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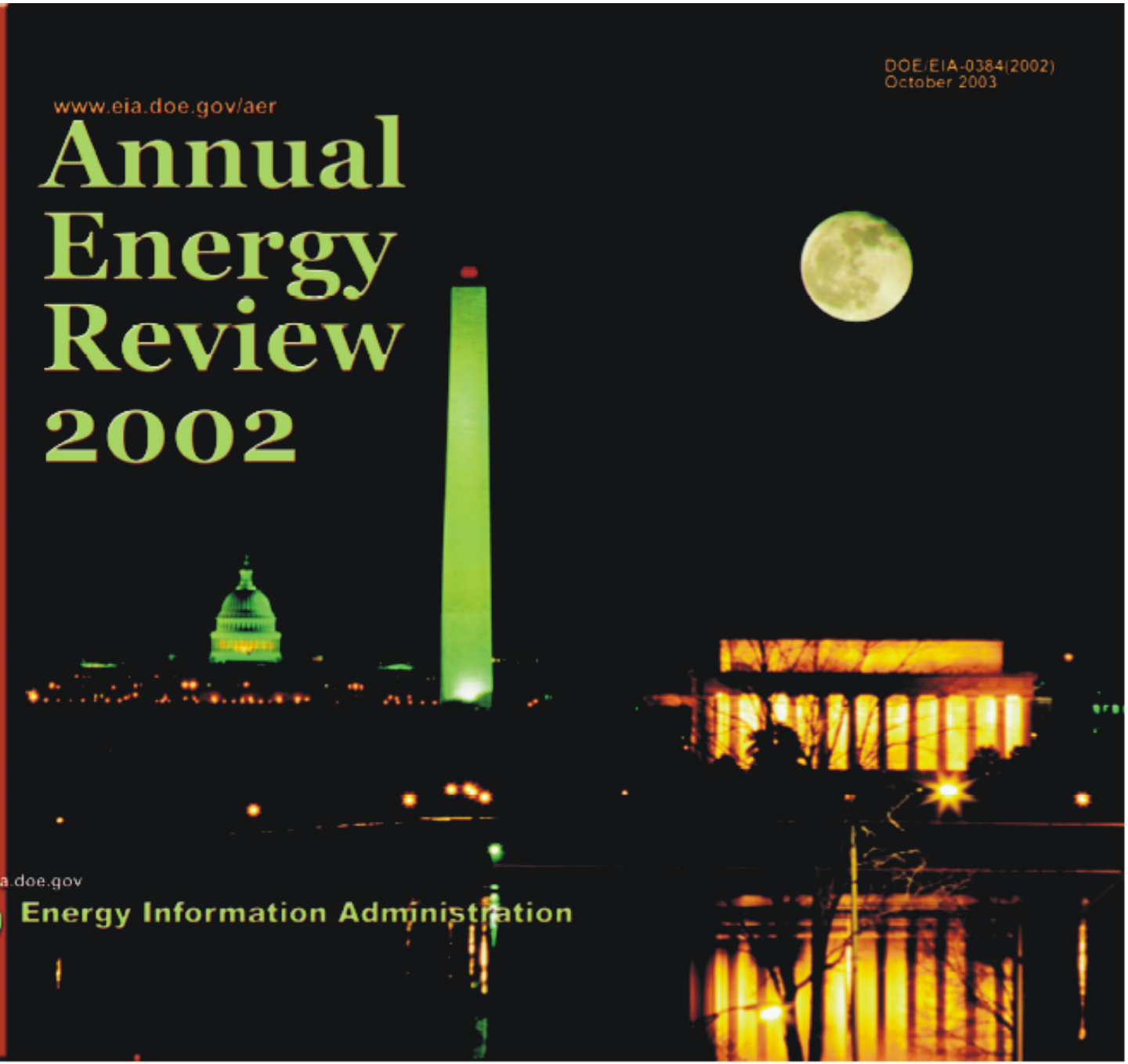

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Preface

Complex and persistent energy issues crowd the news. Questions about energy markets are entangled with economic and environmental issues. While none of us can be sure of the future, we can do our best to measure and understand energy-related trends and events of the past. The *Annual Energy Review 2002 (AER*) is a statistical history of U.S. energy activities. The Energy Information Administration (EIA) presents this latest edition with the hope that it will serve as a data foundation for the Nation's discussions about energy markets and their future performance.

Many of the time series in the report begin with the year 1949. That means that, for most major energy activities, analysts now have 54 years of continuous data to consider when studying the components of energy supply and demand and their statistical relationships. The strength of the *AER* lies in this long-term perspective. Important milestones and sweeping changes can be observed over the decades recorded in the data series.

Analysts should keep in mind, however, that EIA is continually releasing updated information. We encourage you to check out EIA's Web site at www.eia.doe.gov and, in particular, keep your eye on "What's New" for EIA's latest releases. For the most recent years in the *AER*, the numbers will change as the data collections are completed, reviewed, and improved. Analysts who are looking for the most current information available should access EIA's monthly and weekly products. For comprehensive *monthly* data covering a broad spectrum of energy topics—many directly paralleling the *AER*—we suggest you go to the *Monthly Energy Review* at www.eia.doe.gov/mer.

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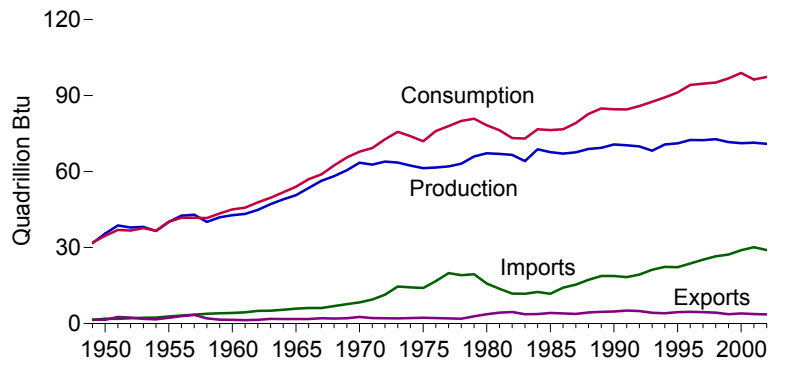
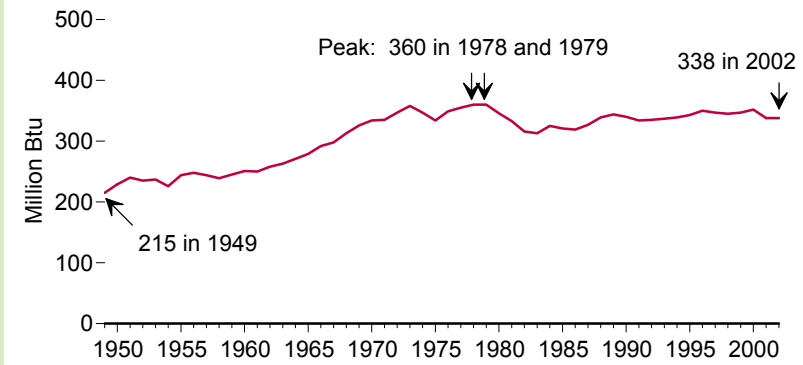
Overview

Figure 1. Energy Overview



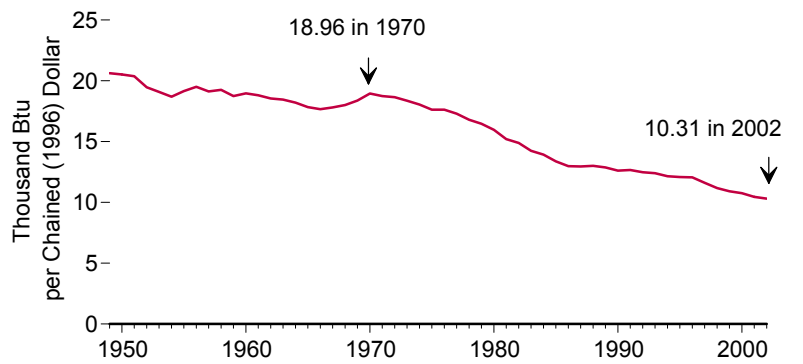
The United States was self-sufficient in energy until the late 1950s when energy consumption began to outpace domestic production. The Nation imported more energy to fill the gap. In 2002, net imported energy accounted for 26 percent of all energy consumed.

Figure 2. Energy Consumption per Person



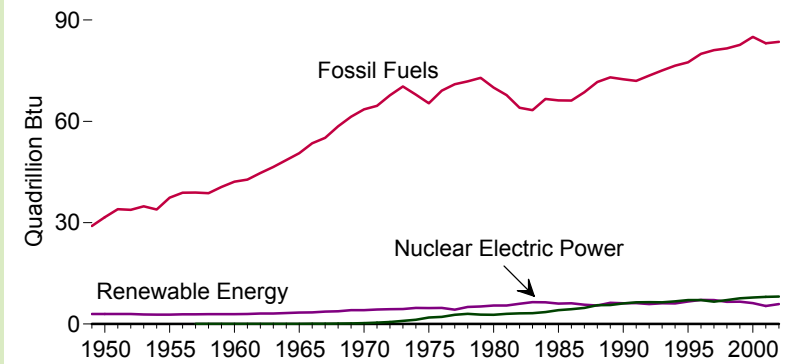
Energy use per person stood at 215 million Btu in 1949. The rate generally increased until the oil price shocks of the mid-1970s and early 1980s caused the pattern to reverse for a few years. Slight increases occurred in the 1990s, but the rate fell in 2001 and remained unchanged in 2002.

Figure 3. Energy Use per Dollar of Gross Domestic Product



Over the second half of the 20th century, the rate at which energy was consumed per dollar of the economy's output of goods and services fell dramatically. By the end of the century, the rate was half of the mid-century level. The rate in 2002 was 46 percent below that in 1970. The decline resulted from efficiency improvements and structural changes in the economy.

Figure 4. Energy Consumption by Source



Most energy consumed in the United States has come from fossil fuels. Renewable energy resources, mostly hydroelectricity and the industrial use of biomass, have supplied a relatively small but steady portion. In the late 1950s, nuclear fuel began to be used to generate electricity. By the late 1980s, nuclear fuel's share of total energy consumption equaled that of renewable energy.

Consumption by Source

Figure 5. Energy Consumption by Source, 1635-2002

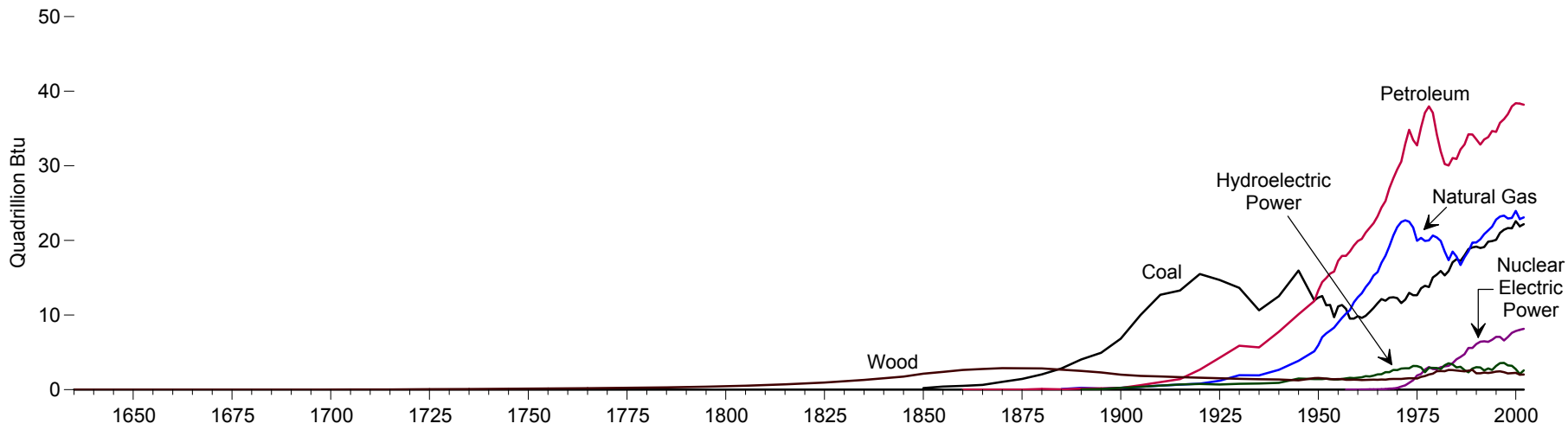
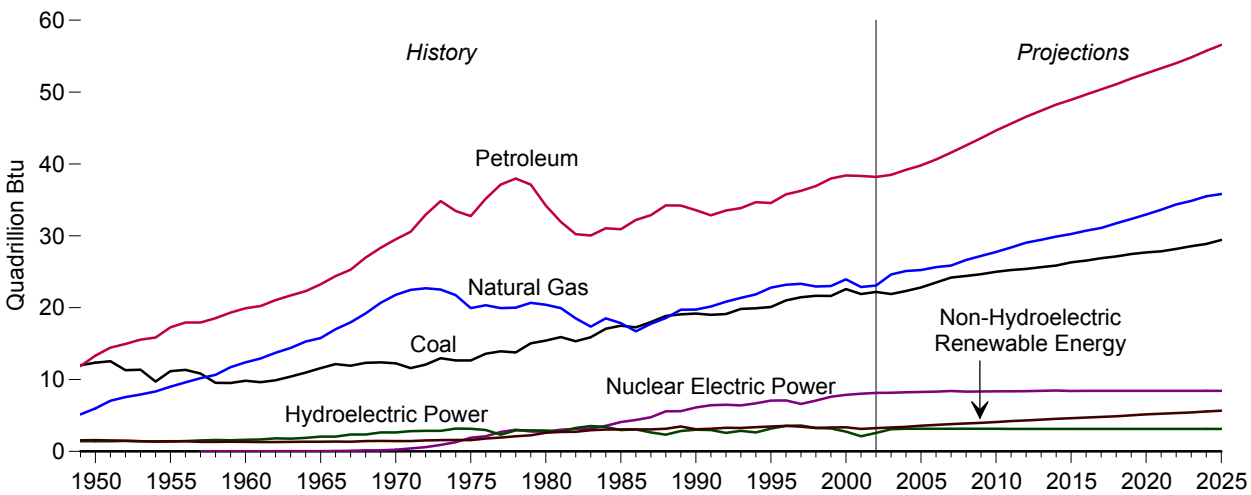


Figure 6. Energy Consumption History and Outlook, 1949-2025

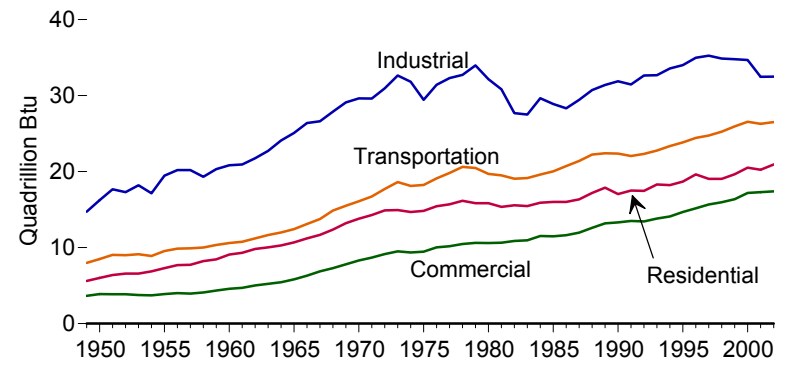


In the long view of American history, wood served as the preeminent form of energy for about half of the Nation's history. Around 1885, coal surpassed wood's usage. Despite its tremendous and rapid expansion, coal was, in turn, overtaken by petroleum in the middle of the 20th century. Natural gas, too, 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.

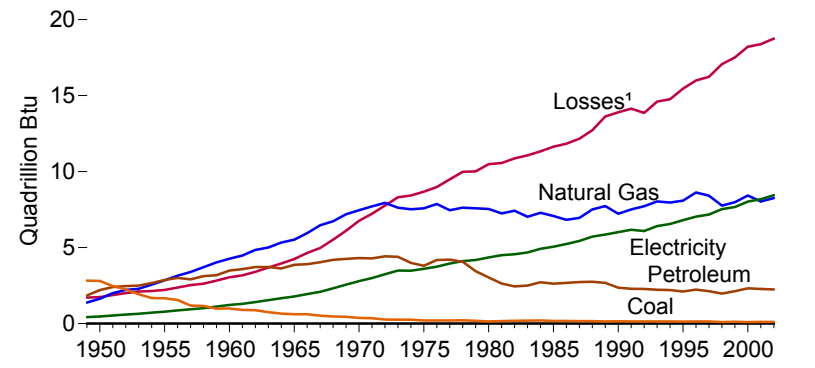
Consumption by Sector

Figure 7. Energy Consumption by End-Use



The industrial sector of the economy used the largest share of energy and showed the greatest volatility. In particular, steep drops occurred in 1975 and 1980-83 in response to high oil prices. Transportation was the next largest energy consuming sector, followed by residential use and commercial use.

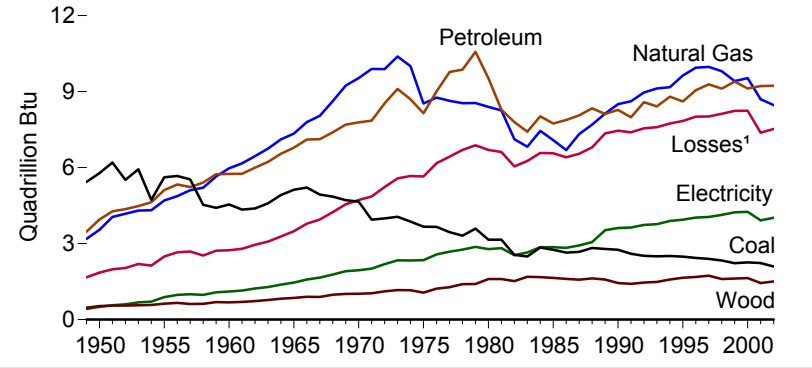
Figure 8. Residential and Commercial Energy Consumption



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

Coal, once 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.

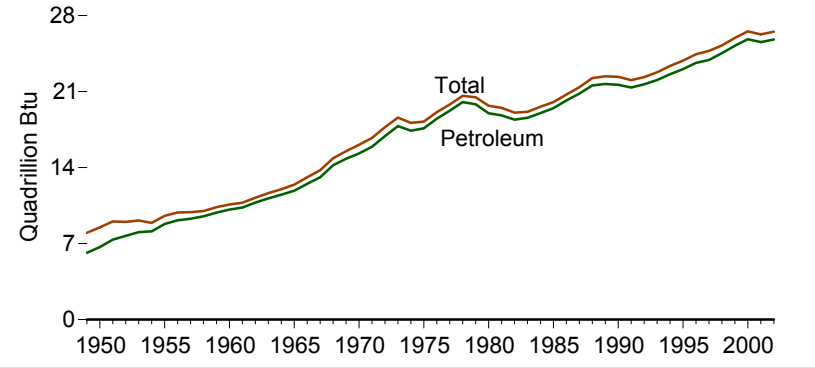
Figure 9. Industrial Energy Consumption



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

Coal, once the prominent form of energy in the industrial sector, gave way to natural gas and petroleum in the late 1950s. Both natural gas and petroleum expanded rapidly until the early 1970s; after that, large swings occurred. Industrial sector usage of electric and wood energy increased in 2002 while other sources declined.

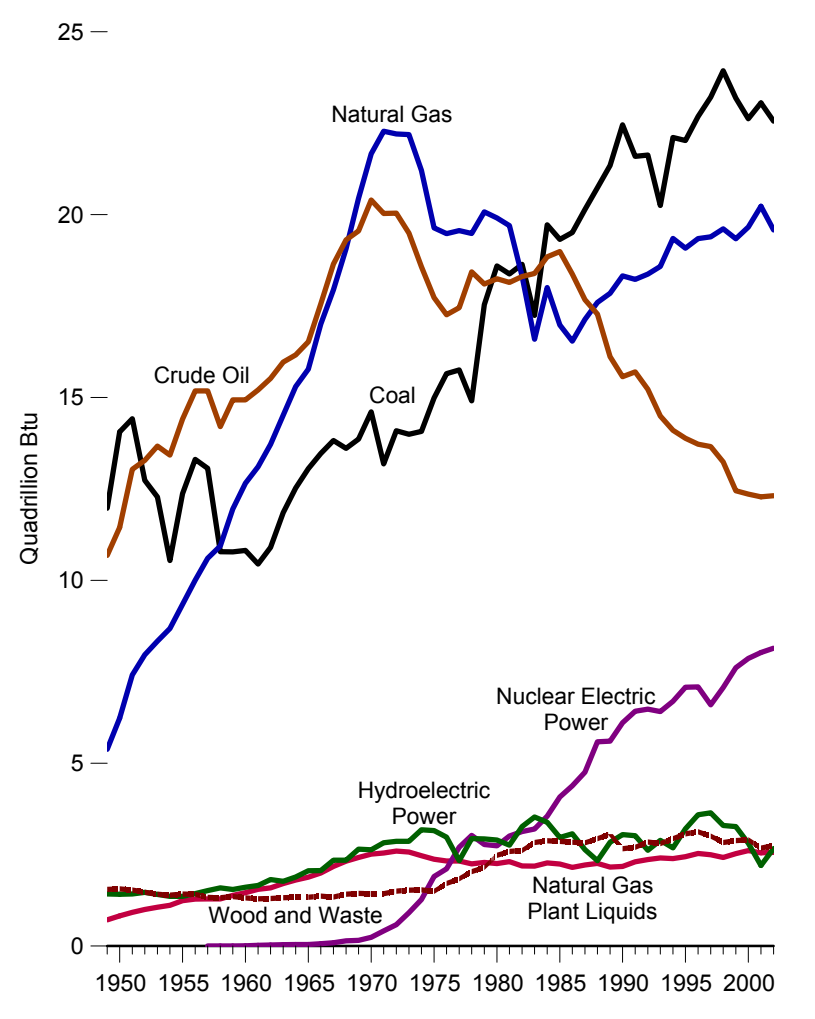
Figure 10. Transportation Energy Consumption



The transportation sector's use of energy, which is overwhelmingly petroleum, more than tripled from 1949 to 2002. Motor gasoline accounts for about two-thirds of the petroleum consumed in the sector. Distillate fuel oil and jet fuel are other important petroleum products used in the sector.

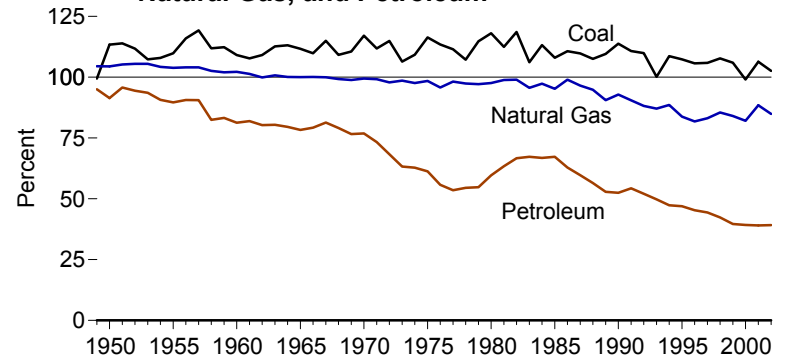
Production and Trade

Figure 11. Energy Production by Major Source, 1949-2002



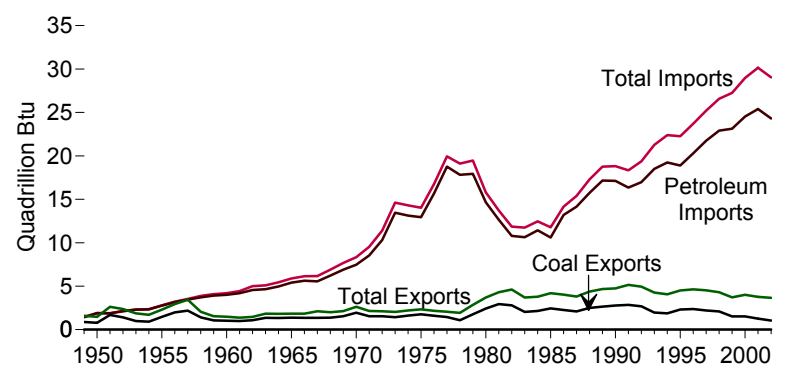
Most energy produced in the United States comes from fossil fuels—coal, natural gas, and crude oil. Coal, the leading source at the middle of the 20th century, was surpassed by crude oil and natural gas for many years, but again became the leading source of energy in the mid-1980s, used primarily for electric generation. Hydroelectric output in 2001 was the lowest level since 1966, but rebounded in 2002.

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



The Nation almost always produced more than enough coal for our own requirements. For many years, we were also self-sufficient in natural gas, but after 1967, we produced less than we consumed each year. Petroleum production fell far short of domestic requirements.

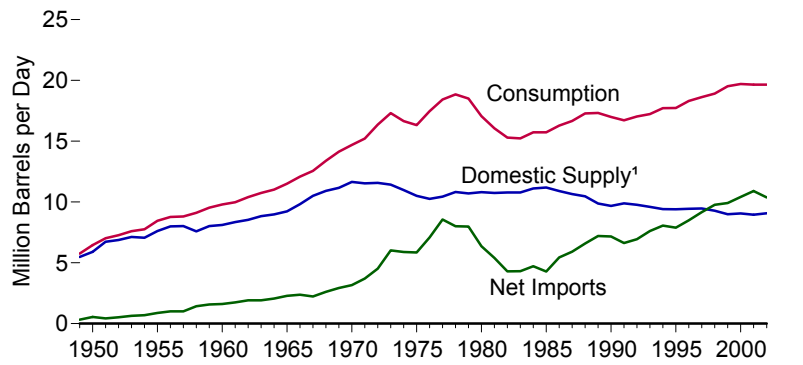
Figure 13. Energy Imports and Exports



Since the mid-1950s, the Nation imported more energy than it exported. In 2002, the United States imported 29 quadrillion Btu of energy and exported 4 quadrillion Btu. Most imported energy was in the form of petroleum; in recent years, natural gas imports grew, primarily from Canada. Exported energy was primarily in the form of coal until the recent decade when petroleum exports expanded, and, in some years, even exceeded coal exports.

Petroleum Overview and Crude Oil Production

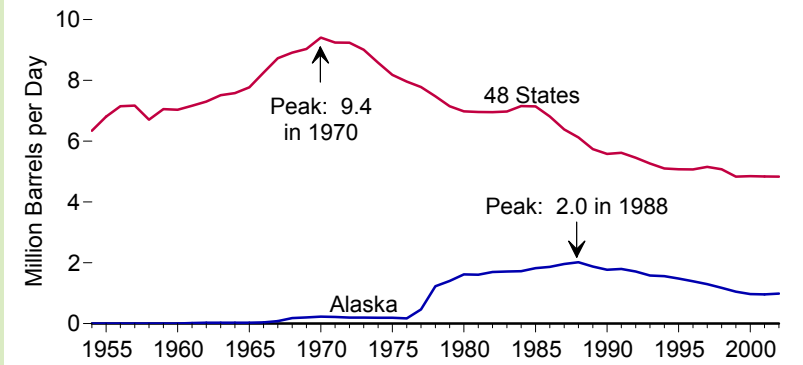
Figure 14. Petroleum Overview



Consumption = Petroleum Products Supplied.
¹ Crude oil and natural gas plant liquids production; refinery gains; and field production of other components.

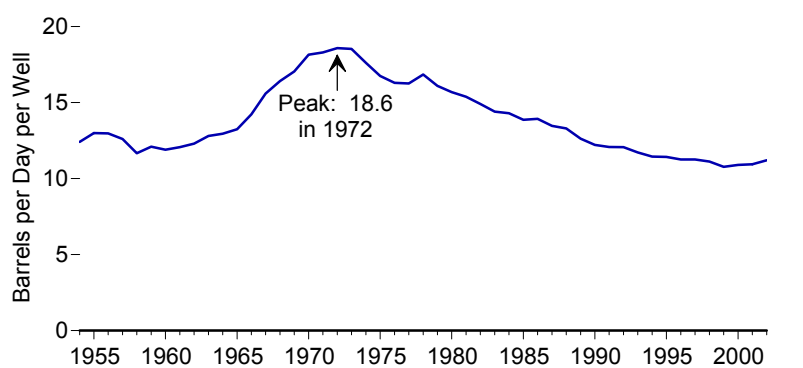
When U.S. domestic supply of petroleum peaked at 11.7 million barrels per day in 1970, net imports stood at 3.2 million barrels per day. As domestic supply declined, consumption grew. In 1998, for the first time, net imports surpassed domestic supply. In 2002, domestic supply was 9.1 million barrels per day and net imports were 10.4 million barrels per day.

Figure 15. 48 States and Alaskan Crude Oil Production



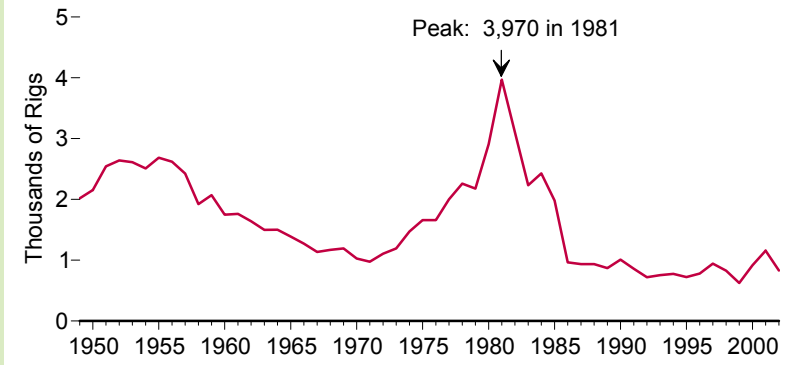
Crude oil production peaked in the U.S. 48 States at 9.4 million barrels per day in 1970. As production fell in the 48 States, Alaska's production came on line and helped supply U.S. needs. Alaskan production peaked at 2.0 million barrels per day in 1988, then fell to less than half the peak rate by 2001, before recovering modestly in 2002.

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 2002, productivity measured 11.2 barrels per day per well, 40 percent below the peak but up slightly from the year before.

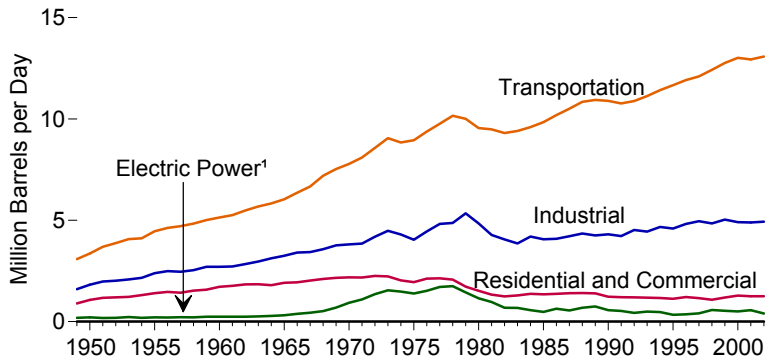
Figure 17. Crude Oil and Natural Gas Rotary Rigs in Operation



Rotary rig activity declined sharply in the period 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 2002 stood at 79 percent below the peak level in 1981.

Petroleum Consumption and Prices

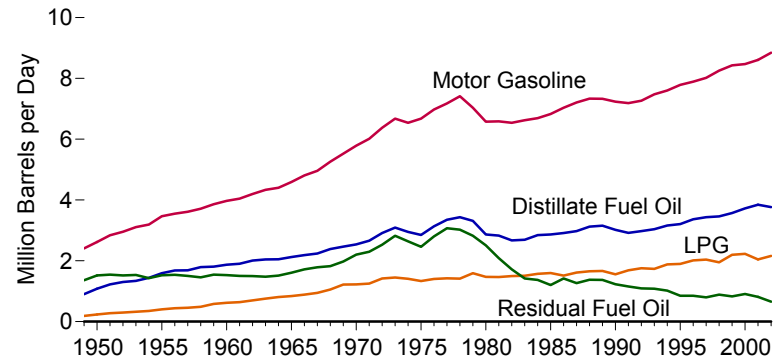
Figure 18. Petroleum Consumption by Sector



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 2002, 13 million barrels per day of petroleum products were consumed for transportation purposes, accounting for 67 percent of all petroleum used.

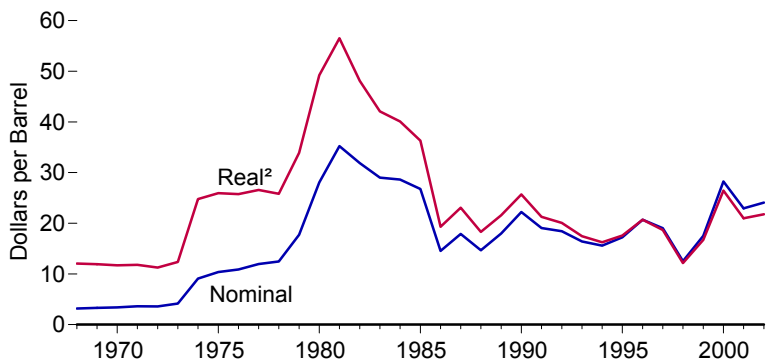
Figure 19. Petroleum Consumption by Selected Product



LPG = Liquefied petroleum gases.

Motor gasoline is the single largest petroleum product consumed in the United States. Its consumption stood at 8.8 million barrels per day in 2002, 45 percent of all petroleum consumption. Distillate fuel oil and liquefied petroleum gases (LPG) are other important products. The use of residual fuel oil fell off sharply after 1977.

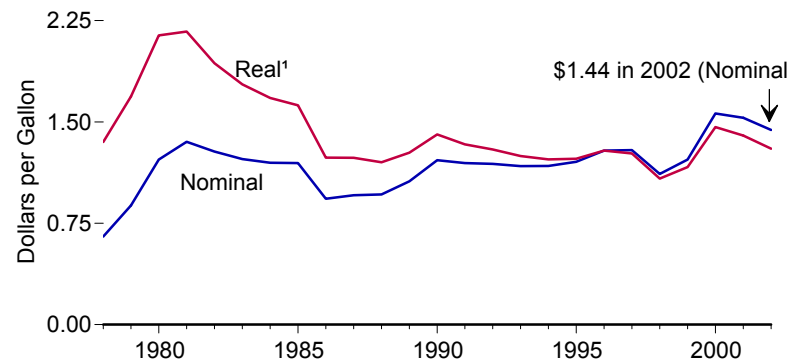
Figure 20. Crude Oil Refiner Acquisition Cost¹



¹ Composite of domestic and imported crude oil. ² In chained (1996) 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 per barrel in 1981. The price fell dramatically over the years that followed, dropping below $13 per barrel in 1998. It jumped to $28 per barrel in 2000, declined to $23 per barrel in 2001, and then rose again to $24 per barrel in 2002.

Figure 21. Price of Motor Gasoline

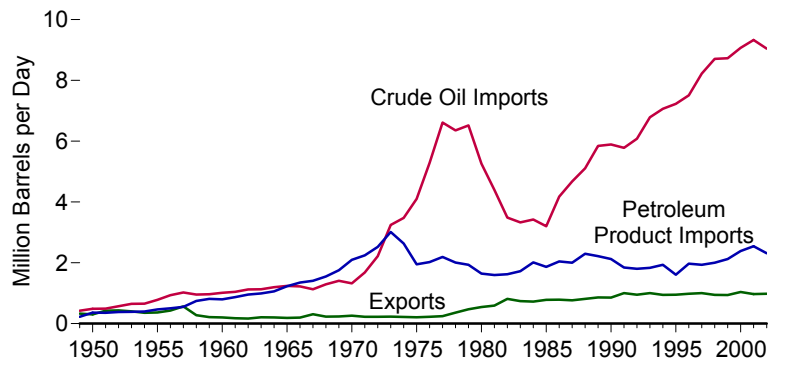


¹ In chained (1996) dollars, calculated by using gross domestic product implicit price deflator.

In nominal (unadjusted for inflation) dollars, Americans paid an average of 65¢ per gallon for motor gasoline in 1978. The 2002 average price of $1.44 was 122 percent higher than the 1978 rate but, adjusted for inflation, it was 4 percent lower.

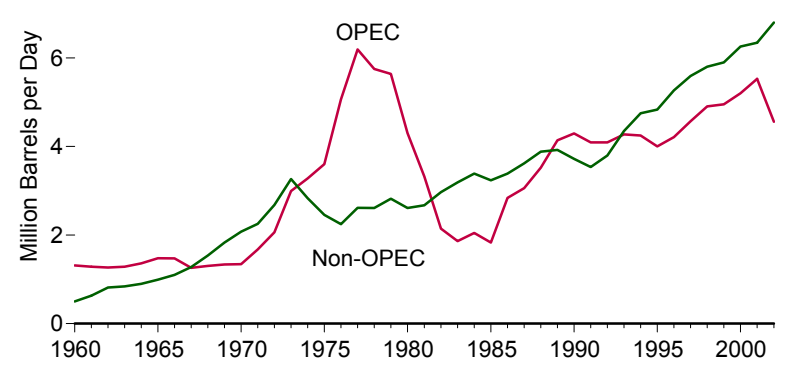
Petroleum Trade

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 2001, crude oil imports reached a record-high level of 9.3 million barrels per day, but declined to 9.0 million barrels per day in 2002. Petroleum product imports were 2.3 million barrels per day in 2002.

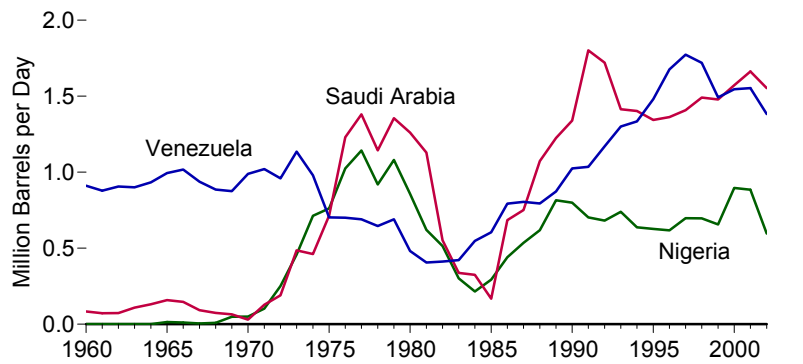
Figure 23. Imports From OPEC and Non-OPEC Countries



OPEC = Organization of Petroleum Exporting Countries.

As U.S. petroleum imports rose sharply in the late 1970s, the Nation's 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. Since 1993, more petroleum imports have come from non-OPEC countries than OPEC countries.

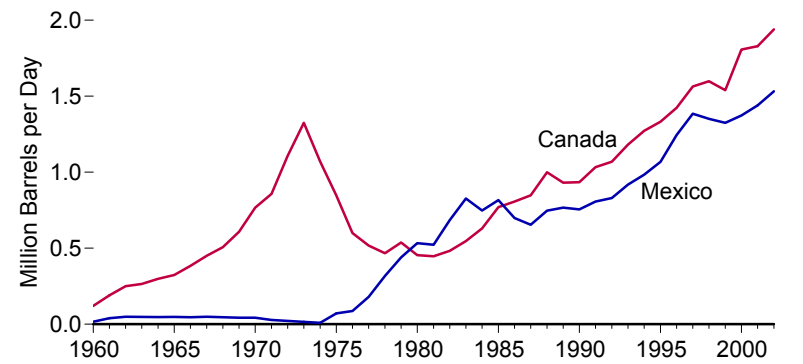
Figure 24. Imports From Selected OPEC Countries



OPEC = Organization of Petroleum Exporting 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 2002, the three together accounted for more than three-fourths of U.S. imports from OPEC countries.

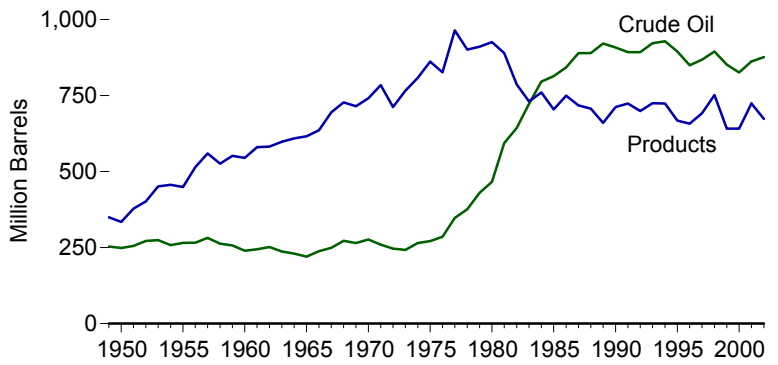
Figure 25. Imports From Canada and Mexico



Canada and Mexico, our national neighbors, supplied the largest quantities of petroleum from non-OPEC countries. Out of both OPEC and non-OPEC countries, Canada is now the leading supplier of petroleum imports to the United States. Imports from Mexico were insignificant until the mid-1970s when they began to play a key role in U.S. supplies. In 2002, Canada and Mexico together provided 31 percent of all U.S. petroleum imports.

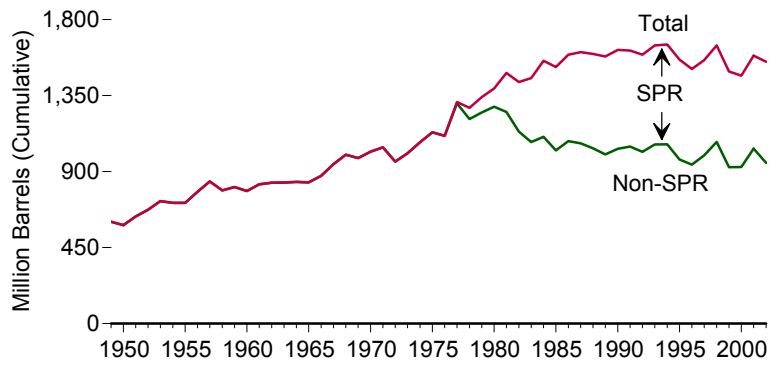
Petroleum Stocks

Figure 26. Stocks of Crude Oil and Products



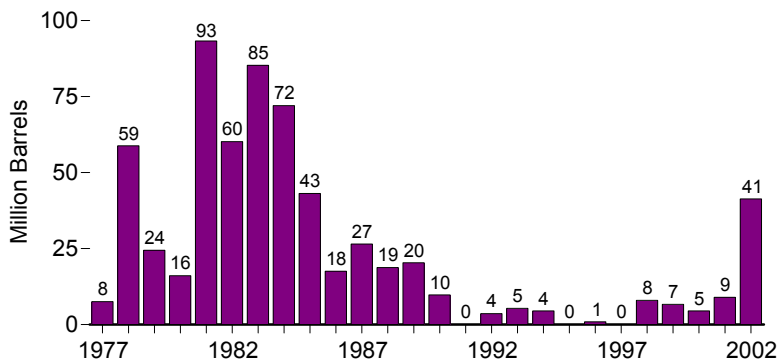
Through 1983, the Nation held most of its petroleum storage in the form of products, which are ready for the market. After that, most petroleum in storage was in the form of crude oil. At the end of 2002, petroleum stocks totaled 1.6 billion barrels, 57 percent crude oil and 43 percent products.

Figure 27. Total Stocks and the Strategic Petroleum Reserve



In 1977, the United States began building the Strategic Petroleum Reserve (SPR), a national reserve of petroleum stocks in case of emergency. U.S. total petroleum stocks declined 2 percent in 2002, but the amount of crude oil held in the reserve reached a new peak of 599 million barrels.

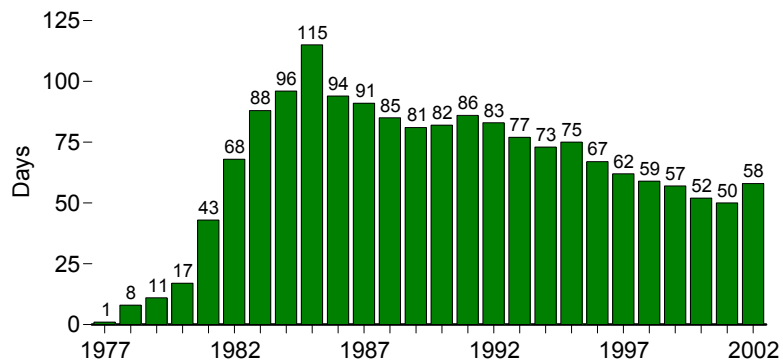
Figure 28. Crude Oil Imports for SPR[1]



[1] Imported by SPR and imported by others for SPR.

Most of the crude oil in SPR is imported oil, 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. In 2002, 41 million barrels of crude oil were imported for SPR.

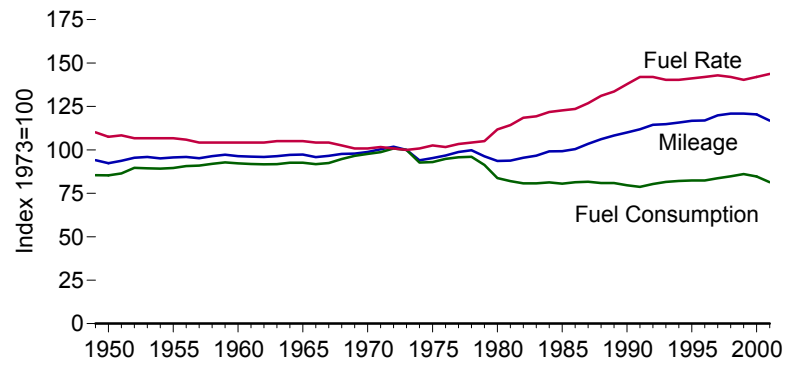
Figure 29. SPR Stocks as Days' Worth of Net Imports



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 substantially during 2002, reaching 58 days at year-end.

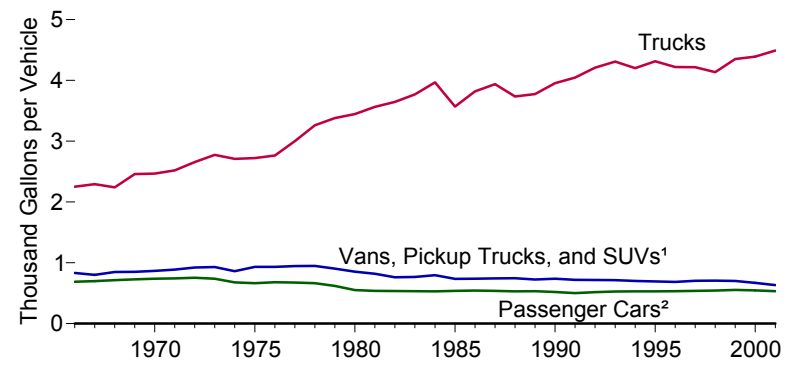
Motor Vehicles

Figure 30. Motor Vehicle Indicators



The composite motor vehicle fuel rate (miles per gallon) soared 42 percent from 1973 to 1991. Efficiency gains slowed over succeeding years but reached a new high in 2001. Mileage (miles driven per vehicle) grew steadily from 1980 to 1998, but declined from 1999 through 2001. Fuel consumption per vehicle, which began to grow again in 1992 after a 21-percent decline from 1973 to 1991, reversed course in 2001 and 2002.

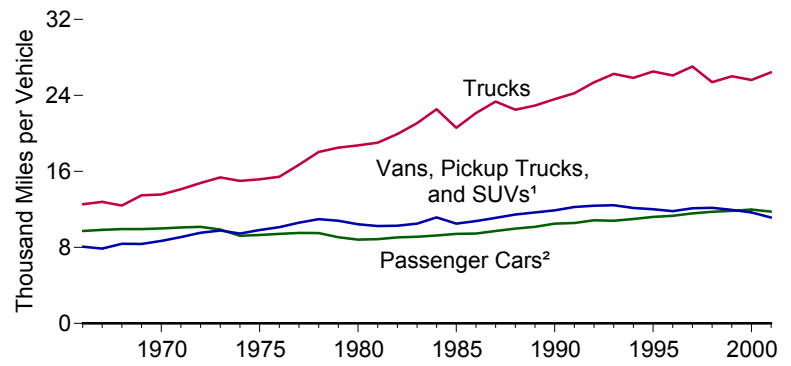
Figure 31. Motor Vehicle Fuel Consumption



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

From 1966 to 2001, fuel consumption rates for trucks doubled, growing from 2.3 thousand gallons per truck to 4.5 thousand gallons per truck. Meanwhile, fuel consumption rates of other vehicle types fell, passenger cars down 23 percent and other vehicles down 24 percent.

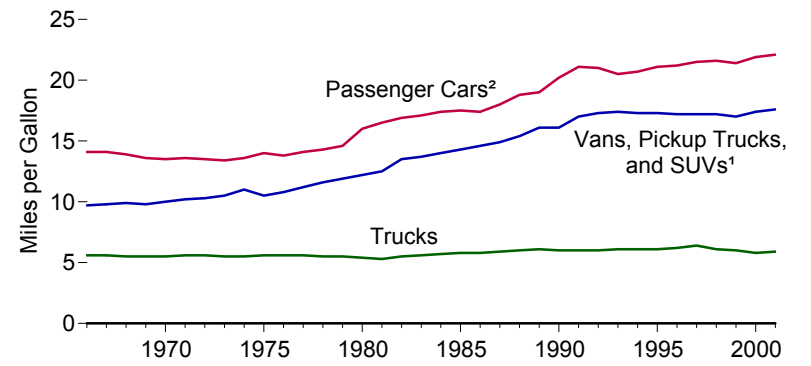
Figure 32. Motor Vehicle Mileage



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 2001, up 111 percent. In 2001, trucks averaged 26.4 thousand miles per vehicle per year, while passenger cars averaged 11.8 thousand miles per year, and vans, pickup trucks, and sport utility vehicles averaged 11.1 thousand miles per year.

Figure 33. Motor Vehicle Fuel Rates



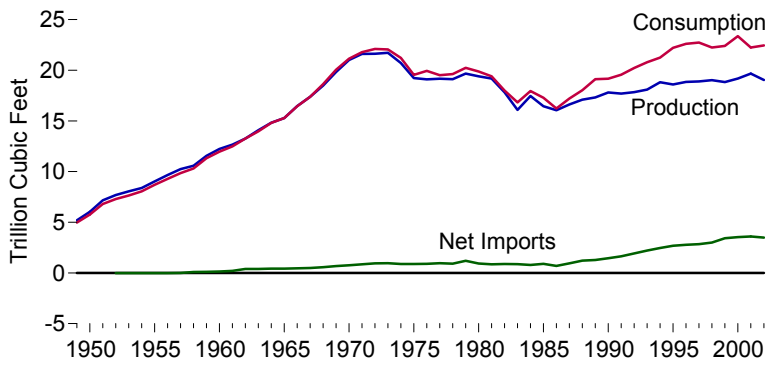
¹ Sport utility vehicle. ² Motorcycles are included through 1989.

Fuel rates (miles per gallon) for passenger cars and vans, pickup trucks, and sport utility vehicles rose from the late 1970s through the early 1990s and again in 2000 and 2001. Truck fuel rates were generally flat throughout the entire period.

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

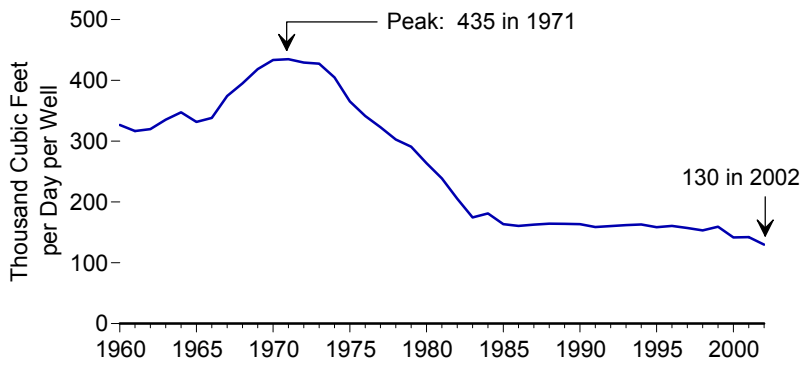
Natural Gas

Figure 34. Natural Gas Overview



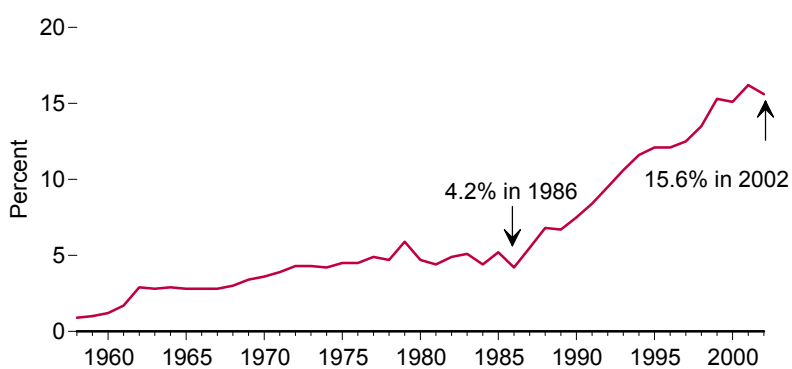
U.S. natural gas production and consumption were nearly in balance through 1986. When consumption began to outpace production, imports of natural gas rose to meet U.S. requirements for the fuel. In 2002, consumption stood at 22.5 trillion cubic feet (Tcf), production at 19.0 Tcf, and net imports at 3.5 Tcf.

Figure 35. Natural Gas Well Productivity



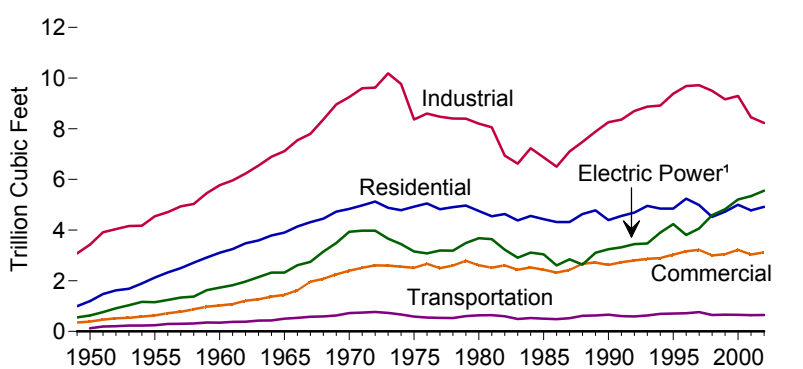
Gas well productivity, measured as gross withdrawals per day per well, grew rapidly in the late 1960s, peaked in 1971, and then fell sharply until the mid-1980s. Productivity remained nearly steady from 1985 through 1999, but then declined. The 2002 rate was 70 percent below the 1971 peak level.

Figure 36. Net Imports as Share of Consumption



From 1970 through 1987, net imports as a share of consumption registered in the 4-to-6 percent range. Net imports measured 4.2 percent of consumption in 1986, which was followed by consumption increases that outpaced production growth. Net imports expanded, and in 2002 accounted for 15.6 percent of consumption.

Figure 37. Natural Gas Consumption by Sector

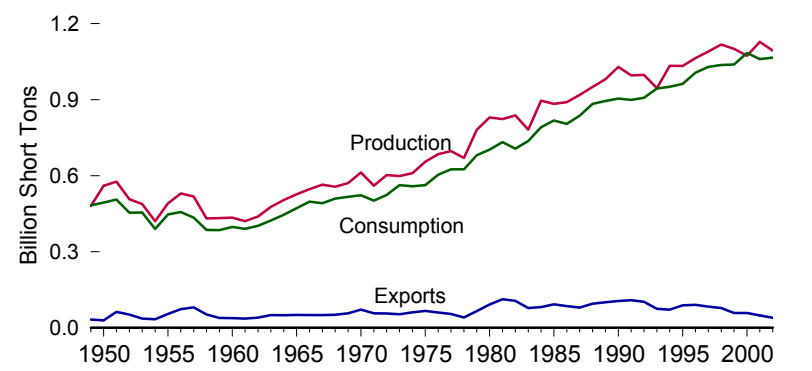


¹ Through 1988, electric utilities only; after 1988, includes independent power producers.

The industrial sector was both the largest consuming sector of natural gas and the sector with the greatest volatility over the years due to variability in industrial output. The electric power sector accounted for one-fourth of all natural gas consumption in 2002.

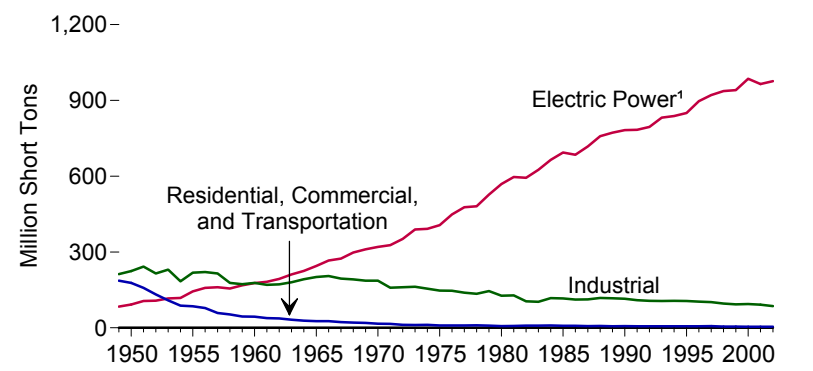
Coal

Figure 38. Coal Overview



Unlike petroleum or natural gas, domestic supplies of coal nearly always outpaced U.S. consumption of the resource. Coal exports peaked at 113 million short tons in 1981. In 2002, the United States exported 40 million short tons, 42 percent of it to Canada.

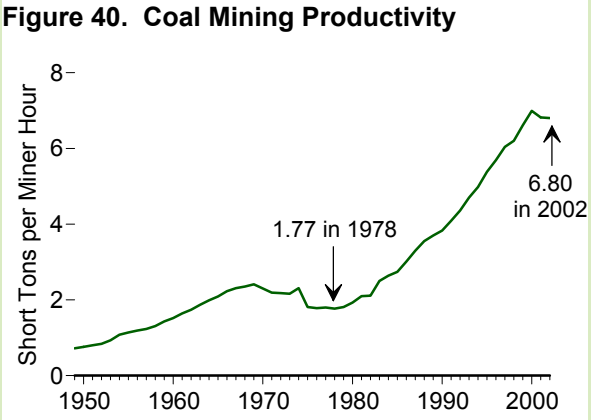
Figure 39. Coal Consumption by Sector



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

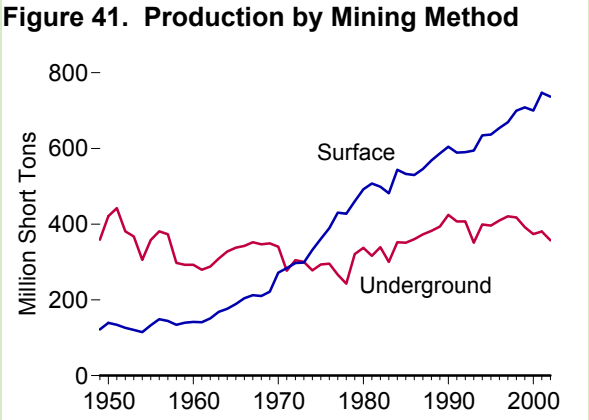
In the 1950s, most coal was consumed in the industrial sector, many homes were still heated by coal, and the transportation sector consumed coal in steam-driven trains and ships. By the 1960s, most coal was used for generating electricity and by 2002 the electric power sector's share stood at 92 percent of all coal consumption.

Figure 40. Coal Mining Productivity



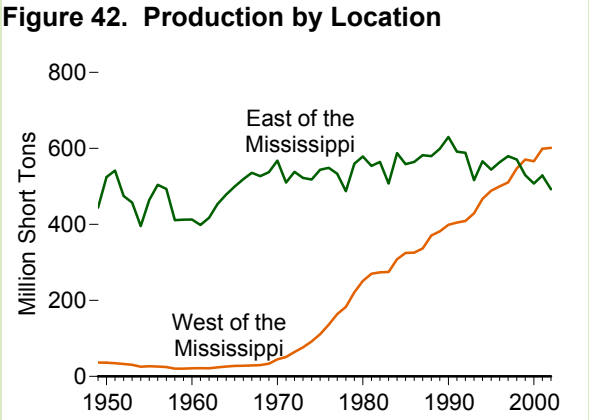
Improved mining technology and the shift toward more surface-mined coal promoted increased productivity from the Nation's mines after 1978.

Figure 41. Production by Mining Method



Most growth of coal production came from surface mines, which surpassed underground production after 1973.

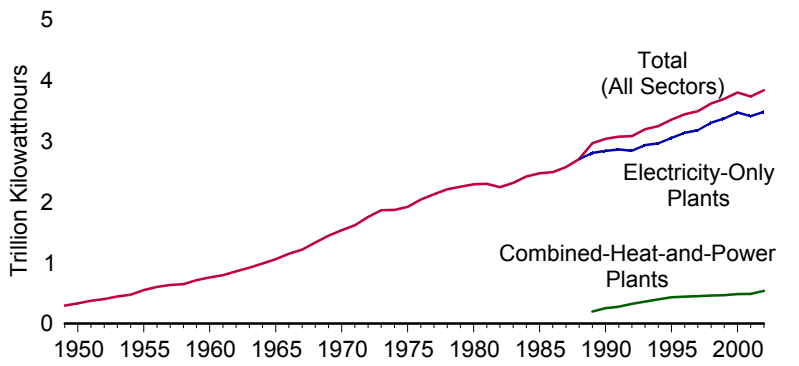
Figure 42. Production by Location



Western coal production expanded tremendously after 1969 and exceeded production from the East beginning in 1999.

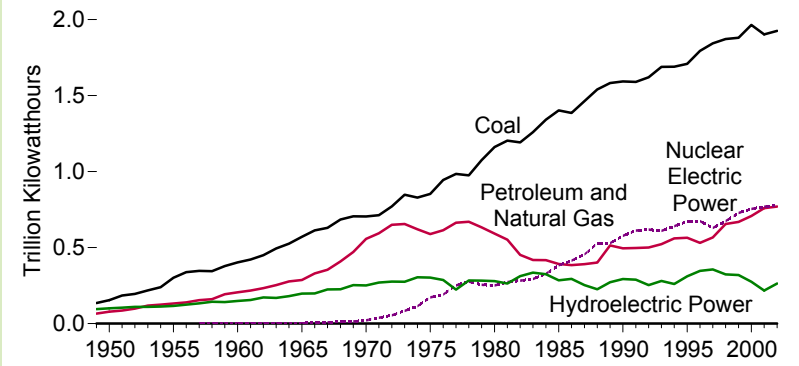
Electricity Generation and Useful Thermal Output

Figure 43. Electric Power Net Generation



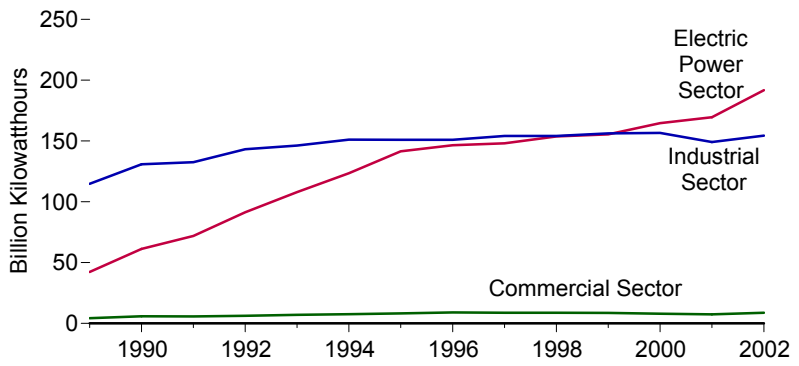
Electric power generation grew from 0.3 trillion kilowatthours in 1949 to 3.8 trillion kilowatthours in 2002. Over the entire span, electricity net generation failed to increase in only two recession-affected years, 1982 and 2001, when 2-percent decreases were recorded.

