1.93	2.92	3.35	0.24	1.50	2.19	0.96	8.61	3.33	
1976	1.04	1.46	2.77	2.25	3.21	4.84	1.90	3.07	3.47	0.25	1.53	2.34	1.02	9.13	3.57	
1977	1.11	1.76	3.11	2.59	3.65	5.13	2.14	3.25	3.73	0.27	1.58	2.57	1.16	10.11	3.98	
1978	1.27	1.95	3.26	2.87	3.60	5.24	2.08	3.44	3.84	0.30	1.61	2.71	1.25	10.92	4.23	
1979	1.36	2.31	4.69	3.90	4.50	7.11	2.83	4.69	5.23	0.34	1.88	3.47	1.48	11.78	5.21	
1980	1.46	2.86	6.70	6.36	5.64	9.84	3.88	7.02	7.40	0.43	2.26	4.57	1.75	13.95	6.89	
1981	1.64	3.43	8.03	7.57	6.18	10.94	4.91	8.63	8.68	0.48	2.53	5.24	2.00	16.14	8.03	
1982	1.73	4.23	7.78	7.23	6.66	10.39	4.65	7.83	8.39	0.54	2.54	5.32	2.01	18.16	8.45	
1983	1.70	4.72	7.32	6.53	7.17	9.12	4.50	7.58	7.77	0.58	2.43	5.11	1.98	18.62	8.39	
1984	1.71	4.75	7.36	6.25	6.93	8.89	4.75	7.64	7.67	0.67	2.50	5.02	1.97	18.50	8.28	
1985	1.69	4.61	7.18	5.91	6.54	9.01	4.30	7.52	7.62	0.71	2.41	4.91	1.85	19.05	8.36	
1986	1.62	4.07	5.66	3.92	6.42	6.79	2.37	5.77	5.72	0.70	2.10	3.96	1.56	19.05	7.30	
1987	1.53	3.77	5.94	4.03	6.06	7.23	2.86	5.59	6.03	0.71	2.07	3.98	1.52	18.74	7.33	
1988	1.50	3.78	5.80	3.80	5.86	7.33	2.35	5.23	5.90	0.73	2.08	3.87	1.45	18.68	7.26	
1989	1.49	3.85	6.45	4.39	5.53	8.02	2.72	5.47	6.43	0.70	1.74	4.10	1.48	18.98	7.59	
1990	1.50	3.85	7.70	5.68	6.75	9.12	3.16	5.80	7.47	0.67	1.70	4.49	1.46	19.33	8.25	
1991	1.49	3.78	7.28	4.83	6.79	8.93	2.62	5.72	7.19	0.63	1.75	4.31	1.37	19.85	8.20	
1992	1.46	3.89	7.11	4.52	6.19	8.96	2.27	5.49	7.07	0.59	1.66	4.28	1.35	20.06	8.12	
1993	1.43	4.16	7.10	4.29	6.20	8.83	2.25	5.47	7.01	0.56	1.58	4.30	1.35	20.38	8.22	
1994	1.40	4.15	7.03	3.95	6.61	8.96	2.32	5.46	7.07	0.56	1.50	4.31	1.30	20.34	8.24	
1995	1.38	3.81	7.02	4.00	6.54	9.22	2.46	5.72	7.29	0.54	1.42	4.28	1.23	20.30	8.24	
1996	1.34	4.33	7.90	4.82	8.01	9.85	2.79	6.22	8.02	0.51	1.53	4.69	1.28	20.17	8.72	
1997	1.32	4.63	7.70	4.53	7.42	9.81	2.93	5.91	7.87	0.51	1.42	4.72	1.30	20.15	8.78	
1998	1.31	4.25	6.63	3.35	5.99	8.45	2.15	5.06	6.65	0.50	1.50	4.14	1.24	19.82	8.15	
1999	1.28	4.26	7.24	4.01	6.64	9.31	2.30	5.32	7.33	0.47	1.60	4.42	1.22	19.37	8.34	
2000	1.27	5.68	9.90	6.60	10.19	12.01	4.74	6.98	9.94	0.45	1.90	5.78	1.43	20.04	9.85	

¹ "Primary Energy" price estimates are for all sectors, including electric utilities.

² Liquefied petroleum gases.

³ Consumption-weighted average price for asphalt and road oil, aviation gasoline, kerosene, lubricants, petrochemical feedstocks, petroleum coke, special naphthas, waxes, and miscellaneous petroleum products.

⁴ Includes coal coke imports and exports, which are not separately displayed. In 2000, coal coke imports averaged 2.66 dollars per million Btu, and coal coke exports averaged 3.64 dollars per million Btu.

⁵ Includes net imports of electricity generated from nonrenewable energy sources, which are not separately displayed.

⁶ Price estimates for primary energy at electric utilities.

⁷ Retail electricity prices paid by ultimate customers, reported by electric utilities and other energy service providers.

⁸ "Total Energy" price estimates exclude primary energy at electric utilities, but include retail electricity.

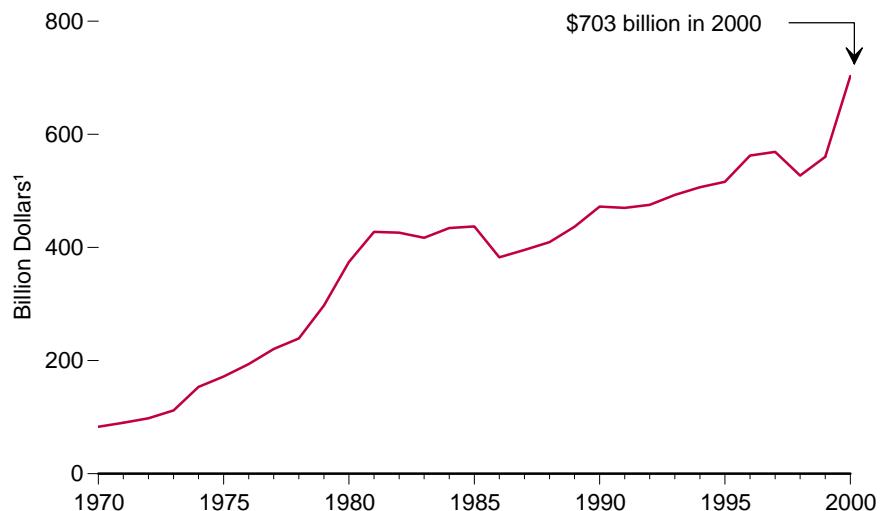
Notes: • Consumer prices are intended to represent prices paid by consumers. As such they include taxes where data were available. • There are no direct fuel costs for hydroelectric, geothermal, wind, or solar energy.

Web Page: http://www.eia.doe.gov/emeu/states/sep_prices/total/pdf/pr_us.pdf.

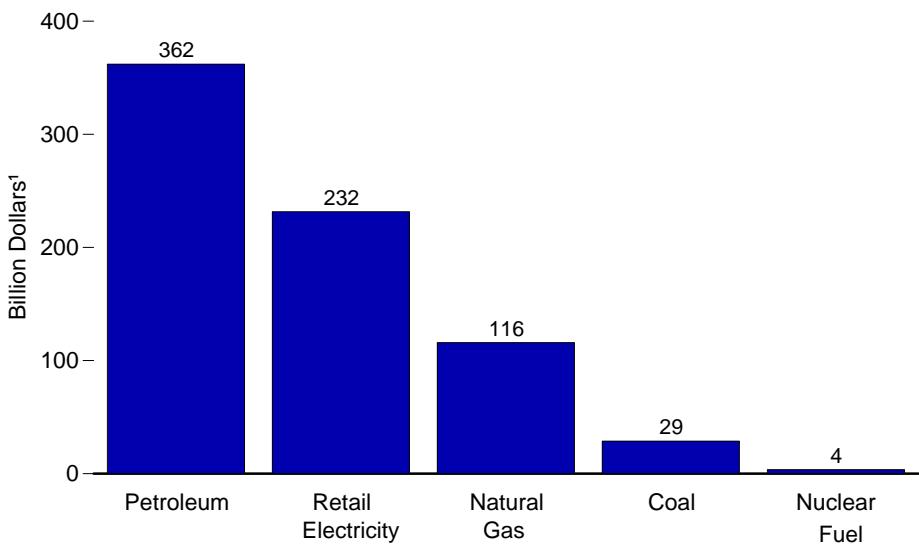
Source: Energy Information Administration, State Energy Data 2000 (March 2003), Table 1.

Figure 3.4 Consumer Expenditure Estimates for Energy

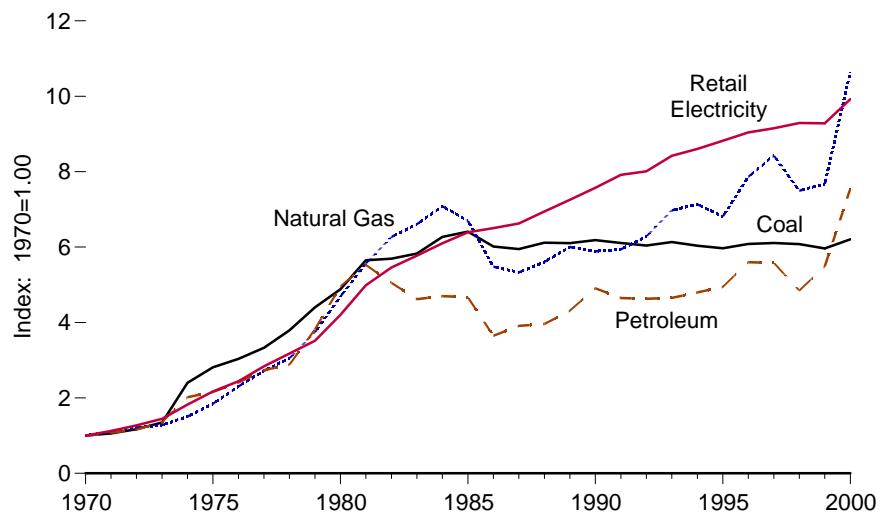
Total Energy, 1970-2000



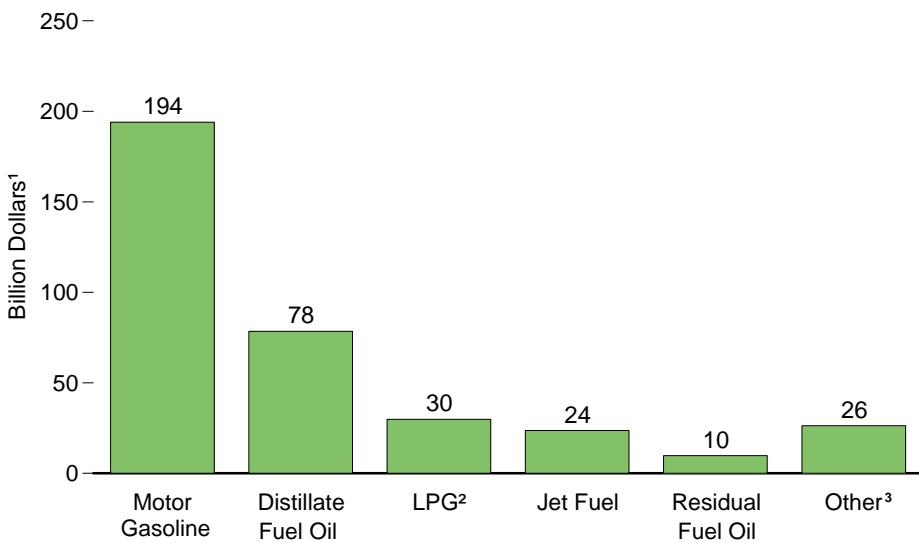
By Energy Type, 2000



Expenditures¹ by Energy Type, Indexed, 1970-2000



By Petroleum Product, 2000



¹Nominal dollars.

²Liquefied petroleum gases.

³Asphalt and road oil, aviation gasoline, kerosene, lubricants, petrochemical feedstocks, petroleum coke, special naphthas, waxes, and miscellaneous petroleum products.

Note: Because vertical scales differ, graphs should not be compared.

Source: Table 3.4.

Table 3.4 Consumer Expenditure Estimates for Energy, 1970-2000
 (Million Nominal Dollars)

Year	Primary Energy ¹													Electric Utility Fuel ^{5,6}	Retail Electricity ⁷	Total Energy ⁸			
	Coal	Coal Coke Net Imports ²	Natural Gas	Petroleum							Nuclear Fuel	Wood and Waste	Total ⁵						
				Distillate Fuel Oil	Jet Fuel	LPG ³	Motor Gasoline	Residual Fuel Oil	Other ⁴	Total									
1970	4,630	-75	10,891	6,253	1,441	2,446	31,596	2,046	4,159	47,942	44	438	63,870	-4,316	23,345	82,898			
1971	4,902	-40	12,065	6,890	1,582	2,531	33,478	2,933	4,429	51,844	73	446	69,290	-5,441	26,202	90,051			
1972	5,415	-26	13,198	7,552	1,682	2,889	35,346	3,458	4,756	55,682	104	476	74,848	-6,473	29,712	98,088			
1973	6,243	7	13,933	9,524	2,001	3,933	39,667	4,667	5,300	65,091	177	502	85,953	-7,817	33,774	111,910			
1974	11,118	150	16,380	15,217	3,208	5,273	54,194	10,547	8,264	96,704	259	544	125,155	-14,391	42,586	153,350			
1975	13,021	82	20,061	15,680	4,193	5,231	59,446	10,374	8,448	103,372	448	534	137,517	-16,396	50,680	171,802			
1976	14,051	44	25,097	18,402	4,567	5,993	64,977	11,648	9,880	115,468	520	622	155,802	-18,923	56,972	193,852			
1977	15,416	67	29,602	22,004	5,517	6,824	70,591	14,381	11,719	131,036	743	694	177,558	-23,392	66,225	220,391			
1978	17,551	362	33,185	23,587	6,205	6,621	74,513	13,747	13,294	137,967	915	782	190,762	-25,746	74,159	239,175			
1979	20,376	259	40,785	32,854	8,603	9,383	95,916	17,656	18,760	183,173	941	964	246,498	31,031	82,051	297,518			
1980	22,607	-78	51,061	40,797	13,923	10,926	124,408	21,573	26,001	237,628	1,189	1,252	313,659	-37,435	98,095	374,319			
1981	26,159	-31	60,544	48,200	15,607	11,900	138,138	22,668	28,445	264,957	1,436	1,452	354,517	-43,275	116,455	427,697			
1982	26,349	-52	68,292	44,087	14,974	12,925	130,305	17,632	22,355	242,279	1,684	1,475	340,027	-41,311	127,393	426,109			
1983	26,987	-44	72,000	41,846	13,979	14,083	115,803	14,099	21,536	221,345	1,859	1,504	323,652	-41,336	134,731	417,047			
1984	29,021	-22	77,169	44,580	15,097	14,143	114,429	14,410	22,576	225,234	2,384	1,552	335,336	-43,378	142,420	434,379			
1985	29,673	-34	72,938	43,759	14,747	13,545	118,048	11,493	22,004	223,597	2,878	1,493	330,545	-42,507	149,233	437,271			
1986	27,847	-40	59,702	34,995	10,505	12,694	91,529	7,486	17,579	174,788	3,061	1,319	266,677	-35,729	151,793	382,741			
1987	27,526	7	58,019	37,587	11,448	12,859	99,864	8,062	17,581	187,400	3,378	1,299	277,629	-36,584	154,685	395,730			
1988	28,329	116	61,089	38,593	11,318	12,775	103,323	7,259	16,674	189,941	4,057	1,358	284,890	-37,381	162,063	409,572			
1989	28,271	137	65,383	43,246	13,434	12,154	112,720	8,354	16,965	206,872	3,939	1,656	306,212	-38,793	169,332	436,752			
1990	28,637	22	64,102	49,430	17,784	13,680	126,558	8,707	19,169	235,328	4,104	1,678	333,764	-38,287	176,737	472,214			
1991	28,290	44	64,697	45,181	14,609	14,922	123,118	6,786	18,160	222,776	4,073	1,782	321,763	-36,482	184,814	470,095			
1992	27,972	126	68,400	45,110	13,559	14,161	125,249	5,575	18,267	221,923	3,802	1,792	324,105	-35,761	186,954	475,298			
1993	28,408	96	75,941	45,885	13,002	13,961	126,560	5,439	18,250	223,096	3,597	1,673	332,895	-36,658	196,579	492,816			
1994	27,946	214	77,716	47,240	12,474	16,253	130,068	5,288	18,654	229,976	3,777	1,893	341,728	-36,057	200,883	506,553			
1995	27,632	234	74,150	47,845	12,525	16,250	136,647	4,667	19,175	237,110	3,810	1,877	345,040	-34,765	205,932	516,207			
1996	28,168	156	85,634	56,675	15,770	21,159	148,344	5,297	21,202	268,447	3,624	2,059	388,224	-36,635	211,011	562,600			
1997	28,276	170	91,736	56,199	15,000	19,861	149,668	5,211	21,683	267,621	3,355	1,817	393,131	-37,765	213,645	569,011			
1998	28,139	188	81,628	48,763	11,239	15,343	132,730	4,288	20,004	232,367	3,568	1,813	347,627	-37,527	216,928	527,028			
1999	27,621	140	83,559	54,996	13,878	19,147	149,260	4,300	21,332	262,912	3,558	2,341	379,913	-36,490	216,737	560,161			
2000	28,728	146	115,910	78,488	23,636	29,851	193,999	9,740	26,312	362,026	3,542	2,441	512,910	-41,375	231,653	703,188			

¹ "Primary Energy" expenditure estimates are for all sectors, including electric utilities.

² Values derive from U.S. Department of Commerce, Bureau of the Census, "Monthly Report IM-145" and "Monthly Report EM-545," and may differ slightly from those shown on Table 3.7, which derive from Bureau of the Census, *U.S. International Trade in Goods and Services*. FT600 series.

³ Liquefied petroleum gases.

⁴ Asphalt and road oil, aviation gasoline, kerosene, lubricants, petrochemical feedstocks, petroleum coke, special naphthas, waxes, and miscellaneous petroleum products.

⁵ Includes net imports of electricity generated from nonrenewable energy sources, which are not separately displayed.

⁶ Expenditure estimates for primary energy at electric utilities. Values are negative so the columns will

sum to the "Total Energy" column.

⁷ Retail electricity expenditures by ultimate customers, reported by electric utilities and other energy service providers.

⁸ "Total Energy" expenditure estimates exclude primary energy at electric utilities, but include retail electricity.

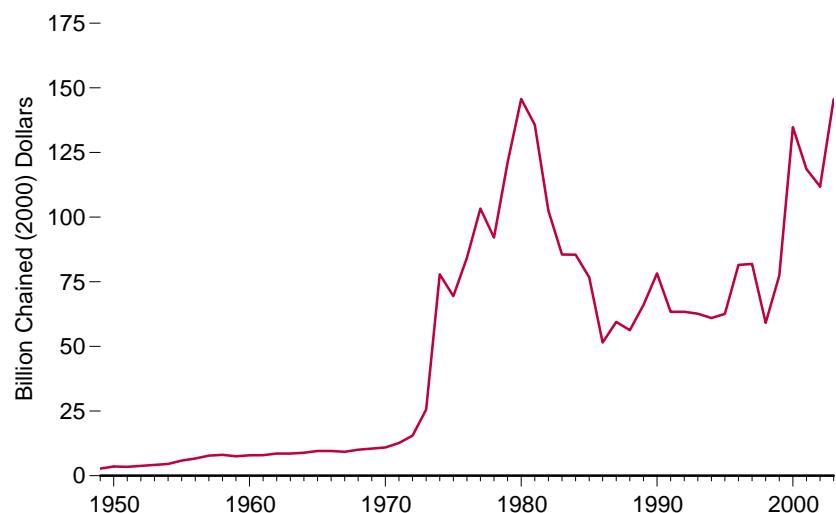
Notes: • There are no direct fuel costs for hydroelectric, geothermal, wind, or solar energy. • Totals may not equal the sum of components due to independent rounding.

Web Page: http://www.eia.doe.gov/emeu/states/sep_prices/total/pdf/pr_us.pdf.

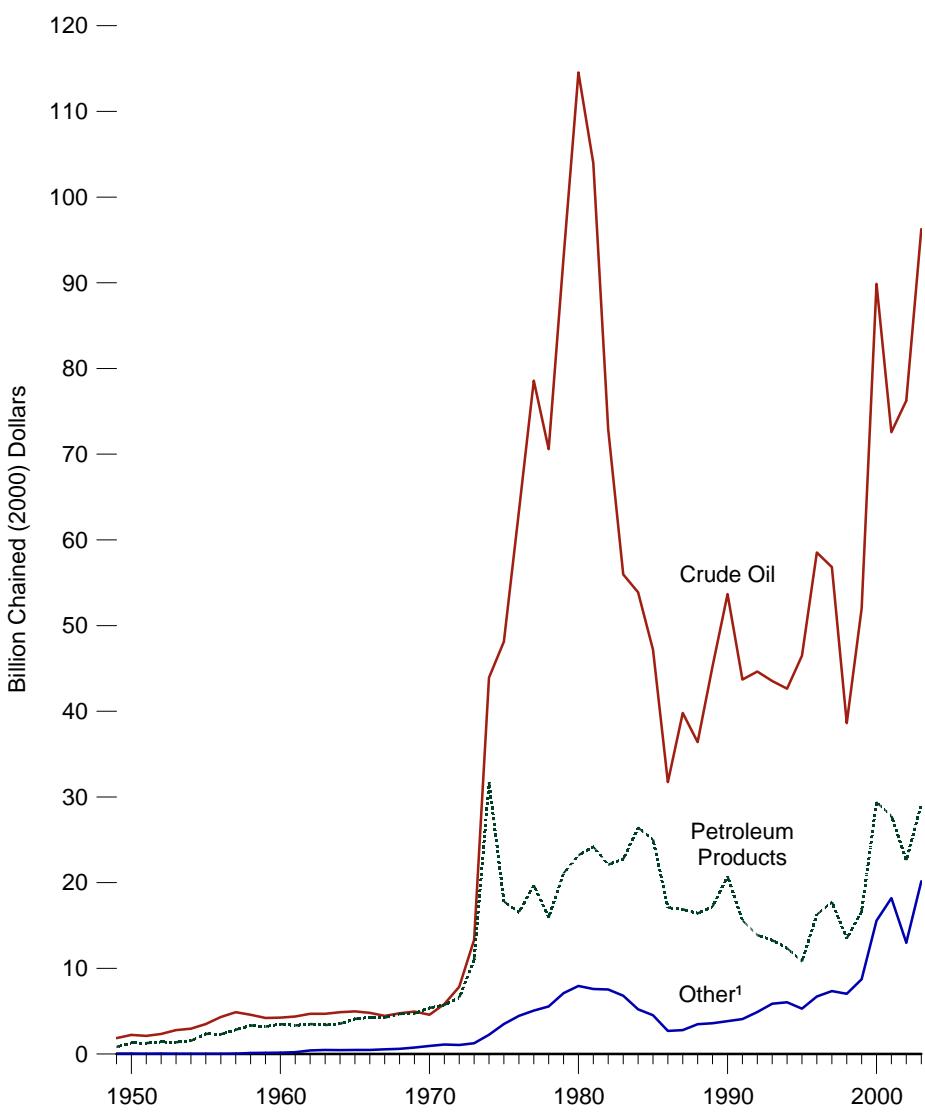
Source: Energy Information Administration, State Energy Data 2000 (March 2003), Table 1.

Figure 3.5 Value of Fossil Fuel Imports

Total, 1949-2003



By Fuel, 1949-2003



¹ Natural gas, coal, and coal coke.

Notes: • Prices are in chained (2000) dollars, calculated by using gross domestic product implicit price deflators. See Table D1. • Because vertical scales differ, graphs should not be compared.

Source: Table 3.5.

Table 3.5 Value of Fossil Fuel Imports, Selected Years, 1949-2003
 (Billion Dollars)

Year	Coal		Coal Coke		Natural Gas		Crude Oil ¹		Petroleum Products ²		Total	
	Nominal	Real ³	Nominal	Real ³	Nominal	Real ³	Nominal	Real ³	Nominal	Real ³	Nominal	Real ³
1949	(s)	0.01	(s)	0.02	0.00	0.00	0.30	R1.86	0.14	R0.84	0.45	R2.74
1950	(s)	0.02	0.01	0.03	0.00	0.00	0.37	R2.23	0.21	R1.30	0.59	R3.58
1955	(s)	0.01	(s)	0.01	(s)	0.01	0.65	R3.49	0.44	R2.36	1.10	R5.88
1960	(s)	0.01	(s)	0.01	0.03	0.13	0.90	R4.25	0.73	R3.48	1.66	R7.88
1965	(s)	0.01	(s)	0.01	0.11	R0.47	1.12	R4.97	0.92	R4.10	2.15	R9.55
1970	(s)	(s)	(s)	0.01	0.26	R0.94	1.26	R4.58	1.48	R5.38	3.00	R10.91
1971	(s)	0.01	0.01	0.02	0.31	R1.08	1.69	R5.84	1.66	R5.73	3.66	R12.67
1972	(s)	(s)	(s)	R0.02	0.31	R1.04	2.37	R7.85	1.99	R6.59	4.68	R15.51
1973	(s)	R0.01	0.04	0.12	0.36	R1.14	4.24	R13.31	3.50	R10.98	8.14	R25.56
1974	0.06	R0.17	0.19	R0.56	0.53	R1.53	15.25	R43.92	11.01	R31.71	27.05	R77.89
1975	0.02	R0.06	0.16	R0.41	1.15	R3.03	18.29	R48.13	6.77	R17.81	26.39	R69.44
1976	0.02	0.04	0.11	R0.28	1.66	R4.13	25.46	R63.33	6.65	R16.55	33.90	R84.33
1977	0.04	0.09	0.13	R0.31	2.00	R4.68	33.59	R78.57	8.42	R19.69	44.18	R103.34
1978	0.07	R0.16	0.41	R0.89	2.06	R4.50	32.30	R70.59	7.30	R15.96	42.15	R92.11
1979	0.05	0.10	0.34	R0.69	3.13	R6.31	46.06	R92.96	10.45	R21.09	60.03	R121.15
1980	0.03	R0.06	0.05	R0.10	4.21	R7.80	61.90	R114.54	12.54	R23.21	78.74	R145.69
1981	0.03	0.05	0.04	0.07	4.41	R7.46	61.46	R103.96	14.30	R24.18	80.24	R135.73
1982	0.02	R0.04	0.01	0.01	4.69	R7.48	45.72	R72.89	13.86	R22.10	64.31	R102.53
1983	0.04	R0.07	(s)	(s)	4.39	R6.73	36.49	R55.96	14.84	R22.76	55.77	R85.52
1984	0.05	R0.07	0.05	0.07	3.44	R5.08	36.44	R53.87	17.87	R26.41	57.84	R85.49
1985	0.07	0.10	0.04	0.06	3.05	R4.37	32.90	R47.20	17.47	R25.05	53.53	R76.79
1986	0.08	0.11	0.03	R0.04	1.82	R2.56	22.61	R31.73	12.18	R17.10	36.72	R51.53
1987	0.06	R0.08	0.05	R0.08	1.93	R2.64	29.13	R39.80	12.37	R16.89	43.54	R59.48
1988	0.06	0.08	0.19	R0.26	2.38	R3.14	27.55	R36.39	12.43	R16.43	42.62	R56.30
1989	0.10	0.12	0.22	R0.28	2.51	R3.19	35.53	R45.23	13.50	R17.18	51.85	R66.00
1990	0.09	0.11	0.07	R0.09	2.97	R3.64	43.78	R53.66	16.90	R20.72	63.83	R78.23
1991	0.11	0.13	0.09	R0.11	3.24	R3.83	36.90	R43.70	13.17	R15.60	53.51	R63.37
1992	0.13	R0.15	0.14	R0.17	3.96	R4.58	38.55	R44.63	11.98	R13.87	54.77	R63.40
1993	0.25	R0.29	0.17	R0.19	4.77	R5.40	38.47	R43.53	11.74	R13.28	55.40	R62.68
1994	0.27	R0.30	0.27	R0.30	4.90	R5.43	38.48	R42.63	11.14	R12.35	55.07	R61.01
1995	0.32	R0.35	0.33	R0.35	4.23	R4.59	42.81	R46.48	9.95	R10.80	57.64	R62.58
1996	0.27	R0.29	0.24	R0.26	5.79	R6.17	54.93	R58.53	15.27	R16.27	76.51	R81.52
1997	0.26	R0.27	0.25	R0.27	6.50	R6.81	54.23	R56.83	78.16	R81.91		
1998	0.28	R0.29	0.29	R0.30	6.21	R6.44	37.25	R38.61	13.01	R13.49	57.05	R59.13
1999	0.28	R0.29	0.23	R0.23	8.03	R8.21	50.89	R52.00	16.28	R16.64	75.71	R77.36
2000	0.38	R0.38	0.25	R0.25	14.94	R14.94	89.88	R89.88	29.38	R29.38	134.81	R134.81
2001	0.67	R0.66	R0.19	R0.19	17.77	R17.36	74.29	R72.57	28.45	R27.79	R121.38	R118.57
2002	0.60	R0.58	0.24	R0.23	12.67	R12.19	R79.25	R76.24	R23.52	R22.63	R116.29	R111.88
2003 ^p	0.79	0.75	0.24	0.23	20.27	19.18	101.72	96.26	30.80	29.14	153.81	145.56

¹ Beginning in 1977, includes imports into the Strategic Petroleum Reserve.

² Includes petroleum preparations, liquefied propane and butane, and, beginning in 1997, other mineral fuels.

³ In chained (2000) dollars, calculated by using gross domestic product implicit price deflators. See Table D1.

⁴ There is a discontinuity in this time series between 1996 and 1997 due to the addition of the commodity category "Other Mineral Fuels."

R=Revised. P=Preliminary. (s)=Less than 0.005 billion.

Notes: • Includes value of imports into Puerto Rico from foreign countries; excludes receipts into the 50 States and the District of Columbia from the Virgin Islands and Puerto Rico. • Totals may not equal sum of components due to independent rounding.

Web Page: For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/finan.html>.

Sources: **Coal** and **Coal Coke**: Bureau of the Census, Foreign Trade Division, unpublished data. **Natural Gas**: • 1949-1962—Bureau of the Census, *U.S. Imports of Merchandise for Consumption*,

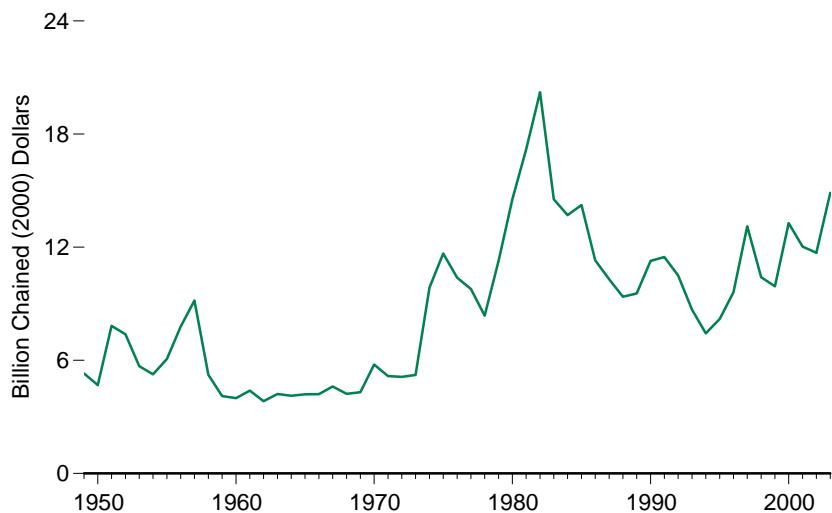
FT110. • 1963—Bureau of the Census, *U.S. Imports of Merchandise for Consumption*, FT125.

• 1964-1971—Bureau of the Census, *U.S. Imports for Consumption and General Imports*, FT246. • 1972 and 1973—Federal Power Commission, *Pipeline Imports and Exports of Natural Gas - Imports and Exports of LNG*. • 1974-1977—Federal Power Commission, *United States Imports and Exports of Natural Gas*, annual reports. • 1978-1981—Energy Information Administration (EIA), *U.S. Imports and Exports of Natural Gas*, annual reports. • 1982-1998—EIA, *Natural Gas Monthly*, monthly reports.

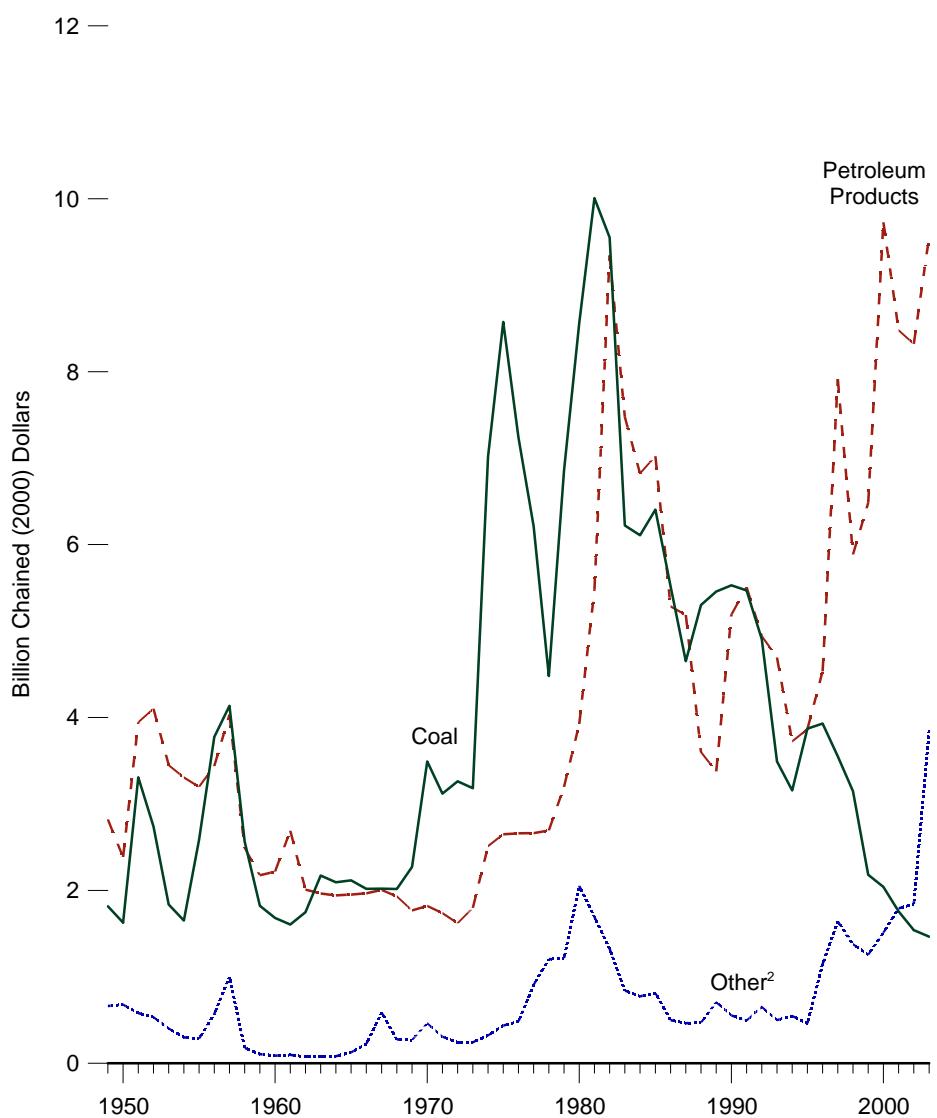
• 1999-2000—EIA, *Natural Gas Monthly*, (August 2001). • 2001 forward—Calculated from EIA, *Natural Gas Monthly*, March reports, Tables 5 and 6. **Crude Oil and Petroleum Products**: • 1949-1962—Bureau of the Census, *U.S. Imports of Merchandise for Consumption*, FT110. • 1963—Bureau of the Census, *U.S. Imports of Merchandise for Consumption*, FT125. • 1964-1988—Bureau of the Census, *U.S. Imports for Consumption*, FT135. • 1989 forward—Bureau of the Census, Foreign Trade Division, *U.S. Merchandise Trade*, FT900, "Exhibit 15. Exports and Imports of Goods by Principal SITC Commodity Groupings," December issues.

Figure 3.6 Value of Fossil Fuel Exports

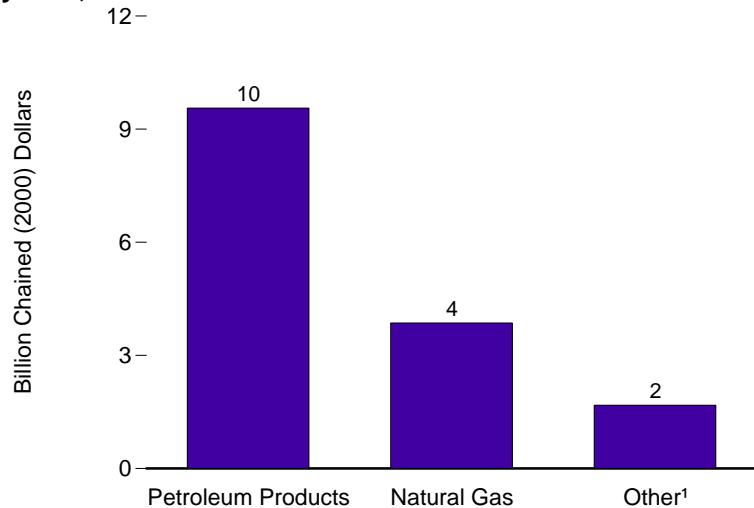
Total, 1949-2003



By Fuel, 1949-2003



By Fuel, 2003



¹ Coal, crude oil, and coal coke.

² Natural gas, crude oil, and coal coke.

Notes: • Prices are in chained (2000) dollars, calculated by using gross domestic product implicit price deflators. See Table D1. • Because vertical scales differ, graphs should not be compared.

Source: Table 3.6.

Table 3.6 Value of Fossil Fuel Exports, Selected Years, 1949-2003
 (Billion Dollars)

Year	Coal		Coal Coke		Natural Gas		Crude Oil		Petroleum Products ¹		Total	
	Nominal	Real ²	Nominal	Real ²	Nominal	Real ²	Nominal	Real ²	Nominal	Real ²	Nominal	Real ²
1949	0.30	R1.82	0.01	0.05	(s)	0.01	0.10	R0.60	0.46	R2.82	0.87	R5.30
1950	0.27	R1.63	0.01	0.04	(s)	0.02	0.10	R0.62	0.39	R2.39	0.78	R4.69
1955	0.48	R2.59	0.01	0.04	0.01	0.03	0.04	R0.21	0.60	R3.20	1.14	R6.07
1960	0.35	R1.68	0.01	0.03	(s)	0.02	0.01	0.04	0.47	R2.22	0.84	R3.99
1965	0.48	R2.12	0.02	0.07	0.01	0.03	(s)	0.02	0.44	R1.95	0.95	R4.19
1970	0.96	R3.49	0.08	R0.29	0.03	R0.11	0.02	R0.07	0.50	R1.82	1.59	R5.78
1971	0.90	R3.12	0.04	R0.16	0.04	0.13	0.01	0.02	0.50	R1.74	1.49	R5.16
1972	0.98	R3.26	0.03	0.10	0.04	R0.13	(s)	0.01	0.49	R1.62	1.55	R5.12
1973	1.01	R3.18	0.03	0.10	0.04	R0.13	(s)	0.01	0.57	R1.80	1.66	R5.22
1974	2.44	R7.02	0.04	R0.13	0.05	R0.16	0.01	0.04	0.87	R2.51	3.42	R9.85
1975	3.26	R8.58	0.07	R0.20	0.09	R0.24	(s)	(s)	1.01	R2.65	4.43	R11.66
1976	2.91	R7.24	0.07	R0.17	0.10	R0.25	0.03	R0.07	1.07	R2.66	4.17	R10.39
1977	2.66	R6.21	0.07	R0.17	0.11	R0.25	0.21	R0.49	1.14	R2.66	4.18	R9.78
1978	2.05	R4.48	0.05	R0.11	0.11	R0.24	0.39	R0.85	1.23	R2.69	3.83	R8.38
1979	3.40	R6.86	0.08	R0.16	0.13	R0.26	0.39	R0.80	1.58	R3.20	5.58	R11.27
1980	4.63	R8.56	0.13	R0.24	0.23	R0.42	0.75	R1.39	2.12	R3.92	7.86	R14.54
1981	5.92	R10.01	0.07	R0.13	0.35	R0.59	0.58	R0.98	3.24	R5.48	10.16	R17.18
1982	5.99	R9.55	0.06	R0.10	0.30	R0.48	0.47	R0.75	5.86	R9.34	12.68	R20.22
1983	4.06	R6.22	0.05	0.07	0.28	R0.43	0.22	R0.34	4.88	R7.48	9.48	R14.54
1984	4.13	R6.11	0.07	0.10	0.27	R0.40	0.19	R0.27	4.62	R6.82	9.27	R13.71
1985	4.47	R6.41	0.08	R0.11	0.26	R0.38	0.23	R0.32	4.90	R7.02	9.93	R14.24
1986	3.93	R5.52	0.07	0.09	0.17	R0.24	0.12	0.16	3.77	R5.29	8.05	R11.30
1987	3.40	R4.65	0.05	R0.07	0.17	R0.23	0.13	R0.17	3.80	R5.19	7.54	R10.30
1988	4.01	R5.30	0.08	0.10	0.20	R0.27	0.08	0.10	2.72	R3.60	7.09	R9.37
1989	4.29	R5.46	0.08	0.10	0.27	R0.34	0.21	R0.26	2.65	R3.38	7.49	R9.54
1990	4.51	R5.53	0.05	0.06	0.27	R0.32	0.14	R0.17	4.23	R5.19	9.20	R11.27
1991	4.62	R5.47	0.05	0.06	0.33	R0.40	0.03	0.04	4.65	R5.51	9.69	R11.48
1992	4.24	R4.91	0.04	0.05	0.49	R0.56	0.03	0.04	4.27	R4.94	9.07	R10.50
1993	3.09	R3.49	0.06	R0.07	0.36	R0.41	0.02	0.02	4.15	R4.69	7.68	R8.69
1994	2.85	R3.16	0.04	0.04	0.40	R0.45	0.05	0.05	3.36	R3.72	6.71	R7.43
1995	3.57	R3.87	0.05	0.05	0.37	R0.40	0.01	0.01	3.56	R3.87	7.55	R8.20
1996	3.69	R3.93	0.06	R0.07	0.46	R0.49	0.56	R0.60	4.25	R4.53	9.02	R9.61
1997	3.39	R3.55	0.05	R0.06	0.47	R0.50	1.04	R1.09	R3.791	12.51	R13.11	
1998	3.04	R3.15	0.04	R0.05	0.39	R0.40	0.90	R0.93	5.68	R5.89	10.04	R10.41
1999	2.13	R2.18	0.03	0.03	0.43	R0.44	0.77	R0.79	6.35	R6.48	9.71	R9.92
2000	2.04	R2.04	0.05	0.05	1.00	R4.00	0.46	R0.46	9.73	R9.73	13.28	R13.28
2001	1.80	R1.76	R0.11	R0.11	1.54	R1.50	0.19	R0.18	8.68	R8.48	R12.31	R12.03
2002	1.60	R1.54	R0.06	R0.06	1.76	R4.69	0.09	R0.09	R8.65	R8.32	R12.17	R11.71
2003 ^p	1.55	1.46	0.07	0.07	3.85	3.65	0.16	0.15	10.10	9.56	15.73	14.88

¹ Includes petroleum preparations, liquefied propane and butane, and, beginning in 1997, other mineral fuels.

² In chained (2000) dollars, calculated by using gross domestic product implicit price deflators. See Table D1.

³ There is a discontinuity in this time series between 1996 and 1997 due to the addition of the commodity category "Other Mineral Fuels."

R=Revised. P=Preliminary. (s)=Less than 0.005 billion.

Notes: • Includes value of exports from Puerto Rico to foreign countries; excludes shipments from the 50 States and the District of Columbia to the Virgin Islands and Puerto Rico. • Totals may not equal sum of components due to independent rounding.

Web Page: For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/finan.html>.

Sources: **Coal and Coal Coke:** Bureau of the Census, Foreign Trade Division, unpublished data.

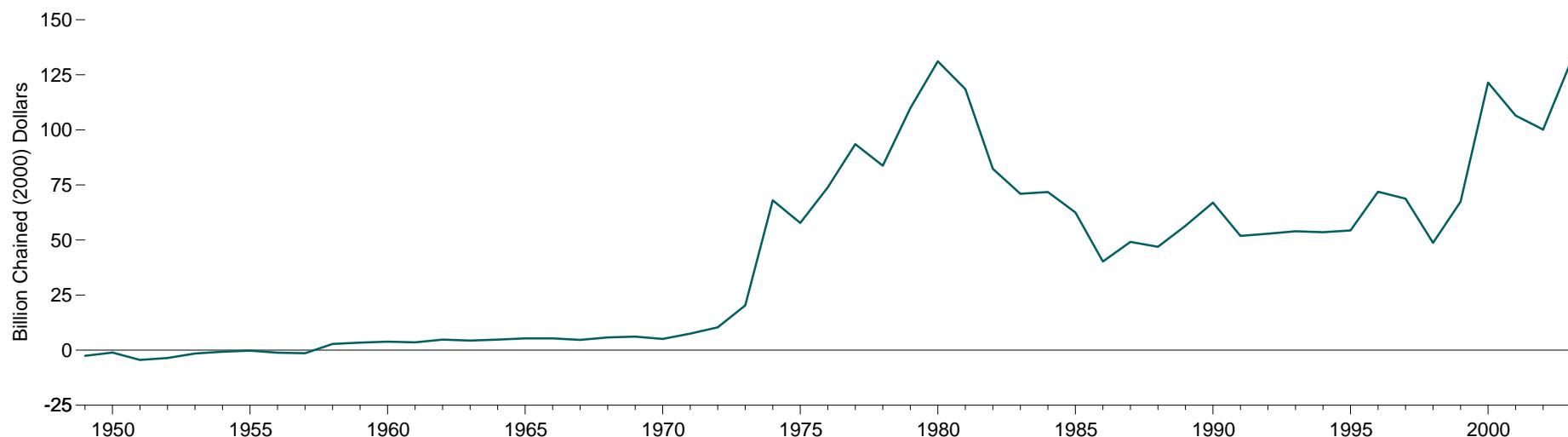
Natural Gas: • 1949-1971—Bureau of the Census, *U.S. Exports*, FT410. • 1972 and 1973—Federal Power Commission, *Pipeline Imports and Exports of Natural Gas - Imports and Exports of LNG*.

• 1974-1977—Federal Power Commission, *United States Imports and Exports of Natural Gas*, annual reports. • 1978-1981—Energy Information Administration (EIA), *U.S. Imports and Exports of Natural Gas*, annual reports. • 1982-1998—EIA, *Natural Gas Monthly*, monthly reports. • 1999-2002—EIA, *Natural Gas Monthly* (August 2003). • 2003—Calculated from EIA, *Natural Gas Monthly*, (March 2004), Tables 5 and 6. **Crude Oil and Petroleum Products:** • 1949-1988—Bureau of the Census, *U.S. Exports*, FT410.

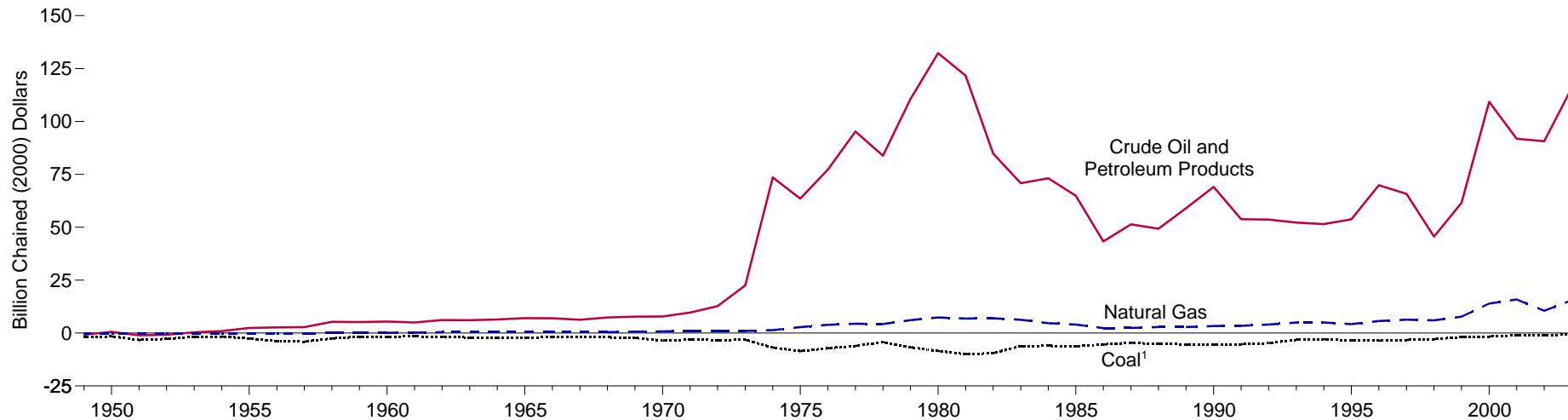
• 1989 forward—Bureau of the Census, Foreign Trade Division, *U.S. Merchandise Trade*, FT900, "Exhibit 15. Exports and Imports of Goods by Principal SITC Commodity Groupings," December issues.

Figure 3.7 Value of Fossil Fuel Net Imports, 1949-2003

Value of Fossil Fuel Net Imports



Value of Fossil Fuel Net Imports by Fuel



¹Includes small amounts of coal coke.

Source: Table 3.7.

Notes: • Negative net imports are net exports. • Prices are in chained (2000) dollars, calculated by using gross domestic product implicit price deflators. See Table D1.

Table 3.7 Value of Fossil Fuel Net Imports, Selected Years, 1949-2003
 (Billion Dollars)

Year	Coal		Coal Coke		Natural Gas		Crude Oil		Petroleum Products ¹		Total	
	Nominal	Real ²	Nominal	Real ²	Nominal	Real ²	Nominal	Real ²	Nominal	Real ²	Nominal	Real ²
1949	-0.29	R-1.80	(s)	-0.03	(s)	-0.01	0.21	R1.26	-0.32	R-1.98	-0.42	R-2.56
1950	-0.27	R-1.61	(s)	R-0.01	(s)	-0.02	0.27	R1.61	-0.18	R-1.09	-0.18	R-1.11
1955	-0.48	R-2.57	-0.01	R-0.04	-0.01	-0.03	0.62	R3.29	-0.16	R-0.84	-0.04	R-0.19
1960	-0.35	R-1.67	-0.01	R-0.03	0.02	R0.12	0.89	R4.22	0.26	R1.26	0.82	R3.89
1965	-0.48	R-2.11	-0.01	R-0.07	0.10	R0.44	1.11	R4.95	0.48	R2.15	1.21	R5.36
1970	-0.96	R-3.49	-0.08	R-0.27	0.23	R0.83	1.24	R4.51	0.98	R3.56	1.41	R5.14
1971	-0.90	R-3.11	-0.04	R-0.14	0.27	R0.95	1.68	R5.82	1.15	R3.99	2.17	R7.50
1972	-0.98	R-3.26	-0.03	R-0.09	0.28	R0.91	2.37	R7.85	1.50	R4.97	3.13	R10.39
1973	-1.01	R-3.18	0.01	0.02	0.32	R4.01	4.24	R13.31	2.93	R9.19	6.48	R20.34
1974	-2.38	R-6.85	0.15	R0.43	0.48	R4.37	15.24	R43.89	10.14	R29.20	23.63	R68.04
1975	-3.24	R-8.52	0.08	R0.22	1.06	R2.79	18.29	R48.13	5.76	R15.16	21.96	R57.78
1976	-2.89	R-7.20	0.04	R0.11	1.56	R3.88	25.43	R63.26	5.58	R13.89	29.72	R73.94
1977	-2.62	R-6.12	0.06	R0.14	1.89	R4.43	33.38	R78.08	7.28	R17.03	40.00	R93.56
1978	-1.98	R-4.32	0.36	R0.79	1.95	R4.26	31.91	R69.73	6.07	R13.27	38.31	R83.73
1979	-3.35	R-6.75	0.26	R0.52	3.00	R6.05	45.66	R92.16	8.87	R17.89	54.44	R109.88
1980	-4.60	R-8.51	-0.08	-0.14	3.98	R7.37	61.15	R113.15	10.42	R19.28	70.88	R131.15
1981	-5.89	R-9.96	-0.03	-0.05	4.06	R6.87	60.88	R102.98	11.06	R18.71	70.09	R118.55
1982	-5.97	R-9.52	-0.05	-0.08	4.39	R7.00	45.25	R72.15	8.00	R12.76	51.63	R82.31
1983	-4.01	R-6.16	-0.04	R-0.07	4.11	R6.30	36.27	R55.62	9.96	R15.28	46.28	R70.98
1984	-4.09	R-6.04	-0.02	-0.03	3.17	R4.68	36.26	R53.59	13.25	R19.58	48.57	R71.79
1985	-4.39	R-6.30	-0.03	-0.05	2.79	R4.00	32.68	R46.87	12.57	R18.03	43.60	R62.55
1986	-3.85	R-5.40	-0.04	R-0.06	1.65	R2.32	22.49	R31.57	8.42	R11.81	28.67	R40.23
1987	-3.35	R-4.58	0.01	0.01	1.76	R2.41	29.00	R39.63	8.57	R11.71	36.00	R49.18
1988	-3.95	R-5.22	0.12	0.15	2.18	R2.88	27.47	R36.29	9.71	R12.83	35.53	R46.93
1989	-4.19	R-5.33	0.14	R0.17	2.24	R2.85	35.32	R44.97	10.85	R13.81	44.35	R56.46
1990	-4.42	R-5.41	0.02	0.03	2.71	R3.32	43.65	R53.50	12.67	R15.53	54.63	R66.96
1991	-4.51	R-5.34	0.04	0.05	2.90	R3.43	36.87	R43.66	8.52	R10.09	43.82	R51.90
1992	-4.11	R-4.76	0.10	0.11	3.47	R4.02	38.52	R44.59	7.72	R8.93	45.70	R52.90
1993	-2.83	R-3.21	0.11	R0.12	4.41	R4.99	38.45	R43.50	7.59	R8.59	47.72	R54.00
1994	-2.58	R-2.86	0.23	R0.26	4.50	R4.98	38.43	R42.58	7.78	R8.62	48.37	R53.58
1995	-3.24	R-3.52	0.27	R0.30	3.86	R4.19	42.81	R46.48	6.39	R6.94	50.09	R54.38
1996	-3.41	R-3.64	0.18	R0.19	5.33	R5.68	54.37	R57.93	11.01	R11.74	67.49	R71.91
1997	-3.13	R-3.28	0.20	R0.21	6.02	R6.31	53.19	R55.74	39.37	R39.82	65.65	R68.80
1998	-2.75	R-2.86	0.25	R0.26	5.82	R6.03	36.36	R37.69	7.33	R7.60	47.00	R48.72
1999	-1.85	R-1.90	0.20	R0.20	7.61	R7.77	50.12	R51.21	9.94	R10.15	66.00	R67.44
2000	-1.66	R-1.66	0.20	R0.20	13.94	R13.94	89.41	R89.41	19.65	R19.65	121.53	R121.53
2001	-1.13	R-1.10	R0.08	0.08	16.23	R15.85	74.11	R72.39	19.77	R19.31	109.07	R106.54
2002	-1.00	R-0.96	R0.18	0.17	10.91	R10.50	R79.16	R76.16	R14.87	R14.31	R104.12	R100.17
2003 ^p	-0.76	-0.72	0.17	0.16	16.41	15.53	101.57	96.11	20.70	19.59	138.09	130.67

¹ Includes petroleum preparations, liquefied propane and butane, and, beginning in 1997, other mineral fuels.

² In chained (2000) dollars, calculated by using gross domestic product implicit price deflators. See Table D1.

³ There is a discontinuity in this time series between 1996 and 1997 due to the addition of the commodity category "Other Mineral Fuels."

R=Revised. P=Preliminary. (s)=Less than 0.005 billion.

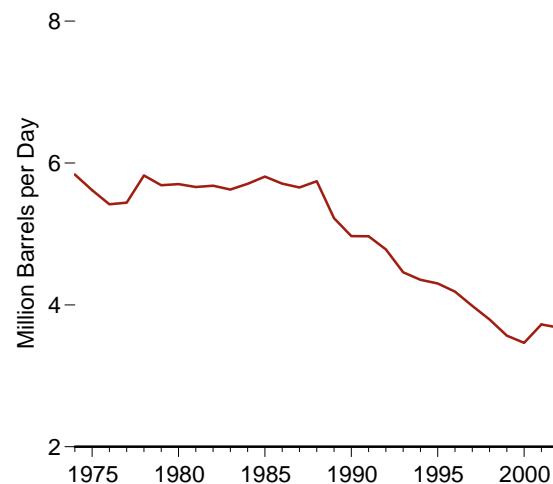
Notes: • Net imports equal imports minus exports. Minus sign indicates that the value of exports is greater than the value of imports. • Totals may not equal sum of components due to independent rounding. • Data on this table may not equal data on Table 3.5 minus data on Table 3.6 due to independent rounding.

Web Page: For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/finan.html>.

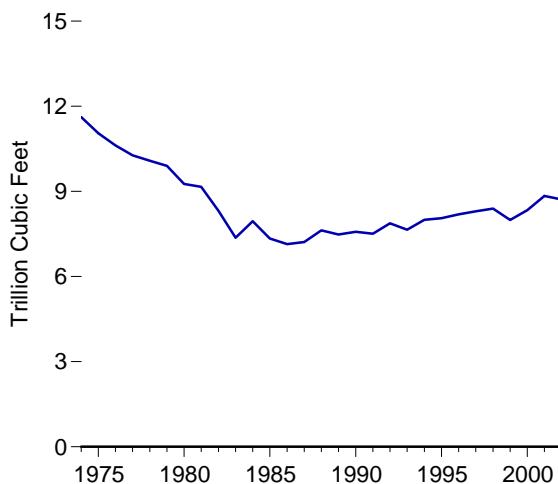
Sources: Tables 3.5 and 3.6.

Figure 3.8 Major U.S. Energy Companies' Domestic Production and Refining, 1974-2002

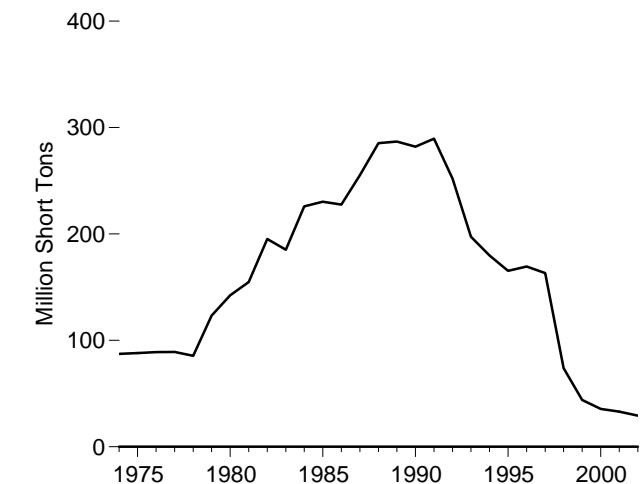
**Crude Oil and Natural Gas Liquids Production
by Major Energy Companies**



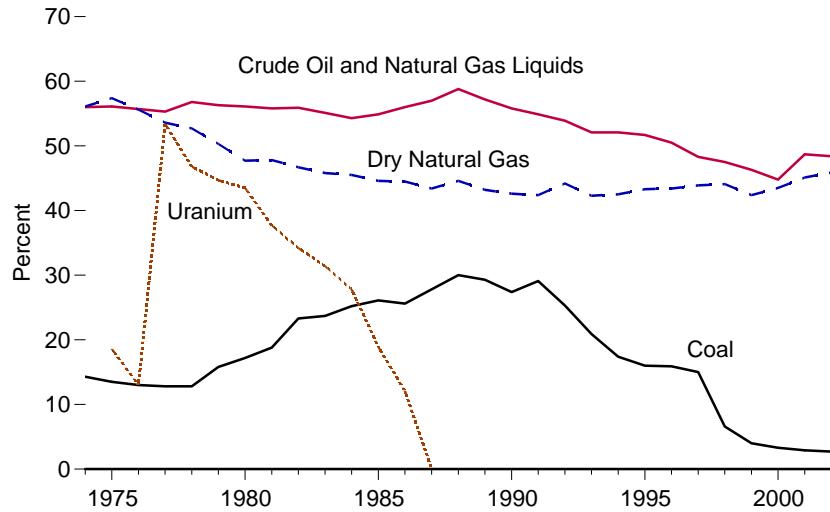
**Dry Natural Gas Production
by Major Energy Companies**



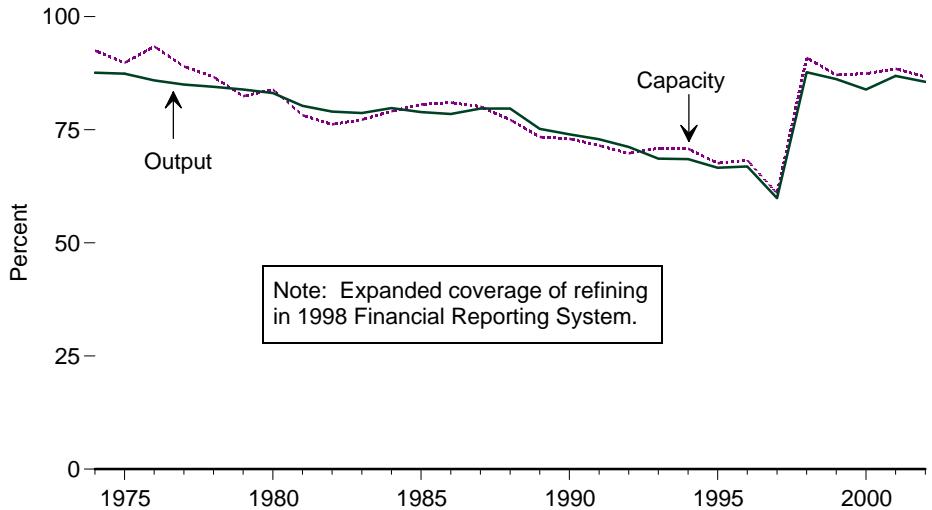
**Coal Production
by Major Energy Companies**



Major Energy Companies' Shares of U.S. Total Production



Major Energy Companies' Shares of U.S. Refining Capacity and Output



Notes: • "Major U.S. Energy Companies" are the top publicly-owned, U.S.-based crude oil and natural gas producers and petroleum refiners that form the Financial Reporting System (FRS). See Table 3.12. • Because vertical scales differ, graphs should not be compared.

Source: Table 3.8.

Table 3.8 Major U.S. Energy Companies' Domestic Production and Refining, 1974-2002

Year	Production								Refining			
	Crude Oil and Natural Gas Liquids ¹		Dry Natural Gas ¹		Coal ²		Uranium		Capacity ³		Output	
	Million Barrels per Day	Percent of U.S. Total	Trillion Cubic Feet	Percent of U.S. Total	Million Short Tons	Percent of U.S. Total	Million Pounds ⁴	Percent of U.S. Total ⁵	Million Barrels per Day	Percent of U.S. Total ⁶	Million Barrels per Day	Percent of U.S. Total ⁶
1974	5.9	56.0	11.6	56.1	87.4	14.3	NA	NA	13.3	92.5	11.8	87.6
1975	5.6	56.1	11.0	57.4	88.1	13.5	4.3	18.6	13.4	89.8	12.0	87.4
1976	5.4	55.7	10.6	55.6	89.0	13.0	3.3	13.0	14.2	93.4	12.6	85.9
1977	5.5	55.3	10.3	53.6	89.1	12.8	16.0	53.4	14.6	89.0	13.5	85.0
1978	5.8	56.8	10.1	52.7	85.5	12.8	17.3	46.8	14.8	86.7	13.5	84.5
1979	5.7	56.3	9.9	50.3	123.3	15.8	16.7	44.7	14.4	82.4	13.2	83.9
1980	5.7	56.1	9.3	47.7	142.3	17.2	19.0	43.5	15.1	83.9	12.2	83.1
1981	5.7	55.8	9.2	47.8	154.8	18.8	14.5	37.7	14.6	78.2	11.2	80.3
1982	5.7	55.9	8.3	46.7	195.2	23.3	9.2	34.2	13.6	76.2	10.6	79.0
1983	5.6	55.1	7.4	45.8	185.2	23.7	6.6	31.4	13.0	77.2	10.3	78.7
1984	5.7	54.3	7.9	45.5	226.0	25.2	4.1	27.8	12.8	79.1	10.9	79.8
1985	5.8	54.9	7.3	44.6	230.4	26.1	2.1	18.9	12.6	80.6	10.8	78.9
1986	5.7	56.0	7.1	44.5	227.6	25.6	1.6	12.1	12.5	81.0	11.4	78.5
1987	5.7	57.0	7.2	43.4	255.3	27.8	0.0	0.0	12.5	80.1	11.7	79.7
1988	5.7	58.8	7.6	44.6	285.3	30.0	0.0	0.0	12.3	77.2	12.0	79.7
1989	5.2	57.2	7.5	43.2	286.9	29.3	0.0	0.0	11.5	73.4	11.4	75.2
1990	5.0	55.8	7.6	42.6	282.0	27.4	0.0	0.0	11.4	73.0	11.3	74.0
1991	5.0	54.9	7.5	42.4	289.6	29.1	0.0	0.0	11.2	71.5	11.1	72.9
1992	4.8	53.9	7.9	44.2	251.9	25.3	0.0	0.0	11.0	69.8	11.0	71.2
1993	4.5	52.1	7.7	42.3	197.3	20.9	0.0	0.0	10.7	70.9	10.8	68.6
1994	4.4	52.1	8.0	42.5	179.7	17.4	0.0	0.0	10.6	70.8	10.8	68.5
1995	4.3	51.7	8.1	43.3	165.4	16.0	0.0	0.0	10.4	67.6	10.7	66.6
1996	4.2	50.5	8.2	43.4	169.4	15.9	0.0	0.0	10.5	68.3	11.0	66.9
1997	4.0	48.3	8.3	43.9	163.3	15.0	0.0	0.0	9.4	60.9	10.0	59.9
1998	3.8	47.5	8.4	44.1	73.9	6.6	0.0	0.0	⁷ 14.3	⁷ 90.9	⁷ 14.9	⁷ 87.7
1999	3.6	46.3	8.0	42.4	44.0	4.0	0.0	0.0	14.2	87.1	14.6	86.2
2000	3.5	44.8	8.3	^R 43.5	35.5	3.3	0.0	0.0	14.4	^R 87.4	14.5	83.9
2001	3.7	48.7	8.8	^R 45.1	33.0	2.9	0.0	0.0	^R 14.7	^R 88.5	15.0	86.9
2002	3.7	48.4	8.7	45.9	29.3	2.7	0.0	0.0	14.6	86.7	14.8	85.5

¹ Production is on a net ownership basis. "Net ownership" is all reserve quantities owned, regardless of type of ownership (e.g., working interest or royalty).

² Bituminous coal, subbituminous coal, and lignite.

³ Operable capacity as of January 1 of the following year.

⁴ Production of uranium oxide (U_3O_8). See "Uranium Oxide" in Glossary.

⁵ Percent of U.S. total uranium concentrate production. See "Uranium Concentrate" in Glossary.

⁶ The Financial Reporting System (FRS) data include Puerto Rico and the Virgin Islands; U.S. Totals do not include Puerto Rico and the Virgin Islands.

⁷ There is a discontinuity in this time series between 1997 and 1998 due to the expanded coverage of

the FRS.

R=Revised. NA=Not available.

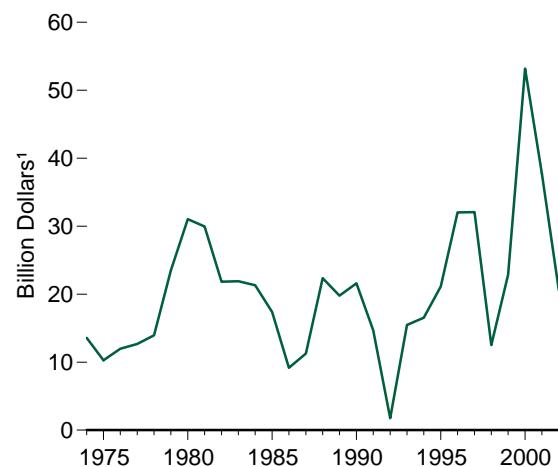
Note: "Major U.S. Energy Companies" are the top publicly-owned, U.S.-based crude oil and natural gas producers and petroleum refiners that form the FRS. See Table 3.12.

Web Page: For related information, see <http://www.eia.doe.gov/emeu/finance>.

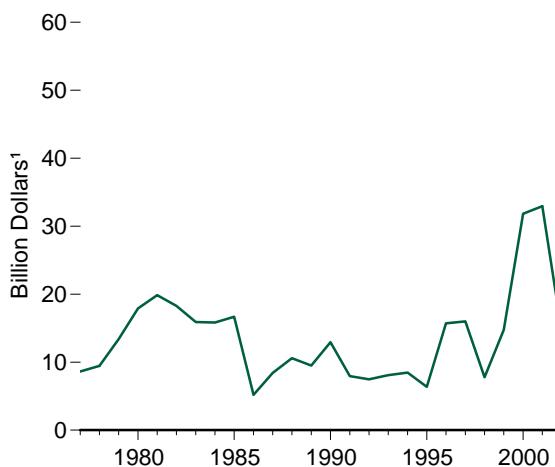
Sources: **Production and Refining:** • 1974-1976—Energy Information Administration (EIA), Form EIA-28, "Financial Reporting System" database, November 1998. • 1977 forward—EIA, *Performance Profiles of Major Energy Producers*, annual reports. **Percent of U.S. Total:** Tables 5.1, 5.8, 5.9, 6.1, 7.1, and 9.3.

Figure 3.9 Major U.S. Energy Companies' Net Income

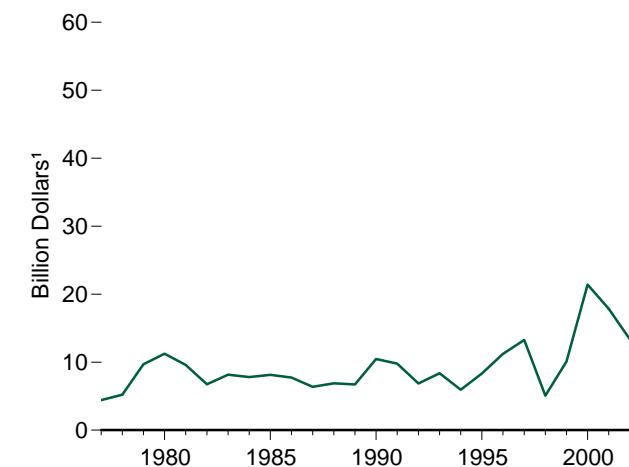
Total, 1974-2002



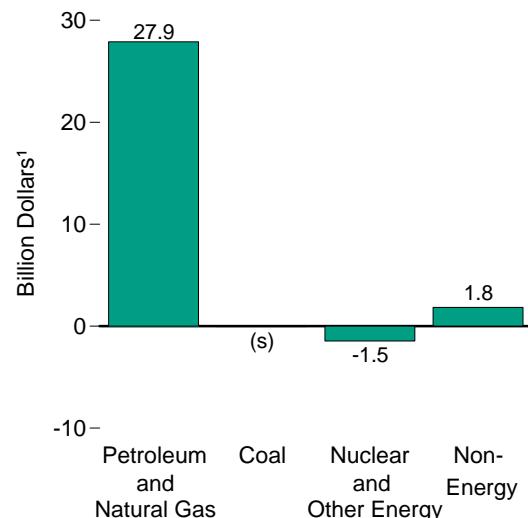
U.S. Petroleum and Natural Gas, 1977-2002



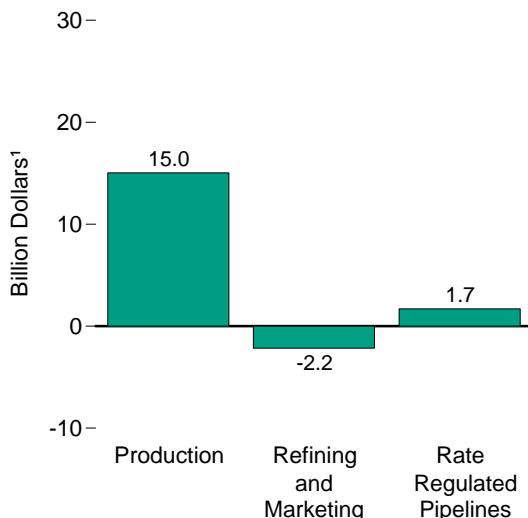
Foreign Petroleum and Natural Gas, 1977-2002



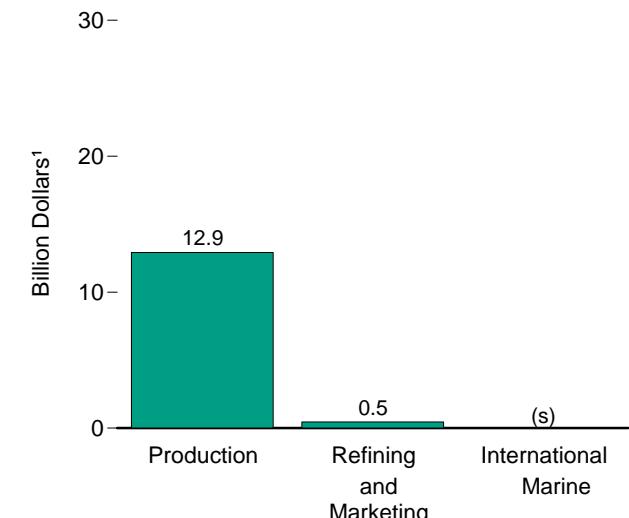
Total by Type of Business, 2002



U.S. Petroleum and Natural Gas by Activity, 2002



Foreign Petroleum and Natural Gas by Activity, 2002



¹ Nominal dollars.

Notes: • "Major U.S. Energy Companies" are the top publicly-owned, U.S.-based crude oil and natural gas producers and petroleum refiners that form the Financial Reporting System (FRS). See Table 3.12. • Because vertical scales differ, graphs should not be compared.

Source: Table 3.9.

Table 3.9 Major U.S. Energy Companies' Net Income, 1974-2002
(Billion Dollars¹)

Year	U.S. Petroleum and Natural Gas				Foreign Petroleum and Natural Gas				Type of Business				
	Production	Refining and Marketing	Rate Regulated Pipelines	Total ²	Production	Refining and Marketing	International Marine	Total ²	Petroleum and Natural Gas	Coal	Nuclear and Other Energy	Non-energy	Total ²
1974	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	13.6
1975	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10.3
1976	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	12.0
1977	6.4	1.5	0.8	8.6	3.6	0.7	0.1	4.4	13.0	0.2	(s)	1.7	12.7
1978	6.7	1.6	1.2	9.5	3.5	1.8	-0.1	5.2	14.7	0.1	-0.1	1.8	13.9
1979	9.4	2.3	1.7	13.4	5.2	4.3	0.1	9.7	23.0	0.3	-0.1	2.8	23.5
1980	13.8	2.5	1.7	17.9	6.9	4.3	0.1	11.2	29.1	0.3	(s)	2.3	31.0
1981	16.8	1.3	1.8	19.9	8.0	1.6	-0.1	9.6	29.5	0.4	-0.3	1.6	30.0
1982	14.1	1.9	2.3	18.3	6.1	0.8	-0.3	6.7	25.0	0.4	-0.3	0.4	21.8
1983	12.2	1.6	2.0	15.9	7.2	1.3	-0.5	8.2	24.0	0.5	(s)	1.8	21.9
1984	13.3	0.1	2.5	15.8	7.5	0.7	-0.4	7.8	23.6	0.6	-0.1	2.9	21.3
1985	12.1	2.3	2.3	16.7	8.0	0.5	-0.4	8.1	24.8	0.4	-0.3	2.5	17.4
1986	0.9	1.6	2.6	5.2	4.7	2.9	0.1	7.7	12.9	0.2	(s)	2.8	9.2
1987	4.7	1.1	2.6	8.4	5.4	1.0	-0.1	6.4	14.8	0.4	(s)	7.1	11.3
1988	3.2	5.4	2.0	10.6	4.3	2.4	0.1	6.9	17.5	0.6	-0.1	10.8	22.3
1989	3.1	4.5	1.9	9.5	4.7	1.8	0.2	6.7	16.2	0.4	-0.1	8.7	19.8
1990	8.7	2.2	2.1	12.9	7.4	2.8	0.2	10.5	23.4	0.3	0.1	4.3	21.6
1991	5.1	0.9	2.0	7.9	5.4	4.1	0.3	9.8	17.7	0.6	0.1	1.6	14.7
1992	5.6	-0.2	2.1	7.5	4.7	2.2	(s)	6.9	14.4	-0.5	0.1	1.2	1.8
1993	4.8	1.7	1.6	8.1	5.2	3.2	(s)	8.4	16.5	0.4	0.1	2.7	15.5
1994	4.8	1.8	1.8	8.5	4.0	2.0	(s)	5.9	14.4	0.2	0.2	6.2	16.5
1995	3.7	0.5	2.2	6.4	5.9	2.4	(s)	8.3	14.7	0.3	0.2	12.6	21.1
1996	11.8	2.3	1.6	15.7	9.2	2.0	(s)	11.2	26.9	0.5	0.2	8.0	32.0
1997	11.6	3.1	1.3	16.0	9.6	3.6	0.1	13.3	29.3	0.3	0.3	6.3	32.1
1998	0.5	5.9	1.4	7.8	2.0	2.9	0.1	5.1	12.8	0.5	0.9	1.8	12.5
1999	7.4	4.9	2.4	14.8	8.2	1.9	(s)	10.1	24.8	0.2	0.7	2.8	22.9
2000	21.9	7.7	2.3	31.8	18.5	2.9	(s)	21.4	53.3	(s)	2.7	3.6	53.2
2001	17.6	12.0	3.3	32.9	14.6	3.1	0.2	17.8	50.8	0.1	2.0	-2.7	37.7
2002	15.0	-2.2	1.7	14.6	12.9	0.5	(s)	13.3	27.9	(s)	-1.5	1.8	20.6

¹ Nominal dollars.

² Total is sum of components shown, plus eliminations and nontraceables (see Notes).

NA=Not available. (s)=Less than 0.05 billion and greater than -0.05 billion.

Notes: • "Major U.S. Energy Companies" are the top publicly-owned, U.S.-based crude oil and natural gas producers and petroleum refiners that form the Financial Reporting System. See Table 3.12. • "Net income" is operating income plus other income and extraordinary income less operating expenses, taxes, interest charges, other deductions, and extraordinary deductions. • "Eliminations" are revenues and expenses resulting from transactions between segments of the energy industry. Consolidated company

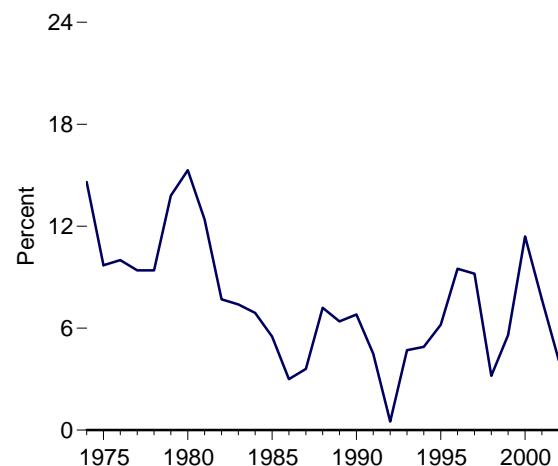
accounts do not include intersegment revenues and expenses. Therefore, such intersegment transactions must be eliminated. • "Nontraceables" are energy companies' revenues, costs, assays, and liabilities that cannot be directly attributed to a type of business by use of a reasonable allocation method developed on the basis of operating-level utilities.

Web Page: For related information, see <http://www.eia.doe.gov/emeu/finance>.

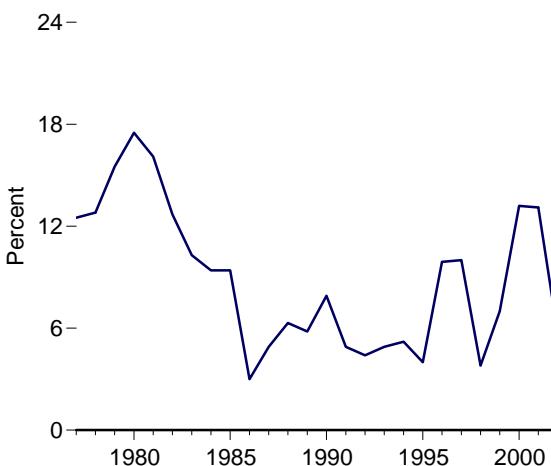
Sources: • 1974-1976—Energy Information Administration (EIA), Form EIA-28, "Financial Reporting System" database, November 1997. • 1977 forward—EIA, *Performance Profiles of Major Energy Producers*, annual reports.

Figure 3.10 Major U.S. Energy Companies' Profitability

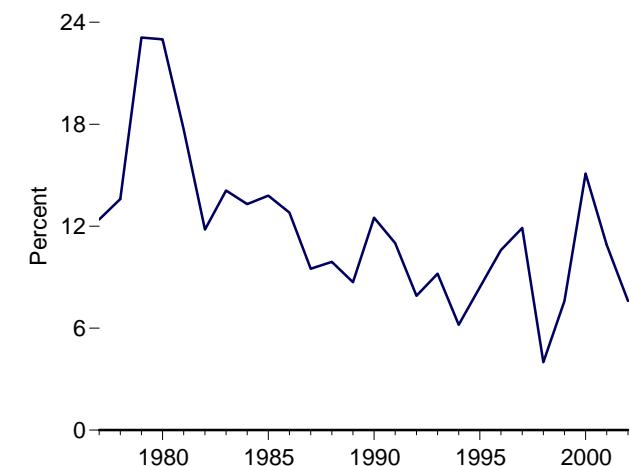
Total, 1974-2002



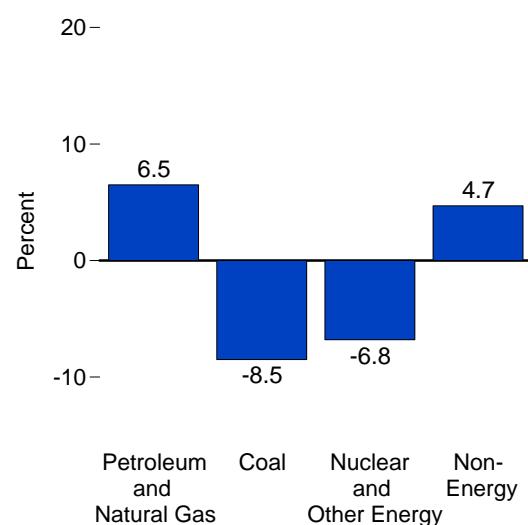
U.S. Petroleum and Natural Gas, 1977-2002



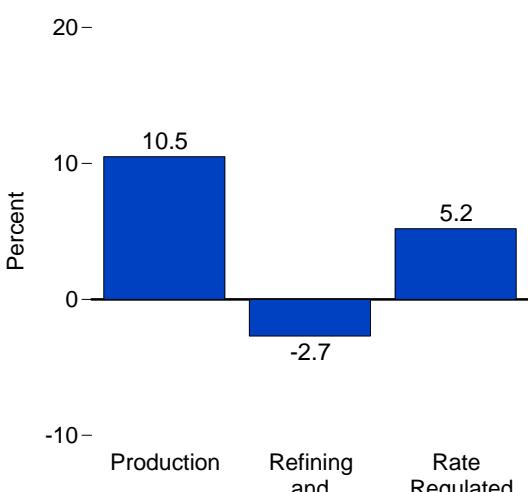
Foreign Petroleum and Natural Gas, 1977-2002



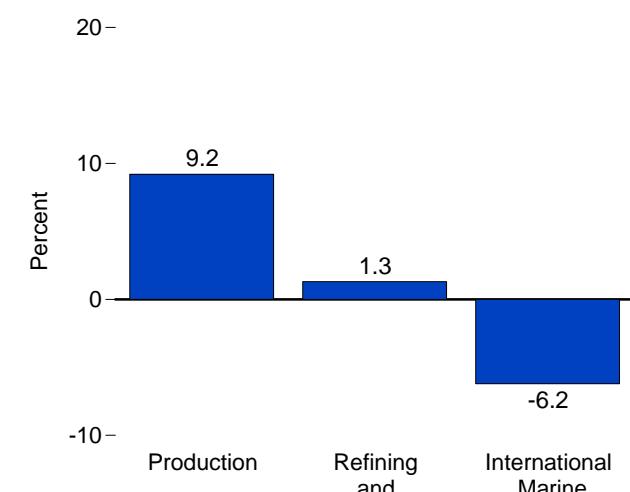
Total by Type of Activity, 2002



U.S. Petroleum and Natural Gas by Activity, 2002



Foreign Petroleum and Natural Gas by Activity, 2002



Notes: • "Major U.S. Energy Companies" are the top publicly-owned crude oil and natural gas producers and petroleum refiners that form the Financial Reporting System (FRS). See Table 3.12. • Because vertical scales differ, graphs should not be compared.

Source: Table 3.10.

Table 3.10 Major U.S. Energy Companies' Profitability, 1974-2002
(Percent)

Year	U.S. Petroleum and Natural Gas				Foreign Petroleum and Natural Gas				Type of Business				
	Production	Refining and Marketing	Rate Regulated Pipelines	Total	Production	Refining and Marketing	International Marine	Total	Petroleum and Natural Gas	Coal	Nuclear and Other Energy	Non-energy	Total
1974	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	14.6
1975	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9.7
1976	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10.0
1977	17.5	7.2	7.3	12.5	21.8	5.1	2.6	12.4	12.5	8.8	-2.6	7.1	9.4
1978	16.4	7.5	10.9	12.8	18.2	12.7	-1.0	13.6	13.1	4.1	-4.2	6.5	9.4
1979	18.2	9.8	15.1	15.5	23.8	29.1	2.6	23.1	18.0	6.3	-3.7	8.8	13.8
1980	20.9	9.8	15.1	17.5	25.1	26.4	2.4	23.0	19.2	5.6	-0.7	5.9	15.3
1981	20.2	4.4	15.6	16.1	25.5	9.0	-1.1	17.7	16.6	6.1	-6.8	3.5	12.4
1982	14.0	6.0	20.8	12.7	17.4	4.7	-6.3	11.8	12.5	4.4	-5.2	0.6	7.7
1983	11.3	4.8	16.6	10.3	19.6	7.7	-13.2	14.1	11.3	5.0	0.5	2.9	7.4
1984	10.8	0.3	20.8	9.4	18.8	4.5	-14.0	13.3	10.4	6.2	-1.8	4.8	6.9
1985	9.5	6.5	15.0	9.4	20.0	3.3	-19.0	13.8	10.5	4.6	-8.4	4.2	5.5
1986	0.8	4.5	13.2	3.0	11.6	16.3	5.3	12.8	5.5	2.7	-0.8	5.1	3.0
1987	4.1	2.9	12.8	4.9	12.4	4.7	-3.6	9.5	6.2	5.1	0.5	12.2	3.6
1988	2.8	14.7	9.6	6.3	9.2	11.6	6.8	9.9	7.3	6.7	-2.5	20.3	7.2
1989	2.9	11.5	10.2	5.8	8.9	8.0	12.4	8.7	6.7	5.0	-2.3	17.3	6.4
1990	8.5	5.1	11.2	7.9	13.1	11.2	11.7	12.5	9.5	3.3	2.6	7.8	6.8
1991	5.1	2.0	10.7	4.9	9.1	14.6	15.6	11.0	7.0	8.7	2.8	2.9	4.5
1992	5.9	-0.4	8.4	4.4	8.2	7.8	-1.2	7.9	5.6	-9.3	1.8	2.1	0.5
1993	5.3	3.4	6.4	4.9	8.6	10.6	1.2	9.2	6.4	7.6	4.1	4.7	4.7
1994	5.5	3.6	7.6	5.2	6.5	6.1	-2.0	6.2	5.6	4.0	4.8	10.5	4.9
1995	4.4	1.0	9.1	4.0	9.3	7.2	-2.5	8.4	5.7	6.9	6.1	19.4	6.2
1996	14.1	4.4	6.9	9.9	12.8	6.0	2.2	10.6	10.1	9.9	7.9	15.0	9.5
1997	12.5	6.6	6.7	10.0	12.5	10.5	11.8	11.9	10.8	7.2	7.0	10.9	9.2
1998	0.5	7.9	4.4	3.8	2.2	8.2	8.9	4.0	3.9	26.4	13.2	4.5	3.2
1999	7.6	6.5	6.4	7.0	8.5	5.1	0.8	7.6	7.2	9.5	7.6	5.8	5.6
2000	17.7	9.6	6.0	13.2	17.1	8.7	6.4	15.1	13.9	1.7	11.0	7.3	11.4
2001	13.1	14.5	9.7	13.1	11.2	9.5	25.9	10.9	12.2	9.0	9.0	-6.6	7.7
2002	10.5	-2.7	5.2	5.7	9.2	1.3	-6.2	7.6	6.5	-8.5	-6.8	4.7	4.1

NA=Not available.

Notes: • "Major U.S. Energy Companies" are the top publicly-owned, U.S.-based crude oil and natural gas producers and petroleum refiners that form the Financial Reporting System. See Table 3.12.
• Data are for return on investment, measured as net income divided by net investment in place. "Net income" is operating income plus other income and extraordinary income less operating expenses, taxes, interest charges, other deductions, and extraordinary deductions. "Net investment in place" is net property,

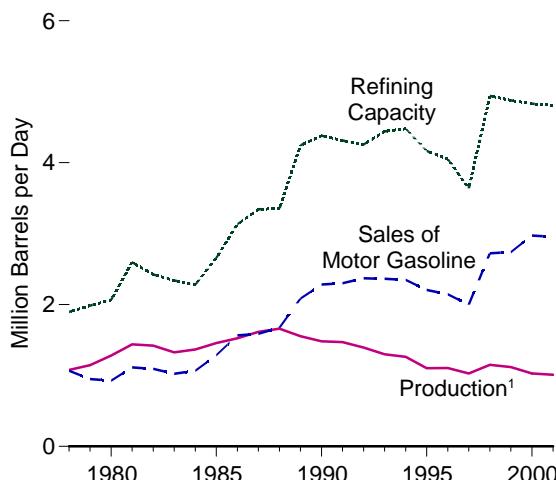
plant, and equipment plus investments and advances to unconsolidated affiliates.

Web Page: For related information, see <http://www.eia.doe.gov/emeu/finance>.

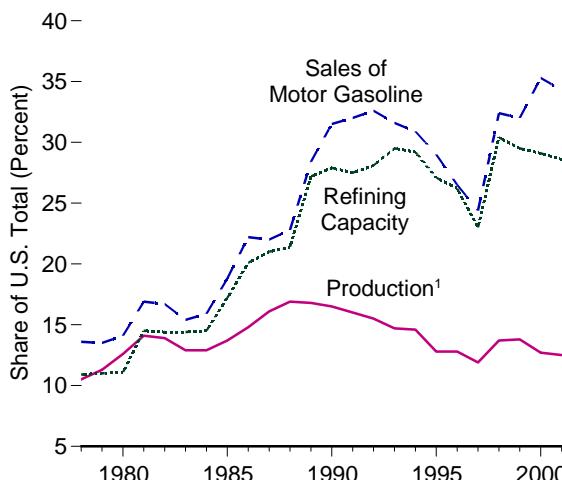
Sources: • 1974-1976—Energy Information Administration (EIA), Form EIA-28, "Financial Reporting System" database, October 1996. • 1977 forward—EIA, *Performance Profiles of Major Energy Producers*, annual reports.

Figure 3.11 U.S. Energy Activities by Foreign-Affiliated Companies, 1978-2001

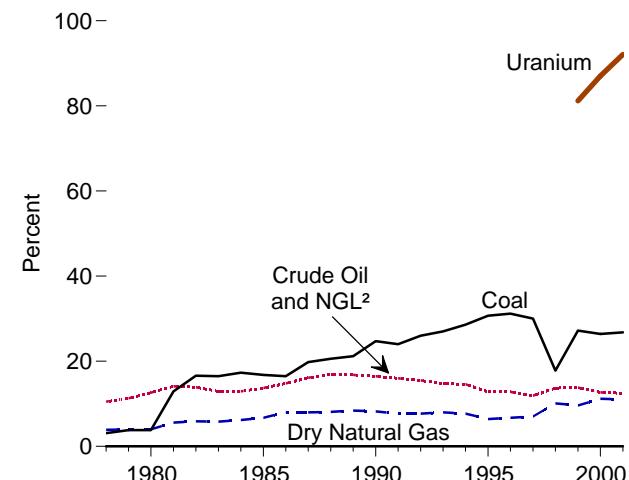
Petroleum Activities



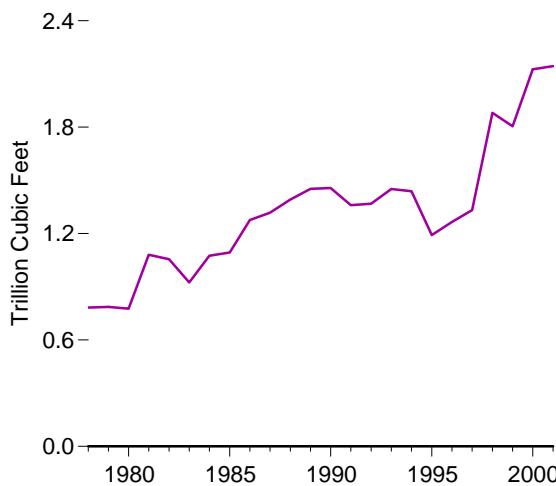
Petroleum Activities



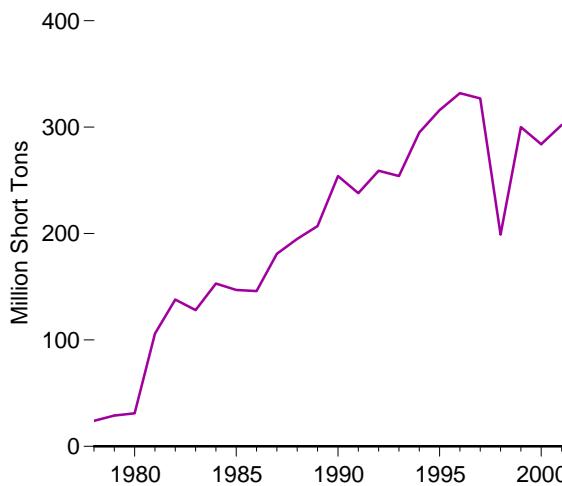
Share of U.S. Total Production by Fuel Type



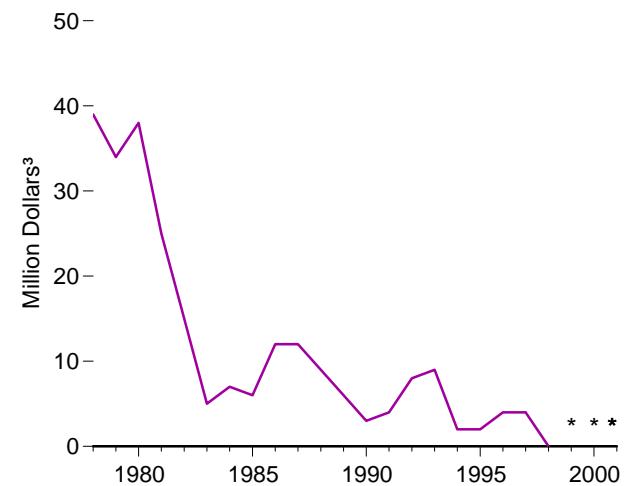
Dry Natural Gas Production



Coal Production



Expenditures for Exploration and Development of Uranium



¹ Crude oil and natural gas liquids.

² Natural gas liquids.

³ Nominal dollars.

* 1999, 2000, and 2001 uranium values are withheld to avoid disclosure of individual company data.

Note: Because vertical scales differ, graphs should not be compared.

Source: Table 3.11.

Table 3.11 U.S. Energy Activities by Foreign-Affiliated Companies, 1978-2001

Year	Production								Refining Capacity		Sales of Motor Gasoline		Expenditures for Exploration and Development of Uranium	
	Crude Oil and Natural Gas Liquids		Dry Natural Gas		Coal		Uranium							
	Thousand Barrels per Day	Percent of U.S. Total	Billion Cubic Feet	Percent of U.S. Total	Million Short Tons	Percent of U.S. Total	Thousand Pounds ¹	Percent of U.S. Total ²	Thousand Barrels per Day	Percent of U.S. Total	Thousand Barrels per Day	Percent of U.S. Total	Million Dollars ³	Percent of U.S. Total
1978	1,076	10.5	783	3.9	24	3.1	NA	NA	1,895	10.9	1,066	13.6	39	12.5
1979	1,145	11.3	786	4.0	29	3.8	NA	NA	1,984	11.0	948	13.5	34	10.8
1980	1,280	12.6	776	4.0	31	3.8	NA	NA	2,066	11.1	926	14.1	38	14.1
1981	1,438	14.1	1,080	5.6	106	12.9	NA	NA	2,595	14.5	1,114	16.9	25	17.0
1982	1,421	13.9	1,055	5.9	138	16.6	NA	NA	2,423	14.4	1,092	16.7	15	19.8
1983	1,325	12.9	924	5.8	128	16.5	NA	NA	2,337	14.4	1,022	15.4	5	13.0
1984	1,365	12.9	1,075	6.2	153	17.3	NA	NA	2,276	14.5	1,066	15.9	7	24.9
1985	1,455	13.7	1,093	6.7	147	16.8	NA	NA	2,656	17.2	1,285	18.8	6	27.9
1986	1,523	14.8	1,276	8.0	146	16.5	NA	NA	3,133	20.1	1,565	22.2	12	54.3
1987	1,614	16.1	1,318	8.0	181	19.8	NA	NA	3,342	21.0	1,586	22.0	12	60.4
1988	1,659	16.9	1,392	8.1	195	20.6	NA	NA	3,356	21.4	1,673	22.8	9	44.2
1989	1,553	16.8	1,452	8.4	207	21.2	NA	NA	4,243	27.2	2,084	28.4	6	41.2
1990	1,481	16.5	1,457	8.2	254	24.7	NA	NA	4,379	27.9	2,282	31.5	3	14.6
1991	1,469	16.0	1,360	7.7	238	24.0	NA	NA	4,312	27.5	2,299	32.0	4	19.7
1992	1,392	15.5	1,368	7.7	259	26.0	NA	NA	4,256	28.1	2,369	32.6	8	55.2
1993	1,299	14.7	1,451	8.0	254	27.0	NA	NA	4,440	29.5	2,362	31.6	9	76.0
1994	1,261	14.6	1,439	7.7	295	28.6	NA	NA	4,479	29.2	2,346	30.9	2	51.0
1995	1,103	12.8	1,191	6.4	316	30.7	NA	NA	4,164	27.1	2,204	29.0	2	35.0
1996	1,105	12.8	1,265	6.7	332	31.2	NA	NA	4,050	26.2	2,145	26.5	4	44.0
1997	1,028	11.9	1,332	7.0	327	30.0	NA	NA	3,637	23.0	1,998	24.4	4	14.0
1998	1,149	13.7	1,881	10.1	199	17.8	NA	NA	4,940	30.4	2,721	32.4	(s)	1.0
1999	1,118	13.8	1,805	9.6	300	27.2	⁴ 3,745	⁴ 81.2	4,877	29.5	2,737	32.0	W	W
2000	1,027	12.7	2,126	11.2	284	26.4	3,443	87.0	4,831	29.1	2,971	35.3	W	W
2001	1,010	12.5	2,144	11.0	302	26.8	2,430	92.1	4,806	28.6	2,954	34.3	W	W

¹ Production of uranium oxide (U_3O_8). See "Uranium Oxide" in Glossary.

² Percent of U.S. total uranium concentrate production. See "Uranium Concentrate" in Glossary.

³ Nominal dollars.

⁴ Includes a small amount produced by a U.S. company, which left the industry by the close of 1999.

NA=Not available. (s)=Less than 0.5 million dollars. W=Value withheld to avoid disclosure of individual company data.

Web Page: For related information, see <http://www.eia.doe.gov/emeu/finance>.

Sources: **Uranium Production:** Energy Information Administration (EIA), *Uranium Industry Annual 2002* (May 2003), Table 5, and analysis by the Office of Energy Markets and End Use, Financial Analysis Team. **All Other Data:** • 1978-1992—EIA, *Profiles of Foreign Direct Investment in U.S. Energy*, annual reports. • 1993—EIA, *Profiles of Foreign Direct Investment in U.S. Energy 1993* (May 1995), Tables 7, 9, 10, 11, and 12. • 1994-1997—EIA, *Performance Profiles of Major Energy Producers*, annual reports. • 1998 forward—EIA, *Profiles of Foreign Direct Investment in U.S. Energy* (annual reports).

Table 3.12 Companies Reporting to the Financial Reporting System, 1974-2002

Company	1974-1981	1982	1983-84	1985-86	1987	1988	1989-90	1991	1992-93	1994-96	1997	1998	1999	2000	2001	2002
Amerada Hess Corporation	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
American Petrofina Holding Company ^{1,2,3}								X	X	X	X	X	X	X	X	X
American Petrofina, Inc. ¹	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X
Anadarko Petroleum Corporation								X	X	X	X	X	X	X	X	X
Apache Corporation														X	X	X
Ashland Inc. ⁴	X	X	X	X	X	X	X	X	X	X	X	X				
Atlantic Richfield Co. (ARCO) ⁵	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
BP America, Inc. ^{6,7}					X	X	X	X	X	X	X	X	X	X	X	
BP Amoco Corporation ^{5,6,8}	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Burlington Northern Inc. ⁹	X	X	X	X	X											
Burlington Resources Inc. ⁹						X	X	X	X	X	X	X	X	X	X	X
Chevron Texaco Corporation ^{10,11,12}	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Citgo Petroleum Corporation												X	X	X	X	X
Cities Service ¹³	X	X														
Conoco ^{14,15,16}	X											X	X	X	X	X
ConocoPhillips Company ^{16,17}	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Devon Energy Corporaton												X	X	X	X	X
Dominion Resources														X	X	X
E.I. du Pont de Nemours and Co. ^{14,15}	X	X	X	X	X	X	X	X	X	X	X					
El Paso Energy Corporation ¹⁸												X	X	X	X	X
Enron Corporation									X	X	X	X	X	X	X	
EOG Resources														X	X	X
Equilon Enterprises, LLC ¹⁹												X	X	X	X	X
Exxon Mobil Corporation ²⁰	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Getty Oil ²¹	X	X	X													
Gulf Oil ¹¹	X	X	X													
Kerr-McGee Corporation ²²	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
LYONDELL-CITGO Refining, LP ²³																
Marathon ²⁴	X															
Mobil Corporation ^{20,25}	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Motiva Enterprises, LLC ²⁶												X	X	X	X	X
Nerco, Inc. ²⁷									X							
Occidental Petroleum Corporation ¹³	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Oryx Energy Company ^{22,28}						X	X	X	X	X	X					
Premcor Refining Group ²⁹												X	X	X	X	X
Shell Oil Company	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sonat Inc.										X	X					
Standard Oil Co. (Ohio) (Sohio) ⁷	X	X	X	X												
Sunoco, Inc. ^{28,30}	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Superior Oil ²⁵	X	X	X													
Tenneco Inc. ³¹	X	X	X	X	X	X	X									
Tesoro Petroleum Corporation												X	X	X	X	X
Texaco Inc. ^{12,21}	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
The Coastal Corporation ¹⁸	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
The Williams Companies, Inc.												X	X	X	X	X
Tosco Corporation ¹⁷												X	X	X	X	X
Total Petroleum (North America) Ltd. ³²							X	X								
Ultramar Diamond Shamrock Corporation ³³												X	X	X	X	X
Union Pacific Resources Group, Inc. ^{34,35}	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Unocal Corporation	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
USX Corporation	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Valero Energy Corporation ³³												X	X	X	X	X
XTO Energy, Inc.														X	X	X

Footnotes: See the following page.

Note: "X" indicates that the company was included in the Financial Reporting System for the year indicated.

Web Page: For related information, see <http://www.eia.doe.gov/emeu/finance>.

Source: Energy Information Administration, Form EIA-28, "Financial Reporting System."

Footnotes for Table 3.12

¹American Petrofina, Inc. changed its name to Fina, Inc., effective April 17, 1991.

²Prior submissions were reported at the FINA, Inc. level. FINA, Inc. was the parent of Fina Oil and Chemical Company, which is now ATOFINA Petrochemicals. Due to a series of mergers and acquisitions, beginning in 2000, the submission is reported at the American Petrofina Holding Company level, which is the holding company of ATOFINA.

³In 2002, the name was changed to Total Fina Elf.

⁴Ashland was dropped from the FRS system for 1998 after spinning off downstream and coal operations and disposing of upstream operations.

⁵BP Amoco acquired Atlantic Richfield Company (ARCO) in April of 2000. The reporting was consolidated under BP Amoco for 2000. Data for ARCO is not included in the database for the period from January 1, 2000, to April 14, 2000.

⁶Amoco merged with British Petroleum plc and became BP Amoco plc on December 31, 1998. BP America was renamed BP Amoco, Inc. The companies reported separately for 1998 and 1999.

⁷In 1987, British Petroleum acquired all shares in Standard Oil Company (Ohio) that it did not already control and renamed its U.S. affiliate, BP America, Inc.

⁸Formerly Standard Oil Company (Indiana).

⁹Burlington Resources was added to the FRS system and Burlington Northern was dropped for 1988. Data for Burlington Resources covers the full year 1988 even though that company was not created until May of that year.

¹⁰Formerly Standard Oil Company of California.

¹¹Chevron acquired Gulf Oil in 1984, but separate data for Gulf continued to be available for the full 1984 year.

¹²In October 2000, Chevron and Texaco agreed to merge. Both companies reported separately for 2000.

¹³Occidental acquired Cities Service in 1982. Separate financial reports were available for 1982, so each company continued to be treated separately until 1983.

¹⁴DuPont acquired Conoco in 1981. Separate data for Conoco were available for 1981; DuPont was included in the FRS system in 1982.

¹⁵Dupont was dropped from the FRS system when Conoco was spunoff in 1998. Conoco began reporting separately again in 1998.

¹⁶In November 2001, Phillips and Conoco agreed to merge forming ConocoPhillips in 2002. Both companies reported separately in 2001.

¹⁷In September 2001, Phillips acquired Tosco. Both companies reported separately in 2001.

¹⁸In January 2001, Coastal merged with a wholly owned subsidiary of El Paso Energy Corporation. The name was changed to El Paso CGP Company. Data were reported separately in 2000 under the name The Coastal Company.

¹⁹Equilon is a joint venture combining Shell's and Texaco's western and midwestern U.S. refining and marketing businesses and nationwide trading transportation and

lubricants businesses. Net income is duplicated in the FRS system since Shell and Texaco account for this investment using the equity method.

²⁰In December 1998, Exxon and Mobil agreed to merge. Both companies reported separately for 1998.

²¹Texaco acquired Getty in 1984; however, Getty was treated as a separate FRS company for that year.

²²In 1998, Kerr-McGee and Oryx merged. The financial reporting for both was consolidated under Kerr-McGee for 1998.

²³LYONDELL-CITGO is a limited partnership owned by Lyondell Chemical Company and Citgo. There will be some duplication of net income since Citgo accounts for its investment using the equity method.

²⁴U.S. Steel (now USX) acquired Marathon in 1982.

²⁵Mobil acquired Superior in 1984, but both companies were treated separately for that year.

²⁶Motiva is a joint venture approximately equally owned by Shell, Texaco and Saudi Refining, Inc. The joint venture combines the company's Gulf and east coast refining and marketing businesses. Duplication exists for the net income related to Shell and Texaco's interest, which are accounted for under the equity method.

²⁷RTZ America acquired the common stock of Nerco, Inc., on February 17, 1994. In September 1993, Nerco, Inc. sold Nerco Oil & Gas, Inc., its subsidiary. Nerco's 1993 submission includes operations of Nerco Oil & Gas, Inc., through September 28, 1993.

²⁸Sun Company spun off Sun Exploration and Development Company (later renamed Oryx Energy Company) during 1988. Both companies were included in the FRS system for 1988; therefore, some degree of duplication exists for that year.

²⁹In May 2000, Clark Refining & Marketing changed its name to Premcor Refining Group.

³⁰Sun company withdrew from oil and gas exploration and production in 1996. Sun's 1996 submission includes oil and gas exploration and production activities through September 30, 1996. Refining/marketing activities are included for the entire 1996 calendar year.

³¹Tenneco sold its worldwide oil and gas assets and its refining and marketing assets in 1988. Other FRS companies purchased approximately 70 percent of Tenneco's assets.

³²Effective June 1, 1991, Total's exploration, production, and marketing operations in Canada were spun off to Total Oil & Gas, a new public entity.

³³In December 2001, Valero and Ultramar Diamond Shamrock agreed to merge. Both companies reported separately in 2001.

³⁴Effective October 15, 1996, Union Pacific Corporation distributed its ownership in the Union Pacific Resources Group, Inc. to its shareholders. Prior to 1996, the FRS system included Union Pacific Corporation. The FRS system includes only Union Pacific Resources Group, Inc. for 1996.

³⁵Union Pacific merged with Anadarko on July 14, 2000. Anadarko's 2000

submission includes data for Union Pacific after July 14, 2000. Data for Union Pacific was not submitted for the period from January 1, 2000, to July 14, 2000.

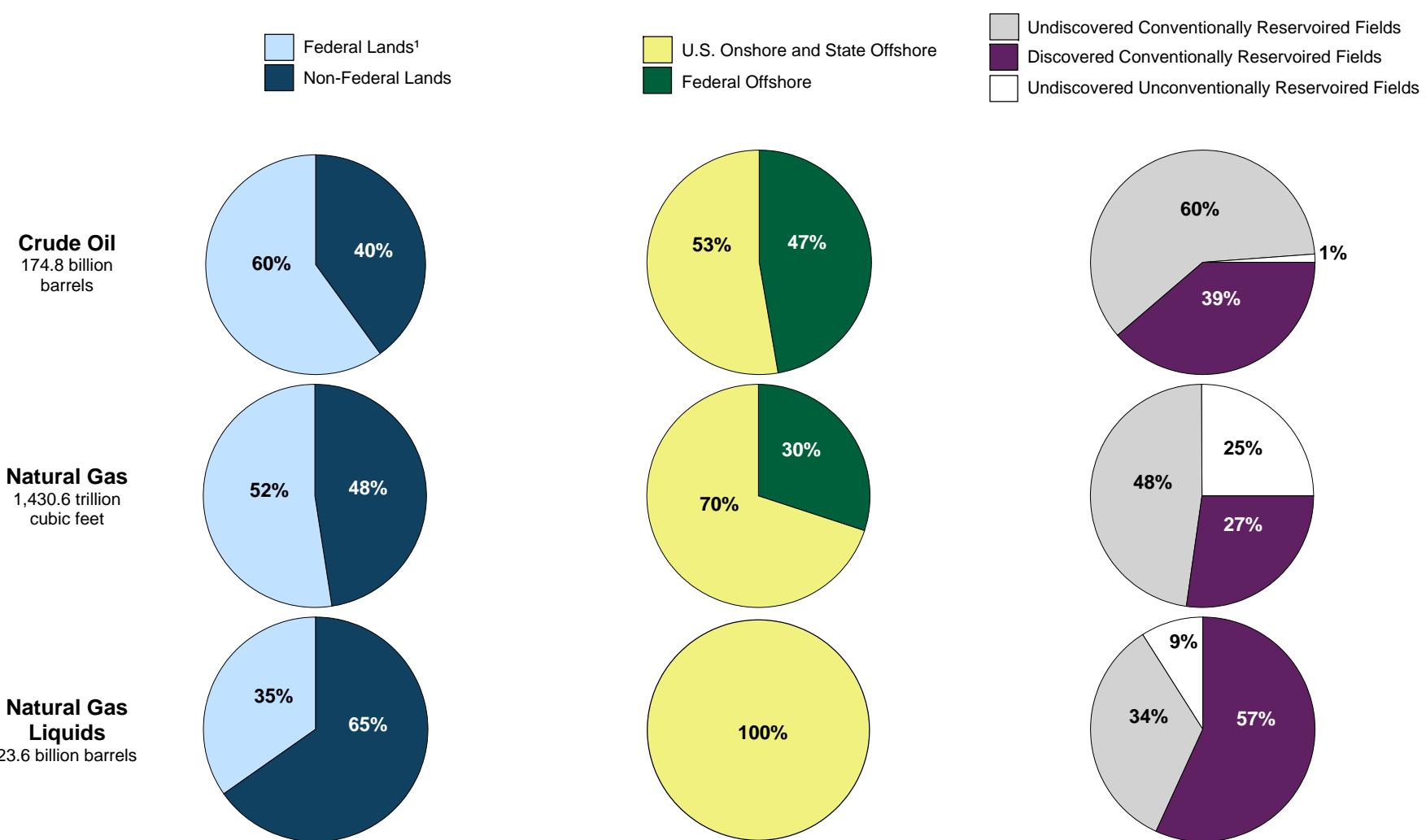
4

Energy Resources



Semisubmersible drilling rig in the Gulf of Mexico. Source: U.S. Department of Energy.

Figure 4.1 Technically Recoverable Crude Oil, Natural Gas, and Natural Gas Liquids Resource Estimates, 2003



¹ Lands owned or under the jurisdiction of the Federal government.

Source: Table 4.1.

Table 4.1 Technically Recoverable Crude Oil, Natural Gas, and Natural Gas Liquids Resource Estimates, 2003

Region	Crude Oil (billion barrels)			Natural Gas (Dry) (trillion cubic feet)			Natural Gas Liquids (billion barrels)		
	Federal Lands ¹	Non-Federal Lands	Total	Federal Lands ¹	Non-Federal Lands	Total	Federal Lands ¹	Non-Federal Lands	Total
Undiscovered Conventionally Reservoired Fields ²	82.54	22.51	105.05	420.14	261.78	681.92	1.80	6.25	8.05
Alaska Onshore and State Offshore ³	3.75	4.68	8.43	33.97	95.37	129.34	0.54	0.61	1.15
Alaska Federal Offshore ⁴	24.90	—	24.90	122.60	—	122.60	0.00	—	0.00
48 States Onshore and State Offshore ³	3.79	17.83	21.62	23.97	166.41	190.38	1.26	5.64	6.90
48 States Federal Offshore ⁴	50.10	—	50.10	239.60	—	239.60	0.00	—	0.00
Discovered Conventionally Reservoired Fields ²	22.03	45.67	67.70	186.70	203.30	390.00	4.94	8.46	13.40
(Ultimate Recovery Appreciation) ⁵									
U.S. Onshore and State Offshore ³	14.33	45.67	60.00	118.70	203.30	322.00	4.94	8.46	13.40
U.S. Federal Offshore ⁴	7.70	—	7.70	68.00	—	68.00	0.00	—	0.00
Undiscovered Unconventionally Reservoired Fields ⁶	0.32	1.75	2.07	143.16	215.55	358.71	1.45	0.67	2.12
U.S. Total	104.89	69.93	174.82	750.00	680.63	1,430.63	8.19	15.38	23.57
U.S. Onshore and State Offshore ³	22.19	69.93	92.12	319.80	680.63	1,000.43	8.19	15.38	23.57
Federal Offshore ⁴	82.70	—	82.70	430.20	—	430.20	0.00	—	0.00

¹ Lands owned or under the jurisdiction of the Federal government, excluding Indian and Native lands even when Federally managed in trust.

² Conventionally reservoired deposits are discrete subsurface accumulations of crude oil or natural gas usually defined, controlled, or limited by hydrocarbon/water contacts.

³ Onshore (Federal and State) plus State offshore waters (near-shore, shallow-water areas under State jurisdiction).

⁴ Federal offshore jurisdictions (Outer Continental Shelf and deeper water areas seaward of State offshore).

⁵ "Proved Reserves" (see Table 4.2) are not included in these estimates. Ultimate recovery appreciation (reserve growth) is the volume by which the estimate of total recovery from a known crude oil or natural gas reservoir or aggregation of such reservoirs is expected to increase during the time between discovery and permanent abandonment. The estimates of ultimate recovery appreciation for onshore and State offshore lands were imputed by assuming that the total estimates reported by the U.S. Geological Survey could be apportioned according to the ratio of 1996 production from onshore Federal lands to total U.S. production.

⁶ Unconventionally reservoired deposits (continuous-type accumulations) are geographically extensive subsurface accumulations of crude oil or natural gas that generally lack well-defined hydrocarbon/water contacts. Examples include coalbed methane, "tight gas," and auto-sourced oil- and gas-shale reservoirs.

— = Not applicable.

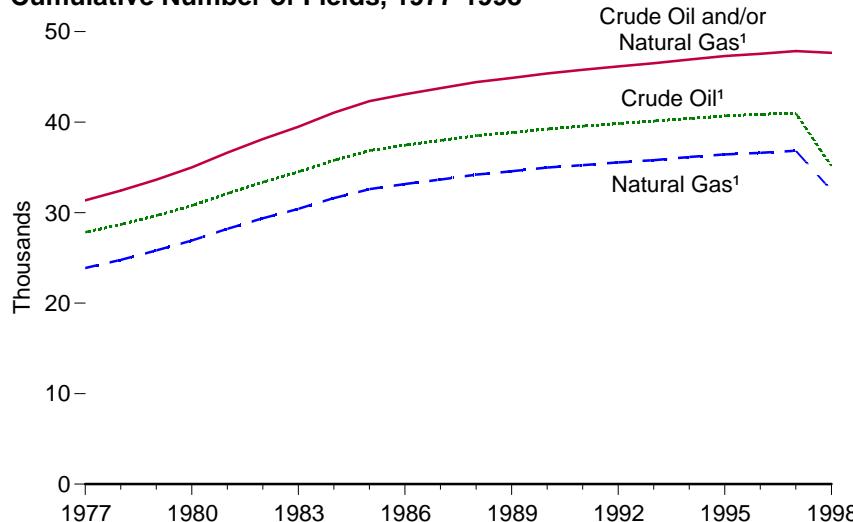
Notes: • Resource estimates are as of the latest estimates generated by the U.S. Department of the Interior, U.S. Geological Survey (USGS) and the Minerals Management Service (MMS). They were not necessarily generated in the current year. • For purposes of comparison, the Potential Gas Committee, an industry-sponsored group of experts, biennially provides another geologically-based estimate of the Nation's natural gas resources. The latest mean estimate, published in "Potential Supply of Natural Gas in the United States," December 31, 2002, is 1,127 trillion cubic feet. This volume includes undiscovered conventionally reservoired deposits, expected ultimate recovery appreciation, coalbed methane, and tight gas where it is believed to be technically recoverable and marketable at reasonable costs. • A value of zero indicates either that none exists in this area or that no estimate of this resource has been made for this area. • "48 States" is the United States excluding Alaska and Hawaii.

Web Page: See http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html for related information.

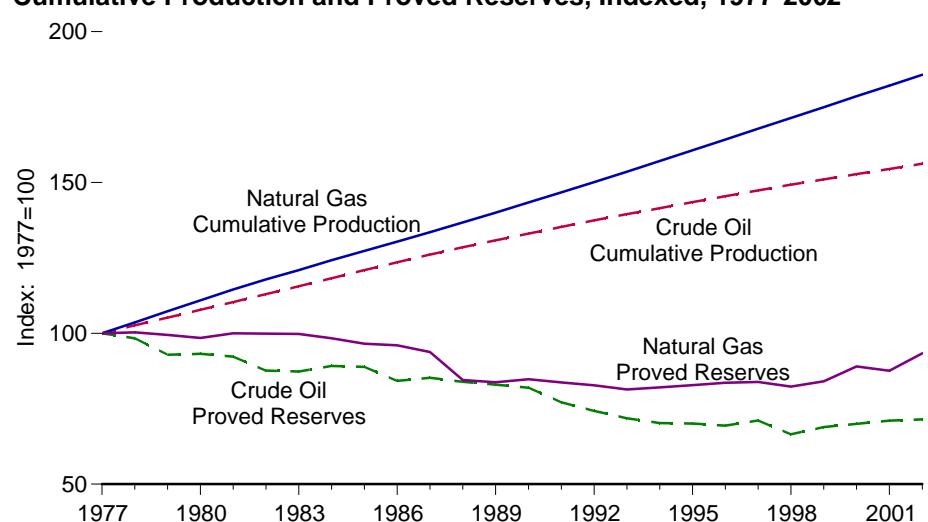
Source: Energy Information Administration, *U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves 2002 Annual Report* (December 2003), Table G1, which in turn is based on the latest resource estimates generated by the U.S. Department of the Interior, U.S. Geological Survey and the Minerals Management Service.

Figure 4.2 Crude Oil and Natural Gas Field Counts, Cumulative Production, Proved Reserves, and Proved Ultimate Recovery

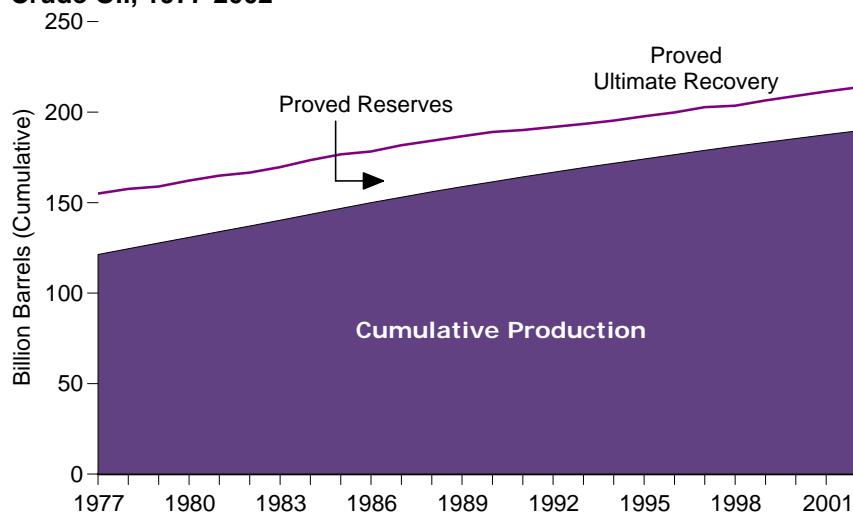
Cumulative Number of Fields, 1977-1998



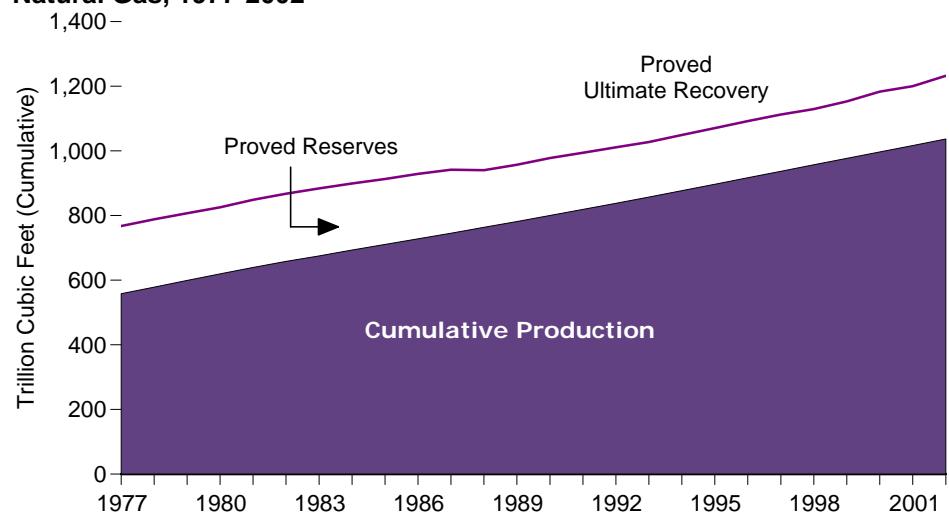
Cumulative Production and Proved Reserves, Indexed, 1977-2002



Crude Oil, 1977-2002



Natural Gas, 1977-2002



¹ There is a discontinuity in this time series between 1997 and 1998 due to the absence of updates for a subset of the data used in the past.

Notes: • Data are at end of year. • Crude oil includes lease condensate. • Natural gas is wet, after lease separation.

Source: Table 4.2.

Table 4.2 Crude Oil and Natural Gas Field Counts, Cumulative Production, Proved Reserves, and Proved Ultimate Recovery, 1977-2002

Year	Cumulative Number of Fields with Crude Oil and/or Natural Gas	Cumulative Number of Fields with Crude Oil	Crude Oil and Lease Condensate (billion barrels)			Cumulative Number of Fields with Natural Gas	Natural Gas ¹ (trillion cubic feet)		
			Cumulative Production	Proved Reserves	Proved Ultimate Recovery		Cumulative Production	Proved Reserves	Proved Ultimate Recovery
1977	31,360	27,835	121.4	33.6	155.0	23,883	558.3	209.5	767.8
1978	32,430	28,683	124.6	33.1	157.6	24,786	578.4	210.1	788.5
1979	33,644	29,671	127.7	31.2	158.9	25,823	599.1	208.3	807.4
1980	34,999	30,766	130.8	31.3	162.2	26,919	619.4	206.3	825.6
1981	36,621	32,111	133.9	31.0	165.0	28,213	639.4	209.4	848.9
1982	38,123	33,375	137.1	29.5	166.6	29,375	658.1	209.3	867.4
1983	39,489	34,495	140.3	29.3	169.6	30,419	675.1	209.0	884.1
1984	41,038	35,784	143.5	30.0	173.5	31,595	693.5	206.0	899.5
1985	42,317	36,849	146.8	29.9	176.7	32,595	710.9	202.2	913.1
1986	43,076	37,464	150.0	28.3	178.3	33,151	727.8	201.1	928.9
1987	43,742	37,982	153.0	28.7	181.7	33,657	745.4	196.4	941.8
1988	44,414	38,506	156.0	28.2	184.2	34,196	763.4	177.0	940.4
1989	44,883	38,858	158.8	27.9	186.7	34,579	781.7	175.4	957.1
1990	45,385	39,244	161.5	27.6	189.0	34,975	800.4	177.6	978.0
1991	45,776	39,558	164.2	25.9	190.1	35,254	819.1	175.3	994.4
1992	46,149	39,843	166.8	25.0	191.8	35,539	838.0	173.3	1,011.3
1993	46,513	40,124	169.3	24.1	193.4	35,798	857.2	170.5	1,027.7
1994	46,922	40,417	171.7	23.6	195.3	36,142	877.1	171.9	1,049.1
1995	47,296	40,694	174.1	23.5	197.7	36,433	896.9	173.5	1,070.4
1996	47,557	40,875	176.5	23.3	199.8	36,612	917.0	175.1	1,092.1
1997	47,854	40,977	178.9	23.9	202.8	36,830	937.1	175.7	1,112.8
1998	² 47,664	² 35,143	181.2	22.4	203.5	² 32,458	957.0	172.4	1,129.4
1999	NA	NA	183.3	23.2	206.5	NA	976.8	176.2	1,153.0
2000	NA	NA	185.4	23.5	208.9	NA	997.0	186.5	1,183.5
2001	NA	NA	187.5	R23.9	R211.4	NA	1,016.7	183.5	1,200.2
2002	NA	NA	189.6	24.0	213.6	NA	1,036.9	195.6	1,232.5

¹ Wet, after separation of lease condensate.

² There is a discontinuity in this time series between 1997 and 1998 due to the absence of updates for a subset of the data used in the past.

R=Revised. NA=Not available.

Notes: • Data are at end of year. • See "Proved Reserves, Crude Oil," "Proved Reserves, Lease Condensate," "Proved Reserves, Natural Gas," and "Proved Reserves, Natural Gas Liquids" in Glossary.

Web Pages: See http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html and http://www.eia.doe.gov/oil_gas/natural_gas/info_glance/natural_gas.html for related information.

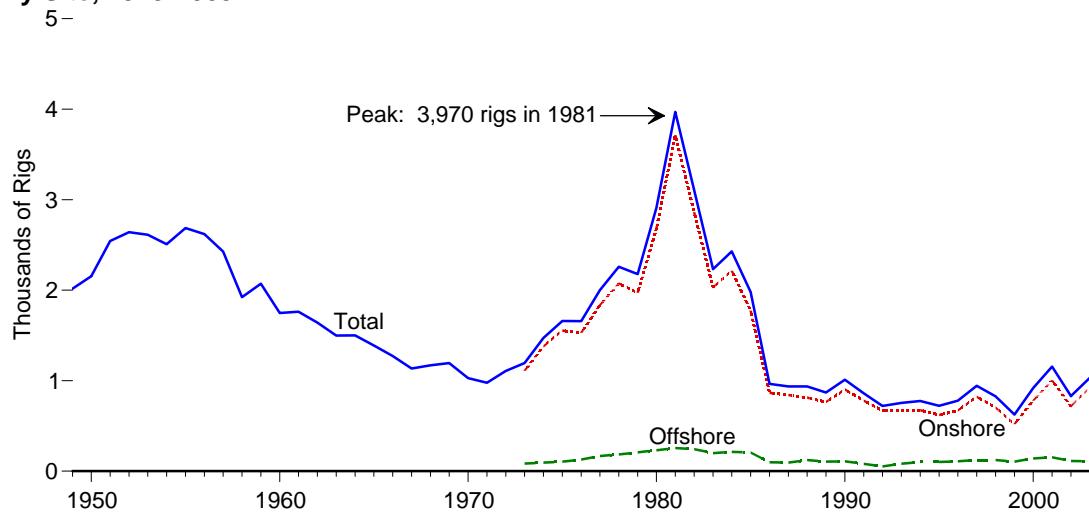
Sources: **Cumulative Number of Fields:** Energy Information Administration (EIA), *Oil and Gas Field Code Master List*, annual reports, and EIA, Office of Oil and Gas, *Oil and Gas Integrated Field File*.

Cumulative Production: Calculated from EIA, *Petroleum Supply Annual*, annual reports and *Natural Gas Annual*, annual reports. **Proved Reserves:** • 1977-2001—EIA, *U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves*, annual reports. • 2002—EIA, *U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves 2002 Annual Report* (December 2003), Tables 6, 9, and 15. **Proved Ultimate Recovery:**

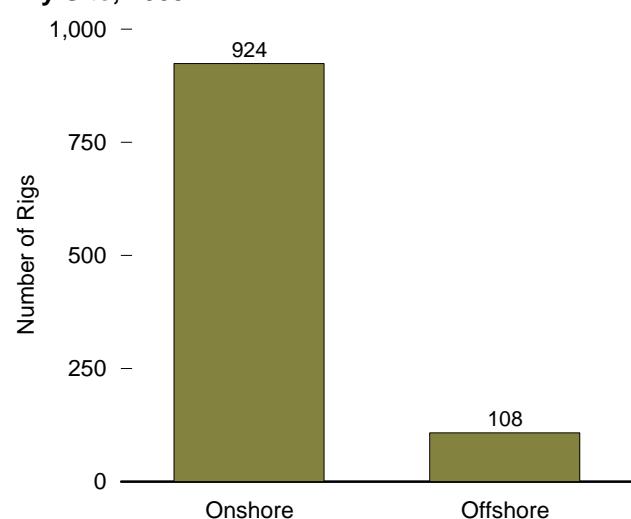
Calculated as the sum of cumulative production and proved reserves.

Figure 4.3 Crude Oil and Natural Gas Rotary Rigs in Operation

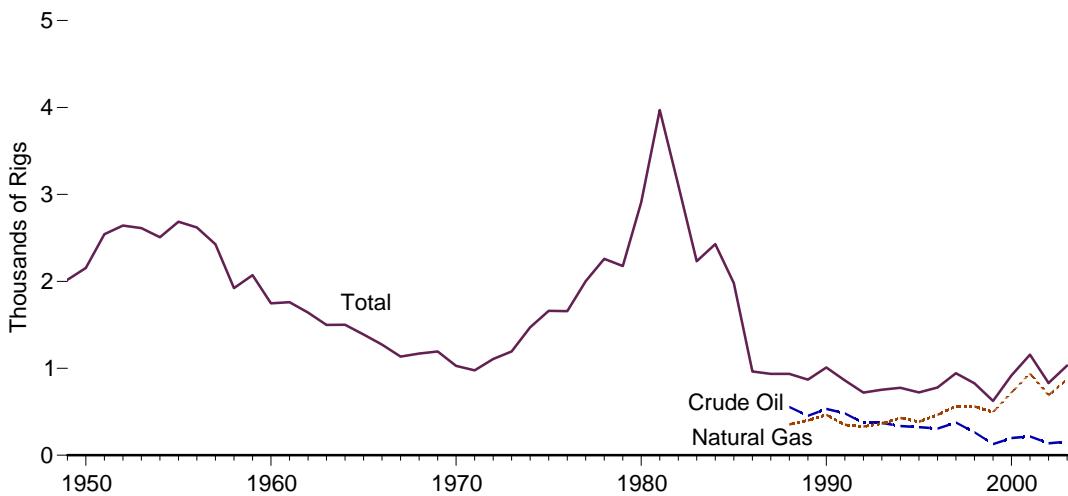
By Site, 1949-2003



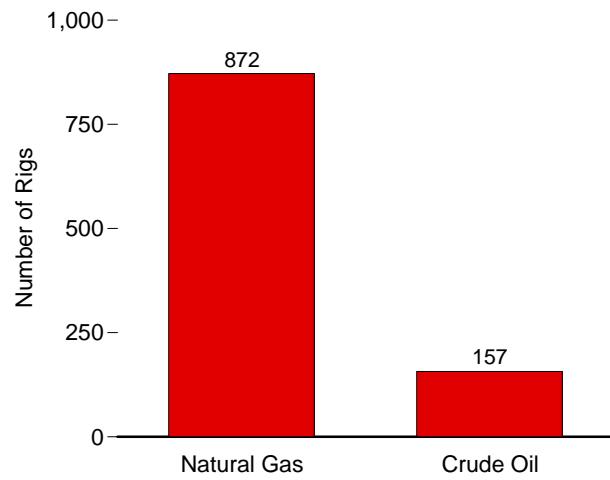
By Site, 2003



By Type, 1949-2003



By Type, 2003



Source: Table 4.3.

Table 4.3 Crude Oil and Natural Gas Rotary Rigs in Operation, Selected Years, 1949-2003

Year	By Site		By Type		Total ¹
	Onshore	Offshore	Crude Oil	Natural Gas	
1949	NA	NA	NA	NA	2,017
1950	NA	NA	NA	NA	2,154
1955	NA	NA	NA	NA	2,686
1960	NA	NA	NA	NA	1,748
1965	NA	NA	NA	NA	1,388
1970	NA	NA	NA	NA	1,028
1971	NA	NA	NA	NA	976
1972	NA	NA	NA	NA	1,107
1973	1,110	84	NA	NA	1,194
1974	1,378	94	NA	NA	1,472
1975	1,554	106	NA	NA	1,660
1976	1,529	129	NA	NA	1,658
1977	1,834	167	NA	NA	2,001
1978	2,074	185	NA	NA	2,259
1979	1,970	207	NA	NA	2,177
1980	2,678	231	NA	NA	2,909
1981	3,714	256	NA	NA	3,970
1982	2,862	243	NA	NA	3,105
1983	2,033	199	NA	NA	2,232
1984	2,215	213	NA	NA	2,428
1985	1,774	206	NA	NA	1,980
1986	865	99	NA	NA	964
1987	841	95	NA	NA	936
1988	813	123	554	354	936
1989	764	105	453	401	869
1990	902	108	532	464	1,010
1991	779	81	482	351	860
1992	669	52	373	331	721
1993	672	82	373	364	754
1994	673	102	335	427	775
1995	622	101	323	385	723
1996	671	108	306	464	779
1997	821	122	376	564	943
1998	703	123	264	560	827
1999	519	106	128	496	625
2000	778	140	197	720	918
2001	1,003	153	217	939	1,156
2002	717	113	137	691	830
2003	924	108	157	872	1,032

¹ Sum of rigs drilling for crude oil, rigs drilling for natural gas, and other rigs (not shown) drilling for miscellaneous purposes such as service wells, injection wells, and stratigraphic tests.

NA=Not available.

Notes: • Data are not for the exact calendar year but are an average for the 52 or 53 consecutive whole

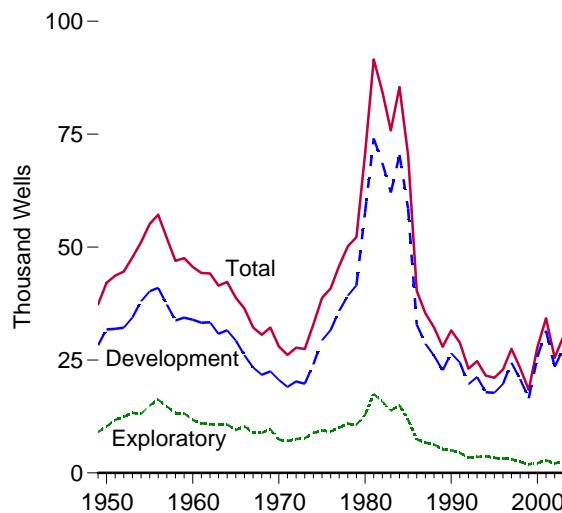
weeks that most nearly coincide with the calendar year. • Geographic coverage is the 50 States and the District of Columbia. • Totals may not equal sum of components due to independent rounding.

Web Page: For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/resource.html>.

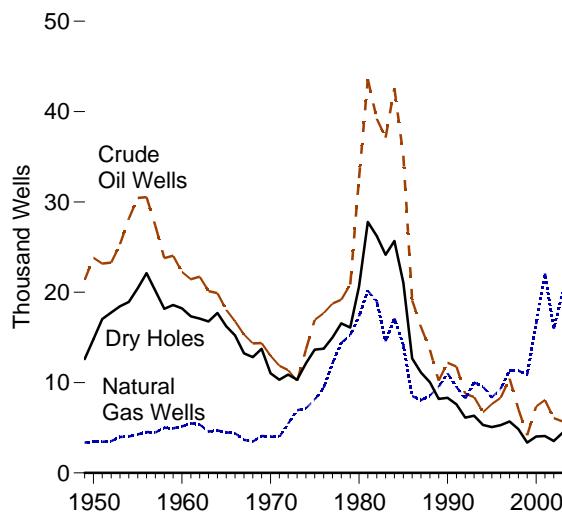
Source: Baker Hughes, Inc., Houston, Texas, *Rotary Rigs Running—By State*.

Figure 4.4 Crude Oil and Natural Gas Exploratory and Development Wells

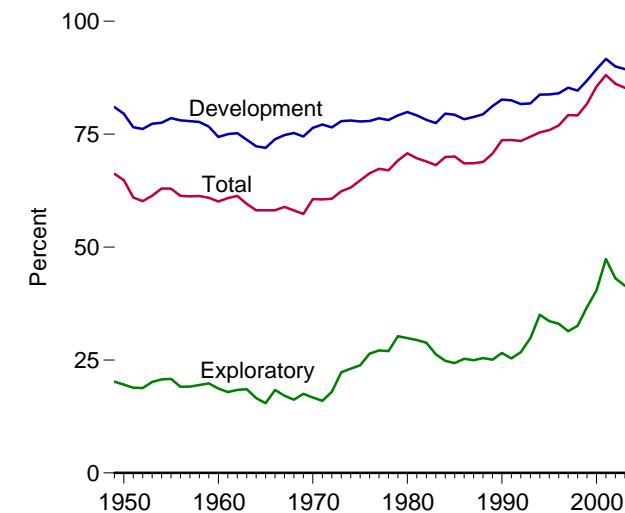
Total Wells Drilled, 1949-2003



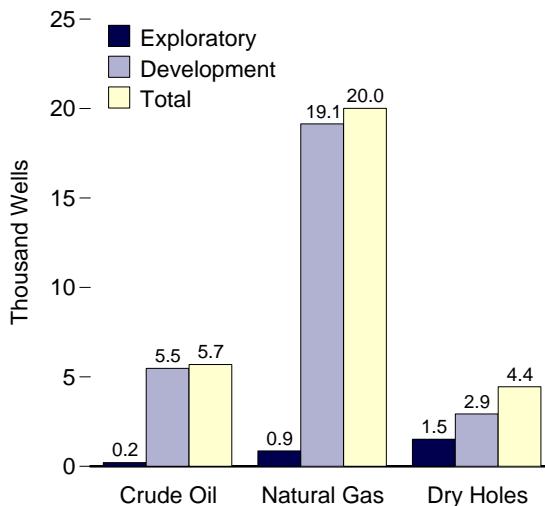
Total Wells Drilled by Type, 1949-2003



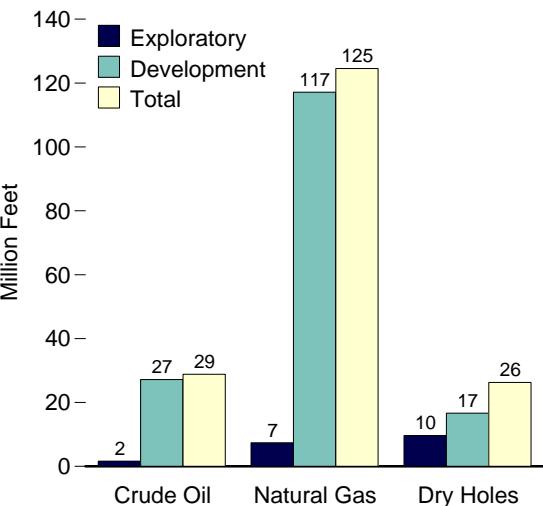
Successful Wells, 1949-2003



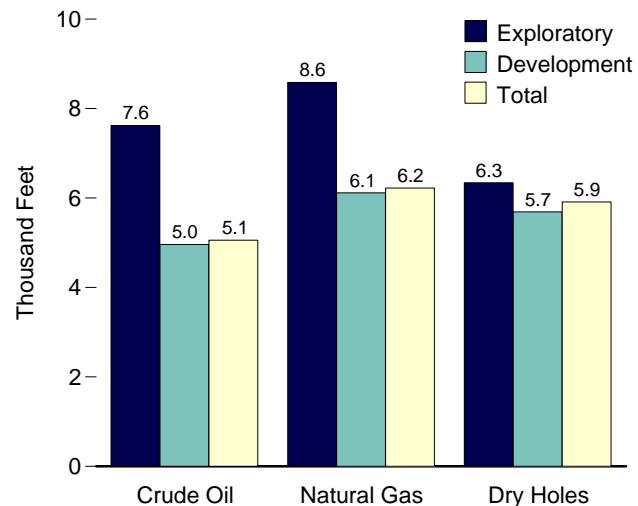
Wells Drilled, 2003



Footage Drilled, 2003



Average Depth, 2003



Sources: Tables 4.4-4.6.

Table 4.4 Crude Oil and Natural Gas Exploratory and Development Wells, Selected Years, 1949-2003

Year	Wells Drilled				Successful Wells (percent)	Footage Drilled ¹ (thousand feet)				Average Depth (feet per well)			
	Crude Oil ²	Natural Gas ³	Dry Holes ⁴	Total		Crude Oil ²	Natural Gas ³	Dry Holes ⁴	Total	Crude Oil ²	Natural Gas ³	Dry Holes ⁴	Total
1949	21,352	3,363	12,597	37,312	66.2	79,428	12,437	43,754	135,619	3,720	3,698	3,473	3,635
1950	23,812	3,439	14,799	42,050	64.8	92,695	13,685	50,977	157,358	3,893	3,979	3,445	3,742
1955	30,432	4,266	20,452	55,150	62.9	121,148	19,930	85,103	226,182	3,981	4,672	4,161	4,101
1960	22,258	5,149	18,212	45,619	60.1	86,568	28,246	77,361	192,176	3,889	5,486	4,248	4,213
1965	18,065	4,482	16,226	38,773	58.2	73,322	24,931	76,629	174,882	4,059	5,562	4,723	4,510
1970	12,968	4,011	11,031	28,010	60.6	56,859	23,623	58,074	138,556	4,385	5,860	5,265	4,943
1971	11,853	3,971	10,309	26,133	60.6	49,109	23,460	54,685	127,253	4,126	5,890	5,305	4,858
1972	11,378	5,440	10,891	27,709	60.7	49,269	30,006	58,556	137,831	4,330	5,516	5,377	4,974
1973	10,167	6,933	10,320	27,420	62.4	44,416	38,045	55,761	138,223	4,369	5,488	5,403	5,041
1974	13,647	7,138	12,116	32,901	63.2	52,025	38,449	62,899	153,374	3,812	5,387	5,191	4,662
1975	16,948	8,127	13,646	38,721	64.8	66,819	44,454	69,220	180,494	3,943	5,470	5,073	4,661
1976	17,688	9,409	13,758	40,855	66.3	68,892	49,113	68,977	186,982	3,895	5,220	5,014	4,577
1977	18,745	12,122	14,985	45,852	67.3	75,451	63,686	76,728	215,866	4,025	5,254	5,120	4,708
1978	19,181	14,413	16,551	50,145	67.0	77,041	75,841	85,788	238,669	4,017	5,262	5,183	4,760
1979	20,851	15,254	16,099	52,204	69.2	82,688	80,468	81,642	244,798	3,966	5,275	5,071	4,689
1980	32,639	17,333	20,638	70,610	70.8	124,350	91,484	98,820	314,654	3,810	5,278	4,788	4,456
1981	43,598	20,166	27,789	91,553	69.6	171,241	107,758	134,113	413,112	3,928	5,344	4,826	4,512
1982	39,199	18,979	26,219	84,397	68.9	148,881	106,627	122,787	378,295	3,798	5,618	4,683	4,482
1983	37,120	14,564	24,153	75,837	68.2	136,078	77,530	104,378	317,986	3,666	5,323	4,322	4,193
1984	42,605	17,127	25,681	85,413	69.9	161,770	90,578	119,044	371,392	3,797	5,289	4,635	4,348
1985	35,118	14,168	21,056	70,342	70.1	137,366	75,862	99,816	313,045	3,912	5,355	4,740	4,450
1986	19,097	8,516	12,678	40,291	68.5	76,622	44,727	60,507	181,856	4,012	5,252	4,773	4,514
1987	16,164	8,055	11,112	35,331	68.5	66,317	42,479	53,382	162,178	4,103	5,274	4,804	4,590
1988	13,636	8,555	10,041	32,232	68.8	58,660	45,320	52,375	156,354	4,302	5,297	5,216	4,851
1989	10,204	9,539	8,188	27,931	70.7	43,287	49,169	41,983	134,439	4,242	5,154	5,127	4,813
1990	12,198	11,044	8,313	31,555	73.7	54,480	55,869	43,352	153,701	4,466	5,059	5,215	4,871
1991	11,770	9,526	7,596	28,892	73.7	54,283	49,737	39,001	143,021	4,612	5,221	5,134	4,950
1992	8,757	8,209	6,118	23,084	73.5	44,183	45,728	31,213	121,124	5,045	5,571	5,102	5,247
1993	8,407	10,017	6,328	24,752	74.4	42,895	59,720	32,503	135,118	5,102	5,962	5,136	5,459
1994	6,721	9,538	5,307	21,566	75.4	36,090	59,412	29,306	124,809	5,370	6,229	5,522	5,787
1995	7,627	8,354	5,075	21,056	75.9	38,024	51,415	28,393	117,832	4,985	6,154	5,595	5,596
1996	8,314	9,302	5,282	22,898	76.9	40,849	58,062	30,133	129,045	4,913	6,242	5,705	5,636
1997	10,436	11,327	5,702	27,465	79.2	52,098	70,477	34,086	156,661	4,992	6,222	5,978	5,704
1998	7,064	R ^{11,308}	4,840	R ^{23,212}	R ^{79.1}	R ^{37,576}	R ^{74,194}	R ^{31,683}	R ^{143,454}	5,321	6,672	6,512	6,224
1999 ^E	4,176	10,877	3,364	18,417	81.7	R ^{19,793}	R ^{58,242}	R ^{21,375}	99,410	4,723	5,393	6,250	5,398
2000 ^E	7,358	16,455	4,025	27,838	85.5	R ^{34,691}	R ^{83,091}	R ^{23,610}	R ^{141,392}	4,698	5,083	5,762	5,079
2001 ^E	8,060	22,083	R ^{4,084}	R ^{34,227}	R ^{88.1}	R ^{42,504}	R ^{120,307}	R ^{27,156}	R ^{189,967}	R ^{5,274}	R ^{5,448}	R ^{6,649}	R ^{5,550}
2002 ^E	R ^{6,058}	15,947	R ^{3,531}	R ^{25,536}	R ^{86.2}	R ^{27,375}	R ^{91,190}	R ^{19,744}	R ^{138,310}	R ^{4,519}	R ^{5,718}	R ^{5,592}	R ^{5,416}
2003 ^E	5,694	20,011	4,446	30,151	85.3	28,808	124,543	26,286	179,637	5,059	6,224	5,912	5,958

¹ See "Footage Drilled" in Glossary.

² See "Crude Oil Well" in Glossary.

³ See "Natural Gas Well" in Glossary.

⁴ See "Dry Hole" in Glossary.

R=Revised. E=Estimate.

Notes: • Data are for all wells; see Table 4.5 for exploratory wells and Table 4.6 for development wells. See "Development Well" and "Exploratory Well" in Glossary. • Service wells, stratigraphic tests, and core tests are excluded. • For 1949-1959, data represent wells completed in a given year. For 1960-1969, data are for well completion reports received by the American Petroleum Institute during the reporting year. For 1970 forward, the data represent wells completed in a given year. The as-received well completion data for recent years are incomplete due to delays in the reporting of wells drilled. The Energy Information Administration (EIA) therefore statistically imputes the missing data to provide estimates of total well

completions and footage where necessary. See "Completion (Crude Oil/Natural Gas Production)" in Glossary. • Totals may not equal sum of components due to independent rounding. Average depth may not equal average of components due to independent rounding.

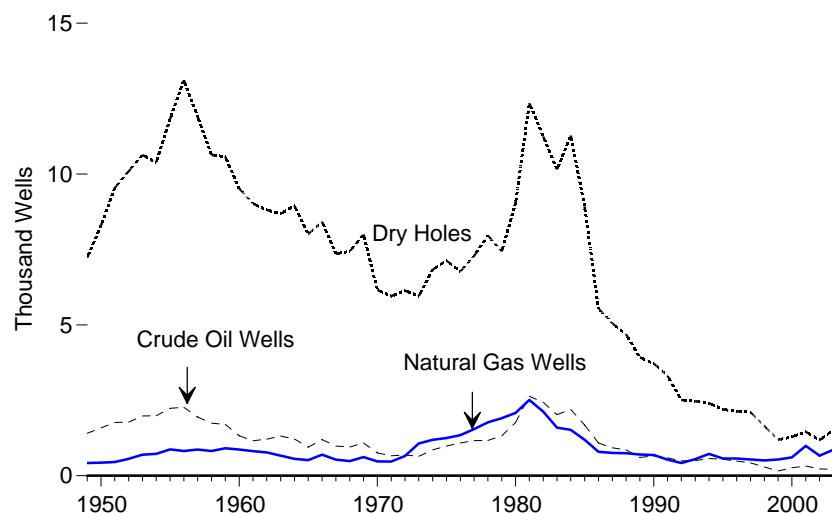
Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/resource.html>.

Sources: • 1949-1965—Gulf Publishing Company, *World Oil*, "Forecast-Review" issue.

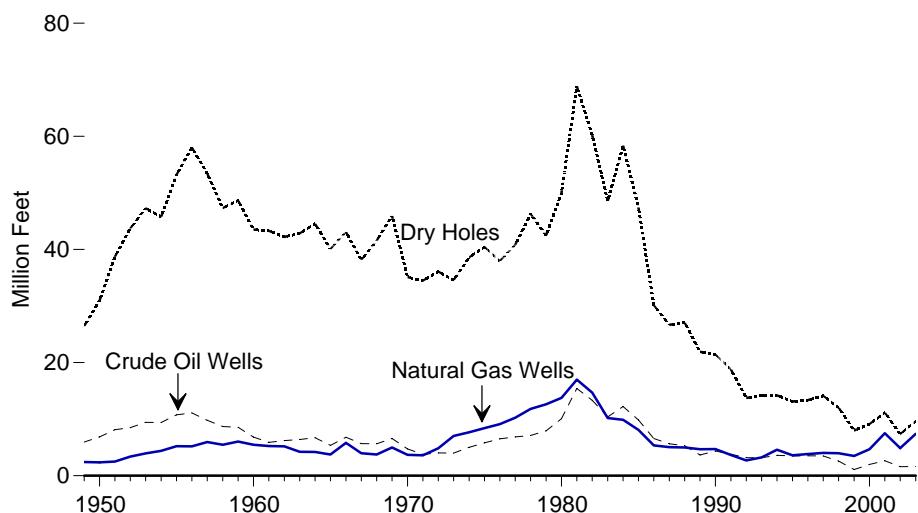
• 1966-1969—American Petroleum Institute (API), *Quarterly Review of Drilling Statistics for the United States*, annual summaries and monthly reports. • 1970-1994—EIA computations based on well reports submitted to the API. • 1995 forward—EIA computations based on well reports submitted to the Information Handling Services Energy Group, Inc. For current data see the EIA, *Monthly Energy Review*, Section 5.

Figure 4.5 Crude Oil and Natural Gas Exploratory Wells, 1949-2003

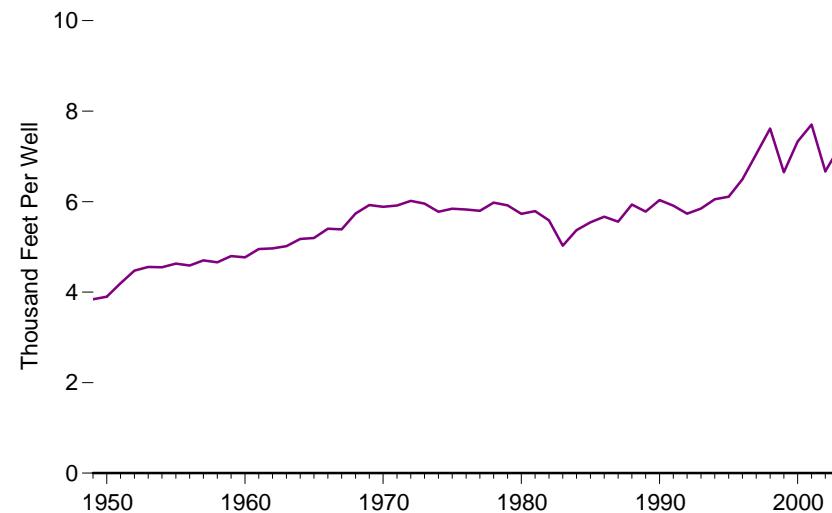
Exploratory Wells Drilled by Well Type



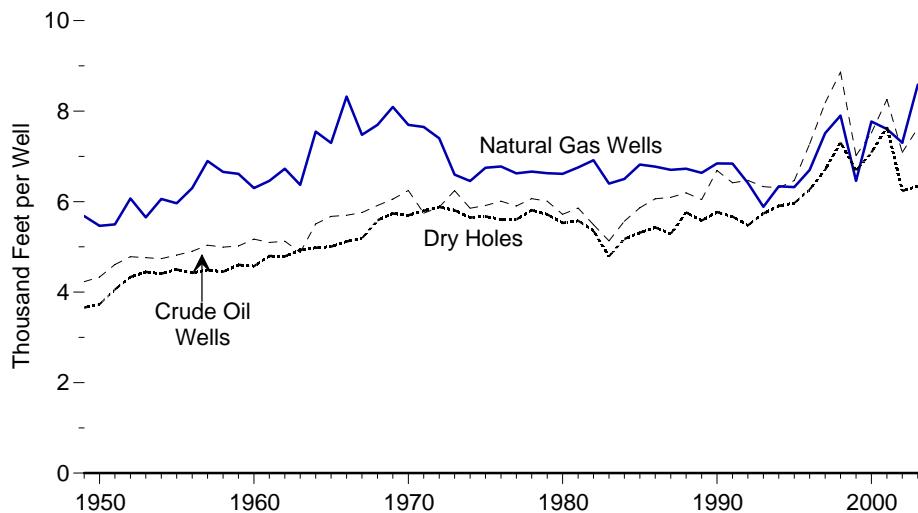
Exploratory Footage Drilled by Well Type



Exploratory Wells Average Depth, All Wells



Exploratory Wells Average Depth by Well Type



Note: These figures depict exploratory wells only; see Figure 4.4 for all wells and Figure 4.6 for development wells only.

Source: Table 4.5.

Table 4.5 Crude Oil and Natural Gas Exploratory Wells, Selected Years, 1949-2003

Year	Wells Drilled				Successful Wells (percent)	Footage Drilled ¹ (thousand feet)				Average Depth (feet per well)			
	Crude Oil ²	Natural Gas ³	Dry Holes ⁴	Total		Crude Oil ²	Natural Gas ³	Dry Holes ⁴	Total	Crude Oil ²	Natural Gas ³	Dry Holes ⁴	Total
1949	1,406	424	7,228	9,058	20.2	5,950	2,409	26,439	34,798	4,232	5,682	3,658	3,842
1950	1,583	431	8,292	10,306	19.5	6,862	2,356	30,957	40,175	4,335	5,466	3,733	3,898
1955	2,236	874	11,832	14,942	20.8	10,774	5,212	53,220	69,206	4,819	5,964	4,498	4,632
1960	1,321	868	9,515	11,704	18.7	6,829	5,466	43,535	55,831	5,170	6,298	4,575	4,770
1965	946	515	8,005	9,466	15.4	5,366	3,757	40,081	49,204	5,672	7,295	5,007	5,198
1970	757	477	6,162	7,396	16.7	4,729	3,678	35,123	43,530	6,247	7,695	5,700	5,885
1971	659	470	5,952	7,081	15.9	3,786	3,610	34,499	41,895	5,745	7,649	5,796	5,915
1972	685	656	6,134	7,475	17.9	4,028	4,847	36,081	44,956	5,880	7,400	5,882	6,015
1973	642	1,067	5,952	7,661	22.3	4,008	7,038	34,571	45,618	6,243	6,596	5,808	5,955
1974	859	1,190	6,833	8,882	23.1	5,029	7,683	38,603	51,315	5,855	6,456	5,649	5,777
1975	982	1,248	7,129	9,359	23.8	5,806	8,422	40,448	54,677	5,913	6,748	5,674	5,842
1976	1,086	1,346	6,772	9,204	26.4	6,527	9,121	37,969	53,617	6,010	6,777	5,607	5,825
1977	1,164	1,548	7,283	9,995	27.1	6,870	10,255	40,823	57,949	5,902	6,625	5,605	5,798
1978	1,171	1,771	7,965	10,907	27.0	7,105	11,798	46,295	65,197	6,067	6,662	5,812	5,978
1979	1,321	1,907	7,437	10,665	30.3	7,941	12,643	42,512	63,096	6,011	6,630	5,716	5,916
1980	1,764	2,081	9,039	12,884	29.8	10,086	13,763	49,971	73,820	5,718	6,614	5,528	5,730
1981	2,636	2,514	12,349	17,499	29.4	15,437	16,983	68,877	101,297	5,856	6,755	5,578	5,789
1982	2,431	2,125	11,247	15,803	28.8	13,349	14,694	60,217	88,260	5,491	6,915	5,354	5,585
1983	2,023	1,593	10,148	13,764	26.3	10,384	10,193	48,590	69,166	5,133	6,398	4,788	5,025
1984	2,198	1,521	11,278	14,997	24.8	12,236	9,889	58,373	80,498	5,567	6,502	5,176	5,368
1985	1,679	1,190	8,924	11,793	24.3	9,847	8,117	47,421	65,386	5,865	6,821	5,314	5,544
1986	1,084	793	5,549	7,426	25.3	6,573	5,372	30,137	42,082	6,063	6,774	5,431	5,667
1987	925	754	5,049	6,728	25.0	5,639	5,055	26,698	37,392	6,096	6,704	5,288	5,558
1988	855	743	4,693	6,291	25.4	5,294	5,000	27,047	37,340	6,192	6,729	5,763	5,936
1989	607	705	3,924	5,236	25.1	3,670	4,678	21,908	30,256	6,046	6,635	5,583	5,778
1990	654	689	3,715	5,058	26.6	4,375	4,716	21,433	30,525	6,690	6,845	5,769	6,035
1991	592	534	3,314	4,440	25.4	3,799	3,654	18,792	26,244	6,417	6,842	5,671	5,911
1992	493	423	2,513	3,429	26.7	3,190	2,712	13,761	19,663	6,470	6,412	5,476	5,734
1993	502	548	2,469	3,519	29.8	3,179	3,226	14,169	20,574	6,332	5,887	5,739	5,847
1994	570	726	2,405	3,701	35.0	3,595	4,601	14,204	22,401	6,308	6,338	5,906	6,053
1995	542	570	2,198	3,310	33.6	3,505	3,604	13,117	20,225	6,466	6,322	5,968	6,110
1996	483	570	2,136	3,189	33.0	3,514	3,819	13,379	20,712	7,276	6,700	6,264	6,495
1997	428	536	2,110	3,074	31.4	3,502	4,026	14,139	21,668	8,183	7,511	6,701	7,049
1998	291	504	1,647	2,442	32.6	R ² ,579	R ³ ,983	R ¹² ,035	R ¹⁸ ,597	R ⁸ ,864	R ⁷ ,902	R ⁷ ,307	R ⁷ ,616
1999 ^E	154	539	1,195	1,888	36.7	R ¹ ,102	R ³ ,481	R ⁷ ,993	R ¹² ,576	R ⁷ ,018	R ⁶ ,458	R ⁶ ,689	R ⁶ ,650
2000 ^E	264	609	1,288	2,161	40.4	R ¹ ,986	R ⁴ ,678	R ⁹ ,124	R ¹⁵ ,788	R ⁷ ,521	R ⁷ ,771	R ⁷ ,084	R ⁷ ,329
2001 ^E	R ³²²	R ⁹⁸⁸	R ^{1,458}	R ^{2,768}	R ^{47.3}	R ² ,659	R ⁷ ,514	R ¹¹ ,153	R ²¹ ,326	R ⁸ ,259	R ⁷ ,605	R ⁷ ,649	R ⁷ ,704
2002 ^E	R ²²⁵	R ⁶⁶⁸	R ^{1,180}	R ^{2,073}	R ^{43.1}	R ¹ ,595	R ⁴ ,878	R ⁷ ,357	R ¹³ ,830	R ⁷ ,089	R ⁷ ,302	R ⁶ ,235	R ⁶ ,671
2003 ^E	212	862	1,519	2,593	41.4	1,616	7,401	9,632	18,649	7,622	8,585	6,341	7,192

¹ See "Footage Drilled" in Glossary.

² See "Crude Oil Well" in Glossary.

³ See "Natural Gas Well" in Glossary.

⁴ See "Dry Hole" in Glossary.

R=Revised. E=Estimate.

Notes: • Data are for exploratory wells only; see Table 4.4 for all wells and Table 4.6 for development wells only. See "Development Well" and "Exploratory Well" in Glossary. • For 1949-1959, data represent wells completed in a given year. For 1960-1969, data are for well completion reports received by the American Petroleum Institute (API) during the reporting year. For 1970 forward, the data represent wells completed in a given year. The as-received well completion data for recent years are incomplete due to delays in the reporting of wells drilled. The Energy Information Administration (EIA) therefore statistically imputes the missing data to provide estimates of total well completions and footage where necessary. See

"Completion (Crude Oil/Natural Gas Production)" in Glossary. • Totals may not equal sum of components due to independent rounding. Average depth may not equal average of components due to independent rounding.

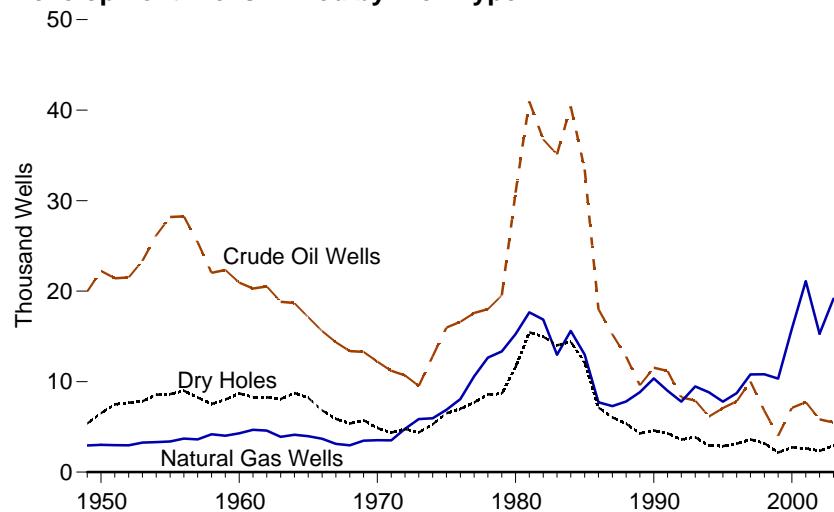
Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/resource.html>.

Sources: • 1949-1960—American Association of Petroleum Geologists, *Statistics on Exploratory Drilling in the United States, 1940 through 1960* (1962), pp. 4-19. • 1961-1965—*Bulletin of the American Association of Petroleum Geologists*, "North American Developments" issue. • 1966-1969—API, *Quarterly Review of Drilling Statistics for the United States*, annual summaries and monthly reports.

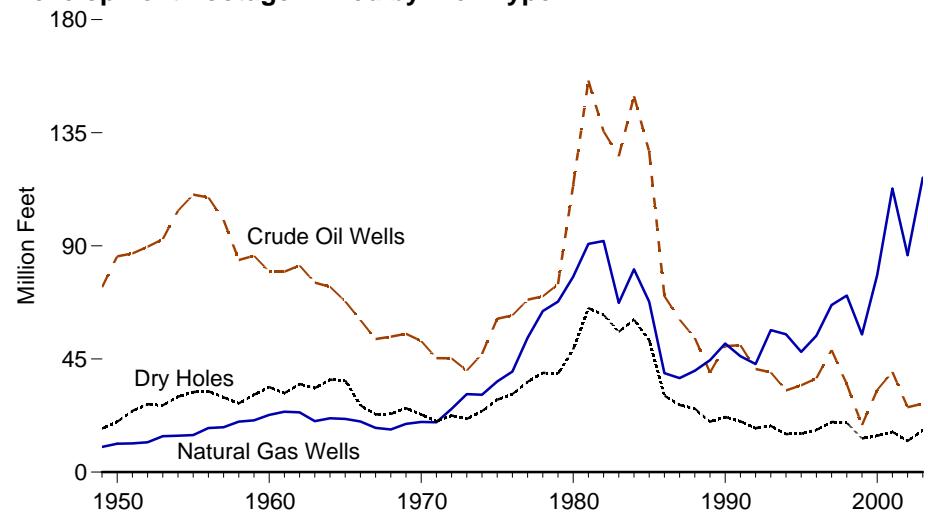
• 1970-1994—EIA computations based on well reports submitted to the API. • 1995 forward—EIA computations based on well reports submitted to the Information Handling Services Energy Group, Inc. For current data see the EIA, *Monthly Energy Review*, Section 5.

Figure 4.6 Crude Oil and Natural Gas Development Wells, 1949-2003

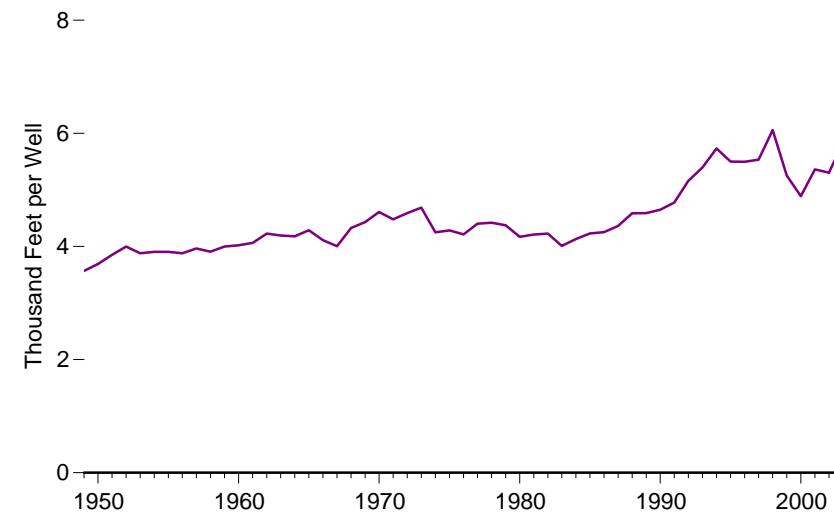
Development Wells Drilled by Well Type



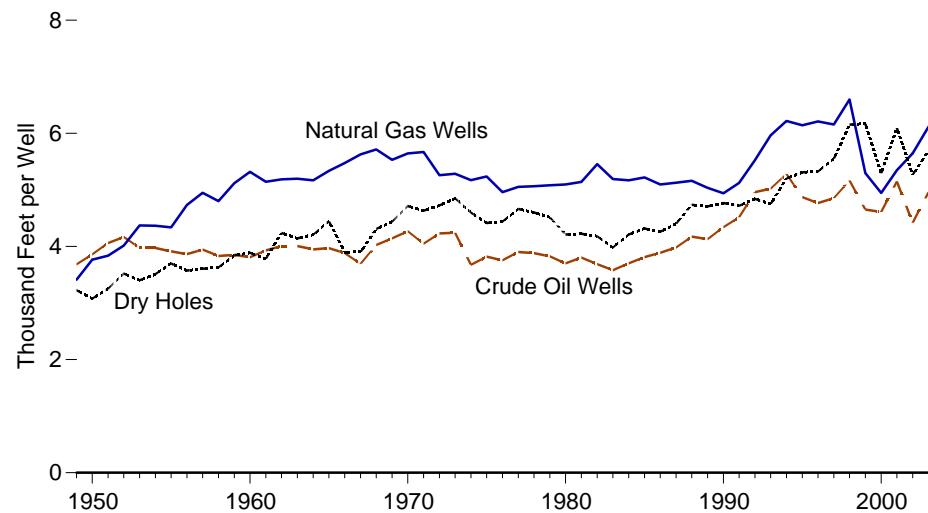
Development Footage Drilled by Well Type



Development Wells Average Depth, All Wells



Development Wells Average Depth by Well Type



Note: These figures depict developed wells only; see Figure 4.4 for all wells and Figure 4.5 for exploratory wells only.

Source: Table 4.6.

Table 4.6 Crude Oil and Natural Gas Development Wells, Selected Years, 1949-2003

Year	Wells Drilled				Successful Wells (percent)	Footage Drilled ¹ (thousand feet)				Average Depth (feet per well)			
	Crude Oil ²	Natural Gas ³	Dry Holes ⁴	Total		Crude Oil ²	Natural Gas ³	Dry Holes ⁴	Total	Crude Oil ²	Natural Gas ³	Dry Holes ⁴	Total
1949	19,946	2,939	5,369	28,254	81.0	73,478	10,028	17,315	100,821	3,684	3,412	3,225	3,568
1950	22,229	3,008	6,507	31,744	79.5	85,833	11,329	20,020	117,183	3,861	3,766	3,077	3,691
1955	28,196	3,392	8,620	40,208	78.6	110,374	14,718	31,883	156,976	3,915	4,339	3,699	3,904
1960	20,937	4,281	8,697	33,915	74.4	79,739	22,780	33,826	136,345	3,809	5,321	3,889	4,020
1965	17,119	3,967	8,221	29,307	71.9	67,956	21,174	36,548	125,678	3,970	5,337	4,446	4,288
1970	12,211	3,534	4,869	20,614	76.4	52,130	19,945	22,951	95,026	4,269	5,644	4,714	4,610
1971	11,194	3,501	4,357	19,052	77.1	45,323	19,850	20,186	85,358	4,049	5,670	4,633	4,480
1972	10,693	4,784	4,757	20,234	76.5	45,241	25,159	22,475	92,875	4,231	5,259	4,725	4,590
1973	9,525	5,866	4,368	19,759	77.9	40,408	31,007	21,190	92,605	4,242	5,286	4,851	4,687
1974	12,788	5,948	5,283	24,019	78.0	46,996	30,766	24,296	102,059	3,675	5,173	4,599	4,249
1975	15,966	6,879	6,517	29,362	77.8	61,013	36,032	28,772	125,817	3,821	5,238	4,415	4,285
1976	16,602	8,063	6,986	31,651	77.9	62,365	39,992	31,008	133,365	3,756	4,960	4,439	4,214
1977	17,581	10,574	7,702	35,857	78.5	68,581	53,431	35,905	157,917	3,901	5,053	4,662	4,404
1978	18,010	12,642	8,586	39,238	78.1	69,936	64,043	39,493	173,472	3,883	5,066	4,600	4,421
1979	19,530	13,347	8,662	41,539	79.1	74,747	67,825	39,130	181,702	3,827	5,082	4,517	4,374
1980	30,875	15,252	11,599	57,726	79.9	114,264	77,721	48,849	240,834	3,701	5,096	4,211	4,172
1981	40,962	17,652	15,440	74,054	79.2	155,804	90,775	65,236	311,815	3,804	5,142	4,225	4,211
1982	36,768	16,854	14,972	68,594	78.2	135,532	91,933	62,570	290,035	3,686	5,455	4,179	4,228
1983	35,097	12,971	14,005	62,073	77.4	125,694	67,337	55,788	248,820	3,581	5,191	3,983	4,009
1984	40,407	15,606	14,403	70,416	79.5	149,534	80,689	60,671	290,894	3,701	5,170	4,212	4,131
1985	33,439	12,978	12,132	58,549	79.3	127,519	67,745	52,395	247,659	3,813	5,220	4,319	4,230
1986	18,013	7,723	7,129	32,865	78.3	70,049	39,355	30,370	139,774	3,889	5,096	4,260	4,253
1987	15,239	7,301	6,063	28,603	78.8	60,678	37,424	26,684	124,786	3,982	5,126	4,401	4,363
1988	12,781	7,812	5,348	25,941	79.4	53,366	40,320	25,328	119,014	4,175	5,161	4,736	4,588
1989	9,597	8,834	4,264	22,695	81.2	39,617	44,491	20,075	104,183	4,128	5,036	4,708	4,591
1990	11,544	10,355	4,598	26,497	82.6	50,105	51,153	21,919	123,176	4,340	4,940	4,767	4,649
1991	11,178	8,992	4,282	24,452	82.5	50,484	46,083	20,209	116,777	4,516	5,125	4,720	4,776
1992	8,264	7,786	3,605	19,655	81.7	40,993	43,016	17,452	101,461	4,960	5,525	4,841	5,162
1993	7,905	9,469	3,859	21,233	81.8	39,716	56,494	18,334	114,544	5,024	5,966	4,751	5,395
1994	6,151	8,812	2,902	17,865	83.8	32,495	54,811	15,102	102,408	5,283	6,220	5,204	5,732
1995	7,085	7,784	2,877	17,746	83.8	34,519	47,811	15,276	97,607	4,872	6,142	5,310	5,500
1996	7,831	8,732	3,146	19,709	84.0	37,335	54,243	16,754	108,333	4,768	6,212	5,325	5,497
1997	10,008	10,791	3,592	24,391	85.3	48,596	66,451	19,947	134,993	4,856	6,158	5,553	5,535
1998	6,773	R ^{10,804}	3,193	R ^{20,770}	R ^{84.6}	R ^{34,997}	R ^{70,211}	R ^{19,648}	R ^{124,857}	5,167	R ^{6,599}	R ^{6,154}	R ^{6,059}
1999 ^E	4,022	10,338	2,169	16,529	86.9	R ^{18,691}	R ^{54,761}	R ^{13,382}	R ^{86,834}	R ^{4,651}	R ^{5,297}	R ^{6,170}	R ^{5,254}
2000 ^E	7,094	15,846	2,737	25,677	89.3	R ^{32,705}	R ^{78,413}	R ^{14,486}	R ^{125,604}	R ^{4,610}	R ^{4,946}	R ^{5,293}	R ^{4,890}
2001 ^E	R ^{7,738}	R ^{21,095}	R ^{2,626}	R ^{31,459}	R ^{91.7}	R ^{39,845}	R ^{112,793}	R ^{16,003}	R ^{168,641}	R ^{5,149}	R ^{5,347}	R ^{6,094}	R ^{5,361}
2002 ^E	R ^{5,833}	R ^{15,279}	R ^{2,351}	R ^{23,463}	R ^{90.0}	R ^{25,780}	R ^{86,312}	R ^{12,387}	R ^{124,480}	R ^{4,420}	R ^{5,649}	R ^{5,269}	R ^{5,305}
2003 ^E	5,482	19,149	2,927	27,558	89.4	27,192	117,142	16,654	160,988	4,960	6,117	5,690	5,842

¹ See "Footage Drilled" in Glossary.

² See "Crude Oil Well" in Glossary.

³ See "Natural Gas Well" in Glossary.

⁴ See "Dry Hole" in Glossary.

R=Revised. E=Estimate.

Notes: • Data are for development wells only; see Table 4.4 for all wells and Table 4.5 for exploratory wells only. See "Development Well" and "Exploratory Well" in Glossary. • Service wells, stratigraphic tests, and core tests are excluded. • For 1949-1959, data represent wells completed in a given year. For 1960-1969, data are for well completion reports received by the American Petroleum Institute during the reporting year. For 1970 forward, the data represent wells completed in a given year. The as-received well completion data for recent years are incomplete due to delays in the reporting of wells drilled. The Energy Information Administration (EIA) therefore statistically imputes the missing data to provide estimates of total

well completions and footage where necessary. See "Completion (Crude Oil/Natural Gas Production)" in Glossary. • Totals may not equal sum of components due to independent rounding. Average depth may not equal average of components due to independent rounding.

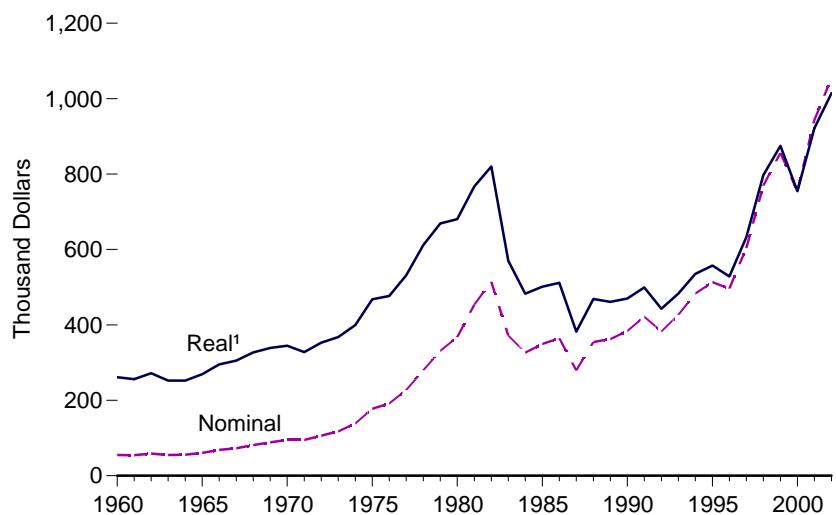
Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/resource.html>.

Sources: • 1949-1965—Gulf Publishing Company, *World Oil*, "Forecast-Review" issue.

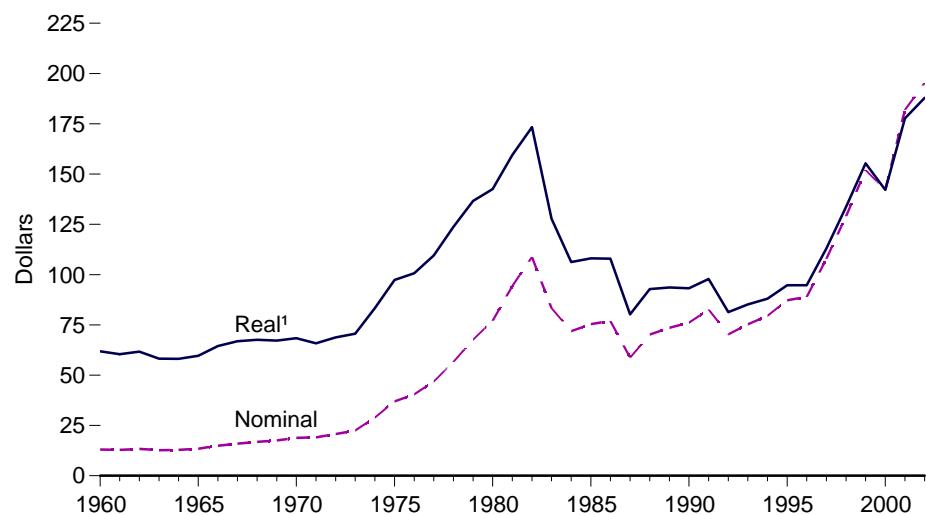
• 1966-1969—American Petroleum Institute, *Quarterly Review of Drilling Statistics for the United States*, annual summaries and monthly reports. • 1970-1994—EIA computations based on well reports submitted to the American Petroleum Institute. • 1995 forward—EIA computations based on well reports submitted to the Information Handling Services Energy Group, Inc. For current data see the EIA, *Monthly Energy Review*, Section 5.

Figure 4.7 Costs of Crude Oil and Natural Gas Wells Drilled

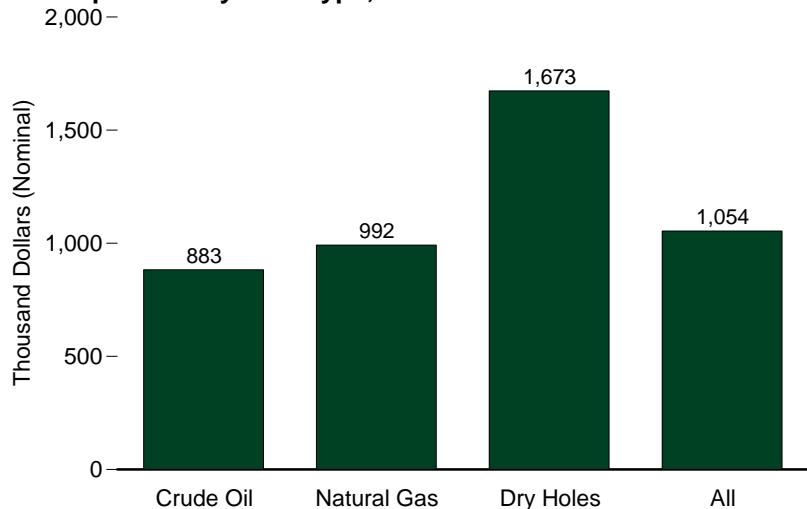
Costs per Well, All Wells, 1960-2002



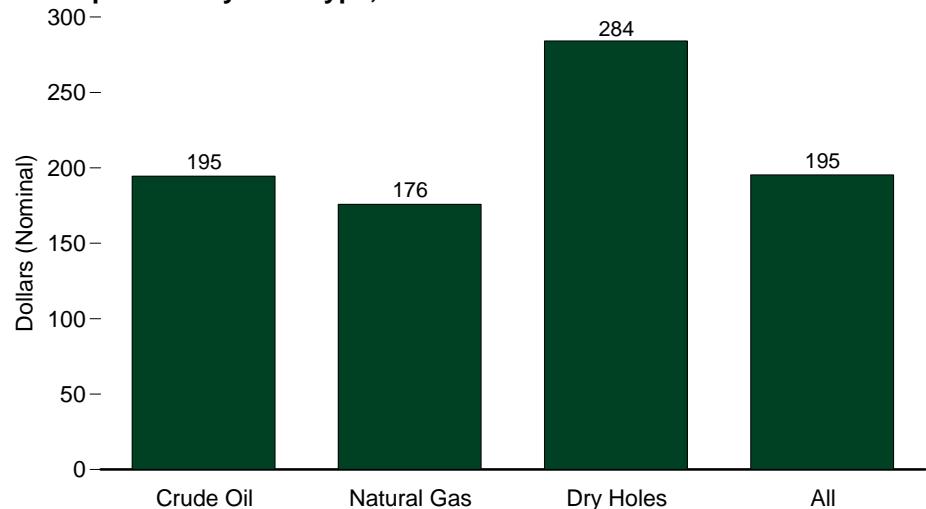
Costs per Foot, All Wells, 1960-2002



Costs per Well by Well Type, 2002



Costs per Foot by Well Type, 2002



¹ In chained (2000) dollars, calculated by using gross domestic product implicit price deflators. See Table D1.

Note: Because vertical scales differ, graphs should not be compared.
Source: Table 4.7.

Table 4.7 Costs of Crude Oil and Natural Gas Wells Drilled, 1960-2002

	Costs per Well (thousand dollars)						Costs per Foot (dollars)				
	Crude Oil ¹	Natural Gas ²	Dry Holes ³	All		Crude Oil ¹	Natural Gas ²	Dry Holes ³	All		
Year	Nominal	Nominal	Nominal	Nominal	Real ⁴	Nominal	Nominal	Nominal	Nominal	Real ⁴	
1960	52.2	102.7	44.0	54.9	R261.1	13.22	18.57	10.56	13.01	R61.83	
1961	51.3	94.7	45.2	54.5	R256.2	13.11	17.65	10.56	12.85	R60.39	
1962	54.2	97.1	50.8	58.6	R271.8	13.41	18.10	11.20	13.31	R61.71	
1963	51.8	92.4	48.2	55.0	R252.4	13.20	17.19	10.58	12.69	R58.22	
1964	50.6	104.8	48.5	55.8	R252.2	13.12	18.57	10.64	12.86	R58.11	
1965	56.6	101.9	53.1	60.6	R269.1	13.94	18.35	11.21	13.44	R59.64	
1966	62.2	133.8	56.9	68.4	R295.1	15.04	21.75	12.34	14.95	R64.51	
1967	66.6	141.0	61.5	72.9	R305.1	16.61	23.05	12.87	15.97	R66.84	
1968	79.1	148.5	66.2	81.5	R327.0	18.63	24.05	12.88	16.83	R67.56	
1969	86.5	154.3	70.2	88.6	R338.7	19.28	25.58	13.23	17.56	R67.15	
1970	86.7	160.7	80.9	94.9	R344.6	19.29	26.75	15.21	18.84	R68.42	
1971	78.4	166.6	86.8	94.7	R327.6	18.41	27.70	16.02	19.03	R65.82	
1972	93.5	157.8	94.9	106.4	R352.8	20.77	27.78	17.28	20.76	R68.82	
1973	103.8	155.3	105.8	117.2	R367.8	22.54	27.46	19.22	22.50	R70.65	
1974	110.2	189.2	141.7	138.7	R399.5	27.82	34.11	26.76	28.93	R83.31	
1975	138.6	262.0	177.2	177.8	R467.9	34.17	46.23	33.86	36.99	R97.34	
1976	151.1	270.4	190.3	191.6	R476.7	37.35	49.78	36.94	40.46	R100.66	
1977	170.0	313.5	230.2	227.2	R531.4	41.16	57.57	43.49	46.81	R109.49	
1978	208.0	374.2	281.7	280.0	R611.8	49.72	68.37	52.55	56.63	R123.76	
1979	243.1	443.1	339.6	331.4	R668.8	58.29	80.66	64.60	67.70	R136.64	
1980	272.1	536.4	376.5	367.7	R680.4	66.36	95.16	73.70	77.02	R142.52	
1981	336.3	698.6	464.0	453.7	R767.4	80.40	122.17	90.03	94.30	R159.51	
1982	347.4	864.3	515.4	514.4	R820.0	86.34	146.20	104.09	108.73	R173.34	
1983	283.8	608.1	366.5	371.7	R570.1	72.65	108.37	79.10	83.34	R127.81	
1984	262.1	489.8	329.2	326.5	R482.5	66.32	88.80	67.18	71.90	R106.27	
1985	270.4	508.7	372.3	349.4	R501.2	66.78	93.09	73.69	75.35	R108.09	
1986	284.9	522.9	389.2	364.6	R511.7	68.35	93.02	76.53	76.88	R107.90	
1987	246.0	380.4	259.1	279.6	R382.0	58.35	69.55	51.05	58.71	R80.21	
1988	279.4	460.3	366.4	354.7	R468.6	62.28	84.65	66.96	70.23	R92.78	
1989	282.3	457.8	355.4	362.2	R461.1	64.92	86.86	67.61	73.55	R93.63	
1990	321.8	471.3	367.5	383.6	R470.2	69.17	90.73	67.49	76.07	R93.23	
1991	346.9	506.6	441.2	421.5	R499.1	73.75	93.10	83.05	82.64	R97.86	
1992	362.3	426.1	357.6	382.6	R442.9	69.50	72.83	67.82	70.27	R81.35	
1993	356.6	521.2	387.7	426.8	R482.9	67.52	83.15	72.56	75.30	R85.20	
1994	409.5	535.1	491.5	483.2	R535.4	70.57	81.90	86.60	79.49	R88.07	
1995	415.8	629.7	481.2	513.4	R557.4	78.09	95.97	84.60	87.22	R94.70	
1996	341.0	616.0	541.0	496.1	R528.6	70.60	98.67	95.74	88.92	R94.74	
1997	445.6	728.6	655.6	603.9	R632.9	90.48	117.55	115.09	107.83	R113.01	
1998	566.0	815.6	973.2	769.1	R797.2	108.88	127.94	157.79	128.97	R133.69	
1999	783.0	798.4	1,115.5	856.1	R874.8	156.45	138.42	182.99	152.02	R155.33	
2000	593.4	756.9	1,075.4	754.6	R754.6	125.96	138.39	181.83	142.16	R142.16	
2001	729.1	896.5	1,620.4	943.2	R921.3	153.72	172.05	271.63	181.94	R177.72	
2002	882.8	991.9	1,673.4	1,054.2	1,014.2	194.55	175.78	284.17	195.31	187.90	

¹ See "Crude Oil Well" in Glossary.

² See "Natural Gas Well" in Glossary.

³ See "Dry Hole" in Glossary.

⁴ In chained (2000) dollars, calculated by using gross domestic product implicit price deflators. See Table D1.

R=Revised.

Notes: • The information reported for 1965 and prior years is not strictly comparable to that in more

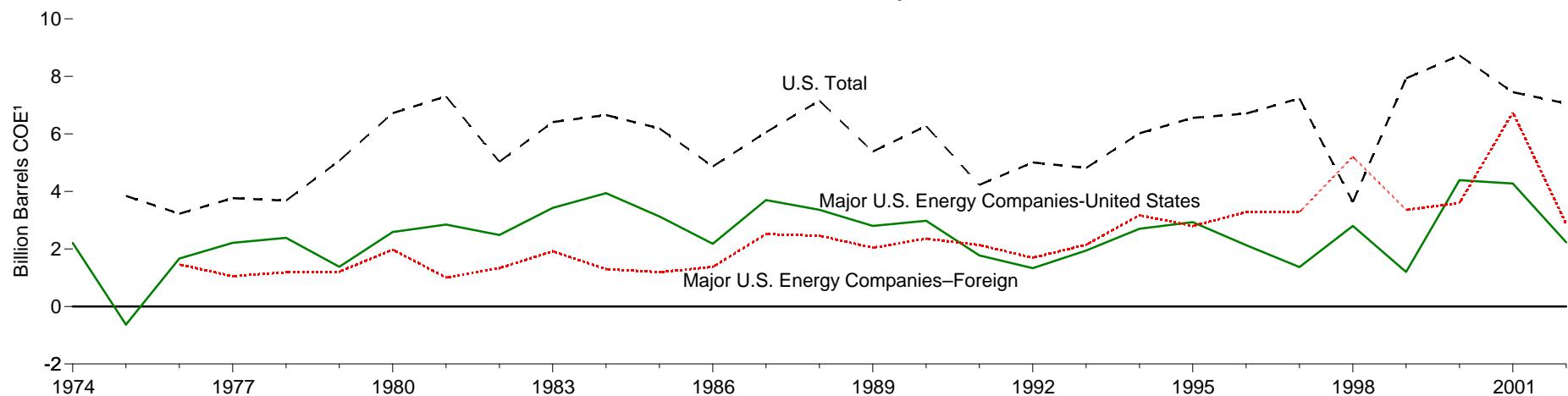
recent surveys. • Average cost is the arithmetic mean and includes all costs for drilling and equipping wells and for surface-producing facilities. Wells drilled include exploratory and development wells; excludes service wells, stratigraphic tests, and core tests. See "Development Well" and "Exploratory Well" in Glossary.

Web Page: For related information, see <http://api-ec.api.org/newsplashpage/index.cfm>.

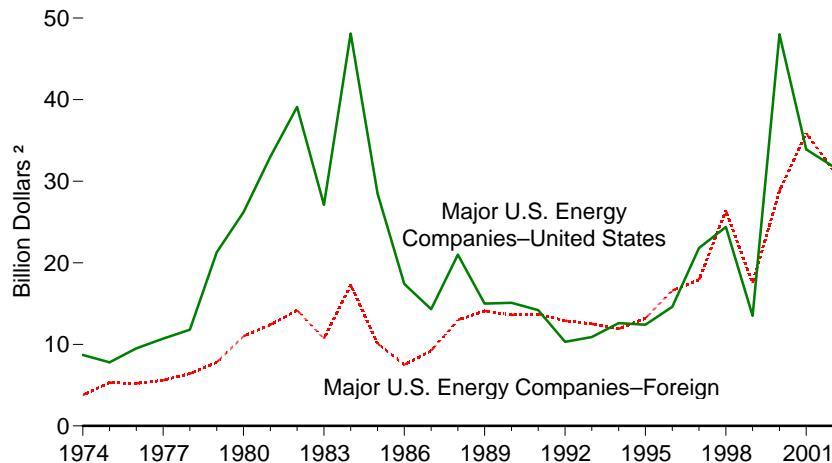
Source: American Petroleum Institute, 2002 Joint Association Survey on Drilling Costs.

Figure 4.8 Crude Oil, Natural Gas, and Natural Gas Liquids Gross Additions to Proved Reserves, and Exploration and Development Expenditures

Gross Additions to Proved Reserves of Crude Oil, Natural Gas, and Natural Gas Liquids, 1974-2002



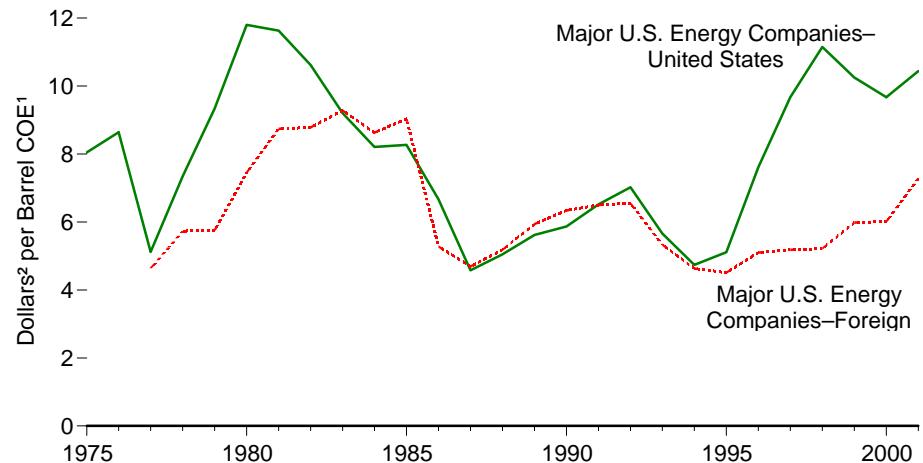
Crude Oil and Natural Gas Exploration and Development Expenditures, 1974-2002



¹ Crude oil equivalent.

² Nominal dollars.

**Expenditures per Barrel of Reserve Additions, 1975-2001
Three-Year Moving Average**



Note: "Major U.S. Energy Companies" are the top publicly-owned crude oil and natural gas producers and petroleum refiners that form the Financial Reporting System (FRS). See Table 3.12.

Source: Table 4.8.

Table 4.8 Crude Oil, Natural Gas, and Natural Gas Liquids Gross Additions to Proved Reserves, and Exploration and Development Expenditures, 1974-2002

Year	Gross Additions to Proved Reserves ¹ of Crude Oil, Natural Gas, and Natural Gas Liquids (million barrels COE ²)			Crude Oil and Natural Gas Exploration and Development Expenditures (billion dollars ³)		Expenditures per Barrel of Reserve Additions, Three-Year Moving Average (dollars ³ per barrel COE ²)	
	U.S. Total	Major U.S. Energy Companies ⁴		Major U.S. Energy Companies ⁴		Major U.S. Energy Companies ⁴	
		United States	Foreign	United States	Foreign	United States	Foreign
1974	NA	2,205	NA	8.7	3.8	NA	NA
1975	3,846	-634	NA	7.8	5.3	8.05	NA
1976	3,224	1,663	1,459	9.5	5.2	8.64	NA
1977	3,765	2,210	1,055	10.7	5.6	5.12	4.64
1978	3,679	2,383	1,191	11.8	6.4	7.34	5.73
1979	5,071	1,378	⁵ 1,208	21.3	7.8	9.34	⁵ 5.75
1980	6,723	2,590	1,977	26.2	11.0	11.80	7.45
1981	7,304	2,848	1,006	33.0	12.4	11.63	8.74
1982	5,030	2,482	1,332	39.1	14.2	⁶ 10.62	⁶ 8.78
1983	6,412	3,427	1,918	27.1	10.7	9.20	9.28
1984	6,653	3,941	1,298	48.1	17.3	⁶ 8.21	⁶ 8.63
1985	6,190	⁷ 3,129	1,192	28.5	10.1	⁷ 8.27	9.03
1986	4,866	2,178	⁵ 1,375	17.4	7.5	6.67	⁵ 5.28
1987	6,059	⁷ 3,698	2,516	14.3	9.2	⁷ 4.58	4.69
1988	7,156	3,359	2,460	21.0	13.0	5.05	5.18
1989	5,385	2,798	2,043	15.0	14.1	5.62	5.94
1990	6,275	2,979	2,355	15.1	13.6	5.87	6.34
1991	4,227	1,772	2,135	14.2	13.7	6.52	6.50
1992	5,006	1,332	1,694	10.3	12.9	7.02	6.55
1993	4,814	1,945	2,147	10.9	12.5	5.66	5.33
1994	6,021	2,703	3,173	12.6	11.9	4.74	4.63
1995	6,558	2,929	2,799	12.4	13.2	5.11	4.51
1996	6,707	2,131	3,280	14.6	16.6	7.61	5.10
1997	7,233	1,367	3,279	21.8	17.9	9.67	5.18
1998	3,628	2,798	5,206	24.4	26.4	11.15	5.22
1999	7,929	1,197	3,360	13.5	17.5	10.25	5.98
2000	8,725	4,392	3,593	48.0	28.8	9.67	6.01
2001	7,449	4,271	6,744	33.9	35.9	^R 10.44	^R 7.28
2002	7,056	2,232	2,873	31.8	31.4	NA	NA

¹ Gross additions to proved reserves equal annual change in proved reserves plus annual production. See "Proved Reserves, Crude Oil," "Proved Reserves, Natural Gas," and "Proved Reserves, Natural Gas Liquids" in Glossary.

² Crude oil equivalent: converted to Btu on the basis of annual average conversion factors. See Appendix A.

³ Nominal dollars.

⁴ "Major U.S. Energy Companies" are the top publicly-owned, U.S.-based crude oil and natural gas producers and petroleum refiners that form the Financial Reporting System (FRS) (see Table 3.12).

⁵ Data for 1979 exclude downward revisions of 1,225 million barrels COE due to Iranian policies. Data for 1986 exclude downward revisions due to Libyan sanctions.

⁶ Data for 1982 and 1984 are adjusted to exclude purchases of proved reserves associated with mergers among the Financial Reporting System companies.

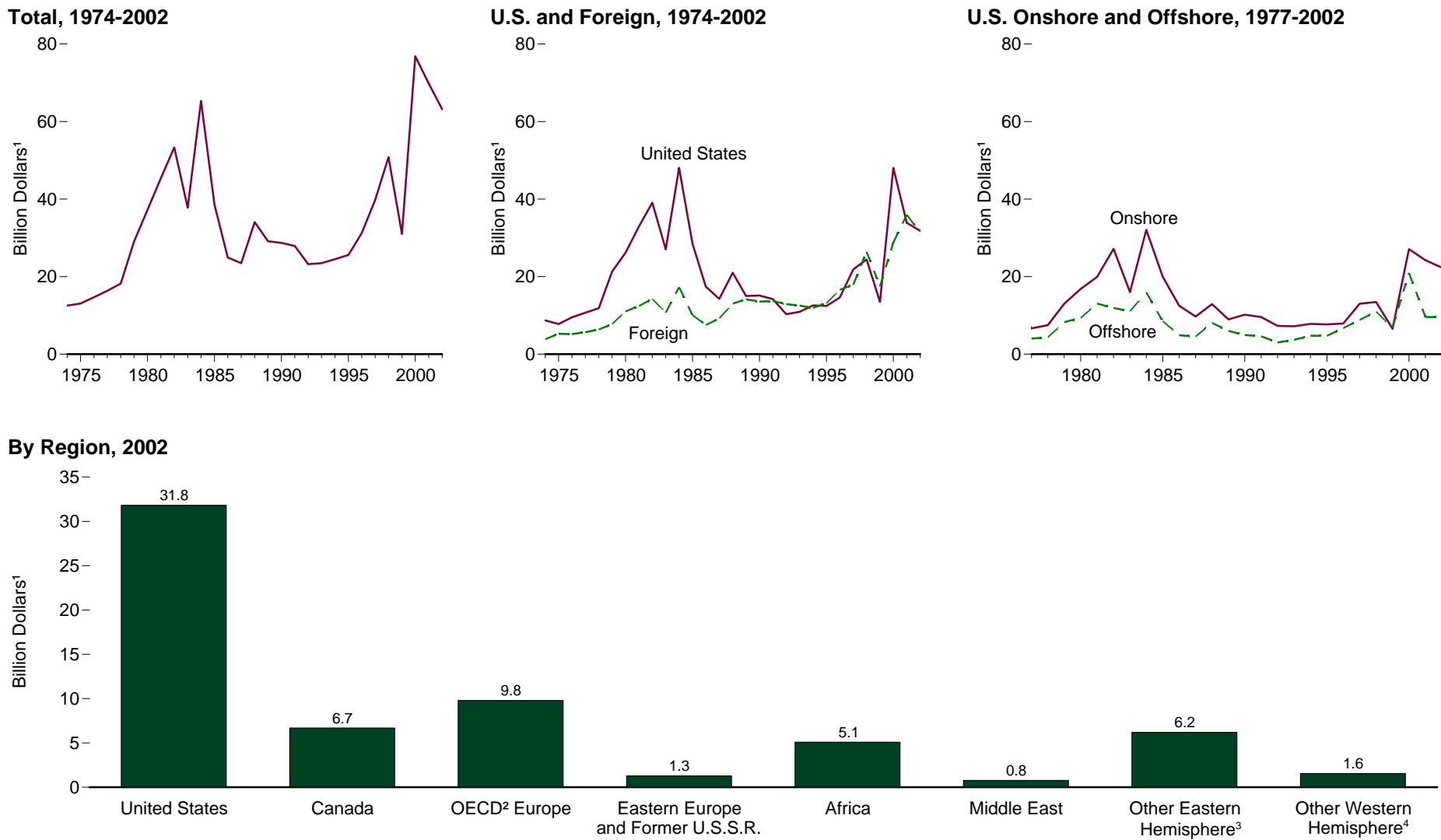
⁷ Data for 1985 and 1987 exclude downward revisions of 1,477 million barrels COE and 2,396 million barrels COE, respectively, of Alaska North Slope natural gas reserves.

R=Revised. NA=Not available.

Web Page: For related information, see <http://www.eia.doe.gov/emeu/finance>.

Sources: **Major U.S. Energy Companies:** • 1974-1976—Energy Information Administration (EIA), Form EIA-28, "Financial Reporting System" database, November 1997. • 1977 forward—EIA, *Performance Profiles of Major Energy Producers*, annual reports. **U.S. Total, Gross Additions to Proved Reserves:** • 1975-1979—American Gas Association, American Petroleum Institute, and Canadian Petroleum Association (published jointly), *Reserves of Crude Oil, Natural Gas Liquids, and Natural Gas in the United States and Canada as of December 31, 1979*, Volume 34 (June 1980). • 1980 forward—EIA, *U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves*, annual reports.

Figure 4.9 Major U.S. Energy Companies' Expenditures for Crude Oil and Natural Gas Exploration and Development by Region



¹ Nominal dollars.

² Organization for Economic Cooperation and Development. See Glossary.

³ This region includes areas that are eastward of the Greenwich prime meridian to 180° longitude and that are not included in other domestic or foreign classifications.

⁴ This region includes areas that are westward of the Greenwich prime meridian to 180° longitude and that are not included in other domestic or foreign classifications.

Notes: • "Major U.S. Energy Companies" are the top publicly-owned, U.S.-based crude oil and natural gas producers and petroleum refiners that form the Financial Reporting System (FRS). See Table 3.12. • Because vertical scales differ, graphs should not be compared.

Source: Table 4.9.

Table 4.9 Major U.S. Energy Companies' Expenditures for Crude Oil and Natural Gas Exploration and Development by Region, 1974-2002 (Billion Dollars ¹)

Year	United States			Foreign								Total
	Onshore	Offshore	Total	Canada	OECD Europe ²	Eastern Europe and Former U.S.S.R.	Africa	Middle East	Other Eastern Hemisphere ³	Other Western Hemisphere ⁴	Total	
1974	NA	NA	8.7	NA	NA	—	NA	NA	NA	NA	3.8	12.5
1975	NA	NA	7.8	NA	NA	—	NA	NA	NA	NA	5.3	13.1
1976	NA	NA	9.5	NA	NA	—	NA	NA	NA	NA	5.2	14.7
1977	6.7	4.0	10.7	1.5	2.5	—	0.7	0.2	0.3	0.4	5.6	16.3
1978	7.5	4.3	11.8	1.6	2.6	—	0.8	0.3	0.4	0.6	6.4	18.2
1979	13.0	8.3	21.3	2.3	3.0	—	0.8	0.2	0.5	0.8	7.8	29.1
1980	16.8	9.4	26.2	3.1	4.3	—	1.4	0.2	0.8	1.0	11.0	37.2
1981	19.9	13.0	33.0	1.8	5.0	—	2.1	0.3	1.9	1.3	12.4	45.4
1982	27.2	11.9	39.1	1.9	6.3	—	2.1	0.4	2.4	1.1	14.2	53.3
1983	16.0	11.1	27.1	1.6	4.3	—	1.7	0.5	2.0	0.6	10.7	37.7
1984	32.1	16.0	48.1	5.4	5.5	—	3.4	0.5	2.0	0.5	17.3	65.3
1985	20.0	8.5	28.5	1.9	3.7	—	1.6	0.9	1.3	0.7	10.1	38.6
1986	12.5	4.9	17.4	1.1	3.2	—	1.1	0.3	1.2	0.6	7.5	24.9
1987	9.7	4.5	14.3	1.9	3.0	—	0.8	0.4	2.8	0.5	9.2	23.5
1988	12.9	8.1	21.0	5.4	4.3	—	0.8	0.4	1.4	0.7	13.0	34.1
1989	9.0	6.0	15.0	6.3	3.5	—	1.0	0.4	2.3	0.6	14.1	29.1
1990	10.2	4.9	15.1	1.8	6.6	—	1.4	0.6	2.4	0.7	13.6	28.7
1991	9.6	4.6	14.2	1.7	6.8	—	1.5	0.5	2.4	0.7	13.7	27.9
1992	7.3	3.0	10.3	1.1	6.8	—	1.4	0.6	2.4	0.6	12.9	23.2
1993	7.2	3.7	10.9	1.6	5.5	0.3	1.5	0.7	2.5	0.6	12.5	23.5
1994	7.8	4.8	12.6	1.8	4.4	0.3	1.4	0.4	2.8	0.7	11.9	24.5
1995	7.7	4.7	12.4	1.9	5.2	0.4	2.0	0.4	2.4	0.9	13.2	25.6
1996	7.9	6.7	14.6	1.6	5.6	0.5	2.8	0.5	4.1	1.6	16.6	31.3
1997	13.0	8.8	21.8	2.0	7.1	0.6	3.0	0.6	3.0	1.6	17.9	39.8
1998	13.5	11.0	24.4	4.8	8.6	1.3	3.1	0.9	3.9	3.7	26.4	50.8
1999	6.6	6.9	13.5	2.1	4.1	0.6	3.1	0.4	3.4	3.8	17.5	31.0
2000	27.1	21.0	48.0	4.9	7.5	0.9	2.7	0.6	6.8	5.4	28.8	76.8
2001	24.2	9.6	33.9	15.3	5.4	0.9	5.5	0.7	5.0	3.1	35.9	69.8
2002	22.3	9.5	31.8	6.7	9.8	1.3	5.1	0.8	6.2	1.6	31.4	63.2

¹ Nominal dollars.

² The European members of the Organization for Economic Cooperation and Development (OECD) are Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, and the United Kingdom, and, for 1997 forward, Czech Republic, Hungary, and Poland.

³ This region includes areas that are eastward of the Greenwich prime meridian to 180° longitude and that are not included in other domestic or foreign classifications.

⁴ This region includes areas that are westward of the Greenwich prime meridian to 180° longitude and that are not included in other domestic or foreign classifications.

NA=Not available. — = Not applicable.

Notes: • "Major U.S. Energy Companies" are the top publicly-owned, U.S.-based crude oil and natural gas producers and petroleum refiners that form the Financial Reporting System (FRS). See Table 3.12.

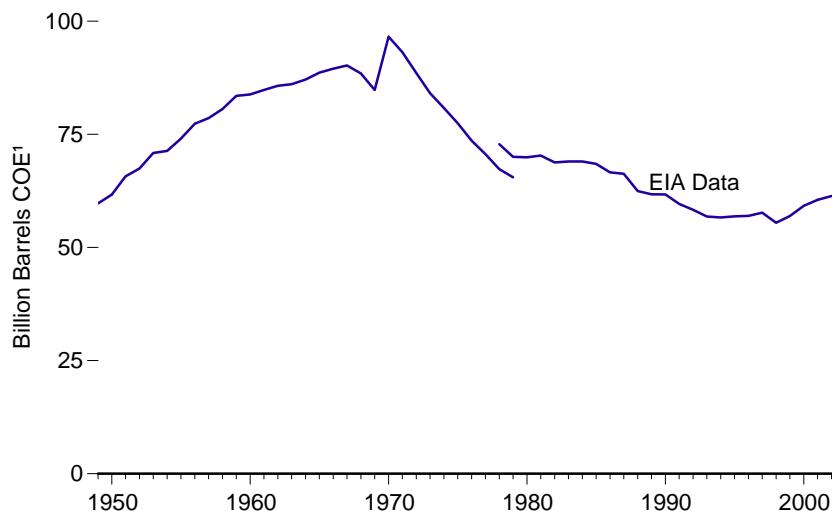
• Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/emeu/finance>.

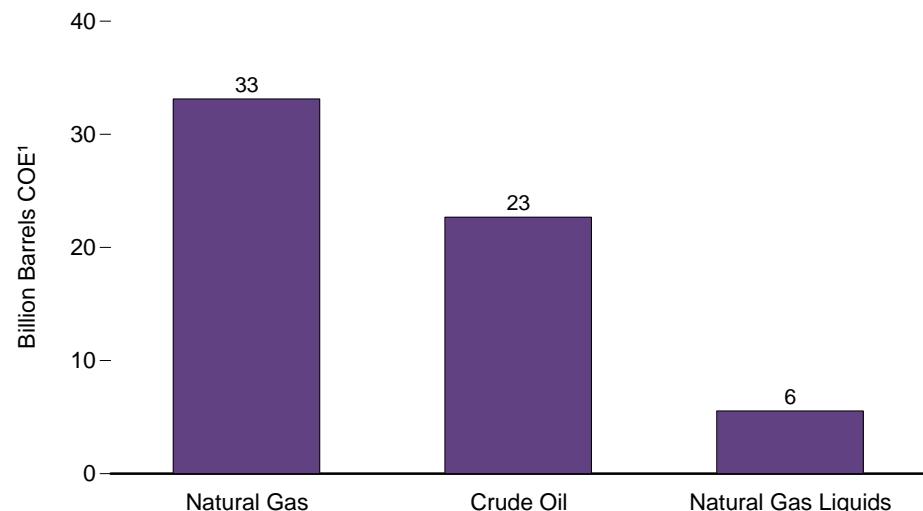
Sources: • 1974-1976—Energy Information Administration (EIA), Office of Energy Markets and End Use, Financial Reporting System Database, November 1997. • 1977 forward—EIA, *Performance Profiles of Major Energy Producers*, annual reports.

Figure 4.10 Crude Oil, Natural Gas, and Natural Gas Liquids Proved Reserves

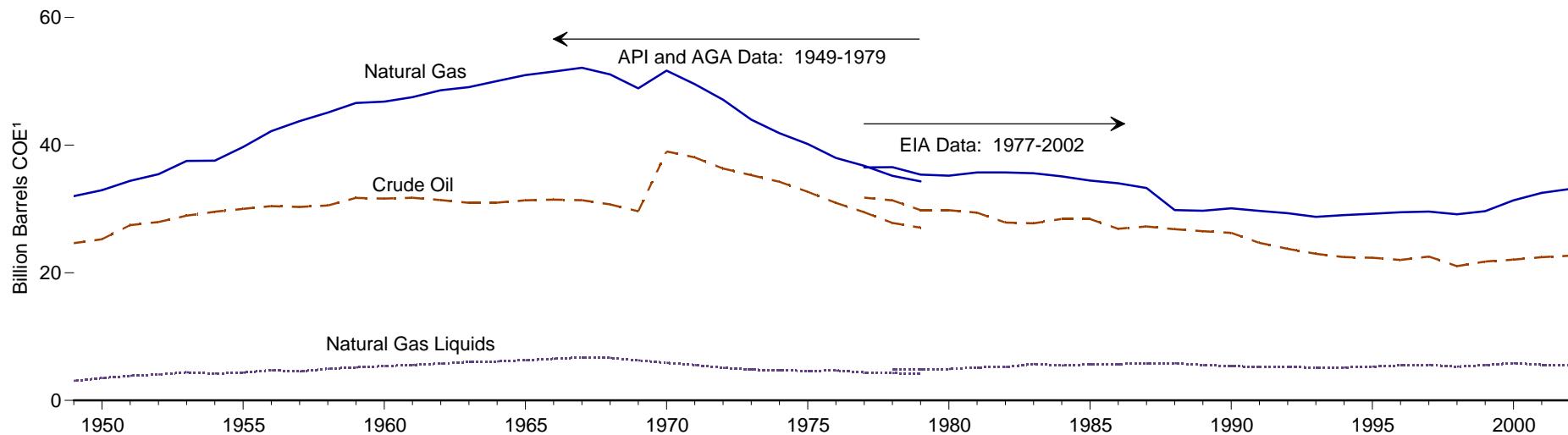
Total, 1949-2002



By Type, 2002



By Type, 1949-2002



¹ COE=crude oil equivalent.

Notes: • Data are at end of year. • API=American Petroleum Institute. AGA=American Gas Association. EIA=Energy Information Administration.

• Because vertical scales differ, graphs should not be compared.

Source: Table 4.10.

Table 4.10 Crude Oil, Natural Gas, and Natural Gas Liquids Proved Reserves, Selected Years, 1949-2002

Year	Crude Oil	Natural Gas (Dry)		Natural Gas Liquids		Total
	Billion Barrels	Trillion Cubic Feet ¹	Billion Barrels COE ²	Billion Barrels	Billion Barrels COE ²	Billion Barrels COE ²
American Petroleum Institute and American Gas Association Data						
1949	24.6	179.4	32.0	3.7	3.1	59.7
1950	25.3	184.6	32.9	4.3	3.5	61.7
1955	30.0	222.5	39.7	5.4	4.4	74.1
1960	31.6	262.3	46.8	6.8	5.4	83.8
1965	31.4	286.5	51.0	8.0	6.3	88.6
1970	39.0	290.7	51.7	7.7	5.9	96.6
1971	38.1	278.8	49.6	7.3	5.5	93.2
1972	36.3	266.1	47.1	6.8	5.1	88.5
1973	35.3	250.0	44.0	6.5	4.8	84.1
1974	34.2	237.1	41.9	6.4	4.7	80.8
1975	32.7	228.2	40.2	6.3	4.6	77.5
1976	30.9	216.0	38.0	6.4	4.7	73.6
1977	29.5	208.9	36.8	6.0	4.4	70.6
1978	27.8	200.3	35.2	5.9	4.3	67.3
1979	27.1	194.9	34.3	5.7	4.1	65.5
Energy Information Administration Data						
1977	31.8	207.4	36.5	NA	NA	NA
1978	31.4	208.0	36.5	6.8	4.9	72.8
1979	29.8	201.0	35.4	6.6	4.8	70.0
1980	29.8	199.0	35.2	6.7	4.9	69.9
1981	29.4	201.7	35.7	7.1	5.2	70.3
1982	27.9	201.5	35.7	7.2	5.2	68.8
1983	27.7	200.2	35.6	7.9	5.7	69.0
1984	28.4	197.5	35.1	7.6	5.5	69.0
1985	28.4	193.4	34.4	7.9	5.6	68.5
1986	26.9	191.6	34.0	8.2	5.7	66.6
1987	27.3	187.2	33.3	8.1	5.8	66.3
1988	26.8	168.0	29.8	8.2	5.8	62.5
1989	26.5	167.1	29.7	7.8	5.5	61.7
1990	26.3	169.3	30.1	7.6	5.4	61.7
1991	24.7	167.1	29.7	7.5	5.3	59.6
1992	23.7	165.0	29.3	7.5	5.2	58.3
1993	23.0	162.4	28.8	7.2	5.1	56.8
1994	22.5	163.8	29.0	7.2	5.1	56.6
1995	22.4	165.1	29.2	7.4	5.3	56.9
1996	22.0	166.5	29.5	7.8	5.5	57.0
1997	22.5	167.2	29.6	8.0	5.6	57.7
1998	21.0	164.0	29.2	7.5	5.3	55.5
1999	21.8	167.4	29.6	7.9	5.5	56.9
2000	22.0	177.4	31.4	8.3	5.8	59.2
2001	22.4	183.5	32.5	8.0	5.6	60.5
2002	22.7	186.9	33.1	8.0	5.6	61.4

¹ The American Gas Association estimates of natural gas proved reserves include volumes of natural gas held in underground storage. In 1979, this volume amounted to 4.9 trillion cubic feet. Energy Information Administration (EIA) data do not include natural gas in underground storage.

² Crude oil equivalent. Natural gas and natural gas liquids are converted to Btu on the basis of annual average conversion factors. See Appendix A.

NA=Not available.

Notes: • Data are at end of year. • See "Proved Reserves, Crude Oil," "Proved Reserves, Natural Gas," and "Proved Reserves, Natural Gas Liquids" in Glossary.

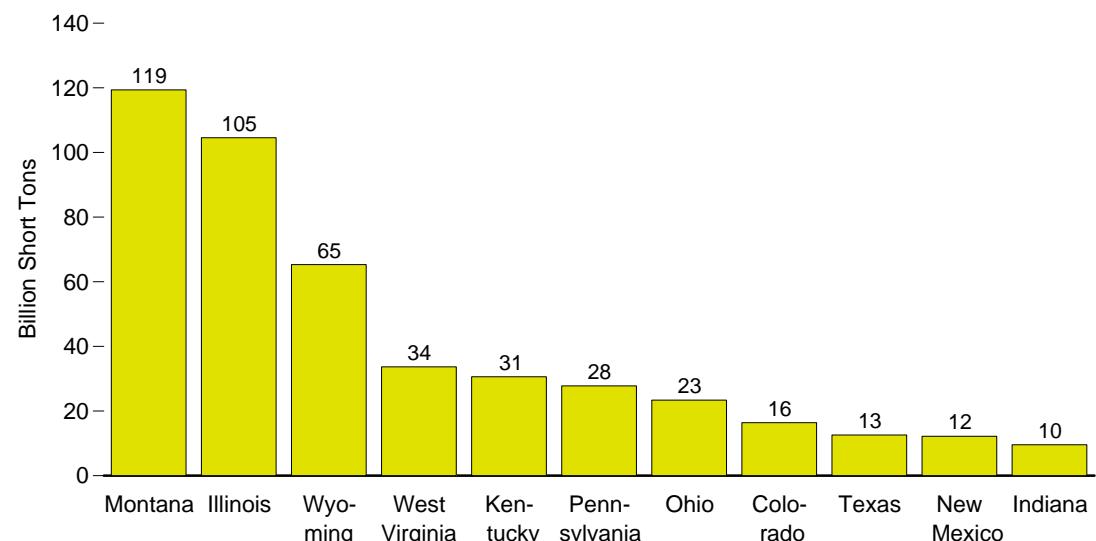
Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/resource.html>.

• For related information, see http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html

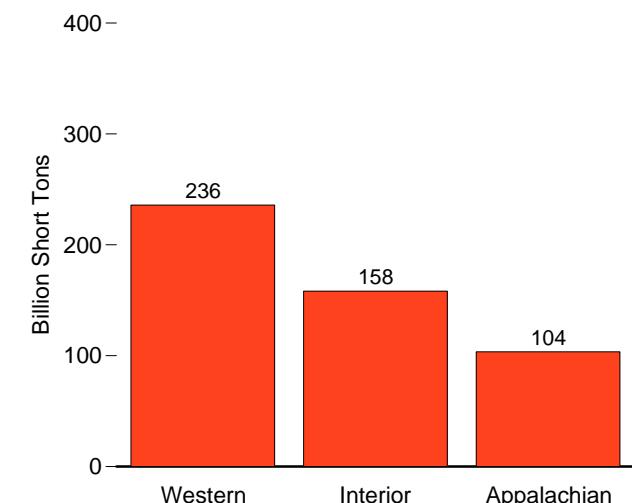
Sources: **American Petroleum Institute and American Gas Association Data:** American Petroleum Institute, American Gas Association, and Canadian Petroleum Association (published jointly), *Reserves of Crude Oil, Natural Gas Liquids and Natural Gas in the United States and Canada as of December 31, 1979*, Volume 34 (June 1980). **Energy Information Administration Data:** • 1977-1989—EIA, U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves, annual reports. • 1990 forward—EIA, U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves 2002 Annual Report (December 2003), Table 1.

Figure 4.11 Coal Demonstrated Reserve Base, January 1, 2003

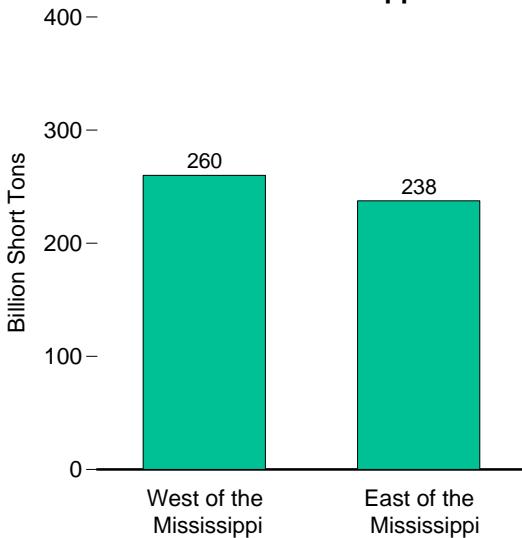
By Key State



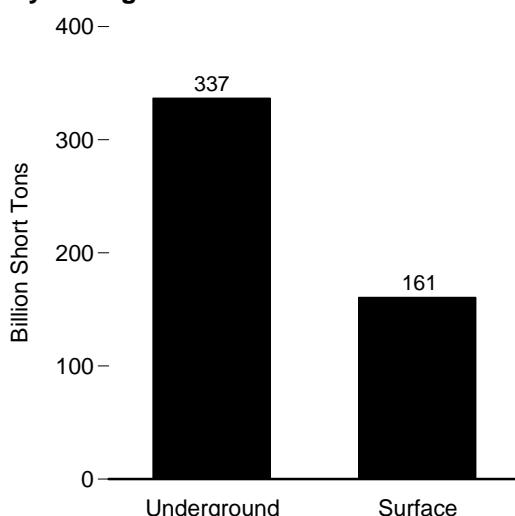
By Region



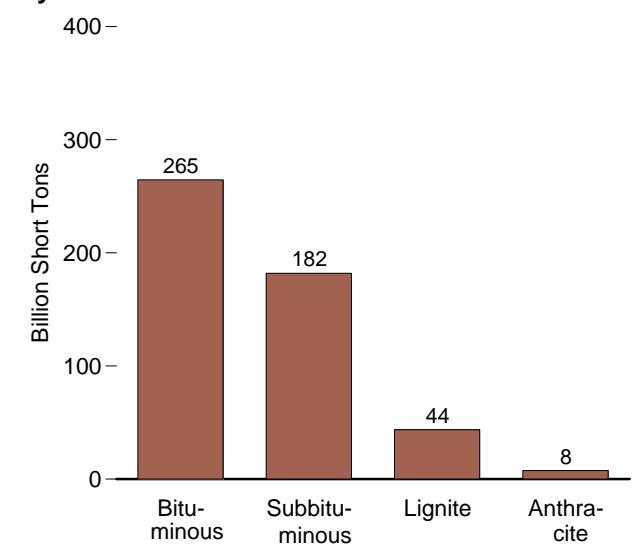
West and East of the Mississippi



By Mining Method



By Rank



Note: Because vertical scales differ, graphs should not be compared.

Source: Table 4.11.

Table 4.11 Coal Demonstrated Reserve Base, January 1, 2003
 (Billion Short Tons)

Region and State	Anthracite	Bituminous Coal		Subbituminous Coal		Lignite	Total		
		Underground	Surface	Underground	Surface	Surface ¹	Underground	Surface	Total
Appalachian	7.3	71.9	23.3	0.0	0.0	1.1	75.9	27.7	103.6
Alabama	0.0	1.1	2.1	0.0	0.0	1.1	1.1	3.2	4.3
Kentucky, Eastern	0.0	1.5	9.5	0.0	0.0	0.0	1.5	9.5	11.0
Ohio	0.0	17.6	5.8	0.0	0.0	0.0	17.6	5.8	23.4
Pennsylvania	7.2	19.7	0.9	0.0	0.0	0.0	23.5	4.3	27.8
Virginia	0.1	1.1	0.6	0.0	0.0	0.0	1.2	0.6	1.8
West Virginia	0.0	29.7	4.0	0.0	0.0	0.0	29.7	4.0	33.7
Other ²	0.0	1.1	0.3	0.0	0.0	0.0	1.1	0.3	1.5
Interior	0.1	117.6	27.4	0.0	0.0	13.0	117.7	40.5	158.2
Illinois	0.0	88.1	16.6	0.0	0.0	0.0	88.1	16.6	104.6
Indiana	0.0	8.8	0.8	0.0	0.0	0.0	8.8	0.8	9.6
Iowa	0.0	1.7	0.5	0.0	0.0	0.0	1.7	0.5	2.2
Kentucky, Western	0.0	16.0	3.6	0.0	0.0	0.0	16.0	3.6	19.6
Missouri	0.0	1.5	4.5	0.0	0.0	0.0	1.5	4.5	6.0
Oklahoma	0.0	1.2	0.3	0.0	0.0	0.0	1.2	0.3	1.6
Texas	0.0	0.0	0.0	0.0	0.0	12.6	0.0	12.6	12.6
Other ³	0.1	0.3	1.1	0.0	0.0	0.5	0.4	1.6	2.0
Western	(s)	22.0	2.4	121.3	60.7	29.5	143.4	92.6	235.9
Alaska	0.0	0.6	0.1	4.8	0.6	(s)	5.4	0.7	6.1
Colorado	(s)	7.9	0.6	3.8	0.0	4.2	11.7	4.8	16.4
Montana	0.0	1.4	0.0	69.6	32.7	15.8	71.0	48.4	119.4
New Mexico	(s)	2.7	0.9	3.5	5.1	0.0	6.2	6.1	12.2
North Dakota	0.0	0.0	0.0	0.0	0.0	9.2	0.0	9.2	9.2
Utah	0.0	5.3	0.3	0.0	0.0	0.0	5.3	0.3	5.5
Washington	0.0	0.3	0.0	1.0	(s)	(s)	1.3	0.0	1.4
Wyoming	0.0	3.8	0.5	38.7	22.3	0.0	42.5	22.8	65.3
Other ⁴	0.0	0.0	0.0	(s)	(s)	0.4	0.0	0.4	0.4
U.S. Total	7.5	211.5	53.1	121.3	60.7	43.6	336.9	160.8	497.7
States East of the Mississippi River	7.3	184.9	44.3	0.0	0.0	1.1	188.8	48.8	237.6
States West of the Mississippi River	0.1	26.6	8.7	121.3	60.7	42.5	148.1	112.0	260.1

¹ Lignite resources are not mined underground in the United States.

² Georgia, Maryland, North Carolina, and Tennessee.

³ Arkansas, Kansas, Louisiana, and Michigan.

⁴ Arizona, Idaho, Oregon, and South Dakota.

(s)=Less than 0.05 billion short tons.

Notes: • See U.S. Coal Reserves: 1997 Update on the Web Page for a description of the methodology used to produce these data. • Data represent known measured and indicated coal resources meeting

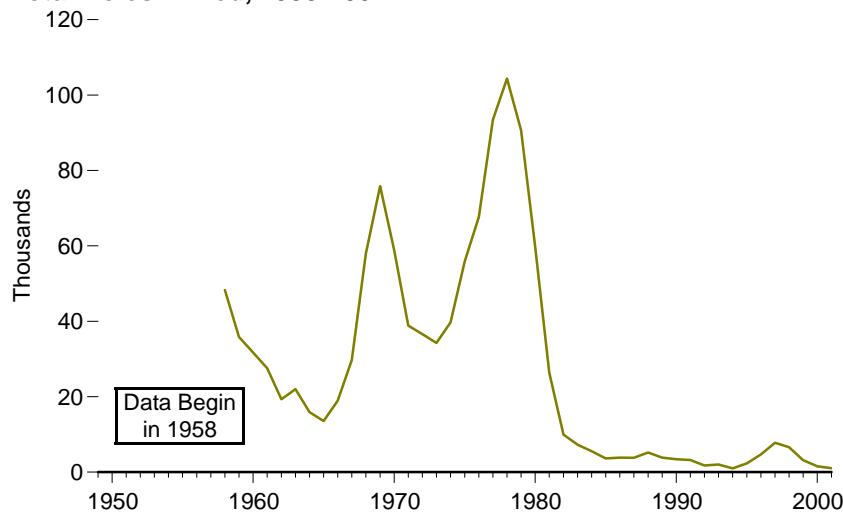
minimum seam and depth criteria, in the ground as of January 1, 2003. These coal resources are not totally recoverable. Net recoverability with current mining technologies ranges from 0 percent (in far northern Alaska) to more than 90 percent. Fifty-four percent of the demonstrated reserve base of coal in the United States is estimated to be recoverable. • Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/fuelcoal.html>.

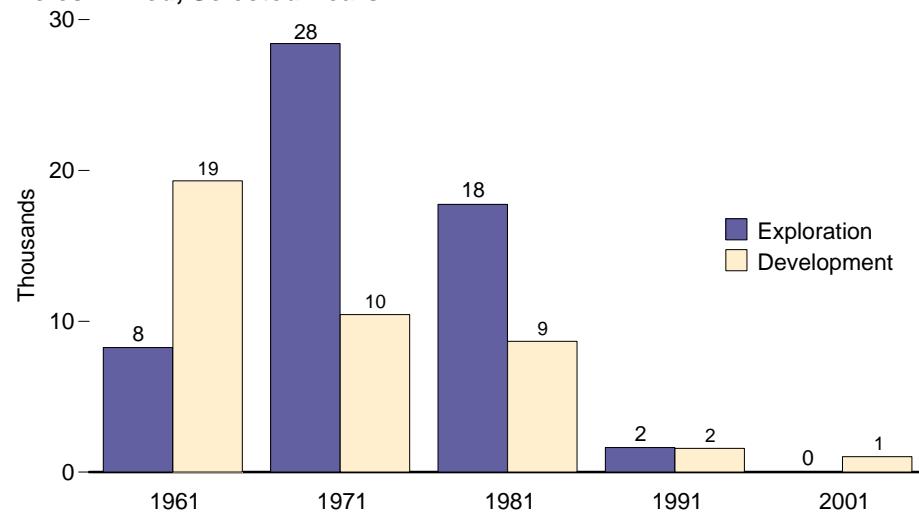
Source: Energy Information Administration, Coal Reserves Database.

Figure 4.12 Uranium Exploration and Development Drilling

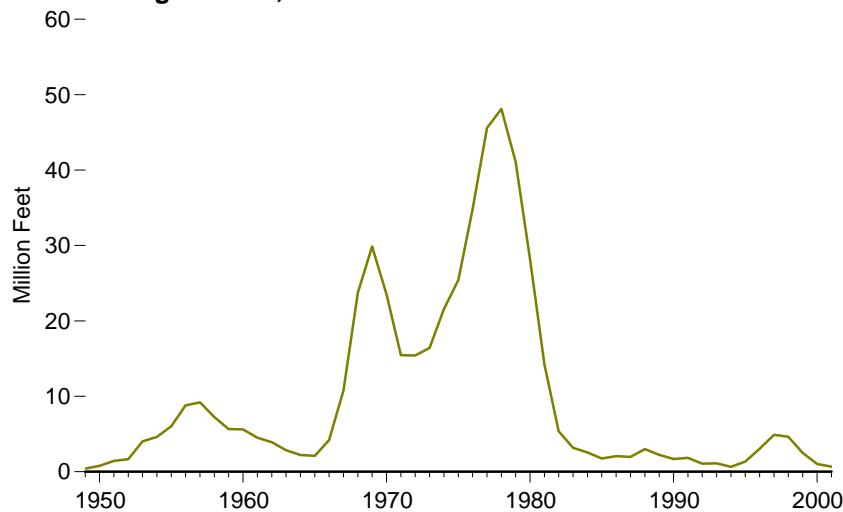
Total Holes Drilled, 1958-2001



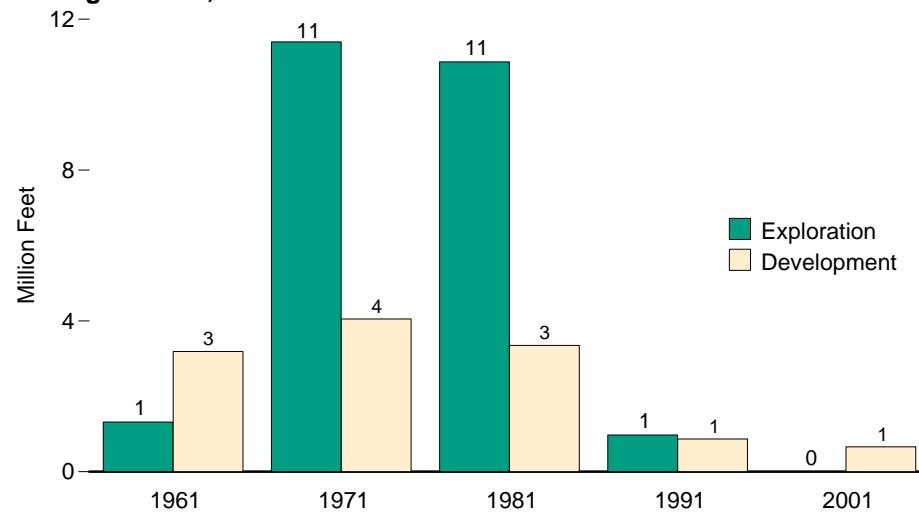
Holes Drilled, Selected Years



Total Footage Drilled, 1949-2001



Footage Drilled, Selected Years



Source: Table 4.12.

Table 4.12 Uranium Exploration and Development Drilling, Selected Years, 1949-2003

Year	Exploration ¹		Development ²		Total	
	Holes Drilled (thousands)	Footage Drilled (million feet)	Holes Drilled (thousands)	Footage Drilled (million feet)	Holes Drilled (thousands)	Footage Drilled (million feet)
1949	NA	0.36	NA	0.05	NA	0.41
1950	NA	0.57	NA	0.21	NA	0.78
1955	NA	5.27	NA	0.76	NA	6.03
1960	7.34	1.40	24.40	4.21	31.73	5.61
1965	6.23	1.16	7.33	0.95	13.56	2.11
1970	43.98	17.98	14.87	5.55	58.85	23.53
1971	28.42	11.40	10.44	4.05	38.86	15.45
1972	26.91	11.82	9.71	3.61	36.62	15.42
1973	22.56	10.83	11.70	5.59	34.26	16.42
1974	27.40	14.72	12.30	6.84	39.70	21.56
1975	34.29	15.69	21.60	9.73	55.89	25.42
1976	40.41	20.36	27.23	14.44	67.64	34.80
1977	62.60	27.96	30.86	17.62	93.45	45.58
1978	75.07	28.95	29.29	19.15	104.35	48.10
1979	60.46	28.07	30.19	13.01	90.65	41.08
1980	39.61	19.60	20.19	8.59	59.80	28.19
1981	17.75	10.87	8.67	3.35	26.42	14.22
1982	6.97	4.23	3.00	1.13	9.97	5.36
1983	4.29	2.09	3.01	1.08	7.30	3.17
1984	4.80	2.26	0.72	0.29	5.52	2.55
1985	2.88	1.42	0.77	0.34	3.65	1.76
1986	1.99	1.10	1.85	0.97	3.83	2.07
1987	1.82	1.11	1.99	0.86	3.81	1.97
1988	2.03	1.28	3.18	1.73	5.21	3.01
1989	2.09	1.43	1.75	0.80	3.84	2.23
1990	1.51	0.87	1.91	0.81	3.42	1.68
1991	1.62	0.97	1.57	0.87	3.20	1.84
1992	0.94	0.56	0.83	0.50	1.77	1.06
1993	0.36	0.22	1.67	0.89	2.02	1.11
1994	0.52	0.34	0.48	0.32	1.00	0.66
1995	0.58	0.40	1.73	0.95	2.31	1.35
1996	1.12	0.88	3.58	2.16	4.70	3.05
1997	1.94	1.33	5.86	3.56	7.79	4.88
1998	1.37	0.89	5.23	3.75	6.60	4.64
1999	0.27	0.18	2.91	2.33	3.18	2.50
2000	W	W	W	W	1.55	1.02
2001	0.00	0.00	1.02	0.66	1.02	0.66
2002	W	W	W	W	W	W
2003	NA	NA	NA	NA	W	W

¹ Includes surface drilling in search of new ore deposits or extensions of known deposits and drilling at the location of a discovery up to the time the company decides sufficient ore reserves are present to justify commercial exploitation.

² Includes all surface drilling on an ore deposit to determine more precisely size, grade, and configuration subsequent to the time that commercial exploitation is deemed feasible.

NA=Not available. W=Value withheld to avoid disclosure of individual company data.

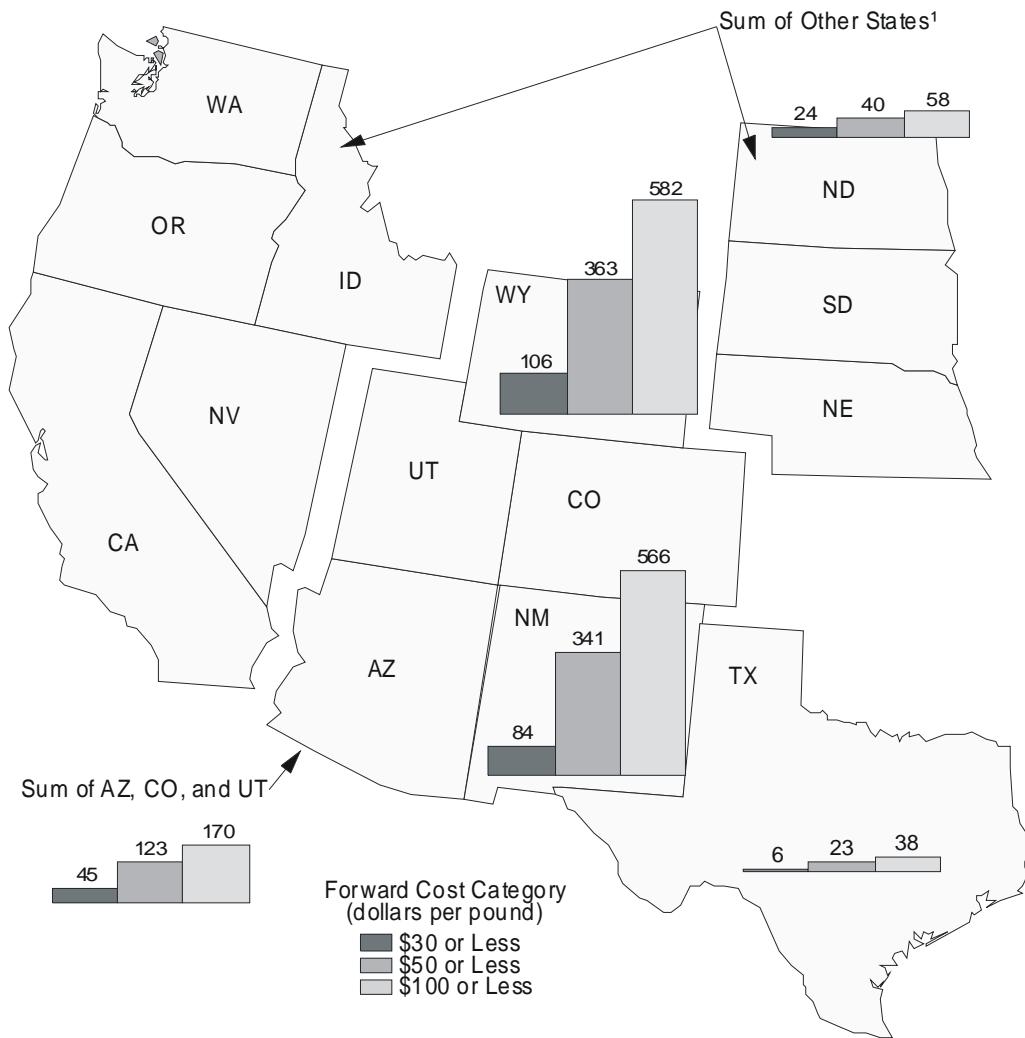
Note: Totals may not equal sum of components due to independent rounding.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/resource.html>.
• For related information, see <http://www.eia.doe.gov/fuelnuclear.html>.

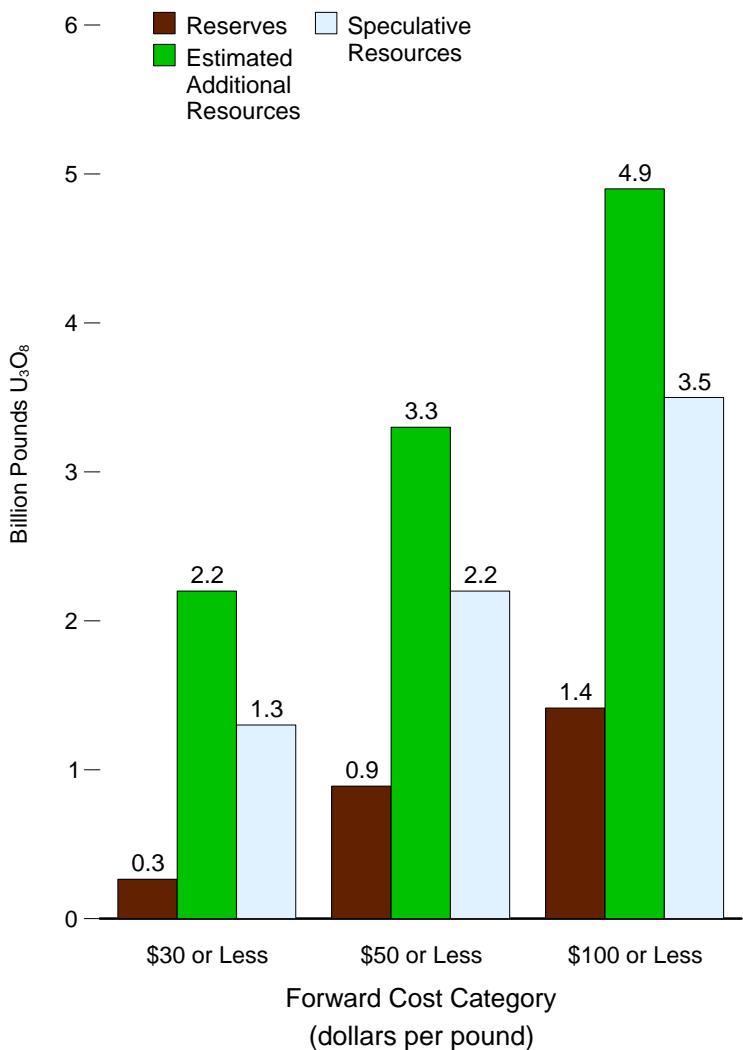
Sources: • 1949-1981—U.S. Department of Energy, Grand Junction Office, *Statistical Data of the Uranium Industry, January 1, 1983*, Report No. GJO-100 (1983), Table VIII-5. • 1982-2002—Energy Information Administration (EIA), *Uranium Industry Annual*, annual reports. • 2003—EIA, "Domestic Uranium Production Report" (May 2004).

Figure 4.13 Uranium Reserves and Resources, 2003

Reserves, Million Pounds U₃O₈



Reserves and Resources



¹ California, Idaho, Nebraska, Nevada, North Dakota, Oregon, South Dakota, and Washington.

Note: Data are at end of year.
Source: Table 4.13.

Table 4.13 Uranium Reserves and Resources, 2003(Million Pounds U₃O₈)

Resource Category and State	Forward-Cost Category (dollars per pound) ¹		
	\$30 or Less	\$50 or Less	\$100 or Less
Reserves²	265	890	1,414
New Mexico	84	341	566
Wyoming	106	363	582
Texas	6	23	38
Arizona, Colorado, Utah	45	123	170
Others ³	24	40	58
Potential Resources⁴			
Estimated Additional Resources	2,180	3,310	4,850
Speculative Resources	1,310	2,230	3,480

¹ Forward costs are all operating and capital costs (in current dollars) yet to be incurred in the production of uranium from estimated resources. Excluded are previous expenditures (such as exploration and land acquisitions), taxes, profit, and the cost of money. Generally, forward costs are lower than market prices. Resource values in forward-cost categories are cumulative; that is, the quantity at each level of forward cost includes all reserves/resources at the lower cost in that category.

² The Energy Information Administration category of uranium reserves is equivalent to the internationally reported category of "Reasonably Assured Resources" (RAR).

³ California, Idaho, Nebraska, Nevada, North Dakota, Oregon, South Dakota, and Washington.

⁴ Shown are the mean values for the distribution of estimates for each forward-cost category, rounded to the nearest million pounds U₃O₈.

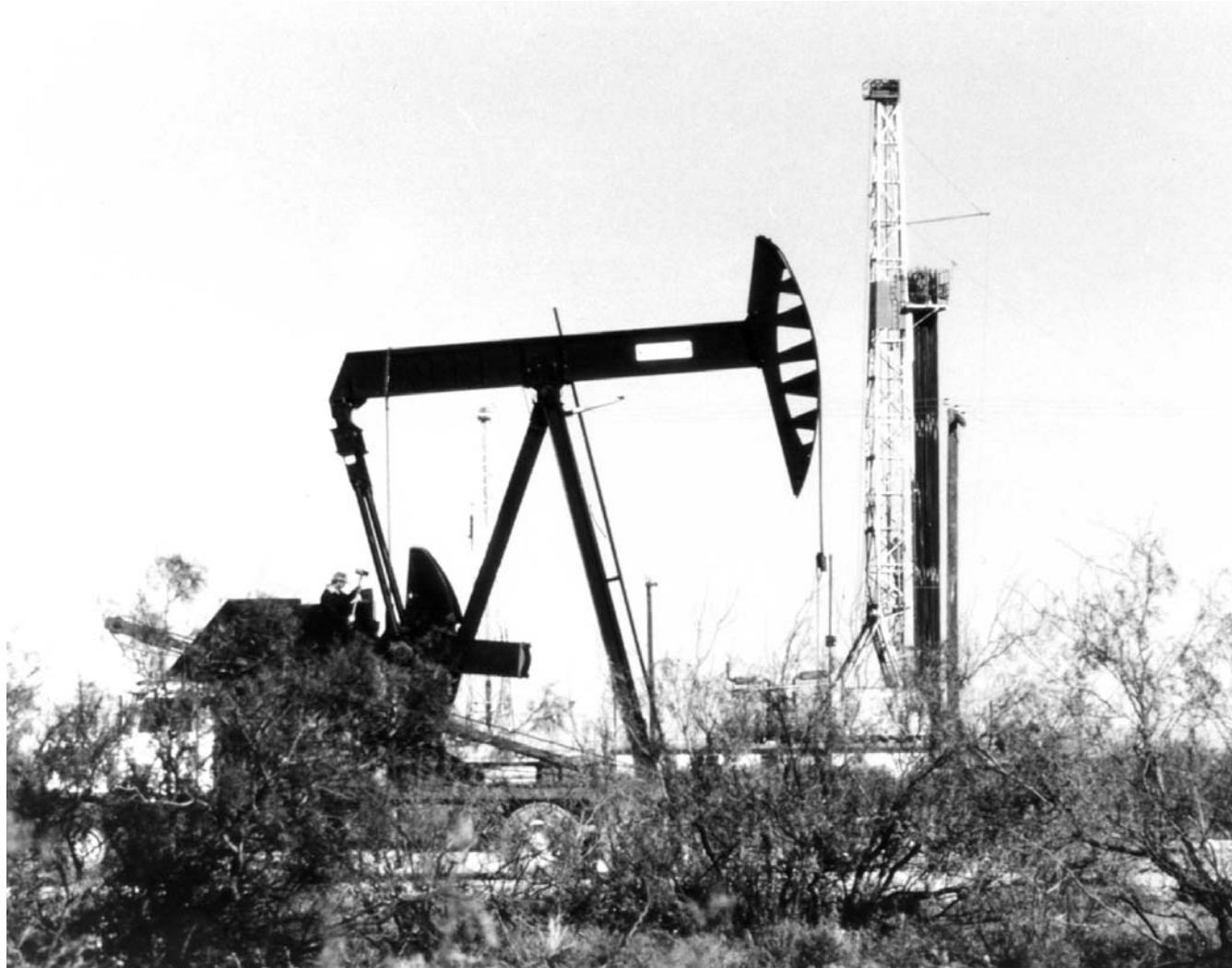
Notes: • Data are at end of year. • U₃O₈ is uranium oxide. See "Uranium Oxide" in Glossary.

Web Page: For related information, see <http://www.eia.doe.gov/fuelnuclear.html>.

Sources: • Forward Costs \$30 or Less and \$50 or Less—Energy Information Administration (EIA), "U.S. Uranium Reserves Estimates" (June 2004). • Forward Costs \$100 or Less—EIA, Office of Coal, Nuclear, Electric and Alternate Fuels database as of June 2004.

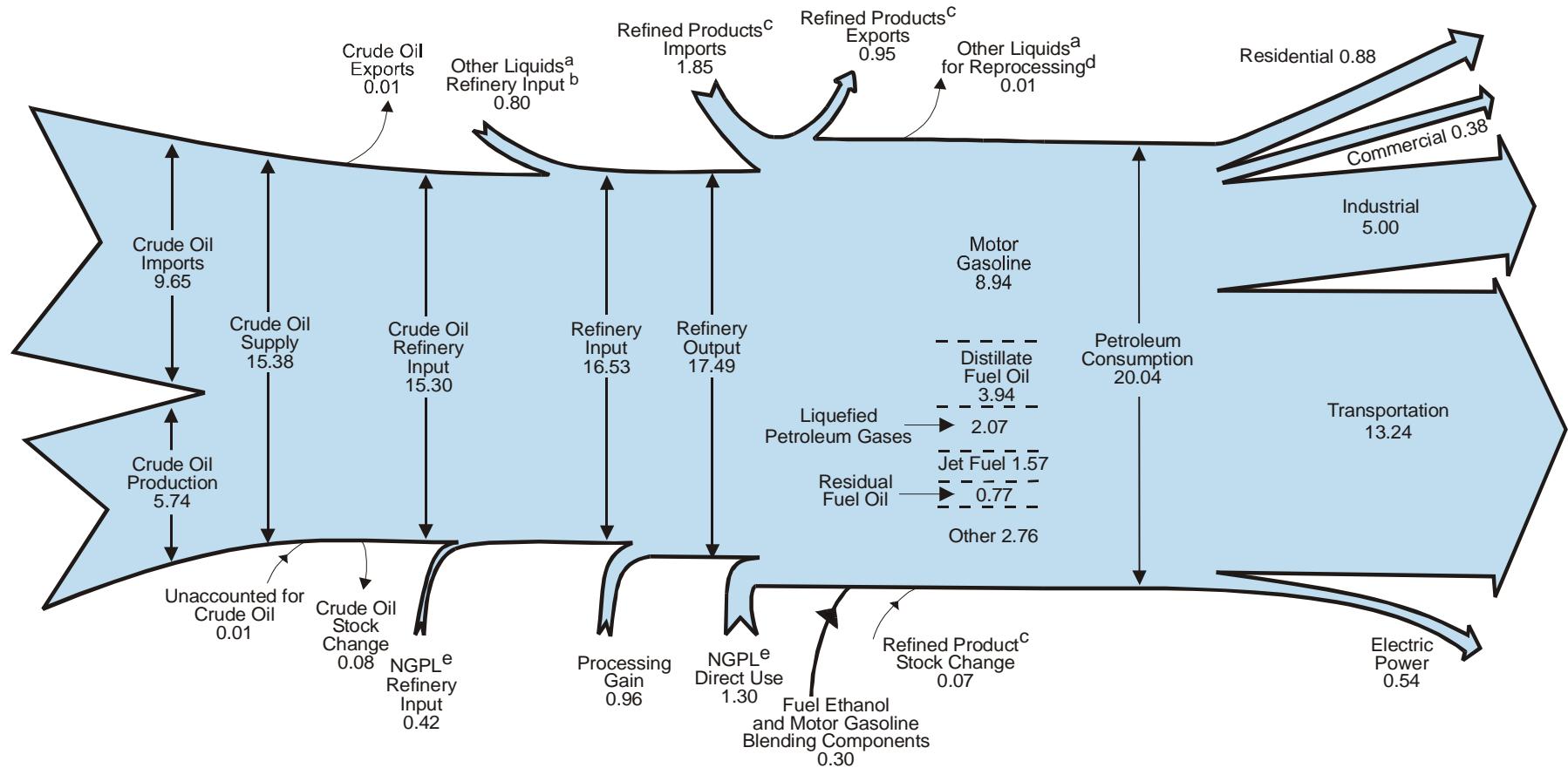
5

Petroleum



Oil pumping unit and drilling rig, Texas. Source: U.S. Department of Energy.

Diagram 2. Petroleum Flow, 2003
 (Million Barrels per Day)



^a Unfinished oils, motor gasoline blending components, aviation gasoline blending components, and other hydrocarbons and oxygenates.

^b Field production (0.12), net imports (0.71), net change in stocks (-0.03), and reprocessing (0.01).

^c Finished petroleum products, liquefied petroleum gases, and pentanes plus.

^d Unfinished oils requiring further refinery processing, and aviation blending components.

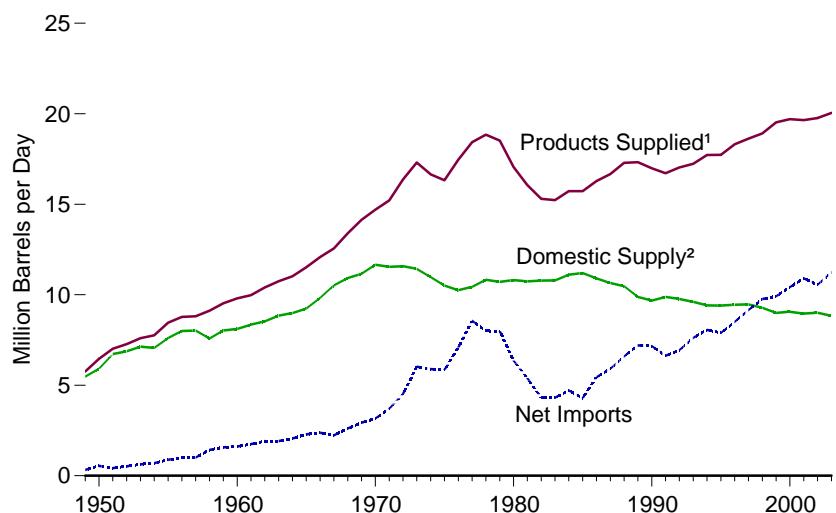
^e Natural gas plant liquids.

Notes: • Data are preliminary. • Totals may not equal sum of components due to independent rounding.

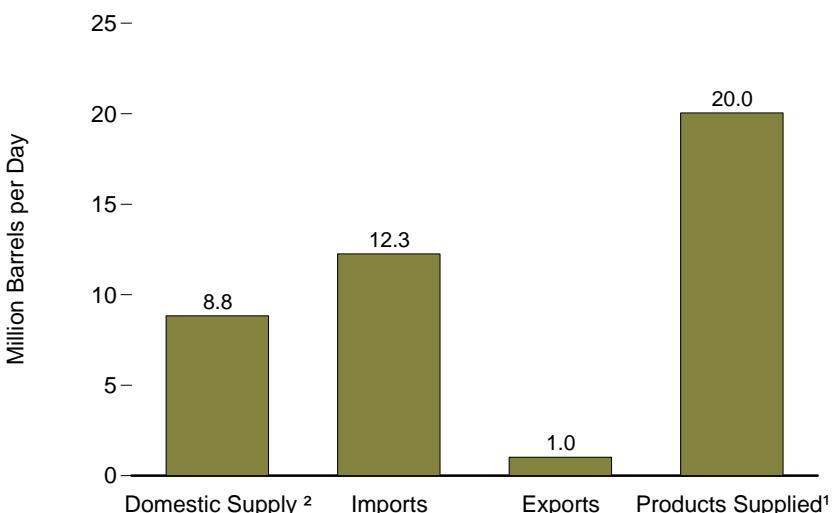
Sources: Tables 5.1, 5.3, 5.5, 5.8, 5.11, 5.13a-5.13d, 5.16, and *Petroleum Supply Monthly*, February 2004, Table 3.

Figure 5.1 Petroleum Overview

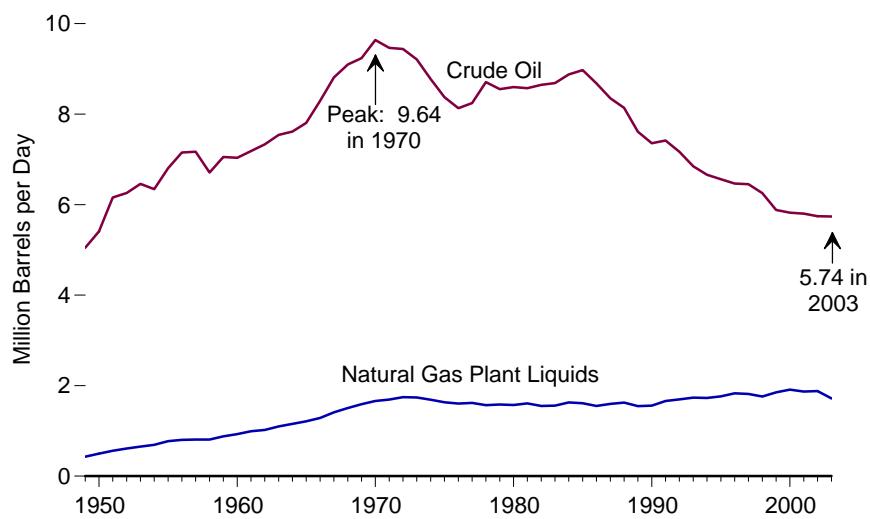
Overview, 1949-2003



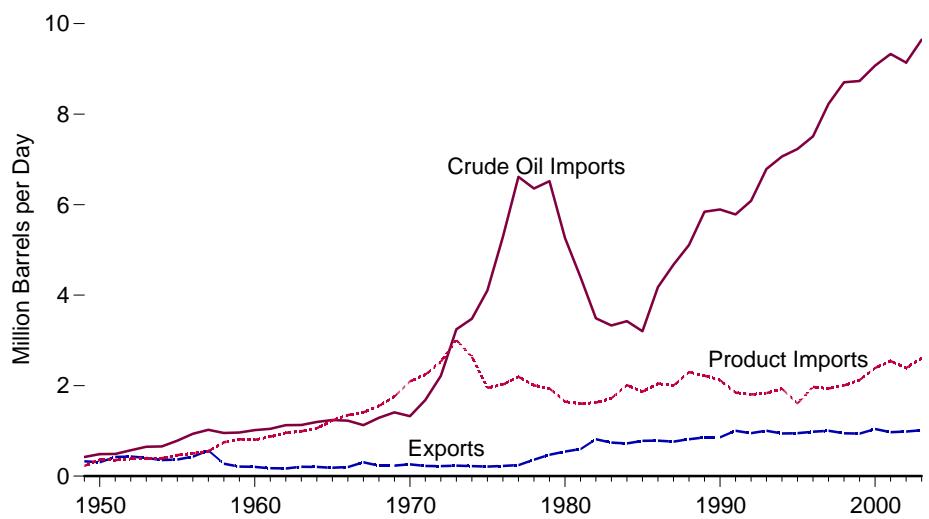
Overview, 2003



Crude Oil and Natural Gas Plant Liquids Production, 1949-2003



Trade, 1949-2003



¹ Approximate representation of petroleum consumption.

² Crude oil and natural gas plant liquids production; refinery processing gains; and field production of other hydrocarbons, hydrogen, oxygenates (ethers and alcohols), gasoline blending components, and finished petroleum products.

Note: Because vertical scales differ, graphs should not be compared.

Sources: Tables 5.1 and 5.3.

Table 5.1 Petroleum Overview, Selected Years, 1949-2003

(Thousand Barrels per Day)

Year	Production					Other Domestic Supply ²	Trade			Stock Change ³	Crude Oil Losses and Unaccounted for ⁴	Petroleum Products Supplied				
	Crude Oil			Natural Gas Plant Liquids	Total		Imports	Exports	Net Imports							
	48 States ¹	Alaska	Total													
1949	5,046	0	5,046	430	5,477	-2	645	327	318	-8	38	5,763				
1950	5,407	0	5,407	499	5,906	2	850	305	545	-56	51	6,458				
1955	6,807	0	6,807	771	7,578	34	1,248	368	880	(s)	37	8,455				
1960	7,034	2	7,035	929	7,965	146	1,815	202	1,613	-83	8	9,797				
1965	7,774	30	7,804	1,210	9,014	220	2,468	187	2,281	-8	10	11,512				
1970	9,408	229	9,637	1,660	11,297	359	3,419	259	3,161	103	16	14,697				
1971	9,245	218	9,463	1,693	11,155	382	3,926	224	3,701	71	-45	15,212				
1972	9,242	199	9,441	1,744	11,185	388	4,741	222	4,519	-232	-43	16,367				
1973	9,010	198	9,208	1,738	10,946	483	6,256	231	6,025	135	11	17,308				
1974	8,581	193	8,774	1,688	10,462	516	6,112	221	5,892	179	38	16,653				
1975	8,183	191	8,375	1,633	10,008	497	6,056	209	5,846	32	-3	16,322				
1976	7,958	173	8,132	1,604	9,736	515	7,313	223	7,090	-58	-63	17,461				
1977	7,781	464	8,245	1,618	9,862	575	8,807	243	8,565	548	22	18,431				
1978	7,478	1,229	8,707	1,567	10,275	549	8,363	362	8,002	-94	73	18,847				
1979	7,151	1,401	8,552	1,584	10,135	571	8,456	471	7,985	173	6	18,513				
1980	6,980	1,617	8,597	1,573	10,170	641	6,909	544	6,365	140	-20	17,056				
1981	6,962	1,609	8,572	1,609	10,180	558	5,996	595	5,401	160	-78	16,058				
1982	6,953	1,696	8,649	1,550	10,199	583	5,113	815	4,298	-147	-68	15,296				
1983	6,974	1,714	8,688	1,559	10,246	541	5,051	739	4,312	-20	-112	15,231				
1984	7,157	1,722	8,879	1,630	10,509	599	5,437	722	4,715	280	-183	15,726				
1985	7,146	1,825	8,971	1,609	10,581	612	5,067	781	4,286	-103	-145	15,726				
1986	6,814	1,867	8,680	1,551	10,231	674	6,224	785	5,439	202	-139	16,281				
1987	6,387	1,962	8,349	1,595	9,944	703	6,678	764	5,914	41	-145	16,665				
1988	6,123	2,017	8,140	1,625	9,765	708	7,402	815	6,587	-28	-196	17,283				
1989	5,739	1,874	7,613	1,546	9,159	722	8,061	859	7,202	-43	-200	17,325				
1990	5,582	1,773	7,355	1,559	8,914	763	8,018	857	7,161	107	-257	16,988				
1991	5,618	1,798	7,417	1,659	9,076	807	7,627	1,001	6,626	-10	-195	16,714				
1992	5,457	1,714	7,171	1,697	8,868	900	7,888	950	6,938	-68	-258	17,033				
1993	5,264	1,582	6,847	1,736	8,582	1,020	8,620	1,003	7,618	151	-168	17,237				
1994	5,103	1,559	6,662	1,727	8,388	1,025	8,996	942	8,054	15	-266	17,718				
1995	5,076	1,484	6,560	1,762	8,322	1,078	8,835	949	7,886	-246	-193	17,725				
1996	5,071	1,393	6,465	1,830	8,295	1,150	9,478	981	8,498	-151	-215	18,309				
1997	5,156	1,296	6,452	1,817	8,269	1,192	10,162	1,003	9,158	143	-145	18,620				
1998	5,077	1,175	6,252	1,759	8,011	1,267	10,708	945	9,764	239	-115	18,917				
1999	4,832	1,050	5,881	1,850	7,731	1,262	10,852	940	9,912	-422	-191	19,519				
2000	4,851	970	5,822	1,911	7,733	1,325	11,459	1,040	10,419	-69	-155	19,701				
2001	4,839	963	5,801	1,868	7,670	1,287	11,871	971	10,900	325	-117	19,649				
2002	R ⁴ ,761	984	R ⁵ ,746	R ¹ ,880	R ⁷ ,626	R ¹ ,374	R ¹¹ ,530	R ⁹⁸⁴	R ¹⁰ ,546	R ⁻¹⁰⁵	R ⁻¹¹⁰	R ¹⁹ ,761				
2003 ^p	4,763	974	5,737	1,717	7,454	1,384	12,254	1,017	11,237	45	-14	20,044				

¹ United States excluding Alaska and Hawaii.

² Refinery processing gains (refinery production minus refinery inputs), and field production of finished motor gasoline, motor gasoline blending components, and other hydrocarbons and oxygenates.

³ A negative number indicates a decrease in stocks and a positive number indicates an increase. Distillate stocks in the "Northeast Heating Oil Reserve" are not included.

⁴ "Unaccounted for" represents the difference between crude oil supply and disposition.

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

Notes: • Crude oil includes lease condensate. • See Note 1, "Petroleum Products Supplied and Petroleum Consumption," Note 2, "Adjustment to Total Petroleum Products Supplied," and Note 3,

"Changes Affecting Petroleum Production and Product Supplied Statistics," at end of section. • Totals may not equal sum of components due to independent rounding.

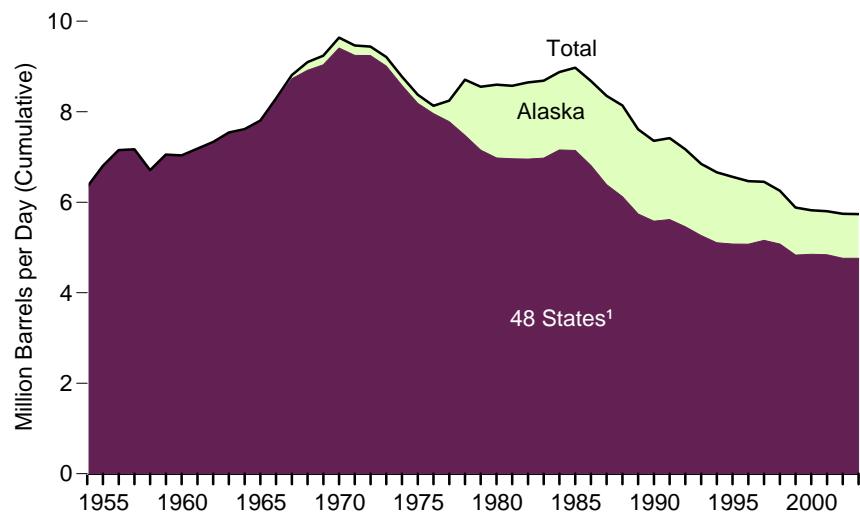
Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/petro.html>.

Sources: • 1949-1975—Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual*, annual reports. • 1976-1980—Energy Information Administration (EIA), Energy Data Reports, *Petroleum Statement, Annual*, annual reports. • 1981-2002—EIA, *Petroleum Supply Annual*, annual reports.

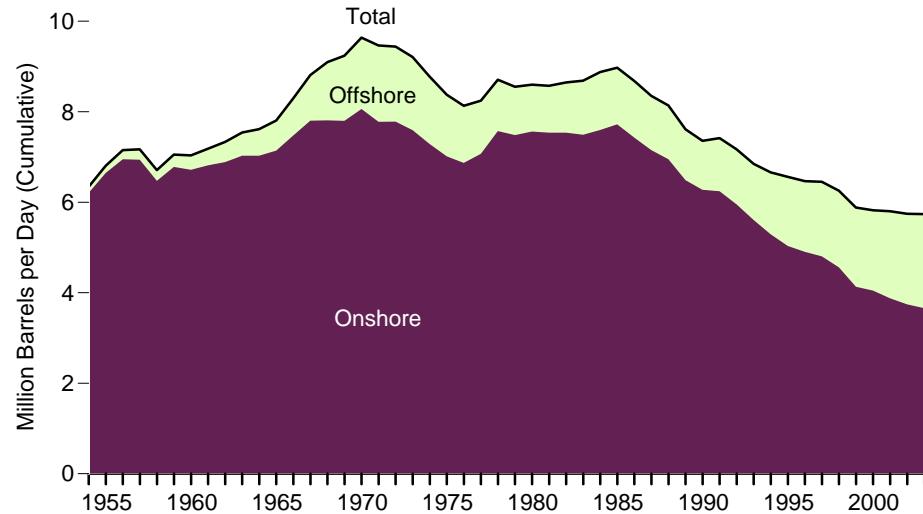
• 2003—EIA, *Petroleum Supply Monthly* (February 2004).

Figure 5.2 Crude Oil Production and Crude Oil Well Productivity, 1954-2003

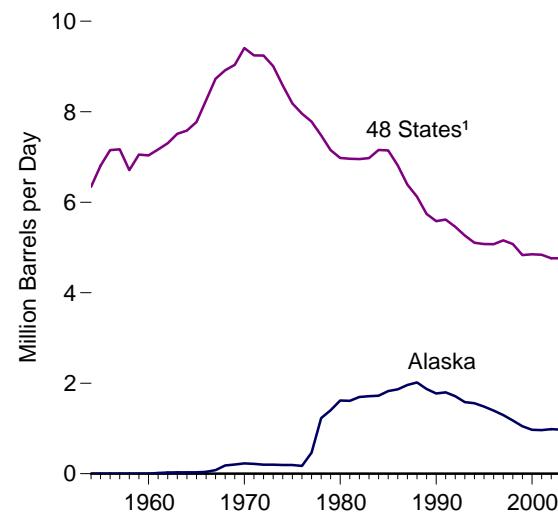
By Geographic Location



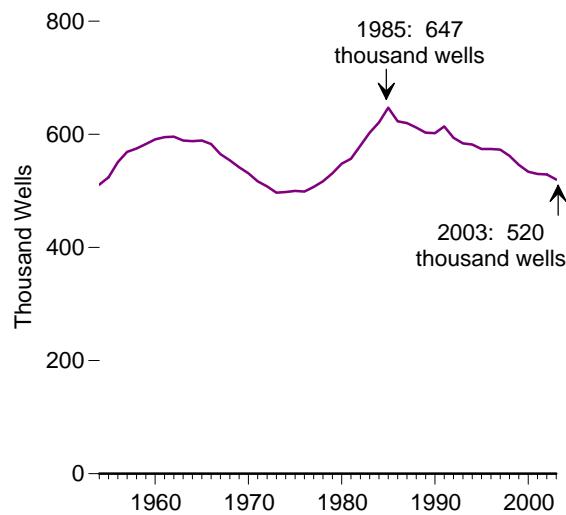
By Site



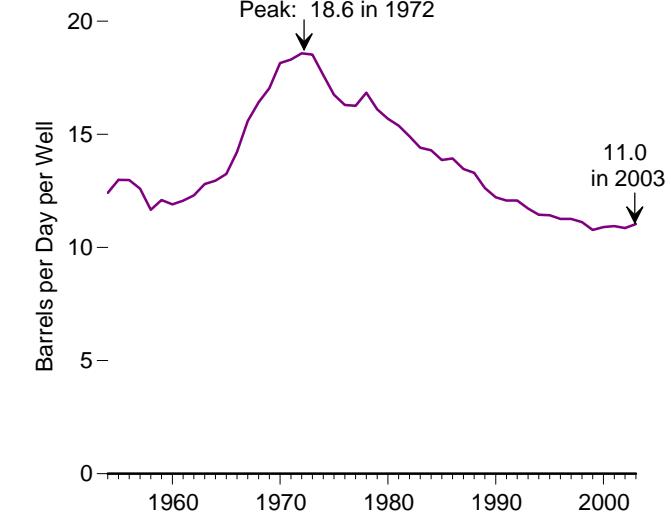
48 States¹ and Alaska



Number of Producing Wells



Average Productivity



¹ United States excluding Alaska and Hawaii.

Note: Crude oil includes lease condensate.

Source: Table 5.2.

Table 5.2 Crude Oil Production and Crude Oil Well Productivity, 1954-2003

(Thousand Barrels per Day, Except as Noted)

Year	Geographic Location		Site		Type		Total Production	Crude Oil Well ¹ Productivity	
	48 States ²	Alaska	Onshore	Offshore	Crude Oil	Lease Condensate		Producing Wells ³ (thousands)	Average Productivity ⁴ (barrels per day per well)
1954	6,342	0	6,209	133	6,342	(5)	6,342	511	12.4
1955	6,807	0	6,645	162	6,807	(5)	6,807	524	13.0
1956	7,151	0	6,951	201	7,151	(5)	7,151	551	13.0
1957	7,170	0	6,940	229	7,170	(5)	7,170	569	12.6
1958	6,710	0	6,473	236	6,710	(5)	6,710	575	11.7
1959	7,053	1	6,779	274	7,054	(5)	7,054	583	12.1
1960	7,034	2	6,716	319	7,035	(5)	7,035	591	11.9
1961	7,166	17	6,817	365	7,183	(5)	7,183	595	12.1
1962	7,304	28	6,888	444	7,332	(5)	7,332	596	12.3
1963	7,512	29	7,026	515	7,542	(5)	7,542	589	12.8
1964	7,584	30	7,027	587	7,614	(5)	7,614	588	12.9
1965	7,774	30	7,140	665	7,804	(5)	7,804	589	13.2
1966	8,256	39	7,473	823	8,295	(5)	8,295	583	14.2
1967	8,730	80	7,802	1,009	8,810	(5)	8,810	565	15.6
1968	8,915	181	7,808	1,287	8,660	436	9,096	554	16.4
1969	9,035	203	7,797	1,441	8,778	460	9,238	542	17.0
1970	9,408	229	8,060	1,577	9,180	457	9,637	531	18.1
1971	9,245	218	7,779	1,684	9,032	431	9,463	517	18.3
1972	9,242	199	7,780	1,660	8,998	443	9,441	508	18.6
1973	9,010	198	7,592	1,616	8,784	424	9,208	497	18.5
1974	8,581	193	7,285	1,489	8,375	399	8,774	498	17.6
1975	8,183	191	7,012	1,362	8,007	367	8,375	500	16.8
1976	7,958	173	6,868	1,264	7,776	356	8,132	499	16.3
1977	7,781	464	7,069	1,176	7,875	370	8,245	507	16.3
1978	7,478	1,229	7,571	1,136	8,353	355	8,707	517	16.8
1979	7,151	1,401	7,485	1,067	8,181	371	8,552	531	16.1
1980	6,980	1,617	7,562	1,034	8,210	386	8,597	548	15.7
1981	6,962	1,609	7,537	1,034	8,176	395	8,572	557	15.4
1982	6,953	1,696	7,538	1,110	8,261	387	8,649	580	14.9
1983	6,974	1,714	7,492	1,196	8,688	(5)	8,688	603	14.4
1984	7,157	1,722	7,596	1,283	8,879	(5)	8,879	621	14.3
1985	7,146	1,825	7,722	1,250	8,971	(5)	8,971	647	13.9
1986	6,814	1,867	7,426	1,254	8,680	(5)	8,680	623	13.9
1987	6,387	1,962	7,153	1,196	8,349	(5)	8,349	620	13.5
1988	6,123	2,017	6,949	1,191	8,140	(5)	8,140	612	13.3
1989	5,739	1,874	6,486	1,127	7,613	(5)	7,613	603	12.6
1990	5,582	1,773	6,273	1,082	7,355	(5)	7,355	602	12.2
1991	5,618	1,798	6,245	1,172	7,417	(5)	7,417	614	12.1
1992	5,457	1,714	5,953	1,218	7,171	(5)	7,171	594	12.1
1993	5,264	1,582	5,606	1,241	6,847	(5)	6,847	584	11.7
1994	5,103	1,559	5,291	1,370	6,662	(5)	6,662	582	11.4
1995	5,076	1,484	5,035	1,525	6,560	(5)	6,560	574	11.4
1996	5,071	1,393	4,902	1,562	6,465	(5)	6,465	574	11.3
1997	5,156	1,296	4,803	1,648	6,452	(5)	6,452	573	11.3
1998	5,077	1,175	4,560	1,692	6,252	(5)	6,252	562	11.1
1999	4,832	1,050	4,132	1,750	5,881	(5)	5,881	546	10.8
2000	4,851	970	4,049	1,773	5,822	(5)	5,822	534	10.9
2001	4,839	963	3,879	1,923	5,801	(5)	5,801	530	10.9
2002	R ⁴ ,761	984	R ³ ,743	R ² ,003	R ⁵ ,746	(5)	R ⁵ ,746	R ⁵²⁹	R ^{10.9}
2003	R ⁴ ,763	P ⁹⁷⁴	E ^{3,657}	E ^{2,080}	P ^{5,737}	(5)	P ^{5,737}	P ⁵²⁰	P ^{11.0}

¹ See "Crude Oil Well" in Glossary.

² United States excluding Alaska and Hawaii.

³ As of December 31.

⁴ Through 1976, average productivity is based on the average number of producing wells. Beginning in 1977, average productivity is based on the number of wells producing at end of year.

⁵ Included in "Crude Oil."

R=Revised. P=Preliminary. E=Estimate.

Note: Totals may not equal sum of components due to independent rounding.

Web Page: See http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html for related information.

Sources: **Onshore:** • 1954-1975—Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement*, Annual, annual reports. • 1976-1980—Energy Information Administration (EIA), Energy Data Reports, *Petroleum Statement*, Annual, annual reports. • 1981-2002—EIA, *Petroleum Supply Annual*, annual

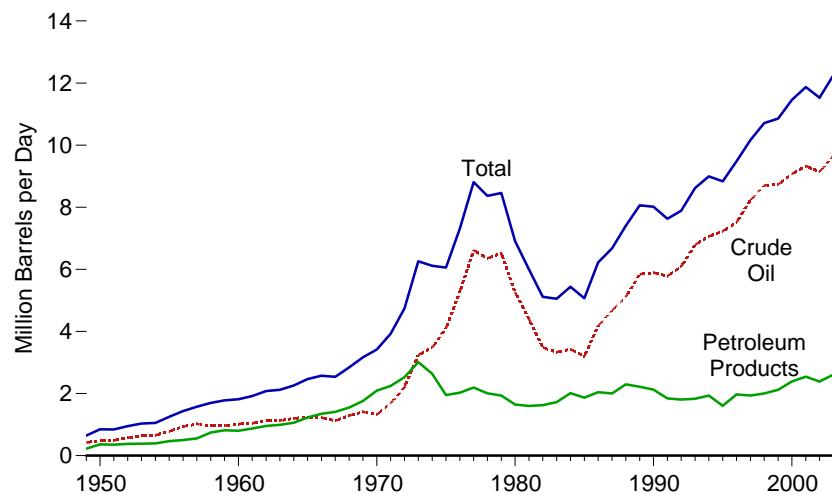
reports. • 2003—EIA estimate. **Offshore:** • 1954-1969—U.S. Geological Survey, *Outer Continental Shelf Statistics* (June 1979). • 1970-1975—Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement*, Annual, annual reports. • 1976-1980—EIA, Energy Data Reports, *Petroleum Statement*, Annual, annual reports. • 1981-2002—EIA, *Petroleum Supply Annual*, annual reports. • 2003—EIA estimate. **Producing Wells:** • 1954-1975—Bureau of Mines, *Minerals Yearbook*, "Crude Petroleum and Petroleum Products" chapter. • 1976-1980—EIA, Energy Data Reports, *Petroleum Statement*, Annual, annual reports. • 1981-1994—Independent Petroleum Association of America, *The Oil Producing Industry in Your State*. • 1995 forward—Gulf Publishing Co., *World Oil*, February issues. **All Other Data:**

• 1954-1975—Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement*, Annual, annual reports. • 1976-1980—EIA, Energy Data Reports, *Petroleum Statement*, Annual, annual reports.

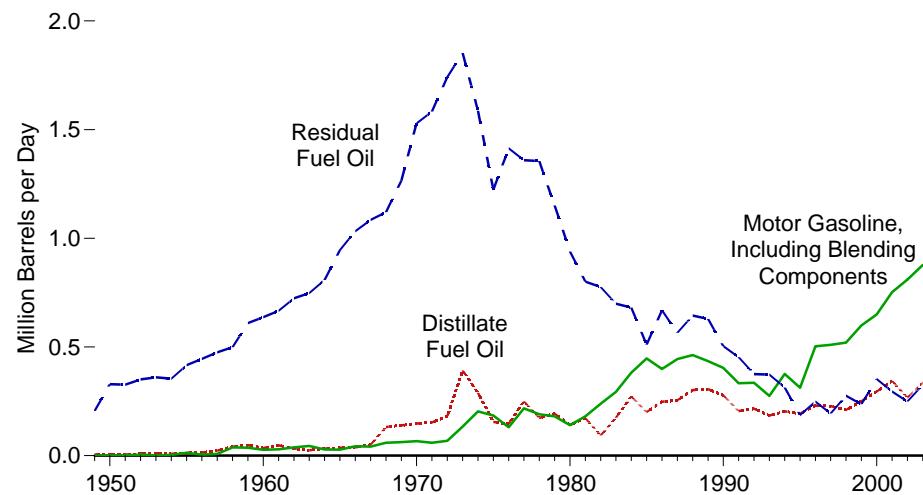
• 1981-2002—EIA, *Petroleum Supply Annual*, annual reports. • 2003—EIA, *Petroleum Supply Monthly* (February 2004).

Figure 5.3 Petroleum Imports by Type

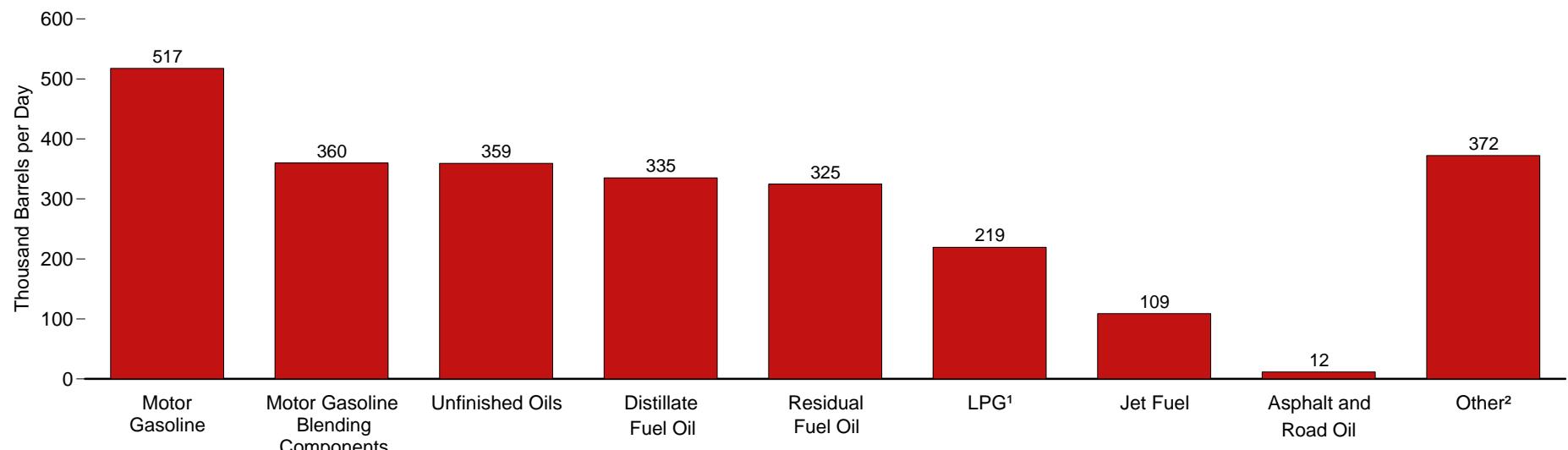
Total, 1949-2003



By Selected Product, 1949-2003



By Product, 2003



¹ Liquefied petroleum gases.

² Aviation gasoline and blending components, other hydrocarbons/oxygenates (ethers and alcohols), kerosene, lubricants, pentanes plus, petrochemical feedstocks, petroleum coke, special naphthas, wax, and miscellaneous products.

Note: Because vertical scales differ, graphs should not be compared.

Source: Table 5.3.

Table 5.3 Petroleum Imports by Type, Selected Years, 1949-2003

(Thousand Barrels per Day)

Year	Crude Oil ¹	Petroleum Products										Total Petroleum	
		Asphalt and Road Oil	Distillate Fuel Oil	Jet Fuel ²	Liquefied Petroleum Gases		Motor Gasoline ⁴	Motor Gasoline Blending Components	Residual Fuel Oil	Unfinished Oils	Other Products ⁵		
				Propane ³	Total								
1949	421	3	5	(²)	0	0	0	206	10	0	224	645	
1950	487	5	7	(²)	0	0	(s)	329	21	1	363	850	
1955	782	9	12	(²)	0	0	13	(⁶)	417	15	0	466	
1960	1,015	17	35	34	NA	4	27	(⁶)	637	45	(s)	799	
1965	1,238	17	36	81	NA	21	28	(⁶)	946	92	10	1,229	
1970	1,324	17	147	144	26	52	67	(⁶)	1,528	108	32	2,095	
1971	1,681	20	153	180	32	70	59	(⁶)	1,583	124	56	2,245	
1972	2,216	25	182	194	43	89	68	(⁶)	1,742	125	101	2,525	
1973	3,244	23	392	212	71	132	134	(⁶)	1,853	137	129	3,012	
1974	3,477	31	289	163	59	123	204	(⁶)	1,587	121	117	2,635	
1975	4,105	14	155	133	60	112	184	(⁶)	1,223	36	95	1,951	
1976	5,287	11	146	76	68	130	131	(⁶)	1,413	32	87	2,026	
1977	6,615	4	250	75	86	161	217	(⁶)	1,359	31	95	2,193	
1978	6,356	2	173	86	57	123	190	(⁶)	1,355	27	50	2,008	
1979	6,519	4	193	78	88	217	181	(⁶)	1,151	59	54	1,937	
1980	5,263	4	142	80	69	216	140	(⁶)	939	55	72	1,646	
1981	4,396	4	173	38	70	244	157	24	800	112	48	1,599	
1982	3,488	5	93	29	63	226	197	42	776	174	84	1,625	
1983	3,329	7	174	29	44	190	247	47	699	234	94	1,722	
1984	3,426	18	272	62	67	195	299	83	681	231	171	2,011	
1985	3,201	35	200	39	67	187	381	67	510	318	130	1,866	
1986	4,178	29	247	57	110	242	326	72	669	250	153	2,045	
1987	4,674	36	255	67	88	190	384	60	565	299	146	2,004	
1988	5,107	31	302	90	106	209	405	57	644	360	196	2,295	
1989	5,843	31	306	106	111	181	369	66	629	348	183	2,217	
1990	5,894	32	278	108	115	188	342	62	504	413	198	2,123	
1991	5,782	28	205	67	91	147	297	36	453	413	198	1,844	
1992	6,083	27	216	82	85	131	294	41	375	443	195	1,805	
1993	6,787	32	184	100	103	160	247	27	373	491	219	1,833	
1994	7,063	37	203	117	124	183	356	20	314	413	291	1,933	
1995	7,230	36	193	106	102	146	265	48	187	349	276	1,605	
1996	7,508	27	230	111	119	166	336	166	248	367	319	1,971	
1997	8,225	32	228	91	113	169	309	200	194	353	360	1,936	
1998	8,706	28	210	124	137	194	311	209	275	302	350	2,002	
1999	8,731	34	250	128	122	182	382	217	237	317	375	2,122	
2000	9,071	28	295	162	161	215	427	223	352	274	414	2,389	
2001	9,328	26	344	148	140	206	454	298	295	378	393	2,543	
2002	R ^a 9,140	27	R ^a 267	R ^a 107	R ^a 145	R ^a 183	R ^a 498	R ^a 311	R ^a 249	R ^a 410	R ^a 337	R ^a 2,390	R ^a 11,530
2003 ^b	9,646	12	335	109	162	219	517	360	325	359	372	2,608	12,254

¹ Includes any imports for the Strategic Petroleum Reserve, which began in 1977.

² Through 1955, naphtha-type jet fuel is included in "Motor Gasoline." Through 1964, kerosene-type jet fuel is included with kerosene in "Other Products."

³ Includes propylene.

⁴ Finished motor gasoline. Through 1955, also includes naphtha-type jet fuel. Through 1963, also includes aviation gasoline and special naphthas. Through 1980, also includes motor gasoline blending components.

⁵ Aviation gasoline blending components, kerosene, lubricants, pentanes plus, petrochemical feedstocks, petroleum coke, waxes, other hydrocarbons and oxygenates, and miscellaneous products. Through 1964, also includes kerosene-type jet fuel. Beginning in 1964, also includes aviation gasoline and special naphthas.

⁶ Included in "Motor Gasoline."

R=Revised. P=Preliminary. NA=Not available. (s)=Less than 500 barrels per day.

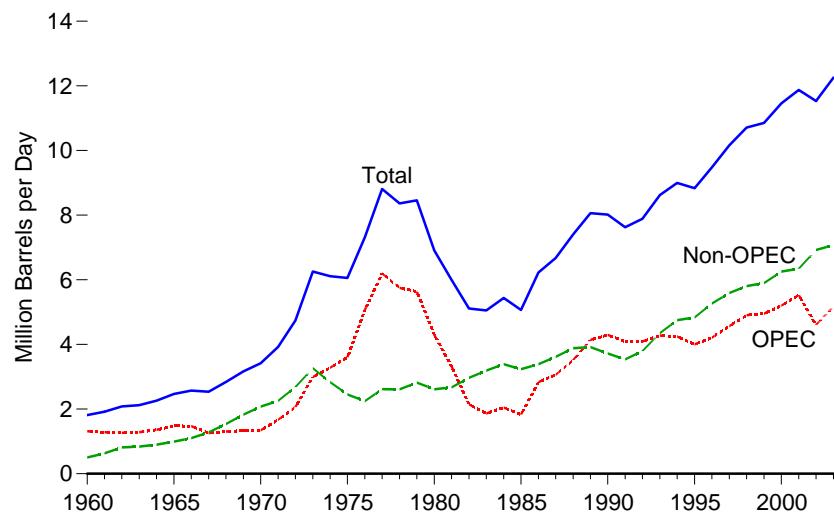
Notes: • Includes imports from U.S. possessions and territories. • Totals may not equal sum of components due to independent rounding.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/petro.html>. • For related information, see http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html.

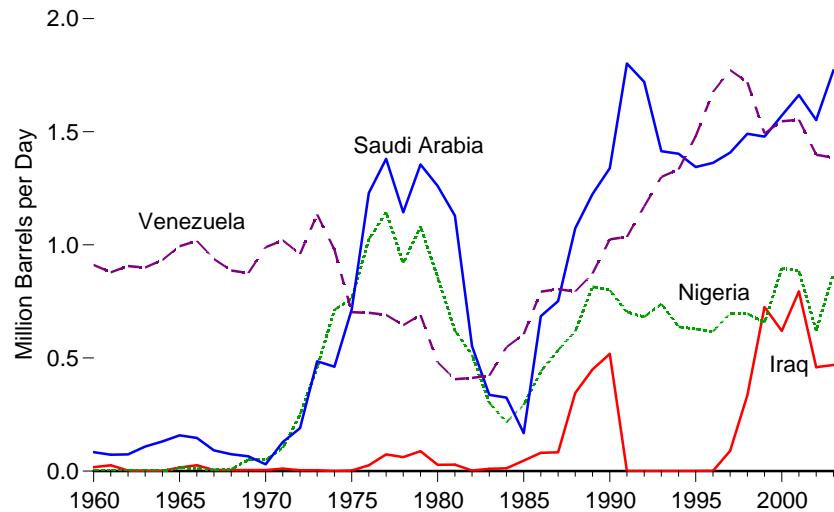
Sources: • 1949-1975—Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual*, annual reports. • 1976-1980—Energy Information Administration (EIA), Energy Data Reports, *Petroleum Statement, Annual*, annual reports. • 1981-2002—EIA, *Petroleum Supply Annual*, annual reports. • 2003—EIA, *Petroleum Supply Monthly* (February 2004).

Figure 5.4 Petroleum Imports by Country of Origin

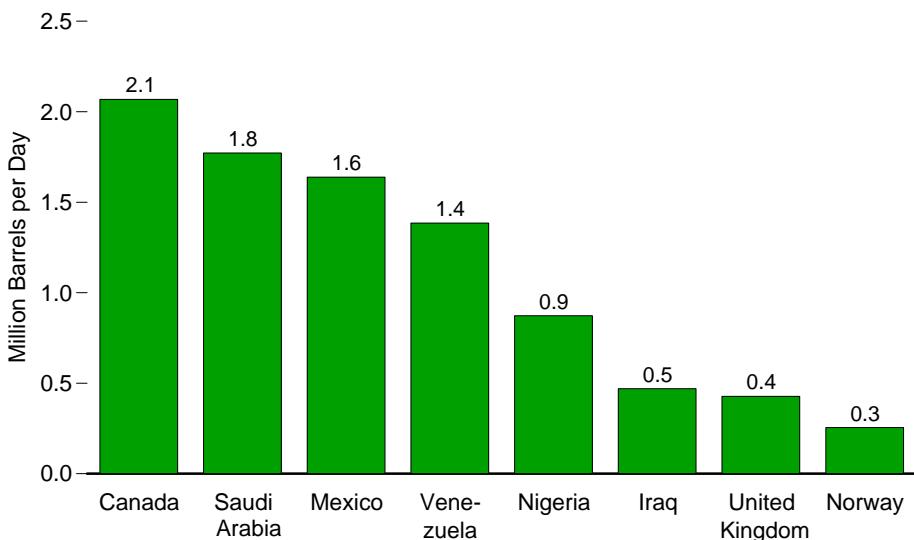
Total, OPEC, and Non-OPEC, 1960-2003



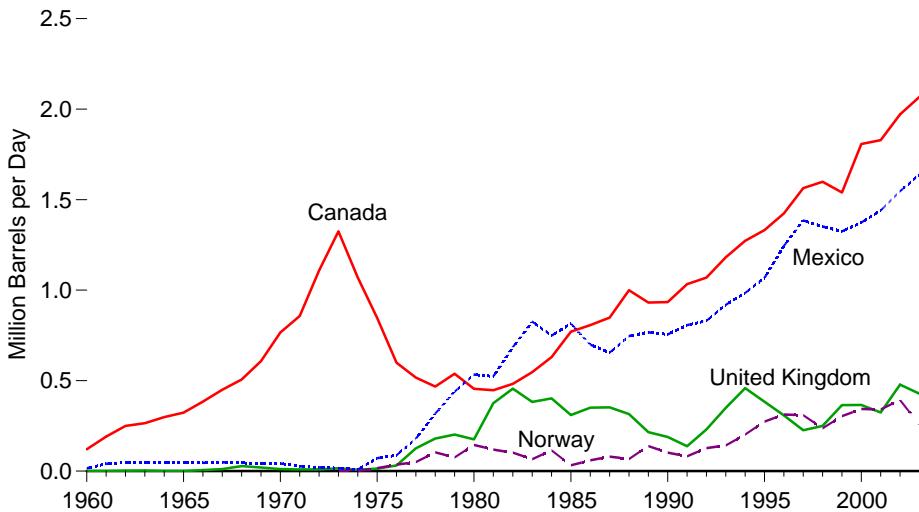
Selected OPEC Countries, 1960-2003



Selected Countries, 2003



Selected Non-OPEC Countries, 1960-2003



Note: Because vertical scales differ, graphs should not be compared.

Source: Table 5.4.

Table 5.4 Petroleum Imports by Country of Origin, 1960-2003

Year	Persian Gulf Nations ²	Selected OPEC ¹ Countries					Selected Non-OPEC Countries						Total Imports	Imports From Persian Gulf Nations as Share of Total Imports	Imports From OPEC as Share of Total Imports	
		Iraq	Nigeria	Saudi Arabia	Venezuela	Total OPEC ³	Canada	Colombia	Mexico	Norway	United Kingdom	Total Non-OPEC ³				
Thousand Barrels per Day																
1960	NA	17	0	84	911	1,314	120	40	16	0	(s)	500	1,815	NA	72.4	
1961	346	25	0	73	879	1,286	190	28	40	0	1	631	1,917	18.0	67.1	
1962	272	2	0	74	906	1,265	250	24	49	0	2	816	2,082	13.0	60.8	
1963	303	1	0	108	900	1,283	265	23	48	0	3	839	2,123	14.3	60.5	
1964	315	1	0	131	933	1,361	299	26	47	0	(s)	898	2,259	13.9	60.2	
1965	345	16	15	158	994	1,476	323	42	48	0	(s)	992	2,468	14.0	59.8	
1966	306	26	11	147	1,018	1,471	384	40	45	0	6	1,102	2,573	11.9	57.2	
1967	198	5	5	92	938	1,259	450	32	49	0	11	1,278	2,537	7.8	49.6	
1968	202	5	9	74	886	1,302	506	33	45	0	28	1,538	2,840	7.1	45.9	
1969	179	5	49	65	875	1,336	608	43	43	0	20	1,830	3,166	5.7	42.2	
1970	121	5	50	30	989	1,343	766	20	42	0	11	2,076	3,419	3.5	39.3	
1971	299	11	102	128	1,020	1,673	857	9	27	0	10	2,253	3,926	7.6	42.6	
1972	471	4	251	190	959	2,063	1,108	5	21	0	9	2,678	4,741	9.9	43.5	
1973	848	4	459	486	1,135	2,993	1,325	9	16	1	15	3,263	6,256	13.6	47.8	
1974	1,039	0	713	461	979	3,280	1,070	5	8	1	8	2,832	6,112	17.0	53.7	
1975	1,165	2	762	715	702	3,601	846	9	71	17	14	2,454	6,056	19.2	59.5	
1976	1,840	26	1,025	1,230	700	5,066	599	21	87	36	31	2,247	7,313	25.2	69.3	
1977	2,448	74	1,143	1,380	690	6,193	517	17	179	50	126	2,614	8,807	27.8	70.3	
1978	2,219	62	919	1,144	646	5,751	467	20	318	104	180	2,612	8,363	26.5	68.8	
1979	2,069	88	1,080	1,356	690	5,637	538	18	439	75	202	2,819	8,456	24.5	66.7	
1980	1,519	28	857	1,261	481	4,300	455	4	533	144	176	2,609	6,909	22.0	62.2	
1981	1,219	(s)	620	1,129	406	3,323	447	1	522	119	375	2,672	5,996	20.3	55.4	
1982	696	3	514	552	412	2,146	482	5	685	102	456	2,968	5,113	13.6	42.0	
1983	442	10	302	337	422	1,862	547	10	826	66	382	3,189	5,051	8.8	36.9	
1984	506	12	216	325	548	2,049	630	8	748	114	402	3,388	5,437	9.3	37.7	
1985	311	46	293	168	605	1,830	770	23	816	32	310	3,237	5,067	6.1	36.1	
1986	912	81	440	685	793	2,837	807	87	699	60	350	3,387	6,224	14.7	45.6	
1987	1,077	83	535	751	804	3,060	848	148	655	80	352	3,617	6,678	16.1	45.8	
1988	1,541	345	618	1,073	794	3,520	999	134	747	67	315	3,882	7,402	20.8	47.6	
1989	1,861	449	815	1,224	873	4,140	931	172	767	138	215	3,921	8,061	23.1	51.4	
1990	1,966	518	800	1,339	1,025	4,296	934	182	755	102	189	3,721	8,018	24.5	53.6	
1991	1,845	0	703	1,802	1,035	4,092	1,033	163	807	82	138	3,535	7,627	24.2	53.7	
1992	1,778	0	681	1,720	1,170	4,092	1,069	126	830	127	230	3,796	7,888	22.5	51.9	
1993	1,782	0	740	1,414	1,300	4,273	1,181	171	919	142	350	4,347	8,620	20.7	49.6	
1994	1,728	0	637	1,402	1,334	4,247	1,272	161	984	202	458	4,749	8,996	19.2	47.2	
1995	1,573	0	627	1,344	1,480	4,002	1,332	219	1,068	273	383	4,833	8,835	17.8	45.3	
1996	1,604	1	617	1,363	1,676	4,211	1,424	234	1,244	313	308	5,267	9,478	16.9	44.4	
1997	1,755	89	698	1,407	1,773	4,569	1,563	271	1,385	309	226	5,593	10,162	17.3	45.0	
1998	2,136	336	696	1,491	1,719	4,905	1,598	354	1,351	236	250	5,803	10,708	19.9	45.8	
1999	2,464	725	657	1,478	1,493	4,953	1,539	468	1,324	304	365	5,899	10,852	22.7	45.6	
2000	2,487	620	896	1,572	1,546	5,203	1,807	342	1,373	343	366	6,257	11,459	21.7	45.4	
2001	2,761	795	885	1,662	1,553	5,528	1,828	296	1,440	341	324	6,343	11,871	23.3	46.6	
2002	R ² ,269	R459	R621	R1,552	R1,398	R4,605	R1,971	R260	R1,547	R393	R478	R6,925	R11,530	R19.7	R39.9	
2003 ^P	2,484	470	873	1,772	1,385	5,175	2,068	191	1,639	255	428	7,079	12,254	20.3	42.2	

¹ Organization of Petroleum Exporting Countries. See Glossary for current membership.

² Bahrain, Iran, Iraq, Kuwait, Qatar, Saudi Arabia, and United Arab Emirates.

³ Ecuador withdrew from OPEC on December 31, 1992. Through 1992, Ecuador is included in "Total OPEC"; beginning in 1993, Ecuador is included in "Total Non-OPEC." Gabon withdrew from OPEC on December 31, 1994. Through 1994, Gabon is included in "Total OPEC"; beginning in 1995, Gabon is included in "Total Non-OPEC."

R=Revised. P=Preliminary. NA=Not available. (s)=Less than 500 barrels per day.

Notes: • The country of origin for refined petroleum products may not be the country of origin for the crude oil from which the refined products were produced. For example, refined products imported from

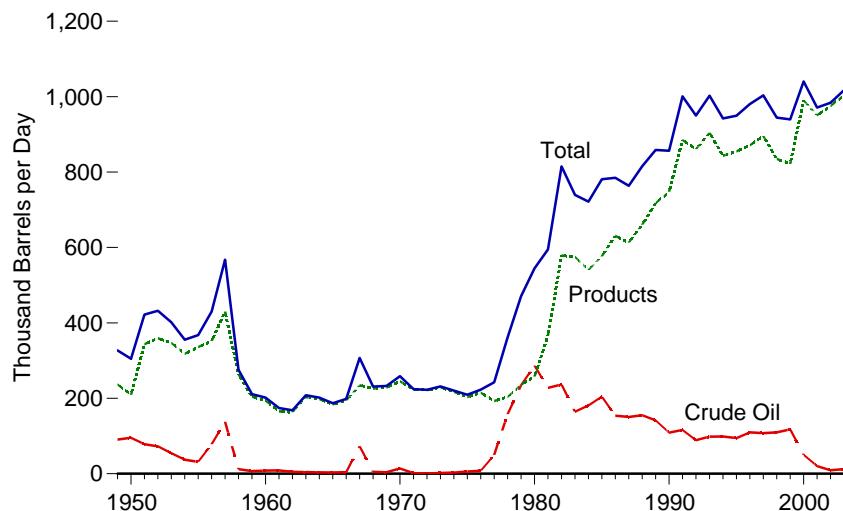
refineries in the Caribbean may have been produced from Middle East crude oil. • Data include any imports for the Strategic Petroleum Reserve, which began in 1977. • Totals may not equal sum of components due to independent rounding.

Web Page: See http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html for related information.

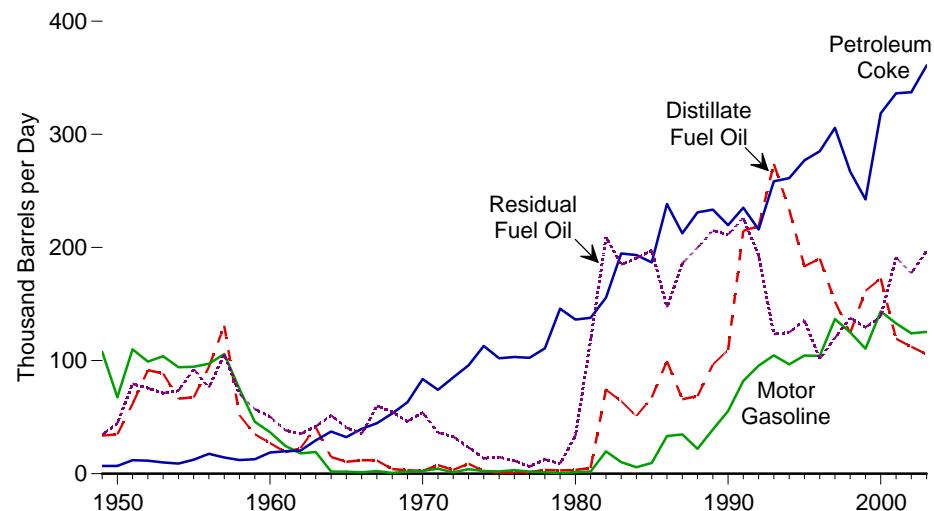
Sources: • 1960-1975—Bureau of Mines, *Minerals Yearbook*, "Crude Petroleum and Petroleum Products" chapter. • 1976-1980—Energy Information Administration (EIA), Energy Data Reports, *P.A.D. Districts Supply/Demand, Annual*, annual reports. • 1981-2002—EIA, *Petroleum Supply Annual*, annual reports. • 2003—EIA, *Petroleum Supply Monthly* (February 2004).

Figure 5.5 Petroleum Exports by Type

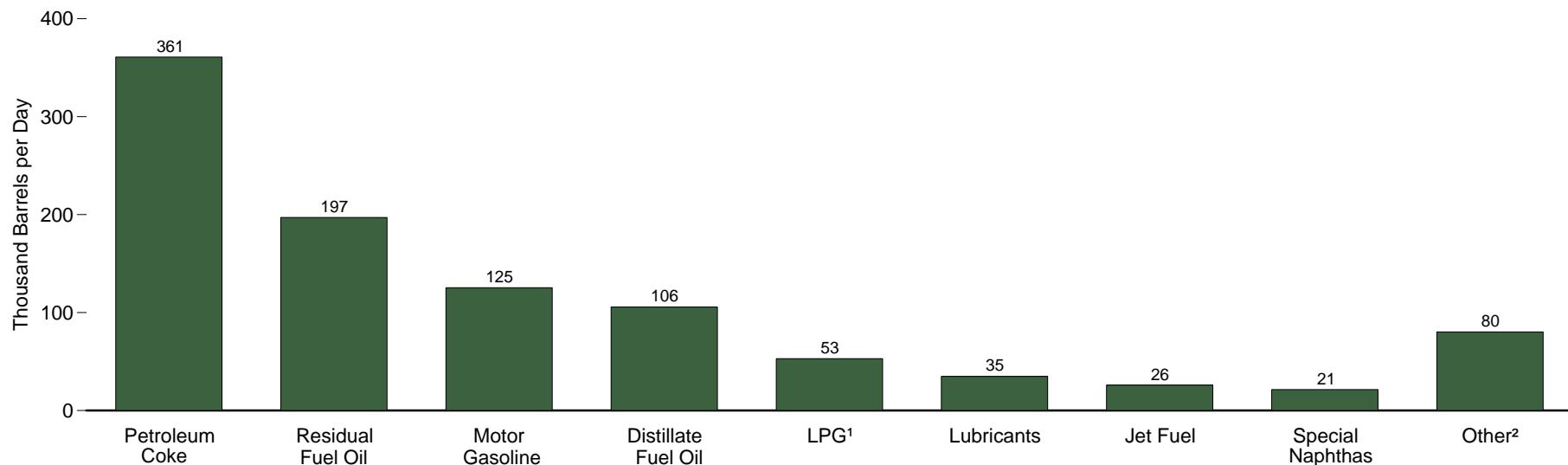
Total, 1949-2003



By Selected Product 1949-2003



By Product, 2003



¹ Liquefied petroleum gases.

² Asphalt and road oil, aviation gasoline, kerosene, motor gasoline blending components, pentanes plus, waxes, other hydrocarbons and oxygenates, and miscellaneous products.

Note: Because vertical scales differ, graphs should not be compared.

Source: Table 5.5.

Table 5.5 Petroleum Exports by Type, Selected Years, 1949-2003

(Thousand Barrels per Day)

Year	Crude Oil	Petroleum Products												Total Petroleum	
		Distillate Fuel Oil	Jet Fuel ¹	Liquefied Petroleum Gases		Lubricants	Motor Gasoline ³	Petroleum Coke	Petrochemical Feedstocks	Residual Fuel Oil	Special Naphthas	Other Products ⁴	Total		
				Propane ²	Total										
1949	91	34	(¹)	NA	4	35	108	7	0	35	NA	15	236	327	
1950	95	35	(¹)	NA	4	39	68	7	0	44	NA	12	210	305	
1955	32	67	(s)	NA	12	39	95	12	0	93	NA	18	336	368	
1960	8	27	(s)	NA	8	43	37	19	0	51	NA	9	193	202	
1965	3	10	3	NA	21	45	2	32	5	41	4	20	184	187	
1970	14	2	6	6	27	44	2	84	10	54	4	10	245	259	
1971	1	8	4	13	26	43	5	74	14	36	4	9	223	224	
1972	1	3	3	18	31	41	1	85	13	33	4	8	222	222	
1973	2	9	4	15	27	35	4	96	19	23	5	8	229	231	
1974	3	2	3	14	25	33	2	113	15	14	4	7	218	221	
1975	6	1	2	13	26	25	2	102	22	15	3	6	204	209	
1976	8	1	2	13	25	26	3	103	30	12	7	6	215	223	
1977	50	1	2	10	18	26	2	102	24	6	4	7	193	243	
1978	158	3	1	9	20	27	1	111	23	13	2	2	204	362	
1979	235	3	1	8	15	23	(s)	146	31	9	5	3	236	471	
1980	287	3	1	10	21	23	1	136	29	33	5	4	258	544	
1981	228	5	2	18	42	19	2	138	26	118	11	4	367	595	
1982	236	74	6	31	65	16	20	156	24	209	5	4	579	815	
1983	164	64	6	43	73	16	10	195	20	185	3	3	575	739	
1984	181	51	9	30	48	15	6	193	21	190	2	6	541	722	
1985	204	67	13	48	62	15	10	187	19	197	1	4	577	781	
1986	154	100	18	28	42	23	33	238	22	147	1	8	631	785	
1987	151	66	24	24	38	23	35	213	20	186	2	7	613	764	
1988	155	69	28	31	49	26	22	231	23	200	7	6	661	815	
1989	142	97	27	24	35	19	39	233	26	215	12	15	717	859	
1990	109	109	43	28	40	20	55	220	26	211	11	13	748	857	
1991	116	215	43	28	41	18	82	235	0	226	15	9	885	1,001	
1992	89	219	43	33	49	16	96	216	0	193	14	16	861	950	
1993	98	274	59	26	43	19	105	258	0	123	4	20	904	1,003	
1994	99	234	20	24	38	22	97	261	0	125	20	26	843	942	
1995	95	183	26	38	58	25	104	277	0	136	21	25	855	949	
1996	110	190	48	28	51	34	104	285	0	102	21	36	871	981	
1997	108	152	35	32	50	31	137	306	0	120	22	44	896	1,003	
1998	110	124	26	25	42	25	125	267	0	138	18	70	835	945	
1999	118	162	32	33	50	28	111	242	0	129	16	52	822	940	
2000	50	173	32	53	74	26	144	319	0	139	20	64	990	1,040	
2001	20	119	29	31	44	26	133	336	0	191	23	50	951	971	
2002	9	112	15	R ⁵⁵	R ⁶⁷	33	124	337	0	177	15	94	R ⁹⁷⁵	R ⁹⁸⁴	
2003 ^p	12	106	26	36	53	35	125	361	0	197	21	80	1,005	1,017	

¹ Through 1952, naphtha-type jet fuel is included in the products from which it was blended: gasoline, kerosene, and distillate fuel oil. Through 1964, kerosene-type jet fuel is included with kerosene in "Other Products."

² Includes propylene.

³ Finished motor gasoline. Through 1963, also includes aviation gasoline.

⁴ Asphalt and road oil, kerosene, motor gasoline blending components, pentanes plus, waxes, other hydrocarbons and oxygenates, and miscellaneous products. Through 1964, also includes kerosene-type jet fuel. Beginning in 1964, also includes aviation gasoline.

R=Revised. P=Preliminary. NA=Not available. (s)=Less than 500 barrels per day.

Notes: • Includes exports to U.S. possessions and territories. • Totals may not equal sum of components due to independent rounding.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/petro.html>.

• For related information, see http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html.

Sources: • 1949-1975—Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual*, annual reports. • 1976-1980—Energy Information Administration (EIA), Energy Data Reports, *Petroleum Statement, Annual*, annual reports. • 1981-2002—EIA, *Petroleum Supply Annual*, annual reports.

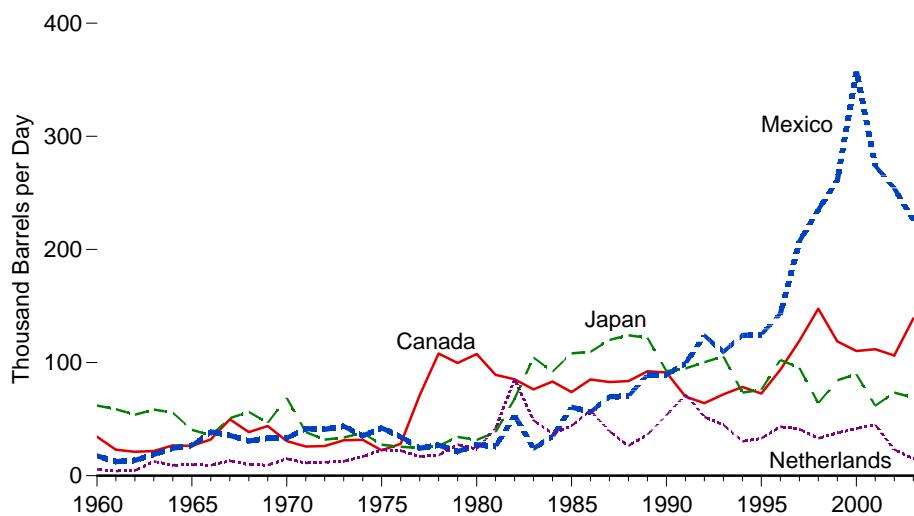
• 2003—EIA, *Petroleum Supply Monthly* (February 2004).

Figure 5.6 Petroleum Exports by Country of Destination

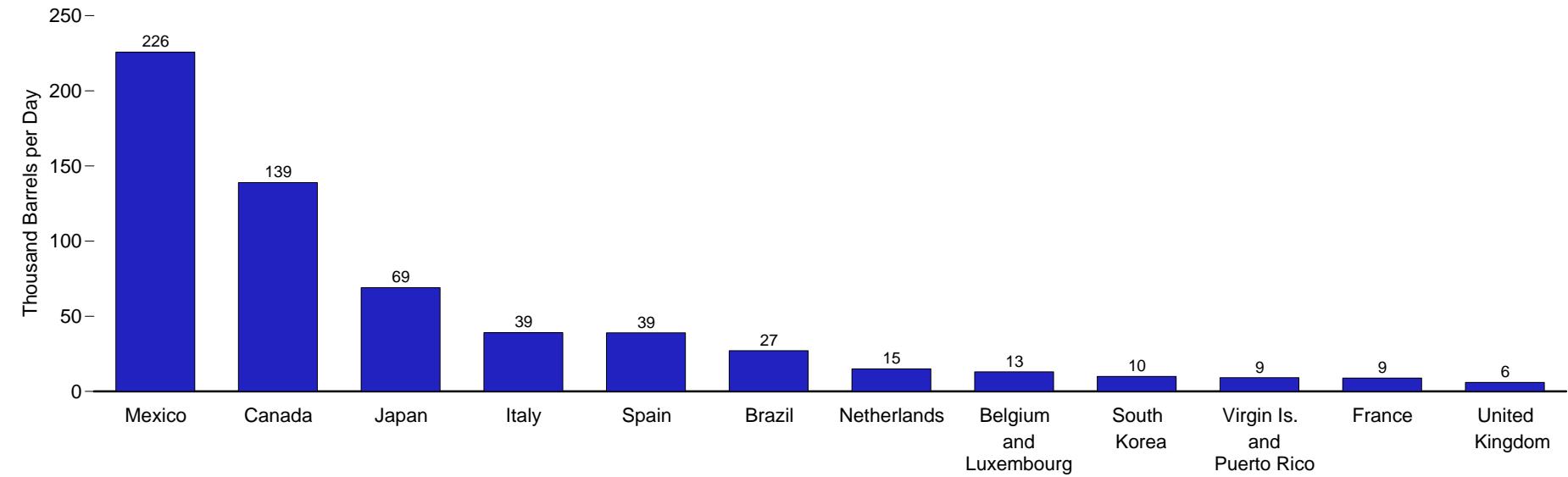
Total Exports and Exports to Canada and Mexico, 1960-2003



By Selected Country, 1960-2003



By Selected Country, 2003



Note: Because vertical scales differ, graphs should not be compared.

Source: Table 5.6.

Table 5.6 Petroleum Exports by Country of Destination, 1960-2003

(Thousand Barrels per Day)

Year	Belgium and Luxembourg	Brazil	Canada	France	Italy	Japan	Mexico	Netherlands	South Korea	Spain	United Kingdom	U.S. Virgin Islands and Puerto Rico	Other	Total
1960	3	4	34	4	6	62	18	6	NA	NA	12	1	52	202
1961	4	4	23	4	5	59	12	4	NA	NA	10	1	48	174
1962	3	5	21	3	5	54	14	5	NA	NA	8	1	50	168
1963	9	4	22	4	8	58	19	13	NA	NA	11	1	59	208
1964	4	4	27	4	8	56	24	9	NA	NA	10	2	55	202
1965	3	3	26	3	7	40	27	10	NA	NA	12	1	54	187
1966	3	4	32	4	7	36	39	9	NA	NA	12	3	49	198
1967	5	6	50	3	9	51	36	13	NA	NA	62	7	65	307
1968	4	8	39	4	8	56	31	10	NA	NA	14	2	55	231
1969	4	7	44	4	9	47	33	9	NA	NA	13	2	59	233
1970	5	7	31	5	10	69	33	15	NA	NA	12	2	71	259
1971	7	9	26	5	8	39	42	11	NA	NA	9	3	67	224
1972	13	9	26	5	9	32	41	12	NA	4	10	4	59	222
1973	15	8	31	5	9	34	44	13	NA	4	9	3	56	231
1974	13	9	32	4	9	38	35	17	NA	4	6	6	48	221
1975	9	6	22	6	10	27	42	23	NA	4	7	12	40	209
1976	12	7	28	6	10	25	35	22	NA	4	13	22	39	223
1977	16	6	71	9	10	25	24	17	NA	5	9	11	39	243
1978	15	8	108	9	10	26	27	18	NA	5	7	86	42	362
1979	19	7	100	13	15	34	21	28	2	9	7	170	45	471
1980	20	4	108	11	14	32	28	23	2	8	7	220	70	544
1981	12	1	89	15	22	38	26	42	10	18	5	220	97	595
1982	17	8	85	24	32	68	53	85	28	24	14	212	165	815
1983	22	2	76	23	35	104	24	49	15	34	8	144	202	739
1984	21	1	83	18	39	92	35	37	17	29	14	152	182	722
1985	26	3	74	11	30	108	61	44	27	28	14	162	193	781
1986	30	3	85	11	39	110	56	58	12	39	8	113	222	785
1987	17	2	83	12	42	120	70	39	25	31	6	136	179	764
1988	25	3	84	12	29	124	70	26	24	36	9	147	226	815
1989	23	5	92	11	37	122	89	36	17	28	9	141	249	859
1990	20	2	91	17	48	92	89	54	60	33	11	101	240	857
1991	22	13	70	27	55	95	99	72	66	23	13	117	330	1,001
1992	22	20	64	9	38	100	124	52	80	21	12	95	315	950
1993	21	16	72	8	34	105	110	45	74	30	10	108	370	1,003
1994	26	15	78	11	35	74	124	30	66	30	10	104	338	942
1995	21	16	73	11	46	76	125	33	57	38	14	123	317	949
1996	27	29	94	18	32	102	143	43	60	34	9	72	318	981
1997	21	15	119	11	30	95	207	41	50	42	12	18	340	1,003
1998	14	18	148	8	30	64	235	33	33	30	11	4	317	945
1999	11	27	119	7	25	84	261	38	49	26	9	8	276	940
2000	14	28	110	10	34	90	358	42	20	40	10	10	277	1,040
2001	16	23	112	13	33	62	274	45	14	51	13	4	312	971
2002	19	26	106	12	29	R74	R254	23	11	54	12	9	354	R984
2003 ^P	13	27	139	9	39	69	226	15	10	39	6	9	416	1,017

R=Revised. P=Preliminary. NA=Not available.

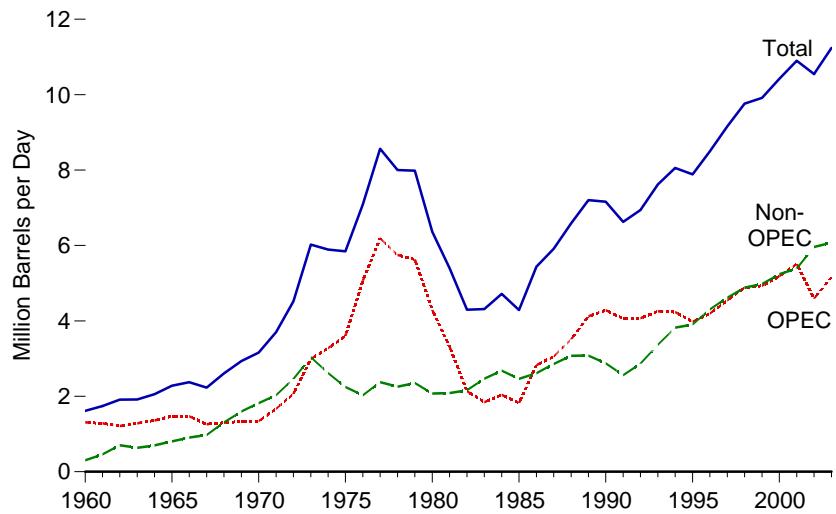
Note: Totals may not equal sum of components due to independent rounding.

Web Page: See http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html for related information.

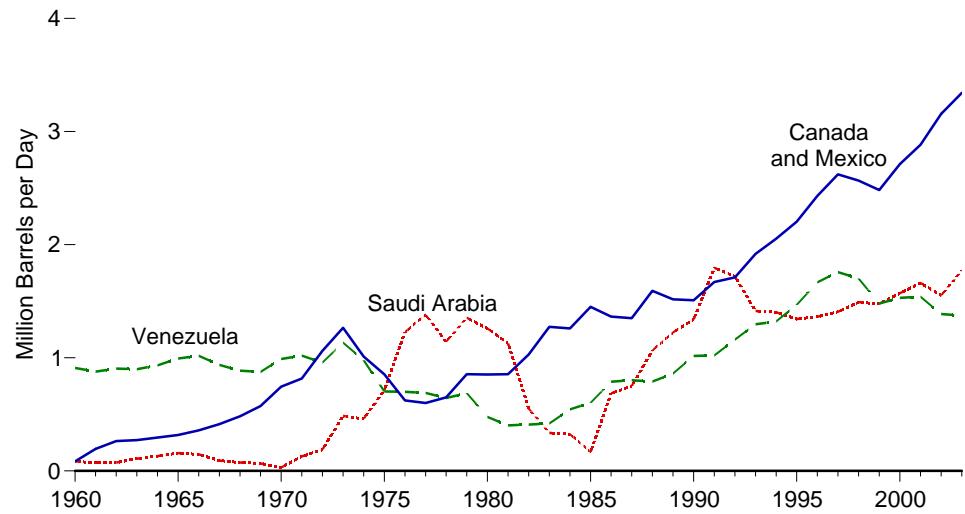
Sources: • 1960-1975—Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual*, annual reports. • 1976-1980—Energy Information Administration (EIA), Energy Data Reports, *Petroleum Statement, Annual*, annual reports. • 1981-2002—EIA, *Petroleum Supply Annual*, annual reports. • 2003—EIA, *Petroleum Supply Monthly* (February 2004).

Figure 5.7 Petroleum Net Imports by Country of Origin, 1960-2003

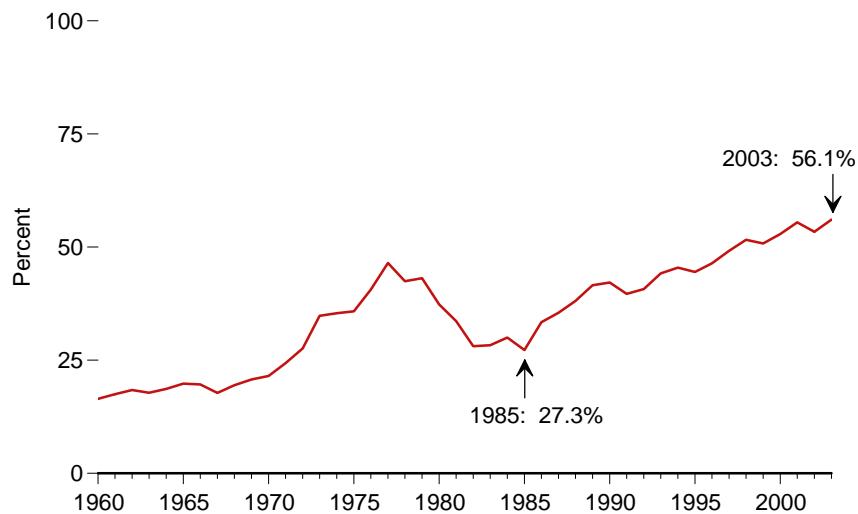
Total, OPEC, and Non-OPEC



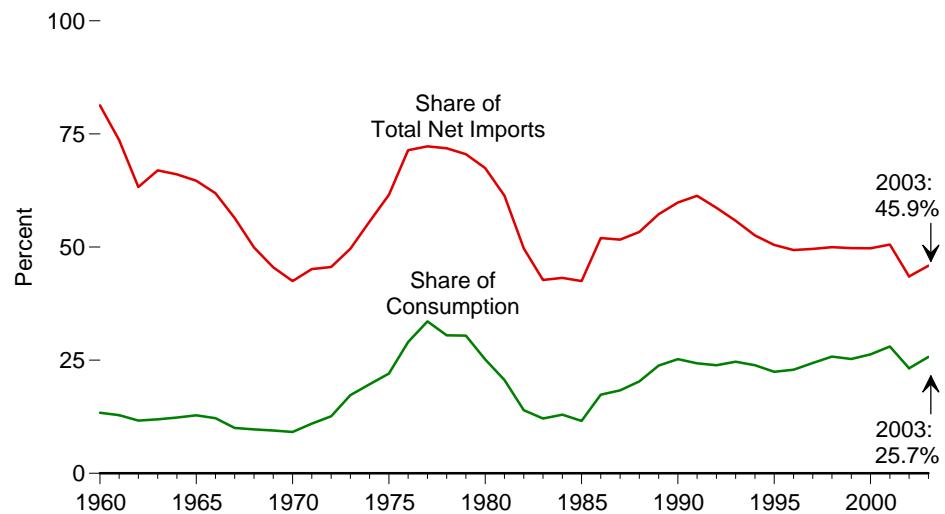
By Selected Country



Total Net Imports as Share of Consumption



Net Imports From OPEC



Note: Because vertical scales differ, graphs should not be compared.

Source: Table 5.7.

Table 5.7 Petroleum Net Imports by Country of Origin, 1960-2003

Year	Persian Gulf Nations ²	Selected OPEC ¹ Countries					Selected Non-OPEC Countries					Total Net Imports	Total Net Imports as Share of Consumption ⁴	Net Imports From OPEC	
		Algeria	Nigeria	Saudi Arabia	Venezuela	Total OPEC ³	Canada	Mexico	United Kingdom	U.S. Virgin Islands and Puerto Rico	Total Non-OPEC ³			Share of Total Net Imports ⁵	Share of Consumption ⁶
Thousand Barrels per Day															
1960	NA	NA	0	84	910	1,311	86	-2	-12	34	302	1,613	16.5	81.3	13.4
1961	NA	NA	0	73	878	1,283	167	27	-10	42	460	1,743	17.5	73.6	12.9
1962	NA	NA	0	74	905	1,210	229	35	-6	40	703	1,913	18.4	63.3	11.6
1963	NA	NA	0	108	899	1,282	243	29	-7	43	632	1,915	17.8	67.0	11.9
1964	NA	NA	0	131	932	1,359	272	23	-9	45	698	2,057	18.7	66.1	12.3
1965	NA	NA	15	158	994	1,475	297	21	-11	45	806	2,281	19.8	64.7	12.8
1966	NA	NA	11	147	1,018	1,470	352	6	-6	58	904	2,375	19.7	61.9	12.2
1967	NA	NA	5	92	937	1,258	400	13	-51	89	972	2,230	17.8	56.4	10.0
1968	NA	NA	9	74	886	1,302	468	15	13	143	1,307	2,609	19.5	49.9	9.7
1969	NA	NA	49	65	875	1,336	564	10	7	186	1,598	2,933	20.8	45.5	9.5
1970	NA	NA	50	30	989	1,343	736	9	-1	270	1,817	3,161	21.5	42.5	9.1
1971	NA	NA	102	128	1,019	1,671	831	-14	1	365	2,030	3,701	24.3	45.2	11.0
1972	NA	NA	251	189	959	2,061	1,082	-20	-1	428	2,458	4,519	27.6	45.6	12.6
1973	NA	NA	459	485	1,134	2,991	1,294	-28	6	426	3,034	6,025	34.8	49.6	17.3
1974	NA	NA	713	461	978	3,277	1,038	-27	1	475	2,615	5,892	35.4	55.6	19.7
1975	NA	NA	762	714	702	3,599	824	29	7	484	2,248	5,846	35.8	61.6	22.1
1976	NA	NA	1,025	1,229	699	5,063	571	53	19	488	2,027	7,090	40.6	71.4	29.0
1977	NA	NA	1,143	1,379	689	6,190	446	155	117	560	2,375	8,565	46.5	72.3	33.6
1978	NA	NA	919	1,142	644	5,747	359	291	173	436	2,255	8,002	42.5	71.8	30.5
1979	NA	NA	1,080	1,354	688	5,633	438	418	196	353	2,352	7,985	43.1	70.5	30.4
1980	NA	NA	857	1,259	478	4,293	347	506	169	256	2,071	6,365	37.3	67.5	25.2
1981	1,215	311	620	1,128	403	3,315	358	497	370	169	2,086	5,401	33.6	61.4	20.6
1982	692	170	512	551	409	2,136	397	632	442	154	2,163	4,298	28.1	49.7	14.0
1983	439	240	299	336	420	1,843	471	802	374	178	2,469	4,312	28.3	42.7	12.1
1984	502	323	215	324	544	2,037	547	714	388	184	2,679	4,715	30.0	43.2	13.0
1985	309	187	293	167	602	1,821	696	755	295	114	2,465	4,286	27.3	42.5	11.6
1986	909	271	440	685	788	2,828	721	642	342	152	2,611	5,439	33.4	52.0	17.4
1987	1,074	295	535	751	801	3,055	765	585	346	158	2,859	5,914	35.5	51.7	18.3
1988	1,529	300	618	1,064	790	3,513	916	677	306	117	3,074	6,587	38.1	53.3	20.3
1989	1,858	269	815	1,224	861	4,124	839	678	206	212	3,078	7,202	41.6	57.3	23.8
1990	1,962	280	800	1,339	1,016	4,285	843	666	179	213	2,876	7,161	42.2	59.8	25.2
1991	1,833	253	703	1,796	1,020	4,065	963	707	125	153	2,561	6,626	39.6	61.3	24.3
1992	1,773	196	680	1,720	1,161	4,071	1,005	706	219	180	2,867	6,938	40.7	58.7	23.9
1993	1,774	219	736	1,413	1,296	4,253	1,109	809	340	175	3,365	7,618	44.2	55.8	24.7
1994	1,723	243	637	1,402	1,322	4,233	1,194	860	448	246	3,822	8,054	45.5	52.6	23.9
1995	1,563	234	626	1,343	1,468	3,980	1,260	943	369	170	3,906	7,886	44.5	50.5	22.5
1996	1,596	256	616	1,362	1,667	4,193	1,330	1,101	299	262	4,305	8,498	46.4	49.3	22.9
1997	1,747	285	693	1,407	1,758	4,542	1,444	1,178	214	298	4,616	9,158	49.2	49.6	24.4
1998	2,132	290	693	1,491	1,700	4,880	1,451	1,116	239	305	4,884	9,764	51.6	50.0	25.8
1999	2,459	259	655	1,478	1,480	4,934	1,421	1,063	356	284	4,978	9,912	50.8	49.8	25.3
2000	2,483	225	896	1,571	1,530	5,181	1,697	1,015	356	297	5,238	10,419	52.9	49.7	26.3
2001	2,758	278	884	1,662	1,540	5,510	1,717	1,166	311	268	5,390	10,900	55.5	50.5	28.0
2002	R ^{2,265}	R ²⁶⁴	R ⁶²⁰	R ^{1,551}	R ^{1,387}	R ^{4,589}	R ^{1,864}	R ^{1,292}	R ⁴⁶⁷	R ²²⁴	R ^{5,958}	R ^{10,546}	R ^{53.4}	R ^{43.5}	R ^{23.2}
2003 ^P	2,479	397	872	1,771	1,372	5,157	1,929	1,413	422	279	6,080	11,237	56.1	45.9	25.7

¹ Organization of Petroleum Exporting Countries. See Glossary for membership.

² Bahrain, Iran, Iraq, Kuwait, Qatar, Saudi Arabia, and United Arab Emirates.

³ Ecuador withdrew from OPEC on December 31, 1992. Through 1992, Ecuador is included in "Total OPEC"; beginning in 1993, Ecuador is included in "Total Non-OPEC." Gabon withdrew from OPEC on December 31, 1994. Through 1994, Gabon is included in "Total OPEC"; beginning in 1995, Gabon is included in "Total Non-OPEC."

⁴ Calculated by dividing total net petroleum imports by total U.S. petroleum products supplied (consumption).

⁵ Calculated by dividing net petroleum imports from OPEC countries by total net petroleum imports.

⁶ Calculated by dividing net petroleum imports from OPEC countries by total U.S. petroleum product supplied (consumption).

R=Revised. P=Preliminary. NA=Not available.

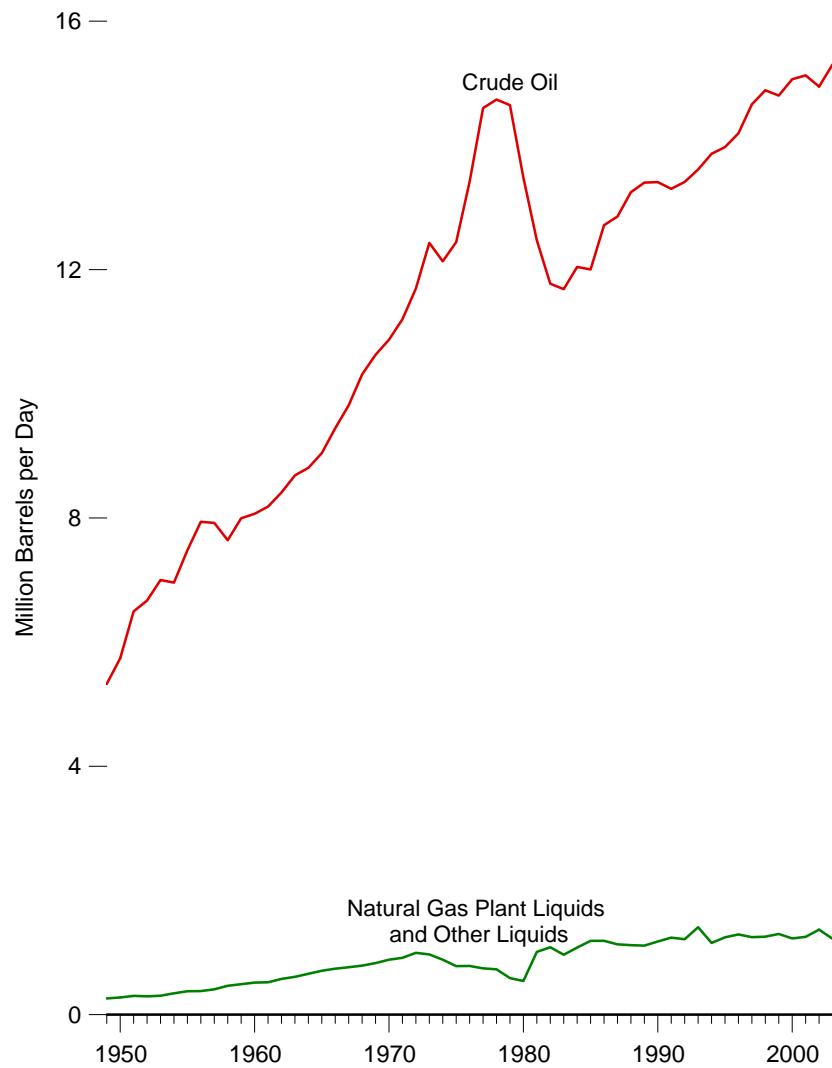
Notes: • The country of origin for refined petroleum products may not be the country of origin for the crude oil from which the refined products were produced. For example, refined products imported from refineries in the Caribbean may have been produced from Middle East crude oil. • Net imports equal imports minus exports. Minus sign indicates exports are greater than imports. • Data include any imports for the Strategic Petroleum Reserve, which began in 1977. • Totals may not equal sum of components due to independent rounding.

Web Page: See http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html for related information.

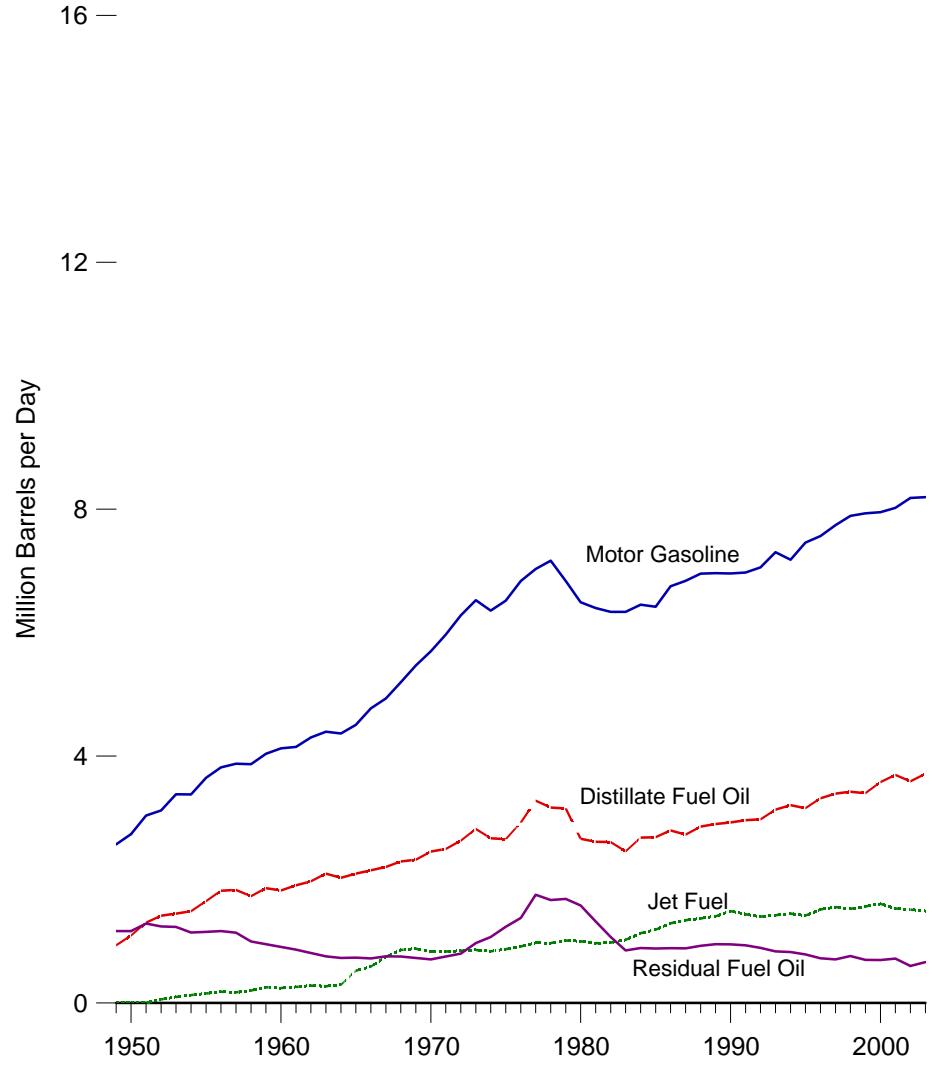
Sources: • 1960-1975—Bureau of Mines, *Minerals Yearbook*, "Crude Petroleum and Petroleum Products" chapter. • 1976-1980—Energy Information Administration (EIA), *Energy Data Reports, P.A.D. Districts Supply/Demand, Annual*, annual reports. • 1981-2002—EIA, *Petroleum Supply Annual*, annual reports. • 2003—EIA, *Petroleum Supply Monthly* (February 2004).

Figure 5.8 Refinery Input and Output, 1949-2003

Refinery Input



Refinery Output of Selected Products



Source: Table 5.8.

Table 5.8 Refinery Input and Output, Selected Years, 1949-2003

(Thousand Barrels per Day)

Year	Refinery Input ¹				Refinery Output ²										Processing Gain
	Crude Oil	Natural Gas Plant Liquids	Other Liquids ³	Total Input	Asphalt and Road Oil	Distillate Fuel Oil	Jet Fuel ⁴	Liquefied Petroleum Gases	Motor Gasoline ⁵	Petroleum Coke	Residual Fuel Oil	Still Gas	Other Products ⁶	Total Output	
1949	5,327	234	28	5,588	155	934	(⁴)	64	2,572	46	1,164	226	425	5,587	(s)
1950	5,739	259	19	6,018	179	1,093	(⁴)	80	2,735	47	1,165	229	492	6,019	(s)
1955	7,480	345	32	7,857	251	1,651	155	119	3,648	78	1,152	319	518	7,891	34
1960	8,067	455	61	8,583	286	1,823	241	212	4,126	164	908	354	616	8,729	146
1965	9,043	618	88	9,750	357	2,096	523	293	4,507	236	736	395	827	9,970	220
1970	10,870	763	121	11,754	428	2,454	827	345	5,699	296	706	483	876	12,113	359
1971	11,199	781	136	12,116	454	2,495	835	357	5,970	299	753	474	861	12,498	382
1972	11,696	826	168	12,691	446	2,630	847	356	6,281	327	799	507	886	13,080	388
1973	12,431	815	155	13,401	480	2,820	859	375	6,527	362	972	518	940	13,854	453
1974	12,133	746	138	13,018	470	2,668	836	338	6,358	339	1,070	521	900	13,498	480
1975	12,442	710	72	13,225	408	2,653	871	311	6,518	354	1,236	523	811	13,685	460
1976	13,416	725	59	14,200	391	2,924	918	340	6,838	356	1,377	541	993	14,677	477
1977	14,602	673	74	15,349	431	3,277	973	352	7,031	369	1,754	572	1,114	15,874	524
1978	14,739	639	92	15,470	482	3,167	970	355	7,167	369	1,667	603	1,186	15,966	496
1979	14,648	510	78	15,236	467	3,152	1,012	340	6,837	376	1,687	598	1,296	15,763	527
1980	13,481	462	81	14,025	393	2,661	999	330	6,492	370	1,580	581	1,215	14,622	597
1981	12,470	524	488	13,482	340	2,613	968	315	6,400	390	1,321	565	1,078	13,990	508
1982	11,774	515	572	12,861	329	2,606	978	270	6,336	410	1,070	554	839	13,391	531
1983	11,685	460	505	12,650	372	2,456	1,022	328	6,338	420	852	550	801	13,138	488
1984	12,044	500	581	13,126	386	2,680	1,132	363	6,453	439	891	559	776	13,679	553
1985	12,002	509	681	13,192	401	2,686	1,189	391	6,419	455	882	584	743	13,750	557
1986	12,716	479	711	13,906	410	2,796	1,293	417	6,752	506	889	641	818	14,522	616
1987	12,854	466	667	13,987	434	2,729	1,343	449	6,841	512	885	643	791	14,626	639
1988	13,246	511	610	14,367	443	2,857	1,370	499	6,956	544	926	670	758	15,022	655
1989	13,401	499	613	14,513	424	2,899	1,403	554	6,963	542	954	681	755	15,175	661
1990	13,409	467	713	14,589	449	2,925	1,488	499	6,959	552	950	673	778	15,272	683
1991	13,301	472	768	14,541	430	2,962	1,438	536	6,975	568	934	651	761	15,256	715
1992	13,411	469	745	14,626	419	2,974	1,399	607	7,058	596	892	659	796	15,398	772
1993	13,613	491	917	15,021	451	3,132	1,422	592	7,304	619	835	653	780	15,787	766
1994	13,866	465	691	15,023	451	3,205	1,448	611	7,181	622	826	657	790	15,791	768
1995	13,973	471	775	15,220	467	3,155	1,416	654	7,459	630	788	647	778	15,994	774
1996	14,195	450	843	15,487	459	3,316	1,515	662	7,565	664	726	654	764	16,324	837
1997	14,662	416	832	15,909	485	3,392	1,554	691	7,743	689	708	661	836	16,759	850
1998	14,889	403	853	16,144	498	3,424	1,526	674	7,892	712	762	656	886	17,030	886
1999	14,804	372	927	16,103	505	3,399	1,565	684	7,934	713	698	656	835	16,989	886
2000	15,067	380	849	16,295	525	3,580	1,606	705	7,951	727	696	659	793	17,243	948
2001	15,128	429	825	16,382	485	3,695	1,530	667	8,022	767	721	670	729	17,285	903
2002	R14,947	R429	R941	R16,316	R492	R3,592	R1,514	R671	R8,183	R781	R601	R667	R771	R17,273	R957
2003 ^p	15,303	419	804	16,525	496	3,714	1,488	657	8,196	798	663	701	777	17,488	963

¹ See "Refinery Input" in Glossary.

² See "Refinery Output" in Glossary.

³ Through 1980, includes unfinished oils (net), other hydrocarbons, and hydrogen; beginning in 1981, includes unfinished oils (net), other hydrocarbons, hydrogen, and oxygenates. See Note 2, "Adjustment to Total Petroleum Products Supplied," at end of section.

⁴ Through 1951, naphtha-type jet fuel is included in the products from which it was blended: in 1952, 71 percent gasoline, 17 percent kerosene, and 12 percent distillate fuel oil. Through 1964, kerosene-type jet fuel is included with kerosene in "Other Products."

⁵ Finished motor gasoline. Through 1963, also includes aviation gasoline and special naphthas.

⁶ Kerosene, lubricants, petrochemical feedstocks, waxes, and miscellaneous products. Through 1964,

also includes kerosene-type jet fuel. Beginning in 1964, also includes aviation gasoline and special naphthas.

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

Note: Totals may not equal sum of components due to independent rounding.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/petro.html>.

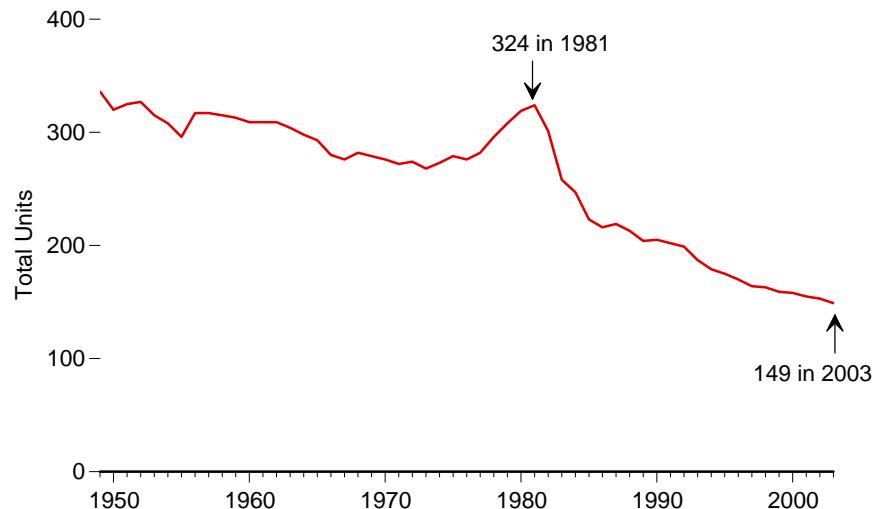
• For related information, see http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html.

Sources: • 1949-1975—Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual*, annual reports. • 1976-1980—Energy Information Administration (EIA), Energy Data Reports, *Petroleum Statement, Annual*, annual reports. • 1981-2002—EIA, *Petroleum Supply Annual*, annual reports.

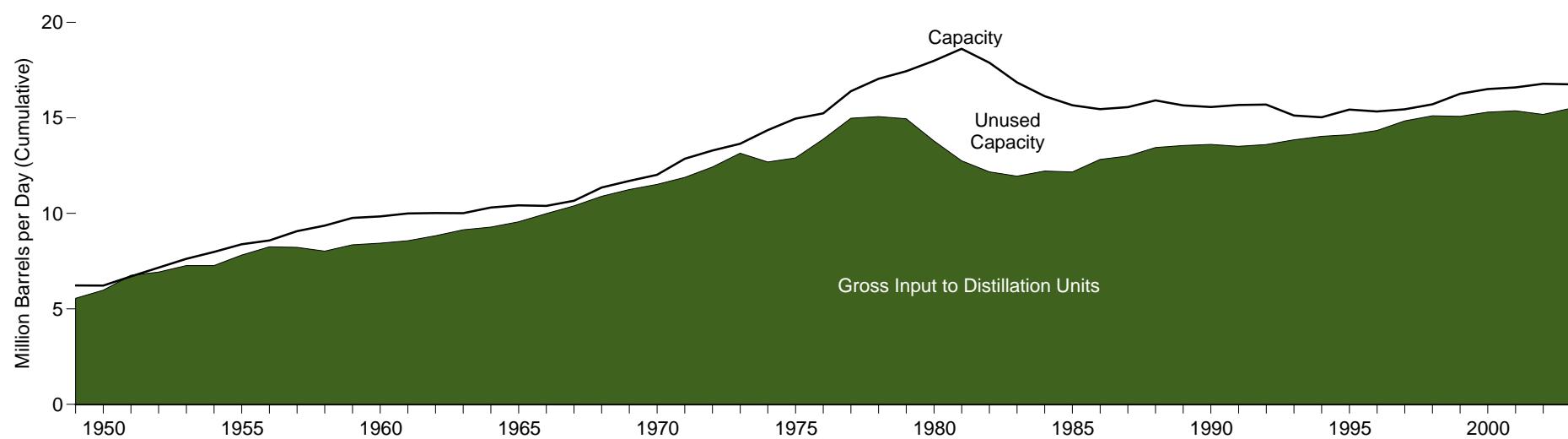
• 2003—EIA, *Petroleum Supply Monthly*, monthly reports.

Figure 5.9 Refinery Capacity and Utilization, 1949-2003

Number of Operable Refineries



Capacity



Source: Table 5.9.

Table 5.9 Refinery Capacity and Utilization, Selected Years, 1949-2003

Year	Operable Refineries		Gross Input to Distillation Units ³ (thousand barrels per day)	Utilization ⁴ (percent)
	Number ¹	Capacity ² (thousand barrels per day)		
1949	336	6,231	5,556	89.2
1950	320	6,223	5,980	92.5
1955	296	8,386	7,820	92.2
1960	309	9,843	8,439	85.1
1965	293	10,420	9,557	91.8
1970	276	12,021	11,517	92.6
1971	272	12,860	11,881	90.9
1972	274	13,292	12,431	92.3
1973	268	13,642	13,151	93.9
1974	273	14,362	12,689	86.6
1975	279	14,961	12,902	85.5
1976	276	15,237	13,884	87.8
1977	282	16,398	14,982	89.6
1978	296	17,048	15,071	87.4
1979	308	17,441	14,955	84.4
1980	319	17,988	13,796	75.4
1981	324	18,621	12,752	68.6
1982	301	17,890	12,172	69.9
1983	258	16,859	11,947	71.7
1984	247	16,137	12,216	76.2
1985	223	15,659	12,165	77.6
1986	216	15,459	12,826	82.9
1987	219	15,566	13,003	83.1
1988	213	15,915	13,447	84.7
1989	204	15,655	13,551	86.6
1990	205	15,572	13,610	87.1
1991	202	15,676	13,508	86.0
1992	199	15,696	13,600	87.9
1993	187	15,121	13,851	91.5
1994	179	15,034	14,032	92.6
1995	175	15,434	14,119	92.0
1996	170	15,333	14,337	94.1
1997	164	15,452	14,838	95.2
1998	163	15,711	15,113	95.6
1999	159	16,261	15,080	92.6
2000	158	16,512	15,299	92.6
2001	155	16,595	15,369	92.6
2002	153	16,785	R15,180	R90.7
2003 ^P	149	16,757	15,505	92.5

¹ Through 1956, includes only those refineries in operation on January 1; beginning in 1957, includes all "operable" refineries on January 1. See "Operable Refineries" in Glossary.

² Capacity on January 1.

³ See Note 4, "Gross Input to Distillation Units," at end of section.

⁴ Through 1980, utilization is derived by dividing gross input to distillation units by one-half of the current year January 1 capacity and the following year January 1 capacity. Percentages were derived from unrounded numbers. Beginning in 1981, utilization is derived by averaging reported monthly utilization.

R=Revised. P=Preliminary.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/petro.html>. • For related information, see http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html.

Sources: **Operable Refineries:** • 1949-1961—Bureau of Mines Information Circular, "Petroleum

Refineries, Including Cracking Plants in the United States." • 1962-1977—Bureau of Mines, Mineral Industry Surveys, *Petroleum Refineries, Annual*, annual reports. • 1978-1981—Energy Information

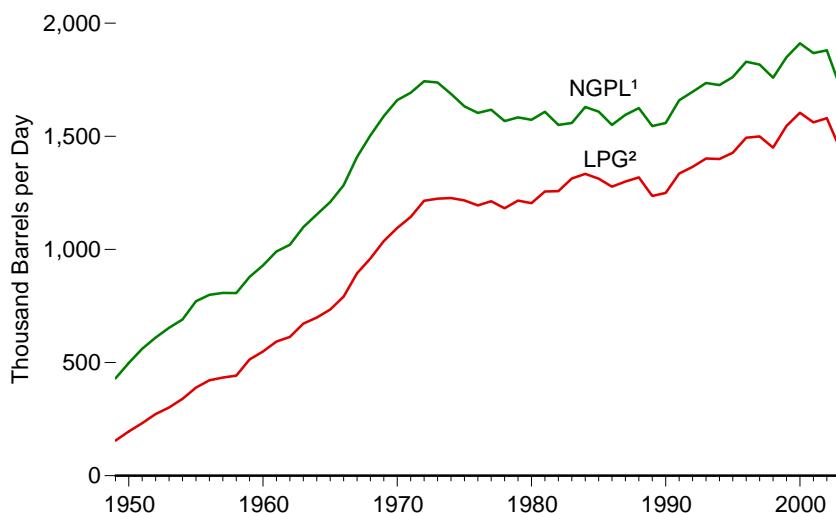
Administration (EIA), Energy Data Reports, *Petroleum Refineries in the United States*. • 1982-2002—EIA, *Petroleum Supply Annual*, annual reports. • 2003—EIA, *Petroleum Supply Monthly* (January 2003). **Gross Input to Distillation Units:**

• 1949-1966—Bureau of Mines, *Minerals Yearbook*, "Natural Gas Liquids" and "Crude Petroleum and Petroleum Products" chapters. • 1967-1977—Bureau of Mines, Mineral Industry Surveys, *Petroleum Refineries, Annual*, annual reports. • 1978-1980—EIA, Energy Data Reports, *Petroleum Refineries in the United States and U.S. Territories*. • 1981-2002—EIA, *Petroleum Supply Annual*, annual reports. • 2003—EIA, *Petroleum Supply Monthly* (January-December 2003 issues).

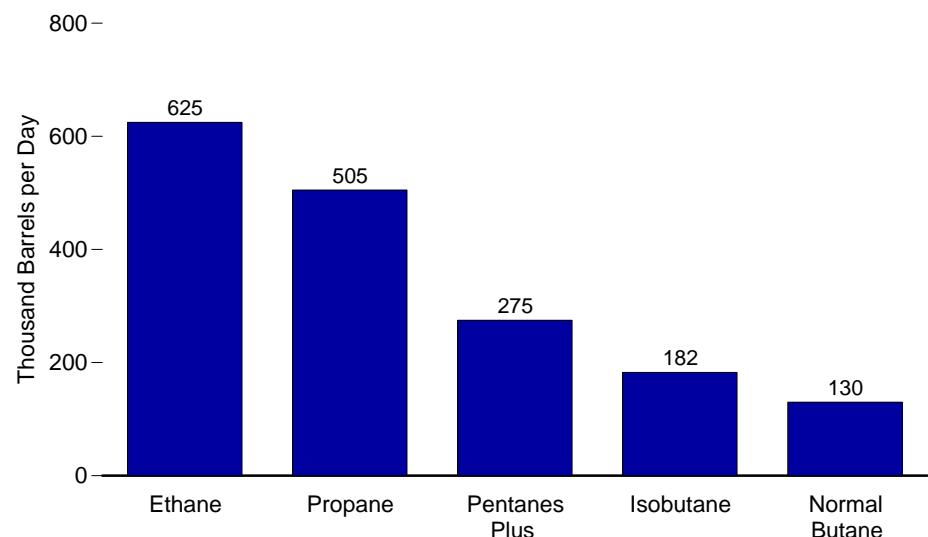
Utilization: • 1949-1980—Calculated. • 1981-2002—EIA, *Petroleum Supply Annual*, annual reports. • 2003—Calculated.

Figure 5.10 Natural Gas Plant Liquids Production

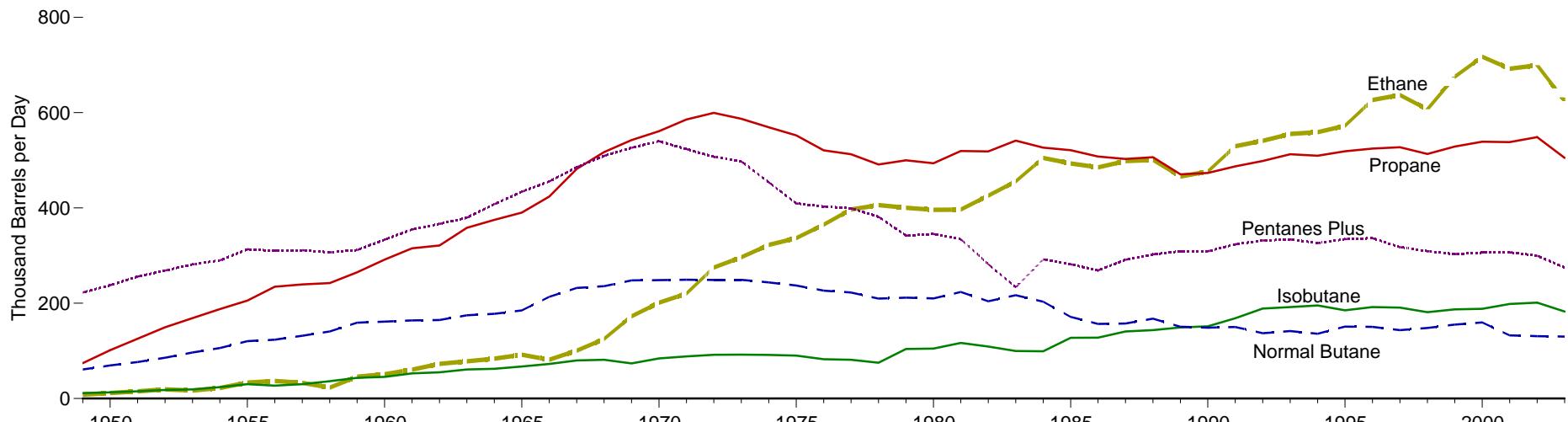
Total, 1949-2003



By Product, 2003



By Selected Product, 1949-2003



¹ Natural gas plant liquids.

² Liquefied petroleum gases.

Note: Because vertical scales differ, graphs should not be compared.

Source: Table 5.10.

Table 5.10 Natural Gas Plant Liquids Production, Selected Years, 1949-2003
 (Thousand Barrels per Day)

Year	Finished Petroleum Products ¹	Liquefied Petroleum Gases					Pentanes Plus ⁴	Total
		Ethane ²	Isobutane	Normal Butane ³	Propane ^{2,3}	Total		
1949	53	8	11	61	74	155	223	430
1950	66	12	13	69	101	195	238	499
1955	68	34	30	120	205	390	313	771
1960	47	51	45	161	291	549	333	929
1965	41	92	67	185	390	734	434	1,210
1970	25	201	84	248	561	1,095	540	1,660
1971	25	221	88	249	586	1,144	523	1,693
1972	21	275	92	249	600	1,215	507	1,744
1973	16	296	92	249	587	1,225	497	1,738
1974	7	323	92	244	569	1,227	454	1,688
1975	7	337	90	237	552	1,217	409	1,633
1976	6	365	82	227	521	1,195	403	1,604
1977	5	397	81	223	513	1,214	399	1,618
1978	3	406	75	210	491	1,182	382	1,567
1979	26	400	104	212	500	1,216	342	1,584
1980	23	396	105	210	494	1,205	345	1,573
1981	18	397	117	224	519	1,256	334	1,609
1982	11	426	109	204	519	1,258	282	1,550
1983	12	456	100	217	541	1,314	233	1,559
1984	4	505	99	203	527	1,334	292	1,630
1985	14	493	127	171	521	1,313	282	1,609
1986	4	485	128	157	508	1,277	269	1,551
1987	4	499	141	157	503	1,300	291	1,595
1988	4	501	144	167	506	1,319	302	1,625
1989	(5)	466	149	151	471	1,237	309	1,546
1990	(5)	477	151	149	474	1,250	309	1,559
1991	(5)	530	169	150	487	1,336	324	1,659
1992	(5)	541	189	137	499	1,365	332	1,697
1993	(5)	556	192	142	513	1,402	334	1,736
1994	(5)	559	195	136	510	1,400	326	1,727
1995	(5)	573	185	151	519	1,428	335	1,762
1996	(5)	627	192	150	525	1,494	336	1,830
1997	(5)	637	191	144	528	1,499	318	1,817
1998	(5)	607	181	148	513	1,450	309	1,759
1999	(5)	675	187	155	529	1,547	303	1,850
2000	(5)	717	188	160	539	1,605	306	1,911
2001	(5)	692	198	133	538	1,562	307	1,868
2002	(5)	R700	201	131	R549	R1,581	300	R1,880
2003 ^P	(5)	625	182	130	505	1,442	275	1,717

¹ Motor gasoline, aviation gasoline, special naphthas, distillate fuel oil, and miscellaneous products.

² Reported production of ethane-propane mixtures has been allocated 70 percent ethane and 30 percent propane.

³ Reported production of butane-propane mixtures has been allocated 60 percent butane and 40 percent propane.

⁴ Through 1983, "Pentanes Plus" was reported separately as natural gasoline, isopentane, and plant condensate.

⁵ Beginning in 1989, data for finished petroleum products production from natural gas processing plants are not available.

R=Revised. P=Preliminary.

Note: Totals may not equal sum of components due to independent rounding.

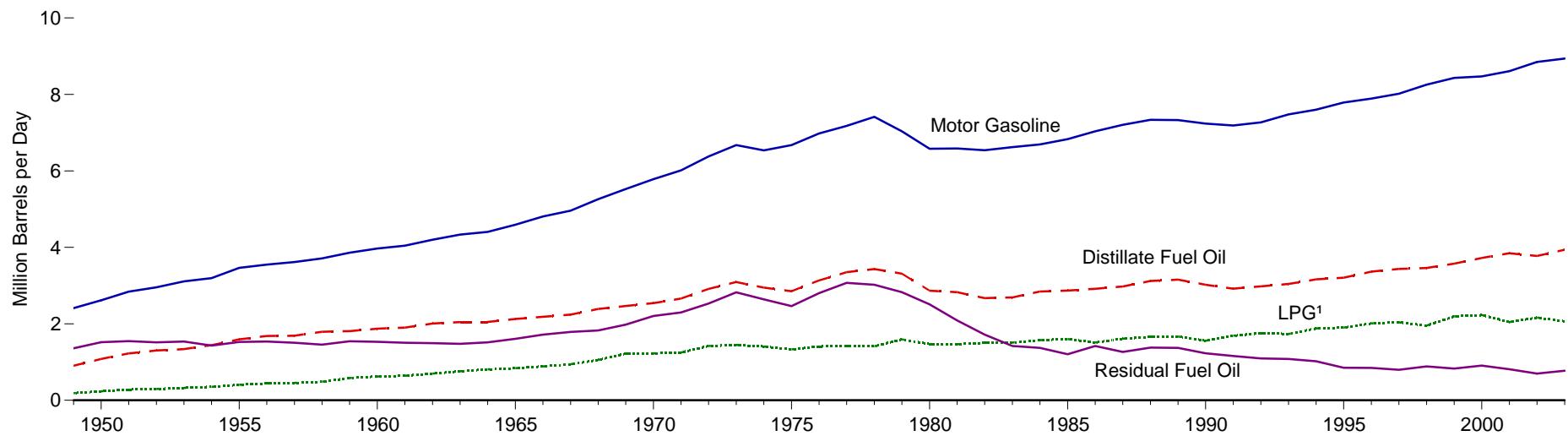
Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/petro.html>.

• For related information, see http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html.

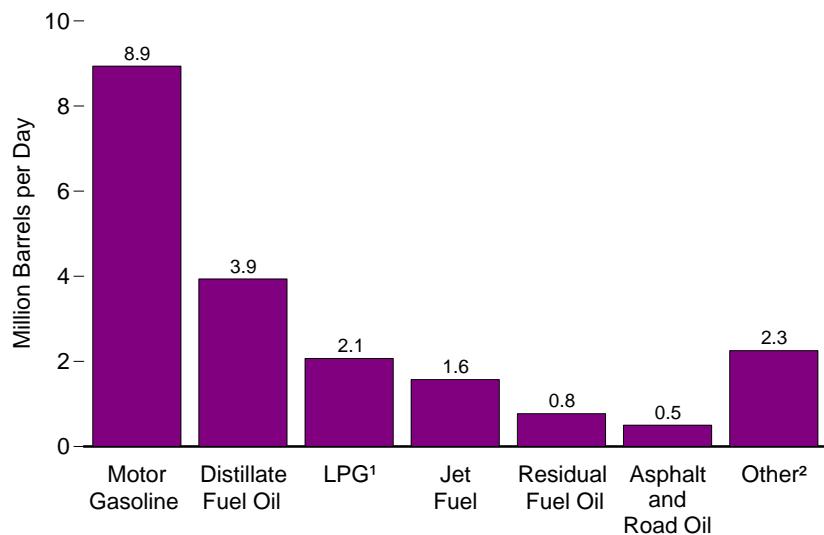
Sources: • 1949-1968—Bureau of Mines, *Minerals Yearbook*, "Crude Petroleum and Petroleum Products" chapter. • 1969-1975—Bureau of Mines, *Mineral Industry Surveys*, *Petroleum Statement, Annual*, annual reports. • 1976-1980—Energy Information Administration (EIA), *Energy Data Reports*, *Petroleum Statement, Annual*, annual reports. • 1981-2002—EIA, *Petroleum Supply Annual*, annual reports. • 2003—EIA, *Petroleum Supply Monthly* (February 2004).

Figure 5.11 Petroleum Products Supplied by Type

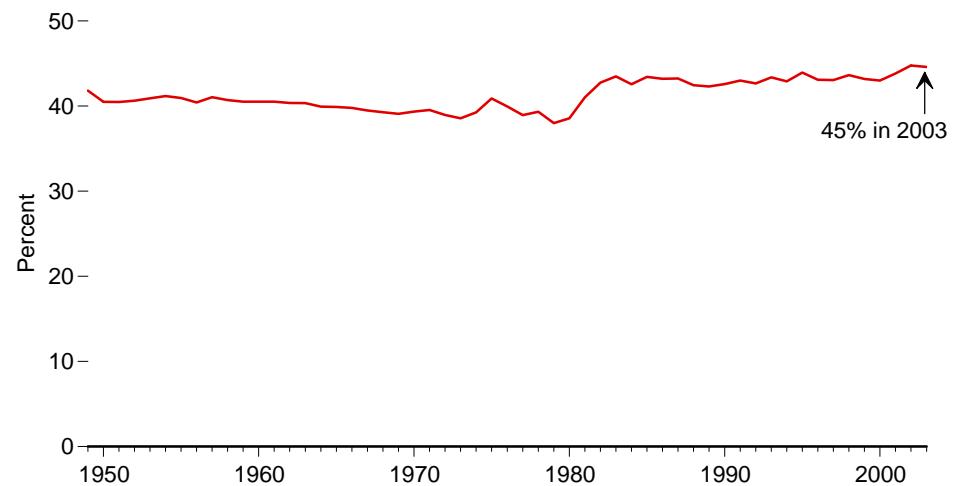
By Selected Product, 1949-2003



By Product, 2003



Motor Gasoline's Share of Total Petroleum Products Supplied, 1949-2003



¹ Liquefied petroleum gases.

² Aviation gasoline, kerosene, lubricants, natural gasoline, pentanes plus, petrochemical feedstocks, petroleum coke, special naphthas, still gas (refinery gas), waxes, miscellaneous products, and crude oil burned as fuel.

Source: 5.11.

Table 5.11 Petroleum Products Supplied by Type, Selected Years, 1949-2003

(Thousand Barrels per Day)

Year	Asphalt and Road Oil	Aviation Gasoline	Distillate Fuel Oil	Jet Fuel ¹	Kerosene	Liquefied Petroleum Gases		Lubricants	Motor Gasoline ³	Petroleum Coke	Residual Fuel Oil	Other ⁴	Total	Percentage Change From Previous Year ⁵
						Propane ²	Total							
1949	157	93	902	(¹)	281	NA	187	91	2,410	40	1,359	243	5,763	—
1950	180	108	1,082	(¹)	323	NA	234	106	2,616	41	1,517	250	6,458	12.1
1955	254	192	1,592	154	320	NA	404	116	3,463	67	1,526	366	8,455	9.0
1960	302	161	1,872	371	271	NA	621	117	3,969	149	1,529	435	9,797	3.1
1965	368	120	2,126	602	267	NA	841	129	4,593	202	1,608	657	11,512	4.2
1970	447	55	2,540	967	263	776	1,224	136	5,785	212	2,204	866	14,697	4.0
1971	458	49	2,661	1,010	249	794	1,251	135	6,014	219	2,296	870	15,212	3.5
1972	468	46	2,913	1,045	235	893	1,420	144	6,376	241	2,529	949	16,367	7.9
1973	522	45	3,092	1,059	216	872	1,449	162	6,674	261	2,822	1,005	17,308	5.5
1974	481	44	2,948	993	176	830	1,406	155	6,537	239	2,639	1,034	16,653	-3.8
1975	419	39	2,851	1,001	159	783	1,333	137	6,675	247	2,462	1,001	16,322	-2.0
1976	411	37	3,133	987	169	830	1,404	152	6,978	243	2,801	1,145	17,461	7.3
1977	436	38	3,352	1,039	175	821	1,422	160	7,177	268	3,071	1,294	18,431	5.3
1978	479	39	3,432	1,057	175	778	1,413	172	7,412	256	3,023	1,391	18,847	2.3
1979	476	38	3,311	1,076	188	849	1,592	180	7,034	246	2,826	1,546	18,513	-1.8
1980	396	35	2,866	1,068	158	754	1,469	159	6,579	237	2,508	1,581	17,056	-7.6
1981	342	31	2,829	1,007	127	773	1,466	153	6,588	252	2,088	1,176	16,058	-6.1
1982	342	25	2,671	1,013	129	798	1,499	140	6,539	248	1,716	973	15,296	-4.7
1983	373	26	2,690	1,046	127	751	1,509	146	6,622	229	1,421	1,042	15,231	-0.4
1984	408	24	2,845	1,175	115	833	1,572	156	6,693	247	1,369	1,120	15,726	3.5
1985	425	27	2,868	1,218	114	883	1,599	145	6,831	264	1,202	1,032	15,726	-0.3
1986	448	32	2,914	1,307	98	831	1,512	142	7,034	268	1,418	1,105	16,281	3.5
1987	467	25	2,976	1,385	95	924	1,612	161	7,206	299	1,264	1,176	16,665	2.4
1988	468	27	3,122	1,449	96	923	1,656	155	7,336	312	1,378	1,286	17,283	4.0
1989	453	26	3,157	1,489	84	990	1,668	159	7,328	307	1,370	1,284	17,325	-0.0
1990	483	24	3,021	1,522	43	917	1,556	164	7,235	339	1,229	1,373	16,988	-1.9
1991	444	23	2,921	1,471	46	982	1,689	146	7,188	328	1,158	1,299	16,714	-1.6
1992	454	22	2,979	1,454	41	1,032	1,755	149	7,268	382	1,094	1,434	17,033	2.2
1993	474	21	3,041	1,469	50	1,006	1,734	152	7,476	366	1,080	1,373	17,237	0.9
1994	484	21	3,162	1,527	49	1,082	1,880	159	7,601	361	1,021	1,454	17,718	2.8
1995	486	21	3,207	1,514	54	1,096	1,899	156	7,789	365	852	1,381	17,725	0.0
1996	484	20	3,365	1,578	62	1,136	2,012	151	7,891	379	848	1,518	18,309	3.6
1997	505	22	3,435	1,599	66	1,170	2,038	160	8,017	377	797	1,605	18,620	1.4
1998	521	19	3,461	1,622	78	1,120	1,952	168	8,253	447	887	1,508	18,917	1.6
1999	547	21	3,572	1,673	73	1,246	2,195	169	8,431	477	830	1,532	19,519	3.2
2000	525	20	3,722	1,725	67	1,235	2,231	166	8,472	406	909	1,458	19,701	1.2
2001	519	19	3,847	1,655	72	1,142	2,044	153	8,610	437	811	1,481	19,649	-0.5
2002	R512	18	R3,776	R1,614	43	R1,248	2,163	151	R8,848	R463	R700	R1,474	R19,761	R0.6
2003 ^P	503	18	3,937	1,574	55	1,210	2,068	141	8,937	454	772	1,585	20,044	1.4

¹ Through 1951, naphtha-type jet fuel is included in the products from which it was blended; in 1952, 71 percent gasoline, 17 percent kerosene, and 12 percent distillate fuel oil. Beginning in 1952, includes naphtha-type jet fuel. Beginning in 1957, also includes kerosene-type jet fuel.

² Includes propylene.

³ Finished motor gasoline. Through 1963, also includes special naphthas. Beginning in 1993, also includes ethanol blended into motor gasoline.

⁴ Pentanes plus, petrochemical feedstocks, still gas (refinery gas), waxes, and miscellaneous products. Beginning in 1964, also includes special naphthas. Beginning in 1981, also includes negative barrels per day of distillate and residual fuel oil reclassified as unfinished oils, and other products (from both primary and secondary supply) reclassified as gasoline blending components. Beginning in 1983, also includes crude oil burned as fuel.

⁵ Percent change from previous year calculated from data in thousand barrels per year.

R=Revised. P=Preliminary. NA=Not available. — = Not applicable.

Notes: • See Note 1, "Petroleum Products Supplied and Petroleum Consumption," Note 2, "Adjustment to Total Petroleum Products Supplied," and Note 3, "Changes Affecting Petroleum Production and Product Supplied Statistics," at end of section. • Totals may not equal sum of components due to independent rounding.

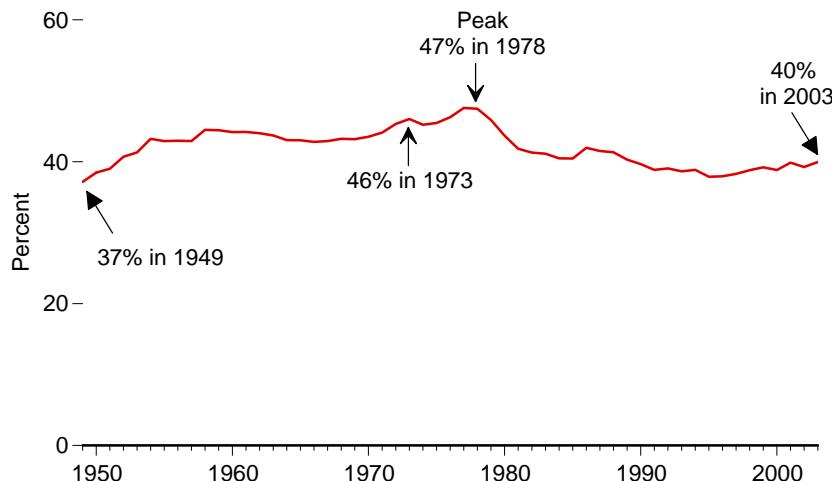
Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/petro.html>.

• For related information, see http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html.

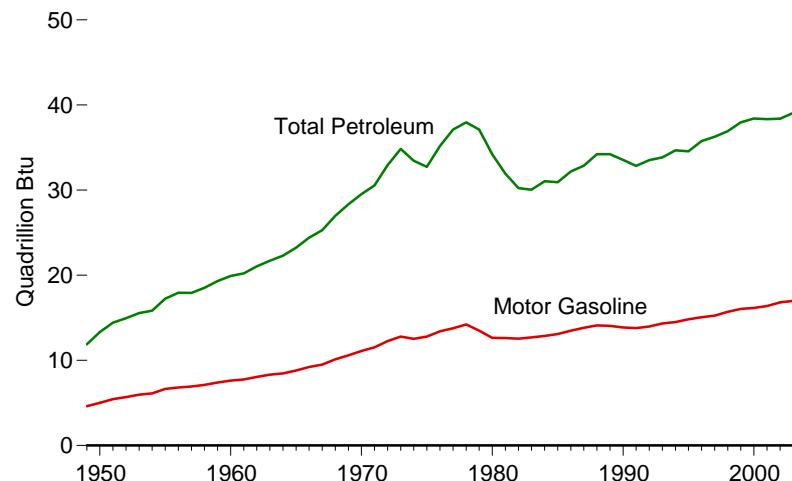
Sources: • 1949-1975—Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual*, annual reports. • 1976-1980—Energy Information Administration (EIA), Energy Data Reports, *Petroleum Statement, Annual*, annual reports. • 1981-2002—EIA, *Petroleum Supply Annual*, annual reports. • 2003—EIA, *Petroleum Supply Monthly* (February 2004).

Figure 5.12 Heat Content of Petroleum Products Supplied

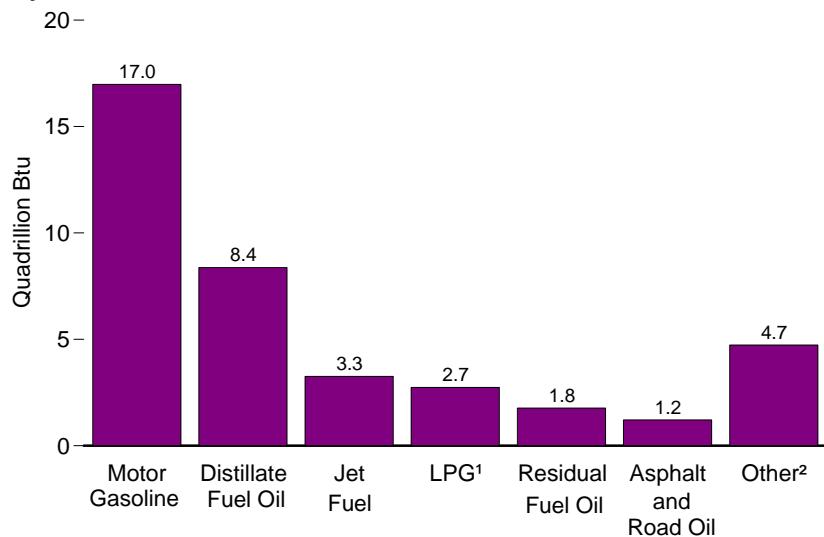
**Petroleum Products Supplied Share
of Total Energy Consumption, 1949-2003**



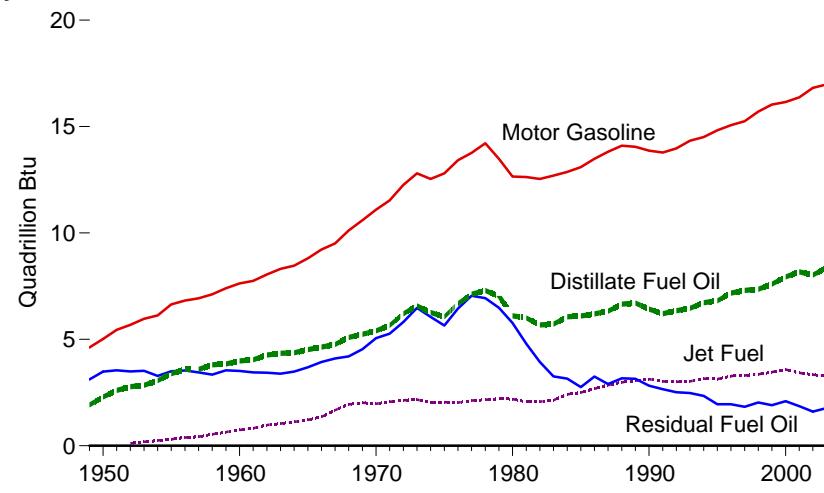
**Total Petroleum and Motor Gasoline Product Supplied,
1949-2003**



By Product, 2003



By Selected Product, 1949-2003



¹ Liquefied petroleum gases.

² Aviation gasoline, kerosene, lubricants, pentanes plus, petrochemical feedstocks, petroleum coke, still gas (refinery gas), waxes, and miscellaneous products.

Sources: Tables 1.3 and 5.12.

Table 5.12 Heat Content of Petroleum Products Supplied, Selected Years, 1949-2003
 (Trillion Btu)

Year	Asphalt and Road Oil	Aviation Gasoline	Distillate Fuel Oil	Jet Fuel ¹	Kerosene	Liquefied Petroleum Gases		Lubricants	Motor Gasoline ³	Petroleum Coke	Residual Fuel Oil	Other ⁴	Total	Percentage Change From Previous Year
						Propane ²	Total							
1949	380	172	1,918	(¹)	582	NA	274	201	4,621	87	3,118	530	11,883	—
1950	435	199	2,300	(¹)	668	NA	343	236	5,015	90	3,482	546	13,315	12.1
1955	615	354	3,385	301	662	NA	592	258	6,640	147	3,502	798	17,255	8.9
1960	734	298	3,992	739	563	NA	912	259	7,631	328	3,517	947	19,919	3.1
1965	890	222	4,519	1,215	553	NA	1,232	286	8,806	444	3,691	1,390	23,246	4.2
1970	1,082	100	5,401	1,973	544	1,086	1,689	301	11,091	465	5,057	1,817	29,521	4.2
1971	1,108	90	5,658	2,061	515	1,111	1,723	299	11,532	481	5,269	1,825	30,561	3.5
1972	1,137	85	6,210	2,141	487	1,254	1,955	320	12,259	532	5,820	2,001	32,947	7.8
1973	1,264	83	6,575	2,167	447	1,221	1,981	359	12,797	573	6,477	2,117	34,840	5.7
1974	1,165	82	6,267	2,030	365	1,163	1,914	344	12,535	524	6,056	2,173	33,455	-4.0
1975	1,014	71	6,061	2,047	329	1,097	1,807	304	12,798	542	5,649	2,107	32,731	-2.2
1976	998	67	6,679	2,026	351	1,166	1,907	338	13,415	537	6,445	2,410	35,175	7.5
1977	1,056	70	7,126	2,126	363	1,150	1,908	354	13,760	589	7,047	2,722	37,122	5.5
1978	1,160	71	7,296	2,164	363	1,089	1,892	380	14,211	562	6,936	2,930	37,965	2.3
1979	1,153	70	7,039	2,204	389	1,189	2,138	397	13,487	541	6,485	3,219	37,123	-2.2
1980	962	64	6,110	2,190	329	1,059	1,976	354	12,648	522	5,772	3,275	34,202	-7.9
1981	828	56	6,014	2,062	263	1,082	1,949	339	12,631	553	4,791	2,445	31,931	-6.6
1982	829	47	5,679	2,072	266	1,117	1,978	309	12,538	545	3,939	2,029	30,232	-5.3
1983	904	48	5,720	2,141	263	1,051	1,990	324	12,697	503	3,260	2,204	30,054	-0.6
1984	992	44	6,065	2,414	239	1,170	2,071	346	12,867	545	3,151	2,317	31,051	3.3
1985	1,029	50	6,098	2,497	236	1,236	2,103	322	13,098	582	2,759	2,149	30,922	-0.4
1986	1,086	59	6,196	2,682	203	1,163	2,009	315	13,487	590	3,255	2,313	32,196	4.1
1987	1,130	46	6,328	2,843	196	1,294	2,153	356	13,816	657	2,901	2,440	32,865	2.1
1988	1,136	49	6,655	2,982	200	1,296	2,213	343	14,105	687	3,170	2,681	34,222	4.1
1989	1,096	48	6,712	3,059	174	1,387	2,243	352	14,050	676	3,144	2,658	34,211	-0.0
1990	1,170	45	6,422	3,129	88	1,284	2,059	362	13,872	745	2,820	2,840	33,553	-1.9
1991	1,077	42	6,210	3,025	96	1,374	2,227	324	13,781	722	2,657	2,685	32,845	-2.1
1992	1,102	41	6,351	3,001	86	1,449	2,328	330	13,973	843	2,518	2,953	33,527	2.1
1993	1,149	38	6,466	3,028	103	1,409	2,282	337	14,335	804	2,479	2,821	33,841	0.9
1994	1,173	38	6,723	3,154	101	1,515	2,494	352	14,511	793	2,342	2,988	34,670	2.4
1995	1,178	40	6,818	3,132	112	1,534	2,512	346	14,825	802	1,955	2,834	34,553	-0.3
1996	1,176	37	7,175	3,274	128	1,594	2,660	335	15,064	837	1,952	3,119	35,757	3.5
1997	1,224	40	7,304	3,308	136	1,638	2,690	354	15,254	829	1,828	3,298	36,266	1.4
1998	1,263	35	7,359	3,357	162	1,568	2,575	371	15,701	982	2,036	3,093	36,934	1.8
1999	1,324	39	7,595	3,462	151	1,745	2,897	375	16,036	1,048	1,905	3,128	37,960	2.8
2000	1,276	36	7,935	3,580	140	1,734	2,945	369	16,155	895	2,091	2,981	38,404	1.2
2001	1,257	35	8,179	3,426	150	1,598	2,697	338	16,373	961	1,861	3,056	38,333	-0.2
2002	R1,240	34	R8,028	R3,340	R90	1,747	2,852	334	R16,819	R1,018	R1,605	R3,041	R38,401	0.2
2003P	1,217	33	8,370	3,257	113	1,695	2,739	313	16,983	998	1,772	3,279	39,074	1.8

¹ Through 1951, naphtha-type jet fuel is included in the products from which it was blended; in 1952, 71 percent gasoline, 17 percent kerosene, and 12 percent distillate fuel oil. Beginning in 1952, includes naphtha-type jet fuel. Beginning in 1957, also includes kerosene-type jet fuel.

² Includes propylene.

³ Finished motor gasoline. Through 1963, also includes special naphthas. Beginning in 1993, also includes ethanol blended into motor gasoline.

⁴ Pentanes plus, petrochemical feedstocks, still gas (refinery gas), waxes, and miscellaneous products. Beginning in 1964, also includes special naphthas. Beginning in 1981, also includes negative barrels per day of distillate and residual fuel oil reclassified as unfinished oils, and other products (from both primary and secondary supply) reclassified as gasoline blending components. Beginning in 1983, also includes

crude oil burned as fuel.

R=Revised. P=Preliminary. NA=Not available. — = Not applicable.

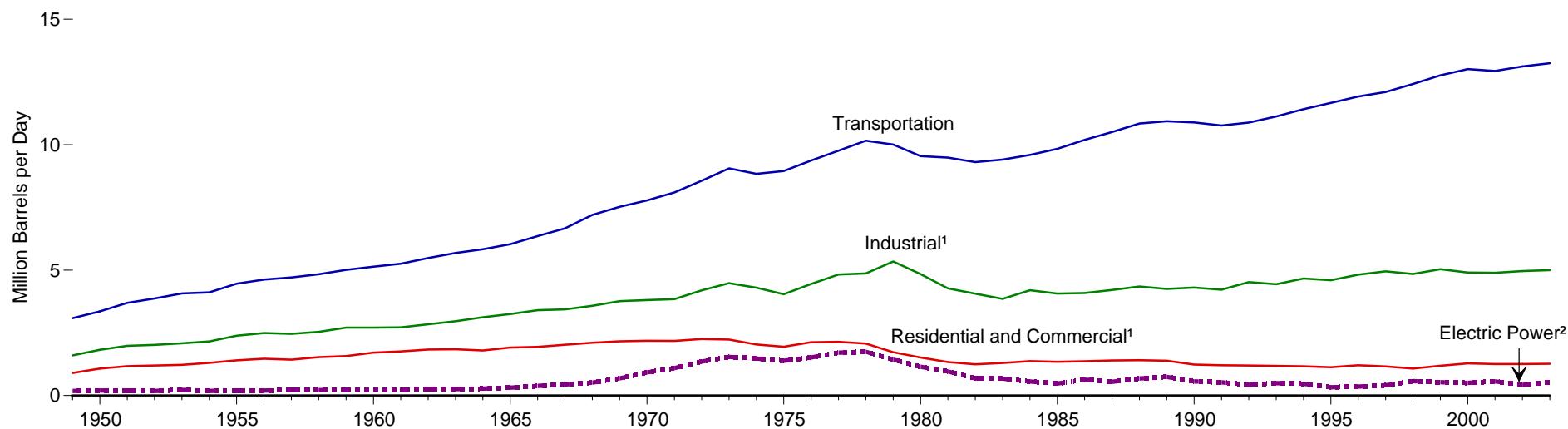
Notes: • See Note 1, "Petroleum Products Supplied and Petroleum Consumption," Note 2, "Adjustment to Total Petroleum Products Supplied," and Note 3, "Changes Affecting Petroleum Production and Product Supplied Statistics," at end of section. • Totals may not equal sum of components due to independent rounding.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/petro.html>. • For related information, see http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html

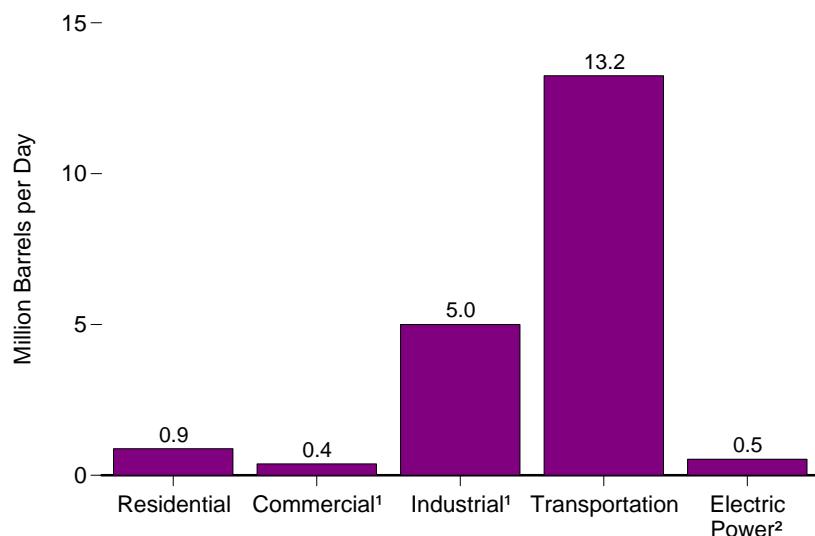
Sources: Tables 5.11, A1, and A3.

Figure 5.13a Estimated Petroleum Consumption by Sector

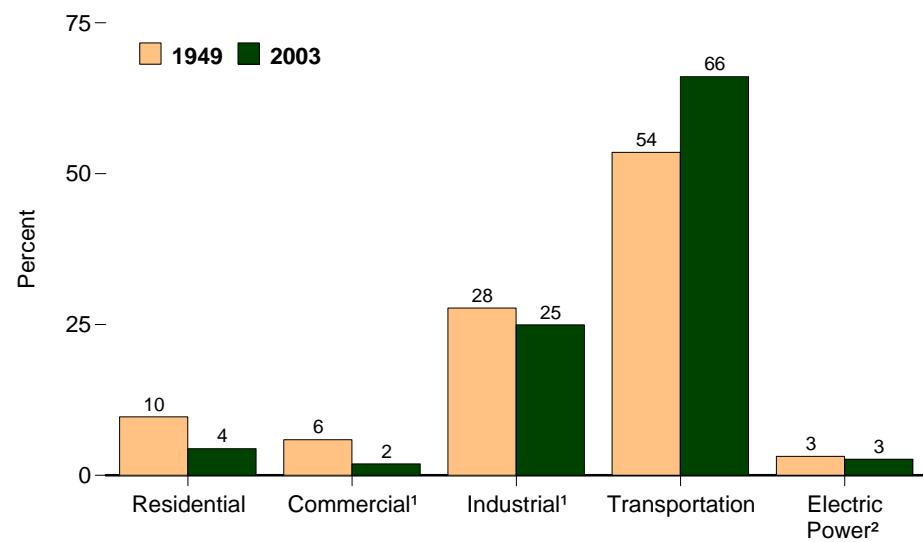
By Sector, 1949-2003



By Sector, 2003



End Use and Electric Power Shares, 1949 and 2003



¹ Includes combined-heat-and-power plants and a small number of electricity-only plants.