Figure 44. Major Sources of Electricity Net Generation



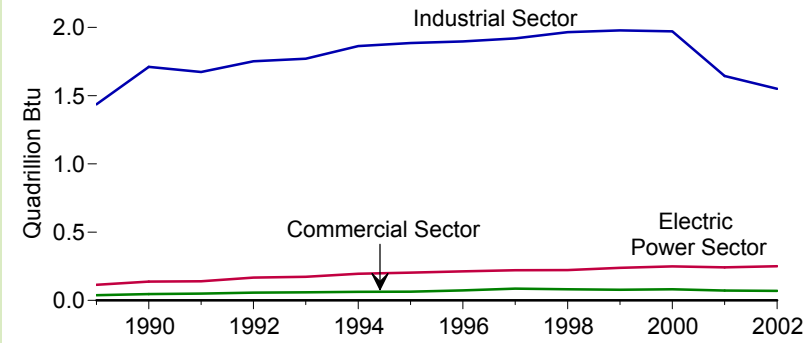
Most net generation of electricity came from coal. In fact, in 2002, fossil fuels (coal, petroleum, and natural gas) accounted for 71 percent of all net generation, while nuclear electric power contributed 20 percent, and renewable energy resources 9 percent. Over three-fourths of the net generation from renewable energy resources was derived from hydroelectric power.

Figure 45. Net Generation at Combined-Heat-and-Power Plants



Some facilities exist to produce only electricity; others function as combined-heat-and-power (CHP) plants that produce both electricity and heat from a single heat source. Some paper mills and refineries, which are part of the industrial sector, operate as CHP plants, and some commercial sector facilities, such as hospitals and college campuses, are CHP facilities.

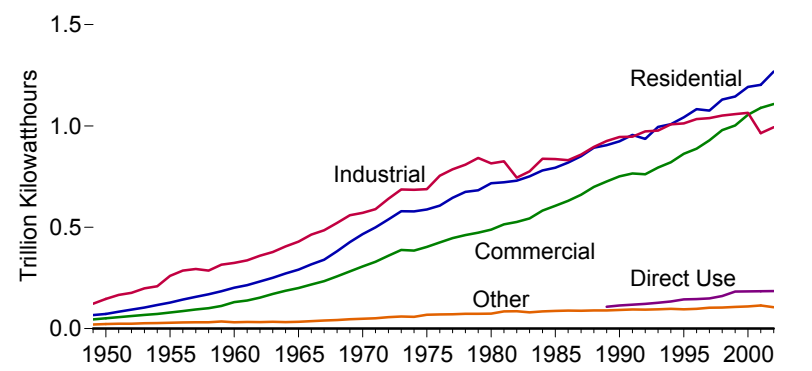
Figure 46. Useful Thermal Output at Combined-Heat-and-Power Plants



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 2002, 1.6 quadrillion Btu of useful thermal output was created by the industrial sector.

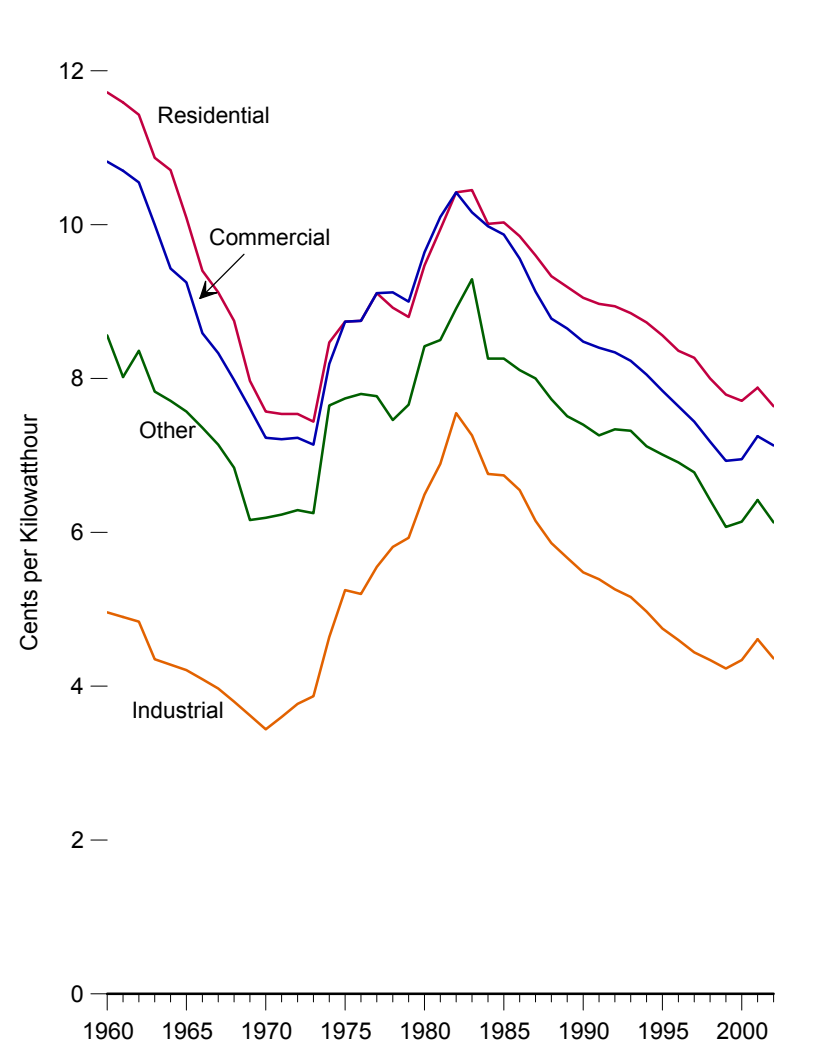
Electricity Sales, Prices, and Trade

Figure 47. Retail Sales by Sector



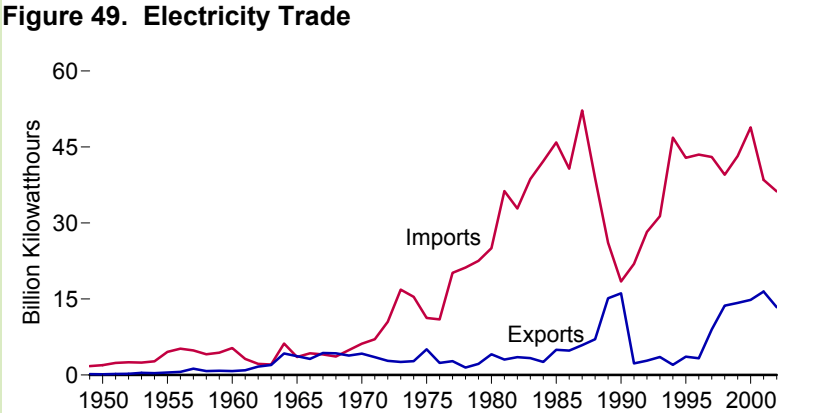
After mid-century, enormous growth occurred in electricity sales in all three major sectors—residential, industrial, and commercial. Beginning in 1993, residential sales surpassed industrial sales. The industrial sector's use of electricity showed the greatest volatility, especially from the late 1970s through the mid 1980s.

Figure 48. Average Real Retail Prices of Electricity by Sector



In inflation-adjusted terms, most electricity sector prices fell steeply in the 1960s, reversed course around 1970 to rise sharply through the early 1980s, and then recorded a pattern of steady decline through 2002 with only a brief upturn in 2001. Over the decades, industrial consumers paid the lowest rates for electricity; residential customers usually paid the highest prices. In 2002, all sectors paid lower rates than they had in 1960, when adjusted for inflation.

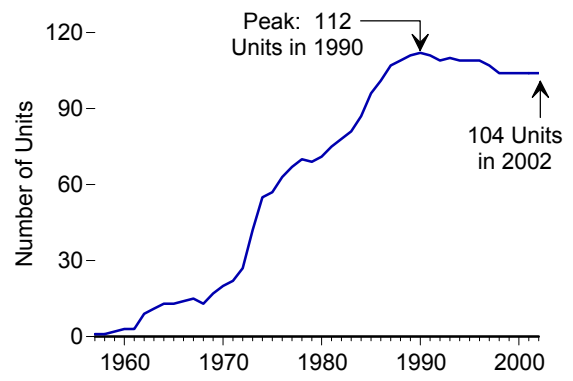
Figure 49. Electricity Trade



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 2002, net imported electricity was less than 1 percent of all electricity used in the United States.

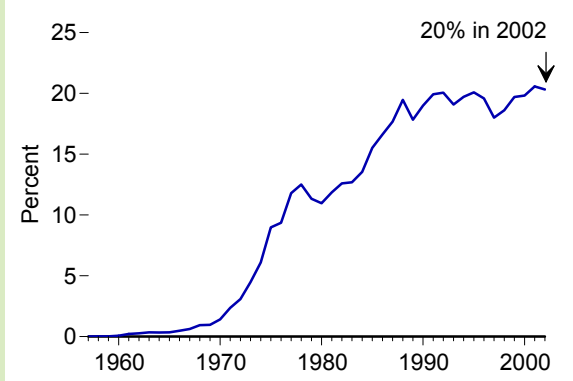
Nuclear Electric Power

Figure 50. Number of Operable Units



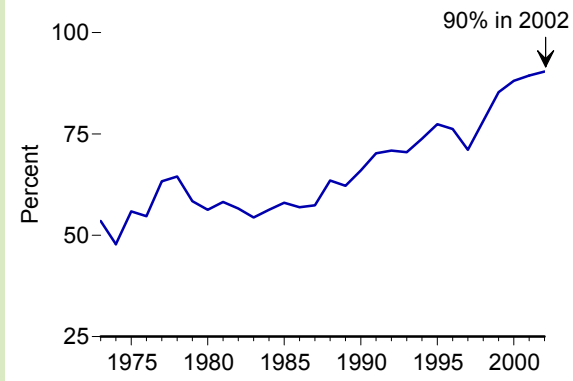
In 1957, a new plant in Shippingport, Pennsylvania, became the first operable nuclear electric plant in the United States. Many new units became operable in the 1970s and 1980s.

Figure 51. Nuclear Share of Electricity



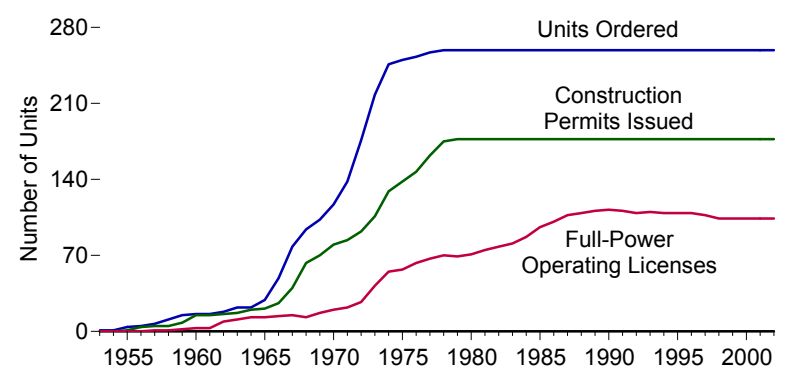
Over the latter part of the last century, nuclear electric power played a key role in meeting the Nation's rapidly growing electricity requirement. In 2002, 20 percent of all U.S. electricity generation came from nuclear electric power.

Figure 52. Capacity Factors



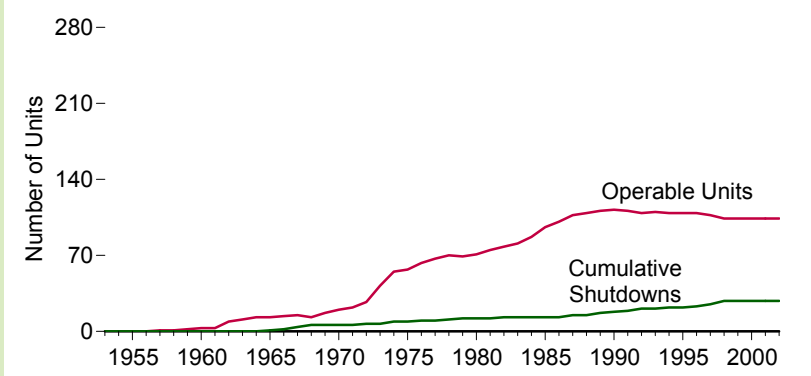
Capacity factors measure actual power generation as a share of maximum possible output. Factors for the industry were in the 50-to-60 percent range through the 1980s, but improved to 90 percent by 2002.

Figure 53. Cumulative Unit Orders, Permits, and Licenses



A total of 259 nuclear electric power units have been ordered over the history of the industry in the United States. The last new orders were placed in 1978. Of the 259 orders, 177 advanced to the issuance of construction permits and, of those, 132 gained full-power operating licenses.

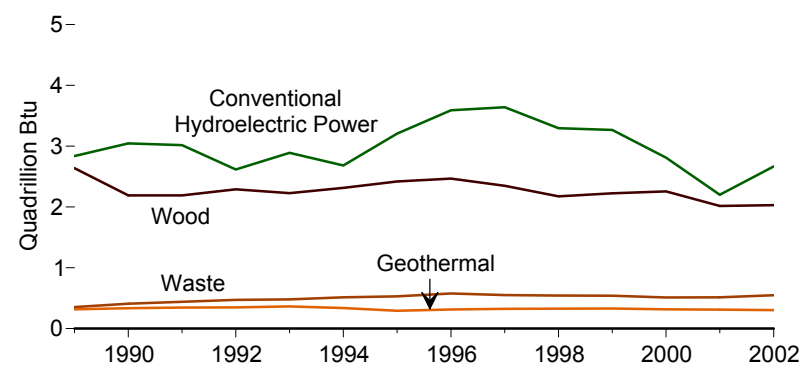
Figure 54. Operable Units and Cumulative Shutdowns



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 2002, 104 units were operable.

Renewable Energy

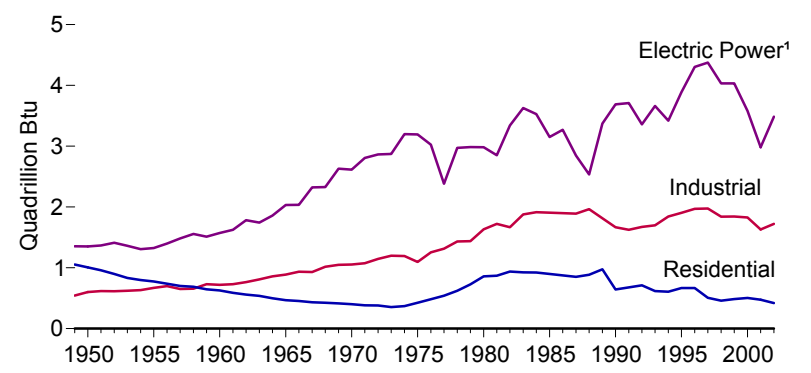
Figure 55. Renewable Energy Consumption by Source



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

Consumption of renewable energy in the United States recovered sharply in 2002 after two successive years of decline, but remained 17 percent below the 1996 peak of 7.1 trillion Btu. Conventional hydroelectric power, which accounted for 45 percent of the total in 2002, led the upturn. Wood was the next largest source of renewable energy, followed by waste and geothermal. Smaller quantities came from alcohol fuels, solar, and wind.

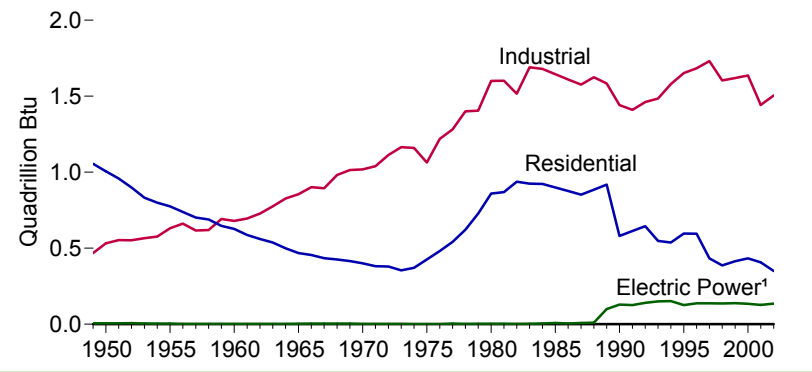
Figure 56. Renewable Energy Consumption by Sector



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, mostly black liquor, a by-product of paper production. Residential sector usage of renewable energy (mostly wood) was the third largest consuming sector.

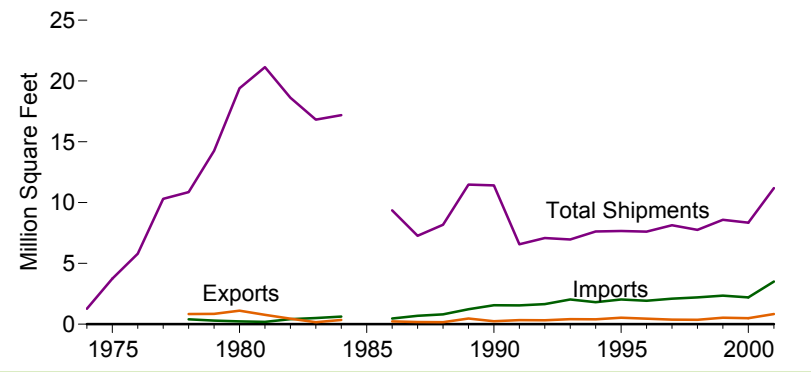
Figure 57. Wood Consumption by Selected Sector



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

Except for the period from 1974 through 1982, residential use of wood generally declined over the second half of the 20th century, while the industrial sector's use of wood, mainly black liquor, expanded. Twenty-seven percent of all wood consumed in 2002 was used to generate electricity. Commercial use of wood was very small.

Figure 58. Solar Collector Shipments and Trade

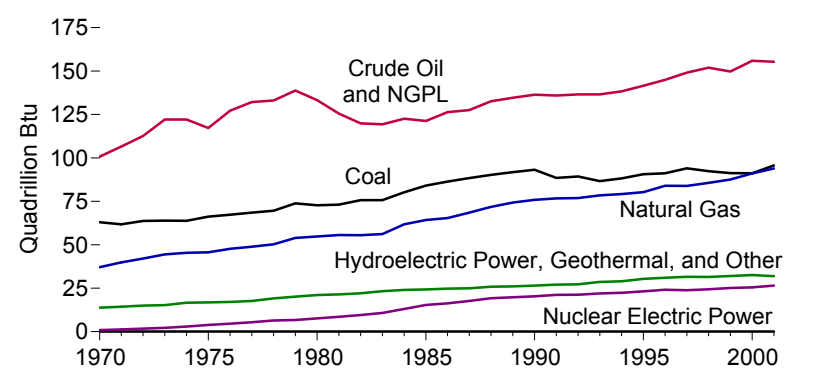


Note: Data were not collected for 1985. Shipments include all domestically manufactured collectors plus imports.

Solar collector total shipments peaked in 1981 at 21 million square feet. From a low of 6.6 million square feet in 1991, shipments generally rose through the 1990s and then registered a strong uptick in 2001, reaching 11.2 million square feet. Since 1983, growth in imports has generally outpaced growth in exports.

International Energy

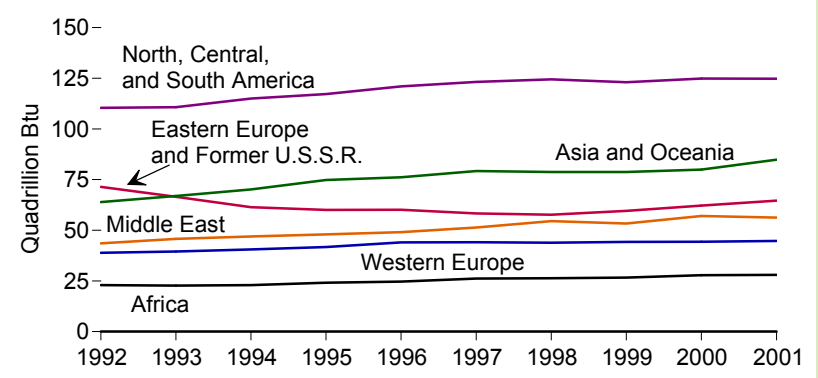
Figure 59. World Primary Energy Production By Source



NGPL = Natural gas plant liquids.

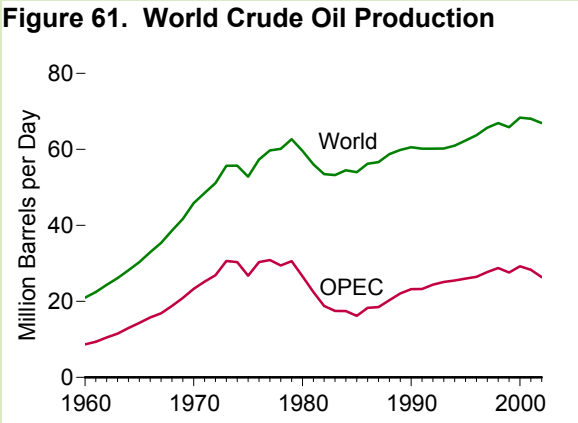
From 1970 to 2001, world primary energy production grew by 87 percent. Growth occurred in all types of energy. In 2001, fossil fuels accounted for 86 percent of all energy produced worldwide, renewable energy 8 percent, and nuclear power 7 percent.

Figure 60. World Primary Energy Production by Region



Thirty-one percent of the 403 quadrillion Btu of energy produced worldwide in 2001 came from North, Central, and South America. Between 1992 and 2001, total primary energy production grew in all major regions of the world except Eastern Europe and the Former U.S.S.R., where 2001 production was still 9 percent below the 1992 level despite growth each year 1999-2001.

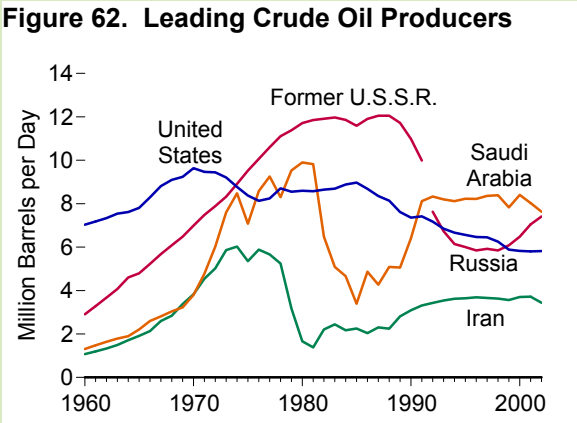
Figure 61. World Crude Oil Production



OPEC = Organization of Petroleum Exporting Countries.

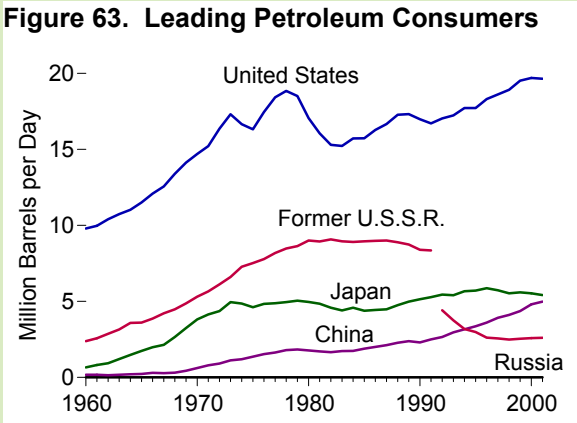
World crude oil production was 67 million barrels per day in 2002, off slightly from the year before. OPEC's share fell from 55 percent in 1973 to 39 percent in 2002.

Figure 62. Leading Crude Oil Producers



After 1991, Saudi Arabia was the largest producer. U.S. production peaked in 1970. After 1998, Russia's production surpassed U.S. output.

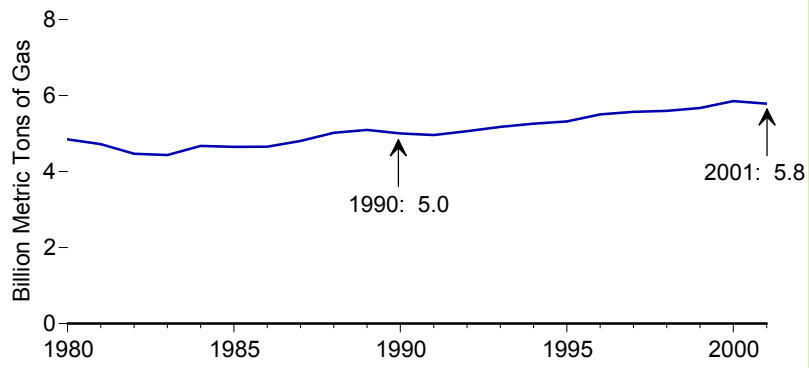
Figure 63. Leading Petroleum Consumers



The United States accounted for 25 percent of world consumption of petroleum in 2001. Japan and China accounted for 7 and 6 percent, respectively.

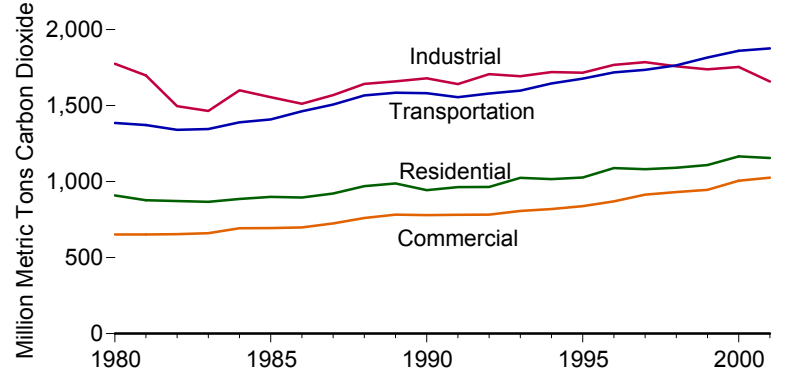
Carbon Dioxide Emissions

Figure 64. Carbon Dioxide Emissions



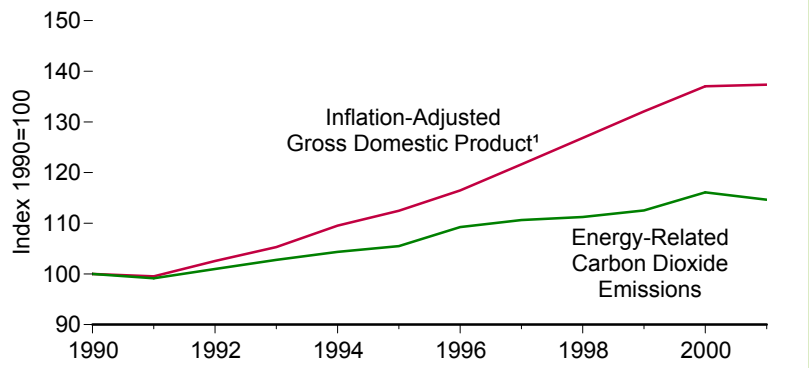
In the United States, fossil fuel combustion is responsible for 99 percent of all emissions from carbon dioxide, which is the most significant greenhouse gas. Total carbon dioxide emissions reached 5.8 billion metric tons of gas in 2001, 16 percent higher than the 1990 level.

Figure 65. Carbon Dioxide Emissions From Energy Use



The level of carbon dioxide emissions generated by the industrial sector exceeded other sector levels until 1998 when it was surpassed by transportation emissions. Commercial sector emissions, the smallest of the four sectors, registered the largest percentage gain from 1990 to 2000, 32 percent.

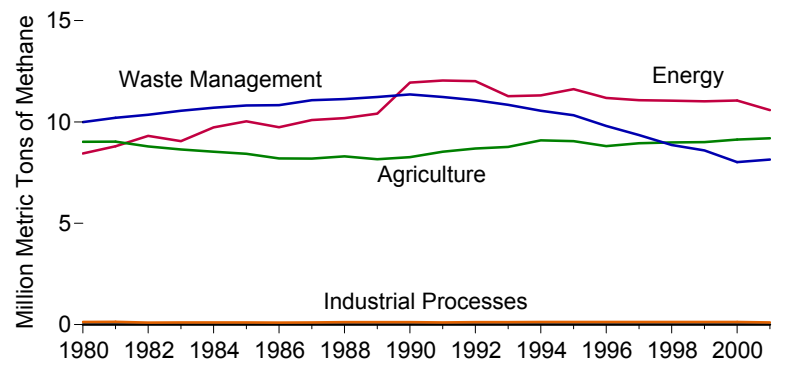
Figure 66. GDP Growth and Carbon Dioxide Emissions



¹ Based on chained (1996) dollars.

While gross domestic product (GDP) grew by 37 percent from 1990 to 2001, energy-related carbon dioxide emissions grew by 15 percent, and actually declined in 2001 from the year before. It was primarily the use of less energy per unit of economic output, rather than the use of low-carbon fuels, that held the rate of carbon dioxide emissions growth to about half the growth rate of the inflation-adjusted gross domestic product.

Figure 67. Methane Emissions by Sector



In 2001, methane emissions accounted for 9 percent of total U.S. greenhouse gas emissions, weighted by global warming potential. Most methane emissions come from energy, agricultural activities, and waste management. The production, processing, and distribution of natural gas accounted for more than half of all energy-related methane emissions in 2001.

Figure Sources

Data for "Energy Perspectives" figures and text are derived from the following *Annual Energy Review 2002* tables and other sources as cited.

1. Table 1.1.
2. Table 1.5.
3. Table 1.5.
4. Table 1.3.
5. Tables 1.3 and E1.
6. Historical data: Table 1.3. Projections: Energy Information Administration (EIA), *Annual Energy Outlook 2003* (January 2003), 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, 5.12c, and A3.
11. Table 1.2.
12. Tables 5.1, 6.1, and 7.1.
13. Tables 1.4 and 6.3.
14. Table 5.1.
15. Table 5.2.
16. Table 5.2.
17. Table 4.3.
18. Tables 5.12a, 5.12b, 5.12c, and 5.12d.
19. Table 5.11.
20. Table 5.19.
21. Table 5.22.
22. Tables 5.3 and 5.5.
23. Table 5.4.
24. Table 5.4.
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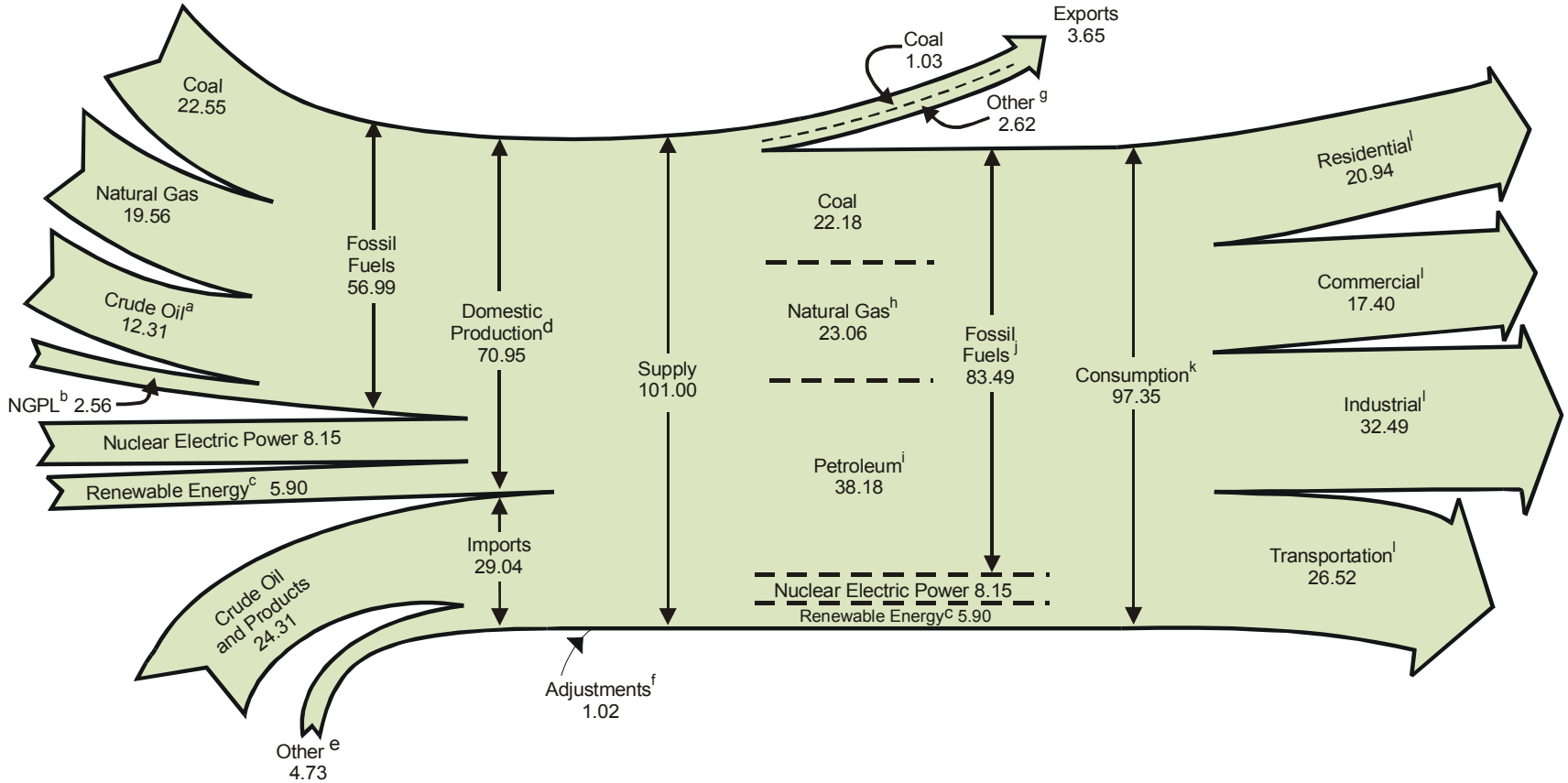
43. Tables 8.2a, 8.2b, and 8.2c.
44. Table 8.2a.
45. Table 8.2c.
46. Table 8.2d.
47. Table 8.5.
48. Table 8.6.
49. Table 8.1, National Energy Board of Canada, and U.S. Department of Energy, Fossil Fuels, Form FE-781R, "Annual Report of International Electrical Export/Import."
50. Table 9.1.
51. Table 9.2.
52. Table 9.2.
53. Table 9.1.
54. Table 9.1.
55. Table 10.1.
56. Tables 10.2a and 10.2b.
57. Tables 8.3c, 10.2a, and 10.2b.
58. Table 10.3.
59. Table 11.1.
60. Table 11.2.
61. Table 11.5.
62. Table 11.5.
63. Table 11.10.
64. Tables 12.1 and 12.2.
65. Table 12.2.
66. Tables 1.5 and 12.2, and EIA, *Emissions of Greenhouse Gases in the United States 2001* (December 2002), page 26.
67. Tables 12.1 and 12.5, and EIA, *Emissions of Greenhouse Gases in the United States 2001* (December 2002), pages 37 and 39.

1 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, 2002
(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 0.06 quadrillion Btu of coal coke net imports.

[k] Includes, in quadrillion Btu, -0.09 hydroelectric pumped storage; -0.17 ethanol blended into motor gasoline, which is accounted for in both fossil fuels and renewable energy but counted only once in total consumption; and 0.08 electricity net imports.

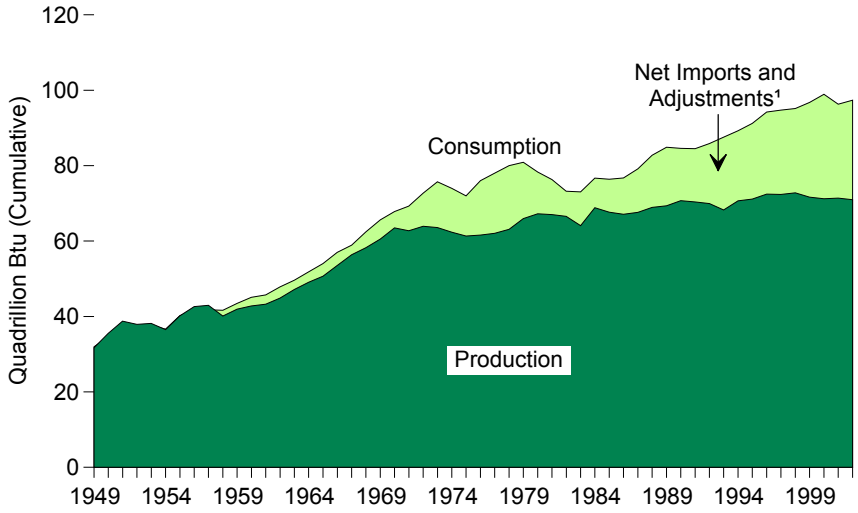
[l] Primary consumption, electricity retail sales, and electrical system energy losses, which are allocated to the end-use sectors in proportion to each sector's share of total electricity retail sales. See note at end of Section 2.

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

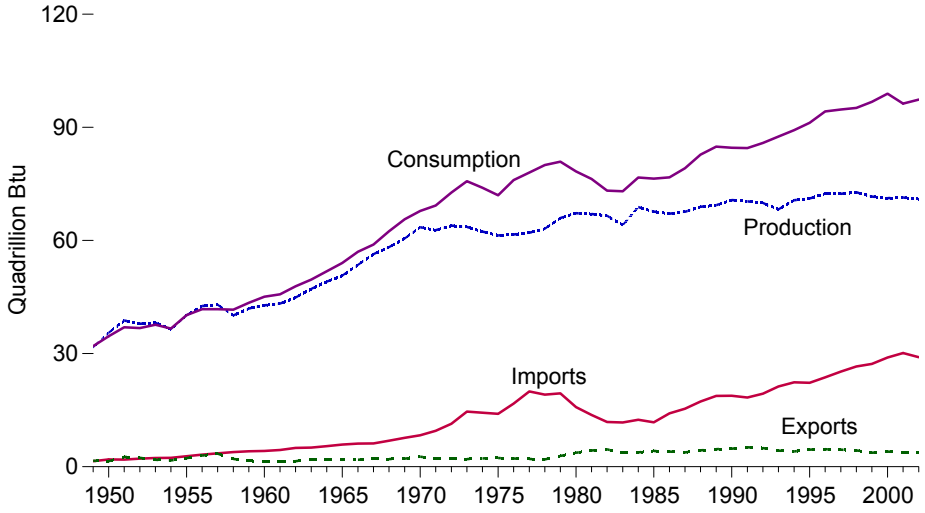
Sources: Tables 1.1, 1.2, 1.3, 1.4, and 2.1a.

Figure 1.1 Energy Overview

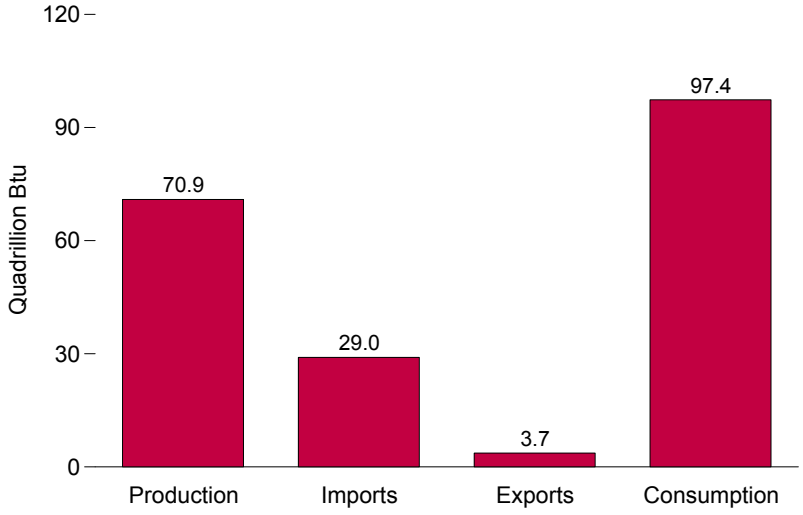
Overview, 1949-2002



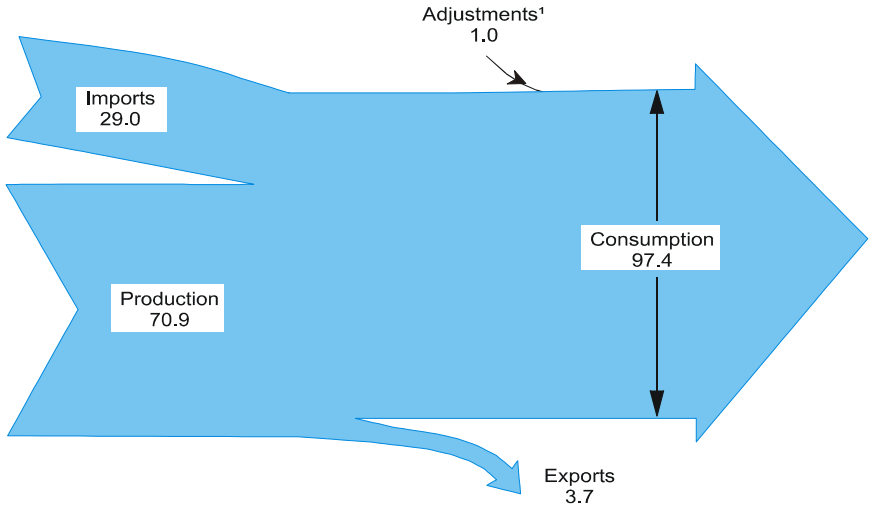
Overview, 1949-2002



Overview, 2002



Energy Flow, 2002
(Quadrillion Btu)



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

Source: Table 1.1

Table 1.1 Energy Overview, 1949-2002

(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]	Nuclear Electric Power	Renewable Energy [2]	Total [9,10]
1949	28.75	0	2.97	31.72	1.43	R1.45	0.88	1.59	0.40	29.00	0	R2.97	R31.98
1950	32.56	0	2.98	35.54	1.89	R1.91	0.79	1.47	-1.37	31.63	0	R2.98	R34.62
1951	35.79	0	2.96	38.75	1.87	R1.89	1.68	2.62	-1.05	34.01	0	R2.96	R36.97
1952	34.98	0	2.94	37.92	2.11	R2.15	1.40	2.37	-0.95	33.80	0	R2.94	R36.75
1953	35.35	0	2.83	38.18	2.28	R2.31	0.98	1.87	-0.96	34.83	0	R2.83	R37.66
1954	33.76	0	2.75	36.52	2.32	R2.35	0.91	1.70	-0.53	33.88	0	R2.75	R36.64
1955	37.36	0	2.78	40.15	2.75	R2.79	1.46	2.29	-0.44	37.41	0	R2.78	R40.21
1956	39.77	0	2.85	42.62	3.17	R3.21	1.98	2.95	-1.13	38.89	0	R2.85	R41.75
1957	40.13	(s)	2.85	42.98	3.46	R3.53	2.17	R3.44	-1.29	38.93	(s)	R2.85	R41.79
1958	37.22	(s)	2.92	40.13	3.72	R3.88	1.42	R2.05	-0.32	38.72	(s)	R2.92	R41.65
1959	39.05	(s)	2.90	41.95	3.91	R4.08	1.05	R1.53	-1.03	40.55	(s)	R2.90	R43.47
1960	39.87	0.01	2.93	42.80	4.00	R4.19	1.02	1.48	-0.43	42.14	0.01	R2.93	R45.09
1961	40.31	0.02	2.95	43.28	4.19	R4.44	0.98	1.38	-0.60	42.76	0.02	R2.95	R45.74
1962	41.73	0.03	3.12	44.88	4.56	R4.99	1.08	R1.47	-0.57	44.68	0.03	3.12	47.83
1963	44.04	0.04	3.10	47.17	4.65	R5.09	1.36	R1.84	-0.78	46.51	0.04	3.10	49.65
1964	45.79	0.04	3.23	49.06	4.96	R5.45	1.34	R1.81	-0.87	48.54	0.04	R3.23	R51.82
1965	47.23	0.04	3.40	50.68	5.40	R5.89	1.38	R1.83	-0.72	50.58	0.04	3.40	54.02
1966	50.04	0.06	3.43	53.53	5.63	R6.15	1.35	R1.83	-0.83	53.51	0.06	R3.43	57.02
1967	52.60	0.09	3.69	56.38	5.56	R6.16	1.35	R2.12	-1.52	55.13	0.09	3.69	58.91
1968	54.31	0.14	3.78	58.23	6.21	R6.91	1.38	R2.00	-0.71	58.50	0.14	R3.78	R62.42
1969	56.29	0.15	4.10	60.54	6.90	R7.68	1.53	R2.13	-0.47	61.36	0.15	R4.10	R65.62
1970	59.19	0.24	4.08	63.50	7.47	R8.34	1.94	R2.63	-1.37	63.52	0.24	R4.08	R67.84
1971	58.04	0.41	4.27	62.72	8.54	R9.53	1.55	R2.15	-0.82	64.60	0.41	R4.27	R69.29
1972	58.94	0.58	4.40	63.92	10.30	R11.39	1.53	R2.12	-0.48	67.70	0.58	R4.40	R72.70
1973	58.24	0.91	4.43	63.58	13.47	R14.61	1.43	R2.03	-0.46	70.32	0.91	R4.43	R75.71
1974	56.33	1.27	4.77	62.37	13.13	R14.30	1.62	R2.20	-0.48	67.91	1.27	R4.77	R73.99
1975	54.73	1.90	4.72	61.36	12.95	R14.03	1.76	R2.32	-1.07	65.35	1.90	R4.72	R72.00
1976	54.72	2.11	4.77	61.60	15.67	R16.76	1.60	R2.17	-0.18	69.10	2.11	R4.77	R76.01
1977	55.10	2.70	4.25	62.05	18.76	R19.95	1.44	R2.05	-1.95	70.99	2.70	R4.25	R78.00
1978	55.07	3.02	5.04	63.14	17.82	R19.11	1.08	R1.92	-0.34	71.86	3.02	R5.04	R79.99
1979	58.01	2.78	5.17	65.95	17.93	R19.46	1.75	R2.86	-1.65	72.89	2.78	R5.17	R80.90
1980	59.01	2.74	5.49	67.24	14.66	R15.80	2.42	R3.69	-1.05	69.98	2.74	R5.49	R78.29
1981	58.53	3.01	5.47	67.01	12.64	R13.72	2.94	R4.31	-0.08	67.75	3.01	R5.47	R76.33
1982	57.46	3.13	5.99	66.57	10.78	R11.86	2.79	R4.61	-0.59	64.04	3.13	R5.99	R73.23
1983	54.42	3.20	6.49	64.11	10.65	R11.75	2.04	R3.69	0.90	63.29	3.20	R6.49	R73.07
1984	58.85	3.55	6.43	68.83	11.43	R12.47	2.15	R3.79	-0.82	66.62	3.55	R6.43	R76.69
1985	57.54	4.08	6.03	67.65	10.61	R11.78	2.44	R4.20	1.19	66.22	4.08	R6.03	R76.42
1986	56.58	4.38	6.13	67.09	13.20	R14.15	2.25	R4.02	-0.50	66.15	4.38	R6.13	R76.72
1987	57.17	4.75	5.69	67.61	14.16	R15.40	2.09	R3.81	-0.04	68.63	4.75	R5.69	R79.16
1988	57.87	5.59	5.49	68.95	15.75	R17.30	2.50	R4.37	0.89	71.66	5.59	R5.49	R82.77
1989	57.47	5.60	R6.29	R69.36	17.16	R18.77	2.64	R4.66	R1.42	R73.02	5.60	R6.29	R84.89
1990	R58.53	6.10	R6.13	70.73	17.12	R18.82	2.77	R4.75	R-0.19	R72.46	6.10	R6.13	R84.60
1991	57.83	6.42	R6.16	R70.36	16.35	R18.33	2.85	R5.14	0.97	R72.00	6.42	R6.16	R84.52
1992	57.59	6.48	5.91	69.93	16.97	R19.37	2.68	R4.94	1.50	R73.52	6.48	R5.91	R85.87
1993	55.74	6.41	6.16	68.26	18.51	R21.27	1.96	R4.26	2.30	R75.05	6.41	R6.16	R87.58
1994	57.95	6.69	6.06	70.68	19.24	R22.39	1.88	R4.06	0.24	R76.48	6.69	R6.06	R89.25
1995	R57.44	7.08	6.67	R71.16	18.88	R22.26	2.32	R4.51	R2.32	R77.49	7.08	R6.67	R91.22
1996	R58.28	7.09	7.14	R72.47	20.29	R23.70	2.37	R4.63	R2.68	R79.98	7.09	R7.14	R94.22
1997	58.76	6.60	7.08	72.39	21.74	R25.22	2.19	R4.51	1.64	R81.09	6.60	R7.08	R94.73
1998	59.20	7.07	6.56	72.79	22.91	R26.58	2.09	R4.30	0.08	R81.59	7.07	R6.56	R95.15
1999	57.51	7.61	R6.60	R71.65	23.13	R27.25	1.53	R3.71	1.58	R82.65	7.61	R6.60	R96.77
2000	R57.25	7.86	R6.16	R71.22	24.53	R28.97	1.53	R4.01	R2.76	R85.00	7.86	R6.16	R98.94
2001	R58.11	8.03	R5.32	R71.37	R25.40	R30.15	1.27	R3.76	R-1.44	R83.13	8.03	R5.32	R96.32
2002P	56.99	8.15	5.90	70.95	24.31	29.04	1.03	3.65	1.02	83.49	8.15	5.90	97.35

[1] Coal, natural gas (dry), crude oil, and natural gas plant liquids.
[2] End-use consumption and electricity net generation.
[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] Also includes hydroelectric pumped storage and electricity net imports.
[10] Alcohol (ethanol blended into motor gasoline) is included in consumption values for both "Fossil Fuels" and "Renewable Energy," but is counted only once in total energy consumption.

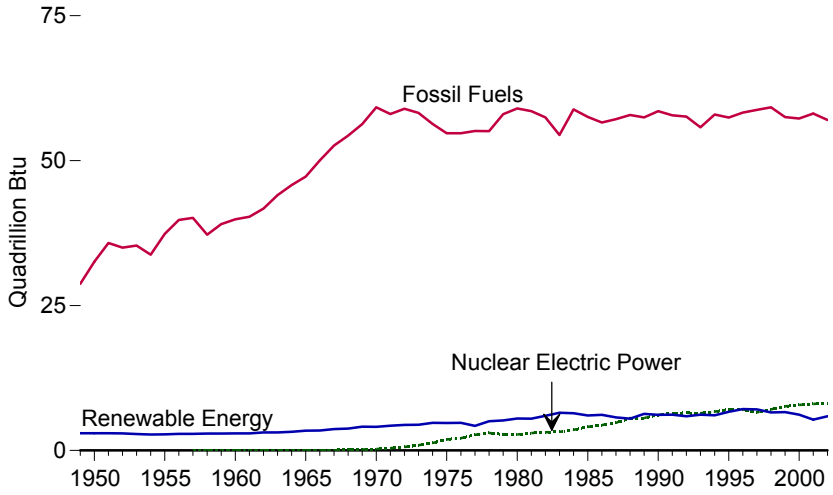
R=Revised. P=Preliminary. (s)=Less than 0.005 quadrillion Btu.

Notes: • See Note 1 at end of section. • Totals may not equal sum of components due to independent rounding.

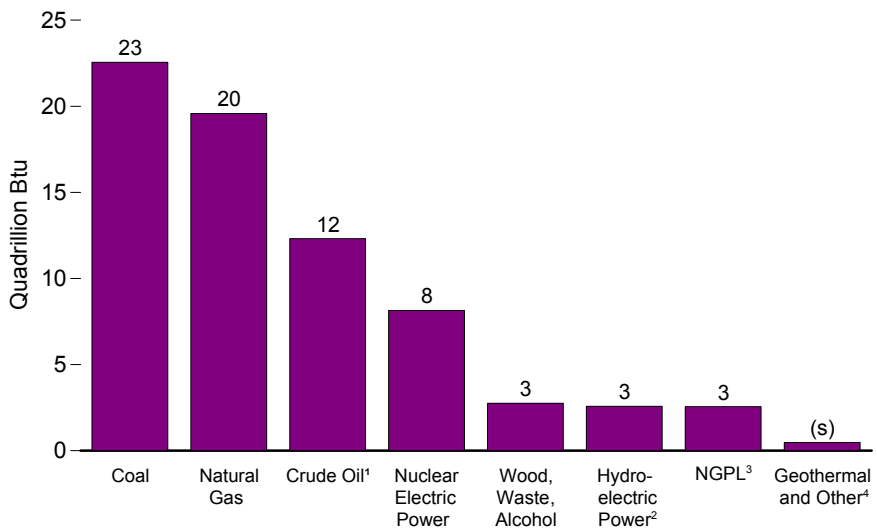
Sources: Tables 1.2, 1.3, and 1.4.

Figure 1.2 Energy Production by Source

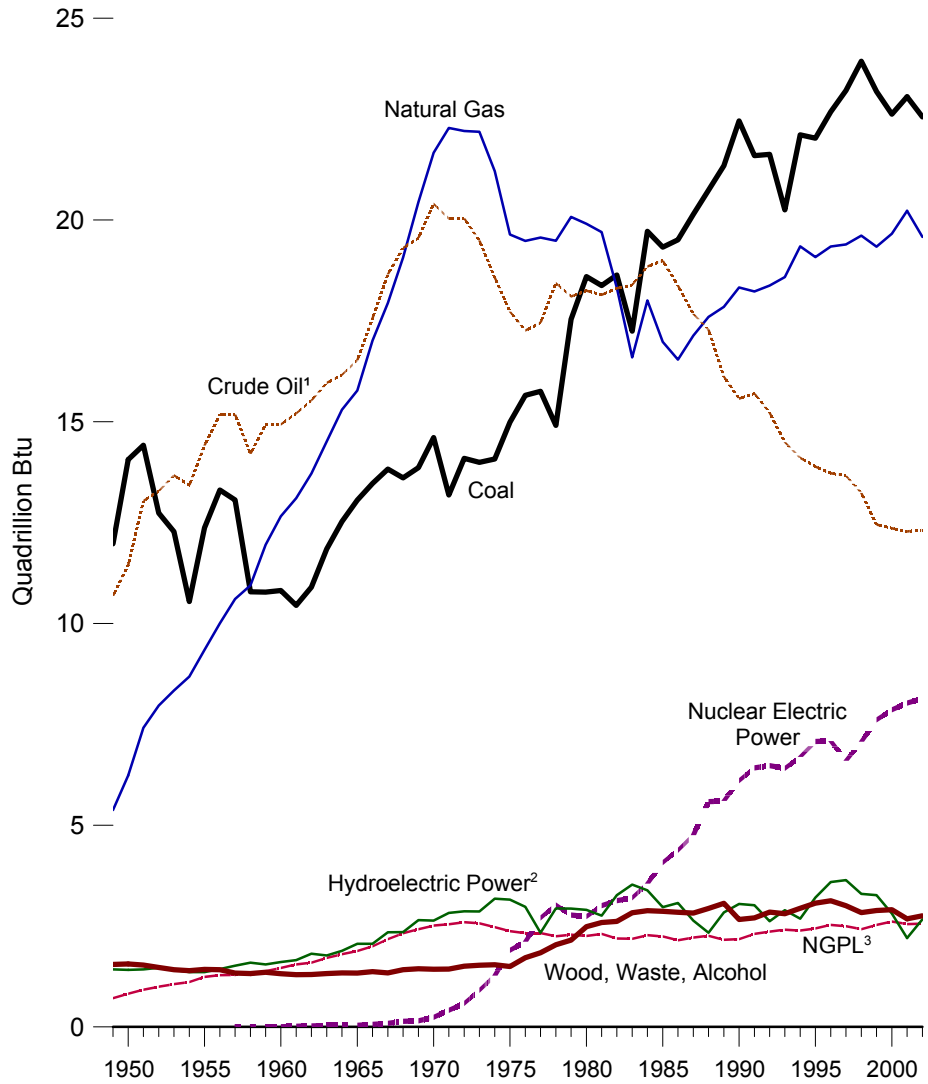
By Fossil Fuels, Nuclear Electric Power, and Renewable Energy, 1949-2002



By Source, 2002



By Major Source, 1949-2002



[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, 1949-2002

(Quadrillion Btu)

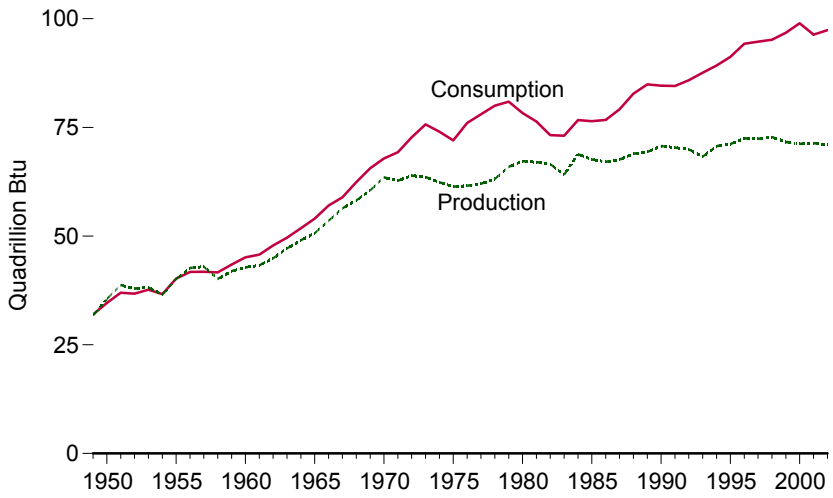
Year	Fossil Fuels					Nuclear Electric Power	Hydro-electric Pumped Storage [3]	Renewable Energy [1]						Total
	Coal	Natural Gas (Dry)	Crude Oil [2]	Natural Gas Plant Liquids	Total			Conventional Hydroelectric Power	Wood, Waste, Alcohol [4]	Geothermal	Solar	Wind	Total	
1949	11.974	5.377	10.683	0.714	28.748	0	([5])	1.425	1.549	NA	NA	NA	2.974	31.722
1950	14.060	6.233	11.447	0.823	32.563	0	([5])	1.415	1.562	NA	NA	NA	2.978	35.540
1951	14.419	7.416	13.037	0.920	35.792	0	([5])	1.424	1.535	NA	NA	NA	2.958	38.751
1952	12.734	7.964	13.281	0.998	34.977	0	([5])	1.466	1.474	NA	NA	NA	2.940	37.917
1953	12.278	8.339	13.671	1.062	35.349	0	([5])	1.413	1.419	NA	NA	NA	2.831	38.181
1954	10.542	8.682	13.427	1.113	33.764	0	([5])	1.360	1.394	NA	NA	NA	2.754	36.518
1955	12.370	9.345	14.410	1.240	37.364	0	([5])	1.360	1.424	NA	NA	NA	2.784	40.148
1956	13.306	10.002	15.180	1.283	39.771	0	([5])	1.435	1.416	NA	NA	NA	2.851	42.622
1957	13.061	10.605	15.178	1.289	40.133	(s)	([5])	1.516	1.334	NA	NA	NA	2.849	42.983
1958	10.783	10.942	14.204	1.287	37.216	0.002	([5])	1.592	1.323	NA	NA	NA	2.915	40.133
1959	10.778	11.952	14.933	1.383	39.045	0.002	([5])	1.548	1.353	NA	NA	NA	2.901	41.949
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
1961	10.447	13.105	15.206	1.549	40.307	0.020	([5])	1.656	1.295	0.002	NA	NA	2.953	43.280
1962	10.901	13.717	15.522	1.593	41.732	0.026	([5])	1.816	1.300	0.002	NA	NA	3.119	44.877
1963	11.849	14.513	15.966	1.709	44.037	0.038	([5])	1.771	1.323	0.004	NA	NA	3.098	47.174
1964	12.524	15.298	16.164	1.803	45.789	0.040	([5])	1.886	1.337	0.005	NA	NA	3.228	49.056
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
1966	13.468	17.011	17.561	1.996	50.035	0.064	([5])	2.062	1.369	0.004	NA	NA	3.435	53.534
1967	13.825	17.943	18.651	2.177	52.597	0.088	([5])	2.347	1.340	0.007	NA	NA	3.694	56.379
1968	13.609	19.068	19.308	2.321	54.306	0.142	([5])	2.349	1.419	0.009	NA	NA	3.778	58.225
1969	13.863	20.446	19.556	2.420	56.286	0.154	([5])	2.648	1.440	0.013	NA	NA	4.102	60.541
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])	R2.837	3.062	R0.317	0.055	R0.022	R6.294	R69.364
1990	22.456	R18.326	15.571	2.175	R58.529	6.104	-0.036	R3.046	R2.662	R0.336	0.060	R0.029	R6.133	R70.729
1991	21.594	18.229	15.701	2.306	57.829	6.422	-0.047	R3.016	2.702	R0.346	0.063	R0.031	R6.158	R70.362
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	2.804	0.364	0.066	0.031	6.157	68.262
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	R19.082	13.887	2.442	R57.440	7.075	-0.028	3.205	3.068	0.294	0.070	0.033	6.669	R71.156
1996	22.684	R19.344	13.723	2.530	R58.281	7.087	-0.032	3.590	3.127	0.316	0.071	0.033	7.137	R72.472
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	R2.885	0.331	0.069	0.046	R6.599	R71.652
2000	22.623	R19.662	12.358	2.611	R57.254	7.862	-0.057	2.811	R2.907	0.317	0.066	0.057	R6.158	R71.218
2001	R23.053	R20.227	R12.282	R2.547	R58.109	8.028	-0.090	R2.201	R2.678	R0.311	R0.065	R0.068	R5.324	R71.372
2002P	22.554	19.561	12.314	2.561	56.990	8.145	-0.089	2.668	2.756	0.304	0.064	0.106	5.899	70.946

[1] End-use consumption and electricity net generation.
[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."

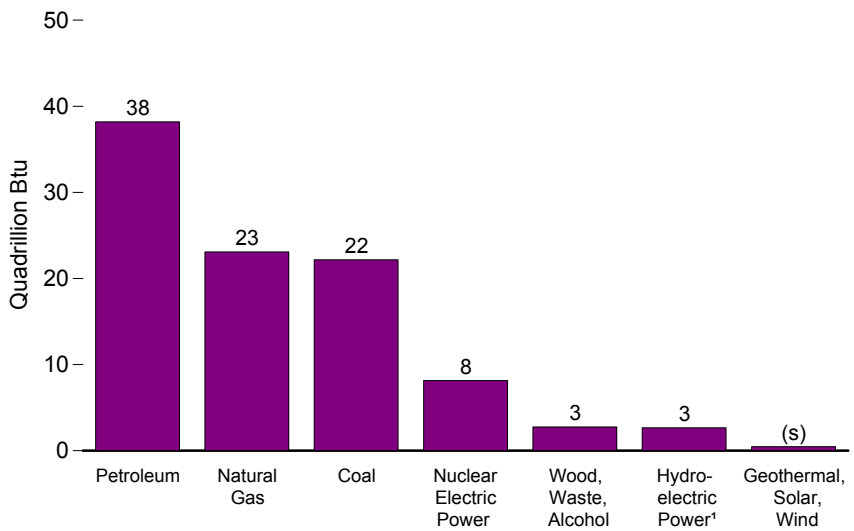
R=Revised. P=Preliminary. NA=Not available. (s)=Less than 0.0005 quadrillion Btu.
Note: Totals may not equal sum of components due to independent rounding.
Sources: Tables 5.1, 6.1, 7.1, 8.2a, 10.2a, 10.2b, and A2-A6.