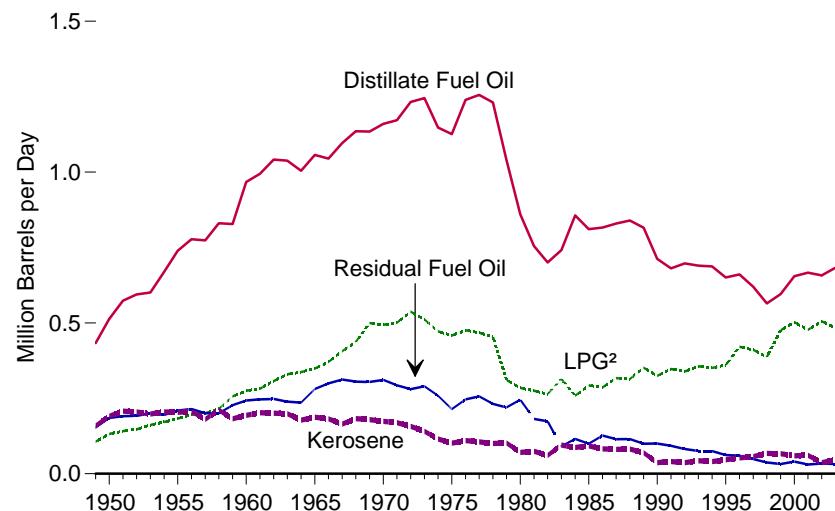
² Electricity-only and combined-heat-and-power plants whose primary business is to sell electricity, or electricity and heat, to the public.

Note: See related Figure 5.13b.

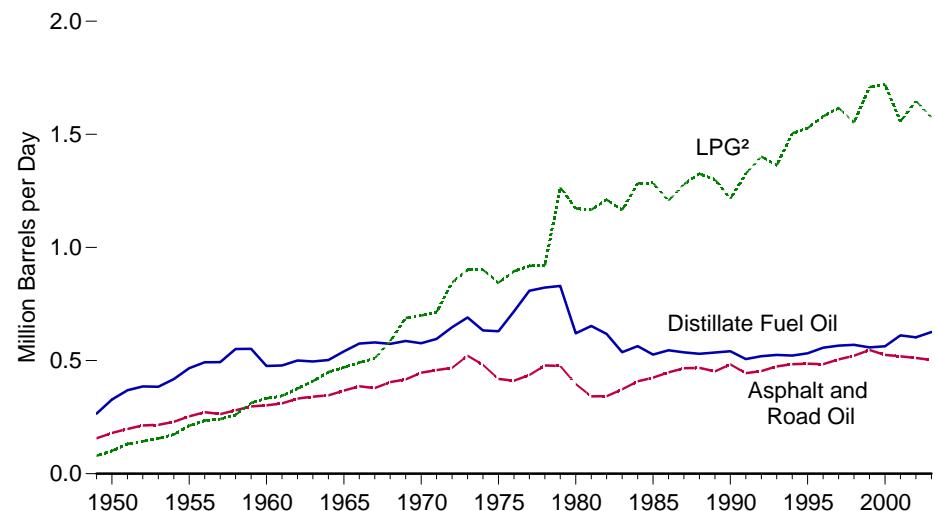
Sources: Tables 5.13a-5.13d.

Figure 5.13b Estimated Petroleum Consumption by Product by Sector, 1949-2003

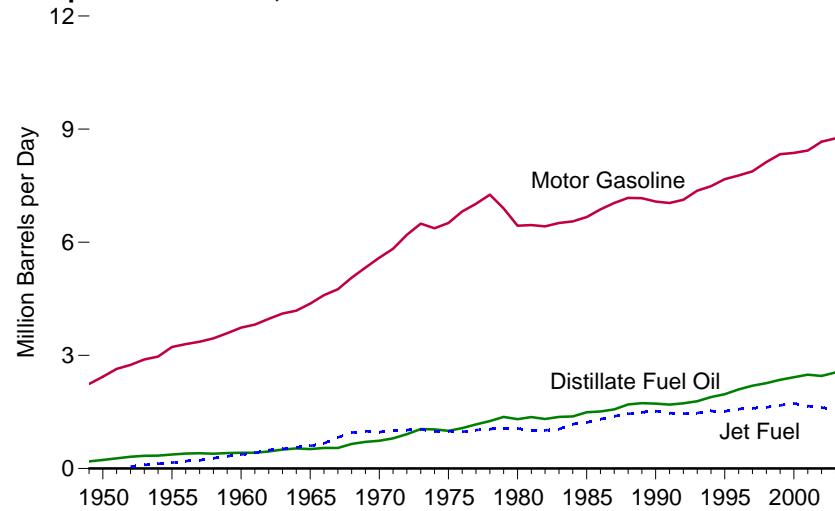
Residential and Commercial¹ Sectors, Selected Products



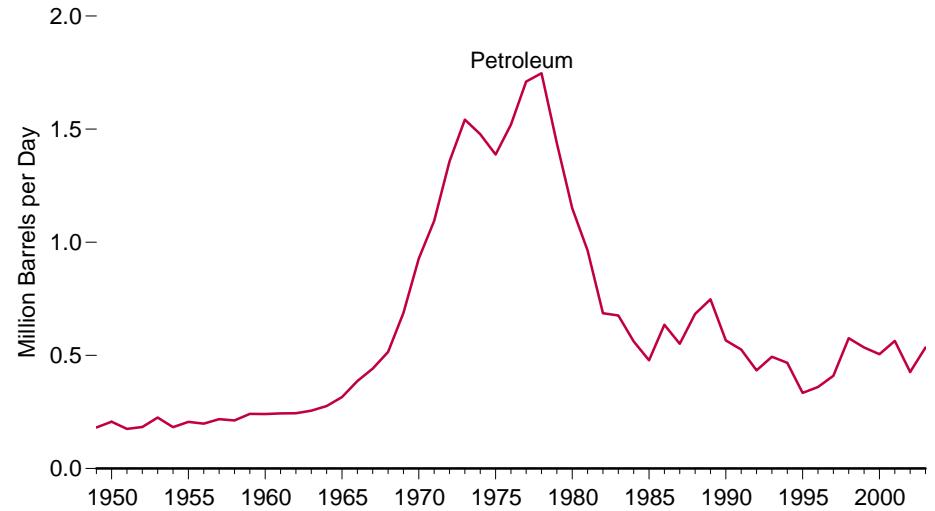
Industrial¹ Sector, Selected Products



Transportation Sector, Selected Products



Electric Power Sector³



¹ Includes combined-heat-and-power plants and a small number of electricity-only plants.

² Liquified petroleum gases.

³ Electricity-only and combined-heat-and-power plants whose primary business is to sell electricity, or electricity and heat, to the public.

Notes: • See related Figure 5.13a. • Because vertical scales differ, graphs should not be compared.

Sources: Tables 5.13a-5.13d.

Table 5.13a Estimated Petroleum Consumption: Residential and Commercial Sectors, Selected Years, 1949-2003
 (Thousand Barrels per Day)

Year	End-Use Sectors													Total	
	Residential Sector				Commercial Sector										
	Distillate Fuel Oil	Kerosene	Liquefied Petroleum Gases	Total	Distillate Fuel Oil			Kerosene	Liquefied Petroleum Gases	Motor Gasoline ³	Petroleum Coke	Residual Fuel Oil			
Year	Distillate Fuel Oil	Kerosene	Liquefied Petroleum Gases	Total	CHP ¹	Other ²	Total	Kerosene	Liquefied Petroleum Gases	Motor Gasoline ³	Petroleum Coke	CHP ¹	Other ²	Total	Total
1949	329	140	90	559	(⁴)	104	104	19	16	48	NA	(⁴)	153	153	340
1950	390	168	112	670	(⁴)	123	123	23	20	52	NA	(⁴)	185	185	403
1955	562	179	155	896	(⁴)	177	177	24	27	69	NA	(⁴)	209	209	508
1960	736	171	234	1,140	(⁴)	232	232	23	41	35	NA	(⁴)	243	243	573
1965	805	161	296	1,263	(⁴)	251	251	26	52	40	NA	(⁴)	281	281	651
1970	883	144	420	1,447	(⁴)	276	276	30	74	45	NA	(⁴)	311	311	736
1971	892	143	425	1,460	(⁴)	280	280	27	75	44	NA	(⁴)	293	293	718
1972	936	131	456	1,523	(⁴)	296	296	27	81	45	NA	(⁴)	280	280	729
1973	942	110	435	1,487	(⁴)	303	303	31	77	45	NA	(⁴)	290	290	746
1974	867	89	401	1,357	(⁴)	280	280	26	71	43	NA	(⁴)	259	259	679
1975	850	78	389	1,316	(⁴)	276	276	24	69	46	NA	(⁴)	214	214	629
1976	932	89	404	1,425	(⁴)	308	308	21	71	50	NA	(⁴)	247	247	697
1977	938	81	397	1,416	(⁴)	318	318	25	70	52	NA	(⁴)	256	256	722
1978	917	74	386	1,377	(⁴)	313	313	26	68	56	NA	(⁴)	232	232	695
1979	765	64	264	1,093	(⁴)	274	274	38	47	54	NA	(⁴)	220	220	634
1980	617	51	242	911	(⁴)	243	243	20	43	56	NA	(⁴)	245	245	606
1981	540	41	234	815	(⁴)	215	215	34	41	48	NA	(⁴)	182	182	519
1982	494	46	224	764	(⁴)	207	207	15	40	46	NA	(⁴)	174	174	480
1983	435	41	267	743	(⁴)	306	306	54	47	53	NA	(⁴)	91	91	552
1984	512	42	220	774	(⁴)	345	345	45	39	56	NA	(⁴)	115	115	600
1985	514	77	249	839	(⁴)	297	297	16	44	50	NA	(⁴)	99	99	506
1986	523	59	243	825	(⁴)	293	293	24	43	55	NA	(⁴)	126	126	542
1987	544	57	269	870	(⁴)	286	286	24	48	58	NA	(⁴)	114	114	529
1988	558	69	267	894	(⁴)	281	281	13	47	57	NA	(⁴)	115	115	513
1989	546	57	299	901	3	267	270	13	53	53	0	2	97	99	488
1990	460	31	276	767	3	249	252	6	49	58	0	3	97	100	465
1991	438	35	295	768	2	241	243	6	52	44	0	2	91	92	438
1992	460	31	288	779	1	236	238	5	51	41	(s)	2	80	82	418
1993	458	37	303	797	2	230	232	7	53	15	(s)	2	73	75	383
1994	451	31	298	781	3	233	236	9	53	13	(s)	2	73	75	386
1995	426	36	306	767	2	223	225	11	54	10	(s)	1	61	62	361
1996	434	43	358	835	2	225	227	10	63	14	(s)	1	58	60	373
1997	411	45	349	805	3	206	209	12	62	22	(s)	1	47	48	353
1998	363	52	329	744	2	199	202	15	58	20	(s)	3	35	37	332
1999	389	54	404	847	2	204	206	13	71	15	(s)	2	30	32	338
2000	424	46	427	897	2	228	230	14	75	23	(s)	2	38	40	383
2001	427	46	406	879	3	236	239	15	72	20	(s)	2	28	30	376
2002	E421	RE28	E429	E878	2	E234	E236	E9	E76	E20	(s)	1	RE32	RE34	RE375
2003	E438	E35	E410	E883	P3	E242	E245	E11	E72	E20	P(s)	P2	E30	E32	E382

¹ Commercial combined-heat-and-power (CHP) and a small number of commercial electricity-only plants. See Note 1, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 8.

² All commercial sector fuel use other than that in "CHP."

³ Finished motor gasoline. Through 1963, also includes special naphthas. Beginning in 1993, also includes ethanol blended into motor gasoline.

⁴ Included in "Other."

R=Revised. P=Preliminary. E=Estimate. NA=Not available. (s)=Less than 500 barrels per day.

Notes: • See Note 1, "Petroleum Products Supplied and Petroleum Consumption," at end of section.

• Totals may not equal sum of components due to independent rounding.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/petro.html>.

• For related information, see http://www.eia.doe.gov/emeu/states/main_us.html (United States page).

Sources: **CHP and Petroleum Coke:** Table 8.7c. **All Other Data:** • 1949-1959—Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual*, annual reports, and Energy Information Administration (EIA) estimates. • 1960-2001—EIA, "State Energy Data 2001: Consumption" (April 2004), U.S. Tables 8 and 9. • 2002 and 2003—EIA estimates.

Table 5.13b Estimated Petroleum Consumption: Industrial Sector, Selected Years, 1949-2003
 (Thousand Barrels per Day)

Year	End-Use Sectors																		Other Petroleum ⁴	Total	
	Industrial Sector																				
	Asphalt and Road Oil	Distillate Fuel Oil			Kerosene	Liquefied Petroleum Gases	Lubricants	Motor Gasoline ³	Petroleum Coke			Residual Fuel Oil			CHP ¹	Other ²	Total	CHP ¹	Other ²	Total	
Year	CHP ¹	Other ²	Total	CHP ¹					Other ²	Total	CHP ¹	Other ²	Total								
1949	157	(5)	265	265	123	80	36	121	(5)	40	40	(5)	534	534	243	1,598					
1950	180	(5)	328	328	132	100	43	131	(5)	41	41	(5)	617	617	250	1,822					
1955	254	(5)	466	466	116	212	47	173	(5)	67	67	(5)	686	686	366	2,387					
1960	302	(5)	476	476	78	333	48	198	(5)	149	149	(5)	689	689	435	2,708					
1965	368	(5)	541	541	80	470	62	179	(5)	202	202	(5)	689	689	657	3,247					
1970	447	(5)	577	577	89	699	70	150	(5)	203	203	(5)	708	708	866	3,808					
1971	458	(5)	596	596	80	715	69	143	(5)	211	211	(5)	705	705	870	3,845					
1972	468	(5)	648	648	77	846	73	132	(5)	233	233	(5)	765	765	949	4,191					
1973	522	(5)	691	691	75	902	88	133	(5)	254	254	(5)	809	809	1,005	4,479					
1974	481	(5)	633	633	61	901	85	123	(5)	230	230	(5)	753	753	1,034	4,301					
1975	419	(5)	630	630	58	844	68	116	(5)	246	246	(5)	658	658	1,001	4,038					
1976	411	(5)	717	717	59	895	75	110	(5)	242	242	(5)	792	792	1,145	4,447					
1977	436	(5)	809	809	69	918	82	102	(5)	266	266	(5)	844	844	1,294	4,821					
1978	479	(5)	823	823	75	921	88	93	(5)	250	250	(5)	748	748	1,391	4,867					
1979	476	(5)	830	830	86	1,266	92	84	(5)	243	243	(5)	721	721	1,546	5,343					
1980	396	(5)	621	621	87	1,172	82	82	(5)	234	234	(5)	586	586	1,581	4,842					
1981	342	(5)	653	653	52	1,166	79	83	(5)	250	250	(5)	471	471	1,176	4,273					
1982	342	(5)	617	617	68	1,211	72	72	(5)	246	246	(5)	456	456	973	4,058					
1983	373	(5)	537	537	32	1,166	75	59	(5)	225	225	(5)	345	345	1,042	3,854					
1984	408	(5)	564	564	28	1,283	80	83	(5)	244	244	(5)	386	386	1,120	4,198					
1985	425	(5)	526	526	21	1,285	75	114	(5)	261	261	(5)	326	326	1,032	4,065					
1986	448	(5)	546	546	16	1,207	73	108	(5)	264	264	(5)	321	321	1,105	4,087					
1987	467	(5)	537	537	14	1,279	83	107	(5)	294	294	(5)	253	253	1,176	4,210					
1988	468	(5)	530	530	14	1,326	80	100	(5)	306	306	(5)	237	237	1,286	4,347					
1989	453	5	531	536	14	1,300	82	104	5	295	300	58	121	121	178	1,284	4,251				
1990	483	7	534	541	6	1,215	84	97	25	300	325	64	115	115	179	1,373	4,304				
1991	444	12	495	507	6	1,326	75	101	22	293	315	55	91	91	146	1,299	4,219				
1992	454	10	509	519	5	1,402	77	101	26	336	362	59	109	109	168	1,434	4,522				
1993	474	10	515	525	6	1,363	78	94	22	308	330	65	129	129	194	1,373	4,438				
1994	484	10	513	522	8	1,505	82	101	25	304	329	69	113	113	183	1,454	4,667				
1995	486	6	526	532	7	1,527	80	105	26	302	328	60	87	87	147	1,381	4,594				
1996	484	8	549	557	9	1,580	78	105	27	317	343	66	80	80	146	1,518	4,819				
1997	505	8	558	566	9	1,617	82	111	37	294	331	56	71	71	127	1,605	4,953				
1998	521	16	554	570	11	1,553	86	105	29	362	390	60	40	40	100	1,508	4,844				
1999	547	16	542	558	6	1,709	87	80	31	395	426	52	38	38	90	1,532	5,035				
2000	525	10	553	563	8	1,720	86	79	19	342	361	48	57	57	105	1,458	4,903				
2001	519	9	602	611	11	1,557	79	155	15	375	390	46	42	42	89	1,481	4,892				
2002	RE512	6	E597	E603	E7	RE1,647	E78	E159	R21	RE362	RE383	37	RE61	RE61	RE98	RE1,474	RE4,961				
2003	E503	P9	E617	E626	E8	E1,575	E73	E161	P19	E356	E375	P38	E55	E93	E1,585	E4,999					

¹ Industrial combined-heat-and-power (CHP) and a small number of industrial electricity-only plants.
 See Note 1, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 8.

² All industrial sector fuel use other than that in "CHP."

³ Finished motor gasoline. Through 1963, also includes special naphthas. Beginning in 1993, also includes ethanol blended into motor gasoline.

⁴ Pentanes plus, petrochemical feedstocks, still gas (refinery gas), waxes, and miscellaneous products. Beginning in 1964, also includes special naphthas. Beginning in 1983, also includes crude oil burned as fuel.

⁵ Included in "Other."

R=Revised. P=Preliminary. E=Estimate.

Notes: • See Note 1, "Petroleum Products Supplied and Petroleum Consumption," at end of section.

• Totals may not equal sum of components due to independent rounding.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/petro.html>.

• For related information, see http://www.eia.doe.gov/emeu/states/main_us.html (United States page).

Sources: CHP: Table 8.7c. All Other Data: • 1949-1959—Bureau of Mines, Mineral Industry Surveys, Petroleum Statement, Annual, annual reports, and Energy Information Administration (EIA) estimates.

• 1960-2001—EIA, "State Energy Data 2001: Consumption" (April 2004), U.S. Table 10. • 2002 and 2003—EIA estimates.

Table 5.13c Estimated Petroleum Consumption: Transportation Sector and End-Use Total, Selected Years, 1949-2003
 (Thousand Barrels per Day)

Year	End-Use Sectors									End-Use Total	
	Transportation										
	Aviation Gasoline	Distillate Fuel Oil	Jet Fuel		Liquefied Petroleum Gases	Lubricants	Motor Gasoline ²	Residual Fuel Oil	Total		
Year	Aviation Gasoline	Distillate Fuel Oil	Kerosene Type	Total ¹	Liquefied Petroleum Gases	Lubricants	Motor Gasoline ²	Residual Fuel Oil	Total	End-Use Total	
1949	93	190	0	(¹)	1	54	2,241	504	3,084	5,581	
1950	108	226	0	(¹)	2	64	2,433	524	3,356	6,251	
1955	192	372	0	154	9	70	3,221	440	4,458	8,249	
1960	161	418	91	371	13	68	3,736	367	5,135	9,556	
1965	120	514	334	602	23	67	4,374	336	6,036	11,197	
1970	55	738	718	967	32	66	5,589	332	7,778	13,769	
1971	49	800	751	1,010	37	67	5,827	305	8,095	14,118	
1972	46	910	779	1,021	38	71	6,199	280	8,566	15,009	
1973	45	1,045	825	1,042	35	74	6,496	317	9,054	15,766	
1974	44	1,036	757	979	33	71	6,372	304	8,838	15,175	
1975	39	998	782	992	31	70	6,512	310	8,951	14,934	
1976	37	1,073	777	976	33	77	6,817	358	9,372	15,941	
1977	38	1,171	814	1,022	36	78	7,022	396	9,761	16,721	
1978	39	1,260	845	1,044	38	83	7,264	431	10,160	17,099	
1979	38	1,366	867	1,067	16	87	6,896	535	10,005	17,075	
1980	35	1,311	845	1,062	13	77	6,441	608	9,546	15,905	
1981	31	1,365	808	1,006	24	74	6,456	531	9,487	15,094	
1982	25	1,312	803	1,011	24	68	6,421	444	9,307	14,609	
1983	26	1,367	839	1,046	29	71	6,510	358	9,406	14,555	
1984	24	1,383	953	1,175	30	76	6,554	351	9,592	15,163	
1985	27	1,491	1,005	1,218	21	71	6,667	342	9,838	15,248	
1986	32	1,514	1,105	1,307	19	69	6,871	379	10,191	15,645	
1987	25	1,568	1,181	1,385	15	78	7,041	392	10,505	16,114	
1988	27	1,701	1,236	1,449	17	75	7,179	399	10,846	16,600	
1989	26	1,734	1,284	1,489	16	77	7,171	423	10,937	16,577	
1990	24	1,722	1,340	1,522	16	80	7,080	443	10,888	16,423	
1991	23	1,694	1,296	1,471	15	71	7,042	447	10,763	16,188	
1992	22	1,728	1,310	1,454	14	72	7,125	465	10,881	16,599	
1993	21	1,785	1,357	1,469	14	74	7,367	393	11,124	16,743	
1994	21	1,896	1,480	1,527	24	77	7,487	385	11,417	17,251	
1995	21	1,973	1,497	1,514	13	76	7,674	397	11,668	17,390	
1996	20	2,096	1,575	1,578	11	73	7,772	370	11,921	17,948	
1997	22	2,198	1,598	1,599	10	78	7,883	310	12,099	18,211	
1998	19	2,263	1,623	1,622	13	81	8,128	294	12,420	18,341	
1999	21	2,352	1,675	1,673	10	82	8,336	290	12,765	18,984	
2000	20	2,422	1,725	1,725	8	81	8,370	386	13,012	19,196	
2001	19	2,489	1,656	1,655	10	74	8,435	255	12,938	19,085	
2002 ^E	18	2,455	R1,621	R1,614	10	73	R8,668	R281	R13,121	R19,335	
2003 ^E	18	2,550	1,580	1,574	10	69	8,756	269	13,244	19,508	

¹ Through 1951, naphtha-type jet fuel is included in the products from which jet fuel was blended; in 1952, 71 percent gasoline, 17 percent kerosene, and 12 percent distillate fuel oil. Beginning in 1952, includes naphtha-type jet fuel. Beginning in 1957, also includes kerosene-type jet fuel.

² Finished motor gasoline. Through 1963, also includes special naphthas. Beginning in 1993, also includes ethanol blended into motor gasoline.

R=Revised. E=Estimate.

Notes: • See Note 1, "Petroleum Products Supplied and Petroleum Consumption," at end of section.

- Totals may not equal sum of components due to independent rounding.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/petro.html>.

- For related information, see http://www.eia.doe.gov/emeu/states/main_us.html (United States page).

Sources: • 1949-1959—Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual*, annual reports, and Energy Information Administration (EIA) estimates. • 1960-2001—EIA, "State Energy Data 2001: Consumption" (April 2004), U.S. Table 11. • 2002 and 2003—EIA estimates.

Table 5.13d Petroleum Consumption: Electric Power Sector and Total, Selected Years, 1949-2003
 (Thousand Barrels per Day)

Year	Electric Power Sector ¹												Total Consumption	
	Electricity Only				CHP				Total					
	Distillate Fuel Oil ²	Petroleum Coke	Residual Fuel Oil ³	Total	Distillate Fuel Oil ²	Petroleum Coke	Residual Fuel Oil ³	Total	Distillate Fuel Oil ²	Petroleum Coke	Residual Fuel Oil ³	Total		
1949	13	NA	169	182	NA	NA	NA	NA	13	NA	169	182	5,763	
1950	15	NA	192	207	NA	NA	NA	NA	15	NA	192	207	6,458	
1955	15	NA	191	206	NA	NA	NA	NA	15	NA	191	206	8,455	
1960	10	NA	231	241	NA	NA	NA	NA	10	NA	231	241	9,797	
1965	14	NA	302	316	NA	NA	NA	NA	14	NA	302	316	11,512	
1970	66	9	853	928	NA	NA	NA	NA	66	9	853	928	14,697	
1971	94	8	992	1,095	NA	NA	NA	NA	94	8	992	1,095	15,212	
1972	146	9	1,203	1,358	NA	NA	NA	NA	146	9	1,203	1,358	16,367	
1973	129	7	1,406	1,542	NA	NA	NA	NA	129	7	1,406	1,542	17,308	
1974	146	9	1,324	1,478	NA	NA	NA	NA	146	9	1,324	1,478	16,653	
1975	107	1	1,280	1,388	NA	NA	NA	NA	107	1	1,280	1,388	16,322	
1976	114	1	1,405	1,520	NA	NA	NA	NA	114	1	1,405	1,520	17,461	
1977	134	1	1,575	1,710	NA	NA	NA	NA	134	1	1,575	1,710	18,431	
1978	130	5	1,612	1,747	NA	NA	NA	NA	130	5	1,612	1,747	18,847	
1979	84	4	1,350	1,437	NA	NA	NA	NA	84	4	1,350	1,437	18,513	
1980	79	2	1,069	1,151	NA	NA	NA	NA	79	2	1,069	1,151	17,056	
1981	58	2	904	964	NA	NA	NA	NA	58	2	904	964	16,058	
1982	42	2	642	686	NA	NA	NA	NA	42	2	642	686	15,296	
1983	45	4	627	676	NA	NA	NA	NA	45	4	627	676	15,231	
1984	42	3	517	562	NA	NA	NA	NA	42	3	517	562	15,726	
1985	40	3	435	478	NA	NA	NA	NA	40	3	435	478	15,726	
1986	39	4	592	636	NA	NA	NA	NA	39	4	592	636	16,281	
1987	42	5	504	551	NA	NA	NA	NA	42	5	504	551	16,665	
1988	51	6	627	683	NA	NA	NA	NA	51	6	627	683	17,283	
1989	70	7	663	740	2	0	6	8	72	7	669	748	17,325	
1990	41	14	497	551	4	0	10	15	45	14	507	566	16,988	
1991	38	13	469	520	1	0	4	5	39	13	473	526	16,714	
1992	33	18	371	422	2	2	8	12	34	20	379	434	17,033	
1993	37	21	409	467	4	15	9	27	41	36	418	494	17,237	
1994	46	16	369	431	11	15	10	36	56	32	379	467	17,718	
1995	44	15	237	296	7	22	9	38	51	37	247	334	17,725	
1996	47	14	263	325	4	22	10	36	51	36	273	360	18,309	
1997	48	23	301	373	4	23	10	37	52	46	311	410	18,620	
1998	61	30	448	539	3	26	8	37	64	56	456	576	18,917	
1999	63	26	409	497	3	25	9	38	66	51	418	535	19,519	
2000	77	20	370	466	6	25	8	39	82	45	378	505	19,701	
2001	76	25	430	531	4	22	7	33	80	47	437	564	19,649	
2002	R ⁵⁹	R ⁵⁴	R ²⁸¹	R ³⁹⁴	1	R ²⁶	R ⁶	R ³³	R ⁶⁰	R ⁸⁰	R ²⁸⁷	R ⁴²⁷	R ^{19,761}	
2003 ^P	73	56	372	500	5	23	7	35	78	79	378	535	20,044	

¹ Electricity-only and combined-heat-and-power (CHP) plants within the NAICS (North American Industry Classification System) 22 category whose primary business is to sell electricity, or electricity and heat, to the public. Through 1988, data are for electric utilities only; beginning in 1989, data are for electric utilities and independent power producers. Electric utility CHP plants are included in "Electricity Only."

² Fuel oil nos. 1, 2, and 4. For 1949-1979, data are for gas turbine and internal combustion plant use of petroleum. For 1980-2000, electric utility data also include small amounts of kerosene and jet fuel.

³ Fuel oil nos. 5 and 6. For 1949-1979, data are for steam plant use of petroleum. For 1980-2000, electric utility data also include a small amount of fuel oil no. 4.

R=Revised. P=Preliminary. NA=Not available.

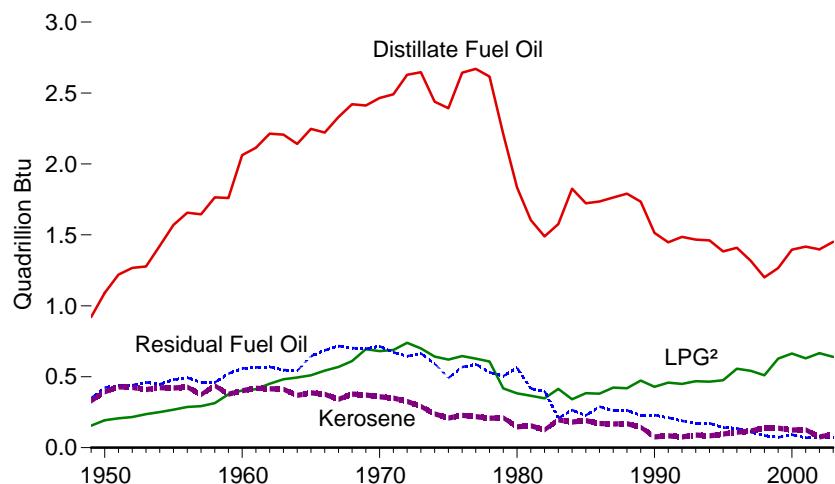
Notes: • See Tables 8.5a-8.5d for the amount of petroleum used to produce electricity and Tables 8.6a-8.6c for the amount of petroleum used to produce useful thermal output. • See Note 1, "Petroleum Products Supplied and Petroleum Consumption," at end of section. • Totals may not equal sum of components due to independent rounding.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/petro.html>. • For related information, see <http://www.eia.doe.gov/fuelelectric.html>.

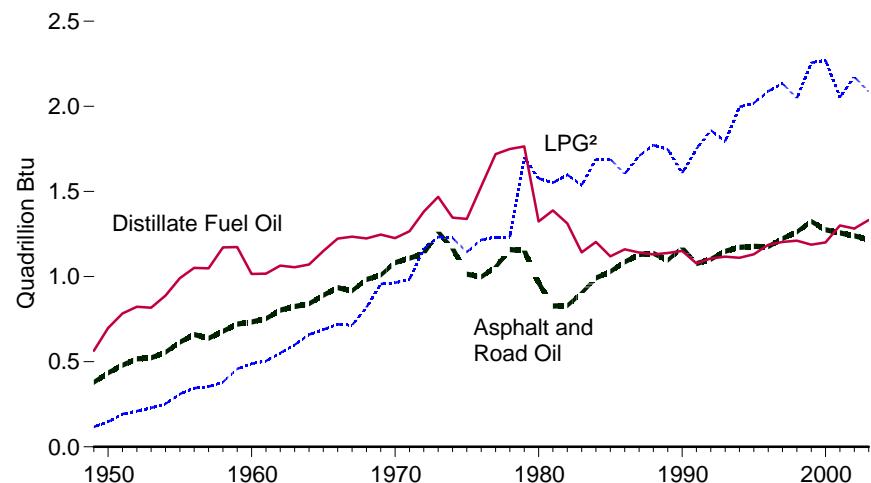
Sources: **Electric Power Sector:** Tables 8.5b, 8.5c, 8.6b, and 8.7b. **Total Consumption:** Table 5.11, data for "Total."

Figure 5.14 Heat Content of Petroleum Consumption by Product by Sector, 1949-2003

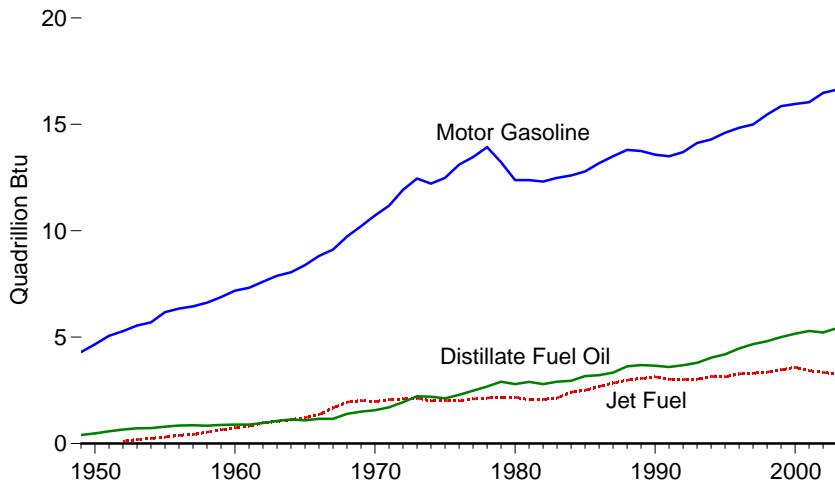
Residential and Commercial¹ Sectors, Selected Products



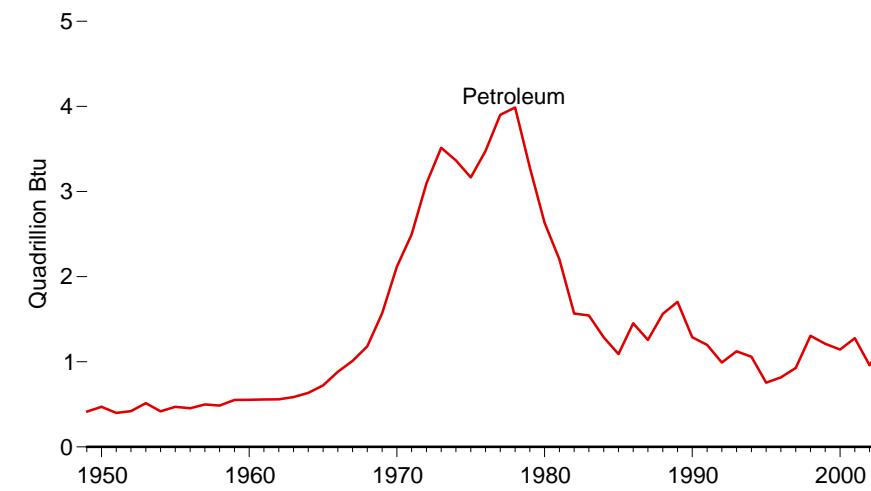
Industrial¹ Sector, Selected Products



Transportation Sector, Selected Products



Electric Power Sector³



¹ Includes combined-heat-and-power plants and a small number of electricity-only plants.

² Liquefied petroleum gases.

³ Electricity-only and combined-heat-and-power plants whose primary business is to sell electricity, or electricity and heat, to the public.

Note: Because vertical scales differ, graphs should not be compared.

Sources: Tables 5.14a-5.14c.

Table 5.14a Heat Content of Petroleum Consumption: Residential and Commercial Sectors, Selected Years, 1949-2003
 (Trillion Btu)

Year	Residential Sector				Commercial Sector						
	Distillate Fuel Oil	Kerosene	Liquefied Petroleum Gases	Total	Distillate Fuel Oil	Kerosene	Liquefied Petroleum Gases	Motor Gasoline ¹	Petroleum Coke	Residual Fuel Oil	Total
1949	700	289	132	1,121	221	39	23	92	NA	351	727
1950	829	347	164	1,340	262	47	29	100	NA	424	862
1955	1,194	371	227	1,792	377	51	40	133	NA	480	1,081
1960	1,568	354	343	2,265	494	48	61	67	NA	559	1,228
1965	1,713	334	434	2,481	534	54	77	77	NA	645	1,386
1970	1,878	298	579	2,755	587	61	102	86	NA	714	1,551
1971	1,897	295	585	2,777	595	55	103	84	NA	672	1,510
1972	1,996	271	628	2,895	632	55	111	87	NA	645	1,530
1973	2,003	227	595	2,825	644	65	105	87	NA	665	1,565
1974	1,844	184	546	2,573	596	55	96	83	NA	593	1,423
1975	1,807	161	528	2,495	587	49	93	89	NA	492	1,310
1976	1,987	184	549	2,720	656	44	97	97	NA	567	1,461
1977	1,994	167	533	2,695	676	52	94	101	NA	588	1,511
1978	1,951	153	516	2,620	666	55	91	107	NA	532	1,450
1979	1,626	133	355	2,114	584	78	63	104	NA	505	1,334
1980	1,316	107	325	1,748	518	41	57	107	NA	565	1,287
1981	1,147	85	311	1,543	457	69	55	92	NA	417	1,090
1982	1,050	95	296	1,441	440	30	52	88	NA	399	1,008
1983	924	85	352	1,362	651	111	62	102	NA	208	1,136
1984	1,091	88	290	1,468	735	93	51	107	NA	266	1,252
1985	1,092	159	327	1,578	631	33	58	96	NA	228	1,045
1986	1,111	121	323	1,556	623	50	57	106	NA	290	1,126
1987	1,156	119	360	1,634	607	49	63	111	NA	263	1,093
1988	1,190	144	356	1,690	600	26	63	110	NA	264	1,063
1989	1,160	117	402	1,679	574	28	71	102	0	228	1,002
1990	978	64	365	1,407	536	12	64	111	0	230	953
1991	930	72	389	1,392	517	12	69	85	0	212	895
1992	980	65	382	1,427	507	11	68	80	(s)	189	854
1993	974	76	399	1,448	493	14	70	30	(s)	173	780
1994	960	65	395	1,420	501	19	70	25	(s)	172	787
1995	905	74	404	1,383	479	22	71	18	(s)	141	732
1996	926	89	473	1,488	483	21	84	27	(s)	137	751
1997	874	93	461	1,428	444	25	81	43	(s)	111	704
1998	772	108	434	1,314	429	31	77	39	(s)	85	661
1999	828	111	534	1,473	438	27	94	28	(s)	73	661
2000	905	95	564	1,563	491	30	99	45	(s)	92	756
2001	908	95	535	1,539	508	31	94	37	(s)	70	742
2002 ^E	896	57	566	1,519	R502	19	100	R39	(s)	R77	R736
2003 ^E	931	72	544	1,546	521	24	96	39	(s)	74	753

¹ Finished motor gasoline. Through 1963, also includes special naphthas. Beginning in 1993, also includes ethanol blended into motor gasoline.

R=Revised. E=Estimate. NA=Not available. (s)=Less than 0.5 trillion Btu.

Note: Totals may not equal sum of components due to independent rounding.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/petro.html>.
 • For related information, see <http://www.eia.doe.gov/emeu/sedr/contents.html>.

Sources: Tables 5.13a, A1, and A3.

Table 5.14b Heat Content of Petroleum Consumption: Industrial Sector, Selected Years, 1949-2003
 (Trillion Btu)

Year	Industrial Sector									Total
	Asphalt and Road Oil	Distillate Fuel Oil	Kerosene	Liquefied Petroleum Gases	Lubricants	Motor Gasoline ¹	Petroleum Coke	Residual Fuel Oil	Other Petroleum ²	
1949	380	564	254	117	80	231	87	1,225	530	3,468
1950	435	698	274	147	94	251	90	1,416	546	3,951
1955	615	991	241	310	103	332	147	1,573	798	5,111
1960	734	1,016	161	489	107	381	328	1,584	947	5,747
1965	890	1,150	165	688	137	342	444	1,582	1,390	6,789
1970	1,082	1,226	185	964	155	288	446	1,624	1,817	7,787
1971	1,108	1,266	165	984	152	275	463	1,618	1,825	7,856
1972	1,137	1,381	160	1,164	163	254	513	1,761	2,001	8,534
1973	1,264	1,469	156	1,233	195	255	558	1,858	2,117	9,104
1974	1,165	1,346	126	1,227	187	235	506	1,728	2,173	8,694
1975	1,014	1,339	119	1,144	149	223	540	1,509	2,107	8,146
1976	998	1,530	123	1,216	166	211	535	1,822	2,410	9,010
1977	1,056	1,719	143	1,232	182	196	586	1,937	2,722	9,774
1978	1,160	1,750	156	1,233	195	178	550	1,716	2,930	9,867
1979	1,153	1,764	177	1,700	204	162	533	1,655	3,219	10,568
1980	962	1,324	181	1,577	182	158	516	1,349	3,275	9,525
1981	828	1,389	108	1,551	175	160	549	1,081	2,445	8,285
1982	829	1,313	141	1,598	159	138	541	1,047	2,029	7,795
1983	904	1,142	66	1,537	167	112	495	791	2,204	7,420
1984	992	1,203	58	1,691	178	160	538	889	2,317	8,025
1985	1,029	1,119	44	1,690	166	218	575	748	2,149	7,738
1986	1,086	1,160	32	1,603	162	206	581	736	2,313	7,880
1987	1,130	1,141	28	1,709	183	206	646	582	2,440	8,065
1988	1,136	1,130	30	1,772	177	193	675	546	2,681	8,339
1989	1,096	1,139	30	1,748	181	199	660	410	2,658	8,120
1990	1,170	1,150	12	1,608	186	185	714	411	2,840	8,278
1991	1,077	1,078	11	1,749	167	193	693	334	2,685	7,987
1992	1,102	1,107	10	1,860	170	194	798	387	2,953	8,581
1993	1,149	1,117	13	1,794	173	180	725	446	2,821	8,418
1994	1,173	1,111	17	1,997	181	192	723	419	2,988	8,801
1995	1,178	1,131	15	2,019	178	200	721	337	2,834	8,614
1996	1,176	1,187	18	2,089	173	200	757	335	3,119	9,053
1997	1,224	1,203	19	2,134	182	212	727	291	3,298	9,290
1998	1,263	1,211	22	2,048	191	199	858	230	3,093	9,116
1999	1,324	1,187	13	2,256	193	152	936	207	3,128	9,396
2000	1,276	1,200	16	2,271	190	150	796	241	2,981	9,120
2001	1,257	1,300	23	2,054	174	295	858	203	3,056	9,220
2002 ^E	R1,240	1,282	14	2,172	172	303	R842	R224	R3,041	R9,291
2003 ^E	1,217	1,332	18	2,087	161	306	824	214	3,279	9,436

¹ Finished motor gasoline. Through 1963, also includes special naphthas. Beginning in 1993, also includes ethanol blended into motor gasoline.

² Pentanes plus, petrochemical feedstocks, still gas (refinery gas), waxes, and miscellaneous products. Beginning in 1964, also includes special naphthas. Beginning in 1983, also includes crude oil burned as fuel.

R=Revised. E=Estimate.

Note: Totals may not equal sum of components due to independent rounding.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/petro.html>.

• For related information, see <http://www.eia.doe.gov/emeu/sedr/contents.html>.

Sources: Tables 5.13b, A1, and A3.

Table 5.14c Heat Content of Petroleum Consumption: Transportation and Electric Power Sectors, Selected Years, 1949-2003
 (Trillion Btu)

Year	Transportation Sector								Electric Power Sector ¹				
	Aviation Gasoline	Distillate Fuel Oil	Jet Fuel		Liquefied Petroleum Gases	Lubricants	Motor Gasoline ³	Residual Fuel Oil	Total	Distillate Fuel Oil ⁴	Petroleum Coke	Residual Fuel Oil ⁵	Total
			Kerosene	Type									
1949	172	405	0	(²)	2	120	4,298	1,156	6,152	28	NA	387	415
1950	199	480	0	(²)	3	141	4,664	1,201	6,690	32	NA	440	472
1955	354	791	0	301	14	155	6,175	1,009	8,800	32	NA	439	471
1960	298	892	188	739	20	152	7,183	844	10,126	22	NA	530	553
1965	222	1,093	691	1,215	33	149	8,386	770	11,868	29	NA	693	722
1970	100	1,569	1,486	1,973	44	147	10,716	761	15,310	141	19	1,958	2,117
1971	90	1,701	1,554	2,061	50	147	11,173	701	15,923	200	18	2,277	2,495
1972	85	1,941	1,617	2,091	52	158	11,918	645	16,891	310	19	2,768	3,097
1973	83	2,222	1,707	2,131	48	163	12,455	727	17,831	273	15	3,226	3,515
1974	82	2,202	1,566	2,001	44	156	12,217	697	17,399	309	19	3,038	3,365
1975	71	2,121	1,619	2,029	42	155	12,485	711	17,614	226	2	2,937	3,166
1976	67	2,288	1,613	2,002	45	172	13,107	824	18,506	243	2	3,232	3,477
1977	70	2,489	1,684	2,090	48	172	13,464	908	19,241	283	3	3,614	3,901
1978	71	2,679	1,750	2,138	52	184	13,927	990	20,041	276	12	3,699	3,987
1979	70	2,905	1,795	2,186	21	193	13,221	1,228	19,825	178	8	3,097	3,283
1980	64	2,795	1,754	2,179	17	172	12,383	1,398	19,008	169	5	2,459	2,634
1981	56	2,901	1,671	2,058	32	165	12,379	1,219	18,811	124	4	2,073	2,202
1982	47	2,790	1,661	2,069	32	150	12,312	1,020	18,420	89	4	1,474	1,568
1983	48	2,905	1,736	2,141	38	157	12,482	821	18,593	96	8	1,440	1,544
1984	44	2,948	1,977	2,414	40	168	12,600	807	19,020	88	8	1,190	1,286
1985	50	3,170	2,079	2,497	28	156	12,784	786	19,471	85	7	998	1,090
1986	59	3,218	2,287	2,682	26	153	13,174	870	20,182	83	9	1,359	1,452
1987	46	3,335	2,444	2,843	21	173	13,499	901	20,816	90	10	1,157	1,257
1988	49	3,626	2,565	2,982	22	167	13,802	919	21,567	109	12	1,442	1,563
1989	48	3,687	2,658	3,059	22	171	13,749	971	21,706	152	16	1,535	1,703
1990	45	3,661	2,774	3,129	22	176	13,575	1,016	21,625	97	30	1,163	1,289
1991	42	3,601	2,681	3,025	20	157	13,503	1,026	21,373	84	29	1,085	1,198
1992	41	3,684	2,718	3,001	18	161	13,699	1,070	21,674	74	45	872	991
1993	38	3,796	2,809	3,028	19	163	14,126	901	22,072	86	79	959	1,124
1994	38	4,032	3,063	3,154	32	171	14,293	883	22,603	120	70	869	1,059
1995	40	4,195	3,099	3,132	17	168	14,607	911	23,069	108	81	566	755
1996	37	4,469	3,268	3,274	15	163	14,837	851	23,647	109	80	628	817
1997	40	4,672	3,307	3,308	13	172	14,999	712	23,917	111	102	715	927
1998	35	4,812	3,359	3,357	17	180	15,463	674	24,537	136	124	1,047	1,306
1999	39	5,001	3,466	3,462	13	182	15,855	665	25,218	140	112	959	1,211
2000	36	5,165	3,580	3,580	11	179	15,960	888	25,820	175	99	871	1,144
2001	35	5,292	3,427	3,426	13	164	16,041	586	25,556	171	103	1,003	1,277
2002	E34	RE5,221	RE3,354	RE3,340	E14	E162	RE16,477	RE646	RE25,894	R127	R175	R659	R961
2003	E33	E5,422	E3,269	E3,257	E13	E152	E16,638	E617	E26,131	P165	P175	P868	P1,207

¹ Electricity-only and combined-heat-and-power (CHP) plants within the NAICS (North American Industry Classification System) 22 category whose primary business is to sell electricity, or electricity and heat, to the public. Through 1988, data are for electric utilities only; beginning in 1989, data are for electric utilities and independent power producers.

² Through 1951, naphtha-type jet fuel is included in the products from which jet fuel was blended; in 1952, 71 percent gasoline, 17 percent kerosene, and 12 percent distillate fuel oil. Beginning in 1952, includes naphtha-type jet fuel. Beginning in 1957, also includes kerosene-type jet fuel.

³ Finished motor gasoline. Through 1963, also includes special naphthas. Beginning in 1993, also includes ethanol blended into motor gasoline.

⁴ Fuel oil nos. 1, 2, and 4. For 1949-1979, data are for gas turbine and internal combustion plant use of petroleum. For 1980-2000, electric utility data also include small amounts of kerosene and jet fuel.

⁵ Fuel oil nos. 5 and 6. For 1949-1979, data are for steam plant use of petroleum. For 1980-2000, electric utility data also include a small amount of fuel oil no. 4.

R=Revised. P=Preliminary. E=Estimate. NA=Not available.

Notes: Totals may not equal sum of components due to independent rounding.

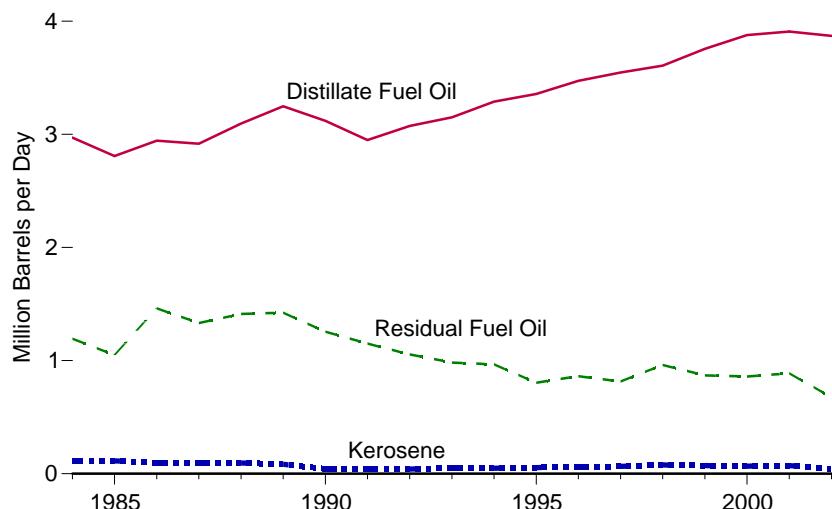
Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/petro.html>.

• For related information, see <http://www.eia.doe.gov/emeu/sedr/contents.html>.

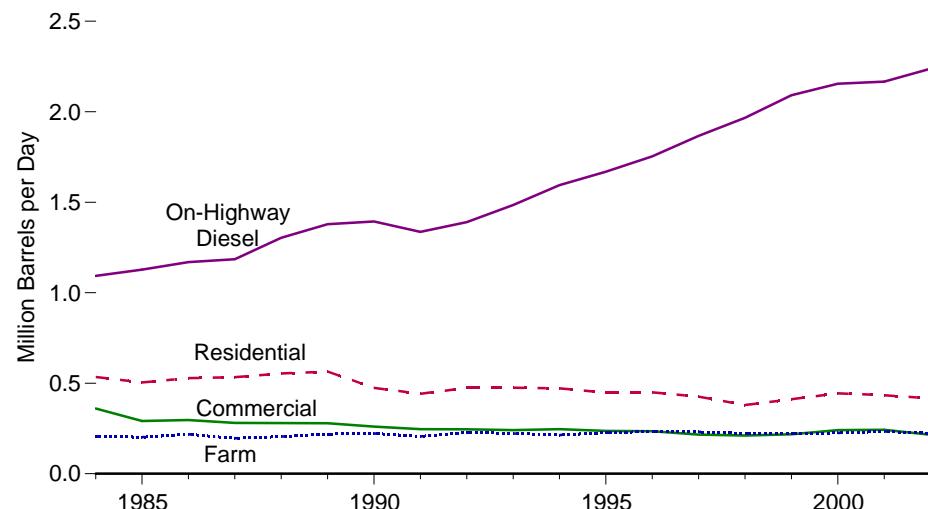
Sources: Tables 5.13c, 5.13d, A1, and A3.

Figure 5.15 Fuel Oil and Kerosene Sales, 1984-2002

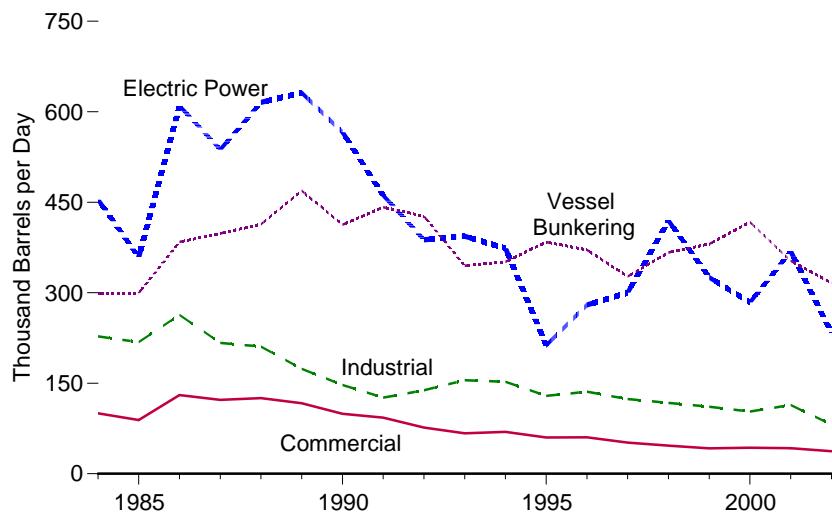
Total by Fuel



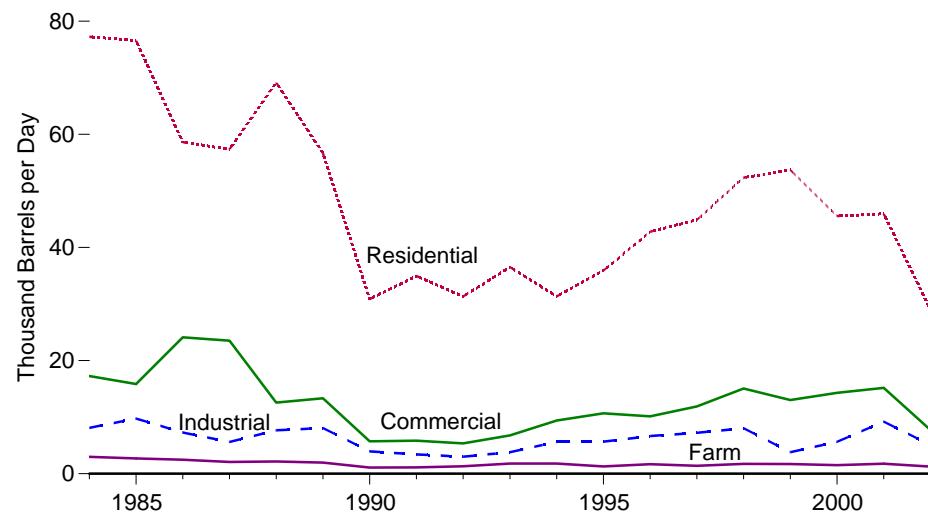
Distillate Fuel Oil by Selected End Use



Residual Fuel Oil by Major End Use



Kerosene by Major End Use



Note: Because vertical scales differ, graphs should not be compared.

Source: Table 5.15.

Table 5.15 Fuel Oil and Kerosene Sales, 1984-2002

(Thousand Barrels per Day)

Year	Distillate Fuel Oil													
	Residential	Commercial	Industrial	Oil Company	Farm	Electric Power ¹	Railroad	Vessel Bunkering	On-Highway Diesel	Military	Off-Highway Diesel	Other	Total	
1984	534	360	166	55	208	42	192	115	1,093	46	114	46	2,971	
1985	504	291	159	45	202	34	182	111	1,127	43	99	11	2,809	
1986	528	296	175	41	218	38	186	127	1,169	47	108	10	2,944	
1987	534	280	184	40	196	37	186	122	1,185	46	102	5	2,917	
1988	554	279	167	41	206	47	201	130	1,304	54	109	4	3,095	
1989	564	279	178	45	219	58	211	147	1,378	56	110	2	3,248	
1990	475	260	169	49	222	50	203	135	1,393	46	118	(s)	3,120	
1991	442	246	151	48	206	39	188	133	1,336	53	107	(s)	2,949	
1992	474	245	150	43	228	35	206	144	1,391	42	114	(s)	3,075	
1993	475	241	139	46	222	36	196	141	1,485	32	137	(s)	3,150	
1994	472	246	148	44	213	43	205	143	1,594	40	140	(s)	3,289	
1995	447	237	146	45	227	39	224	153	1,668	30	142	—	3,357	
1996	450	234	149	48	234	43	224	162	1,754	30	146	—	3,472	
1997	426	216	151	56	231	41	214	168	1,867	28	149	—	3,546	
1998	380	211	161	51	222	55	207	169	1,967	23	162	—	3,608	
1999	411	218	162	43	223	53	211	158	2,091	23	162	—	3,756	
2000	444	241	152	45	225	66	214	147	2,155	20	168	—	3,877	
2001	433	243	161	49	234	88	198	133	2,167	26	177	—	3,908	
2002	416	215	156	50	223	49	212	136	2,238	23	154	—	3,871	
Residual Fuel Oil													Kerosene	
Commercial	Industrial	Oil Company	Electric Power ¹	Vessel Bunkering	Military	Other ²	Total	Residential	Commercial	Industrial	Farm	Other	Total	
1984	100	228	81	454	298	6	26	1,194	77	17	8	3	10	115
1985	89	218	62	359	299	8	13	1,048	77	16	10	3	9	114
1986	130	263	52	610	384	E7	15	1,462	59	24	7	2	6	98
1987	123	217	44	537	398	10	3	1,332	57	24	6	2	6	95
1988	125	211	36	616	413	8	4	1,413	69	13	8	2	5	96
1989	117	174	24	632	469	6	2	1,424	57	13	8	2	4	84
1990	99	147	21	566	413	7	2	1,255	31	6	4	1	1	43
1991	93	126	20	461	442	8	1	1,150	35	6	3	1	1	46
1992	77	138	18	388	427	6	1	1,054	31	5	3	1	(s)	41
1993	67	155	17	394	345	5	(s)	983	37	7	4	2	1	50
1994	69	152	16	374	351	4	(s)	967	31	9	6	2	1	49
1995	60	129	14	213	384	3	(s)	804	36	11	6	1	(s)	54
1996	60	136	11	280	371	4	1	862	43	10	7	2	(s)	62
1997	52	124	10	300	327	3	(s)	816	45	12	7	1	(s)	66
1998	47	117	8	420	367	2	(s)	961	52	15	8	2	1	78
1999	42	111	8	326	381	2	(s)	869	54	13	4	2	1	73
2000	43	103	10	284	417	2	(s)	859	46	14	6	2	(s)	67
2001	42	114	9	368	353	1	(s)	888	46	15	9	2	(s)	72
2002	37	82	7	233	316	(s)	(s)	676	29	8	5	1	(s)	43

¹ Electricity-only and combined-heat-and-power (CHP) plants within the NAICS (North American Industry Classification System) 22 category whose primary business is to sell electricity, or electricity and heat, to the public.

² Sales to railroads are included in "Other."

E = Annual estimate based on eleven months of data. — = Not applicable. (s)=Less than 0.5 thousand barrels per day.

Notes: • All historical data are revised due to a change from "adjusted sales" to "sales" (unadjusted) data. Data in this table in the *Annual Energy Review 2002* (Table 5.13) were adjusted so that the totals for distillate fuel oil, residual fuel oil, and kerosene equaled the total product supplied for those fuels (see Table

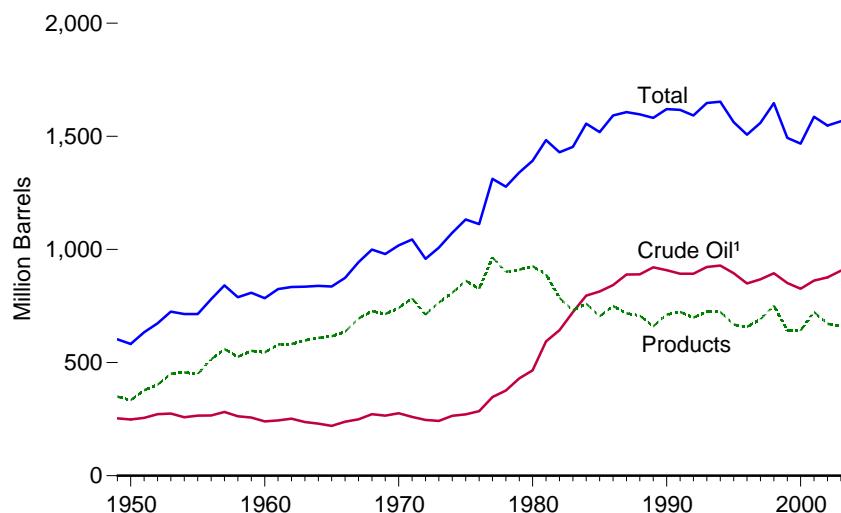
5.11). Data in the current table are "sales" (unadjusted) data from Energy Information Administration (EIA), Form EIA-821, "Annual Fuel Oil and Kerosene Sales Report," and on-highway diesel data from the Federal Highway Administration. • Totals may not equal sum of components due to independent rounding.

Web Page: See http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html for related information.

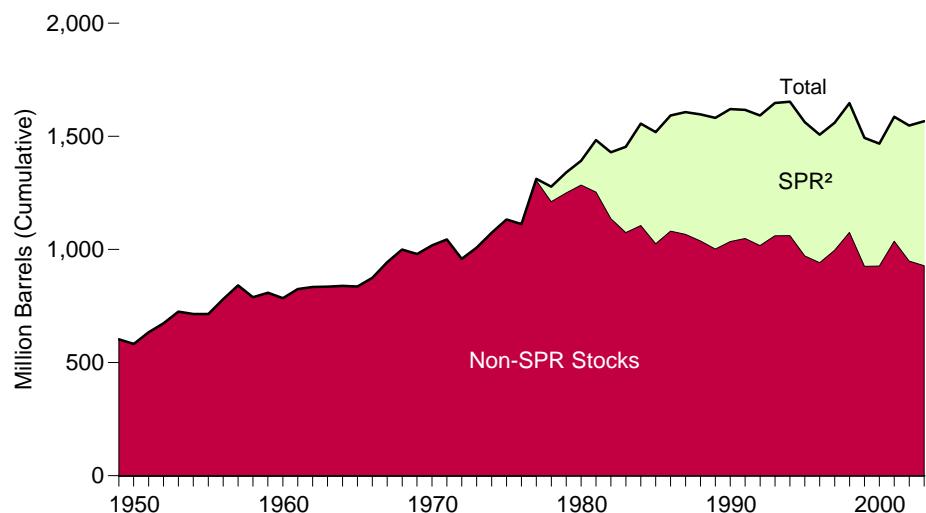
Sources: • 1984—EIA, *Petroleum Marketing Annual 1988* (October 1989), Tables A1-A3. • 1985-1997—EIA, *Fuel Oil and Kerosene Sales*, annual reports, Tables 1-3. • 1998 forward—EIA, *Fuel Oil and Kerosene Sales 2002* (November 2003), Tables 1-3.

Figure 5.16 Petroleum Primary Stocks by Type

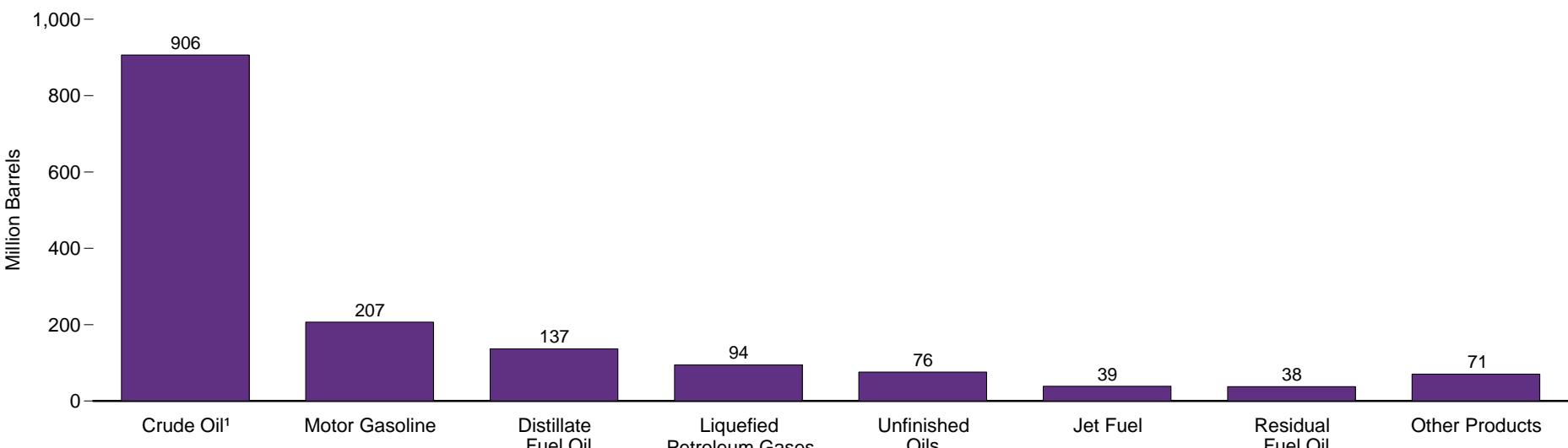
Total, Crude Oil¹, and Products, 1949-2003



Total Stocks and the Strategic Petroleum Reserve, 1949-2003



By Type, 2003



¹ Includes lease condensate and crude oil stored in the Strategic Petroleum Reserve (SPR).

² See Figure 5.17 for additional Strategic Petroleum Reserve Information.

Notes: • Stocks are at end of year. • Because vertical scales differ, graphs should not be compared.

Sources: Table 5.16.

Table 5.16 Petroleum Primary Stocks by Type, Selected Years, 1949-2003
 (Million Barrels)

Year	Crude Oil and Lease Condensate			Petroleum Products											Total Petroleum
	Strategic Petroleum Reserve	Other Primary	Total	Distillate Fuel Oil		Jet Fuel ²	Liquefied Petroleum Gases		Motor Gasoline ⁴	Residual Fuel Oil	Unfinished Oils	Other Products ⁵	Total Products		
				Low Sulfur ¹	Total		Propane ³	Total							
1949	0	253	253	NA	75	(²)	(⁶)	1	110	60	66	37	350	603	
1950	0	248	248	NA	72	(²)	(⁶)	2	116	41	70	34	334	583	
1955	0	266	266	NA	111	3	(⁶)	7	165	39	68	55	449	715	
1960	0	240	240	NA	138	7	(⁶)	23	195	45	62	76	545	785	
1965	0	220	220	NA	155	19	(⁶)	30	175	56	89	92	616	836	
1970	0	276	276	NA	195	28	(⁶)	67	209	54	99	89	741	1,018	
1971	0	260	260	NA	191	28	(⁶)	95	219	60	101	92	784	1,044	
1972	0	246	246	NA	154	25	(⁶)	86	213	55	95	84	713	959	
1973	0	242	242	NA	196	29	65	99	209	53	99	80	766	1,008	
1974	0	265	265	NA	200	29	69	113	218	60	106	82	809	1,074	
1975	0	271	271	NA	209	30	82	125	235	74	106	82	862	1,133	
1976	0	285	285	NA	186	32	74	116	231	72	110	78	826	1,112	
1977	7	340	348	NA	250	35	81	136	258	90	113	82	964	1,312	
1978	67	309	376	NA	216	34	87	132	238	90	109	82	901	1,278	
1979	91	339	430	NA	229	39	64	111	237	96	118	82	911	1,341	
1980	108	358	466	NA	205	42	65	120	261	92	124	82	926	1,392	
1981	230	363	594	NA	192	41	76	135	253	78	111	80	890	1,484	
1982	294	350	644	NA	179	37	54	94	235	66	105	70	786	1,430	
1983	379	344	723	NA	140	39	48	101	222	49	108	72	731	1,454	
1984	451	345	796	NA	161	42	58	101	243	53	94	67	760	1,556	
1985	493	321	814	NA	144	40	39	74	223	50	107	67	705	1,519	
1986	512	331	843	NA	155	50	63	103	233	47	94	68	750	1,593	
1987	541	349	890	NA	134	50	48	97	226	47	93	70	718	1,607	
1988	560	330	890	NA	124	44	50	97	228	45	100	70	707	1,597	
1989	580	341	921	NA	106	41	32	80	213	44	106	70	660	1,581	
1990	586	323	908	NA	132	52	49	98	220	49	99	63	712	1,621	
1991	569	325	893	NA	144	49	48	92	219	50	98	72	724	1,617	
1992	575	318	893	NA	141	43	39	89	216	43	95	73	699	1,592	
1993	587	335	922	64	141	40	51	106	226	44	88	78	725	1,647	
1994	592	337	929	73	145	47	46	99	215	42	91	84	724	1,653	
1995	592	303	895	67	130	40	43	93	202	37	86	79	668	1,563	
1996	566	284	850	68	127	40	43	86	195	46	88	76	658	1,507	
1997	563	305	868	68	138	44	44	89	210	40	89	81	692	1,560	
1998	571	324	895	77	156	45	65	115	216	45	91	85	752	1,647	
1999	567	284	852	69	125	41	43	89	193	36	86	70	641	1,493	
2000	541	286	826	72	118	45	41	83	196	36	87	77	641	1,468	
2001	550	312	862	82	145	42	66	121	210	41	88	78	724	1,586	
2002	599	278	877	81	134	R39	53	106	R209	31	76	76	R671	R1,548	
2003 ^P	638	268	906	82	137	39	49	94	207	38	76	71	661	1,567	

¹ Sulfur content of 0.05 percent or less by weight.

² Through 1951, naphtha-type jet fuel is included in the products from which it was blended: in 1952, 71 percent gasoline, 17 percent kerosene, and 12 percent distillate fuel oil. Through 1964, kerosene-type jet fuel is included with kerosene in "Other Products."

³ Includes propylene.

⁴ Finished motor gasoline and motor gasoline blending components. Through 1963, also includes aviation gasoline and special naphthas.

⁵ Asphalt and road oil, aviation gasoline blending components, kerosene, lubricants, pentanes plus, petrochemical feedstocks, petroleum coke, waxes, other hydrocarbons and oxygenates, and miscellaneous products. Through 1964, also includes kerosene-type jet fuel. Beginning in 1964, also includes aviation gasoline and special naphthas.

⁶ Included in "Liquefied Petroleum Gases Total."

R=Revised. P=Preliminary. NA=Not available.

Notes: • Stocks are at end of year. • Distillate stocks in the "Northeast Heating Oil Reserve" are not included. • Totals may not equal sum of components due to independent rounding.

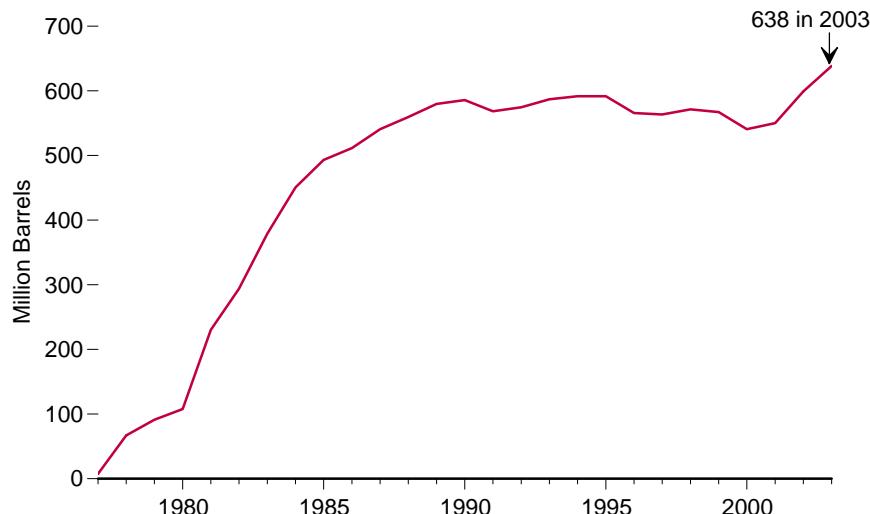
Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/petro.html>.

• For related information, see http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html

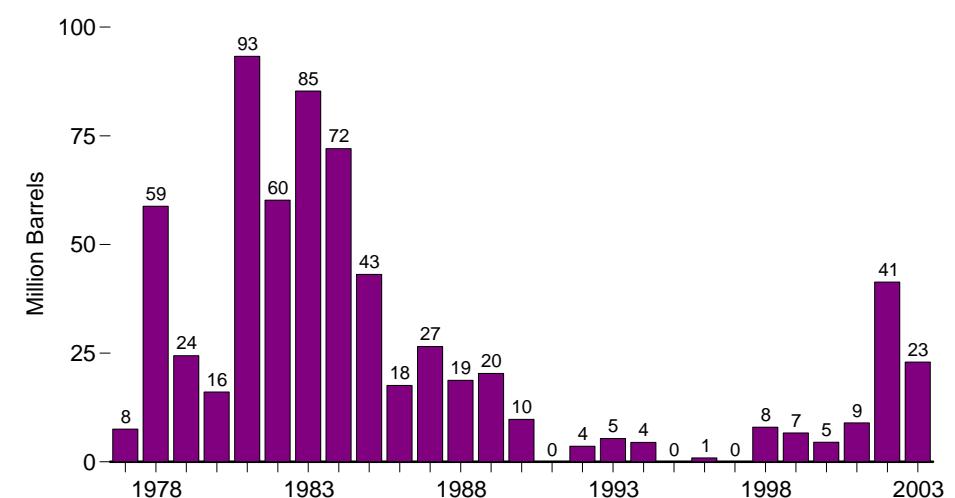
Sources: • 1949-1975—Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual*, annual reports. • 1976-1980—Energy Information Administration (EIA), Energy Data Reports, *Petroleum Statement, Annual*, annual reports. • 1981-2002—EIA, *Petroleum Supply Annual*, annual reports. • 2003—EIA, *Petroleum Supply Monthly* (February 2004).

Figure 5.17 Strategic Petroleum Reserve, 1977-2003

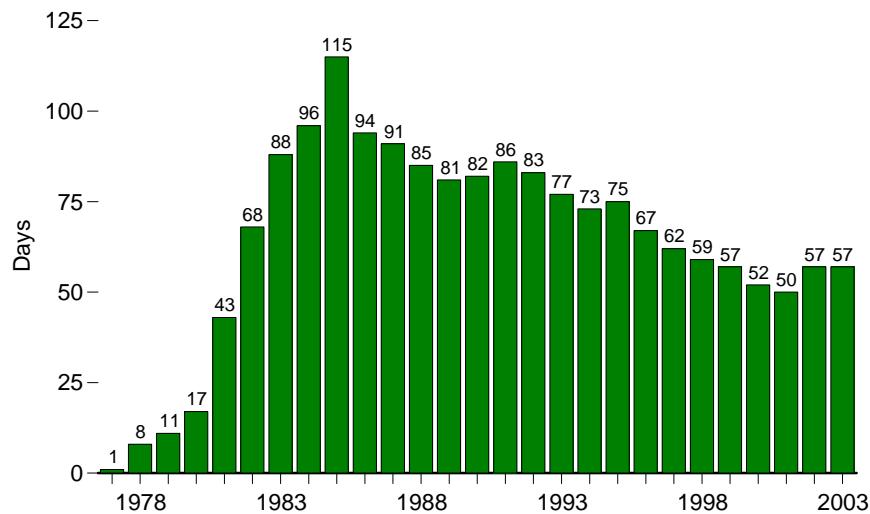
End-of-Year Stocks in SPR



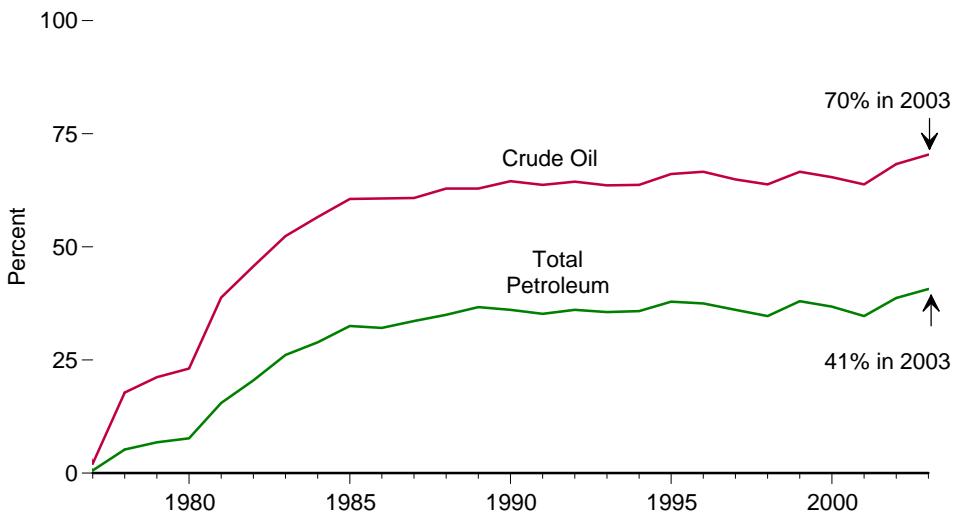
Crude Oil Imports for SPR¹



SPR Stocks as Days' Worth of Net Imports²



SPR as Share of Domestic Stocks



¹ Imported by SPR and imported by others for SPR.

² Derived by dividing end-of-year SPR stocks by annual average daily net imports of all petroleum.

Notes: • SPR=Strategic Petroleum Reserve. • Because vertical scales differ, graphs should not be compared.

Source: Table 5.17.

Table 5.17 Strategic Petroleum Reserve, 1977-2003

(Million Barrels, Except as Noted)

Year	Foreign Crude Oil Receipts		Domestic Crude Oil Receipts		Withdrawals		End-of-Year Stocks			Days of Net Petroleum Imports ⁵
	Imported by SPR	Imported by Others ^{1,2}	Purchases	Exchanges ²	Sales	Exchanges	Quantity ³	Share of Crude Oil ⁴ Stocks (percent)	Share of Total Petroleum Stocks (percent)	
1977	7.54	0.00	60.37	0.00	0.00	0.00	7.46	2.1	0.6	1
1978	58.80	0.00	0.00	0.00	0.00	0.00	66.86	17.8	5.2	8
1979	24.43	0.00	(s)	0.00	0.00	0.00	91.19	21.2	6.8	11
1980	16.07	0.00	1.30	0.00	0.00	0.00	107.80	23.1	7.7	17
1981	93.30	0.00	28.79	0.00	0.00	0.00	230.34	38.8	15.5	43
1982	60.19	0.00	3.79	0.00	0.00	0.00	293.83	45.7	20.5	68
1983	85.29	0.00	0.42	0.00	0.00	0.00	379.09	52.4	26.1	88
1984	72.04	0.00	0.05	0.00	0.00	0.00	450.51	56.6	28.9	96
1985	43.12	0.00	0.17	0.00	0.00	0.00	493.32	60.6	32.5	115
1986	17.56	0.00	1.21	0.00	0.00	0.00	511.57	60.7	32.1	94
1987	26.52	0.00	2.69	0.00	0.00	0.00	540.65	60.8	33.6	91
1988	18.76	0.00	0.01	0.00	0.00	0.00	559.52	62.9	35.0	85
1989	20.35	0.00	0.00	0.00	0.00	0.00	579.86	62.9	36.7	81
1990	9.77	0.00	0.00	0.00	3.91	0.00	585.69	64.5	36.1	82
1991	0.00	0.00	0.00	0.00	17.22	0.00	568.51	63.7	35.2	86
1992	3.59	0.00	2.60	0.00	0.00	0.00	574.72	64.4	36.1	83
1993	5.37	0.00	6.96	0.00	0.00	0.00	587.08	63.6	35.6	77
1994	4.49	0.00	0.11	0.00	0.00	0.00	591.67	63.7	35.8	73
1995	0.00	0.00	0.00	0.00	0.00	0.00	591.64	66.1	37.9	75
1996	0.00	0.90	0.00	0.00	25.82	0.90	565.82	66.6	37.5	67
1997	0.00	0.00	0.00	0.00	2.33	0.00	563.43	64.9	36.1	62
1998	0.00	7.98	0.00	0.00	0.00	0.00	571.41	63.8	34.7	59
1999	3.04	3.60	0.00	1.42	0.00	10.75	567.24	66.6	38.0	57
2000	3.01	1.50	0.00	2.29	0.00	733.35	540.68	65.4	36.8	52
2001	3.91	5.07	0.58	0.00	0.00	0.00	550.24	63.8	34.7	50
2002	5.77	35.59	0.00	7.64	0.00	0.00	599.09	68.3	R38.7	R57
2003	0.00	22.94	0.00	16.40	0.00	0.00	638.39	70.4	40.7	57

¹ Imported crude oil received represents volumes of imported crude oil received at SPR storage facilities for which the costs associated with the importation and delivery of crude oil are the responsibility of the commercial importer under contract to supply the SPR.

² The values shown for 1998 and 1999 represent an exchange agreement in which SPR received approximately 8.5 million barrels of high quality oil in exchange for approximately 11 million barrels of lower quality crude oil shipped from SPR during 1999 and 2000. Also, beginning in 1999, a portion of the crude oil in-kind royalties from Federal leases in the Gulf of Mexico was transferred to the Department of Energy and exchanged with commercial entities for crude oil to fill the SPR. Crude oil exchange barrels delivered to SPR could be either domestic or imported as long as the crude oil met the specification requirements of SPR. All exchange barrels of imported crude oil are included in "Foreign Crude Oil Receipts, Imported by Others," while exchange barrels of domestic crude oil are included in "Domestic Crude Oil Receipts, Exchanges."

³ Stocks do not include imported quantities in transit to SPR terminals, pipeline fill, and above-ground storage.

⁴ Includes lease condensate stocks.

⁵ Derived by dividing end-of-year SPR stocks by annual average daily net imports of all petroleum.

Calculated prior to rounding.

⁶ The quantity of domestic fuel oil which was in storage prior to injection of foreign crude oil.

⁷ Includes 30 million barrels released to increase heating oil stocks in exchange for a like quantity plus a bonus percentage to be returned in 2001 and 2002, as well as additional barrels to create a Northeast Home Heating Oil Reserve.

R=Revised. (s)=Less than 0.005 million barrels.

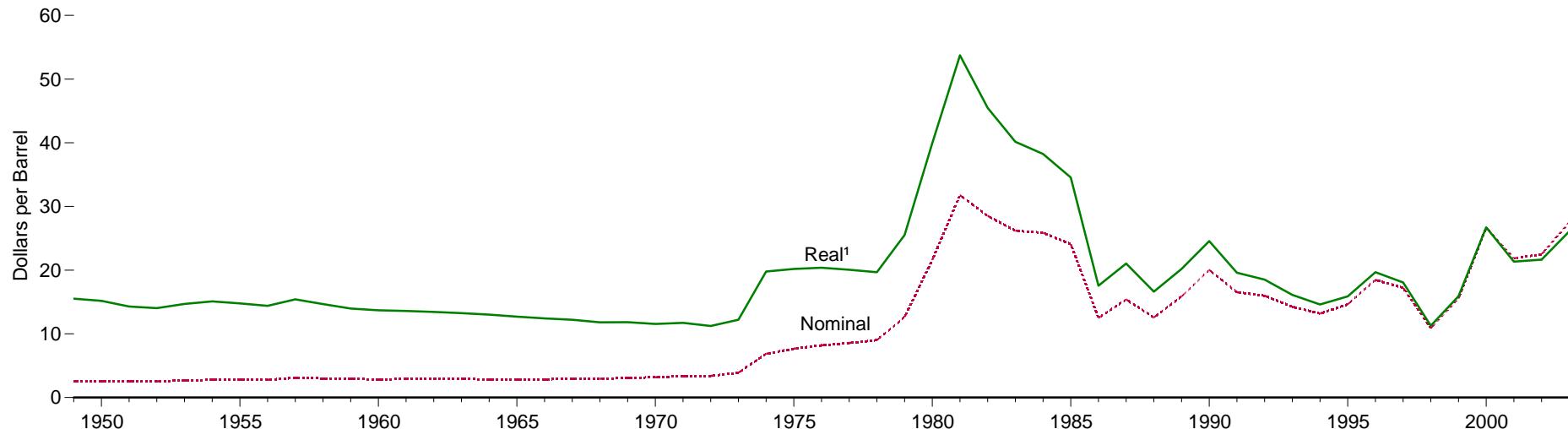
Note: "SPR" is the Strategic Petroleum Reserve—petroleum stocks maintained by the Federal Government for use during periods of major supply interruption.

Web Page: See http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html for related information.

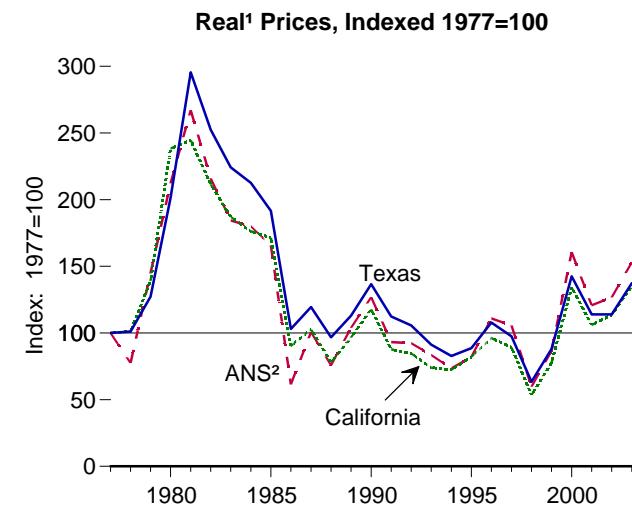
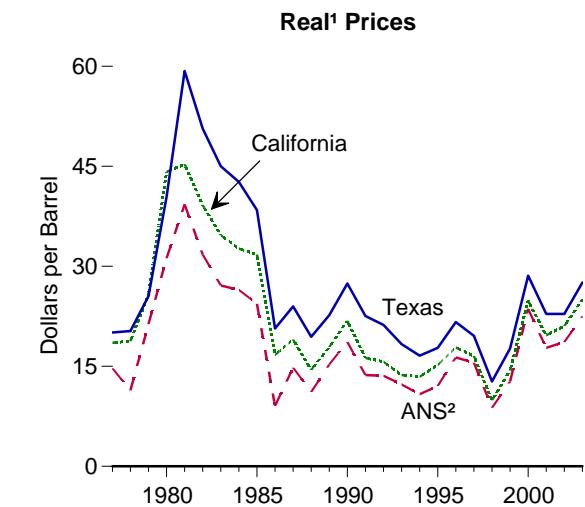
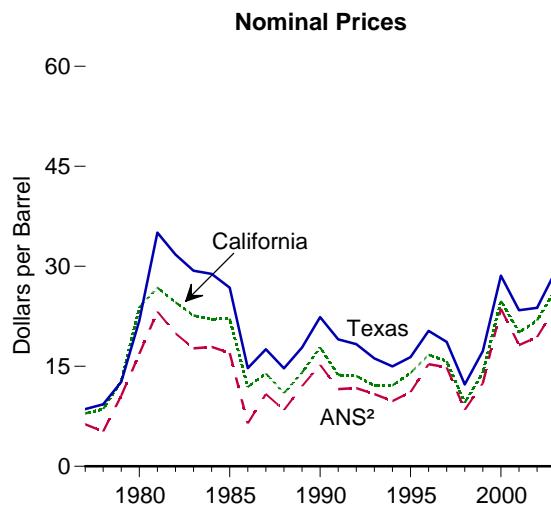
Sources: **Imported by Others, Domestic Crude Oil Receipts, and Withdrawals:** U.S. Department of Energy, Assistant Secretary for Fossil Energy, unpublished data. **All Other Data:** • 1977-1980—Energy Information Administration (EIA), Energy Data Report, *Petroleum Statement, Annual*, annual reports. • 1981-2002—EIA, *Petroleum Supply Annual*, annual reports. • 2003—EIA, *Petroleum Supply Monthly* (February 2004).

Figure 5.18 Crude Oil Domestic First Purchase Prices

U.S. Average Real¹ and Nominal Prices, 1949-2003



Alaska North Slope, California, and Texas 1977-2003



¹ In chained (2000) dollars, calculated by using gross domestic product implicit price deflators. See Table D1.

² Alaska North Slope.
Source: Table 5.18.

Table 5.18 Crude Oil Domestic First Purchase Prices, Selected Years, 1949-2003
(Dollars per Barrel)

Year	Alaska North Slope		California		Texas		U.S. Average	
	Nominal	Real ¹	Nominal	Real ¹	Nominal	Real ¹	Nominal	Real ¹
1949	—	—	—	—	—	—	2.54	R15.53
1950	—	—	—	—	—	—	2.51	R15.18
1955	—	—	—	—	—	—	2.77	R14.78
1960	—	—	—	—	—	—	2.88	R13.69
1965	—	—	—	—	—	—	2.86	R12.69
1970	—	—	—	—	—	—	3.18	R11.55
1971	—	—	—	—	—	—	3.39	R11.73
1972	—	—	—	—	—	—	3.39	R11.24
1973	—	—	—	—	—	—	3.89	R12.21
1974	—	—	—	—	—	—	6.87	R19.78
1975	—	—	—	—	—	—	7.67	R20.18
1976	—	—	—	—	—	—	8.19	R20.38
1977	26.29	R14.71	7.92	R18.53	8.58	R20.07	8.57	R20.05
1978	5.21	R11.39	8.58	R18.75	9.29	R20.30	9.00	R19.67
1979	10.57	R21.33	12.78	R25.79	12.65	R25.53	12.64	R25.51
1980	16.87	R31.22	23.87	R44.17	21.84	R40.41	21.59	R39.95
1981	23.23	R39.29	26.80	R45.33	35.06	R59.30	31.77	R53.74
1982	19.92	R31.76	24.58	R39.19	31.77	R50.65	28.52	R45.47
1983	17.69	R27.13	22.61	R34.67	29.35	R45.01	26.19	R40.16
1984	17.91	R26.47	22.09	R32.65	28.87	R42.67	25.88	R38.25
1985	16.98	R24.36	22.14	R31.76	26.80	R38.44	24.09	R34.56
1986	6.45	R9.05	11.90	R16.70	14.73	R20.67	12.51	R17.56
1987	10.83	R14.80	13.92	R19.02	17.55	R23.98	15.40	R21.04
1988	8.43	R11.14	10.97	R14.49	14.71	R19.43	12.58	R16.62
1989	12.00	R15.28	14.06	R17.90	17.81	R22.67	15.86	R20.19
1990	15.23	R18.67	17.81	R21.83	22.37	R27.42	20.03	R24.55
1991	11.57	R13.70	13.72	R16.25	19.04	R22.55	16.54	R19.59
1992	11.73	R13.58	13.55	R15.69	18.32	R21.21	15.99	R18.51
1993	10.84	R12.27	12.11	R13.70	16.19	R18.32	14.25	R16.12
1994	9.77	R10.82	12.12	R13.43	14.98	R16.60	13.19	R14.61
1995	11.12	R12.07	14.00	R15.20	16.38	R17.78	14.62	R15.87
1996	15.32	R16.32	16.72	R17.82	20.31	R21.64	18.46	R19.67
1997	14.84	R15.55	15.78	R16.54	18.66	R19.56	17.23	R18.06
1998	8.47	R8.78	9.55	R9.90	12.28	R12.73	10.87	R11.27
1999	12.46	R12.73	14.08	R14.39	17.29	R17.67	15.56	R15.90
2000	23.62	R23.62	24.82	R24.82	28.60	R28.60	26.72	R26.72
2001	18.18	R17.76	20.11	R19.64	23.41	R22.87	21.84	R21.33
2002	19.37	R18.63	21.87	R21.04	23.77	R22.87	22.51	R21.66
2003 ^P	23.78	22.50	26.43	25.01	29.13	27.57	27.56	26.08

¹ In chained (2000) dollars, calculated by using gross domestic product implicit price deflators. See Table D1.

² Average for July through December only.

R=Revised. P=Preliminary. — = Not applicable.

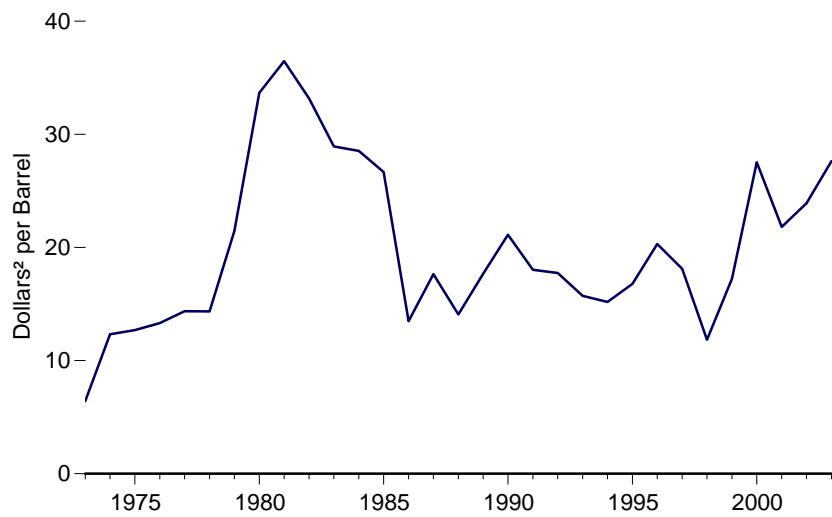
Note: Prices are for the marketed first sales price of domestic crude oil. See Note 5, "Crude Oil Domestic First Purchase Prices," at end of section.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/petro.html>.

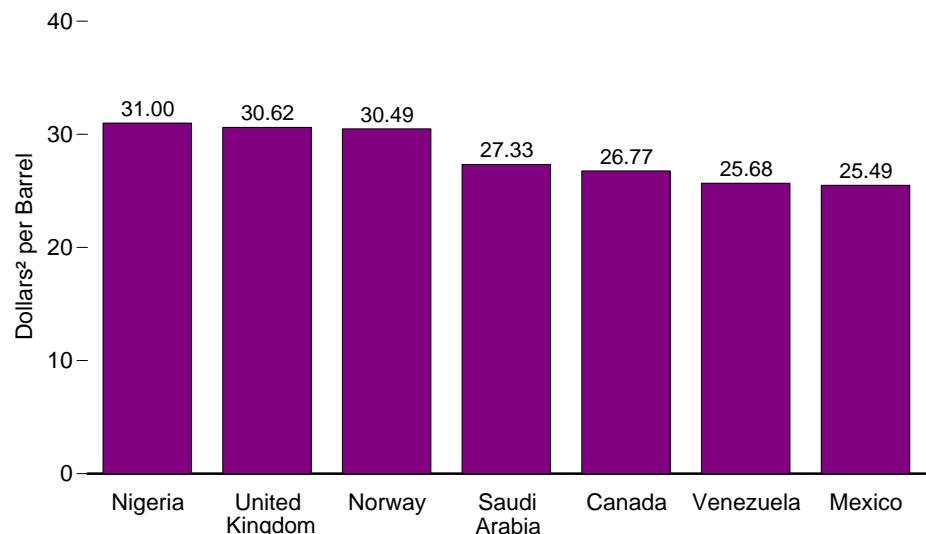
- For related information, see http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html
- Sources: • 1949-1973—Bureau of Mines, *Minerals Yearbook*, "Crude Petroleum and Petroleum Products" chapter. • 1974 through January 1976—Federal Energy Administration (FEA), Form FEA-90, "Crude Petroleum Production Monthly Report." • February 1976 through 1977—FEA, Form FEA-P-124, "Domestic Crude Oil Purchaser's Monthly Report." • 1978 forward—Energy Information Administration, *Petroleum Marketing Monthly* (March 2004), Table 21.

Figure 5.19 Landed Costs of Crude Oil Imports From Selected Countries

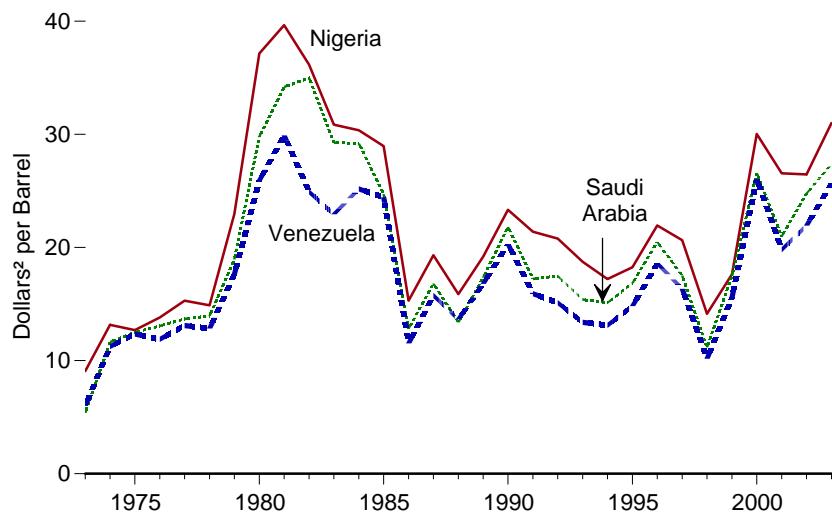
Total, 1973¹-2003



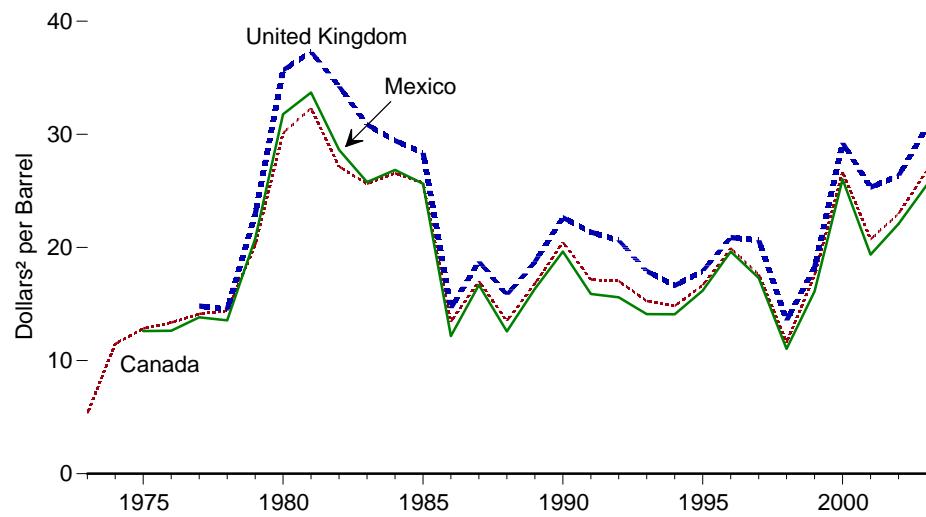
By Selected Country, 2003



By Selected OPEC Country, 1973¹-2003



By Selected Non-OPEC Country, 1973¹-2003



¹ Based on October, November, and December data only.

² Nominal dollars.

Source: Table 5.19

Table 5.19 Landed Costs of Crude Oil Imports From Selected Countries, 1973-2003

(Dollars¹ per Barrel)

Year	Persian Gulf Nations ³	Selected OPEC ² Countries					Selected Non-OPEC Countries						Total Non-OPEC	Total
		Kuwait	Nigeria	Saudi Arabia	Venezuela	Total OPEC ⁴	Angola	Canada	Colombia	Mexico	Norway	United Kingdom		
1973 ⁵	5.91	W	9.08	5.37	5.99	6.85	W	5.33	W	NA	NA	NA	5.64	6.41
1974	12.21	W	13.16	11.63	11.25	12.49	12.48	11.48	W	W	NA	NA	11.81	12.32
1975	12.64	W	12.70	12.50	12.36	12.70	11.81	12.84	(⁶)	12.61	12.80	NA	12.70	12.70
1976	13.03	W	13.81	13.06	11.89	13.32	12.71	13.36	(⁶)	12.64	13.74	W	13.35	13.32
1977	13.85	W	15.29	13.69	13.11	14.35	14.04	14.13	(⁶)	13.82	14.93	14.83	14.42	14.36
1978	14.01	W	14.88	13.94	12.84	14.34	14.07	14.41	(⁶)	13.56	14.68	14.53	14.38	14.35
1979	20.42	W	22.97	18.95	17.65	21.29	21.06	20.22	(⁶)	20.77	22.55	22.97	22.10	21.45
1980	30.59	W	37.15	29.80	25.92	33.56	34.76	30.11	W	31.77	36.82	35.68	33.99	33.67
1981	34.61	NA	39.66	34.20	29.91	36.60	36.84	32.32	(⁶)	33.70	38.70	37.29	36.14	36.47
1982	34.94	NA	36.16	34.99	24.93	34.81	33.08	27.15	(⁶)	28.63	34.70	34.25	31.47	33.18
1983	29.37	NA	30.85	29.27	22.94	29.84	29.31	25.63	(⁶)	25.78	30.72	30.87	28.08	28.93
1984	29.07	W	30.36	29.20	25.19	29.06	28.49	26.56	(⁶)	26.85	30.05	29.45	28.14	28.54
1985	25.50	NA	28.96	24.72	24.43	26.86	27.39	25.71	(⁶)	25.63	28.32	28.36	26.53	26.67
1986	12.92	11.70	15.29	12.84	11.52	13.46	14.09	13.43	12.85	12.17	15.98	14.63	13.52	13.49
1987	17.47	18.14	19.32	16.81	15.76	17.64	18.20	17.04	18.43	16.69	19.10	18.78	17.66	17.65
1988	13.51	12.84	15.88	13.37	13.66	14.18	14.48	13.50	14.47	12.58	15.43	15.82	13.96	14.08
1989	17.37	16.90	19.19	17.34	16.78	17.78	18.36	16.81	18.10	16.35	19.06	18.74	17.54	17.68
1990	20.55	17.01	23.33	21.82	20.31	21.23	21.51	20.48	22.34	19.64	21.11	22.65	20.98	21.13
1991	17.34	18.48	21.39	17.22	15.92	18.08	19.90	17.16	19.55	15.89	21.44	21.37	17.93	18.02
1992	17.58	16.99	20.78	17.48	15.13	17.81	19.36	17.04	18.46	15.60	20.90	20.63	17.67	17.75
1993	15.26	14.23	18.73	15.40	13.39	15.68	17.40	15.27	16.54	14.11	18.99	17.92	15.78	15.72
1994	15.00	14.49	17.21	15.11	13.12	15.08	16.36	14.83	15.80	14.09	17.09	16.64	15.29	15.18
1995	16.78	16.47	18.25	16.84	14.81	16.61	17.66	16.65	17.45	16.19	18.06	17.91	16.95	16.78
1996	R ^{20.45}	20.32	21.95	20.49	18.59	20.14	21.86	19.94	22.02	19.64	21.34	20.88	20.47	20.31
1997	17.44	17.03	20.64	17.52	16.35	17.73	20.24	17.63	19.71	17.30	20.26	20.64	18.45	18.11
1998	11.18	11.00	14.14	11.16	10.16	11.46	13.37	11.62	13.26	11.04	13.83	13.55	12.22	11.84
1999	17.37	16.77	17.63	17.48	15.58	16.94	18.37	17.54	18.09	16.12	19.06	18.26	17.51	17.23
2000	26.77	26.28	30.04	26.58	26.05	27.29	29.57	26.69	29.68	26.03	30.13	29.26	27.80	27.53
2001	20.73	19.66	26.55	20.98	19.81	21.52	25.13	20.72	25.88	19.37	25.77	25.32	22.17	21.82
2002	R ^{24.13}	R ^{23.04}	R ^{26.45}	R ^{24.77}	R ^{21.93}	R ^{23.83}	R ^{25.43}	R ^{22.98}	R ^{25.28}	22.09	R ^{26.60}	R ^{26.35}	R ^{23.97}	R ^{23.91}
2003 ^P	27.41	26.76	31.00	27.33	25.68	27.60	30.08	26.77	30.56	25.49	30.49	30.62	27.66	27.63

¹ Nominal dollars.

² Organization of Petroleum Exporting Countries. See Glossary for current membership.

³ Bahrain, Iran, Iraq, Kuwait, Qatar, Saudi Arabia, and United Arab Emirates.

⁴ Ecuador, which withdrew from OPEC on December 31, 1992, is included through 1992. In June 1996, OPEC retroactively ended Gabon's membership in OPEC effective December 31, 1994. However, data for Gabon are still included here for 1995.

⁵ Based on October, November, and December data only.

⁶ No data reported.

R=Revised. P=Preliminary. NA=Not available. W=Value withheld to avoid disclosure of individual company data.

Notes: • This table reports landed costs of crude oil imports only; it does not account for refined

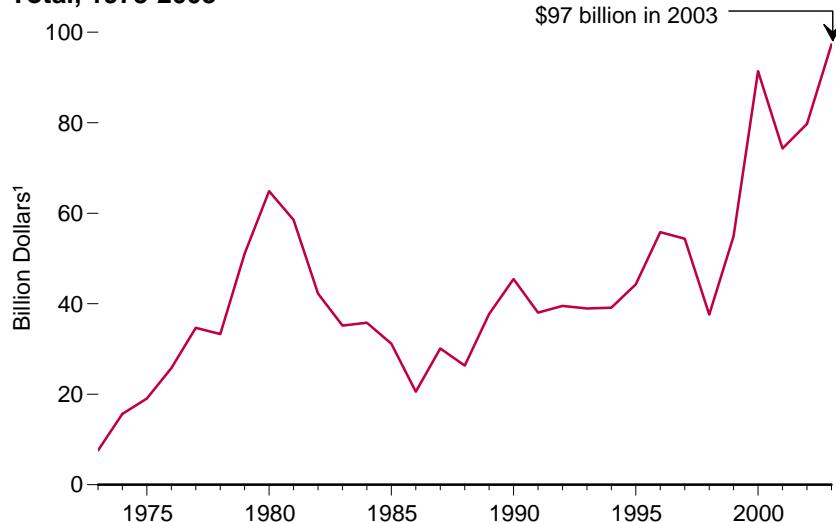
petroleum products imported into the United States. • Data include any imports for the Strategic Petroleum Reserve, which began in 1977. • See "Crude Oil Landed Cost" in Glossary. • Totals may not equal sum of components due to independent rounding.

Web Page: See http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html for related information.

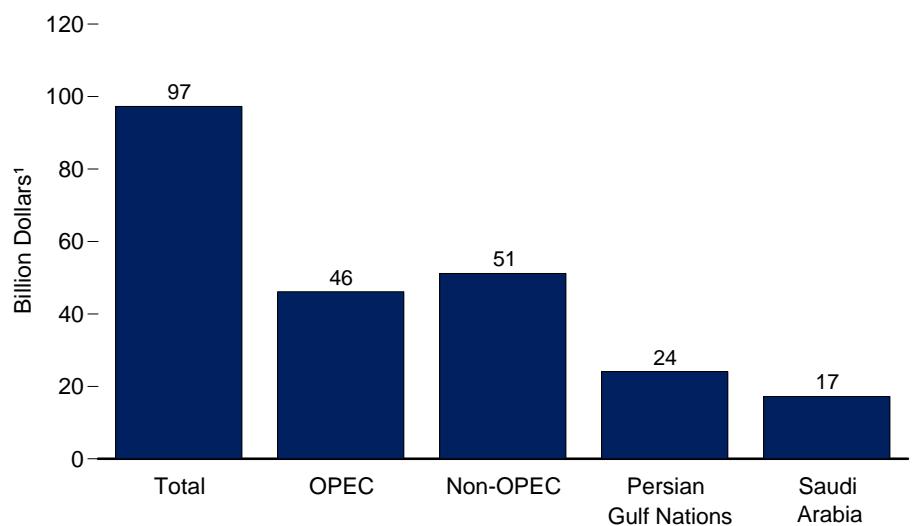
Sources: • 1973 through September 1977—Federal Energy Administration, Form FEA-F701-M-0, "Transfer Pricing Report." • October 1977 through January 1979—Energy Information Administration (EIA), Form FEA-F701-M-0, "Transfer Pricing Report." • February 1979 through September 1982—EIA, Form ERA-51, "Transfer 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."

Figure 5.20 Value of Crude Oil Imports

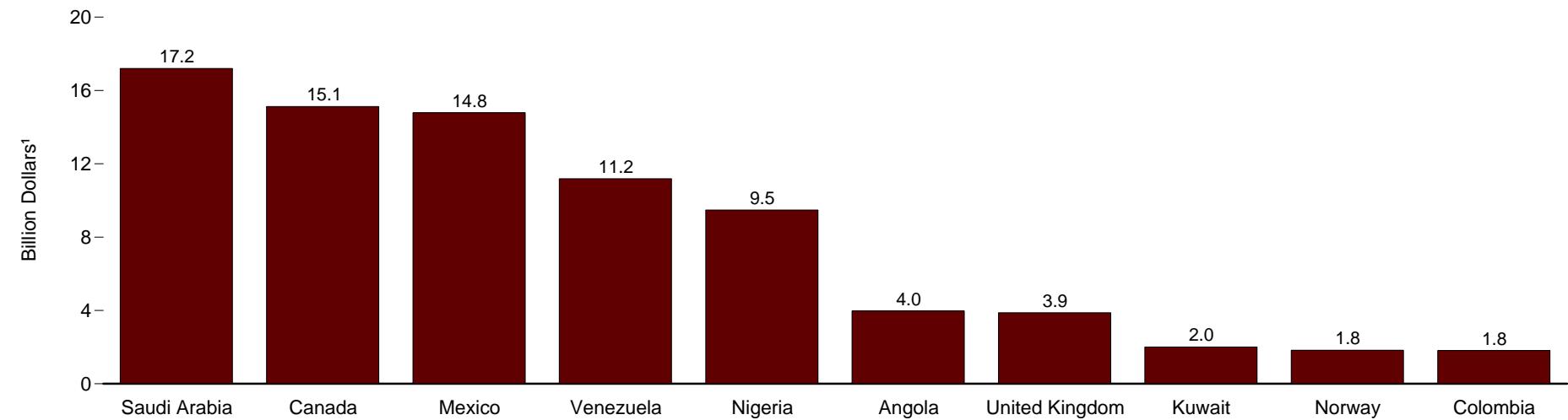
Total, 1973-2003



Totals, 2003



By Selected Country, 2003



¹ Nominal dollars.

Notes: • OPEC=Organization of Petroleum Exporting Countries. • Because vertical scales differ, graphs should not be compared.

Source: Table 5.20.

Table 5.20 Value of Crude Oil Imports From Selected Countries, 1973-2003
 (Billion Dollars¹)

Year	Persian Gulf Nations ³	Selected OPEC ² Countries					Selected Non-OPEC Countries							Total ⁵
		Kuwait	Nigeria	Saudi Arabia	Venezuela	Total OPEC ⁴	Angola	Canada	Colombia	Mexico	Norway	United Kingdom	Total Non-OPEC	
1973	1.7	W	1.5	0.9	0.8	5.2	W	1.9	W	NA	NA	2.4	7.6	
1974	4.4	W	3.3	1.9	1.3	11.6	0.2	3.3	NA	W	NA	4.1	15.6	
1975	5.2	W	3.5	3.2	1.8	14.9	0.3	2.8	NA	0.3	0.1	W	4.1	19.0
1976	8.7	W	5.1	5.8	1.0	22.2	(s)	1.8	W	0.4	0.2	W	3.6	25.8
1977	12.2	W	6.3	6.9	1.2	29.6	0.1	1.4	NA	0.9	0.3	0.5	5.1	34.7
1978	11.3	W	4.9	5.8	0.8	27.1	(s)	1.3	NA	1.6	0.6	0.9	6.2	33.3
1979	15.3	W	9.0	9.3	1.9	39.7	0.3	2.0	NA	3.3	0.6	1.7	11.3	51.0
1980	16.9	W	11.4	13.6	1.5	47.5	0.5	2.2	NA	5.9	1.9	2.3	17.4	64.9
1981	15.1	NA	8.8	13.9	1.6	39.0	0.6	1.9	NA	5.8	1.6	5.0	19.5	58.5
1982	8.4	W	6.7	6.8	1.4	22.0	0.5	2.1	NA	6.7	1.3	5.5	20.2	42.2
1983	4.3	W	3.4	3.4	1.4	16.1	0.8	2.6	NA	7.2	0.7	4.1	19.1	35.2
1984	4.8	W	2.3	3.3	2.3	16.1	0.9	3.3	NA	6.5	1.2	4.1	19.7	35.8
1985	2.3	W	3.0	1.2	2.7	12.9	1.0	4.4	NA	6.7	0.3	2.9	18.3	31.2
1986	3.8	0.1	2.4	2.9	1.8	10.4	0.5	2.8	0.3	2.8	0.3	1.7	10.2	20.6
1987	6.0	0.5	3.7	3.9	2.8	15.5	1.2	3.8	0.8	3.7	0.5	2.1	14.7	30.1
1988	6.7	0.4	3.5	4.4	2.2	14.0	1.1	3.4	0.6	3.1	0.3	1.5	12.3	26.3
1989	11.0	1.0	5.6	7.1	3.0	21.9	1.9	3.9	0.9	4.3	0.9	1.1	15.8	37.7
1990	13.5	0.5	6.7	9.5	4.9	27.2	1.9	4.8	1.1	4.9	0.7	1.3	18.2	45.5
1991	11.0	(s)	5.3	10.7	3.9	22.3	1.8	4.7	0.9	4.4	0.6	0.8	15.7	38.0
1992	10.5	0.2	5.1	10.2	4.6	22.2	2.4	5.0	0.7	4.5	0.9	1.5	17.3	39.5
1993	9.1	1.8	4.9	7.2	4.9	20.7	2.1	5.0	0.9	4.4	0.9	2.0	18.3	38.9
1994	8.8	1.6	3.9	7.2	5.0	19.7	1.9	5.3	0.8	4.8	1.2	2.4	19.4	39.1
1995	9.1	1.3	4.1	7.7	6.2	21.6	2.3	6.3	1.3	6.1	1.7	2.2	22.6	44.3
1996	11.1	1.8	4.8	9.4	8.9	25.3	2.8	7.8	1.8	8.7	2.3	1.6	30.5	55.8
1997	10.4	1.6	5.2	8.3	8.3	24.4	3.1	7.7	1.9	8.6	2.1	1.3	29.9	54.4
1998	8.3	1.2	3.6	5.7	5.1	17.4	2.3	5.4	1.7	5.3	1.1	0.8	20.2	37.6
1999	15.0	1.5	4.0	8.8	6.5	26.1	2.4	7.5	3.0	7.4	1.8	1.9	28.8	54.9
2000	23.6	2.5	9.6	14.8	11.7	45.4	3.2	13.2	3.5	12.5	3.3	3.1	46.0	91.4
2001	20.2	1.7	8.2	12.3	9.3	38.1	2.9	10.3	2.5	9.9	2.6	2.3	36.2	74.3
2002	R19.5	1.8	R5.7	13.7	9.6	R35.5	R3.0	R12.1	R2.2	R12.1	R3.4	3.9	R44.3	R79.8
2003 ^P	24.1	2.0	9.5	17.2	11.2	46.1	4.0	15.1	1.8	14.8	1.8	3.9	51.2	97.3

¹ Nominal dollars.

² Organization of Petroleum Exporting Countries. See Glossary for current membership.

³ Bahrain, Iran, Iraq, Kuwait, Qatar, Saudi Arabia, and United Arab Emirates.

⁴ Ecuador, which withdrew from OPEC on December 31, 1992, is included through 1992. In June 1996, OPEC retroactively ended Gabon's membership in OPEC effective December 31, 1994. However, data for Gabon are still included here for 1995.

⁵ Data shown here represent landed value; they differ from data in Table 3.5, which are data from U.S. Customs that represent crude oil value at the port of loading.

R=Revised. P=Preliminary. NA=Not available. (s)=Less than \$0.05 billion. W=Value withheld to avoid disclosure of individual company data.

Notes: • Crude oil import volumes used to calculate values in this table are for the 50 states and the District of Columbia. • Totals may not equal sum of components due to independent rounding.

Web Page: See http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html for related information.

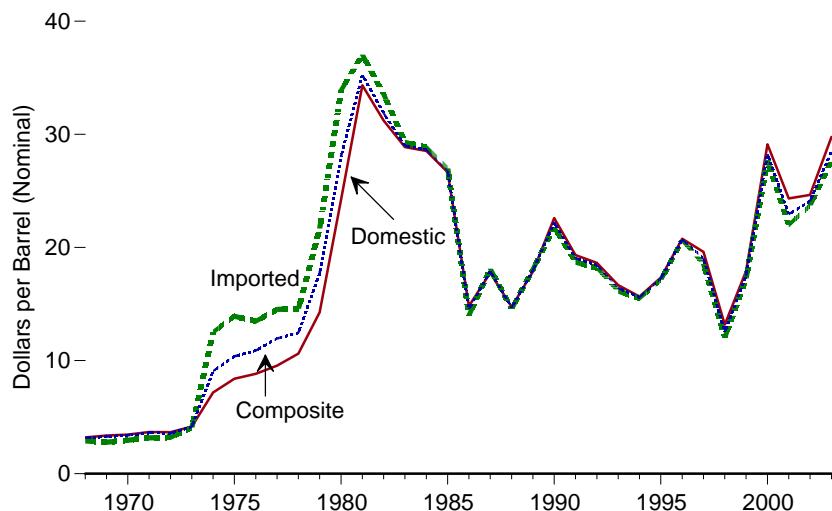
Sources: Calculated by using prices on Table 5.19 and volume data as follows: • 1973-1975—U.S. Department of the Interior, Bureau of Mines, *Petroleum Statement, Annual*, annual reports.

• 1976-1980—Energy Information Administration (EIA), *Petroleum Statement, Annual*, annual reports.

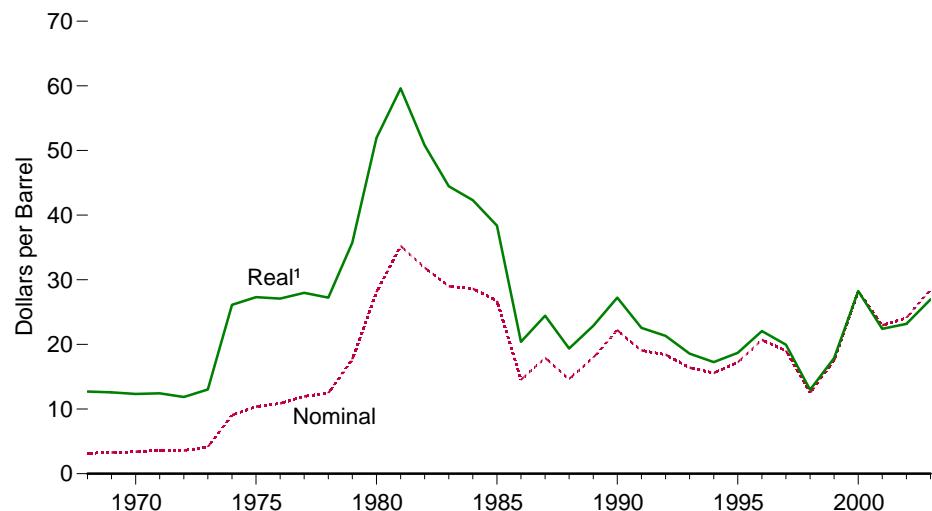
• 1981-2002—EIA, *Petroleum Supply Annual*, annual reports. • 2003—EIA, *Petroleum Supply Monthly* (February 2004).

Figure 5.21 Crude Oil Refiner Acquisition Costs, 1968-2003

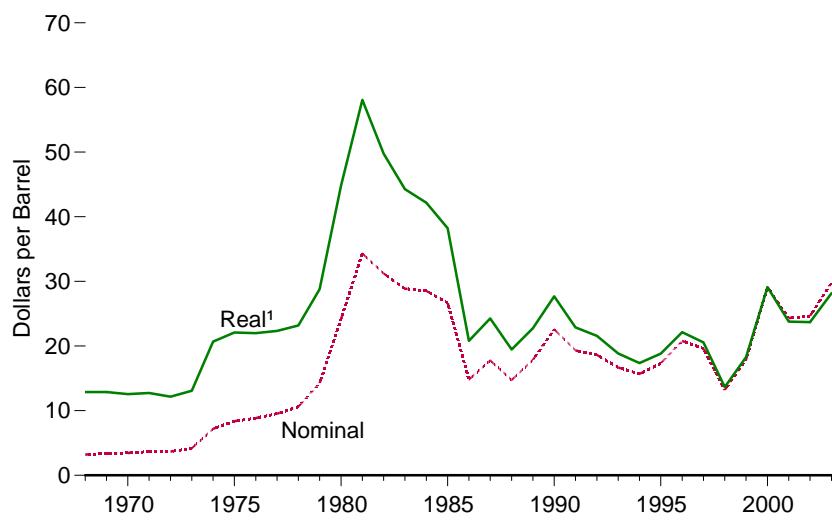
Summary



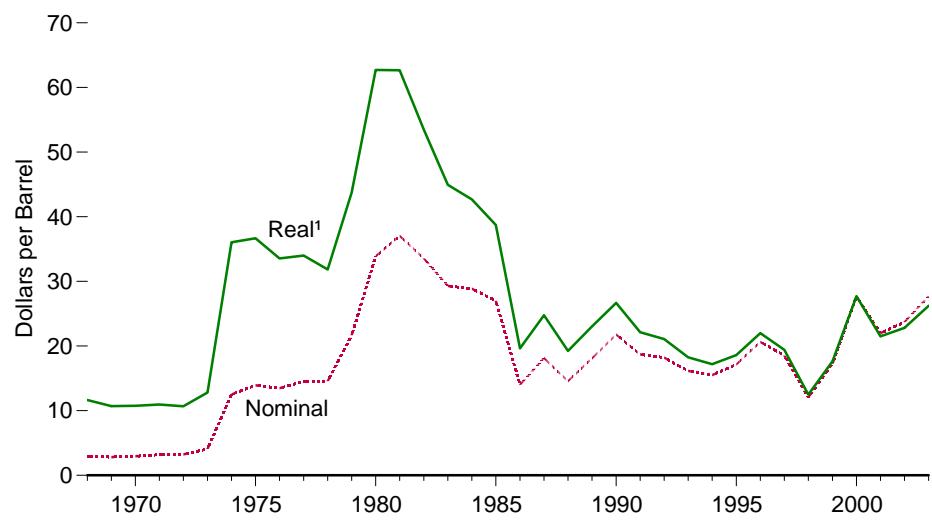
Composite Costs



Domestic Costs



Imported Costs



¹ In chained (2000) dollars, calculated by using gross domestic product implicit price deflators. See Table D1.

Note: Because vertical scales differ, graphs should not be compared.
Source: Table 5.21.

Table 5.21 Crude Oil Refiner Acquisition Costs, 1968-2003
(Dollars per Barrel)

Year	Domestic		Imported		Composite	
	Nominal	Real ¹	Nominal	Real ¹	Nominal	Real ¹
1968 ^E	3.21	R12.88	2.90	R11.64	3.17	R12.72
1969 ^E	3.37	R12.89	2.80	R10.71	3.29	R12.58
1970 ^E	3.46	R12.57	2.96	R10.75	3.40	R12.35
1971 ^E	3.68	R12.73	3.17	R10.96	3.60	R12.45
1972 ^E	3.67	R12.17	3.22	R10.67	3.58	R11.87
1973 ^E	4.17	R13.09	4.08	R12.81	4.15	R13.03
1974	7.18	R20.68	12.52	R36.05	9.07	R26.12
1975	8.39	R22.08	13.93	R36.66	10.38	R27.31
1976	8.84	R21.99	13.48	R33.54	10.89	R27.09
1977	9.55	R22.34	14.53	R33.99	11.96	R27.98
1978	10.61	R23.19	14.57	R31.84	12.46	R27.23
1979	14.27	R28.80	21.67	R43.74	17.72	R35.76
1980	24.23	R44.83	33.89	R62.71	28.07	R51.94
1981	34.33	R58.07	37.05	R62.67	35.24	R59.61
1982	31.22	R49.77	33.55	R53.49	31.87	R50.81
1983	28.87	R44.27	29.30	R44.93	28.99	R44.46
1984	28.53	R42.17	28.88	R42.69	28.63	R42.32
1985	26.66	R38.24	26.99	R38.72	26.75	R38.37
1986	14.82	R20.80	14.00	R19.65	14.55	R20.42
1987	17.76	R24.26	18.13	R24.77	17.90	R24.45
1988	14.74	R19.47	14.56	R19.24	14.67	R19.38
1989	17.87	R22.75	18.08	R23.02	17.97	R22.88
1990	22.59	R27.69	21.76	R26.67	22.22	R27.23
1991	19.33	R22.89	18.70	R22.14	19.06	R22.57
1992	18.63	R21.57	18.20	R21.07	18.43	R21.33
1993	16.67	R18.86	16.14	R18.26	16.41	R18.57
1994	15.67	R17.36	15.51	R17.18	15.59	R17.27
1995	17.33	R18.82	17.14	R18.61	17.23	R18.71
1996	20.77	R22.13	20.64	R21.99	20.71	R22.07
1997	19.61	R20.55	18.53	R19.42	19.04	R19.96
1998	13.18	R13.66	12.04	R12.48	12.52	R12.98
1999	17.90	R18.29	17.26	R17.64	17.51	R17.89
2000	29.11	R29.11	27.70	R27.70	28.26	R28.26
2001	24.33	R23.77	22.00	R21.49	22.95	R22.42
2002	24.65	R23.71	R23.71	R22.81	R24.10	R23.19
2003 ^P	29.76	28.16	27.71	26.22	28.50	26.97

¹ In chained (2000) dollars, calculated by using gross domestic product implicit price deflators. See Table D1.

R=Revised. P=Preliminary. E=Estimate.

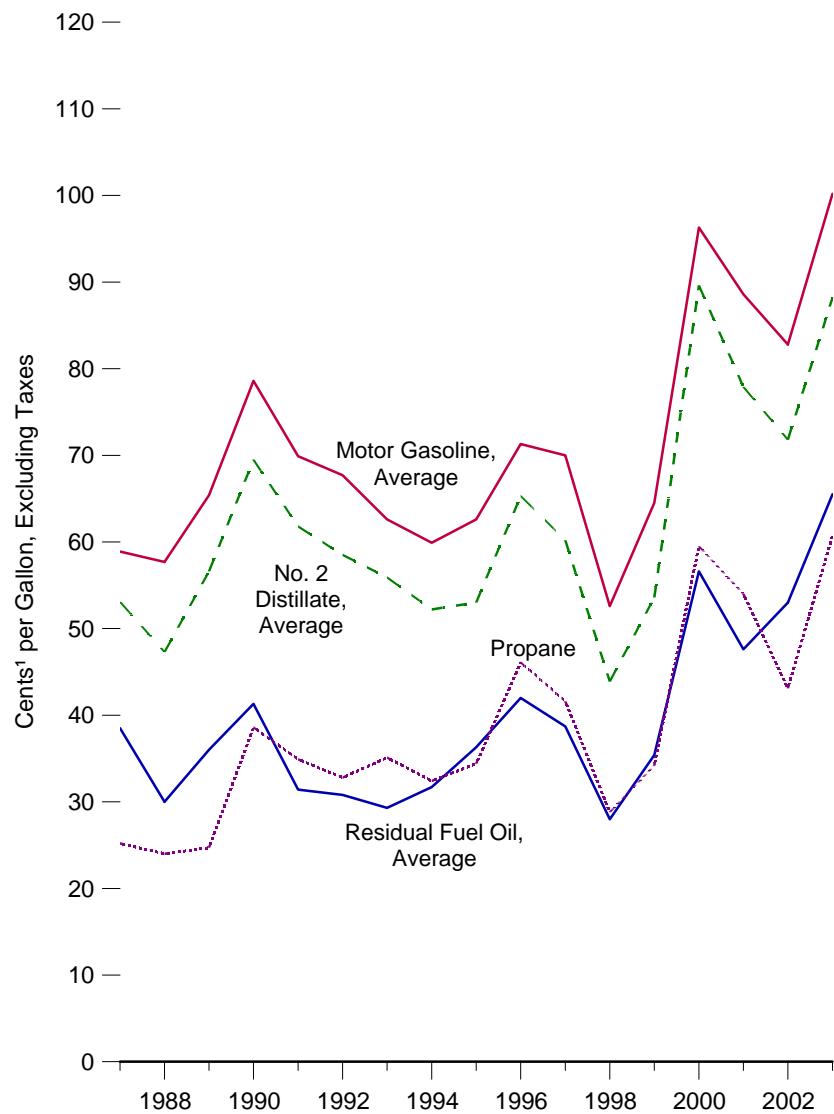
Note: Costs are for crude oil to refiners, including transportation and other fees; they do not include crude oil purchased for the Strategic Petroleum Reserve. The cost for each category and for the composite is derived by dividing the sum of the total purchasing (acquisition) costs of all refiners by the total volume of all refiners' purchases.

Web Page: See http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html for related information.

Sources: • 1968-1973—Energy Information Administration (EIA) estimates. The cost of domestic crude oil was derived by adding estimated transportation costs to the reported average domestic first purchase value. The cost of imported crude oil was derived by adding an estimated ocean transport cost based on the published "Average Freight Rate Assessment" to the average "Free Alongside Ship" value published by the U.S. Bureau of the Census. The composite cost was derived by weighting domestic costs and imported costs on the basis of quantities produced and imported. • 1974 through January 1976—Federal Energy Administration (FEA), Form FEA-96, "Monthly Cost Allocation Report." • February 1976 through December 1977—FEA, Form FEA-P110-M-1, "Refiners' Monthly Cost Allocation Report." • 1978 forward—EIA, *Petroleum Marketing Monthly* (March 2004), Table 1.

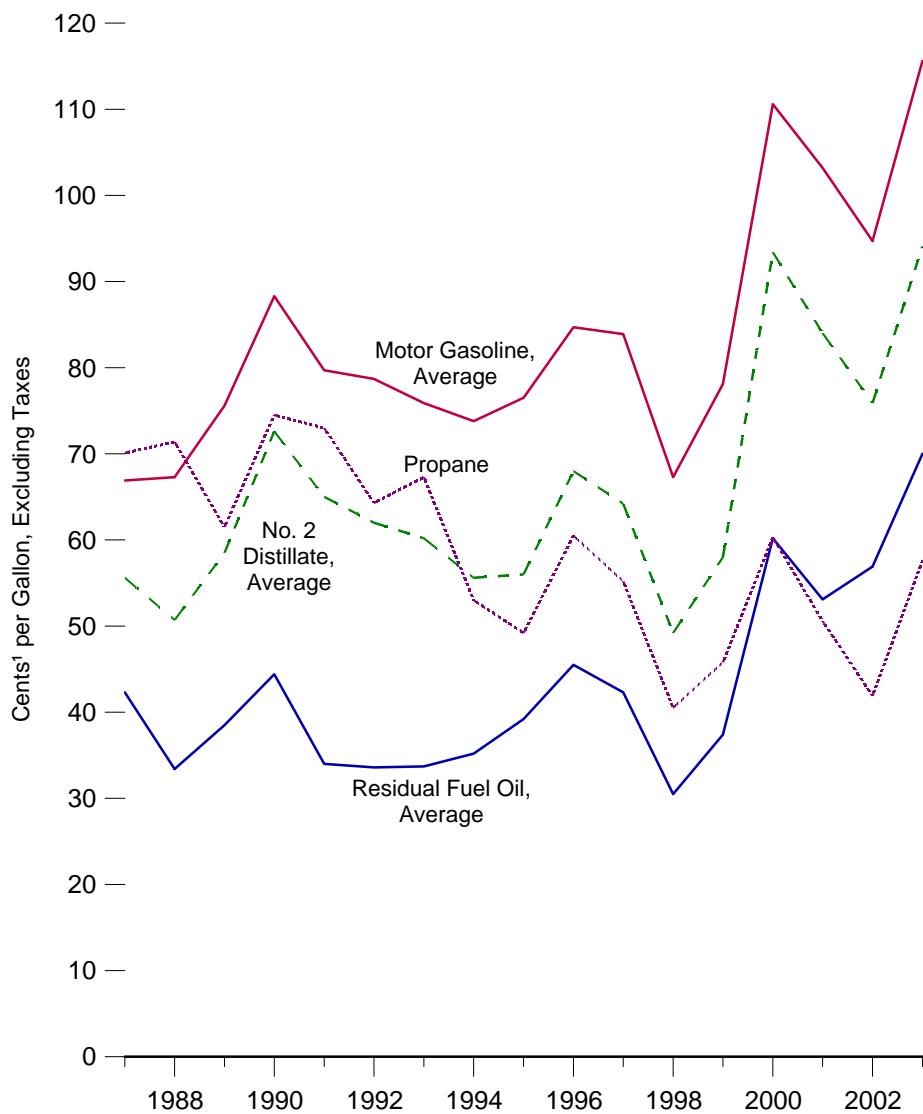
Figure 5.22 Refiner Sales Prices for Selected Petroleum Products, 1987-2003

To Resellers



¹ Nominal value.

To End Users



Source: Table 5.22.

Table 5.22 Refiner Sales Prices and Refiner Margins for Selected Petroleum Products, 1987-2003
 (Cents¹ per Gallon, Excluding Taxes)

Product	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003 P
Sales Prices to Resellers:²																	
Aviation Gasoline	85.9	85.0	95.0	106.3	100.1	99.1	96.5	93.3	97.5	105.5	106.5	91.2	100.7	133.0	125.6	R114.6	129.0
Motor Gasoline	58.9	57.7	65.4	78.6	69.9	67.7	62.6	59.9	62.6	71.3	70.0	52.6	64.5	96.3	88.6	82.8	100.2
Leaded Regular	56.5	54.8	63.1	75.4	65.7	69.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Unleaded Regular	56.9	54.8	61.8	75.8	67.2	64.5	59.3	56.6	59.3	68.5	67.3	49.9	62.0	94.2	86.5	R80.6	98.1
Unleaded Midgrade	NA	NA	68.6	81.4	73.3	70.8	66.0	63.8	67.0	75.9	74.9	57.6	69.6	101.3	94.5	88.5	106.0
Premium	67.1	67.2	74.9	87.4	79.2	77.4	72.2	69.5	72.2	80.3	79.2	61.7	72.6	105.5	98.0	92.8	111.1
Kerosene	59.2	54.9	66.9	83.9	72.2	63.2	60.4	61.8	58.0	71.4	65.3	46.5	55.0	96.9	82.1	R75.2	94.9
Jet Fuel, Kerosene-Type	53.8	49.5	58.3	77.3	65.0	60.5	57.7	53.4	53.9	64.6	61.3	45.0	53.3	88.0	76.3	R71.6	87.2
No. 1 Distillate	59.9	54.9	66.8	83.8	73.0	65.2	64.6	61.5	62.5	75.1	72.3	51.3	63.4	101.9	88.3	R80.5	103.4
No. 2 Distillate	53.1	47.3	56.6	69.5	61.8	58.5	55.9	52.2	53.0	65.3	60.2	43.9	53.6	89.6	77.9	71.8	88.2
No. 2 Fuel Oil	52.7	47.3	56.5	69.7	62.2	57.9	54.4	50.6	51.1	63.9	59.0	42.2	49.3	88.6	75.6	R69.4	87.9
No. 2 Diesel Fuel	53.4	47.3	56.7	69.4	61.5	59.1	57.0	52.9	53.8	65.9	60.6	44.4	54.6	89.8	77.5	R72.4	88.3
No. 4 Fuel ³	46.2	42.5	48.0	59.0	55.6	49.5	48.8	46.2	46.3	60.3	55.1	38.3	43.0	77.8	69.7	R66.3	79.3
Residual Fuel Oil	38.5	30.0	36.0	41.3	31.4	30.8	29.3	31.7	36.3	42.0	38.7	28.0	35.4	56.6	47.6	53.0	65.5
1% or Less Sulfur Content	41.2	33.3	40.7	47.2	36.4	35.1	33.7	34.5	38.3	45.6	41.5	29.9	38.2	62.7	52.3	R54.6	72.4
Greater Than 1% Sulfur Content ..	36.2	27.1	33.1	37.2	29.2	28.6	25.6	28.7	33.8	38.9	36.6	26.9	32.9	51.2	42.8	R50.8	58.7
Propane (Consumer Grade)	25.2	24.0	24.7	38.6	34.9	32.8	35.1	32.4	34.4	46.1	41.6	28.8	34.2	59.5	54.0	43.1	60.7
Sales Prices to End Users:²																	
Aviation Gasoline	90.7	89.1	99.5	112.0	104.7	102.7	99.0	95.7	100.5	111.6	112.8	97.5	105.9	130.6	132.3	R128.8	149.2
Motor Gasoline	66.9	67.3	75.6	88.3	79.7	78.7	75.9	73.8	76.5	84.7	83.9	67.3	78.1	110.6	103.2	94.7	115.6
Leaded Regular	61.8	61.9	71.0	83.1	71.5	78.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Unleaded Regular	65.0	64.1	71.4	84.9	76.1	74.3	71.2	68.9	71.7	80.7	79.8	63.0	74.2	107.3	99.7	91.2	112.3
Unleaded Midgrade	NA	NA	79.2	92.1	84.3	82.7	80.5	78.5	80.8	89.6	89.5	72.8	83.5	116.8	110.0	101.0	121.8
Premium	78.4	78.8	86.7	98.5	90.7	91.4	88.9	86.5	89.0	97.2	97.3	80.5	90.6	124.2	117.5	108.8	130.5
Kerosene	77.0	73.8	70.9	92.3	83.8	78.8	75.4	66.0	58.9	74.0	74.5	50.1	60.5	112.3	104.5	R99.0	122.4
Jet Fuel, Kerosene-Type	54.3	51.3	59.2	76.6	65.2	61.0	58.0	53.4	54.0	65.1	61.3	45.2	54.3	89.9	77.5	R72.1	87.3
No. 1 Distillate	60.4	56.4	66.1	81.9	74.0	66.6	66.6	64.0	62.0	72.6	68.9	55.1	62.1	98.8	90.2	82.8	101.5
No. 2 Distillate	55.6	50.7	58.5	72.6	65.0	62.0	60.2	55.6	56.0	68.0	64.2	49.2	58.0	93.4	84.0	75.9	94.1
No. 2 Fuel Oil	58.1	54.4	58.7	73.4	66.5	62.7	60.2	57.2	56.2	67.3	63.6	48.2	55.8	92.7	82.9	R73.7	93.2
No. 2 Diesel Fuel	55.1	50.0	58.5	72.5	64.8	61.9	60.2	55.4	56.0	68.1	64.2	49.4	58.4	93.5	84.2	76.2	94.3
No. 4 Fuel ³	51.3	46.1	51.2	62.2	58.0	52.6	50.1	50.1	50.5	60.3	56.5	42.8	47.4	76.9	67.9	65.7	85.6
Residual Fuel Oil	42.3	33.4	38.5	44.4	34.0	33.6	33.7	35.2	39.2	45.5	42.3	30.5	37.4	60.2	53.1	R56.9	70.0
1% or Less Sulfur Content	44.7	37.2	43.6	50.5	40.2	38.9	39.7	40.1	43.6	52.6	48.8	35.4	40.5	70.8	64.2	R64.0	80.5
Greater Than 1% Sulfur Content ..	39.6	30.0	34.4	40.0	30.6	31.2	30.3	33.0	37.7	43.3	40.3	28.7	36.2	56.6	49.2	54.4	65.2
Propane (Consumer Grade)	70.1	71.4	61.5	74.5	73.0	64.3	67.3	53.0	49.2	60.5	55.2	40.5	45.8	60.3	50.6	41.9	57.6
Refiner Margins⁴																	
Motor Gasoline	16.3	22.8	22.6	25.7	24.5	23.8	23.5	22.8	21.6	22.0	24.7	22.8	22.8	29.0	34.0	25.4	32.3
Jet Fuel, Kerosene-Type	11.2	14.6	15.5	24.4	19.6	16.5	18.6	16.3	12.9	15.3	16.0	15.2	11.6	20.7	21.7	R14.2	19.3
No. 2 Distillate	10.4	12.4	13.8	16.6	16.4	14.6	16.8	15.1	12.0	16.0	14.9	14.1	11.9	22.3	23.3	14.4	20.3
Residual Fuel Oil	-4.1	-5.0	-6.8	-11.6	-14.0	-13.2	-9.8	-5.4	-4.8	-7.2	-6.6	-1.8	-6.3	-10.7	-7.0	-4.4	-2.4
Composite ⁵	13.8	18.7	18.8	22.1	20.7	19.8	19.0	19.8	18.1	19.4	20.0	19.5	18.9	26.1	29.7	21.6	28.1

¹ Nominal value.

² Sales for resale (wholesale sales) are those made to purchasers who are other than ultimate consumers. Sales to end users are those made directly to the ultimate consumer, including bulk customers, such as agriculture, industry, and utilities, as well as residential and commercial customers.

³ Includes No. 4 fuel oil and No. 4 diesel fuel.

⁴ In this table, refiner margin is the difference between the composite refiner acquisition price of crude oil and the price to resellers.

⁵ Composite of aviation gasoline, kerosene-type jet fuel, kerosene, motor gasoline, distillate fuel nos. 1, 2, and 4, and residual fuel oil.

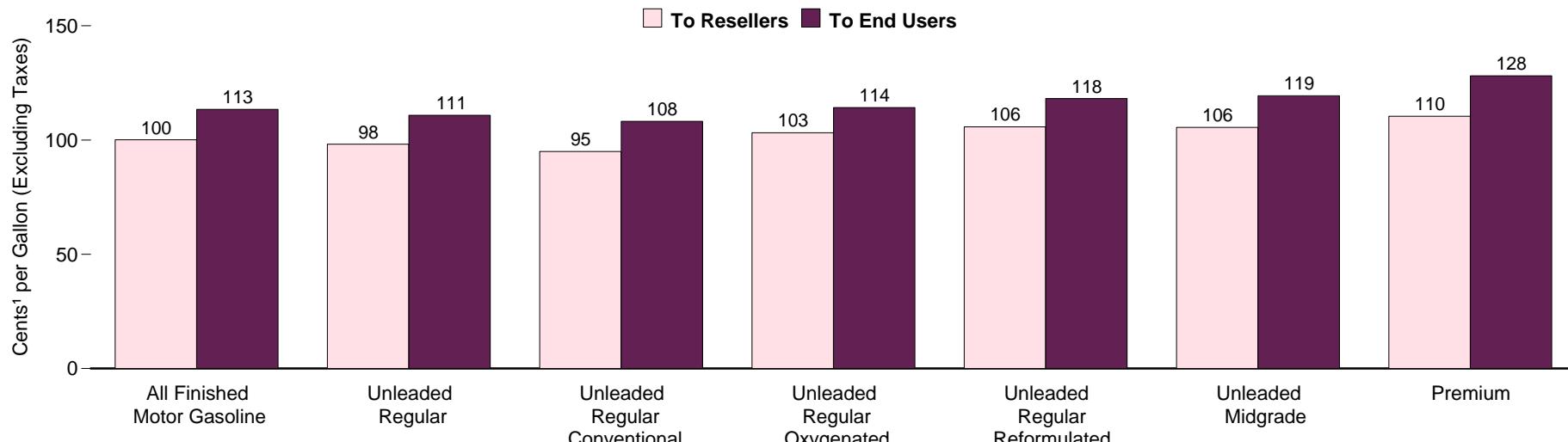
R=Revised. P=Preliminary. NA=Not available.

Web Page: See http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html for related information.

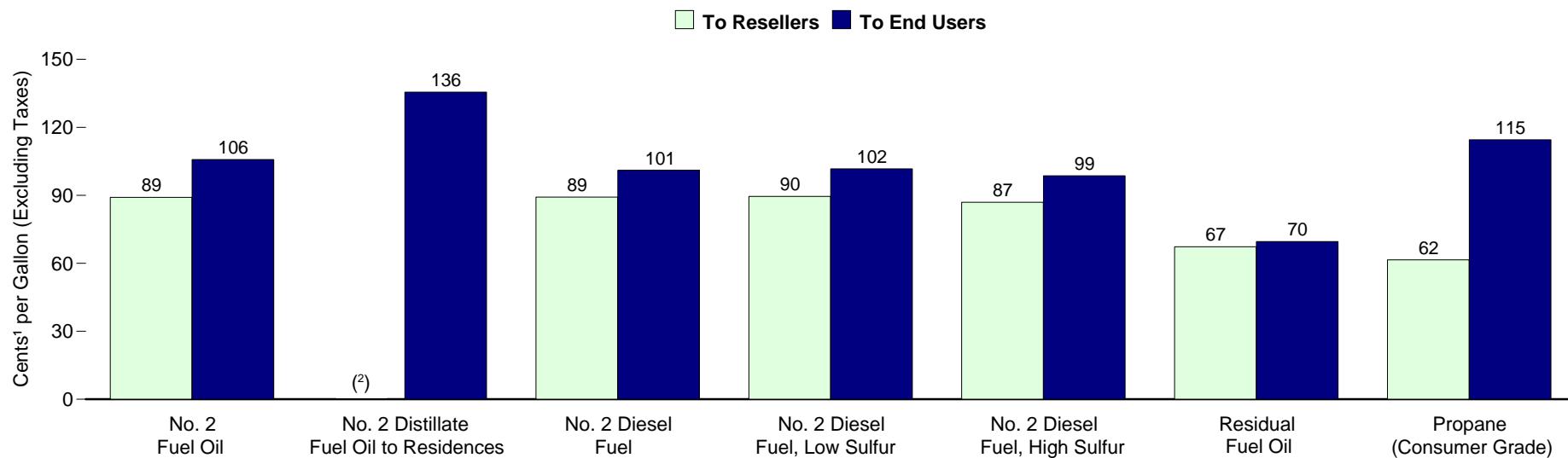
Sources: • 1987-2002—Energy Information Administration (EIA), *Petroleum Marketing Annual*, annual reports. • 2003—EIA, *Petroleum Marketing Monthly* (March 2004).

Figure 5.23 All Sellers Sales Prices for Selected Petroleum Products, 2003

Motor Gasoline, Selected Grades



Distillate Fuel Oil, Residual Fuel Oil, and Propane



¹ Nominal value.

² Not applicable.

Notes: • Data are preliminary. • Because vertical scales differ, graphs should not be compared.

Source: Table 5.23.

Table 5.23 All Sellers Sales Prices for Selected Petroleum Products, 1987-2003

(Cents¹ per Gallon, Excluding Taxes)

Product	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003 P
Sales Prices to Resellers²																	
Motor Gasoline	59.2	58.0	65.8	78.9	70.8	68.0	62.8	60.2	63.0	71.5	70.3	53.0	64.5	96.6	88.8	83.2	100.1
Unleaded Regular	57.2	55.1	62.3	76.2	68.2	64.9	59.7	57.1	59.9	68.9	67.7	50.4	62.1	94.6	86.8	R\$1.3	98.2
Conventional	NA	NA	NA	NA	NA	NA	NA	56.5	58.3	67.2	65.8	48.4	59.6	91.8	83.8	R\$9.4	95.0
Oxygenated	NA	NA	NA	NA	NA	NA	NA	62.7	66.2	74.5	75.4	57.5	69.0	101.6	94.7	R\$5.8	103.2
Reformulated	NA	NA	NA	NA	NA	NA	NA	63.2	64.6	73.3	72.5	55.1	67.6	100.6	93.0	R\$5.6	105.8
Unleaded Midgrade	NA	NA	69.1	82.3	74.4	71.3	66.4	64.1	67.3	76.0	75.1	57.9	69.4	101.4	94.5	R\$8.6	105.5
Conventional	NA	NA	NA	NA	NA	NA	NA	63.3	65.1	73.7	72.3	55.0	65.8	97.7	90.1	R\$5.2	101.4
Oxygenated	NA	NA	NA	NA	NA	NA	NA	68.9	71.1	78.9	79.1	59.9	69.5	102.1	96.5	R\$8.5	104.3
Reformulated	NA	NA	NA	NA	NA	NA	NA	72.2	71.9	80.2	80.1	63.2	75.8	108.0	102.2	R\$2.2	115.1
Premium	67.4	67.5	75.2	87.7	80.0	77.6	72.2	69.6	72.4	80.4	79.4	61.8	72.4	105.5	98.0	92.9	110.4
Conventional	NA	NA	NA	NA	NA	NA	NA	68.6	69.5	77.7	76.4	58.7	68.8	101.3	93.3	R\$9.7	105.5
Oxygenated	NA	NA	NA	NA	NA	NA	NA	75.7	78.7	85.1	85.6	67.4	77.9	111.9	102.0	R\$9.2	113.1
Reformulated	NA	NA	NA	NA	NA	NA	NA	76.9	77.9	85.1	84.5	67.1	78.7	111.7	105.4	R\$9.6	118.6
No. 2 Distillate	53.5	48.2	57.2	70.6	62.7	59.1	56.6	52.9	53.6	66.0	61.1	45.0	53.8	90.1	78.5	R\$2.8	89.1
No. 2 Diesel Fuel	NA	NA	NA	NA	NA	NA	NA	53.8	54.6	66.7	61.6	45.4	55.2	90.4	79.1	73.5	89.2
Low Sulfur	NA	NA	NA	NA	NA	NA	NA	54.2	55.1	67.3	61.9	45.7	55.7	90.9	79.4	73.8	89.5
High Sulfur	NA	NA	NA	NA	NA	NA	NA	51.9	52.4	63.9	60.2	43.7	51.9	87.5	77.1	R\$7.1	86.9
Residual Fuel Oil	39.9	31.5	37.8	43.4	33.0	32.6	30.1	32.2	36.6	42.7	39.6	28.4	35.5	57.9	49.6	R\$2.6	67.3
1% or Less Sulfur Content	42.0	34.1	41.5	48.1	37.9	36.8	34.1	35.0	38.3	46.1	42.4	30.5	38.2	63.8	54.2	R\$4.8	73.2
Greater Than 1% Sulfur Content	38.1	28.2	34.0	38.8	29.7	30.0	27.2	29.8	34.4	39.7	37.5	27.1	33.3	52.3	43.8	R\$0.2	61.8
Propane (Consumer Grade)	NA	NA	NA	NA	NA	NA	NA	33.6	35.4	47.1	42.6	29.7	35.4	60.3	55.6	44.0	61.5
Sales Prices to End Users²																	
Motor Gasoline	67.7	68.0	76.8	89.9	81.1	78.7	75.3	72.9	76.1	84.3	83.1	66.0	76.2	109.1	102.2	R\$4.3	113.4
Unleaded Regular	66.3	65.5	73.2	87.0	78.0	75.0	71.4	69.0	72.1	80.9	79.7	62.3	72.8	106.3	99.3	R\$1.5	110.8
Conventional	NA	NA	NA	NA	NA	NA	NA	68.5	71.4	80.1	78.5	61.0	70.8	104.4	96.8	R\$0.1	108.2
Oxygenated	NA	NA	NA	NA	NA	NA	NA	73.7	77.3	86.1	88.7	69.4	78.2	111.8	105.9	R\$6.4	114.2
Reformulated	NA	NA	NA	NA	NA	NA	NA	74.3	74.1	83.3	82.2	65.1	77.7	110.9	105.1	R\$4.9	118.2
Unleaded Midgrade	NA	NA	NA	NA	NA	NA	NA	82.4	79.2	77.0	80.2	88.5	88.0	71.1	81.2	114.6	108.6
Conventional	NA	NA	NA	NA	NA	NA	NA	76.6	79.3	87.4	86.5	69.5	78.7	112.2	105.2	R\$8.5	116.6
Oxygenated	NA	NA	NA	NA	NA	NA	NA	82.1	83.8	92.9	96.4	76.3	85.3	118.5	112.0	R\$10.3	119.2
Reformulated	NA	NA	NA	NA	NA	NA	NA	85.1	82.9	91.6	91.5	74.8	86.9	119.7	115.6	R\$104.2	127.6
Premium	78.0	78.6	87.4	99.6	91.9	90.6	87.5	85.2	88.3	96.2	95.5	78.6	88.0	121.8	115.4	R\$108.1	128.1
Conventional	NA	NA	NA	NA	NA	NA	NA	84.6	87.1	95.0	93.9	76.9	85.6	119.2	111.9	R\$106.3	124.4
Oxygenated	NA	NA	NA	NA	NA	NA	NA	90.8	93.8	101.9	105.4	84.5	94.0	127.9	121.8	R\$112.8	130.6
Reformulated	NA	NA	NA	NA	NA	NA	NA	93.7	91.4	99.1	98.8	82.2	93.1	126.7	121.7	R\$111.6	135.5
No. 2 Distillate	64.3	61.2	69.5	84.1	76.0	72.6	71.0	67.5	67.3	79.3	75.3	59.9	67.8	104.4	94.8	R\$7.4	105.8
No. 2 Distillate to Residences ³	80.3	81.3	90.0	106.3	101.9	93.4	91.1	88.4	86.7	98.9	98.4	85.2	87.6	131.1	125.0	R\$12.9	135.5
No. 2 Diesel Fuel	NA	NA	NA	NA	NA	NA	NA	62.8	63.6	75.7	71.4	56.2	65.4	100.6	91.2	R\$3.7	101.0
Low Sulfur	NA	NA	NA	NA	NA	NA	NA	64.2	64.5	76.7	71.9	56.5	66.3	101.4	91.7	R\$4.1	101.7
High Sulfur	NA	NA	NA	NA	NA	NA	NA	59.8	61.4	73.2	69.8	55.5	62.0	98.1	89.2	R\$2.2	98.6
Residual Fuel Oil	42.6	33.9	39.3	45.5	34.7	34.6	34.1	35.8	39.7	46.4	42.9	31.1	37.8	60.9	53.3	R\$6.1	69.6
1% or Less Sulfur Content	44.9	37.3	43.6	51.2	40.0	39.4	39.3	40.3	43.3	52.9	47.2	35.6	40.6	68.3	62.0	R\$1.2	78.5
Greater Than 1% Sulfur Content	39.9	30.6	35.1	40.5	31.1	31.9	31.2	32.7	37.6	43.0	40.7	29.2	36.6	57.6	49.8	54.0	65.1
Propane (Consumer Grade)	NA	NA	NA	NA	NA	NA	NA	77.6	76.6	88.6	87.8	77.4	78.1	104.8	109.4	R\$95.8	114.5

¹ Nominal value.

² Sales for resale (wholesale sales) are those made to purchasers who are other than ultimate consumers. Sales to end users are those made directly to the ultimate consumer, including bulk customers, such as agriculture, industry, and utilities, as well as residential and commercial customers.

³ See Note 6, "Historical Residential Heating Oil Prices," at end of section for historical data.

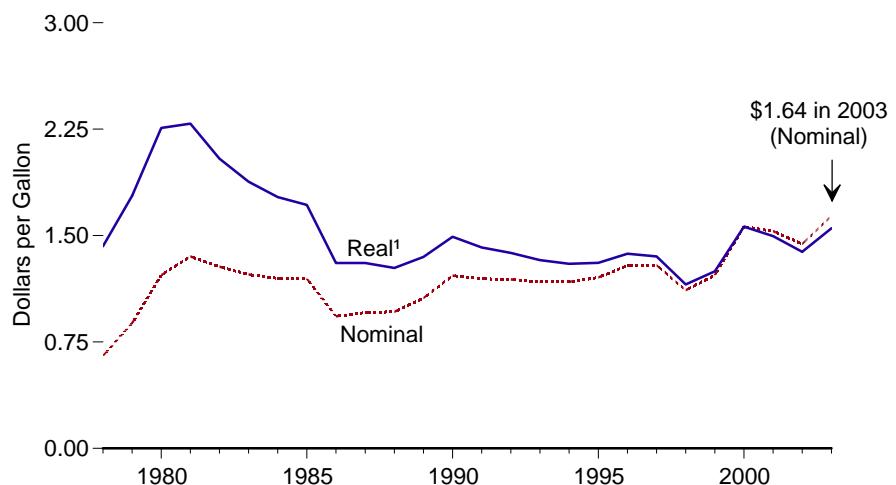
R=Revised. P=Preliminary. NA=Not available.

Web Page: See http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html for related information.

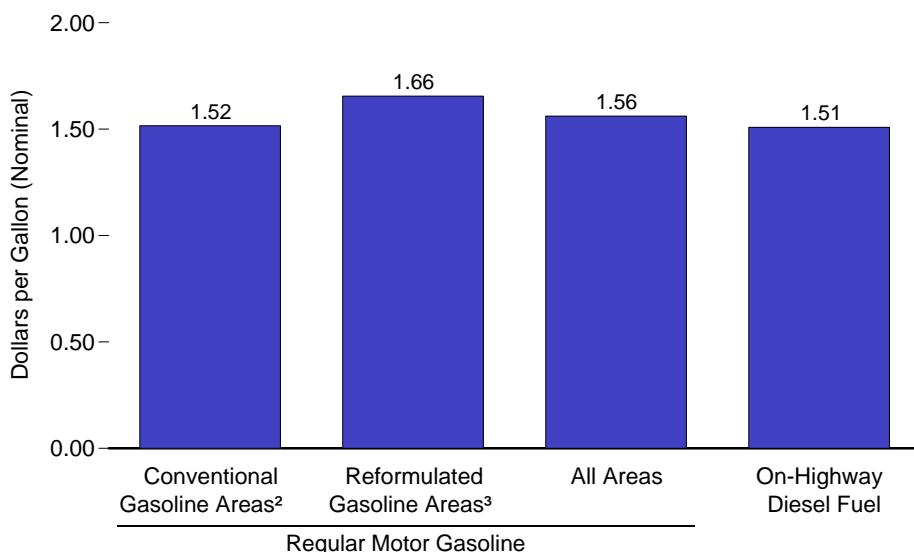
Sources: • 1987-2002—Energy Information Administration (EIA), *Petroleum Marketing Annual*, annual reports. • 2003—EIA, *Petroleum Marketing Monthly* (March 2004).

Figure 5.24 Retail Motor Gasoline and On-Highway Diesel Fuel Prices

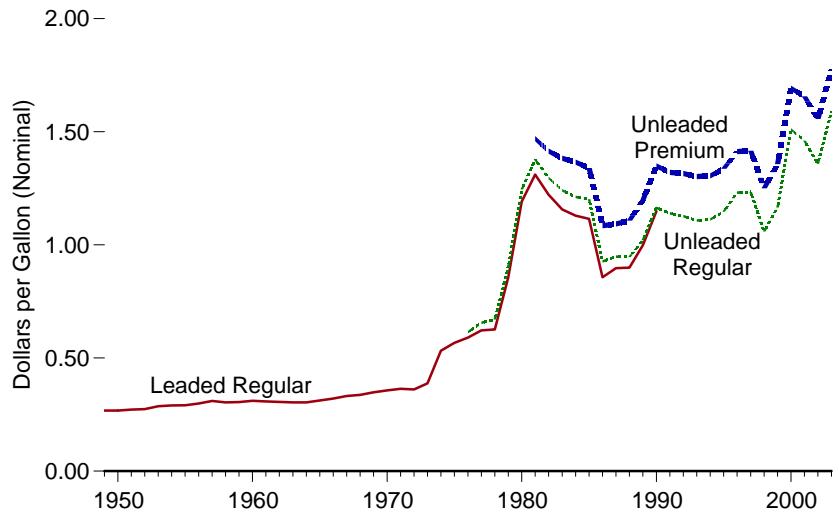
Motor Gasoline, All Grades, 1978-2003



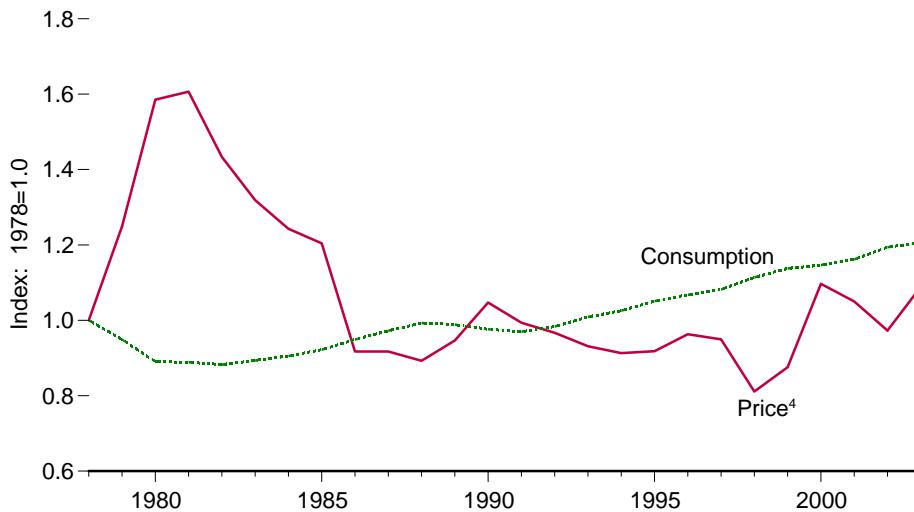
Regular Motor Gasoline by Area Type and On-Highway Diesel Fuel, 2003



Motor Gasoline by Grade, 1949-2003



Motor Gasoline Price and Consumption, 1978-2003, Indexed to 1978



¹ In chained (2000) dollars, calculated by using gross domestic product implicit price deflators. See Table D1.

² Any area that does not require the sale of reformulated gasoline.

³ Reformulated Gasoline (RFG) areas are ozone nonattainment areas designated by the Environmental Protection Agency that require the use of reformulated gasoline.

⁴ All grades, in chained (2000) dollars.

Note: Because vertical scales differ, graphs should not be compared.

Sources: Tables 5.11 and 5.24.

Table 5.24 Retail Motor Gasoline and On-Highway Diesel Fuel Prices, Selected Years, 1949-2003
(Dollars per Gallon)

Year	Motor Gasoline by Grade								Regular Motor Gasoline by Area Type ¹			On-Highway Diesel Fuel ¹	
	Leaded Regular		Unleaded Regular		Unleaded Premium		All Grades		Conventional Gasoline Areas ^{3,4}	Reformulated Gasoline Areas ^{5,6}	All Areas		
	Nominal	Real ²	Nominal	Real ²	Nominal	Real ²	Nominal	Real ²					
1949	0.27	R1.64	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
1950	0.27	R1.62	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
1955	0.29	R1.55	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
1960	0.31	R1.48	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
1965	0.31	R1.39	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
1970	0.36	R1.30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
1971	0.36	R1.26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
1972	0.36	R1.20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
1973	0.39	R1.22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
1974	0.53	R1.53	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
1975	0.57	R1.49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
1976	0.59	R1.47	0.61	R1.53	NA	NA	NA	NA	NA	NA	NA	NA	
1977	0.62	R1.46	0.66	R1.53	NA	NA	NA	NA	NA	NA	NA	NA	
1978	0.63	R1.37	0.67	R1.46	NA	NA	0.65	R1.43	NA	NA	NA	NA	
1979	0.86	R1.73	0.90	R1.82	NA	NA	0.88	R1.78	NA	NA	NA	NA	
1980	1.19	R2.20	1.25	R2.30	NA	NA	1.22	R2.26	NA	NA	NA	NA	
1981	1.31	R2.22	1.38	R2.33	1.47	R2.49	1.35	R2.29	NA	NA	NA	NA	
1982	1.22	R1.95	1.30	R2.07	1.42	R2.26	1.28	R2.04	NA	NA	NA	NA	
1983	1.16	R1.77	1.24	R1.90	1.38	R2.12	1.23	R1.88	NA	NA	NA	NA	
1984	1.13	R1.67	1.21	R1.79	1.37	R2.02	1.20	R1.77	NA	NA	NA	NA	
1985	1.12	R1.60	1.20	R1.72	1.34	R1.92	1.20	R1.72	NA	NA	NA	NA	
1986	0.86	R1.20	0.93	R1.30	1.09	R1.52	0.93	R1.31	NA	NA	NA	NA	
1987	0.90	R1.23	0.95	R1.30	1.09	R1.49	0.96	R1.31	NA	NA	NA	NA	
1988	0.90	R1.19	0.95	R1.25	1.11	R1.46	0.96	R1.27	NA	NA	NA	NA	
1989	1.00	R1.27	1.02	R1.30	1.20	R1.52	1.06	R1.35	NA	NA	NA	NA	
1990	1.15	R1.41	1.16	R1.43	1.35	R1.65	1.22	R1.49	NA	NA	NA	NA	
1991	NA	NA	1.14	R1.35	1.32	R1.56	1.20	R1.42	1.10	NA	1.10	NA	
1992	NA	NA	1.13	R1.31	1.32	R1.52	1.19	R1.38	1.09	NA	1.09	NA	
1993	NA	NA	1.11	R1.25	1.30	R1.47	1.17	R1.33	41.07	NA	1.07	NA	
1994	NA	NA	1.11	R1.23	1.31	R1.45	1.17	R1.30	1.07	NA	1.08	NA	
1995	NA	NA	1.15	R1.25	1.34	R1.45	1.21	R1.31	1.10	61.16	1.11	1.11	
1996	NA	NA	1.23	R1.31	1.41	R1.51	1.29	R1.37	1.19	1.28	1.22	1.24	
1997	NA	NA	1.23	R1.29	1.42	R1.48	1.29	R1.35	1.19	1.25	1.20	1.20	
1998	NA	NA	1.06	R1.10	1.25	R1.30	1.12	R1.16	1.02	1.08	1.03	1.04	
1999	NA	NA	1.17	R1.19	1.36	R1.39	1.22	R1.25	1.12	1.20	1.14	1.12	
2000	NA	NA	1.51	R1.51	1.69	R1.69	1.56	R1.56	1.46	1.54	1.48	1.49	
2001	NA	NA	1.46	R1.43	1.66	R1.62	1.53	R1.50	1.38	1.50	1.42	1.40	
2002	NA	NA	1.36	R1.31	R1.56	R1.50	1.44	R1.39	1.31	1.41	1.35	1.32	
2003	NA	NA	1.59	1.51	1.78	1.68	1.64	1.55	1.52	1.66	1.56	1.51	

¹ Nominal dollars.

² In chained (2000) dollars, calculated by using gross domestic product implicit price deflators. See Table D1.

³ Any area that does not require the sale of reformulated gasoline.

⁴ For 1993-2000, data collected for oxygenated areas are included in "Conventional Gasoline Areas."

⁵ "Reformulated Gasoline Areas" are ozone nonattainment areas designated by the Environmental Protection Agency that require the use of reformulated gasoline.

⁶ For 1995-2000, data collected for combined oxygenated and reformulated areas are included in "Reformulated Gasoline Areas."

R=Revised. NA=Not available.

Note: See "Motor Gasoline Grades," "Motor Gasoline, Conventional," "Motor Gasoline, Oxygenated," and "Motor Gasoline, Reformulated" in Glossary.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/petro.html>.

• For related information, see http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html

Sources: **Motor Gasoline by Grade:** • 1949-1973—Platt's Oil Price Handbook and Oilmanac, 1974, 51st Edition. • 1974 forward—Energy Information Administration (EIA), annual averages of monthly data from the U.S. Department of Labor, Bureau of Labor Statistics, U.S. City Average Gasoline Prices. **Regular Motor Gasoline by Area Type:** EIA, weighted annual averages of data from "Weekly U.S. Retail Gasoline Prices, Regular Grade." **On-Highway Diesel Fuel:** EIA, weighted annual averages of data from "Weekly Retail On-Highway Diesel Prices."

Petroleum

Note 1. Petroleum Products Supplied and Petroleum Consumption. Total petroleum products supplied is the sum of the products supplied for each petroleum product, crude oil, unfinished oils, and gasoline blending components. For each of these, except crude oil, product supplied is calculated by adding refinery production, natural gas plant liquids production, new supply of other liquids, imports, and stock withdrawals, and subtracting stock additions, refinery inputs, and exports. Crude oil product supplied is the sum of crude oil burned on leases and at pipeline pump stations as reported on Form EIA-813, "Monthly Crude Oil Report." Prior to 1983, crude oil burned on leases and at pipeline pump stations was reported as either distillate or residual fuel oil and was included as product supplied for these products. Petroleum product supplied (see Table 5.11) is an approximation of petroleum consumption and is synonymous with the term "Petroleum Consumption" in Section 1 and in Tables 5.13a-d. The sector allocation of product supplied in Tables 5.13a-d for products used in more than one sector is derived from sales to ultimate consumers by refiners, marketers, distributors, and dealers (see Energy Information Administration (EIA) report *Fuel Oil and Kerosene Sales*) and from EIA electric power sector petroleum consumption data (see Tables 8.7b and 8.7c).

Note 2. Adjustment to Total Petroleum Products Supplied. Accurate calculation of the quantity of petroleum products supplied to the domestic market is complicated by the recycling of products at the refinery, the renaming of products involved in a transfer, and the receipt of products from outside the primary supply system. Beginning in 1981, a single adjustment (always a negative quantity) is made to total product supplied to correct this accounting problem. The calculation of this adjustment, called "reclassified," involves only unfinished oils and gasoline blending components. It is the sum of their net changes in primary stocks (net withdrawals is a plus quantity; net additions is a minus quantity) plus imports minus net input to refineries.

Note 3. Changes Affecting Petroleum Production and Product Supplied Statistics. Beginning in January 1981, several Energy Information Administration survey forms and calculation methodologies were changed to reflect new developments in refinery and blending plant practices and to improve data integrity. Those changes affect production and product supplied statistics for motor gasoline, distillate fuel

oil, and residual fuel oil, and stocks of motor gasoline. On the basis of those changes, motor gasoline production during the last half of 1980 would have averaged 289,000 barrels per day higher than that which was published on the old basis. Distillate and residual fuel oil production and product supplied for all of 1980 would have averaged, respectively, 105,000 and 54,000 barrels per day higher than the numbers that were published.

Note 4. Gross Input to Distillation Units. The methods of deriving Gross Input to Distillation Units (GIDU) in this report are as follows: For 1949-1966, GIDU is estimated by summing annual crude oil runs to stills, net unfinished oil reruns at refineries, and shipments of natural gasoline and plant condensate from natural gas processing plants to refineries. For 1967-1973, GIDU is estimated by summing annual crude oil runs to stills, net unfinished oil reruns, and refinery input of natural gasoline and plant condensate. For 1974-1980, GIDU is published annual data. For 1981 forward, GIDU is the sum of reported monthly data.

Note 5. Crude Oil Domestic First Purchase Prices. Crude oil domestic first purchase prices were derived as follows: for 1949-1973, weighted average domestic first purchase values as reported by State agencies and calculated by the Bureau of Mines; for 1974 and 1975, weighted averages of a sample survey of major first purchasers' purchases; for 1976 forward, weighted averages of all first purchasers' purchases.

Note 6. Historical Residential Heating Oil Prices. Residential heating oil prices for 1956 through 1986 were formerly published in the *Annual Energy Review*. Those data, in cents per gallon, are: 1956—15.2; 1957—16.0; 1958—15.1; 1959—15.3; 1960—15.0; 1961—15.6; 1962—15.6; 1963—16.0; 1964—16.1; 1965—16.0; 1966—16.4; 1967—16.9; 1968—17.4; 1969—17.8; 1970—18.5; 1971—19.6; 1972—19.7; 1973—22.8; 1974—36.0; 1975—37.7; 1976—40.6; 1977—46.0; 1978—49.0; 1979—70.4; 1980—97.4; 1981—119.4; 1982—116.0; 1983—107.8; 1984—109.1; 1985—105.3; and 1986—83.6. The sources of these data are: 1956-1974—Bureau of Labor Statistics, "Retail Prices and Indexes of Fuels and Utilities for Residential Usage," monthly; January 1975—September 1977—Federal Energy Administration, Form FEA-P112-M-1, "No. 2 Heating Oil Supply/Price Monitoring Report"; October 1977—December 1977—Energy Information Administration (EIA), Form EIA-9, "No. 2 Heating Oil Supply/Price Monitoring Report"; 1978 forward—EIA, *Petroleum Marketing Annual*, Table 18.

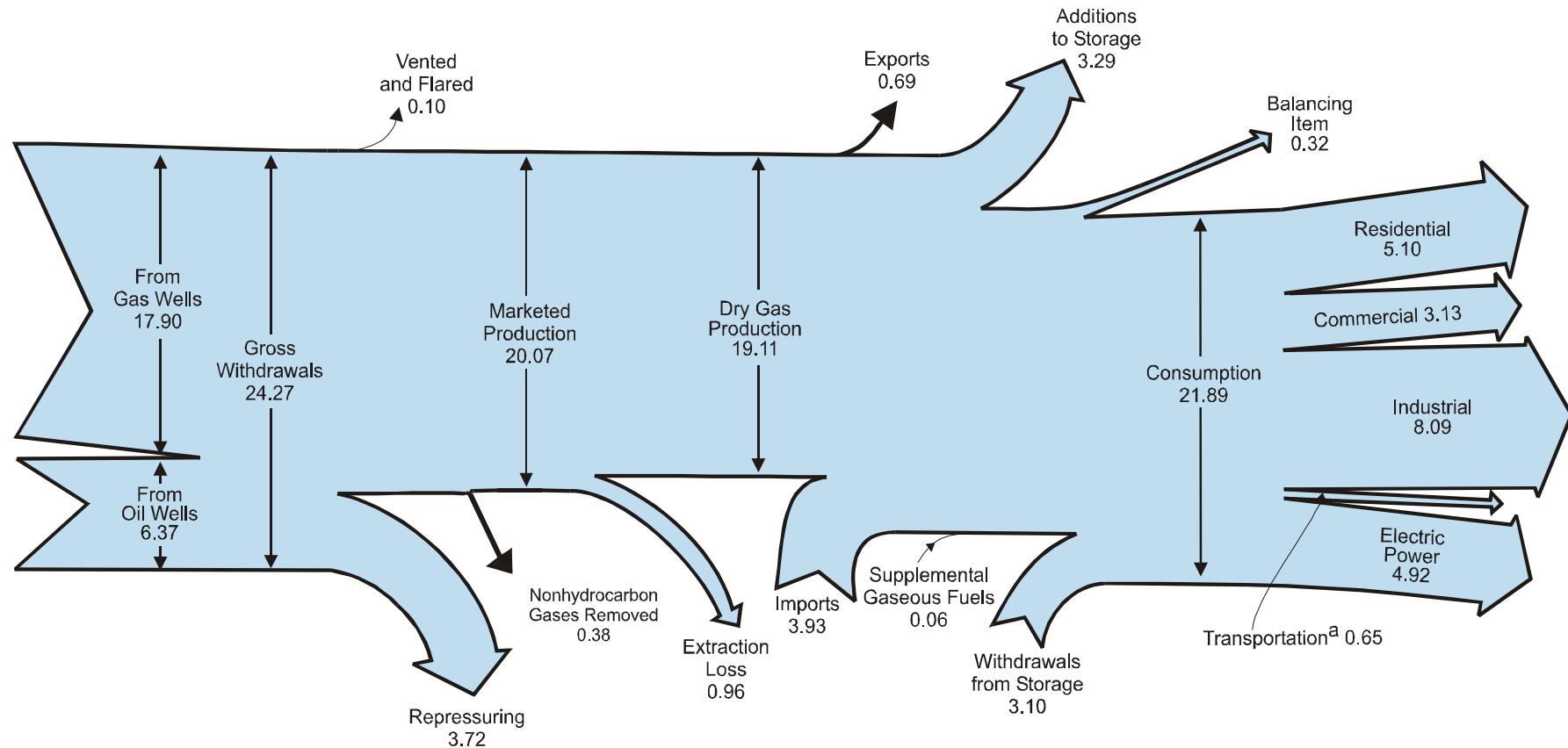
6

Natural Gas



Natural gas pipeline, El Paso County, Texas. Source: U.S. Department of Energy.

Diagram 3. Natural Gas Flow, 2003
 (Trillion Cubic Feet)



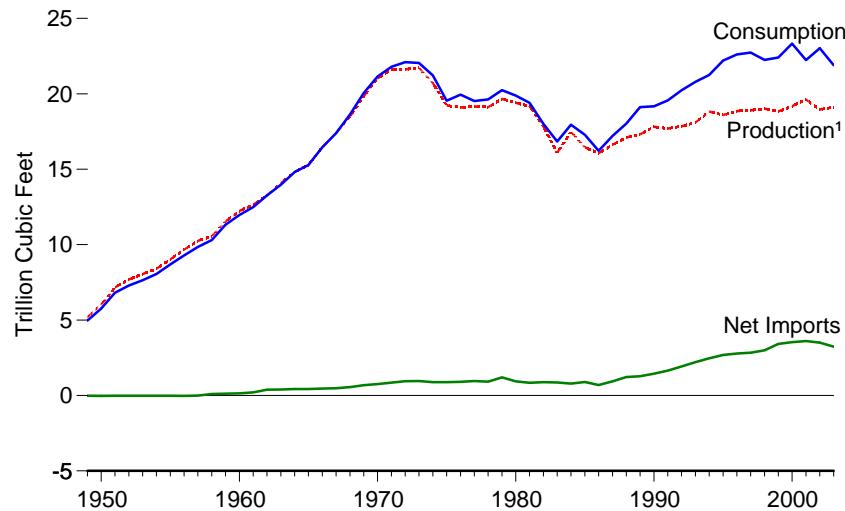
^a Natural gas consumed in the operation of pipelines, primarily in compressors, and a small quantity used as vehicle fuel.

Notes: • Data are preliminary. • Totals may not equal sum of components due to independent rounding.

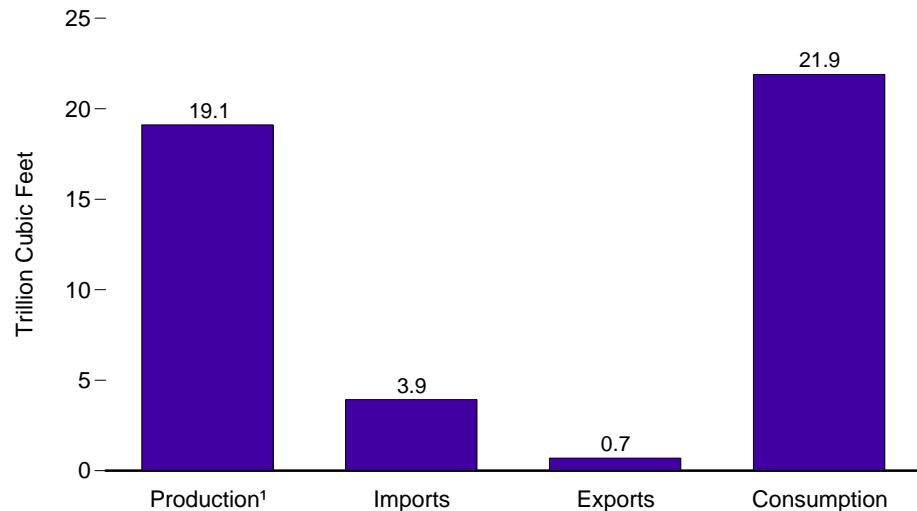
Sources: Tables 6.1, 6.2, and 6.5.

Figure 6.1 Natural Gas Overview

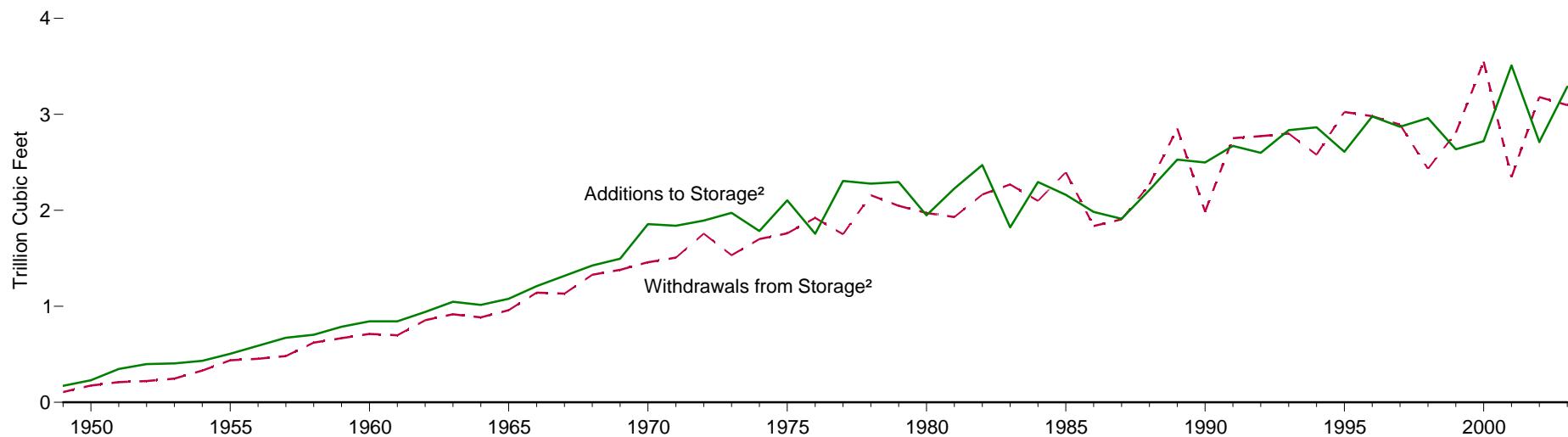
Overview, 1949-2003



Overview, 2003



Storage Additions and Withdrawals, 1949-2003



¹ Dry gas.

² For all years, includes underground storage; for 1980-2002, also includes liquefied natural gas stored in above-ground tanks.

Note: Because vertical scales differ, graphs should not be compared.

Source: Table 6.1.

Table 6.1 Natural Gas Overview, Selected Years, 1949-2003
(Billion Cubic Feet)

Year	Dry Gas Production	Supplemental Gaseous Fuels	Trade			Storage ¹ Activity			Balancing Item ⁴	Consumption
			Imports	Exports	Net Imports ²	Withdrawals	Additions	Net Withdrawals ³		
1949	5,195	NA	0	20	-20	106	172	-66	-139	4,971
1950	6,022	NA	0	26	-26	175	230	-54	-175	5,767
1955	9,029	NA	11	31	-20	437	505	-68	-247	8,694
1960	12,228	NA	156	11	144	713	844	-132	-274	11,967
1965	15,286	NA	456	26	430	960	1,078	-118	-319	15,280
1970	21,014	NA	821	70	751	1,459	1,857	-398	-228	21,139
1971	21,610	NA	935	80	854	1,508	1,839	-332	-339	21,793
1972	21,624	NA	1,019	78	941	1,757	1,893	-136	-328	22,101
1973	21,731	NA	1,033	77	956	1,533	1,974	-442	-196	22,049
1974	20,713	NA	959	77	882	1,701	1,784	-84	-289	21,223
1975	19,236	NA	953	73	880	1,760	2,104	-344	-235	19,538
1976	19,098	NA	964	65	899	1,921	1,756	165	-216	19,946
1977	19,163	NA	1,011	56	955	1,750	2,307	-557	-41	19,521
1978	19,122	NA	966	53	913	2,158	2,278	-120	-287	19,627
1979	19,663	NA	1,253	56	1,198	2,047	2,295	-248	-372	20,241
1980	19,403	155	985	49	936	1,972	1,949	23	-640	19,877
1981	19,181	176	904	59	845	1,930	2,228	-297	-500	19,404
1982	17,820	145	933	52	882	2,164	2,472	-308	-537	18,001
1983	16,094	132	918	55	864	2,270	1,822	447	-703	16,835
1984	17,466	110	843	55	788	2,098	2,295	-197	-217	17,951
1985	16,454	126	950	55	894	2,397	2,163	235	-428	17,281
1986	16,059	113	750	61	689	1,837	1,984	-147	-493	16,221
1987	16,621	101	993	54	939	1,905	1,911	-6	-444	17,211
1988	17,103	101	1,294	74	1,220	2,270	2,211	59	-453	18,030
1989	17,311	107	1,382	107	1,275	2,854	2,528	326	101	⁵ 19,119
1990	17,810	123	1,532	86	1,447	1,986	2,499	-513	307	⁵ 19,174
1991	17,698	113	1,773	129	1,644	2,752	2,672	80	27	⁵ 19,562
1992	17,840	118	2,138	216	1,921	2,772	2,599	173	176	⁵ 20,228
1993	18,095	119	2,350	140	2,210	2,799	2,835	-36	401	20,790
1994	18,821	111	2,624	162	2,462	2,579	2,865	-286	139	21,247
1995	18,599	110	2,841	154	2,687	3,025	2,610	415	396	22,207
1996	18,854	109	2,937	153	2,784	2,981	2,979	2	860	22,609
1997	18,902	103	2,994	157	2,837	2,894	2,870	24	871	22,737
1998	19,024	102	3,152	159	2,993	2,432	2,961	-530	657	22,246
1999	18,832	98	3,586	163	3,422	2,808	2,636	172	-119	22,405
2000	19,182	90	3,782	244	3,538	3,550	2,721	829	R-306	R ^{23,333}
2001	R19,616	86	3,977	373	3,604	2,344	R ^{3,510}	-1,166	R99	R ^{22,239}
2002	R ^{18,964}	R ⁶⁸	R ^{4,015}	516	R ^{3,499}	R ^{3,180}	R ^{2,712}	469	R ¹⁸	R ^{23,018}
2003 ^p	19,106	65	3,928	692	3,236	3,095	3,288	-193	-320	21,894

¹ For all years, includes underground storage; for 1980-2002, also includes liquefied natural gas stored in above-ground tanks.

² Net imports equal imports minus exports. Minus sign indicates exports are greater than imports.

³ Net withdrawals equal withdrawals minus additions. Minus sign indicates additions are greater than withdrawals.

⁴ Quantities lost and imbalances in data due to differences among data sources. Since 1980, excludes intratank shipments that cross the U.S.-Canada border (i.e., natural gas delivered to its destination via the other country).

⁵ For 1989-1992, a small amount of consumption at independent power producers may be counted in both "Other Industrial" and "Electric Power Sector" on Table 6.5. See Note 1, "Natural Gas Deliveries to Nonutilities, 1989-1992" at end of section.

R=Revised. P=Preliminary. NA=Not available.

Notes: • Beginning with 1965, all volumes are shown on a pressure base of 14.73 p.s.i.a. at 60° F. For prior years, the pressure base was 14.65 p.s.i.a. at 60° F. • Totals may not equal sum of components due to independent rounding.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/natgas.html>.

• For related information, see http://www.eia.doe.gov/oil_gas/natural_gas/info_glance/natural_gas.html.

Sources: **Dry Gas Production:** Table 6.2. **Supplemental Gaseous Fuels:** • 1980-2002—Energy

Information Administration (EIA), *Natural Gas Annual (NGA)*, annual reports. • 2003—EIA, *Natural Gas*

Monthly (NGM) (March 2004), Table 2. **Trade:** Table 6.3. **Storage Activity:** • 1949-1997—EIA, *NGA*

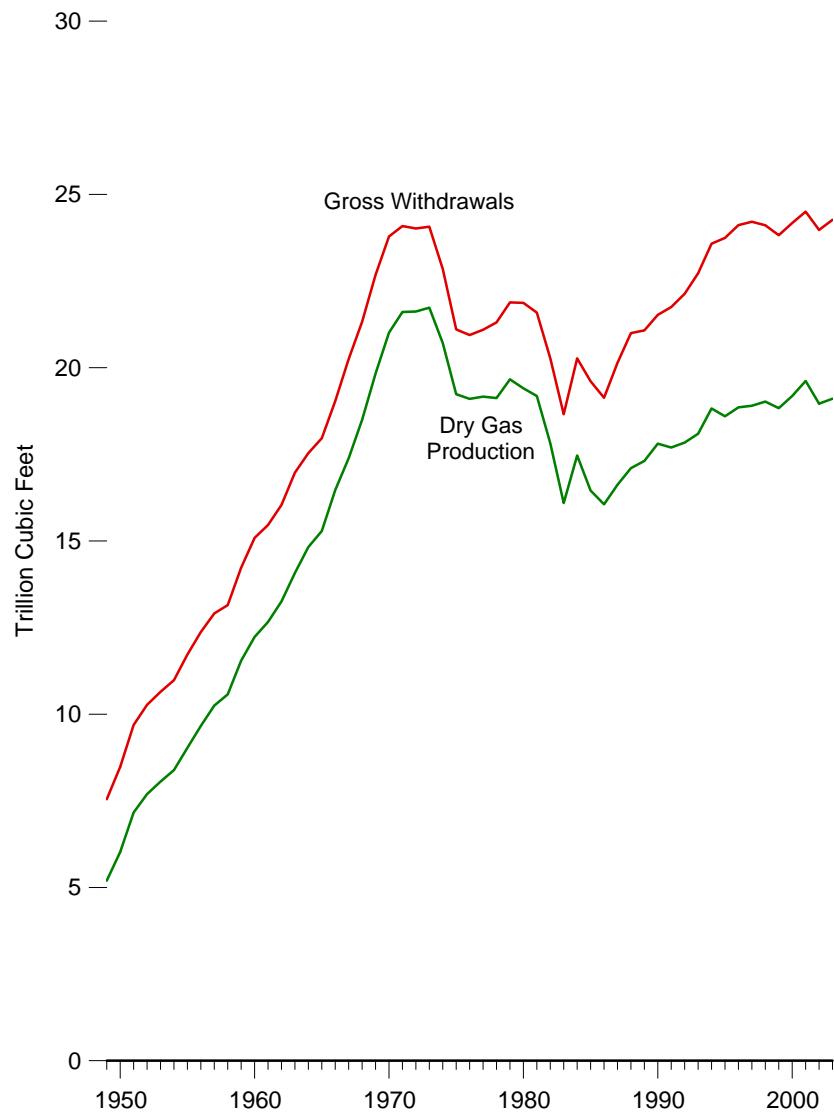
2000 (November 2001), Table 94. • 1998-2002—EIA, *NGA* 2002 (January 2004), Table 1.

• 2003—EIA, *NGM* (March 2004), Table 9. **Balancing Item:** Calculated as consumption minus dry gas

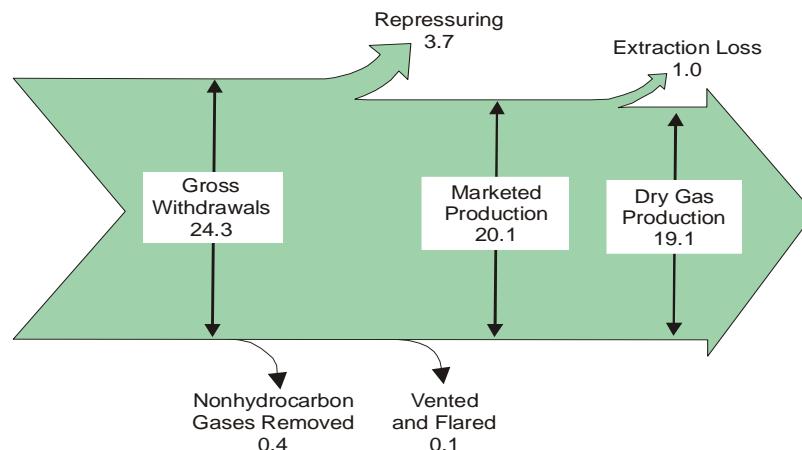
production, supplemental gaseous fuels, net imports, and net withdrawals. **Consumption:** Table 6.5.

Figure 6.2 Natural Gas Production

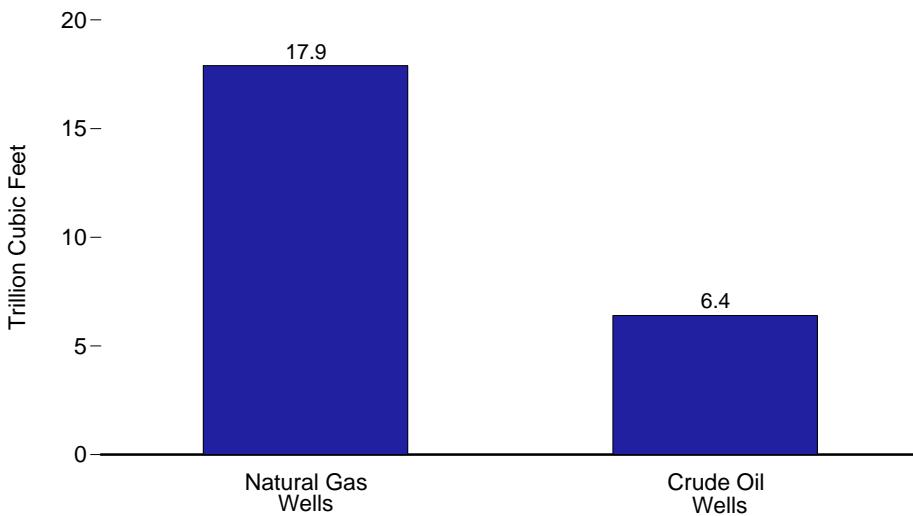
Gross Withdrawals and Dry Gas Production, 1949-2003



Production Flow, 2003
(Trillion Cubic Feet)



Gross Withdrawals by Well Type, 2003



Note: Because vertical scales differ, graphs should not be compared.

Source: Table 6.2.

Table 6.2 Natural Gas Production, Selected Years, 1949-2003
 (Billion Cubic Feet)

Year	Natural Gas Gross Withdrawals			Repressuring	Nonhydrocarbon Gases Removed	Vented and Flared	Marketed Production	Extraction Loss ¹	Dry Gas Production
	Natural Gas Wells	Crude Oil Wells	Total						
1949	4,986	2,561	7,547	1,273	NA	854	5,420	224	5,195
1950	5,603	2,876	8,480	1,397	NA	801	6,282	260	6,022
1955	7,842	3,878	11,720	1,541	NA	774	9,405	377	9,029
1960	10,853	4,234	15,088	1,754	NA	563	12,771	543	12,228
1965	13,524	4,440	17,963	1,604	NA	319	16,040	753	15,286
1970	18,595	5,192	23,786	1,376	NA	489	21,921	906	21,014
1971	18,925	5,163	24,088	1,310	NA	285	22,493	883	21,610
1972	19,043	4,974	24,016	1,236	NA	248	22,532	908	21,624
1973	19,372	4,696	24,067	1,171	NA	248	22,648	917	21,731
1974	18,669	4,181	22,850	1,080	NA	169	21,601	887	20,713
1975	17,380	3,723	21,104	861	NA	134	20,109	872	19,236
1976	17,191	3,753	20,944	859	NA	132	19,952	854	19,098
1977	17,416	3,681	21,097	935	NA	137	20,025	863	19,163
1978	17,394	3,915	21,309	1,181	NA	153	19,974	852	19,122
1979	18,034	3,849	21,883	1,245	NA	167	20,471	808	19,663
1980	17,573	4,297	21,870	1,365	199	125	20,180	777	19,403
1981	17,337	4,251	21,587	1,312	222	98	19,956	775	19,181
1982	15,809	4,463	20,272	1,388	208	93	18,582	762	17,820
1983	14,153	4,506	18,659	1,458	222	95	16,884	790	16,094
1984	15,513	4,754	20,267	1,630	224	108	18,304	838	17,466
1985	14,535	5,071	19,607	1,915	326	95	17,270	816	16,454
1986	14,154	4,977	19,131	1,838	337	98	16,859	800	16,059
1987	14,807	5,333	20,140	2,208	376	124	17,433	812	16,621
1988	15,467	5,532	20,999	2,478	460	143	17,918	816	17,103
1989	15,709	5,366	21,074	2,475	362	142	18,095	785	17,311
1990	16,054	5,469	21,523	2,489	289	150	18,594	784	17,810
1991	16,018	5,732	21,750	2,772	276	170	18,532	835	17,698
1992	16,165	5,967	22,132	2,973	280	168	18,712	872	17,840
1993	16,691	6,035	22,726	3,103	414	227	18,982	886	18,095
1994	17,351	6,230	23,581	3,231	412	228	19,710	889	18,821
1995	17,282	6,462	23,744	3,565	388	284	19,506	908	18,599
1996	17,737	6,376	24,114	3,511	518	272	19,812	958	18,854
1997	17,844	6,369	24,213	3,492	599	256	19,866	964	18,902
1998	17,729	6,380	24,108	3,427	617	103	19,961	938	19,024
1999	17,590	6,233	23,823	3,293	615	110	19,805	973	18,832
2000	17,726	6,448	24,174	3,380	505	91	20,198	1,016	19,182
2001	R18,129	R6,371	R24,501	R3,371	R463	R97	R20,570	954	R19,616
2002	R17,728	R6,249	R23,977	R3,455	R502	R99	R19,921	R957	R18,964
2003	E17,896	E6,369	P24,265	P3,716	P385	P95	P20,070	P964	P19,106

¹ Volume reduction resulting from the removal of natural gas plant liquids. Natural gas plant liquids are transferred to petroleum supply.

R=Revised. P=Preliminary. E=Estimate. NA=Not available.

Notes: • Beginning with 1965 data, all volumes are shown on a pressure base of 14.73 p.s.i.a. at 60° F. For prior years, the pressure base was 14.65 p.s.i.a. at 60° F. • Totals may not equal sum of components due to independent rounding.

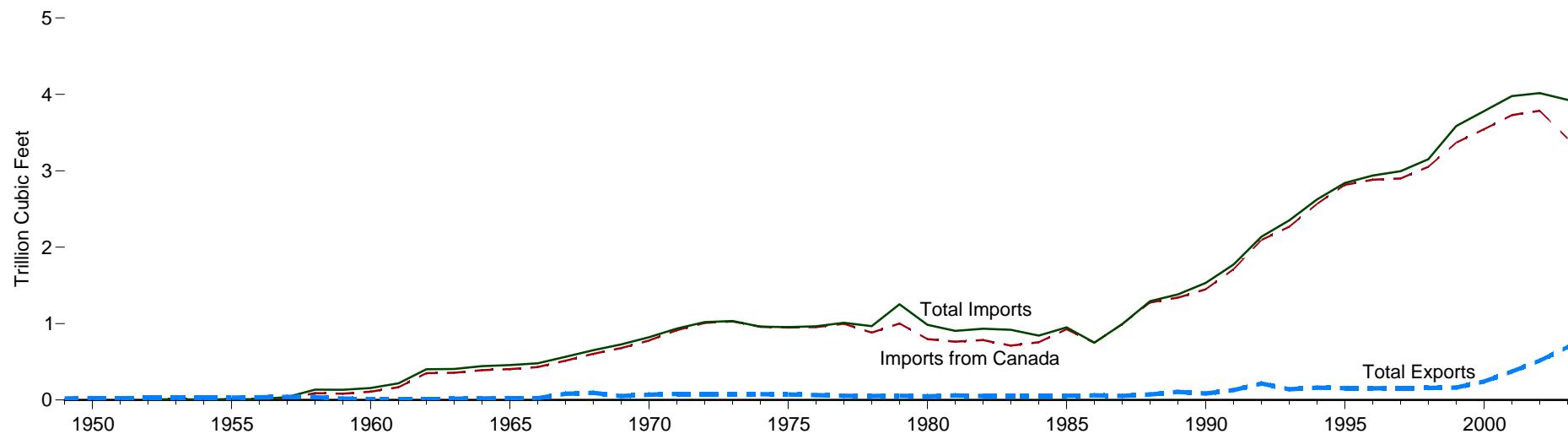
Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/natgas.html>.

• For related information, see http://www.eia.doe.gov/oil_gas/natural_gas/info_glance/natural_gas.html.

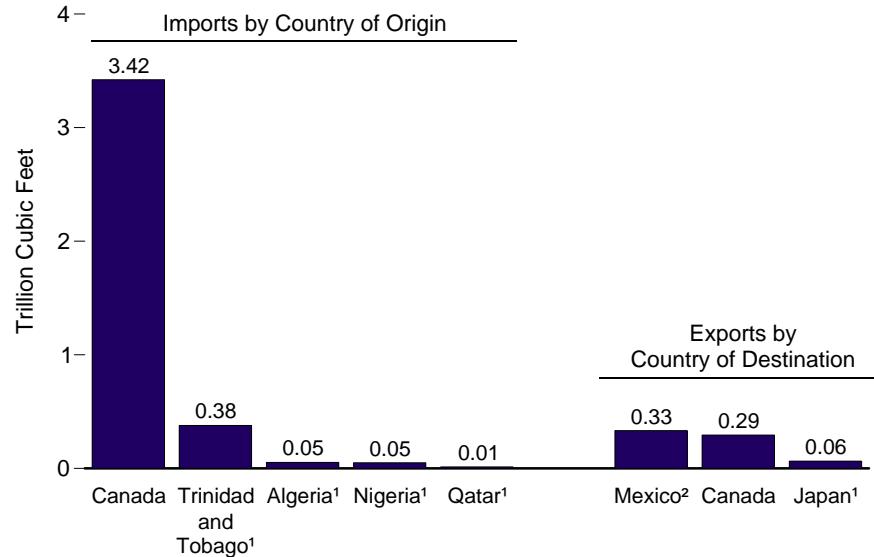
Sources: **Natural Gas Wells** and **Crude Oil Wells**: • 1949-1966—Bureau of Mines, *Minerals Yearbook*, "Natural Gas" chapter. • 1967-1997—Energy Information Administration (EIA), *Natural Gas Annual (NGA)*, annual reports. • 1998-2002—EIA, *NGA 2002* (January 2004), Table 1. • 2003—EIA estimates. **All Other Data**: • 1949-1997—EIA, *NGA 2000* (November 2001), Table 93. • 1998 forward—EIA, *Natural Gas Monthly* (March 2004), Table 1.

Figure 6.3 Natural Gas Imports, Exports, and Net Imports

Trade Overview, 1949-2003



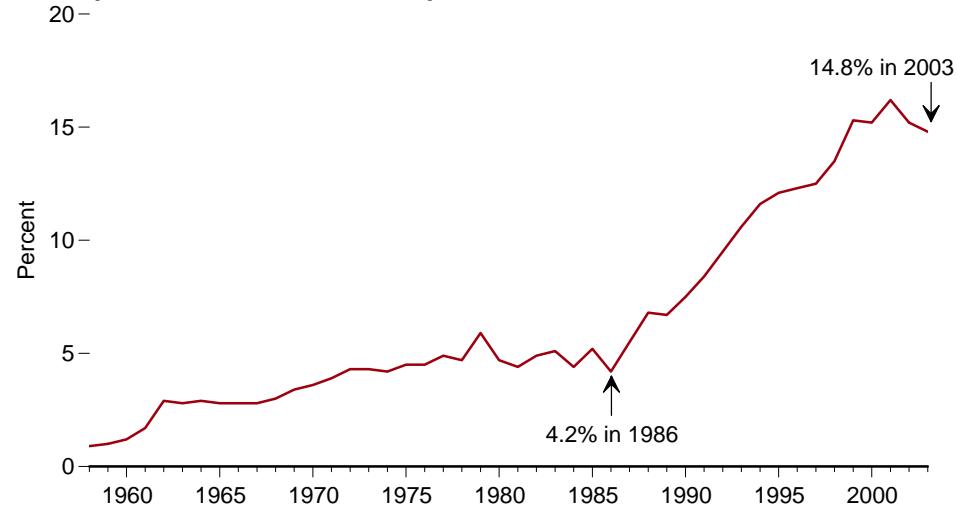
Trade, 2003



¹ Liquefied natural gas.

² Pipeline and liquefied natural gas.

Net Imports as Share of Consumption, 1958-2003



Note: Because vertical scales differ, graphs should not be compared.

Source: Table 6.3.

Table 6.3 Natural Gas Imports, Exports, and Net Imports, Selected Years, 1949-2003
 (Billion Cubic Feet, Except as Noted)

Year	Imports by Country of Origin										Exports by Country of Destination				Net Imports ¹	
	Algeria ²	Australia ²	Canada ³	Mexico ³	Nigeria ²	Oman ²	Qatar ²	Trinidad and Tobago ²	Total ⁴	Canada ³	Japan ²	Mexico ³	Total	Total	Percent of U.S. Consumption	
1949	0	0	0	0	0	0	0	0	0	(s)	0	20	20	-20	(⁵)	
1950	0	0	0	0	0	0	0	0	0	3	0	23	26	-26	(⁵)	
1955	0	0	11	(s)	0	0	0	0	11	11	0	20	31	-20	(⁵)	
1960	0	0	109	47	0	0	0	0	156	6	0	6	11	144	1.2	
1965	0	0	405	52	0	0	0	0	456	18	0	8	26	430	2.8	
1970	1	0	779	41	0	0	0	0	821	11	44	15	70	751	3.6	
1971	1	0	912	21	0	0	0	0	935	14	50	16	80	854	3.9	
1972	2	0	1,009	8	0	0	0	0	1,019	16	48	15	78	941	4.3	
1973	3	0	1,028	2	0	0	0	0	1,033	15	48	14	77	956	4.3	
1974	0	0	959	(s)	0	0	0	0	959	13	50	13	77	882	4.2	
1975	5	0	948	0	0	0	0	0	953	10	53	9	73	880	4.5	
1976	10	0	954	0	0	0	0	0	964	8	50	7	65	899	4.5	
1977	11	0	997	2	0	0	0	0	1,011	(s)	52	4	56	955	4.9	
1978	84	0	881	0	0	0	0	0	966	(s)	48	4	53	913	4.7	
1979	253	0	1,001	0	0	0	0	0	1,253	(s)	51	4	56	1,198	5.9	
1980	86	0	797	102	0	0	0	0	985	(s)	45	4	49	936	4.7	
1981	37	0	762	105	0	0	0	0	904	(s)	56	3	59	845	4.4	
1982	55	0	783	95	0	0	0	0	933	(s)	50	2	52	882	4.9	
1983	131	0	712	75	0	0	0	0	918	(s)	53	2	55	864	5.1	
1984	36	0	755	52	0	0	0	0	843	(s)	53	2	55	788	4.4	
1985	24	0	926	0	0	0	0	0	950	(s)	53	2	55	894	5.2	
1986	0	0	749	0	0	0	0	0	750	9	50	2	61	689	4.2	
1987	0	0	993	0	0	0	0	0	993	3	49	2	54	939	5.5	
1988	17	0	1,276	0	0	0	0	0	1,294	20	52	2	74	1,220	6.8	
1989	42	0	1,339	0	0	0	0	0	1,382	38	51	17	107	1,275	6.7	
1990	84	0	1,448	0	0	0	0	0	1,532	17	53	16	86	1,447	7.5	
1991	64	0	1,710	0	0	0	0	0	1,773	15	54	60	129	1,644	8.4	
1992	43	0	2,094	0	0	0	0	0	2,138	68	53	96	216	1,921	9.5	
1993	82	0	2,267	2	0	0	0	0	2,350	45	56	40	140	2,210	10.6	
1994	51	0	2,566	7	0	0	0	0	2,624	53	63	47	162	2,462	11.6	
1995	18	0	2,816	7	0	0	0	0	2,841	28	65	61	154	2,687	12.1	
1996	35	0	2,883	14	0	0	0	0	2,937	52	68	34	153	2,784	12.3	
1997	66	10	2,899	17	0	0	0	0	2,994	56	62	38	157	2,837	12.5	
1998	69	12	3,052	15	0	0	0	0	3,152	40	66	53	159	2,993	13.5	
1999	76	12	3,368	55	0	0	20	51	3,586	39	64	61	163	3,422	15.3	
2000	47	6	3,544	12	13	10	46	99	3,782	73	66	106	244	3,538	R ^{15.2}	
2001	65	2	3,729	10	38	12	23	98	3,977	167	66	141	373	3,604	16.2	
2002	27	0	R ^{3,785}	2	8	3	35	151	R ^{4,015}	189	63	263	516	R ^{3,499}	R ^{15.2}	
2003 ^P	53	0	3,421	0	50	9	14	378	3,928	294	64	333	692	3,236	14.8	

¹ Net imports equal imports minus exports.

² As liquefied natural gas.

³ By pipeline, except for very small amounts of liquefied natural gas imported from Canada in 1973, 1977, and 1981 and exported to Mexico beginning in 1998.

⁴ Included in the total but not shown separately are liquefied natural gas imports from Indonesia in 1986 and 2000; United Arab Emirates in 1996-2000; Malaysia in 1999, 2002, and 2003; and Brunei in 2002.

⁵ Not meaningful because there were net exports during this year.

R=Revised. P=Preliminary. (s)=Less than 0.5 billion cubic feet.

Note: Totals may not equal sum of components due to independent rounding.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/natgas.html>.

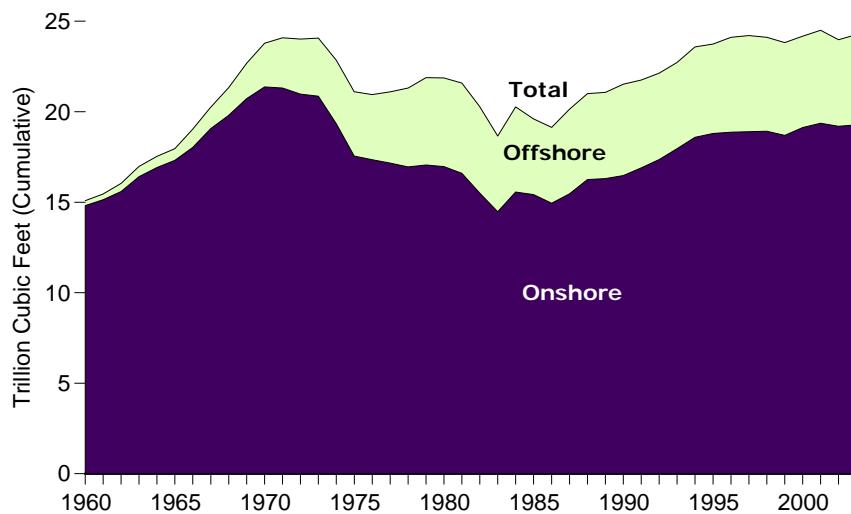
Sources: • 1949-1954—Energy Information Administration (EIA), Office of Oil and Gas, Reserves and Natural Gas Division, unpublished data. • 1955-1971—EIA, Federal Power Commission, by telephone.

• 1972-1987—EIA, Form FPC-14, "Annual Report for Importers and Exporters of Natural Gas."

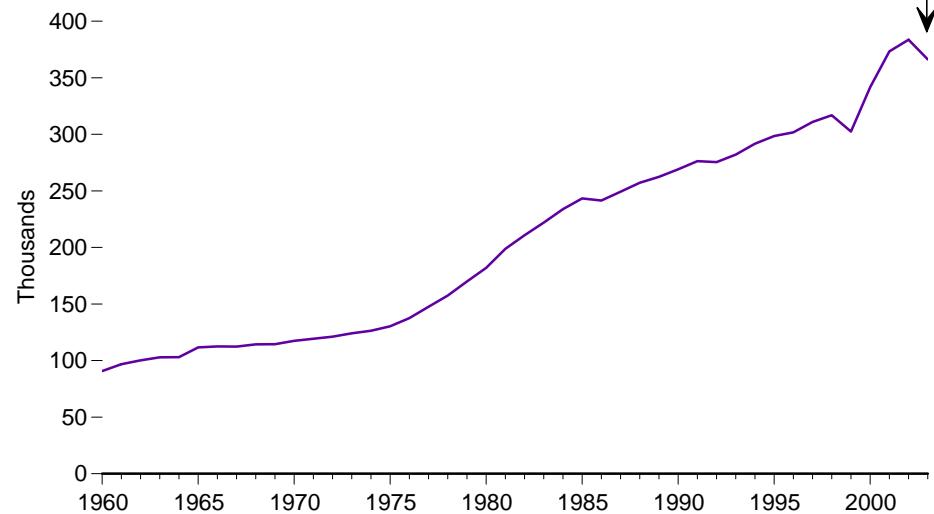
• 1988-1997—EIA, *Natural Gas Annual*, annual reports. • 1998 forward—EIA, *Natural Gas Monthly* (March 2004), Tables 5 and 6.

Figure 6.4 Natural Gas Gross Withdrawals and Natural Gas Well Productivity, 1960-2003

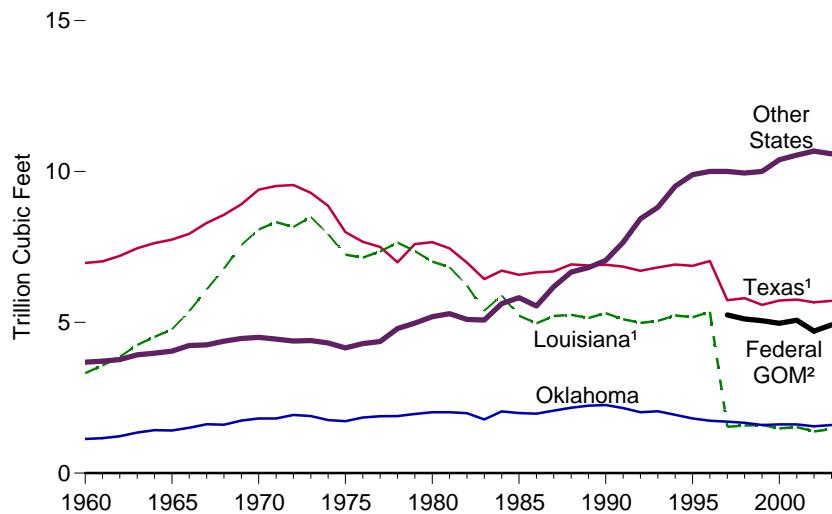
Gross Withdrawals by Location



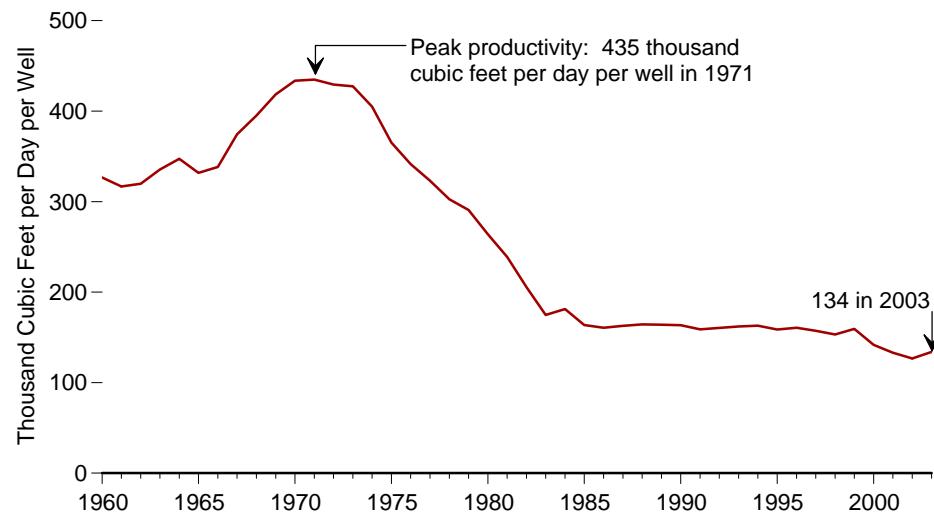
Number of Producing Wells



Gross Withdrawals by State and Federal Gulf of Mexico



Natural Gas Well Average Productivity



¹ Through 1996, includes gross withdrawals in Federal offshore areas of the Gulf of Mexico; beginning in 1997, these are included in "Federal Gulf of Mexico."

² Gulf of Mexico.

Note: Because vertical scales differ, graphs should not be compared.

Source: Table 6.4.

Table 6.4 Natural Gas Gross Withdrawals and Natural Gas Well Productivity, 1960-2003
 (Billion Cubic Feet, Except as Noted)

Year	Natural Gas Gross Withdrawals From Crude Oil and Natural Gas Wells							Natural Gas Well Productivity			
	State				Location			Gross Withdrawals From Natural Gas Wells	Producing Wells ⁵ (thousands)	Average Productivity (thousand cubic feet per day)	
	Texas ¹	Louisiana ¹	Oklahoma	Other States ¹	Federal Gulf of Mexico ²	Onshore ³	Offshore ⁴				
1960	6,965	3,313	1,133	3,677	(2)	14,815	273	15,088	10,853	91	326.7
1961	7,020	3,571	1,160	3,710	(2)	15,142	318	15,460	11,195	97	316.8
1962	7,199	3,854	1,222	3,764	(2)	15,587	452	16,039	11,702	100	319.8
1963	7,452	4,250	1,347	3,924	(2)	16,409	564	16,973	12,606	103	335.4
1964	7,622	4,515	1,423	3,975	(2)	16,914	622	17,536	13,106	103	347.4
1965	7,741	4,764	1,414	4,044	(2)	17,318	646	17,963	13,524	112	331.8
1966	7,935	5,365	1,502	4,232	(2)	18,026	1,007	19,034	13,894	112	338.4
1967	8,292	6,087	1,621	4,252	(2)	19,065	1,187	20,252	15,345	112	374.3
1968	8,566	6,778	1,607	4,375	(2)	19,801	1,524	21,325	16,540	114	395.1
1969	8,915	7,561	1,742	4,462	(2)	20,725	1,954	22,679	17,489	114	418.6
1970	9,399	8,076	1,811	4,501	(2)	21,368	2,419	23,786	18,595	117	433.6
1971	9,519	8,319	1,809	4,442	(2)	21,311	2,777	24,088	18,925	119	434.8
1972	9,550	8,160	1,928	4,378	(2)	20,978	3,039	24,016	19,043	121	429.4
1973	9,290	8,491	1,890	4,396	(2)	20,856	3,212	24,067	19,372	124	427.4
1974	8,859	7,920	1,757	4,314	(2)	19,335	3,515	22,850	18,669	126	404.9
1975	7,989	7,242	1,721	4,152	(2)	17,555	3,549	21,104	17,380	130	365.3
1976	7,666	7,143	1,842	4,293	(2)	17,348	3,596	20,944	17,191	138	341.5
1977	7,496	7,351	1,888	4,362	(2)	17,165	3,932	21,097	17,416	148	323.1
1978	6,988	7,639	1,892	4,790	(2)	16,953	4,356	21,309	17,394	157	302.7
1979	7,594	7,359	1,958	4,973	(2)	17,061	4,822	21,883	18,034	170	290.8
1980	7,656	7,008	2,019	5,187	(2)	16,967	4,902	21,870	17,573	182	263.8
1981	7,452	6,830	2,019	5,287	(2)	16,597	4,991	21,587	17,337	199	238.9
1982	6,976	6,217	1,985	5,094	(2)	15,499	4,773	20,272	15,809	211	205.5
1983	6,429	5,379	1,780	5,071	(2)	14,477	4,182	18,659	14,153	222	174.7
1984	6,712	5,888	2,046	5,620	(2)	15,560	4,707	20,267	15,513	234	181.2
1985	6,577	5,218	1,993	5,818	(2)	15,421	4,186	19,607	14,535	243	163.6
1986	6,656	4,965	1,972	5,538	(2)	14,945	4,186	19,131	14,154	242	160.6
1987	6,688	5,205	2,073	6,174	(2)	15,468	4,672	20,140	14,807	249	162.8
1988	6,919	5,248	2,167	6,665	(2)	16,253	4,747	20,999	15,467	257	164.3
1989	6,881	5,143	2,237	6,813	(2)	16,303	4,771	21,074	15,709	262	164.0
1990	6,907	5,303	2,258	7,054	(2)	16,476	5,047	21,523	16,054	269	163.4
1991	6,846	5,100	2,154	7,651	(2)	16,900	4,850	21,750	16,018	276	158.8
1992	6,708	4,977	2,017	8,429	(2)	17,361	4,772	22,132	16,165	275	160.4
1993	6,817	5,047	2,050	8,812	(2)	17,960	4,766	22,726	16,691	282	162.1
1994	6,912	5,226	1,935	9,508	(2)	18,585	4,996	23,581	17,351	292	162.9
1995	6,873	5,163	1,812	9,896	(2)	18,802	4,942	23,744	17,282	299	158.6
1996	7,028	5,351	1,735	9,999	(2)	18,867	5,246	24,114	17,737	302	160.6
1997	15,730	11,538	1,704	19,999	5,242	18,897	5,316	24,213	17,844	311	157.2
1998	5,799	1,579	1,669	9,950	5,110	18,923	5,185	24,108	17,729	317	153.3
1999	5,575	1,599	1,594	10,002	5,053	18,692	5,131	23,823	17,590	302	159.4
2000	5,723	1,485	1,613	10,386	4,968	19,130	5,044	24,174	17,726	342	141.7
2001	R5,752	R1,525	1,615	R10,542	R5,066	R19,364	R5,137	R24,501	R18,129	R373	R133.1
2002	R5,661	R1,382	R1,551	R10,674	R4,709	R19,200	R4,777	R23,977	R17,728	R384	R126.6
2003	E5,712	E1,464	E1,593	E10,582	E4,914	E19,279	E4,986	E24,265	E17,896	E366	E133.9

¹ Through 1996, includes gross withdrawals in Federal offshore areas of the Gulf of Mexico; beginning in 1997, these are included in "Federal Gulf of Mexico."

² Gross withdrawals from Federal offshore areas of the Gulf of Mexico. Through 1996, these gross withdrawals are included in "Texas," "Louisiana," and "Other States."

³ Includes State offshore gross withdrawals.

⁴ Excludes State offshore gross withdrawals; includes Federal offshore (Outer Continental Shelf) gross withdrawals.

⁵ As of December 31 each year.

R=Revised. P=Preliminary. E=Estimate.

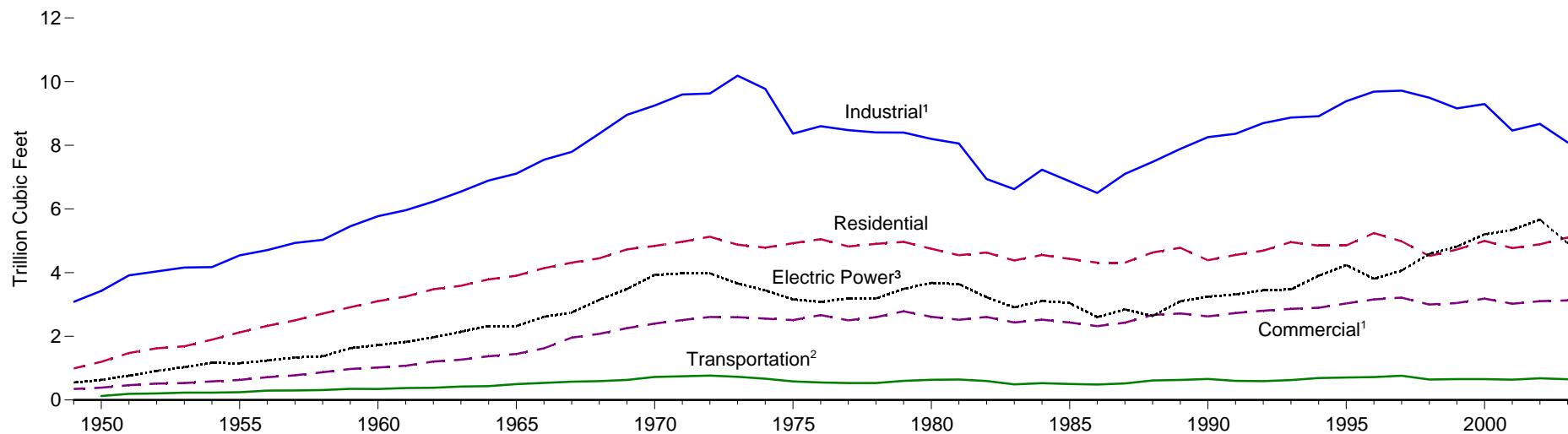
Web Page: See http://www.eia.doe.gov/oil_gas/natural_gas/info_glance/natural_gas.html for related information.

Sources: **Offshore:** • 1960-1981—U.S. Geological Survey. • 1982-1985—U.S. Minerals Management Service, *Mineral Revenues—The 1989 Report on Receipts from Federal and Indian Leases*, and predecessor annual reports. • 1986-1997—Energy Information Administration (EIA), *Natural Gas Annual (NGA)*, annual reports. • 1998-2002—EIA, *NGA* 2002 (January 2004), Table 4. • 2003—EIA estimate.

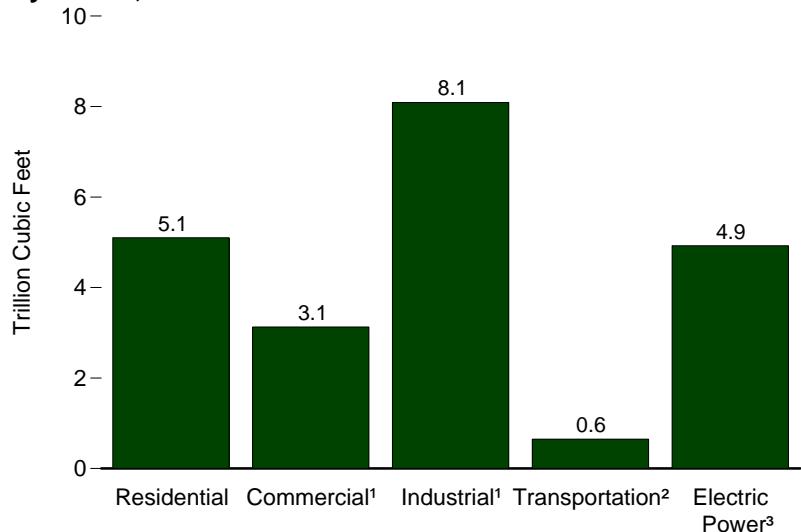
Total (Gross Withdrawals): • 1960-1997—EIA, *NGA* 2000 (November 2001), Table 93. • 1998 forward—EIA, *Natural Gas Monthly* (March 2004), Table 1. **Average Productivity:** Calculated as gross withdrawals from natural gas wells divided by the number of producing wells, and then divided by the number of days in the year. **All Other Data:** • 1960-1966—Bureau of Mines, *Natural Gas Production and Consumption*. • 1967-2002—EIA, *NGA*, annual reports and unpublished revisions. • 2003—EIA estimates.

Figure 6.5 Natural Gas Consumption by Sector

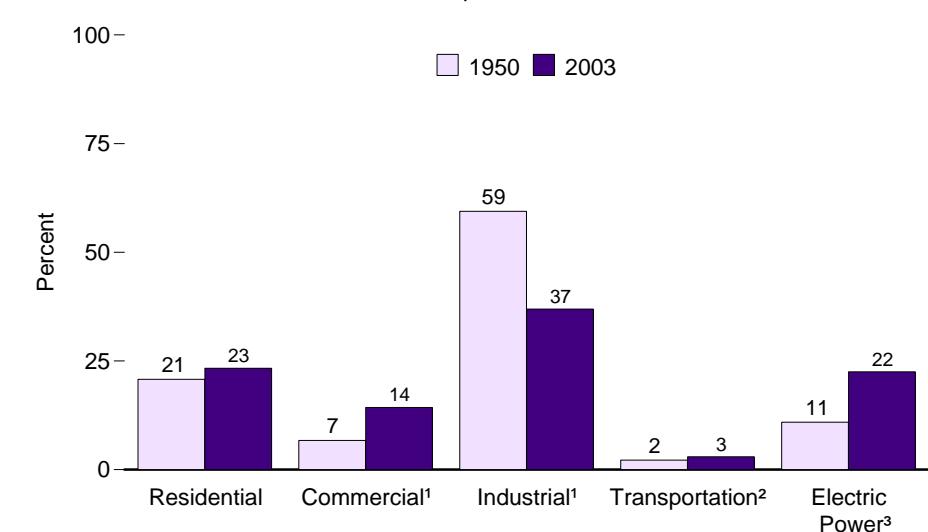
By Sector, 1949-2003



By Sector, 2003



End Use and Electric Power Shares, 1950 and 2003



¹ Includes combined-heat-and-power plants and a small number of electricity-only plants.

² Pipeline and vehicle fuel.

³ Electricity-only and combined-heat-and-power plants whose primary business is to sell electricity, or electricity and heat, to the public.

Source: Table 6.5.

Table 6.5 Natural Gas Consumption by Sector, Selected Years, 1949-2003
(Billion Cubic Feet)

Year	End-Use Sectors												Electric Power Sector ¹					
	Commercial			Industrial			Transportation											
	Residential	CHP ²	Other ³	Total	Lease and Plant Fuel	CHP ⁴	Non-CHP ⁵	Total	Total	Pipeline Fuel ⁶	Vehicle Fuel	Total	Electricity Only	CHP	Total	Total		
1949	993	(7)	348	348	835	(8)	2,245	2,245	3,081	NA	NA	NA	4,421	550	NA	550	4,971	
1950	1,198	(7)	388	388	928	(8)	2,498	2,498	3,426	126	NA	126	5,138	629	NA	629	5,767	
1955	2,124	(7)	629	629	1,131	(8)	3,411	3,411	4,542	245	NA	245	7,540	1,153	NA	1,153	8,694	
1960	3,103	(7)	1,020	1,020	1,237	(8)	4,535	4,535	5,771	347	NA	347	10,242	1,725	NA	1,725	11,967	
1965	3,903	(7)	1,444	1,444	1,156	(8)	5,955	5,955	7,112	501	NA	501	12,959	2,321	NA	2,321	15,280	
1970	4,837	(7)	2,399	2,399	1,399	(8)	7,851	7,851	9,249	722	NA	722	17,208	3,932	NA	3,932	21,139	
1971	4,972	(7)	2,509	2,509	1,414	(8)	8,181	8,181	9,594	743	NA	743	17,817	3,976	NA	3,976	21,793	
1972	5,126	(7)	2,608	2,608	1,456	(8)	8,169	8,169	9,624	766	NA	766	18,125	3,977	NA	3,977	22,101	
1973	4,879	(7)	2,597	2,597	1,496	(8)	8,689	8,689	10,185	728	NA	728	18,389	3,660	NA	3,660	22,049	
1974	4,786	(7)	2,556	2,556	1,477	(8)	8,292	8,292	9,769	669	NA	669	17,780	3,443	NA	3,443	21,223	
1975	4,924	(7)	2,508	2,508	1,396	(8)	6,968	6,968	8,365	583	NA	583	16,380	3,158	NA	3,158	19,538	
1976	5,051	(7)	2,668	2,668	1,634	(8)	6,964	6,964	8,598	548	NA	548	16,866	3,081	NA	3,081	19,946	
1977	4,821	(7)	2,501	2,501	1,659	(8)	6,815	6,815	8,474	533	NA	533	16,329	3,191	NA	3,191	19,521	
1978	4,903	(7)	2,601	2,601	1,648	(8)	6,757	6,757	8,405	530	NA	530	16,439	3,188	NA	3,188	19,627	
1979	4,965	(7)	2,786	2,786	1,499	(8)	6,899	6,899	8,398	601	NA	601	16,750	3,491	NA	3,491	20,241	
1980	4,752	(7)	2,611	2,611	1,026	(8)	7,172	7,172	8,198	635	NA	635	16,196	3,682	NA	3,682	19,877	
1981	4,546	(7)	2,520	2,520	928	(8)	7,128	7,128	8,055	642	NA	642	15,764	3,640	NA	3,640	19,404	
1982	4,633	(7)	2,606	2,606	1,109	(8)	5,831	5,831	6,941	596	NA	596	14,776	3,226	NA	3,226	18,001	
1983	4,381	(7)	2,433	2,433	978	(8)	5,643	5,643	6,621	490	NA	490	13,924	2,911	NA	2,911	16,835	
1984	4,555	(7)	2,524	2,524	1,077	(8)	6,154	6,154	7,231	529	NA	529	14,839	3,111	NA	3,111	17,951	
1985	4,433	(7)	2,432	2,432	966	(8)	5,901	5,901	6,867	504	NA	504	14,237	3,044	NA	3,044	17,281	
1986	4,314	(7)	2,318	2,318	923	(8)	5,579	5,579	6,502	485	NA	485	13,619	2,602	NA	2,602	16,221	
1987	4,315	(7)	2,430	2,430	1,149	(8)	5,953	5,953	7,103	519	NA	519	14,367	2,844	NA	2,844	17,211	
1988	4,630	(7)	2,670	2,670	1,096	(8)	6,383	6,383	7,479	614	NA	614	15,394	2,636	NA	2,636	18,030	
1989	4,781	30	2,688	2,718	1,070	914	95,903	96,816	7,886	629	NA	629	16,014	92,791	9315	93,105	919,119	
1990	4,391	46	2,576	2,623	1,236	1,055	95,963	97,018	8,255	660	(s)	660	15,929	92,794	9451	93,245	919,174	
1991	4,556	52	2,676	2,729	1,129	1,061	96,170	97,231	8,360	601	(s)	602	16,246	92,822	9494	93,316	919,562	
1992	4,690	62	2,740	2,803	1,171	R1,107	R6,420	R7,527	8,698	588	2	590	16,780	92,829	9619	93,448	920,228	
1993	4,956	65	2,796	2,862	1,172	R1,124	R6,576	7,700	8,872	624	3	627	17,317	2,755	718	3,473	20,790	
1994	4,848	72	2,823	2,895	1,124	R1,176	R6,613	7,790	8,913	685	3	689	17,345	3,065	838	3,903	21,247	
1995	4,850	78	2,953	3,031	1,220	R1,258	R6,906	8,164	9,384	700	5	705	17,970	3,288	949	4,237	22,207	
1996	5,241	82	3,076	3,158	1,250	1,289	7,146	8,435	9,685	711	6	718	18,802	2,824	983	3,807	22,609	
1997	4,984	87	3,128	3,215	1,203	1,282	7,229	8,511	9,714	751	8	760	18,673	3,039	1,026	4,065	22,737	
1998	4,520	87	2,912	2,999	1,173	1,355	6,965	8,320	9,493	635	9	645	17,658	3,544	1,044	4,588	22,246	
1999	4,726	84	2,961	3,045	1,079	1,401	6,678	8,079	9,158	645	1012	657	17,586	3,729	1,090	4,820	22,405	
2000	4,996	85	R3,098	R3,182	1,151	1,386	6,757	8,142	9,293	642	1013	655	R18,127	4,093	1,114	5,206	R23,333	
2001	R4,771	79	R2,944	R3,023	R1,119	1,310	R6,035	R7,344	R8,463	R625	1015	R640	R16,896	4,164	R1,178	5,342	R22,239	
2002	R4,890	R74	3,029	R3,103	R1,114	R1,240	R6,316	R7,557	R8,671	R667	1015	R682	R17,346	R4,258	R1,413	R5,672	R23,018	
2003 ^P	5,101	71	3,058	3,129	1,123	1,138	5,829	6,967	8,090	635	1015	650	16,970	3,611	1,313	4,924	21,894	

¹ Electricity-only and combined-heat-and-power (CHP) plants within the NAICS (North American Industry Classification System) 22 category whose primary business is to sell electricity, or electricity and heat, to the public. Through 1988, data are for electric utilities only; beginning in 1989, data are for electric utilities and independent power producers. Electric utility CHP plants are included in "Electricity Only."

² Commercial combined-heat-and-power and a small number of commercial electricity-only plants.

³ All commercial sector fuel use other than that in "Commercial CHP."

⁴ Industrial combined-heat-and-power (CHP) and a small number of industrial electricity-only plants.

⁵ All industrial sector fuel use other than that in "Lease and Plant Fuel" and "Industrial CHP."

⁶ Natural gas consumed in the operation of pipelines, primarily in compressors.

⁷ Included in "Commercial Other."

⁸ Included in "Industrial Non-CHP."

⁹ For 1989-1992, a small amount of consumption at independent power producers may be counted in both "Other Industrial" and "Electric Power Sector." See Note 1, "Natural Gas Deliveries to Nonutilities, 1989-1992" at end of section.

¹⁰ For 1999 forward, vehicle fuel data do not reflect revised data shown in Table 10.7. These revisions, in million cubic feet, are: 1999—10,313; 2000—11,365; 2001—13,646; 2002—15,657; and 2003—18,339.

R=Revised. P=Preliminary. NA=Not available. (s)=Less than 0.5 billion cubic feet.

Notes: • Data are for natural gas, plus a small amount of supplemental gaseous fuels that cannot be identified separately. • See Tables 8.5a-8.5d for the amount of natural gas used to produce electricity and

Tables 8.6a-8.6c for the amount of natural gas used to produce useful thermal output. • See Note 2, "Natural Gas Consumption," at end of section. • Beginning with 1965, all volumes are shown on a pressure base of 14.73 p.s.i.a. at 60° F. For prior years, the pressure base was 14.65 p.s.i.a. at 60° F. • Totals may not equal sum of components due to independent rounding.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/natgas.html>.

• For related information, see http://www.eia.doe.gov/oil_gas/natural_gas/info_glance/natural_gas.html.

Sources: Residential, Commercial Total, Lease and Plant Fuel, and Pipeline Fuel:

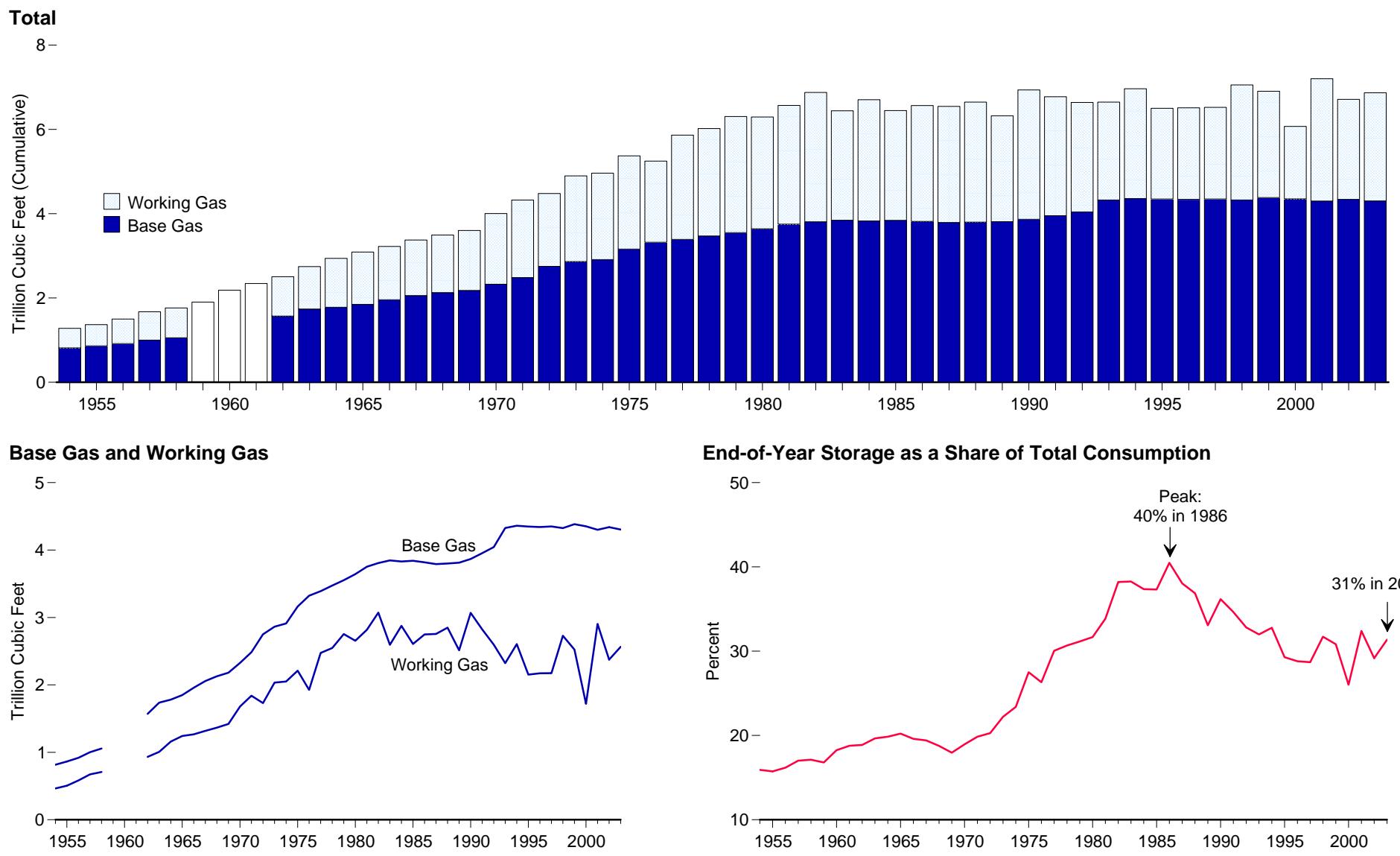
• 1949-1997—Energy Information Administration (EIA), *Natural Gas Annual (NGA)* 2000 (November 2001), Table 95. • 1998 forward—EIA, *Natural Gas Monthly (NGM)* (March 2004), Table 3.

Other Industrial Total: • 1949-1992—EIA, *NGA 2000* (November 2001), Table 95. • 1993-1996—EIA, Form EIA-857, "Monthly Report of Natural Gas Purchases and Deliveries to Consumers." • 1997—EIA, *NGM* (May 2003), Table 3. • 1998 forward—EIA, *NGM* (March 2004), Table 3.

Vehicle Fuel: • 1990 and 1991—EIA, *NGA 2000* (November 2001), Table 95. • 1992-1995—Science Applications International Corporation, "Alternative Transportation Fuels and Vehicles Data Development," unpublished final report prepared for EIA (McLean, VA, July 1996) and U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. • 1996—EIA, Office of Coal, Nuclear, Electric, and Alternate Fuels. • 1997—EIA, *NGM* (May 2003), Table 3. • 1998 forward—EIA, *NGM* (March 2004), Table 3.

Commercial CHP and Industrial CHP: Table 8.7c. **Electric Power Sector:** Tables 8.5b, 8.5c, 8.6b, and 8.7b. **All Other Data:** Calculated.

Figure 6.6 Natural Gas in Underground Storage, 1954-2003



Notes: • Storage is at end of year. • Because vertical scales differ, graphs should not be compared. • Working- and base-gas component data were not collected in 1959, 1960, and 1961.

Sources: Tables 6.5 and 6.6.

Table 6.6 Natural Gas in Underground Storage, 1954-2003
(Billion Cubic Feet)

Year	Base Gas ¹			Working Gas			Total		
	Traditional Storage	Salt Caverns	Total	Traditional Storage	Salt Caverns	Total	Traditional Storage	Salt Caverns	Total
1954	NA	NA	817	NA	NA	465	NA	NA	1,281
1955	NA	NA	863	NA	NA	505	NA	NA	1,368
1956	NA	NA	919	NA	NA	583	NA	NA	1,502
1957	NA	NA	1,001	NA	NA	673	NA	NA	1,674
1958	NA	NA	1,056	NA	NA	708	NA	NA	1,764
1959	NA	NA	NA	NA	NA	NA	NA	NA	1,901
1960	NA	NA	NA	NA	NA	NA	NA	NA	2,184
1961	NA	NA	NA	NA	NA	NA	NA	NA	2,344
1962	NA	NA	1,571	NA	NA	933	NA	NA	2,504
1963	NA	NA	1,738	NA	NA	1,007	NA	NA	2,745
1964	NA	NA	1,781	NA	NA	1,159	NA	NA	2,940
1965	NA	NA	1,848	NA	NA	1,242	NA	NA	3,090
1966	NA	NA	1,958	NA	NA	1,267	NA	NA	3,225
1967	NA	NA	2,058	NA	NA	1,318	NA	NA	3,376
1968	NA	NA	2,128	NA	NA	1,366	NA	NA	3,495
1969	NA	NA	2,181	NA	NA	1,421	NA	NA	3,602
1970	NA	NA	2,326	NA	NA	1,678	NA	NA	4,004
1971	NA	NA	2,485	NA	NA	1,840	NA	NA	4,325
1972	NA	NA	2,751	NA	NA	1,729	NA	NA	4,480
1973	NA	NA	2,864	NA	NA	2,034	NA	NA	4,898
1974	NA	NA	2,912	NA	NA	2,050	NA	NA	4,962
1975	NA	NA	3,162	NA	NA	2,212	NA	NA	5,374
1976	NA	NA	3,323	NA	NA	1,926	NA	NA	5,250
1977	NA	NA	3,391	NA	NA	2,475	NA	NA	5,866
1978	NA	NA	3,473	NA	NA	2,547	NA	NA	6,020
1979	NA	NA	3,553	NA	NA	2,753	NA	NA	6,306
1980	NA	NA	3,642	NA	NA	2,655	NA	NA	6,297
1981	NA	NA	3,752	NA	NA	2,817	NA	NA	6,569
1982	NA	NA	3,808	NA	NA	3,071	NA	NA	6,879
1983	NA	NA	3,847	NA	NA	2,595	NA	NA	6,442
1984	NA	NA	3,830	NA	NA	2,876	NA	NA	6,706
1985	NA	NA	3,842	NA	NA	2,607	NA	NA	6,448
1986	NA	NA	3,819	NA	NA	2,749	NA	NA	6,567
1987	NA	NA	3,792	NA	NA	2,756	NA	NA	6,548
1988	NA	NA	3,800	NA	NA	2,850	NA	NA	6,650
1989	NA	NA	3,812	NA	NA	2,513	NA	NA	6,325
1990	NA	NA	3,868	NA	NA	3,068	NA	NA	6,936
1991	NA	NA	3,954	NA	NA	2,824	NA	NA	6,778
1992	NA	NA	4,044	NA	NA	2,597	NA	NA	6,641
1993	NA	NA	4,327	NA	NA	2,322	NA	NA	6,649
1994	4,317	44	4,360	2,536	70	2,606	6,853	113	6,966
1995	4,290	60	4,349	2,082	72	2,153	6,371	131	6,503
1996	4,277	64	4,341	2,087	85	2,173	6,364	149	6,513
1997	4,283	67	4,350	2,092	83	2,175	6,375	150	6,525
1998	4,259	67	4,326	2,626	104	2,730	6,884	171	7,056
1999	4,314	69	4,383	2,423	100	2,523	6,738	169	6,906
2000	4,282	70	4,352	1,647	72	1,719	5,929	142	6,071
2001	4,224	77	4,301	2,789	115	2,904	7,013	191	7,204
2002	4,265	75	4,340	2,273	102	2,375	6,539	177	6,715
2003 ^p	4,229	76	4,305	2,440	125	2,565	6,668	201	6,869

¹ Includes native gas.

P=Preliminary. NA=Not available.

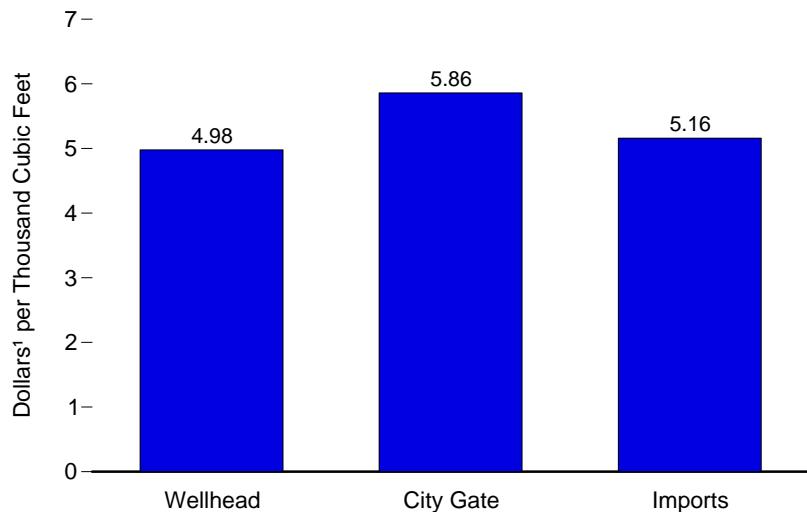
Notes: • Storage is at end of year. • Beginning with 1965, all volumes are shown on a pressure base of 14.73 p.s.i.a. at 60° F. For prior years, the pressure base was 14.65 p.s.i.a. at 60° F. • Totals may not equal sum of components due to independent rounding.

Web Page: See http://www.eia.doe.gov/oil_gas/natural_gas/info_glance/natural_gas.html for related information.

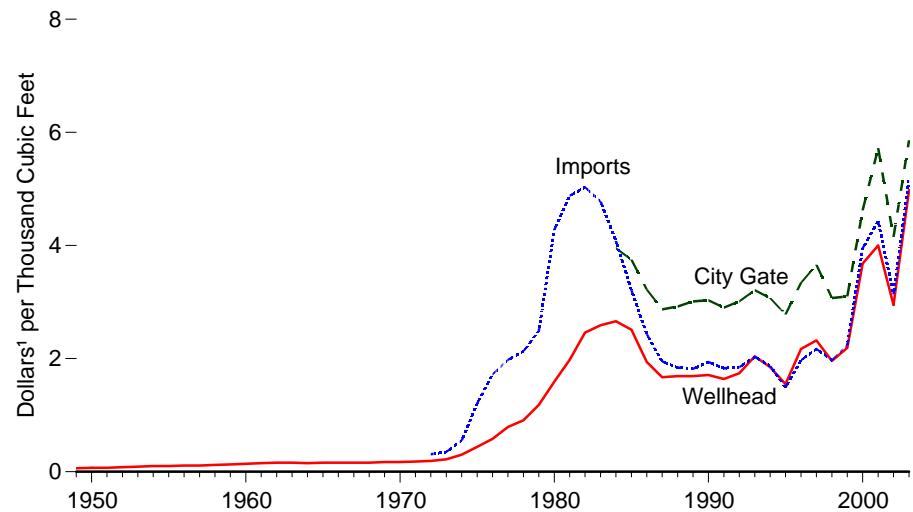
Sources: • 1954-1974—American Gas Association, *Gas Facts*. • 1975-1978—Federal Energy Administration, Form FEA-G318-M-O, "Underground Gas Storage Report," and Federal Power Commission, Form FPC-8, "Underground Gas Storage Report." • 1979-1984—Energy Information Administration (EIA), Form EIA-191, "Underground Gas Storage Report" and Federal Energy Regulatory Commission, Form FERC-8, "Underground Gas Storage Report." • 1985-2001—EIA, *Natural Gas Monthly (NGM)*, monthly reports. • 2002 and 2003—EIA, *NGM* (March 2004), Tables 9, 11, and 12.

Figure 6.7 Natural Gas Wellhead, City Gate, and Imports Prices

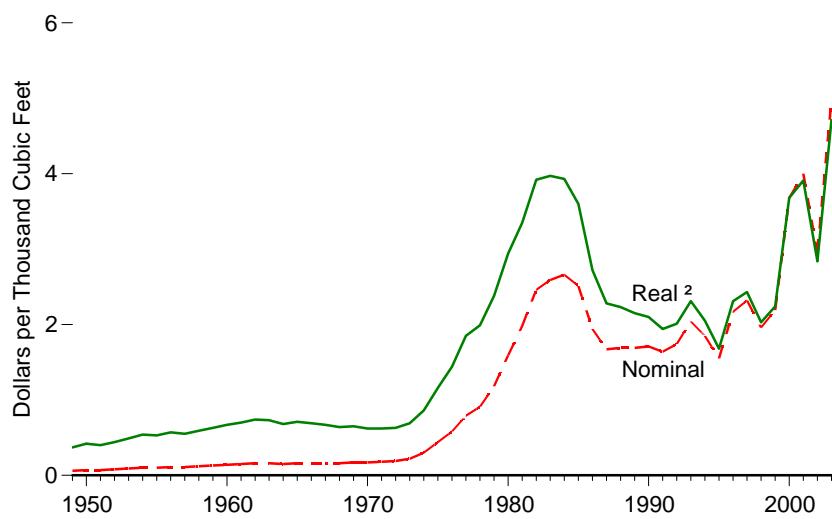
Wellhead, City Gate, and Imports, 2003



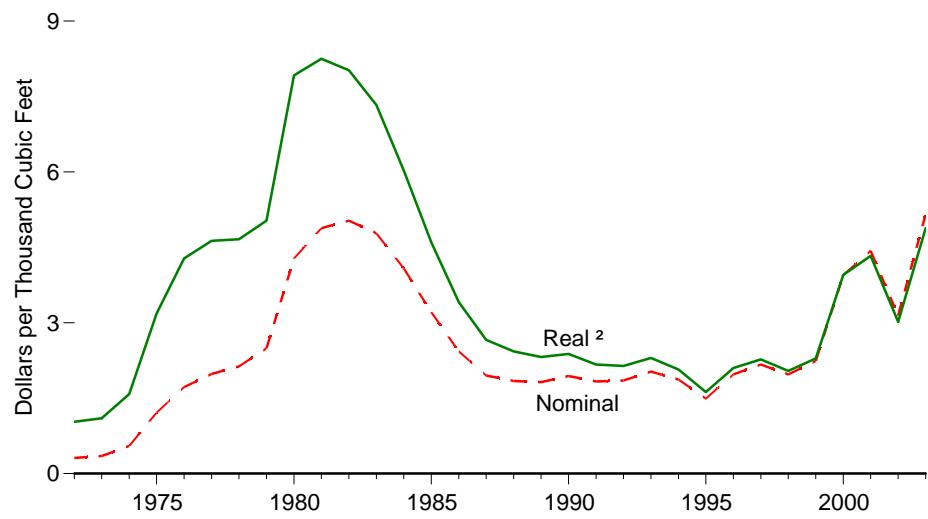
Wellhead, City Gate, and Imports, 1949-2003



Wellhead, 1949-2003



Imports, 1972-2003



¹ Nominal dollars.

² In chained (2000) dollars, calculated by using gross domestic product implicit price deflators. See Table D1.

Note: Because vertical scales differ, graphs should not be compared.

Source: Table 6.7.

Table 6.7 Natural Gas Wellhead, City Gate, and Imports Prices, Selected Years, 1949-2003
(Dollars per Thousand Cubic Feet)

Year	Wellhead ¹		City Gate ²		Imports	
	Nominal	Real ³	Nominal	Real ³	Nominal	Real ³
1949	0.06	R0.37	NA	NA	NA	NA
1950	0.07	R0.42	NA	NA	NA	NA
1955	0.10	R0.53	NA	NA	NA	NA
1960	0.14	R0.67	NA	NA	NA	NA
1965	0.16	R0.71	NA	NA	NA	NA
1970	0.17	R0.62	NA	NA	NA	NA
1971	0.18	R0.62	NA	NA	NA	NA
1972	0.19	R0.63	NA	NA	0.31	R1.03
1973	0.22	R0.69	NA	NA	0.35	R1.10
1974	0.30	R0.86	NA	NA	0.55	R1.58
1975	0.44	R1.16	NA	NA	1.21	R3.18
1976	0.58	R1.44	NA	NA	1.72	R4.28
1977	0.79	R1.85	NA	NA	1.98	R4.63
1978	0.91	R1.99	NA	NA	2.13	R4.66
1979	1.18	R2.38	NA	NA	2.49	R5.03
1980	1.59	R2.94	NA	NA	4.28	R7.92
1981	1.98	R3.35	NA	NA	4.88	R8.25
1982	2.46	R3.92	NA	NA	5.03	R8.02
1983	2.59	R3.97	NA	NA	4.78	R7.33
1984	2.66	R3.93	3.95	R5.84	4.08	R6.03
1985	2.51	R3.60	3.75	R5.38	3.21	R4.60
1986	1.94	R2.72	3.22	R4.52	2.43	R3.41
1987	1.67	R2.28	2.87	R3.92	1.95	R2.66
1988	1.69	R2.23	2.92	R3.86	1.84	R2.43
1989	1.69	R2.15	3.01	R3.83	1.82	R2.32
1990	1.71	R2.10	3.03	R3.71	1.94	R2.38
1991	1.64	R1.94	2.90	R3.43	1.83	R2.17
1992	1.74	R2.01	3.01	R3.48	1.85	R2.14
1993	2.04	R2.31	3.21	R3.63	2.03	R2.30
1994	1.85	R2.05	3.07	R3.40	1.87	R2.07
1995	1.55	R1.68	2.78	R3.02	1.49	R1.62
1996	2.17	R2.31	3.34	R3.56	1.97	R2.10
1997	2.32	R2.43	3.66	R3.84	2.17	R2.27
1998	1.96	R2.03	3.07	R3.18	1.97	R2.04
1999	2.19	R2.24	3.10	R3.17	2.24	R2.29
2000	R3.68	R3.68	4.62	R4.62	3.95	R3.95
2001	R4.00	R3.91	5.72	R5.59	4.43	R4.33
2002	2.95	R2.84	4.12	R3.96	3.15	R3.03
2003 ^p	4.98	4.71	5.86	5.55	5.16	4.88

¹ See "Natural Gas Wellhead Price" in Glossary.

² See "City Gate" in Glossary.

³ In chained (2000) dollars, calculated by using gross domestic product implicit price deflators. See Appendix Table D1.

R=Revised. P=Preliminary. NA=Not available.

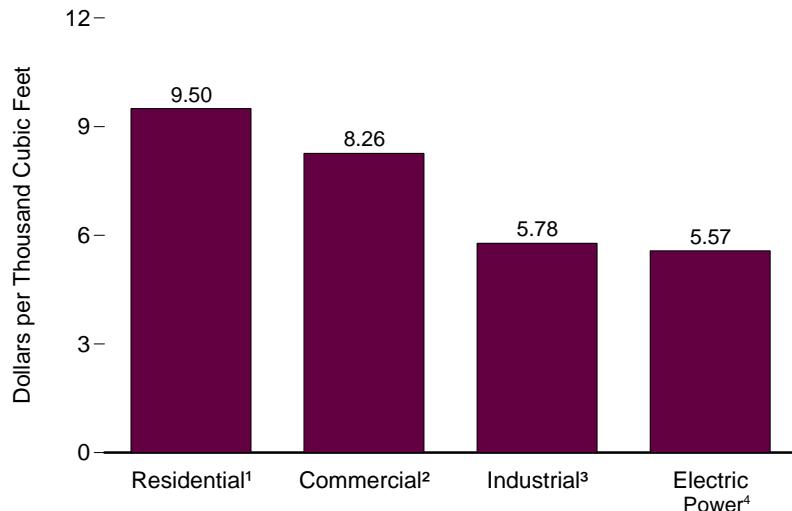
Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/natgas.html>.

• For related information, see http://www.eia.doe.gov/oil_gas/natural_gas/info_glance/natural_gas.html.

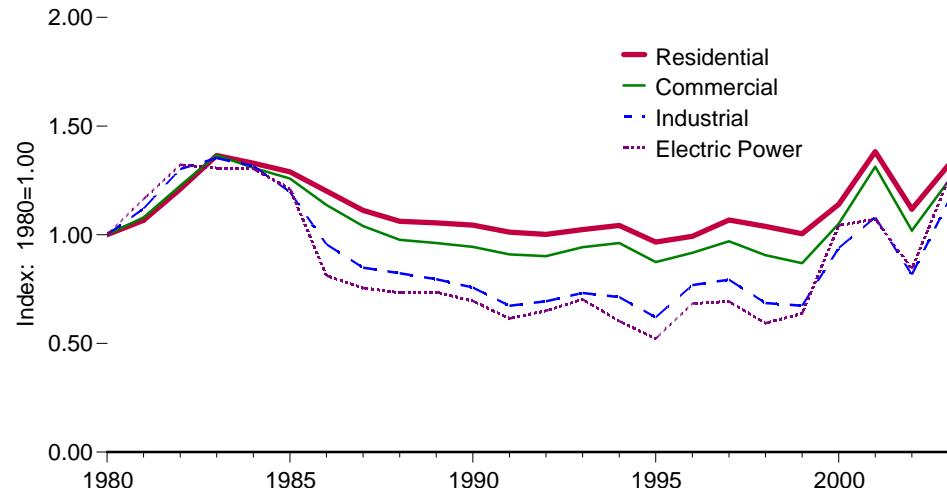
Sources: **Wellhead:** • 1949-1997—Energy Information Administration (EIA), *Natural Gas Annual (NGA) 2000* (November 2001), Table 93. • 1998 forward—EIA, *Natural Gas Monthly (NGM)* (March 2004), Table 4. **City Gate:** • 1984-1997—EIA, *NGA 2000* (November 2001), Table 96. • 1998 forward—EIA, *NGM* (March 2004), Table 4. **Imports:** • 1972 and 1973—Federal Power Commission (FPC), *Pipeline Imports and Exports of Natural Gas—Imports and Exports of LNG*. • 1974-1976—FPC, *United States Imports and Exports of Natural Gas*, annual reports. • 1977-1997—EIA, *NGA*, annual reports. • 1998 forward—EIA, *NGM* (March 2004), Tables 5 and 6.

Figure 6.8 Natural Gas Prices by Sector

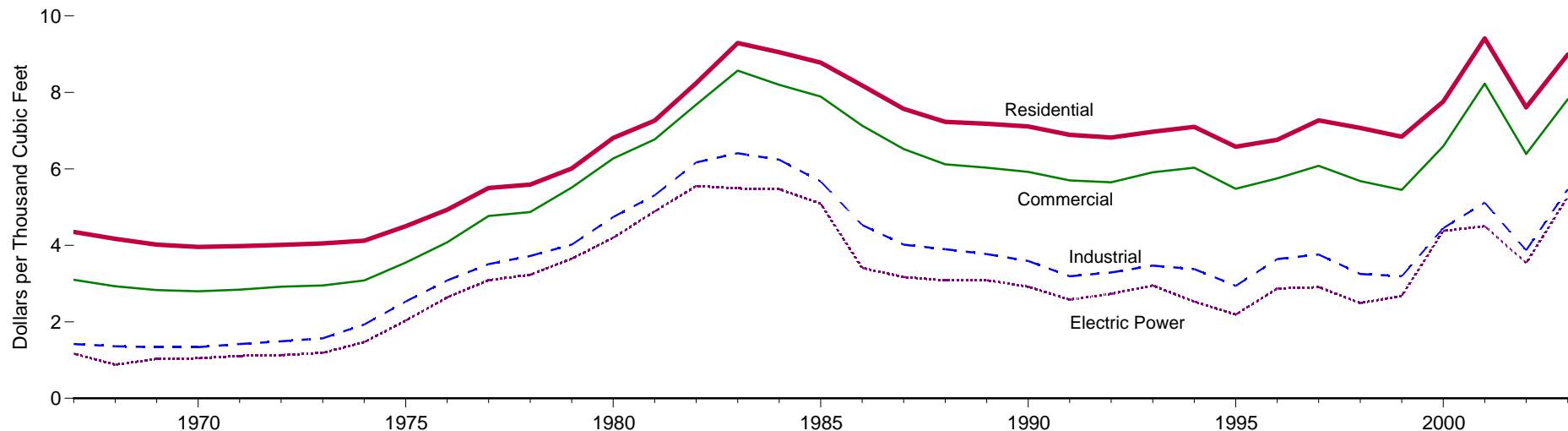
Nominal Prices, 2003



Real Prices⁵, Indexed, 1980-2003



Real Prices⁵, 1967-2003



¹ Based on 92.1 percent of volume delivered.

² Based on 77.2 percent of volume delivered.

³ Based on 22.2 percent of volume delivered.

⁴ Based on 83.6 percent of volume delivered.

⁵ In chained (2000) dollars, calculated by using gross domestic product implicit price deflators.

See Table D1.

Source: Table 6.8.

Table 6.8 Natural Gas Prices by Sector, 1967-2003

(Dollars per Thousand Cubic Feet)

Year	Residential ¹			Commercial ^{1,2}			Industrial ^{1,3}			Vehicle Fuel ⁴		Electric Power ⁵		
	Prices		Percentage of Sector ⁷	Prices		Percentage of Sector ⁷	Prices		Percentage of Sector ⁷	Prices		Prices		Percentage of Sector ⁷
	Nominal	Real ⁶		Nominal	Real ⁶		Nominal	Real ⁶		Nominal	Real ⁶	Nominal	Real ⁶	
1967	1.04	R4.35	NA	0.74	R3.10	NA	0.34	R1.42	NA	NA	NA	0.28	R1.17	NA
1968	1.04	R4.17	NA	0.73	R2.93	NA	0.34	R1.36	NA	NA	NA	0.22	R0.88	NA
1969	1.05	R4.02	NA	0.74	R2.83	NA	0.35	R1.34	NA	NA	NA	0.27	R1.03	NA
1970	1.09	R3.96	NA	0.77	R2.80	NA	0.37	R1.34	NA	NA	NA	0.29	R1.05	NA
1971	1.15	R3.98	NA	0.82	R2.84	NA	0.41	R1.42	NA	NA	NA	0.32	R1.11	NA
1972	1.21	R4.01	NA	0.88	R2.92	NA	0.45	R1.49	NA	NA	NA	0.34	R1.13	NA
1973	1.29	R4.05	NA	0.94	R2.95	NA	0.50	R1.57	NA	NA	NA	0.38	R1.19	92.1
1974	1.43	R4.12	NA	1.07	R3.08	NA	0.67	R1.93	NA	NA	NA	0.51	R1.47	92.7
1975	1.71	R4.50	NA	1.35	R3.55	NA	0.96	R2.53	NA	NA	NA	0.77	R2.03	96.1
1976	1.98	R4.93	NA	1.64	R4.08	NA	1.24	R3.08	NA	NA	NA	1.06	R2.64	96.2
1977	2.35	R5.50	NA	2.04	R4.77	NA	1.50	R3.51	NA	NA	NA	1.32	R3.09	97.1
1978	2.56	R5.59	NA	2.23	R4.87	NA	1.70	R3.72	NA	NA	NA	1.48	R3.23	98.0
1979	2.98	R6.01	NA	2.73	R5.51	NA	1.99	R4.02	NA	NA	NA	1.81	R3.65	96.1
1980	3.68	R6.81	NA	3.39	R6.27	NA	2.56	R4.74	NA	NA	NA	2.27	R4.20	96.9
1981	4.29	R7.26	NA	4.00	R6.77	NA	3.14	R5.31	NA	NA	NA	2.89	R4.89	97.6
1982	5.17	R8.24	NA	4.82	R7.68	NA	3.87	R6.17	85.1	NA	NA	3.48	R5.55	92.6
1983	6.06	R9.29	NA	5.59	R8.57	NA	4.18	R6.41	80.7	NA	NA	3.58	R5.49	93.9
1984	6.12	R9.05	NA	5.55	R8.20	NA	4.22	R6.24	74.7	NA	NA	3.70	R5.47	94.4
1985	6.12	R8.78	NA	5.50	R7.89	NA	3.95	R5.67	68.8	NA	NA	3.55	R5.09	94.0
1986	5.83	R8.18	NA	5.08	R7.13	NA	3.23	R4.53	59.8	NA	NA	2.43	R3.41	91.7
1987	5.54	R7.57	NA	4.77	R6.52	93.1	2.94	R4.02	47.4	NA	NA	2.32	R3.17	91.6
1988	5.47	R7.23	NA	4.63	R6.12	90.7	2.95	R3.90	42.6	NA	NA	2.33	R3.08	89.6
1989	5.64	R7.18	99.9	4.74	R6.03	89.1	2.96	R3.77	36.9	NA	NA	2.43	R3.09	88.6
1990	5.80	R7.11	99.3	4.83	R5.92	86.6	2.93	R3.59	35.2	3.39	R4.15	2.38	R2.92	89.2
1991	5.82	R6.89	99.2	4.81	R5.70	85.1	2.69	R3.19	32.7	3.96	R4.69	2.18	R2.58	93.2
1992	5.89	R6.82	99.1	4.88	R5.65	83.2	2.84	R3.29	30.3	4.05	R4.69	2.36	R2.73	93.2
1993	6.16	R6.97	99.1	5.22	R5.91	83.9	3.07	R3.47	29.7	4.27	R4.83	2.61	R2.95	93.4
1994	6.41	R7.10	99.1	5.44	R6.03	79.3	3.05	R3.38	25.5	4.11	R4.55	2.28	R2.53	93.5
1995	6.06	R6.58	99.1	5.05	R5.48	76.7	2.71	R2.94	24.5	3.98	R4.32	2.02	R2.19	92.0
1996	6.34	R6.76	99.1	5.40	R5.75	77.6	3.42	R3.64	19.4	4.34	R4.62	2.69	R2.87	92.2
1997	6.94	R7.27	98.8	5.80	R6.08	70.8	3.59	R3.76	18.1	4.44	R4.65	2.78	R2.91	91.0
1998	6.82	R7.07	97.7	5.48	R5.68	67.0	3.14	R3.25	16.1	4.59	R4.76	2.40	R2.49	82.5
1999	6.69	R6.84	95.2	5.33	R5.45	66.1	3.12	R3.19	18.8	4.34	R4.43	2.62	R2.68	75.3
2000	7.76	R7.76	92.6	6.59	R6.59	F63.9	4.45	R4.45	19.8	5.54	R5.54	4.38	R4.38	64.3
2001	R9.63	R9.41	R92.4	8.43	R8.23	R66.0	R5.24	R5.12	R20.8	6.60	R6.45	4.61	R4.50	41.9
2002	R7.91	R7.61	R91.4	R6.64	R6.39	R78.4	R4.02	R3.87	R22.5	R4.74	R4.56	5,R3.68	5,R3.54	581.1
2003	R9.50	R8.99	E92.1	R8.26	R7.82	R77.2	R5.78	R5.47	R22.2	NA	NA	R5.57	R5.27	R83.6

¹ Residential, commercial, and industrial prices do not include the price of natural gas delivered to 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 6.5.

² Commercial sector, including commercial combined-heat-and-power (CHP) and commercial electricity-only plants.

³ Industrial sector, including industrial combined-heat-and-power (CHP) and industrial electricity-only plants.

⁴ Much of the natural gas delivered for vehicle fuel represents deliveries to fueling stations that are used primarily or exclusively by respondents' fleet vehicles. Thus, the prices are often those associated with the operation of fleet vehicles.

⁵ Electricity-only and combined-heat-and-power (CHP) plants within the NAICS (North American Industry Classification System) 22 category whose primary business is to sell electricity, or electricity and heat, to the public. Through 2001, data are for electric utilities only; beginning in 2002, data are for electric utilities and independent power producers. See Note 3, "Coverage of Electric Power Sector Natural Gas Prices," at end of section.

⁶ In chained (2000) dollars, calculated by using gross domestic product implicit price deflators. See Table D1.

⁷ The percentage of the sector's consumption in Table 6.5 for which price data are available.

R=Revised. P=Preliminary. E=Estimate. NA=Not available.

Notes: • Prices are for natural gas, plus a small amount of supplemental gaseous fuels that cannot be identified separately. • The average for each end-use sector is calculated by dividing the total value of the natural gas consumed by each sector by the total quantity consumed. • Prices are intended to include all taxes. • See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 8.

Web Page: See http://www.eia.doe.gov/oil_gas/natural_gas/info_glance/natural_gas.html for related information.

Sources: **Residential Percentage of Sector:** • 1989-1997—Energy Information Administration (EIA), *Natural Gas Annual (NGA)*, annual reports. • 1998-2002—EIA, *NGA 2002* (January 2004), Table 1. • 2003—EIA estimate. **Vehicle Fuel:** • 1990-2002—EIA, *NGA*, annual reports. **Electric Power:** • 1967-1997—EIA, *NGA*, annual reports. • 1998-2001—EIA, *Natural Gas Monthly (NGM)* (March 2004), Table 4. • 2002 and 2003—Federal Energy Regulatory Commission, Form FERC-423, "Monthly Report on Cost and Quality of Fuels for Electric Utility Plants," and EIA, Form EIA-423, "Monthly Cost and Quality of Fuels for Electric Plants Report." **All Other Data:** • 1967-1997—EIA, *NGA*, annual reports. • 1998 forward—EIA, *NGM* (March 2004), Table 4.

Natural Gas

Note 1. Natural Gas Deliveries to Nonutilities, 1989-1992. Prior to 1993, deliveries to nonutility generators were not separately collected from natural gas companies on Form EIA-176, "Annual Report of Natural and Supplemental Gas Supply and Disposition." As a result, for 1989-1992, those volumes are probably included in both the industrial and electric power sectors and double-counted in total consumption. In 1993, 0.28 trillion cubic feet was reported as delivered to nonutility generators.

Note 2. Natural Gas Consumption. Natural gas consumption statistics are compiled from surveys of natural gas production, transmission, and distribution companies and from surveys of electric power generation. Consumption by sector from these surveys is compiled on a national and individual State basis and then balanced with national and individual State supply data. Included in the data are the following: **Residential Sector**—Consumption by private households for space heating, cooking, and other household uses; **Commercial Sector**—Consumption by nonmanufacturing establishments; municipalities for institutional heating and lighting; and, through 1995, those engaged in agriculture, forestry, and fishing. The commercial sector includes generators that produce electricity and/or useful thermal output primarily to support the activities of the above-mentioned commercial establishments; **Industrial Sector**—Consumption by establishments engaged primarily in processing unfinished materials into another form of product (including mining;

petroleum refining; manufacturing; and, beginning in 1996, agriculture, forestry, and fishing), and natural gas industry use for lease and plant fuel. The industrial sector includes generators that produce electricity and/or useful thermal output primarily to support the above-mentioned industrial activities; **Transportation Sector**—Natural gas transmission (pipeline) fuel, and natural gas delivered for use as vehicle fuel; and **Electric Power Sector (electric utilities and independent power producers)**—Consumption for electricity generation and useful thermal output at electricity-only and combined-heat-and-power (CHP) plants within the NAICS (North American Industry Classification System) 22 category whose primary business is to sell electricity, or electricity and heat, to the public.

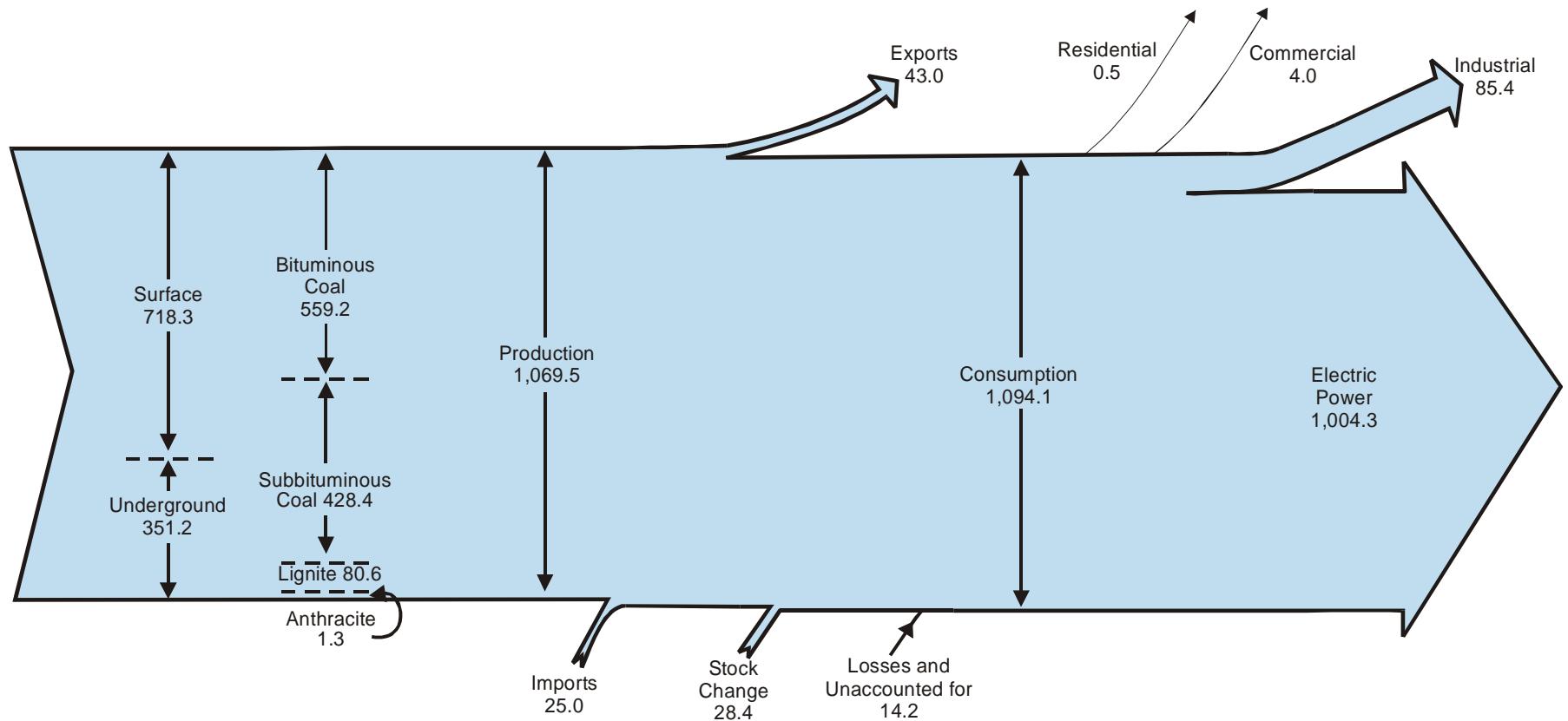
Note 3. Coverage of Electric Power Sector Natural Gas Prices. For 1973-1982, data for electric power sector natural gas prices include all electric utility plants at which the generator nameplate capacity of all steam-electric units combined totaled 25 megawatts or greater. For 1974-1982, peaking units are also included and counted toward the 25-megawatt-or-greater total. For 1983-1990, data include all electric utility plants at which the generator nameplate capacity of all steam-electric units combined totaled 50 megawatts or greater. For 1991-2001, data include all electric utility plants at which the generator nameplate capacity of all steam-electric units and combined-cycle units together totaled 50 megawatts or greater. For 2002 forward, data include electric utility and independent power producer plants at which the total facility fossil-fueled nameplate generating capacity is 50 or more megawatts, regardless of unit type.

Coal



Coal yard, Curtis Bay, Maryland. Source: U.S. Department of Energy.

Diagram 4. Coal Flow, 2003
 (Million Short Tons)

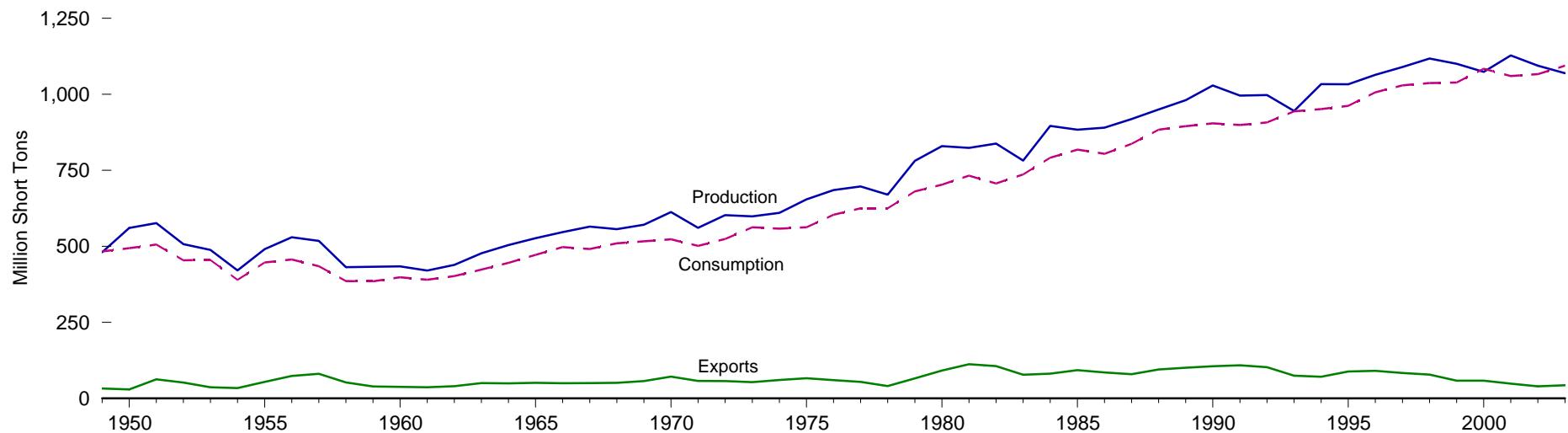


Notes: • Production categories are estimated; other data are preliminary. • Totals may not equal sum of components due to independent rounding.

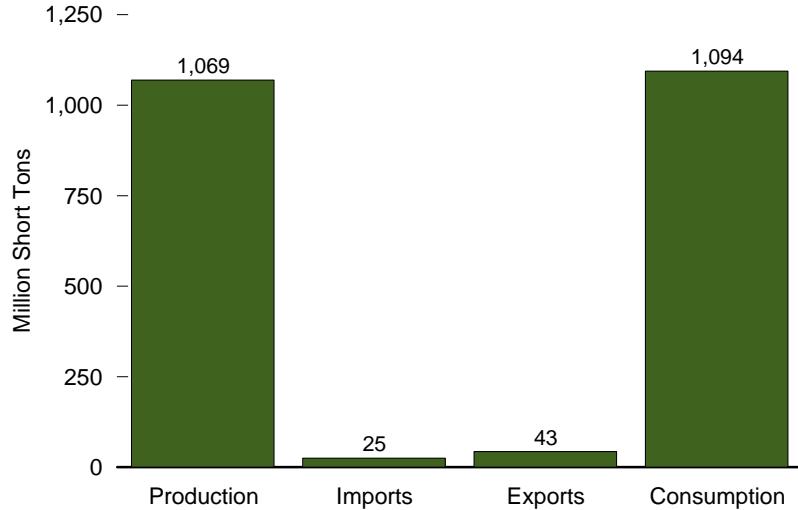
Sources: Tables 7.1, 7.2, and 7.3.

Figure 7.1 Coal Overview

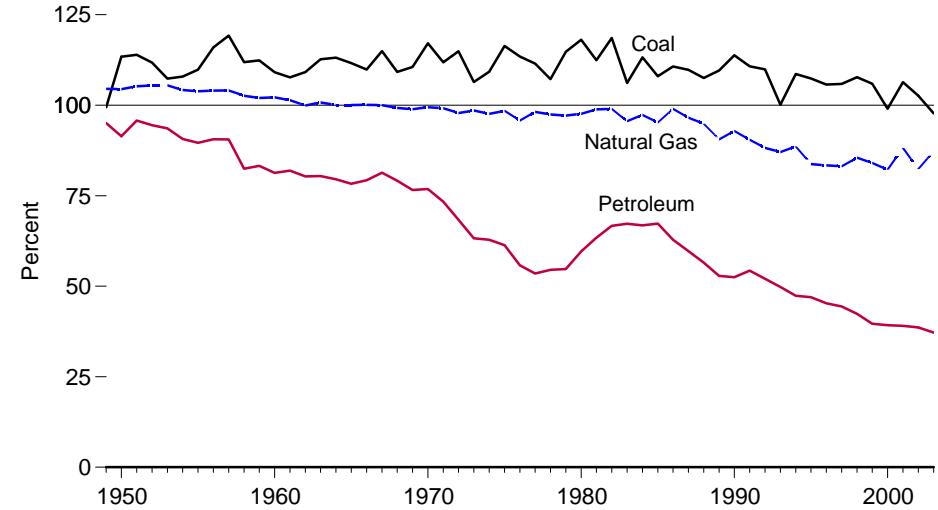
Overview, 1949-2003



Overview, 2003



Production as Share of Consumption by Type of Fossil Fuel, 1949-2003



Sources: Tables 5.1, 6.1, and 7.1.

Table 7.1 Coal Overview, Selected Years, 1949-2003
 (Million Short Tons)

Year	Production ¹	Waste Coal ^{2,3}	Imports	Exports	Stock Change ⁴	Losses and Unaccounted for ⁵	Consumption
1949	480.6	NA	0.3	32.8	(⁶)	⁶ -35.1	483.2
1950	560.4	NA	0.4	29.4	(⁶)	⁶ 9.5	494.1
1955	490.8	NA	0.3	54.4	(⁶)	⁶ -6.3	447.0
1960	434.3	NA	0.3	38.0	(⁶)	⁶ 1.7	398.1
1965	527.0	NA	0.2	51.0	(⁶)	⁶ 2.2	472.0
1970	612.7	NA	(s)	71.7	(⁶)	⁶ 6.6	523.2
1971	560.9	NA	0.1	57.3	(⁶)	⁶ 4.2	501.6
1972	602.5	NA	(s)	56.7	(⁶)	⁶ -4.3	524.3
1973	598.6	NA	0.1	53.6	(⁶)	⁶ -17.9	562.6
1974	610.0	NA	2.1	60.7	-8.9	2.0	558.4
1975	654.6	NA	0.9	66.3	32.2	-5.5	562.6
1976	684.9	NA	1.2	60.0	8.5	13.8	603.8
1977	697.2	NA	1.6	54.3	22.6	-3.4	625.3
1978	670.2	NA	3.0	40.7	-4.9	12.1	625.2
1979	781.1	NA	2.1	66.0	36.2	0.4	680.5
1980	829.7	NA	1.2	91.7	25.6	10.8	702.7
1981	823.8	NA	1.0	112.5	-19.0	-1.4	732.6
1982	838.1	NA	0.7	106.3	22.6	3.1	706.9
1983	782.1	NA	1.3	77.8	-29.5	-1.6	736.7
1984	895.9	NA	1.3	81.5	28.7	-4.3	791.3
1985	883.6	NA	2.0	92.7	-27.9	2.8	818.0
1986	890.3	NA	2.2	85.5	4.0	-1.2	804.2
1987	918.8	NA	1.7	79.6	6.5	-2.5	836.9
1988	950.3	NA	2.1	95.0	-24.9	-1.3	883.6
1989	980.7	1.4	2.9	100.8	-13.7	2.9	895.0
1990	1,029.1	3.3	2.7	105.8	26.5	-1.7	904.5
1991	996.0	4.0	3.4	109.0	-0.9	-3.9	899.2
1992	997.5	6.3	3.8	102.5	-3.0	0.5	907.7
1993	945.4	8.1	8.2	74.5	-51.9	-4.9	944.1
1994	1,033.5	8.2	8.9	71.4	23.6	4.3	951.3
1995	1,033.0	8.6	9.5	88.5	-0.3	0.6	962.1
1996	1,063.9	8.8	8.1	90.5	-17.5	1.4	1,006.3
1997	1,089.9	8.1	7.5	83.5	-11.3	3.7	1,029.5
1998	1,117.5	8.7	8.7	78.0	24.2	-4.4	1,037.1
1999	1,100.4	8.7	9.1	58.5	24.0	-2.9	1,038.6
2000	1,073.6	9.1	12.5	58.5	-48.3	0.9	1,084.1
2001	¹ 1,127.7	(³)	19.8	48.7	41.6	-3.0	1,060.1
2002	R1,094.3	(³)	16.9	39.6	R10.2	R-5.0	R1,066.4
2003 ^P	1,069.5	(³)	25.0	43.0	-28.4	-14.2	1,094.1

¹ Beginning in 2001, includes a small amount of refuse recovery.

² Waste coal (including anthracite culm, bituminous gob, fine coal, and lignite waste) consumed by independent power producers. For 1989-2000, waste coal is counted as a supply-side item to balance the same amount of waste coal included in "Consumption."

³ Beginning in 2001, refuse recovery is included in "Production"; to avoid double counting, waste coal is not counted as a separate supply-side item for 2001 forward.

⁴ A negative value indicates a decrease in stocks; a positive value indicates an increase.

⁵ "Losses and Unaccounted for" is calculated as the sum of production, imports, and waste coal, minus exports, stock change, and consumption.

⁶ Through 1973, stock change is included in "Losses and Unaccounted for."

R=Revised. P=Preliminary. NA=Not available. (s)=Less than 0.05 million short tons.

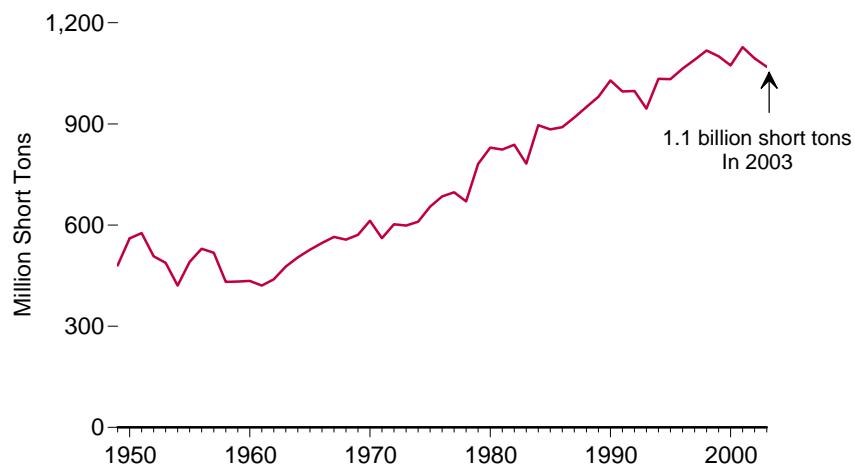
Notes: • See Note 1, "Coal Consumption," at end of section. • Totals may not equal sum of components due to independent rounding.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/coal.html>. • For related information, see <http://www.eia.doe.gov/fuelcoal.html>.

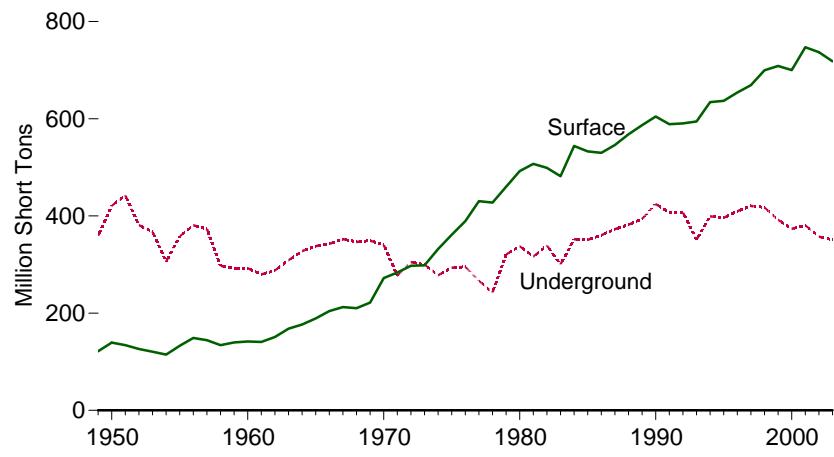
Sources: **Production:** Table 7.2. **Waste Coal:** • 1989-1997—Energy Information Administration (EIA), Form EIA-867, "Annual Nonutility Power Producer Report." • 1998-2000—EIA, Form EIA-860B, "Annual Electric Generator Report-Nonutility." **Imports:** • 1949-1996—U.S. Department of Commerce, Bureau of the Census, "Monthly Report IM145." • 1997 forward—EIA, *Quarterly Coal Report October-December 2003* (March 2004), Table 1. **Exports:** Table 7.4. **Stock Change:** Table 7.5. **Losses and Unaccounted for:** Calculated. **Consumption:** Table 7.3.

Figure 7.2 Coal Production, 1949-2003

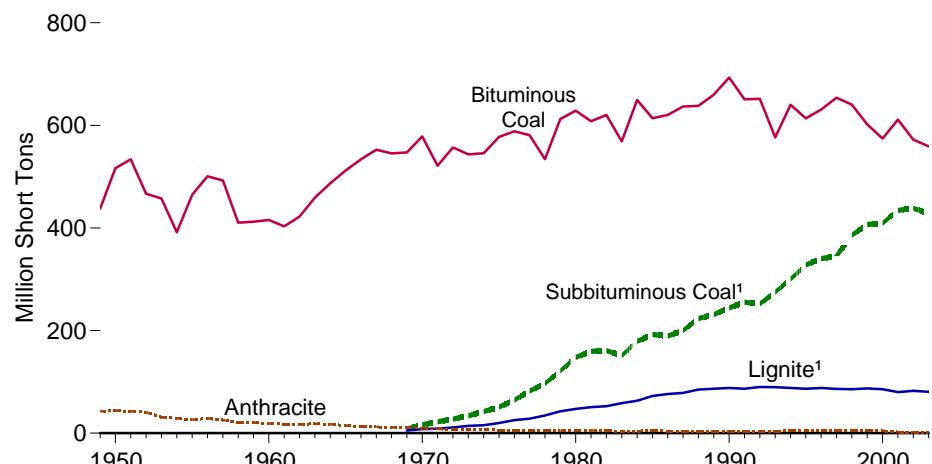
Total



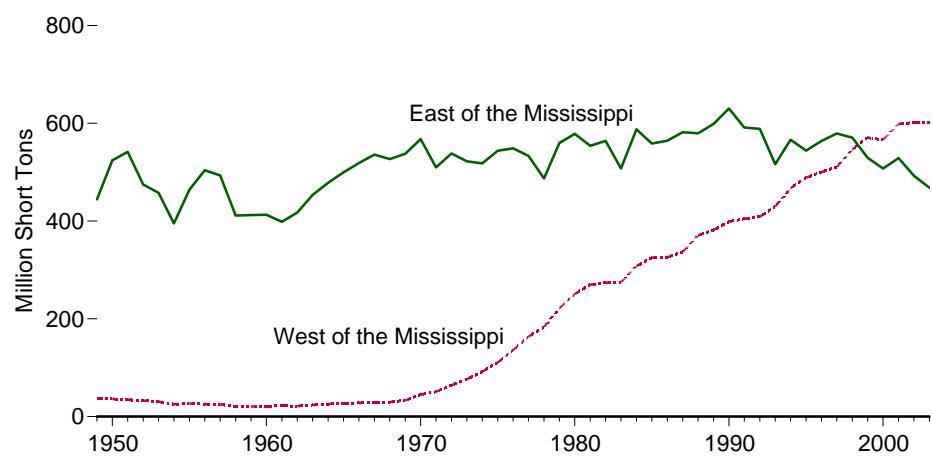
By Mining Method



By Rank



By Location



¹ Included in bituminous coal prior to 1969.

Note: Because vertical scales differ, graphs should not be compared.

Source: Table 7.2.

Table 7.2 Coal Production, Selected Years, 1949-2003
(Million Short Tons)

Year	Rank				Mining Method		Location		Total ¹
	Bituminous Coal ¹	Subbituminous Coal	Lignite	Anthracite ¹	Underground	Surface ¹	East of the Mississippi ¹	West of the Mississippi ¹	
1949	437.9	(²)	(²)	42.7	358.9	121.7	444.2	36.4	480.6
1950	516.3	(²)	(²)	44.1	421.0	139.4	524.4	36.0	560.4
1955	464.6	(²)	(²)	26.2	358.0	132.9	464.2	26.6	490.8
1960	415.5	(²)	(²)	18.8	292.6	141.7	413.0	21.3	434.3
1965	512.1	(²)	(²)	14.9	338.0	189.0	499.5	27.4	527.0
1970	578.5	16.4	8.0	9.7	340.5	272.1	567.8	44.9	612.7
1971	521.3	22.2	8.7	8.7	277.2	283.7	509.9	51.0	560.9
1972	556.8	27.5	11.0	7.1	305.0	297.4	538.2	64.3	602.5
1973	543.5	33.9	14.3	6.8	300.1	298.5	522.1	76.4	598.6
1974	545.7	42.2	15.5	6.6	278.0	332.1	518.1	91.9	610.0
1975	577.5	51.1	19.8	6.2	293.5	361.2	543.7	110.9	654.6
1976	588.4	64.8	25.5	6.2	295.5	389.4	548.8	136.1	684.9
1977	581.0	82.1	28.2	5.9	266.6	430.6	533.3	163.9	697.2
1978	534.0	96.8	34.4	5.0	242.8	427.4	487.2	183.0	670.2
1979	612.3	121.5	42.5	4.8	320.9	460.2	559.7	221.4	781.1
1980	628.8	147.7	47.2	6.1	337.5	492.2	578.7	251.0	829.7
1981	608.0	159.7	50.7	5.4	316.5	507.3	553.9	269.9	823.8
1982	620.2	160.9	52.4	4.6	339.2	499.0	564.3	273.9	838.1
1983	568.6	151.0	58.3	4.1	300.4	481.7	507.4	274.7	782.1
1984	649.5	179.2	63.1	4.2	352.1	543.9	587.6	308.3	895.9
1985	613.9	192.7	72.4	4.7	350.8	532.8	558.7	324.9	883.6
1986	620.1	189.6	76.4	4.3	360.4	529.9	564.4	325.9	890.3
1987	636.6	200.2	78.4	3.6	372.9	545.9	581.9	336.8	918.8
1988	638.1	223.5	85.1	3.6	382.2	568.1	579.6	370.7	950.3
1989	659.8	231.2	86.4	3.3	393.8	586.9	599.0	381.7	980.7
1990	693.2	244.3	88.1	3.5	424.5	604.5	630.2	398.9	1,029.1
1991	650.7	255.3	86.5	3.4	407.2	588.8	591.3	404.7	996.0
1992	651.8	252.2	90.1	3.5	407.2	590.3	588.6	409.0	997.5
1993	576.7	274.9	89.5	4.3	351.1	594.4	516.2	429.2	945.4
1994	640.3	300.5	88.1	4.6	399.1	634.4	566.3	467.2	1,033.5
1995	613.8	328.0	86.5	4.7	396.2	636.7	544.2	488.7	1,033.0
1996	630.7	340.3	88.1	4.8	409.8	654.0	563.7	500.2	1,063.9
1997	653.8	345.1	86.3	4.7	420.7	669.3	579.4	510.6	1,089.9
1998	640.6	385.9	85.8	5.3	417.7	699.8	570.6	547.0	1,117.5
1999	601.7	406.7	87.2	4.8	391.8	708.6	529.6	570.8	1,100.4
2000	574.3	409.2	85.6	4.6	373.7	700.0	507.5	566.1	1,073.6
2001	¹ 611.3	434.4	80.0	¹ 1.9	380.6	¹ 747.1	¹ 528.8	1598.9	¹ 1,127.7
2002	R572.1	R438.4	R82.5	R1.4	R357.4	R736.9	R492.9	601.4	R1,094.3
2003	E559.2	E428.4	E80.6	E1.3	E351.2	E718.3	E468.2	E601.3	E1,069.5

¹ Beginning in 2001, includes a small amount of refuse recovery.

² Included in "Bituminous Coal."

R=Revised. P=Preliminary. E=Estimate.

Note: Totals may not equal sum of components due to independent rounding.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/coal.html>.

• For related information, see <http://www.eia.doe.gov/fuelcoal.html>.

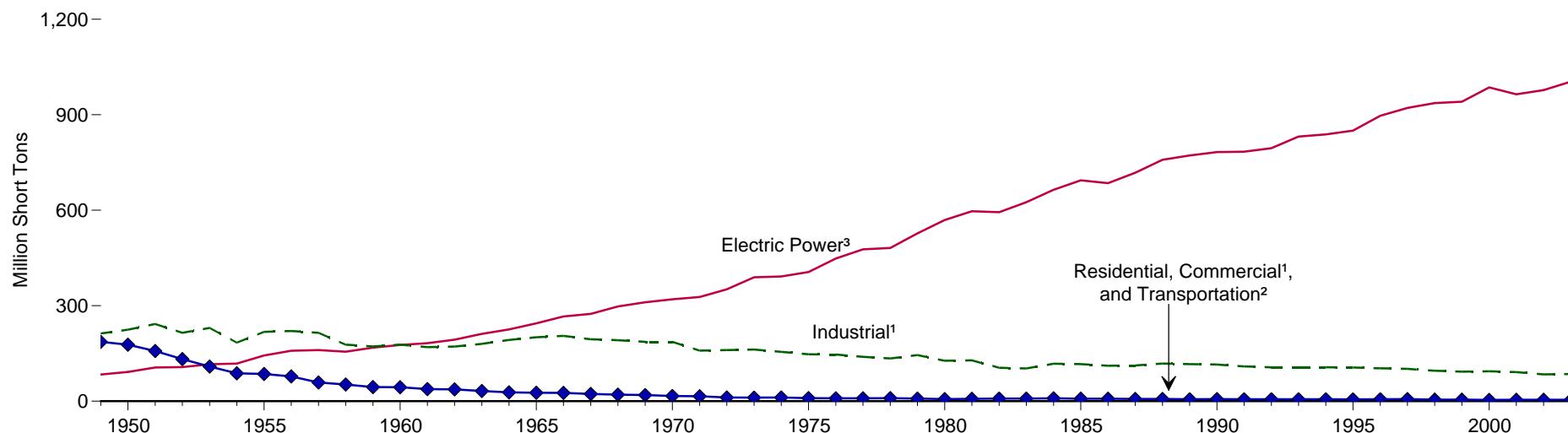
Sources: • 1949-1975—Bureau of Mines, *Minerals Yearbook*, "Coal—Bituminous and Lignite" and "Coal—Pennsylvania Anthracite" chapters. • 1976—Energy Information Administration (EIA), Energy Data Reports, *Coal—Bituminous and Lignite* in 1976 and *Coal—Pennsylvania Anthracite* 1976. • 1977 and

1978—EIA, Energy Data Reports, *Bituminous Coal and Lignite Production and Mine Operations*—1977; *1978, Coal—Pennsylvania Anthracite* 1977; 1978, and *Coal Production*, annual reports. • 1979 and 1980—EIA, Energy Data Reports, *Weekly Coal Report* and *Coal Production*, annual reports.

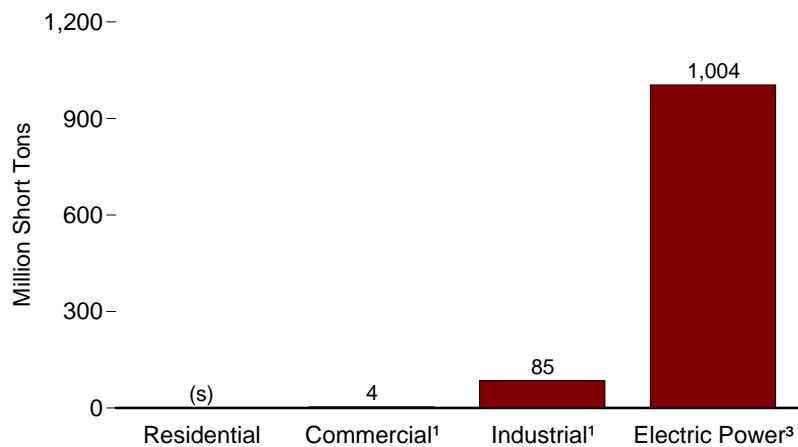
• 1981-1988—EIA, *Weekly Coal Production and Coal Production*, annual reports. • 1989-2000—EIA, *Coal Industry Annual*, annual reports. • 2001 and 2002—EIA, *Annual Coal Report*, annual reports, Tables 1, 2, and 6. • 2003—EIA, *Quarterly Coal Report October-December* (March 2004), Table 4; EIA, Form EIA-7A, "Coal Production Report"; and U.S. Department of Labor, Mine Safety and Health Administration, Form 7000-2, "Quarterly Mine Employment and Coal Production Report."

Figure 7.3 Coal Consumption by Sector

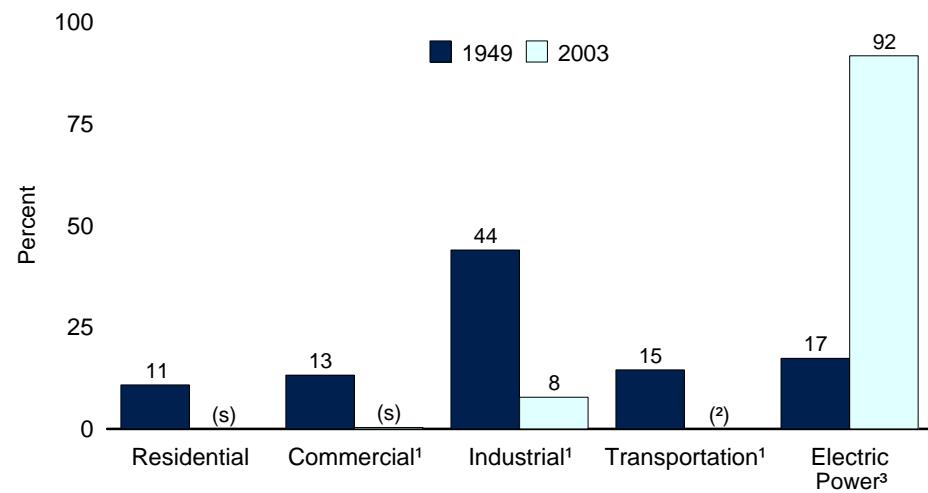
By Sector, 1949-2003



By Sector, 2003



Sector Shares, 1949 and 2003



¹ Includes combined-heat-and-power plants and a small number of electricity-only plants.

² For 1978 forward, small amounts of transportation sector use are included in "Industrial."

³ Electricity-only and combined-heat-and-power plants whose primary business is to sell electricity, or electricity and heat, to the public.

(s)=Less than 0.5 million short tons or less than 0.5 percent, as appropriate.

Source: Table 7.3.

Table 7.3 Coal Consumption by Sector, Selected Years, 1949-2003
(Million Short Tons)

Year	Residential	End-Use Sectors										Electric Power Sector ¹			Total	
		Commercial			Industrial				Total	Transportation	Total					
		CHP ²	Other ³	Total	Coke Plants	CHP ⁴	Non-CHP ⁵	Total			Electricity Only	CHP	Total			
1949	52.4	(6)	64.1	64.1	91.4	(7)	121.2	121.2	212.6	70.2	399.3	84.0	NA	84.0	483.2	
1950	51.6	(6)	63.0	63.0	104.0	(7)	120.6	120.6	224.6	63.0	402.2	91.9	NA	91.9	494.1	
1955	35.6	(6)	32.9	32.9	107.7	(7)	110.1	110.1	217.8	17.0	303.3	143.8	NA	143.8	447.0	
1960	24.2	(6)	16.8	16.8	81.4	(7)	96.0	96.0	177.4	3.0	221.4	176.7	NA	176.7	398.1	
1965	14.6	(6)	11.0	11.0	95.3	(7)	105.6	105.6	200.8	0.7	227.2	244.8	NA	244.8	472.0	
1970	9.0	(6)	7.1	7.1	96.5	(7)	90.2	90.2	186.6	0.3	203.0	320.2	NA	320.2	523.2	
1971	7.4	(6)	7.8	7.8	83.2	(7)	75.6	75.6	158.9	0.2	174.3	327.3	NA	327.3	501.6	
1972	5.0	(6)	6.7	6.7	87.7	(7)	72.9	72.9	160.6	0.2	172.5	351.8	NA	351.8	524.3	
1973	4.1	(6)	7.0	7.0	94.1	(7)	68.0	68.0	162.1	0.1	173.4	389.2	NA	389.2	562.6	
1974	3.7	(6)	7.8	7.8	90.2	(7)	64.9	64.9	155.1	0.1	166.6	391.8	NA	391.8	558.4	
1975	2.8	(6)	6.6	6.6	83.6	(7)	63.6	63.6	147.2	(s)	156.7	406.0	NA	406.0	562.6	
1976	2.6	(6)	6.3	6.3	84.7	(7)	61.8	61.8	146.5	(s)	155.4	448.4	NA	448.4	603.8	
1977	2.5	(6)	6.4	6.4	77.7	(7)	61.5	61.5	139.2	(s)	148.2	477.1	NA	477.1	625.3	
1978	2.2	(6)	7.3	7.3	71.4	(7)	63.1	63.1	134.5	(7)	144.0	481.2	NA	481.2	625.2	
1979	1.7	(6)	6.7	6.7	77.4	(7)	67.7	67.7	145.1	(7)	153.5	527.1	NA	527.1	680.5	
1980	1.4	(6)	5.1	5.1	66.7	(7)	60.3	60.3	127.0	(7)	133.5	569.3	NA	569.3	702.7	
1981	1.3	(6)	6.1	6.1	61.0	(7)	67.4	67.4	128.4	(7)	135.8	596.8	NA	596.8	732.6	
1982	1.4	(6)	6.8	6.8	40.9	(7)	64.1	64.1	105.0	(7)	113.2	593.7	NA	593.7	706.9	
1983	1.4	(6)	7.1	7.1	37.0	(7)	66.0	66.0	103.0	(7)	111.5	625.2	NA	625.2	736.7	
1984	1.7	(6)	7.4	7.4	44.0	(7)	73.7	73.7	117.8	(7)	126.9	664.4	NA	664.4	791.3	
1985	1.7	(6)	6.1	6.1	41.1	(7)	75.4	75.4	116.4	(7)	124.2	693.8	NA	693.8	818.0	
1986	1.8	(6)	5.9	5.9	35.9	(7)	75.6	75.6	111.5	(7)	119.2	685.1	NA	685.1	804.2	
1987	1.6	(6)	5.3	5.3	37.0	(7)	75.2	75.2	112.1	(7)	119.0	717.9	NA	717.9	836.9	
1988	1.6	(6)	5.6	5.6	41.9	(7)	76.3	76.3	118.1	(7)	125.3	758.4	NA	758.4	883.6	
1989	1.3	1.1	3.7	4.9	40.5	24.9	51.3	76.1	116.6	(7)	122.8	767.4	4.8	772.2	895.0	
1990	1.3	1.2	4.2	5.4	38.9	27.8	48.5	76.3	115.2	(7)	121.9	774.2	8.4	782.6	904.5	
1991	1.1	1.2	3.8	5.0	33.9	27.0	48.4	75.4	109.3	(7)	115.4	773.2	10.7	783.9	899.2	
1992	1.1	1.2	3.9	5.0	32.4	28.2	45.8	74.0	106.4	(7)	112.6	781.2	13.9	795.1	907.7	
1993	1.1	1.4	3.7	5.1	31.3	28.9	46.0	74.9	106.2	(7)	112.4	816.6	15.1	831.6	944.1	
1994	0.9	1.3	3.8	5.1	31.7	29.7	45.5	75.2	106.9	(7)	112.9	821.2	17.1	838.4	951.3	
1995	0.8	1.4	3.6	5.1	33.0	29.4	43.7	73.1	106.1	(7)	111.9	832.9	17.3	850.2	962.1	
1996	0.7	1.7	3.6	5.3	31.7	29.4	42.3	71.7	103.4	(7)	109.4	878.8	18.1	896.9	1,006.3	
1997	0.7	1.7	4.0	5.8	30.2	29.9	41.7	71.5	101.7	(7)	108.2	904.2	17.1	921.4	1,029.5	
1998	0.5	1.4	2.9	4.3	28.2	28.6	38.9	67.4	95.6	(7)	100.5	920.4	16.3	936.6	1,037.1	
1999	0.6	1.5	2.8	4.3	28.1	27.8	37.0	64.7	92.8	(7)	97.7	924.7	16.2	940.9	1,038.6	
2000	0.5	1.5	2.1	3.7	28.9	28.0	37.2	65.2	94.1	(7)	98.3	967.1	18.7	985.8	1,084.1	
2001	0.5	1.4	2.4	3.9	26.1	25.8	39.5	65.3	91.3	(7)	95.7	946.1	18.4	964.4	1,060.1	
2002	0.5	R1.4	R2.6	R4.0	R23.7	R26.2	R34.5	R60.7	R84.4	(7)	R88.8	R960.1	R17.4	R977.5	R1,066.4	
2003 ^p	0.5	1.5	2.5	4.0	24.2	26.7	34.4	61.2	85.4	(7)	89.8	986.1	18.1	1,004.3	1,094.1	

¹ Electricity-only and combined-heat-and-power (CHP) plants within the NAICS (North American Industry Classification System) 22 category whose primary business is to sell electricity, or electricity and heat, to the public. Through 1988, data are for electric utilities only; beginning in 1989, data are for electric utilities and independent power producers. Electric utility CHP plants are included in "Electricity Only."

² Commercial combined-heat-and-power (CHP) and a small number of commercial electricity-only plants, such as those at hospitals and universities.

³ All commercial sector fuel use other than that in "Commercial CHP."

⁴ Industrial combined-heat-and-power (CHP) and a small number of industrial electricity-only plants.

⁵ All industrial sector fuel use other than that in "Coke Plants" and "Industrial CHP."

⁶ Included in "Commercial Other."

⁷ Included in "Industrial Non-CHP."

R=Revised. P=Preliminary. NA=Not available. (s)=Less than 0.05 million short tons.

Notes: • See Tables 8.5a-8.5d for the amount of coal used to produce electricity and Tables 8.6a-8.6c for the amount of coal used to produce useful thermal output. • See Note 1, "Coal Consumption," and

Note 2, "Residential and Commercial Coal Consumption Estimates," at end of section. • See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section 8. • Totals may not equal sum of components due to independent rounding.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/fuelcoal.html>.

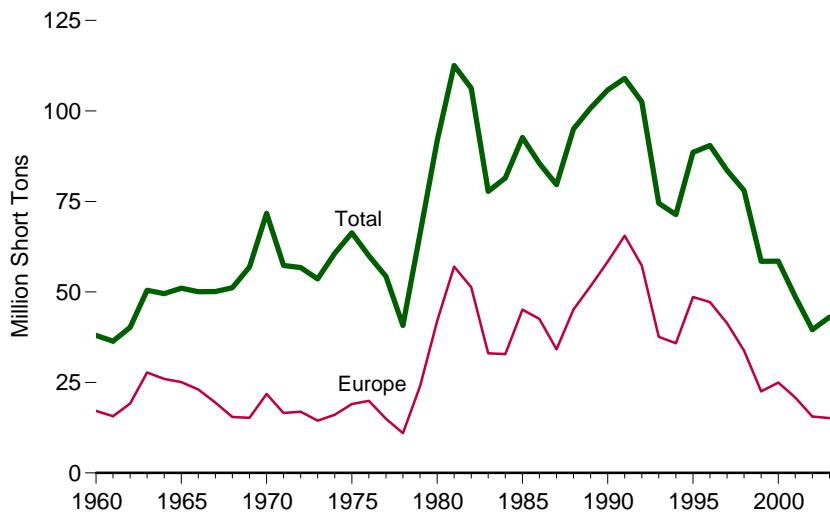
Sources: [Residential](#), [Commercial Total](#), [Coke Plants](#), [Other Industrial Total](#), and [Transportation](#):

• 1949-1975—Bureau of Mines (BOM), [Minerals Yearbook](#), "Coal—Bituminous and Lignite" and "Coal—Pennsylvania Anthracite" chapters. • 1976—Energy Information Administration (EIA), [Energy Data Reports](#), [Coal—Bituminous and Lignite in 1976](#) and [Coal—Pennsylvania Anthracite 1976](#). • 1977 and 1978—EIA, [Energy Data Reports](#), [Coal—Pennsylvania Anthracite 1977](#); 1978, and [Weekly Coal Report](#).

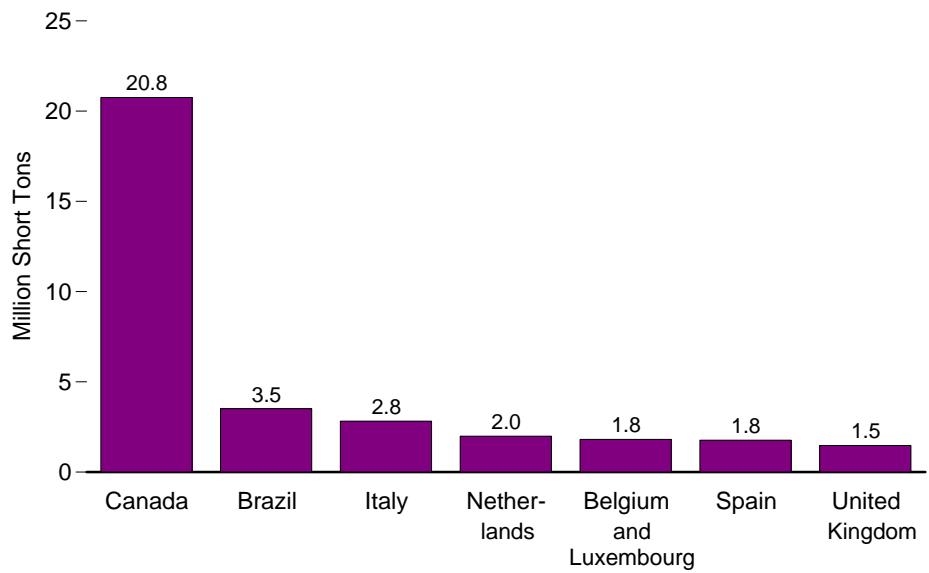
• 1979 and 1980—EIA, [Energy Data Report](#), [Weekly Coal Report](#). • 1981-1996—EIA, [Quarterly Coal Report \(QCR\)](#) October-December, quarterly reports. 1997 forward—EIA, [QCR October-December 2003](#) (March 2004), Table 29. • [Commercial CHP and Industrial CHP](#): Table 8.7c. [Electric Power Sector](#): Tables 8.5b, 8.5c, 8.6b, and 8.7b. [All Other Data](#): Calculated.

Figure 7.4 Coal Exports by Country of Destination

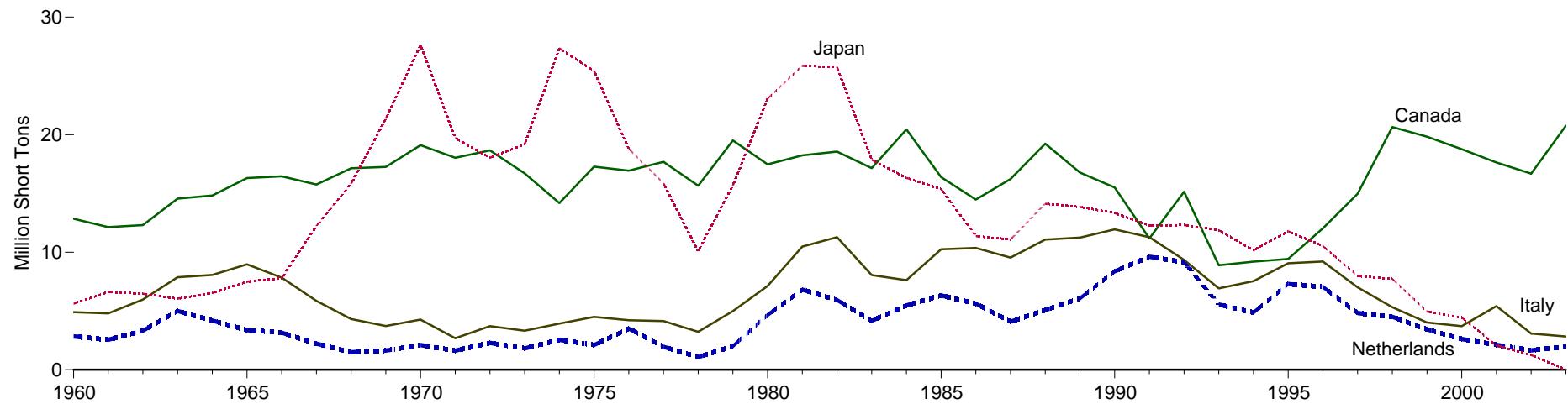
Total and Europe, 1960-2003



By Selected Country, 2003



By Selected Country, 1960-2003



Note: Because vertical scales differ, graphs should not be compared.

Source: Table 7.4.

Table 7.4 Coal Exports by Country of Destination, 1960-2003
 (Million Short Tons)

Year	Canada	Brazil	Europe										Japan	Other	Total
			Belgium and Luxembourg	Denmark	France	Germany ¹	Italy	Netherlands	Spain	United Kingdom	Other	Total			
1960	12.8	1.1	1.1	0.1	0.8	4.6	4.9	2.8	0.3	0.0	2.4	17.1	5.6	1.3	38.0
1961	12.1	1.0	1.0	0.1	0.7	4.3	4.8	2.6	0.2	0.0	2.0	15.7	6.6	1.0	36.4
1962	12.3	1.3	1.3	(s)	0.9	5.1	6.0	3.3	0.8	(s)	1.8	19.1	6.5	1.0	40.2
1963	14.6	1.2	2.7	(s)	2.7	5.6	7.9	5.0	1.5	0.0	2.4	27.7	6.1	0.9	50.4
1964	14.8	1.1	2.3	(s)	2.2	5.2	8.1	4.2	1.4	0.0	2.6	26.0	6.5	1.1	49.5
1965	16.3	1.2	2.2	(s)	2.1	4.7	9.0	3.4	1.4	(s)	2.3	25.1	7.5	0.9	51.0
1966	16.5	1.7	1.8	(s)	1.6	4.9	7.8	3.2	1.2	(s)	2.5	23.1	7.8	1.0	50.1
1967	15.8	1.7	1.4	0.0	2.1	4.7	5.9	2.2	1.0	0.0	2.1	19.4	12.2	1.0	50.1
1968	17.1	1.8	1.1	0.0	1.5	3.8	4.3	1.5	1.5	0.0	1.9	15.5	15.8	0.9	51.2
1969	17.3	1.8	0.9	0.0	2.3	3.5	3.7	1.6	1.8	0.0	1.3	15.2	21.4	1.2	56.9
1970	19.1	2.0	1.9	0.0	3.6	5.0	4.3	2.1	3.2	(s)	1.8	21.8	27.6	1.2	71.7
1971	18.0	1.9	0.8	0.0	3.2	2.9	2.7	1.6	2.6	1.7	1.1	16.6	19.7	1.1	57.3
1972	18.7	1.9	1.1	0.0	1.7	2.4	3.7	2.3	2.1	2.4	1.1	16.9	18.0	1.2	56.7
1973	16.7	1.6	1.2	0.0	2.0	1.6	3.3	1.8	2.2	0.9	1.3	14.4	19.2	1.6	53.6
1974	14.2	1.3	1.1	0.0	2.7	1.5	3.9	2.6	2.0	1.4	0.9	16.1	27.3	1.8	60.7
1975	17.3	2.0	0.6	0.0	3.6	2.0	4.5	2.1	2.7	1.9	1.6	19.0	25.4	2.6	66.3
1976	16.9	2.2	2.2	(s)	3.5	1.0	4.2	3.5	2.5	0.8	2.1	19.9	18.8	2.1	60.0
1977	17.7	2.3	1.5	0.1	2.1	0.9	4.1	2.0	1.6	0.6	2.1	15.0	15.9	3.5	54.3
1978	15.7	1.5	1.1	0.0	1.7	0.6	3.2	1.1	0.8	0.4	2.2	11.0	10.1	2.5	40.7
1979	19.5	2.8	3.2	0.2	3.9	2.6	5.0	2.0	1.4	1.4	4.4	23.9	15.7	4.1	66.0
1980	17.5	3.3	4.6	1.7	7.8	2.5	7.1	4.7	3.4	4.1	6.0	41.9	23.1	6.0	91.7
1981	18.2	2.7	4.3	3.9	9.7	4.3	10.5	6.8	6.4	2.3	8.8	57.0	25.9	8.7	112.5
1982	18.6	3.1	4.8	2.8	9.0	2.3	11.3	5.9	5.6	2.0	7.6	51.3	25.8	7.5	106.3
1983	17.2	3.6	2.5	1.7	4.2	1.5	8.1	4.2	3.3	1.2	6.4	33.1	17.9	6.1	77.8
1984	20.4	4.7	3.9	0.6	3.8	0.9	7.6	5.5	2.3	2.9	5.3	32.8	16.3	7.2	81.5
1985	16.4	5.9	4.4	2.2	4.5	1.1	10.3	6.3	3.5	2.7	10.3	45.1	15.4	9.9	92.7
1986	14.5	5.7	4.4	2.1	5.4	0.8	10.4	5.6	2.6	2.9	8.4	42.6	11.4	11.4	85.5
1987	16.2	5.8	4.6	0.9	2.9	0.5	9.5	4.1	2.5	2.6	6.6	34.2	11.1	12.3	79.6
1988	19.2	5.3	6.5	2.8	4.3	0.7	11.1	5.1	2.5	3.7	8.5	45.1	14.1	11.3	95.0
1989	16.8	5.7	7.1	3.2	6.5	0.7	11.2	6.1	3.3	4.5	8.9	51.6	13.8	12.9	100.8
1990	15.5	5.8	8.5	3.2	6.9	1.1	11.9	8.4	3.8	5.2	9.5	58.4	13.3	12.7	105.8
1991	11.2	7.1	7.5	4.7	9.5	1.7	11.3	9.6	4.7	6.2	10.4	65.5	12.3	13.0	109.0
1992	15.1	6.4	7.2	3.8	8.1	1.0	9.3	9.1	4.5	5.6	8.5	57.3	12.3	11.4	102.5
1993	8.9	5.2	5.2	0.3	4.0	0.5	6.9	5.6	4.1	4.1	6.9	37.6	11.9	11.0	74.5
1994	9.2	5.5	4.9	0.5	2.9	0.3	7.5	4.9	4.1	3.4	7.3	35.8	10.2	10.7	71.4
1995	9.4	6.4	4.5	2.1	3.7	2.0	9.1	7.3	4.7	4.7	10.7	48.6	11.8	12.4	88.5
1996	12.0	6.5	4.6	1.3	3.9	1.1	9.2	7.1	4.1	6.2	9.8	47.2	10.5	14.2	90.5
1997	15.0	7.5	4.3	0.4	3.4	0.9	7.0	4.8	4.1	7.2	9.2	41.3	8.0	11.8	83.5
1998	20.7	6.5	3.2	0.3	3.2	1.2	5.3	4.5	3.2	5.9	6.9	33.8	7.7	9.4	78.0
1999	19.8	4.4	2.1	0.0	2.5	0.6	4.0	3.4	2.5	3.2	4.3	22.5	5.0	6.7	58.5
2000	18.8	4.5	2.9	0.1	3.0	1.0	3.7	2.6	2.7	3.3	5.7	25.0	4.4	5.8	58.5
2001	17.6	4.6	2.8	0.0	2.2	0.9	5.4	2.1	1.6	2.5	3.3	20.8	2.1	3.6	48.7
2002	16.7	3.5	2.4	0.0	1.3	1.0	3.1	1.7	1.9	1.9	2.4	15.6	1.3	2.6	39.6
2003	20.8	3.5	1.8	0.3	1.3	0.5	2.8	2.0	1.8	1.5	3.2	15.1	(s)	3.6	43.0

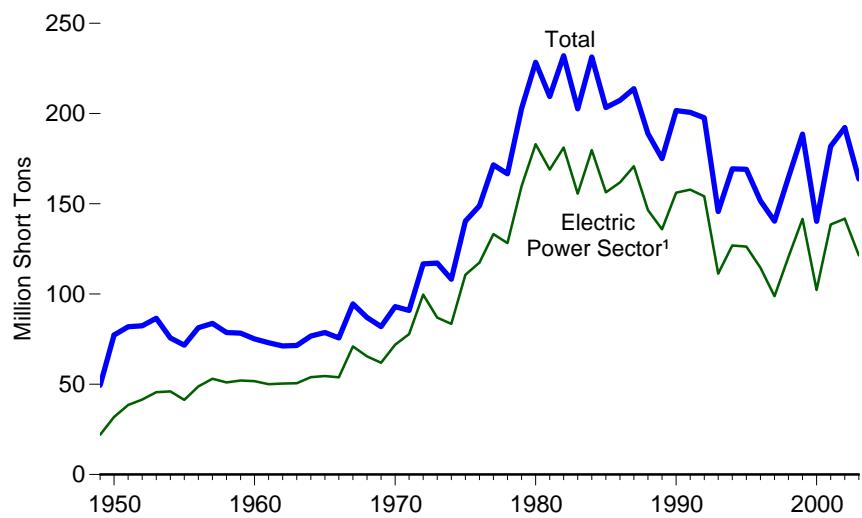
¹ Through 1990, data for Germany are for the former West Germany only. Beginning in 1991, data for Germany are for the unified Germany, i.e., the former East Germany and West Germany.
 (s)=Less than 0.05 million short tons.

Note: Totals may not equal sum of components due to independent rounding.

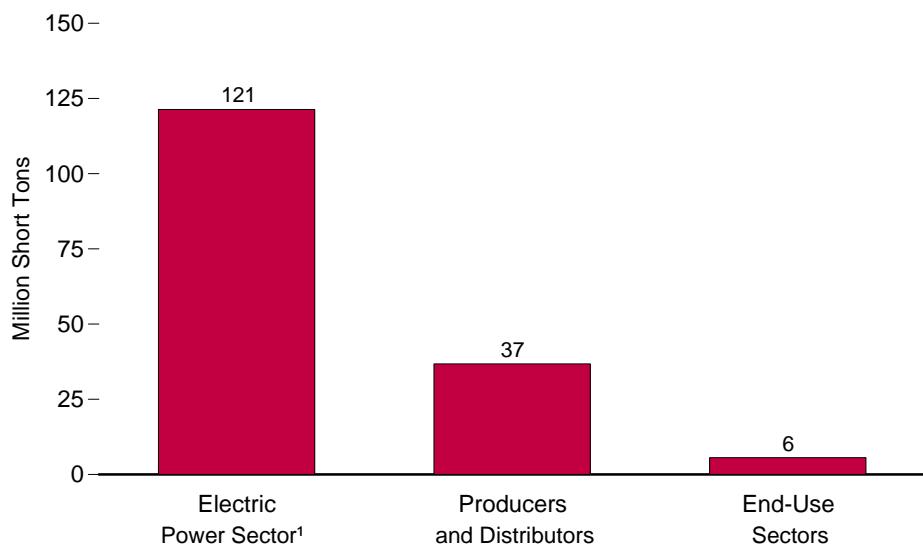
Sources: • 1960-1988—U.S. Department of Commerce, Bureau of the Census. *U.S. Exports by Schedule B Commodities, EM 522*. • 1989-2000—Energy Information Administration (EIA), *Coal Industry Annual*, annual reports. • 2001 forward—EIA, *Quarterly Coal Report October-December*, quarterly reports.

Figure 7.5 Coal Stocks

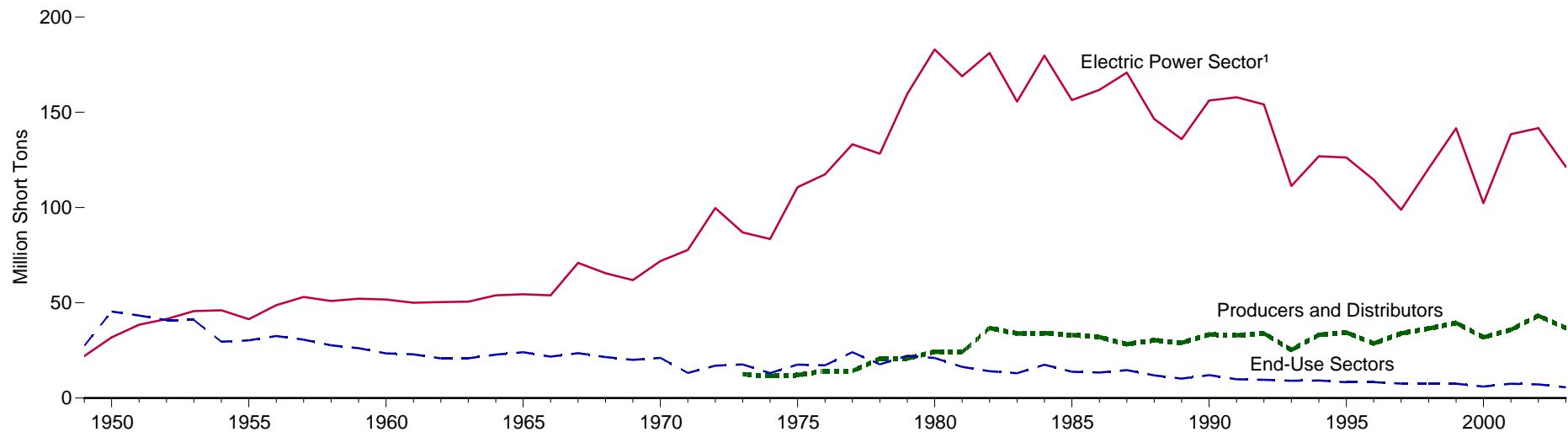
Total and Electric Power Sector Stocks, 1949-2003



By Holding Entity, 2003



By Holding Entity, 1949-2003



¹ Electricity-only and combined-heat-and-power plants whose primary business is to sell electricity, or electricity and heat, to the public.

Notes: • Stocks are at end of year. • Because vertical scales differ, graphs should not be compared.

Source: Table 7.5.

Table 7.5 Coal Stocks by Sector, Selected Years, 1949-2003
 (Million Short Tons)

Year	Producers and Distributors	End-Use Sectors					Electric Power Sector ²	Total		
		Residential and Commercial	Industrial			Total				
			Coke Plants	Other ¹	Total					
1949	NA	1.4	10.0	16.1	26.0	27.4	22.1	49.5		
1950	NA	2.5	16.8	26.2	43.0	45.5	31.8	77.3		
1955	NA	1.0	13.4	15.9	29.3	30.3	41.4	71.7		
1960	NA	0.7	11.1	11.6	22.8	23.4	51.7	75.2		
1965	NA	0.4	10.6	13.1	23.8	24.1	54.5	78.6		
1970	NA	0.3	9.0	11.8	20.8	21.1	71.9	93.0		
1971	NA	0.3	7.3	5.6	12.9	13.2	77.8	91.0		
1972	NA	0.3	9.1	7.6	16.7	17.0	99.7	116.8		
1973	12.5	0.3	7.0	10.4	17.4	17.7	87.0	117.2		
1974	11.6	0.3	6.2	6.6	12.8	13.1	83.5	108.2		
1975	12.1	0.2	8.8	8.5	17.3	17.6	110.7	140.4		
1976	14.2	0.2	9.9	7.1	17.0	17.2	117.4	148.9		
1977	14.2	0.2	12.8	11.1	23.9	24.1	133.2	171.5		
1978	20.7	0.4	8.3	9.0	17.3	17.7	128.2	166.6		
1979	20.8	0.3	10.2	11.8	21.9	22.3	159.7	202.8		
1980	24.4	NA	9.1	12.0	21.0	21.0	183.0	228.4		
1981	24.1	NA	6.5	9.9	16.4	16.4	168.9	209.4		
1982	36.8	NA	4.6	9.5	14.1	14.1	181.1	232.0		
1983	33.9	NA	4.3	8.7	13.1	13.1	155.6	202.6		
1984	34.1	NA	6.2	11.3	17.5	17.5	179.7	231.3		
1985	33.1	NA	3.4	10.4	13.9	13.9	156.4	203.4		
1986	32.1	NA	3.0	10.4	13.4	13.4	161.8	207.3		
1987	28.3	NA	3.9	10.8	14.7	14.7	170.8	213.8		
1988	30.4	NA	3.1	8.8	11.9	11.9	146.5	188.8		
1989	29.0	NA	2.9	7.4	10.2	10.2	135.9	175.1		
1990	33.4	NA	3.3	8.7	12.0	12.0	156.2	201.6		
1991	33.0	NA	2.8	7.1	9.8	9.8	157.9	200.7		
1992	34.0	NA	2.6	7.0	9.6	9.6	154.1	197.7		
1993	25.3	NA	2.4	6.7	9.1	9.1	111.3	145.7		
1994	33.2	NA	2.7	6.6	9.2	9.2	126.9	169.4		
1995	34.4	NA	2.6	5.7	8.3	8.3	126.3	169.1		
1996	28.6	NA	2.7	5.7	8.4	8.4	114.6	151.6		
1997	34.0	NA	2.0	5.6	7.6	7.6	98.8	140.4		
1998	36.5	NA	2.0	5.5	7.6	7.6	120.5	164.6		
1999	39.5	NA	1.9	5.6	7.5	7.5	141.6	188.6		
2000	31.9	NA	1.5	4.6	6.1	6.1	102.3	140.3		
2001	35.9	NA	1.5	6.0	7.5	7.5	138.5	181.9		
2002	R43.3	NA	R1.4	5.8	R7.2	R7.2	R141.7	R192.1		
2003 ^P	36.8	NA	0.9	4.7	5.6	5.6	121.4	163.8		

¹ Includes transportation sector.

² Electricity-only and combined-heat-and-power (CHP) plants within the NAICS (North American Industry Classification System) 22 category whose primary business is to sell electricity, or electricity and heat, to the public. Through 1998, data are for electric utilities only; beginning in 1999, data are for electric utilities and independent power producers.

R=Revised. P=Preliminary. NA=Not available.

Notes: • Stocks are at end of year. • Totals may not equal sum of components due to independent rounding.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/coal.html>.

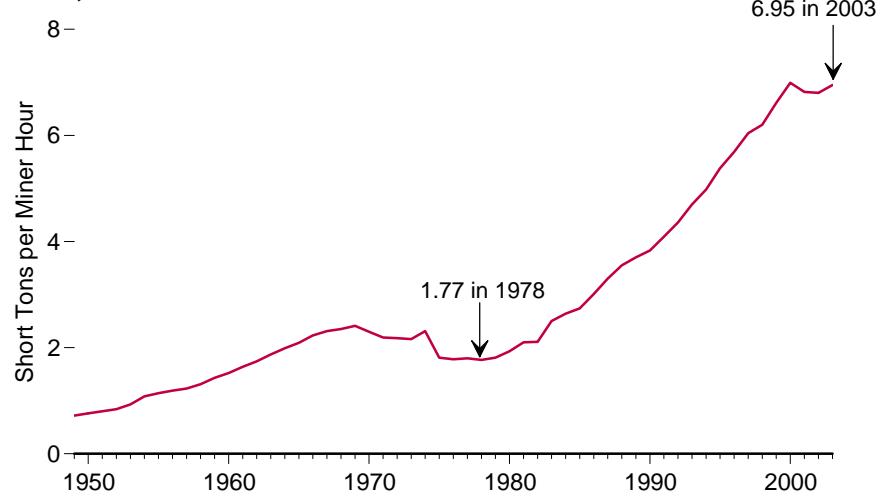
• For related information, see <http://www.eia.doe.gov/fuelcoal.html>.

Sources: **Producers and Distributors** and **End-Use Sectors**: • 1949-1975—Bureau of Mines, Minerals Yearbook, "Coal—Bituminous and Lignite" and "Coal—Pennsylvania Anthracite" chapters.

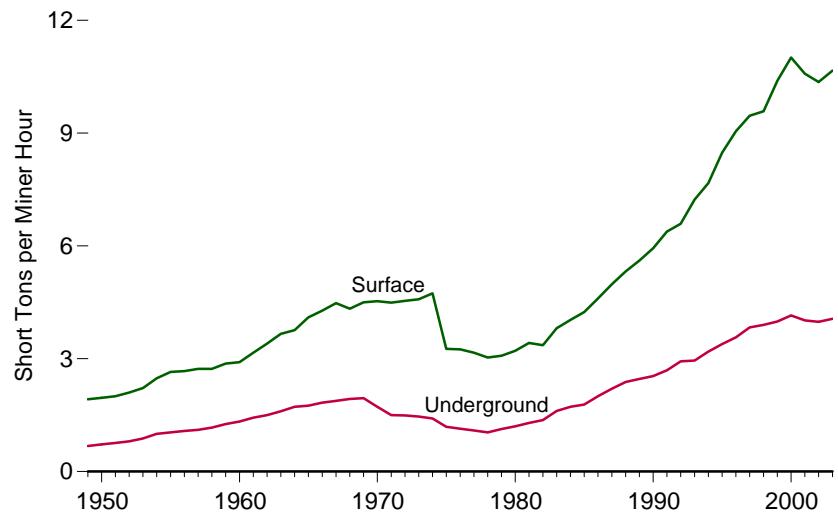
• 1976—Energy Information Administration (EIA), Energy Data Reports, *Coal—Bituminous and Lignite in 1976* and *Coal—Pennsylvania Anthracite 1976*. • 1977 and 1978—EIA, Energy Data Reports, *Coal—Pennsylvania Anthracite 1977*; 1978, and *Weekly Coal Report*. • 1979—EIA, Energy Data Report, *Weekly Coal Report*. • 1980-1996—EIA, *Quarterly Coal Report (QCR) October-December*, quarterly reports. • 1997 forward—EIA, *QCR October-December 2003* (March 2004), Table 34. **Electric Power Sector**: Table 8.8. **All Other Data**: Calculated.

Figure 7.6 Coal Mining Productivity

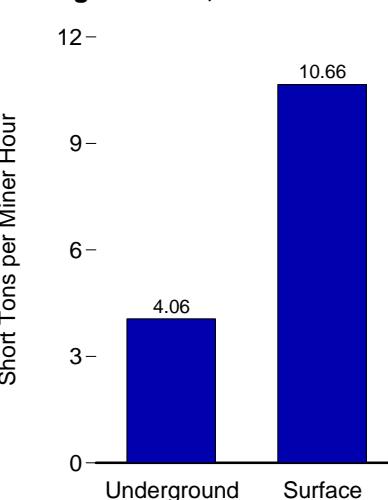
Total, 1949-2003



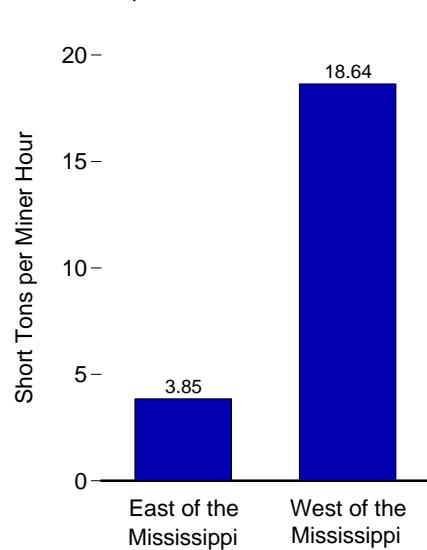
Mining Method,¹ 1949-2003



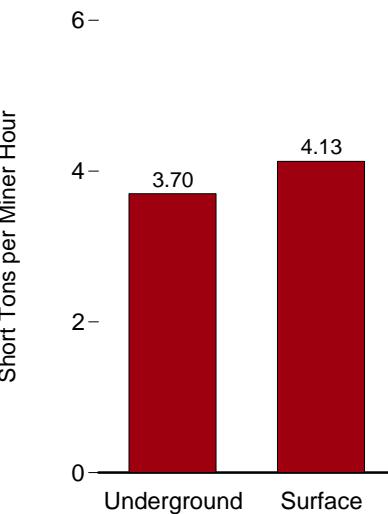
Mining Methods, 2003



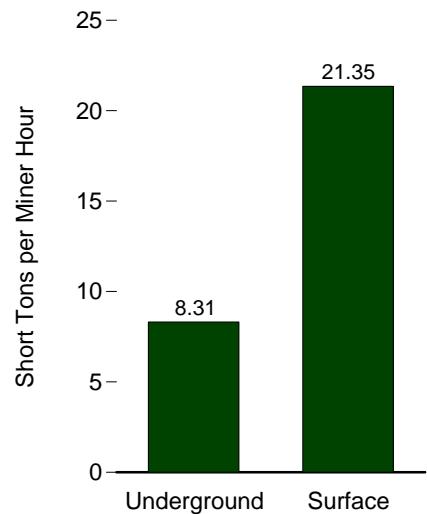
Location, 2003



East of the Mississippi, 2003



West of the Mississippi, 2003



¹ For 1979 forward, includes all coal; prior to 1979, excludes anthracite.

Notes: • Beginning in 2001, surface mining includes a small amount of refuse recovery.

• Because vertical scales differ, graphs should not be compared.

Source: Table 7.6.

Table 7.6 Coal Mining Productivity, Selected Years, 1949-2003

(Short Tons per Miner Hour¹)

Year	Mining Method		Location						Total ²	
	Underground	Surface ²	East of the Mississippi			West of the Mississippi				
			Underground	Surface ²	Total ²	Underground	Surface ²	Total ²		
1949	30.68	31.92	NA	NA	NA	NA	NA	NA	0.72	
1950	30.72	31.96	NA	NA	NA	NA	NA	NA	0.76	
1955	31.04	32.65	NA	NA	NA	NA	NA	NA	1.14	
1960	31.33	32.91	NA	NA	NA	NA	NA	NA	1.52	
1965	31.75	34.10	NA	NA	NA	NA	NA	NA	2.09	
1970	31.72	34.53	NA	NA	NA	NA	NA	NA	2.30	
1971	31.50	34.49	NA	NA	NA	NA	NA	NA	2.19	
1972	31.49	34.54	NA	NA	NA	NA	NA	NA	2.18	
1973	31.46	34.58	NA	NA	NA	NA	NA	NA	2.16	
1974	31.41	34.74	NA	NA	NA	NA	NA	NA	2.31	
1975	31.19	33.26	NA	NA	NA	NA	NA	NA	1.81	
1976	31.14	33.25	NA	NA	NA	NA	NA	NA	1.78	
1977	31.09	33.16	NA	NA	NA	NA	NA	NA	1.80	
1978	31.04	33.03	NA	NA	NA	NA	NA	NA	1.77	
1979	1.13	3.08	NA	NA	NA	NA	NA	NA	1.81	
1980	1.20	3.21	NA	NA	NA	NA	NA	NA	1.93	
1981	1.29	3.42	NA	NA	NA	NA	NA	NA	2.10	
1982	1.37	3.36	NA	NA	NA	NA	NA	NA	2.11	
1983	1.61	3.81	NA	NA	NA	NA	NA	NA	2.50	
1984	1.72	4.03	1.69	2.56	1.98	2.49	8.15	7.07	2.64	
1985	1.78	4.24	1.75	2.52	2.00	2.45	8.61	7.40	2.74	
1986	2.00	4.60	1.96	2.75	2.21	2.80	9.02	7.90	3.01	
1987	2.20	4.98	2.16	2.97	2.42	3.39	9.86	8.73	3.30	
1988	2.38	5.32	2.32	2.99	2.54	3.55	10.73	9.38	3.55	
1989	2.46	5.61	2.39	3.13	2.63	3.92	11.86	10.21	3.70	
1990	2.54	5.94	2.46	3.32	2.73	4.01	12.26	10.41	3.83	
1991	2.69	6.38	2.59	3.49	2.86	4.53	12.36	10.79	4.09	
1992	2.93	6.59	2.82	3.61	3.07	4.85	12.49	11.03	4.36	
1993	2.95	7.23	2.81	3.74	3.11	5.18	13.94	12.14	4.70	
1994	3.19	7.67	3.02	3.85	3.28	5.93	15.19	13.22	4.98	
1995	3.39	8.48	3.19	4.03	3.45	6.32	16.23	14.18	5.38	
1996	3.57	9.05	3.36	4.25	3.63	7.03	17.89	15.66	5.69	
1997	3.83	9.46	3.63	4.49	3.89	6.82	18.63	16.04	6.04	
1998	3.90	9.58	3.69	4.31	3.89	6.76	18.82	16.27	6.20	
1999	3.99	10.39	3.74	4.48	3.97	7.45	19.57	17.18	6.61	
2000	4.15	11.01	3.89	4.82	4.18	7.66	20.04	17.62	6.99	
2001	4.02	² 10.58	3.71	² 4.53	² 3.98	8.39	² 20.63	² 18.32	² 6.82	
2002	3.98	10.36	3.67	4.22	R ³ .86	7.80	20.67	18.06	6.80	
2003 ^P	4.06	10.66	3.70	4.13	3.85	8.31	21.35	18.64	6.95	

¹ Data through 1973 for bituminous, subbituminous, and lignite mines, and data through 1978 for anthracite mines, were originally reported in short tons per miner day. The data were converted to short tons per miner hour by assuming an eight-hour day. All remaining data were calculated by dividing total production by total labor hours worked by all mine employees except office workers.

² Beginning in 2001, includes a small amount of refuse recovery.

³ Anthracite mining productivity is unavailable by underground and surface but is included in "Total."

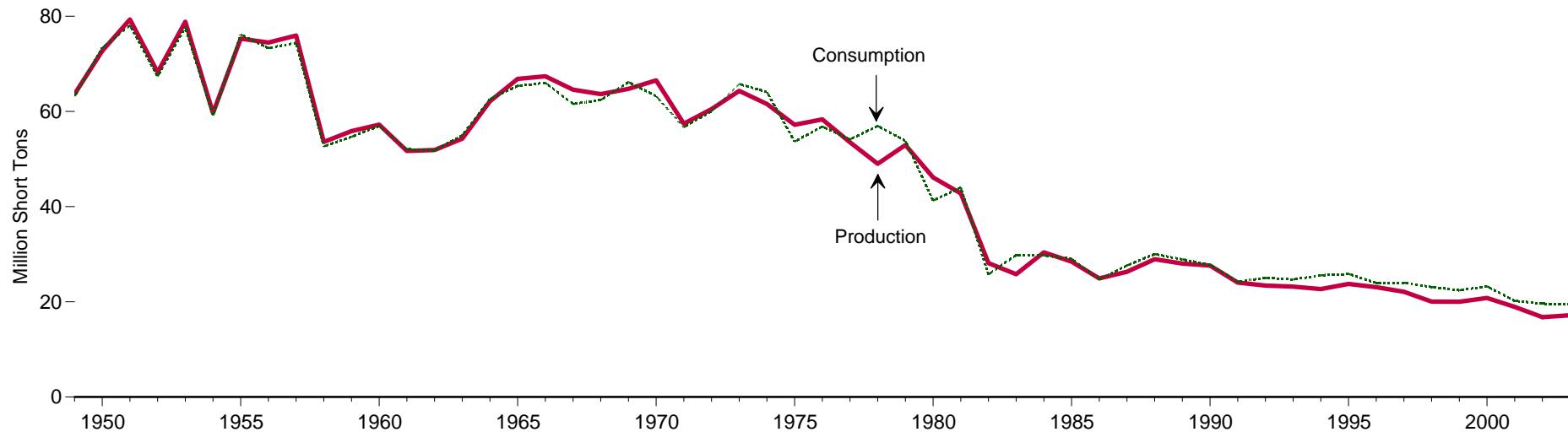
R=Revised. P=Preliminary. NA=Not available.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/coal.html>. • For related information, see <http://www.eia.doe.gov/fuelcoal.html>.

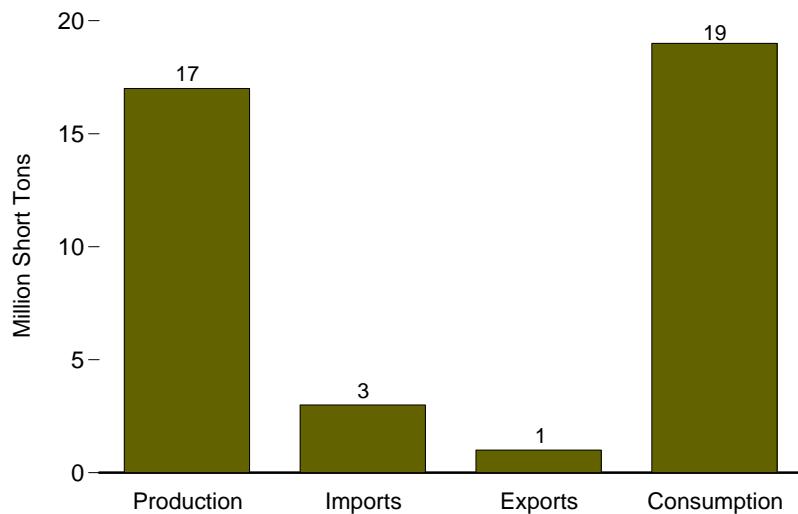
Sources: • 1949-1975—Bureau of Mines, *Minerals Yearbook*, "Coal—Bituminous and Lignite" and "Coal—Pennsylvania Anthracite" chapters. • 1976—Energy Information Administration (EIA), Energy Data Reports, *Coal—Bituminous and Lignite in 1976* and *Coal—Pennsylvania Anthracite 1976*. • 1977 and 1978—EIA, Energy Data Reports, *Bituminous Coal and Lignite Production and Mine Operations—1977; 1978* and *Coal—Pennsylvania Anthracite 1977; 1978*. • 1979—EIA, Energy Data Report, *Coal Production—1979*. • 1980-1988—EIA, *Coal Production*, annual reports. • 1989-2000—EIA, *Coal Industry Annual*, annual reports. • 2001 and 2002—EIA, *Annual Coal Report 2002* (November 2003), Table 21. • 2003—EIA, Form EIA-7A, "Coal Production Report," and U.S. Department of Labor, Mine Safety and Health Administration, Form 7000-2, "Quarterly Mine Employment and Coal Production Report."

Figure 7.7 Coke Overview

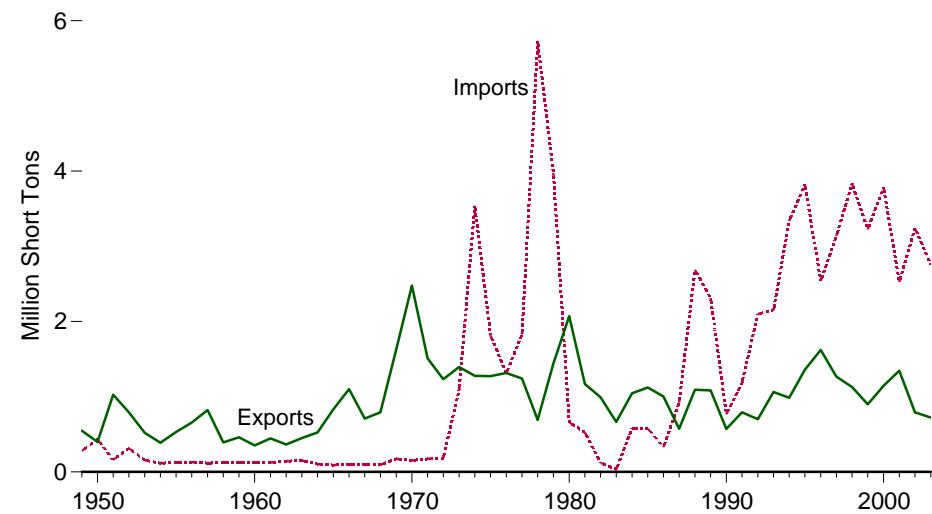
Production and Consumption, 1949-2003



Overview, 2003



Trade, 1949-2003



Note: Because vertical scales differ, graphs should not be compared.

Source: Table 7.7.

Table 7.7 Coke Overview, Selected Years, 1949-2003
 (Million Short Tons)

Year	Production	Imports	Exports	Stock Change ¹	Consumption ²
1949	63.6	0.3	0.5	0.2	63.2
1950	72.7	0.4	0.4	-0.7	73.4
1955	75.3	0.1	0.5	-1.2	76.1
1960	57.2	0.1	0.4	0.1	56.9
1965	66.9	0.1	0.8	0.7	65.4
1970	66.5	0.2	2.5	1.0	63.2
1971	57.4	0.2	1.5	-0.6	56.7
1972	60.5	0.2	1.2	-0.6	60.0
1973	64.3	1.1	1.4	-1.7	65.8
1974	61.6	3.5	1.3	-0.2	64.1
1975	57.2	1.8	1.3	4.1	53.7
1976	58.3	1.3	1.3	1.5	56.8
1977	53.5	1.8	1.2	(s)	54.1
1978	49.0	5.7	0.7	-2.9	56.9
1979	52.9	4.0	1.4	1.7	53.8
1980	46.1	0.7	2.1	3.4	41.3
1981	42.8	0.5	1.2	-1.9	44.0
1982	28.1	0.1	1.0	1.5	25.8
1983	25.8	(s)	0.7	-4.7	29.9
1984	30.4	0.6	1.0	0.2	29.7
1985	28.4	0.6	1.1	-1.2	29.1
1986	24.9	0.3	1.0	-0.5	24.7
1987	26.3	0.9	0.6	-1.0	27.7
1988	28.9	2.7	1.1	0.5	30.0
1989	28.0	2.3	1.1	0.3	28.9
1990	27.6	0.8	0.6	(s)	27.8
1991	24.0	1.2	0.8	0.2	24.2
1992	23.4	2.1	0.7	-0.2	25.0
1993	23.2	2.2	1.1	-0.4	24.7
1994	22.7	3.3	1.0	-0.5	25.6
1995	23.7	3.8	1.4	0.4	25.8
1996	23.1	2.5	1.6	(s)	24.0
1997	22.1	3.1	1.3	(s)	24.0
1998	20.0	3.8	1.1	-0.4	23.1
1999	20.0	3.2	0.9	-0.1	22.4
2000	20.8	3.8	1.1	0.2	23.2
2001	18.9	R2.5	R1.3	-0.1	R20.2
2002	R16.8	R3.2	R0.8	-0.4	R49.6
2003 ^P	17.2	2.8	0.7	-0.2	19.4

¹ Producer and distributor stocks at end of year. A negative value indicates a decrease in stocks; a positive value indicates an increase.

² "Consumption" is calculated as the sum of production and imports minus exports and stock change.

R=Revised. P=Preliminary. (s)=Less than 0.05 million short tons.

Note: Totals may not equal sum of components due to independent rounding.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/coal.html>.

• For related information, see <http://www.eia.doe.gov/fuelcoal.html>.

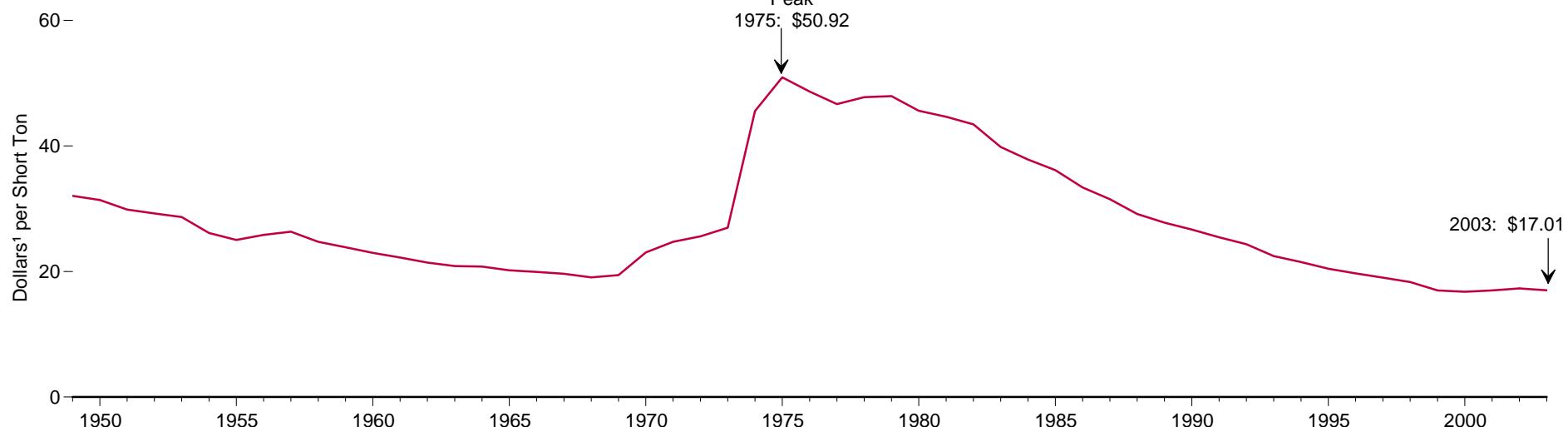
Sources: • 1949-1975—Bureau of Mines, *Minerals Yearbook*, "Coke and Coal Chemicals" chapter.

• 1976-1980—Energy Information Administration (EIA), Energy Data Report, *Coke and Coal Chemicals*, annual reports. • 1981-1996—EIA, *Quarterly Coal Report (QCR) October-December*, quarterly reports.

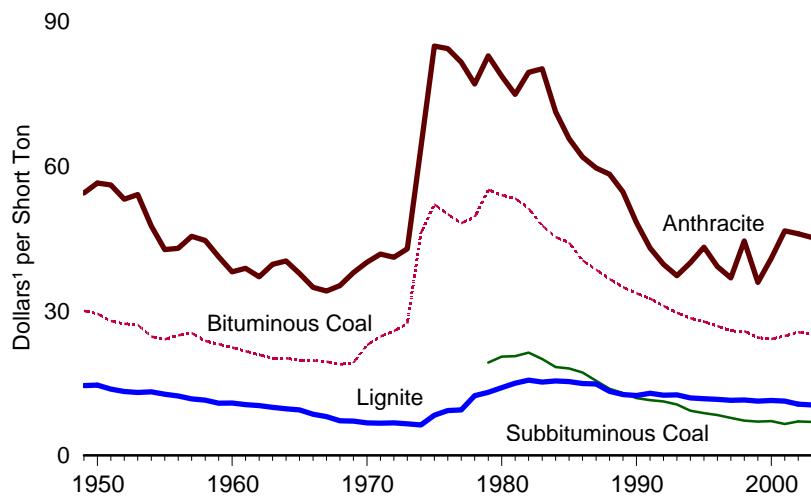
• 1997 forward—EIA, *QCR October-December 2003* (March 2004), Table 2.

Figure 7.8 Coal Prices

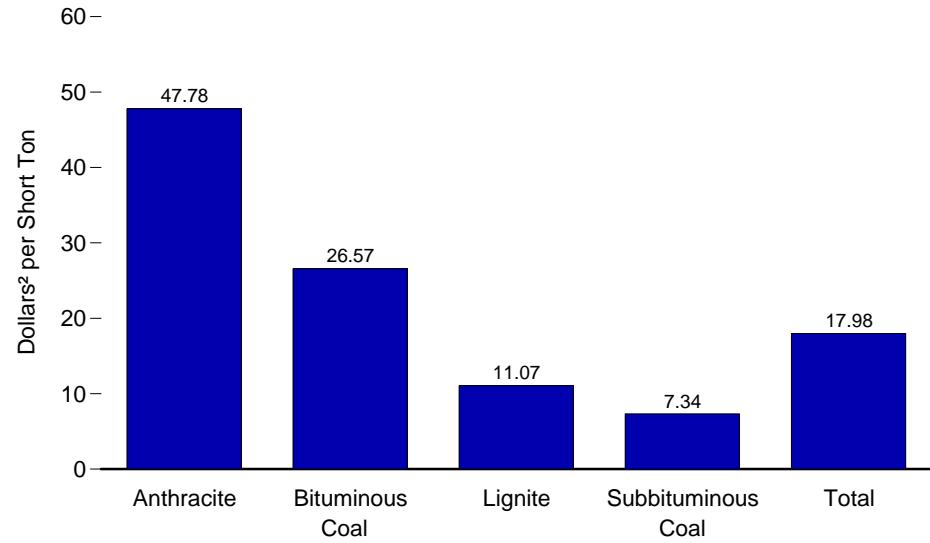
Total, 1949-2003



By Type, 1949-2003



By Type, 2003



¹ In chained (2000) dollars, calculated by using gross domestic implicit price deflators.
See Table D1.

² Nominal dollars.

Note: Because vertical scales differ, graphs should not be compared.
Source: Table 7.8.

Table 7.8 Coal Prices, Selected Years, 1949-2003

(Dollars per Short Ton)

Year	Bituminous Coal		Subbituminous Coal		Lignite ¹		Anthracite		Total	
	Nominal	Real ²	Nominal	Real ²	Nominal	Real ²	Nominal	Real ²	Nominal	Real ²
1949	34.90	3.R29.97	(³)	(³)	2.37	R14.49	8.90	R54.43	5.24	R32.05
1950	34.86	3.R29.40	(³)	(³)	2.41	R14.58	9.34	R56.50	5.19	R31.40
1955	34.51	3.R24.06	(³)	(³)	2.38	R12.70	8.00	R42.68	4.69	R25.02
1960	34.71	3.R22.38	(³)	(³)	2.29	R10.88	8.01	R38.07	4.83	R22.96
1965	34.45	3.R19.75	(³)	(³)	2.13	R9.45	8.51	R37.76	4.55	R20.19
1970	36.30	3.R22.88	(³)	(³)	1.86	R6.76	11.03	R40.06	6.34	R23.03
1971	37.13	3.R24.66	(³)	(³)	1.93	R6.68	12.08	R41.78	7.15	R24.73
1972	37.78	3.R25.79	(³)	(³)	2.04	R6.76	12.40	R41.11	7.72	R25.59
1973	38.71	3.R27.35	(³)	(³)	2.09	R6.56	13.65	R42.86	8.59	R26.97
1974	316.01	3.R46.11	(³)	(³)	2.19	R6.31	22.19	R63.90	15.82	R45.56
1975	319.79	3.R52.08	(³)	(³)	3.17	R8.34	32.26	R84.89	19.35	R50.92
1976	320.11	3.R50.03	(³)	(³)	3.74	R9.30	33.92	R84.39	19.56	R48.66
1977	320.59	3.R48.16	(³)	(³)	4.03	R9.43	34.86	R81.54	19.95	R46.66
1978	322.64	3.R49.48	(³)	(³)	5.68	R12.41	35.25	R77.04	21.86	R47.77
1979	27.31	R55.12	9.55	R19.27	6.48	R13.08	41.06	R82.87	23.75	R47.93
1980	29.17	R53.98	11.08	R20.50	7.60	R14.06	42.51	R78.66	24.65	R45.61
1981	31.51	R53.30	12.18	R20.60	8.85	R14.97	44.28	R74.90	26.40	R44.66
1982	32.15	R51.25	13.37	R21.31	9.79	R15.61	49.85	R79.47	27.25	R43.44
1983	31.11	R47.71	13.03	R19.98	9.91	R15.20	52.29	R80.19	25.98	R39.84
1984	30.63	R45.27	12.41	R18.34	10.45	R15.45	48.22	R71.27	25.61	R37.85
1985	30.78	R44.15	12.57	R18.03	10.68	R15.32	45.80	R65.70	25.20	R36.15
1986	28.84	R40.48	12.26	R17.21	10.64	R14.93	44.12	R61.92	23.79	R33.39
1987	28.19	R38.51	11.32	R15.47	10.85	R14.82	43.65	R59.63	23.07	R31.52
1988	27.66	R36.54	10.45	R13.81	10.06	R13.29	44.16	R58.34	22.07	R29.16
1989	27.40	R34.88	10.16	R12.93	9.91	R12.62	42.93	R54.65	21.82	R27.78
1990	27.43	R33.62	9.70	R11.89	10.13	R12.42	39.40	R48.29	21.76	R26.67
1991	27.49	R32.55	9.68	R11.46	10.89	R12.90	36.34	R43.03	21.49	R25.45
1992	26.78	R31.00	9.68	R11.21	10.81	R12.51	34.24	R39.64	21.03	R24.34
1993	26.15	R29.59	9.33	R10.56	11.11	R12.57	32.94	R37.27	19.85	R22.46
1994	25.68	R28.45	8.37	R9.27	10.77	R11.93	36.07	R39.96	19.41	R21.50
1995	25.56	R27.75	8.10	R8.79	10.83	R11.76	39.78	R43.19	18.83	R20.44
1996	25.17	R26.82	7.87	R8.39	10.92	R11.64	36.78	R39.19	18.50	R19.71
1997	24.64	R25.82	7.42	R7.78	10.91	R11.43	35.12	R36.81	18.14	R19.01
1998	24.87	R25.78	6.96	R7.21	11.08	R11.49	42.91	R44.48	17.67	R18.32
1999	23.92	R24.44	6.87	R7.02	11.04	R11.28	35.13	R35.90	16.63	R16.99
2000	24.15	R24.15	7.12	R7.12	11.41	R11.41	40.90	R40.90	16.78	R16.78
2001	25.36	R24.77	6.67	R6.52	11.52	R11.25	47.67	R46.57	17.38	R16.98
2002	R26.57	R25.56	R7.34	R7.06	R11.07	R10.65	R47.78	R45.97	R17.98	R17.30
2003 ^E	26.57	25.14	7.34	6.95	11.07	10.48	47.78	45.21	17.98	17.01

¹ Because of withholding to protect company confidentiality, lignite prices exclude Texas for 1955-1977 and Montana for 1974-1978. As a result, lignite prices for 1974-1977 are for North Dakota only.

² In chained (2000) dollars, calculated by using gross domestic product implicit price deflators. See Table D1.

³ Through 1978, subbituminous coal is included in "Bituminous Coal."

R=Revised. E=Estimate.

Note: Prices are free-on-board (f.o.b.) rail/barge prices, which are the f.o.b. prices of coal at the point of first sale, excluding freight or shipping and insurance costs. See "Free on Board (F.O.B.)" in Glossary.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/coal.html>. • For related information, see <http://www.eia.doe.gov/fuelcoal.html>.

Sources: • 1949-1975—Bureau of Mines (BOM), *Minerals Yearbook*. • 1976—Energy Information Administration (EIA), Energy Data Report, *Coal—Bituminous and Lignite* in 1976, and BOM, *Minerals Yearbook*. • 1977 and 1978—EIA, Energy Data Reports, *Bituminous Coal and Lignite Production and Mine Operations*, and *Coal—Pennsylvania Anthracite*. • 1979—EIA, *Coal Production*, and Energy Data Report, *Coal—Pennsylvania Anthracite*. • 1980-1992—EIA, *Coal Production*, annual reports. • 1993-2000—EIA, *Coal Industry Annual*, annual reports and unpublished revisions. • 2001 and 2002—EIA, *Annual Coal Report*, annual reports. • 2003—EIA, Form EIA-7A, "Coal Production Report," and U.S. Department of Labor, Mine Safety and Health Administration, Form 7000-2, "Quarterly Mine Employment and Coal Production Report."

Coal

Note 1. Coal Consumption. Data in this report on the consumption of bituminous coal, subbituminous coal, lignite, anthracite, and waste coal are developed primarily from consumption data reported in surveys. Included are data reported by all electric power companies and coke plant companies. Data on coal consumption by all industrial and manufacturing establishments and by the residential and commercial sectors are based on distribution data obtained quarterly from coal companies. Included in each sector's data are the following: Residential and Commercial Sectors—retail dealer sales to households and small commercial establishments; Industrial Sector—consumption at manufacturing plants, large commercial establishments, coking plants, and by agriculture, mining (other than coal mining), and construction industries; Transportation Sector—sales to railroads and for vessel bunkering; Electric Power Sector (electric utilities and independent power producers)—consumption for electricity generation and useful thermal output at electricity-only and CHP plants within the NAICS 22 category whose primary business is to sell electricity, or electricity and heat, to the public.

Note 2. Residential and Commercial Coal Consumption Estimates. Coal consumption by the residential and commercial sectors is reported to the Energy

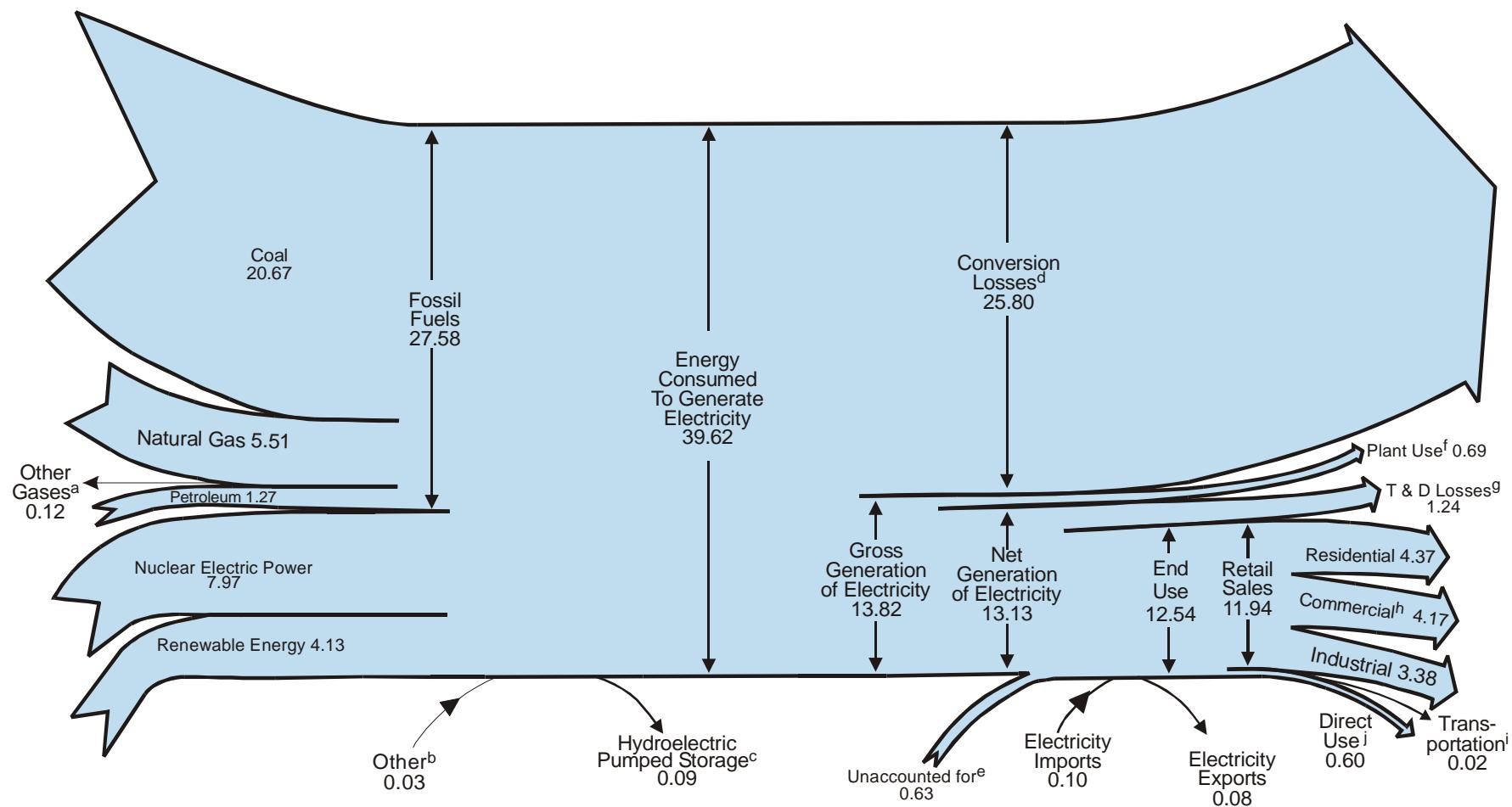
Information Administration (EIA) for the two sectors combined; EIA estimates the amount consumed by the sectors individually. Previously, the breakdown was 40 percent residential and 60 percent commercial for each year. The current method results in variation over time. Beginning in 1949, a larger portion of the coal, 45 percent, is assigned to the residential sector; the share falls gradually over time and reaches 11 percent in 2003. To create the estimate, it is first assumed that an occupied coal-heated housing unit consumes fuel at the same Btu rate as an oil-heated housing unit. Then, for the years in which data are available on the number of occupied housing units by heating source (1950, 1960, 1970, 1973–1981, and subsequent odd-numbered years (Table 2.7)), residential use of coal is estimated by the following steps: a ratio is created of the number of occupied housing units heated by coal to the number of housing units heated by oil; the ratio is multiplied by the Btu quantity of oil used by the residential sector to estimate the Btu quantity of coal used by the residential sector; and the residential sector's share of residential and commercial use is calculated. The 1950 share is applied to 1949; the 2001 share is applied to 2003; and the other missing years' shares are interpolated.

Electricity



High-tension power lines and towers. Source: U.S. Department of Energy.

Diagram 5. Electricity Flow, 2003
 (Quadrillion Btu)



^a Blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels.

^b Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.

^c Pumped storage facility production minus energy used for pumping.

^d Approximately two-thirds of all energy used to generate electricity. See note "Electrical System Energy Losses," at end of Section 2.

^e Data collection frame differences and nonsampling error.

^f Electric energy used in the operation of power plants, estimated as 5 percent of gross generation. See note "Electrical System Energy Losses," at end of Section 2.

^g Transmission and distribution losses (electricity losses that occur between the point of generation and delivery to the customer) are estimated as 9 percent of gross generation. See note "Electrical System Energy Losses," at end of Section 2.

^h Commercial retail sales plus approximately 95 percent of "Other" retail sales from Table 8.9.

ⁱ Approximately 5 percent of "Other" retail sales from Table 8.9.

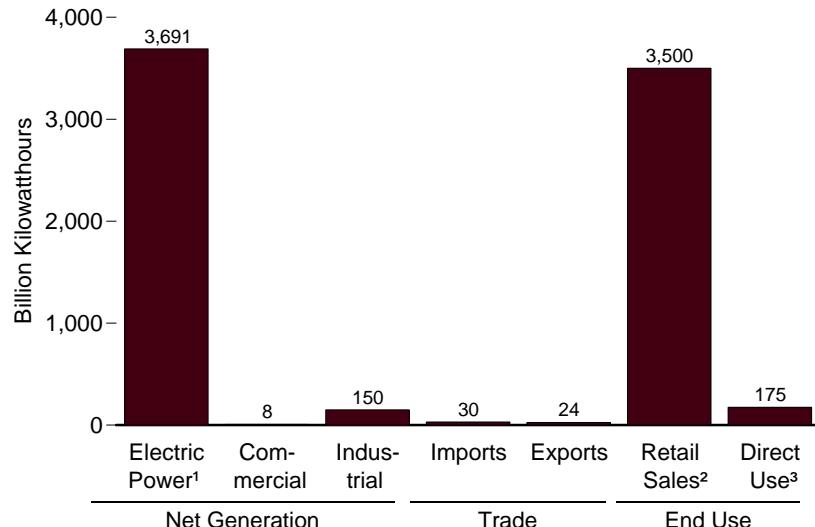
^j Commercial and industrial facility use of onsite net electricity generation; and electricity sales among adjacent or co-located facilities for which revenue information is not available.

Note: Totals may not equal sum of components due to independent rounding.

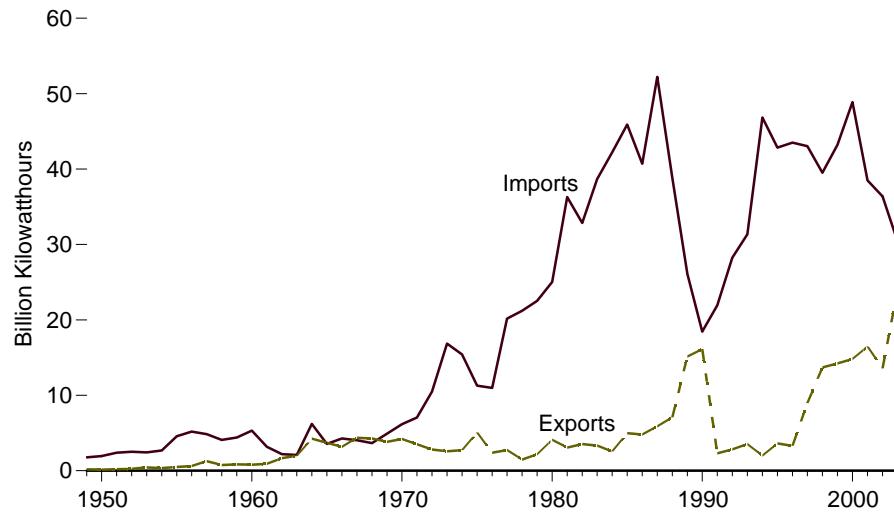
Sources: Tables 2.1b-2.1e, 8.1, 8.4a, and A6 (column 4).

Figure 8.1 Electricity Overview

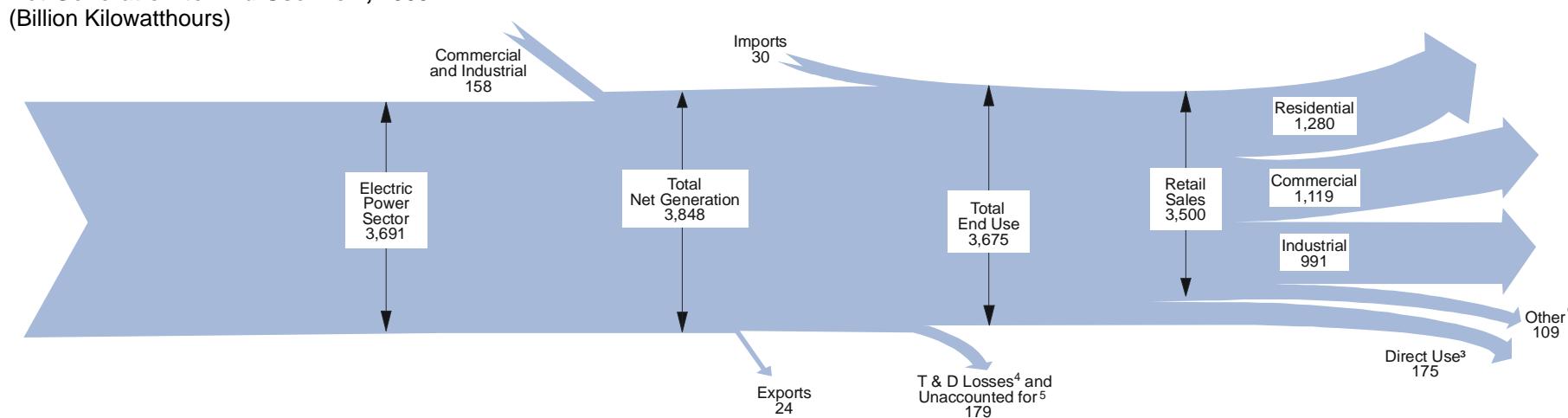
Overview, 2003



Electricity Trade, 1949-2003



Net-Generation-to-End-Use Flow, 2003



¹ Electricity-only and combined-heat-and-power plants within the NAICS 22 category whose primary business is to sell electricity, or electricity and heat, to the public.

² Electricity retail sales to ultimate customers reported by electric utilities and other energy service providers.

³ Commercial and industrial facility use of onsite net electricity generation; and electricity sales among adjacent or co-located facilities for which revenue information is not available.

⁴ Transmission and distribution losses (electricity losses that occur between the point of

generation and delivery to the customer). See Note, "Electrical System Energy Losses," at the end of Section 2.

⁵ Data collection frame differences and nonsampling error.

⁶ Public street and highway lighting, other sales to public authorities, sales to railroads and railways, and interdepartmental sales.

Note: Because vertical scales differ, graphs should not be compared.

Sources: Tables 8.1 and 8.9.

Table 8.1 Electricity Overview, Selected Years, 1949-2003
(Billion Kilowatthours)

Year	Net Generation				Imports ¹		Exports ¹		T & D Losses ⁵ and Unaccounted for ⁶	End Use		
	Electric Power Sector ²	Commercial Sector ³	Industrial Sector ⁴	Total	From Canada	Total	To Canada	Total		Retail Sales ⁷	Direct Use ⁸	Total
1949	291	NA	5	296	NA	2	NA	(s)	43	255	NA	255
1950	329	NA	5	334	NA	2	NA	(s)	44	291	NA	291
1955	547	NA	3	550	NA	5	NA	(s)	58	497	NA	497
1960	756	NA	4	759	NA	5	NA	1	76	688	NA	688
1965	1,055	NA	3	1,058	NA	4	NA	4	104	954	NA	954
1970	1,532	NA	3	1,535	NA	6	NA	4	145	1,392	NA	1,392
1971	1,613	NA	3	1,616	NA	7	NA	4	150	1,470	NA	1,470
1972	1,750	NA	3	1,753	NA	10	NA	3	166	1,595	NA	1,595
1973	1,861	NA	3	1,864	NA	17	NA	3	165	1,713	NA	1,713
1974	1,867	NA	3	1,870	NA	15	NA	3	177	1,706	NA	1,706
1975	1,918	NA	3	1,921	NA	11	NA	5	180	1,747	NA	1,747
1976	2,038	NA	3	2,041	NA	11	NA	2	194	1,855	NA	1,855
1977	2,124	NA	3	2,127	NA	20	NA	3	197	1,948	NA	1,948
1978	2,206	NA	3	2,209	NA	21	NA	1	211	2,018	NA	2,018
1979	2,247	NA	3	2,251	NA	23	NA	2	200	2,071	NA	2,071
1980	2,286	NA	3	2,290	NA	25	NA	4	216	2,094	NA	2,094
1981	2,295	NA	3	2,298	NA	36	NA	3	184	2,147	NA	2,147
1982	2,241	NA	3	2,244	NA	33	NA	4	187	2,086	NA	2,086
1983	2,310	NA	3	2,313	NA	39	NA	3	198	2,151	NA	2,151
1984	2,416	NA	3	2,419	NA	42	NA	3	173	2,286	NA	2,286
1985	2,470	NA	3	2,473	NA	46	NA	5	190	2,324	NA	2,324
1986	2,487	NA	3	2,490	NA	41	NA	5	158	2,369	NA	2,369
1987	2,572	NA	3	2,575	NA	52	NA	6	164	2,457	NA	2,457
1988	2,704	NA	3	2,707	NA	39	NA	7	161	2,578	NA	2,578
1989	22,848	4	4115	2,967	NA	26	NA	15	223	2,647	108	2,755
1990	2,901	6	131	3,038	16	18	16	16	214	2,713	114	2,827
1991	2,936	6	133	3,074	20	22	2	2	213	2,762	118	2,880
1992	2,934	6	143	3,084	26	28	2	3	224	2,763	122	2,886
1993	3,044	7	146	3,197	29	31	3	4	236	2,861	128	2,989
1994	3,089	8	151	3,248	45	47	1	2	224	2,935	134	3,069
1995	3,194	8	151	3,353	41	43	2	4	235	3,013	144	3,157
1996	3,284	9	151	3,444	42	43	2	3	237	3,101	146	3,247
1997	3,329	9	154	3,492	43	43	7	9	232	3,146	148	3,294
1998	3,457	9	154	3,620	40	40	12	14	221	3,264	161	3,425
1999	3,530	9	156	3,695	43	43	13	14	229	3,312	183	3,495
2000	3,638	8	157	3,802	49	49	13	15	231	3,421	183	3,605
2001	3,580	7	149	3,737	38	39	16	16	R215	3,370	RE174	R3,544
2002	R3,698	R7	R153	R3,858	36	36	13	R14	R241	R3,463	RE178	R3,641
2003	P3,691	P8	P150	P3,848	P29	P30	P24	P24	P179	P3,500	E175	P3,675

¹ Electricity transmitted across U.S. borders with Canada and Mexico.

² Electricity-only and combined-heat-and-power (CHP) plants within the NAICS (North American Industry Classification System) 22 category whose primary business is to sell electricity, or electricity and heat, to the public. Through 1988, data are for electric utilities only; beginning in 1989, data are for electric utilities and independent power producers.

³ Commercial combined-heat-and-power (CHP) and commercial electricity-only plants.

⁴ Industrial combined-heat-and-power (CHP) and industrial electricity-only plants. Through 1988, data are for industrial hydroelectric power only.

⁵ Transmission and distribution losses (electricity losses that occur between the point of generation and delivery to the customer). See Note, "Electrical System Energy Losses," at end of Section 2.

⁶ Data collection frame differences and nonsampling error.

⁷ Electricity retail sales to ultimate customers by electric utilities and other energy service providers.

⁸ Commercial and industrial facility use of onsite net electricity generation; and electricity sales among adjacent or co-located facilities for which revenue information is not available.

R=Revised. P=Preliminary. NA=Not available. (s)=Less than 0.5 billion kilowatthours.

Notes: • See Note 1, "Coverage of Electricity Statistics," and Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section. • Totals may not equal sum of components due to independent rounding.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/elect.html>.

• For related information, see <http://www.eia.doe.gov/fuelelectric.html>.

Sources: Net Generation, Electric Power Sector: Table 8.2b. Net Generation, Commercial Sector: Table 8.2d. Net Generation, Industrial Sector: • 1949-September 1977—Federal Power Commission

(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.

• October 1977-1978—Federal Energy Regulatory Commission (FERC), Form FPC-4, "Monthly Power Plant Report," for plants with generating capacity exceeding 10 megawatts, and FERC, Form FPC-12C, "Industrial Electric Generating Capacity," for all other plants. • 1979—FERC, Form FPC-4, "Monthly Power Plant Report," for plants with generating capacity exceeding 10 megawatts, and EIA estimates for all other plants.

• 1980-1988—Estimated by EIA as the average generation over the 6-year period of 1974-1979. • 1989 forward—Table 8.2d. Net Generation, Total: Table 8.2a. Imports and Exports:

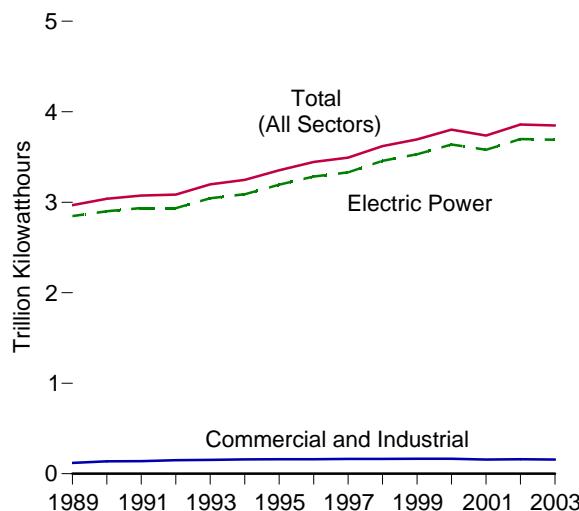
• 1949-September 1977—unpublished FPC data. • October 1977-1980—unpublished Economic Regulatory Administration (ERA) data. • 1981—Department of Energy (DOE), Office of Energy Emergency Operations, "Report on Electric Energy Exchanges with Canada and Mexico for Calendar Year 1981," April 1982 (revised June 1982). • 1982 and 1983—DOE, ERA, Electricity Exchanges Across International Borders. • 1984-1986—DOE, ERA, Electricity Transactions Across International Borders.

• 1987 and 1988—DOE, ERA, Form ERA-781R, "Annual Report of International Electrical Export/Import Data." • 1989—DOE, Fossil Energy, Form FE-781R, "Annual Report of International Electrical Export/Import Data." • 1990 forward—National Energy Board of Canada, and DOE, Fossil Energy, Office of Fuels Programs, Form FE-781R, "Annual Report of International Electrical Export/Imports Data." For 2001-2003, data from the California Independent System Operator were used in combination with the Form FE-781R values to estimate electricity trade with Mexico. See Note 3, "Electricity Imports and Exports," at end of section.

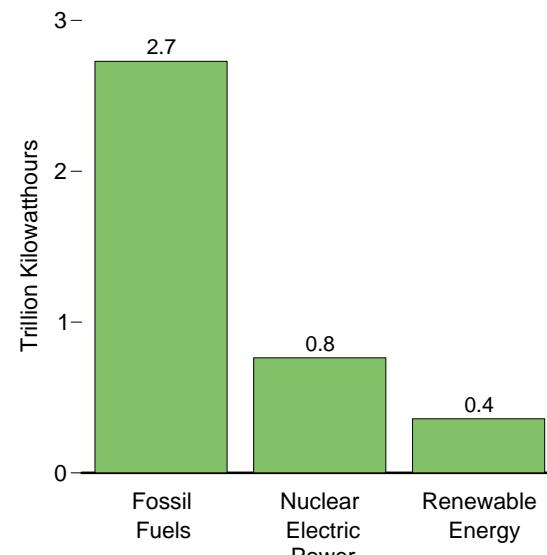
T & D Losses and Unaccounted for: Calculated as the sum of total net generation and imports minus total end use and exports. End Use: Table 8.9.

Figure 8.2a Electricity Net Generation, Total (All Sectors)

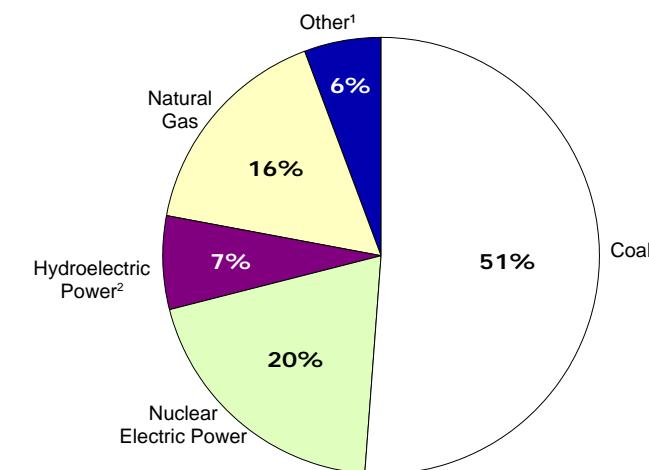
Total (All Sectors) and Sectors, 1989-2003



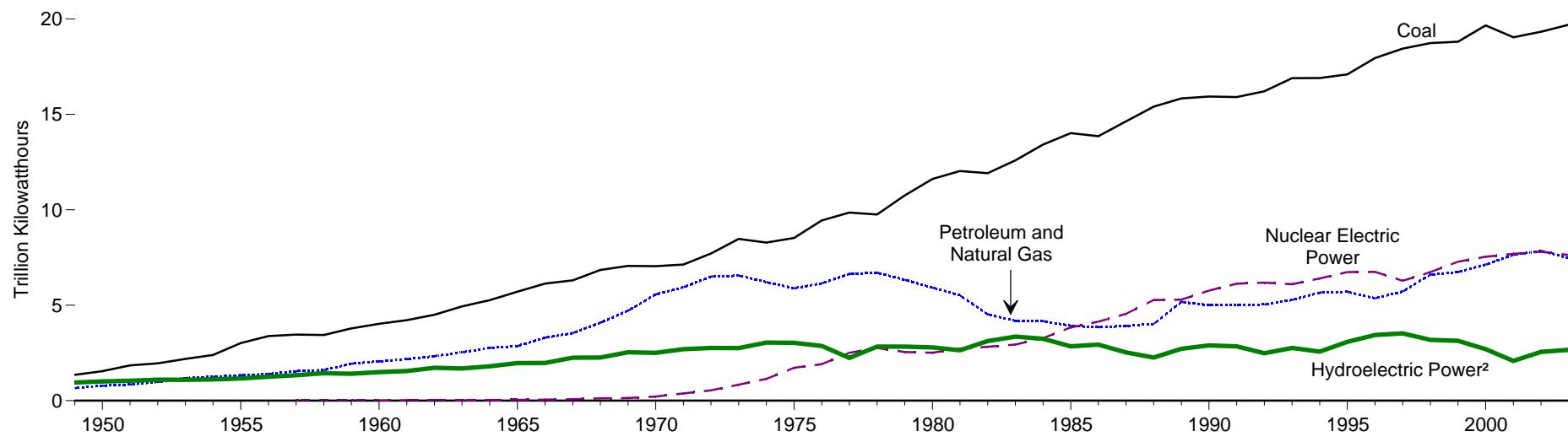
By Source Category, 2003



By Source, 2003



By Major Sources, 1949-2003



¹ Petroleum, wood, waste, geothermal, other gases, wind, solar, and other.

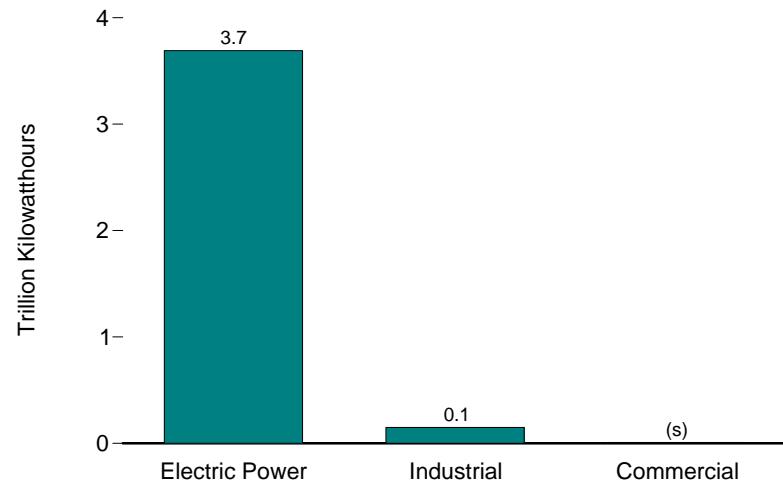
² Conventional hydroelectric power and pumped storage.

Note: Because vertical scales differ, graphs should not be compared.

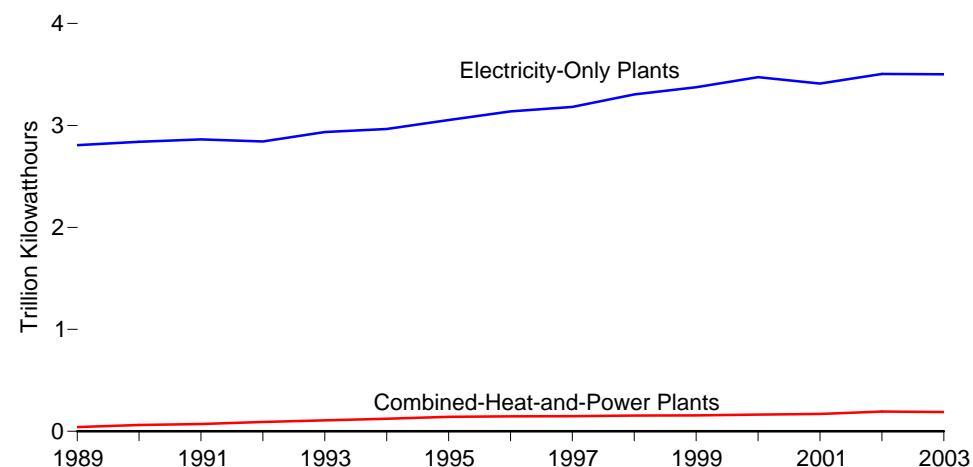
Sources: Tables 8.2a, 8.2b, and 8.2d.