Figure 1.3 Energy Consumption by Source

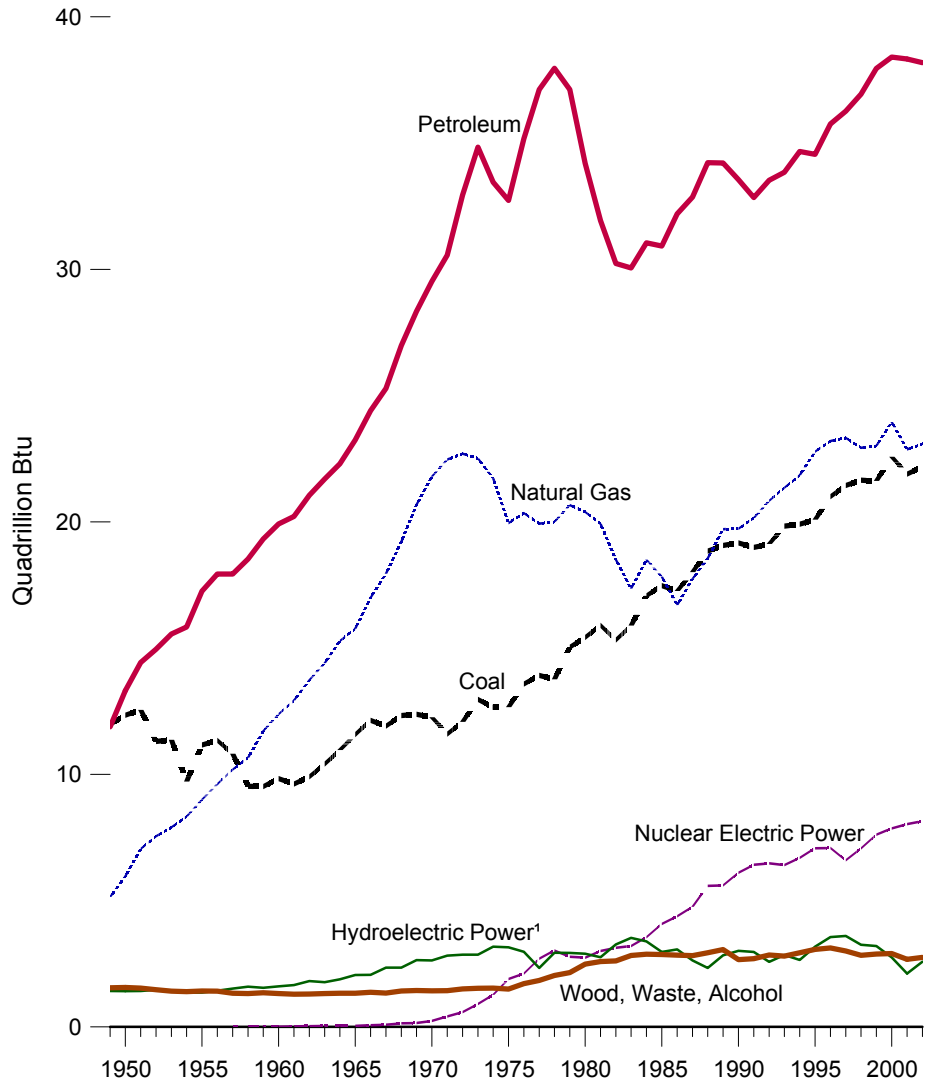
Production and Consumption, 1949-2002



By Source, 2002



By Major Source, 1949-2002



[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, 1949-2002

(Quadrillion Btu)

Year	Fossil Fuels					Nuclear Electric Power	Hydro-electric Pumped Storage [4]	Renewable Energy [1]						Electricity Net Imports	Total [5]
	Coal	Coal Coke Net Imports	Natural Gas [2]	Petroleum [3]	Total			Conventional Hydroelectric Power	Wood, Waste, Alcohol [5]	Geothermal	Solar	Wind	Total		
1949	11.981	-0.007	5.145	11.883	29.002	0	([6])	R1.425	1.549	NA	NA	NA	R2.974	0.005	R31.982
1950	12.347	0.001	5.968	13.315	31.632	0	([6])	R1.415	1.562	NA	NA	NA	R2.978	0.006	R34.616
1951	12.553	-0.021	7.049	14.428	34.008	0	([6])	R1.424	1.535	NA	NA	NA	R2.958	0.007	R36.974
1952	11.306	-0.012	7.550	14.956	33.800	0	([6])	R1.466	1.474	NA	NA	NA	R2.940	0.008	R36.748
1953	11.373	-0.009	7.907	15.556	34.826	0	([6])	R1.413	1.419	NA	NA	NA	R2.831	0.007	R37.664
1954	9.715	-0.007	8.330	15.839	33.877	0	([6])	R1.360	1.394	NA	NA	NA	R2.754	0.008	R36.639
1955	11.167	-0.010	8.998	17.255	37.410	0	([6])	R1.360	1.424	NA	NA	NA	R2.784	0.014	R40.208
1956	11.350	-0.013	9.614	17.937	38.888	0	([6])	R1.435	1.416	NA	NA	NA	R2.851	0.016	R41.754
1957	10.821	-0.017	10.191	17.932	38.926	(s)	([6])	R1.516	1.334	NA	NA	NA	R2.849	0.012	R41.787
1958	9.533	-0.007	10.663	18.527	38.717	0.002	([6])	R1.592	1.323	NA	NA	NA	R2.915	0.011	R41.645
1959	9.518	-0.008	11.717	19.323	40.550	0.002	([6])	R1.548	1.353	NA	NA	NA	R2.901	0.012	R43.466
1960	9.838	-0.006	12.385	19.919	42.137	0.006	([6])	R1.608	1.320	0.001	NA	NA	R2.929	0.015	R45.087
1961	9.623	-0.008	12.926	20.216	42.758	0.020	([6])	R1.656	1.295	0.002	NA	NA	R2.953	0.008	R45.739
1962	9.906	-0.006	13.731	21.049	44.681	0.026	([6])	R1.816	1.300	0.002	NA	NA	R3.119	0.002	R47.828
1963	10.413	-0.007	14.403	21.701	46.509	0.038	([6])	R1.771	1.323	0.004	NA	NA	R3.098	(s)	R49.646
1964	10.964	-0.010	15.288	22.301	48.543	0.040	([6])	R1.886	1.337	0.005	NA	NA	R3.228	0.007	R51.817
1965	11.581	-0.018	15.769	23.246	50.577	0.043	([6])	R2.059	1.335	0.004	NA	NA	R3.398	(s)	R54.017
1966	12.143	-0.025	16.995	24.401	53.514	0.064	([6])	R2.062	1.369	0.004	NA	NA	R3.435	0.004	R57.017
1967	11.914	-0.015	17.945	25.284	55.127	0.088	([6])	R2.347	1.340	0.007	NA	NA	R3.694	-0.001	R58.908
1968	12.331	-0.017	19.210	26.979	58.502	0.142	([6])	R2.349	1.419	0.009	NA	NA	R3.778	-0.002	R62.419
1969	12.382	-0.036	20.678	28.338	61.362	0.154	([6])	R2.648	1.440	0.013	NA	NA	R4.102	0.004	R65.621
1970	12.265	-0.058	21.795	29.521	63.522	0.239	([6])	R2.634	1.431	0.011	NA	NA	R4.076	0.007	R67.844
1971	11.598	-0.033	22.469	30.561	64.596	0.413	([6])	R2.824	1.432	0.012	NA	NA	R4.268	0.012	R69.289
1972	12.077	-0.026	22.698	32.947	67.696	0.584	([6])	R2.864	1.503	0.031	NA	NA	R4.398	0.026	R72.704
1973	12.971	-0.007	22.512	34.840	70.316	0.910	([6])	R2.861	1.529	0.043	NA	NA	R4.433	0.049	R75.708
1974	12.663	0.056	21.732	33.455	67.906	1.272	([6])	R3.177	1.540	0.053	NA	NA	R4.769	0.043	R73.991
1975	12.663	0.014	19.948	32.731	65.355	1.900	([6])	R3.155	1.499	0.070	NA	NA	R4.723	0.021	R71.999
1976	13.584	(s)	20.345	35.175	69.104	2.111	([6])	R2.976	1.713	0.078	NA	NA	R4.768	0.029	R76.012
1977	13.922	0.015	19.931	37.122	70.989	2.702	([6])	R2.333	1.838	0.077	NA	NA	R4.249	0.059	R78.000
1978	13.766	0.125	20.000	37.965	71.856	3.024	([6])	R2.937	2.038	0.064	NA	NA	R5.039	0.067	R79.986
1979	15.040	0.063	20.666	37.123	72.892	2.776	([6])	R2.931	2.152	0.084	NA	NA	R5.166	0.069	R80.903
1980	15.423	-0.035	20.394	34.202	69.984	2.739	([6])	R2.900	2.485	0.110	NA	NA	R5.494	0.071	R78.289
1981	15.908	-0.016	19.928	31.931	67.750	3.008	([6])	R2.758	2.590	0.123	NA	NA	R5.471	0.113	R76.335
1982	15.322	-0.022	18.505	30.232	64.037	3.131	([6])	R3.266	2.615	0.105	NA	NA	R5.985	0.100	R73.234
1983	15.894	-0.016	17.357	30.054	63.290	3.203	([6])	R3.527	2.831	0.129	NA	(s)	R6.488	0.121	R73.066
1984	17.071	-0.011	18.507	31.051	66.617	3.553	([6])	R3.386	2.880	0.165	(s)	(s)	R6.431	0.135	R76.693
1985	17.478	-0.013	17.834	30.922	66.221	4.076	([6])	R2.970	2.864	0.198	(s)	(s)	R6.033	0.140	R76.417
1986	17.260	-0.017	16.708	32.196	66.148	4.380	([6])	R3.071	2.841	0.219	(s)	(s)	R6.132	0.122	R76.722
1987	18.008	0.009	17.744	32.865	68.626	4.754	([6])	R2.635	2.823	0.229	(s)	(s)	R5.687	0.158	R79.156
1988	18.846	0.040	18.552	34.222	71.660	5.587	([6])	R2.334	2.937	0.217	(s)	(s)	R5.489	0.108	R82.774
1989	R19.070	0.030	19.712	34.211	R73.023	5.602	([6])	R2.837	3.062	0.317	0.055	R0.022	R6.294	0.037	R84.886
1990	R19.173	0.005	R19.730	33.553	R72.460	6.104	-0.036	R3.046	R2.662	R0.336	0.060	R0.029	R6.133	0.008	R84.605
1991	18.992	0.010	20.149	32.845	R71.996	6.422	-0.047	R3.016	2.702	R0.346	0.063	R0.031	R6.158	0.067	R84.522
1992	19.122	0.035	20.835	33.527	R73.519	6.479	-0.043	R2.617	2.847	R0.349	0.064	0.030	R5.907	0.087	R85.866
1993	19.835	0.027	21.351	33.841	R75.055	6.410	-0.042	R2.892	2.804	R0.364	0.066	0.031	R6.157	0.095	R87.579
1994	19.909	0.058	21.842	34.670	R76.480	6.694	-0.035	R2.683	2.939	R0.338	0.069	0.036	R6.065	0.153	R89.248
1995	20.089	0.061	22.784	34.553	R77.488	7.075	-0.028	R3.205	3.068	R0.294	0.070	0.033	R6.669	0.134	R91.221
1996	21.002	R0.023	R23.197	35.757	R79.978	7.087	-0.032	R3.590	3.127	R0.316	0.071	0.033	R7.137	0.137	R94.224
1997	21.445	R0.046	R23.329	36.266	R81.086	6.597	-0.041	R3.640	3.006	0.325	0.070	0.034	R7.075	0.116	R94.727
1998	21.656	R0.067	R22.936	36.934	R81.592	7.068	-0.046	R3.297	2.835	R0.328	0.070	0.031	R6.561	0.088	R95.146
1999	21.623	R0.058	R23.010	37.960	R82.650	7.610	-0.062	R3.268	R2.885	R0.331	0.069	0.046	R6.599	0.099	R96.774
2000	22.580	R0.065	R23.953	38.404	R85.001	7.862	-0.057	R2.811	R2.907	0.317	0.066	0.057	R6.158	0.116	R98.942
2001	R21.897	R0.032	R22.869	R38.333	R83.131	8.028	-0.090	R2.201	R2.678	R0.311	R0.065	R0.068	R5.324	0.075	R96.322
2002P	22.184	0.062	23.062	38.183	83.491	8.145	-0.089	2.668	2.756	0.304	0.064	0.106	5.899	0.078	97.351

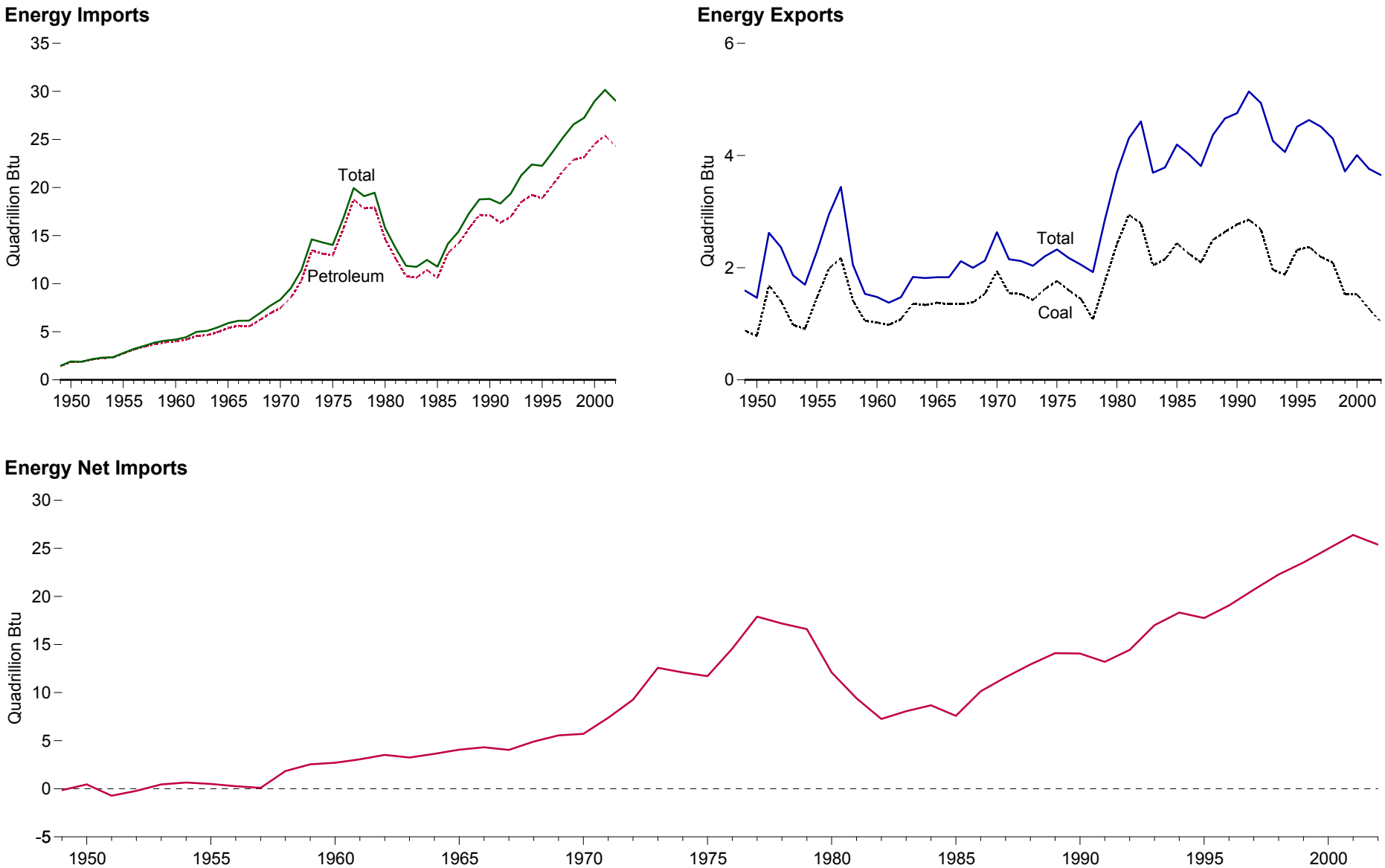
[1] End-use consumption and electricity net generation.
[2] Includes supplemental gaseous fuels.
[3] Petroleum products supplied, including natural gas plant liquids and crude oil burned as fuel.
[4] Pumped storage facility production minus energy used for pumping.
[5] Alcohol (ethanol blended into motor gasoline) is included in both "Petroleum" and "Alcohol," but is counted only once in total energy consumption.
[6] 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 Note 1 at end of section. • Totals may not equal sum of components due to independent rounding.

Sources: Tables 5.1, 6.1, 7.1, 7.7, 8.1, 8.2a, 10.1, and A2-A6.

Figure 1.4 Energy Imports, Exports, and Net Imports, 1949-2002



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

Source: Table 1.4.

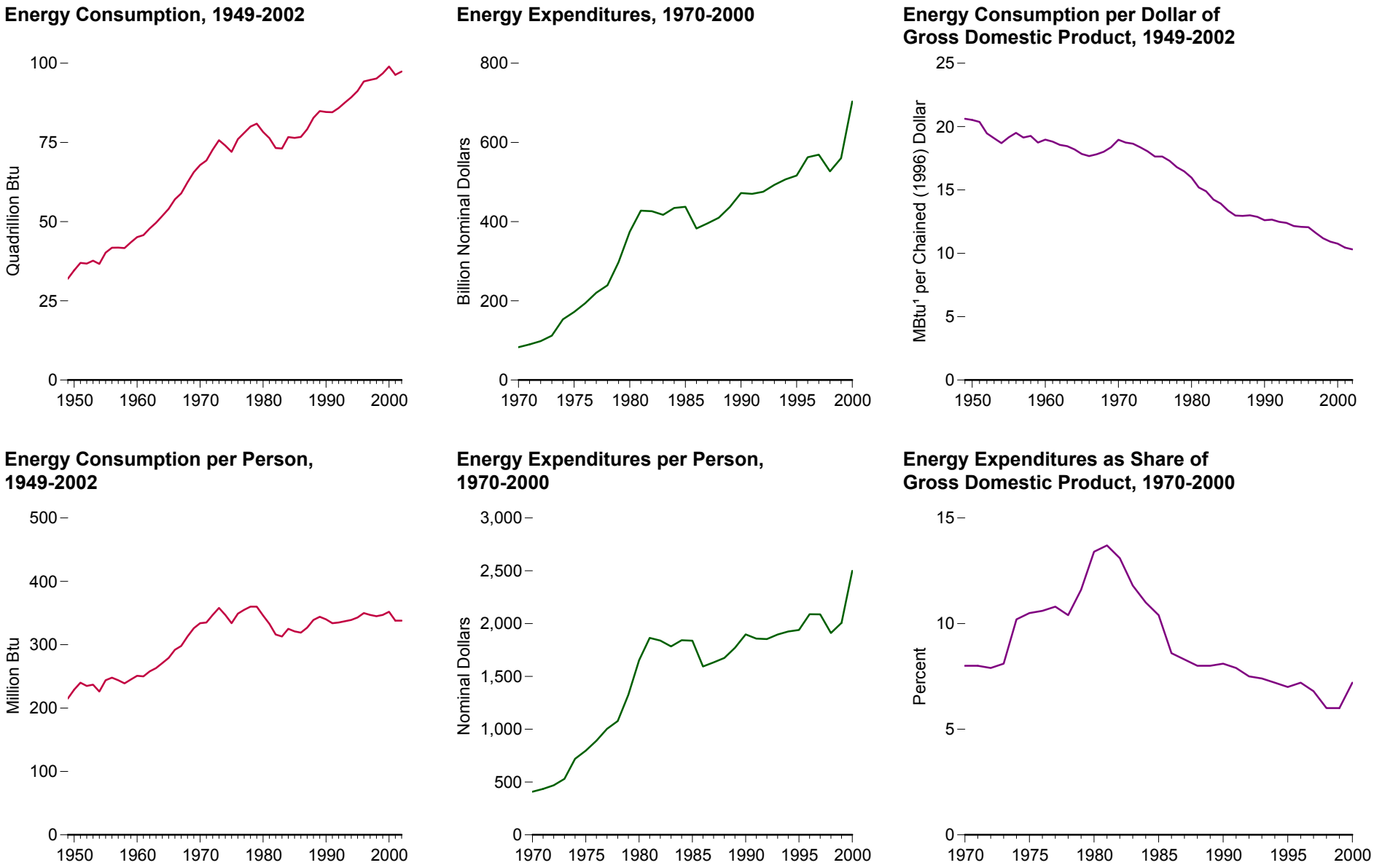
Table 1.4 Energy Imports, Exports, and Net Imports, 1949-2002

(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	R0.01	R1.45	0.88	0.02	0.68	R0.01	1.59	-0.87	-0.02	0.75	(s)	R-0.14
1950	0.01	0.00	1.89	R0.02	R1.91	0.79	0.03	0.64	0.01	1.47	-0.78	-0.03	1.24	R0.01	R0.45
1951	0.01	0.00	1.87	R0.01	R1.89	1.68	0.03	0.89	0.03	2.62	-1.67	-0.03	0.98	-0.01	R-0.73
1952	0.01	0.01	2.11	R0.02	R2.15	1.40	0.03	0.91	0.02	2.37	-1.40	-0.02	1.20	(s)	R-0.22
1953	0.01	0.01	2.28	R0.01	R2.31	0.98	0.03	0.84	R0.01	1.87	-0.97	-0.02	1.44	(s)	R0.45
1954	0.01	0.01	2.32	R0.01	R2.35	0.91	0.03	0.75	0.01	1.70	-0.91	-0.02	1.58	(s)	R0.65
1955	0.01	0.01	2.75	R0.02	R2.79	1.46	0.03	0.77	R0.01	2.29	-1.46	-0.02	1.98	(s)	R0.50
1956	0.01	0.01	3.17	R0.02	R3.21	1.98	0.04	0.91	0.02	2.95	-1.98	-0.03	2.26	(s)	R0.26
1957	0.01	0.04	3.46	R0.02	R3.53	2.17	0.04	1.20	R0.02	R3.44	-2.16	(s)	2.26	R-0.01	R0.09
1958	0.01	0.14	3.72	R0.02	R3.88	1.42	0.04	0.58	R0.01	R2.05	-1.41	0.10	3.14	(s)	R1.83
1959	0.01	0.14	3.91	R0.02	R4.08	1.05	0.02	0.45	R0.01	R1.53	-1.04	0.12	3.46	(s)	R2.54
1960	0.01	0.16	4.00	R0.02	R4.19	1.02	0.01	0.43	R0.01	1.48	-1.02	0.15	3.57	R0.01	R2.71
1961	(s)	0.23	4.19	R0.01	R4.44	0.98	0.01	0.37	R0.01	1.38	-0.98	0.22	3.82	(s)	R3.06
1962	0.01	0.42	4.56	R0.01	R4.99	1.08	0.02	0.36	R0.01	R1.47	-1.08	0.40	4.20	(s)	R3.52
1963	0.01	0.42	4.65	R0.01	R5.09	1.36	0.02	0.44	R0.02	R1.84	-1.35	0.40	4.21	-0.01	3.25
1964	0.01	0.46	4.96	R0.02	R5.45	1.34	0.02	0.43	R0.03	R1.81	-1.33	0.44	4.53	(s)	R3.63
1965	(s)	0.47	5.40	R0.01	R5.89	1.38	0.03	0.39	R0.03	R1.83	-1.37	0.44	5.01	-0.02	4.06
1966	(s)	0.50	5.63	R0.02	R6.15	1.35	0.03	0.41	R0.04	R1.83	-1.35	0.47	5.21	R-0.02	4.32
1967	0.01	0.58	5.56	R0.02	R6.16	1.35	0.08	0.65	R0.03	R2.12	-1.35	0.50	4.91	-0.02	4.04
1968	0.01	0.67	6.21	R0.01	R6.91	1.38	0.10	0.49	R0.03	R2.00	-1.37	0.58	5.73	-0.02	R4.91
1969	(s)	0.75	6.90	R0.02	R7.68	1.53	0.05	0.49	R0.05	R2.13	-1.53	0.70	6.42	R-0.03	R5.55
1970	(s)	0.85	7.47	R0.02	R8.34	1.94	0.07	0.55	R0.08	R2.63	-1.93	0.77	6.92	R-0.05	R5.71
1971	(s)	0.96	8.54	R0.03	R9.53	1.55	0.08	0.47	R0.05	R2.15	-1.54	0.88	8.07	R-0.02	R7.38
1972	(s)	1.05	10.30	R0.04	R11.39	1.53	0.08	0.47	R0.04	R2.12	-1.53	0.97	9.83	(s)	R9.27
1973	(s)	1.06	13.47	R0.08	R14.61	1.43	0.08	0.49	R0.04	R2.03	-1.42	0.98	12.98	R0.04	R12.58
1974	0.05	0.99	13.13	R0.14	R14.30	1.62	0.08	0.46	R0.04	R2.20	-1.57	0.91	12.66	R0.10	R12.10
1975	0.02	0.98	12.95	R0.08	R14.03	1.76	0.07	0.44	R0.05	R2.32	-1.74	0.90	12.51	R0.03	R11.71
1976	0.03	0.99	15.67	R0.07	R16.76	1.60	0.07	0.47	R0.04	R2.17	-1.57	0.92	15.20	R0.03	R14.59
1977	0.04	1.04	18.76	R0.11	R19.95	1.44	0.06	0.51	R0.04	R2.05	-1.40	0.98	18.24	R0.07	R17.90
1978	0.07	0.99	17.82	R0.21	R19.11	1.08	0.05	0.77	R0.02	R1.92	-1.00	0.94	17.06	R0.19	R17.19
1979	0.05	1.30	17.93	R0.18	R19.46	1.75	0.06	1.00	R0.04	R2.86	-1.70	1.24	16.93	R0.13	R16.60
1980	0.03	1.01	14.66	R0.10	R15.80	2.42	0.05	1.16	R0.07	R3.69	-2.39	0.96	13.50	R0.04	R12.10
1981	0.03	0.92	12.64	R0.14	R13.72	2.94	0.06	1.26	R0.04	R4.31	-2.92	0.86	11.38	R0.10	R9.41
1982	0.02	0.95	10.78	R0.12	R11.86	2.79	0.05	1.73	R0.04	R4.61	-2.77	0.90	9.05	R0.08	R7.25
1983	0.03	0.94	10.65	R0.13	R11.75	2.04	0.06	1.57	R0.03	R3.69	-2.01	0.89	9.08	R0.10	R8.06
1984	0.03	0.85	11.43	R0.16	R12.47	2.15	0.06	1.54	R0.03	R3.79	-2.12	0.79	9.89	R0.12	R8.68
1985	0.05	0.95	10.61	R0.17	R11.78	2.44	0.06	1.66	R0.04	R4.20	-2.39	0.90	8.95	R0.13	R7.58
1986	0.06	0.75	13.20	R0.15	R14.15	2.25	0.06	1.67	R0.04	R4.02	-2.19	0.69	11.53	R0.11	R10.13
1987	0.04	0.99	14.16	R0.20	R15.40	2.09	0.05	1.63	R0.03	R3.81	-2.05	0.94	12.53	R0.17	R11.59
1988	0.05	1.30	15.75	R0.20	R17.30	2.50	0.07	1.74	R0.05	R4.37	-2.45	1.22	14.01	R0.15	R12.93
1989	0.07	1.39	17.16	R0.15	R18.77	2.64	0.11	1.84	R0.08	R4.66	-2.57	1.28	15.33	R0.07	R14.11
1990	0.07	1.55	17.12	R0.08	R18.82	2.77	0.09	1.82	R0.07	R4.75	-2.70	1.46	15.29	R0.01	R14.06
1991	0.08	1.80	16.35	R0.10	R18.33	2.85	0.13	2.13	R0.03	R5.14	-2.77	1.67	14.22	R0.08	R13.19
1992	0.10	2.16	16.97	R0.15	R19.37	2.68	0.22	2.01	R0.03	R4.94	-2.59	1.94	14.96	R0.12	R14.44
1993	0.20	2.40	18.51	R0.16	R21.27	1.96	0.14	2.12	R0.04	R4.26	-1.76	2.25	16.40	R0.12	R17.01
1994	0.22	2.68	19.24	R0.24	R22.39	1.88	0.16	1.99	R0.03	R4.06	-1.66	2.52	17.26	R0.21	R18.33
1995	0.24	2.90	18.88	R0.24	R22.26	2.32	0.16	1.99	R0.05	R4.51	-2.08	2.74	16.89	R0.19	R17.75
1996	0.20	3.00	20.29	R0.21	R23.70	2.37	0.16	2.06	R0.05	R4.63	-2.17	2.85	18.23	R0.16	R19.07
1997	0.19	3.06	21.74	R0.22	R25.22	2.19	0.16	2.10	R0.06	R4.51	-2.01	2.90	19.64	R0.16	R20.70
1998	0.22	3.22	22.91	R0.23	R26.58	2.09	0.16	1.97	R0.07	R4.30	-1.87	3.06	20.94	R0.16	R22.28
1999	0.23	3.66	23.13	R0.23	R27.25	1.53	0.16	1.95	R0.07	R3.71	-1.30	3.50	21.18	R0.16	R23.54
2000	0.31	3.87	24.53	R0.26	R28.97	1.53	0.25	2.15	R0.08	R4.01	-1.21	3.62	22.38	R0.18	R24.97
2001	0.49	R4.07	R25.40	R0.19	R30.15	1.27	R0.38	R2.04	R0.08	R3.76	-0.77	R3.69	R23.36	R0.11	R26.39
2002P	0.42	4.10	24.31	0.20	29.04	1.03	0.52	2.04	0.06	3.65	-0.61	3.58	22.28	0.14	25.38

[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: • See Note 1 at end of section. • Includes trade between the United States (50 States and the District of Columbia) and its territories and possessions. • Totals or net import items may not equal sum of components due to independent rounding.
Sources: Tables 5.1, 6.1, 7.1, 7.7, 8.1, 10.2b, and A2-A6.

Figure 1.5 Energy Consumption and Expenditures Indicators



[1] Thousand Btu.

Source: Table 1.5.

Table 1.5 Energy Consumption, Expenditures, and Emissions Indicators, 1949-2002

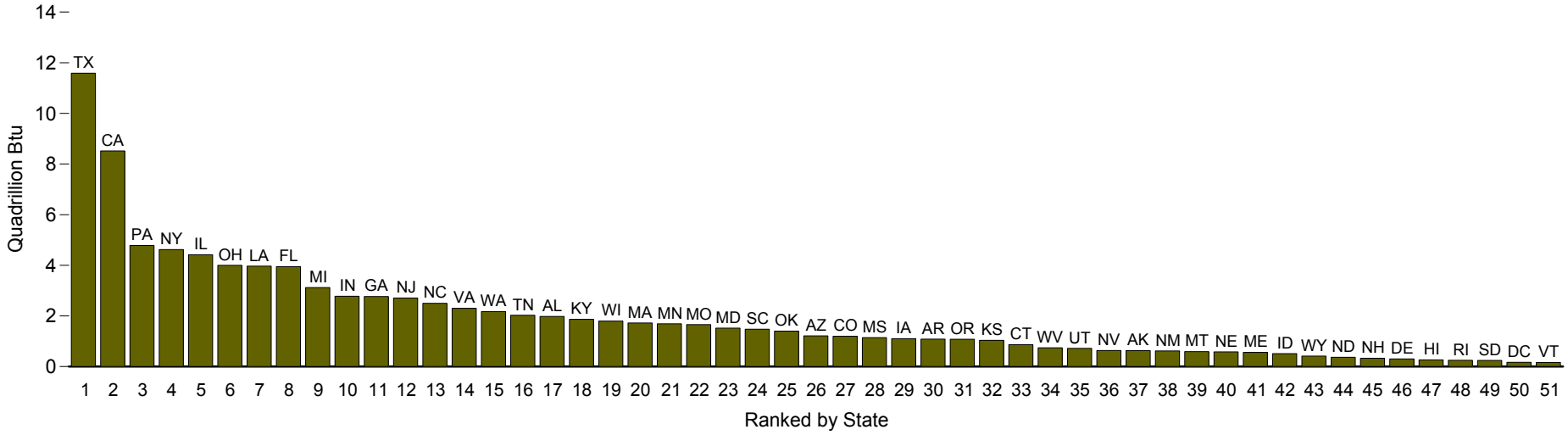
Year	Energy Consumption	Energy Consumption per Person	Energy Expenditures	Energy Expenditures per Person	Gross Domestic Product (GDP)	Energy Expenditures as Share of GDP	Gross Domestic Product (GDP)	Energy Consumption per Dollar of GDP	Greenhouse Gas Emissions [1] per Dollar of GDP	Carbon Dioxide Emissions [2] per Dollar of GDP
	Quadrillion Btu	Million Btu	Million Nominal Dollars	Nominal Dollars	Billion Nominal Dollars	Percent	Billion Chained (1996) Dollars	Thousand Btu per Chained (1996) Dollar	Metric Tons Carbon Dioxide Equivalent per Million Chained (1996) Dollars	Metric Tons Carbon Dioxide per Million Chained (1996) Dollars
1949	R31.98	215	NA	NA	267.7	NA	1,550.9	R20.62	NA	NA
1950	R34.62	229	NA	NA	294.3	NA	1,686.6	R20.52	NA	NA
1951	R36.97	240	NA	NA	339.5	NA	1,815.1	R20.37	NA	NA
1952	R36.75	235	NA	NA	358.6	NA	1,887.3	R19.47	NA	NA
1953	R37.66	237	NA	NA	379.9	NA	1,973.9	R19.08	NA	NA
1954	R36.64	226	NA	NA	381.1	NA	1,960.5	R18.69	NA	NA
1955	R40.21	244	NA	NA	415.2	NA	2,099.5	R19.15	NA	NA
1956	R41.75	R248	NA	NA	438.0	NA	2,141.1	R19.50	NA	NA
1957	R41.79	244	NA	NA	461.5	NA	2,183.9	R19.13	NA	NA
1958	R41.65	239	NA	NA	467.9	NA	2,162.8	R19.26	NA	NA
1959	R43.47	R245	NA	NA	507.4	NA	2,319.0	R18.74	NA	NA
1960	R45.09	R251	NA	NA	527.4	NA	2,376.7	R18.97	NA	NA
1961	R45.74	250	NA	NA	545.7	NA	2,432.0	18.81	NA	NA
1962	47.83	258	NA	NA	586.5	NA	2,578.9	18.55	NA	NA
1963	49.65	263	NA	NA	618.7	NA	2,690.4	18.45	NA	NA
1964	R51.82	271	NA	NA	664.4	NA	2,846.5	R18.20	NA	NA
1965	54.02	279	NA	NA	720.1	NA	3,028.5	17.84	NA	NA
1966	57.02	292	NA	NA	789.3	NA	3,227.5	17.67	NA	NA
1967	58.91	298	NA	NA	834.1	NA	3,308.3	17.81	NA	NA
1968	R62.42	313	NA	NA	911.5	NA	3,466.1	18.01	NA	NA
1969	R65.62	326	NA	NA	985.3	NA	3,571.4	R18.37	NA	NA
1970	R67.84	334	R82,898	408	1,039.7	8.0	3,578.0	R18.96	NA	NA
1971	R69.29	335	R90,051	435	1,128.6	8.0	3,697.7	R18.74	NA	NA
1972	R72.70	R347	R98,088	469	1,240.4	7.9	3,898.4	R18.65	NA	NA
1973	R75.71	R358	R111,910	R529	1,385.5	8.1	4,123.4	R18.36	NA	NA
1974	R73.99	347	R153,350	719	1,501.0	10.2	4,099.0	R18.05	NA	NA
1975	R72.00	334	R171,802	797	1,635.2	10.5	4,084.4	R17.63	NA	NA
1976	R76.01	R349	R193,852	891	1,823.9	10.6	4,311.7	R17.63	NA	NA
1977	R78.00	355	R220,391	1,003	2,031.4	R10.8	4,511.8	R17.29	NA	NA
1978	R79.99	R360	R239,175	1,077	2,295.9	10.4	4,760.6	R16.80	NA	NA
1979	R80.90	R360	R297,518	1,325	2,566.4	11.6	4,912.1	R16.47	NA	NA
1980	R78.29	346	R374,319	1,652	2,795.6	13.4	4,900.9	R15.97	1,136	964
1981	R76.33	R333	R427,697	1,864	3,131.3	13.7	5,021.0	R15.20	1,088	916
1982	R73.23	R316	R426,109	R1,839	3,259.2	13.1	4,919.3	R14.89	1,052	887
1983	R73.07	R313	R417,047	1,784	3,534.9	11.8	5,132.3	R14.24	1,004	845
1984	R76.69	R325	R434,379	1,842	3,932.7	11.0	5,505.2	R13.93	986	830
1985	R76.42	R321	R437,271	1,838	4,213.0	10.4	5,717.1	R13.37	969	797
1986	R76.72	R319	R382,741	1,594	4,452.9	8.6	5,912.4	R12.98	937	773
1987	R79.16	R327	R395,730	1,633	4,742.5	8.3	6,113.3	R12.95	932	772
1988	R82.77	339	R409,572	1,675	5,108.3	8.0	6,368.4	R13.00	929	776
1989	R84.89	344	R436,752	R1,770	5,489.1	8.0	6,591.8	12.88	914	761
1990	R84.60	340	R472,214	R1,898	5,803.2	8.1	6,707.9	12.61	920	743
1991	R84.52	R334	R470,095	R1,858	5,986.2	R7.9	6,676.4	R12.66	919	740
1992	R85.87	335	R475,298	R1,853	6,318.9	7.5	6,880.0	R12.48	908	732
1993	R87.58	R337	R492,816	R1,896	6,642.3	7.4	7,062.6	R12.40	898	725
1994	R89.25	R339	R506,553	R1,925	7,054.3	7.2	7,347.7	R12.15	878	708
1995	R91.22	R343	R516,207	R1,939	7,400.5	7.0	7,543.8	R12.09	863	697
1996	R94.22	R350	R562,600	R2,088	7,813.2	7.2	7,813.2	R12.06	854	697
1997	R94.73	R347	R569,011	R2,087	8,318.4	6.8	8,159.5	R11.61	825	676
1998	R95.15	R345	R527,028	R1,911	8,781.5	6.0	8,508.9	R11.18	794	652
1999	R96.77	R347	R560,161	R2,007	R9,274.3	6.0	R8,859.0	R10.92	770	633
2000	R98.94	R352	703,188	2,499	R9,824.6	7.2	R9,191.4	R10.76	761	630
2001	R96.32	R338	NA	NA	R10,082.2	NA	R9,214.5	R10.45	749	620
2002P	97.35	338	NA	NA	10,446.2	NA	9,439.9	10.31	NA	NA

[1] Greenhouse gas emissions from anthropogenic sources. See Table 12.1.
[2] Carbon dioxide emissions from the combustion of petroleum, natural gas, coal, and coal coke net imports; and from geothermal power generation.
R=Revised. P=Preliminary. NA=Not available.

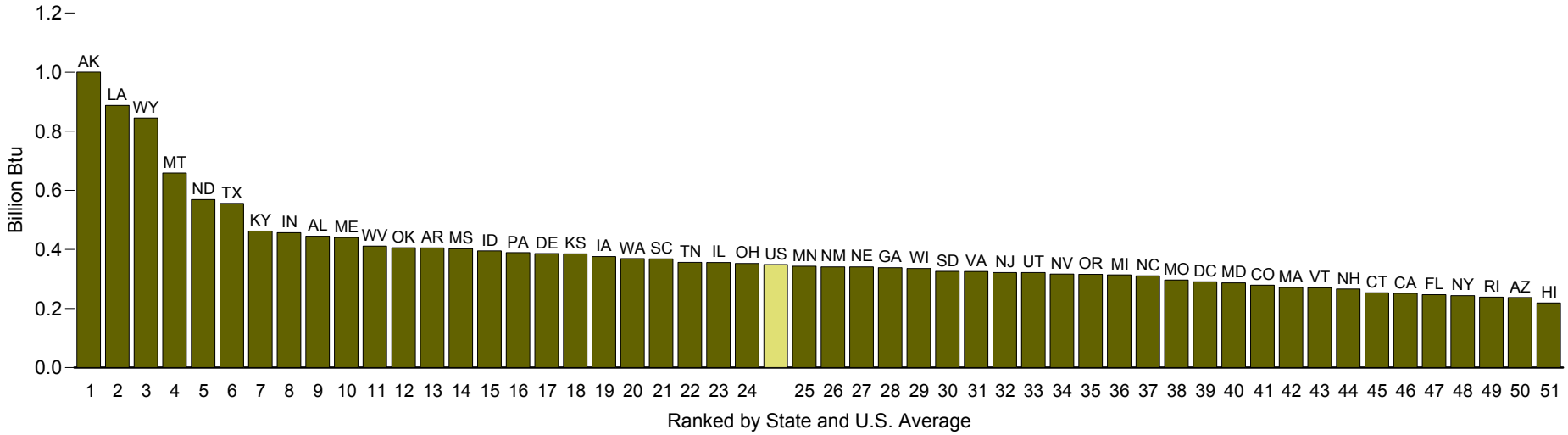
Note: See "Chained Dollars" in the Glossary.
Sources: **Energy Consumption:** Table 1.3. **Energy Expenditures:** Table 3.4. **Gross Domestic Product:** Table D1. **Population Data:** Table D1. **Greenhouse Gas Emissions:** Table 12.1. **Carbon Dioxide Emissions:** Table 12.2. **Other Columns:** Calculated 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

	Consumption		Consumption per Person		Expenditures		Expenditures per Person		Prices	
Rank	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	[1]**98,216.2**	**United States**	**349.0**	**United States**	[2]**703,188**	**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.

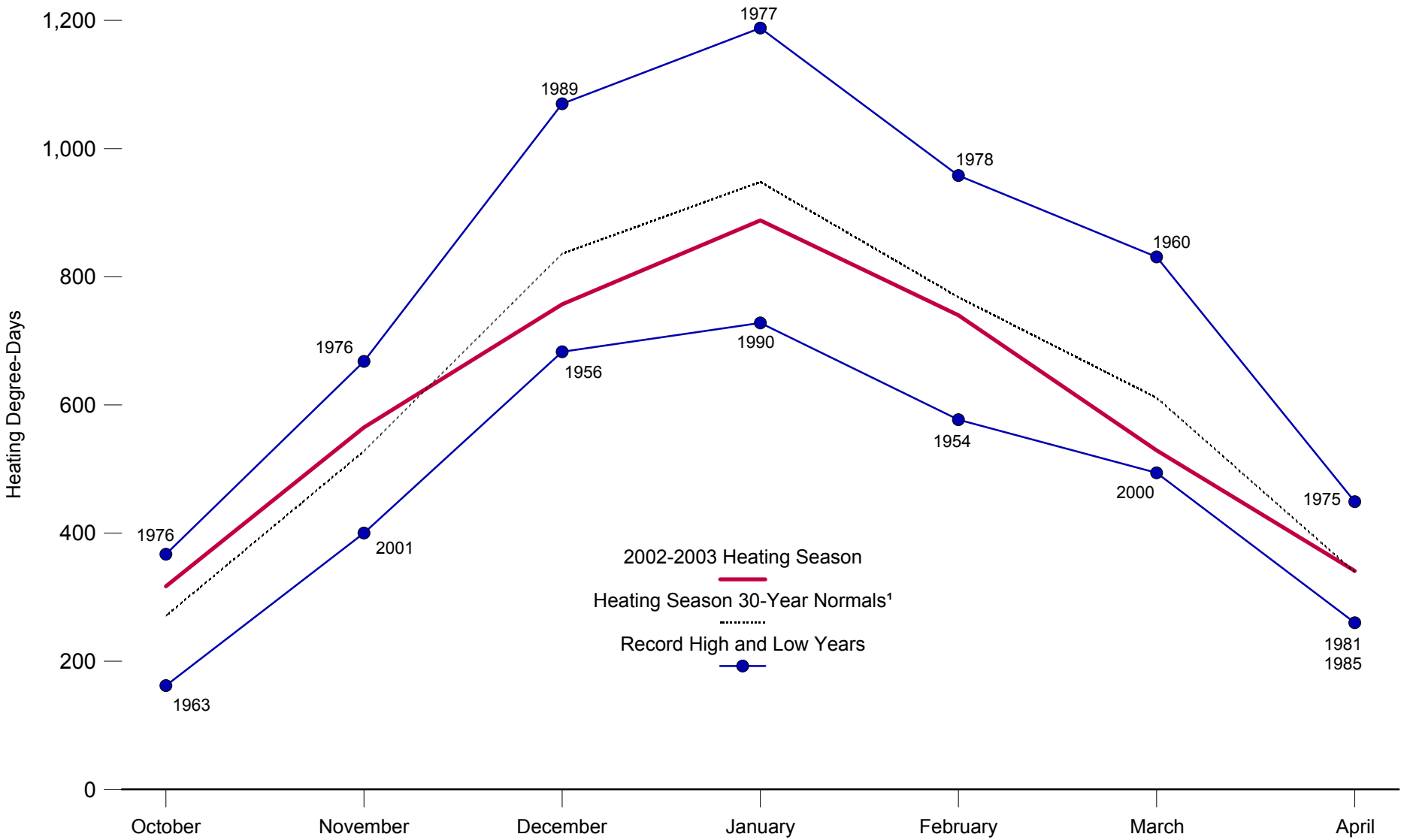
[2] Includes $146 million for coal coke net imports, which are not allocated to the States.

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, 1949-2003



[1] Based on calculations of data from 1961 through 1990.

Source: Table 1.7.

Table 1.7 Heating Degree-Days by Month, 1949-2003

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
1951	863	724	632	359	135	45	8	17	74	231	645	814	4,547
1952	807	677	670	315	154	32	5	11	54	324	540	785	4,374
1953	754	667	557	378	142	33	5	11	51	208	492	765	4,063
1954	886	577	646	261	192	32	8	18	56	224	523	809	4,232
1955	927	759	600	272	121	48	9	6	56	237	600	886	4,521
1956	900	723	648	387	157	27	10	14	82	215	541	683	4,387
1957	977	628	610	308	148	23	6	16	61	315	536	711	4,339
1958	909	866	690	324	143	54	7	8	60	250	484	917	4,712
1959	944	762	619	305	112	26	4	6	48	249	594	734	4,403
1960	884	780	831	278	160	33	7	11	48	254	502	936	4,724
1961	982	670	565	413	199	29	5	7	48	238	532	852	4,540
1962	976	747	689	337	118	35	14	13	91	234	554	886	4,694
1963	1,061	841	562	325	163	35	8	18	76	162	471	1,012	4,734
1964	871	803	636	339	124	39	5	22	72	301	489	814	4,515
1965	907	780	738	355	114	48	11	14	78	271	494	739	4,549
1966	1,010	790	580	377	188	30	6	14	81	298	496	830	4,700
1967	816	820	600	352	229	34	8	17	82	270	588	793	4,609
1968	979	832	567	309	192	35	6	14	59	240	548	894	4,675
1969	939	778	735	307	134	47	7	9	60	296	564	860	4,736
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	R935	R725	R669	R302	R115	29	R8	R6	R71	R267	R400	R696	R4,223
2002P	R761	R652	R543	291	186	23	2	5	37	317	565	757	4,139
2003P	888	740	529	341	NA	NA	NA	NA	NA	NA	NA	NA	NA
Normals[1]	948	768	611	339	150	36	7	13	69	271	528	836	4,576

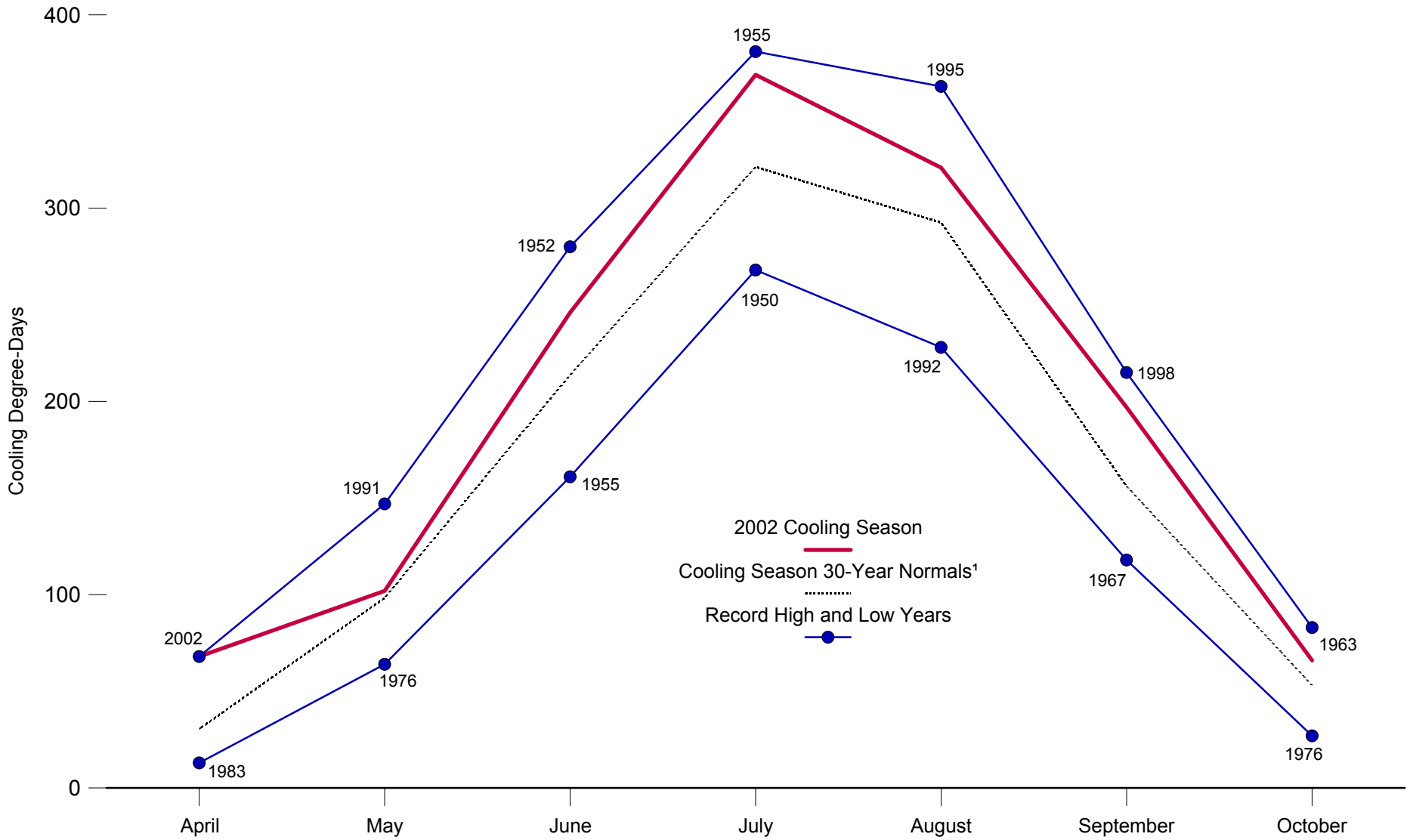
[1] Based on calculations of data from 1961 through 1990.

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 estimated for 1990. The population-weighted State figures are aggregated into Census divisions and the national average.

Sources: • 1949-2001 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. • 2002 and 2003—Energy Information Administration, *Monthly Energy Review,* June 2002-May 2003 issues, Table 1.11, which reports data from NOAA, National Weather Service Climate Analysis Center, Camp Springs, Maryland.

Figure 1.8 Cooling Degree-Days by Month, 1949-2002



[1] Based on calculations of data from 1961 through 1990.

Source: Table 1.8.

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

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
1951	8	5	15	22	95	198	318	293	158	65	7	11	1,195
1952	17	8	15	20	96	280	368	303	159	38	10	4	1,318
1953	12	8	26	25	118	263	338	292	168	58	11	7	1,326
1954	11	12	11	55	65	241	356	296	195	60	9	4	1,315
1955	6	7	20	45	121	161	381	355	182	50	10	6	1,344
1956	4	12	14	23	112	232	297	290	151	66	9	11	1,221
1957	12	17	13	33	96	243	337	275	155	30	13	6	1,230
1958	3	1	8	27	101	187	315	304	166	53	18	6	1,189
1959	6	12	13	31	129	228	325	344	179	64	12	5	1,348
1960	7	4	6	37	76	215	301	302	181	59	15	3	1,206
1961	5	9	23	20	71	195	306	287	186	47	12	7	1,168
1962	6	15	9	26	144	204	276	289	136	64	7	3	1,179
1963	5	5	22	42	94	213	308	266	153	83	11	2	1,204
1964	6	3	14	37	114	214	327	256	146	42	17	9	1,185
1965	9	7	10	42	125	179	280	273	155	48	19	6	1,153
1966	4	5	12	28	81	201	353	273	132	43	12	4	1,148
1967	9	5	24	48	70	206	278	253	118	45	12	9	1,077
1968	6	3	9	32	75	204	307	292	145	53	7	4	1,137
1969	7	4	4	33	94	200	331	304	153	48	8	4	1,190
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	R12	R11	R37	R114	R220	R302	R333	R138	R46	R18	11	R1,245
2002P	8	R5	R19	68	102	246	369	321	197	66	11	4	1,416
2003P	2	6	19	35	NA	NA	NA	NA	NA	NA	NA	NA	NA
Normals[1]	7	7	16	31	95	208	317	287	154	52	13	7	1,193

[1] Based on calculations of data from 1961 through 1990.

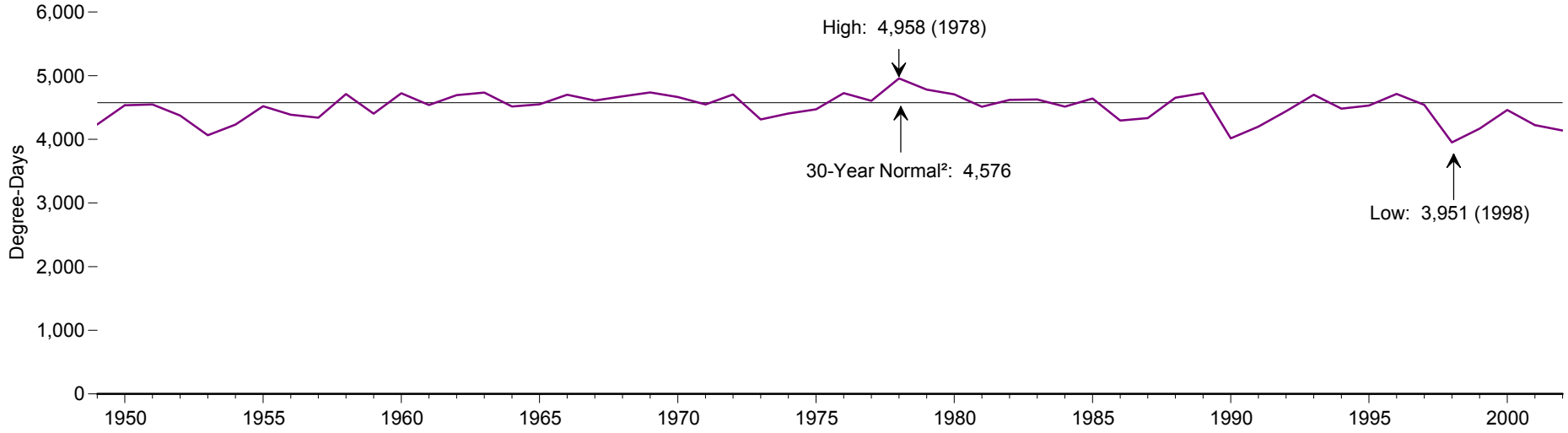
R=Revised. P=Preliminary. NA=Not available.

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 estimated for 1990. The population-weighted State figures are aggregated into Census divisions and the national average.

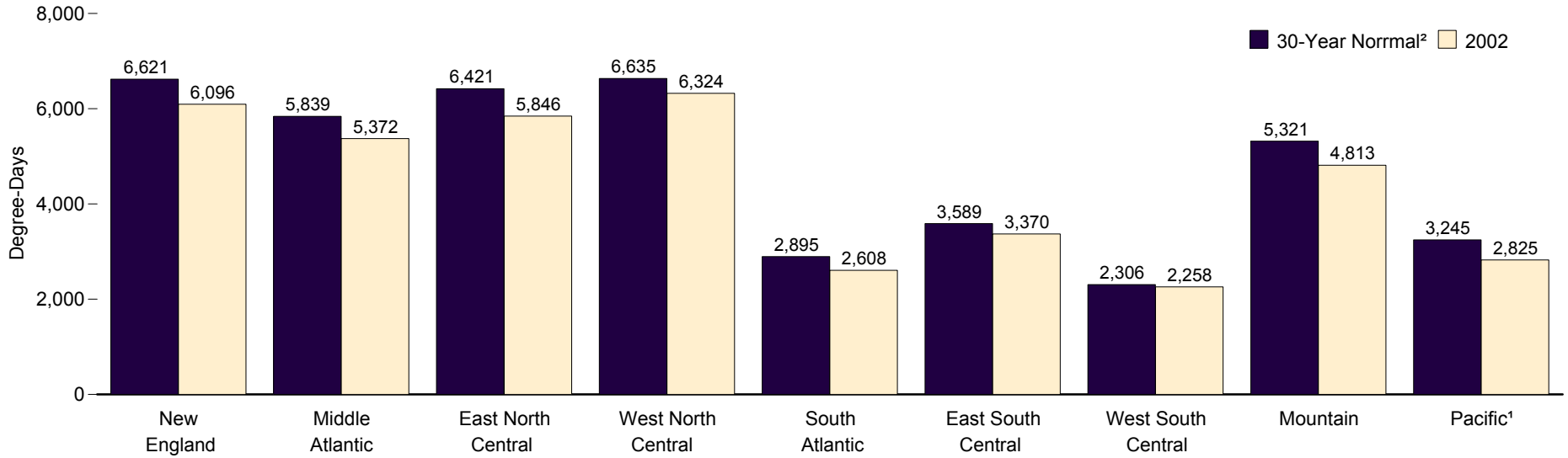
Sources: • 1949-2001 and Normals—U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), National Climatic Data Center, Asheville, North Carolina. Historical Climatology Series 5-2. • 2002 and 2003—Energy Information Administration, *Monthly Energy Review,* June 2002-May 2003 issues, Table 1.12, 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, 1949-2002



Heating Degree-Days by Census Division, 2002



[1] Excludes Alaska and Hawaii.
[2] Normals are based on calculations of data from 1961 through 1990.

Note: See Appendix C for Census Divisions.
Source: Table 1.9.

Table 1.9 Heating Degree-Days by Census Division, 1949-2002

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
1951	6,137	5,497	6,549	7,246	2,728	3,340	2,154	5,513	3,469	4,547
1952	6,180	5,443	5,977	6,386	2,684	3,276	2,074	5,404	3,586	4,374
1953	5,650	5,027	5,626	5,994	2,486	3,132	2,024	4,925	3,224	4,063
1954	6,291	5,473	5,841	6,063	2,713	3,211	1,876	4,679	3,296	4,232
1955	6,577	5,708	6,101	6,630	2,786	3,314	2,083	5,517	3,723	4,521
1956	6,702	5,731	6,019	6,408	2,642	3,113	2,032	5,146	3,382	4,387
1957	6,158	5,469	6,166	6,525	2,594	3,112	2,068	5,203	3,322	4,339
1958	6,907	6,237	6,585	6,585	3,271	4,004	2,590	4,929	2,819	4,712
1959	6,363	5,535	6,303	6,665	2,698	3,415	2,398	5,138	2,925	4,403
1960	6,561	5,901	6,544	6,884	3,147	3,958	2,551	5,328	3,309	4,724
1961	6,632	5,895	6,275	6,591	2,869	3,497	2,296	5,299	3,221	4,540
1962	6,981	6,089	6,545	6,691	3,022	3,627	2,264	5,165	3,400	4,694
1963	6,816	6,103	6,691	6,485	3,138	3,890	2,438	5,060	3,326	4,734
1964	6,594	5,694	6,030	6,303	2,828	3,462	2,272	5,769	3,583	4,515
1965	6,825	5,933	6,284	6,646	2,830	3,374	2,078	5,318	3,378	4,549
1966	6,662	6,012	6,606	6,872	3,118	3,758	2,416	5,275	3,170	4,700
1967	6,987	6,127	6,477	6,569	2,864	3,403	2,082	5,232	3,316	4,609
1968	6,800	5,981	6,331	6,556	3,160	3,927	2,522	5,415	3,198	4,675
1969	6,593	5,933	6,603	6,903	3,205	3,910	2,325	5,324	3,377	4,736
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	R6,059	R5,297	R5,824	R6,185	R2,666	R3,314	R2,200	R4,954	R3,129	R4,223
2002P	6,096	5,372	5,846	6,324	2,608	3,370	2,258	4,813	2,825	4,139
Normals[2]	6,621	5,839	6,421	6,635	2,895	3,589	2,306	5,321	3,245	4,576

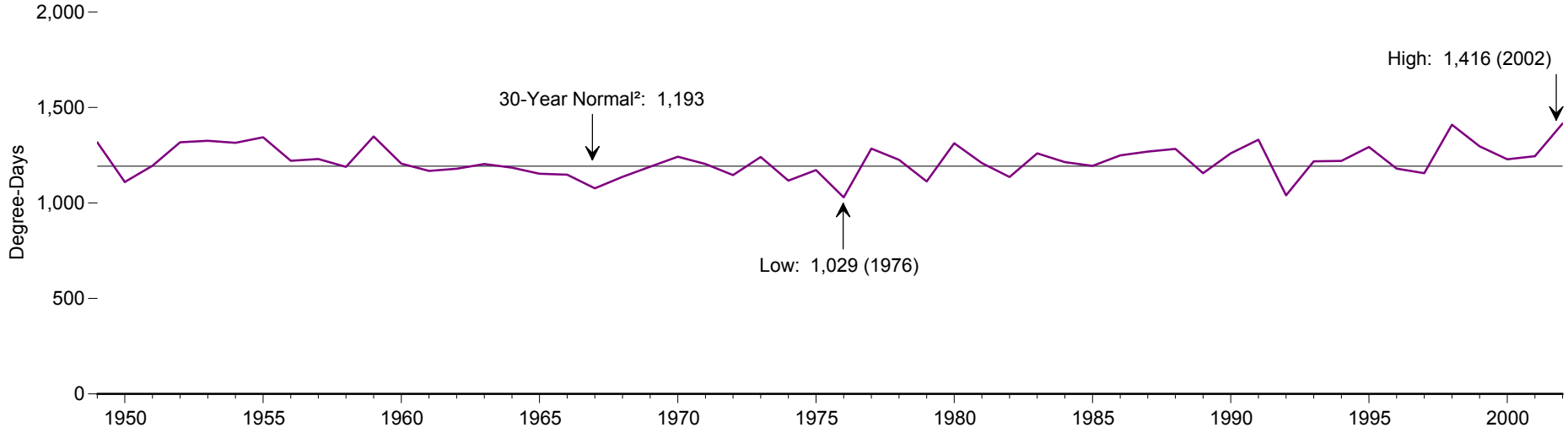
[1] Excludes Alaska and Hawaii.
[2] Normals are based on calculations of data from 1961 through 1990.
R=Revised. P=Preliminary.

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 estimated for 1990. The population-weighted State figures are aggregated into Census divisions and the national average. • See Appendix C for Census divisions.