Figure 8.2b Electricity Net Generation by Sector

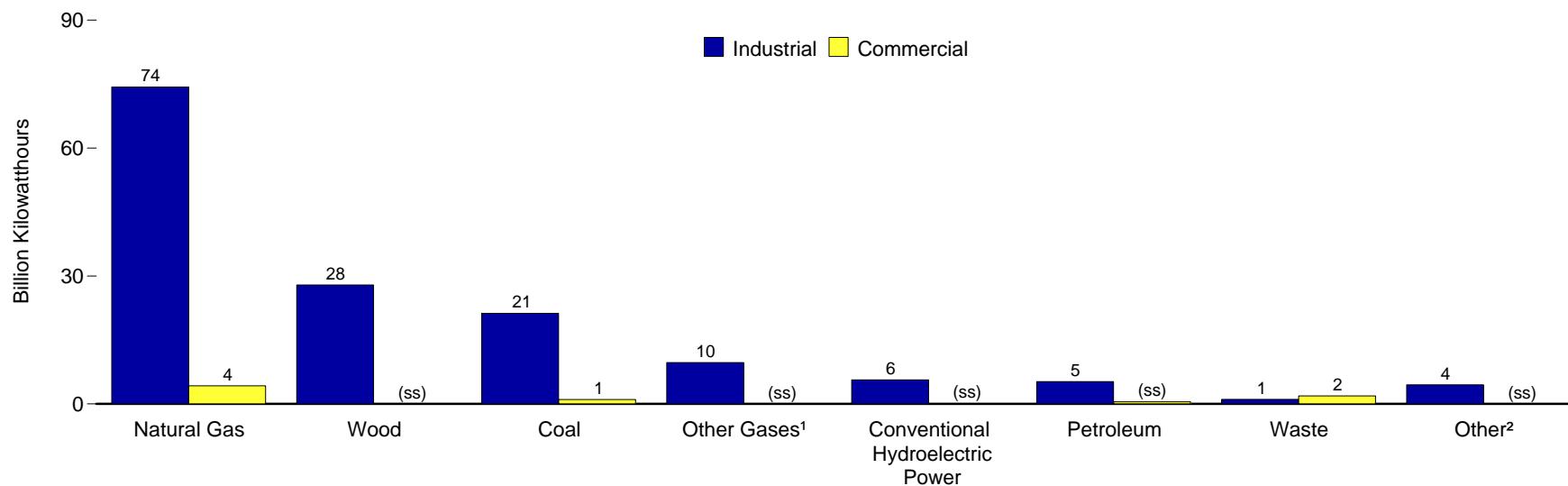
By Sector, 2003



Electric Power Sector by Plant Type, 1989-2003



Industrial and Commercial Sectors, 2003



¹ Blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels.

² Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.

(s) = Less than 0.05 trillion kilowatthours.

(ss) = Less than 0.5 billion kilowatthours.

Note: Because vertical scales differ, graphs should not be compared.

Sources: Tables 8.2b-8.2d.

Table 8.2a Electricity Net Generation: Total (All Sectors), Selected Years, 1949-2003
 (Sum of Tables 8.2b and 8.2d; Billion Kilowatthours)

Year	Fossil Fuels					Nuclear Electric Power	Hydro-electric Pumped Storage ⁵	Renewable Energy							Other ⁹	Total
	Coal ¹	Petroleum ²	Natural Gas ³	Other Gases ⁴	Total			Conventional Hydroelectric Power	Wood ⁶	Waste ⁷	Geo-thermal	Solar ⁸	Wind	Total		
1949	135.5	28.5	37.0	NA	201.0	0.0	(¹⁰)	94.8	0.4	NA	NA	NA	NA	95.2	NA	296.1
1950	154.5	33.7	44.6	NA	232.8	0.0	(¹⁰)	100.9	0.4	NA	NA	NA	NA	101.3	NA	334.1
1955	301.4	37.1	95.3	NA	433.8	0.0	(¹⁰)	116.2	0.3	NA	NA	NA	NA	116.5	NA	550.3
1960	403.1	48.0	158.0	NA	609.0	0.5	(¹⁰)	149.4	0.1	NA	(s)	NA	NA	149.6	NA	759.2
1965	570.9	64.8	221.6	NA	857.3	3.7	(¹⁰)	197.0	0.3	NA	0.2	NA	NA	197.4	NA	1,058.4
1970	704.4	184.2	372.9	NA	1,261.5	21.8	(¹⁰)	251.0	0.1	0.2	0.5	NA	NA	251.8	NA	1,535.1
1971	713.1	220.2	374.0	NA	1,307.4	38.1	(¹⁰)	269.5	0.1	0.2	0.5	NA	NA	270.4	NA	1,615.9
1972	771.1	274.3	375.7	NA	1,421.2	54.1	(¹⁰)	275.9	0.1	0.2	1.5	NA	NA	277.7	NA	1,753.0
1973	847.7	314.3	340.9	NA	1,502.9	83.5	(¹⁰)	275.4	0.1	0.2	2.0	NA	NA	277.7	NA	1,864.1
1974	828.4	300.9	320.1	NA	1,449.4	114.0	(¹⁰)	304.2	0.1	0.2	2.5	NA	NA	306.9	NA	1,870.3
1975	852.8	289.1	299.8	NA	1,441.7	172.5	(¹⁰)	303.2	(s)	0.2	3.2	NA	NA	306.6	NA	1,920.8
1976	944.4	320.0	294.6	NA	1,559.0	191.1	(¹⁰)	286.9	0.1	0.2	3.6	NA	NA	290.8	NA	2,040.9
1977	985.2	358.2	305.5	NA	1,648.9	250.9	(¹⁰)	223.6	0.3	0.2	3.6	NA	NA	227.7	NA	2,127.4
1978	975.7	365.1	305.4	NA	1,646.2	276.4	(¹⁰)	283.5	0.2	0.1	3.0	NA	NA	286.8	NA	2,209.4
1979	1,075.0	303.5	329.5	NA	1,708.0	255.2	(¹⁰)	283.1	0.3	0.2	3.9	NA	NA	287.5	NA	2,250.7
1980	1,161.6	246.0	346.2	NA	1,753.8	251.1	(¹⁰)	279.2	0.3	0.2	5.1	NA	NA	284.7	NA	2,289.6
1981	1,203.2	206.4	345.8	NA	1,755.4	272.7	(¹⁰)	263.8	0.2	0.1	5.7	NA	NA	269.9	NA	2,298.0
1982	1,192.0	146.8	305.3	NA	1,644.1	282.8	(¹⁰)	312.4	0.2	0.1	4.8	NA	NA	317.5	NA	2,244.4
1983	1,259.4	144.5	274.1	NA	1,678.0	293.7	(¹⁰)	335.3	0.2	0.2	6.1	NA	(s)	341.7	NA	2,313.4
1984	1,341.7	119.8	297.4	NA	1,758.9	327.6	(¹⁰)	324.3	0.5	0.4	7.7	(s)	(s)	332.9	NA	2,419.5
1985	1,402.1	100.2	291.9	NA	1,794.3	383.7	(¹⁰)	284.3	0.7	0.6	9.3	(s)	(s)	295.0	NA	2,473.0
1986	1,385.8	136.6	248.5	NA	1,770.9	414.0	(¹⁰)	294.0	0.5	0.7	10.3	(s)	(s)	305.5	NA	2,490.5
1987	1,463.8	118.5	272.6	NA	1,854.9	455.3	(¹⁰)	252.9	0.8	0.7	10.8	(s)	(s)	265.1	NA	2,575.3
1988	1,540.7	148.9	252.8	NA	1,942.4	527.0	(¹⁰)	226.1	0.9	0.7	10.3	(s)	(s)	238.1	NA	2,707.4
1989 ¹¹	1,583.8	164.5	352.6	7.9	2,108.8	529.4	(¹⁰)	272.0	27.2	9.2	14.6	0.3	2.1	325.3	3.8	2,967.3
1990	1,594.0	126.6	372.8	10.4	2,103.8	576.9	-3.5	292.9	32.5	13.3	15.4	0.4	2.8	357.2	3.6	3,038.0
1991	1,590.6	119.8	381.6	11.3	2,103.3	612.6	-4.5	289.0	33.7	15.7	16.0	0.5	3.0	357.8	4.7	3,073.8
1992	1,621.2	100.2	404.1	13.3	2,138.7	618.8	-4.2	253.1	36.5	17.8	16.1	0.4	2.9	326.9	3.7	3,083.9
1993	1,690.1	112.8	414.9	13.0	2,230.7	610.3	-4.0	280.5	37.6	18.3	16.8	0.5	3.0	356.7	3.5	3,197.2
1994	1,690.7	105.9	460.2	13.3	2,270.1	640.4	-3.4	260.1	37.9	19.1	15.5	0.5	3.4	336.7	3.7	3,247.5
1995	1,709.4	74.6	496.1	13.9	2,293.9	673.4	-2.7	310.8	36.5	20.4	13.4	0.5	3.2	384.8	4.1	3,353.5
1996	1,795.2	81.4	455.1	14.4	2,346.0	674.7	-3.1	347.2	36.8	20.9	14.3	0.5	3.2	423.0	3.6	3,444.2
1997	1,845.0	92.6	479.4	13.4	2,430.3	628.6	-4.0	356.5	36.9	21.7	14.7	0.5	3.3	433.6	3.6	3,492.2
1998	1,873.5	128.8	531.3	13.5	2,547.1	673.7	-4.5	323.3	36.3	22.4	14.8	0.5	3.0	400.4	3.6	3,620.3
1999	1,881.1	118.1	556.4	14.1	2,569.7	728.3	-6.1	319.5	37.0	22.6	14.8	0.5	4.5	399.0	4.0	3,694.8
2000	1,966.3	111.2	601.0	14.0	2,692.5	753.9	-5.5	275.6	37.6	23.1	14.1	0.5	5.6	356.5	4.8	3,802.1
2001	1,904.0	124.9	639.1	9.0	2,677.0	768.8	-8.8	217.0	35.2	21.8	13.7	0.5	6.7	294.9	4.7	3,736.6
2002	R ¹ ,933.1	R ^{94.6}	R ^{691.0}	R ^{11.5}	R ^{2,730.2}	780.1	R ^{-8.7}	R ^{264.3}	R ^{38.7}	R ^{22.9}	R ^{14.5}	R ^{0.6}	R ^{10.4}	R ^{351.3}	R ^{5.7}	R ^{3,858.5}
2003 ^P	1,970.3	118.3	629.2	10.9	2,728.7	763.7	-8.7	275.0	37.0	22.8	13.1	0.5	10.7	359.2	5.1	3,848.0

¹ Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal.

² Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, and waste oil.

³ Natural gas, plus a small amount of supplemental gaseous fuels that cannot be identified separately.

⁴ Blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels.

⁵ Pumped storage facility production minus energy used for pumping.

⁶ Wood, black liquor, and other wood waste.

⁷ Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.

⁸ Solar thermal and photovoltaic energy.

⁹ Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.

¹⁰ Included in "Conventional Hydroelectric Power."

¹¹ Through 1988, all data except hydroelectric are for electric utilities only; hydroelectric data through 1988 include industrial plants as well as electric utilities. Beginning in 1989, data are for electric utilities, independent power producers, commercial plants, and industrial plants.

R=Revised. P=Preliminary. NA=Not available. (s)=Less than 0.05 billion kilowatthours.

Notes: • See Note 1, "Coverage of Electricity Statistics," at end of section. • Totals may not equal sum of components due to independent rounding.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/elect.html>.

• For related information, see <http://www.eia.doe.gov/fuelelectric.html>.

Sources: • 1949-1988—Table 8.2b for electric power sector, and Table 8.1 for industrial sector. • 1989 forward—Tables 8.2b and 8.2d.

Table 8.2b Electricity Net Generation: Electric Power Sector, Selected Years, 1949-2003

(Subset of Table 8.2a; Billion Kilowatthours)

Year	Fossil Fuels					Nuclear Electric Power	Hydro- electric Pumped Storage ⁵	Renewable Energy						Other ⁹	Total	
	Coal ¹	Petroleum ²	Natural Gas ³	Other Gases ⁴	Total			Conventional Hydroelectric Power	Wood ⁶	Waste ⁷	Geo- thermal	Solar ⁸	Wind	Total		
1949	135.5	28.5	37.0	NA	201.0	0.0	(10)	89.7	0.4	NA	NA	NA	NA	90.1	NA	291.1
1950	154.5	33.7	44.6	NA	232.8	0.0	(10)	95.9	0.4	NA	NA	NA	NA	96.3	NA	329.1
1955	301.4	37.1	95.3	NA	433.8	0.0	(10)	113.0	0.3	NA	NA	NA	NA	113.3	NA	547.0
1960	403.1	48.0	158.0	NA	609.0	0.5	(10)	145.8	0.1	NA	(s)	NA	NA	146.0	NA	755.5
1965	570.9	64.8	221.6	NA	857.3	3.7	(10)	193.9	0.3	NA	0.2	NA	NA	194.3	NA	1,055.3
1970	704.4	184.2	372.9	NA	1,261.5	21.8	(10)	247.7	0.1	0.2	0.5	NA	NA	248.6	NA	1,531.9
1971	713.1	220.2	374.0	NA	1,307.4	38.1	(10)	266.3	0.1	0.2	0.5	NA	NA	267.2	NA	1,612.6
1972	771.1	274.3	375.7	NA	1,421.2	54.1	(10)	272.6	0.1	0.2	1.5	NA	NA	274.4	NA	1,749.7
1973	847.7	314.3	340.9	NA	1,502.9	83.5	(10)	272.1	0.1	0.2	2.0	NA	NA	274.4	NA	1,860.7
1974	828.4	300.9	320.1	NA	1,449.4	114.0	(10)	301.0	0.1	0.2	2.5	NA	NA	303.7	NA	1,867.1
1975	852.8	289.1	299.8	NA	1,441.7	172.5	(10)	300.0	(s)	0.2	3.2	NA	NA	303.5	NA	1,917.6
1976	944.4	320.0	294.6	NA	1,559.0	191.1	(10)	283.7	0.1	0.2	3.6	NA	NA	287.6	NA	2,037.7
1977	985.2	358.2	305.5	NA	1,648.9	250.9	(10)	220.5	0.3	0.2	3.6	NA	NA	224.5	NA	2,124.3
1978	975.7	365.1	305.4	NA	1,646.2	276.4	(10)	280.4	0.2	0.1	3.0	NA	NA	283.7	NA	2,206.3
1979	1,075.0	303.5	329.5	NA	1,708.0	255.2	(10)	279.8	0.3	0.2	3.9	NA	NA	284.2	NA	2,247.4
1980	1,161.6	246.0	346.2	NA	1,753.8	251.1	(10)	276.0	0.3	0.2	5.1	NA	NA	281.5	NA	2,286.4
1981	1,203.2	206.4	345.8	NA	1,755.4	272.7	(10)	260.7	0.2	0.1	5.7	NA	NA	266.7	NA	2,294.8
1982	1,192.0	146.8	305.3	NA	1,644.1	282.8	(10)	309.2	0.2	0.1	4.8	NA	NA	314.4	NA	2,241.2
1983	1,259.4	144.5	274.1	NA	1,678.0	293.7	(10)	332.1	0.2	0.2	6.1	NA	(s)	338.6	NA	2,310.3
1984	1,341.7	119.8	297.4	NA	1,758.9	327.6	(10)	321.2	0.5	0.4	7.7	(s)	(s)	329.8	NA	2,416.3
1985	1,402.1	100.2	291.9	NA	1,794.3	383.7	(10)	281.1	0.7	0.6	9.3	(s)	(s)	291.9	NA	2,469.8
1986	1,385.8	136.6	248.5	NA	1,770.9	414.0	(10)	290.8	0.5	0.7	10.3	(s)	(s)	302.3	NA	2,487.3
1987	1,463.8	118.5	272.6	NA	1,854.9	455.3	(10)	249.7	0.8	0.7	10.8	(s)	(s)	262.0	NA	2,572.1
1988	1,540.7	148.9	252.8	NA	1,942.4	527.0	(10)	222.9	0.9	0.7	10.3	(s)	(s)	234.9	NA	2,704.3
1989 ¹¹	1,562.4	159.0	297.3	0.5	2,019.1	529.4	(10)	269.2	5.6	7.7	14.6	0.3	2.1	299.5	0.3	2,848.2
1990	1,572.1	118.9	309.5	0.6	2,001.1	576.9	-3.5	289.8	7.0	11.5	15.4	0.4	2.8	326.9	(s)	2,901.3
1991	1,568.8	112.8	317.8	0.7	2,000.1	612.6	-4.5	286.0	7.7	13.9	16.0	0.5	3.0	327.0	0.4	2,935.6
1992	1,597.7	92.2	334.3	1.2	2,025.4	618.8	-4.2	250.0	8.5	15.9	16.1	0.4	2.9	293.9	0.5	2,934.4
1993	1,665.5	105.4	342.2	1.0	2,114.1	610.3	-4.0	277.5	9.2	16.2	16.8	0.5	3.0	323.2	0.4	3,043.9
1994	1,666.3	98.7	385.7	1.1	2,151.7	640.4	-3.4	254.0	9.2	17.0	15.5	0.5	3.4	299.7	0.2	3,088.7
1995	1,686.1	68.1	419.2	1.9	2,175.3	673.4	-2.7	305.4	7.6	18.0	13.4	0.5	3.2	348.0	0.2	3,194.2
1996	1,772.0	74.8	378.8	1.3	2,226.9	674.7	-3.1	341.2	8.4	17.8	14.3	0.5	3.2	385.4	0.2	3,284.1
1997	1,820.8	86.5	399.6	1.5	2,308.4	628.6	-4.0	350.6	8.7	18.5	14.7	0.5	3.3	396.3	0.1	3,329.4
1998	1,850.2	122.2	449.3	2.3	2,424.0	673.7	-4.5	317.9	8.6	19.2	14.8	0.5	3.0	364.0	0.2	3,457.4
1999	1,858.6	111.5	473.0	1.6	2,444.8	728.3	-6.1	314.7	9.0	19.5	14.8	0.5	4.5	362.9	0.1	3,530.0
2000	1,943.1	105.2	518.0	2.0	2,568.3	753.9	-5.5	271.3	8.9	20.3	14.1	0.5	5.6	320.7	0.1	3,637.5
2001	1,882.8	119.1	554.9	0.6	2,557.5	768.8	-8.8	213.7	8.3	19.5	13.7	0.5	6.7	262.5	0.0	3,580.1
2002	R 1,910.6	R 89.7	R 607.7	R 2.0	R 2,610.0	780.1	R 8.7	R 260.5	R 9.0	R 20.2	R 14.5	R 0.6	R 10.4	R 315.1	R 2.1	R 3,698.5
2003 ^P	1,948.0	112.5	550.6	1.2	2,612.4	763.7	-8.7	269.3	9.0	19.9	13.1	0.5	10.7	322.6	0.6	3,690.7

¹ Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal.

² Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, and waste oil.

³ Natural gas, plus a small amount of supplemental gaseous fuels that cannot be identified separately.

⁴ Blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels.

⁵ Pumped storage facility production minus energy used for pumping.

⁶ Wood, black liquor, and other wood waste.

⁷ Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.

⁸ Solar thermal and photovoltaic energy.

⁹ Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.

¹⁰ Included in "Conventional Hydroelectric Power."

¹¹ Through 1988, data are for electric utilities only. Beginning in 1989, data are for electric utilities and independent power producers.

R=Revised. P=Preliminary. NA=Not available. (s)=Less than 0.05 billion kilowatthours.

Notes: • The electric power sector comprises electricity-only and combined-heat-and-power (CHP) plants within the NAICS (North American Industry Classification System) 22 category whose primary

business is to sell electricity, or electricity and heat, to the public. • See Table 8.2d for commercial and industrial CHP and electricity-only data. • See Note 1, "Coverage of Electricity Statistics," and Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section. • Totals may not equal sum of components due to independent rounding.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/elect.html>.

Sources: • 1949-September 1977—Federal Power Commission, Form FPC-4, "Monthly Power Plant Report." • October 1977-1981—Federal Energy Regulatory Commission, Form FPC-4, "Monthly Power Plant Report." • 1982-1988—Energy Information Administration (EIA), Form EIA-759, "Monthly Power Plant Report." • 1989-1997—EIA, Form EIA-759, "Monthly Power Plant Report" and Form EIA-867, "Annual Nonutility Power Producer Report." • 1998-2000—EIA, Form EIA-759, "Monthly Power Plant Report" and Form EIA-860B, "Annual Electric Generator Report—Nonutility." • 2001 and 2002—EIA, Form EIA-860, "Annual Electric Generator Report" and Form EIA-906, "Power Plant Report." • 2003—EIA, Form EIA-906, "Power Plant Report."

Table 8.2c Electricity Net Generation: Electric Power Sector by Plant Type, 1989-2003

(Breakout of Table 8.2b; Billion Kilowatthours)

Year	Fossil Fuels					Nuclear Electric Power	Hydro- electric Pumped Storage ⁵	Renewable Energy							Other ⁹	Total
	Coal ¹	Petroleum ²	Natural Gas ³	Other Gases ⁴	Total			Conventional Hydroelectric Power	Wood ⁶	Waste ⁷	Geo- thermal	Solar ⁸	Wind	Total		
Electricity-Only Plants ¹⁰																
1989	1,554.0	158.3	266.9	0.0	1,979.3	529.4	(¹¹)	269.2	4.2	6.9	14.6	0.3	2.1	297.3	0.0	2,805.9
1990	1,560.2	117.6	264.7	(s)	1,942.4	576.9	-3.5	289.8	5.6	10.4	15.4	0.4	2.8	324.3	0.0	2,840.0
1991	1,551.9	112.2	267.8	(s)	1,931.9	612.6	-4.5	286.0	6.0	12.2	16.0	0.5	3.0	323.7	0.0	2,863.6
1992	1,577.1	90.1	270.9	(s)	1,938.0	618.8	-4.2	250.0	6.6	14.4	16.1	0.4	2.9	290.4	0.0	2,843.1
1993	1,642.1	100.6	267.2	(s)	2,009.9	610.3	-4.0	277.5	7.2	14.9	16.8	0.5	3.0	319.8	0.0	2,935.9
1994	1,639.9	92.1	299.7	(s)	2,031.7	640.4	-3.4	254.0	7.6	15.4	15.5	0.5	3.4	296.5	0.0	2,965.2
1995	1,658.0	62.0	317.4	(s)	2,037.4	673.4	-2.7	305.4	5.9	16.3	13.4	0.5	3.2	344.7	0.0	3,052.8
1996	1,742.8	68.5	272.8	(s)	2,084.1	674.7	-3.1	341.2	6.5	16.1	14.3	0.5	3.2	381.8	0.0	3,137.6
1997	1,793.2	80.3	291.1	(s)	2,164.6	628.6	-4.0	350.6	6.5	16.4	14.7	0.5	3.3	392.0	0.0	3,181.3
1998	1,823.0	115.7	335.9	0.1	2,274.6	673.7	-4.5	317.9	6.6	17.0	14.8	0.5	3.0	359.8	0.0	3,303.6
1999	1,832.1	104.8	356.6	(s)	2,293.6	728.3	-6.1	314.7	7.3	17.1	14.8	0.5	4.5	358.8	0.0	3,374.6
2000	1,910.6	98.0	399.4	0.2	2,408.2	753.9	-5.5	271.3	7.3	17.6	14.1	0.5	5.6	316.4	0.0	3,472.9
2001	1,851.8	113.2	427.0	(s)	2,392.0	768.8	-8.8	213.7	6.6	17.2	13.7	0.5	6.7	258.6	0.0	3,410.5
2002	R ¹ 881.2	R ^{83.3}	R ^{456.8}	R ^{0.2}	R ^{2,421.5}	780.1	R ^{8.7}	R ^{260.5}	R ^{7.3}	R ^{17.4}	R ^{14.5}	R ^{0.6}	R ^{10.4}	R ^{310.5}	R ^{1.4}	R ^{3,504.8}
2003 ^P	1,916.2	105.6	406.4	(s)	2,428.2	763.7	-8.7	269.3	7.2	16.9	13.1	0.5	10.7	317.8	0.2	3,501.3
Combined-Heat-and-Power Plants ¹²																
1989	8.4	0.7	30.4	0.5	39.9	—	—	0.0	1.3	0.9	—	—	—	2.2	0.3	42.3
1990	11.9	1.3	44.8	0.6	58.7	—	—	0.0	1.4	1.1	—	—	—	2.6	(s)	61.3
1991	16.9	0.6	50.0	0.7	68.2	—	—	0.0	1.7	1.6	—	—	—	3.3	0.4	71.9
1992	20.7	2.2	63.4	1.2	87.4	—	—	0.0	1.9	1.5	—	—	—	3.4	0.5	91.3
1993	23.4	4.8	75.0	1.0	104.2	—	—	0.0	2.0	1.4	—	—	—	3.4	0.4	108.0
1994	26.4	6.6	86.0	1.1	120.1	—	—	0.0	1.6	1.6	—	—	—	3.2	0.2	123.5
1995	28.1	6.1	101.7	1.9	137.9	—	—	0.0	1.7	1.7	—	—	—	3.4	0.2	141.5
1996	29.2	6.3	105.9	1.3	142.7	—	—	0.0	1.9	1.7	—	—	—	3.6	0.2	146.6
1997	27.6	6.2	108.5	1.5	143.7	—	—	0.0	2.2	2.1	—	—	—	4.3	0.1	148.1
1998	27.2	6.6	113.4	2.3	149.4	—	—	0.0	2.0	2.3	—	—	—	4.2	0.2	153.8
1999	26.6	6.7	116.4	1.6	151.2	—	—	0.0	1.7	2.4	—	—	—	4.1	0.1	155.4
2000	32.5	7.2	118.6	1.8	160.2	—	—	0.0	1.6	2.7	—	—	—	4.3	0.1	164.6
2001	31.0	6.0	128.0	0.6	165.5	—	—	0.0	1.7	2.3	—	—	—	4.0	0.0	169.5
2002	R ^{29.4}	R ^{6.5}	R ^{150.9}	R ^{1.7}	R ^{188.5}	—	—	0.0	1.7	2.8	—	—	—	R ^{4.6}	R ^{0.6}	R ^{193.7}
2003 ^E	31.8	6.9	144.3	1.2	184.2	—	—	(s)	1.8	2.9	—	—	—	4.8	0.4	189.4

¹ Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal.

² Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, and waste oil.

³ Natural gas, plus a small amount of supplemental gaseous fuels that cannot be identified separately.

⁴ Blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels.

⁵ Pumped storage facility production minus energy used for pumping.

⁶ Wood, black liquor, and other wood waste.

⁷ Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.

⁸ Solar thermal and photovoltaic energy.

⁹ Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.

¹⁰ Electricity-only plants within the NAICS 22 category whose primary business is to sell electricity to the public. Data also include a small number of electric utility combined-heat-and-power (CHP) plants.

¹¹ Included in "Conventional Hydroelectric Power."

¹² Combined-heat-and-power (CHP) plants within the NAICS 22 category whose primary business is to sell electricity and heat to the public. Data do not include electric utility CHP plants—these are included under "Electricity-Only Plants."

R=Revised. P=Preliminary. E=Estimate. — = Not applicable. (s)=Less than 0.05 billion kilowatthours.

Notes: • See Table 8.2d for commercial and industrial CHP and electricity-only data. • See Note 1, "Coverage of Electricity Statistics," and Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section. • Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/fuelelectric.html>.

Sources: • 1989-1997—Energy Information Administration (EIA), Form EIA-759, "Monthly Power Plant Report" and Form EIA-867, "Annual Nonutility Power Producer Report." • 1998-2000—EIA, Form EIA-759, "Monthly Power Plant Report" and Form EIA-860B, "Annual Electric Generator Report—Nonutility." • 2001 and 2002—EIA, Form EIA-860, "Annual Electric Generator Report" and Form EIA-906, "Power Plant Report." • 2003—EIA, Form EIA-906, "Power Plant Report."

Table 8.2d Electricity Net Generation: Commercial and Industrial Sectors, 1989-2003

(Subset of Table 8.2a; Billion Kilowatthours)

Year	Fossil Fuels					Nuclear Electric Power	Hydro-electric Pumped Storage ⁵	Renewable Energy						Other ⁹	Total	
	Coal ¹	Petroleum ²	Natural Gas ³	Other Gases ⁴	Total			Conventional Hydroelectric Power	Wood ⁶	Waste ⁷	Geo-thermal	Solar ⁸	Wind	Total		
Commercial Sector ¹⁰																
1989	0.7	0.6	2.2	0.1	3.6	—	—	0.1	0.1	0.5	—	—	—	0.7	0.0	4.3
1990	0.8	0.6	3.3	0.1	4.8	—	—	0.1	0.1	0.8	—	—	—	1.1	0.0	5.8
1991	0.8	0.4	3.2	0.1	4.5	—	—	0.1	0.1	0.9	—	—	—	1.1	(s)	5.7
1992	0.7	0.3	3.9	0.1	5.0	—	—	0.1	0.1	1.0	—	—	—	1.2	(s)	6.2
1993	0.9	0.3	4.5	0.1	5.8	—	—	0.1	0.1	1.0	—	—	—	1.2	(s)	7.0
1994	0.8	0.4	4.9	0.1	6.3	—	—	0.1	0.1	1.2	—	—	—	1.3	0.0	7.6
1995	1.0	0.4	5.2	0.0	6.5	—	—	0.1	0.1	1.5	—	—	—	1.7	(s)	8.2
1996	1.1	0.4	5.2	(s)	6.7	—	—	0.1	0.1	2.2	—	—	—	2.4	(s)	9.0
1997	1.0	0.4	4.7	(s)	6.2	—	—	0.1	(s)	2.3	—	—	—	2.5	(s)	8.7
1998	1.0	0.4	4.9	(s)	6.3	—	—	0.1	(s)	2.3	—	—	—	2.5	0.0	8.7
1999	1.0	0.4	4.6	(s)	6.0	—	—	0.1	(s)	2.4	—	—	—	2.5	(s)	8.6
2000	1.1	0.4	4.3	(s)	5.8	—	—	0.1	(s)	2.0	—	—	—	2.1	(s)	7.9
2001	1.0	0.4	4.4	(s)	5.9	—	—	0.1	(s)	1.5	—	—	—	1.5	(s)	7.4
2002	1.0	0.4	R4.3	(s)	R5.7	—	—	R (s)	(s)	R1.6	—	—	—	R1.6	R0.1	R7.4
2003 ^P	1.0	0.5	4.3	(s)	5.8	—	—	0.1	(s)	1.9	—	—	—	2.0	(s)	7.8
Industrial Sector ¹¹																
1989	20.7	5.0	53.2	7.3	86.1	—	—	2.7	21.6	0.9	—	—	—	25.2	3.5	114.8
1990	21.1	7.2	60.0	9.6	97.9	—	—	3.0	25.4	0.9	—	—	—	29.3	3.6	130.8
1991	21.0	6.5	60.6	10.5	98.6	—	—	2.8	25.9	0.9	—	—	—	29.6	4.3	132.6
1992	22.7	7.6	65.9	12.0	108.2	—	—	2.9	27.9	0.9	—	—	—	31.8	3.2	143.3
1993	23.7	7.0	68.2	11.9	110.9	—	—	2.9	28.4	1.1	—	—	—	32.3	3.1	146.3
1994	23.6	6.8	69.6	12.1	112.1	—	—	6.0	28.7	1.0	—	—	—	35.7	3.4	151.2
1995	22.4	6.0	71.7	11.9	112.1	—	—	5.3	28.9	0.9	—	—	—	35.1	3.9	151.0
1996	22.2	6.3	71.0	13.0	112.5	—	—	5.9	28.4	0.9	—	—	—	35.2	3.4	151.0
1997	23.2	5.6	75.1	11.8	115.8	—	—	5.7	28.2	0.9	—	—	—	34.8	3.5	154.1
1998	22.3	6.2	77.1	11.2	116.8	—	—	5.3	27.7	0.9	—	—	—	33.9	3.4	154.1
1999	21.5	6.1	78.8	12.5	118.9	—	—	4.8	28.1	0.7	—	—	—	33.5	3.9	156.3
2000	22.1	5.6	78.8	11.9	118.4	—	—	4.1	28.7	0.8	—	—	—	33.6	4.7	156.7
2001	20.1	5.3	79.8	8.5	113.6	—	—	3.1	26.9	0.8	—	—	—	30.8	4.7	149.2
2002	R21.5	R4.4	R79.0	R9.5	R114.4	—	—	R3.8	R29.6	R1.1	—	—	—	R34.6	R3.6	R152.6
2003 ^P	21.2	5.2	74.3	9.7	110.5	—	—	5.6	27.9	1.1	—	—	—	34.6	4.5	149.5

¹ Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal.

² Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, and waste oil.

³ Natural gas, plus a small amount of supplemental gaseous fuels that cannot be identified separately.

⁴ Blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels.

⁵ Pumped storage facility production minus energy used for pumping.

⁶ Wood, black liquor, and other wood waste.

⁷ Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.

⁸ Solar thermal and photovoltaic energy.

⁹ Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.

¹⁰ Commercial combined-heat-and-power (CHP) and commercial electricity-only plants.

¹¹ Industrial combined-heat-and-power (CHP) and industrial electricity-only plants.

R=Revised. P=Preliminary. — = Not applicable. (s)=Less than 0.05 billion kilowatthours.

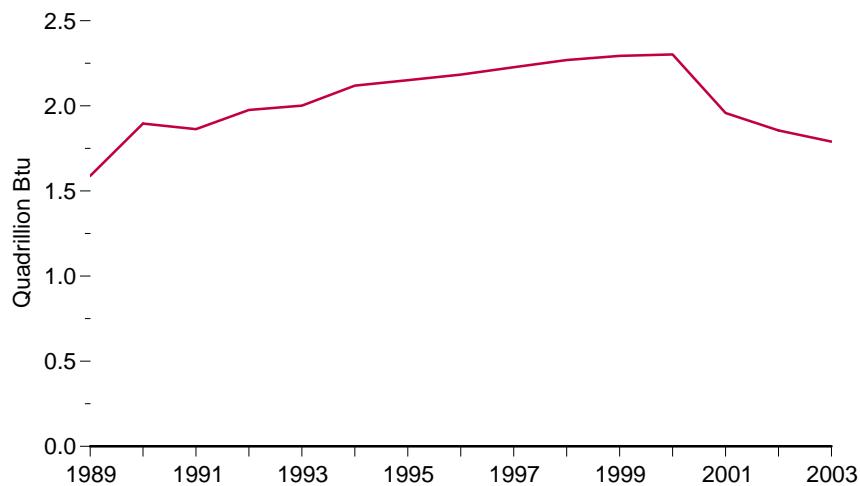
Notes: • See Tables 8.2b and 8.2c for electric power sector electricity-only and CHP data. • See Note 1, "Coverage of Electricity Statistics," and Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section. • Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/fuelelectric.html>.

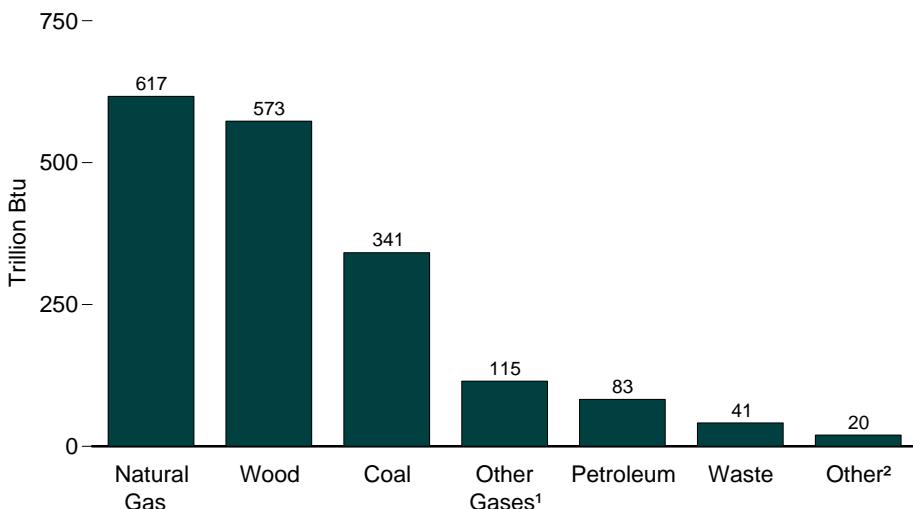
Sources: • 1989-1997—Energy Information Administration (EIA), Form EIA-867, "Annual Nonutility Power Producer Report." • 1998-2000—EIA, Form EIA-860B, "Annual Electric Generator Report—Nonutility." • 2001 and 2002—EIA, Form EIA-860, "Annual Electric Generator Report" and Form EIA-906, "Power Plant Report." • 2003—EIA, Form EIA-906, "Power Plant Report."

Figure 8.3 Useful Thermal Output at Combined-Heat-and-Power Plants

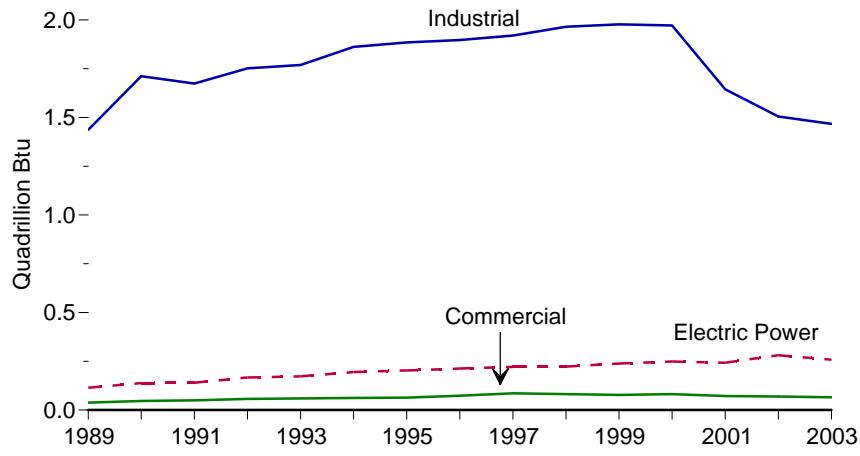
Total (All Sectors), 1989-2003



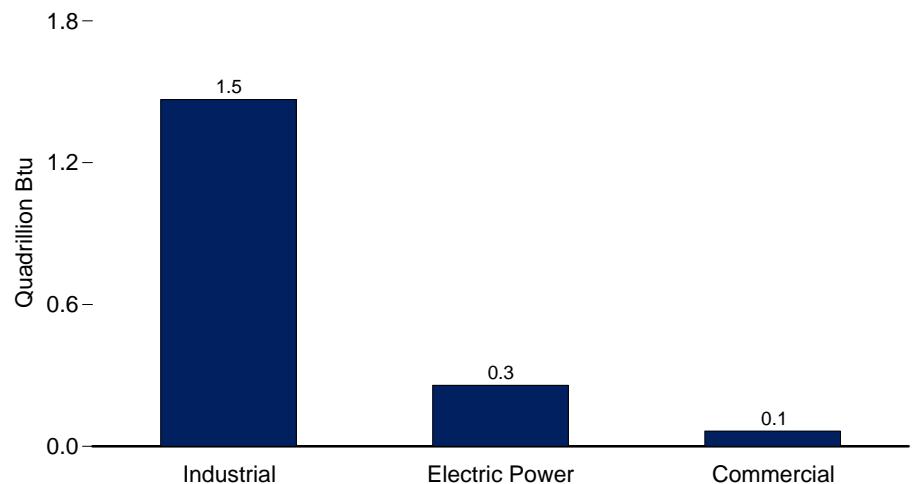
Total (All Sectors) by Source, 2003



By Sector, 1989-2003



By Sector, 2003



¹ Blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels.

² Batteries, chemicals hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.

Note: Because vertical scales differ, graphs should not be compared.
Sources: Tables 8.3a-8.3c.

Table 8.3a Useful Thermal Output at Combined-Heat-and-Power Plants: Total (All Sectors), 1989-2003

(Sum of Tables 8.3b and 8.3c; Trillion Btu)

Year	Fossil Fuels					Renewable Energy			Other ⁷	Total
	Coal ¹	Petroleum ²	Natural Gas ³	Other Gases ⁴	Total	Wood ⁵	Waste ⁶	Total		
1989	323	96	462	93	973	546	30	577	39	1,589
1990	363	127	538	141	1,169	651	36	687	40	1,896
1991	352	112	547	148	1,159	623	37	660	44	1,863
1992	367	117	592	160	1,236	658	40	698	42	1,976
1993	373	129	604	142	1,248	668	45	713	41	2,002
1994	388	133	646	144	1,309	722	45	767	42	2,119
1995	386	121	686	145	1,338	721	47	768	44	2,151
1996	392	133	711	150	1,385	701	55	756	43	2,184
1997	389	137	713	150	1,389	731	55	785	53	2,227
1998	382	136	782	167	1,466	700	57	757	46	2,269
1999	386	125	811	179	1,501	690	55	744	48	2,294
2000	384	108	812	184	1,488	707	56	764	50	2,302
2001	354	90	741	133	1,318	556	41	597	42	1,958
2002	337	73	709	118	1,236	546	39	585	35	1,856
2003 ^P	341	83	617	115	1,156	573	41	614	20	1,790

¹ Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal.² Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, and waste oil.³ Natural gas, plus a small amount of supplemental gaseous fuels that cannot be identified separately.⁴ Blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels.⁵ Wood, black liquor, and other wood waste.⁶ Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.⁷ Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.

P=Preliminary.

Notes: • Data do not include electric utility combined-heat-and-power (CHP) plants. • See Note 1, "Coverage of Electricity Statistics," at end of section. • See "Useful Thermal Output" in Glossary. • Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/fuelelectric.html>.

Sources: Tables 8.3b and 8.3c.

Table 8.3b Useful Thermal Output at Combined-Heat-and-Power Plants: Electric Power Sector, 1989-2003

(Subset of Table 8.3a; Trillion Btu)

Year	Fossil Fuels					Renewable Energy			Other ⁷	Total
	Coal ¹	Petroleum ²	Natural Gas ³	Other Gases ⁴	Total	Wood ⁵	Waste ⁶	Total		
1989	13	8	67	2	90	19	5	24	1	114
1990	21	9	80	4	114	18	6	25	(s)	138
1991	21	6	82	4	113	17	9	26	1	140
1992	28	6	102	5	140	17	8	25	2	167
1993	30	8	107	3	147	16	8	24	1	173
1994	37	9	119	5	170	15	10	24	1	195
1995	40	13	118	4	176	15	12	27	(s)	203
1996	43	12	121	4	180	16	16	33	(s)	213
1997	39	12	132	8	191	16	14	30	(s)	221
1998	43	6	142	5	196	10	16	26	(s)	222
1999	52	7	146	4	208	10	20	30	(s)	238
2000	53	7	158	5	223	6	19	26	(s)	249
2001	52	6	164	5	226	8	8	16	0	243
2002	R40	R4	R214	6	R264	R8	R10	R17	(s)	R281
2003P	39	7	192	5	243	7	8	15	(s)	258

¹ Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal.

² Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, and waste oil.

³ Natural gas, plus a small amount of supplemental gaseous fuels that cannot be identified separately.

⁴ Blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels.

⁵ Wood, black liquor, and other wood waste.

⁶ Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.

⁷ Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.

R=Revised. P=Preliminary. (s)=Less than 0.5 trillion Btu.

Notes: • Data are for combined-heat-and-power (CHP) plants within the NAICS (North American Industry Classification System) 22 category whose primary business is to sell electricity and heat to the

public. Data do not include electric utility CHP plants. • See Table 8.3c for commercial and industrial CHP data. • See Note 1, "Coverage of Electricity Statistics," and Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section. • See "Useful Thermal Output" in Glossary. • Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/fuelelectric.html>.

Sources: • 1989-1997—Energy Information Administration (EIA), Form EIA-867, "Annual Nonutility Power Producer Report." • 1998-2000—EIA, Form EIA-860B, "Annual Electric Generator Report—Nonutility." • 2001 and 2002—EIA, Form EIA-860, "Annual Electric Generator Report" and Form EIA-906, "Power Plant Report." • 2003—EIA, Form EIA-906, "Power Plant Report."

Table 8.3c Useful Thermal Output at Combined-Heat-and-Power Plants: Commercial and Industrial Sectors, 1989-2003
 (Subset of Table 8.3a; Trillion Btu)

Year	Fossil Fuels					Renewable Energy			Other ⁷	Total
	Coal ¹	Petroleum ²	Natural Gas ³	Other Gases ⁴	Total	Wood ⁵	Waste ⁶	Total		
Commercial Sector ⁸										
1989	14	4	10	(s)	27	(s)	10	10	0	38
1990	15	5	16	(s)	36	(s)	10	11	0	46
1991	16	4	21	(s)	41	(s)	9	9	(s)	50
1992	15	4	24	(s)	44	(s)	13	14	(s)	57
1993	18	4	23	(s)	45	(s)	14	14	(s)	59
1994	18	4	26	(s)	48	(s)	14	14	0	62
1995	17	3	29	0	48	(s)	15	15	(s)	63
1996	20	3	33	0	55	1	17	18	0	73
1997	22	4	40	(s)	66	1	19	20	0	86
1998	20	5	39	(s)	64	1	18	18	0	82
1999	20	3	37	0	61	1	17	17	0	78
2000	21	4	39	0	64	1	17	18	0	82
2001	18	4	35	0	58	1	13	14	0	72
2002	R18	R3	R36	0	R57	R1	R11	R12	0	R69
2003 ^P	20	3	29	0	52	(s)	13	13	0	65
Industrial Sector ⁹										
1989	297	84	385	90	856	527	15	542	38	1,437
1990	327	113	443	137	1,019	632	20	652	40	1,711
1991	315	103	444	144	1,005	606	19	625	44	1,674
1992	324	107	466	155	1,052	641	19	660	40	1,752
1993	325	117	475	139	R1,055	R652	23	R675	39	R1,769
1994	333	119	R501	138	R1,092	707	21	729	41	R1,862
1995	329	105	R540	140	R1,114	706	20	726	44	R1,884
1996	329	118	557	146	1,150	684	21	705	43	1,897
1997	328	121	541	142	1,132	713	22	735	53	1,920
1998	318	124	601	162	1,206	689	24	713	46	1,965
1999	313	115	629	175	1,233	679	18	697	48	1,978
2000	309	98	615	179	1,201	700	20	720	50	1,971
2001	284	80	542	128	1,034	548	20	567	42	1,644
2002	R278	66	R458	R112	R914	R537	R19	R556	R35	R1,505
2003 ^P	283	73	395	110	861	566	20	586	19	1,467

¹ Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal.

² Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, and waste oil.

³ Natural gas, plus a small amount of supplemental gaseous fuels that cannot be identified separately.

⁴ Blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels.

⁵ Wood, black liquor, and other wood waste.

⁶ Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.

⁷ Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.

⁸ Commercial combined-heat-and-power (CHP) plants.

⁹ Industrial combined-heat-and-power (CHP) plants.

R=Revised. P=Preliminary. (s)=Less than 0.5 trillion Btu.

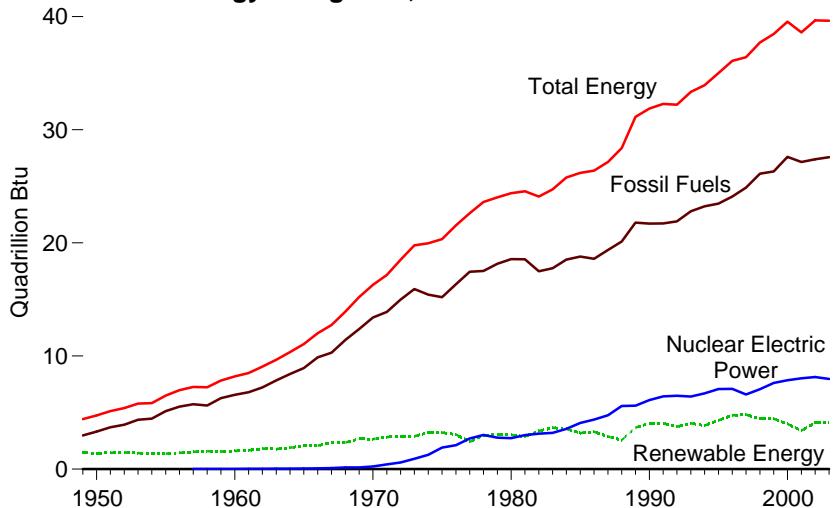
Notes: • See Table 8.3b for electric power sector CHP data. • See Note 1, "Coverage of Electricity Statistics," and Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section. • See "Useful Thermal Output" in Glossary. • Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/fuelelectric.html>.

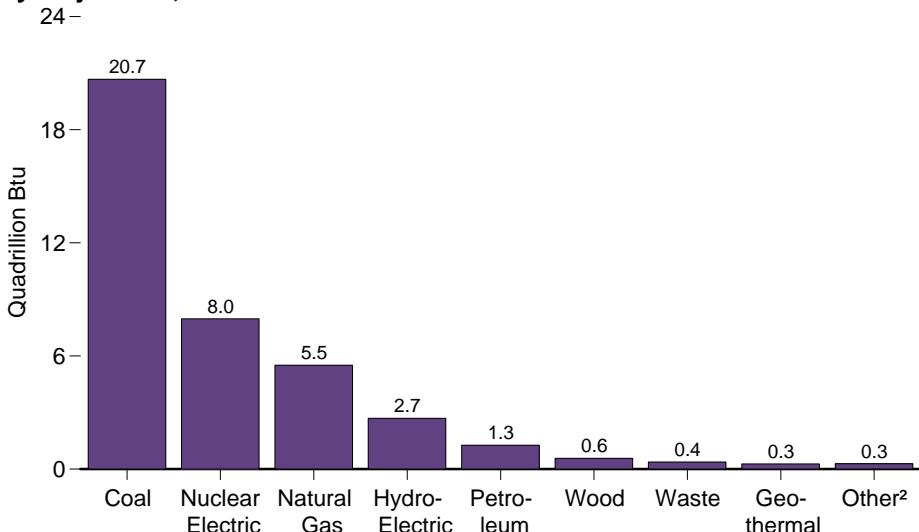
Sources: • 1989-1997—Energy Information Administration (EIA), Form EIA-867, "Annual Nonutility Power Producer Report." • 1998-2000—EIA, Form EIA-860B, "Annual Electric Generator Report—Nonutility." • 2001 and 2002—EIA, Form EIA-860, "Annual Electric Generator Report" and Form EIA-906, "Power Plant Report." • 2003—EIA, Form EIA-906, "Power Plant Report."

Figure 8.4 Consumption for Electricity Generation

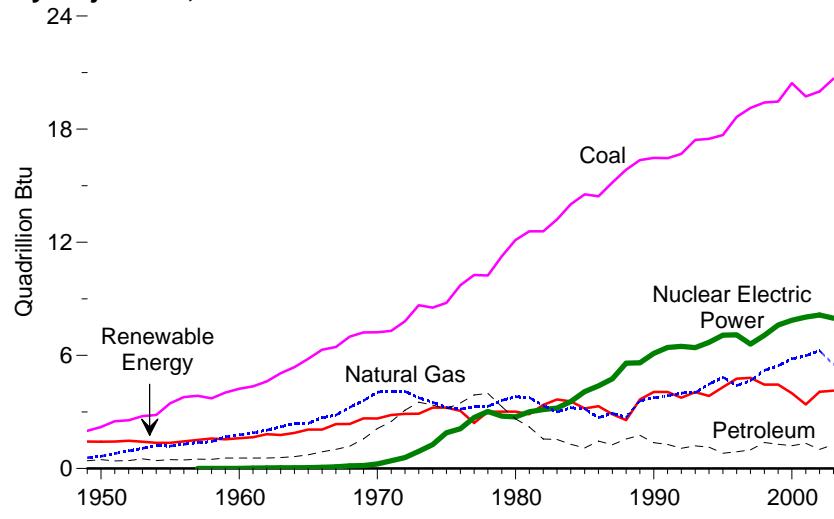
Total and Energy Categories, 1949-2003



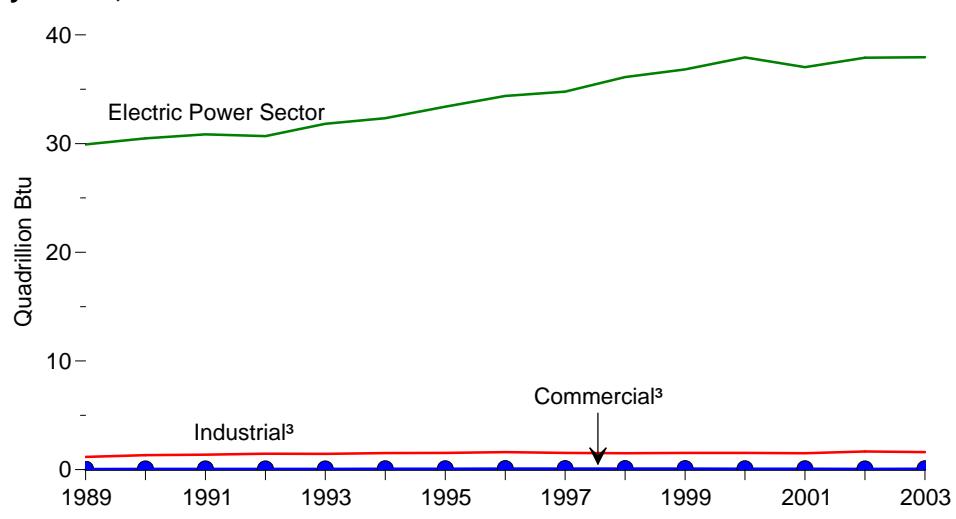
By Major Fuel, 2003



By Major Fuel, 1949-2003



By Sector, 1989-2003



¹ Conventional hydroelectric power and pumped storage.

² Other gases, solar, wind, batteries, chemical, hydrogen, pitch, purchased steam, sulfur, miscellaneous technologies, and electricity net imports.

³ Combined-heat-and-power plants and a small number of electricity-only plants.

Notes: • Stocks are at end of year. • Because vertical scales differ, graphs should not be compared.

Sources: Tables 8.4a-8.4c.

Table 8.4a Consumption for Electricity Generation by Energy Source: Total (All Sectors), Selected Years, 1949-2003

(Sum of Tables 8.4b and 8.4c; Trillion Btu)

Year	Fossil Fuels					Nuclear Electric Power	Hydro-electric Pumped Storage ⁵	Renewable Energy						Electricity Net Imports ¹⁰	Total		
	Coal ¹	Petroleum ²	Natural Gas ³	Other Gases ⁴	Total			Conventional Hydroelectric Power	Wood ⁶	Waste ⁷	Geo-thermal	Solar ⁸	Wind	Total			
1949	1,995	415	569	NA	2,979	0	(11)	1,425	6	NA	NA	NA	NA	1,431	NA	5	4,415
1950	2,199	472	651	NA	3,322	0	(11)	1,415	5	NA	NA	NA	NA	1,421	NA	6	4,749
1955	3,458	471	1,194	NA	5,123	0	(11)	1,360	3	NA	NA	NA	NA	1,363	NA	14	6,500
1960	4,228	553	1,785	NA	6,565	6	(11)	1,608	2	NA	1	NA	NA	1,610	NA	15	8,197
1965	5,821	722	2,395	NA	8,938	43	(11)	2,059	3	NA	4	NA	NA	2,066	NA	(s)	11,047
1970	7,227	2,117	4,054	NA	13,399	239	(11)	2,634	1	2	11	NA	NA	2,649	NA	7	16,293
1971	7,299	2,495	4,099	NA	13,893	413	(11)	2,824	1	2	12	NA	NA	2,839	NA	12	17,158
1972	7,811	3,097	4,084	NA	14,992	584	(11)	2,864	1	2	31	NA	NA	2,899	NA	26	18,501
1973	8,658	3,515	3,748	NA	15,921	910	(11)	2,861	1	2	43	NA	NA	2,907	NA	49	19,788
1974	8,534	3,365	3,519	NA	15,418	1,272	(11)	3,177	1	2	53	NA	NA	3,232	NA	43	19,966
1975	8,786	3,166	3,240	NA	15,191	1,900	(11)	3,155	(s)	2	70	NA	NA	3,227	NA	21	20,339
1976	9,720	3,477	3,152	NA	16,349	2,111	(11)	2,976	1	2	78	NA	NA	3,057	NA	29	21,547
1977	10,262	3,901	3,284	NA	17,446	2,702	(11)	2,333	3	2	77	NA	NA	2,416	NA	59	22,623
1978	10,238	3,987	3,297	NA	17,522	3,024	(11)	2,937	2	1	64	NA	NA	3,005	NA	67	23,618
1979	11,260	3,283	3,613	NA	18,156	2,776	(11)	2,931	3	2	84	NA	NA	3,020	NA	69	24,021
1980	12,123	2,634	3,810	NA	18,567	2,739	(11)	2,900	3	2	110	NA	NA	3,014	NA	71	24,392
1981	12,583	2,202	3,768	NA	18,553	3,008	(11)	2,758	3	1	123	NA	NA	2,885	NA	113	24,559
1982	12,582	1,568	3,342	NA	17,491	3,131	(11)	3,266	2	1	105	NA	NA	3,374	NA	100	24,096
1983	13,213	1,544	2,998	NA	17,754	3,203	(11)	3,527	2	2	129	NA	(s)	3,661	NA	121	24,738
1984	14,019	1,286	3,220	NA	18,526	3,553	(11)	3,386	5	4	165	(s)	(s)	3,560	NA	135	25,774
1985	14,542	1,090	3,160	NA	18,792	4,076	(11)	2,970	8	7	198	(s)	(s)	3,183	NA	140	26,191
1986	14,444	1,452	2,691	NA	18,586	4,380	(11)	3,071	5	7	219	(s)	(s)	3,303	NA	122	26,392
1987	15,173	1,257	2,935	NA	19,365	4,754	(11)	2,635	8	7	229	(s)	(s)	2,879	NA	158	27,157
1988	15,850	1,563	2,709	NA	20,123	5,587	(11)	2,334	10	8	217	(s)	(s)	2,569	NA	108	28,387
1989	121,359	121,757	123,581	90	1221,789	125,602	(11)	12,837	12345	12151	12308	123	1222	123,665	39	37	31,132
1990	16,477	1,367	3,752	112	21,708	6,104	-36	3,046	442	211	326	4	29	4,058	36	8	31,878
1991	16,460	1,276	3,861	125	21,723	6,422	-47	3,016	425	247	335	5	31	4,058	59	67	32,281
1992	16,686	1,076	3,999	141	21,903	6,479	-43	2,617	481	283	338	4	30	3,752	40	87	32,218
1993	17,424	1,203	4,027	136	22,790	6,410	-42	2,892	485	288	351	5	31	4,052	34	95	33,339
1994	17,485	1,135	4,476	136	23,233	6,694	-35	2,683	498	301	325	5	36	3,848	40	153	33,933
1995	17,687	813	4,840	133	23,473	7,075	-28	3,205	480	316	280	5	33	4,318	42	134	35,015
1996	18,650	888	4,400	159	24,097	7,087	-32	3,590	513	324	300	5	33	4,765	37	137	36,091
1997	19,128	985	4,658	119	24,890	6,597	-41	3,640	484	339	309	5	34	4,811	36	116	36,410
1998	19,417	1,378	5,205	125	26,124	7,068	-46	3,297	475	332	311	5	31	4,450	36	88	R37,722
1999	19,467	1,285	5,441	126	26,320	7,610	-62	3,268	490	332	312	5	46	4,452	41	99	R38,459
2000	20,443	1,212	5,818	126	27,599	7,862	-57	2,811	496	330	296	5	57	3,995	46	R115	R39,561
2001	19,734	1,337	5,982	97	27,150	R8,033	-90	2,201	486	347	289	6	68	3,397	41	75	R38,606
2002	R19,997	R1,014	R6,250	R131	R27,392	R8,143	RP-88	RF2,675	R605	R399	R305	P ₆	RP105	RP4,094	R49	78	R39,667
2003	P20,675	P1,271	P5,513	P119	P27,578	P7,973	P-88	P2,779	P576	P381	P276	P5	P108	P4,127	P27	P22	P39,638

¹ Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal.

² Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, and waste oil.

³ Natural gas, plus a small amount of supplemental gaseous fuels that cannot be identified separately.

⁴ Blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels.

⁵ Pumped storage facility production minus energy used for pumping.

⁶ Wood, black liquor, and other wood waste.

⁷ Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.

⁸ Solar thermal and photovoltaic energy.

⁹ Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.

¹⁰ See Note 3, "Electricity Imports and Exports," at end of section.

¹¹ Included in "Conventional Hydroelectric Power."

¹² Through 1988, data are for electric utilities only. Beginning in 1989, data are for electric utilities,

independent power producers, commercial plants, and industrial plants.

¹³ Through 1988, data are for electric utilities and industrial plants. Beginning in 1989, data are for electric utilities, independent power producers, commercial plants, and industrial plants.

R=Revised. P=Preliminary. NA=Not available. (s)=Less than 0.5 trillion Btu.

Notes: • Data are for energy consumed to produce electricity. Data also include energy consumed to produce useful thermal output at a small number of electric utility combined-heat-and-power (CHP) plants.

• See Note 1, "Coverage of Electricity Statistics," at end of section. • Totals may not equal sum of components due to independent rounding.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/elect.html>.

• For related information, see <http://www.eia.doe.gov/fuelectric.html>.

Sources: • 1949-1988—Table 8.4b for electric power sector, and Tables 8.1 and A6 for industrial sector.

• 1989 forward—Tables 8.4b and 8.4c.

Table 8.4b Consumption for Electricity Generation by Energy Source: Electric Power Sector, Selected Years, 1949-2003 (Subset of Table 8.4a; Trillion Btu)

Year	Fossil Fuels					Nuclear Electric Power	Hydro- electric Pumped Storage ⁵	Renewable Energy						Electricity Net Imports ¹⁰	Total		
	Coal ¹	Petroleum ²	Natural Gas ³	Other Gases ⁴	Total			Conventional Hydroelectric Power	Wood ⁶	Waste ⁷	Geo- thermal	Solar ⁸	Wind	Total			
1949	1,995	415	569	NA	2,979	0	(11)	1,349	6	NA	NA	NA	NA	1,355	NA	5	4,339
1950	2,199	472	651	NA	3,322	0	(11)	1,346	5	NA	NA	NA	NA	1,351	NA	6	4,679
1955	3,458	471	1,194	NA	5,123	0	(11)	1,322	3	NA	NA	NA	NA	1,325	NA	14	6,461
1960	4,228	553	1,785	NA	6,565	6	(11)	1,569	2	NA	1	NA	NA	1,571	NA	15	8,158
1965	5,821	722	2,395	NA	8,938	43	(11)	2,026	3	NA	4	NA	NA	2,033	NA	(s)	11,014
1970	7,227	2,117	4,054	NA	13,399	239	(11)	2,600	1	2	11	NA	NA	2,615	NA	7	16,259
1971	7,299	2,495	4,099	NA	13,893	413	(11)	2,790	1	2	12	NA	NA	2,806	NA	12	17,124
1972	7,811	3,097	4,084	NA	14,992	584	(11)	2,829	1	2	31	NA	NA	2,864	NA	26	18,466
1973	8,658	3,515	3,748	NA	15,921	910	(11)	2,827	1	2	43	NA	NA	2,873	NA	49	19,753
1974	8,534	3,365	3,519	NA	15,418	1,272	(11)	3,143	1	2	53	NA	NA	3,199	NA	43	19,933
1975	8,786	3,166	3,240	NA	15,191	1,900	(11)	3,122	(s)	2	70	NA	NA	3,194	NA	21	20,307
1976	9,720	3,477	3,152	NA	16,349	2,111	(11)	2,943	1	2	78	NA	NA	3,024	NA	29	21,513
1977	10,262	3,901	3,284	NA	17,446	2,702	(11)	2,301	3	2	77	NA	NA	2,383	NA	59	22,591
1978	10,238	3,987	3,297	NA	17,522	3,024	(11)	2,905	2	1	64	NA	NA	2,973	NA	67	23,587
1979	11,260	3,283	3,613	NA	18,156	2,776	(11)	2,897	3	2	84	NA	NA	2,986	NA	69	23,987
1980	12,123	2,634	3,810	NA	18,567	2,739	(11)	2,867	3	2	110	NA	NA	2,982	NA	71	24,359
1981	12,583	2,202	3,768	NA	18,553	3,008	(11)	2,725	3	1	123	NA	NA	2,852	NA	113	24,525
1982	12,582	1,568	3,342	NA	17,491	3,131	(11)	3,233	2	1	105	NA	NA	3,341	NA	100	24,063
1983	13,213	1,544	2,998	NA	17,754	3,203	(11)	3,494	2	2	129	NA	(s)	3,627	NA	121	24,705
1984	14,019	1,286	3,220	NA	18,526	3,553	(11)	3,353	5	4	165	(s)	(s)	3,527	NA	135	25,741
1985	14,542	1,090	3,160	NA	18,792	4,076	(11)	2,937	8	7	198	(s)	(s)	3,150	NA	140	26,158
1986	14,444	1,452	2,691	NA	18,586	4,380	(11)	3,038	5	7	219	(s)	(s)	3,270	NA	122	26,359
1987	15,173	1,257	2,935	NA	19,365	4,754	(11)	2,602	8	7	229	(s)	(s)	2,846	NA	158	27,124
1988	15,850	1,563	2,709	NA	20,123	5,587	(11)	2,302	10	8	217	(s)	(s)	2,536	NA	108	28,354
1989	12 ^a 16,121	12 ^a 1,697	12 ^a 3,107	7	12 ^a 20,932	12 ^a 5,602	(11)	12 ^a 2,808	12 ^a 75	12 ^a 126	12 ^a 308	12 ^a 3	12 ^a 22	12 ^a 3,342	2	37	29,916
1990	16,235	1,281	3,224	6	20,746	6,104	-36	3,014	106	180	326	4	29	3,658	(s)	8	30,481
1991	16,223	1,199	3,296	6	20,725	6,422	-47	2,985	104	217	335	5	31	3,677	4	67	30,848
1992	16,431	990	3,407	12	20,840	6,479	-43	2,586	120	252	338	4	30	3,329	3	87	30,695
1993	17,159	1,122	3,426	12	21,719	6,410	-42	2,861	129	255	351	5	31	3,632	3	95	31,818
1994	17,215	1,056	3,851	12	22,134	6,694	-35	2,620	134	269	325	5	36	3,389	2	153	32,337
1995	17,416	743	4,179	18	22,356	7,075	-28	3,149	106	282	280	5	33	3,855	2	134	33,395
1996	18,375	810	3,730	16	22,930	7,087	-32	3,528	117	280	300	5	33	4,264	2	137	34,388
1997	18,855	917	3,981	14	23,768	6,597	-41	3,581	117	292	309	5	34	4,337	1	116	34,777
1998	19,162	1,306	4,520	23	25,011	7,068	-46	3,241	125	287	311	5	31	4,000	2	88	R36,123
1999	19,214	1,211	4,742	14	25,181	7,610	-62	3,218	125	290	312	5	46	3,996	1	99	36,825
2000	20,185	1,145	5,120	19	26,470	7,862	-57	2,768	126	294	296	5	57	3,547	1	R115	R37,939
2001	19,494	1,270	5,271	9	26,044	R8,033	-90	2,169	116	314	289	6	68	2,962	0	75	R37,024
2002	R19,733	R955	R5,522	R25	R26,235	R8,143	RP-88	RP2,636	R141	R353	R305	P6	RP105	RP3,545	R7	78	R37,919
2003	P20,419	P1,200	P4,805	P13	P26,437	P7,973	P-88	P2,722	P152	P336	P276	P5	P108	P3,600	P1	P22	P37,945

¹ Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal.

² Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, and waste oil.

³ Natural gas, plus a small amount of supplemental gaseous fuels that cannot be identified separately.

⁴ Blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels.

⁵ Pumped storage facility production minus energy used for pumping.

⁶ Wood, black liquor, and other wood waste.

⁷ Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.

⁸ Solar thermal and photovoltaic energy.

⁹ Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.

¹⁰ See Note 3, "Electricity Imports and Exports," at end of section.

¹¹ Included in "Conventional Hydroelectric Power."

¹² Through 1988, data are for electric utilities only. Beginning in 1989, data are for electric utilities and independent power producers.

R=Revised. P=Preliminary. NA=Not available. (s)=Less than 0.5 trillion Btu.

Notes: • Data are for energy consumed to produce electricity. Data also include energy consumed to

produce useful thermal output at a small number of electric utility combined-heat-and-power (CHP) plants.

• The electric power sector comprises electricity-only and combined-heat-and-power (CHP) plants within the NAICS (North American Industry Classification System) 22 category whose primary business is to sell electricity, or electricity and heat, to the public. • See Table 8.4c for commercial and industrial CHP and electricity-only data. • See Note 1, "Coverage of Electricity Statistics," and Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section. • Totals may not equal sum of components due to independent rounding.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/elect.html>.

• For related information, see <http://www.eia.doe.gov/fuelelectric.html>.

Sources: **Electricity Net Imports:** Tables 8.1 and A6. **All Other Data:** • 1949-1988—Tables 8.2b, 8.5b, A1, A4, A5, and A6. • 1989-1997—Energy Information Administration (EIA), Form EIA-759, "Monthly Power Plant Report" and Form EIA-867, "Annual Nonutility Power Producer Report." • 1998-2000—EIA, Form EIA-759, "Monthly Power Plant Report" and Form EIA-860B, "Annual Electric Generator Report—Nonutility." • 2001 and 2002—EIA, Form EIA-860, "Annual Electric Generator Report" and Form EIA-906, "Power Plant Report." • 2003—EIA, Form EIA-906, "Power Plant Report."

Table 8.4c Consumption for Electricity Generation by Energy Source: Commercial and Industrial Sectors, 1989-2003
 (Subset of Table 8.4a; Trillion Btu)

Year	Fossil Fuels					Nuclear Electric Power	Hydro-electric Pumped Storage ⁵	Renewable Energy						Electricity Net Imports	Total		
	Coal ¹	Petroleum ²	Natural Gas ³	Other Gases ⁴	Total			Conventional Hydroelectric Power	Wood ⁶	Waste ⁷	Geo-thermal	Solar ⁸	Wind	Total			
Commercial Sector ¹⁰																	
1989	9	7	18	1	36	—	—	1	2	9	—	—	—	12	0	—	47
1990	9	6	27	1	43	—	—	1	2	15	—	—	—	18	0	—	61
1991	9	3	28	1	41	—	—	1	2	15	—	—	—	18	(s)	—	59
1992	8	3	33	1	45	—	—	1	1	16	—	—	—	19	(s)	—	64
1993	9	4	38	1	53	—	—	1	1	16	—	—	—	18	0	—	71
1994	9	4	42	1	56	—	—	1	1	17	—	—	—	19	0	—	75
1995	12	4	44	0	60	—	—	1	1	21	—	—	—	23	(s)	—	83
1996	14	4	44	0	62	—	—	1	1	31	—	—	—	33	(s)	—	95
1997	14	5	40	(s)	59	—	—	1	1	34	—	—	—	35	0	—	94
1998	11	5	42	(s)	57	—	—	1	1	32	—	—	—	34	0	—	91
1999	12	6	40	0	57	—	—	1	(s)	33	—	—	—	35	0	—	92
2000	12	5	38	0	55	—	—	1	(s)	26	—	—	—	28	(s)	—	82
2001	13	6	37	0	56	—	—	1	(s)	22	—	—	—	23	0	—	79
2002	R ₉	R ₄	R ₃₁	0	R ₄₄	—	—	R _P	(s)	R ₂₈	—	—	—	RP ₂₉	R ₁	—	R ₇₃
2003	P ₁₂	P ₇	P ₃₆	P ₀	P ₅₅	—	—	P ₁	(s)	P ₃₂	—	—	—	P ₃₃	P ₀	—	P ₈₈
Industrial Sector ¹¹																	
1989	229	53	456	83	821	—	—	28	267	15	—	—	—	311	37	—	1,169
1990	233	80	500	104	918	—	—	31	335	16	—	—	—	382	36	—	1,336
1991	228	74	537	118	957	—	—	30	318	14	—	—	—	362	55	—	1,374
1992	246	84	559	128	1,017	—	—	31	359	15	—	—	—	405	37	—	1,459
1993	256	77	562	123	1,019	—	—	30	355	17	—	—	—	401	31	—	1,451
1994	261	75	584	123	1,043	—	—	62	364	14	—	—	—	440	38	—	1,521
1995	259	66	617	114	1,057	—	—	55	373	13	—	—	—	440	40	—	1,537
1996	261	74	626	143	1,104	—	—	61	394	13	—	—	—	468	35	—	1,607
1997	260	63	637	105	1,064	—	—	58	367	14	—	—	—	439	36	—	1,538
1998	245	67	643	102	1,056	—	—	55	349	13	—	—	—	417	35	—	1,508
1999	242	68	660	112	1,081	—	—	49	364	8	—	—	—	422	39	—	1,542
2000	245	61	660	107	1,074	—	—	42	369	10	—	—	—	421	45	—	1,540
2001	227	62	674	88	1,051	—	—	32	370	10	—	—	—	412	41	—	1,504
2002	R ₂₅₅	R ₅₅	R ₆₉₇	R ₁₀₆	R _{1,113}	—	—	R _P ₃₉	R ₄₆₄	R ₁₈	—	—	—	RP ₅₂₀	R ₄₁	—	R _{1,675}
2003	P ₂₄₃	P ₆₃	P ₆₇₃	P ₁₀₇	P _{1,086}	—	—	P ₅₇	P ₄₂₄	P ₁₃	—	—	—	P ₄₉₄	P ₂₅	—	P _{1,605}

¹ Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal.

² Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, and waste oil.

³ Natural gas, plus a small amount of supplemental gaseous fuels that cannot be identified separately.

⁴ Blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels.

⁵ Pumped storage facility production minus energy used for pumping.

⁶ Wood, black liquor, and other wood waste.

⁷ Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.

⁸ Solar thermal and photovoltaic energy.

⁹ Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.

¹⁰ Commercial combined-heat-and-power (CHP) and commercial electricity-only plants.

¹¹ Industrial combined-heat-and-power (CHP) and industrial electricity-only plants.

R=Revised. P=Preliminary. — = Not applicable. (s)=Less than 0.5 trillion Btu.

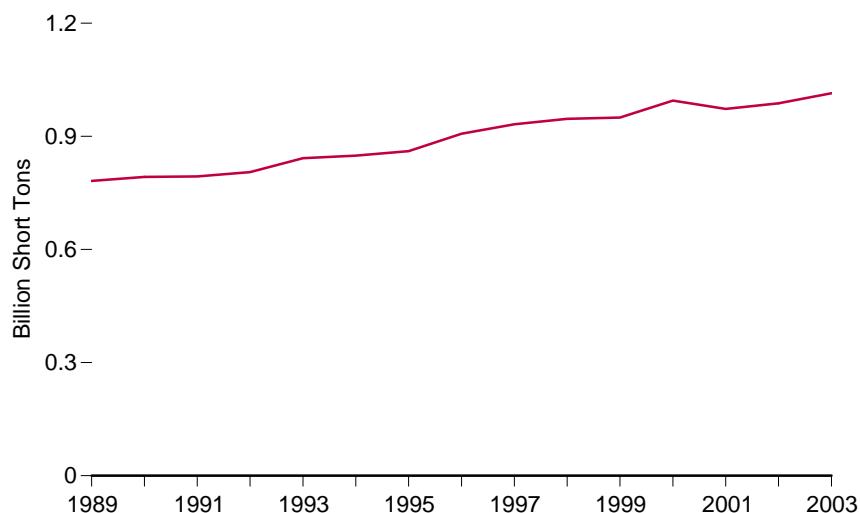
Notes: • Data are for energy consumed to produce electricity. • See Table 8.4b for electric power sector electricity-only and CHP data. • See Note 1, "Coverage of Electricity Statistics," and Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section. • Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/fuelelectric.html>.

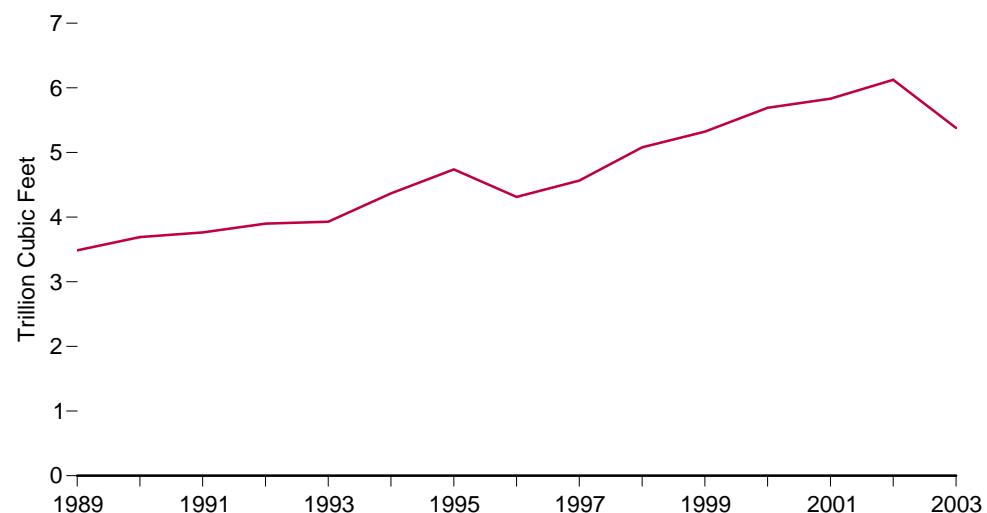
Sources: • 1989-1997—Energy Information Administration (EIA), Form EIA-867, "Annual Nonutility Power Producer Report." • 1998-2000—EIA, Form EIA-860B, "Annual Electric Generator Report—Nonutility." • 2001 and 2002—EIA, Form EIA-860, "Annual Electric Generator Report" and Form EIA-906, "Power Plant Report." • 2003—EIA, Form EIA-906, "Power Plant Report."

Figure 8.5a Consumption of Combustible Fuels for Electricity Generation, 1989-2003

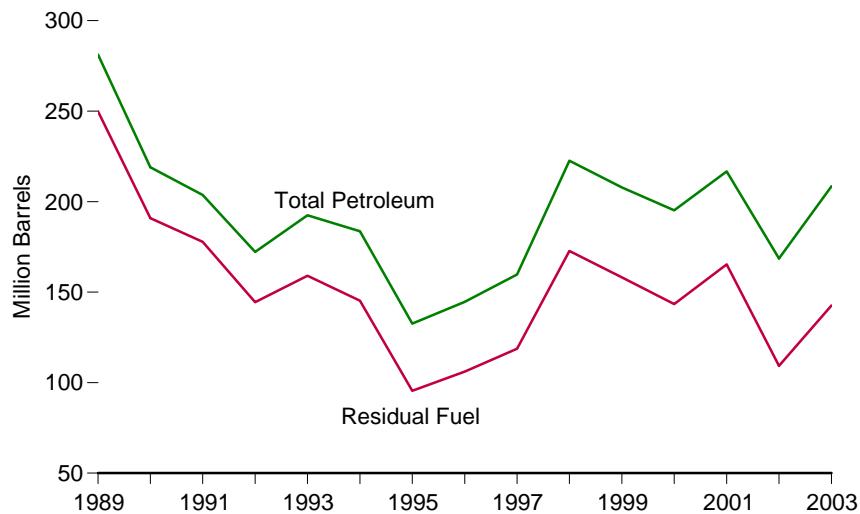
Coal



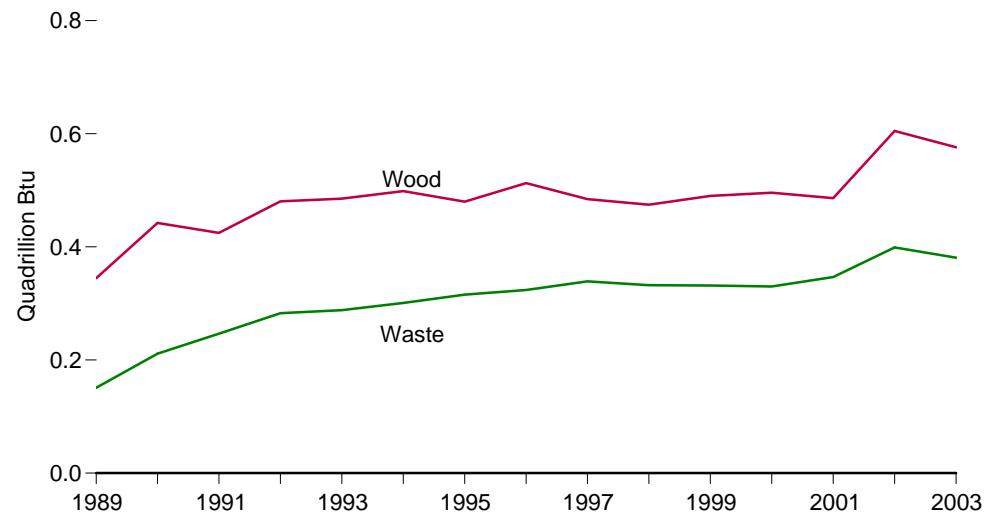
Natural Gas



Petroleum

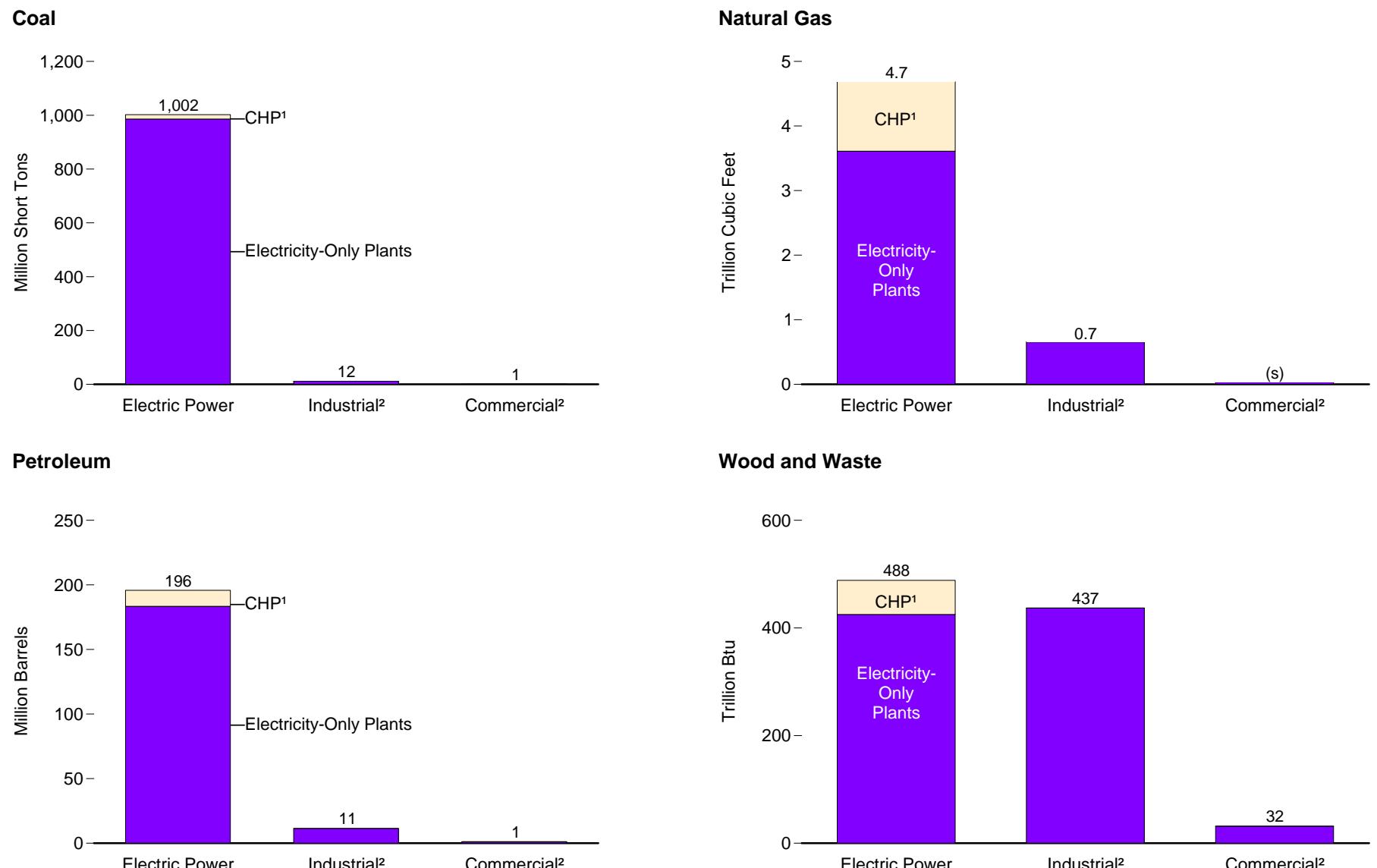


Wood and Waste



Source: Table 8.5a.

Figure 8.5b Consumption of Combustible Fuels for Electricity Generation by Sector, 2003



¹ Combined-heat-and-power plants.

² Combined-heat-and-power and electricity-only plants.

(s)=Less than 0.05 trillion cubic feet.

Sources: Tables 8.5b-8.5d.

Table 8.5a Consumption of Combustible Fuels for Electricity Generation: Total (All Sectors), Selected Years, 1949-2003
 (Sum of Tables 8.5b and 8.5d)

Year	Fossil Fuels							Renewable Energy		Other 10	
	Coal 1	Petroleum					Natural Gas 6	Other Gases 7	Wood 8	Waste 9	
		Distillate Fuel Oil 2	Residual Fuel Oil 3	Other Liquids 4	Petroleum Coke 5	Total 5					
Year	Thousand Short Tons	Thousand Barrels			Thousand Short Tons	Thousand Barrels	Million Cubic Feet	Trillion Btu	Trillion Btu		Trillion Btu
1949	83,963	4,767	61,534	NA	NA	66,301	550,121	NA	6	NA	NA
1950	91,871	5,423	69,998	NA	NA	75,421	628,919	NA	5	NA	NA
1955	143,759	5,412	69,862	NA	NA	75,274	1,153,280	NA	3	NA	NA
1960	176,685	3,824	84,371	NA	NA	88,195	1,724,762	NA	2	NA	NA
1965	244,788	4,928	110,274	NA	NA	115,203	2,321,101	NA	3	NA	NA
1970	320,182	24,123	311,381	NA	636	338,686	3,931,860	NA	1	2	NA
1971	327,301	34,283	362,187	NA	605	399,496	3,976,018	NA	1	2	NA
1972	351,768	53,465	440,294	NA	627	496,895	3,976,913	NA	1	2	NA
1973	389,212	47,058	513,190	NA	507	562,781	3,660,172	NA	1	2	NA
1974	391,811	53,128	483,146	NA	625	539,399	3,443,428	NA	1	2	NA
1975	405,962	38,907	467,221	NA	70	506,479	3,157,669	NA	(s)	2	NA
1976	448,371	41,843	514,077	NA	68	556,261	3,080,868	NA	1	2	NA
1977	477,126	48,837	574,869	NA	98	624,193	3,191,200	NA	3	2	NA
1978	481,235	47,520	588,319	NA	398	637,830	3,188,363	NA	2	1	NA
1979	527,051	30,691	492,606	NA	268	524,636	3,490,523	NA	3	2	NA
1980	569,274	29,051	391,163	NA	179	421,110	3,681,595	NA	3	2	NA
1981	596,797	21,313	329,798	NA	139	351,806	3,640,154	NA	3	1	NA
1982	593,666	15,337	234,434	NA	149	250,517	3,225,518	NA	2	1	NA
1983	625,211	16,512	228,984	NA	261	246,804	2,910,767	NA	2	2	NA
1984	664,399	15,190	189,289	NA	252	205,736	3,111,342	NA	5	4	NA
1985	693,841	14,635	158,779	NA	231	174,571	3,044,083	NA	8	7	NA
1986	685,056	14,326	216,156	NA	313	232,046	2,602,370	NA	5	7	NA
1987	717,894	15,367	184,011	NA	348	201,116	2,844,051	NA	8	7	NA
1988	758,372	18,769	229,327	NA	409	250,141	2,635,613	NA	10	8	NA
1989 ¹¹	781,672	27,733	249,820	303	667	281,192	3,485,429	90	345	151	39
1990	792,457	18,143	190,849	437	1,914	218,997	3,691,563	112	442	211	36
1991	793,666	16,564	177,780	380	1,789	203,669	3,764,778	125	425	247	59
1992	805,140	14,493	144,467	759	2,504	172,241	3,899,718	141	481	283	40
1993	842,153	16,845	159,059	715	3,169	192,462	3,928,653	136	485	288	34
1994	848,796	22,365	145,225	929	3,020	183,618	4,367,148	136	498	301	40
1995	860,594	19,615	95,507	680	3,355	132,578	4,737,871	133	480	316	42
1996	907,209	20,252	106,055	1,712	3,322	144,626	4,312,458	159	513	324	37
1997	931,949	20,309	118,741	237	4,086	159,715	4,564,770	119	484	339	36
1998	946,295	25,062	172,728	549	4,860	222,640	5,081,384	125	475	332	36
1999	949,802	25,951	158,187	974	4,552	207,871	5,321,984	126	490	332	41
2000	994,933	31,675	143,381	1,450	3,744	195,228	5,691,481	126	496	330	46
2001	972,691	31,150	165,312	855	3,871	216,672	R ⁵ ,832,305	97	486	347	41
2002	R ^{987,583}	R ^{23,286}	R ^{109,235}	R ^{1,894}	R ^{6,836}	R ^{168,597}	R ^{6,126,062}	R ¹³¹	R ⁶⁰⁵	R ³⁹⁹	R ⁴⁹
2003 ^P	1,014,307	30,290	142,557	3,411	6,435	208,436	5,379,802	119	576	381	27

¹ Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal.

² Fuel oil nos. 1, 2, and 4. For 1949-1979, data are for gas turbine and internal combustion plant use of petroleum. For 1980-2000, electric utility data also include small amounts of kerosene and jet fuel.

³ Fuel oil nos. 5 and 6. For 1949-1979, data are for steam plant use of petroleum. For 1980-2000, electric utility data also include a small amount of fuel oil no. 4.

⁴ Jet fuel, kerosene, other petroleum liquids, and waste oil.

⁵ Petroleum coke is converted from short tons to barrels by multiplying by 5.

⁶ Natural gas, plus a small amount of supplemental gaseous fuels that cannot be identified separately.

⁷ Blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels.

⁸ Wood, black liquor, and other wood waste.

⁹ Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.

¹⁰ Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.

¹¹ Through 1988, data are for electric utilities only. Beginning in 1989, data are for electric utilities, independent power producers, commercial plants, and industrial plants.

R=Revised. P=Preliminary. NA=Not available. (s)=Less than 0.5 trillion Btu.

Notes: • Data are for fuels consumed to produce electricity. Data also include fuels consumed to produce useful thermal output at a small number of electric utility combined-heat-and-power (CHP) plants. • See Note 1, "Coverage of Electricity Statistics," at end of section. • Totals may not equal sum of components due to independent rounding.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/elect.html>. • For related information, see <http://www.eia.doe.gov/fuelelectric.html>.

Sources: Tables 8.5b and 8.5d.

Table 8.5b Consumption of Combustible Fuels for Electricity Generation: Electric Power Sector, Selected Years, 1949-2003 (Subset of Table 8.5a)

Year	Fossil Fuels							Renewable Energy		Other ¹⁰	
	Coal ¹	Petroleum				Natural Gas ⁶	Other Gases ⁷	Wood ⁸	Waste ⁹		
		Distillate Fuel Oil ²	Residual Fuel Oil ³	Other Liquids ⁴	Petroleum Coke ⁵						
Year	Thousand Short Tons	Thousand Barrels		Thousand Short Tons	Thousand Barrels	Million Cubic Feet	Trillion Btu	Trillion Btu		Trillion Btu	
1949	83,963	4,767	61,534	NA	NA	66,301	550,121	NA	6	NA	
1950	91,871	5,423	69,998	NA	NA	75,421	628,919	NA	5	NA	
1955	143,759	5,412	69,862	NA	NA	75,274	1,153,280	NA	3	NA	
1960	176,685	3,824	84,371	NA	NA	88,195	1,724,762	NA	2	NA	
1965	244,788	4,928	110,274	NA	NA	115,203	2,321,101	NA	3	NA	
1970	320,182	24,123	311,381	NA	636	338,686	3,931,860	NA	1	2	
1971	327,301	34,283	362,187	NA	605	399,496	3,976,018	NA	1	2	
1972	351,768	53,465	440,294	NA	627	496,895	3,976,913	NA	1	2	
1973	389,212	47,058	513,190	NA	507	562,781	3,660,172	NA	1	2	
1974	391,811	53,128	483,146	NA	625	539,399	3,443,428	NA	1	2	
1975	405,962	38,907	467,221	NA	70	506,479	3,157,669	NA	(s)	2	
1976	448,371	41,843	514,077	NA	68	556,261	3,080,868	NA	1	2	
1977	477,126	48,837	574,869	NA	98	624,193	3,191,200	NA	3	2	
1978	481,235	47,520	588,319	NA	398	637,830	3,188,363	NA	2	1	
1979	527,051	30,691	492,606	NA	268	524,636	3,490,523	NA	3	2	
1980	569,274	29,051	391,163	NA	179	421,110	3,681,595	NA	3	2	
1981	596,797	21,313	329,798	NA	139	351,806	3,640,154	NA	3	1	
1982	593,666	15,337	234,434	NA	149	250,517	3,225,518	NA	2	1	
1983	625,211	16,512	228,984	NA	261	246,804	2,910,767	NA	2	2	
1984	664,399	15,190	189,289	NA	252	205,736	3,111,342	NA	5	4	
1985	693,841	14,635	158,779	NA	231	174,571	3,044,083	NA	8	7	
1986	685,056	14,326	216,156	NA	313	232,046	2,602,370	NA	5	7	
1987	717,894	15,367	184,011	NA	348	201,116	2,844,051	NA	8	7	
1988	758,372	18,769	229,327	NA	409	250,141	2,635,613	NA	10	8	
1989 ¹¹	771,551	26,036	242,708	9	517	271,340	3,023,513	7	75	126	
1990	781,301	16,394	183,285	25	1,008	204,745	3,147,289	6	106	180	
1991	782,653	14,255	171,629	58	974	190,810	3,216,056	6	104	217	
1992	793,390	12,469	137,681	118	1,490	157,719	3,324,963	12	120	252	
1993	829,851	14,559	151,407	213	2,571	179,034	3,344,239	12	129	255	
1994	836,113	20,241	137,198	667	2,256	169,387	3,758,484	12	134	269	
1995	847,854	18,066	88,895	441	2,452	119,663	4,093,773	18	106	282	
1996	894,400	18,472	98,795	567	2,467	130,168	3,659,810	16	117	280	
1997	919,009	18,646	112,423	130	3,201	147,202	3,903,195	14	117	292	
1998	934,126	23,166	165,875	411	3,999	209,447	4,415,813	23	125	287	
1999	937,888	23,875	151,921	514	3,607	194,345	4,643,775	14	125	290	
2000	982,713	29,722	138,047	403	3,155	183,946	5,014,071	19	126	294	
2001	961,523	29,056	159,150	374	3,308	205,119	5,142,493	9	116	314	
2002	R975,251	R21,810	R104,577	R1,243	R5,705	R156,154	R5,408,279	R25	R141	R353	
2003 ^P	1,002,210	28,062	137,421	1,912	5,685	195,823	4,688,196	13	152	336	

¹ Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal.

² Fuel oil nos. 1, 2, and 4. For 1949-1979, data are for gas turbine and internal combustion plant use of petroleum. For 1980-2000, electric utility data also include small amounts of kerosene and jet fuel.

³ Fuel oil nos. 5 and 6. For 1949-1979, data are for steam plant use of petroleum. For 1980-2000, electric utility data also include a small amount of fuel oil no. 4.

⁴ Jet fuel, kerosene, other petroleum liquids, and waste oil.

⁵ Petroleum coke is converted from short tons to barrels by multiplying by 5.

⁶ Natural gas, plus a small amount of supplemental gaseous fuels that cannot be identified separately.

⁷ Blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels.

⁸ Wood, black liquor, and other wood waste.

⁹ Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.

¹⁰ Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.

¹¹ Through 1988, data are for electric utilities only. Beginning in 1989, data are for electric utilities and independent power producers.

R=Revised. P=Preliminary. NA=Not available. (s)=Less than 0.5 trillion Btu.

Notes: • Data are for fuels consumed to produce electricity. Data also include fuels consumed to produce useful thermal output at a small number of electric utility combined-heat-and-power (CHP) plants.

- The electric power sector comprises electricity-only and combined-heat-and-power (CHP) plants within the NAICS (North American Industry Classification System) 22 category whose primary business is to sell electricity, or electricity and heat, to the public.
- See Table 8.5d for commercial and industrial CHP and electricity-only data.
- See Note 1, "Coverage of Electricity Statistics," and Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section.
- Totals may not equal sum of components due to independent rounding.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/elect.html>.

• For related information, see <http://www.eia.doe.gov/fuelelectric.html>.

Sources: • 1949-September 1977—Federal Power Commission, Form FPC-4, "Monthly Power Plant Report."

• October 1977-1981—Federal Energy Regulatory Commission, Form FPC-4, "Monthly Power Plant Report."

• 1982-1988—Energy Information Administration (EIA), Form EIA-759, "Monthly Power Plant Report."

• 1989-1997—EIA, Form EIA-759, "Monthly Power Plant Report" and Form EIA-867, "Annual Nonutility Power Producer Report."

• 1998-2000—EIA, Form EIA-759, "Monthly Power Plant Report" and Form EIA-860B, "Annual Electric Generator Report—Nonutility."

• 2001 and 2002—EIA, Form EIA-860, "Annual Electric Generator Report" and Form EIA-906, "Power Plant Report."

• 2003—EIA, Form EIA-906, "Power Plant Report."

Table 8.5c Consumption of Combustible Fuels for Electricity Generation: Electric Power Sector by Plant Type, 1989-2003 (Breakout of Table 8.5b)

Year	Fossil Fuels							Renewable Energy				
	Coal ¹	Petroleum					Natural Gas ⁶	Other Gases ⁷	Wood ⁸	Waste ⁹		
		Distillate Fuel Oil ²	Residual Fuel Oil ³	Other Liquids ⁴	Petroleum Coke ⁵	Total ⁵						
Year	Thousand Short Tons	Thousand Barrels		Thousand Short Tons	Thousand Barrels	Million Cubic Feet	Trillion Btu	Trillion Btu		Trillion Btu		
Electricity-Only Plants ¹¹												
1989	767,378	25,574	241,960	3	517	270,125	2,790,567	0	59	111	0	
1990	774,213	14,956	181,231	17	1,008	201,246	2,794,110	(s)	87	162	0	
1991	773,183	13,822	171,157	51	974	189,898	2,822,159	(s)	85	195	0	
1992	781,186	11,998	135,779	48	1,320	154,428	2,828,996	(s)	94	232	0	
1993	816,558	13,460	149,287	11	1,553	170,521	2,755,093	(s)	101	237	0	
1994	821,209	16,693	134,666	52	1,193	157,375	3,064,561	(s)	112	248	0	
1995	832,928	16,169	86,584	133	1,082	108,297	3,287,571	(s)	84	262	0	
1996	878,825	17,361	96,386	50	1,010	118,848	2,823,724	(s)	94	258	0	
1997	904,245	17,702	109,989	30	1,687	136,156	3,039,227	1	91	266	0	
1998	920,353	22,293	163,541	295	2,202	197,137	3,543,931	1	95	263	0	
1999	924,692	22,877	149,193	380	1,891	181,905	3,729,175	1	105	264	0	
2000	967,080	28,001	135,419	94	1,457	170,799	4,092,729	2	105	267	0	
2001	946,068	27,695	157,090	26	1,827	193,945	4,163,930	(s)	96	277	0	
2002	R960,077	R21,521	R102,622	R444	R3,925	R144,212	R4,258,467	R6	R118	R309	R1	
2003 ^P	986,129	26,492	135,641	743	4,108	183,417	3,610,735	(s)	127	298	(s)	
Combined-Heat-and-Power Plants ¹²												
1989	4,173	462	747	6	0	1,215	232,946	7	16	16	2	
1990	7,088	1,438	2,054	7	0	3,499	353,179	6	18	18	(s)	
1991	9,470	433	473	7	0	912	393,898	6	20	22	4	
1992	12,204	471	1,902	69	170	3,291	495,967	12	25	20	3	
1993	13,293	1,098	2,120	202	1,018	8,513	589,147	12	28	18	3	
1994	14,904	3,548	2,531	615	1,063	12,011	693,923	12	22	22	2	
1995	14,926	1,898	2,311	307	1,370	11,366	806,202	18	22	20	2	
1996	15,575	1,111	2,410	517	1,456	11,320	836,086	15	24	22	2	
1997	14,764	944	2,434	100	1,514	11,046	863,968	14	26	26	1	
1998	13,773	872	2,334	117	1,797	12,310	871,881	21	30	24	2	
1999	13,197	998	2,728	134	1,716	12,440	914,600	14	20	26	1	
2000	15,634	1,721	2,627	310	1,698	13,147	921,341	17	21	28	1	
2001	15,455	1,360	2,059	347	1,482	11,175	978,563	9	20	37	0	
2002	R15,174	R289	R1,955	R800	R1,780	R11,942	R1,149,812	R20	R23	R44	R6	
2003 ^P	16,081	1,571	1,780	1,169	1,577	12,406	1,077,461	13	25	38	1	

¹ Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal.

² Fuel oil nos. 1, 2, and 4. Through 2000, electric utility data also include small amounts of kerosene and jet fuel.

³ Fuel oil nos. 5 and 6. Through 2000, electric utility data also include a small amount of fuel oil no. 4.

⁴ Jet fuel, kerosene, other petroleum liquids, and waste oil.

⁵ Petroleum coke is converted from short tons to barrels by multiplying by 5.

⁶ Natural gas, plus a small amount of supplemental gaseous fuels that cannot be identified separately.

⁷ Blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels.

⁸ Wood, black liquor, and other wood waste.

⁹ Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.

¹⁰ Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.

¹¹ Electricity-only plants within the NAICS (North American Industry Classification System) 22 category whose primary business is to sell electricity to the public. Data also include a small number of electric utility combined-heat-and-power (CHP) plants.

¹² Combined-heat-and-power (CHP) plants within the NAICS 22 category whose primary business is to

sell electricity and heat to the public. Data do not include electric utility CHP plants—these are included under "Electricity-Only Plants."

R=Revised. P=Preliminary. (s)=Less than 0.5.

Notes: • Data are for fuels consumed to produce electricity. Data also include fuels consumed to produce useful thermal output at a small number of electric utility combined-heat-and-power (CHP) plants.

• See Table 8.5d for commercial and industrial CHP and electricity-only data. • See Note 1, "Coverage of Electricity Statistics," and Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section. • Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/fuelelectric.html>.

Sources: • 1989-1997—Energy Information Administration (EIA), Form EIA-759, "Monthly Power Plant Report" and Form EIA-867, "Annual Nonutility Power Producer Report." • 1998-2000—EIA, Form EIA-759, "Monthly Power Plant Report" and Form EIA-860B, "Annual Electric Generator Report—Nonutility." • 2001 and 2002—EIA, Form EIA-860, "Annual Electric Generator Report" and Form EIA-906, "Power Plant Report" • 2003—EIA, Form EIA-906, "Power Plant Report."

Table 8.5d Consumption of Combustible Fuels for Electricity Generation: Commercial and Industrial Sectors, 1989-2003 (Subset of Table 8.5a)

Year	Fossil Fuels							Renewable Energy			
	Coal ¹	Petroleum					Natural Gas ⁶	Other Gases ⁷	Wood ⁸	Waste ⁹	
		Distillate Fuel Oil ²	Residual Fuel Oil ³	Other Liquids ⁴	Petroleum Coke ⁵	Total ⁵					
Year	Thousand Short Tons	Thousand Barrels			Thousand Short Tons	Thousand Barrels	Million Cubic Feet	Trillion Btu	Trillion Btu		Trillion Btu
Commercial Sector ¹¹											
1989	414	882	282	0	0	1,165	17,987	1	2	9	0
1990	417	580	372	(s)	0	953	27,544	1	2	15	0
1991	403	430	146	(s)	0	576	26,806	1	2	15	(s)
1992	371	289	137	(s)	1	429	32,674	1	1	16	(s)
1993	404	384	279	4	1	672	37,435	1	1	16	0
1994	404	481	209	0	1	694	40,828	1	1	17	0
1995	569	493	152	(s)	1	649	42,700	0	1	21	(s)
1996	656	422	218	(s)	1	645	42,380	0	1	31	(s)
1997	630	583	200	0	1	790	38,975	(s)	1	34	0
1998	440	436	359	0	1	802	40,693	(s)	1	32	0
1999	481	506	421	0	1	931	39,045	0	(s)	33	0
2000	514	505	310	1	1	823	37,029	0	(s)	26	(s)
2001	532	520	469	2	6	1,023	36,248	0	(s)	22	0
2002	R477	R524	R292	R10	2	R834	R32,545	0	(s)	R28	R1
2003 ^P	501	735	414	1	2	1,161	35,244	0	(s)	32	0
Industrial Sector ¹²											
1989	9,707	815	6,830	294	150	8,688	443,928	83	267	15	37
1990	10,740	1,169	7,192	412	905	13,299	516,729	104	335	16	36
1991	10,610	1,879	6,004	322	815	12,283	521,916	118	318	14	55
1992	11,379	1,735	6,650	642	1,013	14,093	542,081	128	359	15	37
1993	11,898	1,902	7,373	498	597	12,755	546,978	123	355	17	31
1994	12,279	1,644	7,818	263	762	13,537	567,836	123	364	14	38
1995	12,171	1,056	6,460	239	902	12,265	601,397	114	373	13	40
1996	12,153	1,359	7,042	1,145	853	13,813	610,268	143	394	13	35
1997	12,311	1,079	6,118	107	884	11,723	622,599	105	367	14	36
1998	11,728	1,461	6,494	137	860	12,392	624,878	102	349	13	35
1999	11,432	1,571	5,845	460	944	12,595	639,165	112	364	8	39
2000	11,706	1,448	5,024	1,046	588	10,459	640,381	107	369	10	45
2001	10,636	1,574	5,693	479	557	10,530	R653,565	88	370	10	41
2002	R11,855	R952	R4,366	R640	R1,130	R11,608	R685,239	R106	R464	R18	R41
2003 ^P	11,596	1,493	4,722	1,498	748	11,453	656,362	107	424	13	25

¹ Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal.

² Fuel oil nos. 1, 2, and 4.

³ Fuel oil nos. 5 and 6.

⁴ Jet fuel, kerosene, other petroleum liquids, and waste oil.

⁵ Petroleum coke is converted from short tons to barrels by multiplying by 5.

⁶ Natural gas, plus a small amount of supplemental gaseous fuels that cannot be identified separately.

⁷ Blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels.

⁸ Wood, black liquor, and other wood waste.

⁹ Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.

¹⁰ Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.

¹¹ Commercial combined-heat-and-power (CHP) and commercial electricity-only plants.

¹² Industrial combined-heat-and-power (CHP) and industrial electricity-only plants.

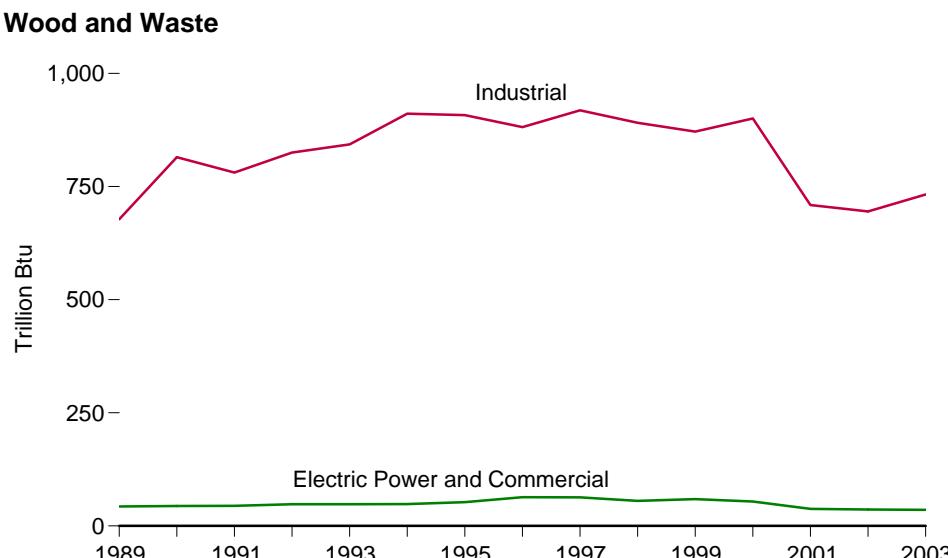
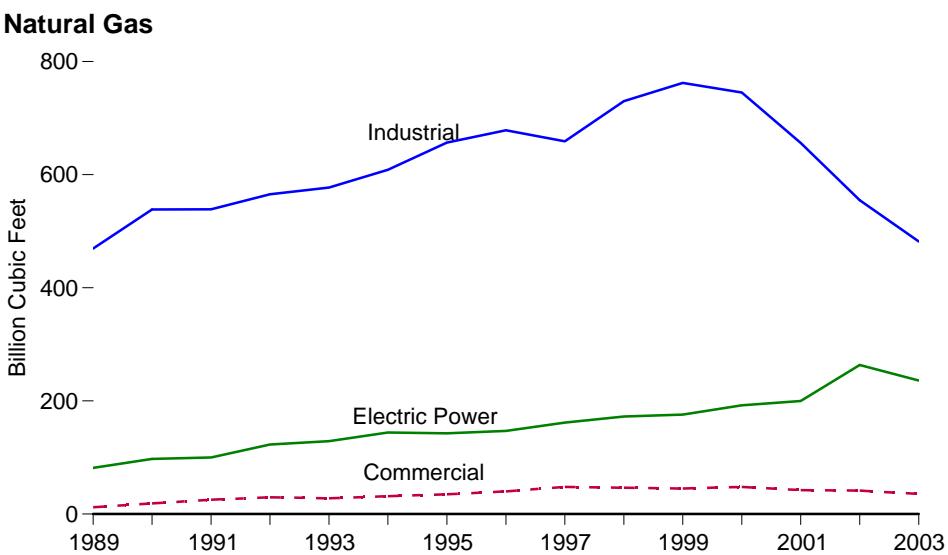
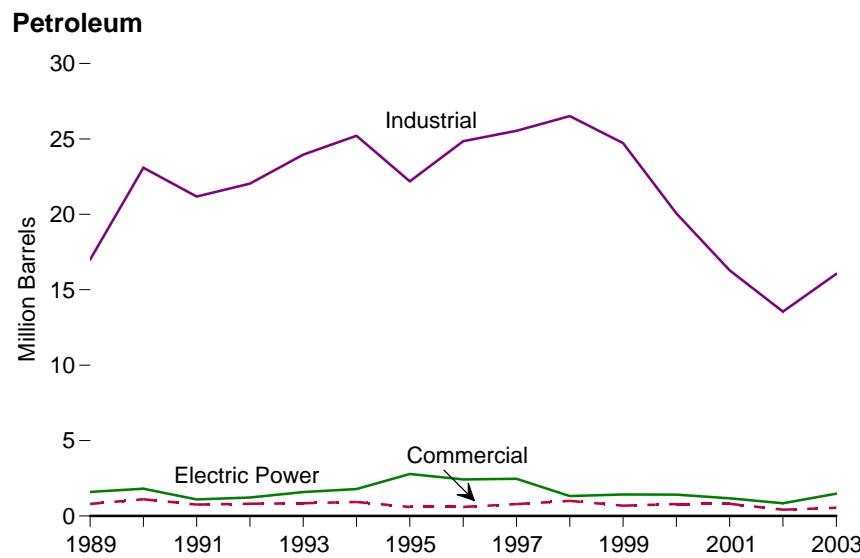
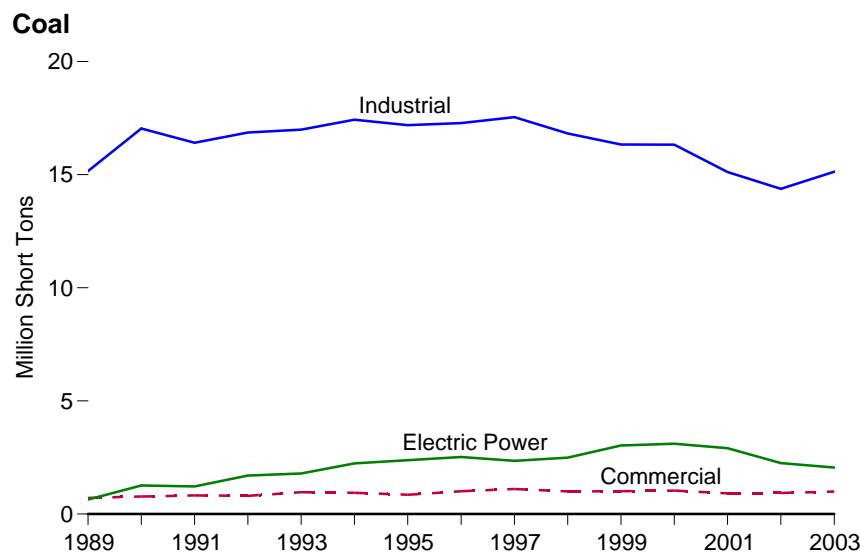
R=Revised. P=Preliminary. (s)=Less than 0.5.

Notes: • Data are for fuels consumed to produce electricity. • See Tables 8.5b and 8.5c for electric power sector electricity-only and CHP data. • See Note 1, "Coverage of Electricity Statistics," and Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section. • Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/fuelelectric.html>.

Sources: • 1989-1997—Energy Information Administration (EIA), Form EIA-867, "Annual Nonutility Power Producer Report." • 1998-2000—EIA, Form EIA-860B, "Annual Electric Generator Report—Nonutility." • 2001 and 2002—EIA, Form EIA-860, "Annual Electric Generator Report" and Form EIA-906, "Power Plant Report." • 2003—EIA, Form EIA-906, "Power Plant Report."

Figure 8.6 Estimated Consumption of Combustible Fuels for Useful Thermal Output at Combined-Heat-and-Power Plants by Sector, 1989-2003



Sources: Table 8.6b and 8.6c.

Table 8.6a Estimated Consumption of Combustible Fuels for Useful Thermal Output at Combined-Heat-and-Power Plants: Total (All Sectors), 1989-2003 (Sum of Tables 8.6b and 8.6c)

Year	Fossil Fuels								Renewable Energy			
	Coal ¹	Petroleum					Natural Gas ⁶	Other Gases ⁷	Wood ⁸	Waste ⁹		
		Distillate Fuel Oil ²	Residual Fuel Oil ³	Other Liquids ⁴	Petroleum Coke ⁵	Total ⁵						
Year	Thousand Short Tons	Thousand Barrels		Thousand Short Tons	Thousand Barrels	Million Cubic Feet	Trillion Btu	Trillion Btu		Trillion Btu		
1989	16,510	1,410	16,391	353	247	19,391	563,307	116	683	38	49	
1990	19,081	2,050	18,465	895	918	26,002	654,749	176	813	46	50	
1991	18,458	3,027	15,293	835	777	23,039	663,963	185	779	46	55	
1992	19,372	2,358	16,474	935	862	24,077	717,860	200	822	51	52	
1993	19,750	2,449	17,933	857	1,031	26,394	733,584	178	836	56	51	
1994	20,609	2,811	18,822	609	1,137	27,929	784,015	180	903	57	53	
1995	20,418	2,082	16,661	642	1,235	25,562	834,382	181	902	59	55	
1996	20,806	2,192	18,552	756	1,275	27,873	865,774	187	876	69	54	
1997	21,005	2,584	15,882	289	2,009	28,802	868,569	188	913	68	67	
1998	20,320	4,944	16,539	681	1,336	28,845	949,106	209	875	72	58	
1999	20,373	4,665	14,133	838	1,437	26,822	982,958	224	862	68	60	
2000	20,466	2,897	13,292	1,455	924	22,266	985,263	230	884	71	63	
2001	18,944	2,574	11,826	563	661	18,268	898,286	166	696	51	53	
2002	17,561	1,462	9,402	1,363	517	14,811	860,019	147	682	49	43	
2003 ^P	18,175	2,320	10,194	1,803	754	18,087	753,431	143	716	52	25	

¹ Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal.

² Fuel oil nos. 1, 2, and 4.

³ Fuel oil nos. 5 and 6.

⁴ Jet fuel, kerosene, other petroleum liquids, and waste oil.

⁵ Petroleum coke is converted from short tons to barrels by multiplying by 5.

⁶ Natural gas, plus a small amount of supplemental gaseous fuels that cannot be identified separately.

⁷ Blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels.

⁸ Wood, black liquor, and other wood waste.

⁹ Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.

¹⁰ Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.

P=Preliminary.

Notes: • Estimates are for fuels consumed to produce useful thermal output; they exclude fuels consumed to produce electricity. • Data do not include electric utility combined-heat-and-power (CHP) plants. • See Note 1, "Coverage of Electricity Statistics," at end of section. • See "Useful Thermal Output" in Glossary. • Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/fuelelectric.html>.

Sources: Tables 8.6b and 8.6c.

**Table 8.6b Estimated Consumption of Combustible Fuels for Useful Thermal Output
at Combined-Heat-and-Power Plants: Electric Power Sector, 1989-2003** (Subset of Table 8.6a)

Year	Fossil Fuels							Renewable Energy			
	Coal ¹	Petroleum					Natural Gas ⁶	Other Gases ⁷	Wood ⁸	Waste ⁹	
		Distillate Fuel Oil ²	Residual Fuel Oil ³	Other Liquids ⁴	Petroleum Coke ⁵	Total ⁵					
Year	Thousand Short Tons	Thousand Barrels			Thousand Short Tons	Thousand Barrels	Million Cubic Feet	Trillion Btu	Trillion Btu		Trillion Btu
1989	639	120	1,471	1	0	1,591	81,670	3	24	6	1
1990	1,266	173	1,630	2	0	1,805	97,330	5	23	8	(s)
1991	1,221	104	995	1	0	1,101	99,868	5	21	11	1
1992	1,704	154	1,045	10	4	1,229	122,908	6	21	10	2
1993	1,794	290	1,074	27	40	1,591	128,743	4	21	10	2
1994	2,241	371	1,024	104	58	1,791	144,062	6	18	12	1
1995	2,376	486	1,127	58	222	2,784	142,753	5	19	15	(s)
1996	2,520	308	1,155	86	175	2,424	147,091	5	20	21	(s)
1997	2,355	343	1,246	23	171	2,466	161,608	10	20	17	(s)
1998	2,493	134	653	19	103	1,322	172,471	6	12	20	(s)
1999	3,033	183	572	30	128	1,423	175,757	4	13	25	(s)
2000	3,107	294	467	51	120	1,412	192,253	7	8	24	(s)
2001	2,910	R ²¹⁹	R ³⁵⁵	3	119	R ^{1,171}	R ^{199,808}	6	10	10	0
2002	R ^{2,255}	R ⁶⁶	R ¹⁹⁷	R ²³	R ¹¹¹	R ⁸⁴¹	R ^{263,619}	R ⁷	R ¹⁰	R ¹²	(s)
2003P	2,053	228	647	47	112	1,483	235,967	6	8	10	(s)

¹ Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal.

² Fuel oil nos. 1, 2, and 4.

³ Fuel oil nos. 5 and 6.

⁴ Jet fuel, kerosene, other petroleum liquids, and waste oil.

⁵ Petroleum coke is converted from short tons to barrels by multiplying by 5.

⁶ Natural gas, plus a small amount of supplemental gaseous fuels that cannot be identified separately.

⁷ Blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels.

⁸ Wood, black liquor, and other wood waste.

⁹ Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.

¹⁰ Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.

R=Revised. P=Preliminary. (s)=Less than 0.5.

Notes: • Estimates are for fuels consumed to produce useful thermal output; they exclude fuels

consumed to produce electricity. • Data are for combined-heat-and-power (CHP) plants within the NAICS (North American Industry Classification System) 22 category whose primary business is to sell electricity and heat to the public. Data do not include electric utility CHP plants. • See Table 8.6c for commercial and industrial CHP data. • See Note 1, "Coverage of Electricity Statistics," and Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section. • See "Useful Thermal Output" in Glossary.

• Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/fuelelectric.html>.

Sources: • 1989-1997—Energy Information Administration (EIA), Form EIA-867, "Annual Nonutility Power Producer Report." • 1998-2000—EIA, Form EIA-860B, "Annual Electric Generator Report—Nonutility." • 2001 and 2002—EIA, Form EIA-860, "Annual Electric Generator Report" and Form EIA-906, "Power Plant Report." • 2003—EIA, Form EIA-906, "Power Plant Report."

Table 8.6c Estimated Consumption of Combustible Fuels for Useful Thermal Output at Combined-Heat-and-Power Plants: Commercial and Industrial Sectors, 1989-2003 (Subset of Table 8.6a)

Year	Fossil Fuels							Renewable Energy			
	Coal ¹	Petroleum					Natural Gas ⁶	Other Gases ⁷	Wood ⁸	Waste ⁹	
		Distillate Fuel Oil ²	Residual Fuel Oil ³	Other Liquids ⁴	Petroleum Coke ⁵	Total ⁵					
Year	Thousand Short Tons	Thousand Barrels			Thousand Short Tons	Thousand Barrels	Million Cubic Feet	Trillion Btu	Trillion Btu		Trillion Btu
Commercial Sector ¹¹											
1989	711	202	601	0	0	803	12,049	(s)	(s)	13	0
1990	773	389	715	(s)	0	1,104	18,913	(s)	(s)	13	0
1991	826	356	405	(s)	0	761	25,295	(s)	(s)	11	(s)
1992	804	259	538	(s)	2	807	29,672	(s)	1	16	(s)
1993	968	272	548	2	4	843	27,738	(s)	(s)	17	(s)
1994	940	534	379	0	4	931	31,457	(s)	(s)	17	0
1995	850	319	261	(s)	3	596	34,964	0	(s)	19	(s)
1996	1,005	260	328	(s)	3	601	40,075	0	1	22	(s)
1997	1,108	470	309	0	3	794	47,941	(s)	1	24	0
1998	1,002	418	573	0	3	1,006	46,527	(s)	1	22	0
1999	1,009	254	412	0	3	682	44,991	0	1	21	0
2000	1,034	403	366	2	4	792	47,844	0	1	21	0
2001	R916	R505	304	0	0	R809	R42,407	0	1	17	0
2002	R929	R248	R108	R28	R6	R416	R41,430	0	R1	R14	0
2003 ^P	991	234	277	1	7	546	35,484	0	1	16	0
Industrial Sector ¹²											
1989	15,160	1,088	14,320	352	247	16,997	469,588	113	659	19	48
1990	17,041	1,488	16,120	893	918	23,093	538,506	171	790	25	50
1991	16,412	2,567	13,893	834	777	21,177	538,800	180	758	23	55
1992	16,864	1,945	14,891	925	856	22,041	R565,279	194	801	24	50
1993	16,988	1,887	R16,311	R829	987	R23,960	R577,103	174	R815	29	49
1994	17,428	1,906	R17,419	505	1,075	R25,207	R608,496	173	884	27	52
1995	17,192	1,277	15,272	584	1,010	22,182	R656,665	175	882	25	55
1996	17,281	1,624	17,069	670	1,097	24,848	678,608	182	855	26	53
1997	17,542	1,772	14,328	267	1,835	25,541	R659,021	178	892	27	67
1998	16,824	4,391	15,313	662	1,230	26,518	730,108	202	862	29	58
1999	16,330	4,228	13,148	808	1,307	24,718	762,210	219	849	23	60
2000	16,325	2,200	12,459	1,402	800	20,062	745,165	223	875	25	63
2001	R15,119	R1,850	R11,167	R560	R542	R16,287	R656,071	160	685	25	53
2002	R14,377	R1,149	R9,097	R1,312	R399	R13,555	R554,970	R139	R672	R23	R43
2003 ^P	15,131	1,857	9,269	1,755	635	16,058	481,981	137	707	25	24

¹ Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal.

² Fuel oil nos. 1, 2, and 4.

³ Fuel oil nos. 5 and 6.

⁴ Jet fuel, kerosene, other petroleum liquids, and waste oil.

⁵ Petroleum coke is converted from short tons to barrels by multiplying by 5.

⁶ Natural gas, plus a small amount of supplemental gaseous fuels that cannot be identified separately.

⁷ Blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels.

⁸ Wood, black liquor, and other wood waste.

⁹ Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.

¹⁰ Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.

¹¹ Commercial combined-heat-and-power (CHP) plants.

¹² Industrial combined-heat-and-power (CHP) plants.

R=Revised. P=Preliminary. (s)=Less than 0.5.

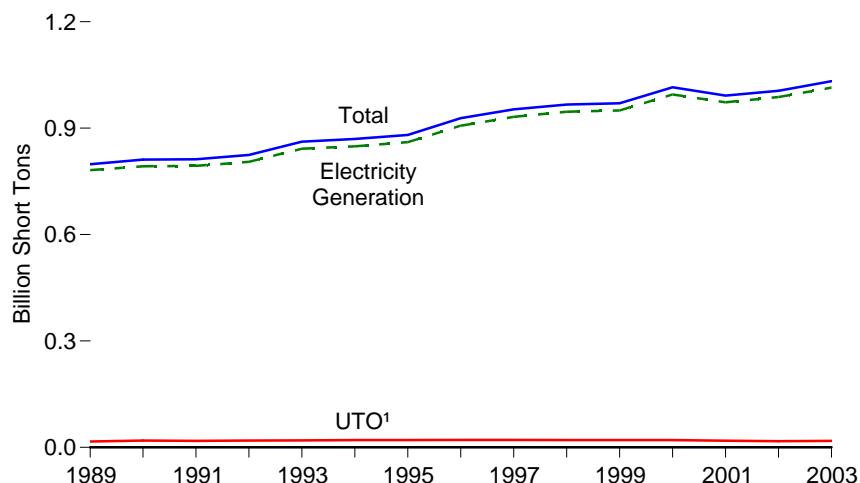
Notes: • Estimates are for fuels consumed to produce useful thermal output; they exclude fuels consumed to produce electricity. • See Table 8.6b for electric power sector CHP data. • See Note 1, "Coverage of Electricity Statistics," and Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section. • See "Useful Thermal Output" in Glossary. • Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/fuelelectric.html>.

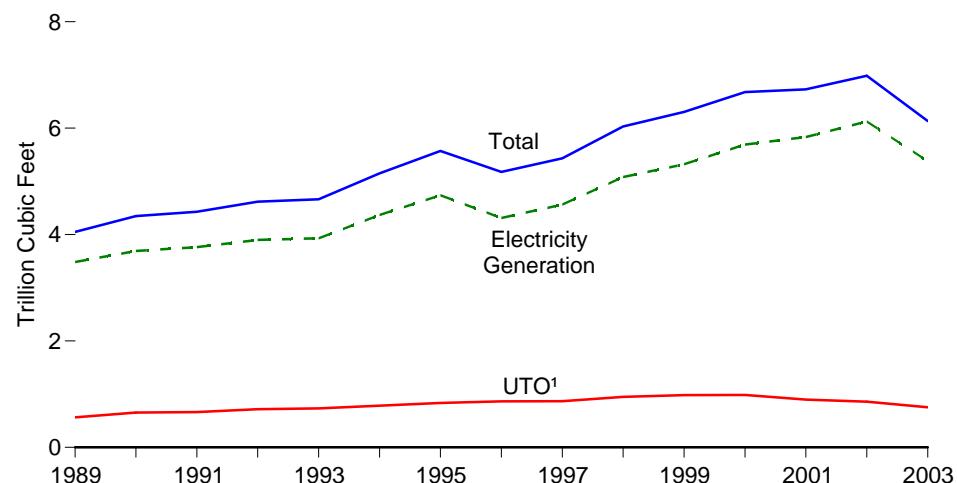
Sources: • 1989-1997—Energy Information Administration (EIA), Form EIA-867, "Annual Nonutility Power Producer Report." • 1998-2000—EIA, Form EIA-860B, "Annual Electric Generator Report—Nonutility." • 2001 and 2002—EIA, Form EIA-860, "Annual Electric Generator Report" and Form EIA-906, "Power Plant Report." • 2003—EIA, Form EIA-906, "Power Plant Report."

Figure 8.7 Consumption of Combustible Fuels for Electricity Generation and Useful Thermal Output, 1989-2003

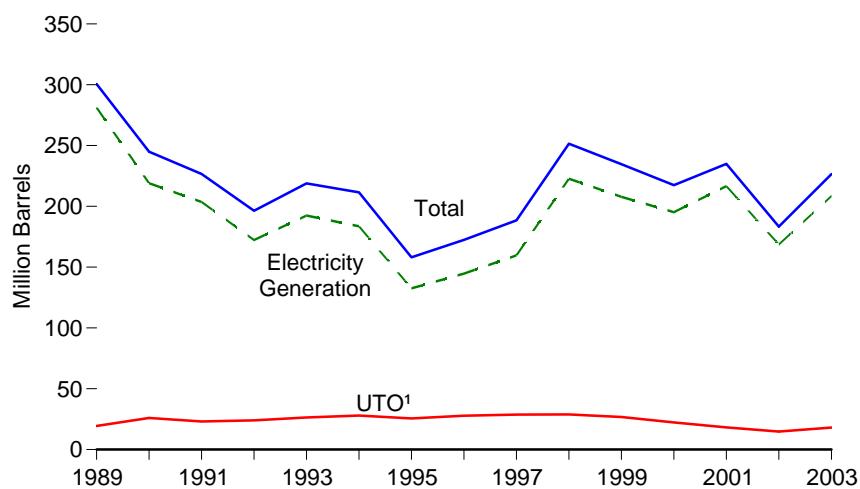
Coal



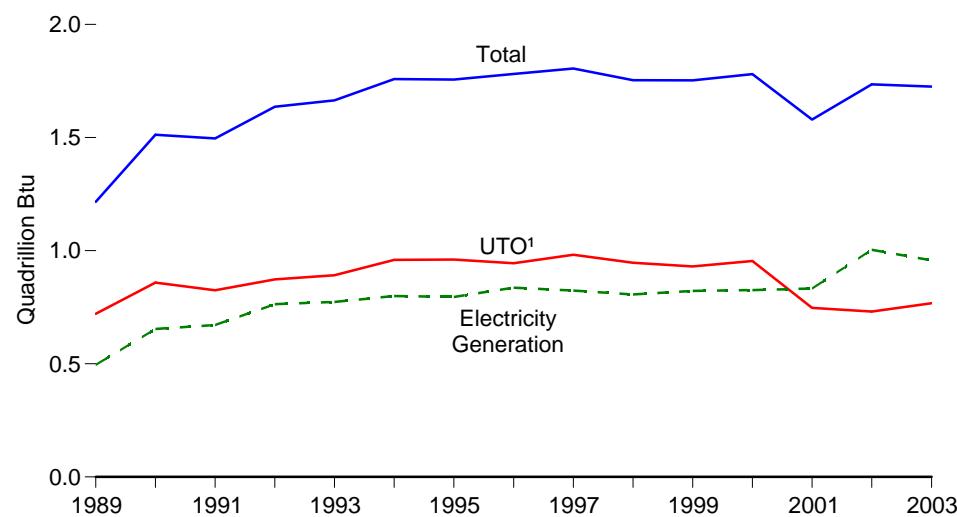
Natural Gas



Petroleum



Wood and Waste



¹Useful thermal output.

Sources: Tables 8.5a, 8.6a, and 8.7a.

**Table 8.7a Consumption of Combustible Fuels for Electricity Generation and Useful Thermal Output:
Total (All Sectors), 1989-2003** (Sum of Tables 8.7b and 8.7c)

Year	Fossil Fuels								Renewable Energy			
	Coal ¹	Petroleum					Natural Gas ⁶	Other Gases ⁷	Wood ⁸	Waste ⁹		
		Distillate Fuel Oil ²	Residual Fuel Oil ³	Other Liquids ⁴	Petroleum Coke ⁵	Total ⁵						
Year	Thousand Short Tons	Thousand Barrels		Thousand Short Tons	Thousand Barrels	Million Cubic Feet	Trillion Btu	Trillion Btu		Trillion Btu		
1989	798,181	29,143	266,211	656	915	300,583	4,048,736	206	1,028	189	88	
1990	811,538	20,194	209,314	1,332	2,832	244,998	4,346,311	288	1,256	257	86	
1991	812,124	R19,590	193,073	1,215	2,566	226,708	4,428,742	311	1,204	292	114	
1992	824,512	16,852	160,941	1,695	3,366	196,318	R4,617,578	341	1,303	333	92	
1993	861,904	19,293	176,992	R1,571	4,200	R218,855	R4,662,236	314	R1,321	344	85	
1994	869,405	25,177	R164,047	1,539	4,157	R211,547	R5,151,163	316	1,401	357	92	
1995	881,012	21,697	112,168	1,322	4,590	158,140	R5,572,253	313	1,382	374	97	
1996	928,015	22,444	124,607	2,468	4,596	172,499	5,178,232	346	1,389	392	91	
1997	952,955	22,893	134,623	526	6,095	188,517	R5,433,338	307	1,397	407	103	
1998	966,615	30,006	189,267	1,230	6,196	251,486	6,030,490	334	1,349	404	95	
1999	970,175	30,616	172,319	1,812	5,989	234,694	6,304,942	350	1,352	400	101	
2000	1,015,398	34,572	156,673	2,904	4,669	217,494	6,676,744	356	1,380	401	109	
2001	991,635	33,724	177,137	1,418	4,532	234,940	6,730,591	263	1,182	398	94	
2002	R1,005,144	R24,748	R118,637	R3,257	R7,353	R183,408	R6,986,081	R278	R1,287	R448	R93	
2003 ^P	1,032,482	32,610	152,751	5,214	7,190	226,523	6,133,233	263	1,292	433	51	

¹ Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal.

² Fuel oil nos. 1, 2, and 4. Through 2000, electric utility data also include small amounts of kerosene and jet fuel.

³ Fuel oil nos. 5 and 6. Through 2000, electric utility data also include a small amount of fuel oil no. 4.

⁴ Jet fuel, kerosene, other petroleum liquids, and waste oil.

⁵ Petroleum coke is converted from short tons to barrels by multiplying by 5.

⁶ Natural gas, plus a small amount of supplemental gaseous fuels that cannot be identified separately.

⁷ Blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels.

⁸ Wood, black liquor, and other wood waste.

⁹ Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.

¹⁰ Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.

R=Revised. P=Preliminary.

Notes: • Data are for fuels consumed to produce electricity and useful thermal output. • See Note 1, "Coverage of Electricity Statistics," at end of section. • See "Useful Thermal Output" in Glossary. • Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/fuelelectric.html>.

Sources: Tables 8.7b and 8.7c.

**Table 8.7b Consumption of Combustible Fuels for Electricity Generation and Useful Thermal Output:
Electric Power Sector, 1989-2003** (Subset of Table 8.7a)

Year	Fossil Fuels							Renewable Energy			
	Coal ¹	Petroleum					Natural Gas ⁶	Other Gases ⁷	Wood ⁸	Waste ⁹	
		Distillate Fuel Oil ²	Residual Fuel Oil ³	Other Liquids ⁴	Petroleum Coke ⁵	Total ⁵					
Year	Thousand Short Tons	Thousand Barrels			Thousand Short Tons	Thousand Barrels	Million Cubic Feet	Trillion Btu	Trillion Btu		Trillion Btu
1989	772,190	26,156	244,179	10	517	272,931	3,105,183	9	100	132	3
1990	782,567	16,567	184,915	26	1,008	206,550	3,244,619	11	129	188	(s)
1991	783,874	14,359	172,625	59	974	191,911	3,315,925	11	126	229	4
1992	795,094	12,623	138,726	128	1,494	158,948	3,447,871	18	140	262	5
1993	831,645	14,849	152,481	239	2,611	180,625	3,472,982	16	150	265	5
1994	838,354	20,612	138,222	771	2,315	171,178	3,902,546	19	152	282	3
1995	850,230	18,553	90,023	499	2,674	122,447	4,236,526	24	125	296	2
1996	896,921	18,780	99,951	653	2,642	132,593	3,806,901	20	138	300	2
1997	921,364	18,989	113,669	152	3,372	149,668	4,064,803	24	137	309	1
1998	936,619	23,300	166,528	431	4,102	210,769	4,588,284	29	137	308	2
1999	940,922	24,058	152,493	544	3,735	195,769	4,819,531	19	138	315	1
2000	985,821	30,016	138,513	454	3,275	185,358	5,206,324	25	134	318	1
2001	964,433	29,274	159,504	377	3,427	206,291	5,342,301	15	126	324	0
2002	R977,507	R21,876	R104,773	R1,267	R5,816	R156,995	R5,671,897	R33	R150	R365	R7
2003 ^P	1,004,263	28,291	138,069	1,959	5,797	197,306	4,924,162	19	161	346	2

¹ Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal.

² Fuel oil nos. 1, 2, and 4. Through 2000, electric utility data also include small amounts of kerosene and jet fuel.

³ Fuel oil nos. 5 and 6. Through 2000, electric utility data also include a small amount of fuel oil no. 4.

⁴ Jet fuel, kerosene, other petroleum liquids, and waste oil.

⁵ Petroleum coke is converted from short tons to barrels by multiplying by 5.

⁶ Natural gas, plus a small amount of supplemental gaseous fuels that cannot be identified separately.

⁷ Blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels.

⁸ Wood, black liquor, and other wood waste.

⁹ Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.

¹⁰ Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.

R=Revised. P=Preliminary. (s)=Less than 0.5.

Notes: • Data are for fuels consumed to produce electricity and useful thermal output. • The electric

power sector comprises electricity-only and combined-heat-and-power (CHP) plants within the NAICS (North American Industry Classification System) 22 category whose primary business is to sell electricity, or electricity and heat, to the public. • See Table 8.7c for commercial and industrial CHP and electricity-only data. • See Note 1, "Coverage of Electricity Statistics," and Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section. • See "Useful Thermal Output" in Glossary. • Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/fuelelectric.html>.

Sources: • 1989-1997—Energy Information Administration (EIA), Form EIA-759, "Monthly Power Plant Report" and Form EIA-867, "Annual Nonutility Power Producer Report." • 1998-2000—EIA, Form EIA-759, "Monthly Power Plant Report" and Form EIA-860B, "Annual Electric Generator Report—Nonutility."

• 2001 and 2002—EIA, Form EIA-860, "Annual Electric Generator Report" and Form EIA-906, "Power Plant Report." • 2003—EIA, Form EIA-906, "Power Plant Report."

**Table 8.7c Consumption of Combustible Fuels for Electricity Generation and Useful Thermal Output:
Commercial and Industrial Sectors, 1989-2003** (Subset of Table 8.7a)

Year	Fossil Fuels								Renewable Energy		Other ¹⁰	
	Coal ¹	Petroleum					Natural Gas ⁶	Other Gases ⁷	Wood ⁸	Waste ⁹		
		Distillate Fuel Oil ²	Residual Fuel Oil ³	Other Liquids ⁴	Petroleum Coke ⁵	Total ⁵						
Year	Thousand Short Tons	Thousand Barrels		Thousand Short Tons	Thousand Barrels	Million Cubic Feet	Trillion Btu	Trillion Btu		Trillion Btu		
Commercial Sector ¹¹												
1989	1,125	1,085	883	0	0	1,967	30,037	1	2	22	0	
1990	1,191	969	1,087	(s)	0	2,056	46,458	1	2	28	0	
1991	1,228	786	551	(s)	0	1,337	52,101	1	2	26	(s)	
1992	1,175	548	675	(s)	2	1,235	62,346	1	2	32	(s)	
1993	1,373	656	828	6	5	1,515	65,173	1	2	33	(s)	
1994	1,344	1,015	588	0	4	1,625	72,285	1	1	35	0	
1995	1,419	812	413	(s)	4	1,245	77,664	0	1	40	(s)	
1996	1,660	682	545	(s)	4	1,246	82,455	0	2	53	(s)	
1997	1,738	1,053	509	0	4	1,584	86,915	(s)	2	58	0	
1998	1,443	854	932	0	4	1,807	87,220	(s)	2	54	0	
1999	1,490	759	834	0	4	1,613	84,037	0	1	54	0	
2000	1,547	908	676	3	6	1,615	84,874	R0	1	47	(s)	
2001	1,448	1,026	773	2	6	1,832	78,655	0	1	39	0	
2002	R1,405	R771	R400	R38	R8	R1,250	R73,975	0	1	R42	R1	
2003 ^P	1,492	969	690	2	9	1,706	70,728	0	1	48	0	
Industrial Sector ¹²												
1989	24,867	1,903	21,150	646	397	25,685	913,516	195	926	35	85	
1990	27,781	2,657	23,312	1,305	1,824	36,392	1,055,235	275	1,125	41	86	
1991	27,021	4,446	19,897	1,156	1,592	33,460	1,060,716	298	1,076	37	110	
1992	28,244	3,680	21,540	1,567	1,870	36,135	R1,107,361	322	1,161	39	87	
1993	28,886	3,788	23,684	R1,326	1,583	R36,715	R1,124,081	297	R1,169	46	80	
1994	29,707	3,550	R25,238	768	1,838	R38,744	R1,176,332	296	1,248	41	89	
1995	29,363	2,333	21,732	823	1,912	34,448	R1,258,063	290	1,255	38	95	
1996	29,434	2,983	24,111	1,815	1,950	38,661	1,288,876	325	1,249	39	89	
1997	29,853	2,851	20,445	374	2,719	37,265	R1,281,620	283	1,259	41	102	
1998	28,553	5,852	21,807	800	2,090	38,910	1,354,986	305	1,211	42	93	
1999	27,763	5,799	18,993	1,268	2,251	37,312	1,401,374	331	1,213	31	99	
2000	28,031	3,648	17,483	2,448	1,388	30,520	1,385,546	331	1,244	35	108	
2001	25,755	3,424	16,860	1,039	1,099	26,817	1,309,636	248	1,054	35	94	
2002	R26,232	R2,101	R13,463	R1,953	R1,529	R25,163	R1,240,209	R245	R1,136	R41	R85	
2003 ^P	26,727	3,350	13,992	3,253	1,383	27,511	1,138,343	244	1,131	39	50	

¹ Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal.

² Fuel oil nos. 1, 2, and 4.

³ Fuel oil nos. 5 and 6.

⁴ Jet fuel, kerosene, other petroleum liquids, and waste oil.

⁵ Petroleum coke is converted from short tons to barrels by multiplying by 5.

⁶ Natural gas, plus a small amount of supplemental gaseous fuels that cannot be identified separately.

⁷ Blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels.

⁸ Wood, black liquor, and other wood waste.

⁹ Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.

¹⁰ Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.

¹¹ Commercial combined-heat-and-power (CHP) and commercial electricity-only plants.

¹² Industrial combined-heat-and-power (CHP) and industrial electricity-only plants.

R=Revised. P=Preliminary. (s)=Less than 0.5.

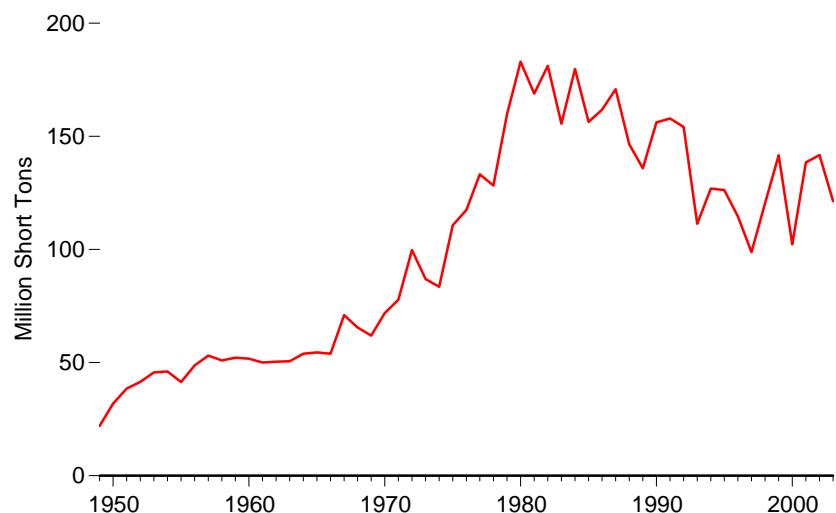
Notes: • Data are for fuels consumed to produce electricity and useful thermal output. • See Table 8.7b for electric power sector electricity-only and CHP data. • See Note 1, "Coverage of Electricity Statistics," and Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section. • See "Useful Thermal Output" in Glossary. • Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/fuelelectric.html>.

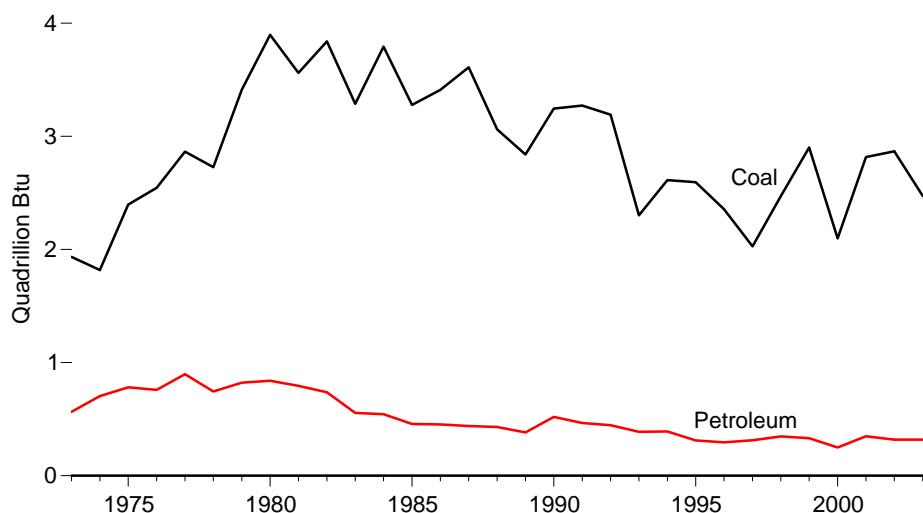
Sources: • 1989-1997—Energy Information Administration (EIA), Form EIA-867, "Annual Nonutility Power Producer Report." • 1998-2000—EIA, Form EIA-860B, "Annual Electric Generator Report—Nonutility." • 2001 and 2002—EIA, Form EIA-860, "Annual Electric Generator Report" and Form EIA-906, "Power Plant Report." • 2003—EIA, Form EIA-906, "Power Plant Report."

Figure 8.8 Stocks of Coal and Petroleum: Electric Power Sector

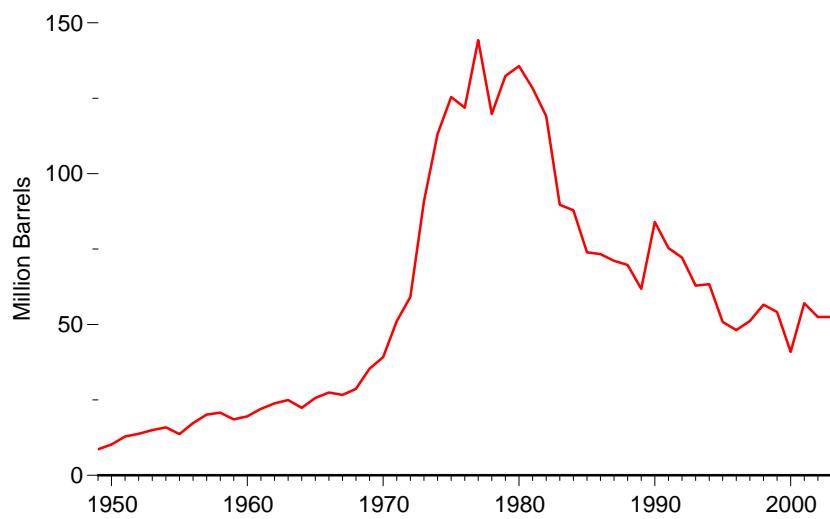
Coal Stocks, 1949-2003



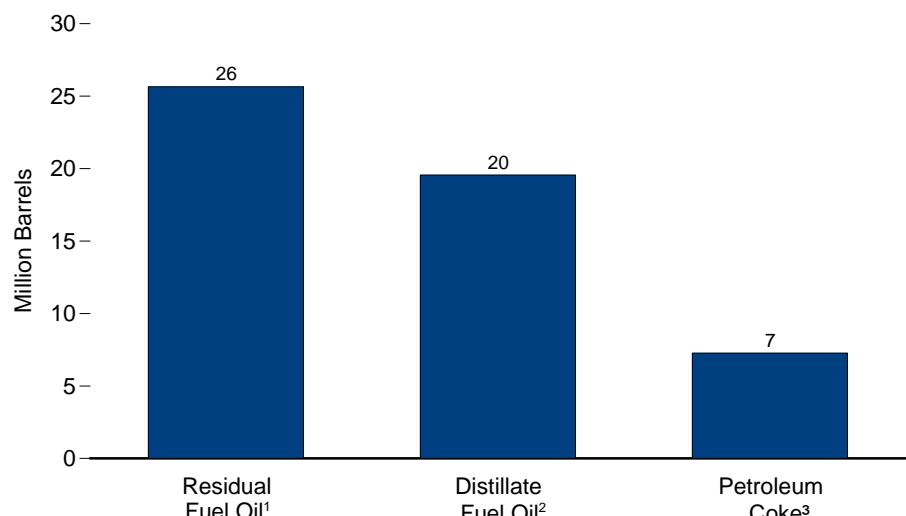
Coal and Petroleum Stocks, 1973-2003



Petroleum Stocks, 1949-2003



Petroleum Stocks by Product, 2003



¹ Fuel oil nos. 5 and 6.

² Fuel oil nos. 1, 2, and 4.

³ Petroleum coke, which is reported in short tons, is converted at a rate of 5 barrels per short ton.

Notes: • Stocks are at end of year. • Because vertical scales differ, graphs should not be compared.

Sources: Tables 8.8, A3, and A5.

Table 8.8 Stocks of Coal and Petroleum: Electric Power Sector, Selected Years, 1949-2003

Year	Coal ¹	Petroleum					Total ⁵
		Distillate Fuel Oil ²	Residual Fuel Oil ³	Other Liquids ⁴	Petroleum Coke ⁵	Thousand Short Tons	
Year	Thousand Short Tons	Thousand Barrels			Thousand Short Tons	Thousand Barrels	
1949	22,054	NA	NA	NA	NA	NA	8,604
1950	31,842	NA	NA	NA	NA	NA	10,201
1955	41,391	NA	NA	NA	NA	NA	13,671
1960	51,735	NA	NA	NA	NA	NA	19,572
1965	54,525	NA	NA	NA	NA	NA	25,647
1970	71,908	NA	NA	NA	239	NA	39,151
1971	77,778	NA	NA	NA	291	NA	51,101
1972	99,722	NA	NA	NA	287	NA	59,090
1973	86,967	10,095	79,121	NA	312	NA	90,776
1974	83,509	15,199	97,718	NA	35	NA	113,091
1975	110,724	16,432	108,825	NA	31	NA	125,413
1976	117,436	14,703	106,993	NA	32	NA	121,857
1977	133,219	19,281	124,750	NA	44	NA	144,252
1978	128,225	16,386	102,402	NA	198	NA	119,778
1979	159,714	20,301	111,121	NA	183	NA	132,338
1980	183,010	30,023	105,351	NA	52	NA	135,635
1981	168,893	26,094	102,042	NA	42	NA	128,345
1982	181,132	23,369	95,515	NA	41	NA	119,090
1983	155,598	18,801	70,573	NA	55	NA	89,652
1984	179,727	19,116	68,503	NA	50	NA	87,870
1985	156,376	16,386	57,304	NA	49	NA	73,933
1986	161,806	16,269	56,841	NA	40	NA	73,313
1987	170,797	15,759	55,069	NA	51	NA	71,084
1988	146,507	15,099	54,187	NA	86	NA	69,714
1989	135,860	13,824	47,446	NA	105	NA	61,795
1990	156,166	16,471	67,030	NA	94	NA	83,970
1991	157,876	16,357	58,636	NA	70	NA	75,343
1992	154,130	15,714	56,135	NA	67	NA	72,183
1993	111,341	15,674	46,770	NA	89	NA	62,890
1994	126,897	16,644	46,344	NA	69	NA	63,333
1995	126,304	15,392	35,102	NA	65	NA	50,821
1996	114,623	15,216	32,473	NA	91	NA	48,146
1997	98,826	15,456	33,336	NA	469	NA	51,138
1998	120,501	16,343	37,451	NA	559	NA	56,591
1999 ⁶	141,604	17,995	34,256	NA	372	NA	54,109
2000	102,296	15,127	24,748	NA	211	NA	40,932
2001	138,496	20,486	34,594	NA	390	NA	57,031
2002	R141,714	R17,413	R25,723	800	R1,711	R52,490	
2003 ^P	121,371	19,563	25,653	NA	1,455	NA	52,489

¹ Anthracite, bituminous coal, subbituminous coal, and lignite.

² Fuel oil nos. 1, 2, and 4. For 1949-1979, data are for gas turbine and internal combustion plant stocks of petroleum. For 1980-2000, electric utility data also include small amounts of kerosene and jet fuel.

³ Fuel oil nos. 5 and 6. For 1949-1979, data are for steam plant stocks of petroleum. For 1980-2000, electric utility data also include a small amount of fuel oil no. 4.

⁴ Jet fuel, kerosene, other petroleum liquids, and waste oil.

⁵ Petroleum coke is converted from short tons to barrels by multiplying by 5.

⁶ Through 1998, data are for electric utilities only. Beginning in 1999, data are for electric utilities and independent power producers.

R=Revised. P=Preliminary. NA=Not available.

Notes: • Stocks are at end of year. • The electric power sector comprises electricity-only and combined-heat-and-power (CHP) plants within the NAICS (North American Industry Classification System) 22 category whose primary business is to sell electricity, or electricity and heat, to the public. • See Note

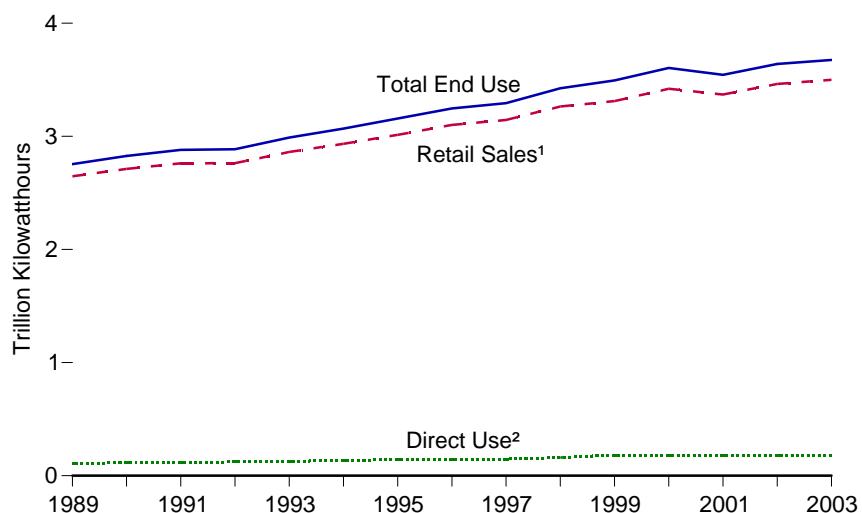
1, "Coverage of Electricity Statistics," and Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section. • Totals may not equal sum of components due to independent rounding.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/elect.html>. • For related information, see <http://www.eia.doe.gov/fuelelectric.html>.

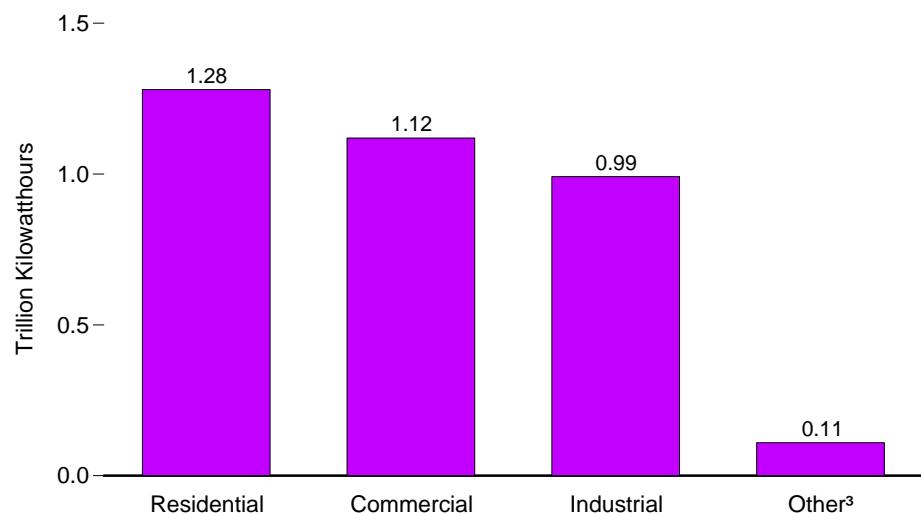
Sources: • 1949-September 1977—Federal Power Commission, Form FPC-4, "Monthly Power Plant Report." • October 1977-1981—Federal Energy Regulatory Commission, Form FPC-4, "Monthly Power Plant Report." • 1982-1988—Energy Information Administration (EIA), Form EIA-759, "Monthly Power Plant Report." • 1989-1997—EIA, Form EIA-759, "Monthly Power Plant Report" and Form EIA-867, "Annual Nonutility Power Producer Report." • 1998-2000—EIA, Form EIA-759, "Monthly Power Plant Report" and Form EIA-860B, "Annual Electric Generator Report—Nonutility." • 2001 and 2002—EIA, Form EIA-860, "Annual Electric Generator Report" and Form EIA-906, "Power Plant Report" • 2003—EIA, Form EIA-906, "Power Plant Report."

Figure 8.9 Electricity End Use

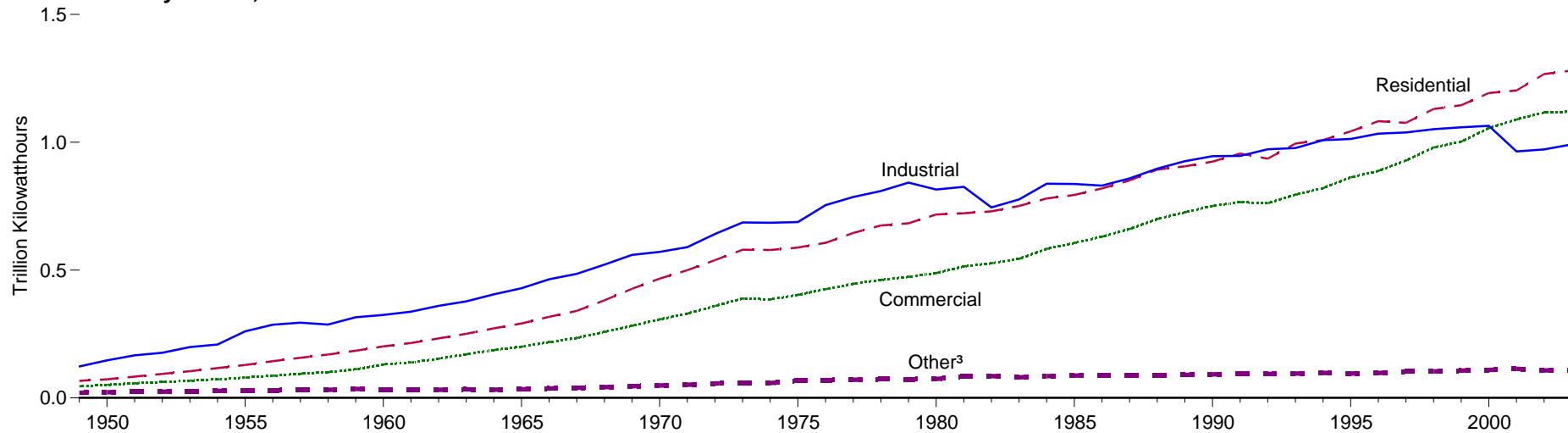
Overview, 1989-2003



Retail Sales¹ by Sector, 2003



Retail Sales¹ by Sector, 1949-2003



¹ Electricity retail sales to ultimate customers by electric utilities and, beginning in 1996, other energy service providers.

² Commercial and industrial facility use of onsite net electricity generation; and electricity sales among adjacent or co-located facilities for which revenue information is not available.

³ Public street and highway lighting, other sales to public authorities, sales to railroads and railways, and interdepartmental sales.

Note: Because vertical scales differ, graphs should not be compared.

Source: Table 8.9.

Table 8.9 Electricity End Use, Selected Years, 1949-2003
(Billion Kilowatthours)

Year	Retail Sales ¹					Direct Use ⁴	Total
	Residential	Commercial ²	Industrial ²	Other ³	Total		
1949	67	45	123	20	255	NA	255
1950	72	51	146	22	291	NA	291
1955	128	79	260	29	497	NA	497
1960	201	131	324	32	688	NA	688
1965	291	200	429	34	954	NA	954
1970	466	307	571	48	1,392	NA	1,392
1971	500	329	589	51	1,470	NA	1,470
1972	539	359	641	56	1,595	NA	1,595
1973	579	388	686	59	1,713	NA	1,713
1974	578	385	685	58	1,706	NA	1,706
1975	588	403	688	68	1,747	NA	1,747
1976	606	425	754	70	1,855	NA	1,855
1977	645	447	786	71	1,948	NA	1,948
1978	674	461	809	73	2,018	NA	2,018
1979	683	473	842	73	2,071	NA	2,071
1980	717	488	815	74	2,094	NA	2,094
1981	722	514	826	85	2,147	NA	2,147
1982	730	526	745	86	2,086	NA	2,086
1983	751	544	776	80	2,151	NA	2,151
1984	780	583	838	85	2,286	NA	2,286
1985	794	606	837	87	2,324	NA	2,324
1986	819	631	831	89	2,369	NA	2,369
1987	850	660	858	88	2,457	NA	2,457
1988	893	699	896	90	2,578	NA	2,578
1989	906	726	926	90	2,647	108	2,755
1990	924	751	946	92	2,713	114	2,827
1991	955	766	947	94	2,762	118	2,880
1992	936	761	973	93	2,763	122	2,886
1993	995	795	977	95	2,861	128	2,989
1994	1,008	820	1,008	98	2,935	134	3,069
1995	1,043	863	1,013	95	3,013	144	3,157
1996	1,083	887	1,034	98	3,101	146	3,247
1997	1,076	929	1,038	103	3,146	148	3,294
1998	1,130	979	1,051	104	3,264	161	3,425
1999	1,145	1,002	1,058	107	3,312	183	3,495
2000	1,192	1,055	1,064	109	3,421	183	3,605
2001	1,203	1,089	964	114	3,370	RE174	R3,544
2002	R1,267	R1,116	R972	R107	R3,463	RE178	R3,641
2003	P1,280	P1,119	P991	P109	P3,500	E175	P3,675

¹ Electricity retail sales to ultimate customers by electric utilities and, beginning in 1996, other energy service providers.

² Retail customers are classified as "Commercial" or "Industrial" based on NAICS (North American Industry Classification System) codes or usage falling within specified limits by rate schedule.

³ Public street and highway lighting, other sales to public authorities, sales to railroads and railways, and interdepartmental sales.

⁴ Commercial and industrial facility use of onsite net electricity generation; and electricity sales among adjacent or co-located facilities for which revenue information is not available.

R=Revised. P=Preliminary. E=Estimate. NA=Not available.

Note: Totals may not equal sum of components due to independent rounding.

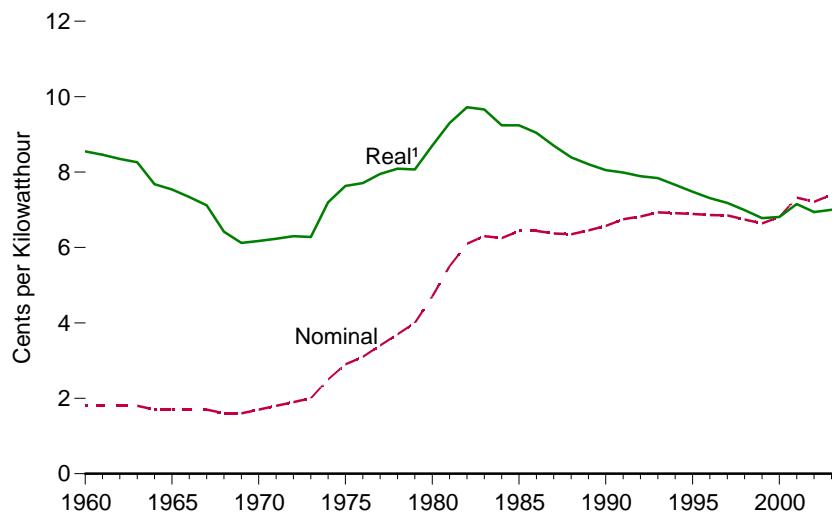
Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/elect.html>.

• For related information, see <http://www.eia.doe.gov/fuelelectric.html>.

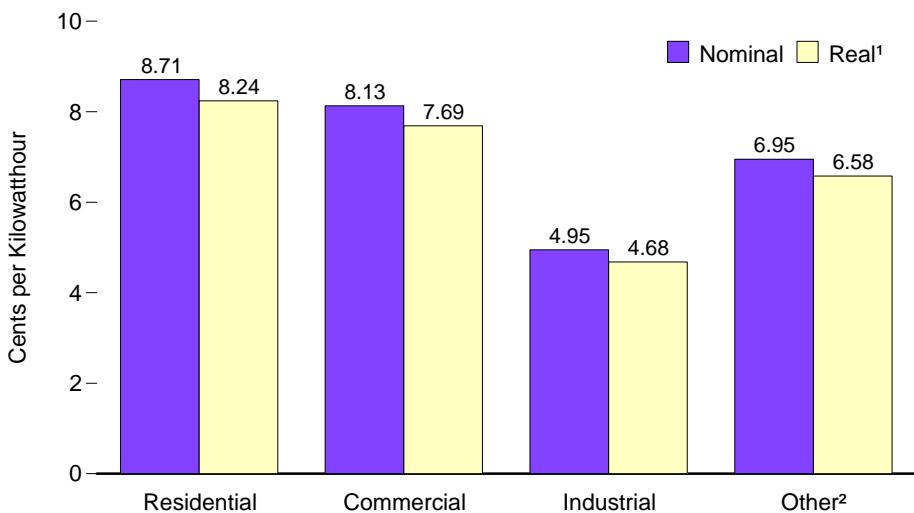
Sources: **Retail Sales:** • 1949-September 1977—Federal Power Commission, Form FPC-5, "Monthly Statement of Electric Operating Revenue and Income." • October 1977–February 1980—Federal Energy Regulatory Commission (FERC), Form FPC-5, "Monthly Statement of Electric Operating Revenue and Income." • March 1980-1982—FERC, Form FPC-5, "Electric Utility Company Monthly Statement." • 1983—Energy Information Administration (EIA), Form EIA-826, "Electric Utility Company Monthly Statement." • 1984-1989—EIA, Form EIA-861, "Annual Electric Utility Report." • 1990 forward—EIA, *Electric Power Monthly* (March 2004), Table 5.1. **Direct Use:** • 1989-1997—EIA, Form EIA-867, "Annual Nonutility Power Producer Report." • 1998-2000—EIA, Form EIA-860B, "Annual Electric Generator Report—Nonutility." • 2001 forward—Estimates are based on the 2000 value adjusted by the percentage increase in commercial and industrial net generation on Table 8.1.

Figure 8.10 Average Retail Prices of Electricity

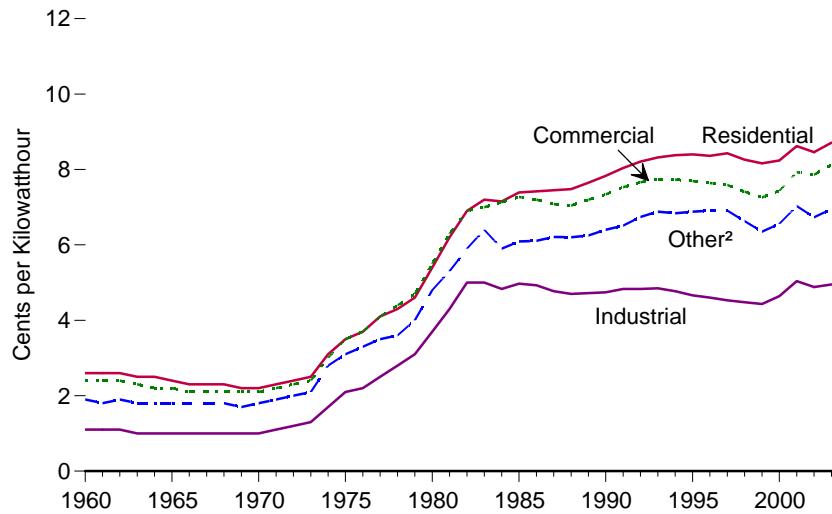
Total, 1960-2003



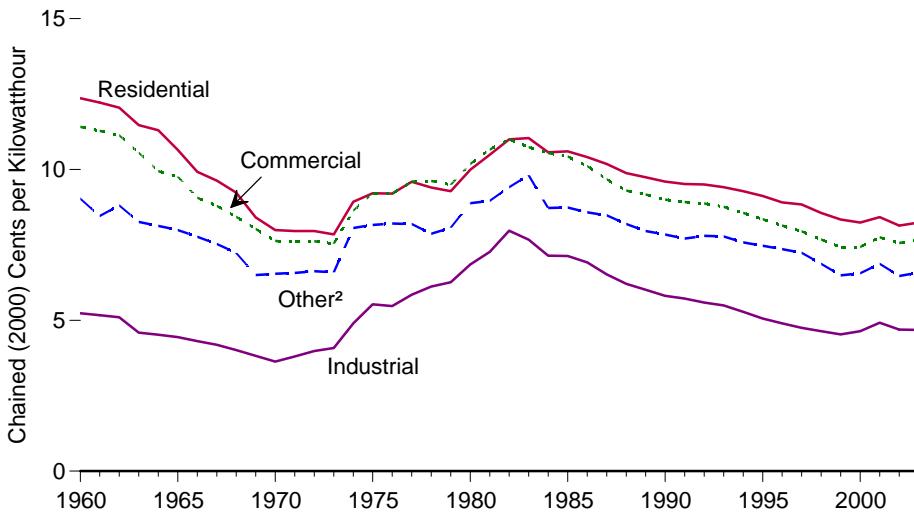
By Sector, 2003



Nominal, 1960-2003



Real¹, 1960-2003



¹ In chained (2000) dollars, calculated by using gross domestic product implicit price deflators. See Table D1.

² Public street and highway lighting, other sales to public authorities, sales to railroads and railways, and interdepartmental sales.

Note: Because vertical scales differ, graphs should not be compared.
Source: Table 8.10.

Table 8.10 Average Retail Prices of Electricity, 1960-2003

(Cents per Kilowatthour)

Year	Residential		Commercial ¹		Industrial ¹		Other ²		Total	
	Nominal	Real ³	Nominal	Real ³	Nominal	Real ³	Nominal	Real ³	Nominal	Real ³
1960	2.6	R12.4	2.4	R11.4	1.1	R5.2	1.9	R9.0	1.8	R8.6
1961	2.6	R12.2	2.4	R11.3	1.1	R5.2	1.8	R8.5	1.8	R8.5
1962	2.6	R12.0	2.4	R11.1	1.1	R5.1	1.9	R8.8	1.8	R8.4
1963	2.5	R11.5	2.3	R10.6	1.0	R4.6	1.8	R8.3	1.8	R8.3
1964	2.5	R11.3	2.2	R9.9	1.0	R4.5	1.8	R8.1	1.7	R7.7
1965	2.4	R10.6	2.2	R9.8	1.0	R4.4	1.8	R8.0	1.7	R7.5
1966	2.3	R9.9	2.1	R9.1	1.0	R4.3	1.8	R7.8	1.7	R7.3
1967	2.3	R9.6	2.1	R8.8	1.0	R4.2	1.8	R7.5	1.7	R7.1
1968	2.3	R9.2	2.1	R8.4	1.0	R4.0	1.8	R7.2	1.6	R6.4
1969	2.2	R8.4	2.1	R8.0	1.0	R3.8	1.7	R6.5	1.6	R6.1
1970	2.2	R8.0	2.1	R7.6	1.0	R3.6	1.8	R6.5	1.7	R6.2
1971	2.3	R8.0	2.2	R7.6	1.1	R3.8	1.9	R6.6	1.8	R6.2
1972	2.4	R8.0	2.3	R7.6	1.2	R4.0	2.0	R6.6	1.9	R6.3
1973	2.5	R7.8	2.4	R7.5	1.3	R4.1	2.1	R6.6	2.0	R6.3
1974	3.1	R8.9	3.0	R8.6	1.7	R4.9	2.8	R8.1	2.5	R7.2
1975	3.5	R9.2	3.5	R9.2	2.1	R5.5	3.1	R8.2	2.9	R7.6
1976	3.7	R9.2	3.7	R9.2	2.2	R5.5	3.3	R8.2	3.1	R7.7
1977	4.1	R9.6	4.1	R9.6	2.5	R5.8	3.5	R8.2	3.4	R8.0
1978	4.3	R9.4	4.4	R9.6	2.8	R6.1	3.6	R7.9	3.7	R8.1
1979	4.6	R9.3	4.7	R9.5	3.1	R6.3	4.0	R8.1	4.0	R8.1
1980	5.4	R10.0	5.5	R10.2	3.7	R6.8	4.8	R8.9	4.7	R8.7
1981	6.2	R10.5	6.3	R10.7	4.3	R7.3	5.3	R9.0	5.5	R9.3
1982	6.9	R11.0	6.9	R11.0	5.0	R8.0	5.9	R9.4	6.1	R9.7
1983	7.2	R11.0	7.0	R10.7	5.0	R7.7	6.4	R9.8	6.3	R9.7
1984	7.15	R10.57	7.13	R10.54	4.83	R7.14	5.90	R8.72	6.25	R9.24
1985	7.39	R10.60	7.27	R10.43	4.97	R7.13	6.09	R8.74	6.44	R9.24
1986	7.42	R10.41	7.20	R10.11	4.93	R6.92	6.11	R8.58	6.44	R9.04
1987	7.45	R10.18	7.08	R9.67	4.77	R6.52	6.21	R8.48	6.37	R8.70
1988	7.48	R9.88	7.04	R9.30	4.70	R6.21	6.20	R8.19	6.35	R8.39
1989	7.65	R9.74	7.20	R9.17	4.72	R6.01	6.25	R7.96	6.45	R8.21
1990	7.83	R9.60	7.34	R9.00	4.74	R5.81	6.40	R7.84	6.57	R8.05
1991	8.04	R9.52	7.53	R8.92	4.83	R5.72	6.51	R7.71	6.75	R7.99
1992	8.21	R9.50	7.66	R8.87	4.83	R5.59	6.74	R7.80	6.82	R7.89
1993	8.32	R9.41	7.74	R8.76	4.85	R5.49	6.88	R7.78	6.93	R7.84
1994	8.38	R9.28	7.73	R8.56	4.77	R5.28	6.84	R7.58	6.91	R7.66
1995	8.40	R9.12	7.69	R8.35	4.66	R5.06	6.88	R7.47	6.89	R7.48
1996	8.36	R8.91	7.64	R8.14	4.60	R4.90	6.91	R7.36	6.86	R7.31
1997	8.43	R8.84	7.59	R7.95	4.53	R4.75	6.91	R7.24	6.85	R7.18
1998	8.26	R8.56	7.41	R7.68	4.48	R4.64	6.63	R6.87	6.74	R6.99
1999	8.16	R8.34	7.26	R7.42	4.43	R4.53	6.35	R6.49	6.64	R6.78
2000	8.24	R8.24	7.43	R7.43	4.64	R4.64	6.56	R6.56	6.81	R6.81
2001	8.62	R8.42	7.93	R7.75	5.04	R4.92	7.03	R6.87	7.32	R7.15
2002	R8.46	R8.14	R7.86	R7.56	R4.88	R4.69	R6.73	R6.47	R7.21	R6.94
2003	8.71	8.24	8.13	7.69	4.95	4.68	6.95	6.58	7.40	7.00

¹ Retail customers are classified as "Commercial" or "Industrial" based on NAICS (North American Industry Classification System) codes or usage falling within specified limits by rate schedule.

² Public street and highway lighting, other sales to public authorities, sales to railroads and railways, and interdepartmental sales.

³ In chained (2000) dollars, calculated by using gross domestic product implicit price deflators. See Table D1.

R=Revised.

Notes: • Data represent revenue from electricity retail sales divided by electricity retail sales. • Through 1979, data are for Classes A and B privately owned electric utilities only. For 1980-1982, data are for selected Class A utilities whose electric operating revenues were \$100 million or more during the previous

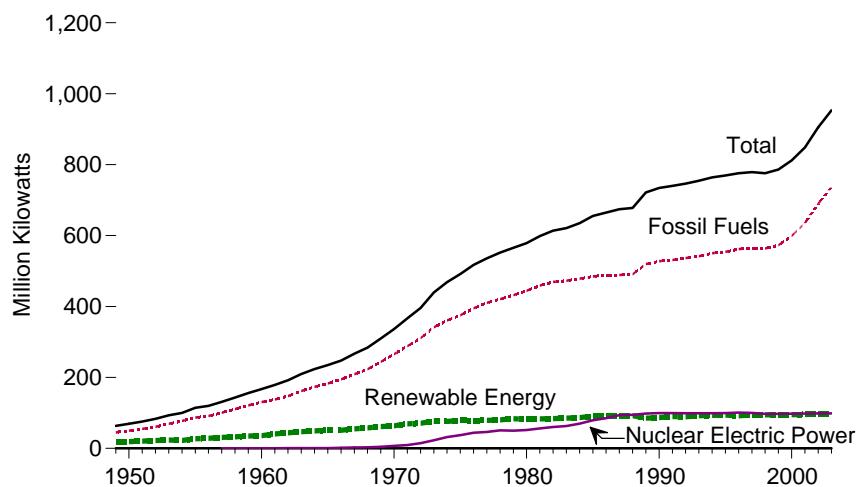
year. For 1983, data are for a selected sample of electric utilities. Beginning in 1984, data are for a census of electric utilities. Beginning in 1996, data also include energy service providers selling to retail customers.

Web Page: For related information, see <http://www.eia.doe.gov/fuelelectric.html>.

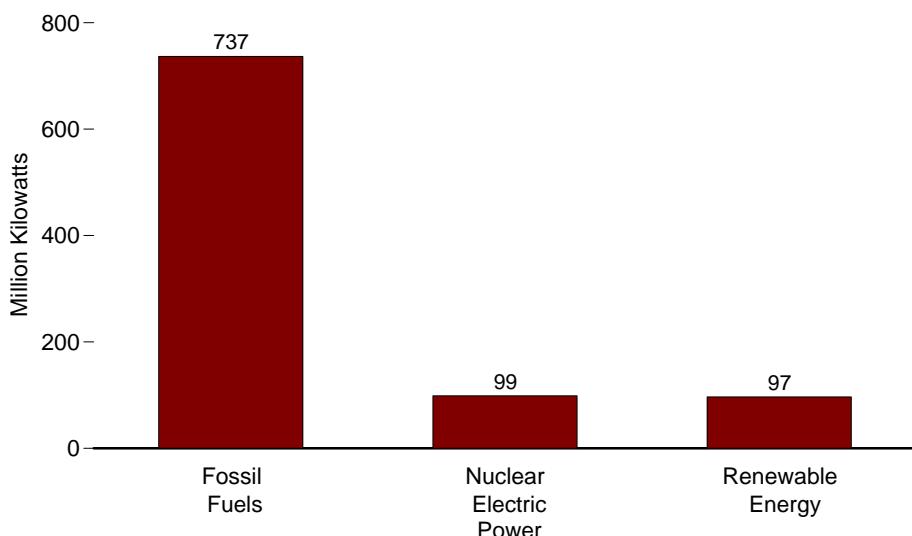
Sources: • 1960-September 1977—Federal Power Commission, Form FPC-5, "Monthly Statement of Electric Operating Revenues and Income." • October 1977-February 1980—Federal Energy Regulatory Commission (FERC), Form FPC-5, "Monthly Statement of Electric Operating Revenues and Income." • March 1980-1982—FERC, Form FERC-5, "Electric Utility Company Monthly Statement." • 1983—Energy Information Administration (EIA), Form EIA-826, "Electric Utility Company Monthly Statement." • 1984-1989—EIA, Form EIA-861, "Annual Electric Utility Report." • 1990 forward—EIA, *Electric Power Monthly* (March 2004), Table 5.3.

Figure 8.11a Electric Net Summer Capacity, Total (All Sectors)

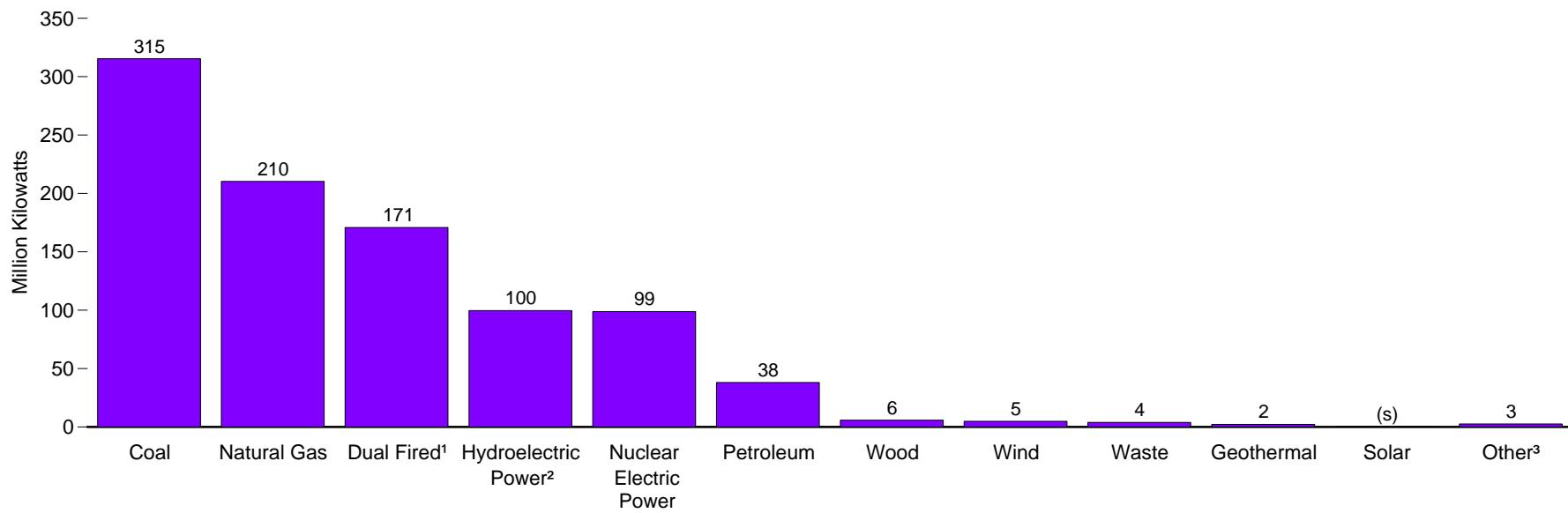
Total, 1949-2003



By Major Category, 2003



By Source, 2003



¹ Petroleum and natural gas.

² Conventional and pumped storage.

³ Other gases, batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.

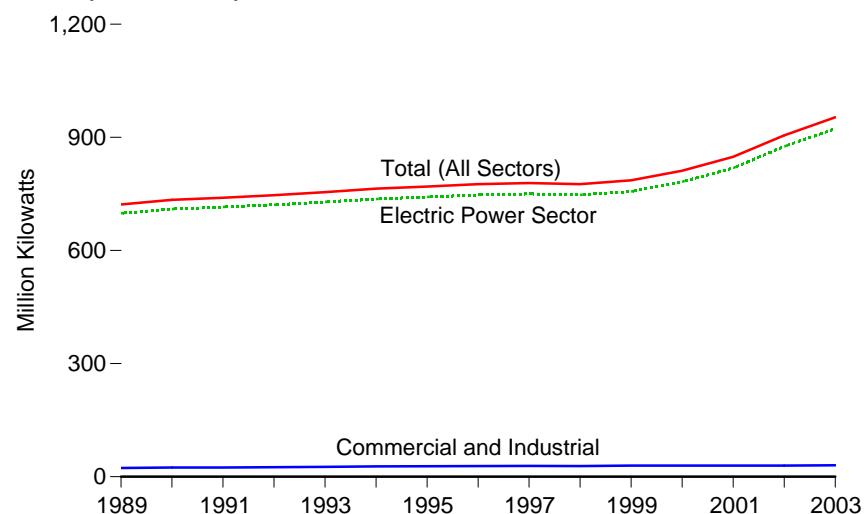
(s)=Less than 0.5 million kilowatts.

Note: Because vertical scales differ, graphs should not be compared.

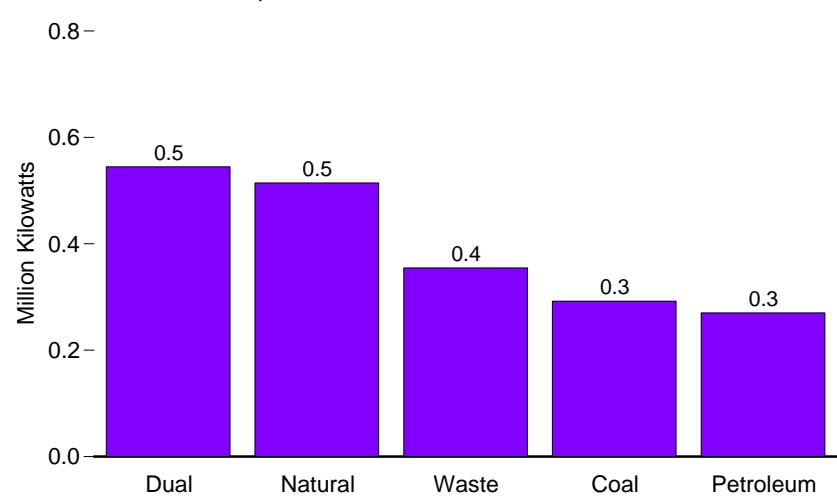
Source: Table 8.11a.

Figure 8.11b Electric Net Summer Capacity by Sector

Total (All Sectors) and Sectors, 1989-2003



Commercial Sector, 2003

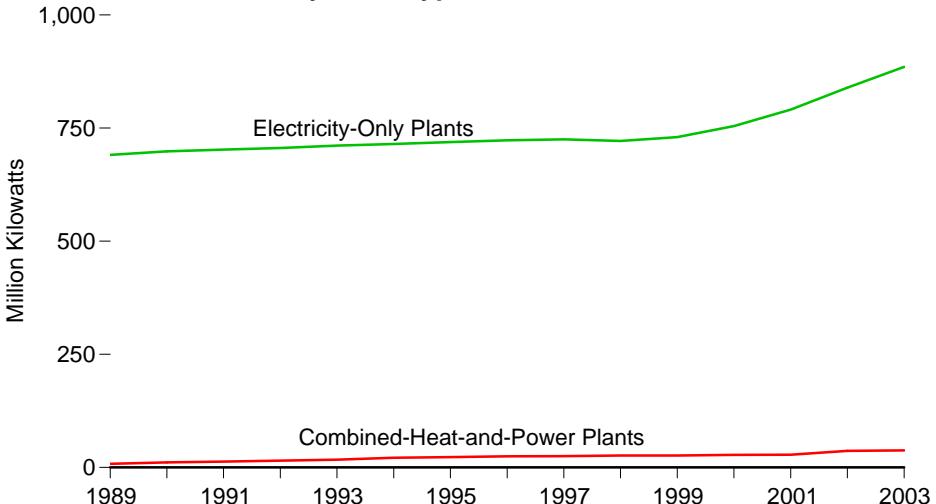


¹ Petroleum and natural gas.

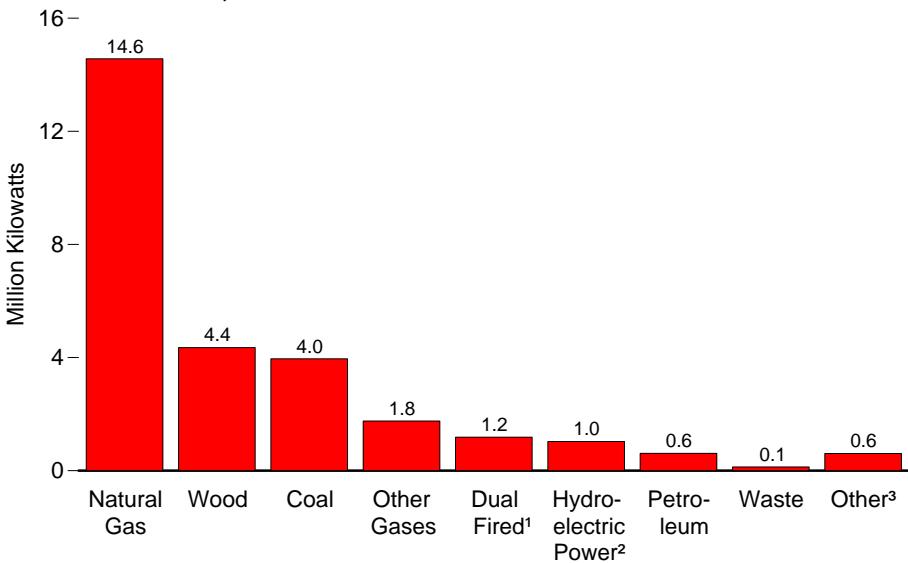
² Conventional.

³ Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.

Electric Power Sector by Plant Type, 1989-2003



Industrial Sector, 2003



Note: Because vertical scales differ, graphs should not be compared.

Sources: Tables 8.11a-8.11d.

Table 8.11a Electric Net Summer Capacity: Total (All Sectors), Selected Years, 1949-2003

(Sum of Tables 8.11b and 8.11d; Million Kilowatts)

Year	Fossil Fuels						Nuclear Electric Power	Hydro- electric Pumped Storage	Renewable Energy						Other ⁹	Total	
	Coal ¹	Petroleum ²	Natural Gas ³	Dual Fired ⁴	Other Gases ⁵	Total			Conventional Hydroelectric Power	Wood ⁶	Waste ⁷	Geo- thermal	Solar ⁸	Wind	Total		
1949	NA	NA	NA	NA	NA	44.9	0.0	(10)	18.5	(s)	(11)	NA	NA	NA	18.5	NA	63.4
1950	NA	NA	NA	NA	NA	50.0	0.0	(10)	19.2	(s)	(11)	NA	NA	NA	19.2	NA	69.2
1955	NA	NA	NA	NA	NA	86.8	0.0	(10)	27.4	(s)	(11)	NA	NA	NA	27.4	NA	114.2
1960	NA	NA	NA	NA	NA	130.8	0.4	(10)	35.8	0.1	(11)	(s)	NA	NA	35.9	NA	167.1
1965	NA	NA	NA	NA	NA	182.9	0.8	(10)	51.0	0.1	(11)	(s)	NA	NA	51.1	NA	234.8
1970	NA	NA	NA	NA	NA	265.4	7.0	(10)	63.8	0.1	(11)	0.1	NA	NA	63.9	NA	336.4
1971	NA	NA	NA	NA	NA	288.0	9.0	(10)	69.1	0.1	(11)	0.2	NA	NA	69.4	NA	366.4
1972	NA	NA	NA	NA	NA	310.7	14.5	(10)	70.5	0.1	(11)	0.3	NA	NA	70.9	NA	396.0
1973	NA	NA	NA	NA	NA	341.2	22.7	(10)	75.4	0.1	(11)	0.4	NA	NA	75.9	NA	439.8
1974	NA	NA	NA	NA	NA	360.7	31.9	(10)	75.5	0.1	(11)	0.4	NA	NA	76.0	NA	468.5
1975	NA	NA	NA	NA	NA	375.1	37.3	(10)	78.4	0.1	(11)	0.5	NA	NA	79.0	NA	491.3
1976	NA	NA	NA	NA	NA	394.8	43.8	(10)	78.0	0.1	(11)	0.5	NA	NA	78.6	NA	517.2
1977	NA	NA	NA	NA	NA	410.4	46.3	(10)	78.6	0.1	(11)	0.5	NA	NA	79.2	NA	535.9
1978	NA	NA	NA	NA	NA	420.8	50.8	(10)	79.9	0.1	(11)	0.5	NA	NA	80.5	NA	552.1
1979	NA	NA	NA	NA	NA	432.1	49.7	(10)	82.9	0.1	(11)	0.7	NA	NA	83.6	NA	565.5
1980	NA	NA	NA	NA	NA	444.1	51.8	(10)	81.7	0.1	(11)	0.9	NA	NA	82.7	NA	578.6
1981	NA	NA	NA	NA	NA	458.9	56.0	(10)	82.4	0.1	(11)	0.9	NA	(s)	83.4	NA	598.3
1982	NA	NA	NA	NA	NA	469.6	60.0	(10)	83.0	0.1	(11)	1.0	NA	(s)	84.1	NA	613.7
1983	NA	NA	NA	NA	NA	472.8	63.0	(10)	83.9	0.2	(11)	1.2	NA	(s)	85.3	NA	621.1
1984	NA	NA	NA	NA	NA	478.6	69.7	(10)	85.3	0.3	(11)	1.2	(12)	(s)	86.9	NA	635.1
1985	NA	NA	NA	NA	NA	485.0	79.4	(10)	88.9	0.2	0.2	1.6	(12)	(s)	90.8	NA	655.2
1986	NA	NA	NA	NA	NA	488.3	85.2	(10)	89.3	0.2	0.2	1.6	(12)	(s)	91.2	NA	664.8
1987	NA	NA	NA	NA	NA	488.8	93.6	(10)	89.7	0.2	0.2	1.5	(12)	(s)	91.7	NA	674.1
1988	NA	NA	NA	NA	NA	490.6	94.7	(10)	90.3	0.2	0.2	1.7	(12)	(s)	92.4	NA	677.7
1989 ¹³	303.1	48.8	54.1	111.8	1.5	519.4	98.2	18.1	74.1	5.2	2.1	2.6	0.2	1.5	85.7	0.5	721.8
1990	307.4	49.0	56.2	113.6	1.6	527.8	99.6	19.5	73.9	5.5	2.5	2.7	0.3	1.8	86.8	0.5	734.1
1991	307.4	47.3	60.8	113.7	2.1	531.4	99.6	18.4	76.0	6.1	2.9	2.6	0.3	1.9	89.9	0.5	739.9
1992	309.4	45.6	60.7	118.9	2.1	536.7	99.0	21.2	74.8	6.2	3.0	2.9	0.3	1.8	89.1	0.5	746.5
1993	310.1	44.0	65.5	120.2	1.9	541.8	99.0	21.1	77.4	6.5	3.1	2.9	0.3	1.8	92.1	0.5	754.6
1994	311.4	42.7	70.7	123.1	2.1	550.0	99.1	21.2	78.0	6.7	3.3	3.0	0.3	1.7	93.1	0.5	764.0
1995	311.4	43.7	75.4	122.0	1.7	554.2	99.5	21.4	78.6	6.7	3.5	3.0	0.3	1.7	93.9	0.5	769.5
1996	313.4	43.6	74.5	128.6	1.7	561.7	100.8	21.1	76.4	6.8	3.6	2.9	0.3	1.7	91.7	0.5	775.9
1997	313.6	43.2	76.3	129.4	1.5	564.1	99.7	19.3	79.4	6.9	3.6	2.9	0.3	1.6	94.8	0.8	778.6
1998	315.8	40.4	75.8	130.4	1.5	563.9	97.1	19.5	79.2	6.8	3.7	2.9	0.3	1.7	94.6	0.8	775.9
1999	315.5	35.6	73.6	146.0	1.9	572.6	97.4	19.6	79.4	6.8	3.7	2.8	0.4	2.3	95.3	1.0	785.9
2000	R315.1	R35.9	95.7	149.8	2.3	R598.9	97.9	19.5	79.4	6.1	3.9	2.8	0.4	2.4	94.9	0.5	R811.7
2001	314.2	39.7	125.8	153.5	1.7	634.9	98.2	19.1	79.5	5.9	3.8	2.2	0.4	3.9	95.7	0.4	848.3
2002	R315.4	R38.2	R171.7	R162.3	R2.0	R689.5	R98.7	R20.4	R79.4	R5.8	3.8	R2.3	0.4	R4.4	R96.1	R0.6	R905.3
2003 ^P	315.4	38.1	210.3	170.9	2.0	736.7	98.8	20.4	79.4	5.9	3.9	2.3	0.4	4.9	96.7	0.6	953.2

¹ Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal.

² Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, and waste oil.

³ Natural gas, plus a small amount of supplemental gaseous fuels that cannot be identified separately.

⁴ Petroleum and natural gas.

⁵ Blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels.

⁶ Wood, black liquor, and other wood waste.

⁷ Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.

⁸ Solar thermal and photovoltaic energy.

⁹ Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.

¹⁰ Included in "Conventional Hydroelectric Power."

¹¹ Included in "Wood."

¹² Included in "Wind."

¹³ Through 1988, data are for electric utilities only. Beginning in 1989, data are for electric utilities, independent power producers, commercial plants, and industrial plants.

R=Revised. P=Preliminary. NA=Not available. (s)=Less than 0.05 million kilowatts.

Notes: • Data are at end of year. • For plants that use multiple sources of energy, capacity is assigned to the predominant energy source. • See Note 1, "Coverage of Electricity Statistics," at end of section.

• See "Generator Net Summer Capacity" in Glossary. • Totals may not equal sum of components due to independent rounding.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/elect.html>.

• For related information, see <http://www.eia.doe.gov/fuelelectric.html>.

Sources: Tables 8.11b and 8.11d.

Table 8.11b Electric Net Summer Capacity: Electric Power Sector, Selected Years, 1949-2003
 (Subset of Table 8.11a; Million Kilowatts)

Year	Fossil Fuels						Nuclear Electric Power	Hydro- electric Pumped Storage	Renewable Energy						Other ⁹	Total	
	Coal ¹	Petroleum ²	Natural Gas ³	Dual Fired ⁴	Other Gases ⁵	Total			Conventional Hydroelectric Power	Wood ⁶	Waste ⁷	Geo- thermal	Solar ⁸	Wind	Total		
1949	NA	NA	NA	NA	NA	44.9	0.0	(¹⁰)	18.5	(s)	(¹¹)	NA	NA	NA	18.5	NA	63.4
1950	NA	NA	NA	NA	NA	50.0	0.0	(¹⁰)	19.2	(s)	(¹¹)	NA	NA	NA	19.2	NA	69.2
1955	NA	NA	NA	NA	NA	86.8	0.0	(¹⁰)	27.4	(s)	(¹¹)	NA	NA	NA	27.4	NA	114.2
1960	NA	NA	NA	NA	NA	130.8	0.4	(¹⁰)	35.8	0.1	(¹¹)	(s)	NA	NA	35.9	NA	167.1
1965	NA	NA	NA	NA	NA	182.9	0.8	(¹⁰)	51.0	0.1	(¹¹)	(s)	NA	NA	51.1	NA	234.8
1970	NA	NA	NA	NA	NA	265.4	7.0	(¹⁰)	63.8	0.1	(¹¹)	0.1	NA	NA	63.9	NA	336.4
1971	NA	NA	NA	NA	NA	288.0	9.0	(¹⁰)	69.1	0.1	(¹¹)	0.2	NA	NA	69.4	NA	366.4
1972	NA	NA	NA	NA	NA	310.7	14.5	(¹⁰)	70.5	0.1	(¹¹)	0.3	NA	NA	70.9	NA	396.0
1973	NA	NA	NA	NA	NA	341.2	22.7	(¹⁰)	75.4	0.1	(¹¹)	0.4	NA	NA	75.9	NA	439.8
1974	NA	NA	NA	NA	NA	360.7	31.9	(¹⁰)	75.5	0.1	(¹¹)	0.4	NA	NA	76.0	NA	468.5
1975	NA	NA	NA	NA	NA	375.1	37.3	(¹⁰)	78.4	0.1	(¹¹)	0.5	NA	NA	79.0	NA	491.3
1976	NA	NA	NA	NA	NA	394.8	43.8	(¹⁰)	78.0	0.1	(¹¹)	0.5	NA	NA	78.6	NA	517.2
1977	NA	NA	NA	NA	NA	410.4	46.3	(¹⁰)	78.6	0.1	(¹¹)	0.5	NA	NA	79.2	NA	535.9
1978	NA	NA	NA	NA	NA	420.8	50.8	(¹⁰)	79.9	0.1	(¹¹)	0.5	NA	NA	80.5	NA	552.1
1979	NA	NA	NA	NA	NA	432.1	49.7	(¹⁰)	82.9	0.1	(¹¹)	0.7	NA	NA	83.6	NA	565.5
1980	NA	NA	NA	NA	NA	444.1	51.8	(¹⁰)	81.7	0.1	(¹¹)	0.9	NA	NA	82.7	NA	578.6
1981	NA	NA	NA	NA	NA	458.9	56.0	(¹⁰)	82.4	0.1	(¹¹)	0.9	NA	(s)	83.4	NA	598.3
1982	NA	NA	NA	NA	NA	469.6	60.0	(¹⁰)	83.0	0.1	(¹¹)	1.0	NA	(s)	84.1	NA	613.7
1983	NA	NA	NA	NA	NA	472.8	63.0	(¹⁰)	83.9	0.2	(¹¹)	1.2	NA	(s)	85.3	NA	621.1
1984	NA	NA	NA	NA	NA	478.6	69.7	(¹⁰)	85.3	0.3	(¹¹)	1.2	(¹²)	(s)	86.9	NA	635.1
1985	NA	NA	NA	NA	NA	485.0	79.4	(¹⁰)	88.9	0.2	0.2	1.6	(¹²)	(s)	90.8	NA	655.2
1986	NA	NA	NA	NA	NA	488.3	85.2	(¹⁰)	89.3	0.2	0.2	1.6	(¹²)	(s)	91.2	NA	664.8
1987	NA	NA	NA	NA	NA	488.8	93.6	(¹⁰)	89.7	0.2	0.2	1.5	(¹²)	(s)	91.7	NA	674.1
1988	NA	NA	NA	NA	NA	490.6	94.7	(¹⁰)	90.3	0.2	0.2	1.7	(¹²)	(s)	92.4	NA	677.7
1989 ¹³	298.0	48.0	46.1	109.4	0.4	501.9	98.2	18.1	73.6	1.1	1.7	2.6	0.2	1.5	80.7	0.0	698.8
1990	302.3	48.0	47.9	110.8	0.4	509.3	99.6	19.5	73.3	1.2	2.1	2.7	0.3	1.8	81.4	(s)	709.9
1991	302.5	46.4	52.9	110.9	0.7	513.3	99.6	18.4	75.4	1.3	2.5	2.6	0.3	1.9	84.0	0.0	715.3
1992	304.3	44.7	52.0	116.1	0.7	517.9	99.0	21.2	74.2	1.4	2.5	2.9	0.3	1.8	83.1	0.0	721.2
1993	305.0	43.1	56.1	117.6	0.7	522.5	99.0	21.1	76.8	1.5	2.6	2.9	0.3	1.8	85.9	0.0	728.6
1994	306.1	41.7	61.1	120.2	0.7	529.8	99.1	21.2	76.9	1.7	2.7	3.0	0.3	1.7	86.4	0.0	736.5
1995	306.0	42.7	65.6	119.1	0.3	533.7	99.5	21.4	77.4	1.8	3.0	3.0	0.3	1.7	87.3	0.0	741.8
1996	308.1	42.6	64.5	125.7	0.1	540.9	100.8	21.1	75.3	1.7	2.9	2.9	0.3	1.7	84.9	0.0	747.7
1997	308.5	42.0	65.7	126.7	0.2	543.1	99.7	19.3	78.3	1.8	2.9	2.9	0.3	1.6	87.8	0.2	750.1
1998	310.9	39.2	64.4	128.5	0.1	543.0	97.1	19.5	78.0	1.8	3.0	2.9	0.3	1.7	87.8	0.2	747.6
1999	310.7	34.5	61.6	143.7	0.2	550.7	97.4	19.6	78.3	1.8	3.0	2.8	0.4	2.3	88.6	0.2	756.5
2000	R310.2	34.9	82.6	147.9	0.3	R575.9	97.9	19.5	78.2	1.7	3.3	2.8	0.4	2.4	88.8	(s)	R782.1
2001	309.8	38.4	111.1	152.0	0.3	611.6	98.2	19.1	78.4	1.6	3.3	2.2	0.4	R3.9	89.9	(s)	818.8
2002	R311.0	R37.3	R157.4	R160.4	R0.3	R666.5	R98.7	R20.4	R78.3	1.6	3.4	R2.3	0.4	R4.4	R90.3	(s)	R875.8
2003 ^P	311.2	37.3	195.2	169.1	0.3	713.0	98.8	20.4	78.3	1.6	3.4	2.3	0.4	4.9	90.8	(s)	923.0

¹ Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal.

² Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, and waste oil.

³ Natural gas, plus a small amount of supplemental gaseous fuels that cannot be identified separately.

⁴ Petroleum and natural gas.

⁵ Blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels.

⁶ Wood, black liquor, and other wood waste.

⁷ Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.

⁸ Solar thermal and photovoltaic energy.

⁹ Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.

¹⁰ Included in "Conventional Hydroelectric Power."

¹¹ Included in "Wood."

¹² Included in "Wind."

¹³ Through 1988, data are for electric utilities only. Beginning in 1989, data are for electric utilities and independent power producers.

R=Revised. P=Preliminary. NA=Not available. (s)=Less than 0.05 million kilowatts.

Notes: • Data are at end of year. • For plants that use multiple sources of energy, capacity is assigned

to the predominant energy source. • The electric power sector comprises electricity-only and combined-heat-and-power (CHP) plants within the NAICS (North American Industry Classification System) 22 category whose primary business is to sell electricity, or electricity and heat, to the public. • See Table 8.11d for commercial and industrial CHP and electricity-only data. • See Note 1, "Coverage of Electricity Statistics," and Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section. • See "Generator Net Summer Capacity" in Glossary. • Totals may not equal sum of components due to independent rounding.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/elect.html>.

• For related information, see <http://www.eia.doe.gov/fuelelectric.html>.

Sources: • 1949-1984—Energy Information Administration (EIA) estimates. • 1985-1988—EIA, Form EIA-860, "Annual Electric Generator Report." • 1989-1997—EIA, Form EIA-860, "Annual Electric Generator Report" and Form EIA-867, "Annual Nonutility Power Producer Report." • 1998-2000—EIA, Form EIA-860A, "Annual Electric Generator Report—Utility" and Form EIA-860B, "Annual Electric Generator Report—Nonutility." • 2001 and 2002—EIA, Form EIA-860, "Annual Electric Generator Report" and Form EIA-906, "Power Plant Report." • 2003—EIA, Form EIA-906, "Power Plant Report."

Table 8.11c Electric Net Summer Capacity: Electric Power Sector by Plant Type, 1989-2003

(Breakout of Table 8.11b; Million Kilowatts)

Year	Fossil Fuels						Nuclear Electric Power	Hydro- electric Pumped Storage	Renewable Energy						Other ⁹	Total	
	Coal ¹	Petroleum ²	Natural Gas ³	Dual Fired ⁴	Other Gases ⁵	Total			Conven- tional Hydroelectric Power	Wood ⁶	Waste ⁷	Geo- thermal	Solar ⁸	Wind			
Electricity-Only Plants ¹⁰																	
1989	296.5	47.9	43.2	106.2	0.4	494.2	98.2	18.1	73.6	0.9	1.5	2.6	0.2	1.5	80.3	0.0	690.7
1990	299.9	47.8	44.1	106.4	0.4	498.6	99.6	19.5	73.3	1.0	1.9	2.7	0.3	1.8	80.9	(s)	698.6
1991	299.6	46.0	48.4	106.1	0.7	500.8	99.6	18.4	75.4	1.1	2.2	2.6	0.3	1.9	83.6	0.0	702.4
1992	300.8	44.4	47.7	109.5	0.7	503.1	99.0	21.2	74.2	1.2	2.3	2.9	0.3	1.8	82.7	0.0	706.0
1993	301.2	42.8	49.8	111.2	0.7	505.7	99.0	21.1	76.8	1.2	2.4	2.9	0.3	1.8	85.5	0.0	711.3
1994	301.6	41.4	51.5	113.5	0.7	508.7	99.1	21.2	76.9	1.5	2.5	3.0	0.3	1.7	85.9	0.0	715.0
1995	301.3	42.4	55.5	112.1	0.3	511.5	99.5	21.4	77.4	1.5	2.7	3.0	0.3	1.7	86.6	0.0	719.1
1996	303.1	42.2	52.9	118.6	0.1	516.9	100.8	21.1	75.3	1.4	2.6	2.9	0.3	1.7	84.2	0.0	723.0
1997	303.6	41.7	54.1	119.1	0.2	518.7	99.7	19.3	78.3	1.5	2.5	2.9	0.3	1.6	87.1	0.2	725.0
1998	305.9	38.8	50.3	122.5	0.1	517.5	97.1	19.5	78.0	1.4	2.6	2.9	0.3	1.7	87.0	0.2	721.4
1999	305.5	34.2	49.8	135.2	0.2	525.0	97.4	19.6	78.3	1.5	2.6	2.8	0.4	2.3	87.8	0.2	730.0
2000	R305.2	R34.4	67.6	141.8	0.1	R549.0	97.9	19.5	78.2	1.5	2.8	2.8	0.4	2.4	88.1	(s)	R754.5
2001	305.2	38.1	R93.0	R148.2	0.1	R584.5	98.2	19.1	78.4	1.5	3.0	2.2	0.4	3.6	89.1	(s)	R790.8
2002	R305.8	R36.5	R135.5	R152.5	0.1	R630.4	R98.7	R20.4	R78.3	R1.4	R2.9	R2.3	0.4	R4.4	R89.7	(s)	R839.2
2003 ^P	305.5	36.4	172.9	161.0	0.1	675.8	98.8	20.4	78.3	1.4	3.0	2.3	0.4	4.9	90.2	(s)	885.2
Combined-Heat-and-Power Plants ¹¹																	
1989	1.5	0.1	2.8	3.3	0.0	7.7	—	—	0.0	0.2	0.2	0.0	—	0.0	0.4	0.0	8.1
1990	2.4	0.1	3.9	4.4	0.0	10.7	—	—	0.0	0.2	0.2	0.0	—	0.0	0.5	0.0	11.2
1991	2.9	0.3	4.5	4.8	0.0	12.5	—	—	0.0	0.2	0.2	0.0	—	0.0	0.5	0.0	12.9
1992	3.5	0.3	4.3	6.6	(s)	14.7	—	—	0.0	0.2	0.2	0.0	—	0.0	0.5	0.0	15.2
1993	3.8	0.3	6.3	6.4	0.0	16.8	—	—	0.0	0.2	0.2	0.0	—	0.0	0.5	0.0	17.3
1994	4.5	0.3	9.6	6.8	0.0	21.0	—	—	0.0	0.3	0.2	0.0	—	0.0	0.5	0.0	21.5
1995	4.8	0.3	10.0	7.0	0.0	22.1	—	—	0.0	0.4	0.2	0.0	—	0.0	0.6	0.0	22.7
1996	5.0	0.3	11.5	7.2	0.0	24.0	—	—	0.0	0.3	0.3	0.0	—	0.0	0.6	0.0	24.6
1997	4.9	0.3	11.6	7.6	(s)	24.4	—	—	0.0	0.3	0.4	0.0	—	0.0	0.7	0.0	25.1
1998	5.0	0.4	14.1	6.0	0.0	25.5	—	—	0.0	0.4	0.4	0.0	—	0.0	0.7	0.0	26.2
1999	5.2	0.2	11.8	8.4	0.0	25.7	—	—	0.0	0.4	0.4	0.0	—	0.0	0.7	0.0	26.5
2000	R5.0	0.4	15.1	6.1	0.3	R26.9	—	—	0.0	0.2	0.5	0.0	—	0.0	0.7	0.0	R27.7
2001	4.6	0.4	R18.0	R3.8	0.3	R27.1	—	—	(s)	0.1	0.4	(s)	—	0.3	0.8	(s)	R27.9
2002	R5.2	R0.8	R21.9	R7.9	R0.2	R36.1	—	—	R0.0	0.1	0.4	0.0	—	0.0	R0.6	R0.0	R36.6
2003 ^P	5.7	0.9	22.4	8.1	0.2	37.2	—	—	0.0	0.2	0.4	0.0	—	0.0	0.6	(s)	37.8

¹ Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal.

² Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, and waste oil.

³ Natural gas, plus a small amount of supplemental gaseous fuels that cannot be identified separately.

⁴ Petroleum and natural gas.

⁵ Blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels.

⁶ Wood, black liquor, and other wood waste.

⁷ Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.

⁸ Solar thermal and photovoltaic energy.

⁹ Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.

¹⁰ Electricity-only plants within the NAICS (North American Industry Classification System) 22 category whose primary business is to sell electricity to the public. Data also include a small number of electric utility combined-heat-and-power (CHP) plants.

¹¹ Combined-heat-and-power (CHP) plants within the NAICS 22 category whose primary business is to sell electricity and heat to the public. Data do not include electric utility CHP plants—these are included

under "Electricity-Only Plants."

R=Revised. P=Preliminary. — = Not applicable. (s)=Less than 0.05 million kilowatts.

Notes: • Data are at end of year. • For plants that use multiple sources of energy, capacity is assigned to the predominant energy source. • See Note 1, "Coverage of Electricity Statistics," and Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section. • See "Generator Net Summer Capacity" in Glossary.

• Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/fuelelectric.html>.

Sources: • 1989-1997—Energy Information Administration (EIA), Form EIA-860, "Annual Electric Generator Report" and Form EIA-867, "Annual Nonutility Power Producer Report." • 1998-2000—EIA, Form EIA-860A, "Annual Electric Generator Report—Utility" and Form EIA-860B, "Annual Electric Generator Report—Nonutility." • 2001 and 2002—EIA, Form EIA-860, "Annual Electric Generator Report" and Form EIA-906, "Power Plant Report." • 2003—EIA, Form EIA-906, "Power Plant Report."

Table 8.11d Electric Net Summer Capacity: Commercial and Industrial Sectors, 1989-2003
 (Subset of Table 8.11a; Million Kilowatts)

Year	Fossil Fuels						Nuclear Electric Power	Hydro electric Pumped Storage	Renewable Energy						Other ⁹	Total	
	Coal ¹	Petroleum ²	Natural Gas ³	Dual Fired ⁴	Other Gases ⁵	Total			Conventional Hydroelectric Power	Wood ⁶	Waste ⁷	Geo- thermal	Solar ⁸	Wind			
Commercial Sector ¹⁰																	
1989	0.3	0.1	0.1	0.6	—	1.0	—	0.0	(s)	(s)	0.2	—	—	—	0.2	—	1.2
1990	0.3	0.2	0.2	0.6	—	1.2	—	0.0	(s)	(s)	0.2	—	—	—	0.2	—	1.4
1991	0.2	0.1	0.2	0.6	—	1.1	—	0.0	(s)	(s)	0.2	—	—	—	0.3	—	1.3
1992	0.2	0.1	0.3	0.6	—	1.2	—	0.0	(s)	(s)	0.2	—	—	—	0.3	—	1.5
1993	0.3	0.1	0.3	0.6	—	1.3	—	0.0	(s)	(s)	0.3	—	—	—	0.3	—	1.6
1994	0.3	0.2	0.3	0.9	—	1.7	—	0.0	(s)	(s)	0.3	—	—	—	0.3	—	2.1
1995	0.3	0.2	0.3	1.0	—	1.8	—	0.0	(s)	(s)	0.3	—	—	—	0.3	—	2.1
1996	0.3	0.2	0.4	0.9	—	1.8	—	0.0	(s)	(s)	0.4	—	—	—	0.5	—	2.3
1997	0.3	0.2	0.4	0.9	—	1.9	—	0.0	(s)	(s)	0.4	—	—	—	0.5	—	2.3
1998	0.3	0.2	0.6	0.7	—	1.8	—	0.0	(s)	(s)	0.5	—	—	—	0.5	—	2.3
1999	0.3	0.3	0.5	0.8	—	1.8	—	0.0	(s)	(s)	0.5	—	—	—	0.5	—	2.3
2000	0.3	0.3	0.6	0.6	—	1.8	—	0.0	(s)	(s)	0.4	—	—	—	0.4	—	2.2
2001	0.3	0.3	1.4	0.6	—	2.5	—	(s)	(s)	(s)	0.3	—	—	—	0.4	—	2.9
2002	0.3	0.3	R0.5	R0.7	—	R1.8	—	(s)	(s)	(s)	R0.4	—	—	—	0.4	—	R2.2
2003 ^P	0.3	0.3	0.5	0.5	—	1.6	—	(s)	(s)	(s)	0.4	—	—	—	0.4	—	2.0
Industrial Sector ¹¹																	
1989	4.8	0.7	7.9	1.8	1.2	16.5	—	—	0.5	4.1	0.2	—	—	—	4.8	0.5	21.8
1990	4.8	0.9	8.1	2.2	1.3	17.3	—	—	0.6	4.3	0.2	—	—	—	5.1	0.5	22.9
1991	4.7	0.8	7.8	2.3	1.4	17.1	—	—	0.6	4.8	0.2	—	—	—	5.6	0.5	23.2
1992	4.8	0.8	8.4	2.2	1.4	17.6	—	—	0.6	4.8	0.3	—	—	—	5.6	0.5	23.8
1993	4.9	0.8	9.1	1.9	1.2	18.0	—	—	0.6	5.0	0.3	—	—	—	5.8	0.5	24.3
1994	5.0	0.9	9.3	1.9	1.4	18.5	—	—	1.1	5.0	0.3	—	—	—	6.3	0.5	25.4
1995	5.0	0.8	9.5	1.9	1.4	18.7	—	—	1.1	4.9	0.2	—	—	—	6.3	0.5	25.5
1996	5.0	0.8	9.6	1.9	1.6	19.0	—	—	1.1	5.1	0.2	—	—	—	6.4	0.5	25.9
1997	4.8	1.0	10.3	1.7	1.3	19.2	—	—	1.1	5.1	0.2	—	—	—	6.5	0.6	26.2
1998	4.6	1.0	10.8	1.3	1.5	19.1	—	—	1.1	5.0	0.2	—	—	—	6.3	0.6	26.0
1999	4.4	0.8	11.5	1.6	1.7	20.1	—	—	1.1	5.0	0.2	—	—	—	6.2	0.8	27.1
2000	4.6	0.8	12.5	1.3	2.0	21.2	—	—	1.1	4.4	0.2	—	—	—	5.7	0.5	27.3
2001	4.2	1.0	13.3	0.9	1.3	20.7	—	—	1.0	4.2	0.1	—	—	—	5.4	0.4	26.6
2002	R4.0	R0.6	R13.7	R1.1	R1.8	R21.2	—	—	1.0	R4.3	0.1	—	—	—	R5.5	R0.6	R27.3
2003 ^P	4.0	0.6	14.6	1.2	1.8	22.1	—	—	1.0	4.4	0.1	—	—	—	5.5	0.6	28.2

¹ Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal.

² Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, and waste oil.

³ Natural gas, plus a small amount of supplemental gaseous fuels that cannot be identified separately.

⁴ Petroleum and natural gas.

⁵ Blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels.

⁶ Wood, black liquor, and other wood waste.

⁷ Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.

⁸ Solar thermal and photovoltaic energy.

⁹ Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.

¹⁰ Commercial combined-heat-and-power (CHP) and commercial electricity-only plants.

¹¹ Industrial combined-heat-and-power (CHP) and industrial electricity-only plants.

R=Revised. P=Preliminary. — = Not applicable. (s)=Less than 0.05 million kilowatts.

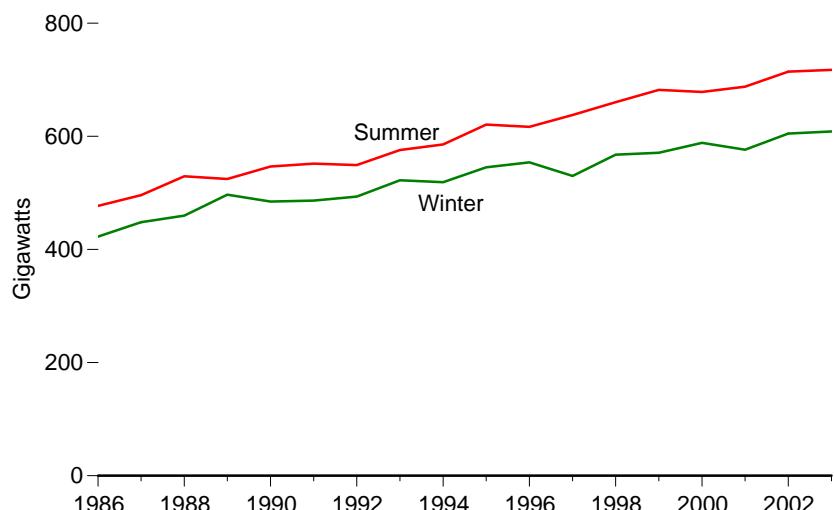
Notes: • Data are at end of year. • For plants that use multiple sources of energy, capacity is assigned to the predominant energy source. • See Tables 8.11b and 8.11c for electric power sector electricity-only and CHP data. • See Note 1, "Coverage of Electricity Statistics," and Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section. • See "Generator Net Summer Capacity" in Glossary. • Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/fuelelectric.html>.

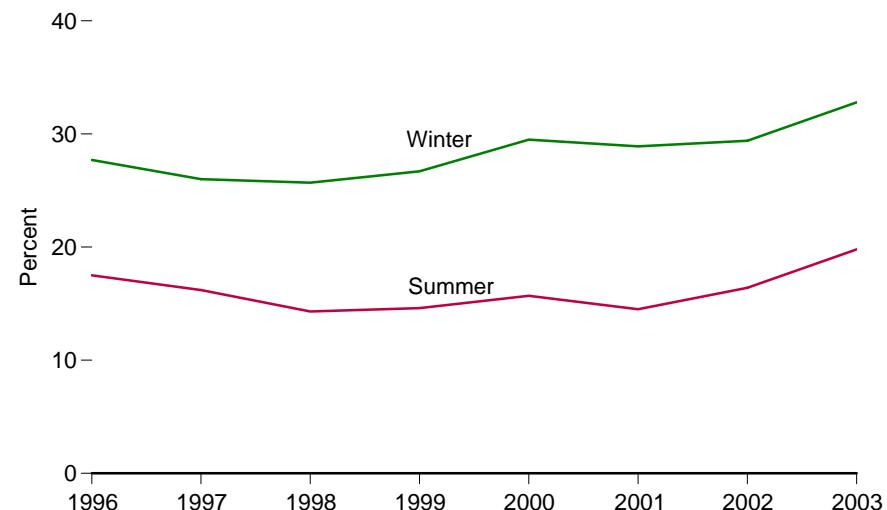
Sources: • 1989-1997—Energy Information Administration (EIA), Form EIA-867, "Annual Nonutility Power Producer Report." • 1998-2000—EIA, Form EIA-860B, "Annual Electric Generator Report—Nonutility." • 2001 and 2002—EIA, Form EIA-860, "Annual Electric Generator Report" and Form EIA-906, "Power Plant Report." • 2003—EIA, Form EIA-906, "Power Plant Report."

Figure 8.12 Electric Noncoincident Peak Load and Capacity Margin

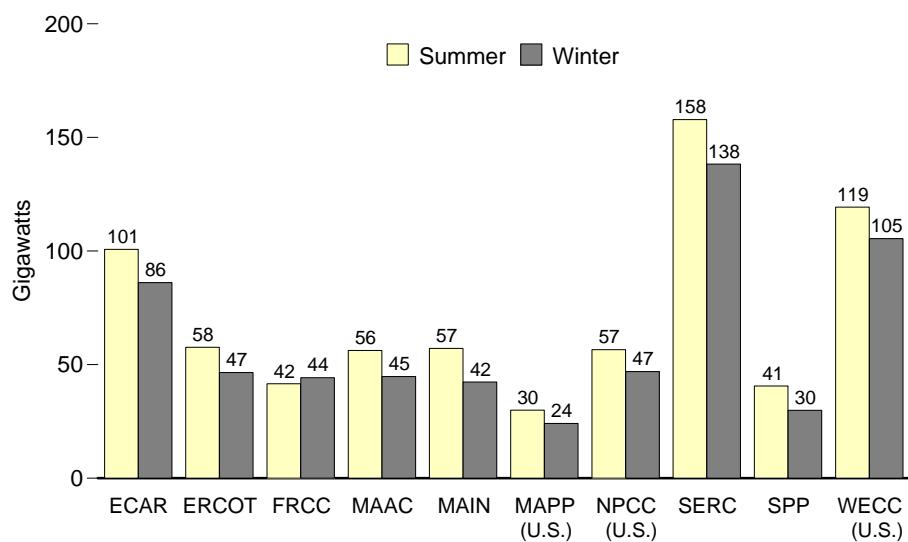
U.S. Peak Load, 1986-2003



Capacity Margin, 1996-2003



U.S. Peak Load by NERC Region, 2003



North American Electric Reliability Council Map for the United States



Notes: • Noncoincident peak load is the sum of two or more peak loads on individual systems that do not occur at the same time interval. See Glossary for information on North American Electric Reliability Council (NERC).

• Because vertical scales differ, graphs should not be compared.
Source: Table 8.12.

Table 8.12 Electric Noncoincident Peak Load and Capacity Margin, 1986-2003
 (Megawatts, Except as Noted)

Year	Noncoincident Peak Load												Capacity Margin ³ (percent)		
	North American Electric Reliability Council Regions ¹										Contiguous United States	ASCC (Alaska)	Hawaii	U.S. Total	
	ECAR	ERCOT	FRCC	MAAC	MAIN	MAPP (U.S.)	NPCC (U.S.)	SERC	SPP	WECC ² (U.S.)					
Summer															
1986	69,606	39,335	—	37,564	35,943	21,029	39,026	105,570	47,123	81,787	476,983	(⁴)	(⁵)	476,983	NA
1987	72,561	39,339	—	40,526	37,446	23,162	42,651	109,798	47,723	82,967	496,173	(⁴)	(⁵)	496,173	NA
1988	79,149	40,843	—	43,110	41,139	24,899	45,245	115,168	49,356	90,551	529,460	(⁴)	(⁵)	529,460	NA
1989	75,442	40,402	—	41,614	39,460	24,336	45,031	117,729	49,439	90,657	524,110	456	(⁵)	524,566	NA
1990	79,258	42,737	—	42,613	40,740	24,994	44,116	121,943	52,541	97,389	546,331	463	(⁵)	546,794	21.6
1991	81,224	41,870	—	45,937	41,598	25,498	46,594	124,716	51,885	92,096	551,418	471	(⁵)	551,889	20.9
1992	78,550	42,619	—	43,658	38,819	22,638	43,658	128,236	51,324	99,205	548,707	504	(⁵)	549,211	20.5
1993	80,930	44,255	—	46,494	41,956	24,396	46,706	135,704	57,106	97,809	575,356	511	(⁵)	575,867	19.9
1994	87,165	44,162	—	46,019	42,562	27,000	47,581	132,584	56,035	102,212	585,320	524	(⁵)	585,844	18.7
1995	92,619	46,618	—	48,577	45,782	29,192	47,705	146,569	59,595	103,592	620,249	622	(⁵)	620,871	18.9
1996	90,798	47,480	—	44,302	46,402	28,253	45,094	145,650	60,072	108,739	616,790	(⁵)	(⁵)	616,790	17.5
1997	93,492	50,541	35,375	49,464	45,887	29,787	49,269	137,382	36,479	110,001	637,677	(⁵)	(⁵)	637,677	16.2
1998	93,784	54,666	38,730	48,445	47,509	30,722	49,566	143,226	37,724	115,921	660,293	(⁵)	(⁵)	660,293	14.3
1999	99,239	55,529	37,493	51,645	51,535	31,903	52,855	149,685	38,609	113,629	682,122	(⁵)	(⁵)	682,122	14.6
2000	92,033	57,606	37,194	49,477	52,552	28,605	50,057	156,088	40,199	114,602	678,413	(⁵)	(⁵)	678,413	15.7
2001	100,235	55,201	39,062	54,015	56,344	28,321	55,949	149,293	40,273	109,119	687,812	(⁵)	(⁵)	687,812	14.5
2002	R102,996	R56,248	R40,696	R55,569	R56,396	R29,119	R56,012	R158,767	R39,688	R119,074	R714,565	(⁵)	(⁵)	R714,565	R16.4
2003 ^F	100,714	57,639	41,618	56,257	57,169	29,957	56,550	157,864	40,564	119,320	717,652	(⁵)	(⁵)	717,652	19.8
Winter															
1986	64,561	28,730	—	32,807	28,036	18,850	37,976	101,849	33,877	76,171	422,857	(⁴)	(⁵)	422,857	NA
1987	68,118	31,399	—	35,775	30,606	19,335	41,902	105,476	34,472	81,182	448,265	(⁴)	(⁵)	448,265	NA
1988	67,771	34,621	—	36,363	30,631	20,162	42,951	108,649	35,649	82,937	459,734	(⁴)	(⁵)	459,734	NA
1989	73,080	38,388	—	38,161	33,770	21,360	42,588	121,995	42,268	84,768	496,378	626	(⁵)	497,004	NA
1990	67,097	35,815	—	36,551	32,461	21,113	40,545	117,448	38,949	94,252	484,231	613	(⁵)	484,844	NA
1991	71,181	35,448	—	37,983	33,420	21,432	41,866	119,575	38,759	86,097	485,761	622	(⁵)	486,383	NA
1992	72,885	35,055	—	37,915	31,289	21,866	41,125	121,250	39,912	91,686	492,983	635	(⁵)	493,618	NA
1993	81,846	35,407	—	41,406	34,966	21,955	42,063	133,635	41,644	88,811	521,733	632	(⁵)	522,365	NA
1994	75,638	36,180	—	40,653	33,999	23,033	42,547	132,661	42,505	91,037	518,253	641	(⁵)	518,894	NA
1995	83,465	36,965	—	40,790	35,734	23,429	42,755	142,032	44,624	94,890	544,684	676	(⁵)	545,360	NA
1996	84,534	38,868	—	40,468	37,162	24,251	41,208	143,060	49,095	95,435	554,081	(⁵)	(⁵)	554,081	27.7
1997	75,670	37,966	33,076	37,217	34,973	25,390	41,338	122,649	27,437	94,158	529,874	(⁵)	(⁵)	529,874	26.0
1998	84,401	41,876	39,975	36,532	37,410	26,080	44,199	127,416	27,847	101,822	567,558	(⁵)	(⁵)	567,558	25.7
1999	86,239	39,164	40,178	40,220	39,081	25,200	45,227	128,563	27,963	99,080	570,915	(⁵)	(⁵)	570,915	26.7
2000	84,546	44,641	38,606	43,256	41,943	24,536	43,852	139,146	30,576	97,324	588,426	(⁵)	(⁵)	588,426	29.5
2001	85,485	44,015	40,922	39,458	40,529	21,815	42,670	135,182	29,614	96,622	576,312	(⁵)	(⁵)	576,312	28.9
2002	R87,300	R45,414	R45,635	R46,551	R42,412	R23,645	R46,009	R141,882	R30,187	R95,951	R604,986	(⁵)	(⁵)	R604,986	R29.4
2003 ^F	86,120	46,538	44,266	44,748	42,332	24,148	46,903	138,291	29,891	105,492	608,729	(⁵)	(⁵)	608,729	32.8

¹ See Glossary for information on the North American Electric Reliability Council (NERC) Regions.

Data include the U.S. portion of NERC only. See Figure 8.12 for an illustration of NERC regions.

² WECC was renamed from WSCC in 2002.

³ The percent by which planned generating capacity resources are expected to be greater (or less) than estimated net internal demand at the time of expected peak summer (or winter) demand. Net internal demand does not include estimated demand for direct control load management and customers with interruptible service agreements. Data are for the contiguous United States only.

⁴ Data submission for ASCC (Alaska) began in 1989.

⁵ Data were not filed.

R=Revised. F=Forecast. NA=Not available. — = Not applicable.

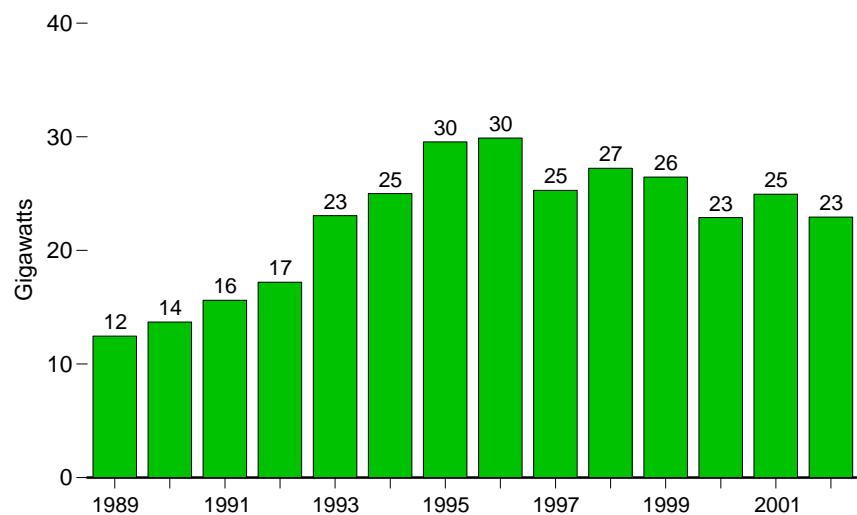
Note: Noncoincident peak load is the sum of two or more peak loads on individual systems that do not occur at the same time interval.

Web Page: For related information, see <http://www.eia.doe.gov/fuelelectric.html>.

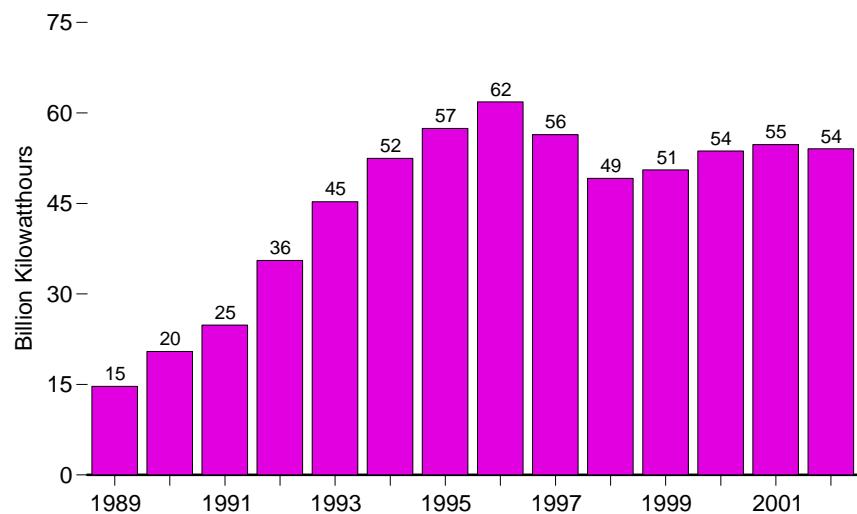
Sources: Energy Information Administration (EIA), *Electric Power Annual 2002* (December 2003), Tables 3.1-3.4; and EIA, Form EIA-411, "Coordinated Bulk Power Supply Program Report" and predecessor forms.

Figure 8.13 Electricity Utility Demand-Side Management Programs

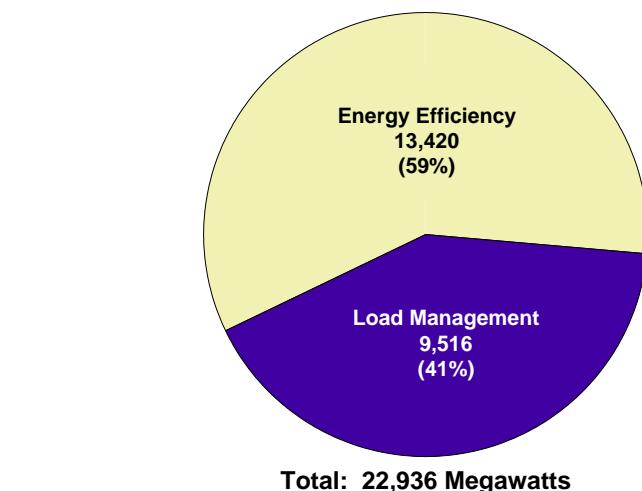
Actual Peakload Reductions Total, 1989-2002



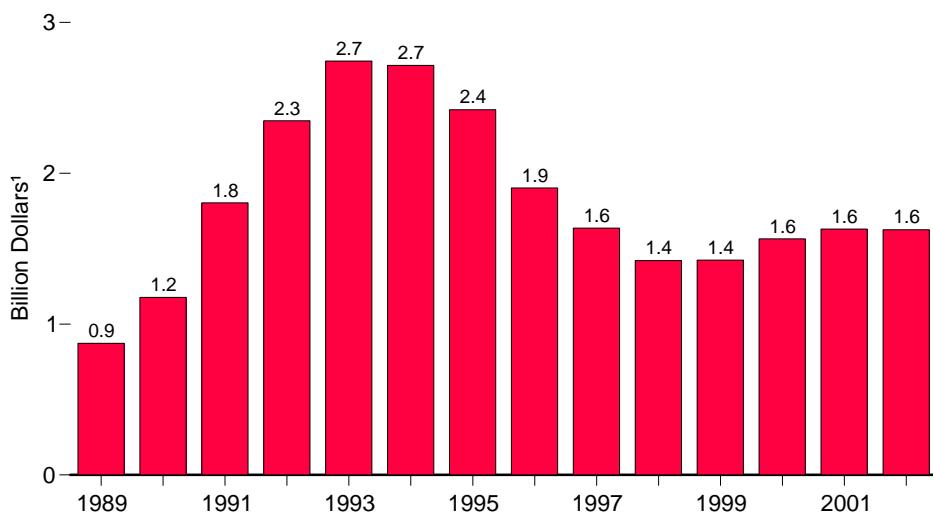
Energy Savings, 1989-2002



Actual Peakload Reductions, 2002



Costs, 1989-2002



¹ Nominal dollars.

Source: Table 8.13.

Table 8.13 Electric Utility Demand-Side Management Programs, 1989-2002

Year	Actual Peakload Reductions ¹ (megawatts)			Energy Savings (million kilowatthours)	Costs (thousand dollars ⁴)
	Energy Efficiency ²	Load Management ³	Total		
1989	NA	NA	12,463	14,672	872,935
1990	NA	NA	13,704	20,458	1,177,457
1991	NA	NA	15,619	24,848	1,803,773
1992	7,890	9,314	17,204	35,563	2,348,094
1993	10,368	12,701	23,069	45,294	2,743,533
1994	11,662	13,340	25,001	52,483	2,715,657
1995	13,212	16,347	29,561	57,421	R ² ,421,284
1996	14,243	15,650	29,893	61,842	1,902,197
1997	13,326	11,958	25,284	56,406	1,636,020
1998	13,591	13,640	27,231	49,167	1,420,920
1999	13,452	13,003	26,455	50,563	1,423,644
2000	12,873	10,027	22,901	53,701	1,564,901
2001	13,027	11,928	24,955	54,762	R ¹ ,630,286
2002	13,420	9,516	22,936	54,075	1,625,537

¹ The actual reduction in peak load reflects the change in demand for electricity that results from a utility demand-side management (DSM) program that is in effect at the time that the utility experiences its actual peak load as opposed to the potential installed peakload reduction capacity. Differences between actual and potential peak reduction result from changes in weather, economic activity, and other variable conditions.

² "Energy Efficiency" refers to programs that are aimed at reducing the energy used by specific end-use devices and systems, typically without affecting the services provided. These programs reduce overall electricity consumption, often without explicit consideration for the timing of program-induced savings. Such savings are generally achieved by substituting technically more advanced equipment to produce the same level of end-use services (e.g., lighting, heating, motor drive) with less electricity. Examples include high-efficiency appliances, efficient lighting programs, high-efficiency heating, ventilating, and air conditioning systems or control modifications, efficient building design, advanced electric motor drives, and heat recovery systems.

³ "Load Management" includes programs such as "Direct Load Control," "Interruptible Load Control," and, "Other Types" of DSM programs. "Direct Load Control" refers to program activities that can interrupt consumer load at the time of annual peak load by direct control of the utility system operator by interrupting power supply to individual appliances or equipment on consumer premises. This type of control usually involves residential consumers. "Interruptible Load Control" refers to program activities that, in accordance with contractual arrangements, can interrupt consumer load at times of seasonal peak load by direct control

of the utility system operator or by action of the consumer at the direct request of the system operator. It usually involves commercial and industrial consumers. In some instances, the load reduction may be affected by direct action of the system operator (remote tripping) after notice to the consumer in accordance with contractual provisions. "Other Types" are programs that limit or shift peak loads from on-peak to off-peak time periods, such as space heating and water heating storage systems.

⁴ Nominal dollars.

R=Revised. NA=Not available.

Note: This table reports on the results of DSM programs operated by electric utilities. The decrease since 1998 in peakload reductions from DSM programs can be attributed in part to utilities cutting back or terminating these programs due to industry deregulation. Some State governments have created new programs to promote DSM. Examples include the "Energy \$mart Loan Fund" administered by the New York Energy Research and Development Authority and the "Efficiency Vermont" program of the Vermont Public Service Board. Data on energy savings attributable to these non-utility programs are not collected by the Energy Information Administration.

Web Page: For related information, see <http://www.eia.doe.gov/fuelelectric.html>.

Sources: • 1989 and 1990—Energy Information Administration (EIA), Form EIA-861, "Annual Electric Utility Report." • 1991 forward—EIA, *Electric Power Annual 2002* (December 2003), Tables 9.1, 9.6, and 9.7.

Electricity

Note 1. Coverage of Electricity Statistics. Through 1984, data for electric utilities also include institutions (such as universities) and military facilities that generated electricity primarily for their own use; beginning in 1985, data for electric utilities exclude institutions and military facilities. Data for independent power producers, commercial plants, and industrial plants include plants with a generator nameplate capacity of 1 megawatt or greater; they exclude plants with a generator nameplate capacity less than 1 megawatt. Also excluded from the electricity statistics in Section 8 are data for residential and commercial self-generation from solar energy, except for the small amount sold to the grid and included in data for the electric power sector.

Note 2. Classification of Power Plants Into Energy-Use Sectors. The Energy Information Administration (EIA) classifies power plants (both electricity-only and combined-heat-and-power plants) into energy-use sectors based on the North American Industry Classification System (NAICS), which replaced the Standard Industrial Classification (SIC) system in 1997. Plants with a NAICS code of 22 are assigned to the Electric Power Sector. Those with NAICS codes beginning with 11 (agriculture, forestry, fishing, and hunting); 21 (mining, including oil and gas

extraction); 23 (construction); 31-33 (manufacturing); 2212 (natural gas distribution); and 22131 (water supply and irrigation systems) are assigned to the Industrial Sector. Those with all other codes are assigned to the Commercial Sector. Form EIA-860, "Annual Electric Generator Report," asks respondents to indicate the primary purpose of the facility by assigning a NAICS code from the universal list at: www.census.gov/epcd/naics02/naicod02.htm.

Note 3. Electricity Imports and Exports. Through the *Annual Energy Review (AER)* 2001, EIA estimated the proportions of traded electricity from fossil fuels and hydropower (and applied the fossil-fuel steam-electric-plant heat rate to convert from kilowatthours to Btu) and from geothermal (and applied the heat rate for geothermal energy plants). Beginning with the *AER* 2002, because of inadequate data, EIA is applying an overall rate of 3,412 Btu per kilowatthour to all traded electricity. In addition, electricity net imports derived from hydroelectric power and geothermal energy are no longer included in renewable energy consumption data. They continue to be included in total U.S. energy consumption as components of electricity net imports, with energy sources unspecified (see Tables 1.3 and 2.1f). This change between *AER* 2001 and *AER* 2002 resulted in a 0.0-to-0.5 quadrillion Btu drop in total renewable energy consumption from 1949 forward.

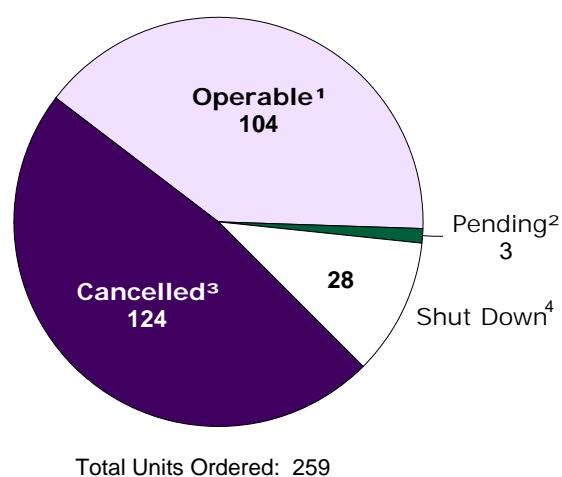
Nuclear Energy



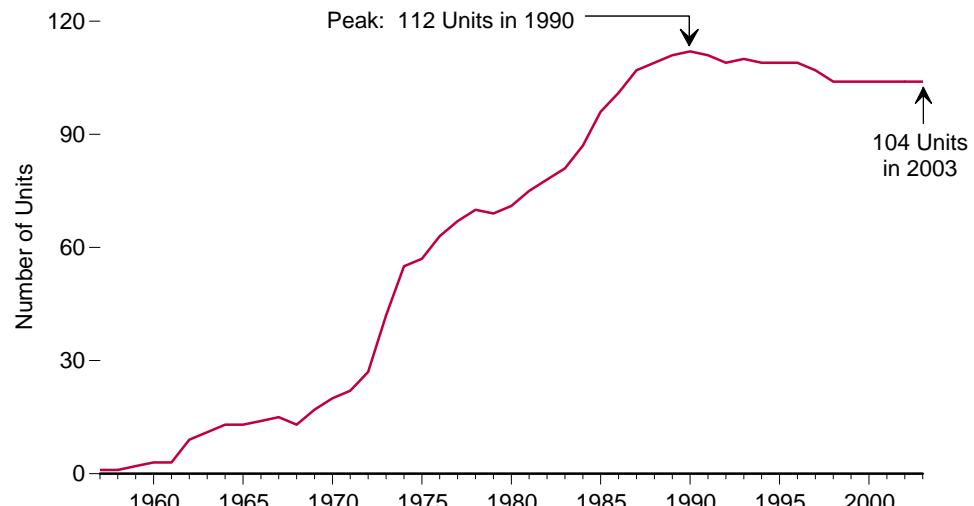
Site of Shippingport atomic power station, the first commercial nuclear power plant in the United States (rectangular reactor building and foreground); background, Beaver Valley 1 and 2 nuclear power plants and Bruce Mansfield coal-fired power plant (southwestern Pennsylvania). Source: U.S. Department of Energy.

Figure 9.1 Nuclear Generating Units

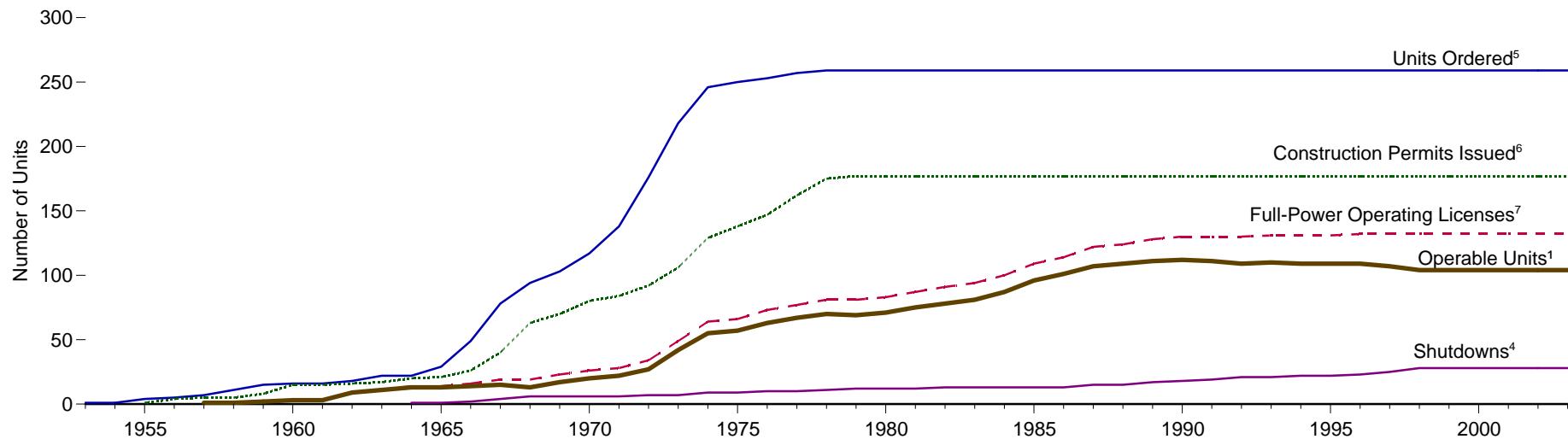
Status of All Ordered Units, 1953-2003



Operable Units,¹ 1957-2003



Operable Units and Cumulative Orders, Permits, Licenses, and Shutdowns, 1953-2003



¹ Units holding full-power operating license, or equivalent permission to operate.

² Bellefonte 1 and 2 and Watts Bar 2, where construction has been stopped indefinitely.

³ Includes WNP 1; the licensee intends to request that the construction permit be cancelled.

⁴ Ceased operation permanently.

⁵ Placement of an order by a utility or government agency for a nuclear steam supply system.

⁶ Issuance by a regulatory authority of a permit, or equivalent permission, to begin construction.

⁷ Issuance by regulatory authority of full-power operating license, or equivalent permission.

Note: Data are at end of year.

Source: Table 9.1.

Table 9.1 Nuclear Generating Units, 1953-2003

Year	Orders ¹	Cancelled Orders ²	Construction Permits ³	Low-Power Operating Licenses ⁴	Full-Power Operating Licenses ⁵	Shutdowns ⁶	Operable Units ⁷
1953	1	0	0	0	0	0	0
1954	0	0	0	0	0	0	0
1955	3	0	1	0	0	0	0
1956	1	0	3	0	0	0	0
1957	2	0	1	1	1	0	1
1958	4	0	0	0	0	0	1
1959	4	0	3	1	1	0	2
1960	1	0	7	1	1	0	3
1961	0	0	0	0	0	0	3
1962	2	0	1	7	6	0	9
1963	4	0	1	3	2	0	11
1964	0	0	3	2	3	1	13
1965	7	0	1	0	0	0	13
1966	20	0	5	1	2	1	14
1967	29	0	14	3	3	2	15
1968	16	0	23	0	0	2	13
1969	9	0	7	4	4	0	17
1970	14	0	10	4	3	0	20
1971	21	0	4	5	2	0	22
1972	38	7	8	6	6	1	27
1973	42	0	14	12	15	0	42
1974	28	9	23	14	15	2	55
1975	4	13	9	3	2	0	57
1976	3	1	9	7	7	1	63
1977	4	10	15	4	4	0	67
1978	2	13	13	3	4	1	70
1979	0	6	2	0	0	1	69
1980	0	15	0	5	2	0	71
1981	0	9	0	3	4	0	75
1982	0	18	0	6	4	1	78
1983	0	6	0	3	3	0	81
1984	0	6	0	7	6	0	87
1985	0	2	0	7	9	0	96
1986	0	2	0	7	5	0	101
1987	0	0	0	6	8	2	107
1988	0	3	0	1	2	0	109
1989	0	0	0	3	4	2	111
1990	0	1	0	1	2	1	112
1991	0	0	0	0	0	1	111
1992	0	0	0	0	0	2	109
1993	0	0	0	1	1	0	110
1994	0	1	0	0	0	1	109
1995	0	2	0	1	0	0	109
1996	0	0	0	0	1	1	109
1997	0	0	0	80	80	2	107
1998	0	0	0	0	0	3	104
1999	0	0	0	0	0	0	104
2000	0	0	0	0	0	0	104
2001	0	0	0	0	0	0	104
2002	0	0	0	0	0	0	104
2003	0	0	0	0	0	0	104
Total	259	124	177	132	132	28	—

¹ Placement of an order by a utility or government agency for a nuclear steam supply system.

² Cancellation by utilities of ordered units. Includes WNP 1; the licensee intends to request that the construction permit be cancelled. Does not include three units (Bellefonte 1 and 2 and Watts Bar 2) where construction has been stopped indefinitely.

³ Issuance by regulatory authority of a permit, or equivalent permission, to begin construction. Numbers reflect permits issued in a given year, not extant permits.

⁴ Issuance by regulatory authority of license, or equivalent permission, to conduct testing but not to operate at full power.

⁵ Issuance by regulatory authority of full-power operating license, or equivalent permission. Units generally did not begin immediate operation.

⁶ Ceased operation permanently.

⁷ Total of nuclear generating units holding full-power licenses, or equivalent permission to operate, at the end of the year. Although Browns Ferry 1 was shut down in 1985, the unit has remained fully licensed and thus has continued to be counted as operable during the shutdown; in May 2002, the Tennessee Valley Authority announced its intention to have the unit resume operation in 2007.

⁸ Under new regulations beginning in 1997, the terms "Low-Power Operating Licenses" and "Full-Power Operating Licenses" are no longer applicable; while no new licenses have been granted under the new regulations, applications were made in 2003 for three "Early Site Permits."

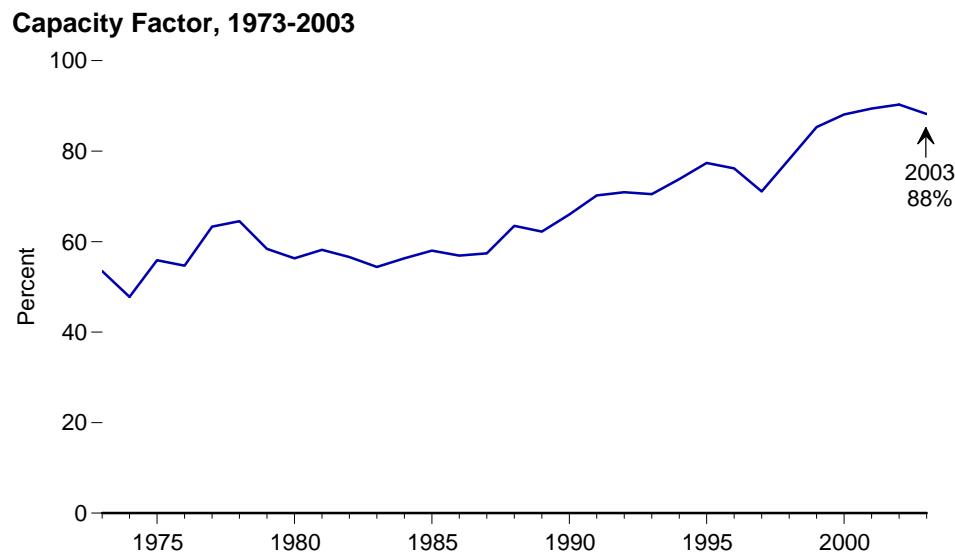
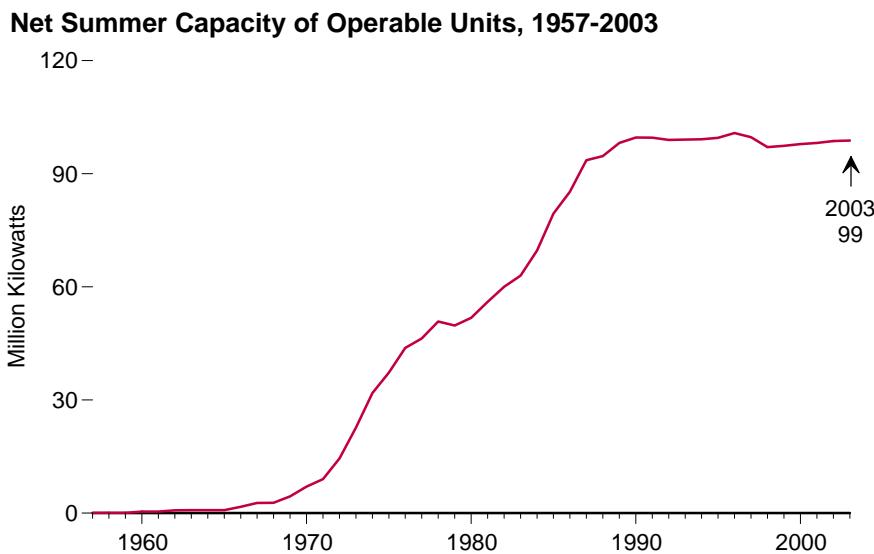
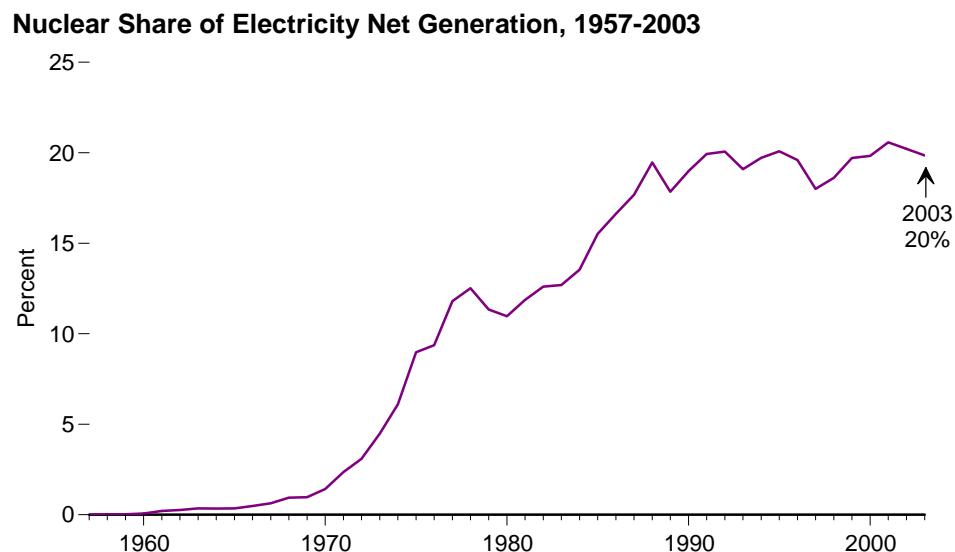
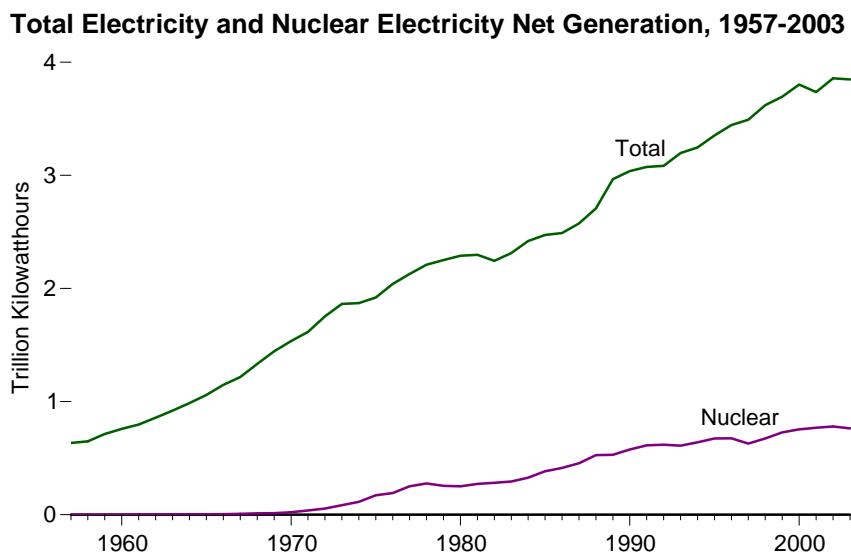
— = Not applicable.

Note: See Note, "Coverage of Nuclear Energy Statistics," at end of section.

Web Page: For related information, see <http://www.eia.doe.gov/fuelnuclear.html>.

Sources: **Operable Units:** • 1953-1982—Compiled from various sources, primarily U.S. Department of Energy (DOE), Office of Nuclear Reactor Programs, "U.S. Central Station Nuclear Electric Generating Units: Significant Milestones." • 1983 forward—Energy Information Administration (EIA), Form EIA-860, "Annual Electric Generator Report," and predecessor forms. **All Other Data:** • 1953-1997—U.S. Atomic Energy Commission, 1973 Annual Report to Congress, Volume 2, Regulatory Activities; Nuclear Energy Institute, Historical Profile of U.S. Nuclear Power Development (1988); EIA, Commercial Nuclear Power 1991 (September 1991); DOE, Nuclear Reactors Built, Being Built, and Planned: 1995; U.S. Nuclear Regulatory Commission (NRC), Information Digest (1997 and 1998) and "Plant Status Report"; and various utility, Federal, and contractor officials. • 1998 forward—NRC, Information Digest, annual reports.

Figure 9.2 Nuclear Power Plant Operations



Note: Because vertical scales differ, graphs should not be compared.

Sources: Tables 8.1 and 9.2.

Table 9.2 Nuclear Power Plant Operations, 1957-2003

Year	Nuclear Electricity Net Generation	Nuclear Share of Electricity Net Generation	Net Summer Capacity of Operable Units ¹	Capacity Factor ² Percent
	Billion Kilowatthours	Percent	Million Kilowatts	
1957	(s)	(s)	0.1	NA
1958	0.2	(s)	0.1	NA
1959	0.2	(s)	0.1	NA
1960	0.5	0.1	0.4	NA
1961	1.7	0.2	0.4	NA
1962	2.3	0.3	0.7	NA
1963	3.2	0.3	0.8	NA
1964	3.3	0.3	0.8	NA
1965	3.7	0.3	0.8	NA
1966	5.5	0.5	1.7	NA
1967	7.7	0.6	2.7	NA
1968	12.5	0.9	2.7	NA
1969	13.9	1.0	4.4	NA
1970	21.8	1.4	7.0	NA
1971	38.1	2.4	9.0	NA
1972	54.1	3.1	14.5	NA
1973	83.5	4.5	22.7	53.5
1974	114.0	6.1	31.9	47.8
1975	172.5	9.0	37.3	55.9
1976	191.1	9.4	43.8	54.7
1977	250.9	11.8	46.3	63.3
1978	276.4	12.5	50.8	64.5
1979	255.2	11.3	49.7	58.4
1980	251.1	11.0	51.8	56.3
1981	272.7	11.9	56.0	58.2
1982	282.8	12.6	60.0	56.6
1983	293.7	12.7	63.0	54.4
1984	327.6	13.5	69.7	56.3
1985	383.7	15.5	79.4	58.0
1986	414.0	16.6	85.2	56.9
1987	455.3	17.7	93.6	57.4
1988	527.0	19.5	94.7	63.5
1989	529.4	17.8	98.2	62.2
1990	576.9	19.0	99.6	66.0
1991	612.6	19.9	99.6	70.2
1992	618.8	20.1	99.0	70.9
1993	610.3	19.1	99.0	70.5
1994	640.4	19.7	99.1	73.8
1995	673.4	20.1	99.5	77.4
1996	674.7	19.6	100.8	76.2
1997	628.6	18.0	99.7	71.1
1998	673.7	18.6	97.1	78.2
1999	728.3	19.7	97.4	85.3
2000	753.9	19.8	97.9	88.1
2001	768.8	20.6	98.2	89.4
2002	780.1	R20.2	R98.7	R90.3
2003 ^P	763.7	19.8	98.8	88.2

¹ At end of year. See "Generator Net Summer Capacity" in Glossary.

² See "Generator Capacity Factor" in Glossary.

R=Revised. P=Preliminary. NA=Not available. (s)=Less than 0.05.

Note: See Note, "Coverage of Nuclear Energy Statistics," at end of section.

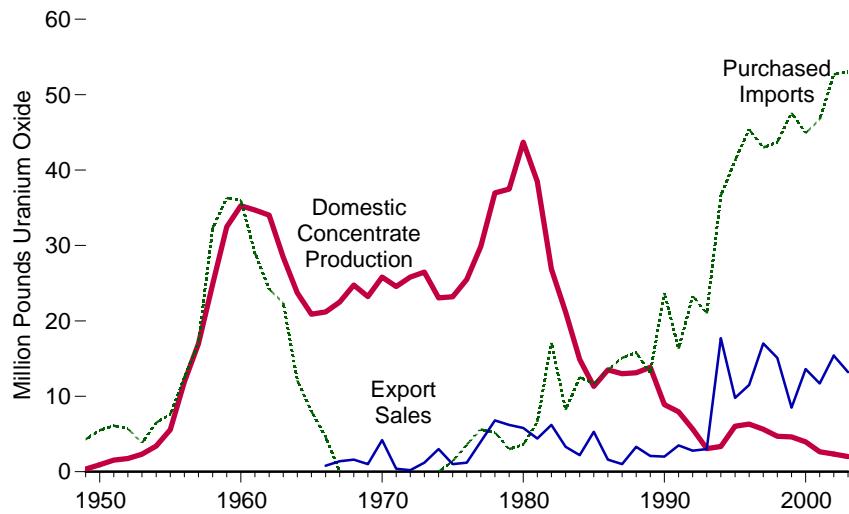
Web Page: For related information, see <http://www.eia.doe.gov/fuelnuclear.html>.

Sources: **Nuclear Electricity Net Generation** and **Nuclear Share of Electricity Net Generation**:

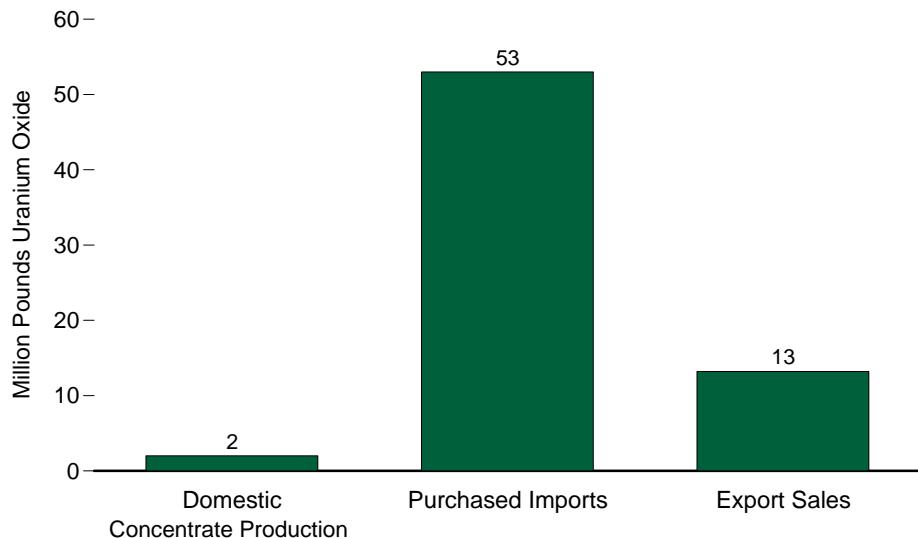
Table 8.2a. **Net Summer Capacity of Operable Units:** Table 8.11a. **Capacity Factor:** Computed as a weighted average of monthly values for the year. Monthly factors are computed as the actual monthly generation divided by the maximum possible generation for that month. The maximum possible generation is the number of hours in the month multiplied by the net summer capacity at the end of the month. That fraction is then multiplied by 100 to obtain a percentage.

Figure 9.3 Uranium Overview

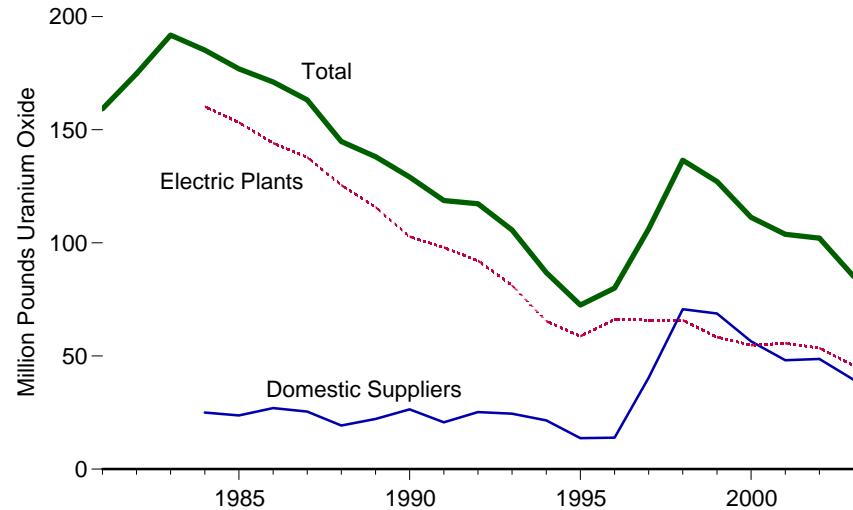
Production and Trade, 1949-2003



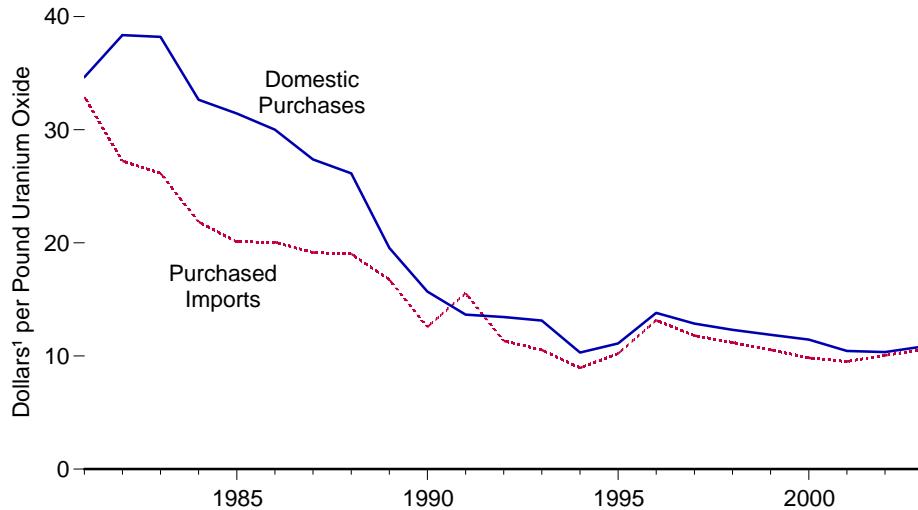
Production and Trade, 2003



Inventories, End of Year 1981-2003



Average Prices, 1981-2003



¹ Nominal dollars.

Note: Because vertical scales differ, graphs should not be compared.

Source: Table 9.3.

Table 9.3 Uranium Overview, Selected Years, 1949-2003

Year	Domestic Concentrate Production ¹	Purchased Imports ²	Export ² Sales	Electric Plant Purchases From Domestic Suppliers	Loaded Into U.S. Nuclear Reactors ³	Inventories			Average Price	
						Domestic Suppliers	Electric Plants	Total	Purchased Imports	Domestic Purchases
Million Pounds U ₃ O ₈									U.S. Dollars ⁴ per Pound U ₃ O ₈	
1949	0.36	4.3	0.0	NA	NA	NA	NA	NA	NA	NA
1950	0.92	5.5	0.0	NA	NA	NA	NA	NA	NA	NA
1955	5.56	7.6	0.0	NA	NA	NA	NA	NA	NA	NA
1960	35.28	36.0	0.0	NA	NA	NA	NA	NA	NA	NA
1965	20.88	8.0	0.0	NA	NA	NA	NA	NA	NA	NA
1970	25.81	0.0	4.2	NA	NA	NA	NA	NA	—	NA
1971	24.55	0.0	0.4	NA	NA	NA	NA	NA	—	NA
1972	25.80	0.0	0.2	NA	NA	NA	NA	NA	—	NA
1973	26.47	0.0	1.2	NA	NA	NA	NA	NA	—	NA
1974	23.06	0.0	3.0	NA	NA	NA	NA	NA	—	NA
1975	23.20	1.4	1.0	NA	NA	NA	NA	NA	NA	NA
1976	25.49	3.6	1.2	NA	NA	NA	NA	NA	NA	NA
1977	29.88	5.6	4.0	NA	NA	NA	NA	NA	NA	NA
1978	36.97	5.2	6.8	NA	NA	NA	NA	NA	NA	NA
1979	37.47	3.0	6.2	NA	NA	NA	NA	NA	NA	NA
1980	43.70	3.6	5.8	NA	NA	NA	NA	NA	NA	NA
1981	38.47	6.6	4.4	32.6	NA	NA	NA	159.2	32.90	34.65
1982	26.87	17.1	6.2	27.1	NA	NA	NA	174.8	27.23	38.37
1983	21.16	8.2	3.3	24.2	NA	NA	NA	191.8	26.16	38.21
1984	14.88	12.5	2.2	22.5	NA	25.0	160.2	185.2	21.86	32.65
1985	11.31	11.7	5.3	21.7	NA	23.7	153.2	176.9	20.08	31.43
1986	13.51	13.5	1.6	18.9	NA	27.0	144.1	171.1	20.07	30.01
1987	12.99	15.1	1.0	20.8	NA	25.4	137.8	163.2	19.14	27.37
1988	13.13	15.8	3.3	17.6	NA	19.3	125.5	144.8	19.03	26.15
1989	13.84	13.1	2.1	18.4	NA	22.2	115.8	138.1	16.75	19.56
1990	8.89	23.7	2.0	20.5	NA	26.4	102.7	129.1	12.55	15.70
1991	7.95	16.3	3.5	26.8	34.6	20.7	98.0	118.7	15.55	13.66
1992	5.65	23.3	2.8	23.4	43.0	25.2	92.1	117.3	11.34	13.45
1993	3.06	21.0	3.0	15.5	45.1	24.5	81.2	105.7	10.53	13.14
1994	3.35	36.6	17.7	22.7	40.4	21.5	65.4	86.9	8.95	10.30
1995	6.04	41.3	9.8	22.3	51.1	13.7	58.7	72.5	10.20	11.11
1996	6.32	45.4	11.5	23.7	46.2	13.9	66.1	80.0	13.15	13.81
1997	5.64	43.0	17.0	19.4	48.2	40.4	65.9	106.2	11.81	12.87
1998	4.71	43.7	15.1	21.6	38.2	70.7	65.8	136.5	11.19	12.31
1999	4.61	47.6	8.5	21.4	58.8	68.8	58.3	127.1	10.55	11.88
2000	3.96	44.9	13.6	24.3	51.5	56.5	54.8	111.3	9.84	11.45
2001	2.64	46.7	11.7	27.5	52.7	48.1	55.6	103.8	9.51	10.45
2002	E2.34	52.7	15.4	22.7	R 57.2	R 48.7	R 53.5	R 102.1	10.05	10.35
2003	E2.00	53.0	13.2	21.7	P 62.3	P 39.5	P 45.7	P 85.2	10.59	10.84

¹ See "Uranium Concentrate" in Glossary.

² Import quantities through 1970 are reported for fiscal years. Prior to 1968, the Atomic Energy Commission was the sole purchaser of all imported U₃O₈. Trade data prior to 1982 were for transactions conducted by uranium suppliers only. For 1982 forward, transactions by uranium buyers (consumers) have been included. Buyer imports and exports prior to 1982 are believed to be small.

³ Does not include any fuel rods removed from reactors and later reloaded.

⁴ Nominal dollars.

R=Revised. P=Preliminary. E=Estimate. NA=Not available. — = Not applicable.

Note: U₃O₈ is uranium oxide. See "Uranium Oxide" in Glossary.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/nuclear.html>.

• For related information, see <http://www.eia.doe.gov/fuelnuclear.html>.

Sources: • 1949-1966—U.S. Department of Energy, Grand Junction Office, *Statistical Data of the Uranium Industry*, Report No. GJO-100, annual reports. • 1967-2002—Energy Information Administration, *Uranium Industry Annual*, annual reports. • 2003—EIA, "Domestic Uranium Production Report" (May 2004), and "Uranium Marketing Annual Report" (May 2004), Tables 5, 18, 19, 21, and 22.

Nuclear Energy

Note. Coverge of Nuclear Energy Statistics. In 1997, the Energy Information Administration undertook a major revision of Table 9.1 to more fully describe the history of the U.S. commercial nuclear power industry. The time frame was extended back to the birth of the industry in 1953, and the data categories were revised for greater relevance to current industry conditions and trends. To acquire the data for the revised categories it was necessary to develop a reactor unit database employing different sources than those used previously for Table 9.1 and still used for Table 9.2.

The data in Table 9.1 apply to commercial nuclear power units, which means that the units contributed power to the commercial electricity grid. A total of 259 units ever ordered was identified. Although most orders were placed by electric utilities, several units are or were ordered, owned, and operated wholly or in part by the Federal Government, including BONUS (Boiling Nuclear Superheater Power Station), Elk River, Experimental Breeder Reactor 2, Hallam, Hanford N, Piqua, and Shippingport.

A reactor is generally defined as operable in Table 9.1 while it possessed a full-power license from the Nuclear Regulatory Commission or its predecessor the Atomic Energy Commission, or equivalent permission to operate, at the end of the year. The definition is liberal in that it does not exclude units retaining full-power licenses during long, non-routine shutdowns. For example:

- In 1985 the five then-active Tennessee Valley Authority units (Browns Ferry 1, 2, and 3 and Sequoyah 1 and 2) were shut down under a regulatory forced outage. Browns Ferry 1 remains shut down and has been defueled, while the other units were idle for several years, restarting in 1991, 1995, 1988, and 1988, respectively. All five units are counted as operable during the shutdowns. Brown's Ferry 1 is the only one of the five TVA plants that has not returned to service. Because it is still fully licensed to operate, it continues to meet the definition of operable.
- Shippingport was shut down from 1974 through 1976 for conversion to a light-water breeder reactor, but is counted as operable until its retirement in 1982.
- Calvert Cliffs 2 was shut down in 1989 and 1990 for replacement of pressurizer heater sleeves but is counted as operable during those years.

Exceptions to the rule are Shoreham and Three Mile Island 2. Shoreham was granted a full-power license in April 1989, but was shut down two months later and never restarted. In 1991, the license was changed to Possession Only. Although not operable at the end of the year, Shoreham is treated as operable during 1989 and shut down in 1990, because counting it as operable and shut down in the same year would introduce a statistical discrepancy in the tallies. A major accident closed Three Mile Island 2 in 1979, and although the unit retained its full-power license for several years, it is considered permanently shut down since that year.

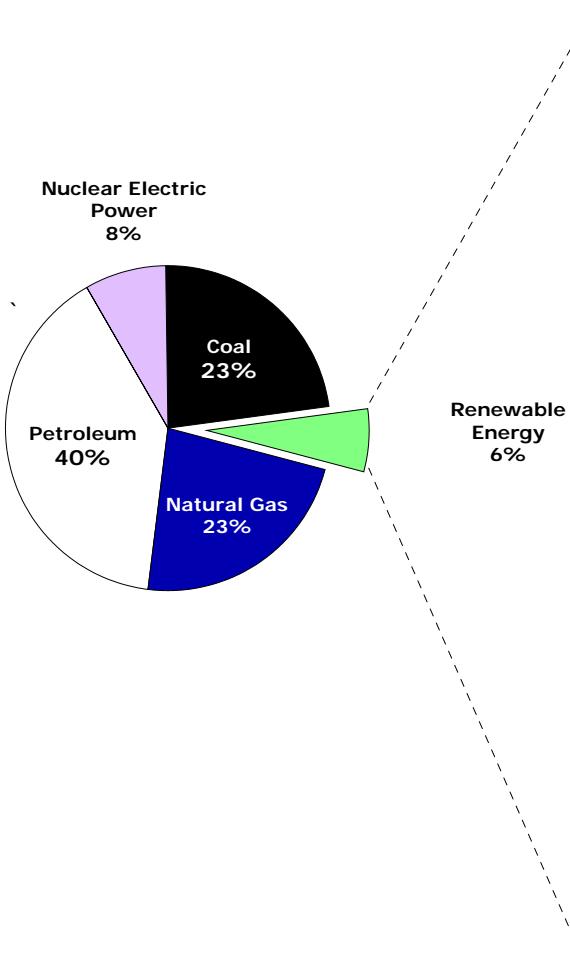
Renewable Energy



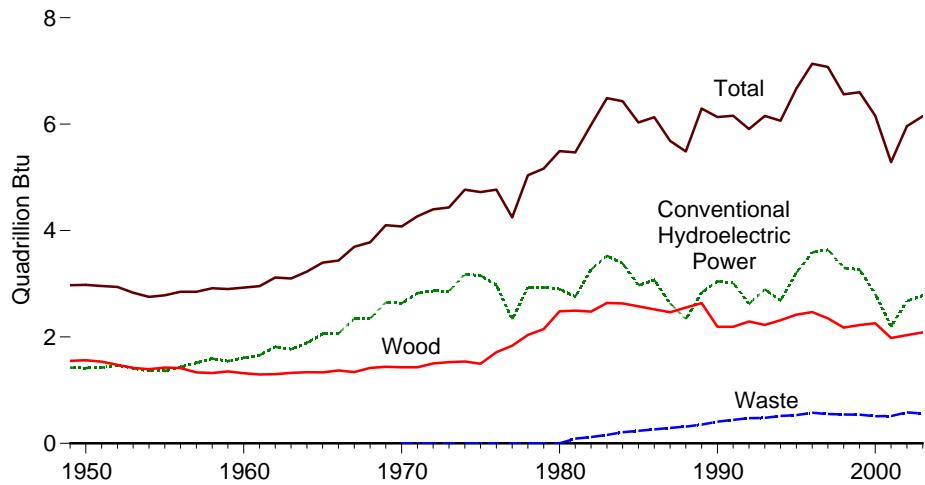
Grand Coulee Dam, Washington State. Source: U.S. Bureau of Reclamation.

Figure 10.1 Renewable Energy Consumption by Major Sources

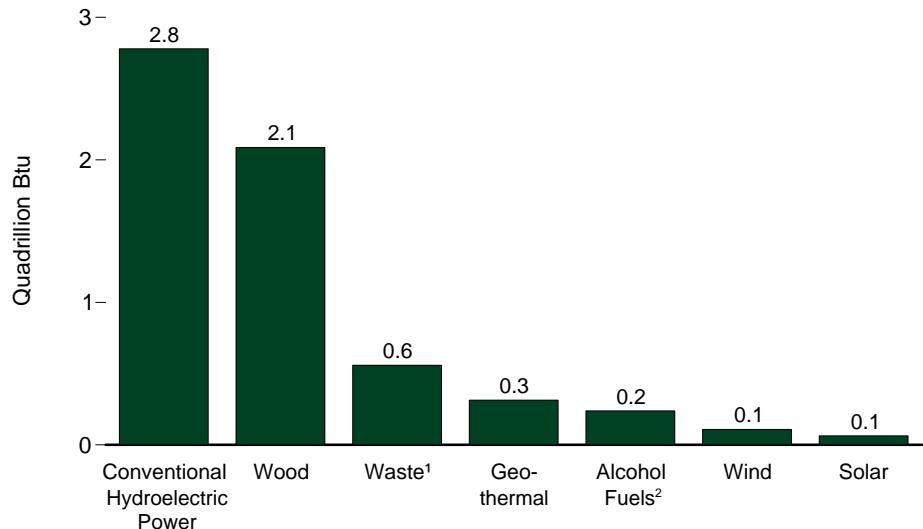
Renewable Energy as Share of Total Energy, 2003



Renewable Energy Total Consumption and Major Sources, 1949-2003



Renewable Energy Consumption by Source, 2003



¹ Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.

² Ethanol blended into motor gasoline.

Note: Because vertical scales differ, graphs should not be compared.
Sources: Tables 1.3 and 10.1.

Table 10.1 Renewable Energy Consumption by Source, Selected Years, 1949-2003
 (Trillion Btu)

Year	Conventional Hydroelectric Power ¹	Wood ²	Waste ³	Alcohol Fuels ⁴	Geothermal ⁵	Solar ⁶	Wind ⁷	Total
1949	1,425	1,549	NA	NA	NA	NA	NA	2,974
1950	1,415	1,562	NA	NA	NA	NA	NA	2,978
1955	1,360	1,424	NA	NA	NA	NA	NA	2,784
1960	1,608	1,320	NA	NA	1	NA	NA	2,929
1965	2,059	1,335	NA	NA	4	NA	NA	3,398
1970	2,634	1,429	2	NA	11	NA	NA	4,076
1971	2,824	1,430	2	NA	12	NA	NA	4,268
1972	2,864	1,501	2	NA	31	NA	NA	4,398
1973	2,861	1,527	2	NA	43	NA	NA	4,433
1974	3,177	1,538	2	NA	53	NA	NA	4,769
1975	3,155	1,497	2	NA	70	NA	NA	4,723
1976	2,976	1,711	2	NA	78	NA	NA	4,768
1977	2,333	1,837	2	NA	77	NA	NA	4,249
1978	2,937	2,036	1	NA	64	NA	NA	5,039
1979	2,931	2,150	2	NA	84	NA	NA	5,166
1980	2,900	2,483	2	NA	110	NA	NA	5,494
1981	2,758	2,495	88	7	123	NA	NA	5,471
1982	3,266	2,477	119	19	105	NA	NA	5,985
1983	3,527	2,639	157	35	129	NA	(s)	6,488
1984	3,386	2,629	208	43	165	(s)	(s)	6,431
1985	2,970	2,576	236	52	198	(s)	(s)	6,033
1986	3,071	2,518	263	60	219	(s)	(s)	6,132
1987	2,635	2,465	289	69	229	(s)	(s)	5,687
1988	2,334	2,552	315	70	217	(s)	(s)	5,489
1989	2,837	2,637	354	71	317	55	22	6,294
1990	3,046	2,191	408	63	336	60	29	6,133
1991	3,016	2,190	440	73	346	63	31	6,158
1992	2,617	2,290	473	83	349	64	30	5,907
1993	2,892	R2,227	479	97	364	66	31	R6,156
1994	2,683	2,315	515	109	338	69	36	6,065
1995	3,205	2,420	531	117	294	70	33	6,669
1996	3,590	2,467	577	84	316	71	33	7,137
1997	3,640	2,350	551	106	325	70	34	7,075
1998	3,297	2,175	542	117	328	70	31	6,561
1999	3,268	2,224	540	122	331	69	46	6,599
2000	2,811	2,257	511	139	317	66	57	6,158
2001	2,201	R1,980	514	147	311	65	68	R5,286
2002	RP2,675	R2,036	R581	174	R328	P64	RP105	RP5,963
2003	P2,779	P2,086	P558	P239	P314	P63	P108	P6,150

¹ Hydroelectricity generated by pumped storage is not included in renewable energy.

² Wood, black liquor, and other wood waste.

³ Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.

⁴ Ethanol blended into motor gasoline.

⁵ Geothermal electricity net generation, heat pump, and direct use energy.

⁶ Solar thermal and photovoltaic electricity net generation, and solar thermal direct use energy.

⁷ Wind electricity net generation.

R=Revised. P=Preliminary. NA=Not available. (s)=Less than 0.5 trillion Btu.

Notes: • See Table E1 for estimated renewable energy consumption for 1635-1945. • See Note 3, "Electricity Imports and Exports," at end of Section 8. • Totals may not equal sum of components due to independent rounding.

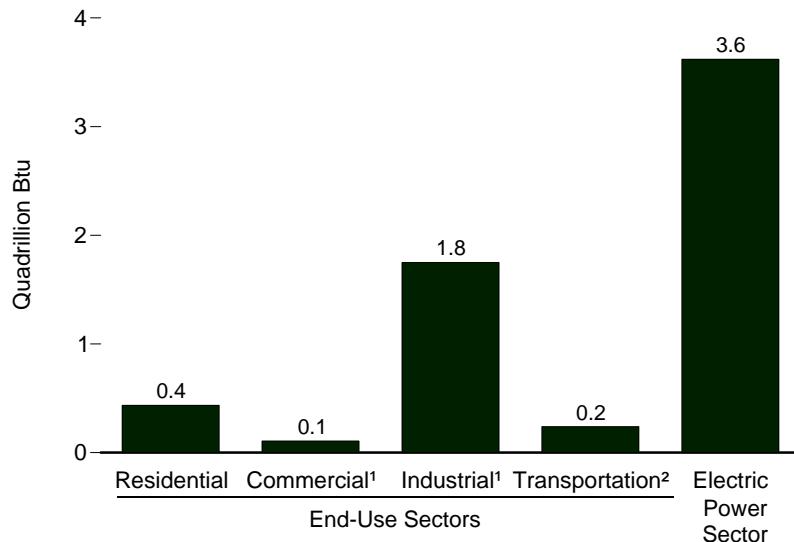
Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/renew.html>.

• For related information, see <http://www.eia.doe.gov/fuelrenewable.html>.

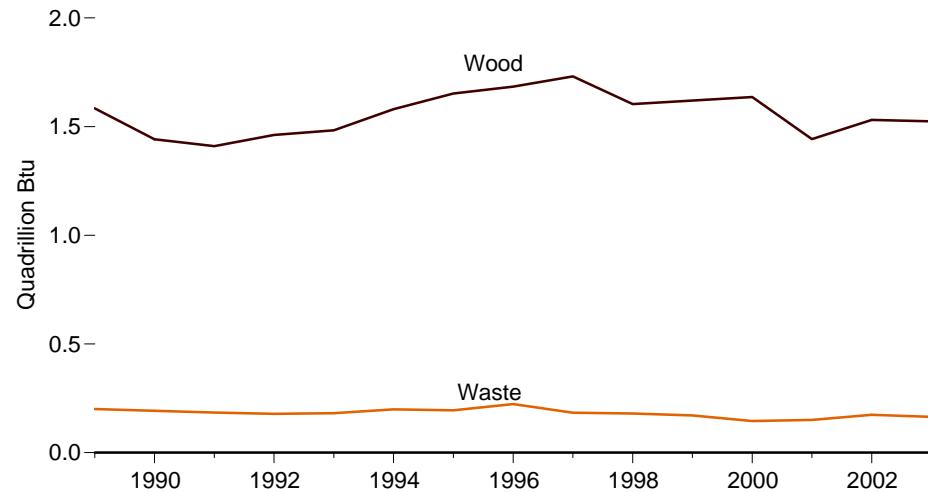
Sources: Tables 10.2a and 10.2b.

Figure 10.2a Renewable Energy Consumption: End-Use Sectors

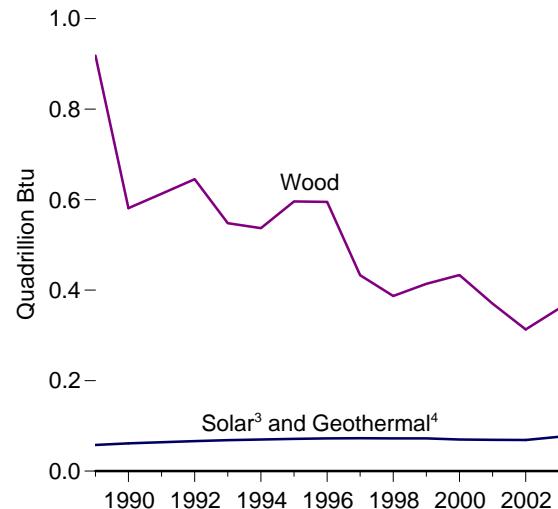
End-Use Sectors and Electric Power Sector, 2003



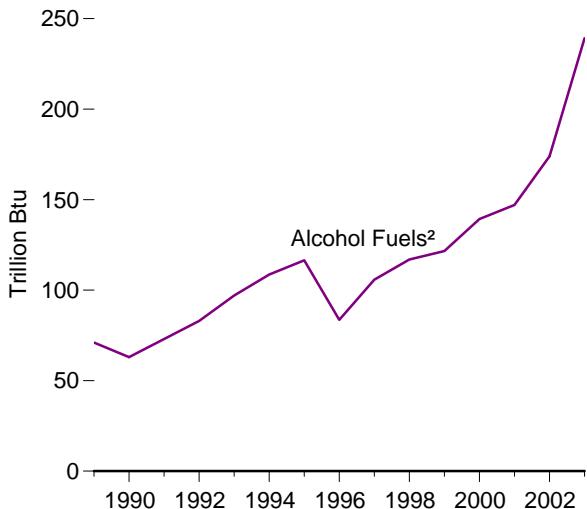
Industrial¹ Sector, Major Sources, 1989-2003



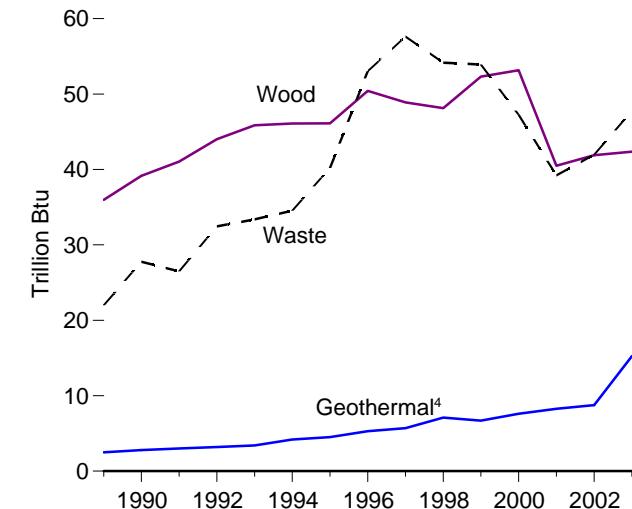
Residential Sector, 1989-2003



Transportation Sector, 1989-2003



Commercial¹ Sector, Major Sources, 1989-2003



¹ Includes fuel used at combined-heat-and-power plants and a small number of electricity-only plants.

² Ethanol blended into motor gasoline.

³ Solar thermal direct use energy and photovoltaic electricity generation. Includes small amounts of commercial sector use.

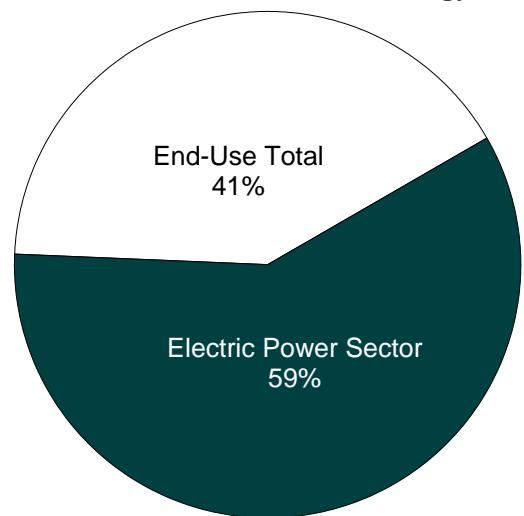
⁴ Geothermal heat pump and direct use energy.

Notes: • See related Figure 10.2b on the electric power sector. • Because vertical scales differ, graphs should not be compared.

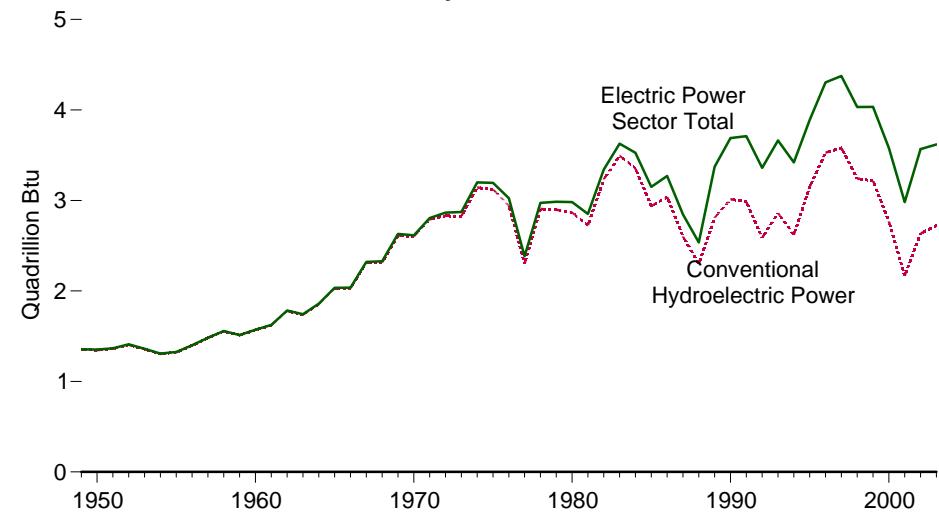
Sources: Tables 10.2a and 10.2b.

Figure 10.2b Renewable Energy Consumption: Electric Power Sector

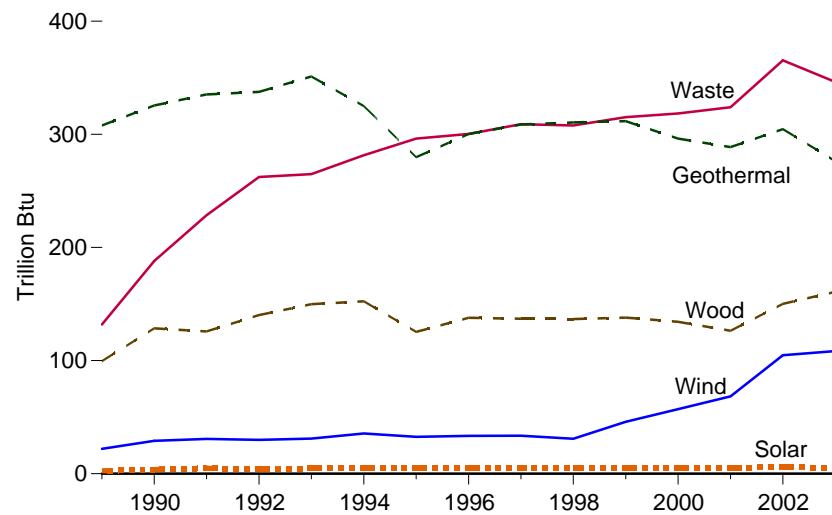
Electric Power Share of Total Renewable Energy Consumption, 2003



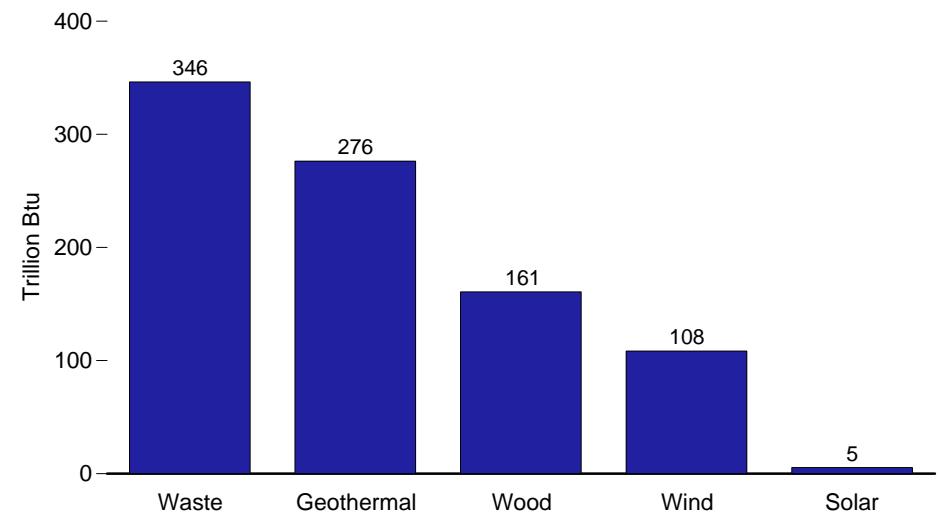
Electric Power Sector Total and Hydroelectric Power, 1949-2003



Non-Hydroelectric Power Sources, 1989-2003



Non-Hydroelectric Power Sources, 2003



Notes: • See related Figure 10.2a on the end-use sectors. • Because vertical scales differ, graphs should not be compared.

Sources: Tables 10.2a and 10.2b.

Table 10.2a Estimated Renewable Energy Consumption: End-Use Sectors, Selected Years, 1949-2003
(Trillion Btu)

Year	Residential				Commercial ¹					Industrial ²					Transportation	End-Use Total
	Wood ³	Geo-thermal ⁴	Solar ⁵	Total	Hydro-power ⁶	Wood ³	Waste ⁷	Geo-thermal ⁴	Total	Hydro-power ⁶	Wood ³	Waste ⁷	Geo-thermal ⁴	Total	Alcohol Fuels ⁸	
1949	1,055	NA	NA	1,055	NA	20	NA	NA	20	76	468	NA	NA	544	NA	1,619
1950	1,006	NA	NA	1,006	NA	19	NA	NA	19	69	532	NA	NA	602	NA	1,626
1955	775	NA	NA	775	NA	15	NA	NA	15	38	631	NA	NA	669	NA	1,459
1960	627	NA	NA	627	NA	12	NA	NA	12	39	680	NA	NA	719	NA	1,357
1965	468	NA	NA	468	NA	9	NA	NA	9	33	855	NA	NA	888	NA	1,365
1970	401	NA	NA	401	NA	8	NA	NA	8	34	1,019	NA	NA	1,053	NA	1,461
1971	382	NA	NA	382	NA	7	NA	NA	7	34	1,040	NA	NA	1,074	NA	1,463
1972	380	NA	NA	380	NA	7	NA	NA	7	34	1,113	NA	NA	1,147	NA	1,534
1973	354	NA	NA	354	NA	7	NA	NA	7	35	1,165	NA	NA	1,200	NA	1,560
1974	371	NA	NA	371	NA	7	NA	NA	7	33	1,159	NA	NA	1,192	NA	1,570
1975	425	NA	NA	425	NA	8	NA	NA	8	32	1,063	NA	NA	1,096	NA	1,529
1976	482	NA	NA	482	NA	9	NA	NA	9	33	1,220	NA	NA	1,253	NA	1,744
1977	542	NA	NA	542	NA	10	NA	NA	10	33	1,281	NA	NA	1,314	NA	1,866
1978	622	NA	NA	622	NA	12	NA	NA	12	32	1,400	NA	NA	1,432	NA	2,066
1979	728	NA	NA	728	NA	14	NA	NA	14	34	1,405	NA	NA	1,439	NA	2,181
1980	859	NA	NA	859	NA	21	NA	NA	21	33	1,600	NA	NA	1,633	NA	2,513
1981	869	NA	NA	869	NA	21	NA	NA	21	33	1,602	87	NA	1,722	7	2,619
1982	937	NA	NA	937	NA	22	NA	NA	22	33	1,516	118	NA	1,667	19	2,645
1983	925	NA	NA	925	NA	22	NA	NA	22	33	1,690	155	NA	1,879	35	2,861
1984	923	NA	NA	923	NA	22	NA	NA	22	33	1,679	204	NA	1,916	43	2,904
1985	899	NA	NA	899	NA	24	NA	NA	24	33	1,645	230	NA	1,908	52	2,883
1986	876	NA	NA	876	NA	27	NA	NA	27	33	1,610	256	NA	1,899	60	2,862
1987	852	NA	NA	852	NA	29	NA	NA	29	33	1,576	282	NA	1,891	69	2,841
1988	885	NA	NA	885	NA	32	NA	NA	32	33	1,625	308	NA	1,965	70	2,952
1989	918	5	53	976	1	36	22	3	61	28	1,584	200	2	1,814	71	2,922
1990	581	6	56	642	1	39	28	3	71	31	1,442	192	2	1,667	63	2,444
1991	613	6	58	677	1	41	26	3	72	30	1,410	185	2	1,626	73	2,448
1992	645	6	60	711	1	44	32	3	81	31	1,461	179	2	1,672	83	2,548
1993	548	7	62	616	1	46	33	3	84	30	R1,483	181	2	R1,696	97	R2,493
1994	537	6	64	607	1	46	35	4	86	62	1,580	199	3	1,844	109	2,645
1995	596	7	65	667	1	46	40	5	92	55	1,652	195	3	1,905	117	2,781
1996	595	7	65	667	1	50	53	5	110	61	1,683	224	3	1,971	84	2,832
1997	433	8	65	506	1	49	58	6	113	58	1,731	184	3	1,976	106	2,701
1998	387	8	65	459	1	48	54	7	111	55	1,603	180	3	1,841	117	2,528
1999	414	9	64	486	1	52	54	7	114	49	1,620	171	4	1,843	122	2,565
2000	433	9	61	503	1	53	47	8	109	42	1,636	145	4	1,828	139	2,579
2001	R370	9	60	R439	1	R40	39	8	89	32	1,443	150	5	1,630	147	R2,305
2002	R313	10	R59	R382	RP (S)	R42	R42	9	RP93	RP39	R1,531	R174	5	RP1,748	174	R2,397
2003	P359	P18	P58	P435	P1	P42	P48	P15	P106	P57	P1,524	P164	P5	P1,750	P239	P2,531

¹ Commercial sector, including commercial combined-heat-and-power (CHP) and commercial electricity-only plants.

² Industrial sector, including industrial combined-heat-and-power (CHP) and industrial electricity-only plants.

³ Wood, black liquor, and other wood waste.

⁴ Geothermal heat pump and direct use energy.

⁵ Solar thermal direct use energy and photovoltaic electricity generation. Includes a small amount of commercial sector use.

⁶ Conventional hydroelectric power.

⁷ Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.

⁸ Ethanol blended into motor gasoline.

R=Revised. P=Preliminary. NA=Not available. (S)=Less than 0.5 trillion Btu.

Notes: • See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 8.

• Totals may not equal sum of components due to independent rounding.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/renew.html>.

• For related information, see <http://www.eia.doe.gov/fuelrenewable.html>.

Sources: See end of section.

Table 10.2b Renewable Energy Consumption: Electric Power Sector and Total, Selected Years, 1949-2003
 (Trillion Btu)

Year	Electric Power Sector ¹							Renewable Energy Consumption Total
	Conventional Hydroelectric Power	Wood ²	Waste ³	Geothermal ⁴	Solar ⁵	Wind ⁶	Total	
1949	1,349	6	NA	NA	NA	NA	1,355	2,974
1950	1,346	5	NA	NA	NA	NA	1,351	2,978
1955	1,322	3	NA	NA	NA	NA	1,325	2,784
1960	1,569	2	NA	1	NA	NA	1,571	2,929
1965	2,026	3	NA	4	NA	NA	2,033	3,398
1970	2,600	1	2	11	NA	NA	2,615	4,076
1971	2,790	1	2	12	NA	NA	2,806	4,268
1972	2,829	1	2	31	NA	NA	2,864	4,398
1973	2,827	1	2	43	NA	NA	2,873	4,433
1974	3,143	1	2	53	NA	NA	3,199	4,769
1975	3,122	(s)	2	70	NA	NA	3,194	4,723
1976	2,943	1	2	78	NA	NA	3,024	4,768
1977	2,301	3	2	77	NA	NA	2,383	4,249
1978	2,905	2	1	64	NA	NA	2,973	5,039
1979	2,897	3	2	84	NA	NA	2,986	5,166
1980	2,867	3	2	110	NA	NA	2,982	5,494
1981	2,725	3	1	123	NA	NA	2,852	5,471
1982	3,233	2	1	105	NA	NA	3,341	5,985
1983	3,494	2	2	129	NA	(s)	3,627	6,488
1984	3,353	5	4	165	(s)	(s)	3,527	6,431
1985	2,937	8	7	198	(s)	(s)	3,150	6,033
1986	3,038	5	7	219	(s)	(s)	3,270	6,132
1987	2,602	8	7	229	(s)	(s)	2,846	5,687
1988	2,302	10	8	217	(s)	(s)	2,536	5,489
1989	12,808	1100	1132	1308	13	122	13,372	6,294
1990	3,014	129	188	326	4	29	3,689	6,133
1991	2,985	126	229	335	5	31	3,710	6,158
1992	2,586	140	262	338	4	30	3,360	5,907
1993	2,861	150	265	351	5	31	3,662	R6,156
1994	2,620	152	282	325	5	36	3,420	6,065
1995	3,149	125	296	280	5	33	3,889	6,669
1996	3,528	138	300	300	5	33	4,305	7,137
1997	3,581	137	309	309	5	34	4,375	7,075
1998	3,241	137	308	311	5	31	4,032	6,561
1999	3,218	138	315	312	5	46	4,034	6,599
2000	2,768	134	318	296	5	57	3,579	6,158
2001	2,169	126	324	289	6	68	2,982	R5,286
2002	RP2,636	R150	R365	R305	P6	RP105	RP3,567	RP5,963
2003	P2,722	P161	P346	P276	P5	P108	P3,619	P6,150

¹ Electricity-only and combined-heat-and-power (CHP) plants within the NAICS (North American Industry Classification System) 22 category whose primary business is to sell electricity, or electricity and heat, to the public. Through 1988, data are for electric utilities only; beginning in 1989, data are for electric utilities and independent power producers.

² Wood, black liquor, and other wood waste.

³ Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.

⁴ Geothermal electricity net generation.

⁵ Solar thermal and photovoltaic electricity net generation.

⁶ Wind electricity net generation.

R=Revised. P=Preliminary. NA=Not available. (s)=Less than 0.5 trillion Btu.

Notes: • See Note 3, "Electricity Imports and Exports," at end of Section 8. • Totals may not equal sum of components due to independent rounding.

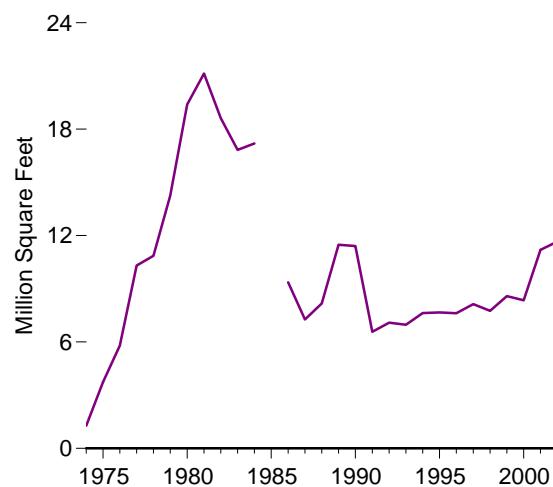
Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/renew.html>.

• For related information, see <http://www.eia.doe.gov/fuelrenewable.html>.

Sources: Tables 8.2b, 8.5b, 8.7b, and A6.

Figure 10.3 Solar Thermal Collector Shipments by Type, Price, and Trade

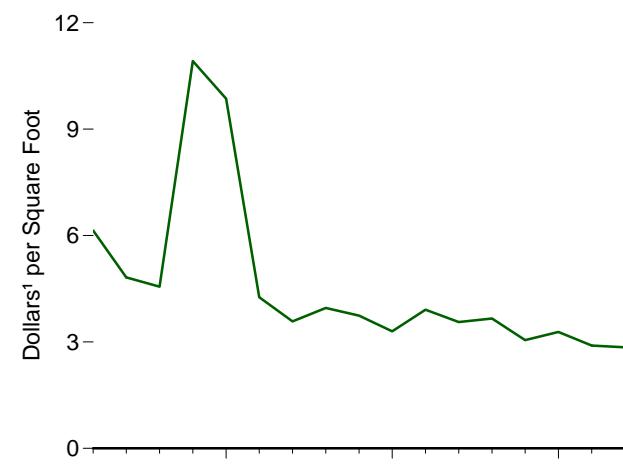
Total Shipments, 1974-1984 and 1986-2002



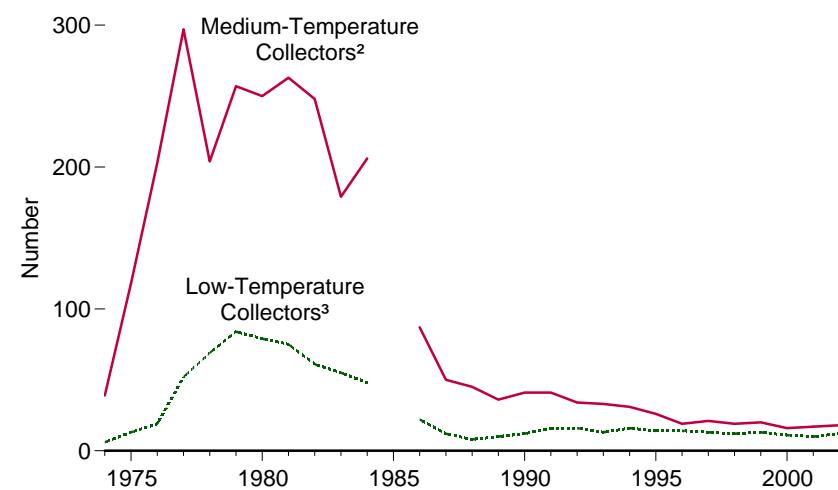
Trade, 1978-1984 and 1986-2002



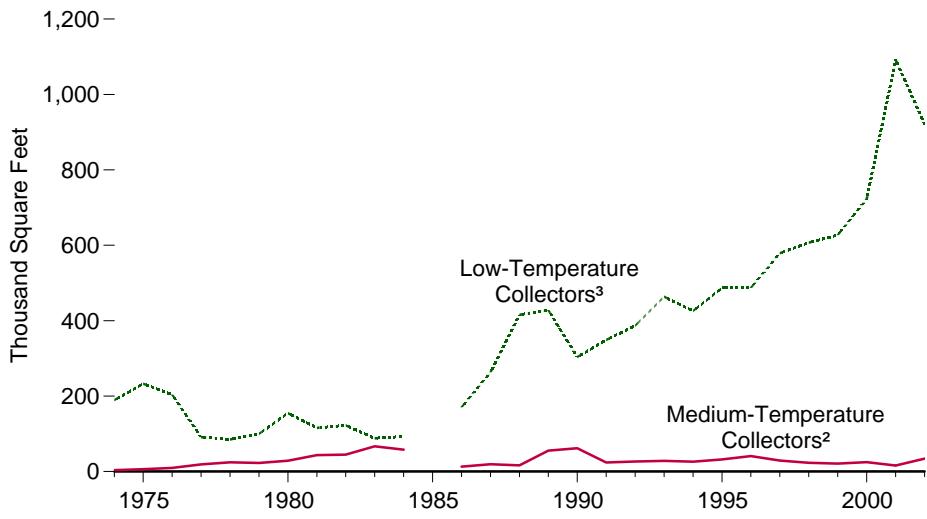
Price of Total Shipments, 1986-2002



Number of U.S. Manufacturers, 1974-1984 and 1986-2002



Average Annual Shipments per Manufacturer, 1974-1984 and 1986-2002



¹ Nominal dollars.

² Collectors that generally operate in the temperature range of 140 degrees Fahrenheit to 180 degrees Fahrenheit but can also operate at temperatures as low as 110 degrees Fahrenheit.

³ Collectors that generally operate at temperatures below 110 degrees Fahrenheit.

Notes: • Data were not collected for 1985. • Special collectors—evacuated tube collectors or concentrating (focusing) collectors—are included in the medium-temperature category.

• Because vertical scales differ, graphs should not be compared.

Source: Table 10.3.

Table 10.3 Solar Thermal Collector Shipments by Type, Price, and Trade, 1974-2002

(Thousand Square Feet, Except as Noted)

Year	Low-Temperature Collectors ¹				Medium-Temperature Collectors ²				High-Temperature Collectors ³		Total Shipments ⁴		Trade	
	Number of U.S. Manufacturers	Quantity Shipped	Shipments per Manufacturer	Price ⁵ (dollars per square foot)	Number of U.S. Manufacturers	Quantity Shipped	Shipments per Manufacturer	Price ⁵ (dollars per square foot)	Quantity Shipped	Price ⁵ (dollars per square foot)	Quantity Shipped	Price ⁵ (dollars per square foot)	Imports	Exports
1974	6	1,137	189.5	NA	39	137	3.5	NA	NA	NA	1,274	NA	NA	NA
1975	13	3,026	232.8	NA	118	717	6.1	NA	NA	NA	3,743	NA	NA	NA
1976	19	3,876	204.0	NA	203	1,925	9.5	NA	NA	NA	5,801	NA	NA	NA
1977	52	4,743	91.2	NA	297	5,569	18.8	NA	NA	NA	10,312	NA	NA	NA
1978	69	5,872	85.1	NA	204	4,988	24.5	NA	NA	NA	10,860	NA	396	840
1979	84	8,394	100.0	NA	257	5,856	22.8	NA	NA	NA	14,251	NA	290	855
1980	79	12,233	154.8	NA	250	7,165	28.7	NA	NA	NA	19,398	NA	235	1,115
1981	75	8,677	115.7	NA	263	11,456	43.6	NA	NA	NA	21,133	NA	196	771
1982	61	7,476	122.6	NA	248	11,145	44.9	NA	NA	NA	18,621	NA	418	455
1983	55	4,853	88.2	NA	179	11,975	66.9	NA	NA	NA	16,828	NA	511	159
1984	48	4,479	93.3	NA	206	11,939	58.0	NA	773	NA	17,191	NA	621	348
1985	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1986	22	3,751	170.5	2.30	87	1,111	12.8	18.30	4,498	NA	9,360	6.14	473	224
1987	12	3,157	263.1	2.18	50	957	19.1	13.50	3,155	NA	7,269	4.82	691	182
1988	8	3,326	415.8	2.24	45	732	16.2	14.88	4,116	NA	8,174	4.56	814	158
1989	10	4,283	428.3	2.60	36	1,989	55.3	11.74	5,209	17.76	11,482	10.92	1,233	461
1990	12	3,645	303.8	2.90	41	2,527	61.6	7.68	5,237	15.74	11,409	9.86	1,562	245
1991	16	5,585	349.0	2.90	41	989	24.1	11.94	1	31.94	6,574	4.26	1,543	332
1992	16	6,187	386.7	2.50	34	897	26.4	10.96	2	75.66	7,086	3.58	1,650	316
1993	13	6,025	463.5	2.80	33	931	28.2	11.74	12	22.12	6,968	3.96	2,039	411
1994	16	6,823	426.0	2.54	31	803	26.0	13.54	2	177.00	7,627	3.74	1,815	405
1995	14	6,813	487.0	2.32	26	840	32.0	10.48	13	53.26	7,666	3.30	2,037	530
1996	14	6,821	487.0	2.67	19	785	41.0	14.48	10	18.75	7,616	3.91	1,930	454
1997	13	7,524	579.0	2.60	21	606	29.0	15.17	7	25.00	8,138	3.56	2,102	379
1998	12	7,292	607.0	2.83	19	443	23.0	15.17	21	53.21	7,756	3.66	2,206	360
1999	13	8,152	627.0	2.08	20	427	21.0	19.12	4	286.49	8,583	3.05	2,352	537
2000	11	7,948	723.0	2.09	16	400	25.0	23.98	5	223.26	8,354	3.28	2,201	496
2001	10	10,919	1,092.0	2.15	17	268	16.0	32.40	2	107.76	11,189	2.90	3,502	840
2002	12	11,046	921.0	1.97	18	615	34.0	18.63	2	22.50	11,663	2.85	3,068	659

¹ Low-temperature collectors are solar thermal collectors that generally operate at temperatures below 110° F.

² Medium-temperature collectors are solar thermal collectors that generally operate in the temperature range of 140° F to 180° F but can also operate at temperatures as low as 110° F. Special collectors are included in this category. Special collectors are evacuated tube collectors or concentrating (focusing) collectors. They operate in the temperature range from just above ambient temperature (low concentration for pool heating) to several hundred degrees Fahrenheit (high concentration for air conditioning and specialized industrial processes).

³ High-temperature collectors are solar thermal collectors that generally operate at temperatures above 180° F.

⁴ Total shipments as reported by respondents include all domestic and export shipments and may

include imports that subsequently were shipped to domestic or to foreign customers.

⁵ Prices, in nominal dollars, equal shipment value divided by quantity shipped. Value includes charges for advertising and warranties. Excluded are excise taxes and the cost of freight or transportation for the shipments.

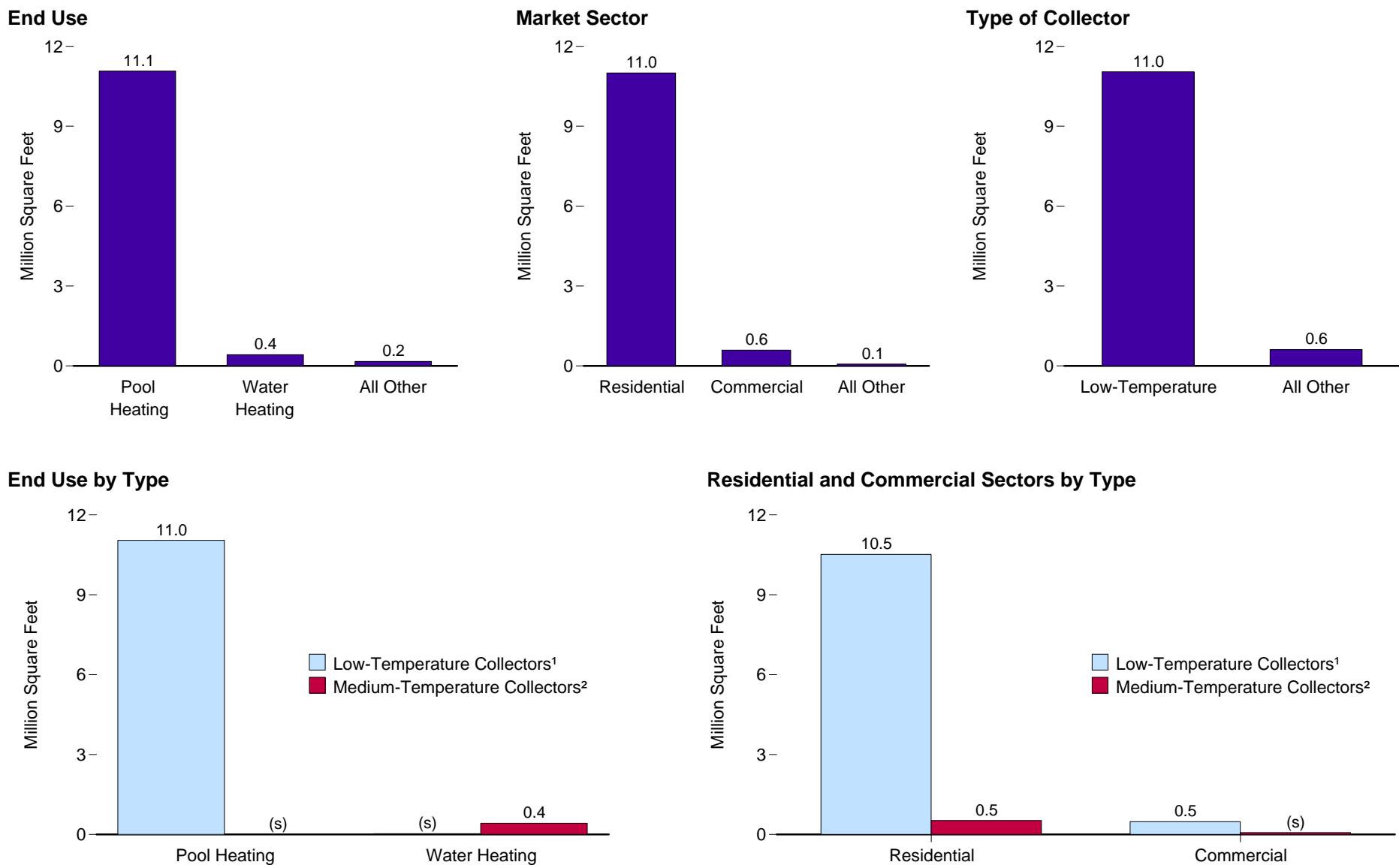
NA=Not available.

Notes: • Manufacturers producing more than one type of collector are accounted for in both groups. • No data are available for 1985. • High-temperature collector shipments were dominated by one manufacturer.

Web Page: For related information, see <http://www.eia.doe.gov/fuelrenewable.html>.

Sources: • 1974-1992—Energy Information Administration (EIA), *Solar Collector Manufacturing Activity*, annual reports. • 1993 forward—EIA, *Renewable Energy Annual*, annual reports.

Figure 10.4 Solar Thermal Collector Shipments by End Use, Market Sector, and Type, 2002



¹ Collectors that generally operate at temperatures below 110 degrees Fahrenheit.

² Collectors that generally operate in the temperature range of 140 degrees Fahrenheit to 180 degrees Fahrenheit but can also operate at temperatures as low as 110 degrees Fahrenheit.

(s)=Less than 0.05 million square feet.

Source: Table 10.4.

Table 10.4 Solar Thermal Collector Shipments by End Use, Market Sector, and Type, 2002
 (Thousand Square Feet)

End Use	Low-Temperature Collectors ¹	Medium-Temperature Collectors ²	High-Temperature Collectors ³	Total
End-Use Total	11,046	615	2	411,663
Pool Heating	11,045	28	0	11,073
Water Heating	1	422	0	423
Space Heating	0	146	0	146
Space Cooling	0	(s)	0	(s)
Combined Space and Water Heating	0	15	2	17
Process Heating	0	4	0	4
Electricity Generation	0	0	0	0
Other ⁵	0	0	0	0
Market Sector Total	11,046	615	2	411,663
Residential	10,519	481	0	11,000
Commercial	524	69	2	595
Industrial ⁶	2	60	0	62
Electric Utility	0	4	0	4
Other ⁷	0	1	0	1

¹ Low-temperature collectors are solar thermal collectors that generally operate at temperatures below 110° F.

² Medium-temperature collectors are solar thermal collectors that generally operate in the temperature range of 140° F to 180° F but can also operate at temperatures as low as 110° F. Special collectors are included in this category. Special collectors are evacuated tube collectors or concentrating (focusing) collectors. They operate in the temperature range from just above ambient temperature (low concentration for pool heating) to several hundred degrees Fahrenheit (high concentration for air conditioning and specialized industrial processes).

³ High-temperature collectors are solar thermal collectors that generally operate at temperatures above 180° F. These are parabolic dish/trough collectors used primarily by independent power producers to generate electricity for the electric grid.

⁴ Totals include other types of collectors not shown.

⁵ "Other" includes shipments of solar thermal collectors for other uses, such as cooking foods, water pumping, water purification, desalination, distilling, etc.

⁶ Includes all independent power producers.

⁷ "Other" includes shipments of solar thermal collectors to other sectors, such as government, including the military but excluding space applications.

(s)=Less than 0.5 thousand square feet.

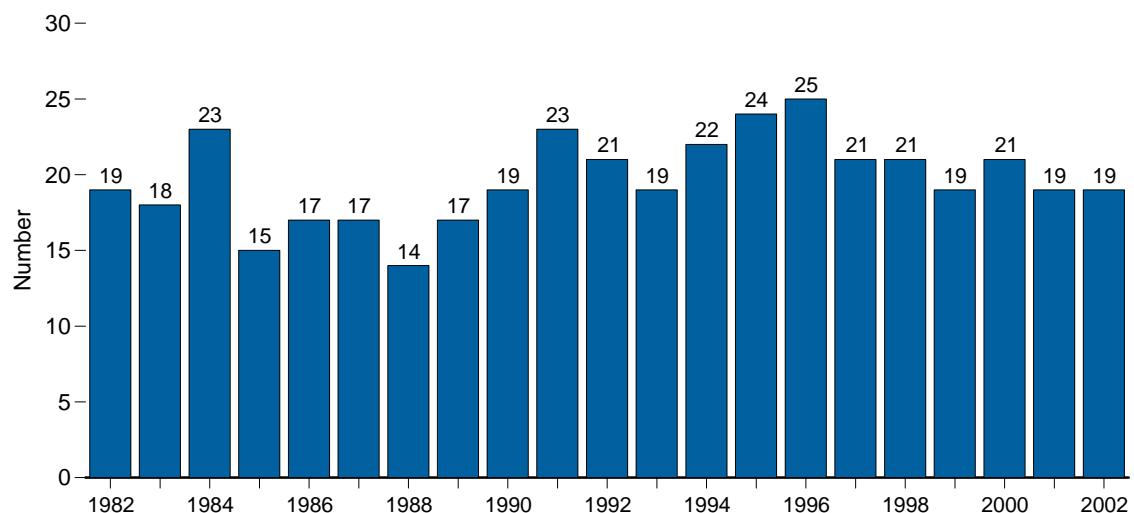
Notes: • Data represent shipments from U.S. manufacturers only. • Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/fuelrenewable.html>.

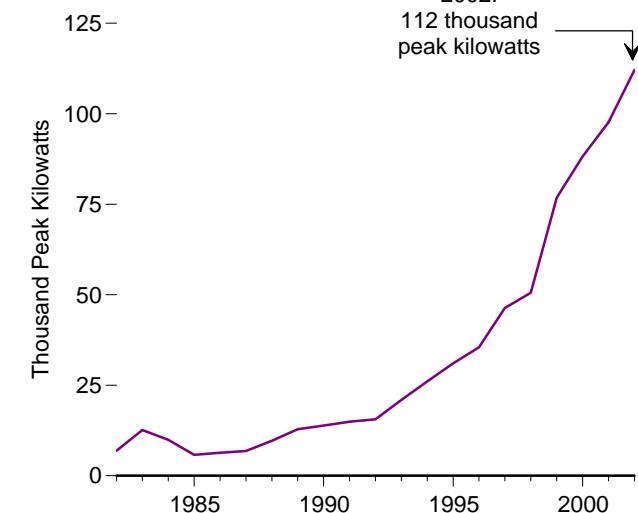
Source: Energy Information Administration, *Renewable Energy Annual 2002* (November 2003).

Figure 10.5 Photovoltaic Cell and Module Shipments, Trade, and Prices

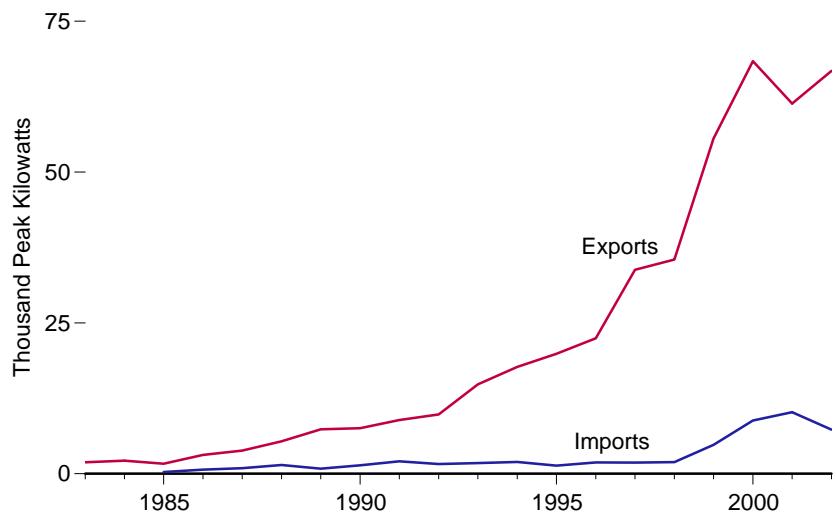
Number of U.S. Companies Reporting Shipments, 1982-2002



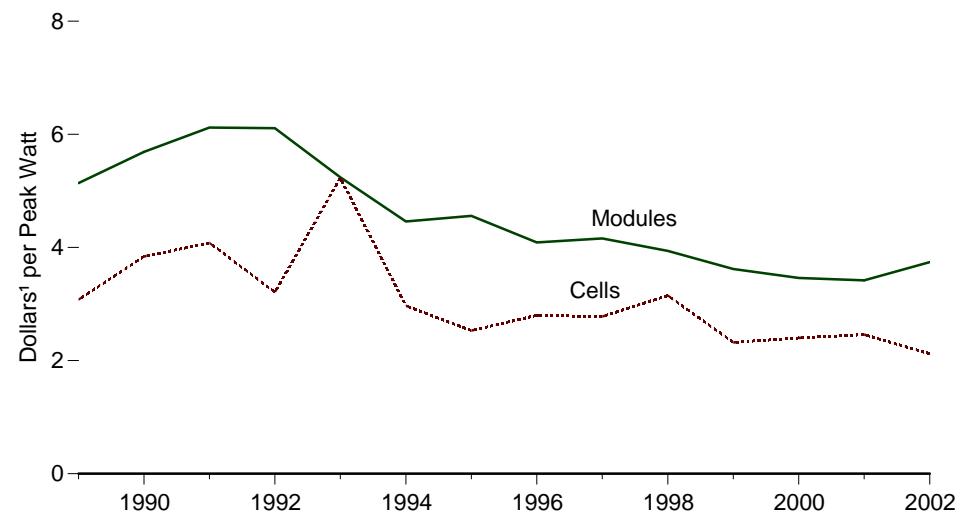
Total Shipments, 1982-2002



Trade, 1983-2002



Prices, 1989-2002



¹ Nominal dollars.

Note: Because vertical scales differ, graphs should not be compared.

Source: Table 10.5.

Table 10.5 Photovoltaic Cell and Module Shipments by Type, Trade, and Prices, 1982-2002

Year	Number of U.S. Companies Reporting Shipments	Shipments			Trade		Prices ¹	
		Crystalline Silicon	Thin-Film Silicon	Total ²	Imports	Exports	Modules	Cells
		Peak Kilowatts					Dollars per Peak Watt	
1982	19	NA	NA	6,897	NA	NA	NA	NA
1983	18	NA	NA	12,620	NA	1,903	NA	NA
1984	23	NA	NA	9,912	NA	2,153	NA	NA
1985	15	5,461	303	5,769	285	1,670	NA	NA
1986	17	5,806	516	6,333	678	3,109	NA	NA
1987	17	5,613	1,230	6,850	921	3,821	NA	NA
1988	14	7,364	1,895	9,676	1,453	5,358	NA	NA
1989	17	10,747	1,628	12,825	826	7,363	5.14	3.08
1990	³ 19	12,492	1,321	³ 13,837	1,398	7,544	5.69	3.84
1991	23	14,205	723	14,939	2,059	8,905	6.12	4.08
1992	21	14,457	1,075	15,583	1,602	9,823	6.11	3.21
1993	19	20,146	782	20,951	1,767	14,814	5.24	5.23
1994	22	24,785	1,061	26,077	1,960	17,714	4.46	2.97
1995	24	29,740	1,266	31,059	1,337	19,871	4.56	2.53
1996	25	33,996	1,445	35,464	1,864	22,448	4.09	2.80
1997	21	44,314	1,886	46,354	1,853	33,793	4.16	2.78
1998	21	47,186	3,318	50,562	1,931	35,493	3.94	3.15
1999	19	73,461	3,269	76,787	4,784	55,562	3.62	2.32
2000	21	85,155	2,736	88,221	8,821	68,382	3.46	2.40
2001	19	84,651	12,541	97,666	10,204	61,356	3.42	2.46
2002	19	104,123	7,396	112,090	7,297	66,778	3.74	2.12

¹ Prices, in nominal dollars, equal shipment value divided by quantity shipped. Value includes charges for advertising and warranties. Excluded are excise taxes and the cost of freight or transportation for the shipments.

² Total shipments include all types of photovoltaic cells and modules (single-crystal silicon, cast silicon, ribbon silicon, thin-film silicon, and concentrator silicon) and internationally traded cells and modules. Shipments of cells and modules for space and satellite applications are not included.

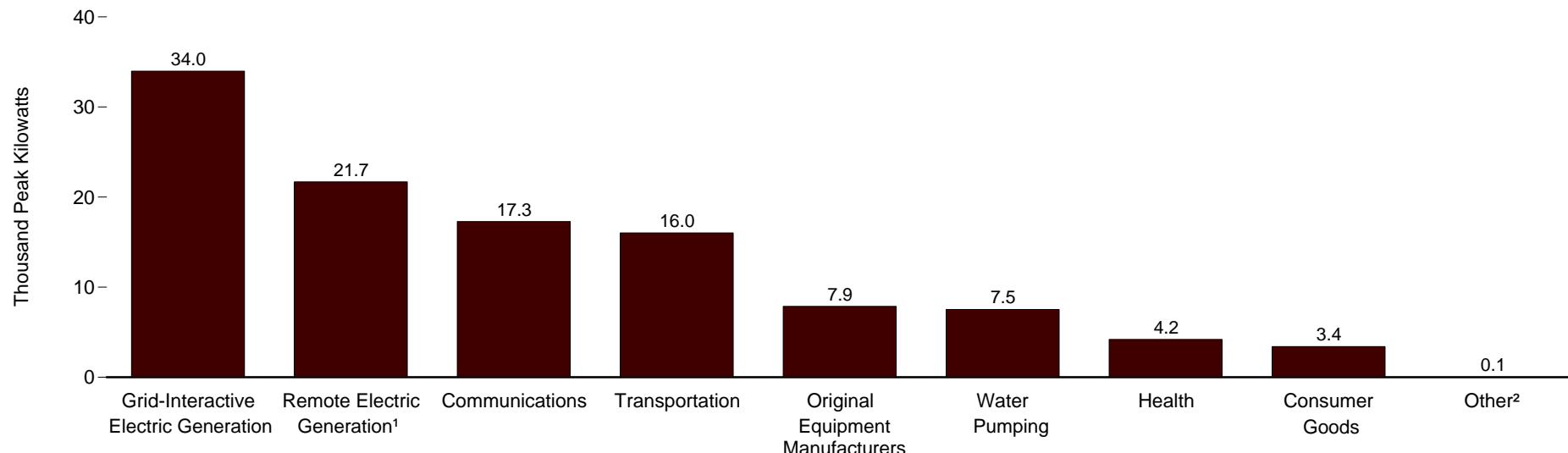
³ Data were imputed for one nonrespondent who exited the industry during 1990.
NA=Not available.

Web Page: For related information, see <http://www.eia.doe.gov/fuelrenewable.html>.

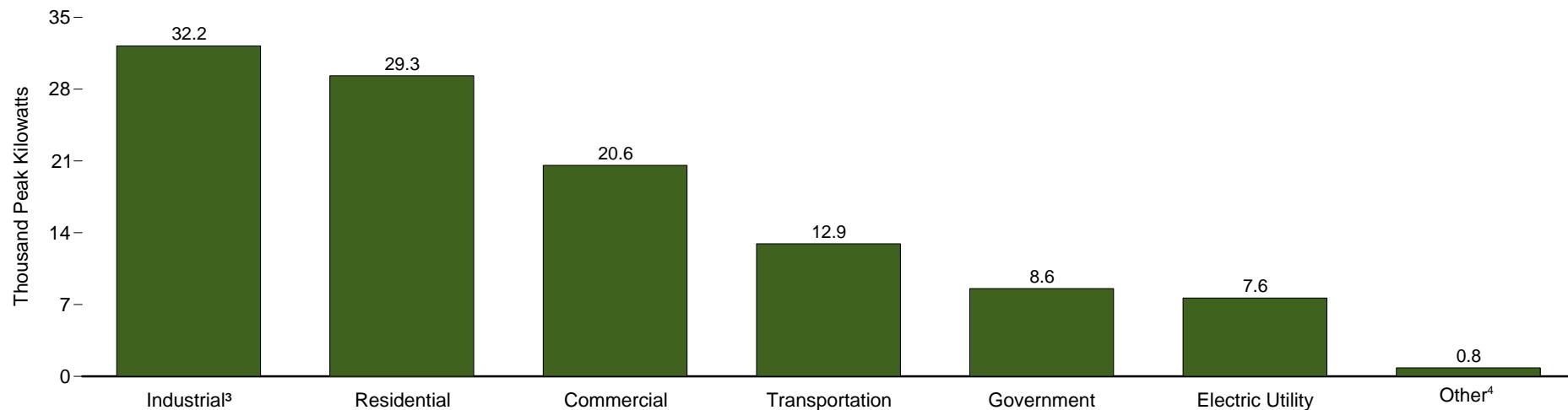
Sources: • 1982-1992—Energy Information Administration (EIA), *Solar Collector Manufacturing Activity*, annual reports. • 1993 forward—EIA, *Renewable Energy Annual*, annual reports.

Figure 10.6 Photovoltaic Cell and Module Shipments by End Use and Market Sector, 2002

By End Use



By Market Sector



¹ Units designed for installations that are not grid-interactive.

² Represents such applications as cooking food, desalination, and distilling.

³ Includes all independent power producers.

⁴ Shipments to foreign governments and for specialty purposes.

Source: Table 10.6.

Table 10.6 Photovoltaic Cell and Module Shipments by End Use and Market Sector, 1989-2002

Year	End-Use										Market Sector								
	Communications	Consumer Goods	Electric Generation ¹		Health	Original Equipment Manufacturers ²	Transpor-tation	Water Pumping	Other ³	Resi-dential	Com-mercial	Gov-ernment	Indus-trial ⁴	Transpor-tation	Electric Utility	Other ⁵			
			Grid-Interactive	Remote															
Amount Shipped (peak kilowatts)																			
1989	2,590	2,788	1,251	2,620	5	1,595	1,196	711	69	1,439	3,850	1,077	3,993	1,130	785	551	12,825		
1990	4,340	2,484	469	3,097	5	1,119	1,069	1,014	240	1,701	6,086	1,002	2,817	974	826	432	13,837		
1991	3,538	3,312	856	3,594	61	1,315	1,523	729	13	3,624	3,345	815	3,947	1,555	1,275	377	14,939		
1992	3,717	2,566	1,227	4,238	67	828	1,602	809	530	4,154	2,386	1,063	4,279	1,673	1,553	477	15,583		
1993	3,846	946	1,096	5,761	674	2,023	4,238	2,294	74	5,237	4,115	1,325	5,352	2,564	1,503	856	20,951		
1994	5,570	3,239	2,296	9,253	79	1,849	2,128	1,410	254	6,632	5,429	2,114	6,855	2,174	2,364	510	26,077		
1995	5,154	1,025	4,585	8,233	776	3,188	4,203	2,727	1,170	6,272	8,100	2,000	7,198	2,383	3,759	1,347	31,059		
1996	6,041	1,063	4,844	10,884	977	2,410	5,196	3,261	789	8,475	5,176	3,126	8,300	3,995	4,753	1,639	35,464		
1997	7,383	347	8,273	8,630	1,303	5,245	6,705	3,783	4,684	10,993	8,111	3,909	11,748	3,574	5,651	2,367	46,354		
1998	8,280	1,198	14,193	8,634	1,061	5,044	6,356	4,306	1,491	15,936	8,460	2,808	13,232	3,440	3,965	2,720	50,562		
1999	12,147	2,292	24,782	10,829	1,466	12,400	8,486	4,063	322	19,817	17,283	3,107	24,972	4,341	5,876	1,392	76,787		
2000	12,269	2,870	21,713	14,997	2,742	12,153	12,804	5,644	3,028	24,814	13,692	4,417	28,808	5,502	6,298	4,690	88,221		
2001	14,743	4,059	27,226	21,447	3,203	6,268	12,636	7,444	641	33,262	15,710	5,728	28,063	8,486	5,846	571	97,666		
2002	17,290	3,400	33,983	21,693	4,202	7,869	16,028	7,532	93	29,315	20,578	8,565	32,218	12,932	7,640	841	112,090		
Percent of Total																			
1989	20.2	21.7	9.8	20.4	(s)	12.4	9.3	5.5	0.5	11.2	30.0	8.4	31.1	8.8	6.1	4.3	100.0		
1990	31.4	18.0	3.4	22.4	(s)	8.1	7.7	7.3	1.7	12.3	44.0	7.2	20.4	7.0	6.0	3.1	100.0		
1991	23.7	22.2	5.7	24.1	0.4	8.8	10.2	4.9	0.1	24.3	22.4	5.5	26.4	10.4	8.5	2.5	100.0		
1992	23.9	16.5	7.9	27.2	0.4	5.3	10.3	5.2	3.4	26.7	15.3	6.8	27.5	10.7	10.0	3.1	100.0		
1993	18.4	4.5	5.2	27.5	3.2	9.7	20.2	10.9	0.4	25.0	19.6	6.3	25.5	12.2	7.2	4.1	100.0		
1994	21.4	12.4	8.8	35.5	0.3	7.1	8.2	5.4	1.0	25.4	20.8	8.1	26.3	8.3	9.1	2.0	100.0		
1995	16.6	3.3	14.8	26.5	2.5	10.3	13.5	8.8	3.8	20.2	26.1	6.4	23.2	7.7	12.1	4.3	100.0		
1996	17.0	3.0	13.7	30.7	2.8	6.8	14.7	9.2	2.2	23.9	14.6	8.8	23.4	11.3	13.4	4.6	100.0		
1997	15.9	0.7	17.8	18.6	2.8	11.3	14.5	8.2	10.1	23.7	17.5	8.4	25.3	7.7	12.2	5.1	100.0		
1998	16.4	2.4	28.1	17.1	2.1	10.0	12.6	8.5	2.9	31.5	16.7	5.6	26.2	6.8	7.8	5.4	100.0		
1999	15.8	3.0	32.3	14.1	1.9	16.1	11.1	5.3	0.4	25.8	22.5	4.0	32.5	5.7	7.7	1.8	100.0		
2000	13.9	3.3	24.6	17.0	3.1	13.8	14.5	6.4	3.4	28.1	15.5	5.0	32.7	6.2	7.1	5.3	100.0		
2001	15.1	4.2	27.9	22.0	3.3	6.4	12.9	7.6	0.7	34.1	16.1	5.9	28.7	8.7	6.0	0.6	100.0		
2002	15.4	3.0	30.3	19.4	3.7	7.0	14.3	6.7	0.1	26.2	18.4	7.6	28.7	11.5	6.8	0.8	100.0		

¹ Grid-interactive means connection to the electrical distribution system; remote means electricity, for general use, that does not interact with the electrical distribution system, such as at an isolated residential site or mobile home. The other end uses in this table also include electricity generation but only for the specific use cited.

² "Original Equipment Manufacturers" are non-photovoltaic manufacturers that combine photovoltaic technology into existing or newly developed product lines.

³ Represents such applications as cooking food, desalination, and distilling.

⁴ Includes all independent power producers.

⁵ Shipments to foreign governments and for specialty purposes.

(s)=Less than 0.05 percent.

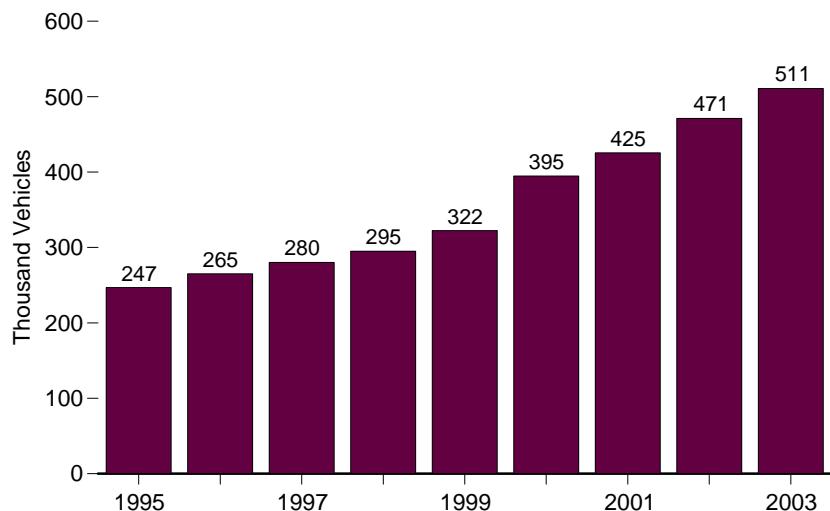
Note: Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/fuelrenewable.html>.

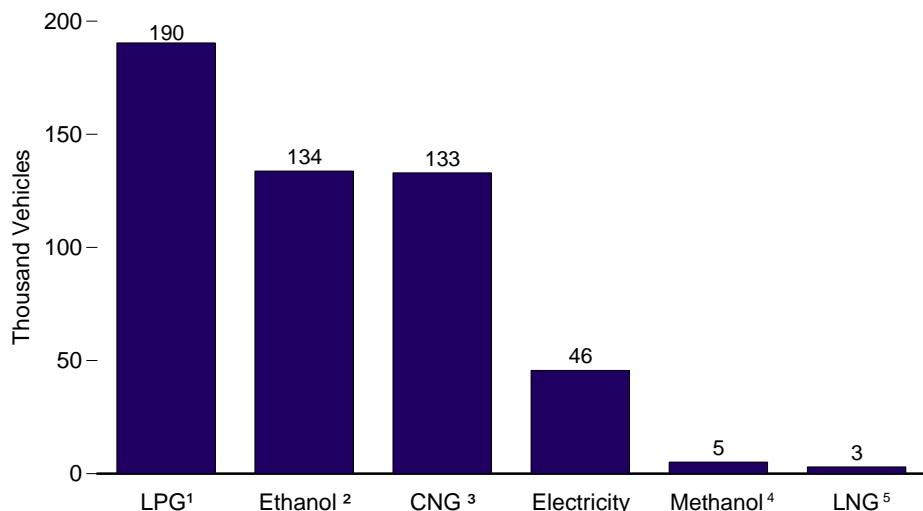
Sources: • 1989-1992—Energy Information Administration (EIA), *Solar Collector Manufacturing Activity*, annual reports. • 1993 forward—EIA, *Renewable Energy Annual*, annual reports.

Figure 10.7 Estimated Alternative-Fueled Vehicles and Consumption by Type

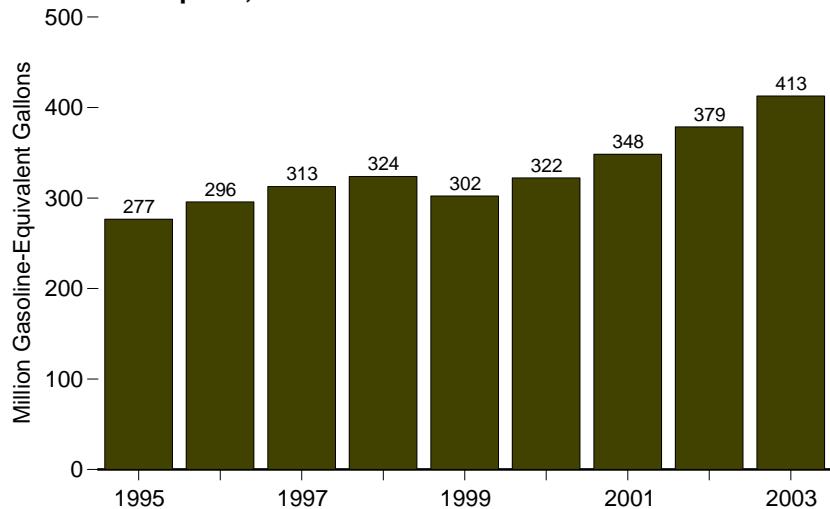
Vehicles in Use, 1995-2003



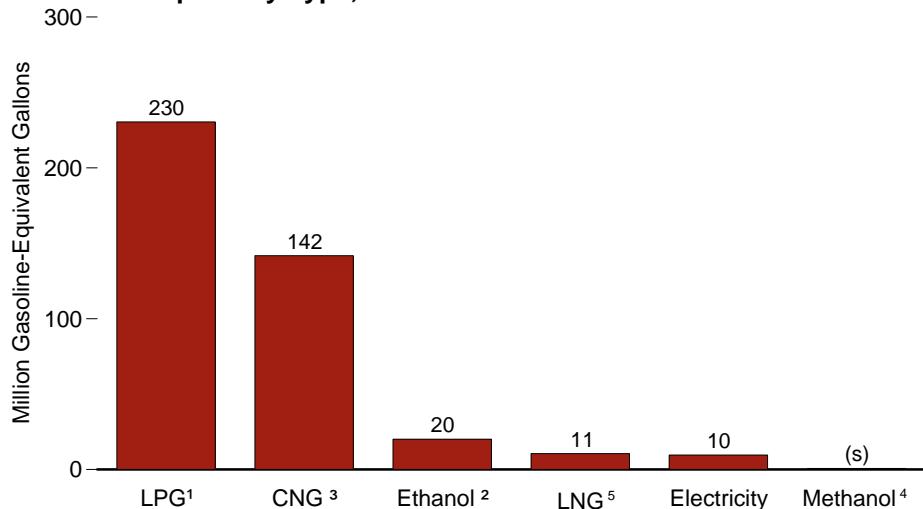
Vehicles in Use by Fuel Type, 2003



Fuel Consumption, 1995-2003



Fuel Consumption by Type, 2003



¹ Liquefied petroleum gases.

² Ethanol, 85 percent.

³ Compressed natural gas.

⁴ Methanol, 85 percent.

⁵ Liquefied natural gas.

(s)=Less than 0.5 million gasoline-equivalent gallons.

Note: Because vertical scales differ, graphs should not be compared.

Source: Table 10.7.

Table 10.7 Estimated Alternative-Fueled Vehicles and Consumption of Replacement Fuels, 1992-2003

Year	Replacement Fuels ¹													Biodiesel ⁹	Total	
	Alternative Fuels ²									Oxygenates ³						
	Liquefied Petroleum Gases	Compressed Natural Gas	Liquefied Natural Gas	Methanol, 85 Percent ⁴	Methanol, Neat ⁵	Ethanol, 85 Percent ⁴	Ethanol, 95 Percent ⁴	Electricity ⁶	Total	Methyl Tertiary Butyl Ether ⁷	Ethanol in Gasohol ⁸	Total				
Number of Alternative-Fueled Vehicles ¹⁰ in Use																
1992	NA	23,191	90	4,850	404	172	38	1,607	NA	NA	NA	NA	NA	NA	NA	
1993	NA	32,714	299	10,263	414	441	27	1,690	NA	NA	NA	NA	NA	NA	NA	
1994	NA	41,227	484	15,484	415	605	33	2,224	NA	NA	NA	NA	NA	NA	NA	
1995	R172,806	50,218	603	18,319	386	1,527	136	2,860	R246,855	NA	NA	NA	NA	NA	NA	
1996	R175,585	60,144	663	20,265	172	4,536	361	3,280	R265,006	NA	NA	NA	NA	NA	NA	
1997	R175,679	68,571	813	21,040	172	9,130	347	4,453	R280,205	NA	NA	NA	NA	NA	NA	
1998	R177,183	78,782	1,172	19,648	200	12,788	14	5,243	R295,030	NA	NA	NA	NA	NA	NA	
1999	R178,610	91,267	1,681	18,964	198	24,604	14	6,964	R322,302	NA	NA	NA	NA	NA	NA	
2000	R181,994	R100,750	2,090	10,426	0	R87,570	4	R11,830	R394,664	NA	NA	NA	NA	NA	NA	
2001	R185,053	R111,851	2,576	7,827	0	R100,303	0	R17,847	R425,457	NA	NA	NA	NA	NA	NA	
2002	R187,680	R120,839	R2,708	5,873	0	R120,951	0	R33,047	R471,098	NA	NA	NA	NA	NA	NA	
2003 ^P	190,438	132,988	3,030	4,917	0	133,776	0	45,656	510,805	NA	NA	NA	NA	NA	NA	
Fuel Consumption (Thousand Gasoline-Equivalent Gallons)																
1992	NA	16,823	585	1,069	2,547	21	85	359	NA	1,175,000	701,000	1,876,000	NA	NA	NA	
1993	NA	21,603	1,901	1,593	3,166	48	80	288	NA	2,069,200	760,000	2,829,200	NA	NA	NA	
1994	NA	24,160	2,345	2,340	3,190	80	140	430	NA	2,018,800	845,900	2,864,700	NA	NA	NA	
1995	R123,701	35,162	2,759	2,023	2,150	190	995	663	276,643	2,691,200	910,700	3,601,900	NA	3,878,543		
1996	R1239,158	46,923	3,247	1,775	347	694	2,699	773	295,616	2,749,700	660,200	3,409,900	NA	3,705,516		
1997	R1238,356	65,192	3,714	1,554	347	1,280	1,136	1,010	312,589	3,104,200	830,700	3,934,900	NA	4,247,489		
1998	R1241,386	72,412	5,343	1,212	449	1,727	59	1,202	R323,790	2,903,400	889,500	3,792,900	NA	4,116,690		
1999	R209,817	R79,620	R5,828	1,073	447	R3,916	R62	R1,524	R302,287	3,402,600	950,300	4,352,900	NA	4,655,187		
2000	R212,576	R86,745	R7,259	585	R0	R12,071	13	R3,058	R322,307	3,296,100	1,085,800	4,381,900	6,816	4,711,023		
2001	R215,876	R104,496	R8,921	R439	R0	R14,623	0	R4,066	R348,421	3,352,200	1,143,300	4,495,500	7,076	4,850,997		
2002	R223,143	R120,670	R9,382	R337	0	R17,783	0	R7,274	R378,589	3,120,300	1,413,600	4,533,900	16,917	4,929,406		
2003 ^P	230,486	141,726	10,514	274	0	20,092	0	9,633	412,725	2,384,500	1,792,900	4,177,400	26,758	4,616,883		

¹ See "Replacement Fuel" in Glossary.

² See "Alternative Fuel" in Glossary.

³ See "Oxygenates" in Glossary.

⁴ Remaining portion is motor gasoline. Consumption data include the motor gasoline portion of the fuel.

⁵ One hundred percent methanol.

⁶ Excludes gasoline-electric hybrids.

⁷ In addition to methyl tertiary butyl ether (MTBE), includes a very small amount of other ethers, primarily tertiary amyl methyl ether (TAME) and ethyl tertiary butyl ether (ETBE).

⁸ Data do not include the motor gasoline portion of the fuel.

⁹ "Biodiesel" is any liquid biofuel suitable as a diesel fuel substitute or diesel fuel additive or extender. See "Biodiesel" in Glossary.

¹⁰ See "Alternative-Fueled Vehicle" in Glossary.

¹¹ For 1995-1998, estimates of the number of vehicles operating on liquefied petroleum gases (LPG) were revised; however, no corresponding revisions were made to consumption of LPG by on-road vehicles. Revised consumption data will be available as other historical LPG vehicle-fuel-use data can be evaluated.

R=Revised. P=Preliminary. NA=Not available.

Note: Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/fuelalternate.html>.

Sources: • 1992-1994—Science Applications International Corporation, "Alternative Transportation Fuels and Vehicles Data Development," unpublished final report prepared for the Energy Information Administration (EIA) (McLean, VA, July 1996) and U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. • 1995 forward—EIA, "Alternatives to Traditional Transportation Fuels 2003 Estimated Data" (February 2004), Tables 1 and 10.

Renewable Energy

Table 10.2a Sources: **Wood, Residential:** • 1949-1979—Energy Information Administration (EIA), *Estimates of U.S. Wood Energy Consumption from 1949 to 1981*, Table A2. • 1980-1983—EIA, *Estimates of U.S. Wood Energy Consumption 1980-1983*, Table ES1. • 1984—EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 1. • 1985 and 1986—Values interpolated. • 1987—EIA, *Estimates of Biofuels Consumption in the United States During 1987*, Table 2. • 1988—Value interpolated. • 1989 forward—EIA, *Renewable Energy Trends 2003* (August 2004), Table B1. **Wood, Commercial:** • 1949-1979—EIA, *Estimates of U.S. Wood Energy Consumption from 1949 to 1981*, Table A2. • 1980-1983—EIA, *Estimates of U.S. Wood Energy Consumption 1980-1983*, Table ES1. • 1984—EIA, CNEAF estimate. • 1985-1988—Values interpolated. • 1989 forward—EIA, *Renewable Energy Trends 2003* (August 2004), Table B1. **Wood, Industrial:** • 1949-1979—EIA, *Estimates of U.S. Wood Energy Consumption from 1949 to 1981*, Table A2. • 1980-1983—EIA, *Estimates of U.S. Wood Energy Consumption 1980-1983*, Table ES1. • 1984—EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 1. • 1985 and 1986—Values interpolated. • 1987—EIA, *Estimates of Biofuels Consumption in the United States During 1987*, Table 2. • 1988—Value interpolated. • 1989 forward—EIA, *Renewable Energy Trends 2003* (August 2004), Table B1. **Waste, Commercial:** Table 8.3b. **Waste, Industrial:** • 1981—EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 8, total waste consumption minus electric power sector waste consumption (see Table 10.2b). • 1982 and 1983—EIA, CNEAF, estimates for total waste consumption minus electric power sector waste consumption (see Table 10.2b). • 1984—EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 8, total waste consumption minus electric power sector waste consumption (see Table 10.2b). • 1985 and 1986—Values interpolated. •

1987—EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 8, total waste consumption minus electric power sector waste consumption (see Table 10.2b). • 1988—Value interpolated. • 1989 forward—EIA, *Renewable Energy Trends 2003* (August 2004), Table B1. **Alcohol Fuels:** • 1981—EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 10. • 1982 and 1983—EIA, CNEAF estimates. • 1984—EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 10. • 1985 and 1986—Values interpolated. • 1987—EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 10. • 1988—Value interpolated. • 1989—EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 10. • 1990—EIA, *Estimates of U.S. Biomass Energy Consumption 1992*, Table D1. • 1991—Value interpolated. • 1992—EIA, *Estimates of U.S. Biomass Energy Consumption 1992*, Table D1. • 1993 forward—EIA, *Petroleum Supply Monthly (PSM)*, Tables 2 and 28, and *Annual Energy Review (AER)* Table A1. Ten percent of the “Field Production” of “Oxygenated Finished Motor Gasoline” from *PSM* Table 2 is added to the “Refinery Input of Fuel Ethanol” from *PSM* Table 28. The sum is multiplied by the conversion factor of 3.539 million Btu per barrel as shown in the *AER* Table A1. **Hydropower:** Tables 8.1, 8.2c, and A6. **Geothermal:** • 1989 forward—EIA, *Renewable Energy Trends 2003* (August 2004), Table B1. **Solar:** • 1989 forward—EIA, *Renewable Energy Trends 2003* (August 2004), Table B1.

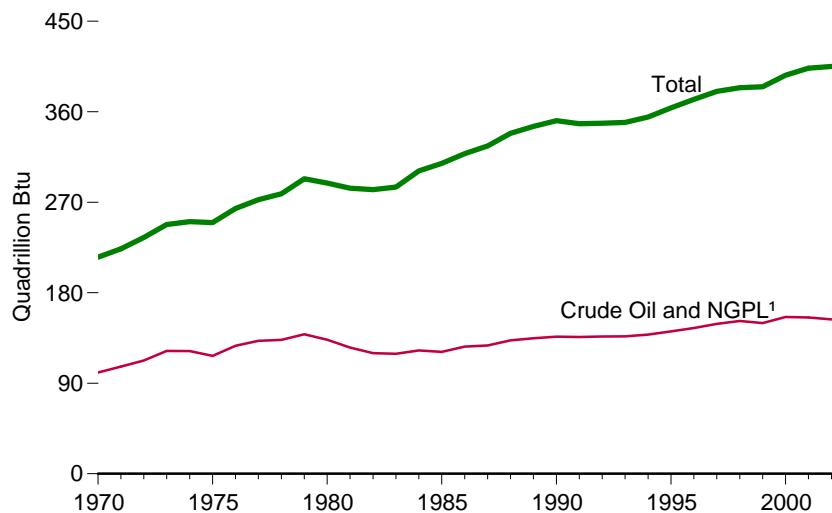
International Energy



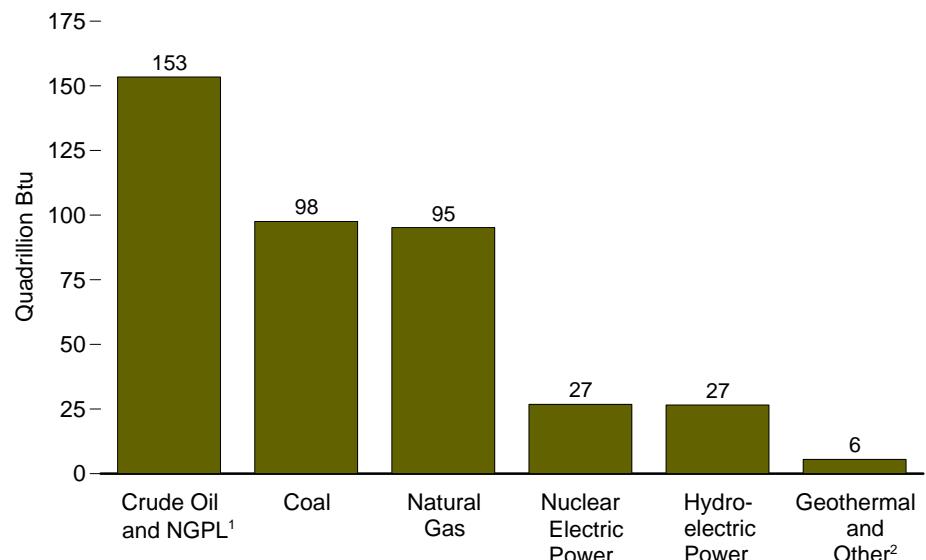
Drilling rig, Gansu Province, People's Republic of China. Source: U.S. Department of Energy.

Figure 11.1 World Primary Energy Production by Source

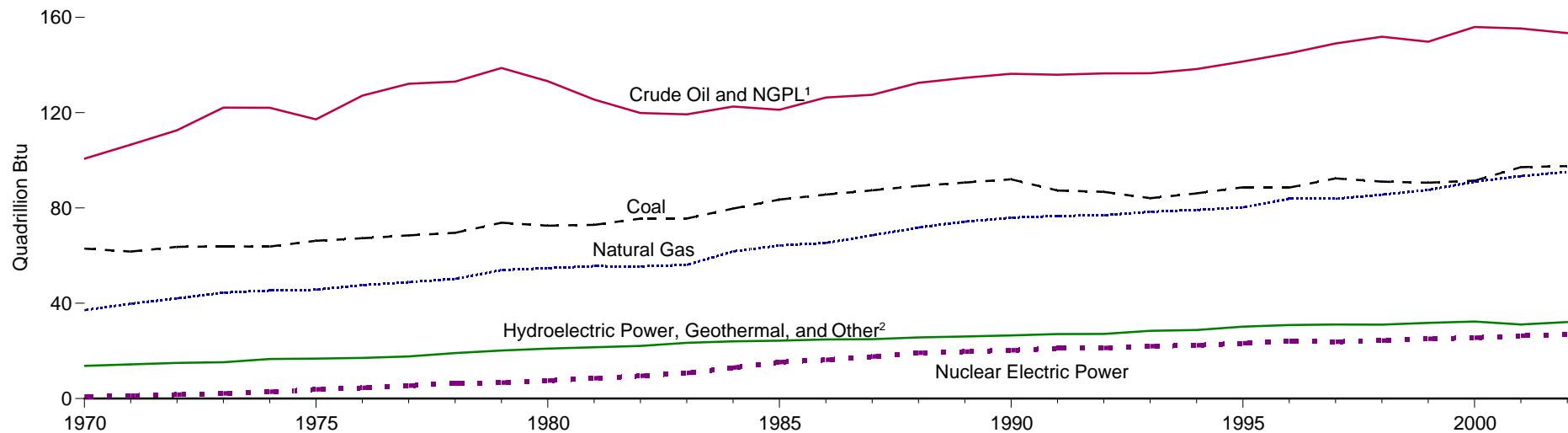
Total and Crude Oil and NGPL¹, 1970-2002



By Source, 2002



By Source, 1970-2002



¹Natural gas plant liquids.

²Net electricity generation from wood, waste, solar, and wind. Data for the United States also include other renewable energy.

Notes: • Crude oil includes lease condensate. • Because vertical scales differ, graphs should not be compared.

Source: Table 11.1.

Table 11.1 World Primary Energy Production by Source, 1970-2002
 (Quadrillion Btu)

Year	Coal	Natural Gas ¹	Crude Oil ²	Natural Gas Plant Liquids	Nuclear Electric Power ³	Hydroelectric Power ³	Geothermal ³ and Other ⁴	Total
1970	62.96	37.09	97.09	3.61	0.90	12.15	1.59	215.39
1971	61.72	39.80	102.70	3.85	1.23	12.74	1.61	223.64
1972	63.65	42.08	108.52	4.09	1.66	13.31	1.68	234.99
1973	63.87	44.44	117.88	4.23	2.15	13.52	1.73	247.83
1974	63.79	45.35	117.82	4.22	2.86	14.84	1.76	250.64
1975	66.20	45.67	113.08	4.12	3.85	15.03	1.74	249.69
1976	67.32	47.62	122.92	4.24	4.52	15.08	1.97	263.67
1977	68.46	48.85	127.75	4.40	5.41	15.56	2.11	272.54
1978	69.56	50.26	128.51	4.55	6.42	16.80	2.32	278.41
1979	73.83	53.93	133.87	4.87	6.69	17.69	2.48	293.36
1980	R72.54	54.73	128.12	5.10	7.58	R18.04	2.95	R289.05
1981	R72.91	55.56	120.16	5.36	8.53	R18.41	R3.10	R284.02
1982	R75.55	55.49	114.51	5.34	9.51	R18.88	3.24	R282.53
1983	R75.58	56.12	113.97	5.34	10.72	R19.88	3.51	R285.13
1984	R79.73	61.78	116.86	5.71	R12.99	R20.38	3.64	R301.10
1985	R83.54	64.22	115.40	5.82	15.30	R20.62	3.67	R308.56
1986	R85.62	65.32	120.24	6.12	16.25	R21.08	R3.74	R318.37
1987	R87.41	68.48	121.16	6.32	17.64	R21.11	3.79	R325.92
1988	R89.25	71.80	125.93	6.63	19.23	R21.72	R3.93	R338.50
1989	R90.67	74.24	127.98	6.67	19.74	R21.77	4.29	R345.37
1990	R92.04	75.87	129.50	6.85	20.31	R22.54	R3.96	R351.08
1991	R87.32	76.69	128.77	7.13	21.13	R23.04	4.04	R348.13
1992	R86.74	76.90	129.13	7.38	21.23	R22.80	R4.32	R348.50
1993	R84.08	78.41	128.86	7.68	21.96	R24.10	R4.35	R349.43
1994	R86.14	79.18	130.46	7.85	22.36	R24.21	R4.55	R354.75
1995	R88.71	80.24	133.32	8.16	23.21	R25.43	R4.76	R363.84
1996	R88.55	83.94	136.64	8.31	24.05	R25.96	R4.88	R372.33
1997	R92.41	83.89	140.52	8.51	23.82	R26.18	R4.92	R380.26
1998	R91.08	85.58	143.15	8.75	24.34	R26.22	R4.83	R383.94
1999	R90.61	R87.53	140.79	R9.01	25.08	R26.68	R5.07	R384.77
2000	R91.44	R91.03	146.50	R9.43	R25.52	R27.12	R5.24	R396.28
2001	R97.13	R93.38	R145.25	R10.07	R26.40	R26.02	R5.09	R403.33
2002 ^P	97.56	95.20	142.86	10.55	26.85	26.59	5.52	405.12

¹ Dry production.

² Includes lease condensate.

³ Net generation, i.e., gross generation less plant use.

⁴ Includes net electricity generation from wood, waste, solar, and wind. Data for the United States also include other renewable energy.

R=Revised. P=Preliminary.

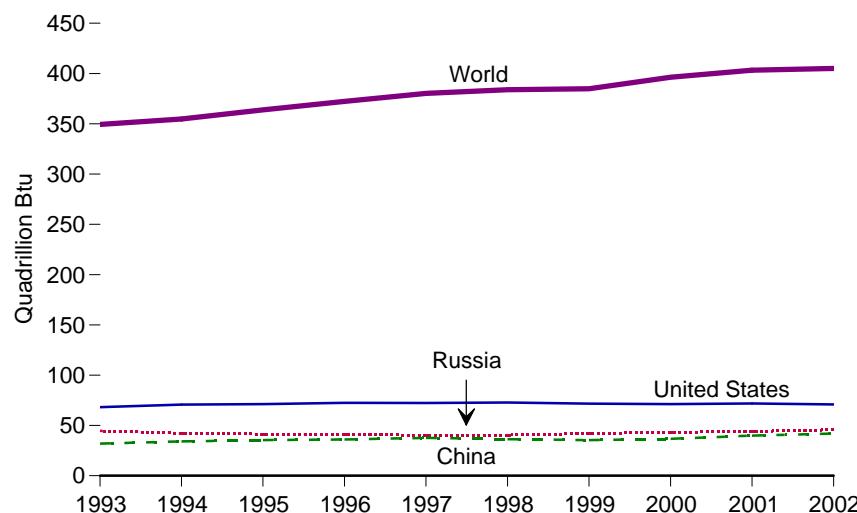
Notes: • See Note 1, "World Primary Energy Production," at end of section. • Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/international>.

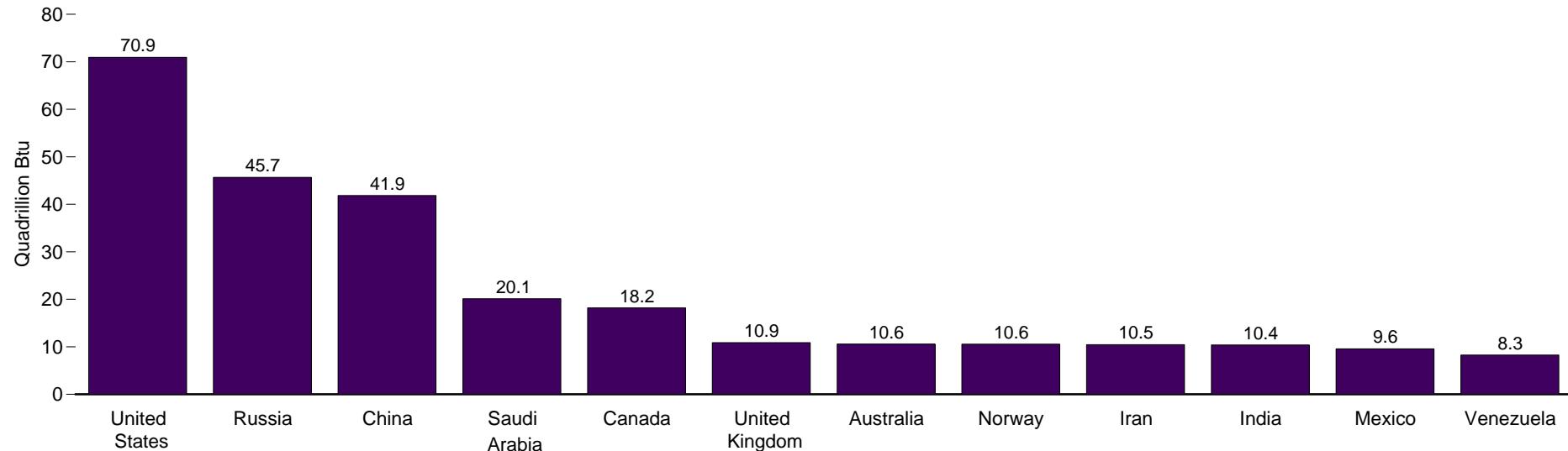
Sources: • 1970-1979—Energy Information Administration (EIA), International Energy Database. • 1980 forward—EIA, "International Energy Annual 2002" (May 2004), Tables F1-F8.

Figure 11.2 World Primary Energy Production by Region and Country

World and Leading Producers, 1993-2002



Top Producing Countries, 2002



Note: Because vertical scales differ, graphs should not be compared.

Source: Table 11.2.

Table 11.2 World Primary Energy Production by Region, 1993-2002
 (Quadrillion Btu)

Region and Country	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002 ^P
North, Central, and South America	R110.62	R114.91	R117.16	R120.96	R123.05	R124.30	R122.88	R124.70	R125.43	124.15
Brazil	R4.13	R4.29	R4.49	R4.85	R5.08	R5.50	R5.90	R6.39	R6.14	6.72
Canada	R15.37	R16.34	R16.82	R17.23	R17.47	R17.43	R17.67	R18.11	R18.17	18.20
Mexico	8.11	8.10	R8.03	8.74	9.07	R9.30	9.06	9.35	R9.58	9.58
United States	68.26	70.68	71.16	72.47	72.39	72.79	71.65	71.22	R71.79	70.93
Venezuela	R7.26	7.70	8.08	8.62	R9.48	R9.45	R8.54	R9.37	R9.22	8.27
Other	R7.48	R7.80	R8.58	R9.05	R9.56	R9.83	R10.05	R10.26	R10.54	10.45
Western Europe	R39.47	R40.48	R41.63	R43.99	R44.04	R43.84	R44.19	R44.25	R44.55	44.28
France	4.84	R4.86	R4.96	5.04	R4.90	R4.79	4.94	R5.04	R5.13	5.13
Germany	5.84	5.71	5.58	5.49	5.56	R5.25	R5.30	R5.30	R5.23	5.27
Netherlands	2.98	2.91	2.91	3.25	2.89	2.78	R2.57	2.48	R2.63	2.59
Norway	R7.27	R7.64	R8.35	R9.28	R9.59	R9.35	R9.53	R10.21	10.22	10.57
United Kingdom	9.40	R10.18	10.76	11.51	11.28	11.54	R11.90	R11.10	R11.06	10.87
Other	R9.15	R9.18	R9.07	R9.42	R9.82	R10.14	R9.95	R10.11	R10.29	9.85
Eastern Europe and Former U.S.S.R.	R65.58	R60.75	R59.51	R59.34	R58.08	R57.55	R59.89	R62.05	R64.09	65.99
Kazakhstan	R3.38	2.57	2.28	2.36	2.44	2.38	R2.55	R3.21	R3.52	3.86
Poland	3.70	3.75	3.60	3.25	3.86	3.35	R3.48	R3.04	R3.06	3.04
Russia	R44.69	R42.31	R41.42	R41.35	R40.04	R40.40	R42.06	R43.02	R44.14	45.68
Ukraine	4.00	3.50	R3.62	3.45	3.40	3.41	R3.45	R3.47	R3.55	3.56
Other	R9.81	R8.63	R8.59	R8.93	R8.35	R8.01	R8.34	R9.32	R9.82	9.86
Middle East	45.76	R46.93	47.97	49.03	51.33	54.50	R53.42	R57.10	R55.86	54.14
Iran	8.83	9.16	9.35	9.65	9.84	R9.89	10.00	10.40	R10.67	10.45
Iraq	1.21	1.33	1.35	1.39	2.60	4.71	R5.47	5.62	R5.22	4.42
Kuwait	4.28	4.73	4.81	4.94	4.85	5.02	4.60	5.04	R4.81	4.59
Saudi Arabia	20.11	20.00	20.25	20.39	20.82	21.00	R19.77	R21.19	R20.55	20.12
United Arab Emirates	5.78	5.84	6.14	6.34	6.50	6.61	6.25	6.77	R6.59	6.50
Other	5.54	5.88	6.06	6.32	6.72	7.27	7.33	8.09	R8.01	8.06
Africa	22.70	R22.94	R24.14	R24.72	26.16	R26.36	R26.63	R27.83	R28.06	28.03
Algeria	4.87	4.79	5.13	5.28	5.63	5.75	6.03	6.29	R6.26	6.30
Libya	3.17	3.21	3.23	3.28	3.39	3.26	3.07	3.30	3.21	3.11
Nigeria	4.45	4.37	4.53	4.57	4.85	4.90	4.89	5.18	R5.46	5.14
South Africa	4.30	4.60	4.84	R4.85	5.44	5.52	5.43	5.56	R5.60	5.51
Other	5.90	R5.98	R6.41	R6.74	6.86	R6.93	R7.21	R7.50	R7.52	7.96
Asia and Oceania	R65.29	R68.73	R73.44	R74.29	R77.59	R77.40	R77.77	R80.36	R85.33	88.54
Australia	6.61	6.91	R7.42	7.57	R8.31	R8.66	R8.87	9.69	R10.25	10.60
China	R31.84	R34.06	R35.46	R36.01	R37.60	R36.33	R35.38	R36.67	R39.91	41.85
India	R7.48	R8.00	R9.48	8.75	R9.17	R9.37	R9.58	R9.81	R10.21	10.41
Indonesia	R6.33	R6.66	R6.96	R7.41	R7.41	R7.52	R7.98	7.80	R8.02	8.25
Japan	R3.89	R3.79	R4.18	R4.28	R4.53	R4.58	R4.37	R4.27	R4.33	4.29
Malaysia	R2.34	2.41	2.59	2.84	3.01	3.14	3.16	3.20	R3.32	3.47
Other	R6.80	R6.90	R7.34	R7.43	R7.58	R7.79	R8.42	R8.92	R9.29	9.68
World	R349.43	R354.75	R363.84	R372.33	R380.26	R383.94	R384.77	R396.28	R403.33	405.12

R=Revised. P=Preliminary.

Notes: • See Note 1, "World Primary Energy Production," at end of section. • World primary energy production includes production of crude oil (including lease condensate), natural gas plant liquids, dry natural gas, and coal; and net electricity generation from nuclear electric power, hydroelectric power, wood, waste, geothermal, solar, and wind. Data for the United States also include other renewable energy.

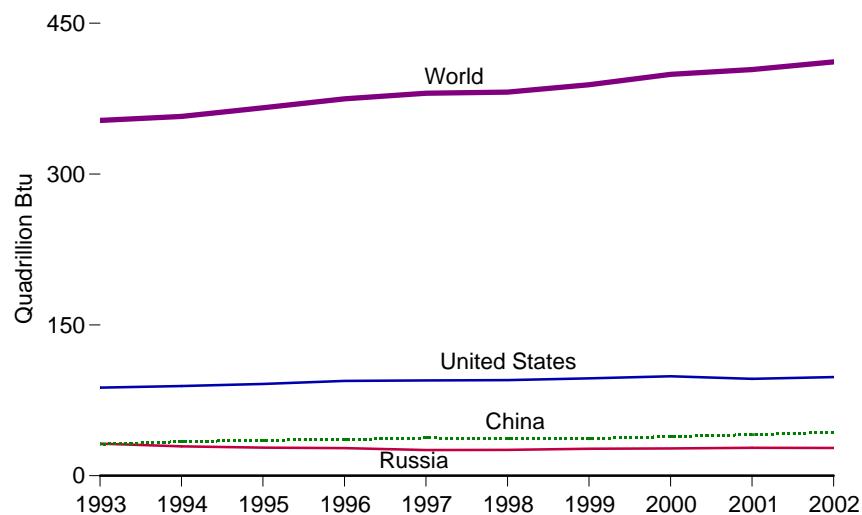
• Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/international>.

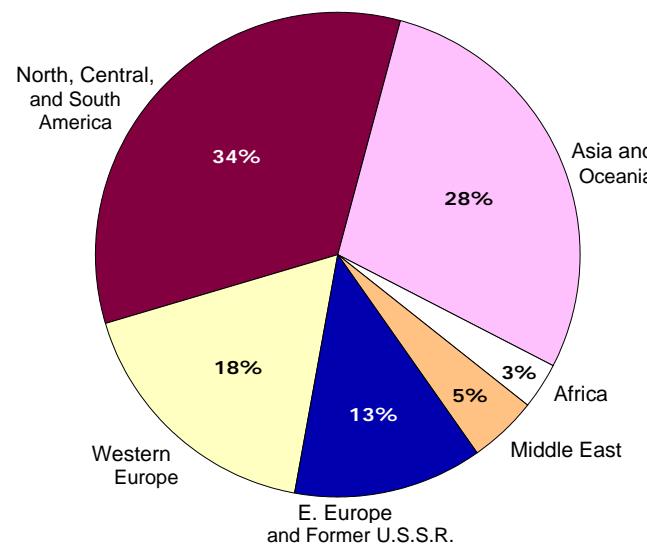
Sources: **United States:** Table 1.2. **All Other Data:** Energy Information Administration, "International Energy Annual 2002" (May 2004), Table F1.

Figure 11.3 World Primary Energy Consumption

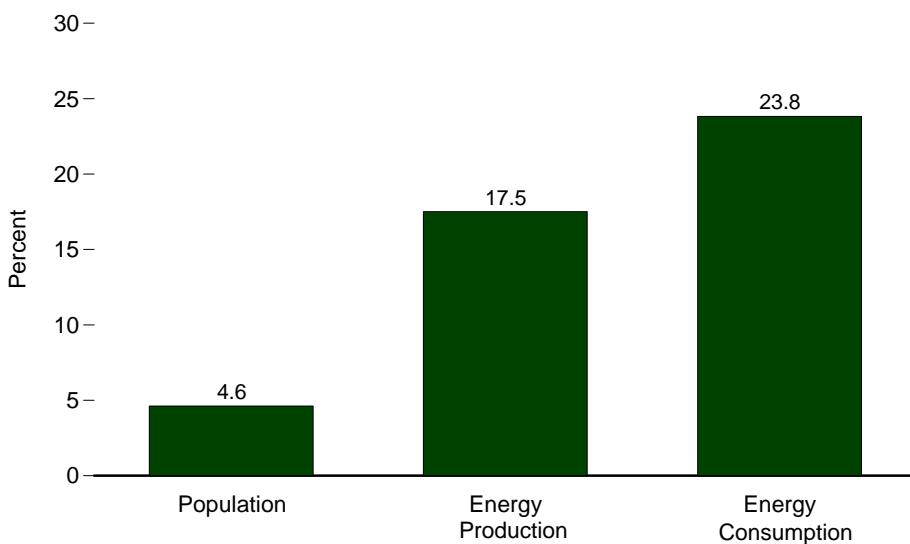
World and Leading Consumers, 1993-2002



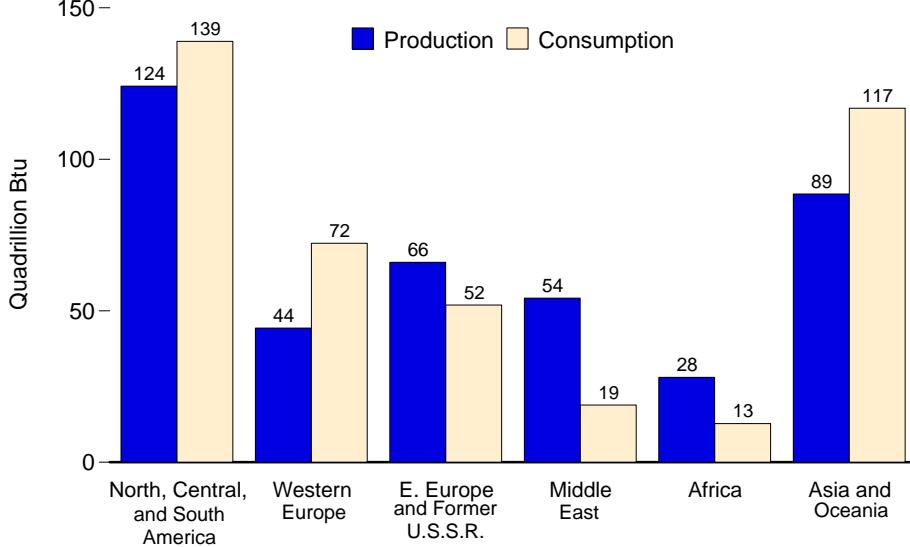
Regional Consumption Shares, 2002



U.S. Share of World, 2002



Production and Consumption by Region, 2002



Note: Because vertical scales differ, graphs should not be compared.

Sources: Tables 11.2, 11.3, and D1.

Table 11.3 World Primary Energy Consumption by Region, 1993-2002
 (Quadrillion Btu)

Region and Country	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002 ^P
North, Central, and South America	R120.87	R123.77	R126.44	R130.89	R132.41	R133.51	R135.77	R139.01	R136.40	138.92
Argentina	R2.27	R2.24	R2.31	R2.39	R2.46	R2.57	R2.60	R2.65	R2.60	2.46
Brazil	R6.36	R6.64	R7.03	R7.46	R7.86	R8.12	R8.27	R8.55	R8.42	8.59
Canada	R11.75	R12.11	R12.11	R12.53	R12.60	R12.29	R12.71	R12.92	R12.77	13.07
Mexico	R5.39	R5.58	R5.50	R5.60	R5.63	R5.92	R5.97	R6.28	R6.09	6.62
United States	87.58	89.25	91.22	94.22	94.73	95.15	96.77	98.90	R96.38	98.03
Venezuela	2.29	2.42	2.47	2.58	R2.65	R2.85	R2.73	R2.77	R3.06	2.90
Other	R5.23	R5.53	R5.80	R6.12	R6.47	R6.62	R6.72	R6.92	R7.09	7.24
Western Europe	64.65	R64.69	R66.20	R68.20	R68.81	R70.18	R70.32	R71.52	R72.57	72.27
Belgium	R2.24	R2.29	R2.33	R2.52	R2.60	2.66	R2.60	R2.69	R2.67	2.73
France	R9.80	R9.78	R10.07	R10.43	R10.34	R10.59	R10.74	R10.91	R11.08	10.99
Germany	14.06	R14.00	R14.30	R14.35	R14.32	14.33	14.12	R14.24	R14.51	14.27
Italy	R6.85	R6.76	R7.08	R7.09	R7.22	R7.43	R7.57	R7.62	R7.68	7.64
Netherlands	R3.54	R3.50	R3.58	R3.73	R3.71	R3.70	R3.69	R3.80	R3.93	3.92
Spain	R4.02	R4.19	R4.30	R4.41	R4.70	R4.94	R5.17	R5.51	R5.78	5.87
Sweden	R2.17	2.19	R2.25	R2.20	R2.25	R2.32	R2.25	R2.22	R2.28	2.22
Turkey	2.33	2.23	R2.49	2.74	R2.93	R2.99	R2.90	R3.16	R2.92	3.10
United Kingdom	R9.57	R9.52	R9.43	R9.98	R9.69	R9.75	9.74	R9.66	9.81	9.58
Other	R10.07	R10.24	R10.39	R10.74	R11.06	R11.48	R11.53	R11.71	R11.92	11.96
Eastern Europe and Former U.S.S.R.	R60.01	R54.14	R52.65	R51.81	R49.77	R48.84	R50.05	R50.53	R51.75	51.90
Poland	R3.99	R3.85	R3.72	R3.57	R4.11	R3.84	R3.97	R3.61	R3.46	3.35
Russia	R31.96	R29.21	R27.93	R27.37	R25.54	R25.72	R26.77	R27.21	R27.72	27.54
Ukraine	R8.60	7.31	R7.23	R6.75	6.44	6.26	R6.30	6.14	R6.34	6.55
Uzbekistan	R2.07	R1.75	R1.87	R1.89	R1.88	R1.85	1.87	R1.95	R2.05	2.12
Other	R13.38	R12.02	R11.91	R12.23	R11.79	R11.16	R11.14	R11.62	R12.19	12.35
Middle East	12.73	R13.38	13.93	14.61	15.44	16.19	R16.60	17.28	R17.99	18.87
Iran	3.47	R3.67	R3.82	3.96	4.44	4.64	R4.93	R5.04	R5.47	5.86
Saudi Arabia	3.52	3.64	3.85	4.05	4.08	4.27	4.35	R4.70	R4.89	5.14
Other	5.74	6.07	6.26	6.60	6.92	7.28	7.32	R7.54	R7.63	7.86
Africa	R9.95	R10.41	R10.62	R10.92	11.40	R11.31	R11.60	R12.03	R12.46	12.75
Egypt	1.51	1.55	1.58	1.73	1.79	1.85	1.89	R2.01	R2.25	2.35
South Africa	R3.74	R4.08	R4.11	R4.16	R4.55	R4.34	R4.49	R4.60	R4.53	4.54
Other	R4.70	R4.78	R4.94	R5.03	R5.06	5.12	R5.22	R5.42	R5.68	5.86
Asia and Oceania	R85.06	R90.86	R96.04	R98.39	R102.51	R101.42	R104.42	R108.74	R112.73	116.87
Australia	R3.92	R3.92	R4.05	R4.22	R4.56	R4.59	R4.82	R4.86	R5.24	5.59
China	R31.32	34.04	R35.23	R36.08	R37.63	R37.08	R37.00	R38.85	R40.89	43.18
India	R9.24	R9.97	R11.49	R11.15	R11.76	R12.17	R12.74	R13.48	R13.84	13.98
Indonesia	R2.91	R3.11	3.25	3.51	3.64	R3.53	R3.88	R4.04	R4.36	4.45
Japan	R19.40	R20.30	R20.89	R21.25	R21.82	R21.34	R21.66	R21.93	R21.94	21.97
Malaysia	1.28	1.43	1.47	1.64	1.67	1.68	1.74	1.87	2.15	2.33
South Korea	R5.54	R5.98	6.63	R6.84	R7.39	R6.80	R7.39	R7.85	R8.03	8.39
Taiwan	2.43	R2.61	R2.86	R3.06	R3.20	R3.39	R3.54	R3.77	R3.85	4.10
Thailand	1.68	1.87	R2.24	R2.44	R2.58	R2.43	2.64	R2.80	2.90	3.08
Other	R7.35	R7.64	R7.93	R8.19	R8.26	R8.43	R9.02	R9.29	R9.54	9.80
World	R353.28	R357.25	R365.87	R374.82	R380.33	R381.45	R388.76	R399.10	R403.91	411.57

R=Revised. P=Preliminary.

Notes: • World primary energy consumption includes consumption of petroleum products (including natural gas plant liquids, and crude oil burned as fuel), dry natural gas, and coal (including net imports of coal coke); and the consumption of net electricity generated from nuclear electric power, hydroelectric power, wood, waste, geothermal, solar, and wind. It also includes, for the United States, the consumption

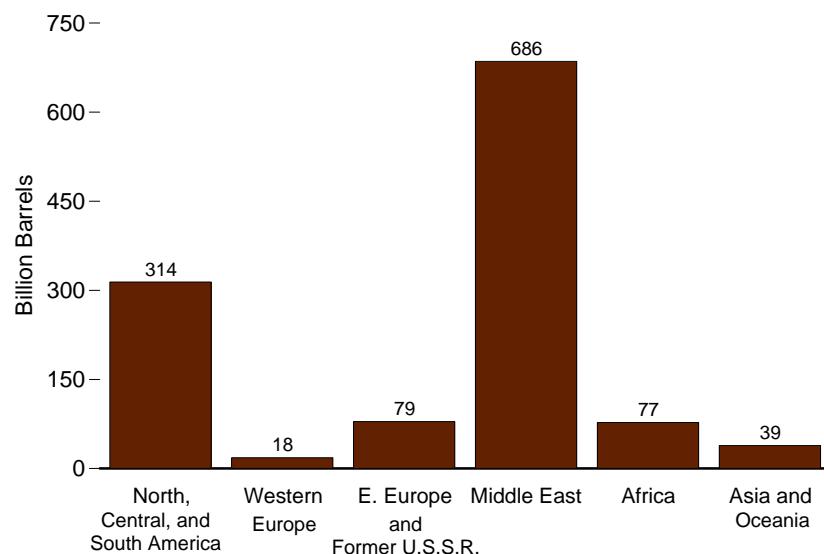
of renewable energy by the end-use sectors. • Totals may not equal sum of components due to independent rounding.

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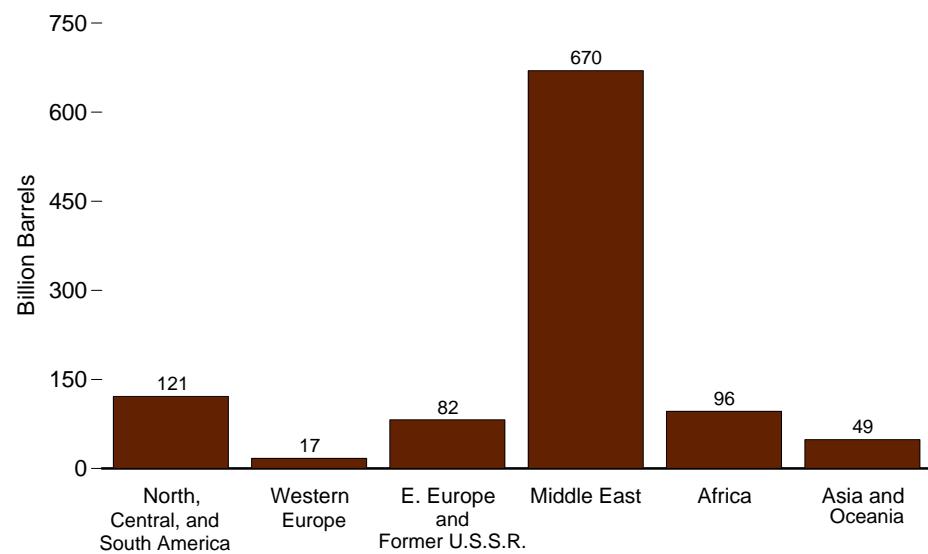
Sources: **United States:** Table 1.3. **All Other Data:** Energy Information Administration, "International Energy Annual 2002" (May 2004), Table 1.8.