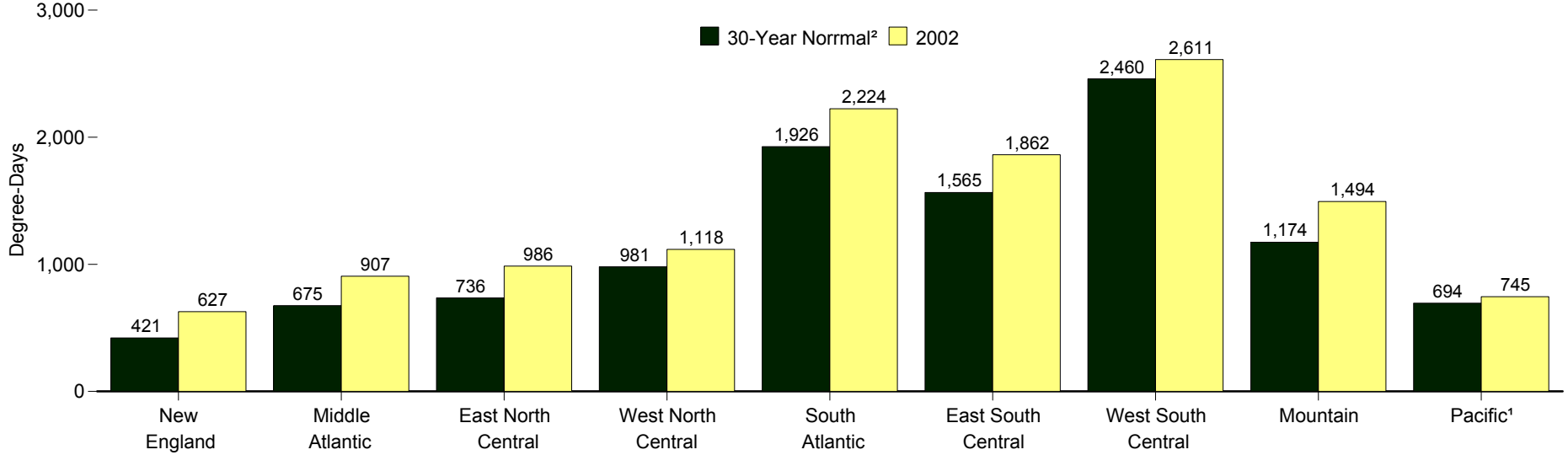
Sources: • 1949-2001 and Normals—U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), National Climatic Data Center, Asheville, North Carolina. Historical Climatology Series 5-1. • 2002—Energy Information Administration, *Monthly Energy Review (MER),* February 2002-January 2003 issues, Table 1.11, which reports data from NOAA, National Weather Service Climate Analysis Center, Camp Springs, Maryland. Census Division data for 2002 are the sums of the current year monthly statistics shown in the cited issues of the *MER.* The U.S. total comes from Table 1.7.

Figure 1.10 Cooling Degree-Days by Census Division

U.S.[1] Cooling Degree-Days, 1949-2002



Cooling Degree-Days by Census Division, 2002



[1] Excludes Alaska and Hawaii.
[2] Normals are based on calculations of data from 1961 through 1990.

Note: See Appendix C for Census Divisions.
Source: Table 1.10.

Table 1.10 Cooling Degree-Days by Census Division, 1949-2002

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
1951	400	653	644	777	2,028	1,781	2,684	1,137	593	1,195
1952	581	825	897	1,109	2,097	1,864	2,543	1,278	657	1,318
1953	441	768	945	1,183	2,137	1,893	2,727	1,193	571	1,326
1954	303	646	858	1,250	2,082	1,998	2,907	1,292	590	1,315
1955	602	934	1,043	1,238	2,045	1,791	2,643	1,124	560	1,344
1956	336	566	750	1,155	1,913	1,685	2,833	1,247	596	1,221
1957	428	738	754	1,004	2,050	1,692	2,465	1,155	660	1,230
1958	344	592	638	878	1,922	1,582	2,517	1,328	836	1,189
1959	532	903	997	1,083	2,128	1,745	2,456	1,258	776	1,348
1960	368	640	722	961	1,926	1,613	2,492	1,308	770	1,206
1961	482	787	745	867	1,888	1,370	2,230	1,223	709	1,168
1962	264	561	742	974	1,908	1,738	2,700	1,147	559	1,179
1963	373	571	712	1,196	1,812	1,580	2,899	1,235	605	1,204
1964	312	634	787	1,030	1,905	1,591	2,608	1,095	574	1,185
1965	352	638	688	914	1,931	1,634	2,579	961	542	1,153
1966	421	731	724	919	1,788	1,440	2,309	1,239	680	1,148
1967	420	602	548	713	1,697	1,257	2,385	1,120	817	1,077
1968	410	725	740	902	1,842	1,517	2,247	1,015	632	1,137
1969	447	706	701	940	1,887	1,572	2,505	1,228	680	1,190
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	R519	R722	R744	R1,028	R1,891	R1,535	R2,565	R1,498	R794	R1,245
2002P	627	907	986	1,118	2,224	1,862	2,611	1,494	745	1,416
Normals[2]	421	675	736	981	1,926	1,565	2,460	1,174	694	1,193

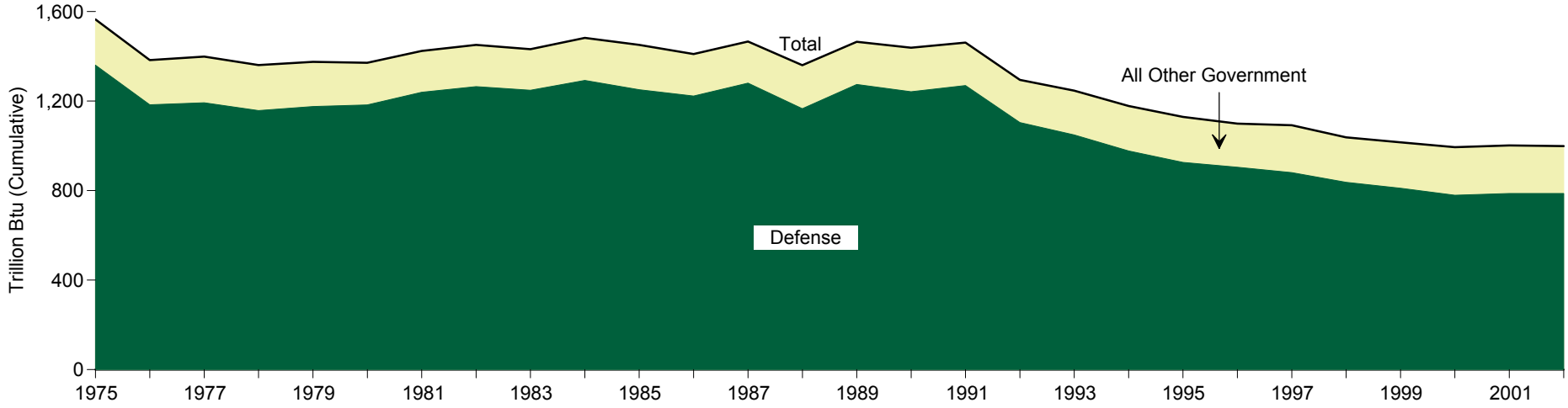
[1] Excludes Alaska and Hawaii.
[2] Normals are based on calculations of data from 1961 through 1990.
R=Revised. P=Preliminary.

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 estimated for 1990. The population-weighted State figures are aggregated into Census divisions and the national average. • See Appendix C for Census divisions.

Sources: • 1949-2001 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. • 2002—Energy Information Administration, *Monthly Energy Review,* January 2003 issue, Table 1.12, which reports Census Division data from NOAA, National Weather Service Climate Analysis Center, Camp Springs, Maryland. The U.S. total comes from Table 1.8.

Figure 1.11 U.S. Government Energy Consumption by Agency

Total and U.S. Department of Defense, Fiscal Years 1975-2002



Selected Non-Defense Agencies, Fiscal Year 2002

[1] General Services Administration.
[2] National Aeronautics and Space Administration.
[3] Health and Human Services.

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 1975-2002

(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	15.5	1,451.3
1986	6.8	1,222.8	50.4	14.0	6.2	6.9	8.6	11.2	28.0	19.4	25.0	10.8	R1,410.1
1987	7.3	1,280.5	R48.5	13.1	6.6	6.6	8.1	11.3	28.5	19.0	24.9	11.9	R1,466.3
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	R44.2	12.7	6.7	7.1	7.7	12.4	30.3	18.5	26.2	15.6	1,464.7
1990	R9.6	1,241.7	R43.4	15.7	R7.1	7.4	7.0	12.4	30.6	19.0	24.9	19.8	R1,438.5
1991	9.6	1,269.3	R42.1	14.0	6.2	7.1	8.0	12.5	30.8	19.0	25.1	18.0	R1,461.6
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	R43.4	14.1	7.2	7.5	9.1	12.4	33.7	19.4	25.7	16.1	R1,246.7
1994	9.4	977.0	R42.1	14.0	7.5	7.9	10.3	12.6	35.0	19.8	25.6	17.0	R1,178.1
1995	R9.0	926.0	R47.3	13.7	6.1	6.4	10.2	12.4	36.2	18.7	25.4	17.0	R1,129.2
1996	9.1	R904.5	R35.4	14.5	6.6	4.3	12.1	R11.5	36.4	19.6	26.8	18.4	R1,099.2
1997	7.4	880.0	R43.1	14.4	7.9	6.6	12.0	12.0	40.8	19.1	27.3	21.8	R1,092.2
1998	7.9	837.1	31.5	14.1	7.4	6.4	15.8	R11.7	39.5	18.5	27.6	20.5	R1,038.1
1999	7.8	810.7	R31.1	14.4	7.1	7.5	15.4	11.4	39.8	R22.6	27.5	20.8	R1,015.9
2000	7.4	R779.1	R30.5	R17.6	R8.0	R7.8	R19.7	R11.1	R43.3	R21.2	27.0	R21.2	R994.0
2001	R7.4	R787.2	R31.1	R18.4	R8.5	R9.5	R19.7	R9.9	R43.4	R17.8	R27.7	R21.5	R1,002.0
2002P	7.1	787.2	30.7	17.5	8.5	9.7	19.4	9.7	42.0	16.1	27.7	23.2	998.8

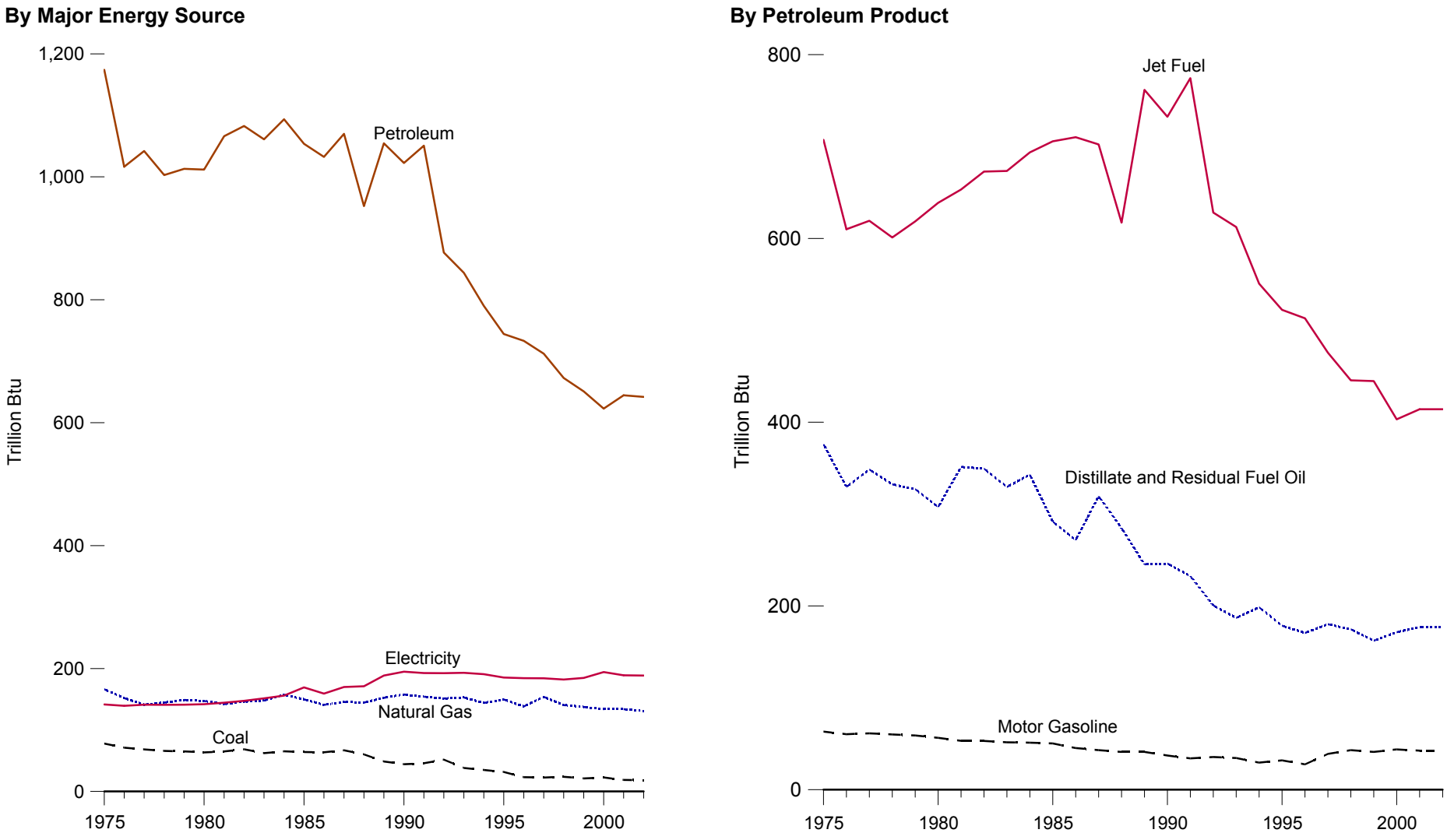
[1] General Services Administration.
[2] Health and Human Services.
[3] National Aeronautics and Space Administration.
[4] Includes National Archives and Records Administration, U.S. Department of Commerce, Panama Canal Commission, Tennessee Valley Authority, U.S. Department of Labor, National Science Foundation, Federal Trade Commission, Federal Communications Commission, Environmental Protection Agency, U.S. Department of 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.

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 1975-2002



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 1975-2002

(Trillion Btu)

Year	Coal	Natural Gas	Petroleum						Electricity	Purchased Steam	Total
			Aviation Gasoline	Distillate and Residual Fuel Oil	Jet Fuel	LPG [1] and Other	Motor Gasoline	Total			
1975	77.9	166.2	22.0	376.0	707.4	5.6	63.2	1,174.2	141.5	5.1	1,565.0
1976	71.3	151.8	11.6	329.7	610.0	4.7	60.4	1,016.4	139.3	4.6	1,383.4
1977	68.4	141.2	8.8	348.5	619.2	4.1	61.4	1,042.1	141.1	5.7	1,398.5
1978	66.0	144.7	6.2	332.3	601.1	3.0	60.1	1,002.9	141.0	6.4	1,360.9
1979	65.1	148.9	4.7	327.1	618.6	3.7	59.1	1,013.1	141.2	7.1	1,375.4
1980	63.5	147.3	4.9	307.7	638.7	4.0	56.5	1,011.8	141.9	6.8	1,371.2
1981	65.1	142.2	4.6	351.3	653.3	3.7	53.2	1,066.2	144.5	6.2	1,424.2
1982	68.6	146.2	3.6	349.4	672.7	3.9	53.1	1,082.8	147.5	6.2	1,451.4
1983	62.4	147.8	2.6	329.5	673.4	4.0	51.6	1,061.1	151.5	9.0	1,431.8
1984	65.3	157.4	1.9	342.9	693.7	4.1	51.2	1,093.8	155.9	10.1	1,482.5
1985	64.2	149.9	1.9	291.8	705.7	4.0	50.4	1,053.8	169.4	13.9	1,451.3
1986	63.8	140.9	1.4	271.6	710.2	3.9	45.3	1,032.4	159.2	13.7	R1,410.1
1987	67.0	145.6	1.0	319.5	702.3	4.0	43.1	1,069.9	169.9	13.9	R1,466.3
1988	60.2	144.6	6.0	284.8	617.2	3.2	41.2	952.4	171.2	32.0	1,360.3
1989	48.7	152.4	0.8	245.3	761.7	5.7	41.1	1,054.5	188.6	20.6	1,464.7
1990	44.2	157.8	0.5	R246.1	732.4	6.4	37.2	R1,022.6	194.8	19.1	R1,438.5
1991	45.9	154.1	0.4	R232.6	774.5	9.0	34.1	R1,050.7	192.6	18.3	R1,461.6
1992	51.7	151.2	1.0	200.6	628.2	11.4	35.6	876.8	R192.5	22.5	1,294.7
1993	R38.3	R152.9	0.7	R187.0	612.4	9.3	34.5	R843.9	193.0	R18.6	R1,246.7
1994	35.0	143.9	0.6	198.5	550.7	10.9	29.5	790.2	190.9	18.2	R1,178.1
1995	31.7	R149.7	0.3	178.5	522.3	11.4	31.9	744.4	R185.3	R18.2	R1,129.2
1996	23.3	R138.3	0.2	170.6	513.0	21.7	27.6	733.2	R184.4	R20.1	R1,099.2
1997	22.5	R154.0	0.3	180.1	475.7	17.2	39.0	712.2	R184.2	R19.2	R1,092.2
1998	23.9	R140.6	0.2	R174.6	445.5	9.4	43.1	R672.8	R182.0	R18.8	R1,038.1
1999	21.2	R137.5	0.1	R162.2	444.7	2.9	41.1	R650.9	R184.7	R21.6	R1,015.9
2000	22.7	R133.8	0.2	R171.4	403.1	R4.3	R43.9	R622.9	R194.2	20.4	R994.0
2001	R18.8	R133.9	0.2	R177.0	R414.1	R10.7	R42.5	R644.5	R188.9	R16.0	R1,002.0
2002P	18.2	130.8	0.2	177.4	414.1	7.6	42.5	641.9	188.6	19.2	998.8

[1] Liquefied petroleum gases.

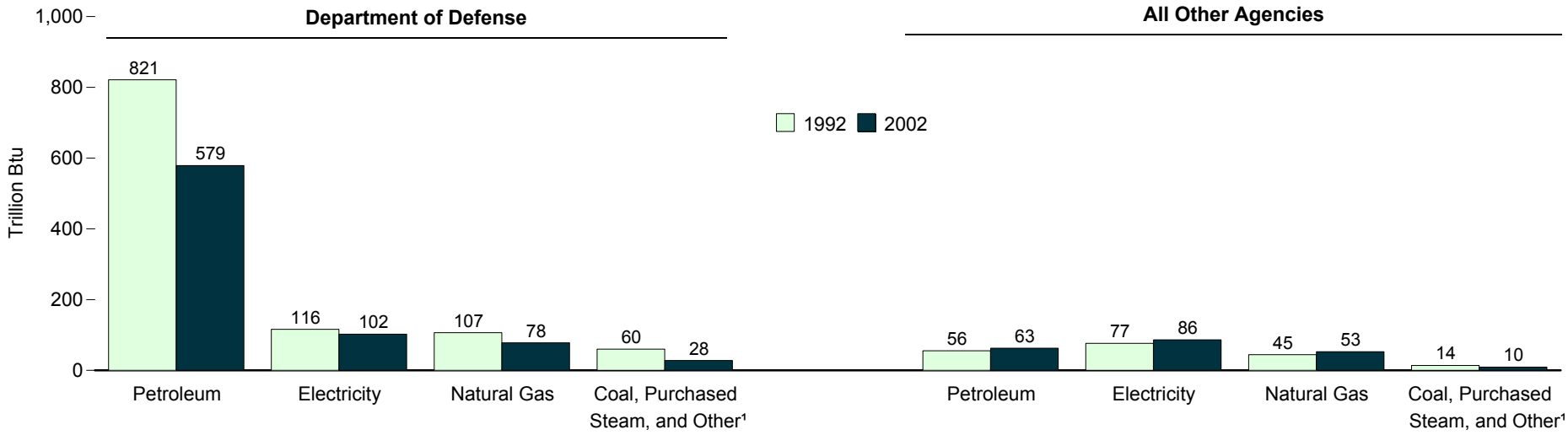
R = Revised. P = Preliminary.

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.

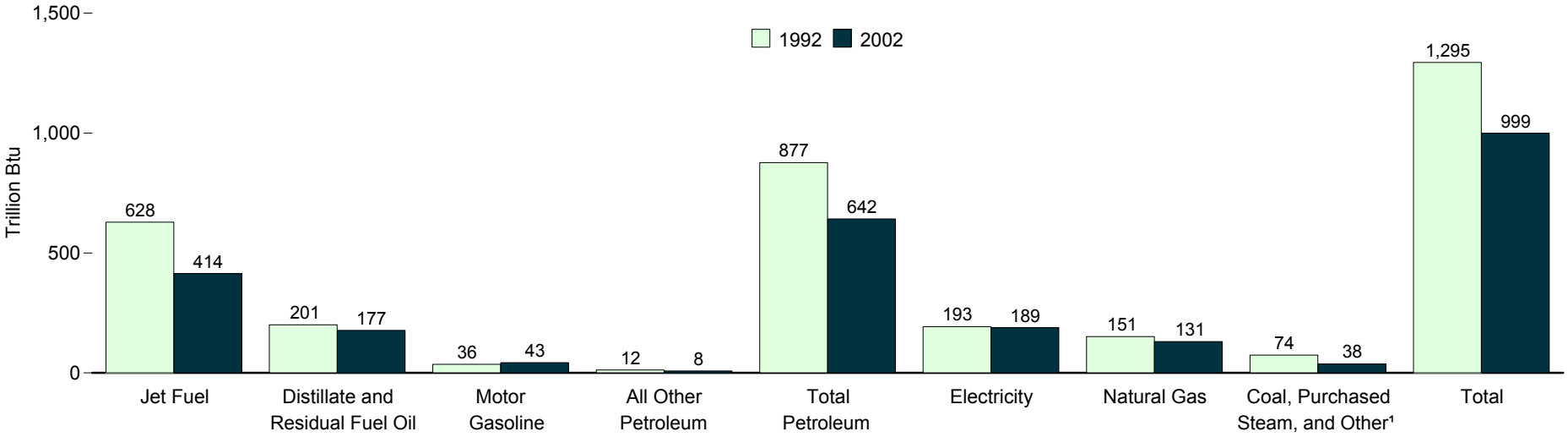
Source: U.S. Department of Energy, Energy Efficiency and Renewable Energy, Office of Federal Energy Management Programs.

Figure 1.13 U.S. Government Energy Consumption by Agency and Source, Fiscal Years 1992 and 2002

By Agency



By Source



[1] Chilled water from district heating and cooling systems and any other energy type, such as renewable energy.

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 1992 and 2002

(Trillion Btu)

Agency	Coal, Purchased Steam, and Other [2]	Natural Gas	Petroleum						Electricity	Total
			Aviation Gasoline	Distillate and Residual Fuel Oil	Jet Fuel	LPG [1] and Other	Motor Gasoline	Total		
Total, 1992	**74.2**	**151.2**	**1.0**	**200.6**	**628.2**	**11.4**	**35.6**	**876.8**	**192.5**	**1,294.7**
Defense	60.2	106.6	0.0	183.2	620.5	5.4	12.2	821.3	115.9	1,104.0
Energy	8.9	12.3	0.0	2.5	0.4	0.3	1.1	4.4	18.8	44.3
Postal Service	0.5	5.1	0.0	3.9	0.0	0.2	9.3	13.4	12.7	31.7
Veterans Affairs	1.3	13.6	0.0	1.6	0.0	0.0	0.5	2.1	8.2	25.3
Transportation	0.1	1.0	0.1	1.5	4.6	3.4	0.7	10.3	5.7	17.0
General Services Administration	1.6	2.6	0.0	0.4	0.0	0.0	0.1	0.5	9.1	13.8
NASA	0.3	2.4	0.0	1.1	1.5	0.0	0.3	2.9	7.0	12.6
Agriculture	0.1	1.6	0.1	0.5	0.0	0.2	4.6	5.4	2.0	9.1
Justice	0.4	0.9	0.6	0.4	0.1	0.0	2.9	4.1	2.2	7.5
Interior	0.1	0.6	0.1	1.0	0.1	1.8	1.8	4.7	1.5	7.0
Health and Human Services	0.1	2.1	0.0	2.0	0.0	0.1	0.0	2.1	2.5	6.8
Other [3]	0.8	2.5	0.1	2.3	1.2	0.0	2.0	5.6	6.7	15.6
Total, 2002 [P]	**37.5**	**130.8**	**0.2**	**177.4**	**414.1**	**7.6**	**42.5**	**641.9**	**188.6**	**998.8**
Defense	28.0	78.0	0.0	153.6	407.7	4.1	13.6	579.0	102.2	787.2
Energy	3.4	7.6	0.0	1.7	0.0	0.2	0.9	3.0	16.7	30.7
Postal Service	0.4	7.0	0.0	5.0	0.0	0.2	11.7	16.9	17.7	42.0
Veterans Affairs	1.5	12.2	0.0	3.3	0.0	0.0	0.6	4.0	10.0	27.7
Transportation	0.2	1.0	0.0	5.6	3.6	0.1	0.7	9.9	5.0	16.1
General Services Administration	1.4	6.1	0.0	0.1	0.0	0.0	0.1	0.2	9.8	17.5
NASA	0.2	3.0	0.0	0.5	0.0	0.0	0.2	0.8	5.6	9.7
Agriculture	0.6	1.9	0.0	0.3	0.0	0.2	2.3	2.9	1.8	7.1
Justice	0.6	5.2	0.1	1.0	1.6	0.0	6.6	9.3	4.3	19.4
Interior	0.1	1.5	0.0	1.3	0.1	2.4	2.4	6.2	1.9	9.7
Health and Human Services	0.4	3.7	0.0	0.6	0.0	0.2	0.6	1.4	3.1	8.5
Other [4]	0.7	3.7	0.0	4.3	1.1	0.1	2.8	8.3	10.4	23.2

[1] Liquefied petroleum gases.

[2] Chilled water from district heating and cooling systems and any other energy type, such as renewable energy.

[3] 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.

[4] 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 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.

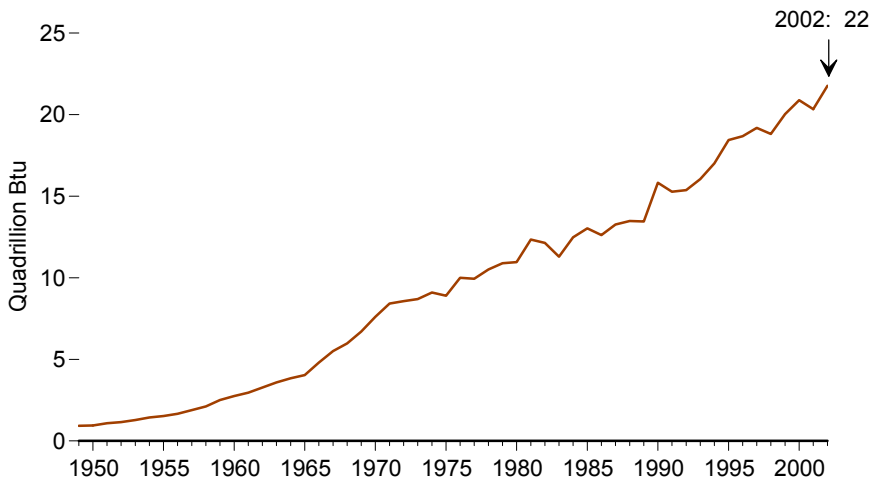
P=Preliminary.

Notes: • 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. • The U.S. Government's fiscal year runs from October 1 through September 30. • Totals may not equal sum of components due to independent rounding.

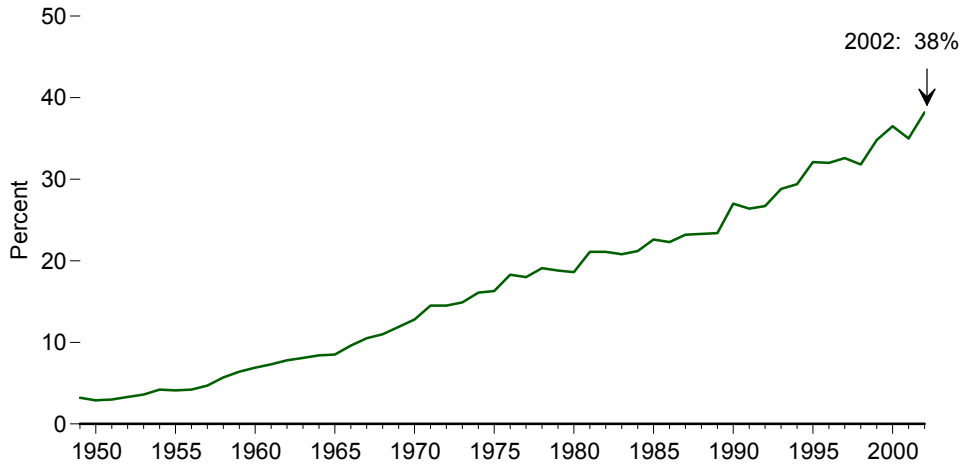
Source: U.S. Department of Energy, Energy Efficiency and Renewable Energy, Office of Federal Energy Management Programs.

Figure 1.14 Fossil Fuel Production on Federally Administered Lands

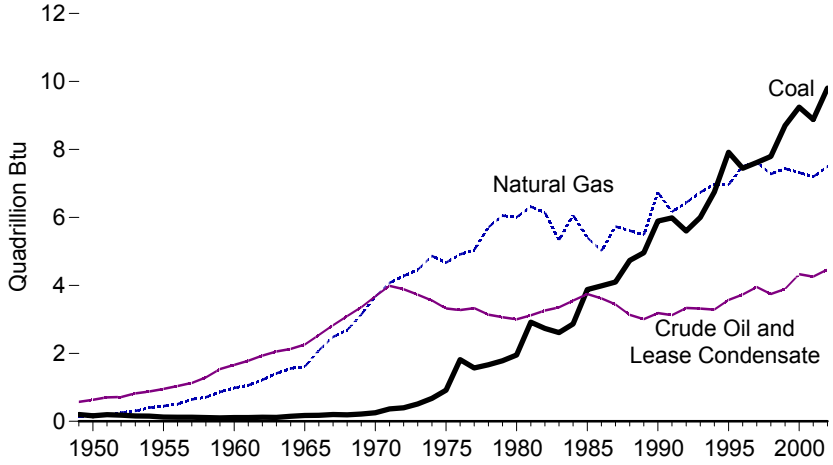
Total, 1949-2002



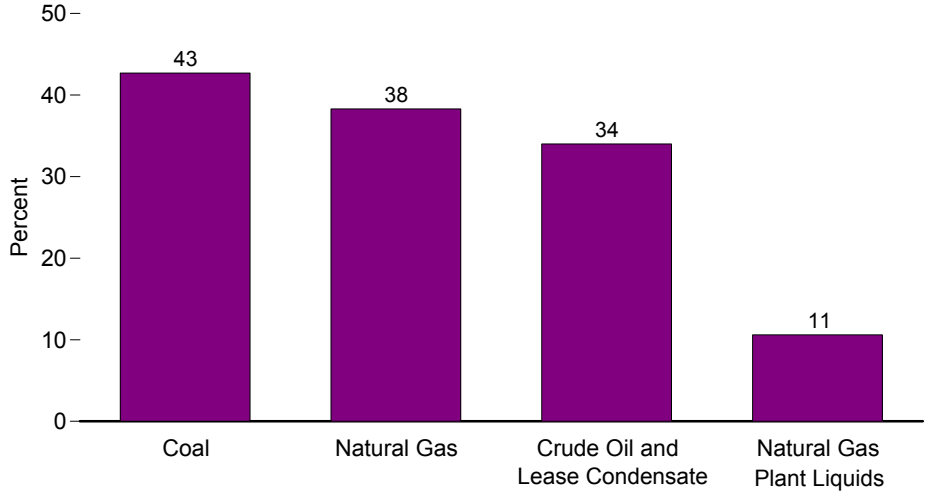
Federal Lands Fossil Fuel Production as a Share of U.S. Fossil Fuel Production, 1949-2002



By Source, 1949-2002



Federal Lands Fossil Fuel Production as a Share of U.S. Fossil Fuel Production, By Source, 2002



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.

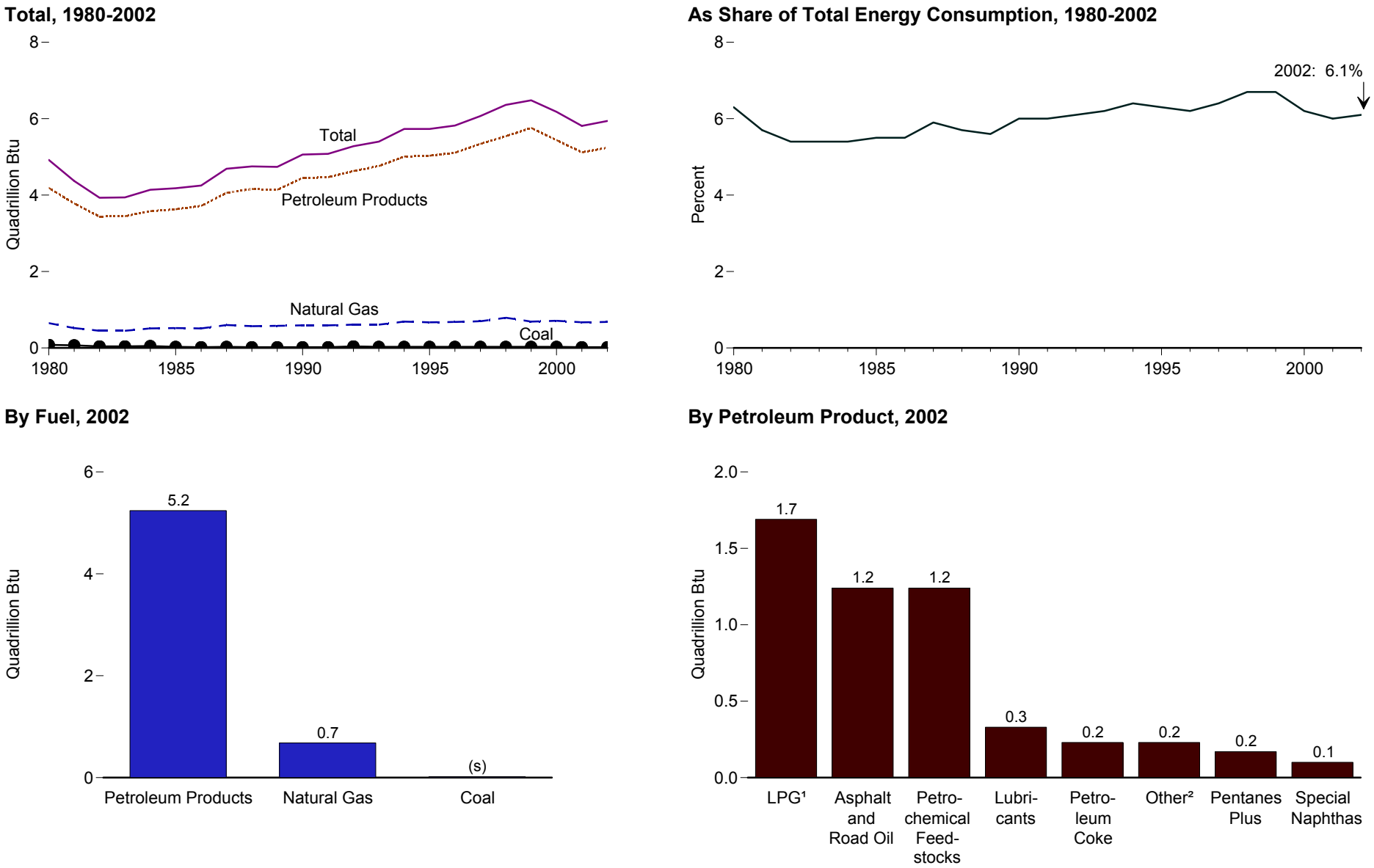
Source: Table 1.14.

Table 1.14 Fossil Fuel Production on Federally Administered Lands, 1949-2002

Year	Crude Oil and Lease Condensate [1]			Natural Gas Plant Liquids [2]			Natural Gas [3]			Coal [4]			Fossil Fuels	
	Million Barrels	Quadrillion Btu	Percent U.S. Total [5]	Million Barrels	Quadrillion Btu	Percent U.S. Total [5]	Trillion Cubic Feet	Quadrillion Btu	Percent U.S. Total [5]	Million Short Tons	Quadrillion Btu	Percent U.S. Total [5]	Quadrillion Btu	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	0.20	2.0	0.92	3.2
1950	105.9	0.61	5.4	4.4	0.02	2.4	0.14	0.15	2.4	7.7	0.16	1.4	0.94	2.9
1951	117.3	0.68	5.2	5.3	0.02	2.6	0.17	0.18	2.4	9.3	0.20	1.6	1.08	3.0
1952	118.7	0.69	5.2	5.5	0.02	2.5	0.25	0.25	3.2	8.7	0.18	1.7	1.15	3.3
1953	136.9	0.79	5.8	5.7	0.03	2.4	0.29	0.30	3.6	7.5	0.16	1.5	1.28	3.6
1954	146.5	0.85	6.3	6.1	0.03	2.4	0.39	0.40	4.6	7.4	0.16	1.8	1.43	4.2
1955	159.5	0.92	6.4	6.0	0.03	2.1	0.43	0.45	4.8	5.9	0.12	1.2	1.53	4.1
1956	174.1	1.01	6.7	6.4	0.03	2.2	0.49	0.51	5.1	5.8	0.12	1.1	1.67	4.2
1957	189.4	1.10	7.2	6.6	0.03	2.2	0.62	0.64	6.1	5.7	0.12	1.1	1.89	4.7
1958	216.8	1.26	8.9	8.0	0.04	2.7	0.69	0.71	6.5	5.3	0.11	1.2	2.11	5.7
1959	258.2	1.50	10.0	9.5	0.04	3.0	0.83	0.86	7.2	4.9	0.10	1.1	2.50	6.4
1960	277.3	1.61	10.8	11.6	0.05	3.4	0.95	0.98	7.8	5.2	0.11	1.2	2.75	6.9
1961	297.3	1.72	11.3	13.5	0.06	3.7	1.03	1.06	8.1	5.2	0.11	1.2	2.95	7.3
1962	321.7	1.87	12.0	15.3	0.07	4.1	1.18	1.22	8.9	5.8	0.12	1.3	3.27	7.8
1963	342.8	1.99	12.5	16.0	0.07	4.0	1.37	1.41	9.7	5.4	0.11	1.1	3.58	8.1
1964	356.0	2.07	12.8	15.5	0.07	3.7	1.51	1.55	10.2	7.1	0.15	1.4	3.84	8.4
1965	378.6	2.20	13.3	14.3	0.06	3.2	1.56	1.61	10.2	8.2	0.17	1.6	4.04	8.5
1966	426.7	2.47	14.1	15.2	0.06	3.2	2.02	2.09	12.3	8.3	0.17	1.5	4.80	9.6
1967	472.6	2.74	14.7	20.1	0.09	3.9	2.41	2.48	13.8	9.5	0.20	1.7	5.51	10.5
1968	523.7	3.04	15.7	13.7	0.06	2.5	2.61	2.69	14.1	9.1	0.19	1.6	5.97	11.0
1969	563.8	3.27	16.7	19.9	0.08	3.4	3.05	3.14	15.4	10.1	0.21	1.8	6.70	11.9
1970	605.6	3.51	17.2	40.6	0.17	6.7	3.56	3.67	16.9	12.0	0.25	2.0	7.60	12.8
1971	648.9	3.76	18.8	54.0	0.22	8.7	3.95	4.08	18.3	17.3	0.36	3.1	8.42	14.5
1972	630.5	3.66	18.2	56.7	0.23	8.9	4.17	4.28	19.3	19.0	0.40	3.1	8.56	14.5
1973	604.3	3.51	18.0	54.9	0.22	8.7	4.37	4.46	20.1	24.2	0.51	4.1	8.70	14.9
1974	570.2	3.31	17.8	61.9	0.25	10.1	4.75	4.87	22.9	32.1	0.67	5.3	9.10	16.1
1975	531.5	3.08	17.4	59.7	0.24	10.0	4.57	4.67	23.8	43.6	0.92	6.7	8.90	16.3
1976	525.7	3.05	17.7	57.2	0.23	9.7	4.81	4.91	25.2	86.4	1.82	12.6	10.00	18.3
1977	535.0	3.10	17.8	57.4	0.23	9.7	4.94	5.04	25.8	74.8	1.57	10.7	9.94	18.0
1978	523.6	3.04	16.5	25.9	0.10	4.5	5.60	5.71	29.3	79.2	1.66	11.8	10.51	19.1
1979	519.8	3.01	16.7	11.9	0.05	2.1	5.93	6.05	30.1	84.9	1.78	10.9	10.89	18.8
1980	510.4	2.96	16.2	10.5	0.04	1.8	5.85	6.01	30.2	92.9	1.95	11.2	10.96	18.6
1981	529.3	3.07	16.9	12.3	0.05	2.1	6.15	6.31	32.1	138.8	2.91	16.8	12.35	21.1
1982	552.3	3.20	17.5	15.0	0.06	2.7	5.97	6.14	33.5	130.0	2.73	15.5	12.13	21.1
1983	568.8	3.30	17.9	14.0	0.05	2.5	5.17	5.33	32.1	124.3	2.61	15.9	11.30	20.8
1984	595.8	3.46	18.3	25.4	0.10	4.3	5.88	6.07	33.7	136.3	2.86	15.2	12.48	21.2
1985	628.3	3.64	19.2	26.6	0.10	4.5	5.24	5.41	31.8	184.6	3.88	20.9	13.03	22.6
1986	608.4	3.53	19.2	23.3	0.09	4.1	4.87	5.01	30.3	189.7	3.98	21.3	12.61	22.3
1987	577.3	3.35	18.9	23.7	0.09	4.1	5.56	5.73	33.4	195.2	4.10	21.2	13.27	23.2
1988	516.3	2.99	17.3	37.0	0.14	6.2	5.45	5.61	31.9	225.4	4.73	23.7	13.48	23.3
1989	488.9	2.84	17.6	45.1	0.17	8.0	5.32	5.49	30.7	236.3	4.96	24.1	13.46	23.4
1990	515.9	2.99	19.2	50.9	0.19	8.9	6.55	[R]6.74	36.8	280.6	5.89	27.3	[R]15.82	27.0
1991	491.0	2.85	18.1	72.7	0.28	12.0	5.99	6.17	33.8	285.1	5.99	28.6	15.28	26.4
1992	529.1	3.07	20.2	70.7	0.27	11.4	6.25	6.43	35.0	266.7	5.60	26.7	15.37	26.7
1993	529.3	3.07	21.2	64.4	0.24	10.2	6.56	6.74	36.3	285.7	6.00	30.2	16.05	28.8
1994	527.7	3.06	21.7	60.0	0.23	9.5	6.78	6.97	36.0	321.4	6.75	31.1	17.01	29.4
1995	567.4	3.29	23.7	74.0	0.28	11.5	6.78	6.96	36.4	376.9	7.91	36.5	[R]18.44	32.1
1996	596.5	3.46	25.2	71.2	0.27	10.6	7.31	[R]7.50	38.8	354.5	7.44	33.3	18.68	32.0
1997	632.8	3.67	26.9	74.7	0.28	11.3	7.43	7.62	39.3	362.6	7.61	33.3	19.18	32.6
1998	[6]606.3	3.52	26.6	[6]60.3	0.23	9.4	[6]7.06	7.27	37.1	371.1	7.79	33.2	18.81	31.8
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	8.70	37.7	[7]20.04	[7]34.8
2000	689.2	4.00	32.3	88.9	0.33	12.7	7.14	7.32	[R]37.2	440.2	9.24	41.0	20.89	[R]36.5
2001[P]	[R]681.8	3.95	[R]32.2	82.0	0.31	12.0	7.00	[R]7.20	[R]35.6	422.9	8.88	[R]37.5	[R]20.34	[R]35.0
2002[E]	722.9	4.19	34.0	72.5	0.27	10.6	7.29	7.50	38.3	466.9	9.80	42.7	21.76	38.2

[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) on the basis of an estimated heat content of coal produced on Federally administered lands of 21.0 million Btu per short ton.
[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 Page: http://www.mrm.mms.gov.
Sources: See end of section.

Figure 1.15 Fossil Fuel Consumption for Nonfuel Use



[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 2 at end of section for a discussion of "nonfuel use." • Because vertical scales differ, graphs should not be compared.
Source: Table 1.15.

Table 1.15 Fossil Fuel Consumption for Nonfuel Use, 1980-2002

Year	Petroleum Products									Natural Gas	Coal	Total	Percent of Total Energy Consumption
	Asphalt and Road Oil	Liquefied Petroleum Gases	Pentanes Plus	Lubricants	Petro-chemical Feedstocks	Petroleum Coke	Special Naphthas	Other [1]	Total				
	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	[R]886	572	0.6	—	—
1991	162	394	10	53	200	[R]25	17	44	[R]906	573	0.6	—	—
1992	166	397	13	54	214	[R]38	20	35	[R]938	594	1.2	—	—
1993	174	389	60	55	216	[R]21	20	33	[R]969	596	0.9	—	—
1994	176	437	56	58	222	[R]23	15	35	[R]1,022	673	0.9	—	—
1995	178	450	66	57	215	[R]22	13	[R]34	[R]1,035	[R]648	0.9	—	—
1996	177	470	69	55	217	[R]25	14	[R]34	[R]1,061	[R]659	0.9	—	—
1997	184	473	65	58	250	[R]20	14	[R]35	[R]1,100	[R]682	0.9	—	—
1998	190	[R]494	[R]44	61	252	[R]35	20	[R]39	[R]1,137	[R]762	0.8	—	—
1999	200	[R]520	[R]57	62	238	[R]47	28	[R]37	[R]1,188	[R]671	0.8	—	—
2000	192	[R]507	[R]51	61	243	[R]23	19	[R]38	[R]1,133	[R]689	0.8	—	—
2001	190	[R]465	[R]44	56	[R]214	[R]34	[R]15	[R]39	[R]1,057	[R]650	[R]0.7	—	—
2002[P]	187	487	37	55	225	38	19	40	1,087	659	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	6.3
1981	0.83	0.77	([3])	0.34	1.21	0.17	0.14	0.31	3.78	0.52	0.07	4.37	5.7
1982	0.83	0.87	([3])	0.31	0.88	0.14	0.13	0.28	3.44	0.45	0.04	3.93	5.4
1983	0.90	0.89	([3])	0.32	0.85	0.06	0.16	0.26	3.45	0.45	0.04	3.94	5.4
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	5.4
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	[R]5.5
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	5.5
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	5.9
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	5.7
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	5.6
1990	1.17	1.20	0.08	0.36	1.12	0.18	0.11	0.23	[R]4.45	0.59	0.02	[R]5.06	6.0
1991	1.08	1.38	0.04	0.32	1.15	[R]0.15	0.09	0.26	[R]4.47	0.59	0.02	[R]5.08	6.0
1992	1.10	1.39	0.06	0.33	1.20	[R]0.23	0.10	0.20	[R]4.63	0.61	0.04	[R]5.28	6.1
1993	1.15	1.35	0.28	0.34	1.22	[R]0.12	0.10	0.20	[R]4.76	0.61	0.03	[R]5.40	6.2
1994	1.17	1.55	0.26	0.35	1.26	[R]0.14	0.08	0.20	[R]5.01	0.69	0.03	[R]5.73	6.4
1995	1.18	1.59	0.30	0.35	1.21	[R]0.13	0.07	0.20	[R]5.03	[R]0.67	0.03	[R]5.73	6.3
1996	1.18	1.65	0.32	0.34	1.21	[R]0.15	0.07	[R]0.20	[R]5.11	[R]0.68	0.03	[R]5.82	6.2
1997	1.22	1.67	0.30	0.35	1.40	[R]0.12	0.07	[R]0.21	[R]5.34	0.70	0.03	[R]6.07	[R]6.4
1998	1.26	[R]1.74	[R]0.20	0.37	1.40	[R]0.21	0.11	[R]0.23	5.54	[R]0.79	0.03	[R]6.36	[R]6.7
1999	1.32	[R]1.82	[R]0.26	0.37	1.33	[R]0.28	0.15	[R]0.22	[R]5.76	[R]0.69	0.03	[R]6.48	[R]6.7
2000	1.28	[R]1.75	[R]0.24	0.37	1.35	[R]0.14	0.10	[R]0.22	[R]5.44	[R]0.71	0.03	[R]6.18	[R]6.2
2001	1.26	[R]1.62	[R]0.20	0.34	[R]1.19	[R]0.21	0.08	[R]0.23	[R]5.12	[R]0.67	0.02	[R]5.81	[R]6.0
2002[P]	1.24	1.69	0.17	0.33	1.24	0.23	0.10	0.23	5.24	0.68	0.02	5.94	6.1

[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 2 at end of section for a discussion of "Nonfuel Use." • 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. See Energy Information Administration (EIA), *Emissions of Greenhouse Gases in the United States 2001* (November 2002), Table 11 and Appendix A, on the Web Page, for a discussion of the estimates in the table. • Totals may not equal sum of components due to independent rounding.

Web Page: http://www.eia.doe.gov/environment.html.

Sources: **Petroleum Products:** • 1980—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:**• 1960-1995—U.S. International Trade Commission, *Synthetic Organic Chemicals, United States Production and Sales, 1995* (January 1997). • 1996 forward—Estimated because the data series has been discontinued. **Percent of Total Energy Consumption:** Derived by dividing total by total consumption on Table 1.3.

Energy Overview

Note 1. Changes to Electricity Imports and Exports
In previous issues of the *Annual Energy Review*, the Energy Information Admiistration (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). EIA no longer has adequate data to estimate the proportions by source and is now 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). The change results in a 0.0-to-0.5 quadrillion Btu drop in total renewable energy consumption from 1949 forward.

Note 2. 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.

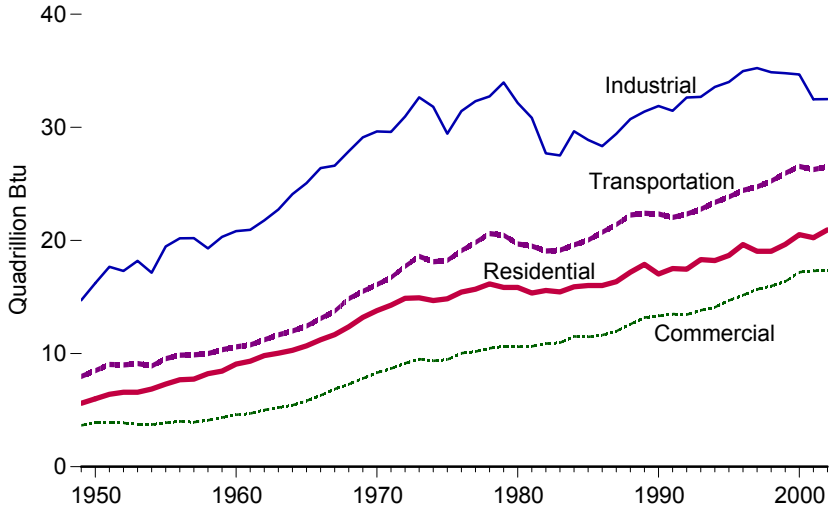
Table 1.14 Sources: • 1949-1980—U.S. Geological Survey, Oil and Gas Production, *Royalty Income, and Production, Royalty Income, and Related Statistics*, and *Coal, Phosphate, Potash, Sodium, and Other Mineral Production*, *Royalty Income, and Related Statistics* (June 1981); Department of Energy (DOE), Office of Naval Petroleum and Oil Shale Reserves (NPOSR), 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); DOE, Office of NPOSR, 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 DOE, Office of NPOSR, unpublished data. • 1999-2000—DOI, MMS, *Mineral Revenues Report on Receipts from Federal and American Indian Leases*, annual reports. • 2001—http://www.mrm.mms.gov/Stats/statsrm.htm. • 2002—DOI, MMS unpublished data.

2 Energy Consumption by Sector

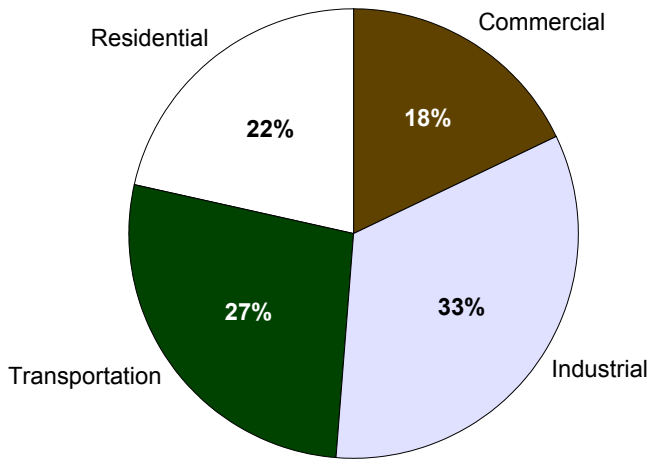
Office buildings, industries, residences, and transport systems, Baltimore, Maryland; east view from the inner harbor.
Source: U.S. Department of Energy.

Figure 2.1a Energy Consumption by Sector Overview

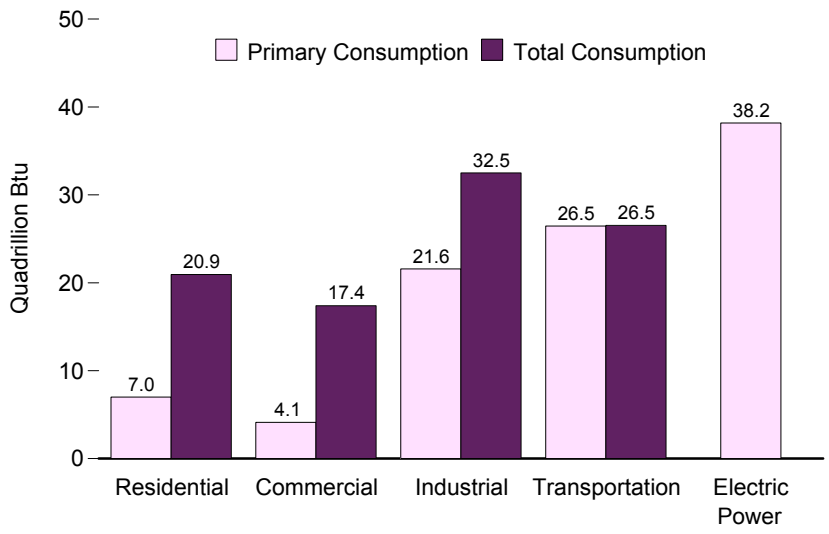
Total Consumption by End-Use Sector, 1949-2002



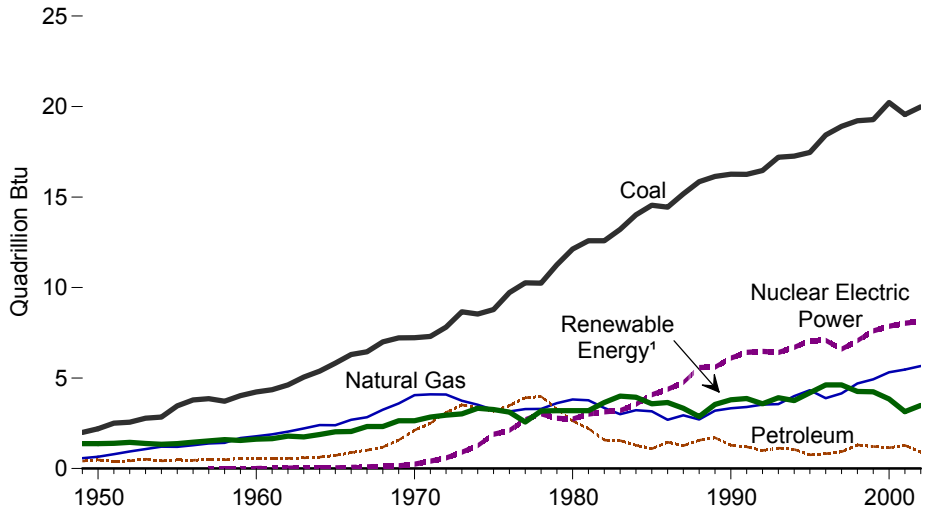
End-Use Sector Shares of Total Consumption, 2002



Primary and Total Consumption by Sector, 2002



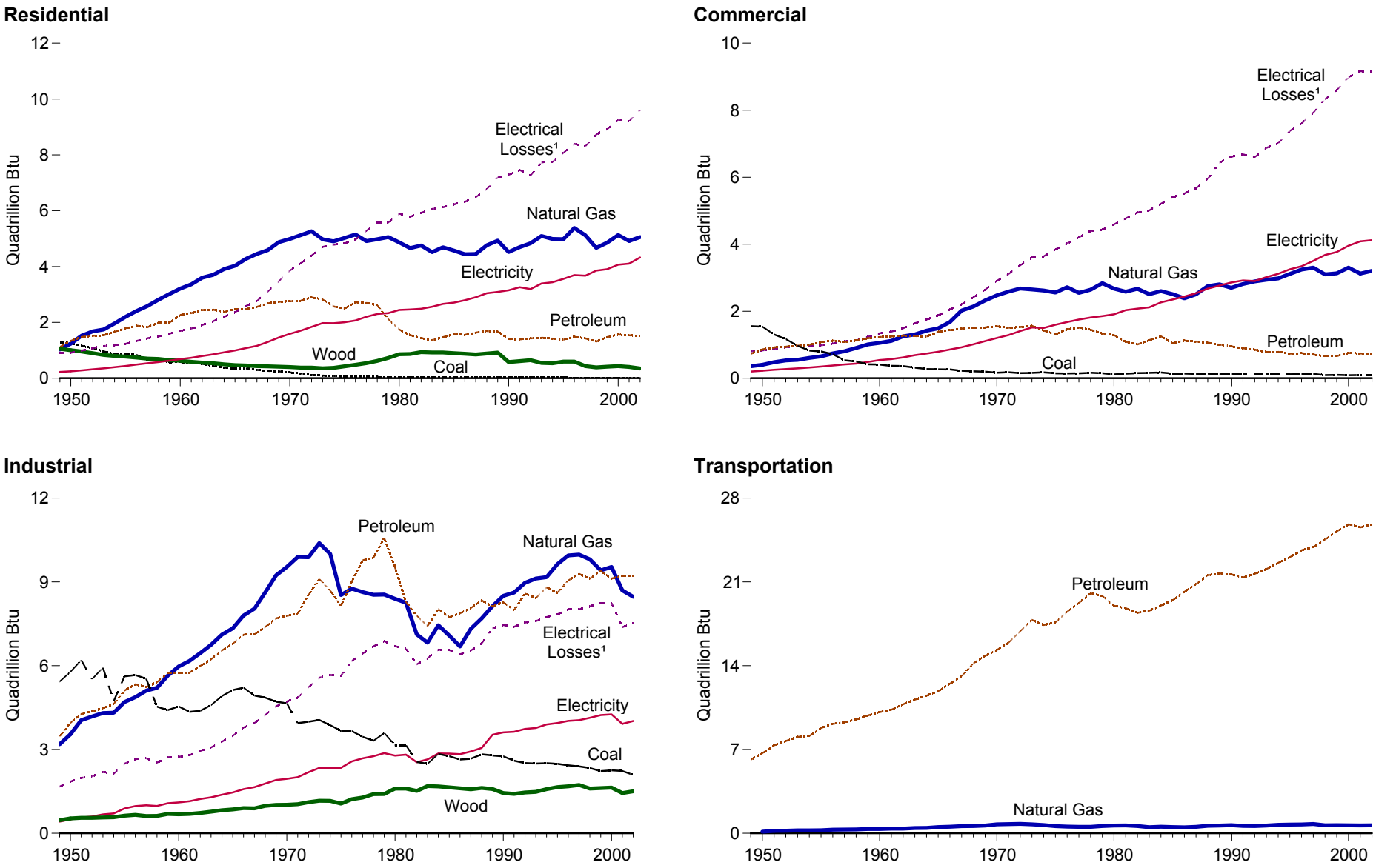
Electric Power Sector, 1949-2002



[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, 1949-2002



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, 1949-2002

(Trillion Btu)

	End-Use Sectors								Electric Power Sector [3]		
	Residential		Commercial [1]		Industrial [2]		Transportation				
Year	Primary	Total	Primary	Total	Primary	Total	Primary	Total	Primary	Adjustments [4]	Total
1949	4,475	R5,614	2,661	R3,661	12,627	R14,717	7,880	R7,990	R4,339	(s)	R31,982
1950	4,848	R6,007	2,824	R3,883	13,881	R16,233	8,384	8,493	R4,679	(s)	R34,616
1951	R5,124	R6,400	R2,727	R3,863	15,118	R17,669	8,934	R9,042	R5,071	(s)	R36,974
1952	5,179	R6,581	2,662	R3,862	14,662	R17,302	8,907	R9,003	R5,338	(s)	R36,748
1953	R5,075	R6,581	R2,500	R3,759	15,328	R18,201	9,031	R9,123	R5,730	(s)	R37,664
1954	5,286	R6,870	2,445	R3,720	14,306	R17,146	8,823	8,903	R5,780	(s)	R36,639
1955	5,633	R7,303	2,548	R3,882	16,091	R19,472	9,475	9,551	R6,461	(s)	R40,208
1956	R5,866	R7,690	R2,592	R4,008	16,562	R20,196	9,791	9,860	R6,942	(s)	R41,754
1957	5,772	R7,740	2,434	R3,946	16,513	R20,205	9,837	9,897	R7,231	(s)	R41,787
1958	R6,155	R8,230	R2,541	R4,103	15,798	R19,307	9,953	10,005	R7,198	(s)	R41,645
1959	6,224	R8,447	2,630	R4,353	16,519	R20,316	10,298	R10,349	R7,794	(s)	R43,466
1960	6,689	R9,078	2,702	R4,589	16,977	R20,823	10,560	10,597	R8,158	(s)	R45,087
1961	6,815	R9,325	2,744	R4,707	16,993	R20,937	10,735	10,770	R8,453	(s)	R45,739
1962	R7,122	R9,825	R2,901	R5,014	17,590	R21,768	11,186	11,221	R9,029	(s)	R47,828
1963	7,135	R10,034	2,897	5,227	18,366	22,730	11,621	11,655	9,627	(s)	R49,646
1964	7,161	R10,291	2,949	R5,439	19,427	R24,090	11,965	11,998	R10,316	(s)	R51,817
1965	R7,328	R10,689	R3,150	R5,820	20,124	R25,075	12,400	12,434	R11,014	(s)	R54,017
1966	7,549	R11,218	3,384	R6,299	21,030	R26,397	13,069	13,102	R11,985	(s)	R57,017
1967	7,741	R11,670	3,738	R6,871	21,013	R26,616	13,718	13,752	R12,698	(s)	R58,908
1968	R7,963	R12,368	R3,866	R7,297	21,872	R27,888	14,831	14,866	R13,887	(s)	R62,419
1969	8,277	R13,205	4,046	R7,795	22,654	R29,114	15,471	15,506	R15,174	(s)	R65,621
1970	8,353	R13,798	4,196	R8,307	22,975	R29,641	16,061	16,098	R16,259	(s)	R67,844
1971	R8,457	R14,278	R4,283	R8,681	22,732	R29,601	16,693	16,729	R17,124	(s)	R69,289
1972	8,655	R14,891	4,369	R9,145	23,532	R30,953	17,681	17,716	R18,466	(s)	R72,704
1973	8,250	R14,930	4,381	R9,507	24,741	R32,653	18,576	18,612	R19,753	7	R75,708
1974	7,928	R14,683	4,221	R9,363	23,816	R31,819	18,086	18,119	R19,933	7	R73,991
1975	8,006	R14,842	4,023	R9,466	21,454	R29,447	18,209	18,244	R20,307	1	R71,999
1976	8,408	R15,441	4,333	R10,035	22,685	R31,430	19,065	19,099	R21,513	8	R76,012
1977	8,207	R15,689	4,217	R10,177	23,193	R32,307	19,784	19,820	R22,591	7	R78,000
1978	8,272	R16,156	4,269	R10,481	23,276	R32,733	20,580	20,615	R23,587	2	R79,986
1979	7,934	R15,842	4,333	R10,627	24,211	R33,962	20,436	20,471	R23,987	2	R80,903
1980	7,504	R15,848	4,097	R10,594	22,673	R32,152	19,658	19,696	R24,359	-1	R78,289
1981	7,103	R15,353	3,831	R10,638	21,404	R30,836	19,469	19,506	R24,525	3	R76,335
1982	7,163	R15,577	3,859	R10,880	19,113	R27,704	19,032	19,069	R24,063	4	R73,234
1983	6,834	R15,459	3,827	R10,952	18,598	R27,511	19,098	19,141	R24,705	3	R73,066
1984	R7,123	R15,908	R4,043	R11,517	R20,219	R29,654	R19,565	R19,612	R25,741	3	R76,693
1985	R7,086	16,023	R3,714	R11,471	R19,473	R28,891	R19,990	R20,037	R26,158	-4	R76,417
1986	R6,912	R16,026	R3,674	R11,628	R19,092	R28,334	R20,681	R20,730	R26,359	3	R76,722
1987	R6,972	R16,359	R3,752	R11,965	R19,960	R29,433	R21,352	R21,402	R27,124	-3	R79,156
1988	R7,377	R17,197	R3,974	R12,597	R20,868	R30,728	R22,198	R22,250	R28,354	3	R82,774
1989	R7,614	R17,893	R3,981	R13,185	R20,883	R31,390	R22,355	R22,409	3,R30,044	R9	R84,886
1990	R6,604	R17,043	R3,850	R13,321	R21,209	R31,891	R22,305	R22,358	R30,647	-9	R84,605
1991	R6,791	R17,514	R3,896	R13,494	R20,843	R31,467	R21,994	R22,047	R30,999	1	R84,522
1992	R6,999	R17,456	R3,941	R13,438	R21,770	R32,637	R22,282	R22,335	R30,873	(s)	R85,866
1993	R7,185	R18,312	R3,923	R13,819	R21,759	R32,689	R22,716	R22,770	R32,006	-10	R87,579
1994	R7,036	R18,223	R3,970	R14,099	R22,384	R33,565	R23,312	R23,367	R32,551	-6	R89,248
1995	R7,049	R18,679	R4,054	R14,687	R22,706	R34,003	R23,793	R23,849	R33,616	3	R91,221
1996	R7,555	R19,642	R4,226	R15,170	R23,428	R34,969	R24,384	R24,439	R34,626	4	R94,224
1997	R7,068	R19,047	4,248	R15,679	R23,684	R35,243	R24,697	R24,752	R35,024	6	R94,727
1998	R6,454	R19,044	R3,963	R15,972	R23,166	R34,876	R25,203	R25,258	R36,363	-3	R95,146
1999	R6,831	R19,654	R4,008	R16,371	R22,938	R34,791	R25,894	R25,951	R37,097	6	R96,774
2000	R7,204	R20,511	R4,259	R17,196	R22,805	R34,681	R26,492	R26,552	R38,181	2	R98,942
2001	R6,942	R20,256	R4,053	R17,309	R21,808	R32,483	R26,213	R26,275	R37,306	(s)	R96,322
2002P	7,006	20,937	4,125	17,397	21,573	32,490	26,465	26,522	38,177	5	97,351

[1] Commercial sector, including commercial combined-heat-and-power (CHP) and commercial electricity-only plants. See Note 1 at end of Secion 8.