Figure 11.4 World Crude Oil and Natural Gas Reserves, January 1, 2003

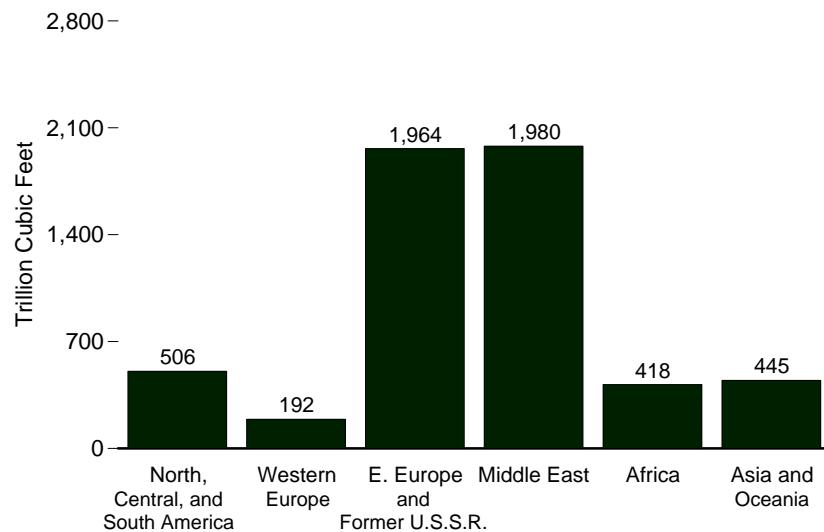
Crude Oil Reserves: *Oil and Gas Journal*



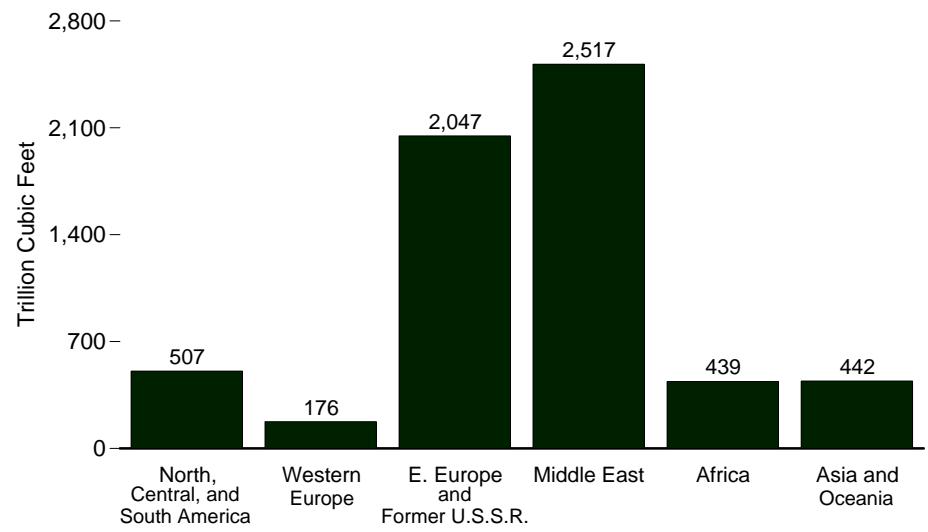
Crude Oil Reserves: *World Oil*



Natural Gas Reserves: *Oil and Gas Journal*



Natural Gas Reserves: *World Oil*



Source: Table 11.4.

Table 11.4 World Crude Oil and Natural Gas Reserves, January 1, 2003

Region and Country	Crude Oil (billion barrels)		Natural Gas (trillion cubic feet)		Region and Country	Crude Oil (billion barrels)		Natural Gas (trillion cubic feet)	
	Oil & Gas Journal	World Oil	Oil & Gas Journal	World Oil		Oil & Gas Journal	World Oil	Oil & Gas Journal	World Oil
North America	215.3	45.4	255.8	262.1	Middle East	685.6	669.8	1,979.7	2.517.0
Canada	180.0	5.5	60.1	60.1	Bahrain	0.1	NA	3.3	NA
Mexico	12.6	17.2	8.8	15.0	Iran	89.7	100.1	812.3	913.6
United States	22.7	22.7	186.9	186.9	Iraq	112.5	115.0	109.8	112.6
					Kuwait ²	96.5	98.9	52.7	56.6
Central and South America	98.6	75.9	250.1	244.4	Oman	5.5	5.7	29.3	31.0
Argentina	2.9	2.8	27.0	23.4	Qatar	15.2	19.6	508.5	916.0
Bolivia	0.4	0.9	24.0	28.1	Saudi Arabia ²	261.8	261.8	224.7	234.6
Brazil	8.3	9.8	8.1	8.4	Syria	2.5	2.3	8.5	18.0
Colombia	1.8	1.6	4.5	4.2	United Arab Emirates	97.8	63.0	212.1	204.1
Ecuador	4.6	4.6	0.3	0.3	Yemen	4.0	2.9	16.9	17.0
Peru	0.3	1.0	8.7	8.6	Other	(s)	0.7	1.6	13.5
Trinidad and Tobago	0.7	1.0	23.5	20.3					
Venezuela	77.8	53.1	148.0	149.2	Africa	77.4	96.3	418.2	438.9
Other	1.6	1.0	6.1	1.8	Algeria	9.2	13.0	159.7	170.0
Western Europe	18.3	17.0	191.6	175.7	Angola	5.4	8.9	1.6	4.0
Denmark	1.3	1.8	3.0	4.2	Cameroon	0.4	NA	3.9	NA
Germany	0.3	0.3	11.3	8.5	Congo	1.5	1.5	3.2	4.2
Italy	0.6	0.7	8.0	7.9	Egypt	3.7	3.5	58.5	5.9
Netherlands	0.1	0.1	62.0	55.3	Libya	29.5	30.0	46.4	46.0
Norway	10.3	9.0	77.3	74.7	Nigeria	24.0	32.0	124.0	178.5
United Kingdom	4.7	4.5	24.6	22.2	Tunisia	0.3	0.5	2.8	2.7
Other	0.9	0.6	5.4	2.9	Other	3.4	6.8	18.1	27.7
Eastern Europe and Former U.S.S.R.	79.2	81.9	1,964.2	2,047.0	Asia and Oceania	38.7	48.5	445.4	441.7
Hungary	0.1	0.1	1.2	2.2	Australia	3.5	3.7	90.0	85.0
Kazakhstan	9.0	NA	65.0	NA	Brunei	1.4	1.1	13.8	8.3
Romania	1.0	1.1	3.6	4.2	China	18.3	23.7	53.3	46.7
Russia	60.0	58.8	1,680.0	1,700.0	India	5.4	4.6	26.9	23.6
Other ³	9.1	21.9	214.4	340.6	Indonesia	5.0	5.9	92.5	73.5
					Japan	0.1	NA	1.4	NA
					Malaysia	3.0	4.3	75.0	88.0
					New Zealand	0.2	0.1	3.1	2.6
					Pakistan	0.3	0.3	26.4	26.4
					Papua New Guinea	0.2	0.4	12.2	13.5
					Thailand	0.6	0.5	13.3	12.9
					Other	0.9	3.8	37.4	61.4
					World	1,213.1	1,034.7	5,504.9	6,126.6

¹ Includes 5.2 billion barrels of conventional crude oil and condensate reserves and 174.8 billion barrels of bitumen that is contained in Alberta's oil sands.

² Data for Kuwait and Saudi Arabia include one-half of the reserves in the Neutral Zone between Kuwait and Saudi Arabia.

³ Albania, Azerbaijan, Belarus, Bulgaria, Czech Republic, Georgia, Kyrgyzstan, Lithuania, Poland, Slovakia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan.

NA=Not available. (s)=Less than 0.05 billion barrels.

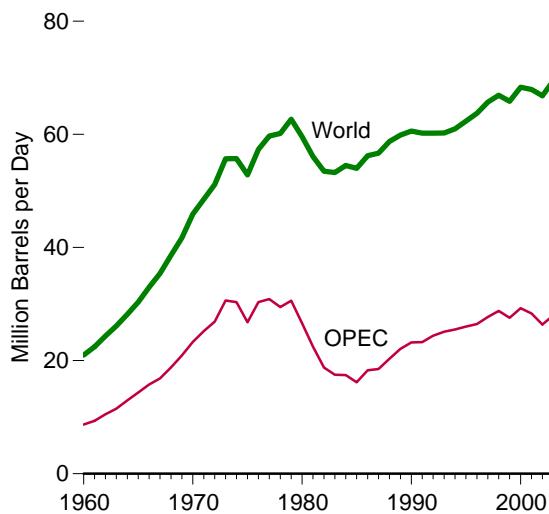
Notes: • All reserve figures except those for the former U.S.S.R. and natural gas reserves in Canada are proved reserves recoverable with present technology and prices at the time of estimation. Former U.S.S.R. and Canadian natural gas figures include proved, and some probable reserves. • Totals may not equal sum of components due to independent rounding.

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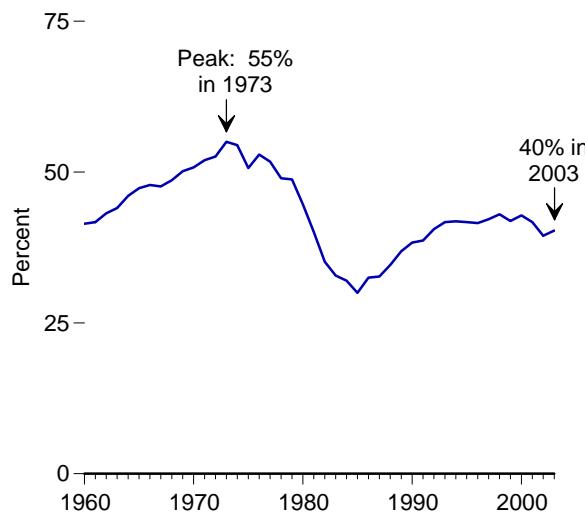
Source: Energy Information Administration, "International Energy Annual 2002" (May 2004), Table 8.1.

Figure 11.5 World Crude Oil Production

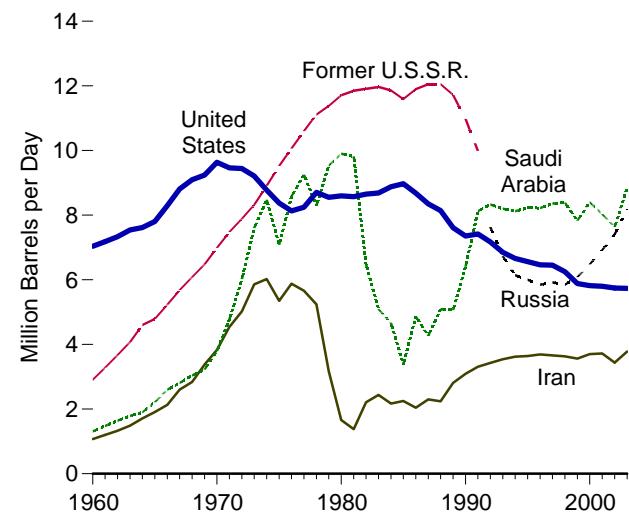
World and OPEC, 1960-2003



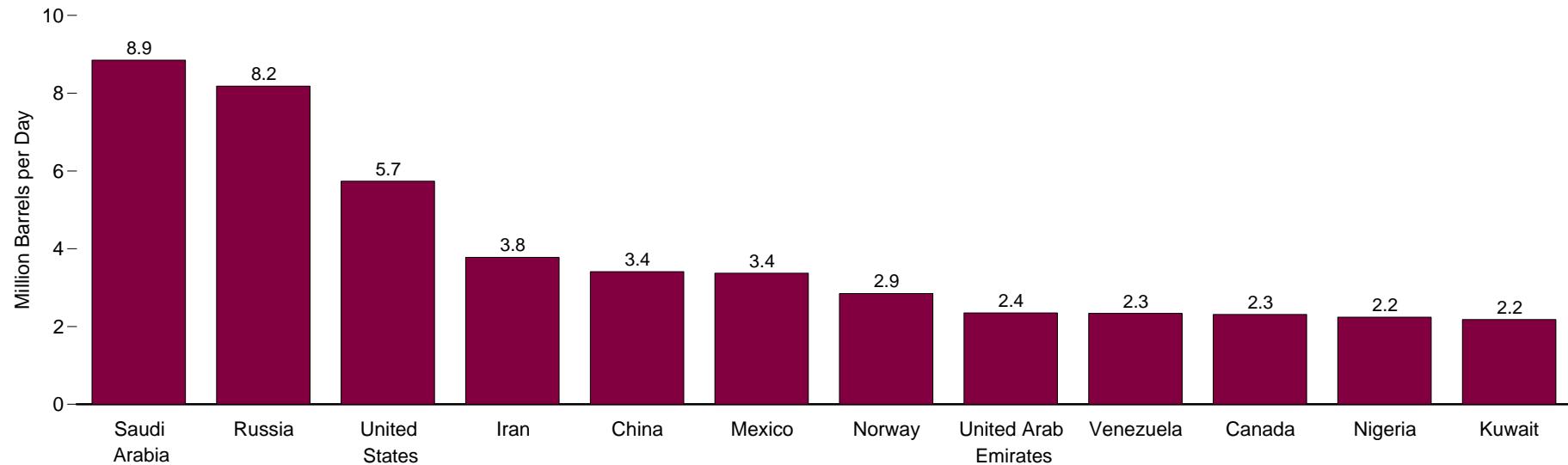
OPEC's Share of World, 1960-2003



Leading Producers, 1960-2003



Selected Producing Countries, 2003



Note: Because vertical scales differ, graphs should not be compared.

Source: Table 11.5.

Table 11.5 World Crude Oil Production, 1960-2003
 (Million Barrels per Day)

Year	Persian Gulf Nations ²	Selected OPEC ¹ Producers							Selected Non-OPEC Producers							World			
		Iran	Iraq	Kuwait ³	Nigeria	Saudi Arabia ³	United Arab Emirates	Venezuela	Total OPEC	Canada	China	Mexico	Norway	Former U.S.S.R.	Russia	United Kingdom	United States	Total Non-OPEC ⁴	
1960	5.27	1.07	0.97	1.69	0.02	1.31	0.00	2.85	8.70	0.52	0.10	0.27	0.00	2.91	—	(s)	7.04	12.29	20.99
1961	5.65	1.20	1.01	1.74	0.05	1.48	0.00	2.92	9.36	0.61	0.11	0.29	0.00	3.28	—	(s)	7.18	13.09	22.45
1962	6.19	1.33	1.01	1.96	0.07	1.64	0.01	3.20	10.51	0.67	0.12	0.31	0.00	3.67	—	(s)	7.33	13.84	24.35
1963	6.82	1.49	1.16	2.10	0.08	1.79	0.05	3.25	11.51	0.71	0.13	0.31	0.00	4.07	—	(s)	7.54	14.62	26.13
1964	7.61	1.71	1.26	2.30	0.12	1.90	0.19	3.39	12.98	0.75	0.18	0.32	0.00	4.60	—	(s)	7.61	15.20	28.18
1965	8.37	1.91	1.32	2.36	0.27	2.21	0.28	3.47	14.35	0.81	0.23	0.32	0.00	4.79	—	(s)	7.80	15.98	30.33
1966	9.32	2.13	1.39	2.48	0.42	2.60	0.36	3.37	15.77	0.88	0.29	0.33	0.00	5.23	—	(s)	8.30	17.19	32.96
1967	9.91	2.60	1.23	2.50	0.32	2.81	0.38	3.54	16.85	0.96	0.28	0.36	0.00	5.68	—	(s)	8.81	18.54	35.39
1968	10.91	2.84	1.50	2.61	0.14	3.04	0.50	3.60	18.79	1.19	0.30	0.39	0.00	6.08	—	(s)	9.10	19.84	38.63
1969	11.95	3.38	1.52	2.77	0.54	3.22	0.63	3.59	20.91	1.13	0.48	0.46	0.00	6.48	—	(s)	9.24	20.79	41.70
1970	13.39	3.83	1.55	2.99	1.08	3.80	0.78	3.71	23.30	1.26	0.60	0.49	0.00	6.99	—	(s)	9.64	22.59	45.89
1971	15.77	4.54	1.69	3.20	1.53	4.77	1.06	3.55	25.21	1.35	0.78	0.49	0.01	7.48	—	(s)	9.46	23.31	48.52
1972	17.54	5.02	1.47	3.28	1.82	6.02	1.20	3.22	26.89	1.53	0.90	0.51	0.03	7.89	—	(s)	9.44	24.25	51.14
1973	20.67	5.86	2.02	3.02	2.05	7.60	1.53	3.37	30.63	1.80	1.09	0.47	0.03	8.32	—	(s)	9.21	25.05	55.68
1974	21.28	6.02	1.97	2.55	2.26	8.48	1.68	2.98	30.35	1.55	1.32	0.57	0.04	8.91	—	(s)	8.77	25.37	55.72
1975	18.93	5.35	2.26	2.08	1.78	7.08	1.66	2.35	26.77	1.43	1.49	0.71	0.19	9.52	—	0.01	8.37	26.06	52.83
1976	21.51	5.88	2.42	2.15	2.07	8.58	1.94	2.29	30.33	1.31	1.67	0.83	0.28	10.06	—	0.25	8.13	27.01	57.34
1977	21.73	5.66	2.35	1.97	2.09	9.25	2.00	2.24	30.89	1.32	1.87	0.98	0.28	10.60	—	0.77	8.24	28.82	59.71
1978	20.61	5.24	2.56	2.13	1.90	8.30	1.83	2.17	29.46	1.32	2.08	1.21	0.36	11.11	—	1.08	8.71	30.70	60.16
1979	21.07	3.17	3.48	2.50	2.30	9.53	1.83	2.36	30.58	1.50	2.12	1.46	0.40	11.38	—	1.57	8.55	32.09	62.67
1980	17.96	1.66	2.51	1.66	2.06	9.90	1.71	2.17	26.61	1.44	2.11	1.94	0.53	11.71	—	1.62	8.60	32.99	59.60
1981	15.25	1.38	1.00	1.13	1.43	9.82	1.47	2.10	22.48	1.29	2.01	2.31	0.50	11.85	—	1.81	8.57	33.60	56.08
1982	12.16	2.21	1.01	0.82	1.30	6.48	1.25	1.90	18.78	1.27	2.05	2.75	0.52	11.91	—	2.07	8.65	34.70	53.48
1983	11.08	2.44	1.01	1.06	1.24	5.09	1.15	1.80	17.50	1.36	2.12	2.69	0.61	11.97	—	2.29	8.69	35.76	53.26
1984	10.78	2.17	1.21	1.16	1.39	4.66	1.15	1.80	17.44	1.44	2.30	2.78	0.70	11.86	—	2.48	8.88	37.05	54.49
1985	9.63	2.25	1.43	1.02	1.50	3.39	1.19	1.68	16.18	1.47	2.51	2.75	0.79	11.59	—	2.53	8.97	37.80	53.98
1986	11.70	2.04	1.69	1.42	1.47	4.87	1.33	1.79	18.28	1.47	2.62	2.44	0.87	11.90	—	2.54	8.68	37.95	56.23
1987	12.10	2.30	2.08	1.59	1.34	4.27	1.54	1.75	18.52	1.54	2.69	2.55	1.02	12.05	—	2.41	8.35	38.15	56.67
1988	13.46	2.24	2.69	1.49	1.45	5.09	1.57	1.90	20.32	1.62	2.73	2.51	1.16	12.05	—	2.23	8.14	38.42	58.74
1989	14.84	2.81	2.90	1.78	1.72	5.06	1.86	1.91	22.07	1.56	2.76	2.52	1.55	11.72	—	1.80	7.61	37.79	59.86
1990	15.28	3.09	2.04	1.18	1.81	6.41	2.12	2.14	23.20	1.55	2.77	2.55	1.70	10.98	—	1.82	7.36	37.37	60.57
1991	14.74	3.31	0.31	0.19	1.89	8.12	2.39	2.38	23.27	1.55	2.84	2.68	1.89	9.99	—	1.80	7.42	36.94	60.21
1992	15.97	3.43	0.43	1.06	1.94	8.33	2.27	2.37	24.40	1.61	2.85	2.67	2.23	—	7.63	1.83	7.17	35.81	60.21
1993	16.71	3.54	0.51	1.85	1.96	8.20	2.16	2.45	25.12	1.68	2.89	2.67	2.35	—	6.73	1.92	6.85	35.12	60.24
1994	16.96	3.62	0.55	2.03	1.93	8.12	2.19	2.59	25.51	1.75	2.94	2.69	2.52	—	6.14	2.37	6.66	35.48	60.99
1995	17.21	3.64	0.56	2.06	1.99	8.23	2.23	2.75	26.00	1.81	2.99	2.62	2.77	—	6.00	2.49	6.56	36.33	62.33
1996	17.37	3.69	0.58	2.06	2.00	8.22	2.28	2.94	26.46	1.84	3.13	2.86	3.10	—	5.85	2.57	6.46	37.25	63.71
1997	18.10	3.66	1.16	2.01	2.13	8.36	2.32	3.28	27.71	1.92	3.20	3.02	3.14	—	5.92	2.52	6.45	37.98	65.69
1998	19.34	3.63	2.15	2.09	2.15	8.39	2.35	3.17	28.77	1.98	3.20	3.07	3.02	—	5.85	2.62	6.25	38.15	66.92
1999	18.67	3.56	2.51	1.90	2.13	7.83	2.17	2.83	27.58	1.91	3.20	2.91	3.02	—	6.08	2.68	5.88	38.27	65.85
2000	19.89	3.70	2.57	2.08	2.17	8.40	2.37	3.16	29.26	1.98	3.25	3.01	3.20	—	6.48	2.28	5.82	39.08	68.34
2001	R ^{19.10}	3.72	R ^{2.39}	2.00	2.26	8.03	R ^{2.21}	R ^{3.01}	R ^{28.34}	2.03	3.30	3.16	3.12	—	R ^{6.92}	2.28	5.80	R ^{39.60}	R ^{67.94}
2002	17.79	3.44	2.02	1.89	2.12	7.63	2.08	R ^{2.60}	26.37	2.17	3.39	3.18	2.99	—	7.41	2.29	R ^{5.75}	R ^{40.47}	R ^{66.84}
2003 ^P	19.26	3.78	1.31	2.18	2.24	8.85	2.35	2.34	28.01	2.31	3.41	3.37	2.85	—	8.18	2.09	5.74	41.49	69.50

¹ Organization of Petroleum Exporting Countries. See Glossary for membership.

² Persian Gulf Nations are Bahrain, Iran, Iraq, Kuwait, Qatar, Saudi Arabia, and United Arab Emirates.

³ Includes about one-half of the production in the Neutral Zone between Kuwait and Saudi Arabia.

⁴ Ecuador, which withdrew from OPEC on December 31, 1992, and Gabon, which withdrew on December 31, 1994, are included in "Non-OPEC" for all years.

R=Revised. P=Preliminary. — = Not applicable. (s)=Less than 0.005 million barrels per day.

Notes: • Includes lease condensate, excludes natural gas plant liquids. • Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/international>.

Sources: **China:** • 1960-1972—Central Intelligence Agency, unpublished data. • 1973-1979—

Energy Information Administration (EIA), *International Energy Annual*, annual reports, and the International Energy Database. • 1980-2002—EIA, "International Energy Annual 2002" (May 2004), Table 2.2.

• 2003—EIA, *Monthly Energy Review* (March 2004), Table 11.1b. **United States:**

• 1960-1975—Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual*.

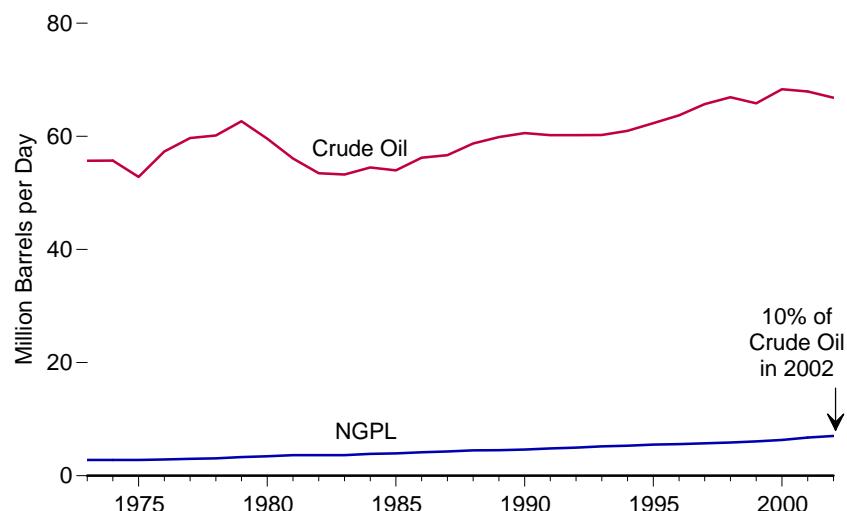
• 1976-1979—EIA, *Energy Data Reports, Petroleum Statement, Annual*. • 1980-2002—EIA, "International Energy Annual 2002" (May 2004), Table 2.2. • 2003—EIA, *Petroleum Supply Monthly* (February 2004).

Former U.S.S.R.: • 1960-1969—U.S.S.R. Central Statistical Office, *Narodnoye Khozyaystvo SSSR* (National Economy USSR). • 1970-1979—EIA, *International Petroleum Monthly*, February 2001, Table 4.1c. • 1980-1991—EIA, "International Energy Annual 2002" (May 2004), Table 2.2. **Russia:**

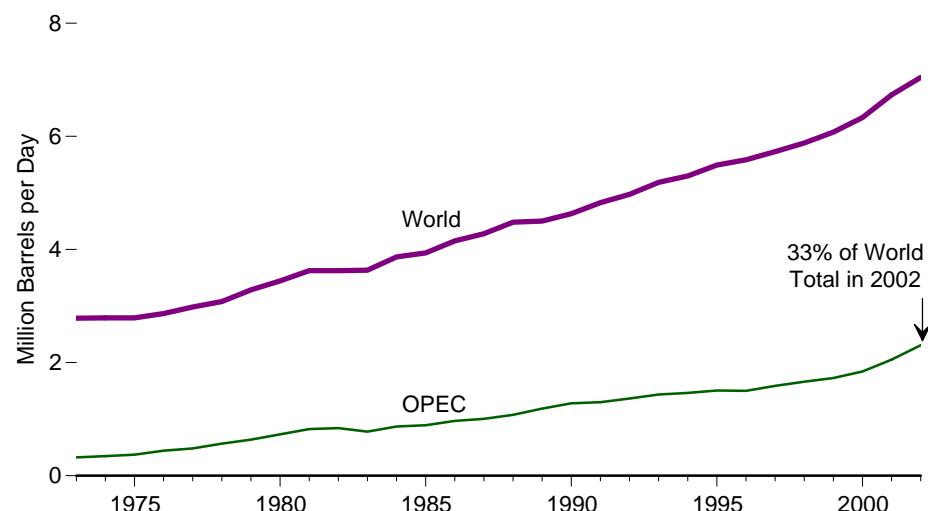
• 1992-2002—EIA, "International Energy Annual 2002" (May 2004), Table 2.2. • 2003—EIA, *Monthly Energy Review* (March 2004), Table 11.1b. **OPEC Nations:** • 1960-1972—Organization of Petroleum Exporting Countries, *Annual Statistical Bulletin 1979*. • 1973-1979—EIA, *International Energy Annual*, annual reports, and the International Energy Database. • 1980-2002—EIA, "International Energy Annual 2002" (May 2004), Table 2.2. • 2003—EIA, *Monthly Energy Review* (March 2004), Table 11.1a. **All Other Countries:** • 1960-1969—Bureau of Mines, *International Petroleum Annual*, 1969. • 1970-1972—EIA, *International Petroleum Annual*, 1978. • 1973-1979—EIA, *International Energy Annual*, annual reports, and the International Energy Database. • 1980-2002—EIA, "International Energy Annual 2002" (May 2004), Table 2.2. • 2003—EIA, *Monthly Energy Review* (March 2004), Tables 11.1a and 11.1b.

Figure 11.6 World Natural Gas Plant Liquids Production

Crude Oil and NGPL Production, 1973-2002



World and OPEC NGPL Production, 1973-2002



Top NGPL Producing Countries, 2002



Notes: • Crude oil includes lease condensate. • NGPL is natural gas plant liquids.
• Because vertical scales differ, graphs should not be compared.

Sources: Tables 11.5 and 11.6.

Table 11.6 World Natural Gas Plant Liquids Production, 1973-2002
 (Thousand Barrels per Day)

Year	Selected OPEC ¹ Producers								Selected Non-OPEC Producers										World
	Algeria	Indonesia	Kuwait ²	Qatar	Saudi Arabia ²	United Arab Emirates	Venezuela	Total OPEC	Australia	Canada	Malaysia	Mexico	Norway	Former U.S.S.R.	Russia	United Kingdom	United States	Total Non-OPEC ³	
1973	9	(s)	60	(s)	90	(s)	89	324	50	314	0	75	(s)	170	—	5	1,738	2,462	2,786
1974	12	(s)	50	5	130	(s)	84	347	50	314	0	80	(s)	190	—	5	1,688	2,443	2,790
1975	20	(s)	50	10	140	(s)	76	372	50	309	0	80	5	205	—	15	1,633	2,419	2,791
1976	24	10	50	10	185	(s)	77	442	50	289	0	95	20	220	—	15	1,604	2,425	2,867
1977	19	10	55	5	215	15	78	482	55	290	0	105	20	235	—	30	1,618	2,502	2,984
1978	25	30	75	5	250	30	61	566	60	281	0	115	35	255	—	40	1,567	2,514	3,080
1979	30	40	95	10	303	30	69	637	60	331	0	150	40	270	—	45	1,584	2,650	3,287
1980	36	70	95	10	369	35	60	732	60	331	0	193	40	285	—	45	1,573	2,712	3,444
1981	49	95	60	24	433	60	55	825	60	330	0	241	31	300	—	50	1,609	2,800	3,625
1982	58	80	40	30	430	90	60	842	52	318	0	255	33	315	—	78	1,550	2,784	3,626
1983	56	94	55	25	330	120	57	780	52	309	0	265	38	330	—	111	1,559	2,855	3,635
1984	105	75	67	28	355	130	57	869	54	336	10	257	36	340	—	136	1,630	3,000	3,869
1985	120	44	54	30	375	160	63	892	65	337	10	271	41	350	—	145	1,609	3,046	3,938
1986	120	30	75	22	385	185	97	969	60	328	9	352	53	440	—	152	1,551	3,181	4,150
1987	140	30	95	24	418	145	94	1,006	65	367	11	338	55	430	—	162	1,595	3,273	4,279
1988	120	30	100	30	499	130	98	1,077	67	381	11	370	75	450	—	159	1,625	3,404	4,481
1989	130	72	105	24	503	130	108	1,188	65	410	11	384	74	425	—	140	1,546	3,314	4,502
1990	130	77	65	40	620	135	114	1,281	63	426	12	428	78	425	—	108	1,559	3,351	4,632
1991	140	76	0	50	680	146	117	1,299	61	431	12	457	94	420	—	141	1,659	3,528	4,827
1992	140	75	34	55	713	144	113	1,364	56	460	13	454	95	—	230	160	1,697	3,610	4,974
1993	145	78	53	55	704	146	143	1,435	55	506	17	459	100	—	220	169	1,736	3,751	5,186
1994	140	80	85	50	698	150	146	1,465	56	529	17	461	103	—	200	218	1,727	R3,834	R5,299
1995	145	76	95	55	701	160	149	1,506	52	581	20	447	137	—	180	267	1,762	3,986	5,492
1996	150	80	85	50	697	160	150	1,501	62	596	20	423	138	—	185	259	1,830	4,084	5,585
1997	160	85	109	70	712	160	143	1,589	71	636	50	388	139	—	195	233	1,817	4,140	5,729
1998	155	87	115	85	755	170	145	1,662	70	651	90	424	131	—	220	241	1,759	4,221	5,883
1999	190	87	115	111	R745	160	170	R1,728	72	653	85	439	121	—	231	238	1,850	4,347	R6,075
2000	230	90	115	133	R750	200	175	R1,843	70	699	65	438	120	—	232	233	1,911	R4,490	R6,333
2001	250	82	120	150	R800	290	200	R2,053	74	709	70	433	291	—	237	258	1,868	R4,681	R6,734
2002 ^P	270	80	125	160	1,000	300	202	2,308	80	698	75	408	335	—	246	211	1,880	4,734	7,042

¹ Organization of Petroleum Exporting Countries. See Glossary for membership.

² Includes about one-half of the production in the Neutral Zone between Kuwait and Saudi Arabia.

³ Ecuador, which withdrew from OPEC on December 31, 1992, and Gabon, which withdrew on December 31, 1994, are included in "Non-OPEC" for all years.

R=Revised. P=Preliminary. — = Not applicable. (s)=Less than 500 barrels per day.

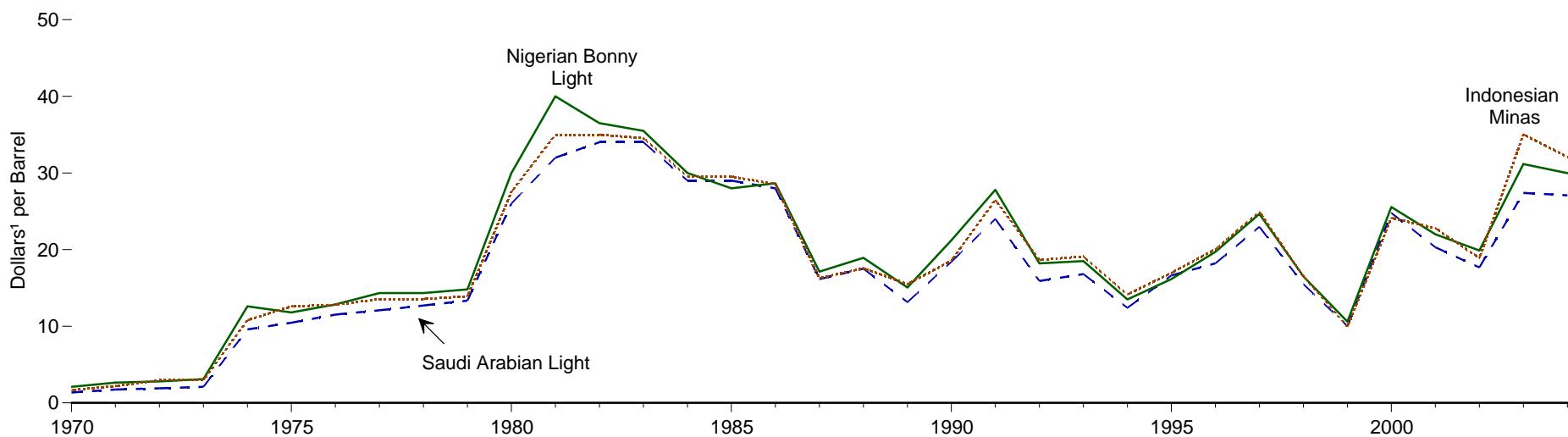
Note: Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/international>.

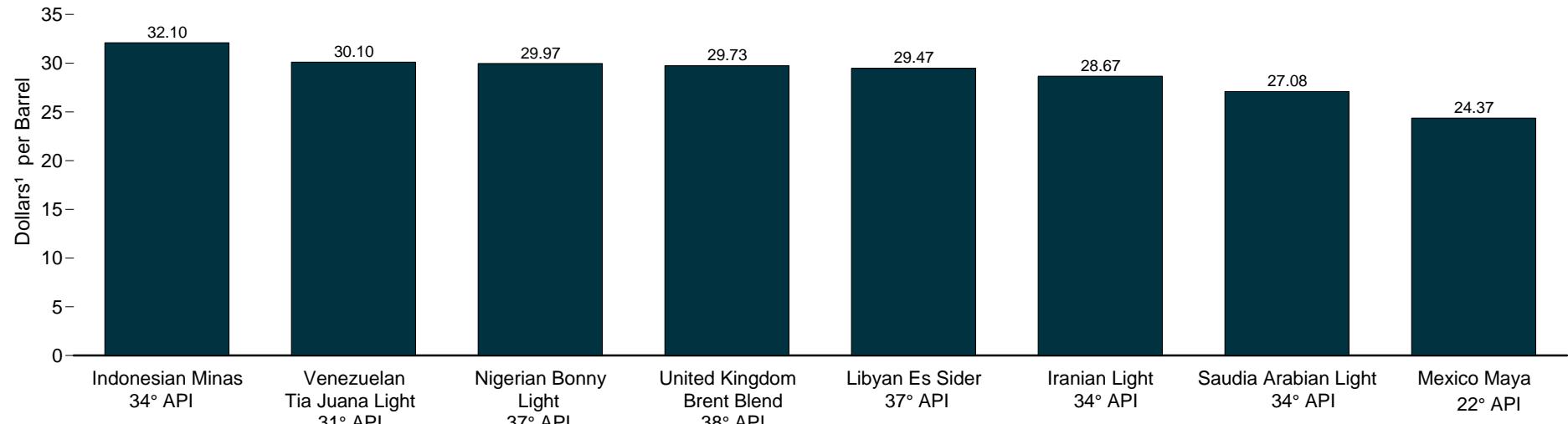
Sources: • 1973-1979—Energy Information Administration (EIA), *International Energy Annual*, annual reports, and the International Energy Database. • 1980 forward—EIA, "International Energy Annual 2002" (May 2004), Table 2.3.

Figure 11.7 Crude Oil Prices by Selected Type

Selected Types, 1970-2004



Selected Types, 2004



¹Nominal dollars.
API=API gravity.

Notes: • Prices are as of the Friday that is closest to January 1, except in 1987, when prices are as of the first Friday in February. • Because vertical scales differ, graphs should not be compared.

Source: Table 11.7.

Table 11.7 Crude Oil Prices by Selected Type, 1970-2004
 (Dollars¹ per Barrel)

Year	Saudi Arabian Light-34° API	Iranian Light-34° API	Libyan ² Es Sider-37° API	Nigerian ³ Bonny Light-37° API	Indonesian Minas-34° API	Venezuelan Tia Juana Light ⁴	Mexico Maya-22° API	United Kingdom Brent Blend-38° API
1970	1.35	1.36	2.09	2.10	1.67	2.05	NA	NA
1971	1.75	1.76	2.80	2.65	2.18	2.45	NA	NA
1972	1.90	1.91	2.80	2.80	2.96	2.45	NA	NA
1973	2.10	2.11	3.10	3.10	2.96	2.60	NA	NA
1974	9.60	10.63	14.30	12.60	10.80	9.30	NA	NA
1975	10.46	10.67	11.98	11.80	12.60	11.00	NA	NA
1976	11.51	11.62	12.21	12.84	12.80	11.12	NA	NA
1977	12.09	12.81	13.74	14.33	13.55	12.72	NA	NA
1978	12.70	12.81	13.80	14.33	13.55	12.82	NA	NA
1979	13.34	13.45	14.52	14.80	13.90	13.36	15.45	15.70
1980	26.00	50.37	34.50	29.97	27.50	25.20	28.00	26.02
1981	32.00	37.00	40.78	40.00	35.00	32.88	34.50	39.25
1982	34.00	34.20	36.50	36.50	35.00	32.88	26.50	36.60
1983	34.00	31.20	35.10	35.50	34.53	32.88	25.50	33.50
1984	29.00	28.00	30.15	30.00	29.53	27.88	25.00	30.00
1985	29.00	28.00	30.15	28.00	29.53	27.88	25.50	28.65
1986	28.00	28.05	30.15	28.65	28.53	28.05	21.93	26.00
1987	16.15	16.14	16.95	17.13	16.28	15.10	14.00	18.25
1988	17.52	15.55	18.52	18.92	17.56	17.62	11.10	18.00
1989	13.15	12.75	15.40	15.05	15.50	12.27	10.63	15.80
1990	18.40	18.20	20.40	21.20	18.55	24.69	17.05	21.00
1991	24.00	23.65	26.90	27.80	26.50	28.62	20.00	27.20
1992	15.90	15.50	17.20	18.20	18.65	19.67	10.75	17.75
1993	16.80	16.70	17.55	18.50	19.10	17.97	12.50	17.90
1994	12.40	12.40	12.55	13.50	14.15	12.97	9.01	13.15
1995	16.63	16.18	16.05	16.15	16.95	16.57	13.77	16.15
1996	18.20	17.73	19.20	19.70	20.05	18.52	15.79	19.37
1997	22.98	22.63	24.10	24.65	24.95	26.62	19.33	24.05
1998	15.50	14.93	16.72	16.50	16.50	15.93	10.81	15.89
1999	10.03	9.83	10.65	10.60	9.95	9.45	6.38	10.44
2000	24.78	24.63	25.85	25.55	24.15	24.85	20.20	25.10
2001	20.30	20.20	22.40	22.00	22.80	22.13	15.82	22.50
2002	17.68	18.90	19.63	19.88	18.89	17.78	14.30	21.20
2003	27.39	27.85	30.40	31.16	35.03	30.25	26.29	31.36
2004	27.08	28.67	29.47	29.97	32.10	30.10	24.37	29.73

¹ Nominal dollars.

² Prices for 1974 and 1975 are for crude oil with 40° API gravity. Prices for 1980 include \$4.72 in retroactive charges and market premiums.

³ Prices from 1977 forward include 2 cents per barrel harbor dues.

⁴ 1970-1985—26° API; 1986 forward—31° API.

⁵ Price for 1980 includes \$1.87 market premiums and credit charges.

API=API gravity. NA=Not available.

Notes: • Prices are at beginning of year. • Based on official government-selling prices, netback values,

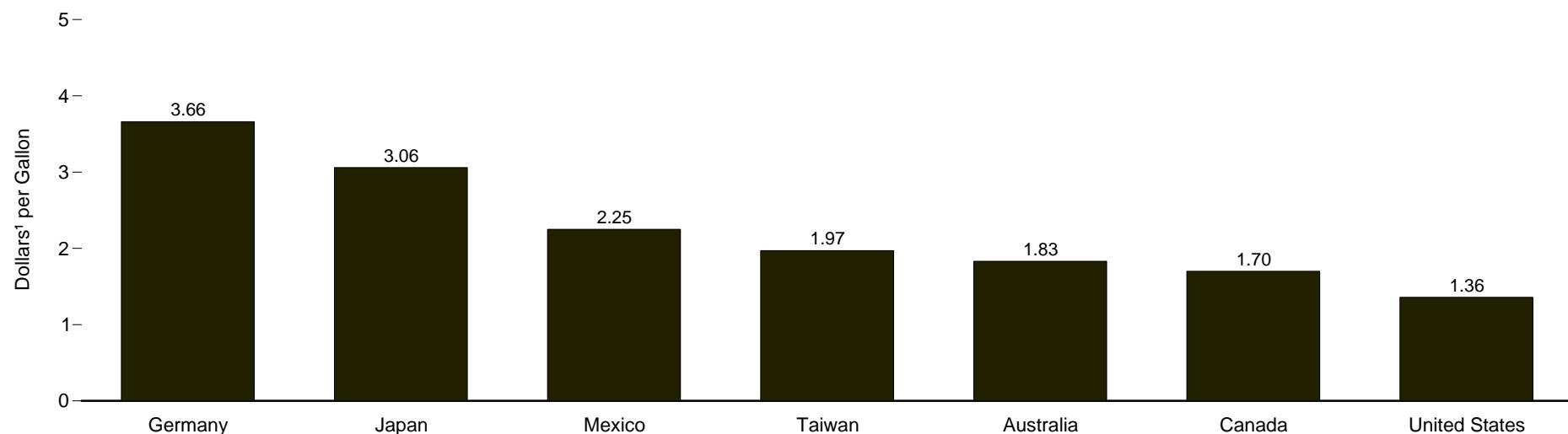
or spot market quotations. • Prices are usually f.o.b. at the foreign port of lading. • Prices are as of the Friday that is closest to January 1, except in 1987, when prices are as of the first Friday in February. • See Tables 5.18, 5.19, and 5.21 for other types of crude oil prices for the United States, such as Domestic First Purchase Prices, Landed Costs of Crude Oil Imports, and Refiner Acquisition Costs.

Web Page: For related information, see <http://www.eia.doe.gov/international>.

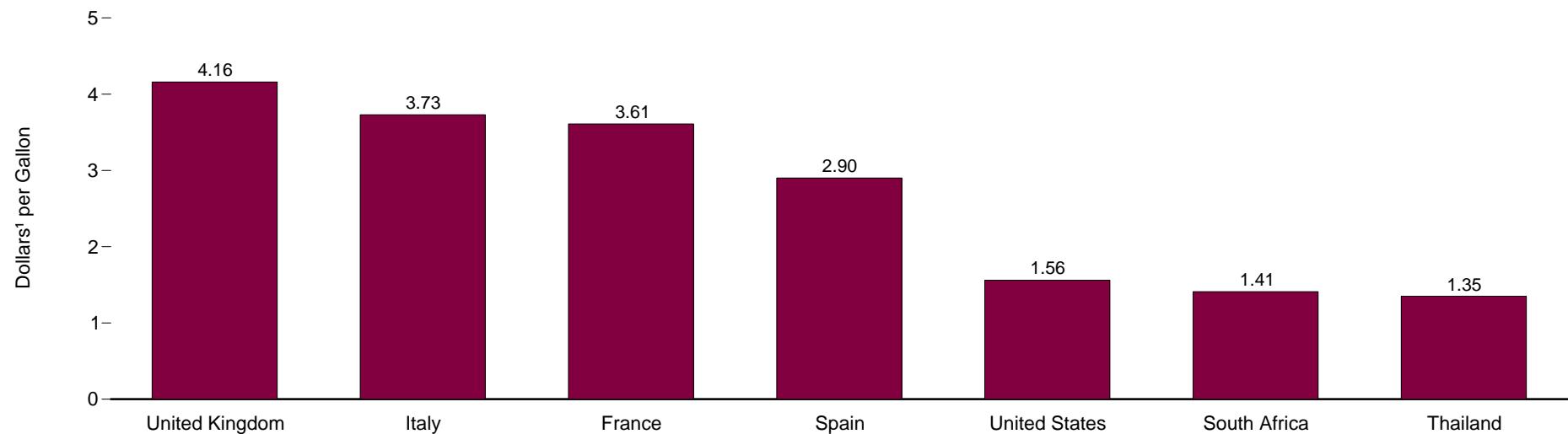
Sources: • 1970-1978—Petroleum and Energy Intelligence Weekly, Inc., *Petroleum Intelligence Weekly*. • 1979 forward—Energy Information Administration, *Weekly Petroleum Status Report*.

Figure 11.8 Retail Motor Gasoline Prices in Selected Countries, 2002

Regular Unleaded



Premium Unleaded²



¹ Nominal dollars.

² Research Octane Number (RON) of 95.

Source: Table 11.8.

Table 11.8 Retail Motor Gasoline Prices in Selected Countries, 1990-2002

(Dollars¹ per Gallon)

Year	Regular Unleaded										Premium Unleaded ²							
	Australia	Brazil	Canada	China	Germany	Japan	Mexico	Taiwan	United States	France	Italy	South Africa	South Korea	Spain	Thailand	United Kingdom	United States	
1990	NA	3.82	1.87	NA	2.65	3.17	1.00	2.49	1.16	3.63	4.60	NA	NA	NA	NA	2.82	1.35	
1991	1.96	2.91	1.92	NA	2.90	3.46	1.29	2.39	1.14	3.45	4.50	NA	NA	NA	1.40	3.01	1.32	
1992	1.89	2.92	1.73	NA	3.27	3.59	1.50	2.42	1.13	3.57	4.53	NA	NA	3.49	1.35	3.06	1.32	
1993	1.73	2.40	1.57	NA	3.07	4.02	1.56	2.27	1.11	3.41	3.68	NA	NA	3.02	1.26	2.84	1.30	
1994	1.84	2.80	1.45	0.96	3.52	4.39	1.48	2.14	1.11	3.59	3.71	NA	NA	2.99	1.21	2.99	1.31	
1995	1.95	2.16	1.53	1.03	3.96	4.43	1.12	2.23	1.15	4.26	4.00	NA	NA	3.24	1.26	3.21	1.34	
1996	2.12	2.31	1.61	1.03	3.94	3.65	1.26	2.15	1.23	4.41	4.39	1.74	NA	3.32	1.49	3.34	1.41	
1997	2.05	2.61	1.62	1.07	3.54	3.27	1.47	2.23	1.23	4.01	4.06	1.72	NA	3.01	1.26	3.83	1.42	
1998	1.63	2.80	1.38	1.08	3.34	2.82	1.50	1.86	1.06	3.87	3.84	1.51	NA	2.81	1.09	4.06	1.25	
1999	1.72	NA	1.51	R0.95	3.42	3.27	1.80	1.86	1.17	3.85	3.87	1.56	NA	2.82	1.22	4.29	1.36	
2000	1.94	NA	1.86	R1.06	3.45	R3.65	2.02	2.15	1.51	3.80	3.77	1.78	NA	2.86	1.38	4.58	1.69	
2001	1.71	NA	1.72	NA	3.40	R3.27	2.21	2.01	1.46	3.51	R3.57	1.59	NA	2.73	R1.33	4.13	1.66	
2002	1.83	NA	1.70	NA	3.66	3.06	2.25	1.97	1.36	3.61	3.73	1.41	NA	2.90	1.35	4.16	1.56	

¹ Nominal dollars.

² Research Octane Number (RON) of 95.

R=Revised. NA=Not available.

Notes: • Prices are those actually paid, i.e., net of rebates, and include transport costs and taxes which are not refundable. Prices in national currencies are converted to U.S. dollars using exchange rates published by the International Monetary Fund. • Prices for all countries, except the United States, have been converted from dollars per liter to dollars per gallon at 3.786 liters per gallon. Comparisons between prices and price trends in different countries require care. They are of limited validity because of

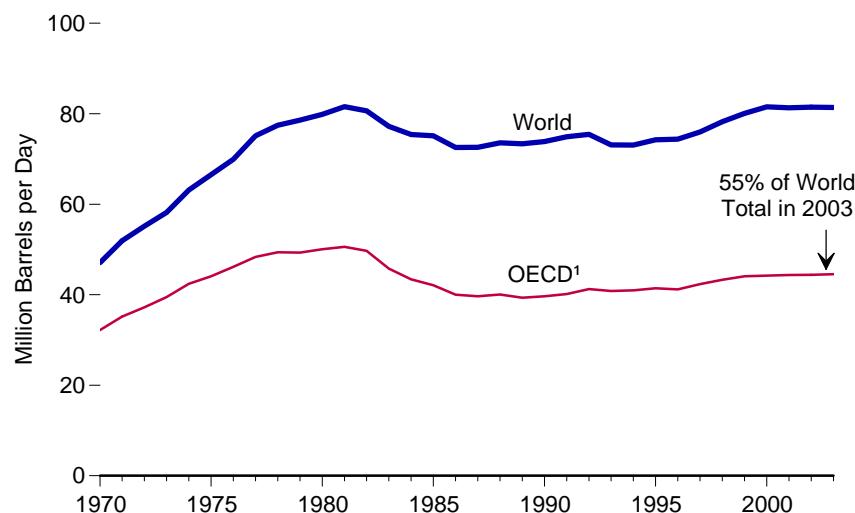
fluctuations in exchange rates, differences in product quality, marketing practices, market structures, and the extent to which the standard categories of sales are representative of total national sales for a given period.

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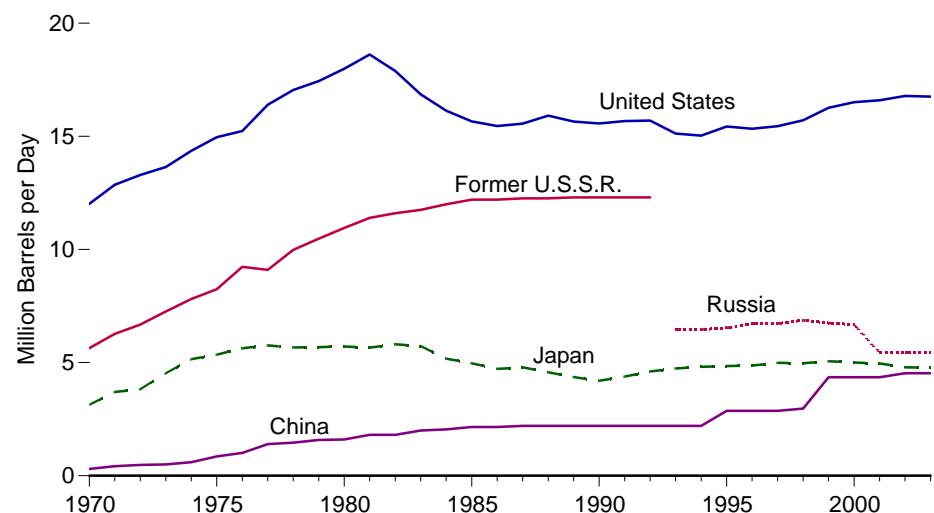
Sources: • **United States:** Table 5.24. • **All Other Data:** International Energy Agency, Organization for Economic Cooperation and Development, *Energy Prices and Taxes, Part II, Section D, and Part III, Section B*, quarterly reports.

Figure 11.9 World Crude Oil Refining Capacity

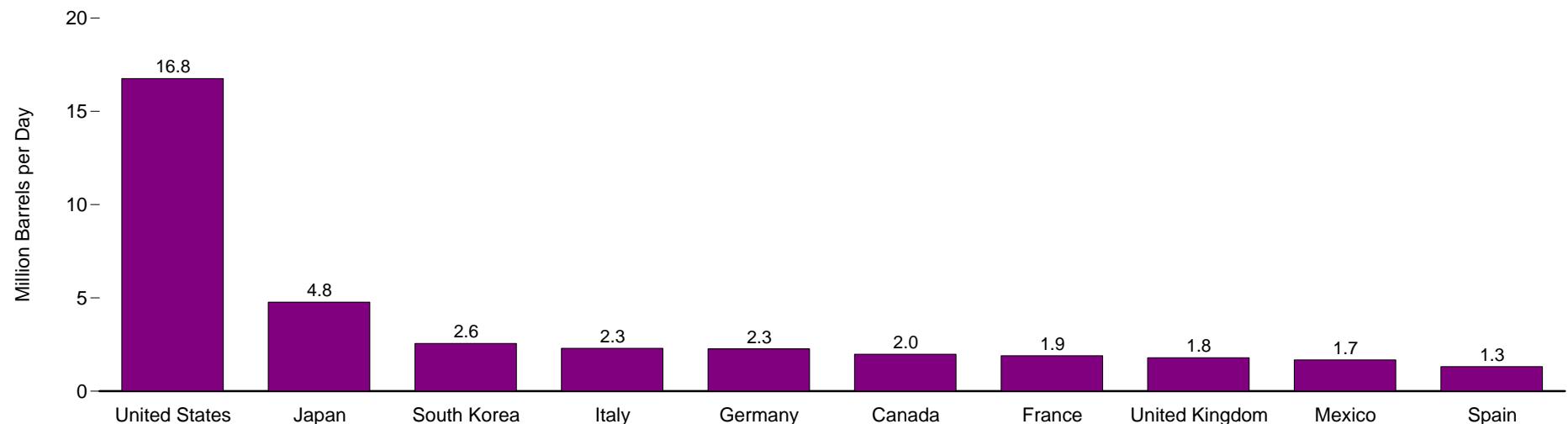
World and OECD,¹ 1970-2003



Leading Countries, 1970-2003



Selected OECD¹ Countries, 2003



¹ Organization for Economic Cooperation and Development. See Glossary for membership.

Notes: • Capacity as of January 1. • Because vertical scales differ, graphs should not be compared.

Source: Table 11.9.

Table 11.9 World Crude Oil Refining Capacity, 1970-2003

(Million Barrels per Day)

Year	Selected OECD ¹ Countries											Selected Non-OECD Countries							World
	Canada	France	Germany ²	Italy	Japan	Mexico ³	South Korea ³	Spain	United Kingdom	United States	Total OECD ⁴	Brazil	China	Former U.S.S.R.	Russia	Saudi Arabia	Ukraine	Total Non-OECD	
1970	1.40	2.32	2.36	2.96	3.14	0.50	0.18	0.69	2.30	12.02	32.18	0.50	0.30	5.64	—	0.38	—	14.92	47.10
1971	1.45	2.53	2.54	3.24	3.70	0.57	0.25	0.85	2.39	12.86	35.18	0.51	0.42	6.27	—	0.91	—	16.73	51.91
1972	1.45	2.69	2.56	3.68	3.82	0.59	0.22	0.87	2.59	13.29	37.22	0.56	0.48	6.68	—	0.51	—	17.92	55.14
1973	1.73	2.95	2.70	3.59	4.53	0.63	0.43	1.03	2.47	13.64	39.48	0.72	0.50	7.26	—	0.43	—	18.72	58.20
1974	1.79	3.14	2.83	3.88	5.15	0.63	0.42	1.16	2.76	14.36	42.41	0.79	0.60	7.81	—	0.43	—	20.74	63.15
1975	1.88	3.34	2.99	3.95	5.35	0.76	0.43	1.17	2.78	14.96	44.07	0.96	0.85	8.24	—	0.61	—	22.45	66.52
1976	2.02	3.31	3.10	4.08	5.63	0.76	0.44	1.32	2.89	15.24	46.16	0.99	1.01	9.23	—	0.54	—	23.77	69.93
1977	2.10	3.52	3.08	4.26	5.76	0.94	0.42	1.28	3.01	16.40	48.34	1.12	1.40	9.10	—	0.60	—	26.77	75.11
1978	2.17	3.46	3.08	4.23	5.67	1.38	0.48	1.27	2.91	17.05	49.37	1.16	1.46	9.98	—	0.59	—	28.09	77.46
1979	2.23	3.47	3.10	4.20	5.68	1.24	0.54	1.43	2.53	17.44	49.31	1.21	1.58	10.48	—	0.49	—	29.27	78.58
1980	2.22	3.40	2.99	4.13	5.71	1.39	0.60	1.46	2.53	17.99	50.07	1.21	1.60	10.95	—	0.49	—	29.78	79.85
1981	2.17	3.34	3.02	4.09	5.66	1.39	0.61	1.46	2.63	18.62	50.57	1.40	1.81	11.40	—	0.49	—	30.99	81.56
1982	2.20	3.29	2.94	4.00	5.81	1.47	0.76	1.52	2.48	17.89	49.70	1.41	1.81	11.60	—	0.49	—	30.93	80.63
1983	2.02	2.87	2.47	3.28	5.73	1.29	0.76	1.52	2.26	16.86	45.79	1.22	2.00	11.75	—	0.71	—	31.42	77.21
1984	1.81	2.67	2.39	3.05	5.17	1.27	0.78	1.49	2.09	16.14	43.41	1.30	2.05	12.00	—	0.86	—	32.01	75.42
1985	1.87	2.39	2.17	3.10	4.97	1.27	0.78	1.49	2.01	15.66	42.10	1.31	2.15	12.20	—	0.84	—	33.02	75.12
1986	1.86	1.95	1.93	2.74	4.72	1.27	0.78	1.37	1.79	15.46	40.00	1.31	2.15	12.20	—	1.12	—	32.55	72.55
1987	1.76	1.83	1.72	2.68	4.79	1.35	0.86	1.31	1.78	15.57	39.64	1.32	2.20	12.26	—	1.13	—	32.93	72.57
1988	1.87	1.94	1.65	2.56	4.57	1.35	0.82	1.31	1.80	15.92	40.03	1.41	2.20	12.26	—	1.38	—	33.54	73.57
1989	1.86	1.88	1.52	2.45	4.36	1.35	0.88	1.29	1.80	15.65	39.35	1.41	2.20	12.30	—	1.38	—	33.99	73.34
1990	1.85	1.82	1.51	2.80	4.20	1.51	0.87	1.29	1.83	15.57	39.66	1.40	2.20	12.30	—	1.48	—	34.20	73.86
1991	1.88	1.82	2.07	2.39	4.38	1.68	0.87	1.32	1.87	15.68	40.16	1.41	2.20	12.30	—	1.86	—	34.75	74.91
1992	1.91	1.82	2.06	2.39	4.61	1.57	1.16	1.32	1.86	15.70	41.26	1.41	2.20	12.30	—	1.86	—	34.17	75.43
1993	1.87	1.85	2.23	2.42	4.74	1.52	1.15	1.30	1.84	15.12	40.82	1.40	2.20	—	6.46	1.86	1.24	32.29	73.11
1994	1.88	1.86	2.27	2.26	4.81	1.52	1.15	1.28	1.87	15.03	40.98	1.25	2.20	—	6.46	1.61	1.24	32.09	73.07
1995	1.91	1.77	2.32	2.26	4.85	1.52	1.17	1.28	1.87	15.43	41.42	1.25	2.87	—	6.53	1.66	1.26	32.83	74.25
1996	1.85	1.78	2.13	2.28	4.87	1.52	1.24	1.33	1.89	15.33	41.19	1.26	2.87	—	6.72	1.66	1.26	33.20	74.39
1997	1.85	1.79	2.11	2.26	4.99	1.52	2.21	1.30	1.94	15.45	42.36	1.26	2.87	—	6.73	1.66	1.25	33.63	75.99
1998	1.85	1.87	2.18	2.45	4.97	1.52	2.54	1.29	1.83	15.71	43.31	1.66	2.97	—	6.87	1.65	1.25	34.91	78.22
1999	1.87	1.95	2.25	2.45	5.06	1.53	2.54	1.32	1.85	16.26	44.08	1.77	4.35	—	6.75	1.69	1.09	36.00	80.08
2000	1.91	1.90	2.28	2.34	5.00	1.53	2.54	1.32	1.79	16.51	44.21	1.78	4.35	—	6.67	1.71	1.15	37.32	81.53
2001	1.91	1.90	2.26	2.36	4.96	1.53	2.56	1.29	1.77	16.60	44.37	1.92	4.35	—	5.44	1.75	1.03	36.95	81.32
2002	1.94	1.90	2.26	2.28	4.79	1.53	2.56	1.29	1.78	16.79	44.38	1.79	4.53	—	5.44	1.75	1.03	37.06	81.44
2003	1.98	1.90	2.27	2.30	4.77	1.68	2.56	1.32	1.79	16.76	44.55	1.87	4.53	—	5.44	1.75	1.02	36.85	81.40

¹ Organization for Economic Cooperation and Development. See Glossary for membership.

² Through 1990, this is East and West Germany. Beginning in 1991, this is unified Germany.

³ Mexico, which joined the OECD on May 18, 1994, and South Korea, which joined the OECD on December 12, 1996, are included in the OECD for all years shown in this table.

⁴ Hungary and Poland, which joined the OECD on May 7, 1996, and November 22, 1996, respectively, are included in Total OECD beginning in 1992, the first year that data for these countries were available. The Czech Republic, which joined the OECD on December 21, 1995, is included in Total OECD beginning in 1994, the first year that data for the country were available.

— = Not applicable.

Notes: • Capacity data represent distillation capacity. • Capacity for all years is as of January 1.

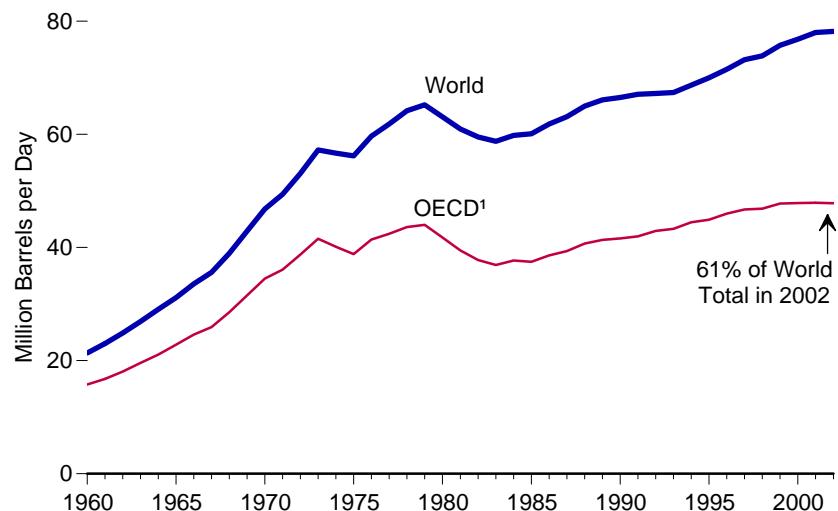
• Totals may not equal sum of components due to independent rounding.

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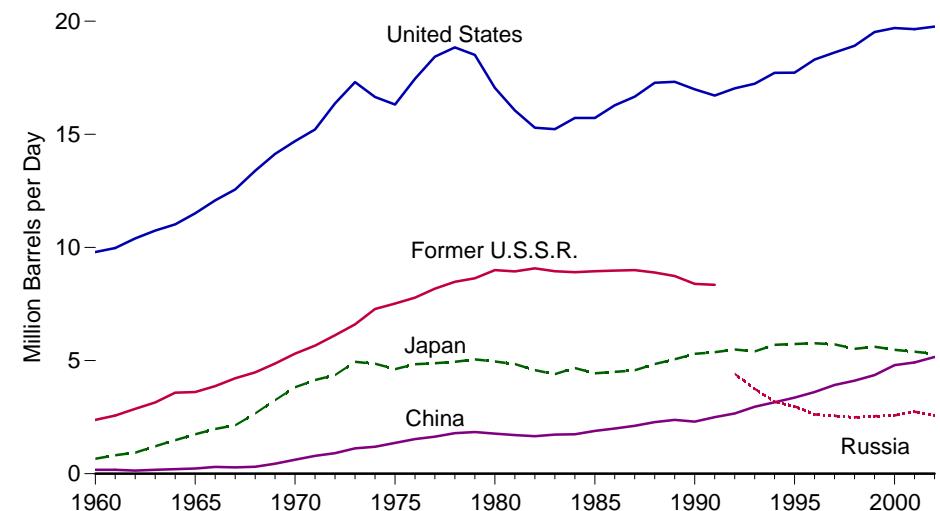
Sources: **United States:** • 1970-1977—Bureau of Mines, Mineral Industry Surveys, *Petroleum Refineries*, annual reports. • 1978-1981—Energy Information Administration (EIA), Energy Data Reports, *Petroleum Refineries in the United States and U.S. Territories*. • 1982 forward—EIA, *Petroleum Supply Annual*, annual reports. **China and Former U.S.S.R.:** • 1970-1976—Ballinger Publishing Company, *The Energy Decade, 1970-1980, A Statistical and Graphic Chronicle*. • 1977 forward—PennWell Publishing Company, *Oil & Gas Journal*. **All Other Countries:** PennWell Publishing Company, *Oil & Gas Journal*.

Figure 11.10 World Petroleum Consumption

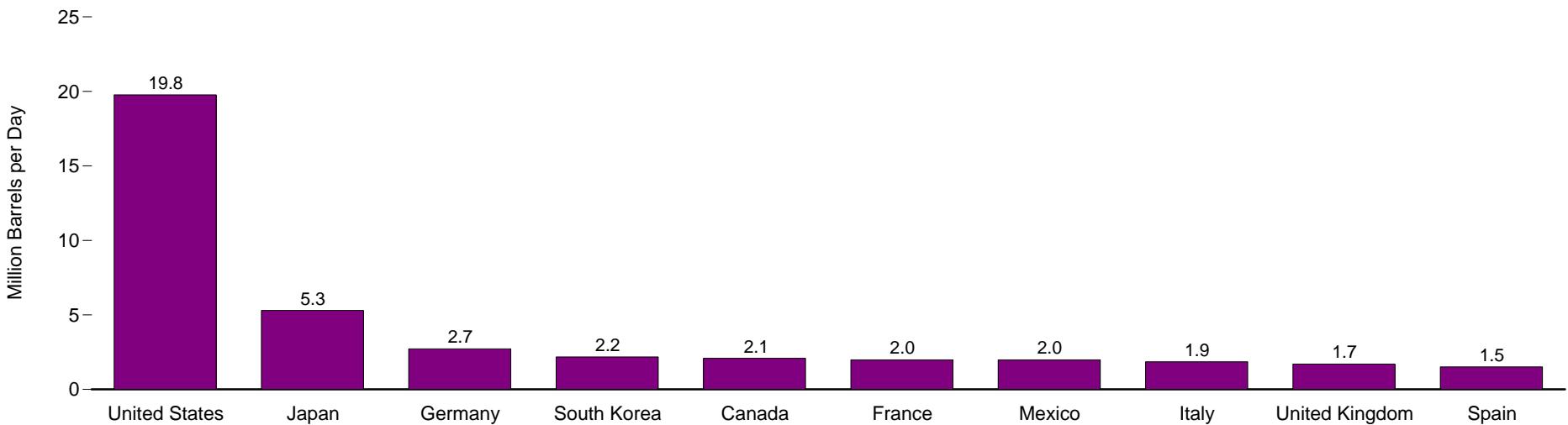
World and OECD,¹ 1960-2002



Leading Consumers, 1960-2002



Selected OECD¹ Consumers, 2002



¹ Organization for Economic Cooperation and Development. See Glossary for membership.

Note: Because vertical scales differ, graphs should not be compared.

Source: Table 11.10.

Table 11.10 World Petroleum Consumption, 1960-2002
(Million Barrels per Day)

Year	Selected OECD ¹ Consumers											Selected Non-OECD Consumers						World
	Canada	France	Germany ²	Italy	Japan	Mexico ³	South Korea ³	Spain	United Kingdom	United States	Total OECD ⁴	Brazil	China	India	Former U.S.S.R.	Russia	Total Non-OECD	
1960	0.84	0.56	0.63	0.44	0.66	0.30	0.01	0.10	0.94	9.80	15.78	0.27	0.17	0.16	2.38	—	5.56	21.34
1961	0.87	0.63	0.79	0.54	0.82	0.29	0.02	0.12	1.04	9.98	16.77	0.28	0.17	0.17	2.57	—	6.23	23.00
1962	0.92	0.73	1.00	0.67	0.93	0.30	0.02	0.12	1.12	10.40	18.06	0.31	0.14	0.18	2.87	—	6.83	24.89
1963	0.99	0.86	1.17	0.77	1.21	0.31	0.03	0.12	1.27	10.74	19.60	0.34	0.17	0.21	3.15	—	7.32	26.92
1964	1.05	0.98	1.36	0.90	1.48	0.33	0.02	0.20	1.36	11.02	21.05	0.35	0.20	0.22	3.58	—	8.03	29.08
1965	1.14	1.09	1.61	0.98	1.74	0.34	0.03	0.23	1.49	11.51	22.81	0.33	0.23	0.25	3.61	—	8.33	31.14
1966	1.21	1.19	1.80	1.08	1.98	0.36	0.04	0.31	1.58	12.08	24.60	0.38	0.30	0.28	3.87	—	8.96	33.56
1967	1.25	1.34	1.86	1.19	2.14	0.39	0.07	0.36	1.64	12.56	25.94	0.38	0.28	0.26	4.22	—	9.65	35.59
1968	1.34	1.46	1.99	1.40	2.66	0.41	0.10	0.46	1.82	13.39	28.56	0.46	0.31	0.31	4.48	—	10.40	38.96
1969	1.42	1.66	2.33	1.69	3.25	0.45	0.15	0.49	1.98	14.14	31.54	0.48	0.44	0.34	4.87	—	11.35	42.89
1970	1.52	1.94	2.83	1.71	3.82	0.50	0.20	0.58	2.10	14.70	34.49	0.53	0.62	0.40	5.31	—	12.32	46.81
1971	1.56	2.12	2.94	1.84	4.14	0.52	0.23	0.64	2.14	15.21	36.07	0.58	0.79	0.42	5.66	—	13.35	49.42
1972	1.66	2.32	3.13	1.95	4.36	0.59	0.23	0.68	2.28	16.37	38.74	0.66	0.91	0.46	6.12	—	14.35	53.09
1973	1.73	2.60	3.34	2.07	4.95	0.67	0.28	0.78	2.34	17.31	41.53	0.78	1.12	0.49	6.60	—	15.71	57.24
1974	1.78	2.45	3.06	2.00	4.86	0.71	0.29	0.86	2.21	16.65	40.12	0.86	1.19	0.47	7.28	—	16.56	56.68
1975	1.78	2.25	2.96	1.86	4.62	0.75	0.31	0.87	1.91	16.32	38.82	0.92	1.36	0.50	7.52	—	17.38	56.20
1976	1.82	2.42	3.21	1.97	4.84	0.83	0.36	0.97	1.89	17.46	41.39	1.00	1.53	0.51	7.78	—	18.28	59.67
1977	1.85	2.29	3.21	1.90	4.88	0.88	0.42	0.94	1.91	18.43	42.43	1.02	1.64	0.55	8.18	—	19.40	61.83
1978	1.90	2.41	3.29	1.95	4.95	0.99	0.48	0.98	1.94	18.85	43.62	1.11	1.79	0.62	8.48	—	20.54	64.16
1979	1.97	2.46	3.37	2.04	5.05	1.10	0.53	1.02	1.97	18.51	44.01	1.18	1.84	0.66	8.64	—	21.21	65.22
1980	1.87	2.26	3.08	1.93	4.96	1.27	0.54	0.99	1.73	17.06	R41.76	1.15	1.77	0.64	9.00	—	R21.35	R63.11
1981	1.77	2.02	2.80	1.87	4.85	1.40	0.54	0.94	1.59	16.06	R39.49	1.09	1.71	0.73	8.94	—	R21.45	R60.94
1982	1.58	1.88	2.74	1.78	4.58	1.48	0.53	1.00	1.59	15.30	R37.77	1.06	1.66	0.74	9.08	—	R21.77	R59.54
1983	1.45	1.84	2.66	1.75	4.40	1.35	0.56	1.01	1.53	15.23	R36.91	0.98	1.73	0.77	8.95	—	R21.87	R58.78
1984	R1.52	R1.77	R2.56	R1.72	R4.67	R1.40	R0.55	R0.85	R1.83	15.73	R37.70	1.03	1.74	0.82	8.91	—	R22.13	59.83
1985	R1.53	R1.75	R2.65	R1.71	R4.44	R1.48	R0.55	R0.86	R1.62	15.73	R37.48	1.08	1.89	R0.89	8.95	—	R22.61	60.09
1986	R1.53	R1.76	R2.79	R1.73	R4.50	R1.52	R0.59	R0.87	R1.64	16.28	R38.61	1.24	2.00	0.95	8.98	—	R23.22	R61.83
1987	R1.61	1.79	R2.72	R1.82	R4.57	R1.58	R0.63	0.90	R1.61	16.67	R39.37	1.26	2.12	0.99	9.00	—	R23.76	R63.13
1988	R1.68	1.80	R2.72	R1.83	R4.85	R1.60	R0.75	0.98	R1.69	17.28	R40.68	1.30	2.28	1.08	8.89	—	R24.32	R65.00
1989	R1.75	R1.84	2.58	R1.90	R5.06	R1.72	R0.86	R0.98	R1.73	17.33	R41.34	1.32	2.38	1.15	8.74	—	R24.76	R66.10
1990	R1.75	R1.83	R2.68	1.87	R5.30	R1.75	R1.05	1.01	R1.78	16.99	R41.60	1.47	2.30	1.17	8.39	—	R24.93	R66.53
1991	R1.67	1.94	2.83	1.86	R5.37	R1.83	R1.26	1.07	1.80	16.71	R41.97	1.48	2.50	1.19	8.35	—	R25.13	R67.10
1992	R1.73	1.93	2.84	R1.89	R5.49	R1.86	R1.53	R1.10	R1.82	17.03	R42.92	1.52	2.66	1.27	—	4.42	R24.32	R67.24
1993	R1.76	1.88	R2.91	R1.89	R5.41	R1.84	R1.68	1.06	R1.83	17.24	R43.29	1.58	2.96	1.31	—	3.75	R24.11	R67.40
1994	R1.77	R1.87	2.88	R1.87	R5.70	R1.93	R1.84	R1.12	R1.83	17.72	R44.46	1.67	3.16	1.41	—	3.18	24.25	R68.71
1995	R1.81	R1.92	2.88	R1.94	R5.73	R1.82	2.01	R1.19	R1.81	17.72	R44.91	1.79	3.36	1.57	—	2.98	R25.09	R70.00
1996	R1.87	R1.95	R2.92	R1.92	R5.77	R1.79	R2.10	R1.20	1.85	18.31	R45.98	1.90	3.61	1.68	—	2.62	R25.52	R71.50
1997	R1.95	R1.97	R2.92	R1.93	R5.72	1.85	R2.25	R1.27	1.80	18.62	R46.71	2.03	3.92	1.77	—	2.56	26.49	R73.20
1998	1.95	R2.04	2.92	R1.94	R5.52	1.95	R1.92	R1.36	1.79	18.92	R46.87	2.10	4.11	1.84	—	2.49	R27.01	R73.88
1999	2.03	2.03	2.84	R1.89	R5.61	R1.96	R2.08	R1.40	R1.79	19.52	R47.76	2.13	4.36	2.03	—	2.54	R27.97	R75.73
2000	R2.02	R2.00	R2.77	R1.85	R5.48	R2.04	R2.14	R1.43	R1.76	19.70	R47.85	2.17	4.80	2.13	—	2.58	R28.98	R76.83
2001	R2.04	R2.05	2.81	R1.84	R5.39	R1.99	R2.13	R1.49	1.72	19.65	R47.90	R2.21	R4.92	R2.18	—	R2.74	R30.10	R78.00
2002 ^P	2.09	1.98	2.72	1.85	5.30	1.98	2.18	1.51	1.70	19.76	47.82	2.16	5.16	2.19	—	2.58	30.39	78.21

¹ Organization for Economic Cooperation and Development. See Glossary for membership.

² Through 1969, the data for Germany are for the former West Germany only. For 1970 through 1990, this is East and West Germany. Beginning in 1991, this is unified Germany.

³ Mexico, which joined the OECD on May 18, 1994, and South Korea, which joined the OECD on December 12, 1996, are included in the OECD for all years shown in this table.

⁴ Hungary and Poland, which joined the OECD on May 7, 1996, and November 22, 1996, respectively, are included in Total OECD beginning in 1970, the first year that data for these countries were available.

OECD totals include Czechoslovakia from 1980-1992, Czech Republic and Slovakia from 1992-2002.

R=Revised. P=Preliminary. — = Not applicable.

Note: Totals may not equal sum of components due to independent rounding.

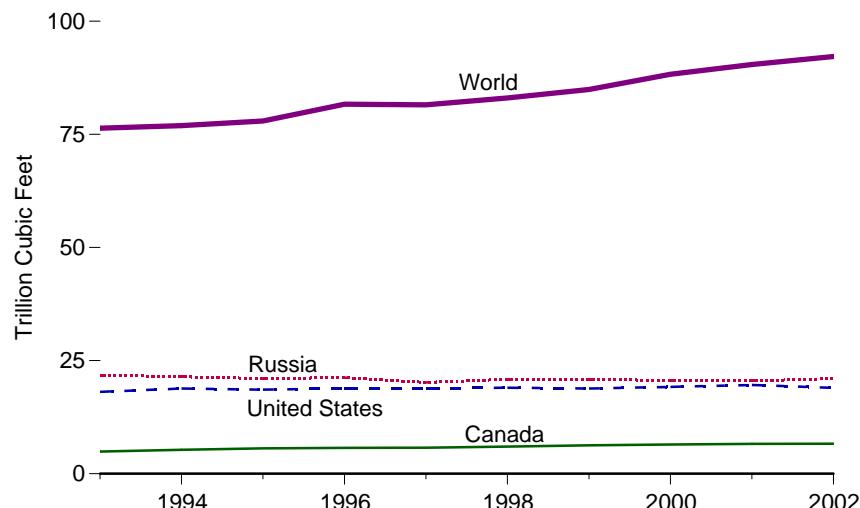
Web Page: For related information, see <http://www.eia.doe.gov/international>.

Sources: • 1960-1979—Energy Information Administration (EIA), International Energy Database.

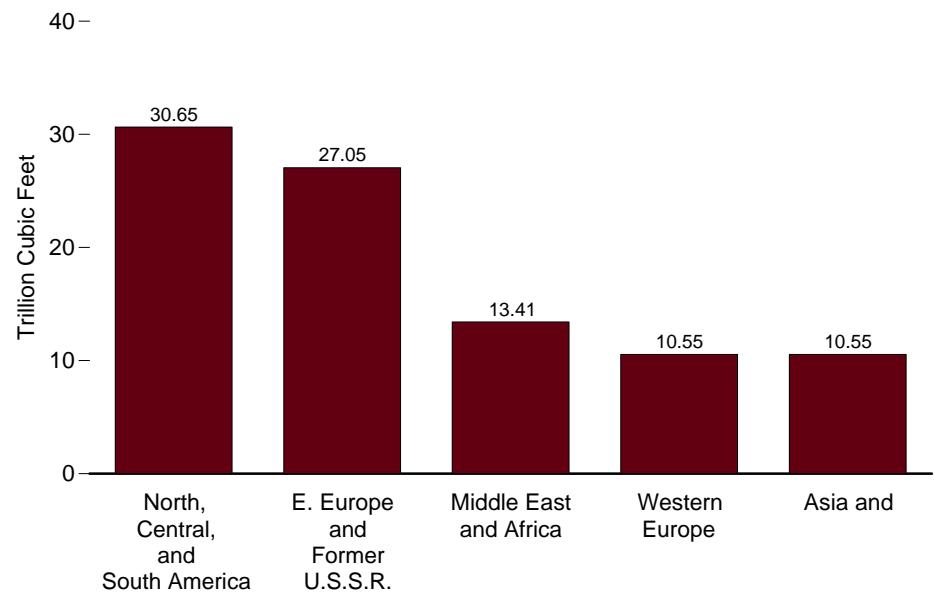
• 1980 forward—EIA, "International Energy Annual 2002" (May 2004), Table 1.2.

Figure 11.11 World Dry Natural Gas Production

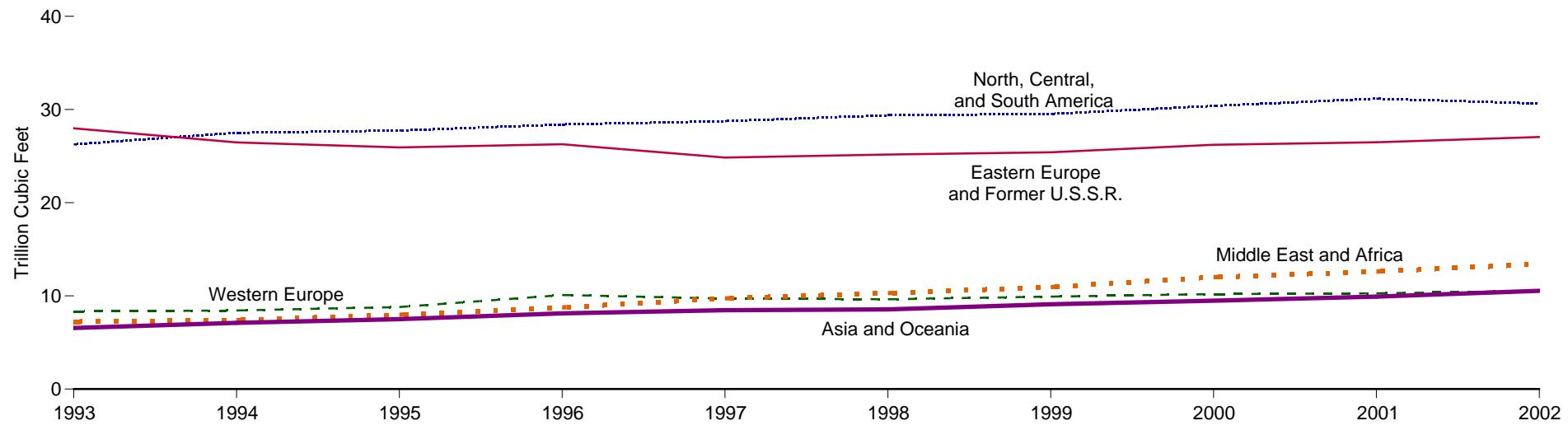
World and Leading Producers, 1993-2002



World Areas, 2002



World Areas, 1993-2002



Note: Because vertical scales differ, graphs should not be compared.

Source: Table 11.11.

Table 11.11 World Dry Natural Gas Production, 1993-2002
 (Trillion Cubic Feet)

Region and Country	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002 P
North, Central, and South America	26.26	27.50	27.74	28.39	28.75	29.39	29.53	30.39	R31.17	30.65
Argentina	0.76	0.79	0.88	0.94	0.97	1.04	1.22	1.32	1.31	1.28
Canada	4.91	5.27	5.60	5.71	5.76	5.98	6.26	6.47	6.60	6.63
Mexico	0.95	0.97	0.96	1.06	1.17	1.27	1.29	1.31	1.30	1.33
United States	18.10	18.82	18.60	18.85	18.90	19.02	18.83	19.18	R19.62	18.96
Venezuela	0.82	0.88	0.89	0.96	0.99	1.11	0.95	0.96	1.12	1.05
Other	0.73	0.78	0.81	0.86	0.96	0.96	0.98	1.15	R1.22	1.39
Western Europe	8.33	8.44	8.80	10.09	9.71	9.64	9.92	10.19	R10.27	10.55
Germany	0.68	0.70	0.74	0.80	0.79	0.77	0.82	0.78	R0.79	0.79
Italy	0.69	0.73	0.72	0.71	0.68	0.67	0.62	0.59	R0.54	0.51
Netherlands	3.11	2.95	2.98	3.37	2.99	2.84	2.67	2.56	2.75	2.66
Norway	0.97	1.04	1.08	1.45	1.62	1.63	1.76	1.87	R1.95	2.41
United Kingdom	2.31	2.47	2.67	3.18	3.03	3.14	3.49	3.83	R3.69	3.61
Other	0.57	0.55	0.61	0.59	0.60	0.58	0.57	0.57	0.57	0.57
Eastern Europe and Former U.S.S.R.	27.99	26.47	25.93	26.28	24.85	25.17	25.41	26.22	26.48	27.05
Romania	0.75	0.69	0.68	0.63	0.61	0.52	0.50	0.48	0.51	0.47
Russia	21.81	21.45	21.01	21.23	20.17	20.87	20.83	20.63	20.51	21.03
Turkmenistan	2.29	1.26	1.14	1.31	0.90	0.47	0.79	1.64	1.70	1.89
Ukraine	0.68	0.64	0.62	0.64	0.64	0.64	0.63	0.64	0.64	0.65
Uzbekistan	1.59	1.67	1.70	1.70	1.74	1.94	1.96	1.99	2.23	2.04
Other	0.87	0.76	0.79	0.76	0.79	0.74	0.70	0.84	0.89	0.97
Middle East and Africa	7.24	7.41	7.99	8.76	9.74	10.30	10.95	12.01	R12.61	13.41
Algeria	1.90	1.81	2.05	2.19	2.43	2.60	2.88	2.94	R2.79	2.80
Egypt	0.40	0.42	0.44	0.47	0.48	0.49	0.52	0.65	R0.87	0.94
Iran	0.96	1.12	1.25	1.42	1.66	1.77	2.04	2.13	R2.33	2.65
Qatar	0.48	0.48	0.48	0.48	0.61	0.69	0.78	1.03	R0.95	1.04
Saudi Arabia	1.27	1.33	1.34	1.46	1.60	1.65	1.63	1.76	1.90	2.00
United Arab Emirates	0.94	0.91	1.11	1.19	1.28	1.31	1.34	1.36	R1.39	1.53
Other	1.30	1.34	1.33	1.53	1.67	1.79	1.76	2.15	R2.39	2.45
Asia and Oceania	6.55	7.11	7.50	8.13	8.47	8.55	9.10	9.48	R9.92	10.55
Australia	0.86	0.93	1.03	1.06	1.06	1.10	1.10	1.16	R1.19	1.26
China	0.56	0.59	0.60	0.67	0.75	0.78	0.85	0.96	1.07	1.15
India	0.53	0.59	0.63	0.70	0.72	0.76	0.75	0.79	R0.85	0.88
Indonesia	1.97	2.21	2.24	2.35	2.37	2.27	2.51	2.36	R2.34	2.48
Malaysia	0.88	0.92	1.02	1.23	1.36	1.37	1.42	1.50	R1.66	1.71
Pakistan	0.58	0.63	0.65	0.70	0.70	0.71	0.78	0.86	R0.77	0.81
Other	1.16	1.23	1.33	1.42	1.52	1.56	1.69	1.86	2.04	2.25
World	76.36	76.93	77.96	81.65	81.52	83.03	84.91	88.28	R90.45	92.20

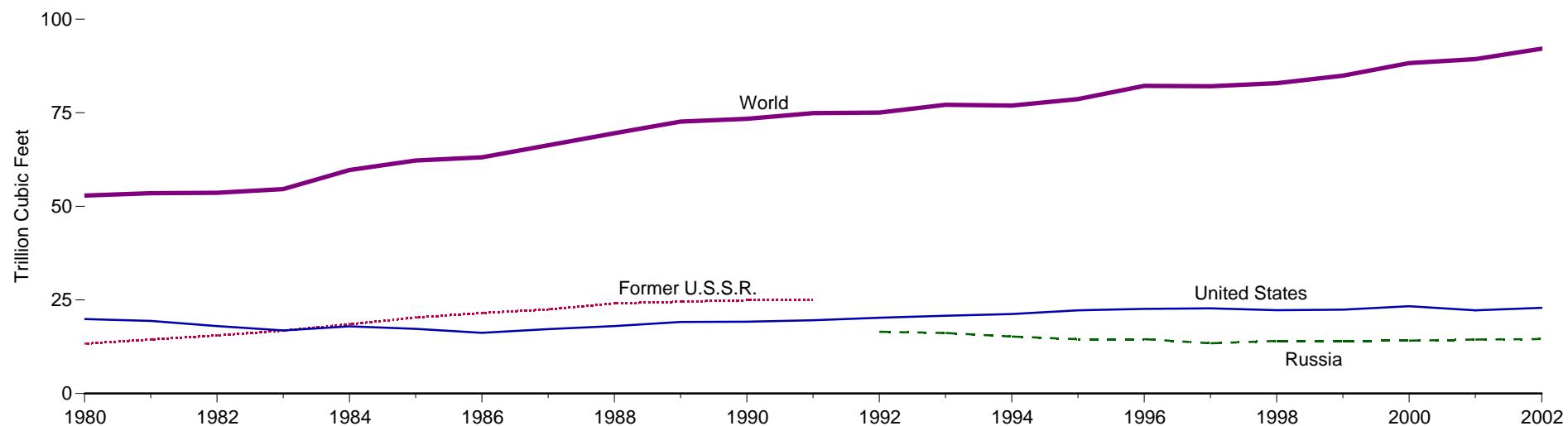
R=Revised. P=Preliminary.

Note: Totals may not equal sum of components due to independent rounding.
 Web Page: For related information, see <http://www.eia.doe.gov/international>.

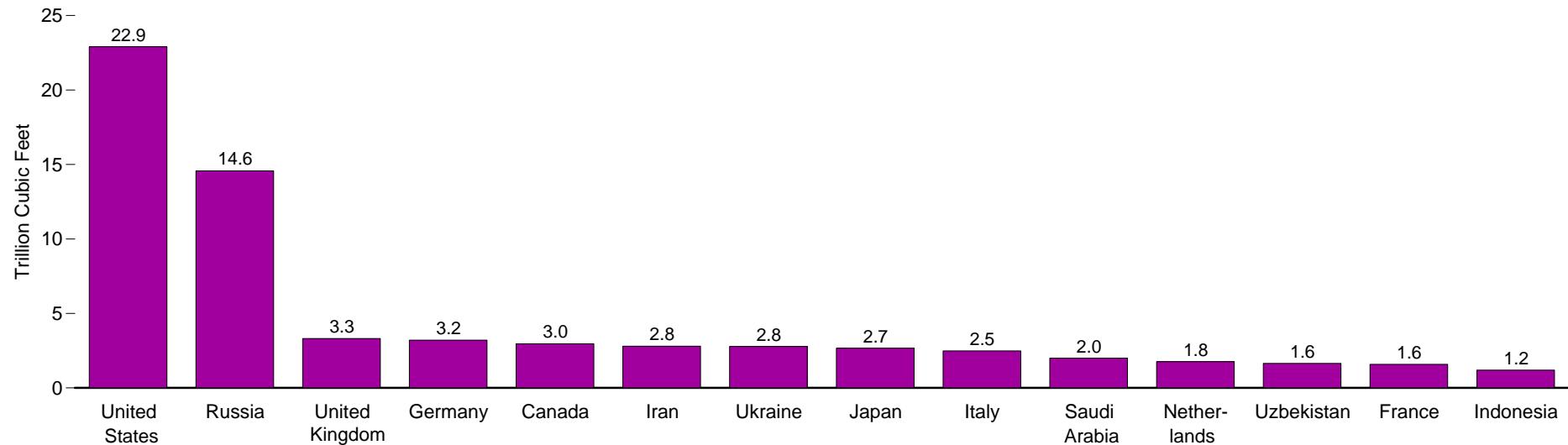
Sources: **United States:** Table 6.1. **All Other Data:** Energy Information Administration, "International Energy Annual 2002" (May 2004), Table 2.4.

Figure 11.12 World Dry Natural Gas Consumption

World and Leading Consumers, 1980-2002



Selected Consuming Countries, 2002



Note: Because vertical scales differ, graphs should not be compared.

Source: Table 11.12.

Table 11.12 World Dry Natural Gas Consumption, 1980-2002
 (Billion Cubic Feet)

Year	Canada	France	Germany ¹	Indonesia	Iran	Italy	Japan	Nether-lands	Former U.S.S.R.	Russia	Saudi Arabia	Ukraine	United Kingdom	United States	Uzbek-istan	Other	World
1980	1,883	981	2,621	195	232	972	903	1,493	13,328	—	334	—	1,702	19,877	—	8,369	52,890
1981	1,842	1,003	2,513	232	155	942	925	1,421	14,440	—	564	—	1,740	19,404	—	8,333	53,513
1982	1,859	979	2,334	218	200	944	956	1,511	15,522	—	430	—	1,743	18,001	—	8,931	53,628
1983	1,863	999	2,397	302	310	967	1,020	1,451	16,822	—	418	—	1,815	16,835	—	9,427	54,626
1984	2,017	1,079	2,584	365	476	1,135	1,372	1,540	18,512	—	620	—	1,851	17,951	—	10,189	59,692
1985	2,165	1,110	2,546	513	600	1,151	1,468	1,624	20,302	—	716	—	1,991	17,281	—	10,777	62,244
1986	2,130	1,129	2,595	441	536	1,217	1,494	1,620	21,522	—	890	—	2,020	16,221	—	11,303	63,118
1987	2,112	1,038	2,733	542	565	1,346	1,543	1,672	22,462	—	946	—	2,079	17,211	—	12,062	66,312
1988	2,331	963	2,716	492	706	1,460	1,618	1,513	24,092	—	1,028	—	1,972	18,030	—	12,628	69,548
1989	2,427	984	2,835	546	784	1,581	1,731	1,550	24,529	—	1,052	—	1,951	19,119	—	13,549	72,638
1990	2,378	997	2,669	547	837	1,674	1,851	1,535	24,961	—	1,077	—	2,059	19,174	—	13,625	R73,383
1991	2,400	1,131	2,776	557	811	1,775	1,976	1,715	25,014	—	1,130	—	2,218	19,562	—	13,856	74,922
1992	2,596	1,146	2,739	673	883	1,760	2,023	1,669	—	16,482	1,201	3,503	2,170	20,228	1,095	16,884	75,053
1993	2,736	1,158	2,830	850	938	1,801	2,034	1,714	—	16,185	1,268	3,871	2,412	20,790	1,541	17,022	R77,148
1994	2,824	1,157	2,965	965	1,123	1,748	2,180	1,654	—	15,214	1,331	3,327	2,542	21,247	1,229	17,419	76,926
1995	2,791	1,183	3,172	1,061	1,243	1,921	2,207	1,701	—	14,507	1,343	2,970	2,690	22,207	1,349	18,317	R78,661
1996	2,917	1,314	3,163	1,108	1,416	1,984	2,390	1,874	—	14,504	1,460	2,935	3,182	22,609	1,434	19,911	R82,202
1997	2,887	1,300	3,012	1,125	1,663	2,048	2,439	1,763	—	13,434	1,601	2,832	3,013	22,737	1,455	20,794	R82,105
1998	2,794	1,313	3,130	983	1,828	2,205	2,535	1,752	—	14,045	1,653	2,606	3,072	22,246	1,409	21,341	R82,910
1999	R2,934	R1,383	3,151	1,124	2,112	2,396	2,646	1,705	—	14,013	1,632	2,755	3,259	22,405	1,423	R21,987	R84,924
2000	R2,952	R1,505	R3,098	1,081	2,221	2,498	R2,785	1,725	—	14,130	1,759	2,779	3,373	R23,333	1,511	R23,524	R88,275
2001	R2,912	R1,576	R3,239	R1,182	R2,478	R2,505	R2,709	R1,769	—	14,412	1,896	2,617	R3,338	R22,239	1,596	R24,854	R89,323
2002 ^P	2,959	1,586	3,204	1,197	2,798	2,485	2,666	1,765	—	14,567	2,002	2,779	3,313	22,899	1,642	26,257	92,121

¹ Through 1990, this is East and West Germany. Beginning in 1991, this is unified Germany.

R=Revised. P=Preliminary. — = Not applicable.

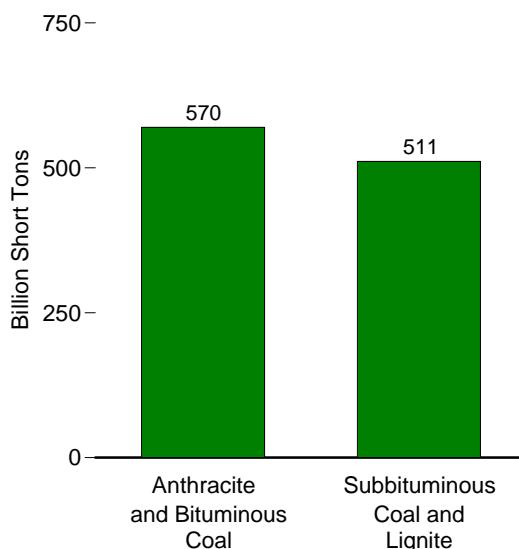
Note: Totals may not equal sum of components due to independent rounding.

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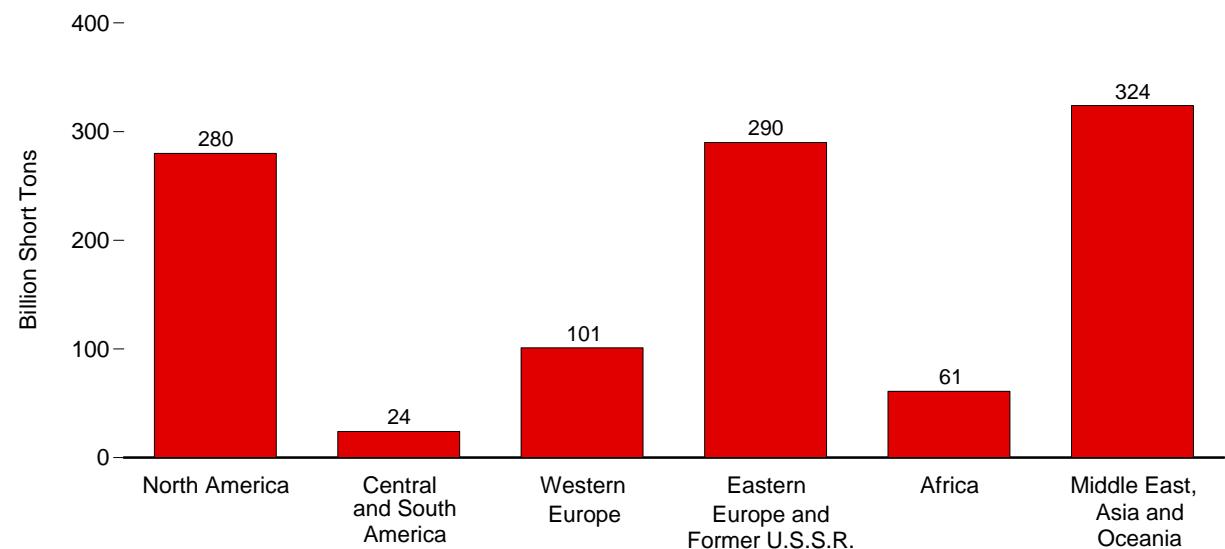
Sources: **United States:** Table 6.1. **All Other Data:** Energy Information Administration, "International Energy Annual 2002" (May 2004), Table 1.3.

Figure 11.13 World Recoverable Reserves of Coal

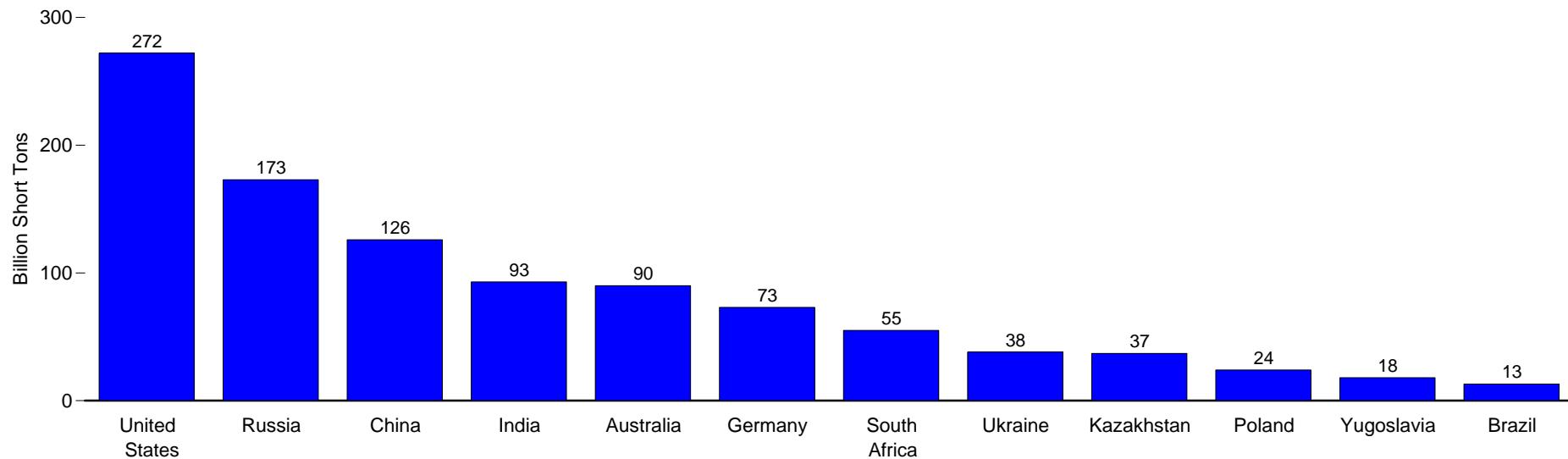
By Type



By Region



Top Reserves Countries



Notes: • Recoverable reserves are as of December 31, 2000, except for U.S. recoverable reserves, which are as of December 31, 2002. • Because vertical scales differ, graphs should not be compared.

Source: Table 11.13.

Table 11.13 World Recoverable Reserves of Coal
(Million Short Tons)

Region and Country	Anthracite and Bituminous Coal	Subbituminous Coal and Lignite	Total
North America	R130,629	R149,836	R 280,464
Canada	3,826	3,425	7,251
Greenland	0	202	202
Mexico	948	387	1,335
United States ¹	R125,855	R145,822	R 271,677
Central and South America	8,530	15,448	23,977
Brazil	0	13,149	13,149
Chile	34	1,268	1,302
Colombia	6,908	420	7,328
Peru	1,058	110	1,168
Other	529	500	1,030
Western Europe	27,650	73,693	101,343
Germany	25,353	47,399	72,753
Greece	0	3,168	3,168
Turkey	306	3,760	4,066
United Kingdom	1,102	551	1,653
Yugoslavia	71	17,849	17,919
Other	818	966	1,784
Eastern Europe and Former U.S.S.R.	132,046	158,138	290,183
Bulgaria	14	2,974	2,988
Czech Republic	2,330	3,929	6,259
Hungary	0	1,209	1,209
Kazakhstan	34,172	3,307	37,479
Poland	22,377	2,050	24,427
Romania	1	1,605	1,606
Russia	54,110	118,964	173,074
Ukraine	17,939	19,708	37,647
Uzbekistan	1,102	3,307	4,409
Other	0	1,085	1,085
Africa	60,816	216	61,032
Botswana	4,740	0	4,740
South Africa	54,586	0	54,586
Zimbabwe	553	0	553
Other	936	216	1,152
Middle East, Asia, and Oceania	210,604	113,675	324,279
Australia	46,903	43,585	90,489
China	68,564	57,651	126,215
India	90,826	2,205	93,031
Indonesia	871	5,049	5,919
Japan	852	0	852
Pakistan	0	2,497	2,497
Thailand	0	1,398	1,398
Other	2,588	1,291	3,879
World	R570,275	R511,005	R1,081,279

¹ U.S. data are more current than other data on this table. They represent recoverable reserves as of December 31, 2002; data for the other countries are as of December 31, 2000, the most recent period for which they are available.

R=Revised.

Notes: • World Energy Council data represent "Proved Recoverable Reserves," which are the tonnage within the "Proved Amount in Place" that can be recovered (extracted from the earth in raw form) under present and expected local economic conditions with existing, available technology. • The EIA does not certify the international reserves data but reproduces the information as a matter of convenience for the

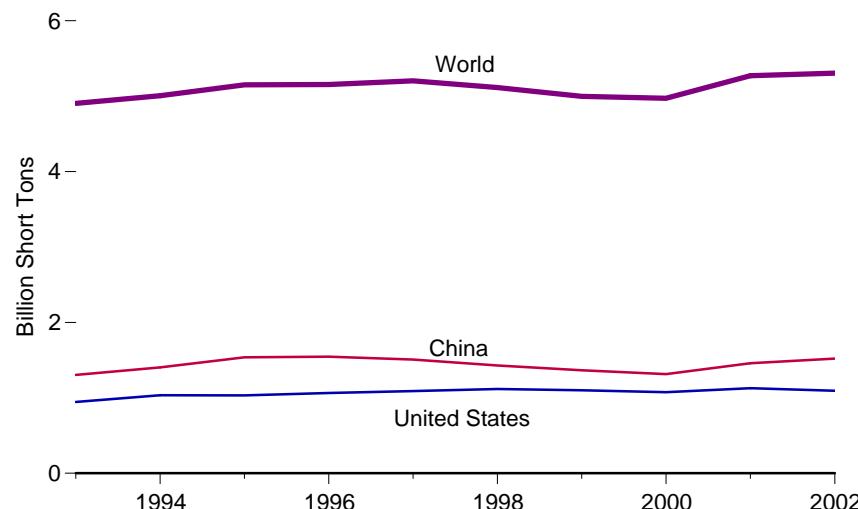
reader. • U.S. reserves represent estimated recoverable reserves from the Demonstrated Reserve Base which includes both measured and indicated tonnage. The U.S. term "measured" approximates the term "proved," used by the World Energy Council. The U.S. "measured and indicated" data have been combined and cannot be recaptured as "measured alone." • Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/international>.

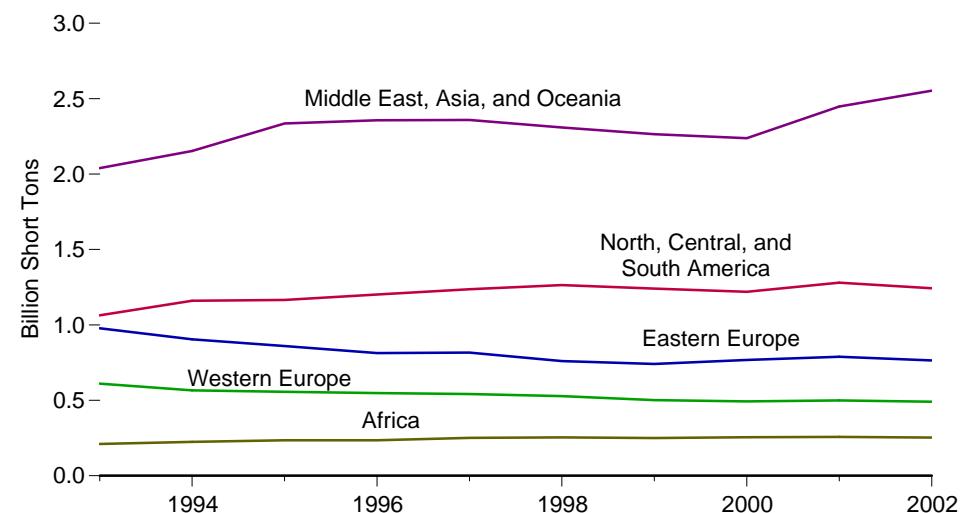
Source: Energy Information Administration, "International Energy Annual 2002" (May 2004), Table 8.2.

Figure 11.14 World Coal Production

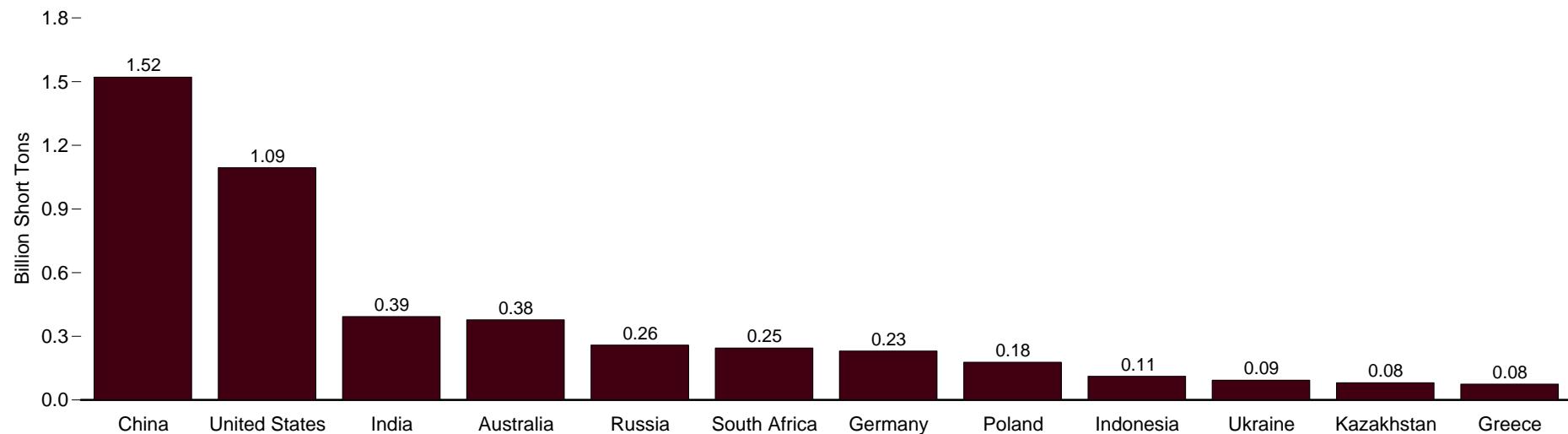
World and Leading Producers, 1993-2002



World Areas, 1993-2002



Top Producing Countries, 2002



Note: Because vertical scales differ, graphs should not be compared.

Source: Table 11.14.

Table 11.14 World Coal Production, 1993-2002

(Million Short Tons)

Region and Country	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002 ^P
North, Central, and South America	1,064	1,160	1,165	1,201	1,236	1,264	1,241	1,219	1,280	1,243
Canada	76	80	83	R84	87	83	80	76	78	73
Colombia	23	25	28	33	36	37	36	42	48	48
Mexico	8	10	10	11	11	12	11	13	13	12
United States	945	1,034	1,033	1,064	1,090	1,118	1,100	1,074	1,128	1,094
Other	11	11	11	10	12	14	13	15	14	15
Western Europe	611	R566	R556	R548	R542	R528	501	R493	R499	491
France	12	11	11	9	8	7	6	R5	3	2
Germany	315	292	274	265	252	233	226	225	226	231
Greece	60	62	64	66	65	67	68	70	R73	75
Macedonia	8	8	8	8	8	9	8	8	R9	10
Slovenia	6	5	5	5	6	5	5	5	5	5
Spain	35	33	31	R30	29	29	27	26	25	24
Turkey	54	60	61	62	66	74	74	70	73	59
United Kingdom	75	54	52	54	52	44	40	34	35	33
Yugoslavia	41	R37	R45	R45	R47	49	37	38	R38	35
Other	6	5	5	4	R9	R11	10	12	13	17
Eastern Europe and Former U.S.S.R.	R978	R904	R860	R813	R816	R760	R741	R768	R789	764
Bulgaria	R28	R28	R30	R31	33	R33	R28	R29	R29	28
Czech Republic	94	85	R83	R85	R82	74	65	72	73	70
Hungary	16	16	16	17	17	R16	R16	R15	R15	14
Kazakhstan	123	115	92	85	80	77	64	80	R83	81
Poland	218	220	220	193	222	196	188	178	179	178
Romania	44	45	45	46	37	29	25	32	R37	34
Russia	R316	R281	R271	R265	R253	241	259	R265	R273	259
Ukraine	128	104	95	83	85	85	R88	R89	R93	93
Uzbekistan	4	4	3	3	3	3	3	3	3	3
Other	7	6	5	5	5	5	5	5	4	4
Africa	211	224	R235	235	251	254	250	255	257	253
South Africa	203	216	R227	227	244	247	243	248	250	245
Zimbabwe	6	R5	R5	5	4	5	5	5	R4	6
Other	3	3	3	2	2	2	2	2	2	2
Middle East, Asia, and Oceania	R1,970	R2,082	R2,263	R2,282	R2,291	R2,243	R2,209	R2,194	R2,403	2,502
Australia	248	248	267	272	292	317	321	338	R363	378
China	1,304	1,404	1,537	1,545	1,507	1,429	1,365	1,314	1,459	1,521
India	R288	R301	R321	315	R338	R343	R356	R369	R385	393
Indonesia	R32	R36	R45	55	60	R68	R81	84	R102	112
Mongolia	6	6	6	6	5	R5	R6	6	6	6
North Korea	R40	R37	R35	R31	R30	R27	R31	R33	R34	37
South Korea	10	8	6	5	5	5	5	5	4	4
Thailand	17	19	20	24	26	22	20	20	22	22
Vietnam	7	6	9	11	13	12	10	11	R14	14
Other	18	18	17	R18	15	14	15	14	15	16
World	R4,834	R4,936	R5,079	R5,079	R5,136	R5,048	R4,943	R4,929	R5,227	5,252

R=Revised. P=Preliminary.

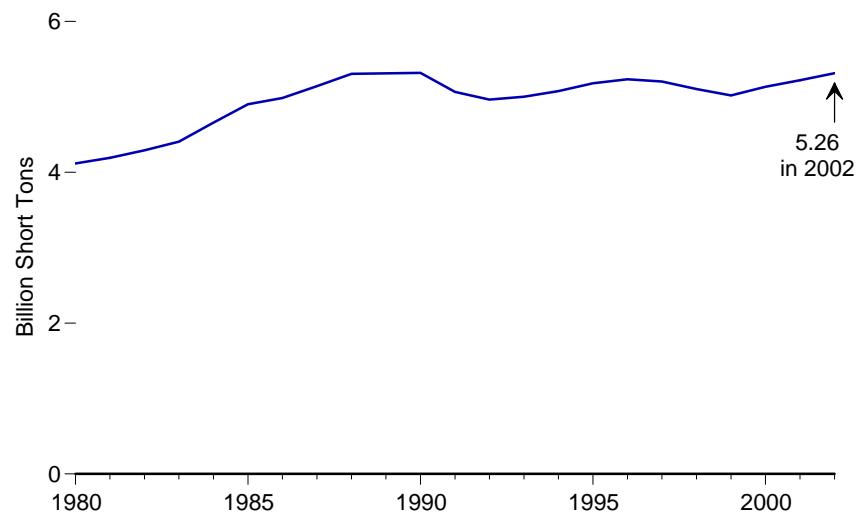
Notes: • Coal includes anthracite, subanthracite, bituminous coal, subbituminous coal, lignite, and brown coal. • Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/international>.

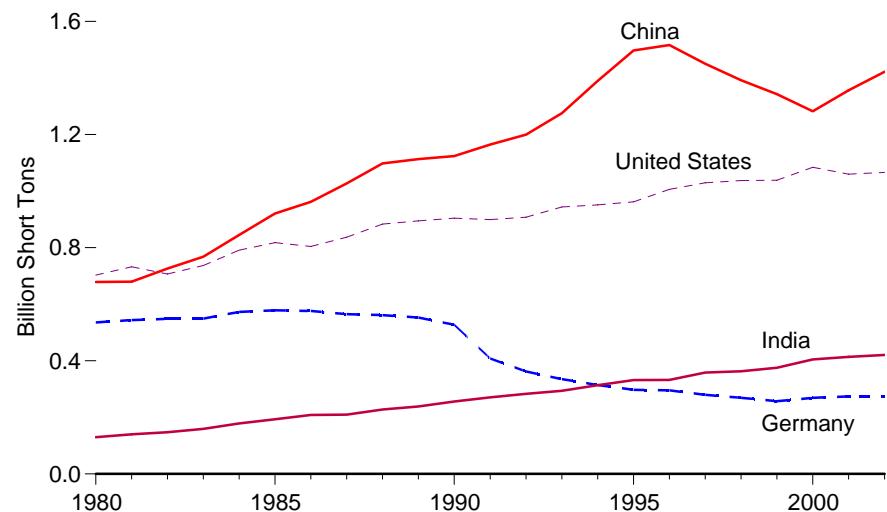
Sources: **United States:** Table 7.1. **All Other Data:** Energy Information Administration, "International Energy Annual 2002" (May 2004), Table 2.5.

Figure 11.15 World Coal Consumption

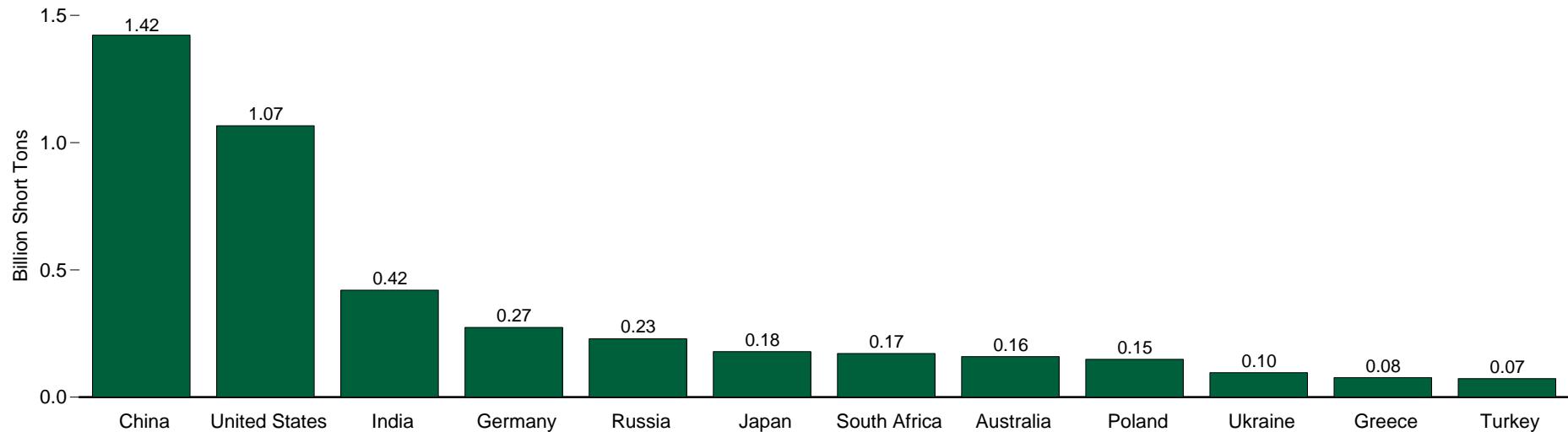
World Total, 1980-2002



Selected Countries, 1980-2002



Top Consuming Countries, 2002



Note: Because vertical scales differ, graphs should not be compared.

Source: Table 11.15.

Table 11.15 World Coal Consumption, 1980-2002

(Million Short Tons)

Year	Australia	China	Germany ¹	Greece	India	Japan	North Korea	Poland	Former U.S.S.R.	Russia	South Africa	Turkey	Ukraine	United Kingdom	United States	Other	World
1980	74	679	535	26	130	98	R49	221	751	—	105	20	—	134	703	R602	R4,126
1981	75	680	544	30	R140	106	R51	200	748	—	116	23	—	130	733	R626	R4,202
1982	79	726	548	31	147	105	R54	208	771	—	124	26	—	122	707	R658	R4,304
1983	78	768	549	36	160	100	R56	213	764	—	127	29	—	123	737	R678	R4,417
1984	81	845	573	36	R179	113	R57	227	770	—	137	35	—	88	791	R723	R4,655
1985	86	921	579	42	193	119	R60	238	779	—	142	46	—	116	818	R756	R4,896
1986	84	962	576	44	209	109	R59	247	803	—	145	54	—	123	804	R754	R4,974
1987	93	1,027	565	49	R209	111	R57	258	807	—	148	54	—	129	837	R774	R5,117
1988	96	1,098	562	56	R228	123	R58	253	821	—	151	51	—	123	884	R770	R5,272
1989	104	1,113	553	59	R239	123	R57	242	777	—	140	60	—	126	895	R783	R5,272
1990	104	1,124	528	59	R256	R126	R54	202	848	—	139	60	—	119	904	R746	R5,270
1991	108	1,165	408	59	R271	R129	R52	202	672	—	144	64	—	118	899	R723	R5,013
1992	111	1,199	362	62	R283	R125	R46	192	—	R326	147	66	151	111	908	R813	R4,903
1993	109	1,276	335	62	R294	R127	R42	194	—	R313	146	R60	R136	96	944	R799	R4,933
1994	110	1,390	314	66	R314	R137	R39	184	—	R284	161	66	109	91	951	R790	R5,004
1995	112	1,498	298	64	R332	R142	R36	184	—	R270	162	67	110	79	962	R791	R5,106
1996	120	1,517	296	66	R332	R142	R31	160	—	R278	164	73	95	77	1,006	R798	R5,155
1997	127	1,450	280	66	R359	R151	R30	182	—	R253	172	80	92	69	1,030	R793	R5,133
1998	138	1,392	269	68	R363	R141	R27	168	—	238	161	86	92	R68	1,037	R786	R5,034
1999	141	1,343	257	68	R375	R151	R31	161	—	247	170	84	R91	61	1,039	R745	R4,964
2000	141	1,282	R269	72	R405	R165	R33	158	—	R253	R176	R89	R93	64	1,084	R806	R5,088
2001	R150	R1,357	R274	R75	R414	R173	R34	151	—	R242	R173	R83	R95	R70	1,060	R823	R5,174
2002 ^P	160	1,422	274	76	421	179	37	149	—	229	172	73	96	64	1,066	844	5,262

¹ Through 1990, this is East and West Germany. Beginning in 1991, this is unified Germany.

R=Revised. P=Preliminary. — = Not applicable.

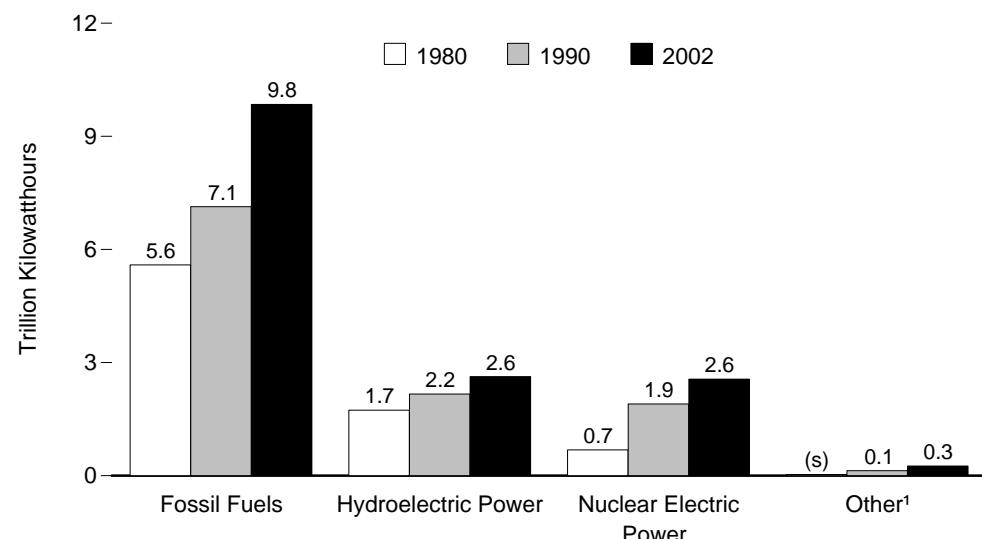
Note: Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/international>.

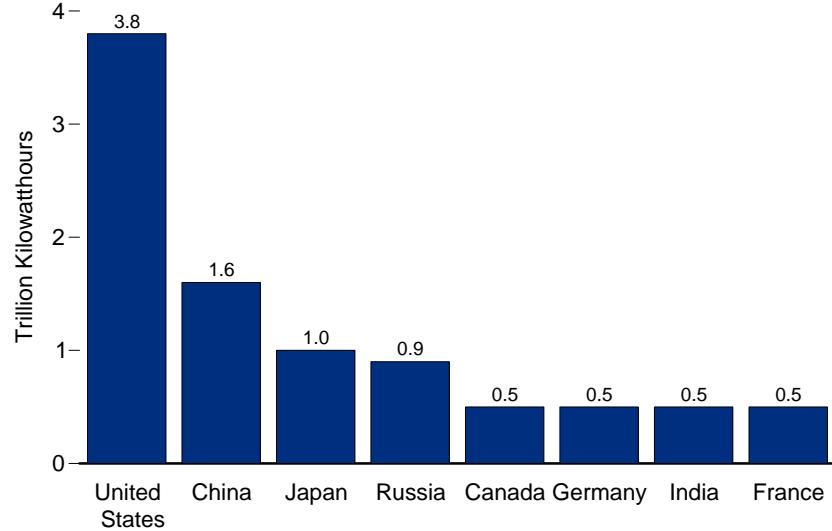
Sources: **United States:** Table 7.1. **All Other Data:** Energy Information Administration, "International Energy Annual 2002" (May 2004), Table 1.4.

Figure 11.16 World Net Generation of Electricity

Net Generation by Type—1980, 1990, and 2002

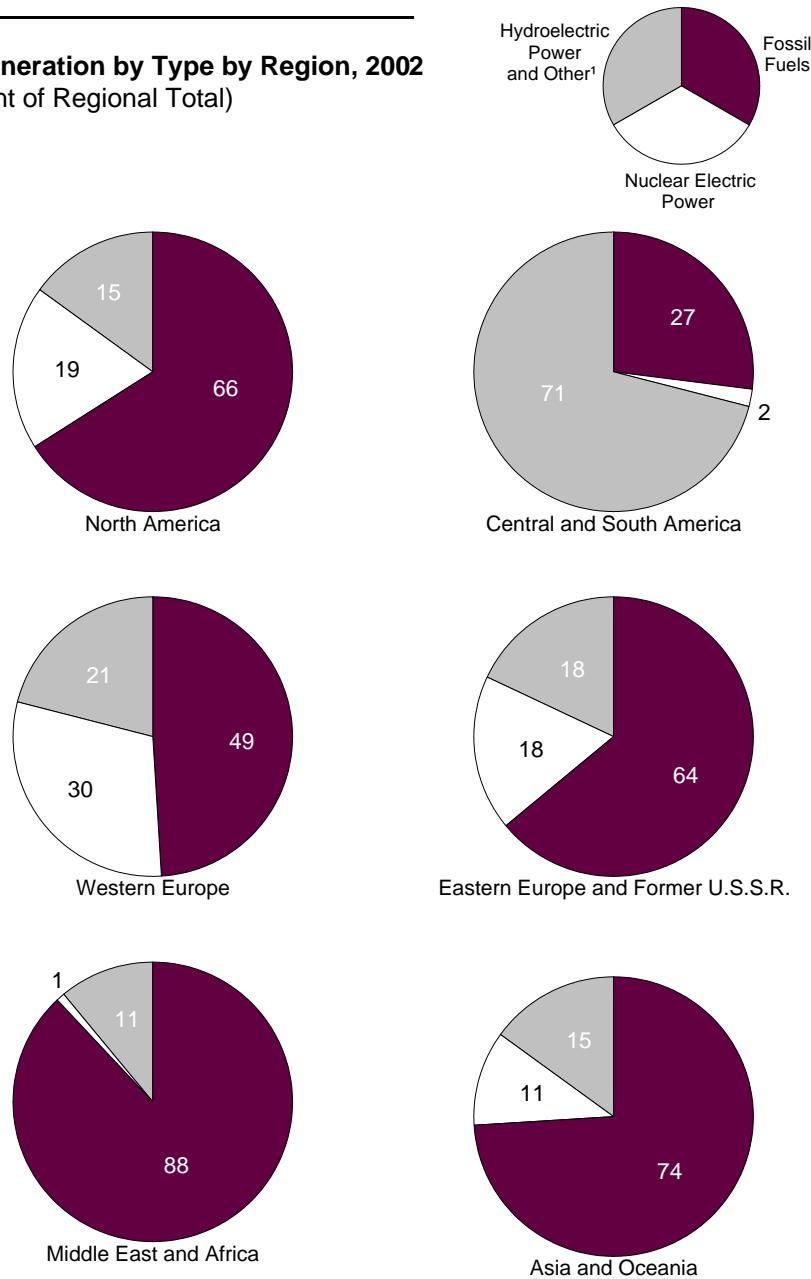


Net Generation in Leading Countries, 2002



Net Generation by Type by Region, 2002

(Percent of Regional Total)



¹ Wood, waste, geothermal, solar, wind, batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.

(s)=Less than 0.05 trillion kilowatthours.

Note: Because vertical scales differ, graphs should not be compared.

Source: Table 11.16.

Table 11.16 World Net Generation of Electricity by Type, 1980, 1990, and 2002
 (Billion Kilowatthours)

Region and Country	Fossil Fuels			Nuclear Electric Power			Hydroelectric Power ¹			Total ²		
	1980	1990	2002 P	1980	1990	2002 P	1980	1990	2002 P	1980	1990	2002 P
North America	1,880.1	R2,292.0	3,050.4	287.0	648.9	860.3	546.9	606.5	595.8	2,721.6	3,623.9	4,592.7
Canada	79.8	101.9	155.2	35.9	69.2	71.0	251.0	293.9	315.5	367.9	468.6	548.9
Mexico	46.0	85.7	164.1	0.0	2.8	9.3	16.7	23.2	24.7	63.6	116.6	203.6
United States	1,753.8	2,103.8	2,730.2	251.1	576.9	780.1	279.2	289.4	255.6	2,289.6	3,038.0	3,839.3
Other	0.5	0.7	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.7	0.9
Central and South America	99.8	114.8	214.3	2.2	9.0	19.2	201.5	365.0	534.8	308.2	R 497.0	789.7
Argentina	22.2	20.9	39.7	2.2	7.0	5.4	17.3	20.2	35.5	41.8	48.3	81.4
Brazil	7.5	8.1	28.6	0.0	1.9	13.8	128.4	204.6	282.1	138.3	219.6	339.0
Paraguay	0.0	(s)	(s)	0.0	0.0	0.0	0.7	26.9	48.3	0.8	27.0	48.4
Venezuela	17.6	21.0	28.1	0.0	0.0	0.0	14.4	36.6	58.9	32.0	57.6	87.0
Other	52.4	R	64.8	118.0	0.0	0.0	40.6	76.5	110.0	95.3	R	144.5
Western Europe	1,180.1	1,171.6	1,436.8	219.2	707.5	881.7	431.7	453.4	503.2	1,844.5	2,351.7	2,918.4
Belgium	38.3	25.0	29.5	11.9	40.6	45.0	0.3	0.3	0.4	50.8	66.5	76.6
Finland	22.0	22.8	29.8	6.6	18.3	21.2	10.1	10.8	10.7	38.7	51.8	71.6
France	118.0	44.3	49.0	63.4	298.4	419.4	68.3	52.8	60.5	250.8	397.6	528.6
Germany	390.3	358.9	341.6	55.6	145.1	156.8	18.8	17.2	23.0	469.9	526.0	548.3
Italy	125.5	167.5	212.3	2.1	0.0	0.0	45.0	31.3	40.0	176.4	202.1	261.6
Netherlands	58.0	63.2	82.3	3.9	3.3	3.7	0.0	0.1	0.1	62.9	67.6	90.6
Norway	0.1	0.2	0.5	0.0	0.0	0.0	82.7	119.9	125.1	82.9	120.4	125.9
Spain	74.5	66.5	134.8	5.2	51.6	59.9	29.2	25.2	22.8	109.2	143.9	229.0
Sweden	10.1	3.2	6.2	25.3	64.8	65.4	58.1	71.8	66.0	94.3	141.5	142.8
Switzerland	0.9	0.6	1.0	12.9	22.4	25.9	32.5	29.5	34.8	46.4	53.0	63.5
Turkey	12.0	32.3	89.7	0.0	0.0	0.0	11.2	22.9	33.3	23.3	55.2	123.3
United Kingdom	228.9	230.0	265.5	32.3	58.7	83.6	3.9	5.1	4.8	265.1	295.2	360.8
Other	101.4	157.0	194.6	0.0	4.4	5.3	71.7	66.6	81.6	173.8	230.8	295.9
Eastern Europe and Former U.S.S.R.	1,309.3	1,471.5	1,042.1	83.2	251.3	297.1	211.3	253.6	275.8	1,604.1	1,976.6	1,619.9
Czech Republic	—	—	50.8	—	—	17.8	—	—	2.5	—	—	71.8
Kazakhstan	—	—	46.7	—	—	0.0	—	—	8.7	—	—	55.4
Poland	111.1	125.0	130.8	0.0	0.0	0.0	3.2	3.3	2.0	114.7	128.5	133.8
Romania	51.4	49.7	31.8	0.0	0.0	5.1	12.5	10.9	16.7	63.9	60.6	53.6
Russia	—	—	533.2	—	—	134.1	—	—	180.2	—	—	850.6
Ukraine	—	—	83.6	—	—	73.4	—	—	10.2	—	—	167.3
Other	1,146.8	1,296.7	165.2	83.2	251.3	66.7	195.5	239.4	55.5	1,425.6	1,787.5	287.4
Middle East	82.8	216.3	470.6	0.0	0.0	0.0	9.6	12.5	19.4	92.4	228.9	490.0
Iran	15.7	49.8	121.0	0.0	0.0	0.0	5.6	6.0	8.0	21.3	55.9	129.0
Saudi Arabia	20.5	64.9	138.2	0.0	0.0	0.0	0.0	0.0	0.0	20.5	64.9	138.2
Other	46.6	101.6	211.4	0.0	0.0	0.0	4.1	6.5	11.4	50.7	108.1	222.8
Africa	129.1	243.8	360.7	0.0	8.4	12.0	60.1	54.9	80.7	189.2	307.5	453.9
Egypt	8.6	31.5	66.8	0.0	0.0	0.0	9.7	9.9	14.4	18.3	41.4	81.3
South Africa	92.1	146.6	188.3	0.0	8.4	12.0	1.0	1.0	2.4	93.1	156.0	202.6
Other	28.4	65.6	105.5	0.0	0.0	0.0	49.4	44.0	63.9	77.8	110.1	170.0
Asia and Oceania	907.7	1,626.8	3,270.4	92.7	279.9	489.3	275.2	420.9	617.9	1,280.5	R 2,354.7	4,425.9
Australia	74.5	131.8	191.3	0.0	0.0	0.0	12.8	14.0	16.3	87.7	146.4	210.3
China	227.9	465.2	1,240.8	0.0	0.0	23.5	57.6	125.1	308.9	285.5	590.3	1,575.1
India	69.7	198.9	457.2	3.0	5.6	17.8	46.5	70.9	68.0	119.3	275.5	547.2
Indonesia	10.6	35.3	85.8	0.0	0.0	0.0	3.0	10.1	10.4	13.5	46.5	99.3
Japan	381.6	524.0	646.5	78.6	192.2	295.1	87.8	88.4	81.4	549.1	822.1	1,044.0
South Korea	29.8	45.5	170.9	3.3	50.2	113.1	1.5	4.6	3.2	34.6	100.4	287.6
Taiwan	31.3	43.6	114.2	7.8	31.6	38.0	2.9	8.2	6.3	42.0	83.3	158.5
Thailand	12.3	38.7	94.8	0.0	0.0	0.0	1.3	4.9	6.4	13.6	43.7	102.4
Other	70.1	143.8	269.0	(s)	0.4	1.8	61.8	94.5	117.0	135.3	R	246.4
World	5,588.8	7,136.8	9,845.2	684.4	1,905.0	2,559.6	1,736.3	2,166.8	2,627.6	8,040.5	R 11,340.2	15,290.5

¹ Excludes pumped storage, except for the United States.

² Wood, waste, geothermal, solar, wind, batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies are included in total.

R=Revised. P=Preliminary. — = Not applicable. (s)=Less than 0.05 billion kilowatthours.

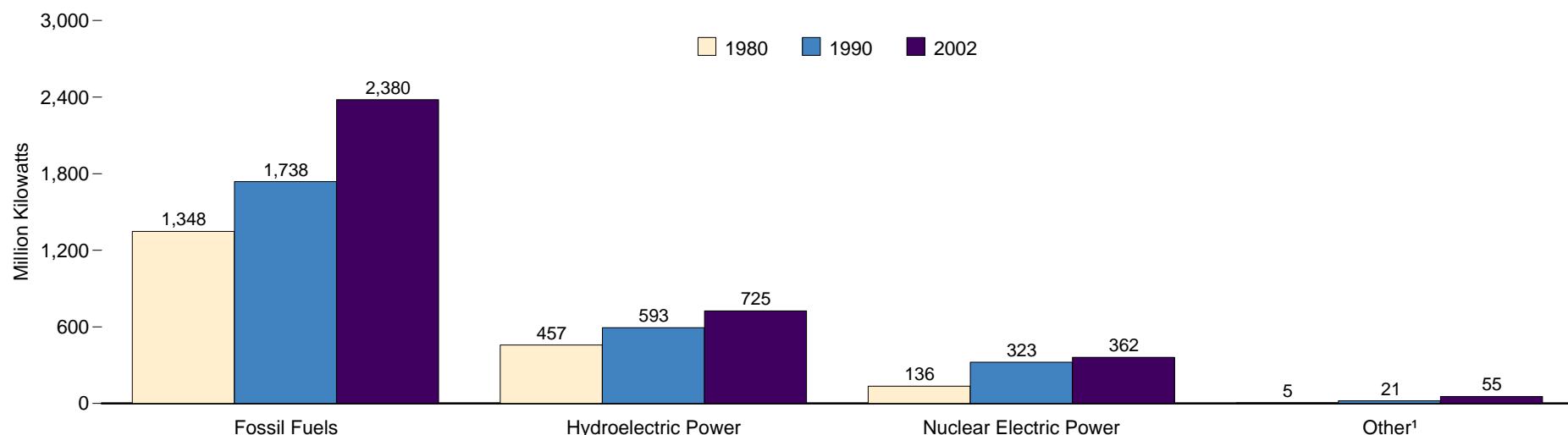
Note: • Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/international>.

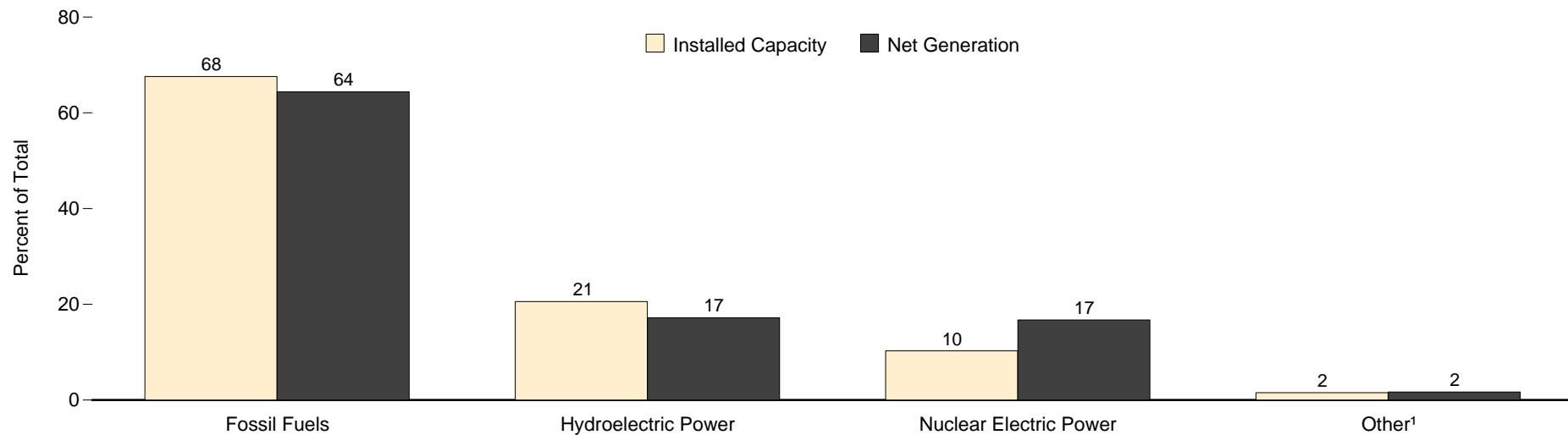
Sources: **United States:** Tables 1.2 and 8.2a. **All Other Data:** Energy Information Administration, "International Energy Annual 2002" (May 2004), Tables 2.6, 2.7, 6.1, and 6.3.

Figure 11.17 World Electrical Installed Capacity by Type

By Type—1980, 1990, and 2002



Installed Capacity and Net Generation Shares by Type, 2002



¹ Wood, waste, geothermal, solar, wind, batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.

Note: Shares are based on data prior to rounding for publication and may not sum exactly to 100 percent.

Sources: Tables 11.16 and 11.17.

Table 11.17 World Electrical Installed Capacity by Type, 1980, 1990, and 2002
 (Million Kilowatts)

Region and Country	Fossil Fuels			Nuclear Electric Power			Hydroelectric Power ¹			Total ²		
	1980	1990	2002 ^P	1980	1990	2002 ^P	1980	1990	2002 ^P	1980	1990	2002 ^P
North America	R 481.7	R 575.0	752.1	57.7	112.2	110.7	135.7	R 159.1	176.6	R 676.4	R 860.0	1,058.2
Canada	R 26.6	R 28.0	31.9	5.9	11.9	10.6	47.9	57.9	67.2	R 80.8	R 98.9	111.0
Mexico	10.8	R 18.9	30.4	0.0	0.7	1.4	6.1	7.8	9.6	17.0	R 28.0	42.3
United States	444.1	527.8	689.5	51.8	99.6	98.7	81.7	93.4	99.8	578.4	732.8	904.6
Other	0.2	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3
Central and South America	36.0	44.9	70.2	0.4	1.7	3.0	43.0	84.1	117.5	81.2	132.8	194.3
Argentina	8.0	9.5	16.4	0.4	1.0	1.0	3.6	6.6	9.6	12.0	17.2	27.0
Brazil	4.1	4.7	7.6	0.0	0.7	2.0	27.5	44.8	63.4	33.4	52.1	76.2
Paraguay	0.1	(s)	0.0	0.0	0.0	0.0	0.2	5.8	8.0	0.2	5.8	8.0
Venezuela	5.8	8.5	8.1	0.0	0.0	0.0	2.7	10.0	13.1	8.5	18.5	21.2
Other	18.0	22.1	38.0	0.0	0.0	0.0	9.0	16.9	23.4	27.1	39.2	61.8
Western Europe	R 291.8	R 315.8	356.0	44.7	117.7	127.7	126.7	R 140.5	146.4	R 464.0	R 577.1	654.5
Belgium	8.2	7.2	8.1	1.7	5.5	5.7	0.7	0.1	0.1	10.6	12.8	14.2
Finland	6.3	7.8	10.9	2.2	2.4	2.6	2.4	2.6	2.9	11.0	12.7	16.5
France	R 30.1	22.8	26.5	14.4	52.5	63.2	16.4	20.3	20.7	61.0	95.9	111.2
Germany	R 84.1	R 87.5	77.4	10.4	24.5	22.4	7.9	8.7	4.3	R 102.5	R 120.7	115.0
Italy	R 27.6	R 37.5	53.7	1.4	0.0	0.0	15.8	12.6	13.5	R 45.3	50.6	69.1
Netherlands	R 16.9	16.8	19.3	0.5	0.5	0.4	0.0	(s)	(s)	R 17.4	17.3	20.4
Norway	0.2	R 0.2	0.1	0.0	0.0	0.0	19.8	25.7	26.8	20.0	26.0	27.1
Spain	R 13.9	R 19.9	26.4	1.1	7.5	7.5	13.5	11.6	12.7	R 28.5	39.1	50.4
Sweden	7.9	R 7.2	7.3	4.6	9.9	9.5	14.9	15.8	16.5	27.4	33.5	33.6
Switzerland	R 0.6	0.8	0.5	1.9	3.0	3.2	11.5	10.1	11.6	R 14.0	13.9	15.6
Turkey	3.0	9.2	16.6	0.0	0.0	0.0	2.1	6.6	11.7	5.1	15.8	28.3
United Kingdom	R 65.6	R 59.1	61.8	6.5	11.4	12.5	2.5	1.4	1.5	R 74.5	R 72.0	77.0
Other	R 27.3	R 39.9	47.3	0.0	0.7	0.7	19.3	R 25.0	24.0	R 46.7	R 66.8	76.0
Eastern Europe and Former U.S.S.R.	261.1	R 311.1	299.7	14.2	45.8	48.2	R 61.0	R 77.0	79.9	R 336.3	R 433.9	427.9
Czech Republic	—	—	11.5	—	—	2.8	—	—	1.0	—	—	15.3
Kazakhstan	—	—	14.7	—	—	0.0	—	—	2.2	—	—	16.9
Poland	R 23.0	R 26.1	28.4	0.0	0.0	0.0	R 0.6	R 0.6	0.9	R 23.6	R 26.8	29.3
Romania	12.7	17.3	15.6	0.0	0.0	0.7	3.5	5.6	6.1	16.1	22.9	22.4
Russia	—	—	139.6	—	—	21.2	—	—	44.7	—	—	205.6
Ukraine	—	—	35.3	—	—	11.8	—	—	4.7	—	—	51.9
Other	R 225.5	R 267.7	54.6	14.2	45.8	11.6	56.9	70.7	20.3	R 296.5	R 384.2	86.6
Middle East	27.9	68.2	99.7	0.0	0.0	0.0	2.6	4.8	5.5	30.4	73.0	105.2
Iran	9.4	15.5	25.2	0.0	0.0	0.0	1.8	2.0	2.8	11.2	17.4	28.0
Saudi Arabia	5.9	19.1	23.8	0.0	0.0	0.0	0.0	0.0	0.0	5.9	19.1	23.8
Other	12.5	33.7	50.7	0.0	0.0	0.0	0.8	2.8	2.7	13.3	36.5	53.4
Africa	30.5	57.4	79.8	0.0	1.8	1.8	13.9	18.5	20.6	44.5	77.8	102.3
Egypt	2.4	8.7	14.9	0.0	0.0	0.0	2.4	2.7	2.7	4.9	11.5	17.6
South Africa	17.8	28.6	38.0	0.0	1.8	1.8	0.5	0.6	0.7	18.4	31.0	40.5
Other	10.3	20.1	26.9	0.0	0.0	0.0	10.9	15.2	17.2	21.2	35.4	44.2
Asia and Oceania	R 218.9	R 365.5	722.7	18.5	43.9	70.3	74.4	109.3	178.3	R 312.6	R 520.3	978.8
Australia	R 17.6	R 27.8	37.9	0.0	0.0	0.0	6.2	7.3	6.2	R 23.8	R 35.1	45.3
China	45.6	92.1	253.1	0.0	0.0	2.2	20.3	34.6	83.0	65.9	126.6	338.3
India	20.7	51.9	90.2	0.9	1.6	2.9	11.8	18.3	25.8	33.3	71.8	120.3
Indonesia	3.9	9.6	20.7	0.0	0.0	0.0	1.0	3.0	4.4	4.9	12.7	25.6
Japan	R 94.3	R 119.1	168.7	15.7	29.4	45.9	19.6	20.4	22.1	R 129.8	R 169.1	237.9
South Korea	6.5	11.0	38.6	0.6	7.6	13.7	0.8	1.3	1.6	7.9	20.0	54.5
Taiwan	6.9	10.2	20.6	1.3	5.1	5.1	1.4	2.6	4.4	9.6	17.9	30.1
Thailand	2.6	6.0	20.2	0.0	0.0	0.0	1.3	2.3	2.9	3.8	8.3	23.2
Other	R 20.9	37.8	72.7	0.1	0.1	0.5	12.1	19.6	27.9	R 33.7	R 58.8	103.6
World	R 1,347.9	R 1,738.0	2,380.0	135.6	323.2	361.7	R 457.3	R 593.3	724.7	R 1,945.4	R 2,675.0	3,521.1

¹ Excludes pumped storage, except for the United States.

² Wood, waste, geothermal, solar, wind, batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies are included in total.

R=Revised. P=Preliminary. — = Not applicable. (s)=Less than 0.05 million kilowatts.

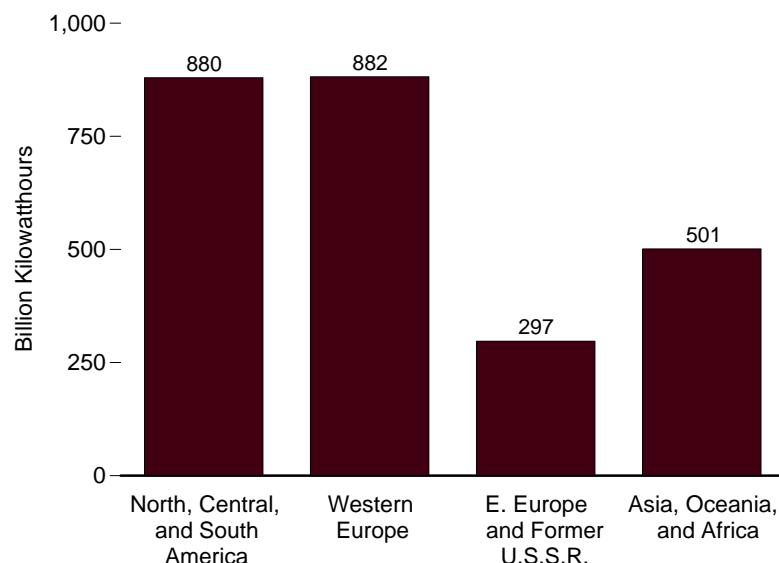
Note: Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/international>.

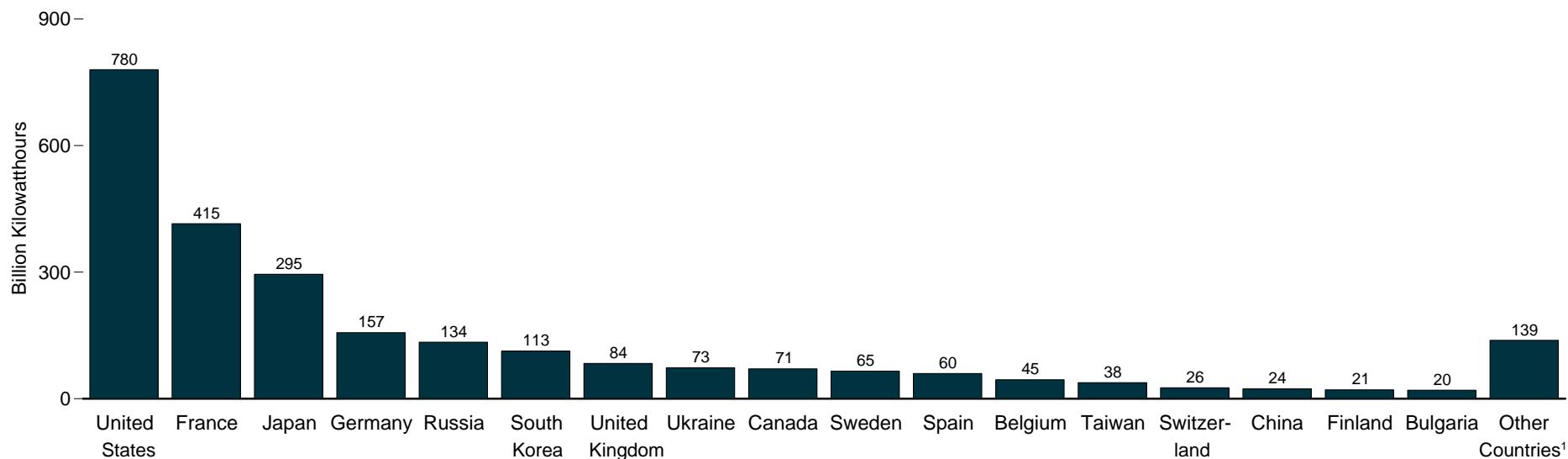
Sources: **United States:** Table 8.11a **All Other Data:** Energy Information Administration, "International Energy Annual 2002" (May 2004), Tables 6.4, 6.4H, 6.4N, and 6.4T.

Figure 11.18 World Nuclear Electricity Net Generation

By Region, 2002

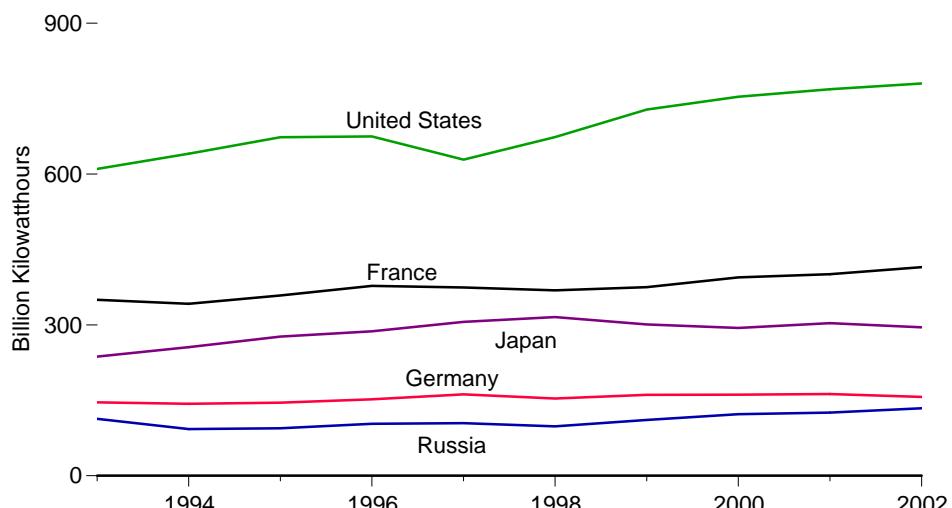


By Country, 2002



¹ Argentina, Armenia, Brazil, Czech Republic, Hungary, India, Lithuania, Mexico, Netherlands, Pakistan, Romania, Slovakia, Slovenia, and South Africa.

By Major Producer, 1993-2002



Note: Because vertical scales differ, graphs should not be compared.
Source: Table 11.18.

Table 11.18 World Nuclear Electricity Net Generation, 1993-2002

(Billion Kilowatthours)

Region and Country	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
North America	705.1	746.9	774.4	770.3	716.4	750.2	807.6	830.4	850.0	860.3
Canada	90.1	102.4	93.0	88.1	77.9	67.7	69.8	68.7	72.9	71.0
Mexico	4.7	4.0	8.0	7.5	9.9	8.8	9.5	7.8	8.3	9.3
United States	610.3	640.4	673.4	674.7	628.6	673.7	728.3	753.9	768.8	780.1
Central and South America	7.7	7.9	9.5	9.2	10.5	10.3	10.5	10.9	20.8	19.2
Argentina	7.3	7.8	7.1	6.9	7.5	7.1	6.7	6.0	6.5	5.4
Brazil	0.4	0.1	2.4	2.3	3.0	3.1	3.8	4.9	14.3	13.8
Western Europe	776.6	775.4	793.0	830.3	839.9	841.0	850.2	849.4	875.4	881.7
Belgium	39.8	38.6	39.3	41.2	45.0	43.9	46.6	45.7	44.0	45.0
Finland	18.9	18.5	18.3	18.5	19.0	20.8	21.8	21.3	21.7	21.2
France	349.8	342.0	358.4	377.5	374.3	368.6	375.1	394.4	400.9	414.9
Germany	145.8	143.2	145.4	152.0	161.8	153.6	161.0	161.2	162.6	156.8
Netherlands	3.8	3.8	3.8	4.0	2.3	3.6	3.6	3.7	3.8	3.7
Slovenia	3.8	4.3	4.5	4.4	4.8	5.0	4.5	4.5	5.0	5.3
Spain	53.3	52.5	52.7	53.5	52.5	56.0	55.9	58.9	60.5	59.9
Sweden	58.3	69.5	66.4	69.6	66.7	69.9	66.6	54.1	65.8	65.4
Switzerland	22.2	23.1	23.7	23.9	24.0	24.5	23.7	23.7	25.5	25.9
United Kingdom	81.0	80.0	80.6	85.8	89.3	95.1	91.5	81.7	85.6	83.6
Eastern Europe and Former U.S.S.R.	247.3	217.7	224.3	249.8	250.3	240.9	248.6	265.7	277.3	297.1
Armenia	0.0	0.0	0.0	R ^a 2.1	1.4	1.4	2.1	1.8	2.0	2.1
Bulgaria	13.3	14.6	16.4	17.8	16.4	16.1	15.0	17.3	18.2	20.2
Czech Republic	12.0	12.3	11.6	12.2	R ^a 12.5	12.5	12.7	12.9	14.0	17.8
Hungary	13.1	13.3	13.3	13.5	13.3	13.3	13.4	13.5	13.4	13.3
Kazakhstan	0.4	0.4	0.1	0.1	0.3	R ^a 0.1	0.0	0.0	0.0	0.0
Lithuania	12.3	7.3	10.6	12.7	10.9	12.9	9.9	8.4	11.4	14.1
Romania	—	—	—	0.9	5.1	4.9	4.8	5.2	5.0	5.1
Russia	113.2	92.9	94.3	103.3	104.5	98.3	110.9	122.5	125.4	134.1
Slovakia	11.6	11.5	10.9	11.3	10.5	10.8	12.5	13.1	16.2	17.1
Ukraine	71.4	65.4	67.0	76.0	75.4	70.6	67.4	71.1	71.7	73.4
Africa	7.3	9.7	11.3	11.8	12.6	13.6	12.8	13.0	10.7	12.0
South Africa	7.3	9.7	11.3	11.8	12.6	13.6	12.8	13.0	10.7	12.0
Asia and Oceania	333.8	363.6	393.6	415.0	436.4	460.8	461.2	464.7	480.9	489.3
China	2.5	13.5	12.4	13.6	11.4	13.5	14.1	16.0	16.7	23.5
India	5.9	4.7	6.5	7.4	10.5	10.6	11.5	14.1	18.2	17.8
Japan	236.8	255.7	276.7	287.1	306.1	315.7	300.8	293.8	303.4	295.1
Pakistan	0.4	0.6	0.5	0.3	0.4	0.4	0.1	0.4	2.0	1.8
South Korea	55.2	55.7	63.7	70.2	73.2	85.2	97.9	103.5	106.5	113.1
Taiwan	33.0	33.5	33.9	36.3	34.8	35.4	36.9	37.0	34.1	38.0
World	2,077.7	2,121.3	2,206.0	2,286.5	2,266.1	2,316.9	2,391.0	2,434.2	2,515.1	2,559.6

— = Not applicable.

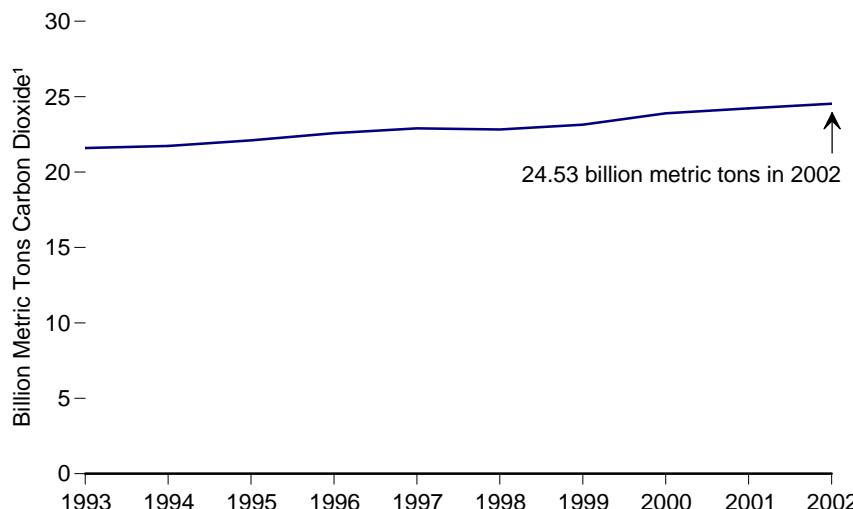
Note: Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/international>.

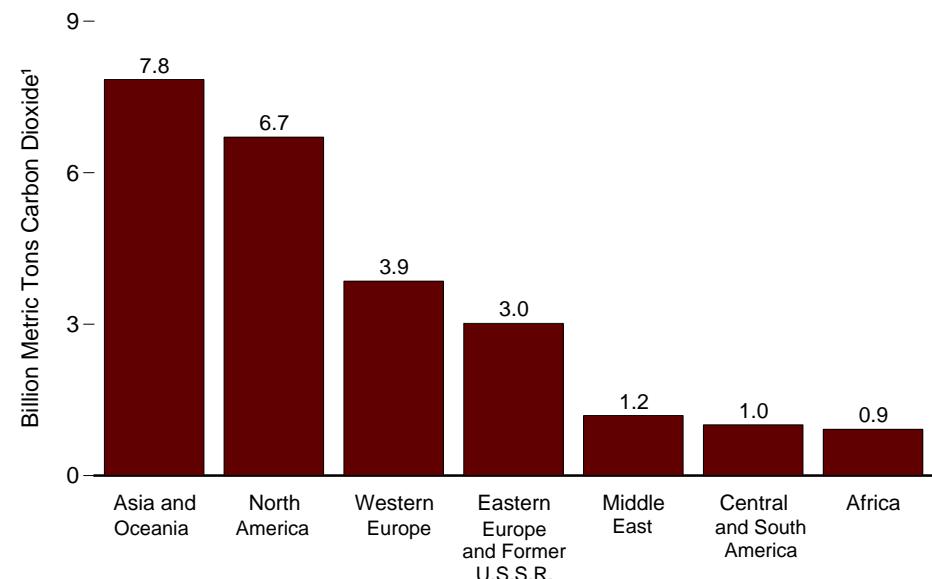
Source: Energy Information Administration, "International Energy Annual 2002" (May 2004), Table 2.7.

Figure 11.19 World Carbon Dioxide Emissions from Energy Consumption

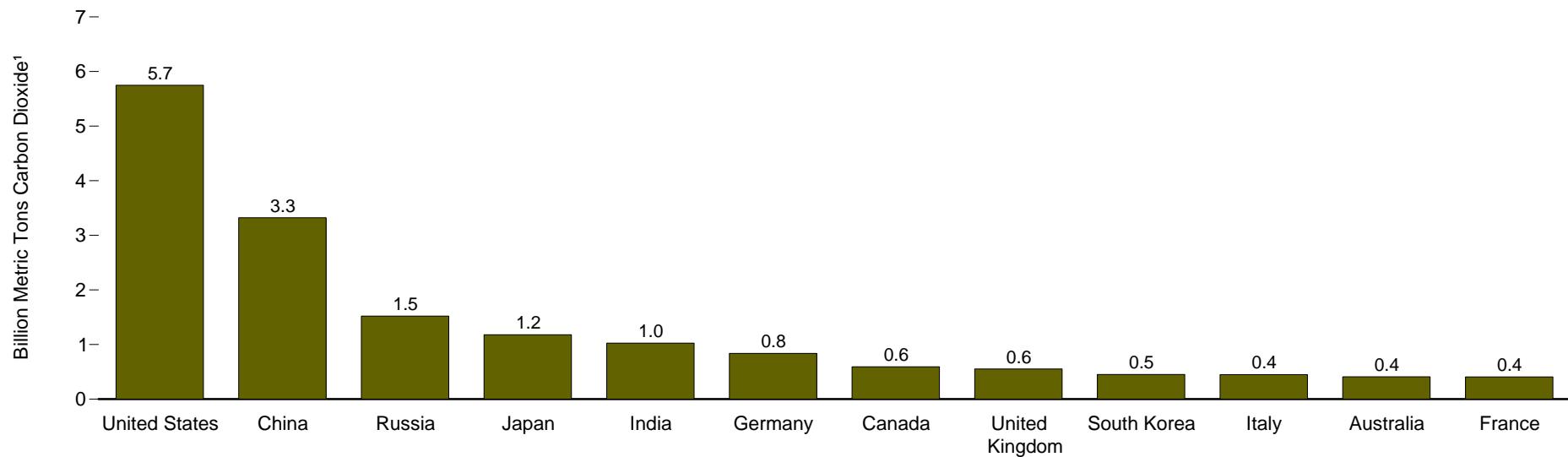
World, 1993-2002



World by Region, 2002



Leading Countries, 2002



¹ Metric tons of carbon dioxide can be converted to metric tons of carbon equivalent by multiplying by 12/44.

Notes: Data include carbon dioxide emissions from fossil-fuel energy consumption and natural gas venting and flaring. • Because vertical scales differ, graphs should not be compared.
Source: Table 11.19.

Table 11.19 World Carbon Dioxide Emissions From Energy Consumption, 1993-2002
 (Million Metric Tons of Carbon Dioxide¹)

Region and Country	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002 ^P
North America	R5,947	R6,059	R6,102	R6,323	R6,427	R6,501	R6,563	R6,773	R6,657	6,705
Canada	478	494	494	R508	536	R541	R552	R577	R577	592
Mexico	310	330	319	338	347	383	R356	R376	R367	363
United States ²	R5,158	R5,234	R5,289	R5,477	R5,543	R5,576	R5,654	R5,819	R5,713	5,749
Other	1	1	1	1	1	1	1	1	1	1
Central and South America	R804	R828	R869	R901	R942	R968	R972	982	R1,017	1,006
Argentina	122	119	122	129	129	R134	R138	135	R127	120
Brazil	273	285	302	309	R321	321	R331	R338	R347	346
Venezuela	114	120	123	132	134	141	R132	133	R151	143
Other	R295	R304	R321	R330	R358	R372	R371	R376	R392	396
Western Europe	R3,510	R3,490	R3,565	3,663	R3,691	R3,704	R3,632	R3,816	R3,883	3,853
Belgium	124	128	130	138	141	146	R139	R144	R142	146
France	367	356	369	388	380	R404	R401	R411	R412	407
Germany	883	867	875	879	877	863	R819	R843	R860	838
Italy	403	395	434	431	414	R425	R422	R449	R449	449
Netherlands	220	220	223	228	236	228	R224	R249	R276	256
Spain	229	236	R244	R233	R265	R271	R293	R318	R324	341
Turkey	144	139	151	168	181	182	R178	R203	R189	192
United Kingdom	578	570	560	R584	R562	R548	R534	R555	R570	553
Other	564	R579	R578	R614	R635	R637	R621	R643	R660	670
Eastern Europe and Former U.S.S.R.	R3,721	R3,297	R3,161	R3,092	R2,949	R2,894	R2,985	R2,992	R3,033	3,016
Kazakhstan	R209	R155	R129	R140	117	113	R133	R136	R140	153
Poland	338	320	304	287	335	311	R323	R289	R276	268
Romania	124	117	123	125	120	R95	R93	R94	R105	100
Russia	R1,887	R1,699	R1,589	R1,569	R1,438	R1,451	R1,524	R1,543	R1,553	1,522
Ukraine	531	442	447	400	375	367	R371	R358	R376	388
Uzbekistan	115	97	104	103	103	101	103	106	112	116
Other	R516	R467	R465	R467	R462	R455	R439	R467	R472	468
Middle East	R858	R894	R921	949	998	R1,024	R1,080	R1,106	R1,143	1,191
Iran	R240	R250	260	261	288	R297	R322	321	R339	359
Saudi Arabia	240	246	255	266	263	257	R280	299	R313	329
Other	377	398	406	422	447	R469	R478	R486	R492	503
Africa	774	R807	R817	R834	R859	R850	864	R884	R906	918
Egypt	96	99	98	107	111	R115	114	120	R132	138
South Africa	317	344	344	349	380	362	R375	R383	R378	378
Other	361	R364	R375	R378	R368	374	376	381	R395	403
Asia and Oceania	R5,981	R6,361	R6,672	R6,814	R7,028	R6,883	R7,041	R7,338	R7,589	7,844
Australia	282	282	292	298	R328	R332	R352	R359	R391	410
China	2,610	2,816	2,888	2,945	3,022	2,952	R2,913	R3,017	R3,176	3,322
India	R695	R734	R867	R830	R873	R898	R934	R996	R1,010	1,026
Indonesia	R201	R209	213	235	R245	R239	R263	275	R293	300
Japan	R1,035	R1,102	R1,095	R1,128	R1,138	R1,096	R1,135	R1,183	R1,182	1,179
Malaysia	83	89	89	101	101	102	106	112	128	141
South Korea	334	364	401	410	432	369	R390	R422	R431	451
Taiwan	156	R160	R181	R195	R207	R221	R216	R234	R215	230
Thailand	115	128	156	169	R174	R160	R179	R173	178	189
Other	R468	R477	R491	R503	R506	R513	R552	R568	R585	596
World	R21,596	R21,736	R22,107	R22,576	R22,893	R22,824	R23,137	R23,891	R24,228	24,533

¹ Metric tons of carbon dioxide can be converted to metric tons of carbon equivalent by multiplying by 12/44. For data in million metric tons carbon equivalent, see the "International Energy Annual 2002" (June 2004), Table H.1.

² Data for the United States in this table differ from those in Table 12.1 due to: the inclusion of emissions from bunker fuels consumption; the exclusion of emissions from geothermal power generation, cement production and other industrial processes, and municipal solid waste combustion; and the exclusion of data for the U.S. Territories.

R=Revised. P=Preliminary.

Notes: • Data include carbon dioxide emissions from fossil-fuel energy consumption and natural gas venting and flaring. • See Note 2, "World Carbon Dioxide Emissions," at end of section. • Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/international>.

Source: Energy Information Administration, "International Energy Annual 2002" (May 2004), Table H.1co2.

International Energy

Note 1. World Primary Energy Production. World primary energy production includes production of crude oil (including lease condensate), natural gas plant liquids, dry natural gas, and coal; and net electricity generation from nuclear electric power, hydroelectric power, wood, waste, geothermal, solar, and wind. Data for the United States also include other renewable energy. Crude oil production is measured at the wellhead and includes lease condensate. Natural gas plant liquids are products obtained from processing natural gas at natural gas processing plants, including natural gas plants, cycling plants, and fractionators. Dry natural gas production is that amount of natural gas produced that is available to be marketed and consumed as a gas. Coal (anthracite, bituminous, subbituminous, and lignite) production is the sum of sales, mine consumption, issues to miners, and issues to coking, briquetting, and other ancillary plants at mines. Coal production data include quantities extracted from surface and underground mines and normally exclude wastes removed at mines or associated preparation plants. The data on generation of electricity from nuclear electric power, hydroelectric power, wood, waste, geothermal, solar, and wind include data reported on a net basis, thus

excluding electricity that is generally used by the electric power plant for its own operating purposes or electricity losses in the transformers that are considered integral parts of the station.

Note 2. World Carbon Dioxide Emissions. In Table 11.19, data for carbon dioxide emissions include anthropogenic (human-caused) emissions from the consumption of petroleum, natural gas, and coal, and also from natural gas venting and flaring. They do not include carbon dioxide emissions from geothermal power generation, cement production and other industrial processes, and municipal solid waste combustion. Fossil-fuel consumption and natural gas flaring statistics for each country have been reduced to account for the fraction of fuels not combusted and, in the case of petroleum, for the fraction of sequestration of non-fuel uses. Carbon dioxide emissions have been determined by applying carbon emission coefficients to the adjusted consumption and flaring data. Carbon emission coefficients for petroleum and natural gas consumption and natural gas flaring are from Energy Information Administration (EIA), *Documentation for Emissions of Greenhouse Gases in the United States 2002* (January 2004), Table 6.1. Carbon emission coefficients for coal consumption are from EIA, *Emissions of Greenhouse Gases in the United States 1985-1990* (October 1993), Table 11.

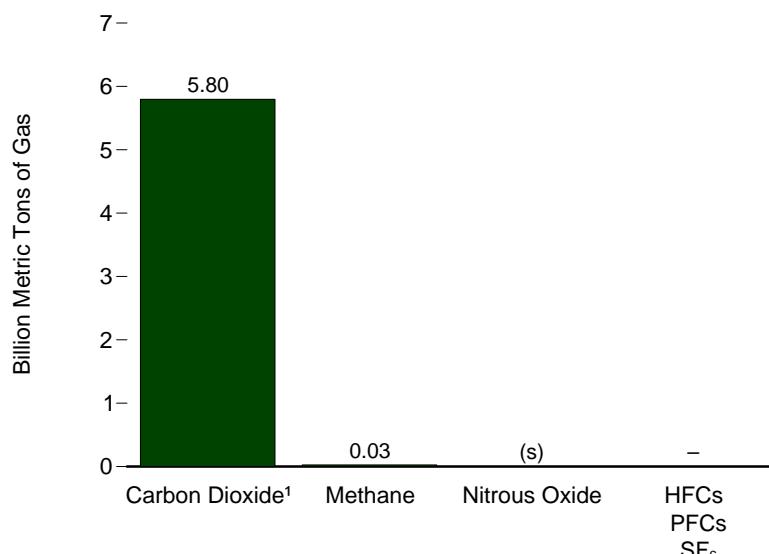
Environmental Indicators



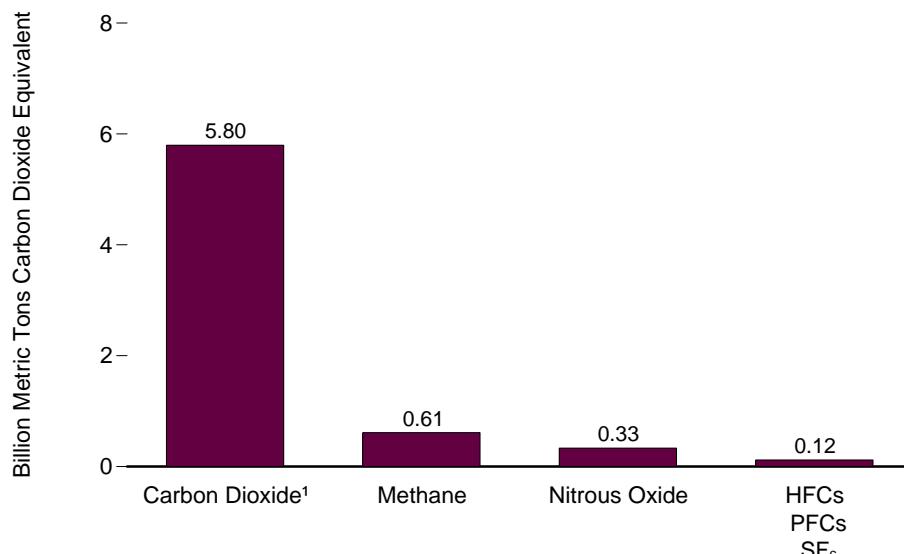
"Harpers Ferry, Junction of the Rivers Shenandoah and Potomac." Engraving by W. Goodacre and James Archer, published in *The History and Topography of the United States of North America*, by John Howard Hinton, 1852. From the collection of the National Park Service, Harpers Ferry National Historical Park, Accession #1297.

Figure 12.1 Emissions of Greenhouse Gases

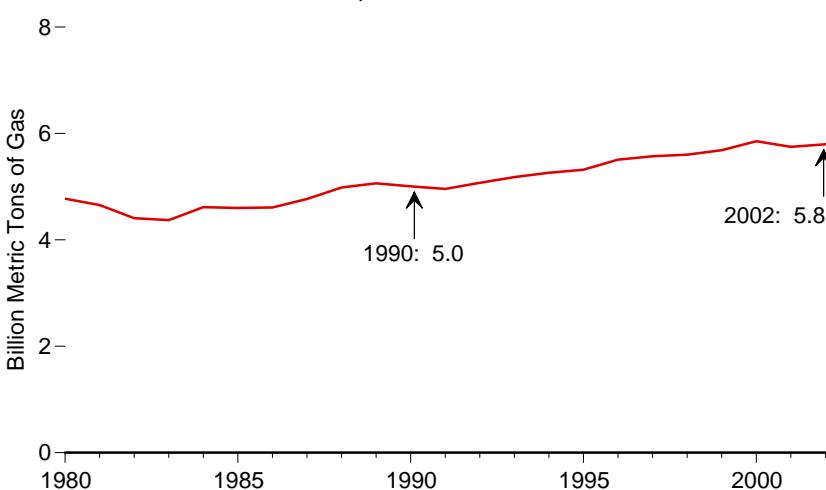
Emissions by Type of Gas, 2002



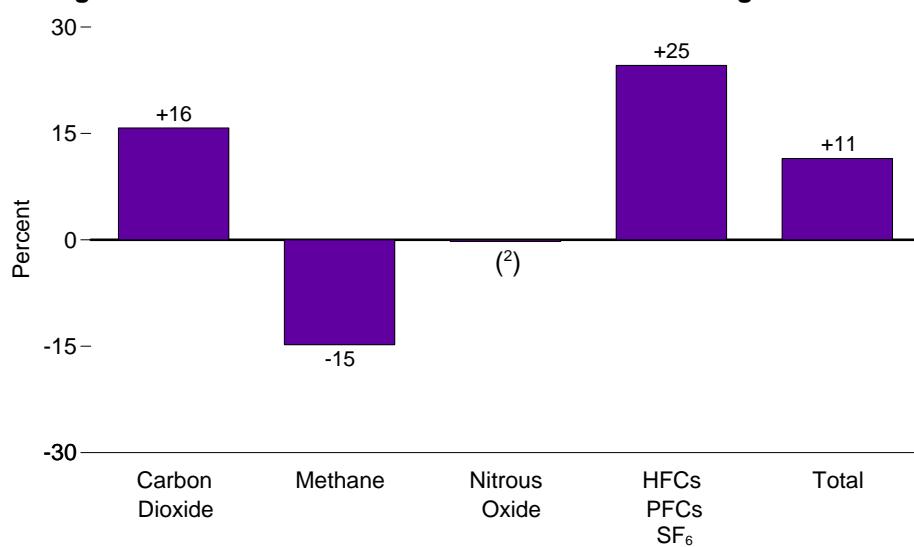
Emissions, Based on Global Warming Potential, by Type of Gas, 2002



Carbon Dioxide¹ Emissions, 1980-2002



Change 1990-2002 in Emissions Based on Global Warming Potential



¹ Metric tons of carbon dioxide can be converted to metric tons of carbon equivalent by multiplying by 12/44.

² -0.2 percent.

(s)=Less than 0.005 billion metric tons of gas.

= Not applicable because these gases cannot be summed in native units.

Notes: • HFCs=hydrofluorocarbons; PFCs=perfluorocarbons; and SF₆=sulfur hexafluoride.
• Emissions by type of gas should not be compared; for comparison, see emissions based on global warming potential by type of gas. • Because vertical scales differ, graphs should not be compared.

Source: Table 12.1.

Table 12.1 Emissions of Greenhouse Gases, 1980-2002

Year	Greenhouse Gases (million metric tons of gas)				Greenhouse Gases, Based on Global Warming Potential ¹ (million metric tons carbon dioxide equivalent ²)				
	Carbon Dioxide ^{2,3}	Methane	Nitrous Oxide	HFCs PFCs SF ₆	Carbon Dioxide ²	Methane	Nitrous Oxide	HFCs PFCs SF ₆	Total
1980	R4,775.4	17.4	0.9	—	R4,775.4	400.0	R268.9	70.4	R5,514.6
1981	R4,654.1	18.0	0.9	—	R4,654.1	413.2	R273.1	74.0	R5,414.4
1982	R4,406.7	17.7	0.9	—	R4,406.7	408.1	R262.6	55.4	R5,132.8
1983	R4,370.0	18.4	0.8	—	R4,370.0	423.4	R248.9	67.1	R5,109.4
1984	R4,615.3	18.9	0.9	—	R4,615.3	433.7	R268.1	75.5	R5,392.7
1985	R4,599.7	23.8	1.0	—	R4,599.7	547.1	R301.5	70.5	R5,518.8
1986	R4,608.0	23.9	1.0	—	R4,608.0	548.7	R291.7	75.0	R5,523.4
1987	R4,767.6	24.1	1.0	—	R4,767.6	555.2	R287.5	77.8	R5,688.2
1988	R4,983.7	24.5	0.9	—	R4,983.7	563.5	R275.9	91.3	R5,914.4
1989	R5,063.7	24.9	1.0	—	R5,063.7	573.6	R289.3	94.5	R6,021.2
1990	R5,006.1	R31.3	R1.1	—	R5,006.1	R719.1	R333.8	R96.8	R6,155.8
1991	R4,959.0	R31.4	R1.1	—	R4,959.0	R722.9	R339.3	R88.0	R6,109.2
1992	R5,072.6	R31.6	1.2	—	R5,072.6	R725.7	R346.7	R87.9	R6,232.9
1993	R5,180.0	R30.6	1.2	—	R5,180.0	R702.7	R347.6	R93.6	R6,324.0
1994	R5,262.5	R30.6	1.3	—	R5,262.5	R703.1	R371.0	R90.9	R6,427.5
1995	R5,318.5	R30.5	R1.2	—	R5,318.5	R701.8	R355.3	R94.6	R6,470.2
1996	R5,508.9	R29.4	1.2	—	R5,508.9	R675.9	R352.3	113.3	R6,650.4
1997	R5,572.5	R29.1	1.2	—	R5,572.5	R668.2	R344.4	R116.0	R6,701.2
1998	R5,602.4	R28.2	1.2	—	R5,602.4	R648.4	R342.6	R126.2	R6,719.6
1999	R5,686.1	R27.8	1.2	—	R5,686.1	R639.7	R347.2	R122.1	R6,795.1
2000	R5,854.0	R27.8	1.2	—	R5,854.0	R638.8	R341.2	R123.2	R6,957.2
2001	R5,748.3	R27.4	R1.1	—	R5,748.3	R630.2	R336.8	R113.6	R6,828.9
2002 ^P	5,795.6	26.6	1.1	—	5,795.6	612.8	333.1	120.6	6,862.0

¹ Emissions of greenhouse gases were weighted based upon their relative global warming potential (gwp), with carbon dioxide equal to a weight of one. The use of updated estimates of gwp resulted in a number of revisions to previously published data. It is also important to note that revisions in estimated emissions result from revisions in energy consumption as well.

² Metric tons of carbon dioxide can be converted to metric tons of carbon equivalent by multiplying by 12/44.

³ Carbon dioxide data in this table differ from those for the United States in Table 11.19 due to: the exclusion of emissions from international bunker fuels consumption; the inclusion of emissions from geothermal power generation, cement production and other industrial processes, and municipal solid waste combustion; and the inclusion of data for the U.S. Territories.

R=Revised. P=Preliminary. — = Not applicable because these gases cannot be summed in native units.

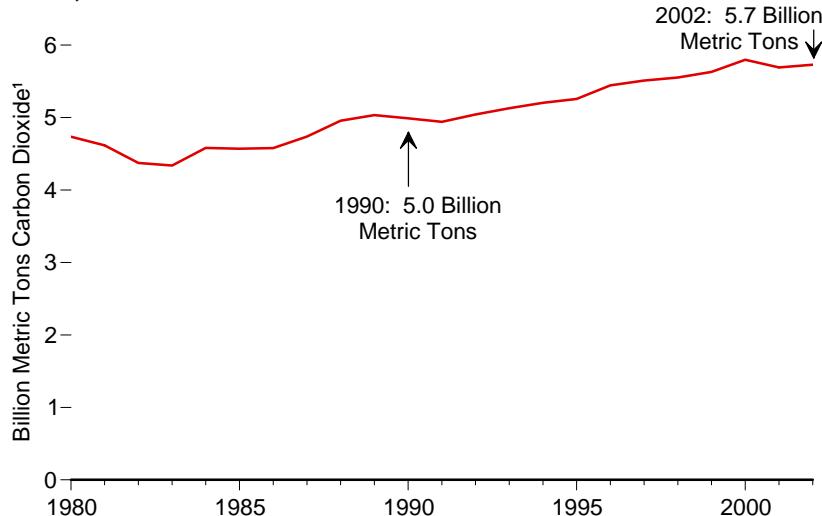
Notes: • HFCs = hydrofluorocarbons; PFCs = perfluorocarbons; and SF₆ = sulfur hexafluoride. • Emissions are from anthropogenic sources. "Anthropogenic" means produced as the result of human activities, including emissions from agricultural activity and domestic livestock. Emissions from natural sources, such as wetlands and wild animals, are not included. • Because of the continuing goal to improve estimation methods for greenhouse gases, data are frequently revised on an annual basis in keeping with the latest findings of the international scientific community.

Web Page: For related information, see <http://www.eia.doe.gov/environment.html>.

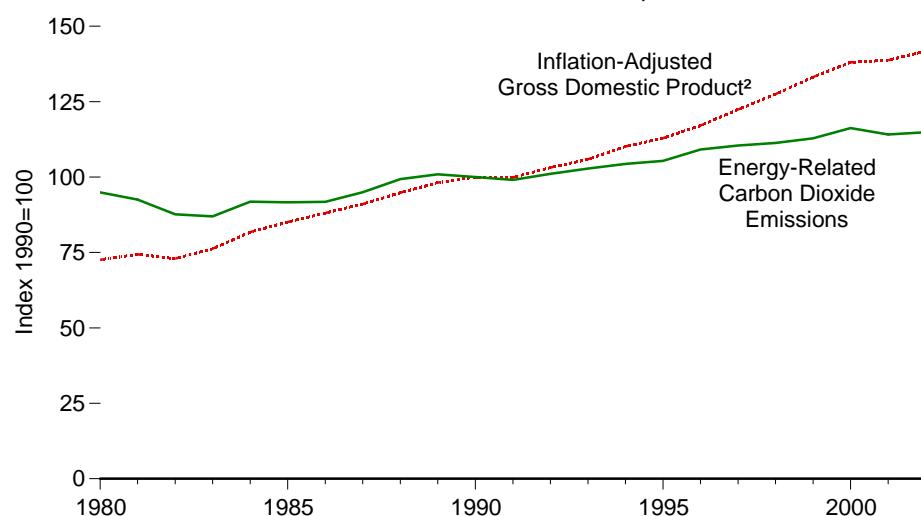
Sources: • 1980-1989—Energy Information Administration (EIA), *Emissions of Greenhouse Gases in the United States*, annual reports and unpublished revisions. • 1990 forward—EIA, *Emissions of Greenhouse Gases in the United States 2002* (October 2003), Tables ES1 and ES2.

Figure 12.2 Carbon Dioxide Emissions From Energy Consumption by Sector

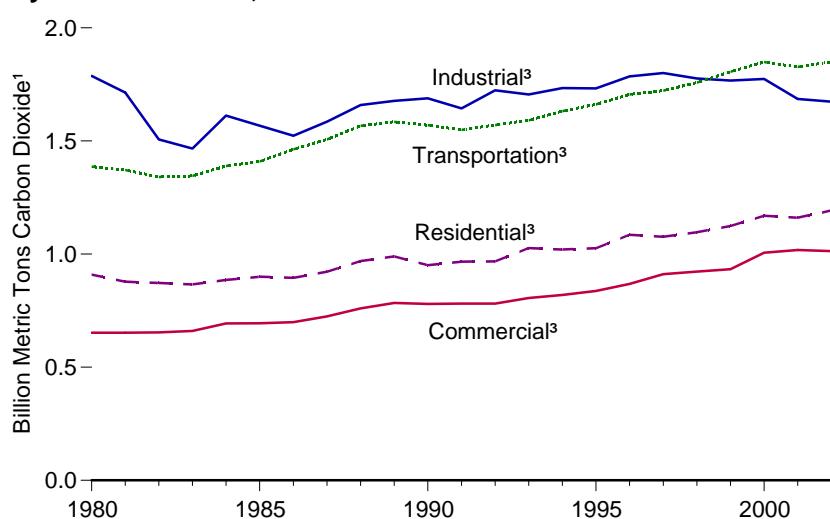
Total, 1980-2002



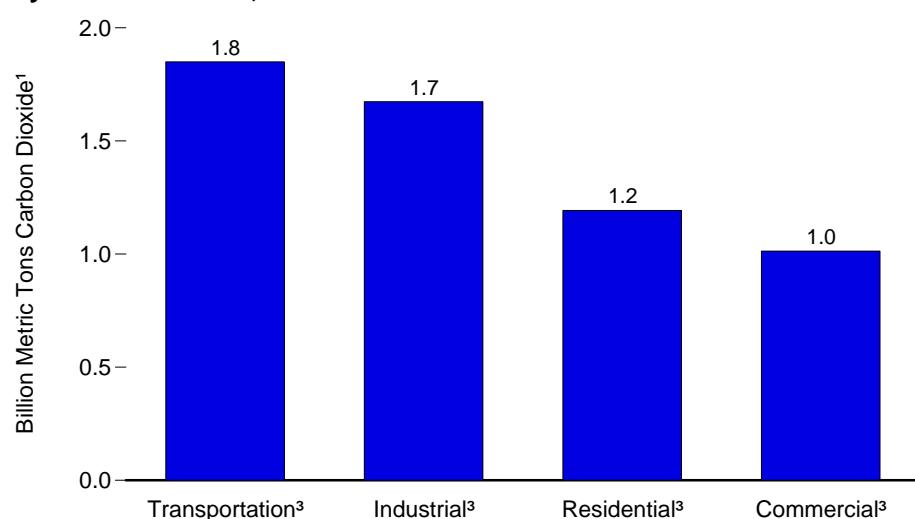
Economic Growth and Carbon Dioxide Emissions, 1980-2002



By End-Use Sector, 1980-2002



By End-Use Sector, 2002



¹ Metric tons of carbon dioxide can be converted to metric tons of carbon equivalent by multiplying by 12/44.

² Based on chained (2000) dollars.

³ Electric power sector emissions are distributed across the end-use sectors.
Note: Because vertical scales differ, graphs should not be compared.

Sources: Tables 1.5 and 12.2.

Table 12.2 Carbon Dioxide Emissions From Energy Consumption by Sector, 1980-2002
 (Million Metric Tons of Carbon Dioxide ¹)

Year	End-Use Sectors								Electric Power Sector ⁴	Total ⁷		
	Residential		Commercial ²		Industrial ³		Transportation					
	Primary ⁵	Total ⁶	Primary ⁵	Total ⁶	Primary ⁵	Total ⁶	Primary ⁵	Total ⁶				
1980	R385.1	R908.9	R244.5	652.5	R1,192.5	R1,787.4	1,383.9	1,386.2	1,529.0	R4,735.0		
1981	R360.7	R877.7	225.8	R652.2	R1,123.0	R1,714.0	1,369.4	R1,371.7	1,536.7	R4,615.6		
1982	R359.0	R872.1	R226.0	R654.1	R983.0	R1,506.7	1,338.3	1,340.5	1,467.1	R4,373.4		
1983	R340.2	R866.3	225.7	660.5	R923.0	R1,466.4	R1,343.0	1,345.3	1,506.5	R4,338.5		
1984	R348.7	R885.7	R236.2	693.6	R1,035.8	R1,612.3	R1,387.1	1,389.6	1,573.5	R4,581.3		
1985	R351.3	R899.6	217.9	694.0	R989.8	R1,567.4	1,406.3	R1,408.9	1,604.6	R4,569.9		
1986	R342.4	R895.1	R216.1	698.8	R963.0	R1,523.2	R1,460.2	1,462.9	1,598.2	R4,580.0		
1987	R345.7	R921.8	R219.9	724.6	R1,004.1	R1,585.4	1,504.4	1,506.9	1,664.5	R4,738.6		
1988	R366.6	R969.5	R230.1	760.0	R1,053.9	R1,659.1	1,564.1	1,566.8	1,740.8	R4,955.5		
1989	R371.5	R989.6	229.9	R784.0	R1,045.2	R1,677.0	R1,581.5	1,584.3	R1,806.7	R5,034.8		
1990	R339.1	R950.8	R224.1	R779.5	R1,063.1	R1,688.8	R1,566.8	R1,569.5	R1,795.5	R4,988.6		
1991	R346.7	R966.7	R225.5	R781.0	R1,029.8	R1,643.9	R1,546.8	R1,549.4	R1,792.2	R4,941.0		
1992	R356.7	R967.7	R225.8	R781.1	R1,088.7	R1,723.5	R1,567.9	R1,570.5	R1,803.7	R5,042.7		
1993	R371.7	R1,026.7	R223.1	R806.2	R1,062.1	R1,705.1	R1,588.1	R1,590.6	R1,883.6	R5,128.6		
1994	R363.9	R1,020.0	R225.6	R819.6	R1,078.0	R1,733.5	R1,628.4	R1,631.7	R1,908.9	R5,204.7		
1995	R360.3	R1,025.7	R228.4	R836.7	R1,085.9	R1,732.0	R1,658.3	R1,661.4	R1,922.9	R5,255.8		
1996	R388.4	R1,085.3	R236.9	R867.9	R1,122.2	R1,785.2	R1,702.1	R1,705.3	R1,994.0	R5,443.7		
1997	R370.1	R1,076.6	237.1	R911.2	R1,122.6	R1,800.4	R1,719.5	R1,722.7	R2,061.7	R5,511.0		
1998	R338.1	R1,096.2	R219.6	R922.4	R1,090.6	R1,776.0	R1,754.6	R1,757.9	R2,149.6	R5,552.5		
1999	R358.6	R1,123.9	R222.2	R933.5	R1,085.1	R1,767.0	R1,802.7	R1,806.0	R2,161.9	R5,630.5		
2000	R378.5	R1,169.4	R237.0	R1,005.9	R1,068.3	R1,774.1	R1,845.7	R1,849.2	R2,269.2	R5,798.6		
2001	R366.2	R1,160.8	R227.1	R1,018.3	R1,048.2	R1,685.3	R1,823.6	R1,827.3	R2,226.6	R5,691.7		
2002 ^p	372.3	1,193.0	231.1	1,012.9	1,030.5	1,673.7	1,846.3	1,849.7	2,249.0	5,729.3		

¹ Metric tons of carbon dioxide can be converted to metric tons of carbon equivalent by multiplying by 12/44.

² Commercial sector, including commercial combined-heat-and-power (CHP) and commercial electricity-only plants.

³ Industrial sector, including industrial combined-heat-and-power (CHP) and industrial electricity-only plants.

⁴ Electricity-only and combined-heat-and-power (CHP) plants within the NAICS (North American Industry Classification System) 22 category whose primary business is to sell electricity, or electricity and heat, to the public.

⁵ Carbon dioxide emissions from the combustion of fossil fuels. The electric power sector also has a small amount of emissions from geothermal power generation and the combustion of the plastics component of municipal solid waste.

⁶ In addition to "Primary" emissions, also includes emissions from energy consumption (for electricity and a small amount of useful thermal output) in the electric power sector, which are allocated to the end-use sectors in proportion to each sector's share of total electricity retail sales. (Electricity retail sales to

"Other," which are primarily for use in government buildings and for street and highway lighting, are added to the commercial sector, except for approximately 5 percent used by railroads and railways and attributed to the transportation sector.)

⁷ The sum of "Primary" emissions in the five energy-use sectors equals the sum of "Total" emissions in the four end-use sectors.

R=Revised. P=Preliminary.

Notes: • See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 8.

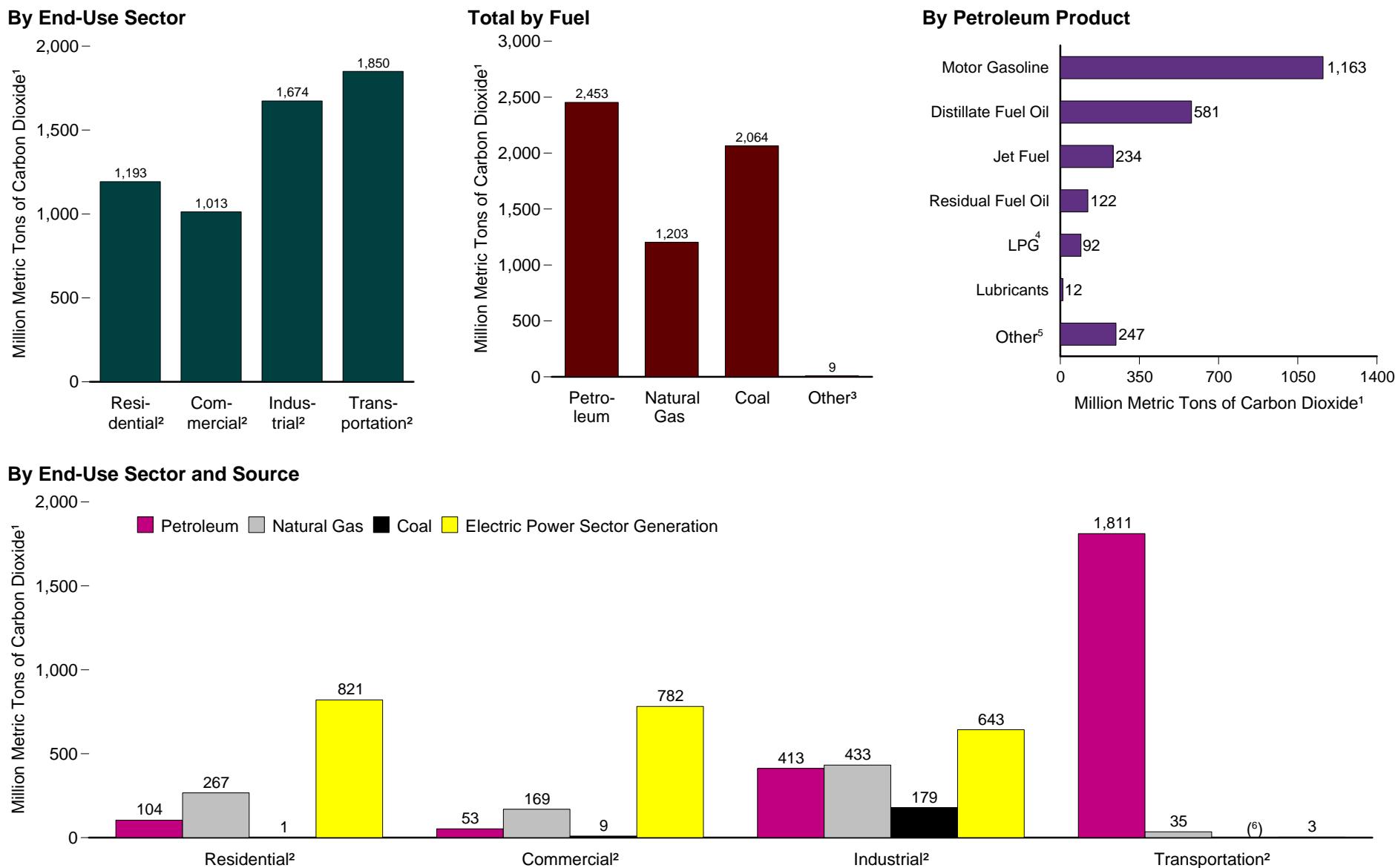
• Because of the continuing goal to improve estimation methods for greenhouse gases, data are frequently revised on an annual basis in keeping with the latest findings of the international scientific community.

• Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/environment.html>.

Sources: • 1980-1989—Energy Information Administration (EIA), *Emissions of Greenhouse Gases in the United States*, annual reports and unpublished revisions. • 1990 forward—EIA, *Emissions of Greenhouse Gases in the United States 2002* (October 2003), Tables 6-10.

Figure 12.3 Carbon Dioxide Emissions From Energy Consumption by Sector by Energy Source, 2002



¹ Metric tons of carbon dioxide can be converted to metric tons of carbon equivalent by multiplying by 12/44.

² Emissions in the electric power sector are distributed across the end-use sectors.

³ Coal coke net imports, municipal solid waste, and geothermal.

⁴ Liquefied petroleum gases.

⁵ Aviation gasoline, kerosene, petroleum coke, and other products.

⁶ Small amounts of coal consumed for transportation are reported as industrial consumption.
(s)=Less than 0.5 million metric tons.

Source: Table 12.3.

Table 12.3 Carbon Dioxide Emissions From Energy Consumption by Sector by Energy Source, 2002
 (Million Metric Tons of Carbon Dioxide ¹)

Energy Source	End-Use Sectors					Electric Power Sector ⁴	Total
	Residential	Commercial ²	Industrial ³	Transportation	Total		
Petroleum	104.0	52.6	412.8	1,811.2	2,380.5	72.2	2,452.7
Aviation Gasoline	—	—	—	2.3	2.3	—	2.3
Distillate Fuel Oil	65.1	36.4	92.7	379.0	573.2	7.8	581.0
Jet Fuel	—	—	—	234.4	234.4	—	234.4
Kerosene	4.1	1.3	1.0	—	6.4	—	6.4
Liquefied Petroleum Gases	34.9	6.2	50.4	0.8	92.2	—	92.2
Lubricants	—	—	6.3	6.0	12.3	—	12.3
Motor Gasoline	—	2.7	21.3	1,138.7	1,162.7	—	1,162.7
Petroleum Coke	—	—	101.2	—	101.2	12.6	113.8
Residual Fuel Oil	—	6.0	15.1	49.9	71.0	51.4	122.4
Other	—	—	124.7	—	124.7	0.4	124.7
Natural Gas	267.2	169.4	432.7	35.2	904.4	299.1	1,203.4
Coal	1.1	9.2	179.4	(⁵)	189.7	1,874.7	2,064.4
Coal Coke Net Imports	—	—	5.8	—	5.8	—	5.8
Municipal Solid Waste ⁶	—	—	—	—	—	2.7	2.7
Geothermal	—	—	—	—	—	0.4	0.4
Primary	372.3	231.1	1,030.5	1,846.3	3,480.3	2,249.0	5,729.3
Electric Power Sector Generation ⁷	820.7	781.8	643.1	3.4	2,249.0	—	—
Total	1,193.0	1,012.9	1,673.7	1,849.7	5,729.3	—	5,729.3

¹ Metric tons of carbon dioxide can be converted to metric tons of carbon equivalent by multiplying by 12/44.

² Commercial sector, including commercial combined-heat-and-power (CHP) and commercial electricity-only plants.

³ Industrial sector, including industrial combined-heat-and-power (CHP) and industrial electricity-only plants.

⁴ Electricity-only and combined-heat-and-power (CHP) plants within the NAICS (North American Industry Classification System) 22 category whose primary business is to sell electricity, or electricity and heat, to the public.

⁵ Small amounts of coal consumed for transportation are reported as industrial sector consumption.

⁶ The plastics component of municipal solid waste.

⁷ Emissions from energy consumption (for electricity and a small amount of useful thermal output) in the electric power sector are allocated to the end-use sectors in proportion to each sector's share of total

electricity retail sales. (Electricity retail sales to "Other," which are primarily for use in government buildings and for street and highway lighting, are added to the commercial sector, except for approximately 5 percent used by railroads and railways and attributed to the transportation sector.)

— = Not applicable. (^s)=Less than 0.05 million metric tons.

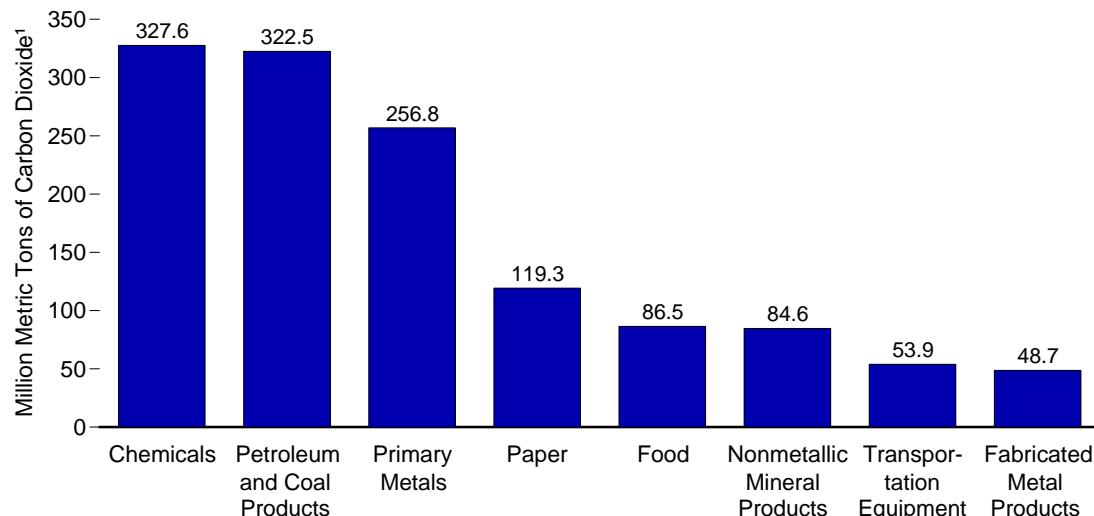
Notes: • Data are preliminary estimates. • Emissions from blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels are counted under their primary energy source—i.e., petroleum, natural gas, or coal. • See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 8. • Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/environment.html>.

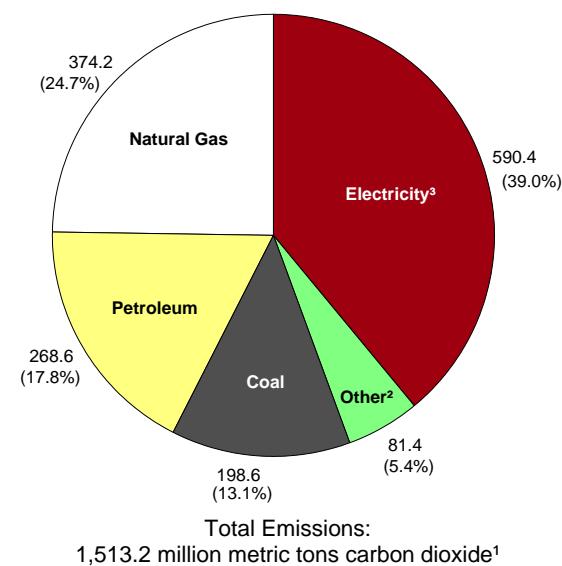
Source: Energy Information Administration (EIA), *Emissions of Greenhouse Gases in the United States 2002* (October 2003), Tables 6-10, and unpublished revisions.

Figure 12.4 Carbon Dioxide Emissions From Consumption of Energy for All Purposes in the Manufacturing Sector, 1998

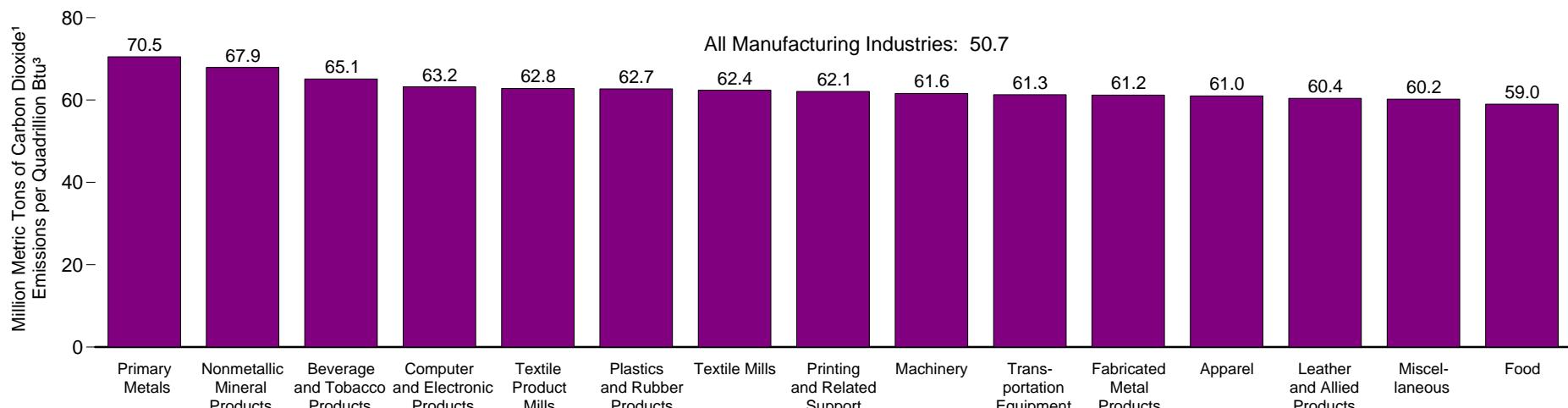
Carbon Dioxide Emissions by Top Industry Groups



Carbon Dioxide Emissions by Energy Source



Carbon Dioxide Emissions per Unit of Primary Consumption, Top Industry Groups



¹ Metric tons of carbon dioxide can be converted to metric tons of carbon equivalent by multiplying by 12/44.

³ Including allocated electricity losses.

Source: Table 12.4.

² All other types of energy that respondents indicated were consumed or allocated.

Table 12.4 Carbon Dioxide Emissions From Consumption of Energy for All Purposes in the Manufacturing Sector, 1998
 (Million Metric Tons of Carbon Dioxide,¹ Except as Noted)

NAICS ² Code	Major Group	Carbon Dioxide Emissions						Carbon Dioxide Emissions per Unit of Primary Consumption ⁵	Carbon Dioxide Emissions per Dollar of Shipments ⁶
		Coal	Natural Gas	Petroleum	Electricity ³	Other ⁴	Total		
311	Food	12.2	30.0	2.8	41.4	0.1	86.5	59.0	202.0
312	Beverage and Tobacco Products	2.7	2.4	0.4	4.7	0.0	10.2	65.1	99.4
313	Textile Mills	1.9	5.4	1.4	19.8	(s)	28.6	62.4	497.9
314	Textile Product Mills	0.3	1.3	Q	3.5	0.0	5.3	62.8	171.3
315	Apparel	0.1	1.2	0.3	3.5	0.0	5.1	61.0	78.5
316	Leather and Allied Products	0.0	0.2	0.0	0.6	0.0	0.8	60.4	78.0
321	Wood Products	0.2	3.9	1.2	14.0	0.2	19.4	29.8	213.3
322	Paper	25.8	30.9	15.2	46.7	0.7	119.3	37.0	769.8
323	Printing and Related Support	0.0	2.3	0.1	9.9	0.1	12.4	62.1	123.4
324	Petroleum and Coal Products	0.0	53.2	175.0	24.5	69.8	322.5	42.6	2,337.5
325	Chemicals	28.7	125.2	56.6	112.2	4.9	327.6	45.4	786.1
326	Plastics and Rubber Products	0.3	6.7	0.8	35.6	0.0	43.3	62.7	264.5
327	Nonmetallic Mineral Products	27.7	23.4	6.7	26.1	0.7	84.6	67.9	914.5
331	Primary Metals	94.6	49.3	3.3	106.0	3.6	256.8	70.5	1,546.2
332	Fabricated Metal Products	0.6	12.7	1.0	34.2	0.1	48.7	61.2	191.8
333	Machinery	0.6	5.2	0.4	18.7	0.2	25.1	61.6	89.6
334	Computer and Electronic Products	0.0	3.4	0.2	26.6	0.0	30.2	63.2	68.0
335	Electrical Equipment, Appliances, and Components	0.1	2.8	0.4	10.7	0.9	14.9	58.8	128.2
336	Transportation Equipment	2.8	11.2	1.8	37.9	0.2	53.9	61.3	88.0
337	Furniture and Related Products	0.2	1.4	0.1	5.8	0.1	7.7	52.2	109.9
339	Miscellaneous	0.0	2.1	0.3	7.8	0.0	10.2	60.2	96.8
—	Total Manufacturing	198.6	374.2	268.6	590.4	81.4	1,513.2	50.7	388.0

¹ Metric tons of carbon dioxide can be converted to metric tons of carbon equivalent by multiplying by 12/44.

² The Standard Industrial Classification (SIC) system has been replaced by the North American Industry Classification System (NAICS).

³ Carbon dioxide emitted from energy inputs used to produce electricity (including associated losses), derived by calculating the manufacturing subsector share of the electric power sector's total carbon dioxide emissions based upon the weighted share of electricity retail sales to (receipts by) the manufacturing subsector. Estimates presented here are based upon the electric power sector and differ from prior estimates that were based upon data for electric utilities only.

⁴ Includes all other types of energy that respondents indicated were consumed or allocated, such as asphalt and road oil, lubricants, naphtha < 40^o F, other oils >= 40^o F, special naphthas, waxes, and miscellaneous nonfuel products, which are nonfuel products assigned to the petroleum refining industry group (NAICS 324110).

⁵ Data are in million metric tons of carbon dioxide per quadrillion Btu of energy (including allocated electricity losses).

⁶ Data are in metric tons of carbon dioxide per million (nominal) dollars.

(s)=Less than 0.05 million metric tons. Q=Data withheld because the relative standard error was greater than 50 percent.

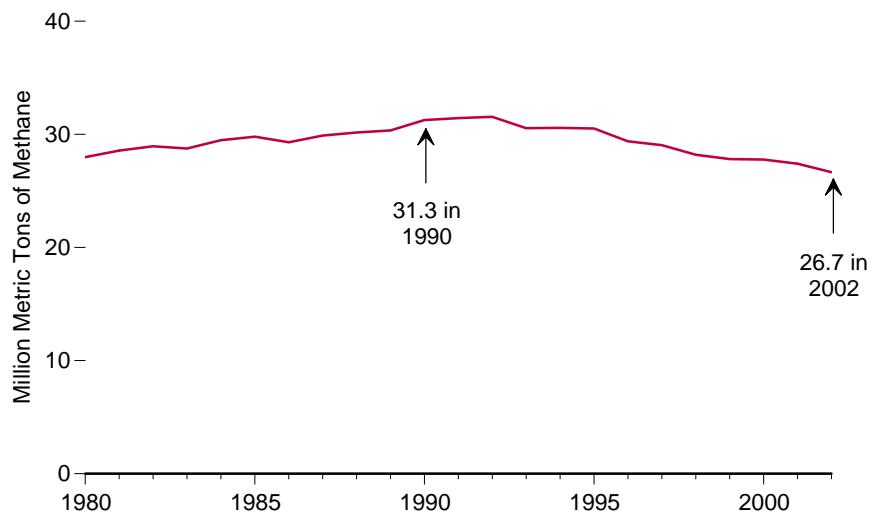
Notes: • For prior surveys and the current Manufacturing Energy Consumption Survey, emissions are available classified under the 1987 Standard Industrial Classification System. See the Web Page. • The estimates are for the first use of energy for heat and power and as feedstocks or raw material inputs. First use is defined as the consumption of the energy that was originally produced offsite or was produced onsite from input materials not classified as energy. • Electricity was converted from point-of-use to primary electricity using Table A6 of this report. • See Table 2.2 for manufacturing energy use. • Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/emeu/mecs>.

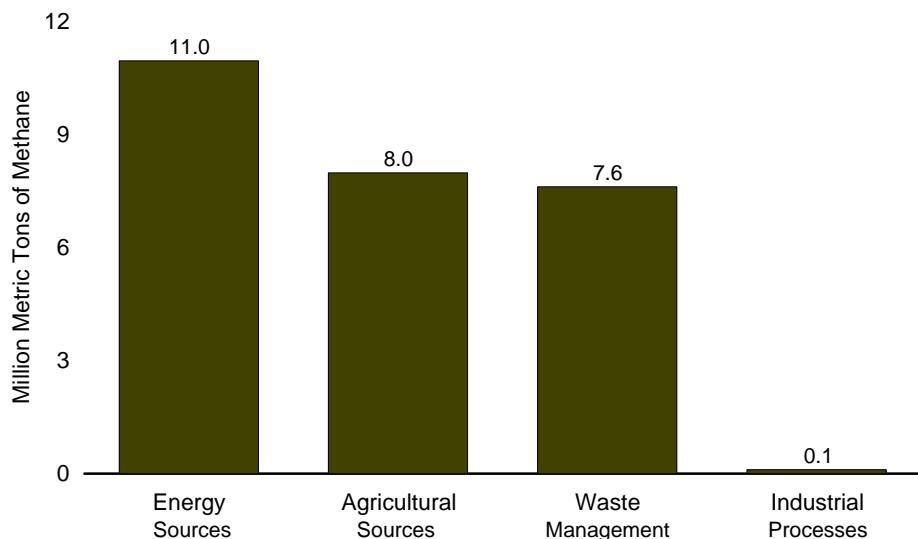
Sources: Energy Information Administration, Form EIA-846, "1998 Manufacturing Energy Consumption Survey," Form EIA-810, "Monthly Refinery Report" for 1998, and *Emissions of Greenhouse Gases in the United States 2002* (October 2003).

Figure 12.5 Methane Emissions

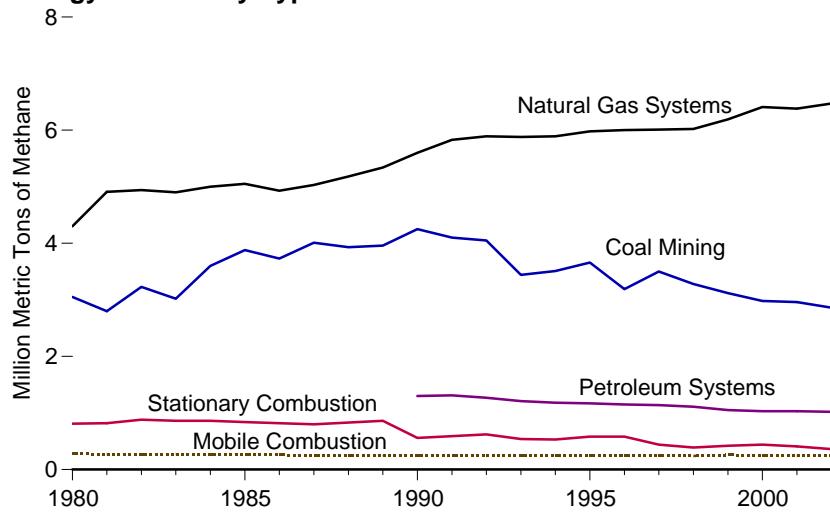
Total, 1980-2002



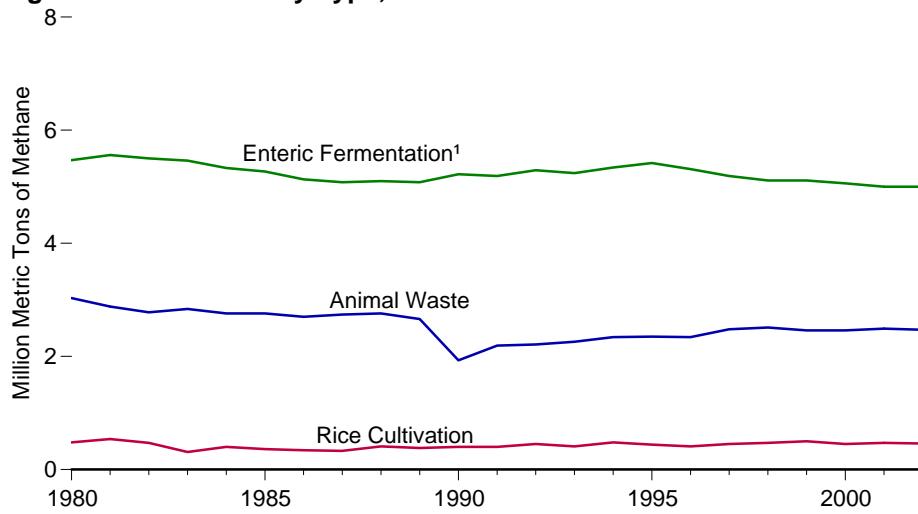
By Source, 2002



Energy Sources by Type 1980-2002



Agricultural Sources by Type, 1980-2002



¹ Methane emitted as a product of digestion in animals such as cattle, buffalo, sheep, goats, and camels.

Note: Because vertical scales differ, graphs should not be compared.
Source: Table 12.5.

Table 12.5 Methane Emissions, 1980-2002
(Million Metric Tons of Methane)

Year	Energy Sources						Waste Management			Agricultural Sources					Industrial Processes ⁶	Total
	Coal Mining	Natural Gas Systems ¹	Petroleum Systems ²	Mobile Combustion ³	Stationary Combustion ⁴	Total	Landfills	Waste-water Treatment	Total	Enteric Fermentation ⁵	Animal Waste	Rice Cultivation	Crop Residue Burning	Total		
1980	3.05	4.30	NA	0.28	0.81	8.44	9.85	R0.53	R10.38	5.47	3.03	0.48	0.04	9.02	0.13	R27.98
1981	2.80	4.91	NA	0.27	0.82	8.80	10.07	R0.53	R10.60	5.56	2.88	0.54	R0.05	9.03	0.14	R28.57
1982	3.23	4.94	NA	0.27	0.88	9.31	10.21	R0.54	R10.75	5.50	2.78	0.47	R0.05	R8.80	0.10	R28.95
1983	3.02	4.90	NA	0.27	0.86	9.05	10.41	R0.54	R10.95	5.46	2.84	0.31	0.03	8.64	0.11	R28.75
1984	3.60	5.00	NA	R0.27	0.86	9.73	10.55	R0.55	R11.10	5.33	2.76	0.40	0.04	R8.54	0.11	R29.48
1985	3.88	5.05	NA	0.26	0.84	10.03	10.67	R0.55	R11.22	5.27	2.76	0.36	R0.05	8.43	0.11	R29.79
1986	3.73	4.93	NA	0.26	0.82	9.74	10.69	R0.56	R11.25	5.13	2.70	0.34	0.04	R8.21	0.10	R29.30
1987	4.01	5.03	NA	0.25	0.80	10.09	10.92	R0.56	R11.49	5.08	2.74	0.33	0.04	R8.20	0.11	R29.89
1988	3.93	5.18	NA	0.25	0.83	10.19	10.98	R0.57	R11.55	5.10	2.76	0.41	0.03	8.30	0.12	R30.16
1989	3.96	5.34	NA	0.25	0.86	10.41	11.08	R0.57	R11.65	5.08	2.66	0.38	0.04	8.16	0.12	R30.35
1990	R4.25	5.60	1.30	0.25	0.56	R11.96	R11.01	R0.58	R11.59	R5.22	R1.93	0.40	R0.05	R7.60	0.12	R31.27
1991	R4.10	5.83	1.31	R0.24	0.59	R12.06	R10.86	R0.58	R11.44	R5.19	R2.19	0.40	0.04	R7.81	0.11	R31.43
1992	R4.05	5.89	1.27	0.24	0.62	R12.07	R10.77	R0.59	R11.36	R5.29	R2.21	0.45	R0.05	R8.01	0.12	R31.55
1993	R3.44	5.88	1.21	0.24	0.54	R11.30	R10.58	R0.60	R11.18	R5.24	R2.26	0.41	0.04	R7.95	0.12	R30.55
1994	R3.51	5.89	1.18	0.24	0.53	R11.35	R10.27	R0.60	R10.88	R5.34	R2.34	0.48	0.05	R8.21	0.13	R30.57
1995	R3.66	5.98	1.17	0.25	0.58	R11.64	R9.87	R0.61	R10.48	R5.42	R2.35	0.44	0.04	R8.26	0.13	R30.51
1996	R3.19	6.00	1.15	0.24	0.58	R11.16	R9.37	R0.61	R9.98	R5.31	R2.34	0.41	R0.05	R8.11	0.13	R29.39
1997	R3.50	6.01	1.14	0.24	0.44	R11.33	R8.80	R0.62	R9.42	R5.19	R2.48	0.45	R0.05	R8.18	0.13	R29.05
1998	R3.28	6.02	1.11	0.24	0.39	R11.04	R8.25	R0.63	R8.88	R5.11	R2.51	0.47	R0.05	R8.13	0.13	R28.19
1999	3.12	6.19	R1.05	0.26	0.42	11.02	R7.91	R0.63	R8.54	R5.11	R2.46	0.50	R0.05	R8.11	0.13	R27.81
2000	2.98	R6.41	1.03	0.25	0.44	R11.10	R7.87	R0.65	R8.53	R5.06	R2.46	0.45	0.05	R8.02	0.13	R27.77
2001	R2.96	R6.38	1.03	R0.24	0.41	R11.03	R7.58	R0.66	R8.24	R5.00	R2.49	R0.47	R0.05	R8.01	0.11	R27.40
2002 ^p	2.86	6.47	1.02	0.24	0.36	10.95	6.94	0.67	7.61	5.00	2.47	0.46	0.05	7.98	0.11	26.65

¹ Natural gas production, processing, and distribution.

² Petroleum production, refining, and distribution.

³ Emissions from passenger cars, trucks, buses, motorcycles, and other transport.

⁴ Consumption of coal, petroleum, natural gas, and wood for heat or electricity.

⁵ Methane emitted as a product of digestion in animals such as cattle, buffalo, sheep, goats, and camels.

⁶ Chemical production, and iron and steel production.

R=Revised. P=Preliminary. NA=Not available.

Notes: • Emissions are from anthropogenic sources. "Anthropogenic" means produced as the result of human activities, including emissions from agricultural activity and domestic livestock. Emissions from

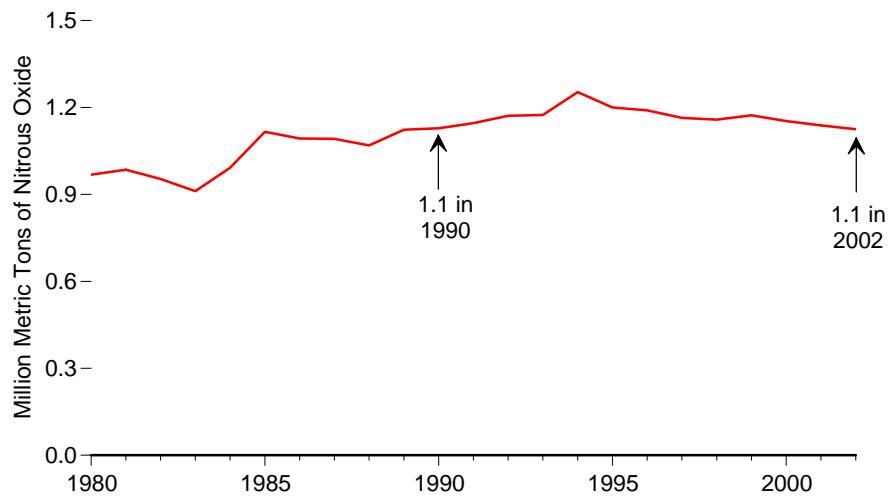
natural sources, such as wetlands and wild animals, are not included. • Under certain conditions, methane may be produced via anaerobic decomposition of organic materials in landfills, animal wastes, and rice paddies. • Because of the continuing goal to improve estimation methods for greenhouse gases, data are frequently revised on an annual basis in keeping with the latest findings of the international scientific community. • Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.doe.gov/environment.html>.

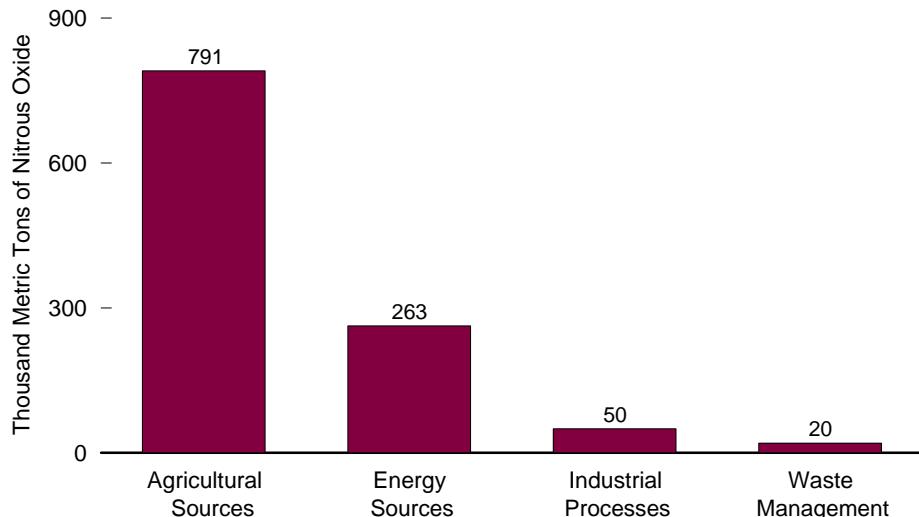
Sources: • 1980-1989—Energy Information Administration (EIA), *Emissions of Greenhouse Gases in the United States*, annual reports and unpublished revisions. • 1990 forward—EIA, *Emissions of Greenhouse Gases in the United States 2002* (October 2003), Table 13.

Figure 12.6 Nitrous Oxide Emissions

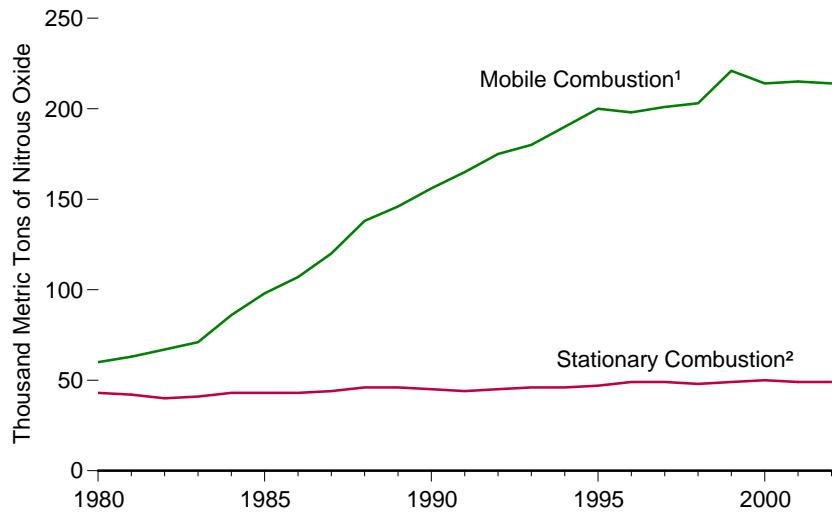
Total, 1980- 2002



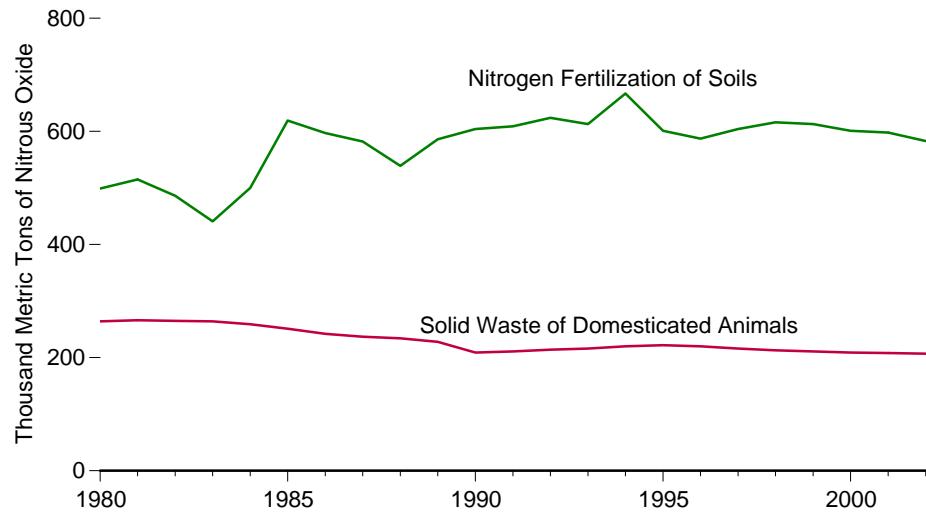
By Source, 2002



Energy Sources by Type, 1980-2002



Agricultural Sources by Major Type, 1980-2002



¹ Emissions from passenger cars and trucks; air, rail, and marine transportation; and farm and construction equipment.

² Consumption of coal, petroleum, natural gas, and wood for heat or electricity.

Notes: Because vertical scales differ, graphs should not be compared.
Source: Table 12.6.

Table 12.6 Nitrous Oxide Emissions, 1980-2002

(Thousand Metric Tons of Nitrous Oxide)

Year	Energy Sources			Waste Management			Agricultural Sources				Industrial Processes ³	Total
	Mobile Combustion ¹	Stationary Combustion ²	Total	Waste Combustion	Human Sewage in Wastewater	Total	Nitrogen Fertilization of Soils	Crop Residue Burning	Solid Waste of Domesticated Animals	Total		
1980	60	43	102	(s)	13	13	499	1	264	764	88	968
1981	63	42	105	(s)	13	13	515	2	266	782	85	985
1982	67	40	107	(s)	13	13	486	2	265	752	81	954
1983	71	41	112	(s)	14	14	441	1	264	706	80	912
1984	86	43	130	(s)	14	14	500	2	259	761	88	992
1985	98	43	141	(s)	15	15	619	2	251	871	89	1,116
1986	107	43	150	(s)	15	15	597	2	242	841	87	1,093
1987	120	44	164	1	15	16	582	1	237	821	91	1,092
1988	138	46	183	1	15	16	539	1	234	774	96	1,069
1989	146	46	192	1	15	16	586	2	228	816	99	1,123
1990	156	45	200	1	16	17	604	2	209	814	96	1,128
1991	165	44	209	1	16	17	609	2	211	821	99	1,146
1992	175	45	220	1	16	17	624	2	214	839	95	1,171
1993	180	46	226	1	16	17	613	1	216	831	100	1,174
1994	190	46	237	1	17	18	667	2	220	888	110	1,253
1995	200	47	247	1	17	18	601	2	222	825	111	1,200
1996	198	49	247	1	17	18	587	2	220	809	116	1,190
1997	201	49	250	1	17	18	604	2	216	822	74	1,164
1998	203	48	251	1	18	18	616	2	213	830	58	1,158
1999	221	49	270	1	18	19	613	2	211	826	58	1,173
2000	214	50	264	1	19	20	601	2	209	812	57	1,153
2001	215	49	263	1	19	20	598	2	208	807	47	1,138
2002 ^p	214	49	263	1	19	20	583	2	207	791	50	1,125

¹ Emissions from passenger cars and trucks; air, rail, and marine transportation; and farm and construction equipment.

² Consumption of coal, petroleum, natural gas, and wood for heat or electricity.

³ Adipic acid production (primarily for the manufacture of nylon fibers and plastics), and nitric acid production (primarily for fertilizers).

P=Preliminary. (s)=Less than 0.5 thousand metric tons.

Notes: • Emissions are from anthropogenic sources. "Anthropogenic" means produced as the result of human activities, including emissions from agricultural activity and domestic livestock. Emissions from natural sources, such as wetlands and wild animals, are not included. • Under certain conditions, methane

may be produced via anaerobic decomposition of organic materials in landfills, animal wastes, and rice paddies. • Because of the continuing goal to improve estimation methods for greenhouse gases, data are frequently revised on an annual basis in keeping with the latest findings of the international scientific community. • Totals may not equal sum of components due to independent rounding.

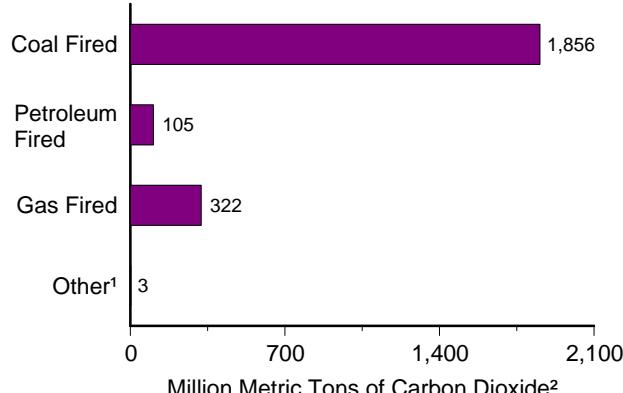
Web Page: For related information, see <http://www.eia.doe.gov/environment.html>.

Sources: • 1980-1989—Energy Information Administration (EIA), *Emissions of Greenhouse Gases in the United States*, annual reports. • 1990 forward—EIA, *Emissions of Greenhouse Gases in the United States 2002* (October 2003), Table 23.

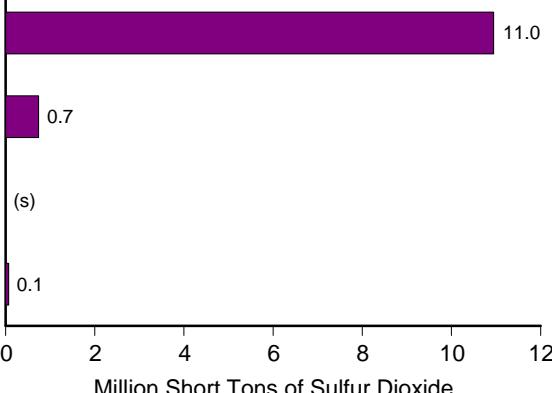
Figure 12.7 Emissions From Energy Consumption for Electricity Generation

Emissions by Type of Generating Unit

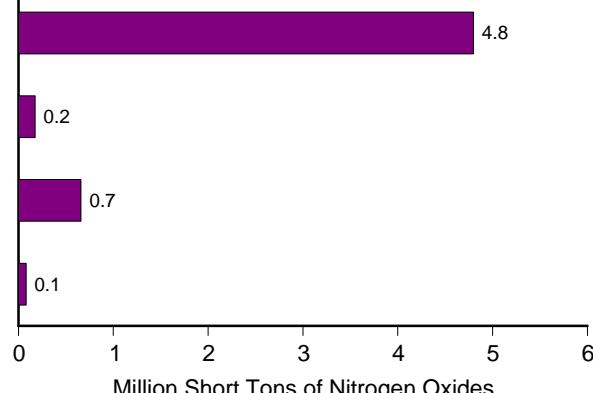
Carbon Dioxide, 2001



Sulfur Dioxide, 2000

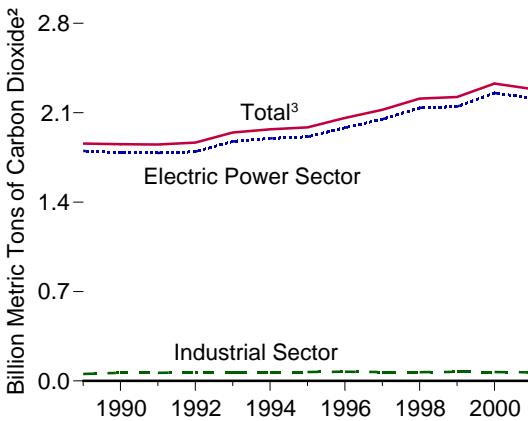


Nitrogen Oxides, 2000

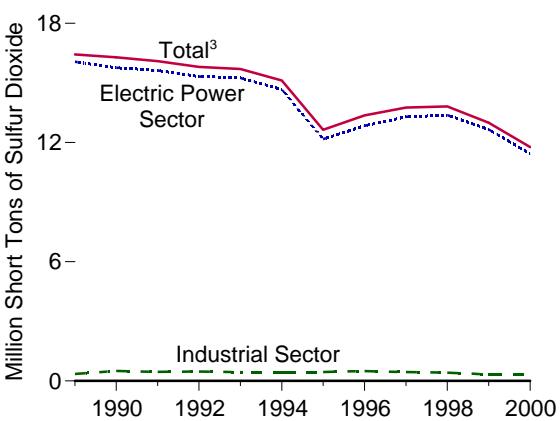


Emissions by Sector

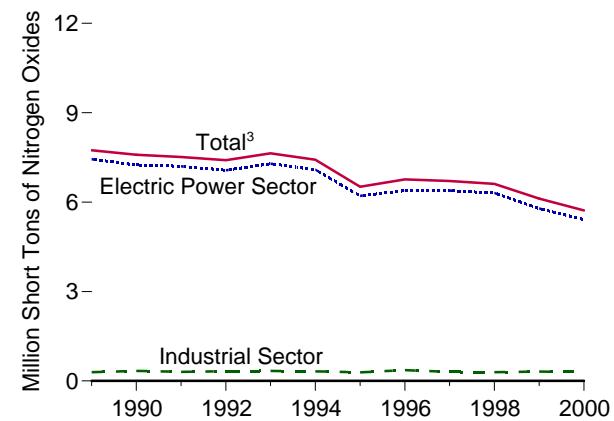
Carbon Dioxide, 1989-2001



Sulfur Dioxide, 1989-2000



Nitrogen Oxides, 1989-2000



¹ For carbon dioxide: municipal solid waste (only the estimated plastics component of municipal solid waste is included). For sulfur dioxide and nitrogen oxides: wood, black liquor, and other wood waste; municipal solid waste, sludge waste, tire-derived fuels, agricultural byproducts, other solids, other liquids, other gases, and all other.

² Carbon dioxide gas can be converted to units of carbon equivalent by multiplying by 12/44.

³ Includes Commercial Sector.
(s)=Less than 0.05 million short tons.
Note: Because vertical scales differ, graphs should not be compared.

Source: Table 12.7.

Table 12.7 Emissions From Energy Consumption for Electricity Generation, 1989-2001

Year	Carbon Dioxide					Sulfur Dioxide					Nitrogen Oxides				
	Coal ¹	Petroleum ²	Natural Gas ³ and Other Gases ⁴	MSW ⁵	Total	Coal ¹	Petroleum ²	Natural Gas ³ and Other Gases ⁴	Other ⁶	Total	Coal ¹	Petroleum ²	Natural Gas ³ and Other Gases ⁴	Other ⁶	Total
	Million Metric Tons of Carbon Dioxide ⁷					Thousand Short Tons of Sulfur Dioxide					Thousand Short Tons of Nitrogen Oxides				
Electric Power Sector ⁸															
1989	1,505.6	129.6	164.5	1.1	1,800.8	15,211	846	2	7	16,066	6,788	217	407	27	7,439
1990	1,517.0	98.4	171.1	1.5	1,788.0	15,080	678	1	10	15,769	6,640	167	397	39	7,243
1991	1,516.6	92.1	174.4	1.9	1,785.0	14,935	680	2	12	15,629	6,609	157	390	44	7,200
1992	1,535.6	76.5	180.6	2.2	1,794.9	14,695	615	1	9	15,320	6,526	123	371	48	7,068
1993	1,603.1	87.3	181.6	2.2	1,874.2	14,426	809	1	10	15,246	6,724	139	376	51	7,290
1994	1,609.6	81.9	204.1	2.4	1,898.0	13,925	735	1	9	14,670	6,512	124	406	50	7,092
1995	1,629.2	58.1	221.8	2.5	1,911.6	11,598	560	7	8	12,173	5,525	131	504	51	6,211
1996	1,718.5	63.2	197.9	2.4	1,982.0	12,238	597	2	8	12,845	5,763	130	439	53	6,385
1997	1,763.8	72.0	211.1	2.6	2,049.5	12,630	649	1	9	13,289	5,775	140	417	55	6,387
1998	1,792.6	102.2	240.1	2.5	2,137.4	12,452	922	1	10	13,385	5,541	219	492	56	6,308
1999	1,799.8	94.9	251.2	2.5	2,148.4	11,805	826	16	8	12,655	5,048	198	484	56	5,786
2000	1,891.4	89.1	271.5	2.4	2,254.4	10,736	689	2	6	11,433	4,707	169	480	57	5,413
2001 ^P	1,833.4	99.6	279.1	2.7	2,214.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Industrial Sector ⁹															
1989	21.2	4.1	29.4	(s)	54.7	271	64	(s)	12	347	96	8	167	24	295
1990	21.6	6.7	34.7	0.1	63.1	285	145	(s)	73	503	96	13	199	30	338
1991	21.2	6.2	35.9	(s)	63.3	274	105	(s)	75	454	89	11	178	24	302
1992	22.9	7.1	37.7	(s)	67.7	296	90	(s)	84	470	94	12	197	24	327
1993	23.8	6.3	37.6	(s)	67.7	309	45	(s)	86	440	96	11	202	25	334
1994	24.2	6.1	38.7	(s)	69.0	299	52	(s)	86	437	96	12	185	24	317
1995	24.1	5.6	39.9	(s)	69.6	297	65	(s)	85	447	95	11	155	26	287
1996	24.3	6.1	42.2	(s)	72.6	301	105	(s)	92	498	95	11	230	27	363
1997	24.2	5.2	40.3	(s)	69.7	274	89	(s)	85	448	94	10	177	24	305
1998	22.8	5.5	40.5	(s)	68.8	252	90	(s)	72	414	87	11	170	23	291
1999	22.5	5.7	42.0	(s)	70.2	185	71	(s)	68	324	89	13	190	23	315
2000	22.8	5.1	41.7	(s)	69.6	198	54	(s)	66	318	88	9	178	22	297
2001 ^P	21.3	5.2	40.7	(s)	67.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total (All Sectors) ¹⁰															
1989	1,527.7	134.3	194.9	1.3	1,858.1	15,499	914	2	20	16,434	6,888	226	576	51	7,741
1990	1,539.4	105.5	207.3	1.7	1,854.0	15,381	825	2	83	16,291	6,740	180	601	71	7,591
1991	1,538.6	98.6	211.9	2.0	1,851.1	15,223	786	2	87	16,098	6,702	168	572	71	7,513
1992	1,559.3	83.8	220.2	2.4	1,865.7	15,004	705	1	94	15,804	6,623	136	571	74	7,405
1993	1,627.7	93.9	221.3	2.4	1,945.3	14,751	855	2	96	15,703	6,824	150	583	78	7,636
1994	1,634.6	88.3	245.1	2.6	1,970.6	14,240	788	2	95	15,124	6,612	136	596	76	7,421
1995	1,654.4	64.0	264.0	2.7	1,985.2	11,915	627	7	93	12,642	5,625	142	665	81	6,513
1996	1,744.1	69.6	242.4	2.8	2,059.0	12,559	703	2	101	13,366	5,864	142	675	84	6,765
1997	1,789.2	77.5	253.6	2.9	2,123.3	12,925	740	2	95	13,761	5,875	151	599	84	6,708
1998	1,816.3	108.1	282.8	2.8	2,210.0	12,719	1,014	2	82	13,817	5,632	231	667	84	6,613
1999	1,823.4	101.0	295.4	2.8	2,222.5	12,006	898	16	76	12,997	5,142	212	678	84	6,116
2000	1,915.4	94.6	315.2	2.6	2,327.9	10,952	744	3	72	11,770	4,799	178	661	83	5,722
2001 ^P	1,855.9	105.2	321.8	2.9	2,285.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

¹ Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal.

² Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, and waste oil.

³ Natural gas, plus a small amount of supplemental gaseous fuels that cannot be identified separately.

⁴ Blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels.

Carbon dioxide data for "Other Gases" are not included in the data in Tables 12.1-12.3.

⁵ Municipal solid waste (only the estimated plastics component of municipal solid waste is included).

⁶ Wood, black liquor, and other wood waste; municipal solid waste, sludge waste, tire-derived fuels, agricultural byproducts, other solids, other liquids, other gases, and all other.

⁷ Metric tons of carbon dioxide can be converted to metric tons of carbon equivalent by multiplying by 12/44.

⁸ Electricity-only and combined-heat-and-power (CHP) plants within the NAICS (North American Industry Classification System) 22 category whose primary business is to sell electricity, or electricity and heat, to the public.

⁹ Industrial combined-heat-and-power (CHP) and industrial electricity-only plants.

¹⁰ Includes commercial combined-heat-and-power (CHP) and commercial electricity-only plants.

P=Preliminary. NA=Not available. (s)=Less than 0.05 million metric tons or less than 500 short tons.

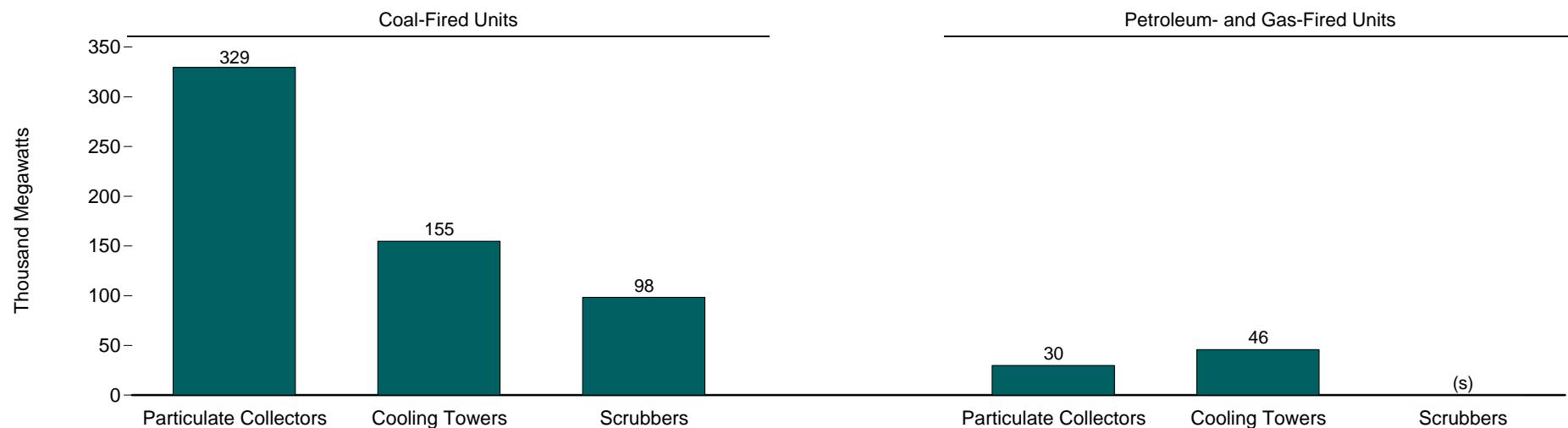
Notes: • Data are for emissions from energy consumption for electricity generation; they exclude emissions from energy consumption for useful thermal output. • Data in this table are the same as in *Annual Energy Review 2002*, Table 12.7, "Emissions From Energy Consumption for Electricity and Useful Thermal Output at Electricity-Only and Combined-Heat-and-Power Plants, 1989-2001," which mistakenly excluded the emissions from energy consumption for useful thermal output. • See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 8.

Web Page: For related information, see <http://www.eia.doe.gov/fuelelectric.html>.

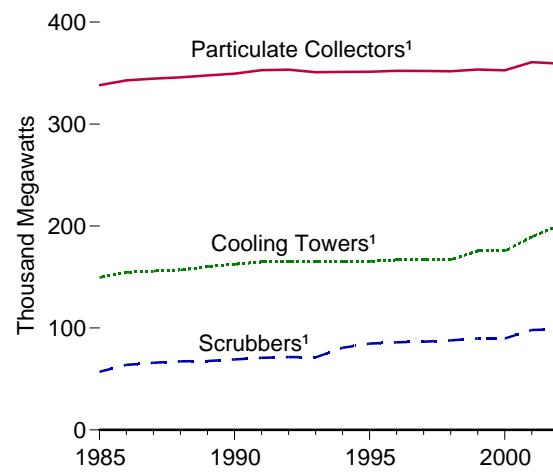
Sources: **Carbon Dioxide:** Data as of July 2, 2003, from Energy Information Administration (EIA), Form EIA-906, "Power Plant Report" and predecessor forms. **Sulfur Dioxide and Nitrogen Oxides:** Data as of July 2, 2003, from EIA, Form EIA-767, "Steam-Electric Plant Operation and Design Report." Data were adjusted by the Environmental Protection Agency's Continuous Emission Monitoring System.

Figure 12.8 Installed Nameplate Capacity of Steam-Electric Generators With Environmental Equipment

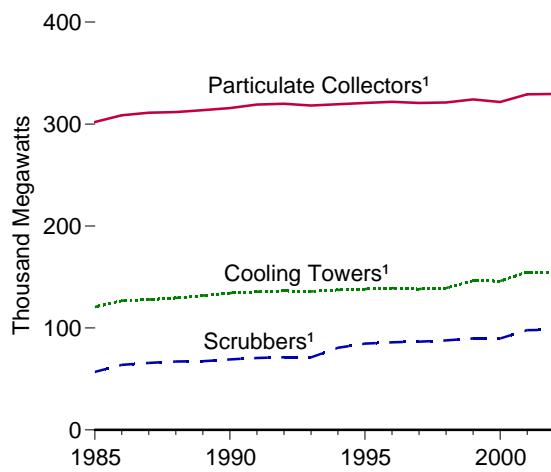
By Fuel and Equipment Type, 2002



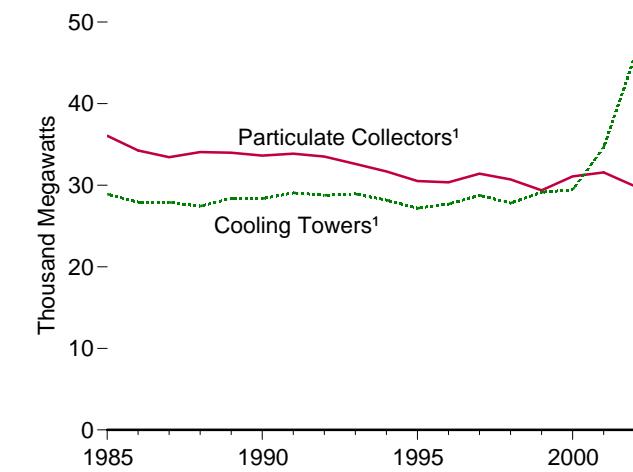
Total Units by Equipment Type, 1985-2002



Coal-Fired Units by Equipment Type, 1985-2002



Petroleum- and Natural Gas-Fired Units by Equipment Type, 1985-2002



(s)=Less than 0.5 thousand megawatts.

¹ Through 2000, data are for electric utility plants with fossil-fueled steam-electric capacity of 100 megawatts or greater. Beginning in 2001, data are for electric utility and non-utility generating plants (independent power producers, commercial plants, and industrial plants) in operating or standby status, with fossil-fueled steam-electric capacity of 100 megawatts or greater.

Notes: • Components are not additive because some generators are included in more than one category. • Because vertical scales differ, graphs should not be compared.

Source: Table 12.8.

Table 12.8 Installed Nameplate Capacity of Steam-Electric Generators With Environmental Equipment, 1985-2002
 (Megawatts)

Year	Coal				Petroleum and Natural Gas				Total			
	Particulate Collectors	Cooling Towers	Scrubbers	Total ¹	Particulate Collectors	Cooling Towers	Scrubbers	Total ¹	Particulate Collectors	Cooling Towers	Scrubbers	Total ¹
1985	302,056	120,591	56,955	304,706	36,054	28,895	65	62,371	338,110	149,486	57,020	367,078
1986	308,566	126,731	63,735	311,217	34,258	27,919	65	59,618	342,825	154,650	63,800	370,835
1987	311,043	127,875	65,688	312,885	33,431	27,912	65	58,783	344,474	155,786	65,753	371,668
1988	311,776	129,366	67,156	313,618	34,063	27,434	65	58,937	345,839	156,800	67,221	372,555
1989	313,680	131,701	67,469	315,521	33,975	28,386	65	59,736	347,655	160,087	67,534	375,257
1990	315,681	134,199	69,057	317,522	33,639	28,359	65	59,372	349,319	162,557	69,122	376,894
1991	319,046	135,565	70,474	319,110	33,864	29,067	260	59,773	352,910	164,632	70,734	378,883
1992	319,856	136,266	71,336	319,918	33,509	28,764	195	59,116	353,365	165,030	71,531	379,034
1993	318,188	135,885	71,106	318,251	32,620	28,922	0	58,580	350,808	164,807	71,106	376,831
1994	319,485	137,266	80,617	319,776	31,695	28,186	0	57,123	351,180	165,452	80,617	376,899
1995	320,685	138,108	84,677	320,749	30,513	27,187	0	54,942	351,198	165,295	84,677	375,691
1996	321,805	139,065	85,842	321,869	30,349	27,685	0	55,275	352,154	166,749	85,842	377,144
1997	320,646	138,120	86,605	320,710	31,422	28,766	0	56,485	352,068	166,886	86,605	377,195
1998	321,082	139,082	87,783	321,353	30,708	27,814	0	55,764	351,790	166,896	87,783	377,117
1999	324,109	146,377	89,666	331,379	29,371	29,142	0	55,812	353,480	175,520	89,666	387,192
2000	321,636	146,093	89,675	328,741	31,090	29,427	0	57,697	352,727	175,520	89,675	386,438
2001	R329,187	R154,747	R97,804	R329,187	R31,575	R34,649	R184	R61,634	R360,762	R189,396	R97,988	R390,821
2002 ^P	329,459	154,750	98,363	329,459	29,879	45,747	310	71,709	359,338	200,497	98,673	401,168

¹ Components are not additive because some generators are included in more than one category.

R=Revised. P=Preliminary.

Note: Through 2000, data are for electric utility plants with fossil-fueled steam-electric capacity of 100 megawatts or greater. Beginning in 2001, data are for electric utility and unregulated generating plants (independent power producers, commercial plants, and industrial plants) in operating or standby status,

with fossil-fueled steam-electric capacity of 100 megawatts or greater.

Web Page: For related information, see <http://www.eia.doe.gov/fuelelectric.html>.

Sources: • 1985-1990—Energy Information Administration (EIA), Form EIA-767, "Steam-Electric Plant Operation and Design Report." • 1991 forward—EIA, *Electric Power Annual 2002* (December 2003), Table 5.2, and EIA, Form EIA-767, "Steam-Electric Plant Operation and Design Report."

Appendix A

Thermal Conversion Factors

Using Thermal Conversion Factors

The thermal conversion factors presented in the following tables can be used to estimate the heat content in British thermal units (Btu) of a given amount of energy measured in physical units, such as barrels or cubic feet. For example, 10 barrels of asphalt has a heat content of approximately 66.36 million Btu (10 barrels x 6.636 million Btu per barrel = 66.36 million Btu).

The heat content rates (i.e., thermal conversion factors) provided in this section represent the gross (or upper) energy content of the fuels. Gross heat content rates are applied in all Btu calculations for the *Annual Energy Review* and are commonly used in energy calculations in the United States; net (or lower) heat content rates are typically used in European energy calculations. The difference between the two rates is the amount of energy that is consumed to vaporize water that is created during the combustion process. Generally, the difference ranges from 2 percent to 10 percent, depending on the specific fuel and its hydrogen content. Some fuels, such as unseasoned wood, can be more than 40 percent different in their gross and net heat content rates. More information about British thermal units (Btu) can be found in the Glossary.

Thermal conversion factors for hydrocarbon mixes (Table A1) 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 the thermal conversion factor for propane.

In general, the annual thermal conversion factors presented in Tables A2 through A6 are computed from final annual data or from the best available data and are labeled “preliminary.” Often, the previous year’s factor is used as the preliminary value until data become available to calculate the factor appropriate to the year. The source of each factor is described in the section entitled “Thermal Conversion Factor Source Documentation,” which follows Table A6 in this appendix.

Table A1. Approximate Heat Content of Petroleum Products
(Million Btu per Barrel)

Asphalt	6.636
Aviation Gasoline	5.048
Butane	4.326
Butane-Propane Mixture (60 percent-40 percent)	4.130
Distillate Fuel Oil	5.825
Ethane	3.082
Ethane-Propane Mixture (70 percent-30 percent)	3.308
Isobutane	3.974
Jet Fuel, Kerosene-Type	5.670
Jet Fuel, Naphtha-Type	5.355
Kerosene	5.670
Lubricants	6.065
Motor Gasoline		
Conventional ¹	5.253
Oxygenated ¹	5.150
Reformulated ¹	5.150
Fuel Ethanol ²	3.539
Natural Gasoline	4.620
Pentanes Plus	4.620
Petrochemical Feedstocks		
Naphtha less than 401° F	5.248
Other Oils equal to or greater than 401° F	5.825
Still Gas	6.000
Petroleum Coke	6.024
Plant Condensate	5.418
Propane	3.836
Residual Fuel Oil	6.287
Road Oil	6.636
Special Naphthas	5.248
Still Gas	6.000
Unfinished Oils	5.825
Unfractionated Stream	5.418
Waxes	5.537
Miscellaneous	5.796

¹See Table A3 for motor gasoline annual weighted averages beginning in 1994.

²Fuel ethanol, which is derived from agricultural feedstocks (primarily corn), is not a petroleum product but is blended into motor gasoline. Its gross heat content (3.539 million Btu per barrel) is used in *Annual Energy Review* calculations; its net heat content (3.192 million Btu per barrel) is used in the Energy Information Administration’s *Renewable Energy Annual* calculations.

Web Page: For related information, see <http://www.eia.doe.gov/emeu/aer/append.html>.

Sources: See “Thermal Conversion Factor Source Documentation,” which follows Table A6.

Table A2. Approximate Heat Content of Petroleum Production, Imports, and Exports, Selected Years, 1949-2003
 (Million Btu per Barrel)

Year	Production		Imports			Exports		
	Crude Oil	Natural Gas Plant Liquids	Crude Oil	Petroleum Products	Total	Crude Oil	Petroleum Products	Total
1949	5.800	4.544	5.952	6.261	6.059	5.800	5.651	5.692
1950	5.800	4.522	5.943	6.263	6.080	5.800	5.751	5.766
1955	5.800	4.406	5.924	6.234	6.040	5.800	5.765	5.768
1960	5.800	4.295	5.911	6.161	6.021	5.800	5.835	5.834
1965	5.800	4.264	5.872	6.123	5.997	5.800	5.742	5.743
1970	5.800	4.146	5.822	6.088	5.985	5.800	5.811	5.810
1971	5.800	4.117	5.824	6.062	5.961	5.800	5.775	5.775
1972	5.800	4.070	5.809	6.045	5.935	5.800	5.741	5.741
1973	5.800	4.049	5.817	5.983	5.897	5.800	5.752	5.752
1974	5.800	4.011	5.827	5.959	5.884	5.800	5.773	5.774
1975	5.800	3.984	5.821	5.935	5.858	5.800	5.747	5.748
1976	5.800	3.964	5.808	5.980	5.856	5.800	5.743	5.745
1977	5.800	3.941	5.810	5.908	5.834	5.800	5.796	5.797
1978	5.800	3.925	5.802	5.955	5.839	5.800	5.814	5.808
1979	5.800	3.955	5.810	5.811	5.810	5.800	5.864	5.832
1980	5.800	3.914	5.812	5.748	5.796	5.800	5.841	5.820
1981	5.800	3.930	5.818	5.659	5.775	5.800	5.837	5.821
1982	5.800	3.872	5.826	5.664	5.775	5.800	5.829	5.820
1983	5.800	3.839	5.825	5.677	5.774	5.800	5.800	5.800
1984	5.800	3.812	5.823	5.613	5.745	5.800	5.867	5.850
1985	5.800	3.815	5.832	5.572	5.736	5.800	5.819	5.814
1986	5.800	3.797	5.903	5.624	5.808	5.800	5.839	5.832
1987	5.800	3.804	5.901	5.599	5.820	5.800	5.860	5.858
1988	5.800	3.800	5.900	5.618	5.820	5.800	5.842	5.840
1989	5.800	3.826	5.906	5.641	5.833	5.800	5.869	5.857
1990	5.800	3.822	5.934	5.614	5.849	5.800	5.838	5.833
1991	5.800	3.807	5.948	5.636	5.873	5.800	5.827	5.823
1992	5.800	3.804	5.953	5.623	5.877	5.800	5.774	5.777
1993	5.800	3.801	5.954	5.620	5.883	5.800	5.777	5.779
1994	5.800	3.794	5.950	5.534	5.861	5.800	5.777	5.779
1995	5.800	3.796	5.938	5.483	5.855	5.800	5.740	5.746
1996	5.800	3.777	5.947	5.468	5.847	5.800	5.728	5.736
1997	5.800	3.762	5.954	5.469	5.862	5.800	5.726	5.734
1998	5.800	3.769	5.953	5.462	5.861	5.800	5.710	5.720
1999	5.800	3.744	5.942	5.421	5.840	5.800	5.684	5.699
2000	5.800	3.733	5.959	5.432	5.849	5.800	5.651	5.658
2001	5.800	3.735	5.976	5.443	5.862	5.800	5.751	5.752
2002	5.800	R3.729	R5.971	R5.451	R5.863	5.800	R5.687	R5.688
2003P	5.800	3.739	5.971	5.445	5.859	5.800	5.745	5.746

R=Revised. P=Preliminary.

Note: Crude oil includes lease condensate.

Web Page: For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/append.html>.

Sources: See "Thermal Conversion Factor Source Documentation," which follows Table A6.

Table A3. Approximate Heat Content of Petroleum Consumption, Selected Years, 1949-2003
 (Million Btu per Barrel)

Year	Total Petroleum ¹						Liquefied Petroleum Gases	Motor Gasoline		
	End-Use Sectors				Electric Power Sector ²	Total				
	Residential	Commercial	Industrial	Transportation						
1949	5.493	5.858	5.946	5.465	6.254	5.649	4.011	5.253		
1950	5.482	5.865	5.940	5.461	6.254	5.649	4.011	5.253		
1955	5.480	5.832	5.867	5.408	6.254	5.591	4.011	5.253		
1960	5.430	5.849	5.800	5.388	6.267	5.555	4.011	5.253		
1965	5.380	5.837	5.728	5.387	6.267	5.532	4.011	5.253		
1970	5.216	5.773	5.603	5.393	6.252	5.503	³ 3.779	5.253		
1971	5.212	5.758	5.598	5.389	6.245	5.504	3.772	5.253		
1972	5.193	5.733	5.563	5.388	6.233	5.500	3.760	5.253		
1973	5.205	5.749	5.569	5.395	6.245	5.515	3.746	5.253		
1974	5.196	5.740	5.538	5.394	6.238	5.504	3.730	5.253		
1975	5.192	5.704	5.527	5.392	6.250	5.494	3.715	5.253		
1976	5.215	5.726	5.536	5.395	6.251	5.504	3.711	5.253		
1977	5.213	5.733	5.554	5.400	6.249	5.518	3.677	5.253		
1978	5.213	5.716	5.554	5.404	6.251	5.519	3.669	5.253		
1979	5.298	5.769	5.419	5.428	6.258	5.494	3.680	5.253		
1980	5.245	5.803	5.374	5.440	6.254	5.479	3.674	5.253		
1981	5.191	5.751	5.312	5.432	6.258	5.448	3.643	5.253		
1982	5.167	5.751	5.263	5.422	6.258	5.415	3.615	5.253		
1983	5.022	5.642	5.275	5.415	6.255	5.406	3.614	5.253		
1984	5.184	5.705	5.223	5.418	6.251	5.395	3.599	5.253		
1985	5.153	5.661	5.215	5.422	6.247	5.387	3.603	5.253		
1986	5.169	5.694	5.283	5.425	6.257	5.418	3.640	5.253		
1987	5.144	5.661	5.248	5.429	6.249	5.403	3.659	5.253		
1988	5.165	5.661	5.241	5.433	6.250	5.410	3.652	5.253		
1989	5.105	5.621	5.234	5.437	² 6.240	5.410	3.683	5.253		
1990	5.027	5.621	5.270	5.442	6.244	5.411	3.625	5.253		
1991	4.968	5.599	5.186	5.440	6.246	5.384	3.614	5.253		
1992	5.004	5.589	5.185	5.442	6.238	5.378	3.624	5.253		
1993	4.975	5.580	5.196	5.436	6.230	5.379	3.606	5.253		
1994	4.983	5.592	5.166	5.424	6.213	5.361	3.635	⁴ 5.230		
1995	4.940	5.554	5.137	5.417	6.188	5.341	3.623	5.215		
1996	4.869	5.498	5.133	5.420	6.195	5.336	3.613	5.216		
1997	4.859	5.459	5.138	5.416	6.199	5.336	3.616	5.213		
1998	4.837	5.446	5.155	5.413	6.210	5.349	3.614	5.212		
1999	4.761	5.369	5.113	5.413	6.205	5.328	3.616	5.211		
2000	4.761	5.394	5.082	5.421	6.189	5.326	3.607	5.210		
2001	4.796	5.403	5.164	5.412	6.199	5.345	3.614	5.210		
2002	RE4.739	RE5.382	RE5.131	RE5.407	R6.173	F5.324	R3.613	5.208		
2003	E4.798	E5.409	E5.171	E5.405	P6.181	P5.341	P3.629	P5.206		

¹ Petroleum products supplied, including natural gas plant liquids and crude oil burned directly as fuel.

² Electricity-only and combined-heat-and-power (CHP) plants within the NAICS (North American Industry Classification System) 22 category whose primary business is to sell electricity, or electricity and heat, to the public. Through 1988, data are for electric utilities only; beginning in 1989, data are for electric utilities and independent power producers.

³ There is a discontinuity in this time series between 1966 and 1967; beginning in 1967, the single constant factor is replaced by a quantity-weighted average of liquefied petroleum gases' major components.

⁴ There is a discontinuity in this time series between 1993 and 1994; beginning in 1994, the single constant factor is replaced by a factor that is a quantity-weighted average of motor gasoline's major components. See Table A1.

R=Revised. P=Preliminary. E=Estimate.

Note: Weighted averages of the products included in each category are calculated by using heat content values shown in Table A1.

Web Page: For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/append.html>.

Sources: See "Thermal Conversion Factor Source Documentation," which follows Table A6.

Table A4. Approximate Heat Content of Natural Gas, Selected Years, 1949-2003
(Btu per Cubic Foot)

Year	Production		Consumption ¹			Imports	Exports
	Marketed	Dry	End-Use Sectors	Electric Power Sector ²	Total		
1949	1,120	1,035	1,035	1,035	1,035	—	1,035
1950	1,119	1,035	1,035	1,035	1,035	—	1,035
1955	1,120	1,035	1,035	1,035	1,035	1,035	1,035
1960	1,107	1,035	1,035	1,035	1,035	1,035	1,035
1965	1,101	1,032	1,032	1,032	1,032	1,032	1,032
1970	1,102	1,031	1,031	1,031	1,031	1,031	1,031
1971	1,103	1,031	1,031	1,031	1,031	1,031	1,031
1972	1,100	1,027	1,027	1,027	1,027	1,027	1,027
1973	1,093	1,021	1,020	1,024	1,021	1,026	1,023
1974	1,097	1,024	1,024	1,022	1,024	1,027	1,016
1975	1,095	1,021	1,020	1,026	1,021	1,026	1,014
1976	1,093	1,020	1,019	1,023	1,020	1,025	1,013
1977	1,093	1,021	1,019	1,029	1,021	1,026	1,013
1978	1,088	1,019	1,016	1,034	1,019	1,030	1,013
1979	1,092	1,021	1,018	1,035	1,021	1,037	1,013
1980	1,098	1,026	1,024	1,035	1,026	1,022	1,013
1981	1,103	1,027	1,025	1,035	1,027	1,014	1,011
1982	1,107	1,028	1,026	1,036	1,028	1,018	1,011
1983	1,115	1,031	1,031	1,030	1,031	1,024	1,010
1984	1,109	1,031	1,030	1,035	1,031	1,005	1,010
1985	1,112	1,032	1,031	1,038	1,032	1,002	1,011
1986	1,110	1,030	1,029	1,034	1,030	997	1,008
1987	1,112	1,031	1,031	1,032	1,031	999	1,011
1988	1,109	1,029	1,029	1,028	1,029	1,002	1,018
1989	1,107	1,031	1,031	14,028	1,031	1,004	1,019
1990	1,105	1,029	1,030	1,027	1,029	1,012	1,018
1991	1,108	1,030	1,031	1,025	1,030	1,014	1,022
1992	1,110	1,030	1,031	1,025	1,030	1,011	1,018
1993	1,106	1,027	1,028	1,025	1,027	1,020	1,016
1994	1,105	1,028	1,029	1,025	1,028	1,022	1,011
1995	1,106	1,026	1,027	1,021	1,026	1,021	1,011
1996	1,109	1,026	1,027	1,020	1,026	1,022	1,011
1997	1,107	1,026	1,027	1,020	1,026	1,023	1,011
1998	1,109	1,031	1,033	1,024	1,031	1,023	1,011
1999	1,107	1,027	1,028	1,022	1,027	1,022	1,006
2000	1,107	1,025	1,026	1,021	1,025	1,023	1,006
2001	1,105	R1,030	R1,031	R1,026	R1,030	1,023	1,010
2002	R1,107	R1,028	R1,030	1,020	R1,028	R1,022	R1,008
2003 ^E	1,106	1,028	1,029	1,025	1,028	1,023	1,008

¹ Consumption factors are for natural gas, plus a small amount of supplemental gaseous fuels that cannot be identified separately.

² Electricity-only and combined-heat-and-power (CHP) plants within the NAICS (North American Industry Classification System) 22 category whose primary business is to sell electricity, or electricity and heat, to the public. Through 1988, data are for electric utilities only; beginning in 1989, data are for electric

utilities and independent power producers.

R=Revised. E=Estimate. — = Not applicable.

Web Page: For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/append.html>.

Sources: See "Thermal Conversion Factor Source Documentation," which follows Table A6.

Table A5. Approximate Heat Content of Coal and Coal Coke, Selected Years, 1949-2003
 (Million Btu per Short Ton)

Year	Production	Coal							Coal Coke Imports and Exports	
		Consumption				Electric Power Sector ^{2,3}	Total	Imports	Exports	
		End-Use Sectors		Coke Plants	Other ¹					
Year	Production	Residential and Commercial	Industrial		Electric Power Sector ^{2,3}	Total	Imports	Exports		
Year	Production	Coke Plants	Other ¹	Electric Power Sector ^{2,3}	Total	Imports	Exports			
1949	24.916	24.263	26.797	24.612	23.761	24.793	25.000	26.759	24.800	
1950	25.090	24.461	26.798	24.820	23.937	24.989	25.020	26.788	24.800	
1955	25.201	24.373	26.794	24.821	24.056	24.982	25.000	26.907	24.800	
1960	24.906	24.226	26.791	24.609	23.927	24.713	25.003	26.939	24.800	
1965	24.775	24.028	26.787	24.385	23.780	24.537	25.000	26.973	24.800	
1970	23.842	23.203	26.784	22.983	22.573	23.440	25.000	26.982	24.800	
1971	23.507	23.090	26.784	22.670	22.301	23.124	25.000	26.981	24.800	
1972	23.389	22.998	26.782	22.550	22.204	23.036	25.000	26.979	24.800	
1973	23.376	22.831	26.780	22.586	22.246	23.057	25.000	26.596	24.800	
1974	23.072	22.479	26.778	22.419	21.781	22.677	25.000	26.700	24.800	
1975	22.897	22.261	26.782	22.436	21.642	22.506	25.000	26.562	24.800	
1976	22.855	22.774	26.781	22.530	21.679	22.498	25.000	26.601	24.800	
1977	22.597	22.919	26.787	22.322	21.508	22.265	25.000	26.548	24.800	
1978	22.248	22.466	26.789	22.207	21.275	22.017	25.000	26.478	24.800	
1979	22.454	22.242	26.788	22.452	21.364	22.100	25.000	26.548	24.800	
1980	22.415	22.543	26.790	22.690	21.295	21.947	25.000	26.384	24.800	
1981	22.308	22.474	26.794	22.585	21.085	21.713	25.000	26.160	24.800	
1982	22.239	22.695	26.797	22.712	21.194	21.674	25.000	26.223	24.800	
1983	22.052	22.775	26.798	22.691	21.133	21.576	25.000	26.291	24.800	
1984	22.010	22.844	26.799	22.543	21.101	21.573	25.000	26.402	24.800	
1985	21.870	22.646	26.798	22.020	20.959	21.366	25.000	26.307	24.800	
1986	21.913	22.947	26.798	22.198	21.084	21.462	25.000	26.292	24.800	
1987	21.922	23.404	26.799	22.381	21.136	21.517	25.000	26.291	24.800	
1988	21.823	23.571	26.799	22.360	20.900	21.328	25.000	26.299	24.800	
1989	21.765	23.650	26.800	22.347	² 20.898	21.307	25.000	26.160	24.800	
1990	21.822	23.137	26.799	22.457	20.779	21.197	25.000	26.202	24.800	
1991	21.681	23.114	26.799	22.460	20.730	21.120	25.000	26.188	24.800	
1992	21.682	23.105	26.799	22.250	20.709	21.068	25.000	26.161	24.800	
1993	21.418	22.994	26.800	22.123	20.677	21.010	25.000	26.335	24.800	
1994	21.394	23.112	26.800	22.068	20.589	20.929	25.000	26.329	24.800	
1995	21.326	23.118	26.800	21.950	20.543	20.880	25.000	26.180	24.800	
1996	21.322	23.011	26.800	22.105	20.547	20.870	25.000	26.174	24.800	
1997	21.296	22.494	26.800	22.172	20.518	20.830	25.000	26.251	24.800	
1998	21.418	21.620	27.426	23.164	20.516	20.881	25.000	26.800	24.800	
1999	21.070	23.880	27.426	22.489	20.490	20.818	25.000	26.081	24.800	
2000	21.072	25.020	27.426	22.433	20.511	20.828	25.000	26.117	24.800	
2001	^R 20.865	^R 24.909	27.426	23.209	^R 20.337	^R 20.707	25.000	25.998	24.800	
2002	^R 20.742	^R 22.962	27.426	^R 23.793	^R 20.238	^R 20.612	25.000	26.062	24.800	
2003 ^P	20.861	24.916	27.425	23.941	20.381	20.754	25.000	25.972	24.800	

¹ Includes transportation.

² Electricity-only and combined-heat-and-power (CHP) plants within the NAICS (North American Industry Classification System) 22 category whose primary business is to sell electricity, or electricity and heat, to the public. Through 1988, data are for electric utilities only; beginning in 1989, data are for electric utilities and independent power producers.

³ Electric power sector factors are for anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal.

R=Revised. P=Preliminary.

Web Page: For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/append.html>.

Sources: See "Thermal Conversion Factor Source Documentation," which follows Table A6.

Table A6. Approximate Heat Rates for Electricity, Selected Years, 1949-2003
(Btu per Kilowatthour)

Year	Electricity Net Generation			Electricity Consumption ⁵
	Fossil-Fueled Plants ^{1,2}	Nuclear Plants ³	Geothermal Energy Plants ⁴	
1949	15,033	—	—	3,412
1950	14,030	—	—	3,412
1955	11,699	—	—	3,412
1960	10,760	11,629	23,200	3,412
1965	10,453	11,804	22,182	3,412
1970	10,494	10,977	21,606	3,412
1971	10,478	10,837	21,655	3,412
1972	10,379	10,792	21,668	3,412
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	10,440	10,843	21,303	3,412
1985	10,447	10,622	21,263	3,412
1986	10,446	10,579	21,263	3,412
1987	10,419	10,442	21,263	3,412
1988	10,324	10,602	21,096	3,412
1989	10,432	10,583	21,096	3,412
1990	10,402	10,582	21,096	3,412
1991	10,436	10,484	20,997	3,412
1992	10,342	10,471	20,914	3,412
1993	10,309	10,504	20,914	3,412
1994	10,316	10,452	20,914	3,412
1995	10,312	10,507	20,914	3,412
1996	10,340	10,503	20,960	3,412
1997	10,213	10,494	20,960	3,412
1998	10,197	10,491	21,017	3,412
1999	10,226	10,450	21,017	3,412
2000	10,201	10,429	21,017	3,412
2001	10,146	R10,448	21,017	3,412
2002	P10,119	R10,439	21,017	3,412
2003	P10,107	P10,439	P21,017	3,412

¹ Through 2000, used as the thermal conversion factor for wood and waste electricity net generation at electric utilities. For all years, used as the thermal conversion factor for hydroelectric, solar, and wind electricity net generation.

² Through 2000, heat rates are for fossil-fueled steam-electric plants at electric utilities. For 2001 and 2002, heat rates are for fossil-fueled steam-electric plants at electric utilities and independent power producers. For 2003, the heat rate is for all fossil-fueled plants at electric utilities and independent power producers.

³ Used as the thermal conversion factor for nuclear electricity net generation.

⁴ Used as the thermal conversion factor for geothermal electricity net generation.

⁵ Used as the thermal conversion factor for electricity retail sales, and electricity imports and exports.

R=Revised data. P=Preliminary data. — = Not applicable.

Web Page: For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/append.html>.

Sources: See "Thermal Conversion Factor Source Documentation," which follows this table.

Thermal Conversion Factor Source Documentation

Approximate Heat Content of Petroleum and Natural Gas Plant Liquids

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*, a 1968 release of historical and projected statistics.

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**.

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 Production**.

Crude Oil Imports. Calculated annually by EIA as the average of the thermal conversion factors for each type of crude oil imported weighted by the quantities 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 oil imported from each foreign country from Form ERA-60 in 1977 and converting average API gravity to average Btu content by using National Bureau of Standards, Miscellaneous Publication No. 97, *Thermal Properties of Petroleum Products*, 1933.

Crude Oil 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."

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 Values 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 calculation of 3.308 million Btu per barrel based on an assumed mixture of 70 percent ethane and 30 percent propane. See **Ethane** and **Propane**.

Fuel Ethanol (Blended Into Motor Gasoline). EIA adopted the thermal conversion factor of 3.539 million Btu per barrel published in "Oxygenate Flexibility for Future Fuels," a paper presented by William J. Piel of the ARCO Chemical Company at the National Conference on Reformulated Gasolines and Clean Air Act Implementation, Washington, D.C., October 1991.

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 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 for "Jet Fuel, Commercial" as published by the Texas Eastern Transmission Corporation in the report *Competition and Growth in American Energy Markets 1947-1985*, a 1968 release of historical and projected statistics.

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

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."

Liquefied Petroleum Gases Consumption. • 1949-1966: U.S. Department of the Interior, Bureau of Mines, Mineral Industry Surveys, "Crude Petroleum and Petroleum Products, 1956," Table 4 footnote, constant value of 4.011 million Btu per barrel. • 1967 forward: Calculated annually by EIA as the average of the thermal conversion factors for all liquefied petroleum gases consumed (see Table A1) weighted by the quantities consumed. The component products of liquefied petroleum gases are ethane (including ethylene), propane (including propylene), normal butane (including butylene), butane-propane mixtures, ethane-propane mixtures, and isobutane. For 1967-1980, quantities consumed are from EIA, Energy Data

Reports, "Petroleum Statement, Annual," Table 1. For 1981 forward, quantities consumed are from EIA, *Petroleum Supply Annual*, Table 2.

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, Annual, 1956*.

Motor Gasoline Consumption. • 1949-1993: EIA adopted the Bureau of Mines thermal conversion factor of 5.253 million Btu per barrel for "Gasoline, Motor Fuel" as published by the Texas Eastern Transmission Corporation in Appendix V of *Competition and Growth in American Energy Markets 1947-1985*, a 1968 release of historical and projected statistics. • 1994 forward: EIA calculated national annual quantity-weighted average conversion factors for conventional, reformulated, and oxygenated motor gasolines (see Table A3). The factor for conventional motor gasoline is 5.253 million Btu per barrel, as used for previous years. The factors for reformulated and oxygenated gasolines, both currently 5.150 million Btu per barrel, are based on data published in Environmental Protection Agency, Office of Mobile Sources, National Vehicle and Fuel Emissions Laboratory report EPA 420-F-95-003, "Fuel Economy Impact Analysis of Reformulated Gasoline." See **Fuel Ethanol (Blended Into Motor Gasoline)**.

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

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 or equal to that for natural gasoline. See **Natural Gasoline**.

Petrochemical Feedstocks, Naphtha less than 401° F. Assumed by EIA to be 5.248 million Btu per barrel, equal to the thermal conversion factor for special naphthas. See **Special Naphthas**.

Petrochemical Feedstocks, Other Oils equal to or greater than 401° F. 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 memorandum, "Bureau of Mines Standard Average Heating Values of Various Fuels, Adopted January 3, 1950." The Bureau of Mines calculated this factor by dividing

30.120 million 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.

Petroleum Consumption, Commercial Sector. Calculated annually by EIA as the average of the thermal conversion factors for all petroleum products consumed by the commercial sector weighted by the estimated quantities consumed by the commercial sector. The quantities of petroleum products consumed by the commercial sector are estimated in the State Energy Data System—see documentation at http://www.eia.doe.gov/emeu/states/sep_use/notes/use_petrol.pdf.

Petroleum Consumption, Electric Power Sector. Calculated annually by EIA as the average of the thermal conversion factors for all petroleum products consumed by the electric power sector weighted by the quantities consumed by the electric power sector. Data are from Form EIA-860, "Annual Electric Generator Report"; Form EIA-906, "Power Plant Report"; and predecessor forms.

Petroleum Consumption, Industrial Sector. Calculated annually by EIA as the average of the thermal conversion factors for all petroleum products consumed by the industrial sector weighted by the estimated quantities consumed by the industrial sector. The quantities of petroleum products consumed by the industrial sector are estimated in the State Energy Data System—see documentation at http://www.eia.doe.gov/emeu/states/sep_use/notes/use_petrol.pdf.

Petroleum Consumption, Residential Sector. Calculated annually by EIA as the average of the thermal conversion factors for all petroleum products consumed by the residential sector weighted by the estimated quantities consumed by the residential sector. The quantities of petroleum products consumed by the residential sector are estimated in the State Energy Data System—see documentation at http://www.eia.doe.gov/emeu/states/sep_use/notes/use_petrol.pdf.

Petroleum Consumption, Total. Calculated annually by EIA as the average of the thermal conversion factors for all petroleum products consumed weighted by the quantities consumed.

Petroleum Consumption, Transportation Sector. Calculated annually by EIA as the average of the thermal conversion factors for all petroleum products consumed by the transportation sector weighted by the estimated quantities consumed by the transportation sector. The quantities of petroleum products consumed by the transportation sector are estimated in the State Energy Data System—see documentation at http://www.eia.doe.gov/emeu/states/sep_use/notes/use_petrol.pdf.

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

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

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 thermal 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 Naphthas. 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 the total gasoline (aviation and motor) factor and was first published in the *Petroleum Statement, Annual, 1970*.

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

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

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

Unfinished Oils. 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 it in EIA's *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 it in EIA's *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 Natural Gas

Natural Gas Consumption, Electric Power Sector. Calculated annually by EIA by dividing the heat content of natural gas consumed by the electric power sector by the quantity consumed. Data are from Form EIA-860, "Annual Electric Generator Report"; Form EIA-906, "Power Plant Report"; and predecessor forms.

Natural Gas Consumption, End-Use Sectors. Calculated annually by EIA by dividing the heat content of natural gas consumed by the end-use sectors (residential, commercial, industrial, and transportation) by the quantity consumed. Data are from Form EIA-176, "Annual Report of Natural and Supplemental Gas Supply and Disposition."

Natural Gas Consumption, Total. • 1949-1962: EIA adopted the thermal conversion factor of 1,035 Btu per cubic foot as estimated by the Bureau of Mines and first published in the *Petroleum Statement, Annual, 1956*. • 1963-1979: 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 consumed.

Natural Gas Exports. • 1949-1972: Assumed by EIA to be equal to the thermal conversion factor for dry natural gas consumed (see **Natural Gas Consumption, Total**). • 1973 forward: Calculated annually by EIA by dividing the heat content of natural gas exported by the quantity exported. For 1973-1995, data are from Form FPC-14, "Annual Report for Importers and Exporters of Natural Gas." Beginning in 1996, data are from U.S. Department of Energy, Office of Fossil Energy, *Natural Gas Imports and Exports*.

Natural Gas Imports. • 1949-1972: Assumed by EIA to be equal to the thermal conversion factor for dry natural gas consumed (see **Natural Gas Consumption, Total**). • 1973 forward: Calculated annually by EIA by dividing the heat content of natural gas imported by the quantity imported. For 1973-1995, data are from Form FPC-14, "Annual Report for Importers and Exporters of Natural Gas." Beginning in 1996, data are from U.S. Department of Energy, Office of Fossil Energy, *Natural Gas Imports and Exports*.

Natural Gas Production, Dry. Assumed by EIA to be equal to the thermal conversion factor for dry natural gas consumed. See **Natural Gas Consumption, Total**.

Natural Gas Production, Marketed. Calculated annually by EIA by dividing the heat content of dry natural gas produced (see **Natural Gas Production, Dry**) and liquids produced (see **Natural Gas Plant Liquids Production**) by the total quantity of marketed natural gas produced.

Approximate Heat Content of Coal and Coal Coke

Coal Coke Imports and Exports. EIA adopted the Bureau of Mines estimate of 24,800 million Btu per short ton.

Coal Consumption, Electric Power Sector. Calculated annually by EIA by dividing the heat content of coal consumed by the electric power sector by the quantity consumed. Data are from Form EIA-860, "Annual Electric Generator Report"; Form EIA-906, "Power Plant Report"; and predecessor forms.

Coal Consumption, Industrial Sector, Coke Plants. Calculated annually by EIA by dividing the heat content of coal consumed by coke plants by the quantity consumed. Data are from Form EIA-5, "Quarterly Coal Consumption and Quality Report—Coke Plants."

Coal Consumption, Industrial Sector, Other. Calculated annually by EIA by dividing the heat content of coal consumed by manufacturing plants by the quantity consumed. Data are from Form EIA-3, "Quarterly Coal Consumption and Quality Report—Manufacturing Plants."

Coal Consumption, Residential and Commercial Sectors. Calculated annually by EIA by dividing the heat content of coal consumed by the residential and commercial sectors by the quantity consumed. Through 1999, data are from Form EIA-6, "Coal Distribution Report." Beginning in 2000, data are for commercial combined-heat-and-power (CHP) plants from Form EIA-860, "Annual Electric Generator Report"; and Form EIA-906, "Power Plant Report."

Coal Consumption, Total. Calculated annually by EIA by dividing the total heat content of coal consumed by all sectors by the total quantity consumed.

Coal Exports. Calculated annually by EIA by dividing the heat content of steam coal and metallurgical coal exported by the quantity exported. Data are from U.S. Department of Commerce, Bureau of the Census, "Monthly Report EM 545."

Coal Imports. • 1949-1963: Calculated annually by EIA by dividing the heat content of coal imported by the quantity imported. • 1963 forward: Assumed by EIA to be 25,000 million Btu per short ton.

Coal Production. Calculated annually by EIA to balance the heat content of coal supply (production and imports) and the heat content of coal disposition (exports, stock change, and consumption).

Approximate Heat Rates for Electricity

Electricity Net Generation, Fossil-Fueled Plants. There is no generally accepted practice for measuring the thermal conversion rates for power plants that generate electricity from hydro, wind, photovoltaic, or solar thermal energy sources. Therefore, EIA calculates a rate factor that is equal to the prevailing annual average heat rate factor for fossil-fueled 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. • 1949-1955: The weighted annual average heat rate for fossil-fueled steam-electric power plants in the United States, as published by EIA in *Thermal-Electric Plant Construction Cost and Annual Production Expenses—1981* and *Steam-Electric Plant Construction Cost and Annual Production Expenses—1978*. • 1956-1988: The weighted annual average heat rate for fossil-fueled steam-electric power plants in the United States, as published in EIA, *Electric Plant Cost and Power Production Expenses 1991*, Table 9. • 1989 forward: Calculated annually by EIA by using the heat rate reported on Form EIA-860, "Annual Electric Generator Report" (and predecessor forms); and the generation on Form EIA-906, "Power Plant Report."

Electricity Net Generation, Geothermal Energy Plants. • 1960-1981: Calculated annually by EIA by weighting the annual average heat rates of operating geothermal units by the installed nameplate capacities as reported on Form FPC-12, "Power System Statement." • 1982 forward: Estimated annually by EIA on the basis of an informal survey of relevant plants.

Electricity Net Generation, Nuclear Plants. • 1957-1984: Calculated annually by dividing the total heat content consumed in nuclear generating units by the total (net) electricity generated by nuclear generating units. The heat content and electricity generation were reported on Form FERC-1, "Annual Report of Major Electric Utilities, Licensees, and Others"; Form EIA-412, "Annual Report of Public Electric Utilities"; and predecessor forms. For 1982, the factors were published in EIA, *Historical Plant Cost and Annual Production Expenses for Selected Electric Plants 1982*, page 215. For 1983 and 1984, the factors were published in EIA, *Electric Plant Cost and Power Production Expenses 1991*, Table 13. • 1985 forward: Calculated annually by EIA by using the heat rate reported on Form EIA-860, "Annual Electric Generator Report" (and predecessor forms); and the generation reported on Form EIA-906, "Power Plant Report."

Appendix B. Metric and Other Physical Conversion Factors

Data presented in the *Annual Energy Review* and in other Energy Information Administration publications are expressed predominately in units that historically have been used in the United States, such as British thermal units, barrels, cubic feet, and short tons. However, because U.S. commerce involves other nations, most of which use metric units of measure, the U.S. Government is committed to the transition to the metric system, as stated in the Metric Conversion Act of 1975 (Public Law 94–168), amended by the Omnibus Trade and Competitiveness Act of 1988 (Public Law 100–418), and Executive Order 12770 of July 25, 1991.

The metric conversion factors presented in Table B1 can be used to calculate the metric-unit equivalents of values expressed in U.S. customary units. For example, 500 short tons are the equivalent of 453.6 metric tons ($500 \text{ short tons} \times 0.9071847 \text{ metric tons/short ton} = 453.6 \text{ metric tons}$).

In the metric system of weights and measures, the names of multiples and subdivisions of any unit may be derived by combining the name of the unit with prefixes, such as deka, hecto, and kilo, meaning, respectively, 10, 100, 1,000, and deci, centi, and milli, meaning, respectively, one-tenth, one-hundredth, and one-thousandth. Common metric prefixes can be found in Table B2.

The conversion factors presented in Table B3 can be used to calculate equivalents in various physical units commonly used in energy analyses. For example, 10 barrels are the equivalent of 420 U.S. gallons ($10 \text{ barrels} \times 42 \text{ gallons/barrel} = 420 \text{ gallons}$).

Table B1. Metric Conversion Factors

Type of Unit	U.S. Unit		Equivalent in Metric Units
Mass	1 short ton (2,000 lb)	=	0.907 184 7 metric tons (t)
	1 long ton	=	1.016 047 metric tons (t)
	1 pound (lb)	=	0.453 592 37 ^a kilograms (kg)
	1 pound uranium oxide (lb U ₃ O ₈)	=	0.384 647 ^b kilograms uranium (kgU)
	1 ounce, avoirdupois (avdp oz)	=	28.349 52 grams (g)
Volume	1 barrel of oil (bbl)	=	0.158 987 3 cubic meters (m ³)
	1 cubic yard (yd ³)	=	0.764 555 cubic meters (m ³)
	1 cubic foot (ft ³)	=	0.028 316 85 cubic meters (m ³)
	1 U.S. gallon (gal)	=	3.785 412 liters (L)
	1 ounce, fluid (fl oz)	=	29.573 53 milliliters (mL)
	1 cubic inch (in ³)	=	16.387 06 milliliters (mL)
Length	1 mile (mi)	=	1.609 344 ^a kilometers (km)
	1 yard (yd)	=	0.914 4 ^a meters (m)
	1 foot (ft)	=	0.304 8 ^a meters (m)
	1 inch (in)	=	2.54 ^a centimeters (cm)
Area	1 acre	=	0.404 69 hectares (ha)
	1 square mile (mi ²)	=	2.589 988 square kilometers (km ²)
	1 square yard (yd ²)	=	0.836 127 4 square meters (m ²)
	1 square foot (ft ²)	=	0.092 903 04 ^a square meters (m ²)
	1 square inch (in ²)	=	6.451 6 ^a square centimeters (cm ²)
Energy	1 British thermal unit (Btu) ^c	=	1,055.055 852 62 ^a joules (J)
	1 calorie (cal)	=	4.186 8 ^a joules (J)
	1 kilowatthour (kWh)	=	3.6 ^a megajoules (MJ)
Temperature^d	32 degrees Fahrenheit (°F)	=	0 ^a degrees Celsius (°C)
	212 degrees Fahrenheit (°F)	=	100 ^a degrees Celsius (°C)

^aExact conversion.^bCalculated by the Energy Information Administration.^cThe Btu used in this table is the International Table Btu adopted by the Fifth International Conference on Properties of Steam, London, 1956.^dTo convert degrees Fahrenheit (°F) to degrees Celsius (°C) exactly, subtract 32, then multiply by 5/9.

Notes: • Spaces have been inserted after every third digit to the right of the decimal for ease of reading. • Most metric units belong to the International System of Units (SI), and the liter, hectare, and metric ton are accepted for use with the SI units. For more information about the SI units, see <http://physics.nist.gov/cuu/Units/index.html>.

Web Page: For related information, see <http://www.eia.doe.gov/emeu/aer/append.html>.

Sources: • General Services Administration, Federal Standard 376B, *Preferred Metric Units for General Use by the Federal Government* (Washington, DC, January 1993), pp. 9-11, 13, and 16. • U.S. Department of Commerce, National Institute of Standards and Technology, Special Publications 330, 811, and 814. • American National Standards Institute/Institute of Electrical and Electronic Engineers, ANSI/IEEE Std 268-1992, pp. 28 and 29.

Table B2. Metric Prefixes

Unit Multiple	Prefix	Symbol	Unit Subdivision	Prefix	Symbol
10^1	deka	da	10^{-1}	deci	d
10^2	hecto	h	10^{-2}	centi	c
10^3	kilo	k	10^{-3}	milli	m
10^6	mega	M	10^{-6}	micro	μ
10^9	giga	G	10^{-9}	nano	n
10^{12}	tera	T	10^{-12}	pico	p
10^{15}	peta	P	10^{-15}	femto	f
10^{18}	exa	E	10^{-18}	atto	a
10^{21}	zetta	Z	10^{-21}	zepto	z
10^{24}	yotta	Y	10^{-24}	yocto	y

Web Page: For related information, see <http://www.eia.doe.gov/emeu/aer/append.html>.

Source: U.S. Department of Commerce, National Institute of Standards and Technology, *The International System of Units (SI)*, NIST Special Publication 330, 1991 Edition (Washington, DC, August 1991), p.10.

Table B3. Other Physical Conversion Factors

Energy Source	Original Unit		Equivalent in Final Units	
Petroleum	1 barrel (bbl)	=	42 ^a	U.S. gallons (gal)
Coal	1 short ton	=	2,000 ^a	pounds (lb)
	1 long ton	=	2,240 ^a	pounds (lb)
	1 metric ton (t)	=	1,000 ^a	kilograms (kg)
Wood	1 cord (cd)	=	1.25 ^b	shorts tons
	1 cord (cd)	=	128 ^a	cubic feet (ft^3)

^aExact conversion.

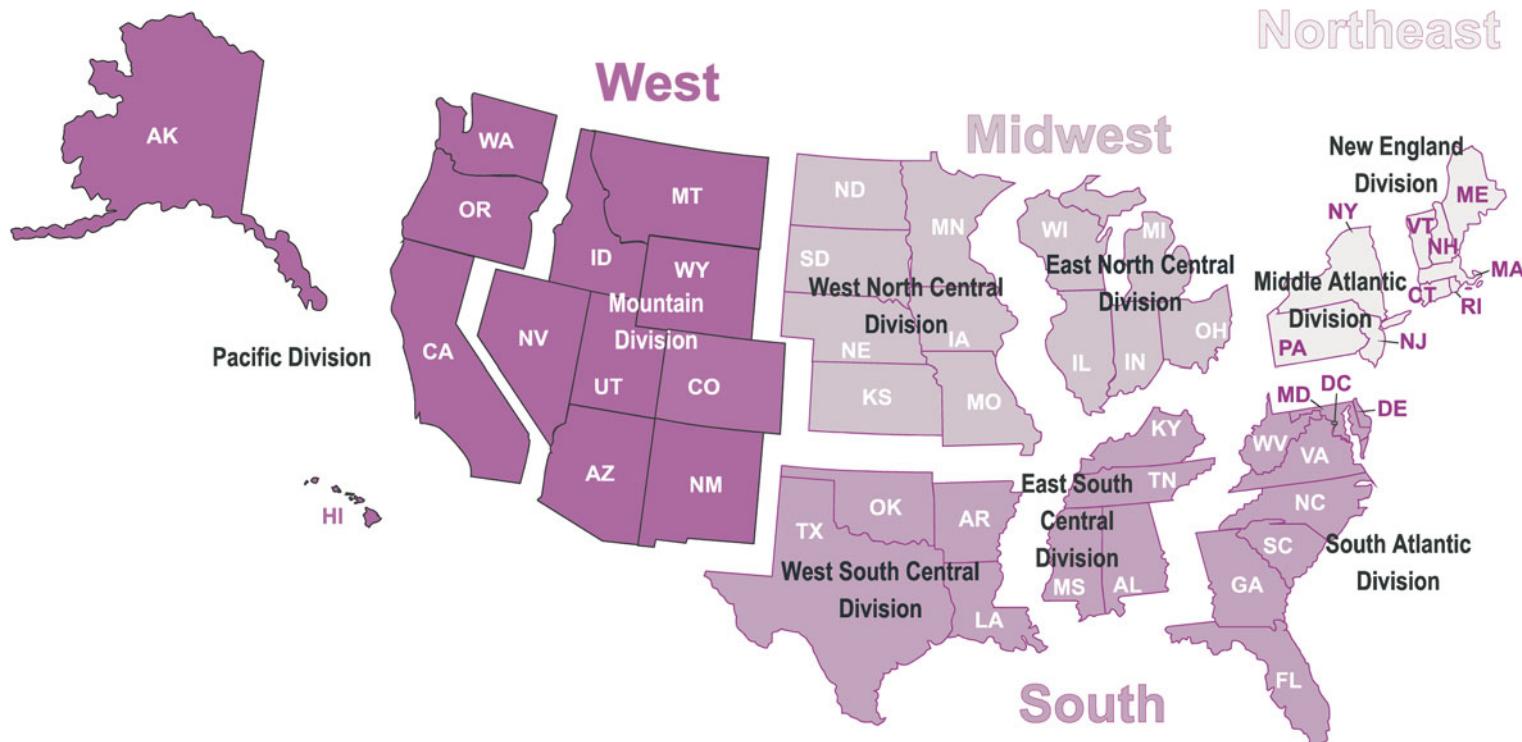
^bCalculated by the Energy Information Administration.

Web Page: For related information, see <http://www.eia.doe.gov/emeu/aer/append.html>.

Source: U.S. Department of Commerce, National Institute of Standards and Technology, *Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices*, NIST Handbook 44, 1994 Edition (Washington, DC, October 1993), pp. B-10, C-17 and C-21.

Appendix C

U.S. Census Regions and Divisions



Note: Map not to scale.

Source: Adapted from U.S. Department of Commerce, Bureau of the Census,
Statistical Abstract of the United States 2003 (Washington, DC, December 2003).

Appendix D

Table D1. Population and U.S. Gross Domestic Product, Selected Years, 1949-2003

Year	Population		U.S. Gross Domestic Product		
	United States ¹	World	Billion Nominal Dollars	Billion Chained (2000) Dollars	Implicit Price Deflator ² (2000 = 1.00000)
	Million People				
1949	148.7	NA	\$267.3	\$1,634.6	R0.16352
1950	151.3	2,555.4	\$293.8	\$1,777.3	R0.16531
1955	165.1	2,780.0	\$414.8	\$2,212.8	R0.18743
1960	179.3	3,039.7	\$526.4	\$2,501.8	R0.21041
1965	193.5	3,346.2	\$719.1	\$3,191.1	R0.22535
1970	203.3	3,708.1	\$1,038.5	\$3,771.9	R0.27534
1971	206.8	3,785.7	\$1,127.1	\$3,898.6	R0.28911
1972	209.3	\$3,862.3	\$1,238.3	\$4,105.0	R0.30166
1973	211.4	\$3,938.5	\$1,382.7	\$4,341.5	R0.31849
1974	213.3	\$4,014.1	\$1,500.0	\$4,319.6	R0.34725
1975	215.5	\$4,087.3	\$1,638.3	\$4,311.2	R0.38002
1976	217.6	\$4,159.1	\$1,825.3	\$4,540.9	R0.40196
1977	219.8	\$4,231.4	\$2,030.9	\$4,750.5	R0.42752
1978	222.1	\$4,303.5	\$2,294.7	\$5,015.0	R0.45757
1979	224.6	\$4,378.6	\$2,563.3	\$5,173.4	R0.49548
1980	226.5	\$4,454.3	\$2,789.5	\$5,161.7	R0.54043
1981	229.5	\$4,530.1	\$3,128.4	\$5,291.7	R0.59119
1982	231.7	\$4,610.2	\$3,255.0	\$5,189.3	R0.62726
1983	233.8	\$4,690.5	\$3,536.7	\$5,423.8	R0.65207
1984	235.8	\$4,769.8	\$3,933.2	\$5,813.6	R0.67655
1985	237.9	\$4,850.4	\$4,220.3	\$6,053.7	R0.69713
1986	240.1	\$4,932.7	\$4,462.8	\$6,263.6	R0.71250
1987	242.3	\$5,017.9	\$4,739.5	\$6,475.1	R0.73196
1988	244.5	\$5,103.5	\$5,103.8	\$6,742.7	R0.75694
1989	246.8	\$5,189.2	\$5,484.4	\$6,981.4	R0.78556
1990	248.8	\$5,275.9	\$5,803.1	\$7,112.5	R0.81590
1991	253.0	\$5,359.8	\$5,995.9	\$7,100.5	R0.84444
1992	256.5	\$5,443.8	\$6,337.7	\$7,336.6	R0.86385
1993	259.9	\$5,525.2	\$6,657.4	\$7,532.7	R0.88381
1994	263.1	\$5,605.4	\$7,072.2	\$7,835.5	R0.90259
1995	266.3	\$5,686.0	\$7,397.7	\$8,031.7	R0.92106
1996	269.4	\$5,765.2	\$7,816.9	\$8,328.9	R0.93852
1997	272.6	\$5,844.9	\$8,304.3	\$8,703.5	R0.95414
1998	275.9	\$5,923.7	\$8,747.0	\$9,066.9	R0.96472
1999	279.0	\$6,002.0	\$9,268.4	\$9,470.3	R0.97868
2000	281.4	\$6,079.0	\$9,817.0	\$9,817.0	R1.00000
2001	\$285.1	\$6,154.3	\$10,100.8	\$9,866.6	R1.02373
2002	\$288.0	\$6,228.6	\$10,480.8	\$10,083.0	R1.03945
2003	290.8	6,302.5	10,987.9	10,398.0	1.05673

¹ Resident population of the 50 States and the District of Columbia estimated for July 1 of each year, except for the April 1 decennial census counts.

² See Glossary.

R=Revised. NA=Not available.

Note: See "Chained Dollars" in the Glossary.

Web Pages: • For data not shown for 1951-1969, see <http://www.eia.doe.gov/emeu/aer/Append.html>.

• For related information, see <http://www.census.gov/> and <http://www.bea.doc.gov/>.

Sources: **U.S. Population:** • 1949-1989—Department of Commerce (DOC), U.S. Bureau of the Census, Current Population Reports Series P-25, November 1998. • 1990 forward—DOC, U.S. Bureau of the Census, State Population Estimates. **World Population:** • 1950 forward—DOC, U.S. Bureau of the Census, International Database. **U.S. Gross Domestic Product:** • 1949 forward—DOC, Bureau of Economic Analysis, National Income and Product Accounts (March 25, 2004), Tables 1.1.5, 1.1.6, and 1.1.9.

Appendix E

Table E1. Estimated Energy Consumption in the United States, Selected Years, 1635-1945
 (Quadrillion Btu)

Year	Fossil Fuels				Renewable Energy			Electricity Net Imports	Total
	Coal	Natural Gas	Petroleum	Total	Conventional Hydroelectric Power	Wood ¹	Total		
1635	NA	—	—	—	—	(s)	(s)	—	(s)
1645	NA	—	—	—	—	0.001	0.001	—	0.001
1655	NA	—	—	—	—	0.002	0.002	—	0.002
1665	NA	—	—	—	—	0.005	0.005	—	0.005
1675	NA	—	—	—	—	0.007	0.007	—	0.007
1685	NA	—	—	—	—	0.009	0.009	—	0.009
1695	NA	—	—	—	—	0.014	0.014	—	0.014
1705	NA	—	—	—	—	0.022	0.022	—	0.022
1715	NA	—	—	—	—	0.037	0.037	—	0.037
1725	NA	—	—	—	—	0.056	0.056	—	0.056
1735	NA	—	—	—	—	0.080	0.080	—	0.080
1745	NA	—	—	—	—	0.112	0.112	—	0.112
1755	NA	—	—	—	—	0.155	0.155	—	0.155
1765	NA	—	—	—	—	0.200	0.200	—	0.200
1775	NA	—	—	—	—	0.249	0.249	—	0.249
1785	NA	—	—	—	—	0.310	0.310	—	0.310
1795	NA	—	—	—	—	0.402	0.402	—	0.402
1805	NA	—	—	—	—	0.537	0.537	—	0.537
1815	NA	—	—	—	—	0.714	0.714	—	0.714
1825	NA	—	—	—	—	0.960	0.960	—	0.960
1835	NA	—	—	—	—	1.305	1.305	—	1.305
1845	NA	—	—	—	—	1.757	1.757	—	1.757
1850	0.219	—	—	0.219	—	2.138	2.138	—	2.357
1855	0.421	—	—	0.421	—	2.389	2.389	—	2.810
1860	0.518	—	0.003	0.521	—	2.641	2.641	—	3.162
1865	0.632	—	0.010	0.642	—	2.767	2.767	—	3.409
1870	1.048	—	0.011	1.059	—	2.893	2.893	—	3.952
1875	1.440	—	0.011	1.451	—	2.872	2.872	—	4.323
1880	2.054	—	0.096	2.150	—	2.851	2.851	—	5.001
1885	2.840	0.082	0.040	2.962	—	2.683	2.683	—	5.645
1890	4.062	0.257	0.156	4.475	0.022	2.515	2.537	—	7.012
1895	4.950	0.147	0.168	5.265	0.090	2.306	2.396	—	7.661
1900	6.841	0.252	0.229	7.322	0.250	2.015	2.265	—	9.587
1905	10.001	0.372	0.610	10.983	0.386	1.843	2.229	—	13.121
1910	12.714	0.540	1.007	14.261	0.539	1.765	2.304	—	16.565
1915	13.294	0.673	1.418	15.385	0.659	1.688	2.347	0.002	17.734
1920	15.504	0.813	2.676	18.993	0.738	1.610	2.348	0.003	21.344
1925	14.706	1.191	4.280	20.177	0.668	1.533	2.201	0.004	22.382
1930	13.639	1.932	5.897	21.468	0.752	1.455	2.207	0.005	23.680
1935	10.634	1.919	5.675	18.228	0.806	1.397	2.203	0.005	20.436
1940	12.535	2.665	7.760	22.960	0.880	1.358	2.238	0.007	25.205
1945	15.972	3.871	10.110	29.953	1.442	1.261	2.703	0.009	32.665

¹ There is a discontinuity in the "Wood" time series between 1945 and 1949. Through 1945, data are for fuelwood only; beginning in 1949, data also include wood-derived fuel and wood byproducts burned as fuel.

NA=Not available. — = Not applicable. (s)=Less than 0.0005 quadrillion Btu.

Notes: • For years not shown, there are no data available. • See Tables 1.3 and 10.1 for continuation of these data series from 1949 forward. • See Note, "Geographic Coverage of Statistics for 1635-1945," at end of section.

Sources: **Coal, Natural Gas, and Petroleum:** *Energy in the American Economy, 1850-1975*, Table VII.

Conventional Hydroelectric Power: *Energy in the American Economy, 1850-1975*, Table II. **Wood:**

• 1635-1845: U.S. Department of Agriculture Circular No. 641, *Fuel Wood Used in the United States*

1630-1930, February 1942. This source estimates fuelwood consumption in cords per decade, which were converted to Btu using the conversion factor of 20 million Btu per cord. The annual average value for each decade was assigned to the fifth year of the decade on the assumption that annual use was likely to increase during any given decade and the average annual value was more likely to reflect mid-decade yearly consumption than use at either the beginning or end of the decade. Values thus begin in 1635 and are plotted at 10-year intervals. • 1850-1945: *Energy in the American Economy, 1850-1975*, Table VII. **Electricity Net Imports:** *Energy in the American Economy, 1850-1975*, Tables I and VI. Calculated as the difference between hydroelectric consumption and hydroelectric production times 3,412 Btu per kilowatthour.

Appendix E

Note: Geographic Coverage of statistics for 1635-1945. Table E1 presents estimates of U.S. energy consumption by energy source for a period that begins a century and a half before the original 13 colonies formed a political union and continues through the decades during which the United States was still expanding territorially. The question thus arises, what exactly is meant by "U.S. consumption" of an energy source for those years when the United States did not formally exist or consisted of less territory than is now encompassed by the 50 States and the District of Columbia?

The documents used to assemble the estimates, and (as far as possible) the sources of those documents, were reviewed carefully for clues to geographic coverage. For most energy sources, the extent of coverage expanded more rapidly than the Nation, defined as all the official States and the District of Columbia. Estimates or measurements of consumption of each energy source generally appear to follow settlement patterns. That is, they were made for areas of the continent that were settled enough to have economically significant consumption even though those areas were not to become States for years. The wood data series, for example, begins in 1635 and includes 12 of the original colonies (excepting Georgia), as well

as Maine, Vermont, and the area that would become the District of Columbia. By the time the series reaches 1810, the rest of the continental States are all included, though the last of the 48 States to achieve statehood did not do so until 1912. Likewise, the coal data series begins in 1850 but includes consumption in areas, such as Utah and Washington (State), which were significant coal-producing regions but had not yet attained statehood. (Note: No data were available on State-level historical coal consumption. The coal data shown in Table E1 through 1945 describe *apparent* consumption, i.e., production plus imports minus exports. The geographic coverage for coal was therefore based on a tally of coal-producing States listed in various historical issues of *Minerals Yearbook*. It is likely that coal was consumed in States where it was not mined in significant quantities.)

By energy source, the extent of coverage can be summarized as follows:

- **Coal**—35 coal-producing States by 1885.
- **Natural Gas**—All 48 contiguous States, the District of Columbia, and Alaska by 1885.
- **Petroleum**—All 48 contiguous States, the District of Columbia, and Alaska by 1885.
- **Conventional Hydroelectric Power**—Coverage for 1890 and 1895 is uncertain, but probably the 48 contiguous States and the District of Columbia. Coverage for 1900 through 1945 is the 48 contiguous States, and the District of Columbia.
- **Wood**—All 48 contiguous States and the District of Columbia by 1810.

Glossary

Alcohol: The family name of a group of organic chemical compounds composed of carbon, **hydrogen**, and oxygen. The series of molecules vary in chain length and are composed of a **hydrocarbon** plus a hydroxyl group: CH₃-(CH₂)_n-OH (e.g., **methanol**, **ethanol**, and tertiary butyl alcohol). See **Fuel Ethanol**.

Alternative Fuel: As defined pursuant to the Energy Policy Act of 1992 (EPACT), **methanol**, denatured **ethanol**, and other **alcohols**, separately or in mixtures of 85 percent by volume or more (or other percentage not less than 70 as determined by DOE rule) with **motor gasoline** or other fuels, **compressed natural gas** (CNG), **liquefied natural gas** (LNG), **liquefied petroleum gases** (LPG), **hydrogen**, coal-derived liquid fuels, fuels other than alcohols derived from biological materials, **electricity**, or any other fuel determined to be substantially not **petroleum** and yielding substantial energy security benefits and substantial environmental benefits.

Alternative-Fueled Vehicle (AFV): A vehicle either designed and manufactured by an original equipment manufacturer or a converted vehicle designed to operate in either dual-fuel, flexible-fuel, or dedicated modes on fuels other than **motor gasoline** or **diesel fuel**. This does not include a conventional vehicle that is limited to operation on blended or **reformulated motor gasoline** fuels.

Anthracite: The highest rank of **coal**; used primarily for residential and commercial **space heating**. It is a hard, brittle, and black lustrous coal, often referred to as hard coal, containing a high percentage of fixed carbon and a low percentage of volatile matter. The moisture content of fresh-mined anthracite generally is less than 15 percent. The heat content of anthracite ranges from 22 to 28 million **Btu** per **short ton** on a moist, mineral-matter-free basis. The heat content of anthracite consumed in the United States averages 25 million Btu per short ton, on the as-received basis (i.e., containing both inherent moisture and mineral matter). *Note:* Since the 1980's, anthracite refuse or mine waste has been used for steam-electric power generation. This fuel typically has a heat content of 15 million Btu per short ton or less. See **Coal Rank**.

Anthracite Culm: Waste from Pennsylvania **anthracite** preparation plants, consisting of coarse rock fragments containing as much as 30 percent small-sized **coal**; sometimes defined as including very fine coal particles called silt. Its heat value ranges from 8 to 17 million **Btu** per **short ton**.

Anthropogenic: Made or generated by a human or caused by human activity. The term is used in the context of global **climate change** to refer to gaseous emissions that are the result of human activities, as well as other potentially climate-altering activities, such as deforestation.

API: The American Petroleum Institute, a trade association.

API Gravity: American Petroleum Institute measure of specific gravity of **crude oil** or condensate in degrees. An arbitrary scale expressing the gravity or density of liquid **petroleum products**. The measuring scale is calibrated in terms of degrees API; it is calculated as follows:
Degrees API = (141.5 / sp.gr.60 deg.F/60 deg.F) - 131.5.

Asphalt: A dark-brown to black cement-like material obtained by **petroleum** processing and containing bitumens as the predominant component; used primarily for road construction. It includes crude asphalt as well as the following finished products: cements, fluxes, the asphalt content of emulsions (exclusive of water), and petroleum distillates blended with asphalt to make cutback asphalts. *Note:* The conversion factor for asphalt is 5.5 **barrels** per **short ton**.

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

Aviation Gasoline Blending Components: **Naphthas** that will be used for blending or compounding into finished **aviation gasoline** (e.g., straight run gasoline, alkylate, reformate, benzene, toluene, and xylene). Excludes **oxygenates (alcohols, ethers)**, **butane**, and **pentanes plus**. Oxygenates are reported as **other hydrocarbons**, **hydrogen**, and **oxygenates**.

Aviation Gasoline, Finished: A complex mixture of relatively volatile **hydrocarbons** with or without small quantities of additives, blended to form a fuel suitable for use in aviation reciprocating engines. Fuel specifications are provided in ASTM Specification D910 and Military Specification MIL-G-5572. *Note:* Data on blending components are not counted in data on finished aviation gasoline. See **Jet Fuel**; **Jet Fuel, Kerosene-Type**; and **Jet Fuel, Naphtha-Type**.

Barrel (Petroleum): A unit of volume equal to 42 U.S. gallons.

Barrels per Calendar Day: The amount of input that a distillation facility can process under usual operating conditions. The amount is expressed in terms of capacity during a 24-hour period and reduces the maximum processing capability of all units at the facility under continuous operation to account for the following limitations that may delay, interrupt, or slow down production: 1) the capability of downstream processing units to absorb the output of **crude oil** processing facilities of a given refinery (no reduction is necessary for intermediate streams that are distributed to other than downstream facilities as part of a refinery's normal operation); 2) the types and grades of inputs to be processed; 3) the types and grades of products expected to be manufactured; 4) the environmental constraints associated with refinery operations; 5) the reduction of capacity for scheduled downtime due to such conditions as routine inspection, maintenance, repairs, and turnaround; and 6) the reduction of capacity for unscheduled downtime due to such conditions as mechanical problems, repairs, and slowdowns.

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.

Biodiesel: Any liquid biofuel suitable as a **diesel fuel** substitute or diesel fuel additive or extender. Biodiesel can be made from transesterification of oils of vegetables such as soybeans, rapeseed, or sunflowers (end product known as methyl ester) or from animal tallow (end product known as methyl tallowate). Biodiesel can also be made by transesterification of **hydrocarbons** produced by the Fisher-Tropsch process from agricultural byproducts such as rice hulls.

Bituminous Coal: A dense **coal**, usually black, sometimes dark brown, often with well-defined bands of bright and dull material, used primarily as fuel in steam-electric power generation, with substantial quantities also used for heat and power applications in manufacturing and making **coke**. Bituminous coal is the most abundant coal in active U.S. mining regions. Its moisture content usually is less than 20 percent. The heat content of bituminous coal ranges from 21 to 30 million **Btu** per **short ton** on a moist, mineral-matter-free basis. The heat content of bituminous coal consumed in the United States averages 24 million Btu per short ton, on the as-received basis (i.e., containing both inherent moisture and mineral matter). See **Coal Rank**.

Black Liquor (Pulping Liquor): The alkaline spent liquor removed from the digesters in the process of chemically pulping wood. After evaporation, the liquor is burned as a fuel in a recovery furnace that permits the recovery of certain basic chemicals.

British Thermal Unit (Btu): The quantity of heat required to raise the temperature of 1 pound of liquid water by 1 degree Fahrenheit at the temperature at which water

has its greatest density (approximately 39 degrees Fahrenheit). See **Heat Content of a Quantity of Fuel, Gross**, and **Heat Content of a Quantity of Fuel, Net**.

Btu: See **British Thermal Unit**.

Bunker Fuels: Fuel supplied to ships and aircraft, both domestic and foreign, consisting primarily of **residual fuel oil** and **distillate fuel oil** for ships and **kerosene-type jet fuel** for aircraft. The term "international bunker fuels" is used to denote the consumption of fuel for international transport activities. *Note:* For the purposes of **greenhouse gas** emissions inventories, data on emissions from combustion of international bunker fuels are subtracted from national emissions totals. Historically, bunker fuels have meant only ship fuel.

Butane: A normally gaseous straight-chain or branched-chain **hydrocarbon** (C_4H_{10}) extracted from **natural gas** or **refinery gas** streams. It includes isobutane and normal butane and is designated in ASTM Specification D1835 and Gas Producers Association Specifications for commercial butane.

Isobutane: A normally gaseous branched-chain hydrocarbon. It is a colorless paraffinic gas that boils at a temperature of 10.9 degrees Fahrenheit. It is extracted from natural gas or refinery gas streams.

Normal Butane: A normally gaseous straight-chain hydrocarbon. It is a colorless paraffinic gas that boils at a temperature of 31.1 degrees Fahrenheit. It is extracted from natural gas or refinery gas streams.

Butylene: An olefinic **hydrocarbon** (C_4H_8) recovered from refinery processes.

Capacity: See **Generator Capacity**.

Capacity Factor: See **Generator Capacity Factor**.

Carbon Dioxide: A colorless, odorless, non-poisonous gas (CO_2) that is a normal part of Earth's atmosphere. Carbon dioxide is a product of **fossil-fuel** combustion as well as other processes. It is considered a **greenhouse gas** as it traps heat (infrared energy) radiated by the Earth into the atmosphere and thereby contributes to the potential for **global warming**. The **global warming potential** (GWP) of other greenhouse gases is measured in relation to that of carbon dioxide, which by international scientific convention is assigned a value of one (1).

Carbon Dioxide Equivalent: The amount of **carbon dioxide** by weight emitted into the atmosphere that would produce the same estimated radiative forcing as a given weight of another radiatively active gas. Carbon dioxide equivalents are computed by multiplying the weight of the gas being measured (for example, **methane**) by its estimated **global warming potential** (which is 21 for methane). "Carbon

equivalent units” are defined as carbon dioxide equivalents multiplied by the carbon content of carbon dioxide (i.e., 12/44).

Chained Dollars: A measure used to express **real prices**. Real prices are those that have been adjusted to remove the effect of changes in the purchasing power of the dollar; they usually reflect buying power relative to a reference year. Prior to 1996, real prices were expressed in constant dollars, a measure based on the weights of goods and services in a single year, usually a recent year. In 1996, the U.S. Department of Commerce introduced the chained-dollar measure. The new measure is based on the average weights of goods and services in successive pairs of years. It is “chained” because the second year in each pair, with its weights, becomes the first year of the next pair. The advantage of using the chained-dollar measure is that it is more closely related to any given period covered and is therefore subject to less distortion over time.

Chlorofluorocarbon (CFC): Any of various compounds consisting of carbon, **hydrogen**, chlorine, and flourine used as refrigerants. CFCs are now thought to be harmful to the Earth’s atmosphere.

City Gate: A point or measuring station at which a distribution gas utility receives gas from a **natural gas pipeline** company or transmission system.

Climate Change: A term used to refer to all forms of climatic inconsistency, but especially to significant change from one prevailing climatic condition to another. In some cases, “climate change” has been used synonymously with the term “**global warming**”; scientists, however, tend to use the term in a wider sense to include natural changes in climate as well as climatic cooling.

Coal: A readily combustible black or brownish-black rock whose composition, including inherent moisture, consists of more than 50 percent by weight and more than 70 percent by volume of carbonaceous material. It is formed from plant remains that have been compacted, hardened, chemically altered, and metamorphosed by heat and pressure over geologic time. See **Coal Rank**.

Coal Coke: See **Coke, Coal**.

Coal Rank: The classification of **coals** according to their degree of progressive alteration from lignite to anthracite. In the United States, the standard ranks of coal include **lignite**, **subbituminous coal**, **bituminous coal**, and **anthracite** and are based on fixed carbon, volatile matter, heating value, and agglomerating (or caking) properties.

Coal Stocks: **Coal** quantities that are held in storage for future use and disposition. *Note:* When coal data are collected for a particular reporting period (month, quarter, or year), coal stocks are commonly measured as of the last day of this period.

Coke, Coal: A solid carbonaceous residue derived from low-ash, low-sulfur **bituminous coal** from which the volatile constituents are driven off by baking in an oven at temperatures as high as 2,000 degrees Fahrenheit so that the fixed carbon and residual ash are fused together. Coke is used as a fuel and as a reducing agent in smelting iron ore in a blast furnace. Coke from coal is gray, hard, and porous and has a heating value of 24.8 million **Btu** per **short ton**.

Coke, Petroleum: A residue high in carbon content and low in **hydrogen** that is the final product of thermal decomposition in the condensation process in cracking. This product is reported as marketable coke or catalyst coke. The conversion is 5 **barrels** (of 42 U.S. gallons each) per **short ton**. Coke from **petroleum** has a heating value of 6.024 million **Btu** per barrel.

Combined-Heat-and-Power (CHP) Plant: A plant designed to produce both heat and **electricity**. If one or more units of the plant is a CHP unit, then the whole plant is designated as a CHP plant. *Note:* This term is being used in place of the term “cogenerator” that was used by EIA in the past. CHP better describes the facilities because some of the plants included do not produce heat and power in a sequential fashion and, as a result, do not meet the legal definition of cogeneration specified in the Public Utility Regulatory Policies Act (PURPA). See **Electricity-Only Plant**.

Commercial Building: A building with more than 50 percent of its floorspace used for commercial activities. Commercial buildings include, but are not limited to, stores, offices, schools, churches, gymnasiums, libraries, museums, hospitals, clinics, warehouses, and jails. Government buildings are included, except buildings on military bases or reservations.

Commercial Sector: An **energy**-consuming sector that consists of service-providing facilities and equipment of: businesses; Federal, State, and local governments; and other private and public organizations, such as religious, social, or fraternal groups. The commercial sector includes institutional living quarters. It also includes sewage treatment facilities. Common uses of energy associated with this sector include **space heating**, water heating, air conditioning, lighting, refrigeration, cooking, and running a wide variety of other equipment. *Note:* This sector includes **generators** that produce **electricity** and/or **useful thermal output** primarily to support the activities of the above-mentioned commercial establishments. Various EIA programs differ in sectoral coverage—for more information see <http://www.eia.doe.gov/neic/databdefinitions/Guideforwebcom.htm>. See **End-Use Sectors** and **Energy-Use Sectors**.

Completion (Crude Oil/Natural Gas Production): The term refers to the installation of permanent equipment for the production of **crude oil** or **natural gas**. If a **well** is equipped to produce only crude oil or natural gas from one zone or reservoir, the definition of a “well” (classified as a **crude oil well** or **natural gas well**) and the definition of a “completion” are identical. However, if a well is equipped to produce

crude oil and/or natural gas separately from more than one reservoir, a “well” is not synonymous with a “completion.”

Compressed Natural Gas (CNG): Natural gas compressed to a volume and density that is practical as a portable fuel supply (even when compressed, natural gas is not a liquid).

Conventional Hydroelectric Power: See **Hydroelectric Power, Conventional.**

Conventional Motor Gasoline: See **Motor Gasoline, Conventional.**

Conversion Factor: A number that translates units of one system into corresponding values of another system. Conversion factors can be used to translate physical units of measure for various fuels into **Btu** equivalents.

Cooling Tower: A common type of environmental equipment installed at **electric power plants** used to transfer heat, produced by burning fuel, to the atmosphere. Cooling towers are installed where there is insufficient cooling water available or where waste heat discharged into cooling water would affect marine life.

Criteria Pollutant: A pollutant determined to be hazardous to human health and regulated under the Environmental Protection Agency’s (EPA) National Ambient Air Quality Standards. The 1970 amendments to the Clean Air Act require EPA to describe the health and welfare impacts of a pollutant as the “criteria” for inclusion in the regulatory regime.

Crude Oil: A mixture of **hydrocarbons** that exists in liquid phase in natural underground reservoirs and remains liquid at atmospheric pressure after passing through surface separating facilities. Depending upon the characteristics of the crude stream, it may also include: 1) small amounts of hydrocarbons that exist in gaseous phase in natural underground reservoirs but are liquid at atmospheric pressure after being recovered from oil well (casinghead) gas in lease separators and are subsequently commingled with the crude stream without being separately measured. Lease condensate recovered as a liquid from **natural gas wells** in lease or field separation facilities and later mixed into the crude stream is also included; 2) small amounts of nonhydrocarbons produced with the oil, such as sulfur and various metals; and 3) drip gases, and liquid hydrocarbons produced from tar sands, gilsonite, and oil shale. Liquids produced at natural gas processing plants are excluded. Crude oil is refined to produce a wide array of **petroleum products**, including heating oils; gasoline, **diesel** and **jet fuels**; **lubricants**; **asphalt**; **ethane**, **propane**, and **butane**; and many other products used for their **energy** or chemical content.

Crude Oil Domestic First Purchase Price: The marketed first sales price of domestic **crude oil**, consistent with the removal price defined by the provisions of

the Windfall Profits Tax on Domestic Crude Oil (Public Law 96-223, Sec. 4998 [c]).

Crude Oil Landed Cost: The price of **crude oil** at the port of discharge, including charges associated with purchasing, transporting, and insuring a cargo from the purchase point to the port of discharge. The cost does not include charges incurred at the discharge port (e.g., import tariffs or fees, wharfage charges, and demurrage).

Crude Oil Refiner Acquisition Cost: The cost of **crude oil** to the refiner, including transportation and other fees. The composite cost is the weighted average of domestic and imported crude oil costs. The refiner acquisition cost does not include the cost of crude oil purchased for the **Strategic Petroleum Reserve**.

Crude Oil Refinery Input: The total **crude oil** put into processing units at refineries.

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

Crude Oil Used Directly: **Crude oil** consumed as fuel by **petroleum pipelines** and on crude oil leases.

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

Cubic Foot (Natural Gas) The amount of **natural gas** contained at standard temperature and pressure (60 degrees Fahrenheit and 14.73 pounds standard per square inch) in a cube whose edges are one foot long.

Degree-Day Normals: Simple arithmetic averages of monthly or annual **degree-days** over a long period of time (usually the 30-year period 1971–2000). The averages may be simple degree-day normals or population-weighted degree-day normals.

Degree-Days, Cooling (CDD): A measure of how warm a location is over a period of time relative to a base temperature, most commonly specified as 65 degrees Fahrenheit. The measure is computed for each day by subtracting the base temperature (65 degrees) from the average of the day’s high and low temperatures, with negative values set equal to zero. Each day’s cooling degree-days are summed to create a cooling degree-day measure for a specified reference period. Cooling degree-days are used in energy analysis as an indicator of air conditioning energy requirements or use.

Degree-Days, Heating (HDD): A measure of how cold a location is over a period of time relative to a base temperature, most commonly specified as 65 degrees

Fahrenheit. The measure is computed for each day by subtracting the average of the day's high and low temperatures from the base temperature (65 degrees), with negative values set equal to zero. Each day's heating degree-days are summed to create a heating degree-day measure for a specified reference period. Heating degree-days are used in energy analysis as an indicator of space heating energy requirements or use.

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 multiplied by the corresponding population weight for each division and those 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 comprising from three to eight States, which 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 those products are then summed to arrive at the national population-weighted degree-day figure.

Demand-Side Management: The planning, implementation, and monitoring of **electric utility** activities designed to encourage consumers to modify patterns of electricity usage, including the timing and level of electricity demand.

Demonstrated Reserve Base (Coal): A collective term for the sum of **coal** in both measured and indicated resource categories of reliability, representing 100 percent of the in-place coal in those categories as of a certain date. Includes beds of **bituminous coal** and **anthracite** 28 or more inches thick and beds of **subbituminous coal** 60 or more inches thick that can occur at depths of as much as 1,000 feet. Includes beds of **lignite** 60 or more inches thick that can be surface mined. Includes also thinner and/or deeper beds that currently are being mined or for which there is evidence that they could be mined commercially at a given time. Represents that portion of the identified coal resource from which reserves are calculated.

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

Diesel Fuel: A fuel composed of **distillate fuel oils** obtained in petroleum refining operation or blends of such distillate fuel oils with **residual fuel oil** used in motor vehicles. The boiling point and specific gravity are higher for diesel fuels than for gasoline.

Distillate Fuel Oil: A general classification for one of the **petroleum** fractions produced in conventional distillation operations. It includes **diesel fuels** and fuel

oils. Products known as No. 1, No. 2, and No. 4 diesel fuel are used in on-highway diesel engines, such as those found in cars and trucks, as well as off-highway engines, such as those in railroad locomotives and agricultural machinery. Products known as No. 1, No. 2, and No. 4 fuel oils are used primarily for **space heating** and **electricity generation**.

Distillation Unit (Atmospheric): The primary distillation unit that processes **crude oil** (including mixtures of **other hydrocarbons**) at approximately atmospheric conditions. It includes a pipe still for vaporizing the crude oil and a **fractionation** tower for separating the vaporized hydrocarbon components in the crude oil into fractions with different boiling ranges. This is done by continuously vaporizing and condensing the components to separate higher boiling point material. The selected boiling ranges are set by the processing scheme, the properties of the crude oil, and the product specifications.

District Heat: Steam or hot water from an outside source used as an **energy source** in a building. The steam or hot water is produced in a central plant and is piped into the building. District heat may be purchased from a utility or provided by a physical plant in a separate building that is part of the same facility (for example, a hospital complex or university).

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

Dry Natural Gas: See **Natural Gas, Dry**.

Dry Natural Gas Production: See **Natural Gas (Dry) Production**.

Dual-Fired Unit: A **generating unit** that can produce **electricity** using two or more input fuels. In some of these units, only the primary fuel can be used continuously; the alternate fuel(s) can be used only as a start-up fuel or in emergencies.

Eastern Europe and Former U.S.S.R.: Includes Albania, Azerbaijan, Belarus, Bulgaria, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Poland, Romania, Russia, Slovakia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan. See **U.S.S.R.**

Electric Energy: The ability of an electric current to produce work, heat, light, or other forms of **energy**. It is measured in **kilowatthours**.

Electric Power Plant: A station containing **prime movers**, **electric generators**, and auxiliary equipment for converting mechanical, chemical, and/or fission **energy** into **electricity**.

Electric Power Sector: An **energy**-consuming sector that consists of **electricity-only** and **combined-heat-and-power (CHP)** plants within the **NAICS** (North American Industry Classification System) 22 category whose primary business is to sell **electricity**, or electricity and heat, to the public. *Note:* This sector includes **electric utilities** and **independent power producers**. See **Energy-Use Sectors**.

Electric Utility: A corporation, person, agency, authority, or other legal entity or instrumentality aligned with distribution facilities for delivery of **electric energy** for use primarily by the public. Included are investor-owned electric utilities, municipal and State utilities, Federal electric utilities, and rural electric cooperatives. A few entities that are tariff based and corporately aligned with companies that own distribution facilities are also included. Electric utilities are included in the **electric power sector**. *Note:* Due to the issuance of FERC Order 888 that required traditional electric utilities to functionally unbundle their generation, transmission, and distribution operations, “electric utility” currently has inconsistent interpretations from State to State. See **Electric Power Sector**.

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

Electricity: A form of **energy** characterized by the presence and motion of elementary charged particles generated by friction, induction, or chemical change.

Electricity Generation: The process of producing **electric energy**, or the amount of electric energy produced by transforming other forms of **energy**; commonly expressed in **kilowatthours** (kWh) or megawatthours (MWh). See **Electricity Generation, Gross** and **Electricity Generation, Net**.

Electricity Generation, Gross: The total amount of **electric energy** produced by generating units and measured at the generating terminal.

Electricity Generation, Net: The amount of **gross electricity generation** less the **electric energy** consumed at the generating station(s) for station service or auxiliaries. *Note:* Electricity required for pumping at **hydroelectric pumped-storage** plants is regarded as station use and is deducted from gross generation.

Electricity Retail Sales: The amount of **electricity** sold by **electric utilities** and other **energy service providers** to customers purchasing electricity for their own use and not for resale. These sales are usually grouped by classes of service, such as residential, commercial, industrial, and other. “Other” sales include sales for public street and highway lighting and other sales to public authorities and railways, and interdepartmental sales.

Electricity-Only Plant: A plant designed to produce **electricity** only. See **Combined-Heat-and-Power (CHP) Plant**.

Emissions: Anthropogenic releases of gases to the atmosphere. In the context of global **climate change**, they consist of radiatively important **greenhouse gases** (e.g., the release of **carbon dioxide** during fuel combustion).

End-Use Sectors: The **residential**, **commercial**, **industrial**, and **transportation** sectors of the economy. See **Energy-Use Sectors**.

Energy: The capacity for doing work as measured by the capability of doing work (potential energy) or the conversion of this capability to motion (kinetic energy). Energy has several forms, some of which are easily convertible and can be changed to another form useful for work. Most of the world’s convertible energy comes from **fossil fuels** that are burned to produce heat that is then used as a transfer medium to mechanical or other means in order to accomplish tasks. **Electric energy** is usually measured in **kilowatthours**, while heat energy is usually measured in **British thermal units**.

Energy Consumption: The use of **energy** as a source of heat or power or as an input in the manufacturing process.

Energy Expenditures: The money spent directly by consumers to purchase **energy**. Expenditures equal the amount of energy used by the consumer times the price per unit paid by the consumer.

Energy Service Provider: An **energy** entity that provides service to a retail or end-use customer.

Energy Source: Any substance or natural phenomenon that can be consumed or transformed to supply heat or power. Examples include **petroleum**, **coal**, **natural gas**, **nuclear**, **wood**, **waste**, **electricity**, **wind**, **geothermal**, sunlight (**solar energy**), water movement, and **hydrogen** in fuel cells.

Energy-Use Sectors: A group of major **energy**-consuming components of U.S. society developed to measure and analyze energy use. The sectors most commonly referred to in EIA are: **residential**, **commercial**, **industrial**, **transportation**, and **electric power**.

Ethane: A normally gaseous straight-chain **hydrocarbon** (C_2H_6). It is a colorless, paraffinic gas that boils at a temperature of -127.48 degrees Fahrenheit. It is extracted from **natural gas** and **refinery gas** streams.

Ether: The family name applied to a group of organic chemical compounds composed of carbon, **hydrogen**, and oxygen, and which are characterized by an

oxygen atom attached to two carbon atoms (for example, **methyl tertiary butyl ether**).

Ethanol: See **Fuel Ethanol**.

Ethyl Tertiary Butyl Ether (ETBE): A colorless, flammable, oxygenated hydrocarbon blend stock, $(\text{CH}_3)_3\text{COC}_2\text{H}_5$, formed by the catalytic etherification of **isobutylene** with **ethanol**. See **Oxygenates**.

Ethylene: An olefinic **hydrocarbon** recovered from refinery processes or petrochemical processes. Ethylene is used as a **petrochemical feedstock** for numerous chemical applications and the production of consumer goods.

Exploratory Well: A **well** drilled to find and produce **crude oil** or **natural gas** in an area previously considered unproductive, to find a new reservoir in a known field (i.e., one previously producing crude oil or natural gas in another reservoir), or to extend the limit of a known crude oil or natural gas reservoir.

Exports: Shipments of goods from within the 50 States and the District of Columbia to U.S. possessions and territories or to foreign countries.

Extraction Loss: The reduction in volume of **natural gas** due to the removal of **natural gas liquid** constituents such as **ethane**, **propane**, and **butane** at natural gas processing plants.

Federal Energy Administration (FEA): A predecessor of the Energy Information Administration.

Federal Energy Regulatory Commission (FERC): The Federal agency with jurisdiction over interstate **electricity** sales, wholesale electric rates, hydroelectric licensing, **natural gas** pricing, **petroleum pipeline** rates, and **natural gas pipeline** certification. FERC is an independent regulatory agency within the Department of Energy and is the successor to the Federal Power Commission.

Federal Power Commission (FPC): The predecessor agency of the **Federal Energy Regulatory Commission**. The Federal Power Commission was created by an Act of Congress under the Federal Water Power Act on June 10, 1920. It was charged originally with regulating the electric power and **natural gas** industries. It was abolished on September 30, 1977, when the Department of Energy was created. Its functions were divided between the Department of Energy and the Federal Energy Regulatory Commission, an independent regulatory agency.

Financial Reporting System (FRS): The Energy Information Administration's statutory requirement to identify major **energy**-producing companies and develop and implement a data-reporting program for energy financial and operating information from these companies. Companies are selected if they are within the top 50

publicly-owned U.S. **crude oil** producers that have at least 1 percent of either production or reserves of **crude oil**, **natural gas**, **coal**, or **uranium** in the United States, or 1 percent of either refining capacity or **petroleum product** sales in the United States.

Finished Motor Gasoline: See **Motor Gasoline, Finished**.

First Purchase Price: See **Crude Oil Domestic First Purchase Price**.

First Use: Manufacturing establishments' consumption of the **energy** that was originally produced offsite or was produced onsite from input materials not classified as energy.

Fiscal Year: The U.S. Government's fiscal year runs from October 1 through September 30. The fiscal year is designated by the calendar year in which it ends; e.g., fiscal year 2003 began on October 1, 2002, and ended on September 30, 2003.

Flared Natural Gas: See **Natural Gas, Flared**.

F.O.B.: See **Free on Board**.

Footage Drilled: Total footage for **wells** in various categories, as reported for any specified period, includes (1) the deepest total depth (length of well bores) of all wells drilled from the surface, (2) the total of all bypassed footage drilled in connection with reported wells, and (3) all new footage drilled for directional sidetrack wells. Footage reported for directional sidetrack wells does not include footage in the common bore, which is reported as footage for the original well. In the case of old wells drilled deeper, the reported footage is that which was drilled below the total depth of the old well.

Former U.S.S.R.: See **U.S.S.R.**

Forward Costs (Uranium): The operating and capital costs that will be incurred in any future production of **uranium** from in-place reserves. Included are costs for labor, materials, power and fuel, royalties, payroll taxes, insurance, and general and administrative costs that are dependent upon the quantity of production and, thus, applicable as variable costs of production. Excluded from forward costs are prior expenditures, if any, incurred for property acquisition, exploration, mine development, and mill construction, as well as income taxes, profit, and the cost of money.

Note: By use of forward costing, estimates of reserves for **uranium ore** deposits in differing geological settings can be aggregated and reported as the maximum amount that can theoretically be extracted to recover the specified costs of **uranium oxide** production under the listed forward cost categories.

Fossil Fuel: An **energy source** formed in the Earth's crust from decayed organic material, such as **petroleum, coal, and natural gas**.

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

Fractionation: The process by which saturated **hydrocarbons** are removed from **natural gas** and separated into distinct parts, or "fractions" such as **propane, butane, and ethane**.

Free Alongside Ship (F.A.S.): The value of a commodity at the port of exportation, generally including the purchase price plus all charges incurred in placing the commodity alongside the carrier at the port of exportation.

Free on Board (F.O.B.): A sales transaction in which the seller makes the product available for pick up at a specified port or terminal at a specified price and the buyer pays for the subsequent transportation and insurance.

Free on Board (F.O.B.) Rail/Barge Price: The **free on board** price of coal at the point of first sale. It excludes freight or shipping and insurance costs.

Fuel Ethanol: An anhydrous, denatured aliphatic **alcohol** (C_2H_5OH) intended for **motor gasoline blending**. See **Oxygenates**.

Full-Power Operation: Operation of a nuclear **generating unit** at 100 percent of its design capacity. Full-power operation precedes commercial operation.

Gasohol: A blend of **finished motor gasoline** containing **alcohol** (generally **ethanol** but sometimes **methanol**) at a concentration between 5.7 percent and 10 percent by volume. See **Oxygenates**.

Generating Unit: Any combination of physically connected **generators**, reactors, boilers, combustion turbines, or other **prime movers** operated together to produce electric power.

Generator: A machine that converts mechanical **energy** into **electric energy**.

Generator Capacity: The maximum output, commonly expressed in megawatts (MW), that generating equipment can supply to system load, adjusted for ambient conditions. See **Generator Nameplate (Installed) Capacity** and **Generator Net Summer Capacity**.

Generator Capacity Factor: The ratio of the **electric energy** produced by a **generating unit** for a given period of time to the electric energy that could have been produced at continuous full-power operation during the same period.

Generator Nameplate (Installed) Capacity: The maximum rated output of a **generator, prime mover**, or other electric power production equipment under specific conditions designated by the manufacturer. Installed generator nameplate capacity is commonly expressed in megawatts (MW) and is usually indicated on a nameplate physically attached to the generator.

Generator Net Summer Capacity: The maximum output, commonly expressed in megawatts (MW), that generating equipment can supply to system load, as demonstrated by a multi-hour test, at the time of summer peak demand (period of May 1 through October 31). This output reflects a reduction in capacity due to electricity use for station service or auxiliaries.

Geothermal Energy: Hot water or steam extracted from geothermal reservoirs in the Earth's crust and used for geothermal heat pumps, water heating, or **electricity generation**.

Global Warming: An increase in the near-surface temperature of the Earth. Global warming has occurred in the distant past as the result of natural influences, but the term is today most often used to refer to the warming some scientists predict will occur as a result of increased **anthropogenic** emissions of **greenhouse gases**. See **Climate Change**.

Global Warming Potential (GWP): An index used to compare the relative radiative forcing of different gases without directly calculating the changes in atmospheric concentrations. GWPs are calculated as the ratio of the radiative forcing that would result from the emission of one kilogram of a **greenhouse gas** to that from the emission of one kilogram of **carbon dioxide** over a period of time, such as 100 years.

Greenhouse Gases: Those gases, such as water vapor, **carbon dioxide**, nitrous oxide, **methane**, **hydrofluorocarbons** (HFCs), **perfluorocarbons** (PFCs), and **sulfur hexafluoride**, that are transparent to solar (short-wave) radiation but opaque to long-wave radiation, thus preventing long-wave radiant energy from leaving the Earth's atmosphere. The net effect is a trapping of absorbed radiation and a tendency to warm the planet's surface.

Gross Domestic Product (GDP): The total value of goods and services produced by labor and property located in the United States. As long as the labor and property are located in the United States, the supplier (that is, the workers and, for property, the owners) may be either U.S. residents or residents of foreign countries.

Gross Domestic Product (GDP) Implicit Price Deflator: A measure used to convert nominal prices to real prices. See **Chained Dollars**.

Gross Electricity Generation: See **Electricity Generation, Gross**.

Gross Withdrawals: See **Natural Gas Gross Withdrawals**.

Gross Input to Atmospheric Crude Oil Distillation Units: Total input to atmospheric crude oil distillation units. Includes all **crude oil**, **lease condensate**, **natural gas plant liquids**, **unfinished oils**, **liquefied refinery gases**, slop oils, and other liquid **hydrocarbons** produced from tar sands, gilsonite, and oil shale.

Heat Content of a Quantity of Fuel, Gross: The total amount of heat released when a fuel is burned. **Coal**, **crude oil**, and **natural gas** all include chemical compounds of carbon and **hydrogen**. When those fuels are burned, the carbon and hydrogen combine with oxygen in the air to produce **carbon dioxide** and water. Some of the **energy** released in burning goes into transforming the water into steam and is usually lost. The amount of heat spent in transforming the water into steam is counted as part of gross heat content but is not counted as part of net content. Gross heat content is also referred to as the higher heating value. Btu **conversion factors** typically used by the Energy Information Administration represent gross heat content.

Heat Content of a Quantity of Fuel, Net: The amount of usable heat **energy** released when a fuel is burned under conditions similar to those in which it is normally used. Net heat content is also referred to as the lower heating value. Btu **conversion factors** typically used by the Energy Information Administration represent gross heat content.

Household: A family, an individual, or a group of up to nine unrelated persons occupying the same housing unit. "Occupy" means the housing unit was the person's usual or permanent place of residence.

Housing Unit: A house, an apartment, a group of rooms, or a single room if it is either occupied or intended for occupancy as separate living quarters by a family, an individual, or a group of one to nine unrelated persons. Separate living quarters means the occupants (1) live and eat separately from other persons in the house or apartment and (2) have direct access from the outside of the buildings or through a common hall—that is, they can get to it without going through someone else's living quarters. Housing units do not include group quarters such as prisons or nursing homes where ten or more unrelated persons live. A common dining area used by residents is an indication of group quarters. Hotel and motel rooms are considered housing units if occupied as the usual or permanent place of residence.

Hydrocarbon: An organic chemical compound of **hydrogen** and carbon in the gaseous, liquid, or solid phase. The molecular structure of hydrocarbon compounds varies from the simplest (**methane**, a constituent of **natural gas**) to the very heavy and very complex.

Hydroelectric Power: The production of **electricity** from the kinetic **energy** of falling water. See **Hydroelectric Power, Conventional** and **Hydroelectric Pumped Storage**.

Hydroelectric Power, Conventional: **Hydroelectric power** generated from flowing water that is not created by **hydroelectric pumped storage**.

Hydroelectric Pumped Storage: **Hydroelectric power** that is generated during peak load periods by using water previously pumped into an elevated storage reservoir during off-peak periods when excess generating capacity is available to do so. When additional generating capacity is needed, the water can be released from the reservoir through a conduit to turbine **generators** located in an **electric power plant** at a lower level.

Hydrofluorocarbons (HFCs): A group of man-made chemicals composed of one or two carbon atoms and varying numbers of **hydrogen** and fluorine atoms. Most HFCs have 100-year **global warming potentials** in the thousands.

Hydrogen (H): The lightest of all gases, hydrogen occurs chiefly in combination with oxygen in water. It also exists in acids, bases, **alcohols**, **petroleum**, and other **hydrocarbons**.

Implicit Price Deflator: See **Chained Dollars**.

Imports: Receipts of goods into the 50 States and the District of Columbia from U.S. possessions and territories or from foreign countries.

Independent Power Producer: A corporation, person, agency, authority, or other legal entity or instrumentality that owns or operates facilities for the generation of electricity for use primarily by the public, and that is not an **electric utility**. Independent power producers are included in the **electric power sector**.

Indicated Resources, Coal: **Coal** for which estimates of the **coal rank**, quality, and quantity are based partly on sample analyses and measurements and partly on reasonable geologic projections. Indicated resources are computed partly from specified measurements and partly from projection of visible data for a reasonable distance on the basis of geologic evidence. The points of observation are $\frac{1}{2}$ to $1\frac{1}{2}$ miles apart. Indicated coal is projected to extend as a $\frac{1}{2}$ -mile-wide belt that lies more than $\frac{1}{4}$ mile from the outcrop or points of observation or measurement.

Industrial Sector: An energy-consuming sector that consists of all facilities and equipment used for producing, processing, or assembling goods. The industrial sector encompasses the following types of activity: manufacturing (NAICS codes 31-33); agriculture, forestry, fishing, and hunting (NAICS code 11); mining, including oil and gas extraction (NAICS code 21); natural gas distribution (NAICS code 2212); water supply and irrigation systems (NAICS code 22131); and construction (NAICS code 23). Overall energy use in this sector is largely for process heat and cooling and powering machinery, with lesser amounts used for facility heating, air conditioning, and lighting. Fossil fuels are also used as raw material inputs to manufactured products. Note: This sector includes generators that produce electricity and/or useful thermal output primarily to support the above-mentioned industrial activities. Various EIA programs differ in sectoral coverage—for more information see <http://www.eia.doe.gov/neic/datadefinitions/Guideforwebind.htm>. See End-Use Sectors and Energy-Use Sectors.

Isobutane: See Butane.

Isobutylene: An olefinic hydrocarbon recovered from refinery processes or petrochemical processes.

Isopentane: A saturated branched-chain hydrocarbon obtained by fractionation of natural gasoline or isomerization of normal pentane.

Jet Fuel: A refined petroleum product used in jet aircraft engines. See Jet Fuel, Kerosene-Type and Jet Fuel, Naphtha-Type.

Jet Fuel, Kerosene-Type: A kerosene-based product with a maximum distillation temperature of 400 degrees Fahrenheit at the 10-percent recovery point and a final maximum boiling point of 572 degrees Fahrenheit and meeting ASTM Specification 1655 and Military Specifications MIL-T-5624P and MIL-T-8313D (Grades JP-5 and JP-8). It is used for commercial and military turbojet and turboprop aircraft engines.

Jet Fuel, Naphtha-Type: A fuel in the heavy naphtha boiling range, with an average gravity of 52.8° API, 20 to 90 percent distillation temperature of 290 to 470 degrees Fahrenheit, and meeting Military Specification MIL-T-5624L (Grade JP-4). It is used primarily for military turbojet and turboprop aircraft engines because it has a lower freeze point than other aviation fuels and meets engine requirements at high altitudes and speeds.

Kerosene: A light petroleum distillate that is used in space heaters, cook stoves, and water heaters and is suitable for use as a light source when burned in wick-fed lamps. Kerosene has a maximum distillation temperature of 400 degrees Fahrenheit at the 10-percent recovery point, a final boiling point of 572 degrees Fahrenheit, and a minimum flash point of 100 degrees Fahrenheit. Included are No. 1-K and No.

2-K, the two grades recognized by ASTM Specification D3699 as well as all other grades of kerosene called range or stove oil, which have properties similar to those of No. 1 fuel oil. See Jet Fuel, Kerosene-Type.

Kerosene-Type Jet Fuel: See Jet Fuel, Kerosene-Type.

Kilowatt: A unit of electrical power equal to 1,000 watts.

Kilowatthour (kWh): A measure of electricity defined as a unit of work or energy, measured as 1 kilowatt (1,000 watts) of power expended for 1 hour. One kilowatthour is equivalent to 3,412 Btu. See Watthour.

Landed Cost: See Crude Oil Landed Cost.

Lease and Plant Fuel: Natural gas used in well, field, and lease operations (such as natural gas used in drilling operations, heaters, dehydrators, and field compressors) and used as fuel in natural gas processing plants.

Lease Condensate: A mixture consisting primarily of pentanes and heavier hydrocarbons which is recovered as a liquid from natural gas in lease separation facilities. This category excludes natural gas plant liquids, such as butane and propane, which are recovered at downstream natural gas processing plants or facilities.

Lignite: The lowest rank of coal, often referred to as brown coal, used almost exclusively as fuel for steam-electric power generation. It is brownish-black and has a high inherent moisture content, sometimes as high as 45 percent. The heat content of lignite ranges from 9 to 17 million Btu per short ton on a moist, mineral-matter-free basis. The heat content of lignite consumed in the United States averages 13 million Btu per short ton, on the as-received basis (i.e., containing both inherent moisture and mineral matter). See Coal Rank.

Liquefied Natural Gas (LNG): Natural gas (primarily methane) that has been liquefied by reducing its temperature to -260 degrees Fahrenheit at atmospheric pressure.

Liquefied Petroleum Gases (LPG): A group of hydrocarbon-based gases derived from crude oil refining or natural gas fractionation. They include ethane, ethylene, propane, propylene, normal butane, butylene, isobutane, and isobutylene. For convenience of transportation, these gases are liquefied through pressurization.

Liquefied Refinery Gases (LRG): Liquefied petroleum gases fractionated from refinery or still gases. Through compression and/or refrigeration, they are retained in the liquid state. The reported categories are ethane/ethylene, propane/propylene, normal butane/butylene, and isobutane. Excludes still gas.

Losses: See **Electrical System Energy Losses**.

Low-Power Testing: The period of time between a nuclear **generating unit**'s initial fuel loading date and the issuance of its operating (full-power) license. The maximum level of operation during that period is 5 percent of the unit's design thermal rating.

Lubricants: Substances used to reduce friction between bearing surfaces or incorporated into other materials used as processing aids in the manufacture of other products, or used as carriers of other materials. **Petroleum** lubricants may be produced either from distillates or residues. Lubricants include all grades of lubricating oils, from spindle oil to cylinder oil, and those used in greases.

Manufacturing: An energy-consuming subsector of the **industrial sector** that consists of all facilities and equipment engaged in the mechanical, physical, chemical, or electronic transformation of materials, substances, or components into new products. Assembly of component parts of products is included, except for that which is included in construction.

Measured Resources, Coal: Coal resources for which estimates of the **coal rank**, quality, and quantity have been computed, within a margin of error of less than 20 percent, from sample analyses and measurements from closely spaced and geologically well known sample sites. Measured resources are computed from dimensions revealed in outcrops, trenches, mine workings, and drill holes. The points of observation and measurement are so closely spaced and the thickness and extent of coals are so well defined that the tonnage is judged to be accurate within 20 percent. Although the spacing of the point of observation necessary to demonstrate continuity of the coal differs from region to region, according to the character of the coal-beds, the points of observation are no greater than $\frac{1}{2}$ mile apart. Measured coal is projected to extend as a belt $\frac{1}{4}$ mile wide from the outcrop or points of observation or measurement.

Methane: A colorless, flammable, odorless **hydrocarbon** gas (CH_4), which is the major component of **natural gas**. It is also an important source of **hydrogen** in various industrial processes.

Methanol: A light, volatile **alcohol** (CH_3OH) eligible for **motor gasoline blending**. See **Oxygenates**.

Methyl Tertiary Butyl Ether (MTBE): An ether, $(\text{CH}_3)_3\text{COCH}_3$, intended for **motor gasoline blending**. See **Oxygenates**.

Miscellaneous Petroleum Products: All finished **petroleum products** not classified elsewhere—for example, petrolatum, lube refining byproducts (aromatic

extracts and tars), absorption oils, ram-jet fuel, petroleum rocket fuels, synthetic natural gas feedstocks, and specialty oils.

Motor Gasoline Blending: Mechanical mixing of **motor gasoline blending components** and **oxygenates** as required, to produce **finished motor gasoline**. Finished motor gasoline may be further mixed with other motor gasoline blending components or oxygenates, resulting in increased volumes of finished motor gasoline and/or changes in the formulation of finished motor gasoline (e.g., **conventional motor gasoline** mixed with **MTBE** to produce **oxygenated motor gasoline**).

Motor Gasoline Blending Components: **Naphthas** (e.g., straight-run gasoline, alkylate, reformate, benzene, toluene, xylene) used for blending or compounding into **finished motor gasoline**. These components include reformulated gasoline blendstock for oxygenate blending (RBOB) but exclude **oxygenates (alcohols, ethers)**, **butane**, and **pentanes plus**. *Note:* Oxygenates are reported as individual components and are included in the total for **other hydrocarbons**, **hydrogen**, and oxygenates.

Motor Gasoline, Conventional: **Finished motor gasoline** not included in the **oxygenated** or **reformulated** motor gasoline categories. *Note:* This category excludes reformulated gasoline blendstock for oxygenate blending (RBOB) as well as other blendstock. Conventional motor gasoline can be leaded or unleaded; regular, midgrade, or premium. See **Motor Gasoline Grades**.

Motor Gasoline, Finished: A complex mixture of relatively volatile **hydrocarbons** with or without small quantities of additives, blended to form a fuel suitable for use in spark-ignition. Motor gasoline, as defined in ASTM Specification D-4814 or Federal Specification VV-G-1690C, is characterized as having a boiling range of 122°F to 158°F at the 10-percent recovery point to 365°F to 374°F at the 90-percent recovery point. "Motor gasoline" includes **conventional motor gasoline**, all types of **oxygenated motor gasoline** including **gasohol**, and **reformulated motor gasoline**, but excludes **aviation gasoline**. *Note:* Volumetric data on **motor gasoline blending components**, as well as **oxygenates**, are not counted in data on finished motor gasoline until the blending components are blended into the gasoline.

Motor Gasoline Grades: The classification of gasoline by octane ratings. Each type of gasoline (**conventional**, **oxygenated**, and **reformulated**; leaded or unleaded) is classified by three grades: regular, midgrade, and premium. *Note:* Motor gasoline sales are reported by grade in accordance with their classification at the time of sale. In general, automotive octane requirements are lower at high altitudes. Therefore, in some areas of the United States, such as the Rocky Mountain States, the octane ratings for the gasoline grades may be 2 or more octane points lower.

Regular Gasoline: Gasoline having an antiknock index, i.e., octane rating, greater than or equal to 85 and less than 88.

Midgrade Gasoline: Gasoline having an antiknock index, i.e., octane rating, greater than or equal to 88 and less than or equal to 90.

Premium Gasoline: Gasoline having an antiknock index, i.e., octane rating, greater than 90.

Motor Gasoline, Oxygenated: Finished motor gasoline other than reformulated motor gasoline, having an oxygen content of 2.7 percent or higher by weight and required by the U.S. Environmental Protection Agency (EPA) to be sold in areas designated by EPA as carbon monoxide (CO) nonattainment areas. *Note:* Oxygenated gasoline excludes reformulated gasoline, oxygenated fuels program reformulated gasoline (OPRG), and reformulated gasoline blendstock for oxygenated blending (RBOB). It can be formulated for regular, midgrade, or premium grade. See **Motor Gasoline Grades**.

Motor Gasoline, Reformulated: Finished motor gasoline formulated for use in motor vehicles, the composition and properties of which meet the requirements of the reformulated gasoline regulations promulgated by the U.S. Environmental Protection Agency under Section 211(k) of the Clean Air Act. *Note:* This category includes oxygenated fuels program reformulated gasoline (OPRG) but excludes reformulated gasoline blendstock for oxygenate blending (RBOB). It can be formulated for regular, midgrade, and premium grades. See **Motor Gasoline Grades**.

MTBE: See **Methyl Tertiary Butyl Ether**.

NAICS: See **North American Industry Classification System**.

Naphtha: A generic term applied to a **petroleum** fraction with an approximate boiling range between 122 and 400° F.

Naphtha-Type Jet Fuel: See **Jet Fuel, Naphtha-Type**.

Natural Gas: A gaseous mixture of **hydrocarbon** compounds, primarily **methane**, used as a fuel for **electricity generation** and in a variety of ways in buildings, and as raw material input and fuel for industrial processes.

Natural Gas, Dry: Natural gas which remains after: 1) the liquefiable **hydrocarbon** portion has been removed from the gas stream (i.e., gas after lease, field, and/or plant separation); and 2) any volumes of **nonhydrocarbon gases** have been removed where they occur in sufficient quantity to render the gas unmarketable. Note: Dry natural gas is also known as consumer-grade natural gas. The parameters

for measurement are cubic feet at 60 degrees Fahrenheit and 14.73 pounds per square inch absolute.

Natural Gas (Dry) Production: The process of producing consumer-grade **natural gas**. Natural gas withdrawn from reservoirs is reduced by volumes used at the production (lease) site and by processing losses. Volumes used at the production site include 1) the volume returned to reservoirs in cycling, repressuring of oil reservoirs, and conservation operations; and 2) **vented natural gas** and **flared natural gas**. Processing losses include 1) **nonhydrocarbon gases** (e.g., water vapor, **carbon dioxide**, helium, hydrogen sulfide, and nitrogen) removed from the gas stream; and 2) gas converted to liquid form, such as **lease condensate** and **natural gas plant liquids**. Volumes of dry gas withdrawn from gas storage reservoirs are not considered part of production. Dry natural gas production equals **natural gas marketed production** less **extraction loss**.

Natural Gas, Flared: Natural gas burned in flares on the base site or at gas processing plants.

Natural Gas Gross Withdrawals: Full well stream volume of produced **natural gas**, excluding **lease condensate** separated at the lease.

Natural Gas Liquids (NGL): A general term for all liquid products separated from **natural gas** in gas processing or cycling plants. They include **natural gas plant liquids** and **lease condensate**.

Natural Gas Marketed Production: **Natural gas gross withdrawals** from production reservoirs, less gas used for reservoir repressuring; **nonhydrocarbon gases** removed in treating or processing operations; and quantities of **vented natural gas** and **flared natural gas**. Includes all quantities of natural gas used in field and processing operations.

Natural Gas Pipeline: A continuous pipe conduit, complete with such equipment as valves, compressor stations, communications systems, and meters, for transporting **natural gas** and/or **supplemental gaseous fuels** from one point to another, usually from a point in or beyond the producing field or processing plant to another pipeline or to points of utilization. Also refers to a company operating such facilities.

Natural Gas Plant Liquids (NGPL): Those **hydrocarbons** in **natural gas** that are separated as liquids at downstream gas processing plants, fractionating and cycling plants, and in some instances at field facilities. **Lease condensate** is excluded. Products obtained include **liquefied petroleum gases** and **pentanes plus**.

Natural Gas, Vented: Natural gas released into the air on the production site or at processing plants.

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

Natural Gas Wellhead Price: Price of natural gas 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 and the U.S. Mineral Management Service. 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.

Natural Gasoline: A mixture of hydrocarbons (mostly pentanes and heavier) extracted from natural gas that meets vapor pressure, end-point, and other specifications for natural gasoline set by the Gas Processors Association. Includes isopentane, which is a saturated branch-chain hydrocarbon obtained by fractionation of natural gasoline or isomerization of normal pentane.

NERC: See North American Electric Reliability Council.

Net Electricity Generation: See Electricity Generation, Net.

Net Summer Capacity: See Generator Net Summer Capacity.

Neutral Zone: A 6,200 square-mile area shared equally between Kuwait and Saudi Arabia under a 1992 agreement.

Nitrogen Oxides (No_x): Compounds of nitrogen and oxygen produced by the burning of fossil fuels.

Nominal Dollars: A measure used to express nominal price.

Nominal Price: The price paid for a product or service at the time of the transaction. Nominal prices are those that have not been adjusted to remove the effect of changes in the purchasing power of the dollar; they reflect buying power in the year in which the transaction occurred.

Noncoincident Peak Load: The sum of two or more peak loads on individual systems that do not occur in the same time interval. Meaningful only in the context of loads within a limited period of time, such as day, week, month, a heating or cooling season, and usually for not more than 1 year.

Nonhydrocarbon Gases: Typical nonhydrocarbon gases that may be present in reservoir natural gas, such as carbon dioxide, helium, hydrogen sulfide, and nitrogen.

Normal Butane: See Butane.

North American Electric Reliability Council (NERC): A council formed in 1968 by the electric utility industry to promote the reliability and adequacy of bulk power supply in the electric utility systems of North America. NERC consists of regional reliability councils and encompasses essentially all the power regions of the contiguous United States, Canada, and Mexico. See the various NERC Regional Reliability Councils at <http://www.eia.doe.gov/neic/pubstyle/nerc.htm>.

North American Industry Classification System (NAICS): A coding system developed jointly by the United States, Canada, and Mexico to classify businesses and industries according to the type of economic activity in which they are engaged. NAICS replaces the Standard Industrial Classification (SIC) codes.

Nuclear Electric Power (Nuclear Power): Electricity generated by the use of the thermal energy released from the fission of nuclear fuel in a reactor.

Nuclear Electric Power Plant: A single-unit or multiunit facility in which heat produced in one or more reactors by the fissioning of nuclear fuel is used to drive one or more steam turbines.

Nuclear Reactor: An apparatus in which a nuclear fission chain reaction can be initiated, controlled, and sustained at a specific rate. A reactor includes fuel (fissionable material), moderating material to control the rate of fission, a heavy-walled pressure vessel to house reactor components, shielding to protect personnel, a system to conduct heat away from the reactor, and instrumentation for monitoring and controlling the reactor's systems.

OECD: See Organization for Economic Cooperation and Development.

Offshore: That geographic area that lies seaward of the coastline. In general, the coastline is the line of ordinary low water along with that portion of the coast that is in direct contact with the open sea or the line marking the seaward limit of inland water. If a State agency uses a different basis for classifying onshore and offshore areas, the State classification is used (e.g., Cook Inlet in Alaska is classified as offshore; for Louisiana, the coastline is defined as the Chapman Line, as modified by subsequent adjudication).

Oil: See Crude Oil.

Operable Nuclear Unit: In the United States, a nuclear generating unit that has completed low-power testing and is in possession of a full-power operating license issued by the Nuclear Regulatory Commission.

Operable Refineries: Refineries that were in one of the following three categories at the beginning of a given year: in operation; not in operation and not under active repair, but capable of being placed into operation within 30 days; or not in operation, but under active repair that could be completed within 90 days.

Operating Income: Operating revenues less operating expenses. Excludes items of other revenue and expense, such as equity in earnings of unconsolidated affiliates, dividends, interest income and expense, income taxes, extraordinary items, and cumulative effect of accounting changes.

Organization for Economic Cooperation and Development (OECD): An international organization helping governments tackle the economic, social and governance challenges of a globalized economy. Its membership comprises about 30 member countries. With active relationships with some 70 other countries, non-governmental organizations (NGOs) and civil society, it has a global reach. For details about the organization, see <http://www.oecd.org>.

Organization of Petroleum Exporting Countries (OPEC): Countries that have organized for the purpose of negotiating with oil companies on matters of oil production, prices, and future concession rights. Current members (as of the date of writing this definition) are Algeria, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, the United Arab Emirates, and Venezuela. See OPEC's site at <http://www.opec.org> for more information.

Other Hydrocarbons: Materials received by a refinery and consumed as a raw material. Includes hydrogen, coal tar derivatives, gilsonite, and natural gas received by the refinery for reforming into hydrogen. Natural gas to be used as fuel is excluded.

Oxygenated Motor Gasoline: See **Motor Gasoline, Oxygenated**.

Oxygenates: Substances which, when added to motor gasoline, increase the amount of oxygen in that gasoline blend. Ethanol, methyl tertiary butyl ether (MTBE), ethyl tertiary butyl ether (ETBE), and methanol are common oxygenates. See **Motor Gasoline, Oxygenated**.

Ozone: A molecule made up of three atoms of oxygen. Occurs naturally in the stratosphere and provides a protective layer shielding the Earth from harmful ultraviolet radiation. In the troposphere, it is a chemical oxidant, a greenhouse gas, and a major component of photochemical smog.

PAD Districts: Petroleum Administration for Defense Districts. Geographic aggregations of the 50 States and the District of Columbia into five districts for the Petroleum Administration for Defense in 1950. The districts were originally instituted for economic and geographic reasons as Petroleum Administration for War (PAW) Districts, which were established in 1942.

Particulate Collectors: Equipment used to remove fly ash from the combustion gases of a boiler plant before discharge to the atmosphere. Particulate collectors include electrostatic precipitators, mechanical collectors (cyclones, fabric filters [baghouses]), and wet scrubbers.

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

Perfluorocarbons (PFCs): A group of man-made chemicals composed of one or two carbon atoms and four to six fluorine atoms, containing no chlorine. PFCs have no commercial uses and are emitted as a byproduct of aluminum smelting and semiconductor manufacturing. PFCs have very high 100-year global warming potentials and are very long-lived in the atmosphere.

Petrochemical Feedstocks: Chemical feedstocks derived from petroleum principally for the manufacture of chemicals, synthetic rubber, and a variety of plastics.

Petroleum: A broadly defined class of liquid hydrocarbon mixtures. Included are crude oil, lease condensate, unfinished oils, refined products obtained from the processing of crude oil, and natural gas plant liquids. Note: Volumes of finished petroleum products include nonhydrocarbon compounds, such as additives and detergents, after they have been blended into the products.

Petroleum Coke: See **Coke, Petroleum**.

Petroleum Consumption: The sum of all refined petroleum products supplied. For each refined petroleum product, the amount supplied is calculated by adding production and imports, then subtracting changes in primary stocks (net withdrawals are a plus quantity and net additions are a minus quantity) and exports.

Petroleum Imports: Imports of petroleum into the 50 States and the District of Columbia from foreign countries and from 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 Pipeline: Crude oil and product pipelines used to transport **crude oil** and **petroleum products**, respectively (including interstate, intrastate, and intra-company pipelines), within the 50 States and the District of Columbia.

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**, **petrochemical feedstocks**, **special naphthas**, **lubricants**, **waxes**, **petroleum coke**, **asphalt**, **road oil**, **still gas**, and **miscellaneous petroleum products**.

Petroleum Products Supplied: An approximate measure of consumption. It measures the disappearance of the **petroleum products** from primary sources, i.e., refineries, blending plants, and bulk terminals. In general, products supplied in any given period are computed as follows: field production, plus imports, plus **unaccounted-for crude oil** (plus net receipts when calculated on a PAD District basis) minus stock change, minus crude oil losses, minus refinery inputs, and minus exports. See also **Petroleum Consumption**.

Petroleum Stocks, Primary: For individual **petroleum products**, quantities that are held at refineries, in **petroleum pipelines**, and at bulk terminals that have a capacity of 50,000 barrels or more, or that are in transit thereto. Stocks held by product retailers and resellers, as well as tertiary stocks held at the point of consumption, are excluded. Stocks of individual products held at gas processing plants are excluded from individual product estimates but are included in other oil estimates and total.

Photovoltaic Energy: Direct-current **electricity** generated from sunlight through solid-state semiconductor devices that have no moving parts.

Photovoltaic Module: An integrated assembly of interconnected photovoltaic cells designed to deliver a selected level of working voltage and current at its output terminals, packaged for protection against environmental degradation, and suited for incorporation in photovoltaic power systems.

Pipeline Fuel: **Natural gas** consumed in the operation of pipelines, primarily in compressors.

Plant Condensate: One of the **natural gas liquids**, mostly pentanes and heavier **hydrocarbons**, recovered and separated as liquids at gas inlet separators or scrubbers in processing plants.

Primary Consumption: Includes consumption of **coal**, **natural gas**, **petroleum**, **nuclear electric power**, **hydroelectric power**, **wood**, **waste**, **alcohol fuels**, **geothermal**, **solar**, **wind**, net imports of **coal coke**, and net imports of **electricity**.

Prime Mover: The engine, turbine, water wheel, or similar machine that drives an electric **generator**; or, for reporting purposes, a device that converts **energy** to **electricity** directly.

Process Fuel: All **energy** consumed in the acquisition, processing, and transportation of energy. Quantifiable process fuel includes three categories: natural gas lease and plant operations, **natural gas pipeline** operations, and oil refinery operations.

Processing Gain: The volumetric amount by which total output is greater than input for a given period of time. This difference is due to the processing of **crude oil** into **petroleum products** which, in total, have a lower specific gravity than the crude oil processed.

Processing Loss: The volumetric amount by which total refinery output is less than input for a given period of time. This difference is due to the processing of **crude oil** into **petroleum products** which, in total, have a higher specific gravity than the crude oil processed.

Processing Plant (Natural Gas): A surface installation designed to separate and recover **natural gas liquids** from a stream of produced **natural gas** through the processes of condensation, absorption, refrigeration, or other methods, and to control the quality of natural gas marketed or returned to oil or gas reservoirs for pressure maintenance, repressuring, or cycling.

Propane: A normally gaseous straight-chain **hydrocarbon** (C_3H_8). It is a colorless paraffinic gas that boils at a temperature of -43.67 degrees Fahrenheit. It is extracted from **natural gas** or **refinery gas** streams. It includes all products designated in ASTM Specification D1835 and Gas Processors Association Specifications for commercial propane and HD-5 propane.

Propylene: An olefinic **hydrocarbon** (C_3H_6) recovered from refinery processes or petrochemical processes.

Proved Reserves, Crude Oil: The estimated quantities of all liquids defined as **crude oil** that geological and engineering data demonstrate with reasonable certainty to be recoverable in future years from known reservoirs under existing economic and operating conditions.

Proved Reserves, Lease Condensate: The volumes of **lease condensate** expected to be recovered in future years in conjunction with the production of proved

reserves of **natural gas** based on the recovery efficiency of lease and/or field separation facilities installed.

Proved Reserves, Natural Gas: The estimated quantities of **natural gas** that analysis of geological and engineering data demonstrates with reasonable certainty to be recoverable in future years from known reservoirs under existing economic and operating conditions.

Proved Reserves, Natural Gas Liquids: Those volumes of **natural gas liquids** (including **lease condensate**) demonstrated with reasonable certainty to be separable in the future from proved **natural gas** reserves, under existing economic and operating conditions.

Pumped Storage: See **Hydroelectric Pumped Storage**.

Real Price: A price that has been adjusted to remove the effect of changes in the purchasing power of the dollar. Real prices, which are expressed in constant dollars, usually reflect buying power relative to a base year. See **Chained Dollars**.

Refiner Acquisition Cost of Crude Oil: See **Crude Oil Refiner Acquisition Cost**.

Refinery Gas: See **Still Gas**.

Refinery Input: The raw materials and intermediate materials processed at refineries to produce finished **petroleum products**. They include **crude oil**, products of natural gas processing plants, **unfinished oils**, **other hydrocarbons** and **alcohol**, **motor gasoline blending components** and **aviation gasoline blending components**, and finished **petroleum products**.

Refinery Output: The total amount of **petroleum products** produced at a refinery. Includes **petroleum** consumed by the refinery.

Refinery (Petroleum): An installation that manufactures finished **petroleum products** from **crude oil**, **unfinished oils**, **natural gas liquids**, **other hydrocarbons**, and **alcohol**.

Reformulated Motor Gasoline: See **Motor Gasoline, Reformulated**.

Renewable Energy: Energy obtained from sources that are essentially inexhaustible (unlike, for example, **fossil fuels**, which are in finite supply). Renewable sources of energy include **conventional hydroelectric power**, **wood**, **waste**, **alcohol fuels**, **geothermal**, **solar**, and **wind**.

Replacement Fuel: The portion of any motor fuel that is **methanol**, **ethanol**, or other **alcohols**, **natural gas**, **liquefied petroleum gases**, **hydrogen**, coal-derived

liquid fuels, **electricity** (including electricity from **solar energy**), **ethers**, **biodiesel**, or any other fuel the Secretary of Energy determines, by rule, is substantially not **petroleum** and would yield substantial energy security benefits and substantial environmental benefits.

Repressuring: The injection of gas into **crude oil** or **natural gas** formations to effect greater ultimate recovery.

Residential Sector: An **energy-consuming sector** that consists of living quarters for private households. Common uses of energy associated with this sector include **space heating**, water heating, air conditioning, lighting, refrigeration, cooking, and running a variety of other appliances. The residential sector excludes institutional living quarters. *Note:* Various EIA programs differ in sectoral coverage—for further explanation see <http://www.eia.doe.gov/neic/datadefinitions/Guideforwebres.htm>. See **End-Use Sectors** and **Energy-Use Sectors**.

Residual Fuel Oil: The heavier oils, known as No. 5 and No. 6 fuel oils, that remain after the **distillate fuel oils** and lighter **hydrocarbons** are distilled away in refinery operations. It conforms to ASTM Specifications D396 and D975 and Federal Specification VV-F-815C. No. 5, a residual fuel oil of medium viscosity, is also known as Navy Special and is defined in Military Specification MIL-F-859E, including Amendment 2 (NATO Symbol F-770). It is used in steam-powered vessels in government service and inshore **electric power plants**. No. 6 fuel oil includes Bunker C fuel oil and is used for **electricity generation**, **space heating**, **vessel bunkering**, and various industrial purposes.

Road Oil: Any heavy **petroleum** oil, including residual asphaltic oil, used as a dust palliative and surface treatment on roads and highways. It is generally produced in six grades, from 0, the most liquid, to 5, the most viscous.

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

Royalty Interest: An interest in a mineral property provided through a royalty contract.

Short Ton (Coal): A unit of weight equal to 2,000 pounds.

Solar Energy: See **Solar Thermal Energy** and **Photovoltaic Energy**.

Solar Thermal Collector: A device designed to receive solar radiation and convert it to thermal **energy**. Normally, a solar thermal collector includes a frame, glazing, and an absorber, together with appropriate insulation. The heat collected by the solar thermal collector may be used immediately or stored for later use. Solar

collectors are used for **space heating**, domestic hot water heating, and heating swimming pools, hot tubs, or spas.

Solar Thermal Energy: The radiant **energy** of the sun that can be converted into other forms of energy, such as heat or **electricity**.

Space Heating: The use of **energy** to generate heat for warmth in housing units using space-heating equipment. The equipment could be the main space-heating equipment or secondary space-heating equipment. It does not include the use of energy to operate appliances (such as lights, televisions, and refrigerators) that give off heat as a byproduct.

Special Naphthas: All finished **petroleum products** within the **naphtha** boiling range that are used as paint thinners, cleaners, or solvents. Those products are refined to a specified flash point. Special naphthas include all commercial hexane and cleaning solvents conforming to ASTM Specifications D1836 and D484, respectively. Naphthas to be blended or marketed as **motor gasoline** or **aviation gasoline** or that are to be used as **petrochemical feedstocks** or synthetic natural gas (SNG) feedstocks are excluded.

Spent Liquor: The liquid residue left after an industrial process; can be a component of waste materials used as fuel.

Spot Market Price: See **Spot Price**.

Spot Price: The price for a one-time open market transaction for immediate delivery of the specific quantity of product at a specific location where the commodity is purchased “on the spot” at current market rates.

Steam-Electric Power Plant: An **electric power plant** in which the **prime mover** is a steam turbine. The steam used to drive the turbine is produced in a boiler where **fossil fuels** are burned.

Still Gas (Refinery Gas): Any form or mixture of gases produced in refineries by distillation, cracking, reforming, and other processes. The principal constituents are **methane**, **ethane**, **ethylene**, **normal butane**, **butylene**, **propane**, **propylene**, etc. Still gas is used as a refinery fuel and a **petrochemical feedstock**. The conversion factor is 6 million **Btu** per fuel oil equivalent **barrel**.

Stocks: Inventories of fuel stored for future use. See **Crude Oil Stocks**, **Coal Stocks**, and **Petroleum Stocks, Primary**.

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

Subbituminous Coal: A **coal** with properties ranging from those of **lignite** to those of **bituminous coal** and used primarily as fuel for steam-electric power generation. It may be dull, dark brown to black, soft and crumbly, at the lower end of the range, to bright, jet black, hard, and relatively strong, at the upper end. Subbituminous coal contains 20 to 30 percent inherent moisture by weight. The heat content of subbituminous coal ranges from 17 to 24 million **Btu** per **short ton** on a moist, mineral-matter-free basis. The heat content of subbituminous coal consumed in the United States averages 17 to 18 million **Btu** per short ton, on the as-received basis (i.e., containing both inherent moisture and mineral matter). See **Coal Rank**.

Sulfur Dioxide (SO₂): A toxic, irritating, colorless gas soluble in water, **alcohol**, and **ether**. Used as a chemical intermediate, in paper pulping and ore refining, and as a solvent.

Sulfur Hexafluoride (SF₆): A colorless gas soluble in **alcohol** and **ether**, and slightly less soluble in water. It is used as a dielectric in electronics. It possesses the highest 100-year **global warming potential** of any gas (23,900).

Supplemental Gaseous Fuels: Any gaseous substance introduced into or commingled with **natural gas** that increases the volume available for disposition. Such substances include, but are not limited to, propane-air, **refinery gas**, coke-oven gas, manufactured gas, biomass gas, or air or inerts added for Btu stabilization.

Synthetic Coal: **Coal** that has been processed by a coal synfuel plant; and coal-based fuels such as briquettes, pellets, or extrusions, which are formed by binding materials and processes that recycle material.

Synthetic Natural Gas (SNG): (Also referred to as substitute natural gas.) A manufactured product, chemically similar in most respects to **natural gas**, resulting from the conversion or reforming of **petroleum hydrocarbons** that may easily be substituted for or interchanged with pipeline-quality natural gas.

Thermal Conversion Factor: See **Conversion Factor**.

Transportation Sector: An **energy**-consuming sector that consists of all vehicles whose primary purpose is transporting people and/or goods from one physical location to another. Included are automobiles; trucks; buses; motorcycles; trains, subways, and other rail vehicles; aircraft; and ships, barges, and other waterborne vehicles. Vehicles whose primary purpose is not transportation (e.g., construction cranes and bulldozers, farming vehicles, and warehouse tractors and forklifts) are classified in the sector of their primary use. Note: Various EIA programs differ in sectoral coverage—for more information see <http://www.eia.doe.gov/neic/datadefinitions/Guideforwebtrans.htm>. See **End-Use Sectors** and **Energy-Use Sectors**.

Unaccounted-for Crude Oil: Represents the arithmetic difference between the calculated supply and the calculated disposition of **crude oil**. The calculated supply is the sum of crude oil production plus imports minus changes in crude oil stocks. The calculated 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.

Unaccounted-for Natural Gas: Represents differences between the sum of the components of **natural gas** supply and the sum of components of natural gas disposition. These 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 temperatures 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 that vary in scope, format, definitions, and type of respondents.

Underground Natural Gas Storage: The use of sub-surface facilities for storing **natural gas** that has been transferred from its original location. The facilities are usually hollowed-out salt domes, geological reservoirs (depleted **crude oil** or natural gas fields) or water-bearing sands topped by an impermeable cap rock (aquifer).

Undiscovered Recoverable Reserves (Crude Oil and Natural Gas): Those economic resources of **crude oil** and **natural gas**, yet undiscovered, that are estimated to exist in favorable geologic settings.

Unfinished Oils: All oils requiring further processing, except those requiring only mechanical blending. Unfinished oils are produced by partial refining of **crude oil** and include **naphthas** and lighter oils, **kerosene** and light gas oils, heavy gas oils, and residuum.

Unfractionated Stream: Mixtures of unsegregated **natural gas liquid** components, excluding those in **plant condensate**. This product is extracted from **natural gas**.

United States: The 50 States and the District of Columbia. *Note:* The United States has varying degrees of jurisdiction over a number of territories and other political entities outside the 50 States and the District of Columbia, including Puerto Rico, the U.S. Virgin Islands, Guam, American Samoa, Johnston Atoll, Midway Islands, Wake Island, and the Northern Mariana Islands. EIA data programs may include data from some or all of these areas in U.S. Totals. For these programs, data products will contain notes explaining the extent of geographic coverage included under the term "United States."

Uranium: A heavy, naturally radioactive, metallic element (atomic number 92). Its two principally occurring isotopes are uranium-235 and uranium-238. Uranium-235

is indispensable to the nuclear industry because it is the only isotope existing in nature, to any appreciable extent, that is fissionable by thermal neutrons. Uranium-238 is also important because it absorbs neutrons to produce a radioactive isotope that subsequently decays to the isotope plutonium-239, which also is fissionable by thermal neutrons.

Uranium Concentrate: A yellow or brown powder obtained by the milling of **uranium ore**, processing of in situ leach mining solutions, or as a byproduct of phosphoric acid production. See **Uranium Oxide**.

Uranium Ore: Rock containing **uranium** mineralization in concentrations that can be mined economically, typically one to four pounds of U_3O_8 per ton or 0.05 percent to 0.2 percent U_3O_8 . See **Uranium Oxide**.

Uranium Oxide: **Uranium concentrate** or **yellowcake**. Abbreviated as U_3O_8 .

Uranium Resource Categories: Three categories of **uranium** resources defined by the international community to reflect differing levels of confidence in the existence of the resources. Reasonably assured resources (RAR), estimated additional resources (EAR), and speculative resources (SR) are described below.

Reasonably assured resources (RAR): **Uranium** that occurs in known mineral deposits of such size, grade, and configuration that it could be recovered within the given production cost ranges, with currently proven mining and processing technology. Estimates of tonnage and grade are based on specific sample data and measurements of the deposits and on knowledge of deposit characteristics. *Note:* RAR corresponds to DOE's uranium reserves category.

Estimated additional resources (EAR): **Uranium** in addition to RAR that is expected to occur, mostly on the basis of geological evidence, in extensions of well-explored deposits, in little-explored deposits, and in undiscovered deposits believed to exist along well-defined geological trends with known deposits. This uranium can subsequently be recovered within the given cost ranges. Estimates of tonnage and grade are based on available sampling data and on knowledge of the deposit characteristics, as determined in the best-known parts of the deposit or in similar deposits. *Note:* EAR corresponds to DOE's probable potential resources category.

Speculative resources (SR): **Uranium** in addition to EAR that is thought to exist, mostly on the basis of indirect evidence and geological extrapolations, in deposits discoverable with existing exploration techniques. The location of deposits in this category can generally be specified only as being somewhere within given regions or geological trends. The estimates in this category are less reliable than estimates of RAR and EAR. *Note:*

SR corresponds to the combination of DOE's possible potential resources and speculative potential resources categories.

Useful Thermal Output: The thermal **energy** made available in a **combined-heat-and-power** system for use in any industrial or commercial process, heating or cooling application, or delivered to other end users, i.e., total thermal energy made available for processes and applications other than **electricity generation**.

U.S.S.R.: The Union of Soviet Socialist Republics consisted of 15 constituent republics: Armenia, Azerbaijan, Belarus, Estonia, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan. As a political entity, the U.S.S.R. ceased to exist as of December 31, 1991.

Vented Natural Gas: See **Natural Gas, Vented**.

Vessel Bunkering: Includes sales for the fueling of commercial or private boats, such as pleasure craft, fishing boats, tugboats, and ocean-going vessels, including vessels operated by oil companies. Excluded are volumes sold to the U.S. Armed Forces.

Waste Coal: Usable **coal** material that is a byproduct of previous processing operations or is recaptured from what would otherwise be refuse. Examples include **anthracite culm**, bituminous gob, fine coal, lignite waste, coal recovered from a refuse bank or slurry dam, and coal recovered by dredging.

Waste Energy: Municipal solid waste, landfill gas, **methane**, digester gas, liquid acetonitrile waste, tall oil, waste alcohol, medical waste, paper pellets, sludge waste, solid byproducts, tires, agricultural byproducts, closed loop biomass, fish oil, and straw used as fuel.

Watt (W): The unit of electrical power equal to one ampere under a pressure of one volt. A watt is equal to 1/746 horsepower.

Watthour (Wh): The **electric energy** unit of measure equal to one **watt** of power supplied to, or taken from, an electric circuit steadily for one hour.

Waxes: Solid or semi-solid materials derived from **petroleum** distillates or residues by such treatments as chilling, precipitating with a solvent, or de-oiling. It is a light-colored, more-or-less translucent crystalline mass, slightly greasy to the touch, consisting of a mixture of solid hydrocarbons in which the paraffin series predominates. Includes all marketable wax, whether crude scale or fully refined. The three grades included are microcrystalline, crystalline-fully refined, and crystalline-other. The conversion factor is 280 pounds per 42 U.S. gallons per barrel.

Well: A hole drilled in the Earth for the purpose of (1) finding or producing **crude oil** or **natural gas**; or (2) producing services related to the production of crude oil or natural gas. See **Completion (Crude Oil/Natural Gas Production)**, **Crude Oil Well**, **Development Well**, **Dry Hole**, **Exploratory Well**, and **Natural Gas Well**.

Wellhead: The point at which the **crude oil** (and/or **natural gas**) exits the ground. Following historical precedent, the volume and price for crude oil production are labeled as "wellhead," even though the cost and volume are now generally measured at the lease boundary. In the context of domestic crude price data, the term "wellhead" is the generic term used to reference the production site or lease property.

Wellhead Price: The value of **crude oil** or **natural gas** at the mouth of the well. See **Natural Gas Wellhead Price**.

Well Servicing Unit: Truck-mounted equipment generally used for downhole services after a **well** is drilled. Services include well completions and recompletions, maintenance, repairs, workovers, and well plugging and abandonments. Jobs range from minor operations, such as pulling the rods and rod pumps out of a **crude oil well**, to major workovers, such as milling out and repairing collapsed casing. Well depth and characteristics determine the type of equipment used.

Western Europe: Includes Austria, Belgium, Bosnia and Herzegovina, Croatia, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Macedonia (The Former Yugoslav Republic of), Malta, Netherlands, Norway, Portugal, Serbia and Montenegro, Slovenia, Spain, Sweden, Switzerland, Turkey, and the United Kingdom.

Wind Energy: **Energy** present in wind motion that can be converted to mechanical energy for driving pumps, mills, and electric power **generators**. Wind pushes against sails, vanes, or blades radiating from a central rotating shaft.

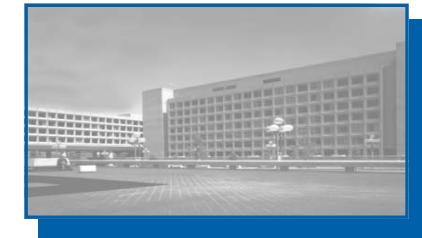
Wood Energy: Wood and wood products used as fuel, including round wood (cord wood), limb wood, wood chips, bark, sawdust, forest residues, charcoal, pulp waste, and spent pulping liquor.

Working Gas: The volume of gas in the reservoir that is in addition to the cushion or **base gas**. 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.

Yellowcake: A natural **uranium concentrate** that takes its name from its color and texture. Yellowcake typically contains 70 to 90 percent U_3O_8 (**uranium oxide**) by weight. It is used as feedstock for **uranium** fuel enrichment and fuel pellet fabrication.

Annual Historical Data Reports

from the Energy Information Administration



The Energy Information Administration (EIA) produces a variety of annual statistical reports on major energy resources and industry activities. Included are:

Annual Energy Review

Long-term historical data on U.S. energy production, consumption, stocks, trade, and prices. Includes an overview of U.S. energy and detailed chapters on energy consumption, major fuels, financial indicators, energy resources, international energy data, and environmental indicators. Most series begin in 1949.

www.eia.doe.gov/aer

Petroleum Supply Annual

Information on the supply and disposition of crude oil and petroleum products. Volume 1 contains three sections: summary statistics, detailed statistics, and refinery statistics. Volume 2 contains final statistics for each month of the most recent publication year.

www.eia.doe.gov/oil_gas/petroleum/data_publications/petroleum_supply_annual/psa_volume1/psa_volume1.html

Petroleum Marketing Annual

Information on volumes and prices of crude oils and refined petroleum products, including motor gasoline, distillate fuel oil, residual fuel oil, aviation fuel, kerosene, and propane.

www.eia.doe.gov/oil_gas/petroleum/data_publications/petroleum_marketing_annual/pma.html

Natural Gas Annual

Comprehensive review of U.S. natural gas activities. Summary tables for 1998 through 2002 are presented for each State; annual data are also shown at the national level.

www.eia.doe.gov/oil_gas/natural_gas/data_publications/natural_gas_annual/nga.html

Annual Coal Report

Annual data on U.S. coal production, number of mines, prices, recoverable reserves, employment, productivity, and productive capacity. Data are available at the State level.

www.eia.doe.gov/cneaf/coal/page/acr/acr_sum.html

Electric Power Annual

Overview of the electric power industry in the United States, including generation; capacity; demand, capacity resources, and capacity margins; emissions; trade; retail customers, sales, and revenue; revenue and expense statistics; and demand-side management.

www.eia.doe.gov/cneaf/electricity/epa/epa_sum.html

Renewable Energy Annual

Data on U.S. renewable energy consumption by sector and for electricity generation; solar thermal and photovoltaic manufacturing activity; and geothermal heat pump activity.

www.eia.doe.gov/cneaf/solar.renewables/page/rea_data/rea_sum.html

Uranium Industry Annual

Comprehensive statistical review of the U.S. uranium industry's activities relating to uranium raw materials and uranium marketing. Contains data for the most recent survey year and industry's plans and commitments for the near-term future.

www.eia.doe.gov/cneaf/nuclear/uia/uia_sum.html

The items listed above are available on EIA's Web site. For more information on these and other EIA products, contact the National Energy Information Center at 202-586-8800 or infoctr@eia.doe.gov.