[2] Industrial sector, including industrial combined-heat-and-power (CHP) and industrial electricity-only plants. See Note 1 at end of Section 8.

[3] Electricity-only and combined-heat-and-power (CHP) plants within the NAICS 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. • Totals may not equal sum of components due to independent rounding.

Sources: Tables 2.1b-2.1f.

Table 2.1b Residential Sector Energy Consumption, 1949-2002

(Trillion Btu)

Year	Primary Consumption									Electricity Retail Sales [4]	Electrical System Energy Losses [5]	Total
	Fossil Fuels				Renewable Energy				Total Primary			
	Coal	Natural Gas [1]	Petroleum	Total	Wood	Geothermal [2]	Solar [3]	Total				
1949	1,272	1,027	1,121	3,420	1,055	NA	NA	1,055	4,475	228	R911	R5,614
1950	1,261	1,240	1,340	3,842	1,006	NA	NA	1,006	4,848	246	R913	R6,007
1951	R1,159	1,526	1,481	R4,166	958	NA	NA	958	R5,124	284	R992	R6,400
1952	1,079	1,679	1,522	4,279	899	NA	NA	899	5,179	319	R1,083	R6,581
1953	R966	1,744	1,533	R4,243	832	NA	NA	832	R5,075	355	R1,151	R6,581
1954	858	1,961	1,667	4,486	800	NA	NA	800	5,286	397	R1,187	R6,870
1955	867	2,198	1,792	4,858	775	NA	NA	775	5,633	438	R1,232	R7,303
1956	R839	2,409	1,880	R5,128	739	NA	NA	739	R5,866	490	R1,334	R7,690
1957	654	2,588	1,828	5,070	702	NA	NA	702	5,772	535	R1,433	R7,740
1958	R663	2,809	1,994	R5,467	688	NA	NA	688	R6,155	578	R1,497	R8,230
1959	573	3,015	1,989	5,577	647	NA	NA	647	6,224	630	R1,594	R8,447
1960	585	3,212	2,265	6,062	627	NA	NA	627	6,689	687	R1,701	R9,078
1961	534	3,362	2,332	6,228	587	NA	NA	587	6,815	732	R1,779	R9,325
1962	R521	3,600	2,441	R6,562	560	NA	NA	560	R7,122	794	R1,909	R9,825
1963	438	3,700	2,459	6,598	537	NA	NA	537	7,135	856	2,044	R10,034
1964	379	3,908	2,375	6,662	499	NA	NA	499	7,161	928	R2,202	R10,291
1965	R352	4,028	2,481	R6,860	468	NA	NA	468	R7,328	993	R2,368	R10,689
1966	349	4,275	2,471	7,094	455	NA	NA	455	7,549	1,081	R2,588	R11,218
1967	299	4,451	2,557	7,307	434	NA	NA	434	7,741	1,160	R2,769	R11,670
1968	R264	4,588	2,685	R7,538	426	NA	NA	426	R7,963	1,302	R3,103	R12,368
1969	248	4,875	2,739	7,862	415	NA	NA	415	8,277	1,456	R3,473	R13,205
1970	209	4,987	2,755	7,952	401	NA	NA	401	8,353	1,591	R3,854	R13,798
1971	R172	5,126	2,777	R8,075	382	NA	NA	382	R8,457	1,704	R4,116	R14,278
1972	116	5,264	2,895	8,276	380	NA	NA	380	8,655	1,838	R4,397	R14,891
1973	94	4,977	2,825	7,896	354	NA	NA	354	8,250	1,976	R4,703	R14,930
1974	82	4,901	2,573	7,557	371	NA	NA	371	7,928	1,973	R4,783	R14,683
1975	63	5,023	2,495	7,580	425	NA	NA	425	8,006	2,007	R4,829	R14,842
1976	59	5,147	2,720	7,927	482	NA	NA	482	8,408	2,069	R4,963	R15,441
1977	57	4,913	2,695	7,666	542	NA	NA	542	8,207	2,202	R5,280	R15,689
1978	49	4,981	2,620	7,651	622	NA	NA	622	8,272	2,301	R5,582	R16,156
1979	37	5,055	2,114	7,206	728	NA	NA	728	7,934	2,330	R5,578	R15,842
1980	31	4,866	1,748	6,645	859	NA	NA	859	7,504	2,448	R5,897	R15,848
1981	30	4,660	1,543	6,234	869	NA	NA	869	7,103	2,464	R5,786	R15,353
1982	32	4,753	1,441	6,226	937	NA	NA	937	7,163	2,489	R5,925	R15,577
1983	31	4,516	1,362	5,909	925	NA	NA	925	6,834	2,562	R6,063	R15,459
1984	R40	4,692	R1,468	R6,200	923	NA	NA	923	R7,123	2,662	R6,123	R15,908
1985	R39	4,571	R1,578	R6,187	899	NA	NA	899	R7,086	2,709	R6,227	16,023
1986	R40	4,439	R1,556	R6,036	876	NA	NA	876	R6,912	2,795	R6,320	R16,026
1987	R37	4,449	R1,634	R6,120	852	NA	NA	852	R6,972	2,902	R6,485	R16,359
1988	R37	4,765	R1,690	R6,492	885	NA	NA	885	R7,377	3,046	R6,774	R17,197
1989	R31	4,929	R1,679	R6,639	918	5	53	976	R7,614	3,090	R7,189	R17,893
1990	R31	4,523	R1,407	R5,961	581	6	56	642	R6,604	3,153	R7,287	R17,043
1991	R25	4,697	R1,392	R6,114	613	6	58	677	R6,791	3,260	R7,463	R17,514
1992	R26	4,835	R1,427	R6,288	645	6	60	711	R6,999	3,193	R7,263	R17,456
1993	R26	5,095	R1,448	R6,569	548	7	62	616	R7,185	3,394	R7,733	R18,312
1994	21	4,988	R1,420	R6,429	537	6	64	607	R7,036	3,441	R7,746	R18,223
1995	17	4,981	R1,383	R6,382	596	7	65	667	R7,049	3,557	R8,073	R18,679
1996	17	5,383	R1,488	6,888	595	7	65	667	R7,555	3,694	R8,393	R19,642
1997	16	5,118	R1,428	R6,562	433	8	65	506	R7,068	3,671	R8,308	R19,047
1998	12	4,669	R1,314	R5,995	387	8	65	459	R6,454	3,856	R8,733	R19,044
1999	14	4,858	R1,473	R6,345	414	9	64	486	R6,831	3,906	R8,917	R19,654
2000	11	R5,126	R1,563	R6,701	433	9	61	503	R7,204	4,069	R9,238	R20,511
2001	R12	R4,915	R1,539	R6,465	407	9	R60	R476	R6,942	R4,103	R9,211	R20,256
2002P	12	5,057	1,519	6,587	350	10	58	419	7,006	4,327	9,604	20,937

[1] Includes supplemental gaseous fuels.
[2] Geothermal heat pump and direct use energy.
[3] Solar thermal direct use and photovoltaic electricity generation. Includes small amounts of commercial sector use.
[4] Electricity retail sales to ultimate customers reported by electric utilities and other energy service providers.
[5] 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 at end of section.

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

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

Sources: Tables 2.1f, 5.12a, 6.5, 7.3, 8.5, 10.2a, A1, and A3-A6.

Table 2.1c Commercial Sector Energy Consumption, 1949-2002

(Trillion Btu)

Year	Primary Consumption										Electricity Retail Sales [4]	Electrical System Energy Losses [5]	Total
	Fossil Fuels				Renewable Energy					Total Primary			
	Coal	Natural Gas [1]	Petroleum	Total	Hydropower [2]	Wood	Waste	Geothermal [3]	Total				
1949	1,554	360	727	2,641	NA	20	NA	NA	20	2,661	200	R800	R3,661
1950	1,542	401	862	2,805	NA	19	NA	NA	19	2,824	225	R834	R3,883
1951	R1,307	481	922	R2,709	NA	18	NA	NA	18	R2,727	252	R883	R3,863
1952	1,169	534	942	2,645	NA	17	NA	NA	17	2,662	273	R927	R3,862
1953	R966	549	970	R2,485	NA	16	NA	NA	16	R2,500	297	R962	R3,759
1954	825	605	1,000	2,430	NA	15	NA	NA	15	2,445	319	R956	R3,720
1955	801	651	1,081	2,533	NA	15	NA	NA	15	2,548	350	R984	R3,882
1956	R715	742	1,122	R2,578	NA	14	NA	NA	14	R2,592	380	R1,036	R4,008
1957	535	803	1,083	2,421	NA	13	NA	NA	13	2,434	411	R1,101	R3,946
1958	R501	902	1,125	R2,528	NA	13	NA	NA	13	R2,541	435	R1,127	R4,103
1959	415	1,009	1,194	2,618	NA	12	NA	NA	12	2,630	488	R1,235	R4,353
1960	407	1,056	1,228	2,690	NA	12	NA	NA	12	2,702	543	R1,344	R4,589
1961	371	1,115	1,247	2,733	NA	11	NA	NA	11	2,744	572	R1,391	R4,707
1962	R362	1,249	1,280	R2,890	NA	11	NA	NA	11	R2,901	621	R1,492	R5,014
1963	317	1,307	1,262	2,887	NA	10	NA	NA	10	2,897	688	R1,642	5,227
1964	274	1,419	1,247	2,940	NA	9	NA	NA	9	2,949	738	R1,752	R5,439
1965	R265	1,490	1,386	R3,142	NA	9	NA	NA	9	R3,150	789	1,880	R5,820
1966	263	1,676	1,436	3,375	NA	9	NA	NA	9	3,384	859	R2,056	R6,299
1967	225	2,022	1,483	3,730	NA	8	NA	NA	8	3,738	925	2,207	R6,871
1968	R208	2,140	1,510	R3,858	NA	8	NA	NA	8	R3,866	1,014	R2,417	R7,297
1969	195	2,323	1,520	4,038	NA	8	NA	NA	8	4,046	1,108	R2,642	R7,795
1970	165	2,473	1,551	4,189	NA	8	NA	NA	8	4,196	1,201	R2,910	R8,307
1971	R179	2,587	1,510	R4,276	NA	7	NA	NA	7	R4,283	1,288	R3,111	R8,681
1972	153	2,678	1,530	4,362	NA	7	NA	NA	7	4,369	1,408	R3,368	R9,145
1973	160	2,649	1,565	4,374	NA	7	NA	NA	7	4,381	1,517	R3,609	R9,507
1974	175	2,617	1,423	4,214	NA	7	NA	NA	7	4,221	1,501	R3,640	R9,363
1975	147	2,558	1,310	4,015	NA	8	NA	NA	8	4,023	1,598	R3,845	R9,466
1976	144	2,718	1,461	4,323	NA	9	NA	NA	9	4,333	1,678	R4,025	R10,035
1977	148	2,548	1,511	4,207	NA	10	NA	NA	10	4,217	1,754	R4,206	R10,177
1978	165	2,643	1,450	4,257	NA	12	NA	NA	12	4,269	1,813	R4,398	R10,481
1979	149	2,836	1,334	4,319	NA	14	NA	NA	14	4,333	1,854	R4,439	R10,627
1980	115	2,674	1,287	4,076	NA	21	NA	NA	21	4,097	1,906	R4,591	R10,594
1981	137	2,583	1,090	3,810	NA	21	NA	NA	21	3,831	2,033	R4,774	R10,638
1982	155	2,673	1,008	3,837	NA	22	NA	NA	22	3,859	2,077	R4,944	R10,880
1983	162	2,508	1,136	3,805	NA	22	NA	NA	22	3,827	2,116	R5,008	R10,952
1984	R169	2,600	R1,252	R4,021	NA	22	NA	NA	22	R4,043	2,264	R5,209	R11,517
1985	R137	2,508	R1,045	R3,690	NA	24	NA	NA	24	R3,714	2,351	R5,405	R11,471
1986	R135	2,386	R1,126	R3,647	NA	27	NA	NA	27	R3,674	2,439	R5,515	R11,628
1987	R125	2,505	R1,093	R3,723	NA	29	NA	NA	29	R3,752	2,539	R5,674	R11,965
1988	R131	2,748	R1,063	R3,942	NA	32	NA	NA	32	R3,974	2,675	R5,948	R12,597
1989	R115	2,802	R1,002	R3,919	1	36	22	3	61	R3,981	2,767	R6,437	R13,185
1990	R124	2,701	R953	R3,779	1	39	28	3	71	R3,850	2,860	R6,611	R13,321
1991	R116	2,813	R895	R3,824	1	41	26	3	72	R3,896	2,918	R6,681	R13,494
1992	R117	2,890	R854	R3,860	1	44	32	3	81	R3,941	2,900	R6,596	R13,438
1993	R117	2,942	R780	R3,839	1	46	33	3	84	R3,923	3,019	R6,877	R13,819
1994	118	2,979	R787	R3,885	1	46	35	4	86	R3,970	3,116	R7,013	R14,099
1995	117	3,113	R732	R3,962	1	46	40	5	92	R4,054	3,252	R7,381	R14,687
1996	122	3,244	R751	R4,116	1	50	53	5	110	R4,226	3,344	R7,599	R15,170
1997	129	3,302	R704	4,135	1	49	58	6	113	4,248	3,503	R7,928	R15,679
1998	93	3,098	R661	R3,853	1	48	54	7	111	R3,963	3,678	R8,330	R15,972
1999	103	3,130	R661	R3,894	1	52	54	7	114	R4,008	3,766	R8,597	R16,371
2000	92	3,301	R756	R4,150	1	53	47	8	109	R4,259	3,956	R8,982	R17,196
2001	R97	R3,126	R742	R3,964	1	R41	R39	8	R89	R4,053	R4,085	R9,170	R17,309
2002P	97	3,204	727	4,028	1	41	47	9	98	4,125	4,122	9,149	17,397

[1] Includes supplemental gaseous fuels.
[2] Conventional hydroelectric power.
[3] Geothermal heat pump and direct use energy.
[4] Electricity retail sales to ultimate customers reported by electric utilities and other energy service providers.
[5] 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 at end of section.

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

Notes: • The commercial sector includes commercial combined-heat-and-power (CHP) and commercial electricity-only plants. See Note 1 at end of Section 8. • Totals may not equal sum of components due to independent rounding.

Sources: Tables 2.1f, 5.12a, 6.5, 7.3, 8.5, 10.2a, A1, and A3-A6.

Table 2.1d Industrial Sector Energy Consumption, 1949-2002

(Trillion Btu)

Year	Primary Consumption											Electricity Retail Sales [4]	Electrical System Energy Losses [5]	Total
	Fossil Fuels					Renewable Energy					Total Primary			
	Coal	Coal Coke Net Imports	Natural Gas [1]	Petroleum	Total	Hydropower [2]	Wood	Waste	Geothermal [3]	Total				
1949	5,433	-7	3,188	3,468	12,083	76	468	NA	NA	544	12,627	418	R1,672	R14,717
1950	5,781	1	3,546	3,951	13,279	69	532	NA	NA	602	13,881	500	R1,852	R16,233
1951	6,202	-21	4,052	4,270	14,502	63	553	NA	NA	616	15,118	567	R1,984	R17,669
1952	5,517	-12	4,181	4,363	14,049	62	552	NA	NA	613	14,662	601	R2,039	R17,302
1953	5,931	-9	4,304	4,480	14,706	57	566	NA	NA	622	15,328	678	R2,195	R18,201
1954	4,730	-7	4,319	4,632	13,674	56	576	NA	NA	632	14,306	711	R2,129	R17,146
1955	5,620	-10	4,701	5,111	15,421	38	631	NA	NA	669	16,091	887	R2,495	R19,472
1956	5,667	-13	4,874	5,336	15,864	37	661	NA	NA	698	16,562	976	R2,658	R20,196
1957	5,536	-17	5,107	5,235	15,861	36	616	NA	NA	652	16,513	1,003	R2,689	R20,205
1958	4,533	-7	5,208	5,408	15,141	37	620	NA	NA	657	15,798	978	R2,531	R19,307
1959	4,413	-8	5,647	5,739	15,790	37	692	NA	NA	729	16,519	1,075	R2,722	R20,316
1960	4,543	-6	5,973	5,747	16,258	39	680	NA	NA	719	16,977	1,107	R2,739	R20,823
1961	4,345	-8	6,170	5,755	16,262	36	695	NA	NA	731	16,993	1,149	R2,794	R20,937
1962	4,385	-6	6,451	5,996	16,826	36	728	NA	NA	764	17,590	1,228	R2,950	R21,768
1963	4,590	-7	6,748	6,227	17,557	34	775	NA	NA	809	18,366	1,288	3,076	22,730
1964	4,915	-10	7,114	6,548	18,566	34	827	NA	NA	861	19,427	1,382	R3,281	R24,090
1965	5,127	-18	7,339	6,789	19,236	33	855	NA	NA	888	20,124	1,463	3,488	R25,075
1966	5,215	-25	7,795	7,110	20,095	33	902	NA	NA	935	21,030	1,582	R3,786	R26,397
1967	4,934	-15	8,043	7,120	20,082	36	895	NA	NA	930	21,013	1,655	R3,948	R26,616
1968	4,855	-17	8,626	7,391	20,855	35	982	NA	NA	1,017	21,872	1,778	R4,238	R27,888
1969	4,712	-36	9,234	7,696	21,605	34	1,014	NA	NA	1,048	22,654	1,909	R4,552	R29,114
1970	4,656	-58	9,536	7,787	21,922	34	1,019	NA	NA	1,053	22,975	1,948	R4,719	R29,641
1971	3,944	-33	9,892	7,856	21,659	34	1,040	NA	NA	1,074	22,732	2,011	R4,857	R29,601
1972	3,993	-26	9,884	8,534	22,385	34	1,113	NA	NA	1,147	23,532	2,187	R5,233	R30,953
1973	4,057	-7	10,388	9,104	23,541	35	1,165	NA	NA	1,200	24,741	2,341	R5,571	R32,653
1974	3,870	56	10,004	8,694	22,624	33	1,159	NA	NA	1,192	23,816	2,337	R5,666	R31,819
1975	3,667	14	8,532	8,146	20,359	32	1,063	NA	NA	1,096	21,454	2,346	R5,647	R29,447
1976	3,661	(s)	8,762	9,010	21,432	33	1,220	NA	NA	1,253	22,685	2,573	R6,171	R31,430
1977	3,454	15	8,635	9,774	21,879	33	1,281	NA	NA	1,314	23,193	2,682	R6,432	R32,307
1978	3,314	125	8,539	9,867	21,845	32	1,400	NA	NA	1,432	23,276	2,761	R6,696	R32,733
1979	3,593	63	8,549	10,568	22,773	34	1,405	NA	NA	1,439	24,211	2,873	R6,878	R33,962
1980	3,155	-35	8,395	9,525	21,040	33	1,600	NA	NA	1,633	22,673	2,781	R6,698	R32,152
1981	3,157	-16	8,257	8,285	19,682	33	1,602	87	NA	1,722	21,404	2,817	R6,615	R30,836
1982	2,552	-22	7,121	7,795	17,446	33	1,516	118	NA	1,667	19,113	2,542	R6,050	R27,704
1983	2,490	-16	6,826	7,420	16,720	33	1,690	155	NA	1,879	18,598	2,648	R6,265	R27,511
1984	2,842	-11	7,448	R8,025	R18,303	33	1,679	204	NA	1,916	R20,219	2,859	R6,576	R29,654
1985	2,760	-13	7,080	R7,738	R17,565	33	1,645	230	NA	1,908	R19,473	2,855	R6,563	R28,891
1986	2,641	-17	6,690	R7,880	R17,194	33	1,610	256	NA	1,899	R19,092	2,834	R6,408	R28,334
1987	2,673	9	7,323	R8,065	R18,069	33	1,576	282	NA	1,891	R19,960	2,928	R6,545	R29,433
1988	2,828	40	7,696	R8,339	R18,902	33	1,625	308	NA	1,965	R20,868	3,059	R6,801	R30,728
1989	2,787	30	8,131	R8,120	R19,068	R28	1,584	200	2	R1,814	R20,883	3,158	R7,349	R31,390
1990	2,756	5	8,502	R8,278	R19,542	R31	R1,442	R192	2	R1,667	R21,209	3,226	R7,457	R31,891
1991	2,601	10	8,619	R7,987	R19,216	R30	1,410	185	2	R1,626	R20,843	3,230	R7,394	R31,467
1992	2,515	35	8,967	R8,581	R20,098	31	1,461	179	2	1,672	R21,770	3,319	R7,548	R32,637
1993	2,496	27	9,120	R8,418	R20,062	30	1,484	181	2	1,697	R21,759	3,334	R7,596	R32,689
1994	2,510	58	9,172	R8,801	R20,540	62	1,580	199	3	1,844	R22,384	3,439	R7,742	R33,565
1995	2,488	61	9,637	R8,614	R20,801	55	1,652	195	3	1,905	R22,706	3,455	R7,842	R34,003
1996	2,434	R23	9,947	R9,053	R21,457	61	1,683	224	3	1,971	R23,428	3,527	R8,014	R34,969
1997	2,395	R46	9,976	R9,290	R21,708	58	1,731	184	3	1,976	R23,684	3,542	R8,017	R35,243
1998	2,335	R67	9,806	R9,116	R21,324	55	1,603	180	3	1,841	R23,166	3,587	R8,124	R34,876
1999	2,227	R58	9,415	R9,396	R21,095	49	R1,620	171	4	R1,843	R22,938	3,611	R8,242	R34,791
2000	2,256	R65	R9,535	R9,120	R20,977	42	1,636	R145	4	R1,828	R22,805	3,631	R8,245	R34,681
2001	R2,230	R32	R8,697	R9,220	R20,178	R32	R1,443	R150	5	R1,630	R21,808	R3,290	R7,385	R32,483
2002P	2,092	62	8,468	9,228	19,850	41	1,506	172	5	1,724	21,573	3,391	7,526	32,490

[1] Includes supplemental gaseous fuels.
[2] Conventional hydroelectric power.
[3] Geothermal heat pump and direct use energy.
[4] Electricity retail sales to ultimate customers reported by electric utilities and other energy service providers.
[5] 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 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 1 at end of Section 8. • Totals may not equal sum of components due to independent rounding.

Sources: Tables 2.1f, 5.12b, 6.5, 7.3, 8.5, 10.2a, A1, and A3-A6.

Table 2.1e Transportation Sector Energy Consumption, 1949-2002

(Trillion Btu)

Year	Primary Consumption						Electricity Retail Sales [3]	Electrical System Energy Losses [4]	Total [2]
	Fossil Fuels				Renewable Energy	Total Primary [2]			
	Coal	Natural Gas [1]	Petroleum	Total	Alcohol Fuels [2]				
1949	1,727	NA	6,152	7,880	NA	7,880	22	R88	R7,990
1950	1,564	130	6,690	8,384	NA	8,384	23	86	8,493
1951	1,379	199	7,356	8,934	NA	8,934	24	R84	R9,042
1952	984	214	7,709	8,907	NA	8,907	22	74	R9,003
1953	733	238	8,059	9,031	NA	9,031	22	71	R9,123
1954	461	239	8,123	8,823	NA	8,823	20	60	8,903
1955	421	254	8,800	9,475	NA	9,475	20	56	9,551
1956	340	306	9,145	9,791	NA	9,791	19	51	9,860
1957	241	310	9,286	9,837	NA	9,837	16	R43	9,897
1958	115	323	9,514	9,953	NA	9,953	15	38	10,005
1959	88	362	9,849	10,298	NA	10,298	14	R36	R10,349
1960	75	359	10,126	10,560	NA	10,560	10	26	10,597
1961	19	391	10,325	10,735	NA	10,735	10	25	10,770
1962	17	396	10,773	11,186	NA	11,186	10	24	11,221
1963	16	437	11,168	11,621	NA	11,621	10	24	11,655
1964	17	450	11,498	11,965	NA	11,965	10	24	11,998
1965	16	517	11,868	12,400	NA	12,400	10	24	12,434
1966	15	553	12,501	13,069	NA	13,069	10	23	13,102
1967	11	594	13,113	13,718	NA	13,718	10	24	13,752
1968	10	609	14,212	14,831	NA	14,831	10	24	14,866
1969	7	651	14,813	15,471	NA	15,471	10	25	15,506
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	([5])	539	20,041	20,580	NA	20,580	10	R24	20,615
1979	([5])	612	19,825	20,436	NA	20,436	10	24	20,471
1980	([5])	650	19,008	19,658	NA	19,658	11	27	19,696
1981	([5])	658	18,811	19,469	7	19,469	11	26	19,506
1982	([5])	612	18,420	19,032	19	19,032	11	R26	19,069
1983	([5])	505	18,593	19,098	35	19,098	13	30	19,141
1984	([5])	545	R19,020	R19,565	43	R19,565	14	33	R19,612
1985	([5])	519	R19,471	R19,990	52	R19,990	14	33	R20,037
1986	([5])	499	R20,182	R20,681	60	R20,681	15	R34	R20,730
1987	([5])	535	R20,816	R21,352	69	R21,352	16	35	R21,402
1988	([5])	632	R21,567	R22,198	70	R22,198	16	R35	R22,250
1989	([5])	649	R21,706	R22,355	71	R22,355	16	38	R22,409
1990	([5])	680	R21,625	R22,305	63	R22,305	16	37	R22,358
1991	([5])	620	R21,373	R21,994	73	R21,994	16	37	R22,047
1992	([5])	608	R21,674	R22,282	83	R22,282	16	37	R22,335
1993	([5])	R645	R22,072	R22,716	97	R22,716	16	37	R22,770
1994	([5])	R709	R22,603	R23,312	109	R23,312	17	R38	R23,367
1995	([5])	R724	R23,069	R23,793	117	R23,793	17	39	R23,849
1996	([5])	R737	R23,647	R24,384	84	R24,384	17	R38	R24,439
1997	([5])	R780	R23,917	R24,697	106	R24,697	17	38	R24,752
1998	([5])	R666	R24,537	R25,203	117	R25,203	17	R38	R25,258
1999	([5])	R675	R25,218	R25,894	122	R25,894	17	40	R25,951
2000	([5])	672	R25,820	R26,492	139	R26,492	18	42	R26,552
2001	([5])	R657	R25,556	R26,213	147	R26,213	R19	R43	R26,275
2002P	([5])	663	25,801	26,465	174	26,465	18	39	26,522

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

[2] Alcohol (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.

[3] Electricity retail sales to ultimate customers reported by electric utilities and other energy service providers.

[4] 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 at end of section.

[5] 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.

Sources: Tables 2.1f, 5.12c, 6.5, 7.3, 8.5, 10.2a, A1, and A3-A6.

Table 2.1f Electric Power Sector Energy Consumption, 1949-2002

(Trillion Btu)

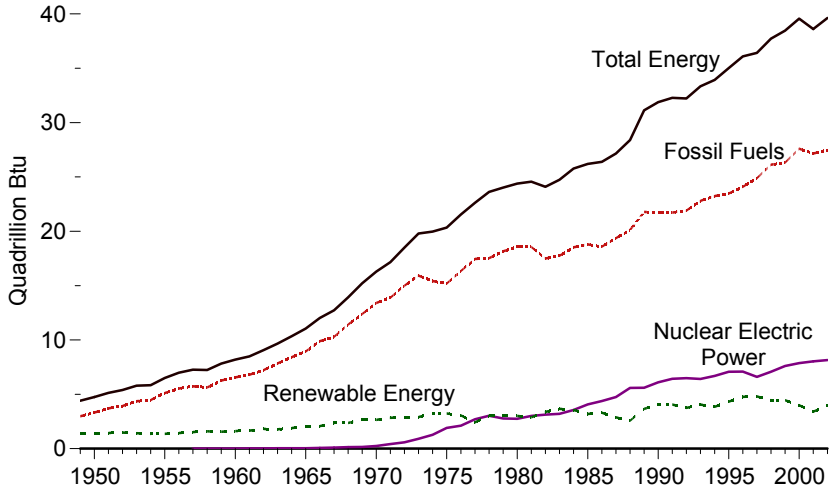
Year	Primary Consumption														
	Fossil Fuels						Renewable Energy								
	Coal	Natural Gas [1]	Petroleum	Total	Nuclear Electric Power	Hydro-electric Pumped Storage [2]	Conventional Hydroelectric Power	Wood	Waste	Geothermal	Solar	Wind	Total	Electricity Net Imports	Total Primary
1949	1,995	569	415	2,979	0	([3])	1,349	6	NA	NA	NA	NA	1,355	5	R4,339
1950	2,199	651	472	3,322	0	([3])	1,346	5	NA	NA	NA	NA	1,351	6	R4,679
1951	2,507	791	400	3,697	0	([3])	1,361	5	NA	NA	NA	NA	1,366	7	R5,071
1952	2,557	942	420	3,920	0	([3])	1,404	6	NA	NA	NA	NA	1,411	8	R5,338
1953	2,777	1,070	514	4,362	0	([3])	1,356	5	NA	NA	NA	NA	1,361	7	R5,730
1954	2,841	1,206	417	4,464	0	([3])	1,304	3	NA	NA	NA	NA	1,307	8	R5,780
1955	3,458	1,194	471	5,123	0	([3])	1,322	3	NA	NA	NA	NA	1,325	14	R6,461
1956	3,790	1,283	455	5,527	0	([3])	1,398	2	NA	NA	NA	NA	1,400	16	R6,942
1957	3,855	1,383	498	5,737	(s)	([3])	1,480	2	NA	NA	NA	NA	1,482	12	R7,231
1958	3,721	1,421	486	5,628	2	([3])	1,555	2	NA	NA	NA	NA	1,557	11	R7,198
1959	4,029	1,686	552	6,267	2	([3])	1,511	2	NA	NA	NA	NA	1,513	12	R7,794
1960	4,228	1,785	553	6,565	6	([3])	1,569	2	NA	1	NA	NA	1,571	15	R8,158
1961	4,355	1,889	557	6,801	20	([3])	1,621	1	NA	2	NA	NA	1,624	8	R8,453
1962	4,622	2,035	560	7,217	26	([3])	1,780	1	NA	2	NA	NA	1,784	2	R9,029
1963	5,050	2,211	585	7,846	38	([3])	1,737	1	NA	4	NA	NA	1,743	(s)	9,627
1964	5,380	2,397	634	8,411	40	([3])	1,853	2	NA	5	NA	NA	1,859	7	R10,316
1965	5,821	2,395	722	8,938	43	([3])	2,026	3	NA	4	NA	NA	2,033	(s)	R11,014
1966	6,302	2,696	883	9,881	64	([3])	2,028	3	NA	4	NA	NA	2,036	4	R11,985
1967	6,445	2,834	1,011	10,290	88	([3])	2,311	3	NA	7	NA	NA	2,321	-1	R12,698
1968	6,994	3,245	1,181	11,421	142	([3])	2,313	4	NA	9	NA	NA	2,327	-2	R13,887
1969	7,219	3,596	1,571	12,386	154	([3])	2,614	3	NA	13	NA	NA	2,630	4	R15,174
1970	7,227	4,054	2,117	13,399	239	([3])	2,600	1	2	11	NA	NA	2,615	7	R16,259
1971	7,299	4,099	2,495	13,893	413	([3])	2,790	1	2	12	NA	NA	2,806	12	R17,124
1972	7,811	4,084	3,097	14,992	584	([3])	2,829	1	2	31	NA	NA	2,864	26	R18,466
1973	8,658	3,748	3,515	15,921	910	([3])	2,827	1	2	43	NA	NA	2,873	49	R19,753
1974	8,534	3,519	3,365	15,418	1,272	([3])	3,143	1	2	53	NA	NA	3,199	43	R19,933
1975	8,786	3,240	3,166	15,191	1,900	([3])	3,122	(s)	2	70	NA	NA	3,194	21	R20,307
1976	9,720	3,152	3,477	16,349	2,111	([3])	2,943	1	2	78	NA	NA	3,024	29	R21,513
1977	10,262	3,284	3,901	17,446	2,702	([3])	2,301	3	2	77	NA	NA	2,383	59	R22,591
1978	10,238	3,297	3,987	17,522	3,024	([3])	2,905	2	1	64	NA	NA	2,973	67	R23,587
1979	11,260	3,613	3,283	18,156	2,776	([3])	2,897	3	2	84	NA	NA	2,986	69	R23,987
1980	12,123	3,810	2,634	18,567	2,739	([3])	2,867	3	2	110	NA	NA	2,982	71	R24,359
1981	12,583	3,768	2,202	18,553	3,008	([3])	2,725	3	1	123	NA	NA	2,852	113	R24,525
1982	12,582	3,342	1,568	17,491	3,131	([3])	3,233	2	1	105	NA	NA	3,341	100	R24,063
1983	13,213	2,998	1,544	17,754	3,203	([3])	3,494	2	2	129	NA	(s)	3,627	121	R24,705
1984	14,019	3,220	1,286	18,526	3,553	([3])	3,353	5	4	165	(s)	(s)	3,527	135	R25,741
1985	14,542	3,160	1,090	18,792	4,076	([3])	2,937	8	7	198	(s)	(s)	3,150	140	R26,158
1986	14,444	2,691	1,452	18,586	4,380	([3])	3,038	5	7	219	(s)	(s)	3,270	122	R26,359
1987	15,173	2,935	1,257	19,365	4,754	([3])	2,602	8	7	229	(s)	(s)	2,846	158	R27,124
1988	15,850	2,709	1,563	20,123	5,587	([3])	2,302	10	8	217	(s)	(s)	2,536	108	R28,354
1989[4]	R16,137	3,192	1,703	R21,032	5,602	([3])	R2,808	100	132	R308	3	R22	R3,372	37	R30,044
1990	R16,261	R3,332	R1,289	R20,883	6,104	-36	R3,014	R129	R188	R326	4	R29	R3,689	8	R30,647
1991	16,250	3,399	1,198	R20,847	6,422	-47	R2,985	126	229	R335	5	R31	R3,710	67	R30,999
1992	16,466	3,534	991	R20,990	6,479	-43	2,586	140	262	338	4	30	3,360	87	R30,873
1993	17,196	3,560	1,124	R21,880	6,410	-42	2,861	150	265	351	5	31	3,662	95	R32,006
1994	17,261	4,000	1,059	R22,320	6,694	-35	2,620	152	282	325	5	36	3,420	153	R32,551
1995	17,466	4,325	755	R22,546	7,075	-28	3,149	125	296	280	5	33	3,889	134	R33,616
1996	18,429	3,883	817	R23,129	7,087	-32	3,528	138	300	300	5	33	4,305	137	R34,626
1997	18,905	4,146	927	R23,977	6,597	-41	3,581	137	309	309	5	34	4,375	116	R35,024
1998	19,216	4,698	1,306	R25,220	7,068	-46	3,241	137	308	311	5	31	4,032	88	R36,363
1999	19,279	4,926	1,211	R25,416	7,610	-62	3,218	138	315	312	5	46	4,034	99	R37,097
2000	20,220	5,316	1,144	R26,680	7,862	-57	2,768	134	318	296	5	57	3,579	116	R38,181
2001	R19,558	R5,476	R1,277	R26,310	8,028	-90	R2,169	R126	R324	R289	R6	R68	R2,982	75	R37,306
2002P	19,985	5,664	908	26,557	8,145	-89	2,626	135	331	281	6	106	3,485	78	38,177

[1] Includes supplemental gaseous fuels.
[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.

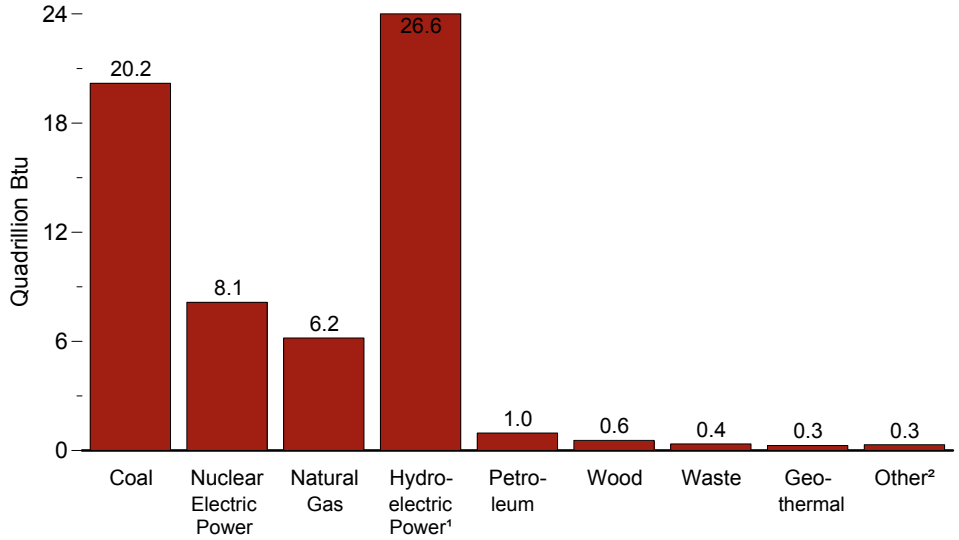
Notes: • See Note 1 at end of Section 1. • Data are for fuels consumed to produce electricity and useful thermal output. • The electric power sector comprises electricity-only and combined-heat-and-power (CHP) plants within the NAICS 22 category whose primary business is to sell electricity, or electricity and heat, to the public. • Totals may not equal sum of components due to independent rounding.
Sources: Tables 5.12d, 6.5, 7.3, 8.1, 10.2b, A1, and A4-A6.

Figure 2.2 Consumption for Electricity Generation

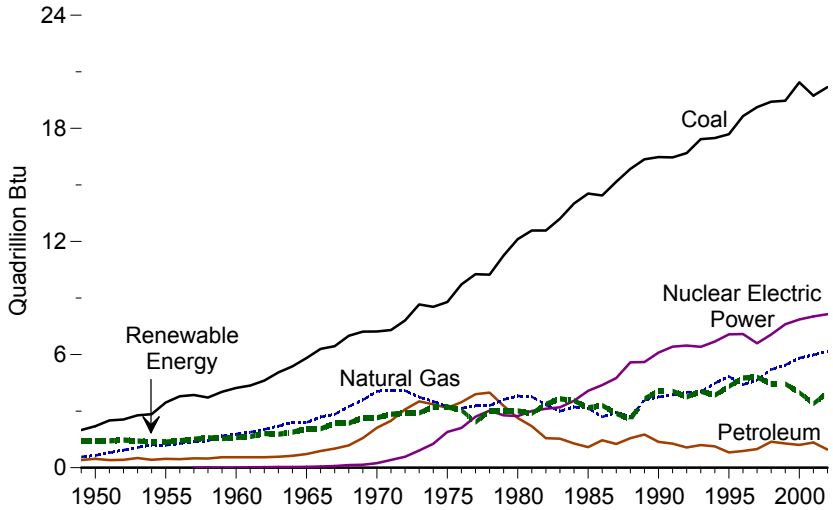
Total and Energy Categories, 1949-2002



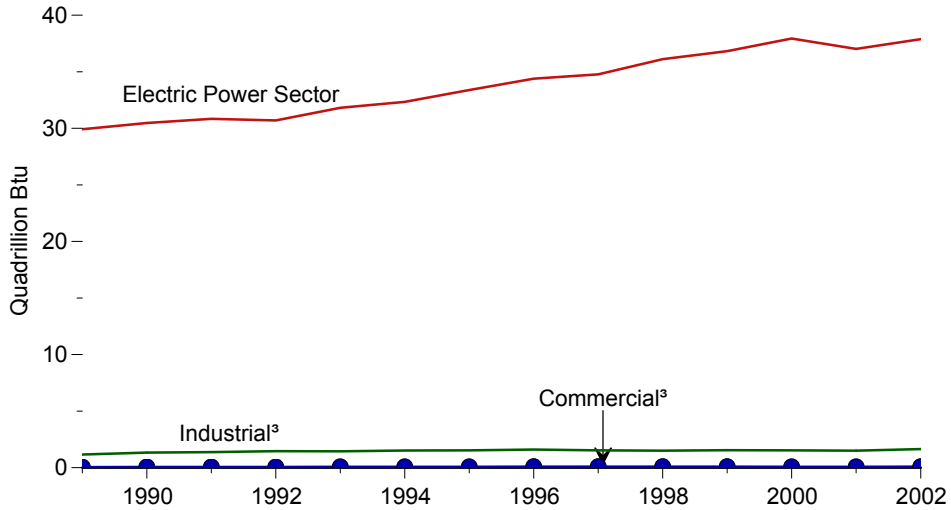
By Major Fuel, 2002



By Major Fuel, 1949-2002



By Sector, 1989-2002



[1] Conventional hydroelectric power and pumped storage.
[2] Other gases, solar, wind, batteries, chemicals, 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.
Note: Because vertical scales differ, graphs should not be compared.
Sources: Tables 2.2a, 2.2b, and 2.2c.

Table 2.2a Consumption for Electricity Generation: Total (All Sectors), 1949-2002

(Trillion Btu)

Year	Fossil Fuels					Nuclear Electric Power	Hydro-electric Pumped Storage [5]	Renewable Energy							Electricity Net Imports	Total [9]
	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	([10])	1,425	6	NA	NA	NA	NA	1,431	5	R4,415
1950	2,199	472	651	NA	3,322	0	([10])	1,415	5	NA	NA	NA	NA	1,421	6	R4,749
1951	2,507	400	791	NA	3,697	0	([10])	1,424	5	NA	NA	NA	NA	1,429	7	R5,134
1952	2,557	420	942	NA	3,920	0	([10])	1,466	6	NA	NA	NA	NA	1,472	8	R5,400
1953	2,777	514	1,070	NA	4,362	0	([10])	1,413	5	NA	NA	NA	NA	1,418	7	R5,787
1954	2,841	417	1,206	NA	4,464	0	([10])	1,360	3	NA	NA	NA	NA	1,363	8	R5,835
1955	3,458	471	1,194	NA	5,123	0	([10])	1,360	3	NA	NA	NA	NA	1,363	14	R6,500
1956	3,790	455	1,283	NA	5,527	0	([10])	1,435	2	NA	NA	NA	NA	1,436	16	R6,979
1957	3,855	498	1,383	NA	5,737	(s)	([10])	1,516	2	NA	NA	NA	NA	1,518	12	R7,267
1958	3,721	486	1,421	NA	5,628	2	([10])	1,592	2	NA	NA	NA	NA	1,594	11	R7,235
1959	4,029	552	1,686	NA	6,267	2	([10])	1,548	2	NA	NA	NA	NA	1,550	12	R7,831
1960	4,228	553	1,785	NA	6,565	6	([10])	1,608	2	NA	1	NA	NA	1,610	15	R8,197
1961	4,355	557	1,889	NA	6,801	20	([10])	1,656	1	NA	2	NA	NA	1,660	8	R8,489
1962	4,622	560	2,035	NA	7,217	26	([10])	1,816	1	NA	2	NA	NA	1,820	2	R9,065
1963	5,050	585	2,211	NA	7,846	38	([10])	1,771	1	NA	4	NA	NA	1,776	(s)	R9,661
1964	5,380	634	2,397	NA	8,411	40	([10])	1,886	2	NA	5	NA	NA	1,892	7	R10,350
1965	5,821	722	2,395	NA	8,938	43	([10])	2,059	3	NA	4	NA	NA	2,066	(s)	R11,047
1966	6,302	883	2,696	NA	9,881	64	([10])	2,062	3	NA	4	NA	NA	2,069	4	R12,018
1967	6,445	1,011	2,834	NA	10,290	88	([10])	2,347	3	NA	7	NA	NA	2,357	-1	R12,734
1968	6,994	1,181	3,245	NA	11,421	142	([10])	2,349	4	NA	9	NA	NA	2,362	-2	R13,922
1969	7,219	1,571	3,596	NA	12,386	154	([10])	2,648	3	NA	13	NA	NA	2,665	4	R15,208
1970	7,227	2,117	4,054	NA	13,399	239	([10])	2,634	1	2	11	NA	NA	2,649	7	R16,293
1971	7,299	2,495	4,099	NA	13,893	413	([10])	2,824	1	2	12	NA	NA	2,839	12	R17,158
1972	7,811	3,097	4,084	NA	14,992	584	([10])	2,864	1	2	31	NA	NA	2,899	26	R18,501
1973	8,658	3,515	3,748	NA	15,921	910	([10])	2,861	1	2	43	NA	NA	2,907	49	R19,788
1974	8,534	3,365	3,519	NA	15,418	1,272	([10])	3,177	1	2	53	NA	NA	3,232	43	R19,966
1975	8,786	3,166	3,240	NA	15,191	1,900	([10])	3,155	(s)	2	70	NA	NA	3,227	21	R20,339
1976	9,720	3,477	3,152	NA	16,349	2,111	([10])	2,976	1	2	78	NA	NA	3,057	29	R21,547
1977	10,262	3,901	3,284	NA	17,446	2,702	([10])	2,333	3	2	77	NA	NA	2,416	59	R22,623
1978	10,238	3,987	3,297	NA	17,522	3,024	([10])	2,937	2	1	64	NA	NA	3,005	67	R23,618
1979	11,260	3,283	3,613	NA	18,156	2,776	([10])	2,931	3	2	84	NA	NA	3,020	69	R24,021
1980	12,123	2,634	3,810	NA	18,567	2,739	([10])	2,900	3	2	110	NA	NA	3,014	71	R24,392
1981	12,583	2,202	3,768	NA	18,553	3,008	([10])	2,758	3	1	123	NA	NA	2,885	113	R24,559
1982	12,582	1,568	3,342	NA	17,491	3,131	([10])	3,266	2	1	105	NA	NA	3,374	100	R24,096
1983	13,213	1,544	2,998	NA	17,754	3,203	([10])	3,527	2	2	129	NA	(s)	3,661	121	R24,738
1984	14,019	1,286	3,220	NA	18,526	3,553	([10])	3,386	5	4	165	(s)	(s)	3,560	135	R25,774
1985	14,542	1,090	3,160	NA	18,792	4,076	([10])	2,970	8	7	198	(s)	(s)	3,183	140	R26,191
1986	14,444	1,452	2,691	NA	18,586	4,380	([10])	3,071	5	7	219	(s)	(s)	3,303	122	R26,392
1987	15,173	1,257	2,935	NA	19,365	4,754	([10])	2,635	8	7	229	(s)	(s)	2,879	158	R27,157
1988	15,850	1,563	2,709	NA	20,123	5,587	([10])	2,334	10	8	217	(s)	(s)	2,569	108	R28,387
1989[11]	R16,359	R1,757	3,581	90	R21,789	5,602	([10])	R2,837	345	151	R308	3	R22	R3,665	37	R31,132
1990	R16,477	R1,367	3,752	R112	R21,708	6,104	-36	R3,046	R442	R211	R326	4	R29	R4,058	8	R31,878
1991	16,460	1,276	3,861	125	21,723	6,422	-47	R3,016	425	247	R335	5	R31	R4,058	67	R32,281
1992	16,686	1,076	3,999	141	21,903	6,479	-43	2,617	481	283	338	4	30	3,752	87	R32,218
1993	17,424	1,203	4,027	136	22,790	6,410	-42	2,892	485	288	351	5	31	4,052	95	R33,339
1994	17,485	1,135	4,476	136	23,233	6,694	-35	2,683	498	301	325	5	36	3,848	153	R33,933
1995	17,687	813	4,840	133	23,473	7,075	-28	3,205	480	316	280	5	33	4,318	134	R35,015
1996	18,650	888	4,400	159	24,097	7,087	-32	3,590	513	324	300	5	33	4,765	137	R36,091
1997	19,128	985	4,658	119	24,890	6,597	-41	3,640	484	339	309	5	34	4,811	116	R36,410
1998	19,417	1,378	5,205	125	26,124	7,068	-46	3,297	475	332	311	5	31	4,450	88	R37,721
1999	19,467	1,285	5,441	126	26,320	7,610	-62	3,268	490	332	312	5	46	4,452	99	R38,459
2000	R20,443	1,212	5,818	126	R27,599	7,862	-57	2,811	496	330	296	5	57	3,995	116	R39,562
2001	R19,734	R1,337	R5,982	R97	R27,150	8,028	-90	R2,201	R486	R347	R289	R6	R68	R3,397	75	R38,602
2002P	20,187	962	6,186	132	27,467	8,145	-89	2,668	556	362	281	6	106	3,978	78	39,628

[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, including a small amount of supplemental gaseous fuels.
[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] Includes batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies, which are not separately displayed.
[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 0.5 trillion Btu.

Notes: • See Note 1 at end of Section 1. • Data are for fuels consumed to produce electricity; they exclude fuels consumed to produce useful thermal output. Consumption for electricity generation at combined-heat-and-power (CHP) plants is estimated. • Totals may not equal sum of components due to independent rounding.

Sources: Tables 2.2b, 2.2c, and 10.2a.

Table 2.2b Consumption for Electricity Generation: Electric Power Sector, 1949-2002

(Trillion Btu)

Year	Fossil Fuels					Nuclear Electric Power	Hydro-electric Pumped Storage [5]	Renewable Energy							Electricity Net Imports	Total [9]
	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	([10])	1,349	6	NA	NA	NA	NA	1,355	5	R4,339
1950	2,199	472	651	NA	3,322	0	([10])	1,346	5	NA	NA	NA	NA	1,351	6	R4,679
1951	2,507	400	791	NA	3,697	0	([10])	1,361	5	NA	NA	NA	NA	1,366	7	R5,071
1952	2,557	420	942	NA	3,920	0	([10])	1,404	6	NA	NA	NA	NA	1,411	8	R5,338
1953	2,777	514	1,070	NA	4,362	0	([10])	1,356	5	NA	NA	NA	NA	1,361	7	R5,730
1954	2,841	417	1,206	NA	4,464	0	([10])	1,304	3	NA	NA	NA	NA	1,307	8	R5,780
1955	3,458	471	1,194	NA	5,123	0	([10])	1,322	3	NA	NA	NA	NA	1,325	14	R6,461
1956	3,790	455	1,283	NA	5,527	0	([10])	1,398	2	NA	NA	NA	NA	1,400	16	R6,942
1957	3,855	498	1,383	NA	5,737	(s)	([10])	1,480	2	NA	NA	NA	NA	1,482	12	R7,231
1958	3,721	486	1,421	NA	5,628	2	([10])	1,555	2	NA	NA	NA	NA	1,557	11	R7,198
1959	4,029	552	1,686	NA	6,267	2	([10])	1,511	2	NA	NA	NA	NA	1,513	12	R7,794
1960	4,228	553	1,785	NA	6,565	6	([10])	1,569	2	NA	1	NA	NA	1,571	15	R8,158
1961	4,355	557	1,889	NA	6,801	20	([10])	1,621	1	NA	2	NA	NA	1,624	8	R8,453
1962	4,622	560	2,035	NA	7,217	26	([10])	1,780	1	NA	2	NA	NA	1,784	2	R9,029
1963	5,050	585	2,211	NA	7,846	38	([10])	1,737	1	NA	4	NA	NA	1,743	(s)	9,627
1964	5,380	634	2,397	NA	8,411	40	([10])	1,853	2	NA	5	NA	NA	1,859	7	R10,316
1965	5,821	722	2,395	NA	8,938	43	([10])	2,026	3	NA	4	NA	NA	2,033	(s)	R11,014
1966	6,302	883	2,696	NA	9,881	64	([10])	2,028	3	NA	4	NA	NA	2,036	4	R11,985
1967	6,445	1,011	2,834	NA	10,290	88	([10])	2,311	3	NA	7	NA	NA	2,321	-1	R12,698
1968	6,994	1,181	3,245	NA	11,421	142	([10])	2,313	4	NA	9	NA	NA	2,327	-2	R13,887
1969	7,219	1,571	3,596	NA	12,386	154	([10])	2,614	3	NA	13	NA	NA	2,630	4	R15,174
1970	7,227	2,117	4,054	NA	13,399	239	([10])	2,600	1	2	11	NA	NA	2,615	7	R16,259
1971	7,299	2,495	4,099	NA	13,893	413	([10])	2,790	1	2	12	NA	NA	2,806	12	R17,124
1972	7,811	3,097	4,084	NA	14,992	584	([10])	2,829	1	2	31	NA	NA	2,864	26	R18,466
1973	8,658	3,515	3,748	NA	15,921	910	([10])	2,827	1	2	43	NA	NA	2,873	49	R19,753
1974	8,534	3,365	3,519	NA	15,418	1,272	([10])	3,143	1	2	53	NA	NA	3,199	43	R19,933
1975	8,786	3,166	3,240	NA	15,191	1,900	([10])	3,122	(s)	2	70	NA	NA	3,194	21	R20,307
1976	9,720	3,477	3,152	NA	16,349	2,111	([10])	2,943	1	2	78	NA	NA	3,024	29	R21,513
1977	10,262	3,901	3,284	NA	17,446	2,702	([10])	2,301	3	2	77	NA	NA	2,383	59	R22,591
1978	10,238	3,987	3,297	NA	17,522	3,024	([10])	2,905	2	1	64	NA	NA	2,973	67	R23,587
1979	11,260	3,283	3,613	NA	18,156	2,776	([10])	2,897	3	2	84	NA	NA	2,986	69	R23,987
1980	12,123	2,634	3,810	NA	18,567	2,739	([10])	2,867	3	2	110	NA	NA	2,982	71	R24,359
1981	12,583	2,202	3,768	NA	18,553	3,008	([10])	2,725	3	1	123	NA	NA	2,852	113	R24,525
1982	12,582	1,568	3,342	NA	17,491	3,131	([10])	3,233	2	1	105	NA	NA	3,341	100	R24,063
1983	13,213	1,544	2,998	NA	17,754	3,203	([10])	3,494	2	2	129	NA	(s)	3,627	121	R24,705
1984	14,019	1,286	3,220	NA	18,526	3,553	([10])	3,353	5	4	165	(s)	(s)	3,527	135	R25,741
1985	14,542	1,090	3,160	NA	18,792	4,076	([10])	2,937	8	7	198	(s)	(s)	3,150	140	R26,158
1986	14,444	1,452	2,691	NA	18,586	4,380	([10])	3,038	5	7	219	(s)	(s)	3,270	122	R26,359
1987	15,173	1,257	2,935	NA	19,365	4,754	([10])	2,602	8	7	229	(s)	(s)	2,846	158	R27,124
1988	15,850	1,563	2,709	NA	20,123	5,587	([10])	2,302	10	8	217	(s)	(s)	2,536	108	R28,354
1989[11]	R16,121	R1,697	3,107	7	R20,932	5,602	([10])	R2,808	75	126	R308	3	R22	R3,342	37	R29,916
1990	R16,235	R1,281	3,224	6	R20,746	6,104	-36	R3,014	R106	R180	R326	4	R29	R3,658	8	R30,481
1991	16,223	1,199	3,296	6	20,725	6,422	-47	R2,985	104	217	R335	5	R31	R3,677	67	R30,848
1992	16,431	990	3,407	12	20,840	6,479	-43	2,586	120	252	338	4	30	3,329	87	R30,695
1993	17,159	1,122	3,426	12	21,719	6,410	-42	2,861	129	255	351	5	31	3,632	95	R31,818
1994	17,215	1,056	3,851	12	22,134	6,694	-35	2,620	134	269	325	5	36	3,389	153	R32,337
1995	17,416	743	4,179	18	22,356	7,075	-28	3,149	106	282	280	5	33	3,855	134	R33,395
1996	18,375	810	3,730	16	22,930	7,087	-32	3,528	117	280	300	5	33	4,264	137	R34,388
1997	18,855	917	3,981	14	23,768	6,597	-41	3,581	117	292	309	5	34	4,337	116	R34,777
1998	19,162	1,306	4,520	23	25,011	7,068	-46	3,241	125	287	311	5	31	4,000	88	R36,122
1999	19,214	1,211	4,742	14	25,181	7,610	-62	3,218	125	290	312	5	46	3,996	99	R36,825
2000	R20,185	1,145	5,120	19	R26,470	7,862	-57	2,768	126	294	296	5	57	3,547	116	R37,940
2001	R19,494	R1,270	R5,271	R9	R26,044	8,028	-90	R2,169	R116	R314	R289	R6	R68	R2,962	75	R37,019
2002P	19,936	901	5,429	17	26,283	8,145	-89	2,626	130	323	281	6	106	3,471	78	37,890

[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, including a small amount of supplemental gaseous fuels.
[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] Includes batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies, which are not separately displayed.
[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 0.5 trillion Btu.

Notes and Sources: See end of section.

Table 2.2c Consumption for Electricity Generation: Commercial and Industrial Sectors, 1989-2002

(Trillion Btu)

Year	Fossil Fuels					Renewable Energy				Other	Total
	Coal [1]	Petroleum [2]	Natural Gas [3]	Other Gases [4]	Total	Conventional Hydroelectric Power	Wood [5]	Waste [6]	Total		
						Commercial Sector [8]					
1989	9	7	18	1	36	1	2	9	12	0	47
1990	9	R6	27	1	43	1	R2	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	R13	R6	R37	0	R56	1	(s)	R22	R23	0	79
2002P	13	5	46	0	63	1	(s)	27	28	0	91
						Industrial Sector [9]					
1989	229	53	456	83	821	R28	267	15	R311	37	R1,169
1990	R233	R80	500	R104	R918	R31	R335	16	R382	R36	R1,336
1991	228	74	537	118	957	R30	318	14	R362	55	R1,374
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	R227	R62	R674	R88	R1,051	R32	R370	R10	R412	R41	R1,504
2002P	238	57	711	115	1,121	41	426	12	479	47	1,647

[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, including a small amount of supplemental gaseous fuels.
[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) and commercial electricity-only plants. See Note 1 at end of Section 8.
[9] Industrial combined-heat-and-power (CHP) and industrial electricity-only plants. See Note 1 at end of Section 8.

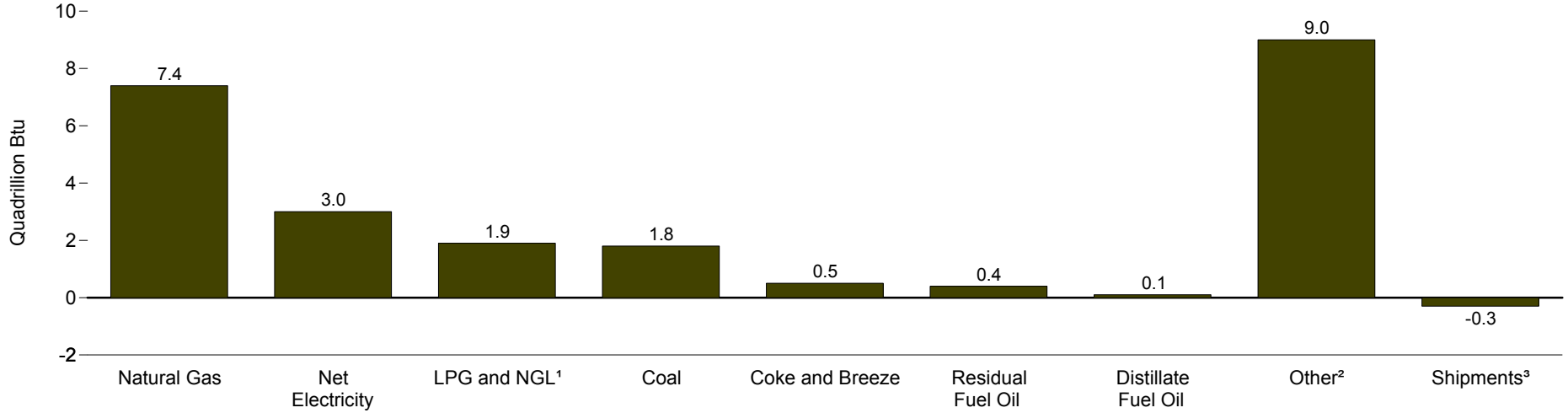
R=Revised. P=Preliminary. (s)=Less than 0.5 trillion Btu.

Notes: • Data are for fuels consumed to produce electricity; they exclude fuels consumed to produce useful thermal output. Consumption for electricity generation at combined-heat-and-power (CHP) plants is estimated. • Totals may not equal sum of components due to independent rounding.

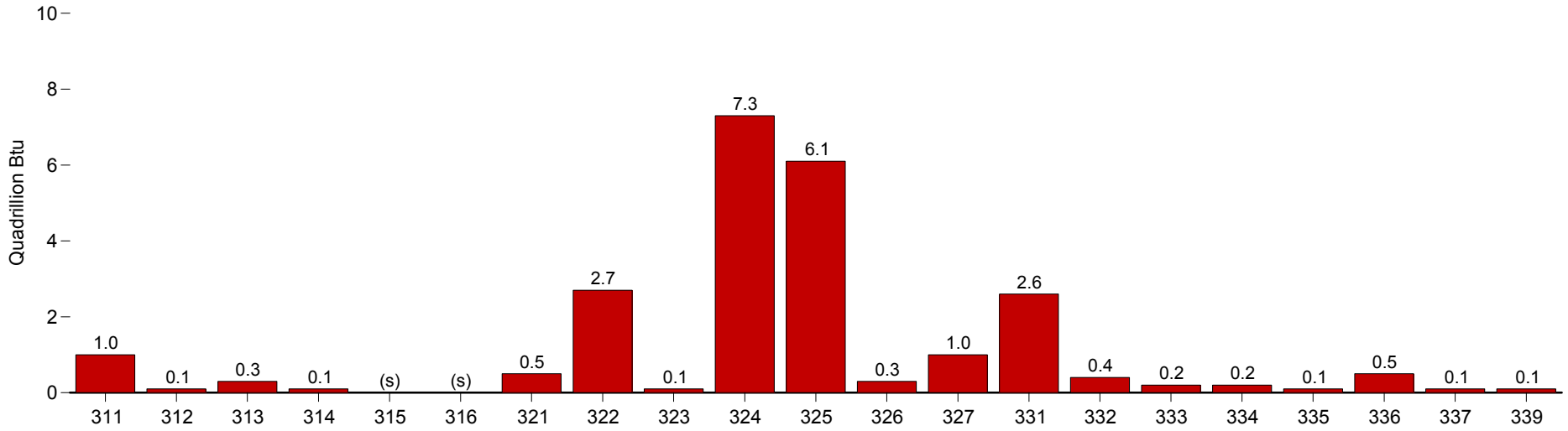
Sources: See data sources listed for Tables 8.2c, 8.3e, and A6.

Figure 2.3 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.
[3] Energy sources produced onsite from the use of other energy sources but sold to another entity.
[4] See Table 2.3 for Major Group titles of industries that correspond to the 3-digit NAICS codes.
(s)=Less than 0.5 quadrillion Btu.
Source: Table 2.3.

Table 2.3 Manufacturing Consumption of Energy for All Purposes, 1998

(Trillion Btu)

NAICS [1] Code	Major Group	Coal	Coke and Breeze	Natural Gas	Distillate Fuel Oil	LPG and NGL [2]	Residual Fuel Oil	Net Electricity [3]	Other [4]	Shipments of Energy Sources [5]	Total [6]
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 and natural gas liquids.

[3] "Net Electricity" is obtained by summing purchases, transfers in, and generation from noncombustible renewable resources, minus quantities sold and transferred out. It excludes electricity generated from combustible fuels.

[4] Includes all other types of energy that respondents indicated were consumed or allocated, such as asphalt and road oil, lubricants, naphtha < 401° F, other oils >= 401° F, special naphthas, waxes, and miscellaneous nonfuel products, which are nonfuel products assigned to the petroleum refining industry group (NAICS 324110).

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

[6] The sum of coal, coke and breeze, natural gas, distillate fuel oil, liquefied petroleum gas, 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.

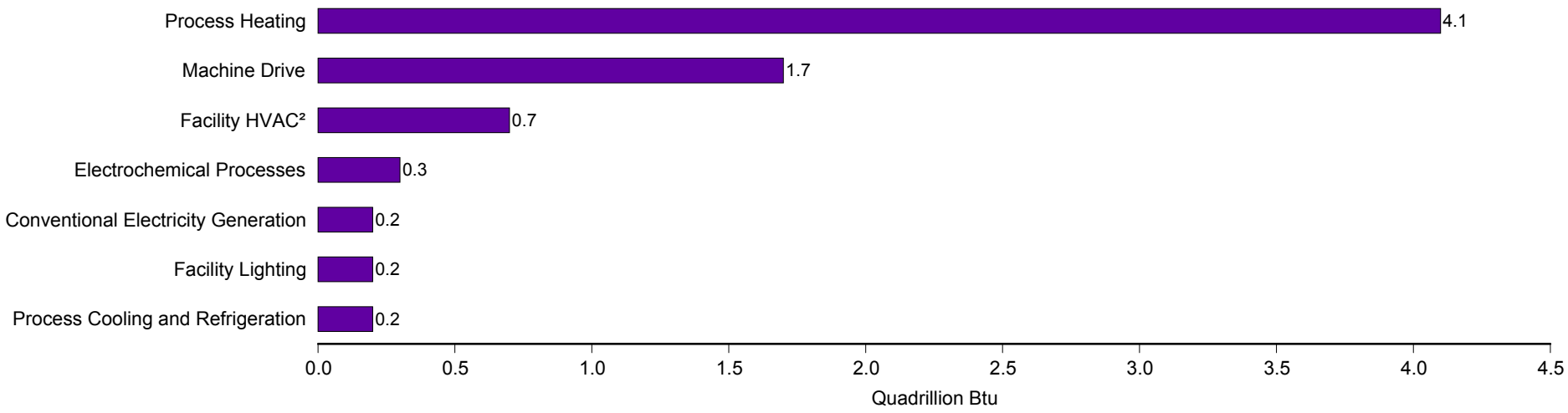
Notes: • "Consumption of Energy" was "First Use of Energy" in previous releases of this table. The estimates are for the first use of energy for heat and power and as feedstocks or raw material inputs. First use is defined as the consumption of the energy that was originally produced offsite or was produced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

Web Page: http://www.eia.doe.gov/emeu/mecs.

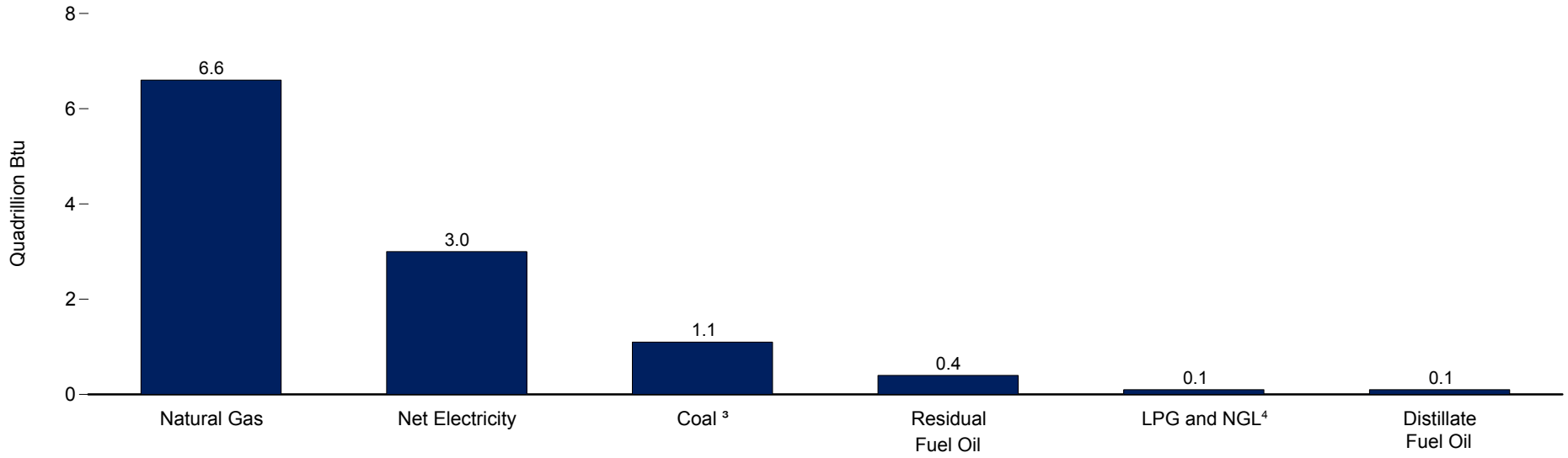
Source: Energy Information Administration, Form EIA-846, "1998 Manufacturing Energy Consumption Survey."

Figure 2.4 Manufacturing Inputs for Heat, Power, and Electricity Generation, 1998

By Selected End Use[1]



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 2.4.

Table 2.4 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	R**157,736**	1	**9**	**8**	**656**	**1**	
Facility Heating, Ventilation, and Air Conditioning [3]	R 79,355	1	1	1	393	(s)	
Facility Lighting	61,966	—	—	—	—	—	
Other Facility Support	R 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	R **20,473**	(s)	**1**	**1**	**70**	(s)	
Total	R**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 obtained by summing purchases, transfers in, and generation from noncombustible renewable resources, minus quantities sold and transferred out.

[2] Total of listed energy sources. Excludes inputs of unallocated energy sources (6,248 trillion Btu). The top half of the "Total" column is blank because different physical units cannot be added.

[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.

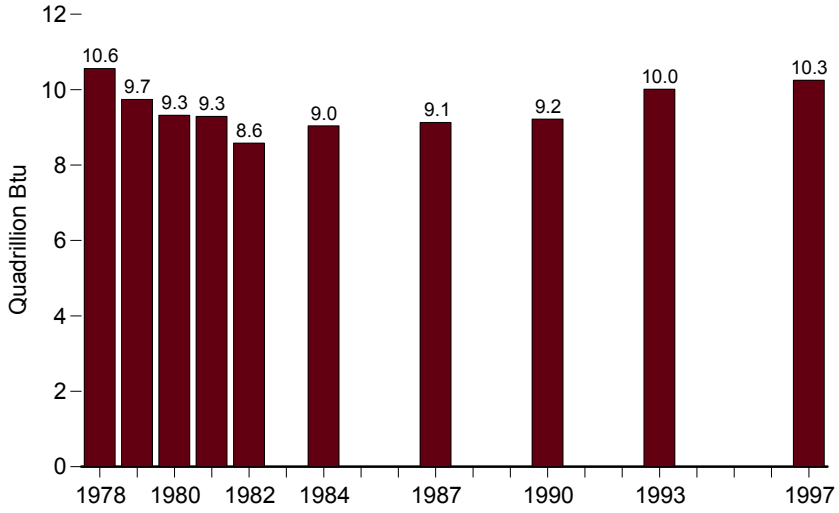
Notes: • Totals may not equal sum of components due to independent rounding. • The estimates presented in this table are for the total consumption of energy for the production of heat, power, and electricity generation, regardless of where the energy was produced. Specifically, the estimates include 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: http://www.eia.doe.gov/emeu/mecs.

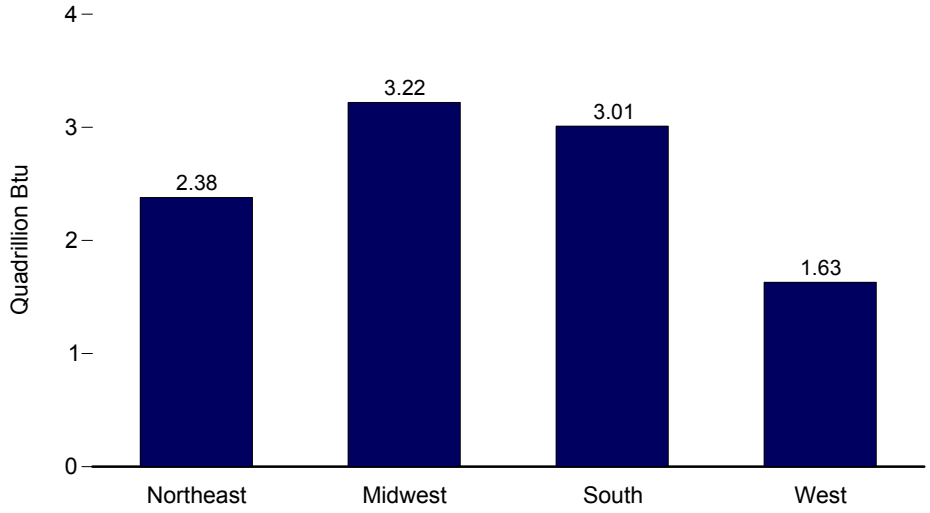
Source: Energy Information Administration, Form EIA-846, "1998 Manufacturing Energy Consumption Survey."

Figure 2.5 Household Energy Consumption

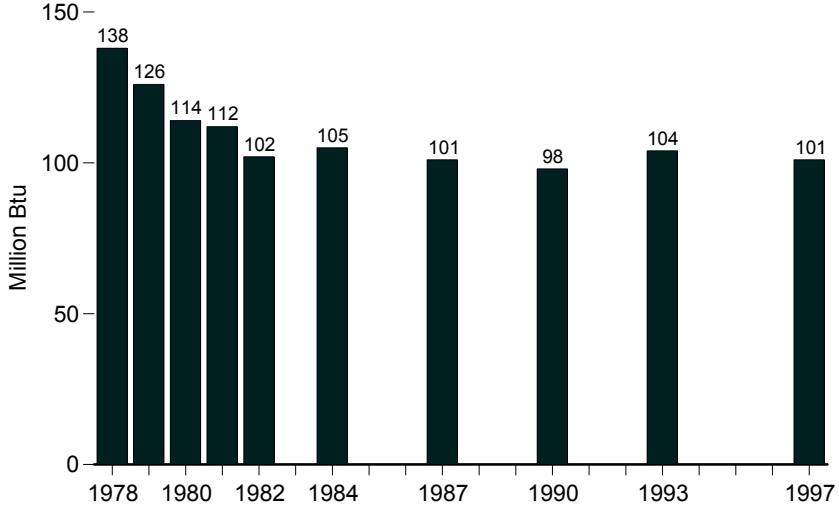
Consumption by All Households, Selected Years, 1978-1997



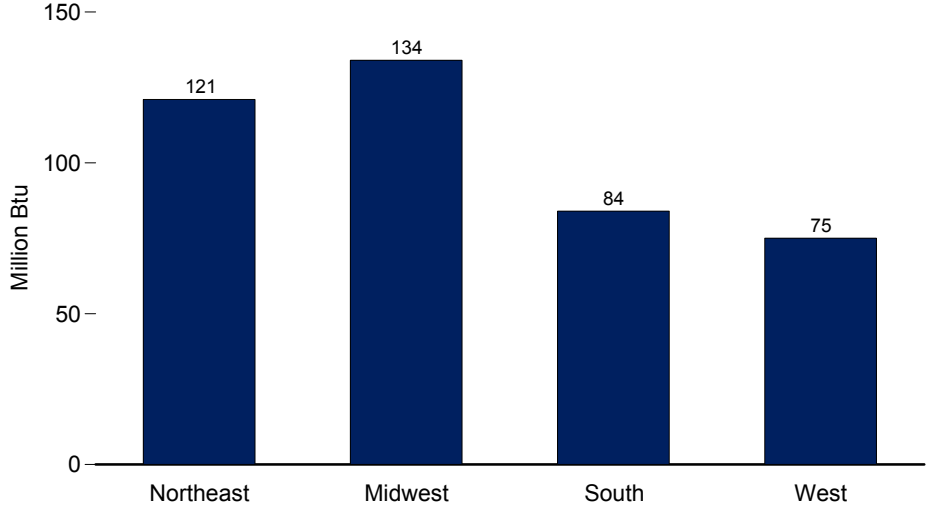
Consumption by All Households, by Census Region, 1997



Consumption per Household, Selected Years, 1978-1997



Consumption per Household, by Census Region, 1997



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

Source: Table 2.5.

Table 2.5 Household Energy Consumption by Census Region, Selected Years, 1978-1997

(Quadrillion Btu, Except as Noted)

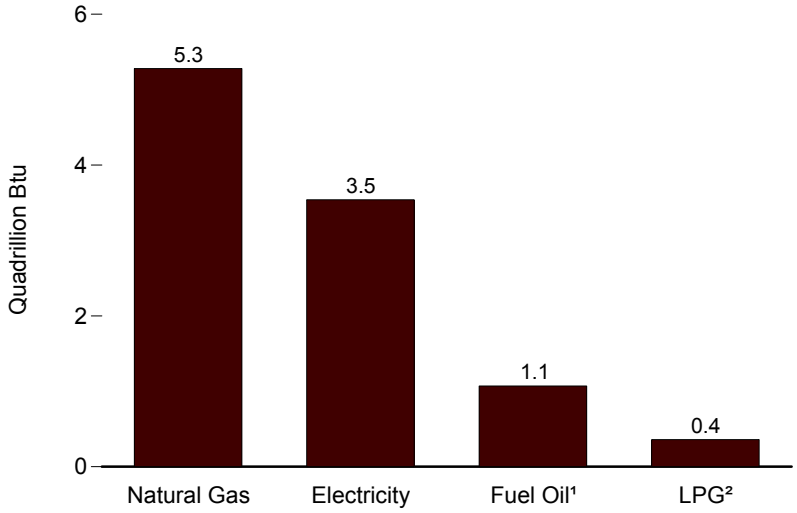
Census Region [1]	1978	1979	1980	1981	1982	1984	1987	1990	1993	1997
Northeast	**2.89**	**2.50**	**2.44**	**2.36**	**2.19**	**2.29**	**2.37**	**2.30**	**2.38**	**2.38**
Natural Gas	1.14	1.05	0.94	1.01	0.96	0.93	1.03	1.03	1.11	1.03
Electricity [2]	0.39	0.39	0.41	0.40	0.37	0.41	0.44	0.47	0.47	0.49
Distillate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

[1] See Appendix C for Census regions.
[2] Site electricity. One kilowatthour = 3,412 Btu.
Notes: • This table shows major energy items only. • No data are available for years not shown. • 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.

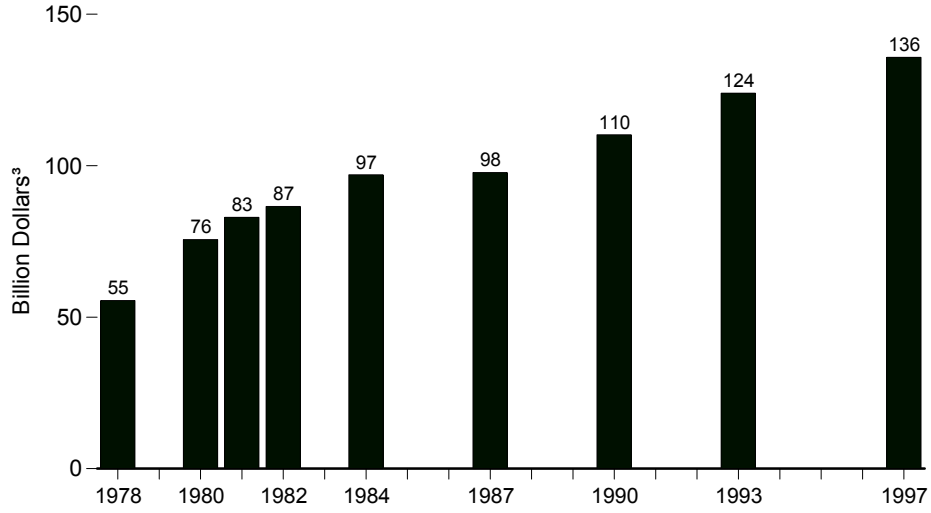
Web Page: http://www.eia.doe.gov/emeu/recs.
Sources: • 1978 and 1979—Energy Information Administration (EIA), Form EIA-84, "Residential Energy Consumption Survey." • 1980 forward—EIA, Form EIA-457, "Residential Energy Consumption Survey."

Figure 2.6 Household Energy Consumption and Expenditures

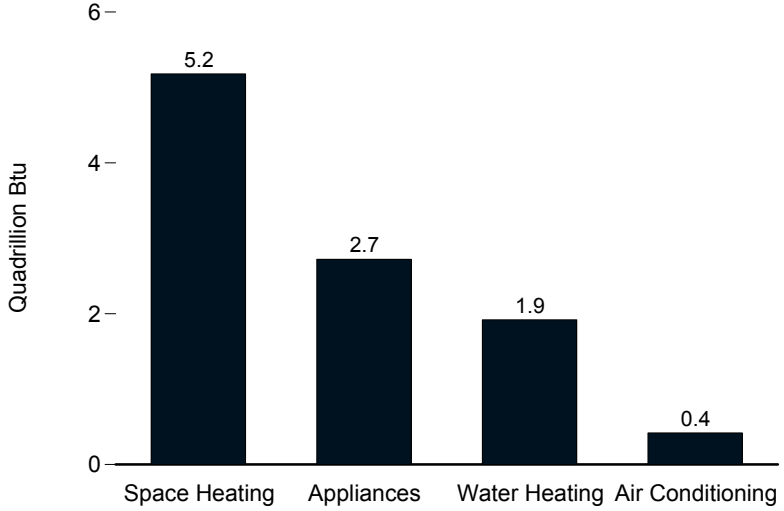
Consumption by Energy Source, 1997



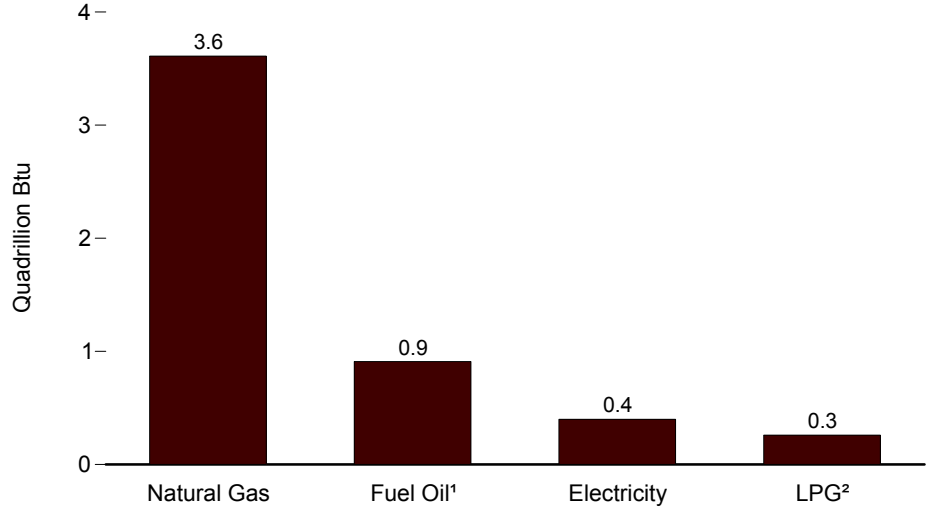
Expenditures, Selected Years, 1978-1997



Consumption by End Use, 1997



Consumption for Space Heating, 1997



[1] Distillate fuel oil and kerosene.
[2] Liquefied petroleum gases.
[3] Nominal dollars.

Notes: • No data are available for years not shown. • Because vertical scales differ, graphs should not be compared.
Source: Table 2.6.

Table 2.6 Household Energy Consumption and Expenditures by End Use and Energy Source, Selected Years, 1978-1997

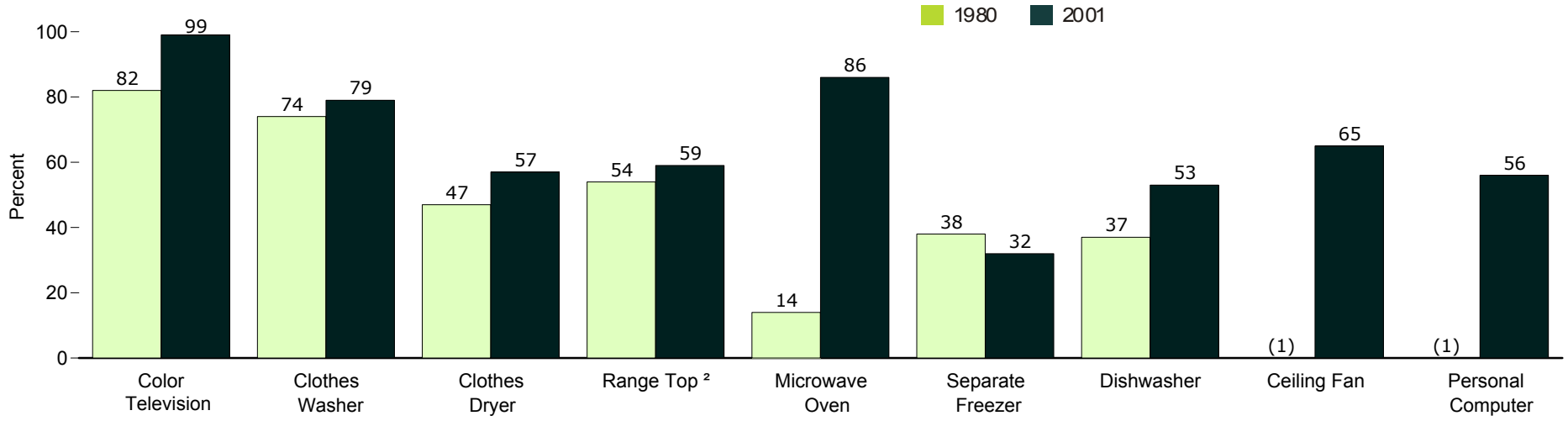
Year	Space Heating				Air Conditioning [1]	Water Heating				Appliances [2]			Total [1,2]			
	Natural Gas	Electricity [3]	Fuel Oil [4]	LPG [5]	Electricity [3]	Natural Gas	Electricity [3]	Fuel Oil [4]	LPG [5]	Natural Gas	Electricity [3]	LPG [5]	Natural Gas	Electricity [3]	Fuel Oil [4]	LPG [5]
	Consumption (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
	Expenditures (billion dollars [6])															
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

[1] A small amount of natural gas used for air conditioning is included in "Natural Gas" under "Total."
[2] Includes refrigerators. A small amount of fuel oil or kerosene used for appliances is included in "Fuel Oil" under "Total."
[3] Site electricity. One kilowatthour = 3,412 Btu.
[4] Fuel oil is distillate fuel oil and kerosene.
[5] Liquefied petroleum gases.
[6] Nominal dollars.

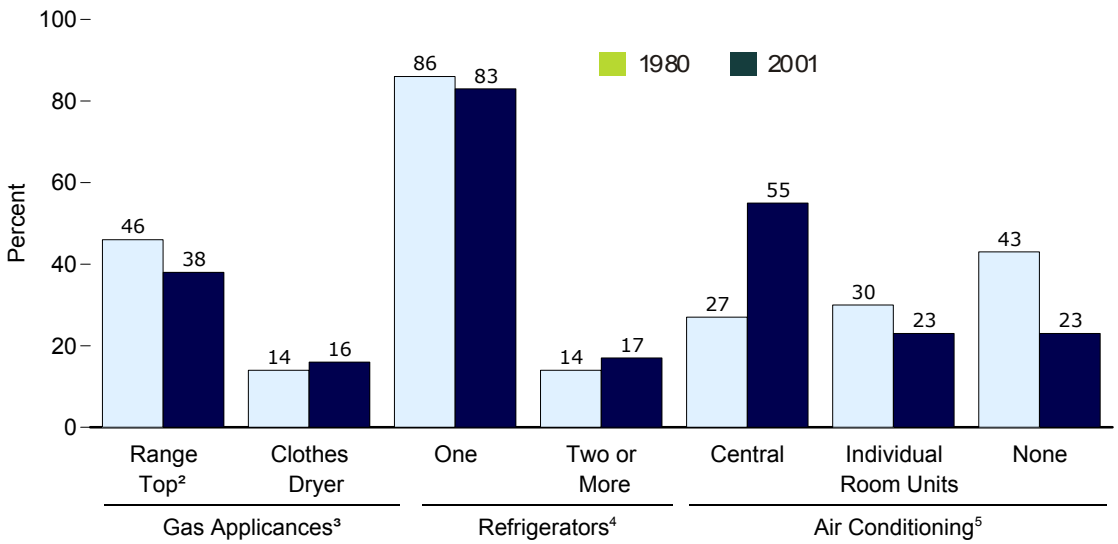
Notes: • No data are available for years not shown. Consumption data by energy source for 1979 are available on Table 2.5. • Totals may not equal sum of components due to independent rounding.
Web Page: http://www.eia.doe.gov/emeu/recs.
Sources: • 1978—Energy Information Administration (EIA), Form EIA-84, "Residential Energy Consumption Survey." • 1980 forward—EIA, Form EIA-457, "Residential Energy Consumption Survey."

Figure 2.7 Households With Selected Appliances and Types of Main Heating Fuel

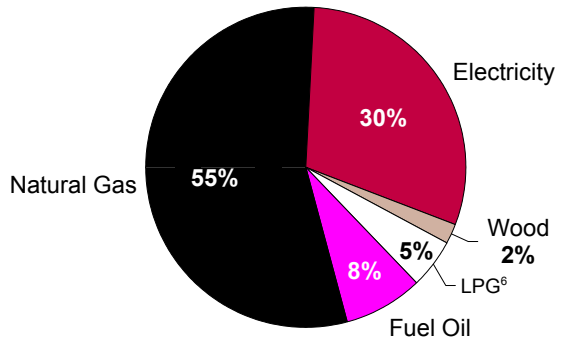
Households With Selected Electric Appliances, 1980 and 2001



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.
Source: Table 2.7.

Table 2.7 Households With Selected Appliances and Types of Main Heating Fuel, Selected Years, 1978-2001

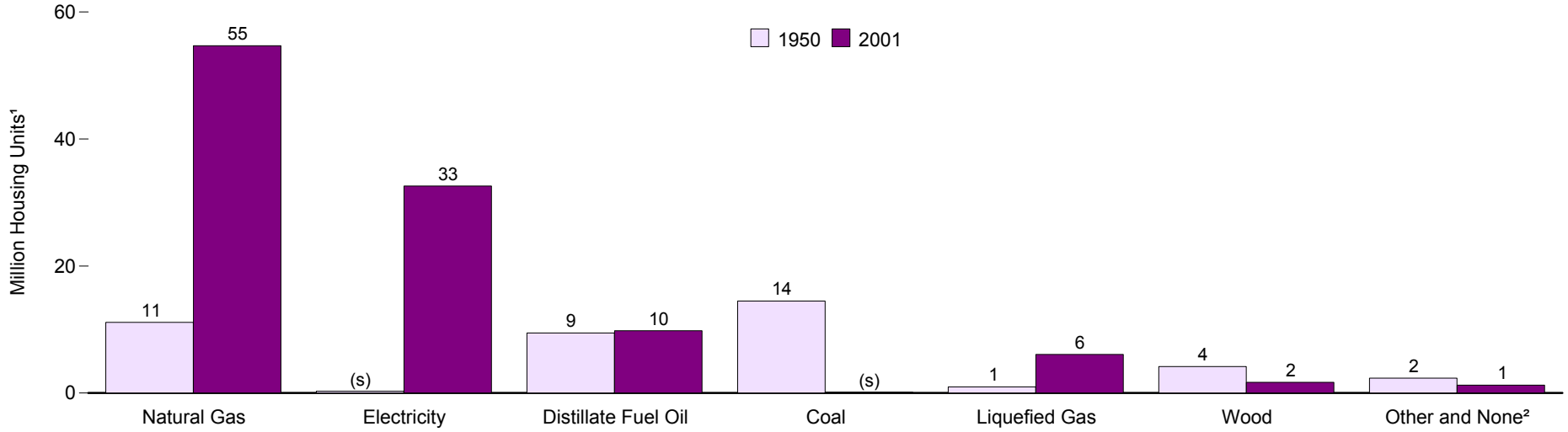
Appliance	Year											Change
	1978	1979	1980	1981	1982	1984	1987	1990	1993	1997	2001 P	1980 to 2001 P
Total Households (millions)	77	78	82	83	84	86	91	94	97	101	107	26
	Percent of Households											
Type of Main Heating Fuel												
Natural Gas	55	55	55	56	57	55	55	55	53	53	55	0
Electricity	16	17	18	17	16	17	20	23	26	29	30	12
Liquefied Petroleum Gas	4	5	5	4	5	5	5	5	5	5	5	0
Fuel Oil	20	17	15	14	13	12	12	11	11	9	8	-7
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	5
Range Top or Burners	53	NA	54	54	53	54	57	58	61	60	59	5
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	28	35	46	51	60	NA	NA	NA
Ceiling Fan	NA	NA	NA	NA	NA	NA	NA	NA	54	61	65	NA
Whole House Fan	NA	NA	NA	NA	8	8	9	10	4	NA	NA	NA
Evaporative Cooler	NA	NA	4	4	4	4	3	4	3	NA	3	-1
Personal Computer	NA	NA	NA	NA	NA	NA	NA	16	23	35	56	NA
Pump for Well Water	NA	NA	NA	NA	NA	NA	NA	15	13	14	13	NA
Swimming-Pool Pump [1]	NA	NA	3	4	3	NA	NA	5	5	5	6	3
Gas Appliances [2]												
Range Top or Burners	48	NA	46	46	47	45	43	42	38	39	38	-8
Clothes Dryer	14	NA	14	16	15	16	15	16	15	16	16	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)	-2
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	-3
Two or More	14	NA	14	13	13	12	14	15	15	15	17	2
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	3	3

[1] All reported swimming pools were assumed to have an electric pump for filtering and circulating the water, except for 1993 and 1997, when a filtering system was made explicit.
[2] Includes 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."

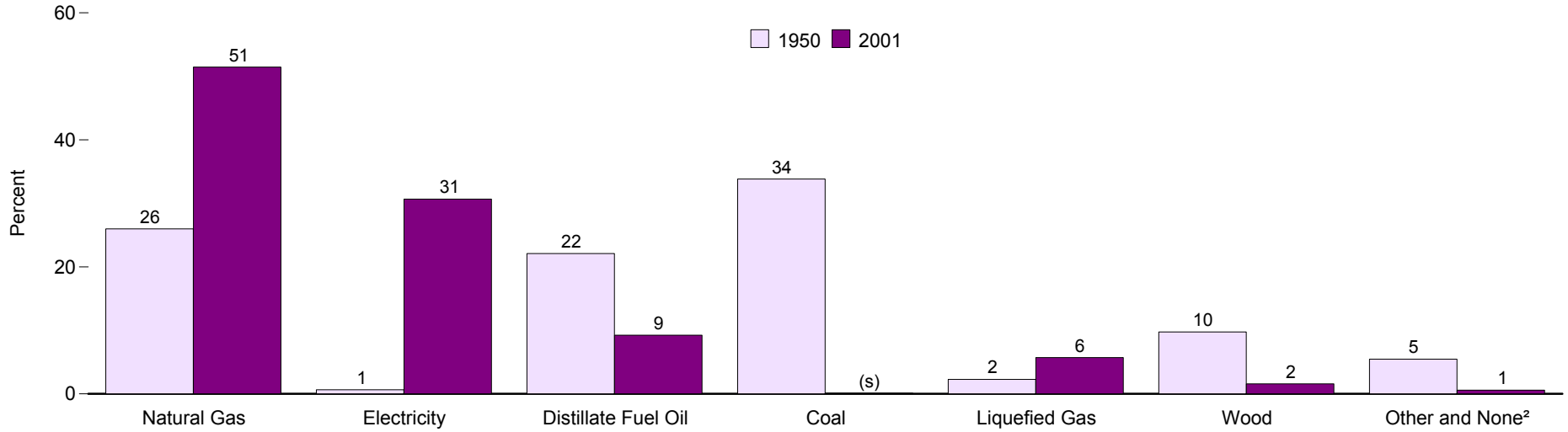
P=Preliminary. NA=Not available. (s)=Less than 0.5 percent.
Note: No data are available for years not shown.
Web Page: http://www.eia.doe.gov/emeu/recs.
Sources: • 1978 and 1979—Energy Information Administration (EIA), Form EIA-84, "Residential Energy Consumption Survey." • 1980 forward—EIA, Form EIA-457, "Residential Energy Consumption Survey."

Figure 2.8 Type of Heating in Occupied Housing Units, 1950 and 2001

By Fuel Type



By Fuel Type, Share of Total



[1] Sum of components do not equal total due to independent rounding.
[2] Kerosene, solar, and other.

(s)=Less than 0.5.
Source: Table 2.8.

Table 2.8 Type of Heating in Occupied Housing Units, Selected Years, 1950-2001

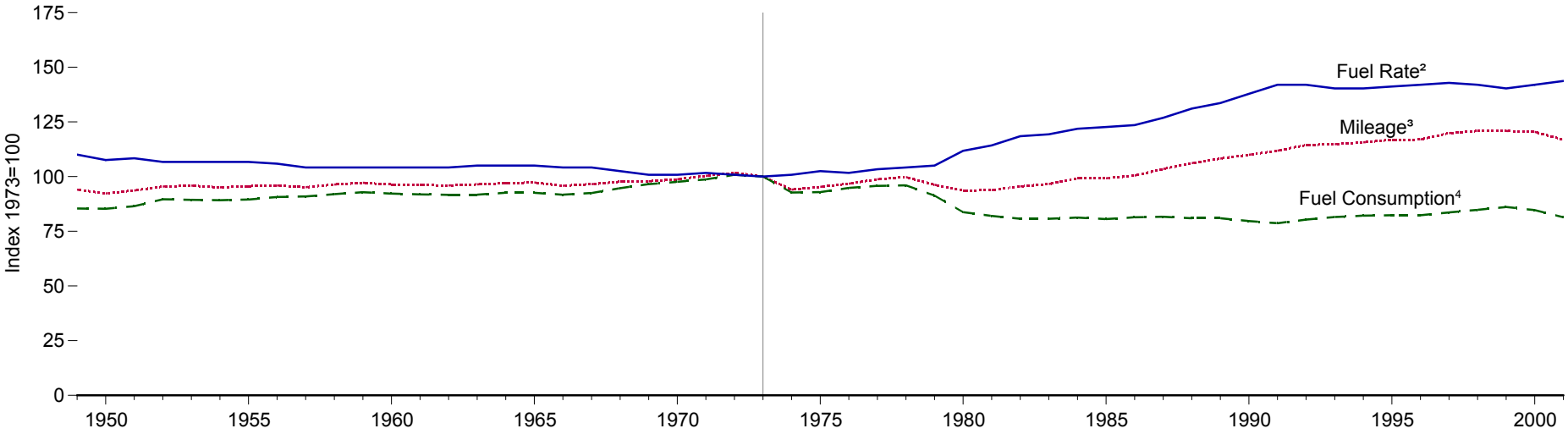
Year	Coal [1]	Natural Gas	Liquefied Gas	Distillate Fuel Oil	Kerosene	Electricity	Wood	Solar	Other	None [2]	Total
						Million					
1950	14.48	11.12	0.98	9.46	([3])	0.28	4.17	NA	0.77	1.57	42.83
1960	6.46	22.85	2.69	17.16	([3])	0.93	2.24	NA	0.22	0.48	53.02
1970	1.82	35.01	3.81	16.47	([3])	4.88	0.79	NA	0.27	0.40	63.45
1973	0.80	38.46	4.42	17.24	([3])	7.21	0.60	NA	0.15	0.45	69.34
1974	0.74	39.47	4.14	16.84	([3])	8.41	0.66	NA	0.09	0.48	70.83
1975	0.57	40.93	4.15	16.30	([3])	9.17	0.85	NA	0.08	0.47	72.52
1976	0.48	41.22	4.24	16.45	([3])	10.15	0.91	NA	0.09	0.46	74.01
1977	0.45	41.54	4.18	15.62	0.44	11.15	1.24	NA	0.15	0.51	75.28
1978	0.40	42.52	4.13	15.65	0.42	12.26	1.07	NA	0.12	0.60	77.17
1979	0.36	43.32	4.13	15.30	0.41	13.24	1.14	NA	0.10	0.57	78.57
1980	0.33	44.40	4.17	14.50	0.37	14.21	1.38	NA	0.11	0.61	80.07
1981	0.36	46.08	4.17	14.13	0.37	15.49	1.89	NA	0.10	0.59	83.18
1983 [4]	0.43	46.70	3.87	12.59	0.45	15.68	4.09	NA	0.16	0.68	84.64
1985	0.45	45.33	3.58	12.44	1.06	18.36	6.25	0.05	0.37	0.53	88.43
1987	0.41	45.96	3.66	12.74	1.08	20.61	5.45	0.05	0.28	0.66	90.89
1989	0.34	47.40	3.66	12.47	1.07	23.06	4.59	0.04	0.40	0.66	93.68
1991	0.32	47.02	3.88	11.47	0.99	23.71	4.44	0.03	0.41	0.86	93.15
1993	0.30	47.67	3.92	11.17	1.02	25.11	4.10	0.03	0.50	0.91	94.73
1995	0.21	49.20	4.25	10.98	1.06	26.77	3.53	0.02	0.64	1.04	97.69
1997	0.18	51.05	5.40	10.10	0.75	29.20	1.79	0.03	0.36	0.62	99.49
1999	0.17	52.37	5.91	10.03	0.72	31.14	1.70	0.02	0.21	0.54	102.80
2001	0.13	54.69	6.08	9.82	0.65	32.59	1.69	0.02	0.19	0.40	106.26
						Percent					
1950	33.8	26.0	2.3	22.1	([3])	0.6	9.7	NA	1.8	3.7	100.0
1960	12.2	43.1	5.1	32.4	([3])	1.8	4.2	NA	0.4	0.9	100.0
1970	2.9	55.2	6.0	26.0	([3])	7.7	1.3	NA	0.4	0.6	100.0
1973	1.2	55.5	6.4	24.9	([3])	10.4	0.9	NA	0.2	0.7	100.0
1974	1.0	55.7	5.8	23.8	([3])	11.9	0.9	NA	0.1	0.7	100.0
1975	0.8	56.4	5.7	22.5	([3])	12.6	1.2	NA	0.1	0.6	100.0
1976	0.7	55.7	5.7	22.2	([3])	13.7	1.2	NA	0.1	0.6	100.0
1977	0.6	55.2	5.6	20.7	0.6	14.8	1.6	NA	0.2	0.7	100.0
1978	0.5	55.1	5.4	20.3	0.5	15.9	1.4	NA	0.2	0.8	100.0
1979	0.5	55.1	5.3	19.5	0.5	16.9	1.4	NA	0.1	0.7	100.0
1980	0.4	55.4	5.2	18.1	0.5	17.7	1.7	NA	0.1	0.8	100.0
1981	0.4	55.4	5.0	17.0	0.4	18.6	2.3	NA	0.1	0.7	100.0
1983 [4]	0.5	55.2	4.6	14.9	0.5	18.5	4.8	NA	0.2	0.8	100.0
1985	0.5	51.3	4.1	14.1	1.2	20.8	7.1	0.1	0.4	0.6	100.0
1987	0.4	50.6	4.0	14.0	1.2	22.7	6.0	0.1	0.3	0.7	100.0
1989	0.4	50.6	3.9	13.3	1.1	24.6	4.9	(s)	0.4	0.7	100.0
1991	0.3	50.5	4.2	12.3	1.1	25.5	4.8	(s)	0.4	0.9	100.0
1993	0.3	50.3	4.1	11.8	1.1	26.5	4.3	(s)	0.5	1.0	100.0
1995	0.2	50.4	4.4	11.2	1.1	27.4	3.6	(s)	0.7	1.1	100.0
1997	0.2	51.3	5.4	10.2	0.8	29.4	1.8	(s)	0.4	0.6	100.0
1999	0.2	50.9	5.7	9.8	0.7	30.3	1.7	(s)	0.2	0.5	100.0
2001	0.1	51.5	5.7	9.2	0.6	30.7	1.6	(s)	0.2	0.4	100.0

[1] Includes coal coke.
[2] Includes nonreporting units in 1950 and 1960, which totaled 997 and 2,000 units, respectively.
[3] Included in distillate fuel oil.
[4] Since 1983, the *American Housing Survey for the United States* has been a biennial survey.
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.

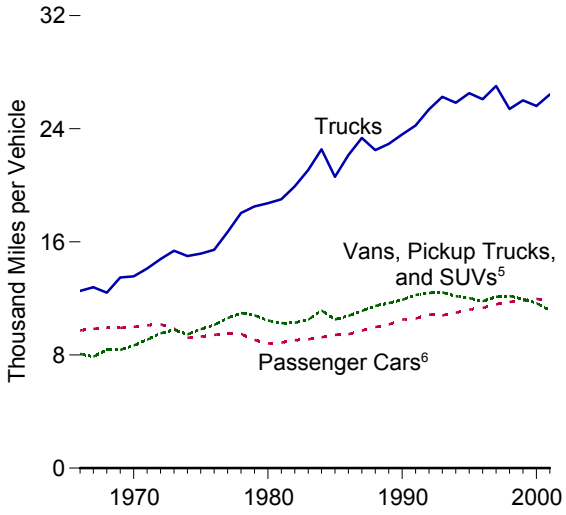
Sources: • 1950, 1960, and 1970—Bureau of the Census, *Census of Population and Housing.* • 1973 forward—Bureau of the Census, *American Housing Survey for the United States,* biennial surveys, Table 2-5.

Figure 2.9 Motor Vehicle Mileage, Fuel Consumption, and Fuel Rates

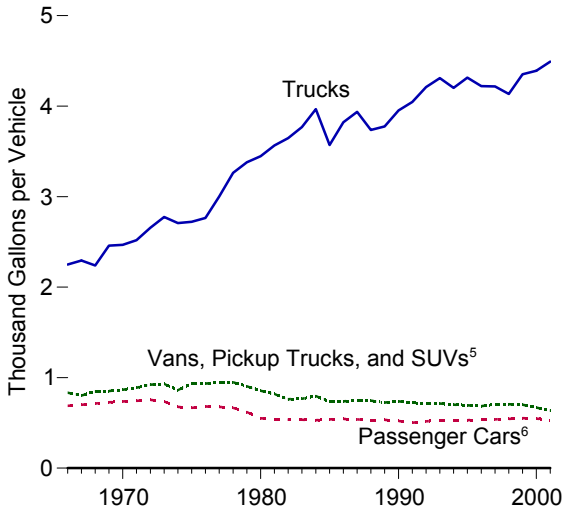
All Motor Vehicles,[1] 1949-2001



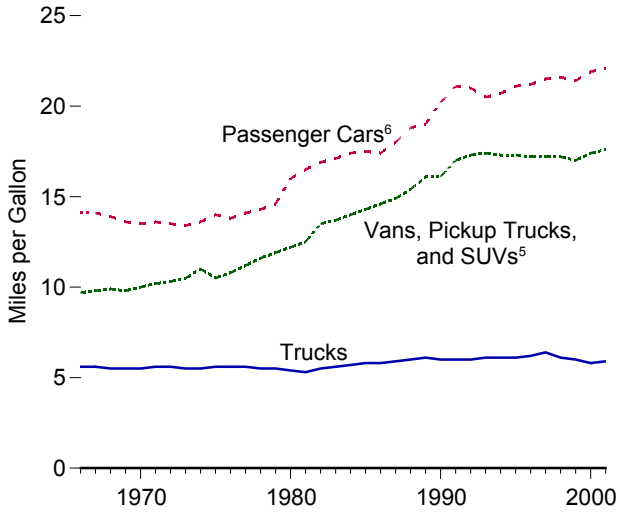
Mileage, 1966-2001



Fuel Consumption, 1966-2001



Fuel Rates, 1966-2001



[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 vehicles.
[6] Motorcycles are included with passenger cars through 1989.
Source: Table 2.9.

Table 2.9 Motor Vehicle Mileage, Fuel Consumption, and Fuel Rates, 1949-2001

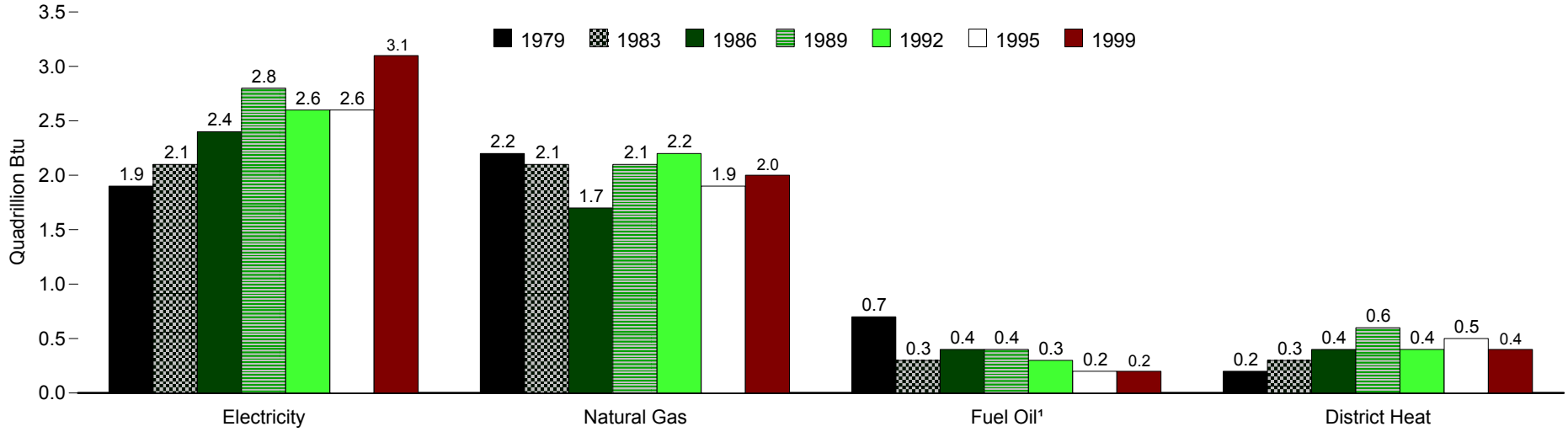
Year	Passenger Cars			Vans, Pickup Trucks, and Sport Utility Vehicles [1]			Trucks [2]			All Motor Vehicles [3]		
	Mileage (miles per vehicle)	Fuel Consumption (gallons per vehicle)	Fuel Rate (miles per gallon)	Mileage (miles per vehicle)	Fuel Consumption (gallons per vehicle)	Fuel Rate (miles per gallon)	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	[4]9,388	[4]627	[4]15.0	([5])	([5])	([5])	[6]9,712	[6]1,080	[6]9.0	9,498	726	13.1
1950	[4]9,060	[4]603	[4]15.0	([5])	([5])	([5])	[6]10,316	[6]1,229	[6]8.4	9,321	725	12.8
1951	[4]9,186	[4]614	[4]15.0	([5])	([5])	([5])	[6]10,545	[6]1,242	[6]8.5	9,460	735	12.9
1952	[4]9,360	[4]639	[4]14.7	([5])	([5])	([5])	[6]10,769	[6]1,288	[6]8.4	9,642	762	12.7
1953	[4]9,377	[4]640	[4]14.6	([5])	([5])	([5])	[6]10,963	[6]1,283	[6]8.5	9,684	760	12.7
1954	[4]9,349	[4]641	[4]14.6	([5])	([5])	([5])	[6]10,682	[6]1,281	[6]8.3	9,605	758	12.7
1955	[4]9,447	[4]645	[4]14.6	([5])	([5])	([5])	[6]10,576	[6]1,293	[6]8.2	9,661	761	12.7
1956	[4]9,496	[4]654	[4]14.5	([5])	([5])	([5])	[6]10,511	[6]1,309	[6]8.0	9,688	771	12.6
1957	[4]9,348	[4]658	[4]14.2	([5])	([5])	([5])	[6]10,774	[6]1,304	[6]8.3	9,609	773	12.4
1958	[4]9,500	[4]670	[4]14.2	([5])	([5])	([5])	[6]10,768	[6]1,303	[6]8.3	9,732	782	12.4
1959	[4]9,615	[4]674	[4]14.3	([5])	([5])	([5])	[6]10,702	[6]1,328	[6]8.1	9,817	789	12.4
1960	[4]9,518	[4]668	[4]14.3	([5])	([5])	([5])	[6]10,693	[6]1,333	[6]8.0	9,732	784	12.4
1961	[4]9,521	[4]663	[4]14.4	([5])	([5])	([5])	[6]10,537	[6]1,341	[6]7.9	9,708	781	12.4
1962	[4]9,494	[4]662	[4]14.3	([5])	([5])	([5])	[6]10,554	[6]1,337	[6]7.9	9,687	779	12.4
1963	[4]9,587	[4]655	[4]14.6	([5])	([5])	([5])	[6]10,395	[6]1,380	[6]7.5	9,737	780	12.5
1964	[4]9,665	[4]661	[4]14.6	([5])	([5])	([5])	[6]10,408	[6]1,389	[6]7.5	9,805	787	12.5
1965	[4]9,603	[4]661	[4]14.5	([5])	([5])	([5])	[6]10,851	[6]1,387	[6]7.8	9,826	787	12.5
1966	[4]9,733	[4]688	[4]14.1	8,077	833	9.7	12,537	2,250	5.6	9,675	780	12.4
1967	[4]9,849	[4]699	[4]14.1	7,877	801	9.8	12,789	2,294	5.6	9,751	786	12.4
1968	[4]9,922	[4]714	[4]13.9	8,376	849	9.9	12,402	2,240	5.5	9,864	805	12.2
1969	[4]9,921	[4]727	[4]13.6	8,355	851	9.8	13,484	2,459	5.5	9,885	821	12.0
1970	[4]9,989	[4]737	[4]13.5	8,676	866	10.0	13,565	2,467	5.5	9,976	830	12.0
1971	[4]10,097	[4]743	[4]13.6	9,082	888	10.2	14,117	2,519	5.6	10,133	839	12.1
1972	[4]10,171	[4]754	[4]13.5	9,534	922	10.3	14,780	2,657	5.6	10,279	857	12.0
1973	[4]9,884	[4]737	[4]13.4	9,779	931	10.5	15,370	2,775	5.5	10,099	850	11.9
1974	[4]9,221	[4]677	[4]13.6	9,452	862	11.0	14,995	2,708	5.5	9,493	788	12.0
1975	[4]9,309	[4]665	[4]14.0	9,829	934	10.5	15,167	2,722	5.6	9,627	790	12.2
1976	[4]9,418	[4]681	[4]13.8	10,127	934	10.8	15,438	2,764	5.6	9,774	806	12.1
1977	[4]9,517	[4]676	[4]14.1	10,607	947	11.2	16,700	3,002	5.6	9,978	814	12.3
1978	[4]9,500	[4]665	[4]14.3	10,968	948	11.6	18,045	3,263	5.5	10,077	816	12.4
1979	[4]9,062	[4]620	[4]14.6	10,802	905	11.9	18,502	3,380	5.5	9,722	776	12.5
1980	[4]8,813	[4]551	[4]16.0	10,437	854	12.2	18,736	3,447	5.4	9,458	712	13.3
1981	[4]8,873	[4]538	[4]16.5	10,244	819	12.5	19,016	3,565	5.3	9,477	697	13.6
1982	[4]9,050	[4]535	[4]16.9	10,276	762	13.5	19,931	3,647	5.5	9,644	686	14.1
1983	[4]9,118	[4]534	[4]17.1	10,497	767	13.7	21,083	3,769	5.6	9,760	686	14.2
1984	[4]9,248	[4]530	[4]17.4	11,151	797	14.0	22,550	3,967	5.7	10,017	691	14.5
1985	[4]9,419	[4]538	[4]17.5	10,506	735	14.3	20,597	3,570	5.8	10,020	685	14.6
1986	[4]9,464	[4]543	[4]17.4	10,764	738	14.6	22,143	3,821	5.8	10,143	692	14.7
1987	[4]9,720	[4]539	[4]18.0	11,114	744	14.9	23,349	3,937	5.9	10,453	694	15.1
1988	[4]9,972	[4]531	[4]18.8	11,465	745	15.4	22,485	3,736	6.0	10,721	688	15.6
1989	[4]10,157	[4]533	[4]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	[R]11,976	[R]547	[R]21.9	[R]11,672	[R]669	[R]17.4	[R]25,617	[R]4,391	5.8	[R]12,164	[R]720	16.9
2001[P]	11,766	532	22.1	11,140	633	17.6	26,431	4,491	5.9	11,800	692	17.1

[1] Includes a small number of trucks with 2 axles and 4 tires, such as step vans.
[2] Single-unit trucks with 2 axles and 6 or more tires, and combination trucks.
[3] Includes buses and motorcycles, which are not shown separately.
[4] Includes motorcycles.
[5] Included in "Trucks."
[6] Includes vans, pickup trucks, and sport utility vehicles.
R=Revised. P=Preliminary.

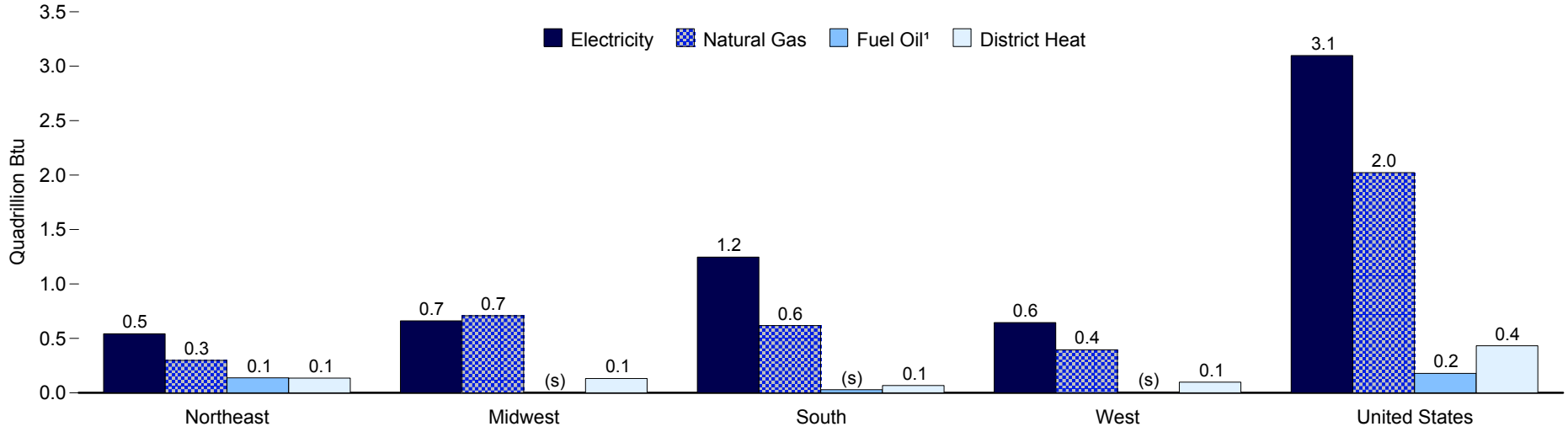
Note: For vehicle registrations data see the "Sources" or the "Web Page."
Web Page: http://www.fhwa.dot.gov/ohim.
Sources: **Passenger Cars:** • 1990-1994—U.S. Department of Transportation, Bureau of Transportation Statistics, *National Transportation Statistics 1998,* Table 4-13. **All Other Data:** • 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 2.10 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 2.10.

Table 2.10 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	1,838	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, fuel oil, and district heat. Propane consumption statistics were collected in 1979, 1983, and 1986 but are not included in the Major Sources.
[3] Included in Food Service.
[4] Beginning with the 1995 survey, commercial buildings on multibuilding manufacturing facilities, and parking garages were excluded.
[5] Distillate fuel oil, residual fuel oil, and kerosene.
[6] For 1979 and 1983, includes only purchased steam. Beginning with the 1986 survey, includes purchased and nonpurchased steam and purchased and nonpurchased hot water.

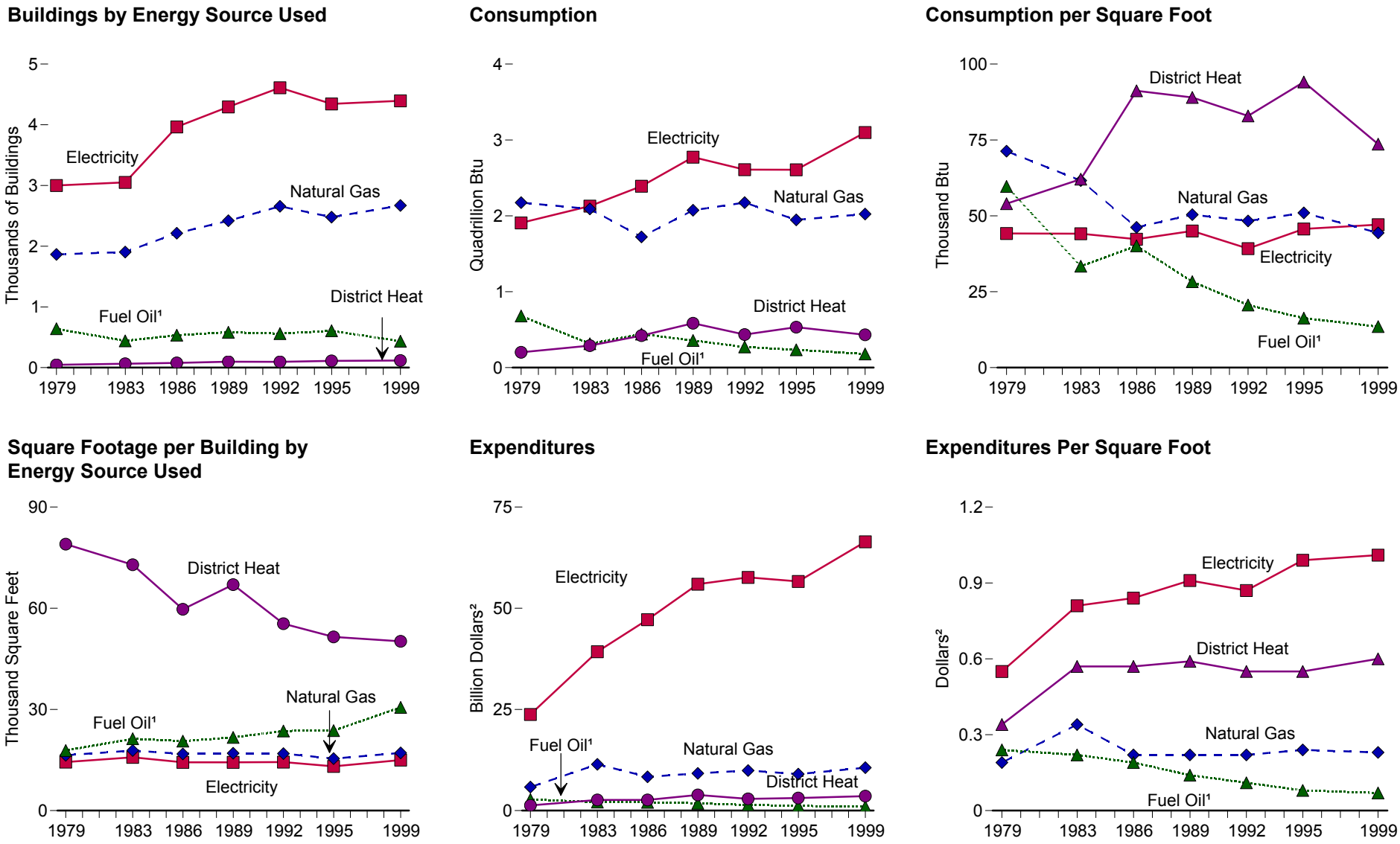
Q=Data withheld because either the relative standard error was greater than 50 percent or fewer than 20 buildings were sampled. NC=No cases in the sample.

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: 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 Energy Consumption and Expenditure Indicators, Selected Years, 1979-1999



[1] Distillate fuel oil, residual fuel oil, and kerosene.
[2] Nominal dollars.

Note: No data are available for years not shown. Because vertical scales differ, graphs should not be compared.
Source: Table 2.11.

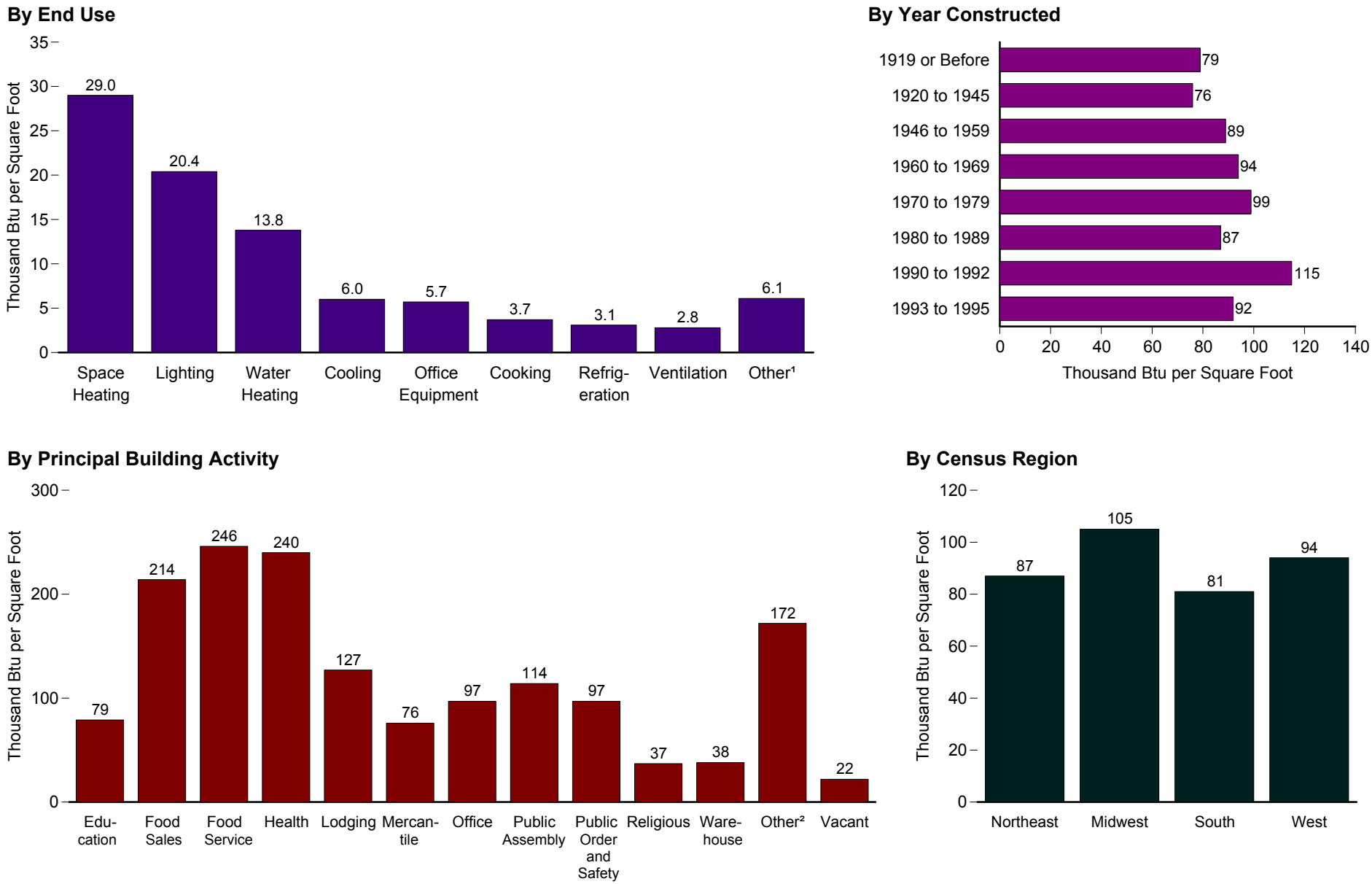
Table 2.11 Commercial Buildings Energy Consumption and Expenditure Indicators, Selected Years, 1979-1999

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 Sources [2]											
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 Oil [4]											
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 Heat [5]											
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.
R=Revised. 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: 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 2.12 Commercial Buildings Energy Intensities by Building Characteristic, 1995



¹ See Table 2.12, footnote 1, for description of "Other."
² Includes buildings that do not fit into any of the other categories.

Notes: • See Appendix C for Census Regions. • Because vertical scales differ, graphs should not be compared.
Source: Table 2.12.

Table 2.12 Commercial Buildings Energy Intensities by Building Characteristic, 1995

(Thousand Btu per Square Foot)

Building Characteristic	Space Heating	Cooling	Ventilation	Water Heating	Lighting	Cooking	Refrigeration	Office Equipment	Other [1]	All End Uses
All Buildings	**29.0**	**6.0**	**2.8**	**13.8**	**20.4**	**3.7**	**3.1**	**5.7**	**6.1**	**90.5**
Building Floorspace (square feet)										
1,001 to 5,000	39.5	7.0	2.9	9.7	22.7	8.9	10.4	5.4	5.1	111.7
5,001 to 10,000	38.5	4.4	1.7	11.1	13.6	4.3	2.5	3.8	2.9	82.8
10,001 to 25,000	27.4	4.8	1.7	9.1	14.7	2.6	2.5	4.3	3.7	70.9
25,001 to 50,000	28.2	6.7	2.1	11.6	18.5	2.1	2.5	5.0	5.2	82.0
50,001 to 100,000	27.0	7.0	3.2	12.9	21.3	2.0	2.1	6.1	6.0	87.6
100,001 to 200,000	26.6	6.2	3.3	19.6	25.0	3.1	1.4	7.2	8.9	101.4
200,001 to 500,000	24.0	6.7	4.5	25.2	27.4	4.6	1.6	8.5	11.9	114.6
Over 500,000	18.5	6.0	3.9	18.0	28.6	3.5	2.2	7.0	9.1	96.8
Principal Building Activity										
Education	32.8	4.8	1.6	17.4	15.8	1.4	1.0	1.5	2.9	79.3
Food Sales	27.5	13.4	4.4	9.1	33.9	5.6	110.9	1.3	7.4	213.5
Food Service	30.9	19.5	5.3	27.5	37.0	77.5	31.6	2.6	13.7	245.5
Health Care	55.2	9.9	7.2	63.0	39.3	11.2	4.7	15.5	34.4	240.4
Lodging	22.7	8.1	1.7	51.4	23.2	6.6	2.3	3.8	7.5	127.3
Mercantile and Service	30.6	5.8	2.5	5.1	23.4	1.5	0.9	2.9	3.7	76.4
Office	24.3	9.1	5.2	8.7	28.1	1.1	0.4	15.1	5.2	97.2
Public Assembly	53.6	6.3	3.5	17.5	21.9	2.8	1.8	2.4	3.8	113.7
Public Order and Safety	27.8	6.1	2.3	23.4	16.4	Q	0.2	5.8	12.7	97.2
Religious Worship	23.7	1.9	0.9	3.2	5.0	0.5	0.6	0.4	1.1	37.4
Warehouse and Storage	15.7	0.9	0.3	2.0	9.8	0.0	1.7	4.4	3.4	38.3
Other [2]	59.6	9.3	8.3	15.3	26.7	Q	0.7	15.2	35.9	172.2
Vacant	11.9	0.6	0.3	2.4	3.6	Q	0.2	0.5	1.9	21.5
Year Constructed										
1919 or Before	34.2	2.6	1.6	10.0	14.9	4.0	1.3	3.2	7.5	79.4
1920 to 1945	37.0	3.4	1.6	10.7	12.3	1.8	1.6	3.3	4.1	75.7
1946 to 1959	37.2	4.4	2.1	14.1	15.5	3.0	2.7	4.6	5.2	88.9
1960 to 1969	30.2	5.7	2.7	16.8	20.4	4.0	3.0	5.3	6.1	94.3
1970 to 1979	26.0	7.2	3.6	15.8	25.6	3.2	3.7	6.7	7.5	99.3
1980 to 1989	19.8	7.8	3.2	11.5	23.5	4.2	3.0	7.6	5.9	86.5
1990 to 1992	26.6	8.4	3.5	17.2	28.7	9.3	5.6	7.9	7.4	114.6
1993 to 1995	24.3	7.9	3.2	11.7	22.7	3.3	7.4	4.9	6.8	92.2
Census Region [3]										
Northeast	32.4	4.0	2.0	14.2	17.7	2.7	3.0	4.5	6.4	87.1
Midwest	46.7	4.3	2.5	15.6	18.8	3.5	2.4	5.1	5.6	104.5
South	18.0	8.4	3.2	10.5	21.3	4.0	3.4	5.9	6.0	80.8
West	23.4	5.5	3.1	17.0	23.6	4.3	3.4	7.2	6.5	94.2

[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.

[3] See Appendix C for Census regions.

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

Web Page: http://www.eia.doe.gov/emeu/cbecs.

Source: Energy Information Administration, *A Look at Commercial Buildings in 1995: Characteristics, Energy Consumption, and Energy Expenditures* (October 1998), Table EU-2.

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 the retail sales of electricity—see Tables 8.5 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.

Table 2.2b Notes: • See Note1 at end of Section 1. • Data are for fuels consumed to produce electricity; they exclude fuels consumed to produce useful thermal output. Consumption for electricity generation at combined-heat-and-power (CHP) plants is estimated. The electric power sector comprises electricity-only and combined-heat-and-power (CHP) plants within the NAICS 22 category whose primary business is to sell electricity, or electricity and heat, to the public. • Totals may not equal sum of components due to independent rounding.

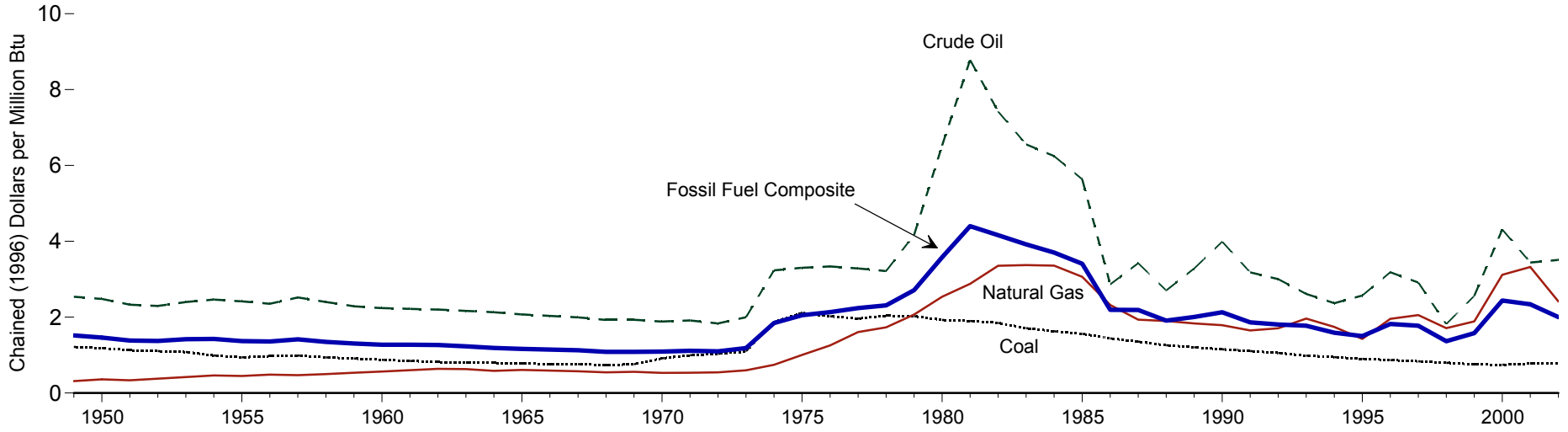
Table 2.2b Sources: See data sources listed for Tables 8.1, 8.2b, 8.2c, 8.3d, 8.3e, and A6.

3 Financial Indicators

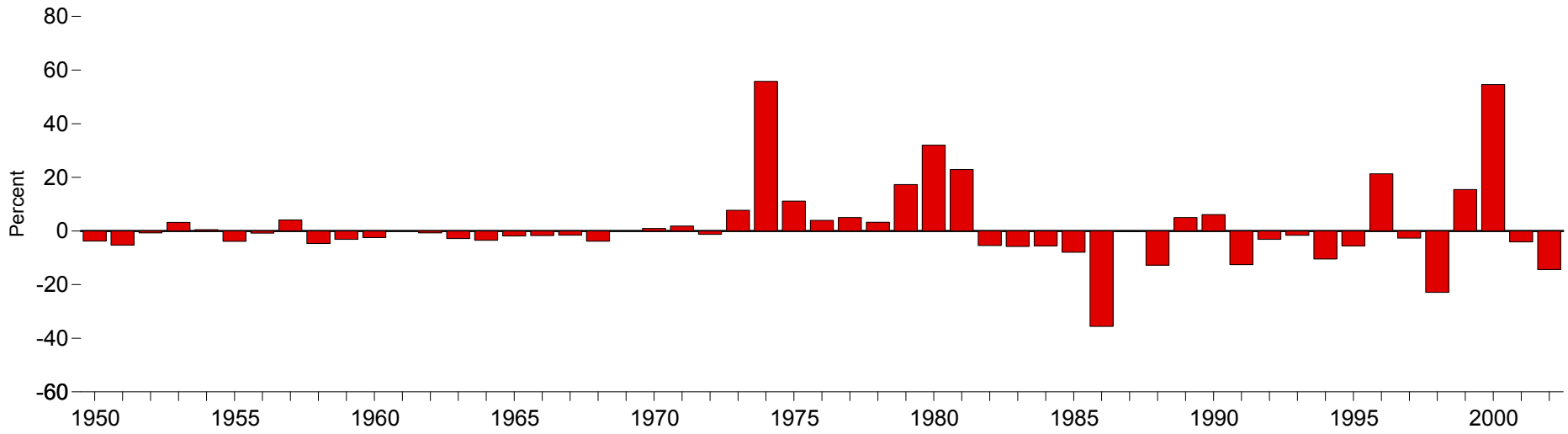
Gas Station, North Carolina, April 1999.

Figure 3.1 Fossil Fuel Production Prices

Prices, 1949-2002



Fossil Fuel Composite Price, Change From Previous Year, 1950-2002



Note: Prices are in chained (1996) dollars, calculated by using gross domestic product implicit price deflators. See Table D1.

Source: Table 3.1.

Table 3.1 Fossil Fuel Production Prices, 1949-2002

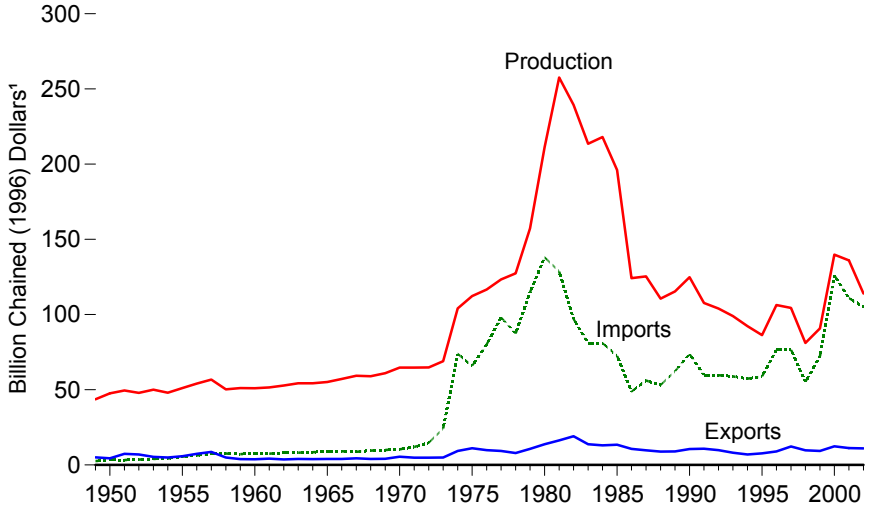
(Dollars per Million Btu)

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	1.22	0.05	0.31	0.44	2.54	0.26	1.52	—
1950	0.21	1.19	0.06	0.36	0.43	2.48	0.26	1.46	-3.8
1951	0.21	1.13	0.06	0.34	0.44	2.33	0.26	1.38	-5.3
1952	0.21	1.11	0.07	0.38	0.44	2.30	0.26	1.37	-0.7
1953	0.21	1.08	0.08	0.42	0.46	2.40	0.27	1.42	3.2
1954	0.19	0.99	0.09	0.46	0.48	2.46	0.28	1.43	0.5
1955	0.19	0.94	0.09	0.45	0.48	2.42	0.27	1.37	-3.9
1956	0.20	0.97	0.10	0.48	0.48	2.35	0.28	1.36	-0.8
1957	0.21	0.99	0.10	0.47	0.53	2.52	0.30	1.42	4.1
1958	0.20	0.94	0.11	0.50	0.52	2.40	0.29	1.35	-4.7
1959	0.20	0.91	0.12	0.54	0.50	2.29	0.29	1.31	-3.1
1960	0.19	0.87	0.13	0.57	0.50	2.24	0.28	1.28	-2.4
1961	0.19	0.85	0.14	0.60	0.50	2.22	0.29	1.28	0.0
1962	0.19	0.82	0.15	0.64	0.50	2.20	0.29	1.27	-0.7
1963	0.18	0.80	0.15	0.63	0.50	2.17	0.28	1.23	-2.8
1964	0.19	0.79	0.14	0.58	0.50	2.13	0.28	1.19	-3.5
1965	0.18	0.77	0.15	0.61	0.49	2.07	0.28	1.17	-1.9
1966	0.19	0.77	0.15	0.59	0.50	2.03	0.28	1.15	-1.7
1967	0.19	0.76	0.15	0.58	0.50	2.00	0.28	1.13	-1.6
1968	0.19	0.74	0.14	0.54	0.51	1.93	0.29	1.08	-3.8
1969	0.21	0.76	0.15	0.56	0.53	1.93	0.30	1.08	0.0
1970	0.27	0.92	0.15	0.53	0.55	1.89	0.32	1.09	0.9
1971	0.30	1.00	0.16	0.53	0.58	1.91	0.34	1.11	1.8
1972	0.33	1.04	0.17	0.54	0.58	1.84	0.35	1.10	-1.3
1973	0.37	1.09	0.20	0.60	0.67	2.00	0.40	1.19	7.7
1974	0.69	1.87	0.27	0.75	1.18	3.23	0.68	1.85	55.8
1975	0.85	2.11	0.40	1.00	1.32	3.30	0.82	2.05	11.1
1976	0.86	2.02	0.53	1.26	1.41	3.34	0.90	2.13	3.9
1977	0.88	1.96	0.72	1.61	1.48	3.28	1.01	2.24	5.0
1978	0.98	2.04	0.84	1.73	1.55	3.22	1.12	2.31	3.3
1979	1.06	2.03	1.08	2.07	2.18	4.17	1.42	2.71	17.3
1980	1.10	1.93	1.45	2.54	3.72	6.53	2.04	3.58	32.0
1981	1.18	1.90	1.80	2.88	5.48	8.78	2.75	4.40	22.9
1982	1.23	1.85	2.22	3.35	4.92	7.42	2.76	4.16	-5.4
1983	1.18	1.71	2.32	3.37	4.52	6.56	2.70	3.92	-5.8
1984	1.16	1.63	2.40	3.36	4.46	6.25	2.65	3.70	-5.5
1985	1.15	1.56	2.26	3.06	4.15	5.64	2.51	3.41	-8.0
1986	1.09	1.44	1.75	2.32	2.16	2.86	1.65	2.20	-35.6
1987	1.05	1.36	1.50	1.94	2.66	3.42	1.70	2.19	-0.2
1988	1.01	1.26	1.52	1.90	2.17	2.70	1.53	1.91	-12.8
1989	1.00	1.21	1.53	1.83	2.73	3.28	1.67	2.01	5.0
1990	1.00	1.15	1.55	1.79	3.45	3.99	1.84	2.13	6.1
1991	0.99	1.11	1.48	1.65	2.85	3.18	1.67	1.86	-12.5
1992	0.97	1.06	1.57	1.71	2.76	3.00	1.66	1.81	-3.1
1993	0.93	0.99	1.84	1.96	2.46	2.61	1.67	1.78	-1.6
1994	0.91	0.95	1.67	1.74	2.27	2.37	1.53	1.59	-10.5
1995	0.88	0.90	1.40	1.43	2.52	2.57	1.47	1.50	-5.5
1996	0.87	0.87	1.96	1.96	3.18	3.18	1.82	1.82	21.3
1997	0.85	0.84	2.10	2.06	2.97	2.91	1.81	1.77	-2.7
1998	0.83	0.80	1.77	1.71	1.87	1.82	1.41	1.37	-22.9
1999	0.79	0.75	1.98	1.89	2.68	2.56	1.65	1.58	R15.4
2000	0.80	R0.75	3.33	R3.12	4.61	R4.31	R2.61	R2.44	R54.6
2001	R0.85	R0.78	R3.64	R3.33	3.77	R3.44	2.56	2.34	R-4.1
2002P	0.86	0.78	2.67	2.41	3.88	3.51	2.22	2.00	-14.4

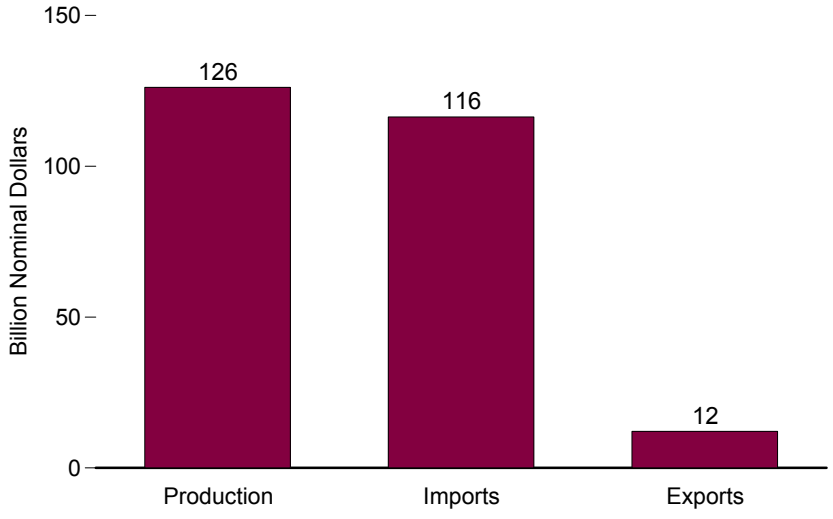
[1] Bituminous coal, subbituminous coal, and lignite prices are based on the value of coal produced at free-on-board (f.o.b.) mines; anthracite prices through 1978 are f.o.b. preparation plants and for 1979 forward are f.o.b. mines.
[2] Wellhead prices.
[3] Domestic first purchase prices.
[4] Derived 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 (1996) dollars, calculated by using gross domestic product implicit price deflators. See Table D1.
[6] Based on real values.
R=Revised. P=Preliminary. — = Not applicable.
Sources: Tables 5.16, 6.7, 7.8, A2, A4, and A5.

Figure 3.2 Value of Fossil Fuel Production

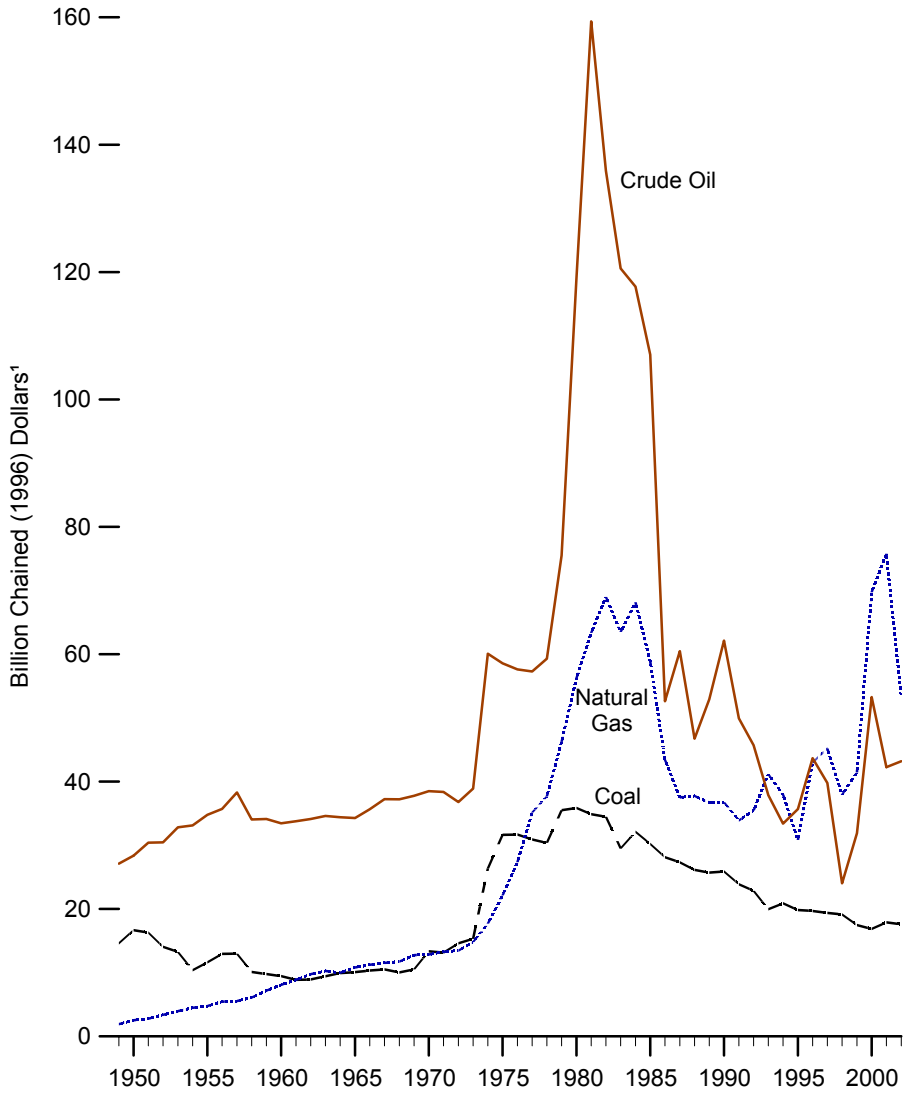
Overview, 1949-2002



Overview, 2002



Production by Fuel, 1949-2002



[1] Prices are in chained (1996) 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, 1949-2002

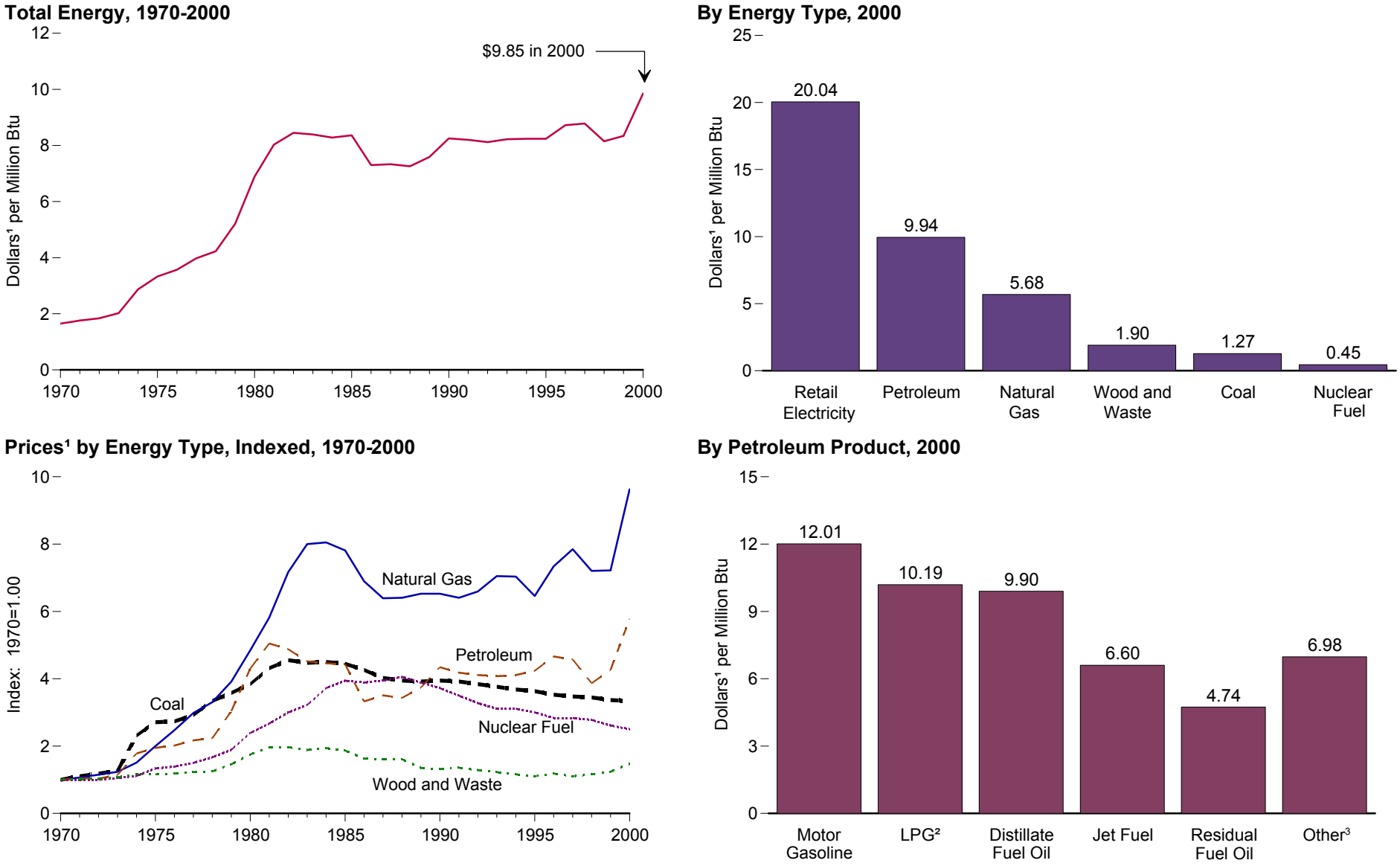
(Billion Dollars)

Year	Coal		Natural Gas [1]		Crude Oil [2]		Total	
	Nominal	Real [3]	Nominal	Real [3]	Nominal	Real [3]	Nominal	Real [3]
1949	2.52	14.60	0.33	1.91	4.68	27.11	7.53	43.62
1950	2.91	16.68	0.44	2.52	4.95	28.37	8.30	47.57
1951	3.05	16.30	0.52	2.78	5.69	30.41	9.26	49.49
1952	2.67	14.05	0.64	3.37	5.79	30.47	9.10	47.89
1953	2.55	13.25	0.76	3.95	6.32	32.83	9.63	50.03
1954	2.02	10.39	0.87	4.48	6.44	33.13	9.33	48.00
1955	2.30	11.63	0.94	4.75	6.88	34.78	10.12	51.16
1956	2.65	12.96	1.11	5.43	7.30	35.70	11.06	54.09
1957	2.74	12.97	1.17	5.54	8.09	38.29	12.00	56.80
1958	2.19	10.12	1.32	6.10	7.37	34.06	10.88	50.28
1959	2.14	9.78	1.57	7.18	7.47	34.14	11.18	51.10
1960	2.10	9.46	1.79	8.07	7.42	33.44	11.31	50.97
1961	1.99	8.87	1.99	8.87	7.58	33.78	11.56	51.52
1962	2.03	8.93	2.22	9.76	7.76	34.12	12.01	52.81
1963	2.17	9.43	2.36	10.26	7.96	34.61	12.49	54.30
1964	2.32	9.94	2.33	9.98	8.03	34.40	12.68	54.32
1965	2.40	10.09	2.57	10.81	8.15	34.27	13.12	55.17
1966	2.53	10.34	2.75	11.24	8.72	35.65	14.00	57.23
1967	2.65	10.51	2.91	11.54	9.39	37.25	14.95	59.30
1968	2.64	10.04	3.09	11.75	9.79	37.22	15.52	59.01
1969	2.90	10.51	3.52	12.76	10.42	37.77	16.84	61.04
1970	3.88	13.35	3.73	12.84	11.19	38.51	18.80	64.70
1971	4.01	13.14	4.05	13.27	11.71	38.37	19.77	64.78
1972	4.65	14.61	4.28	13.45	11.71	36.80	20.64	64.86
1973	5.14	15.30	4.98	14.82	13.07	38.90	23.19	69.02
1974	9.65	26.35	6.48	17.70	22.00	60.08	38.13	104.13
1975	12.67	31.65	8.85	22.11	23.45	58.58	44.97	112.34
1976	13.40	31.68	11.57	27.35	24.37	57.61	49.34	116.64
1977	13.91	30.90	15.82	35.14	25.79	57.29	55.52	123.33
1978	14.65	30.38	18.18	37.69	28.60	59.30	61.43	127.37
1979	18.55	35.50	24.16	46.24	39.45	75.50	82.16	157.24
1980	20.45	35.85	32.09	56.26	67.93	119.09	120.47	211.20
1981	21.75	34.87	39.51	63.35	99.40	159.37	160.66	257.59
1982	22.84	34.48	45.71	69.00	90.03	135.89	158.58	239.37
1983	20.32	29.50	43.73	63.49	83.05	120.57	147.10	213.56
1984	22.94	32.11	48.69	68.16	84.10	117.72	155.73	217.99
1985	22.27	30.22	43.35	58.83	78.88	107.04	144.50	196.09
1986	21.18	28.12	32.71	43.43	39.63	52.62	93.52	124.17
1987	21.20	27.33	29.11	37.52	46.93	60.49	97.24	125.34
1988	20.97	26.14	30.28	37.75	37.48	46.73	88.73	110.62
1989	21.40	25.70	30.58	36.72	44.07	52.92	96.05	115.34
1990	22.39	25.88	31.80	36.76	53.77	62.15	107.96	124.79
1991	21.40	23.87	30.39	33.89	44.77	49.93	96.56	107.69
1992	20.98	22.84	32.56	35.45	41.97	45.70	95.51	103.99
1993	18.77	19.96	38.72	41.17	35.61	37.86	93.10	98.99
1994	20.06	20.89	36.46	37.98	32.07	33.40	88.59	92.27
1995	19.45	19.83	30.24	30.83	35.00	35.68	84.69	86.34
1996	19.68	19.68	42.99	42.99	43.68	43.68	106.35	106.35
1997	19.77	19.39	46.09	45.21	40.57	39.79	106.43	104.39
1998	19.75	19.14	39.12	37.91	24.80	24.03	83.67	81.08
1999	18.30	R17.48	43.37	R41.43	33.40	R31.90	95.07	R90.81
2000	18.02	R16.86	R74.53	R69.73	56.93	R53.26	R149.48	R139.85
2001	R19.60	R17.91	R82.93	R75.79	R46.25	R42.27	R148.78	R135.97
2002P	19.47	17.59	58.91	53.24	47.79	43.19	126.17	114.02

[1] Marketed production.
[2] Includes lease condensate.
[3] In chained (1996) dollars, calculated by using gross domestic product implicit price deflators. See Table D1.

R=Revised. P=Preliminary.
Note: Value is based on fuel prices taken as closely as possible to the point of production.
Sources: Tables 5.1, 5.16, 6.2, 6.7, 7.2, and 7.8.

Figure 3.3 Consumer Price Estimates for Energy



[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.

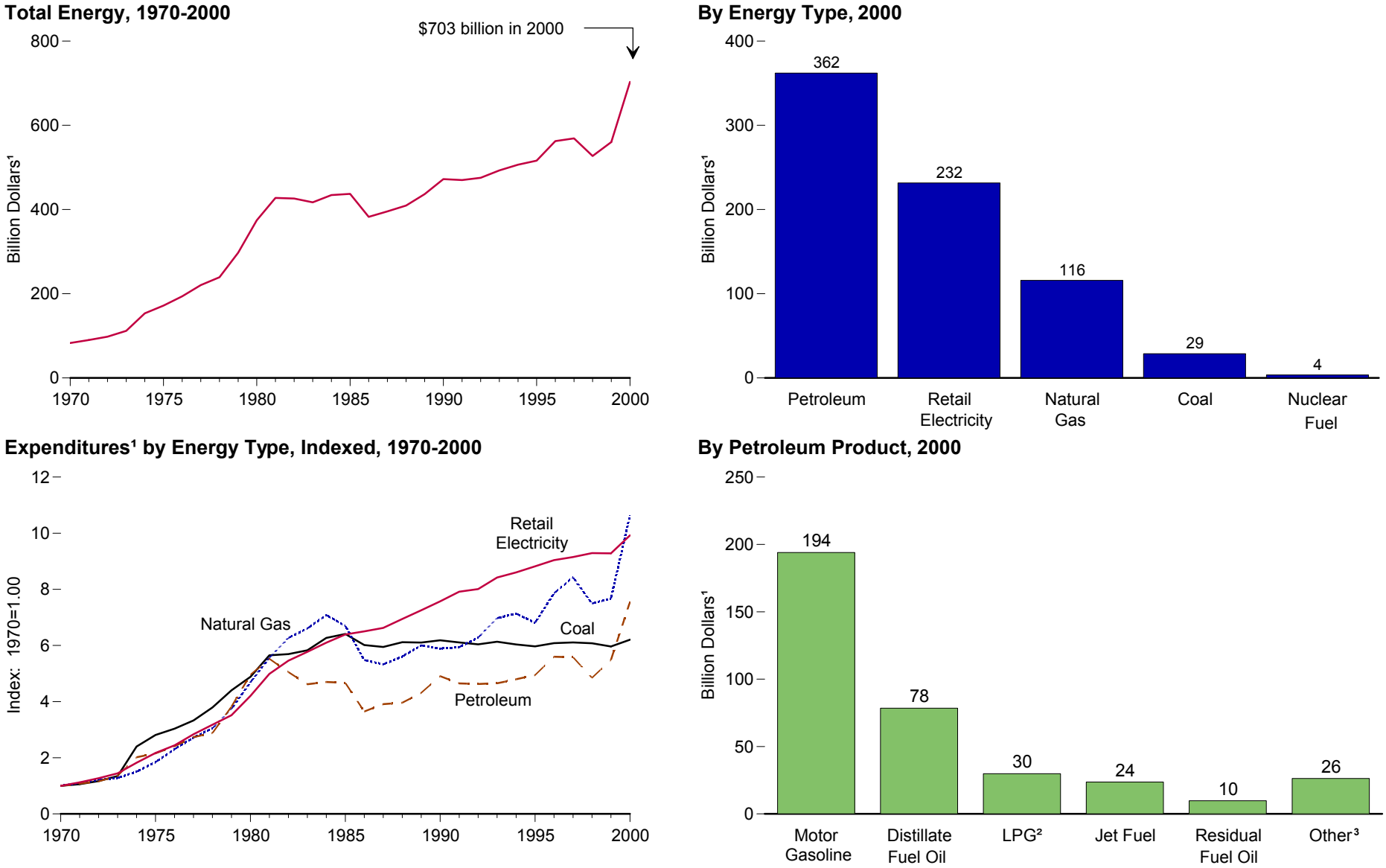
Table 3.3 Consumer Price Estimates for Energy, 1970-2000

(Nominal Dollars per Million Btu)

Year	Primary Energy [1]												Electric Utility Fuel [5,6]	Retail Electricity [7]	Total Energy [4,8]
			Petroleum												
	Coal	Natural Gas	Distillate Fuel Oil	Jet Fuel	LPG [2]	Motor Gasoline	Residual Fuel Oil	Other [3]	Total	Nuclear Fuel	Wood and Waste	Total [4,5]			
1970	R0.38	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	R1.27	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	R1.46	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	R1.64	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	R8.45
1983	R1.70	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	R1.69	4.61	7.18	5.91	6.54	9.01	4.30	7.52	7.62	0.71	2.41	R4.91	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	R3.96	R1.56	19.05	7.30
1987	R1.53	3.77	5.94	4.03	6.06	7.23	2.86	5.59	6.03	0.71	2.07	R3.98	R1.52	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	R4.10	1.48	18.98	R7.59
1990	R1.50	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	R8.25
1991	1.49	3.78	7.28	4.83	6.79	8.93	2.62	5.72	7.19	0.63	R1.75	R4.31	1.37	19.85	R8.20
1992	R1.46	3.89	7.11	4.52	6.19	8.96	2.27	5.49	7.07	0.59	R1.66	4.28	R1.35	20.06	R8.12
1993	1.43	4.16	7.10	4.29	6.20	8.83	2.25	5.47	7.01	0.56	R1.58	4.30	1.35	20.38	R8.22
1994	R1.40	4.15	7.03	3.95	6.61	8.96	2.32	5.46	7.07	0.56	R1.50	4.31	1.30	20.34	R8.24
1995	R1.38	3.81	7.02	4.00	6.54	9.22	2.46	5.72	7.29	0.54	R1.42	R4.28	1.23	20.30	R8.24
1996	R1.34	4.33	7.90	4.82	8.01	9.85	2.79	6.22	8.02	0.51	1.53	R4.69	1.28	20.17	R8.72
1997	R1.32	4.63	7.70	4.53	7.42	9.81	2.93	5.91	7.87	0.51	R1.42	R4.72	1.30	20.15	R8.78
1998	R1.31	4.25	6.63	3.35	5.99	8.45	2.15	5.06	6.65	0.50	R1.50	4.14	1.24	19.82	R8.15
1999	R1.28	4.26	7.24	4.01	6.64	9.31	2.30	5.32	7.33	0.47	R1.60	R4.42	R1.22	19.37	R8.34
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.
R=Revised.
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



[1]Nominal dollars.
[2]Liquefied petroleum gases.
[3]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 3.4.

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]
				Petroleum												
	Coal	Coal Coke Net Imports [2]	Natural Gas	Distillate Fuel Oil	Jet Fuel	LPG [3]	Motor Gasoline	Residual Fuel Oil	Other [4]	Total	Nuclear Fuel	Wood and Waste	Total [5]			
1970	R4,630	-75	10,891	6,253	1,441	2,446	31,596	2,046	4,159	47,942	44	438	R63,870	-4,316	23,345	R82,898
1971	R4,902	-40	12,065	6,890	1,582	2,531	33,478	2,933	4,429	51,844	73	446	R69,290	-5,441	26,202	R90,051
1972	R5,415	-26	13,198	7,552	1,682	2,889	35,346	3,458	4,756	55,682	104	476	R74,848	-6,473	29,712	R98,088
1973	R6,243	7	13,933	9,524	2,001	3,933	39,667	4,667	5,300	65,091	177	502	R85,953	-7,817	33,774	R111,910
1974	R11,118	150	16,380	15,217	3,208	5,273	54,194	10,547	8,264	96,704	259	544	R125,155	-14,391	42,586	R153,350
1975	R13,021	82	20,061	15,680	4,193	5,231	59,446	10,374	8,448	103,372	448	534	R137,517	-16,396	50,680	R171,802
1976	R14,051	44	25,097	18,402	4,567	5,993	64,977	11,648	9,880	115,468	520	622	R155,802	-18,923	56,972	R193,852
1977	R15,416	67	29,602	22,004	5,517	6,824	70,591	14,381	11,719	131,036	743	694	R177,558	-23,392	66,225	R220,391
1978	R17,551	362	33,185	23,587	6,205	6,621	74,513	13,747	13,294	137,967	915	782	R190,762	-25,746	74,159	R239,175
1979	R20,376	259	40,785	32,854	8,603	9,383	95,916	17,656	18,760	183,173	941	964	R246,498	R31,031	82,051	R297,518
1980	R22,607	-78	51,061	40,797	13,923	10,926	124,408	21,573	26,001	237,628	1,189	1,252	R313,659	-37,435	98,095	R374,319
1981	R26,159	-31	60,544	48,200	15,607	11,900	138,138	22,668	28,445	264,957	1,436	1,452	R354,517	-43,275	116,455	R427,697
1982	R26,349	-52	68,292	44,087	14,974	12,925	130,305	17,632	22,355	242,279	1,684	1,475	R340,027	-41,311	127,393	R426,109
1983	R26,987	-44	72,000	41,846	13,979	14,083	115,803	14,099	21,536	221,345	1,859	1,504	R323,652	-41,336	134,731	R417,047
1984	R29,021	-22	77,169	44,580	15,097	14,143	114,429	14,410	22,576	225,234	2,384	1,552	R335,336	-43,378	142,420	R434,379
1985	R29,673	-34	72,938	43,759	14,747	13,545	118,048	11,493	22,004	223,597	R2,878	1,493	R330,545	R-42,507	149,233	R437,271
1986	R27,847	-40	59,702	34,995	10,505	12,694	91,529	7,486	17,579	174,788	R3,061	1,319	R266,677	R-35,729	151,793	R382,741
1987	R27,526	7	58,019	37,587	11,448	12,859	99,864	8,062	17,581	187,400	R3,378	1,299	R277,629	R-36,584	154,685	R395,730
1988	R28,329	116	61,089	38,593	11,318	12,775	103,323	7,259	16,674	189,941	R4,057	1,358	R284,890	R-37,381	162,063	R409,572
1989	R28,271	137	65,383	43,246	13,434	12,154	112,720	8,354	16,965	206,872	R3,939	1,656	R306,212	R-38,793	169,332	R436,752
1990	R28,637	22	64,102	49,430	17,784	13,680	126,558	8,707	19,169	235,328	R4,104	1,678	R333,764	R-38,287	176,737	R472,214
1991	R28,290	44	64,697	45,181	14,609	14,922	123,118	6,786	18,160	222,776	R4,073	1,782	R321,763	R-36,482	184,814	R470,095
1992	R27,972	126	68,400	45,110	13,559	14,161	125,249	5,575	18,267	221,923	R3,802	1,792	R324,105	R-35,761	186,954	R475,298
1993	R28,408	96	75,941	45,885	13,002	13,961	126,560	5,439	18,250	223,096	R3,597	1,673	R332,895	R-36,658	196,579	R492,816
1994	R27,946	214	77,716	47,240	12,474	16,253	130,068	5,288	18,654	229,976	R3,777	1,893	R341,728	R-36,057	200,883	R506,553
1995	R27,632	234	74,150	47,845	12,525	16,250	136,647	4,667	19,175	237,110	R3,810	1,877	R345,040	R-34,765	205,932	R516,207
1996	R28,168	156	85,634	56,675	15,770	21,159	148,344	5,297	21,202	268,447	R3,624	2,059	R388,224	R-36,635	211,011	R562,600
1997	R28,276	170	91,736	56,199	15,000	19,861	149,668	5,211	21,683	267,621	R3,355	1,817	R393,131	R-37,765	213,645	R569,011
1998	R28,139	188	81,628	48,763	11,239	15,343	132,730	4,288	20,004	232,367	R3,568	1,813	R347,627	R-37,527	216,928	R527,028
1999	R27,621	140	R83,559	54,996	13,878	19,147	149,260	4,300	21,332	262,912	R3,558	2,341	R379,913	R-36,490	216,737	R560,161
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.

R=Revised.

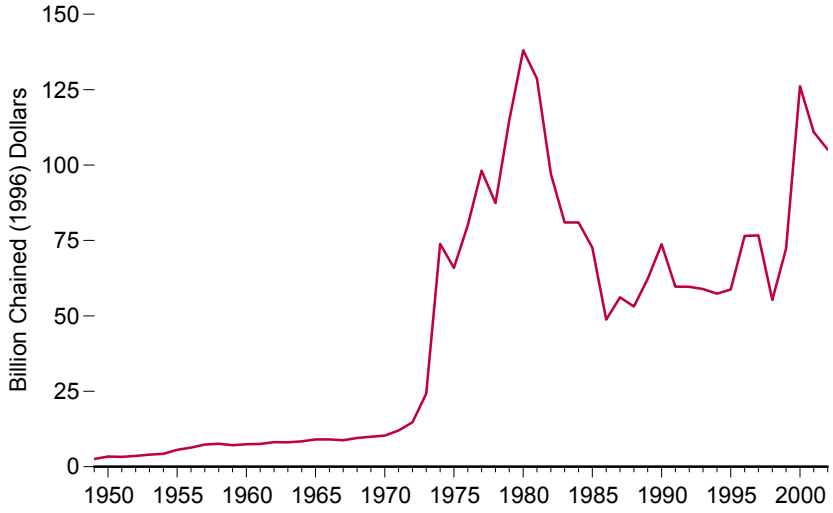
Notes: • There are no direct fuel costs for hydroelectric, geothermal, wind, or solar energy. • Totals may not equal the sum of components due to independent rounding.

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

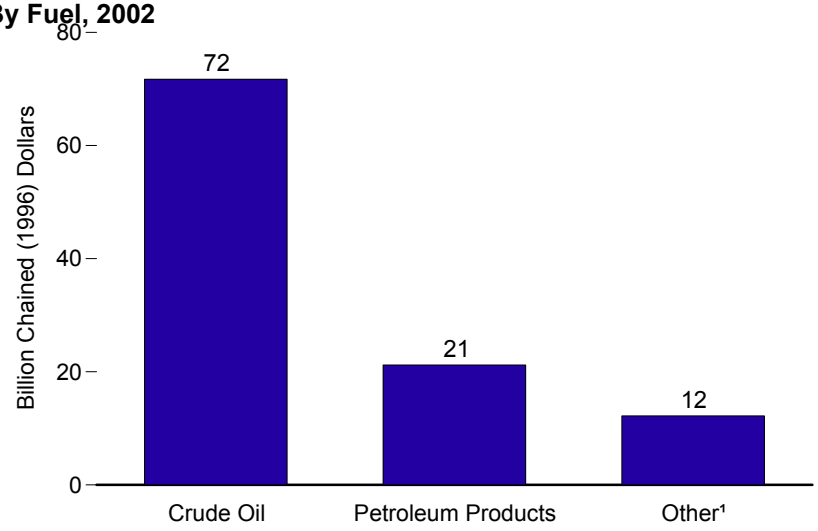
Source: Energy Information Administration, State Energy Data 2000 (March 2003), Table 1.

Figure 3.5 Value of Fossil Fuel Imports

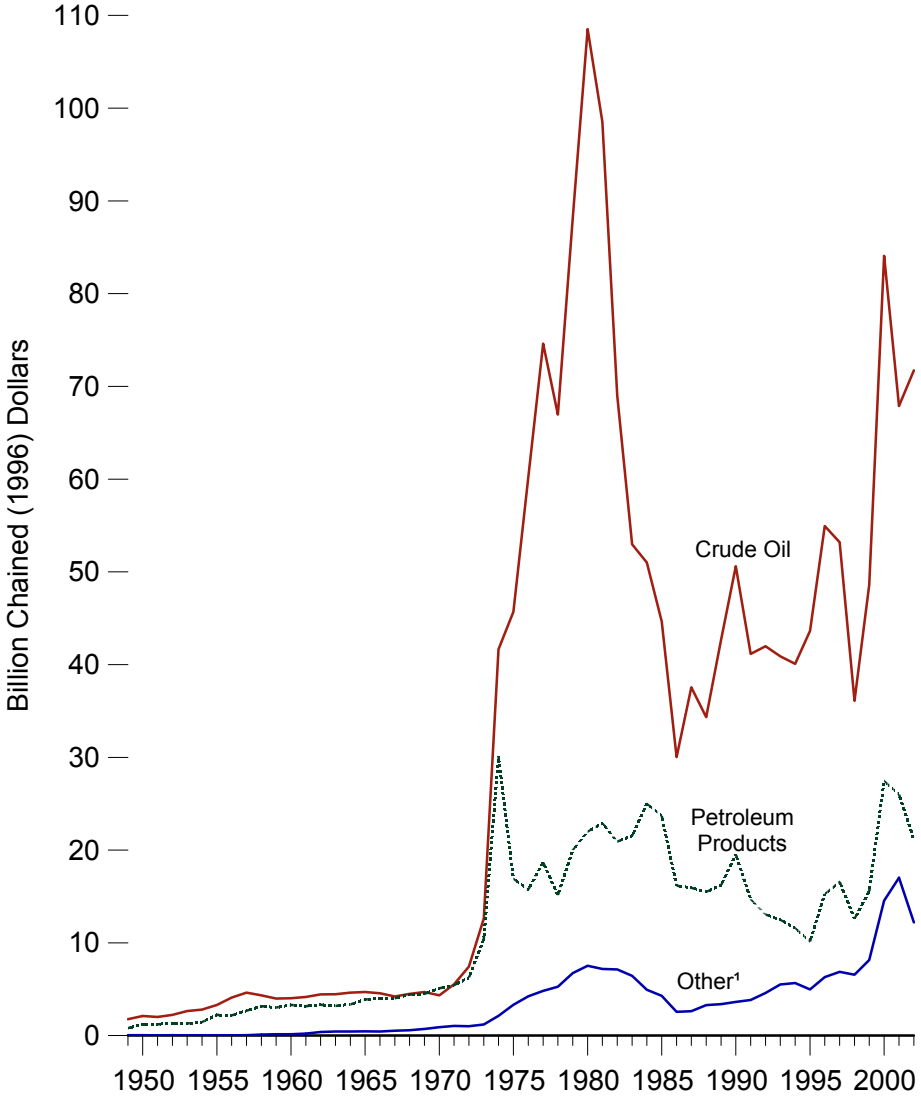
Total, 1949-2002



By Fuel, 2002



By Fuel, 1949-2002



[1] Natural gas, coal, and coal coke.

Notes: • Prices are in chained (1996) 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, 1949-2002

(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	1.77	0.14	0.79	0.45	2.60
1950	(s)	0.02	0.01	0.03	0.00	0.00	0.37	2.12	0.21	1.23	0.59	3.39
1951	(s)	0.01	(s)	0.01	0.00	0.00	0.37	2.00	0.23	1.21	0.61	3.24
1952	(s)	0.01	(s)	0.02	(s)	(s)	0.42	2.23	0.25	1.33	0.68	3.60
1953	(s)	0.01	(s)	0.01	(s)	0.01	0.51	2.65	0.25	1.31	0.77	3.98
1954	(s)	0.01	(s)	0.01	(s)	(s)	0.54	2.80	0.28	1.46	0.83	4.28
1955	(s)	0.01	(s)	0.01	(s)	0.01	0.65	3.31	0.44	2.23	1.10	5.57
1956	(s)	0.01	(s)	0.01	(s)	0.01	0.84	4.10	0.45	2.19	1.29	6.31
1957	(s)	0.01	(s)	0.01	(s)	0.02	0.98	4.64	0.57	2.69	1.56	7.36
1958	(s)	0.01	(s)	0.01	0.02	0.10	0.94	4.34	0.68	3.16	1.65	7.63
1959	(s)	0.01	(s)	0.01	0.03	0.12	0.87	3.99	0.66	3.03	1.57	7.16
1960	(s)	0.01	(s)	0.01	0.03	0.13	0.90	4.03	0.73	3.30	1.66	7.47
1961	(s)	0.01	(s)	0.01	0.04	0.20	0.93	4.16	0.71	3.16	1.69	7.54
1962	(s)	0.01	(s)	0.01	0.09	0.38	1.01	4.45	0.75	3.31	1.86	8.16
1963	(s)	0.01	(s)	0.01	0.10	0.43	1.03	4.46	0.74	3.21	1.87	8.11
1964	(s)	0.01	(s)	0.01	0.10	0.43	1.08	4.63	0.78	3.35	1.97	8.43
1965	(s)	0.01	(s)	0.01	0.11	0.44	1.12	4.71	0.92	3.88	2.15	9.05
1966	(s)	0.01	(s)	0.01	0.11	0.43	1.12	4.56	0.99	4.04	2.21	9.04
1967	(s)	0.01	(s)	0.01	0.13	0.51	1.06	4.22	1.02	4.03	2.21	8.78
1968	(s)	0.01	(s)	0.01	0.15	0.56	1.18	4.50	1.16	4.43	2.50	9.50
1969	(s)	(s)	(s)	0.01	0.20	0.71	1.30	4.71	1.24	4.49	2.74	9.92
1970	(s)	(s)	(s)	0.01	0.26	0.89	1.26	4.34	1.48	5.10	3.00	10.34
1971	(s)	0.01	0.01	0.02	0.31	1.02	1.69	5.53	1.66	5.43	3.66	12.00
1972	(s)	(s)	(s)	0.01	0.31	0.99	2.37	7.45	1.99	6.25	4.68	14.70
1973	(s)	(s)	0.04	0.12	0.36	1.08	4.24	12.62	3.50	10.41	8.14	24.23
1974	0.06	0.16	0.19	0.53	0.53	1.45	15.25	41.65	11.01	30.07	27.05	73.86
1975	0.02	0.05	0.16	0.39	1.15	2.88	18.29	45.69	6.77	16.91	26.39	65.92
1976	0.02	0.04	0.11	0.26	1.66	3.92	25.46	60.18	6.65	15.72	33.90	80.13
1977	0.04	0.09	0.13	0.29	2.00	4.44	33.59	74.61	8.42	18.70	44.18	98.13
1978	0.07	0.15	0.41	0.85	2.06	4.27	32.30	66.97	7.30	15.14	42.15	87.38
1979	0.05	0.10	0.34	0.65	3.13	5.98	46.06	88.15	10.45	20.00	60.03	114.88
1980	0.03	0.05	0.05	0.09	4.21	7.39	61.90	108.52	12.54	21.99	78.74	138.04
1981	0.03	0.05	0.04	0.07	4.41	7.07	61.46	98.54	14.30	22.92	80.24	128.65
1982	0.02	0.03	0.01	0.01	4.69	7.09	45.72	69.02	13.86	20.92	64.31	97.08
1983	0.04	0.06	(s)	(s)	4.39	6.37	36.49	52.98	14.84	21.55	55.77	80.96
1984	0.05	0.06	0.05	0.07	3.44	4.81	36.44	51.01	17.87	25.01	57.84	80.96
1985	0.07	0.10	0.04	0.06	3.05	4.14	32.90	44.65	17.47	23.70	53.53	72.64
1986	0.08	0.11	0.03	0.03	1.82	2.42	22.61	30.02	12.18	16.18	36.72	48.75
1987	0.06	0.07	0.05	0.07	1.93	2.49	29.13	37.55	12.37	15.94	43.54	56.12
1988	0.06	0.08	0.19	0.24	2.38	2.97	27.55	34.34	12.43	15.50	42.62	53.13
1989	0.10	0.12	0.22	0.26	2.51	3.01	35.53	42.67	13.50	16.21	51.85	62.26
1990	0.09	0.11	0.07	0.08	2.97	3.44	43.78	50.61	16.90	19.54	63.83	73.78
1991	0.11	0.13	0.09	0.10	3.24	3.61	36.90	41.16	13.17	14.69	53.51	59.68
1992	0.13	0.14	0.14	0.16	3.96	4.31	38.55	41.98	11.98	13.05	54.77	59.63
1993	0.25	0.27	0.17	0.18	4.77	5.07	38.47	40.90	11.74	12.48	55.40	58.90
1994	0.27	0.28	0.27	0.29	4.90	5.11	38.48	40.08	11.14	11.61	55.07	57.36
1995	0.32	0.33	0.33	0.33	4.23	4.31	42.81	43.64	9.95	10.14	57.64	58.75
1996	0.27	0.27	0.24	0.24	5.79	5.79	54.93	54.93	15.27	15.27	76.51	76.51
1997	0.26	0.25	0.25	0.25	6.50	6.37	54.23	53.19	[4]16.93	[4]16.60	78.16	76.66
1998	0.28	0.27	0.29	0.28	6.21	6.02	37.25	36.10	13.01	12.61	57.05	55.28
1999	0.28	0.27	0.23	0.22	8.03	[R]7.67	50.89	[R]48.61	16.28	[R]15.55	75.71	[R]72.32
2000	0.38	0.35	0.25	0.23	14.94	[R]13.97	89.88	[R]84.08	29.38	[R]27.48	134.81	[R]126.12
2001	0.67	[R]0.61	0.17	0.16	17.77	[R]16.24	[R]74.29	[R]67.90	[R]28.45	26.00	[R]121.36	[R]110.91
2002[P]	0.60	0.54	0.24	0.21	12.67	11.45	79.37	71.72	23.46	21.20	116.34	105.13

[1] Includes imports into the Strategic Petroleum Reserve, which began in 1977.
[2] Includes petroleum preparations; liquefied propane; and butane; and since 1997 other mineral fuels.
[3] In chained (1996) 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."

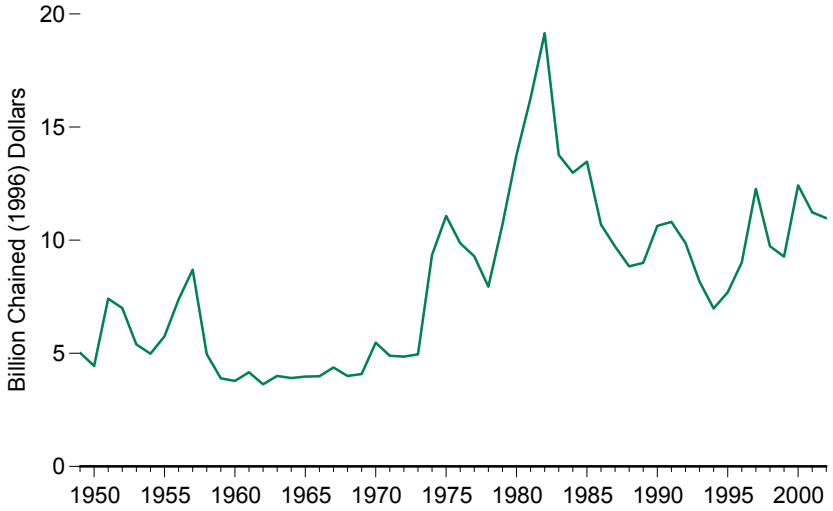
R=Revised. P=Preliminary. (s)=Less than 0.005 billion.

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.

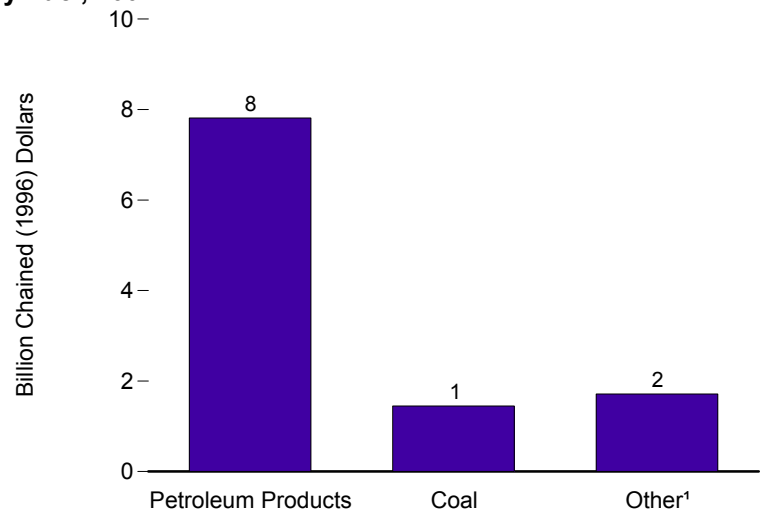
Sources: See end of section.

Figure 3.6 Value of Fossil Fuel Exports

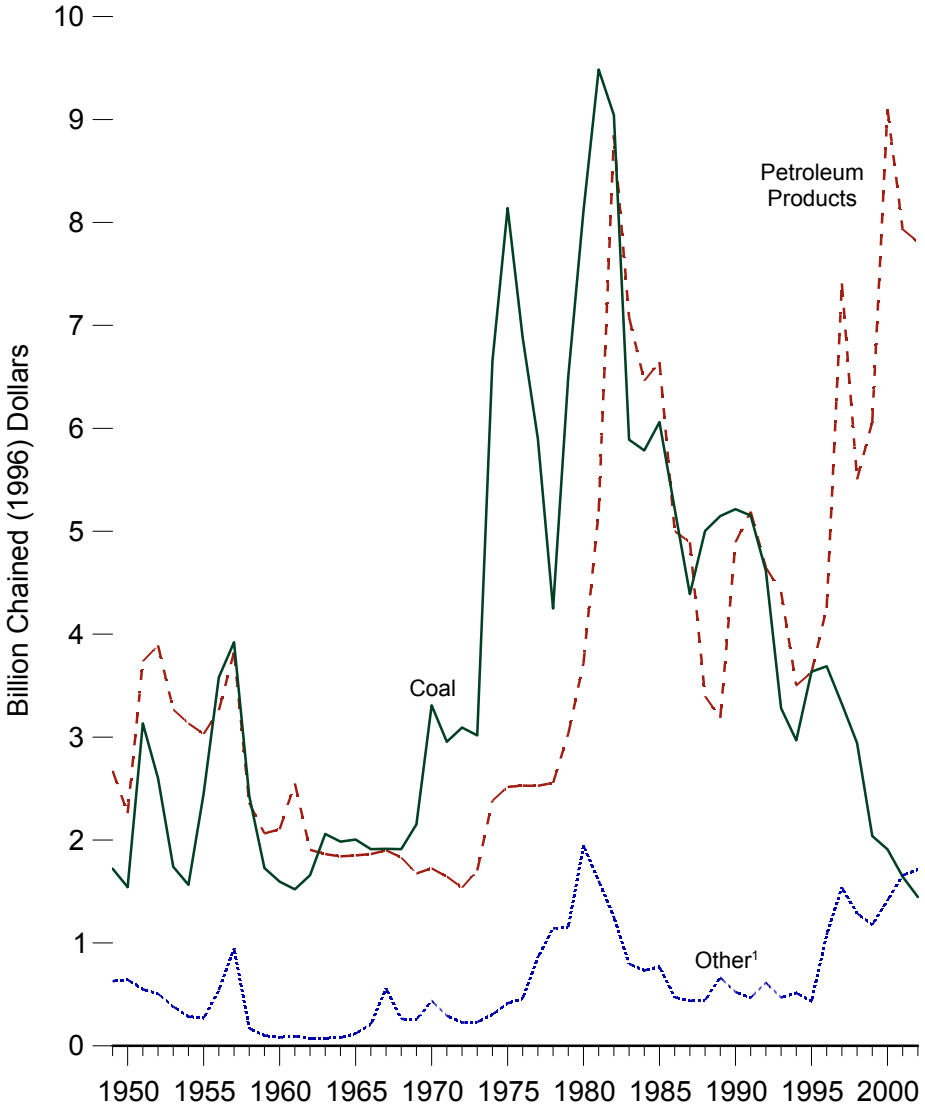
Total, 1949-2002



By Fuel, 2002



By Fuel, 1949-2002



[1] Natural gas, crude oil, and coal coke.

Notes: • Prices are in chained (1996) 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.

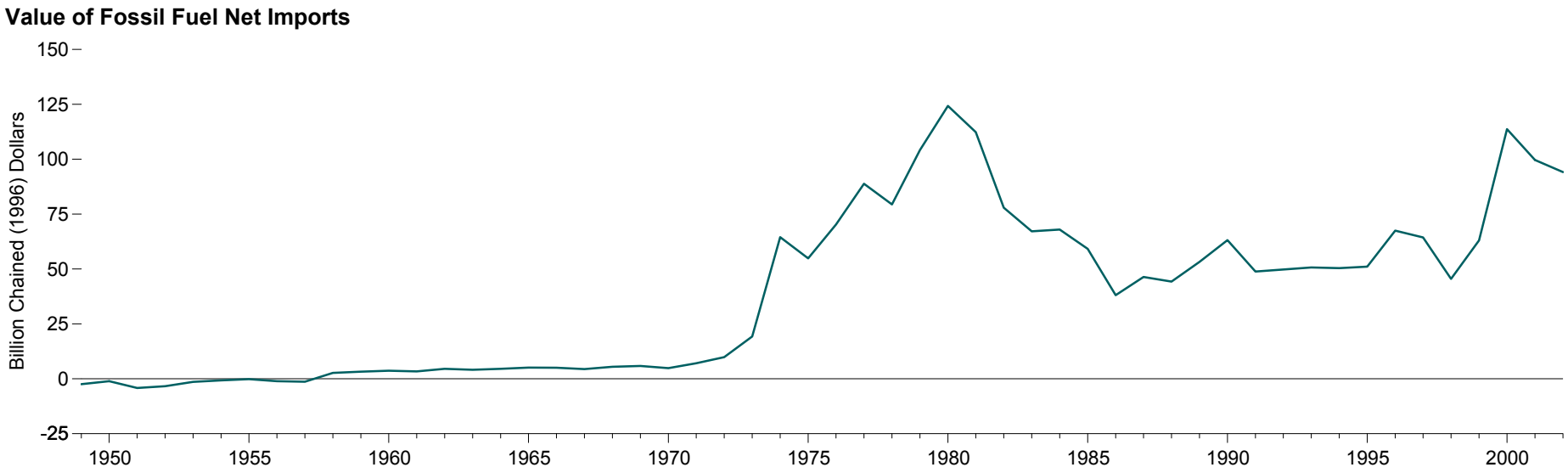
Table 3.6 Value of Fossil Fuel Exports, 1949-2002

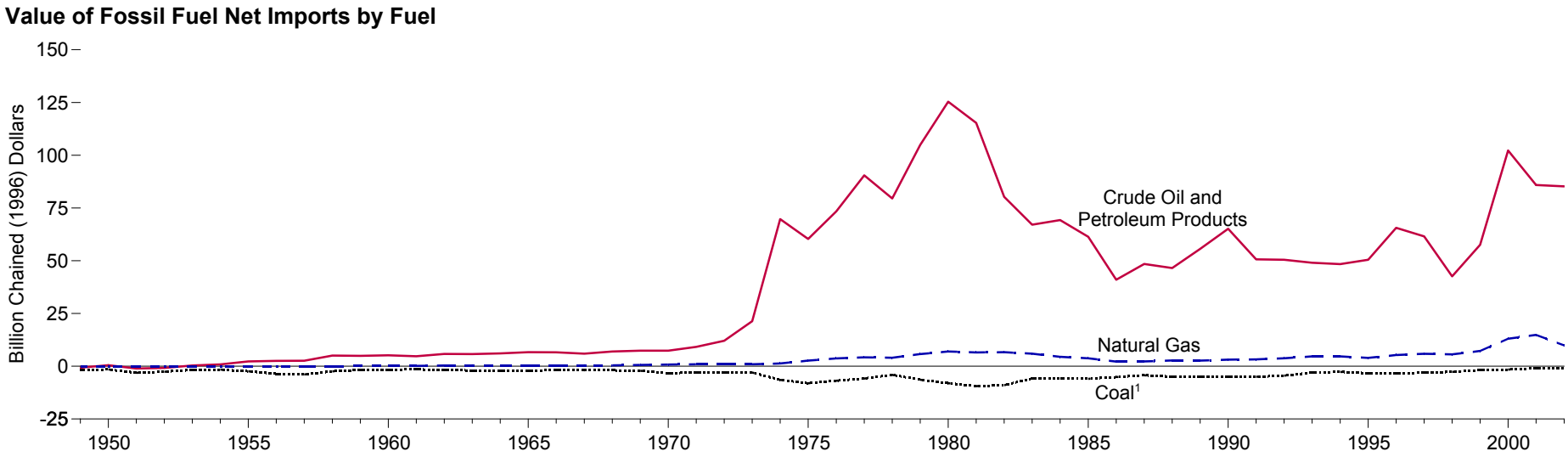
(Billion Dollars)

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	1.72	0.01	0.05	(s)	0.01	0.10	0.57	0.46	2.67	0.87	5.02
1950	0.27	1.54	0.01	0.04	(s)	0.02	0.10	0.59	0.39	2.26	0.78	4.45
1951	0.59	3.13	0.02	0.09	(s)	0.02	0.08	0.44	0.70	3.74	1.39	7.42
1952	0.49	2.60	0.01	0.07	(s)	0.02	0.08	0.41	0.74	3.89	1.33	7.00
1953	0.34	1.74	0.01	0.05	(s)	0.02	0.06	0.31	0.63	3.27	1.04	5.39
1954	0.30	1.57	0.01	0.03	(s)	0.02	0.05	0.23	0.61	3.13	0.97	4.98
1955	0.48	2.45	0.01	0.04	0.01	0.03	0.04	0.20	0.60	3.03	1.14	5.75
1956	0.73	3.58	0.01	0.06	0.01	0.04	0.09	0.44	0.67	3.26	1.51	7.38
1957	0.83	3.92	0.01	0.07	0.01	0.06	0.17	0.82	0.81	3.82	1.84	8.69
1958	0.53	2.43	0.01	0.03	0.01	0.07	0.01	0.07	0.51	2.36	1.07	4.96
1959	0.38	1.73	0.01	0.04	0.01	0.03	0.01	0.03	0.45	2.06	0.85	3.89
1960	0.35	1.59	0.01	0.03	(s)	0.02	0.01	0.04	0.47	2.10	0.84	3.78
1961	0.34	1.52	0.01	0.04	(s)	0.02	0.01	0.04	0.57	2.55	0.93	4.16
1962	0.38	1.66	0.01	0.03	(s)	0.02	0.01	0.02	0.43	1.90	0.83	3.63
1963	0.47	2.06	0.01	0.04	(s)	0.02	(s)	0.02	0.43	1.86	0.92	4.00
1964	0.46	1.98	0.01	0.04	(s)	0.02	(s)	0.02	0.43	1.84	0.91	3.90
1965	0.48	2.01	0.02	0.07	0.01	0.03	(s)	0.02	0.44	1.85	0.95	3.97
1966	0.47	1.91	0.02	0.10	0.02	0.07	0.01	0.04	0.46	1.86	0.97	3.99
1967	0.48	1.91	0.02	0.07	0.03	0.13	0.09	0.37	0.48	1.90	1.10	4.37
1968	0.50	1.91	0.02	0.07	0.04	0.15	0.01	0.04	0.48	1.83	1.05	4.00
1969	0.59	2.15	0.04	0.14	0.03	0.09	0.01	0.02	0.46	1.68	1.13	4.08
1970	0.96	3.31	0.08	0.27	0.03	0.10	0.02	0.06	0.50	1.73	1.59	5.47
1971	0.90	2.95	0.04	0.15	0.04	0.13	0.01	0.02	0.50	1.65	1.49	4.89
1972	0.98	3.09	0.03	0.10	0.04	0.12	(s)	0.01	0.49	1.54	1.55	4.86
1973	1.01	3.02	0.03	0.10	0.04	0.12	(s)	0.01	0.57	1.70	1.66	4.95
1974	2.44	6.65	0.04	0.12	0.05	0.15	0.01	0.04	0.87	2.38	3.42	9.34
1975	3.26	8.14	0.07	0.19	0.09	0.23	(s)	(s)	1.01	2.52	4.43	11.07
1976	2.91	6.88	0.07	0.16	0.10	0.24	0.03	0.06	1.07	2.53	4.17	9.87
1977	2.66	5.90	0.07	0.16	0.11	0.24	0.21	0.46	1.14	2.53	4.18	9.29
1978	2.05	4.25	0.05	0.10	0.11	0.23	0.39	0.81	1.23	2.56	3.83	7.95
1979	3.40	6.50	0.08	0.15	0.13	0.24	0.39	0.75	1.58	3.03	5.58	10.69
1980	4.63	8.11	0.13	0.23	0.23	0.40	0.75	1.32	2.12	3.72	7.86	13.78
1981	5.92	9.49	0.07	0.12	0.35	0.56	0.58	0.92	3.24	5.19	10.16	16.28
1982	5.99	9.04	0.06	0.09	0.30	0.45	0.47	0.71	5.86	8.85	12.68	19.14
1983	4.06	5.89	0.05	0.07	0.28	0.40	0.22	0.33	4.88	7.08	9.48	13.77
1984	4.13	5.78	0.07	0.10	0.27	0.38	0.19	0.26	4.62	6.46	9.27	12.98
1985	4.47	6.06	0.08	0.10	0.26	0.36	0.23	0.31	4.90	6.64	9.93	13.47
1986	3.93	5.22	0.07	0.09	0.17	0.23	0.12	0.16	3.77	5.00	8.05	10.69
1987	3.40	4.39	0.05	0.06	0.17	0.21	0.13	0.16	3.80	4.89	7.54	9.72
1988	4.01	5.00	0.08	0.10	0.20	0.25	0.08	0.10	2.72	3.40	7.09	8.84
1989	4.29	5.15	0.08	0.10	0.27	0.32	0.21	0.25	2.65	3.19	7.49	9.00
1990	4.51	5.21	0.05	0.06	0.27	0.31	0.14	0.16	4.23	4.89	9.20	10.63
1991	4.62	5.15	0.05	0.06	0.33	0.37	0.03	0.04	4.65	5.19	9.69	10.81
1992	4.24	4.61	0.04	0.05	0.49	0.53	0.03	0.04	4.27	4.65	9.07	9.88
1993	3.09	3.28	0.06	0.06	0.36	0.39	0.02	0.02	4.15	4.41	7.68	8.16
1994	2.85	2.97	0.04	0.04	0.40	0.42	0.05	0.05	3.36	3.50	6.71	6.98
1995	3.57	3.63	0.05	0.05	0.37	0.38	0.01	0.01	3.56	3.63	7.55	7.70
1996	3.69	3.69	0.06	0.06	0.46	0.46	0.56	0.56	4.25	4.25	9.02	9.02
1997	3.39	3.32	0.05	0.05	0.47	0.47	1.04	1.02	[3]7.55	[3]7.41	12.51	12.27
1998	3.04	2.94	0.04	0.04	0.39	0.38	0.90	0.87	5.68	5.50	10.04	9.73
1999	2.13	2.04	0.03	0.03	0.43	0.41	0.77	0.74	6.35	6.06	9.71	[R]9.27
2000	2.04	1.91	0.05	0.05	1.00	0.93	0.46	0.43	9.73	[R]9.10	13.28	[R]12.43
2001	1.80	1.64	[R]0.09	[R]0.08	1.54	1.41	[R]0.19	[R]0.17	[R]8.68	[R]7.93	[R]12.29	[R]11.24
2002[P]	1.60	1.45	0.04	0.04	1.76	1.59	0.09	0.08	8.64	7.81	12.14	10.97

[1] Includes petroleum preparations, liquefied propane and butane and since 1997 other mineral fuels.
[2] In chained (1996) 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.
Sources: **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. • 1999-2001—EIA, *Natural Gas Monthly* (August 2002). • 2002—Calculated from EIA, *Natural Gas Monthly,* (March 2003),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. "Exports and Imports of Goods by Principal SITC Commodity Groupings," December issues. **Coal:** • Bureau of the Census, Foreign Trade Division, unpublished data.

Figure 3.7 Value of Fossil Fuel Net Imports, 1949-2002





[1]Includes small amounts of coal coke.

Notes: • Negative net imports are net exports. • Prices are in chained (1996) dollars, calculated by using gross domestic product implicit price deflators. See Table D1.

Source: Table 3.7.

Table 3.7 Value of Fossil Fuel Net Imports, 1949-2002

(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	-1.71	(s)	-0.03	(s)	-0.01	0.21	1.19	-0.32	-1.88	-0.42	-2.43
1950	-0.27	-1.53	(s)	(s)	(s)	-0.02	0.27	1.53	-0.18	-1.03	-0.18	-1.05
1951	-0.58	-3.12	-0.02	-0.08	(s)	-0.02	0.29	1.57	-0.47	-2.53	-0.78	-4.18
1952	-0.49	-2.59	-0.01	-0.05	(s)	-0.02	0.34	1.82	-0.49	-2.56	-0.65	-3.40
1953	-0.33	-1.73	-0.01	-0.04	(s)	-0.02	0.45	2.34	-0.38	-1.96	-0.27	-1.41
1954	-0.30	-1.56	(s)	-0.03	(s)	-0.02	0.50	2.57	-0.32	-1.67	-0.14	-0.70
1955	-0.48	-2.44	-0.01	-0.03	-0.01	-0.03	0.62	3.11	-0.16	-0.80	-0.04	-0.18
1956	-0.73	-3.57	-0.01	-0.05	-0.01	-0.04	0.75	3.65	-0.22	-1.07	-0.22	-1.07
1957	-0.83	-3.91	-0.01	-0.06	-0.01	-0.04	0.81	3.82	-0.24	-1.14	-0.28	-1.33
1958	-0.52	-2.42	-0.01	-0.03	0.01	0.03	0.92	4.27	0.17	0.80	0.58	2.67
1959	-0.38	-1.72	-0.01	-0.03	0.02	0.09	0.87	3.96	0.21	0.97	0.71	3.26
1960	-0.35	-1.59	-0.01	-0.02	0.02	0.11	0.89	4.00	0.26	1.19	0.82	3.69
1961	-0.34	-1.52	-0.01	-0.03	0.04	0.18	0.92	4.12	0.14	0.61	0.76	3.37
1962	-0.38	-1.65	-0.01	-0.02	0.08	0.36	1.01	4.43	0.32	1.41	1.03	4.52
1963	-0.47	-2.05	-0.01	-0.03	0.09	0.41	1.02	4.44	0.31	1.35	0.95	4.11
1964	-0.46	-1.98	-0.01	-0.04	0.10	0.41	1.08	4.61	0.35	1.51	1.06	4.52
1965	-0.48	-2.00	-0.01	-0.06	0.10	0.41	1.11	4.69	0.48	2.03	1.21	5.07
1966	-0.47	-1.91	-0.02	-0.09	0.09	0.36	1.11	4.52	0.53	2.17	1.24	5.06
1967	-0.48	-1.91	-0.01	-0.06	0.10	0.39	0.97	3.86	0.54	2.13	1.11	4.41
1968	-0.50	-1.90	-0.02	-0.06	0.11	0.41	1.17	4.46	0.68	2.60	1.45	5.50
1969	-0.59	-2.15	-0.04	-0.13	0.17	0.61	1.29	4.68	0.78	2.82	1.61	5.84
1970	-0.96	-3.31	-0.08	-0.26	0.23	0.78	1.24	4.27	0.98	3.38	1.41	4.87
1971	-0.90	-2.95	-0.04	-0.13	0.27	0.90	1.68	5.51	1.15	3.78	2.17	7.11
1972	-0.98	-3.09	-0.03	-0.08	0.28	0.87	2.37	7.44	1.50	4.71	3.13	9.85
1973	-1.01	-3.01	0.01	0.02	0.32	0.95	4.24	12.61	2.93	8.71	6.48	19.28
1974	-2.38	-6.50	0.15	0.41	0.48	1.30	15.24	41.61	10.14	27.69	23.63	64.52
1975	-3.24	-8.09	0.08	0.20	1.06	2.65	18.29	45.69	5.76	14.39	21.96	54.85
1976	-2.89	-6.84	0.04	0.10	1.56	3.69	25.43	60.12	5.58	13.20	29.72	70.26
1977	-2.62	-5.81	0.06	0.13	1.89	4.21	33.38	74.15	7.28	16.17	40.00	88.84
1978	-1.98	-4.10	0.36	0.75	1.95	4.04	31.91	66.16	6.07	12.59	38.31	79.44
1979	-3.35	-6.40	0.26	0.50	3.00	5.74	45.66	87.40	8.87	16.97	54.44	104.20
1980	-4.60	-8.06	-0.08	-0.14	3.98	6.99	61.15	107.20	10.42	18.27	70.88	124.26
1981	-5.89	-9.44	-0.03	-0.05	4.06	6.51	60.88	97.61	11.06	17.73	70.09	112.37
1982	-5.97	-9.01	-0.05	-0.08	4.39	6.63	45.25	68.31	8.00	12.08	51.63	77.93
1983	-4.01	-5.83	-0.04	-0.06	4.11	5.97	36.27	52.65	9.96	14.47	46.28	67.20
1984	-4.09	-5.72	-0.02	-0.03	3.17	4.44	36.26	50.75	13.25	18.55	48.57	67.98
1985	-4.39	-5.96	-0.03	-0.05	2.79	3.78	32.68	44.34	12.57	17.06	43.60	59.17
1986	-3.85	-5.11	-0.04	-0.05	1.65	2.19	22.49	29.86	8.42	11.17	28.67	38.06
1987	-3.35	-4.32	0.01	0.01	1.76	2.27	29.00	37.39	8.57	11.05	36.00	46.40
1988	-3.95	-4.92	0.12	0.15	2.18	2.72	27.47	34.25	9.71	12.11	35.53	44.29
1989	-4.19	-5.03	0.14	0.16	2.24	2.69	35.32	42.42	10.85	13.02	44.35	53.27
1990	-4.42	-5.11	0.02	0.03	2.71	3.13	43.65	50.45	12.67	14.65	54.63	63.15
1991	-4.51	-5.03	0.04	0.05	2.90	3.23	36.87	41.12	8.52	9.50	43.82	48.88
1992	-4.11	-4.48	0.10	0.11	3.47	3.78	38.52	41.94	7.72	8.40	45.70	49.76
1993	-2.83	-3.01	0.11	0.11	4.41	4.69	38.45	40.88	7.59	8.07	47.72	50.74
1994	-2.58	-2.68	0.23	0.24	4.50	4.68	38.43	40.03	7.78	8.10	48.37	50.38
1995	-3.24	-3.31	0.27	0.28	3.86	3.93	42.81	43.64	6.39	6.51	50.09	51.06
1996	-3.41	-3.41	0.18	0.18	5.33	5.33	54.37	54.37	11.01	11.01	67.49	67.49
1997	-3.13	-3.07	0.20	0.19	6.02	5.91	53.19	52.17	[3]9.37	[3]9.19	65.65	64.39
1998	-2.75	-2.67	0.25	0.24	5.82	5.64	36.36	35.23	7.33	7.11	47.00	45.54
1999	-1.85	-1.77	0.20	0.19	7.61	7.27	50.12	[R]47.87	9.94	[R]9.49	66.00	[R]63.05
2000	-1.66	-1.56	0.20	0.19	13.94	[R]13.04	89.41	[R]83.65	19.65	[R]18.38	121.53	[R]113.70
2001	-1.13	-1.03	[R]0.09	[R]0.08	16.23	[R]14.83	[R]74.11	[R]67.73	[R]19.77	[R]18.07	[R]109.07	[R]99.68
2002[P]	-1.00	-0.91	0.19	0.17	10.91	9.86	79.28	71.64	14.82	13.39	104.20	94.16

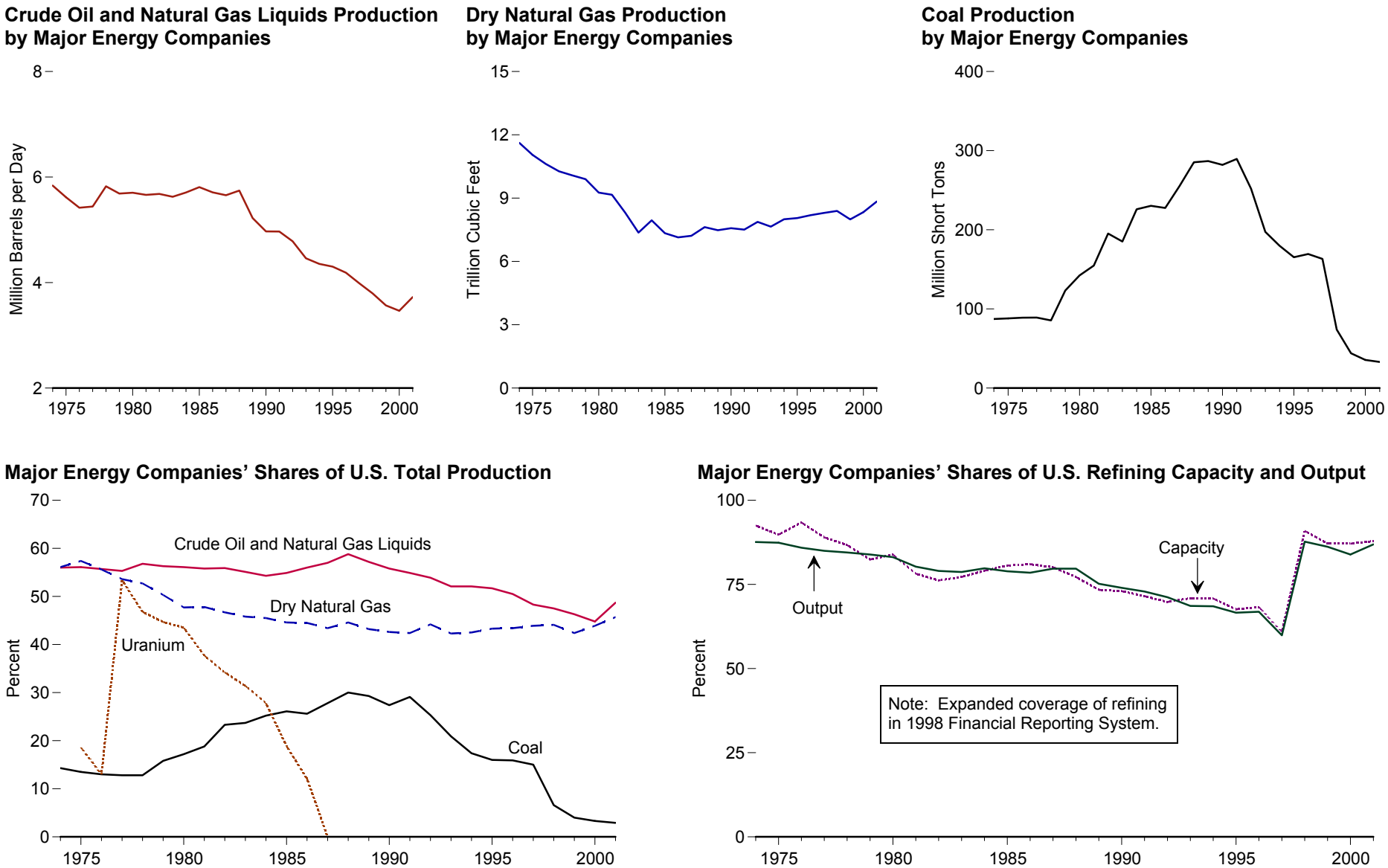
[1] Includes petroleum preparations, liquefied propane and butane and since 1997 other mineral fuels.
[2] In chained (1996) dollars, calculated by using gross domestic product implicit price deflators. See Table D1.
[3] There is a discontinuity in this time series between 1996 and 1997 due to the addition of the commodity category "other mineral fuels."

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

Notes: • Net imports = imports minus exports. • 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.

Sources: Tables 3.5 and 3.6.

Figure 3.8 Major U.S. Energy Companies' Domestic Production and Refining, 1974-2001



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.

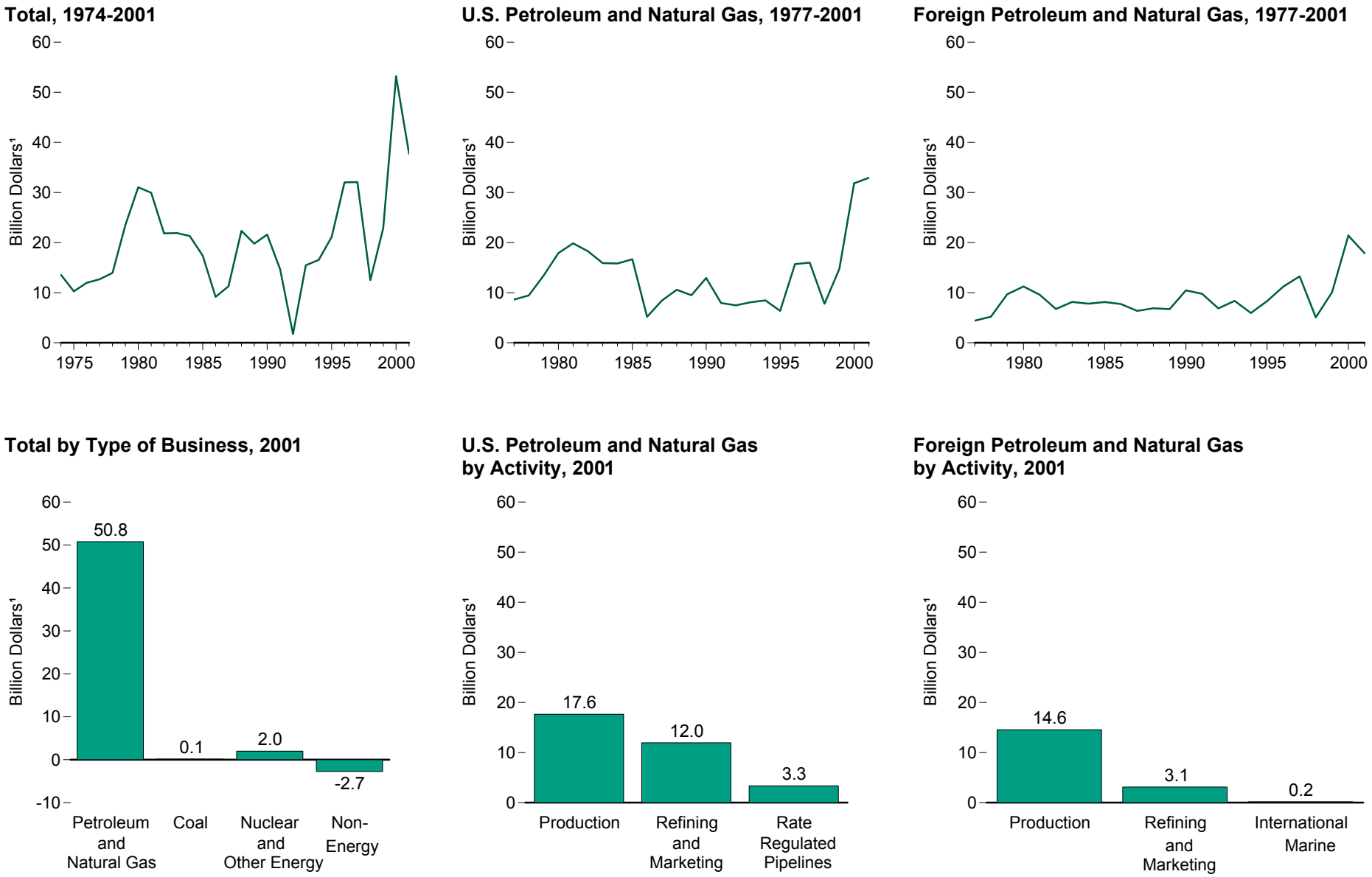
Source: Table 3.8.

Table 3.8 Major U.S. Energy Companies' Domestic Production and Refining, 1974-2001

Year	Production				Refining	
	Crude Oil and Natural Gas Liquids (million barrels per day)	Dry Natural Gas (trillion cubic feet)	Coal [1] (million short tons)	Uranium (million pounds U_3O_8)	Capacity [2,3] (million barrels per day)	Output [3] (million barrels per day)
1974	5.9	11.6	87.4	NA	13.3	11.8
1975	5.6	11.0	88.1	4.3	13.4	12.0
1976	5.4	10.6	89.0	3.3	14.2	12.6
1977	5.5	10.3	89.1	16.0	14.6	13.5
1978	5.8	10.1	85.5	17.3	14.8	13.5
1979	5.7	9.9	123.3	16.7	14.4	13.2
1980	5.7	9.3	142.3	19.0	15.1	12.2
1981	5.7	9.2	154.8	14.5	14.6	11.2
1982	5.7	8.3	195.2	9.2	13.6	10.6
1983	5.6	7.4	185.2	6.6	13.0	10.3
1984	5.7	7.9	226.0	4.1	12.8	10.9
1985	5.8	7.3	230.4	2.1	12.6	10.8
1986	5.7	7.1	227.6	1.6	12.5	11.4
1987	5.7	7.2	255.3	0.0	12.5	11.7
1988	5.7	7.6	285.3	0.0	12.3	12.0
1989	5.2	7.5	286.9	0.0	11.5	11.4
1990	5.0	7.6	282.0	0.0	11.4	11.3
1991	5.0	7.5	289.6	0.0	11.2	11.1
1992	4.8	7.9	251.9	0.0	11.0	11.0
1993	4.5	7.7	197.3	0.0	10.7	10.8
1994	4.4	8.0	179.7	0.0	10.6	10.8
1995	4.3	8.1	165.4	0.0	10.4	10.7
1996	4.2	8.2	169.4	0.0	10.5	11.0
1997	4.0	8.3	163.3	0.0	9.4	10.0
1998	3.8	8.4	73.9	0.0	[4]14.3	[4]14.9
1999	3.6	8.0	44.0	0.0	14.2	14.6
2000	3.5	[R]8.3	35.5	0.0	14.4	14.5
2001	3.7	8.8	33.0	0.0	14.6	15.0
	Percent of U.S. Total					
1974	56.0	56.1	14.3	NA	92.5	87.6
1975	56.1	57.4	13.5	18.6	89.8	87.4
1976	55.7	55.6	13.0	13.0	93.4	85.9
1977	55.3	53.6	12.8	53.4	89.0	85.0
1978	56.8	52.7	12.8	46.8	86.7	84.5
1979	56.3	50.3	15.8	44.7	82.4	83.9
1980	56.1	47.7	17.2	43.5	83.9	83.1
1981	55.8	47.8	18.8	37.7	78.2	80.3
1982	55.9	46.7	23.3	34.2	76.2	79.0
1983	55.1	45.8	23.7	31.4	77.2	78.7
1984	54.3	45.5	25.2	27.8	79.1	79.8
1985	54.9	44.6	26.1	18.9	80.6	78.9
1986	56.0	44.5	25.6	12.1	81.0	78.5
1987	57.0	43.4	27.8	0.0	80.1	79.7
1988	58.8	44.6	30.0	0.0	77.2	79.7
1989	57.2	43.2	29.3	0.0	73.4	75.2
1990	55.8	42.6	27.4	0.0	73.0	74.0
1991	54.9	42.4	29.1	0.0	71.5	72.9
1992	53.9	44.2	25.3	0.0	69.8	71.2
1993	52.1	42.3	20.9	0.0	70.9	68.6
1994	52.1	42.5	17.4	0.0	70.8	68.5
1995	51.7	43.3	16.0	0.0	67.6	66.6
1996	50.5	43.4	15.9	0.0	68.3	66.9
1997	48.3	43.9	15.0	0.0	60.9	59.9
1998	47.5	44.1	6.6	0.0	[4]90.9	[4]87.7
1999	46.3	42.4	4.0	0.0	87.1	86.2
2000	44.8	[R]43.9	3.3	0.0	[R]87.1	83.9
2001	48.7	45.7	2.9	0.0	87.9	86.9

[1] Bituminous coal, subbituminous coal, and lignite.
[2] Operable capacity as of January 1 of the following year.
[3] Includes Puerto Rico and the Virgin Islands.
[4] There is a discontinuity in this time series between 1997 and 1998 due to the expanded coverage of the Financial Reporting System (FRS).
R=Revised. 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 FRS. See Table 3.12. • FRS Crude Oil and Natural Gas Liquids and Dry Natural Gas production are on a net ownership interest basis (see Glossary).
Web Page: 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



[1] Nominal dollars.

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 3.9.

Table 3.9 Major U.S. Energy Companies' Net Income, 1974-2001

(Billion Dollars[1])

	U.S. Petroleum and Natural Gas				Foreign Petroleum and Natural Gas				Type of Business				
Year	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	R21.9	7.7	2.3	R31.8	R18.5	2.9	(s)	R21.4	R53.3	(s)	2.7	R3.6	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

[1] Nominal dollars.

[2] Total is sum of components shown, plus eliminations and nontraceables, which are defined in the glossary.

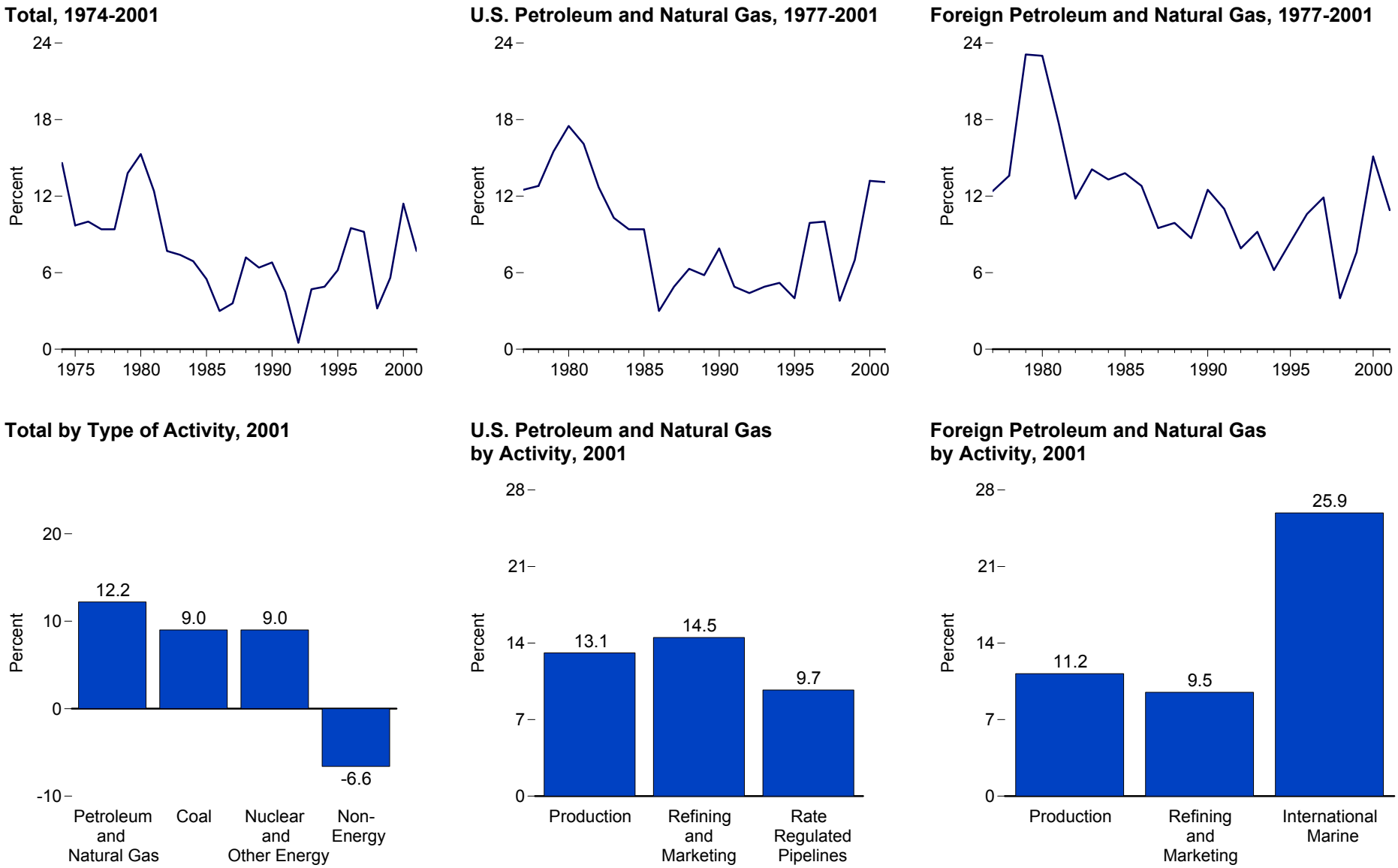
R=Revised. NA=Not available. (s)=Less than 0.05 billion and greater than -0.05 billion.

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 Financial Reporting System. See Table 3.12.

Web Page: http://www.eia.doe.gov/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



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, 1974-2001

(Percent)

	U.S. Petroleum and Natural Gas				Foreign Petroleum and Natural Gas				Type of Business				
Year	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	R17.7	9.6	R6.0	R13.2	R17.1	R8.7	6.4	R15.1	R13.9	1.7	11.0	R7.3	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

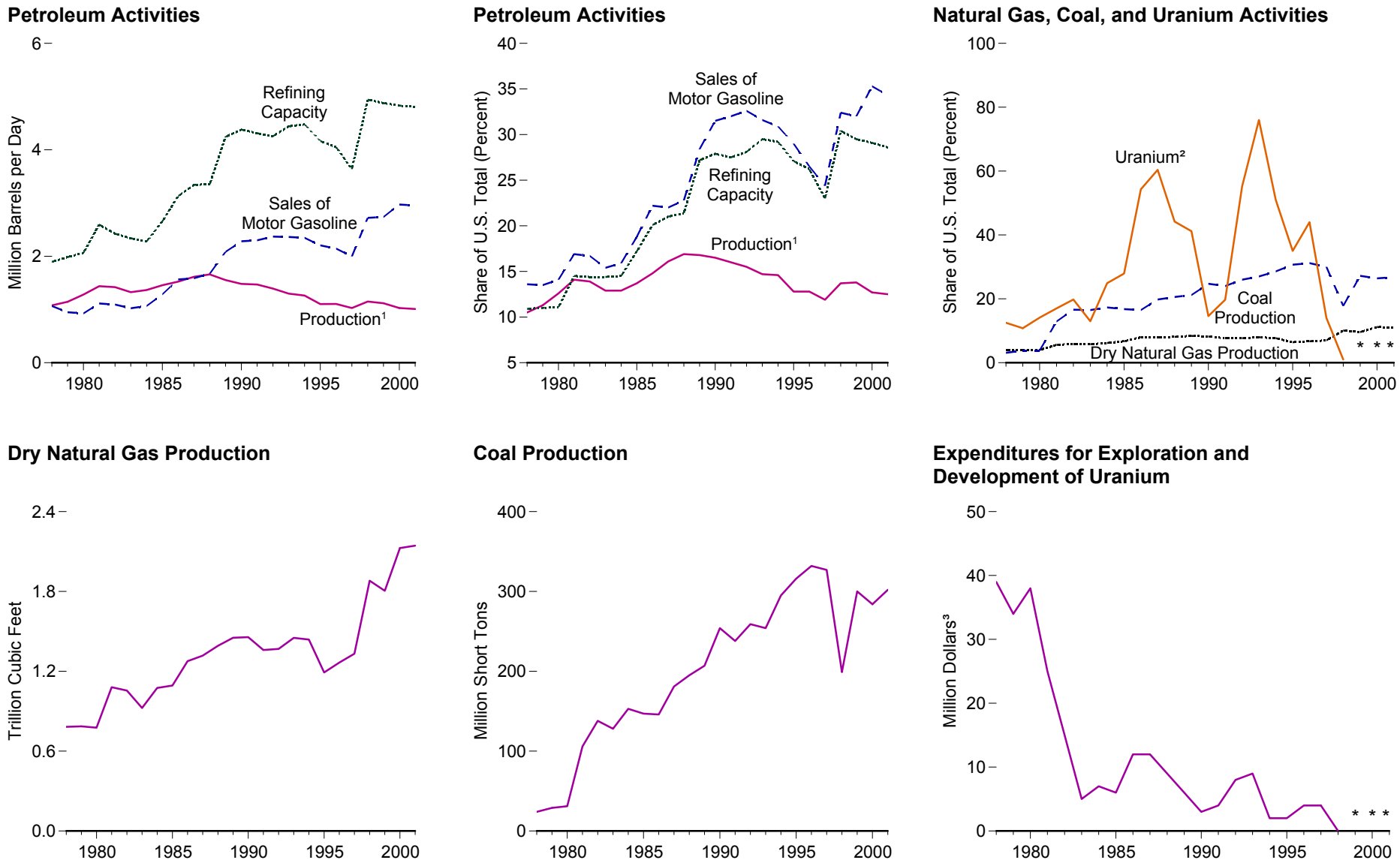
R=Revised. NA=Not available.

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. • Profitablity measured as contribution to net income/net investment in place.

Web Page: 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



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

[1] The uranium share is a percent of U.S. total uranium concentrate production.
[2] Nominal dollars.
[3] Includes a small amount produced by a U.S. company, which left the industry by the close of 1999.
R=Revised. (s)=Less than 0.5 million dollars. W=Value withheld to avoid disclosure of individual company data.
Web Page: 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, 1974-2001

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

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

Footnotes for Table 3.12

[1]American Petrofina, Inc. changed its name to Fina, Inc., effective April 17, 1991.
[2]Prior 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.
[3]Ashland was dropped from the FRS system for 1998 after spinning off downstream and coal operations and disposing of upstream operations.
[4]BP 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.
[5]Amoco 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.
[6]In 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.
[7]Formerly Standard Oil Company (Indiana).
[8]Burlington 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.
[9] Formerly Standard Oil Company of California.
[10]Chevron acquired Gulf Oil in 1984, but separate data for Gulf continued to be available for the full 1984 year.
[11]In October 2000, Chevron and Texaco agreed to merge. Both companies reported separately for 2000.
[12]Occidental acquired Cities Service in 1982. Separate financial reports were available for 1982, so each company continued to be treated separately until 1983.
[13]DuPont acquired Conoco in 1981. Separate data for Conoco were available for 1981; DuPont was included in the FRS system in 1982.
[14]Dupont was dropped from the FRS system when Conoco was spunoff in 1998. Conoco began reporting separately again in 1998.
[15]In November 2001, Phillips and Conoco agreed to merge. Both companies reported separately in 2001.
[16] In 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.
[17]Equilon 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.
[18]In December 1998, Exxon and Mobil agreed to merge. Both companies reported separately for 1998.
[19] Texaco acquired Getty in 1984; however, Getty was treated as a separate FRS company for that year.
[20]In 1998, Kerr-McGee and Oryx merged. The financial reporting for both was consolidated under Kerr-McGee for 1998.
[21]LYONDELL-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.
[22]U.S. Steel (now USX) acquired Marathon in 1982.
[23]Mobil acquired Superior in 1984, but both companies were treated separately for that year.
[24]Motiva 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.
[25]RTZ 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.
[26]Sun 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.
[27]In September 2001, Phillips acquired Tosco. Both companies reported separately in 2001.
[28]In May 2000, Clark Refining & Marketing changed its name to Premcor Refining Group.
[29]Sun 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.
[30]Tenneco 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.
[31]Effective June 1, 1991, Total's exploration, production, and marketing operations in Canada were spun off to Total Oil & Gas, a new public entity.
[32]In December 2001, Valero and Ultramar Diamond Shamrock agreed to merge. Both companies reported separately in 2001.
[33]Effective 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.
[34]Union 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.

Financial Indicators

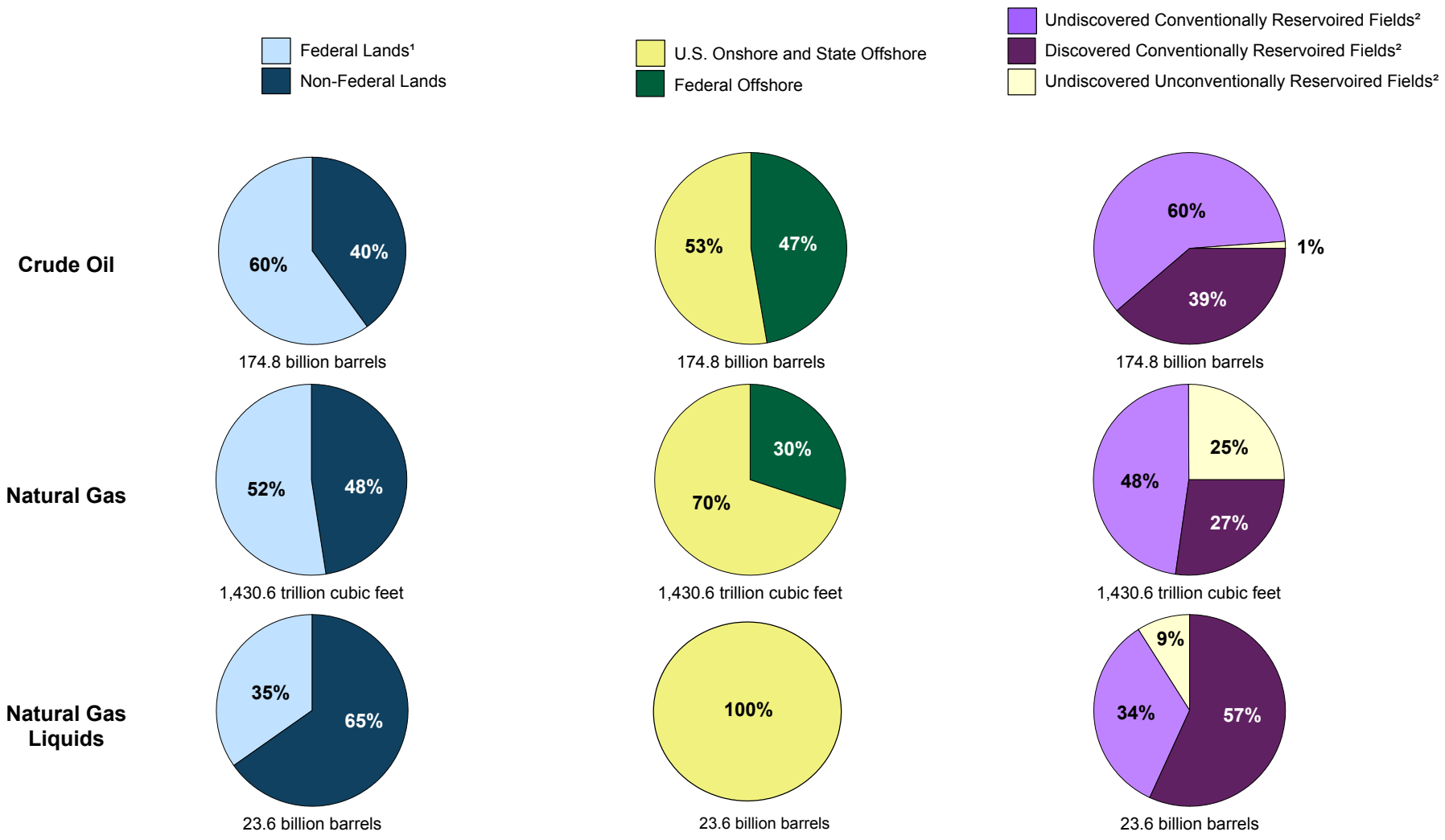
Table 3.5 Sources: Natural Gas: • 1949-1962—Bureau of the Census, *U.S. Imports of Merchandise for Consumption*, FT110. • 1963—Bureau of the Census, *U.S. Imports of Merchandise for Consumption*, FT125. • 1964-1971—Bureau of the Census, *U.S. Imports for Consumption and General Imports*, FT246. • 1972 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, "Exports and Imports of Goods by Principal SITC Commodity Groupings," December issues. Coal: Bureau of the Census, Foreign Trade Division, unpublished data.

4

Energy Resources

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

Figure 4.1 Technically Recoverable Petroleum Resource Estimates as of 2002



[1] Lands owned or under the jurisdiction of the Federal government.
[2] See Note 1 at end of section.

Source: Table 4.1

Table 4.1 Technically Recoverable Petroleum Resource Estimates as of 2002

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	**82.54**	**22.51**	**105.05**	**420.14**	**261.78**	**681.92**	**1.80**	**6.25**	**8.05**
Alaska Onshore and State Offshore	3.75	4.68	8.43	33.97	95.37	129.34	0.54	0.61	1.15
Alaska Federal Offshore	24.90	—	24.90	122.60	—	122.60	0.00	—	0.00
48 States Onshore and State Offshore	3.79	17.83	21.62	23.97	166.41	190.38	1.26	5.64	6.90
48 States Federal Offshore	50.10	—	50.10	239.60	—	239.60	0.00	—	0.00
Discovered Conventionally Reservoired Fields (Ultimate Recovery Appreciation) [2]	**22.03**	**45.67**	**67.70**	**186.70**	**203.30**	**390.00**	**4.94**	**8.46**	**13.40**
U.S. Onshore and State Offshore	14.33	45.67	60.00	118.70	203.30	322.00	4.94	8.46	13.40
U.S. Federal Offshore	7.70	—	7.70	68.00	—	68.00	0.00	—	0.00
Undiscovered Unconventionally Reservoired Fields (Continuous-Type Deposits (all onshore))	**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	22.19	69.93	92.12	319.80	680.63	1,000.43	8.19	15.38	23.57
Federal Offshore	82.70	—	82.70	430.20	—	430.20	0.00	—	0.00

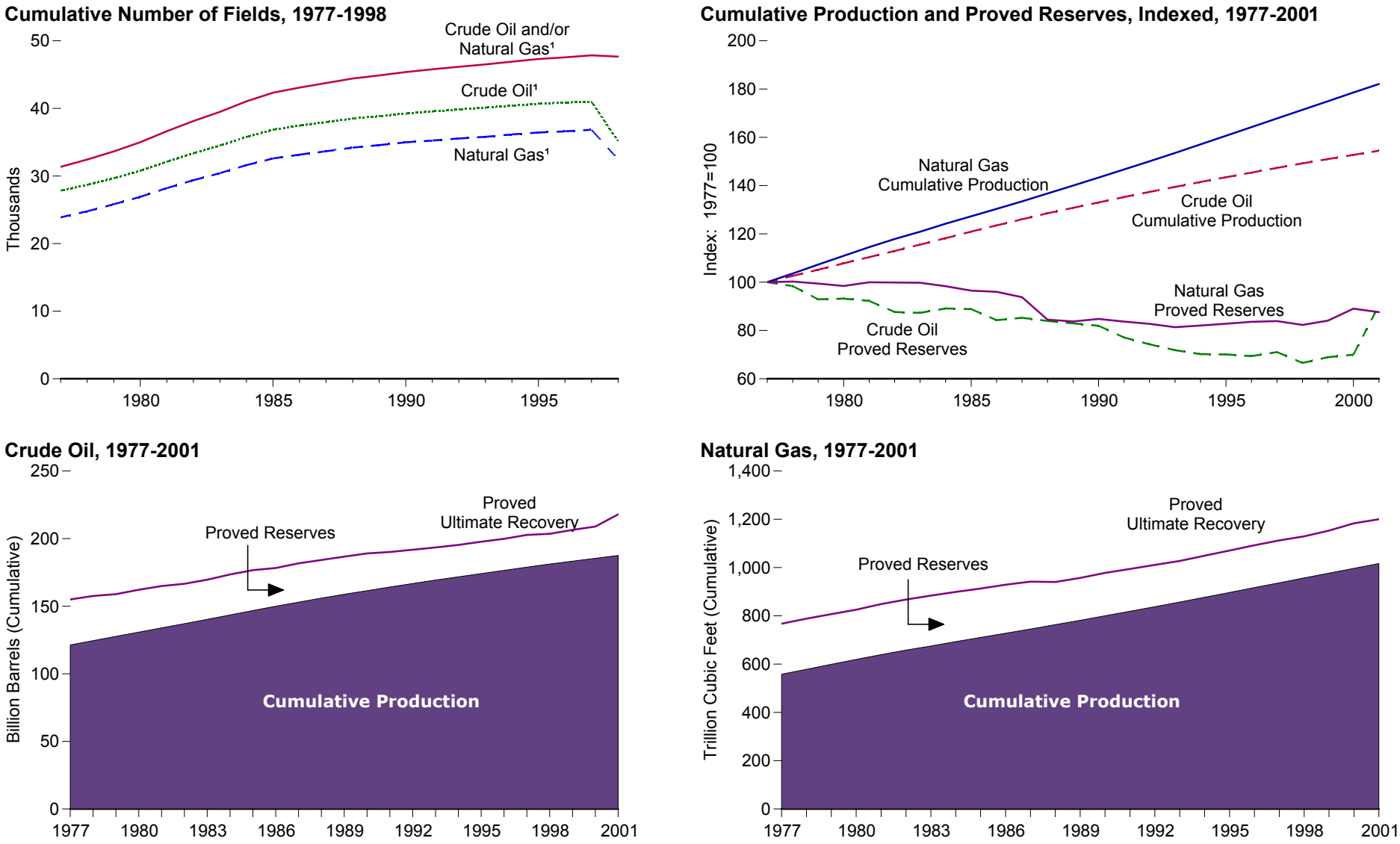
[1] Lands owned or under the jurisdiction of the Federal government.
[2] Proved Reserves are excluded from these estimates.
— = Not applicable.

Notes: • See Note 1 at end of section. • 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. • Onshore indicates estimates for all Onshore plus State Offshore waters (near-shore, shallow-water areas under State jurisdiction). • Federal Onshore excludes Indian and Native lands even when Federally managed in trust. • The estimates of ultimate recovery appreciation for Onshore and State Offshore lands were imputed by assuming that the total estimates reported by the USGS could be apportioned according to the ratio of 1996 production from onshore Federal lands to total U.S. production. • Federal Offshore indicates MMS estimates for Federal Offshore jurisdictions (Outer Continental Shelf and deeper water areas seaward of State Offshore). • 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.

Web Page: http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html.

Source: Energy Information Administration, *U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves 2001 Annual Report* (November 2002), 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 Ultimate Recovery



[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 Ultimate Recovery, 1977-2001

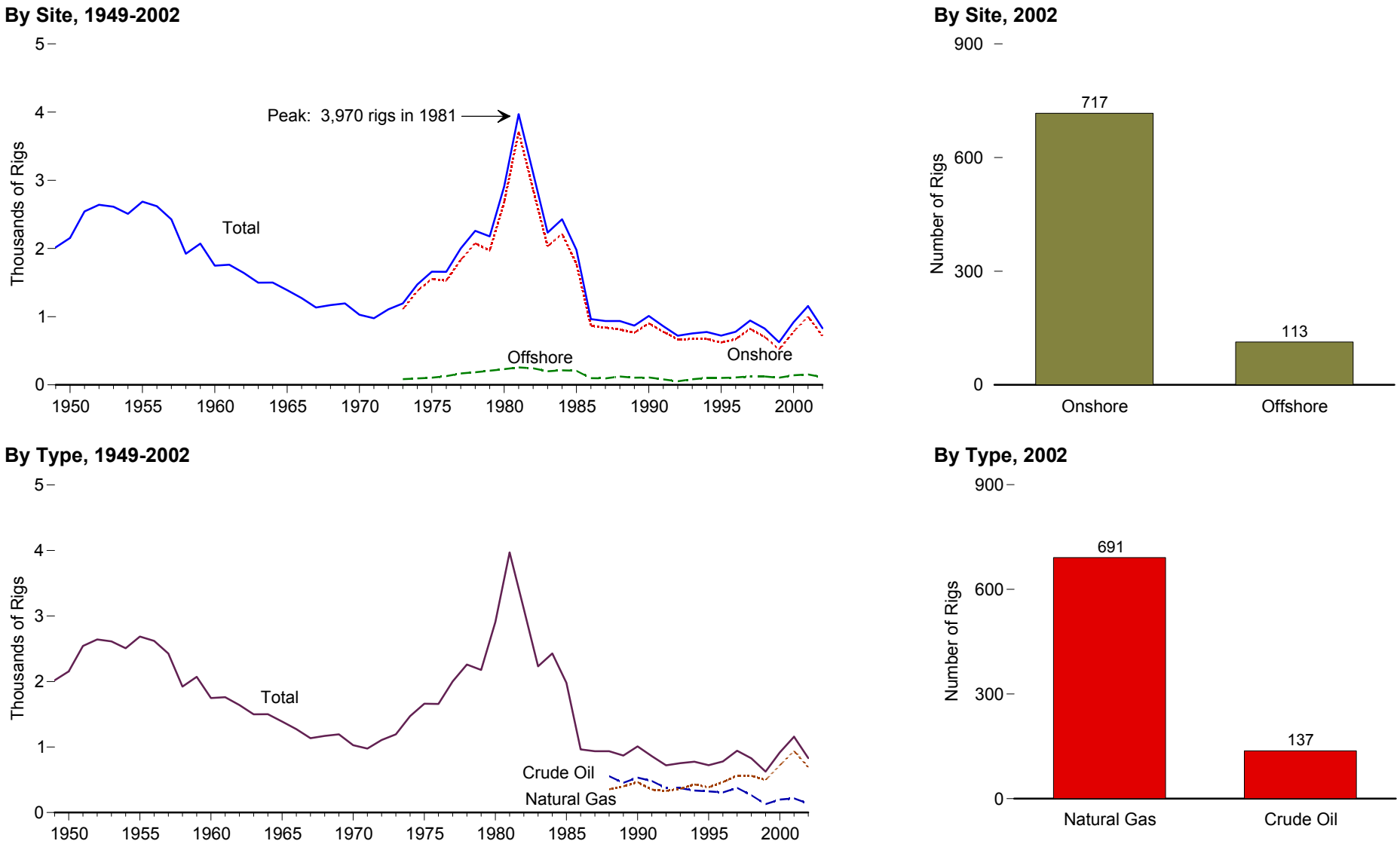
Year	Cumulative Number of Fields with Crude Oil and/or Natural Gas	Cumulative Number of Fields with Crude Oil	Crude Oil and Lease Condensate (billion barrels)			Cumulative Number of Fields with Natural Gas	Natural Gas [1] (trillion cubic feet)		
			Cumulative Production	Proved Reserves	Proved Ultimate 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	30.4	217.9	NA	1,016.7	183.5	1,200.2

[1] Wet, after lease separation.
[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.
NA=Not available.
Note: Data are at end of year.
Web Page: http://www.eia.doe.gov/oil_gas/natural_gas/nat_frame.html.

Sources: **Cumulative Production:** Calculated from Energy Information Administration (EIA), *Petroleum Supply Annual,* annual reports and *Natural Gas Annual,* annual reports. **Proved Reserves:**
- 1977-2000—EIA, *U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves,* annual reports.
- 2001—EIA, *U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves* (November 2002), Tables 6, 9, and 15.

Field Counts: EIA, *Oil and Gas Field Code Master List,* annual reports, and EIA, Office of Oil and Gas, Oil and Gas Integrated Field File.

Figure 4.3 Crude Oil and Natural Gas Rotary Rigs in Operation



Source: Table 4.3.

Table 4.3 Crude Oil and Natural Gas Rotary Rigs in Operation, 1949-2002

Year	By Site		By Objective		Total [1]
	Onshore	Offshore	Crude Oil	Natural Gas	
1949	NA	NA	NA	NA	2,017
1950	NA	NA	NA	NA	2,154
1951	NA	NA	NA	NA	2,543
1952	NA	NA	NA	NA	2,641
1953	NA	NA	NA	NA	2,613
1954	NA	NA	NA	NA	2,508
1955	NA	NA	NA	NA	2,686
1956	NA	NA	NA	NA	2,620
1957	NA	NA	NA	NA	2,426
1958	NA	NA	NA	NA	1,922
1959	NA	NA	NA	NA	2,071
1960	NA	NA	NA	NA	1,748
1961	NA	NA	NA	NA	1,761
1962	NA	NA	NA	NA	1,641
1963	NA	NA	NA	NA	1,499
1964	NA	NA	NA	NA	1,501
1965	NA	NA	NA	NA	1,388
1966	NA	NA	NA	NA	1,272
1967	NA	NA	NA	NA	1,135
1968	NA	NA	NA	NA	1,169
1969	NA	NA	NA	NA	1,194
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

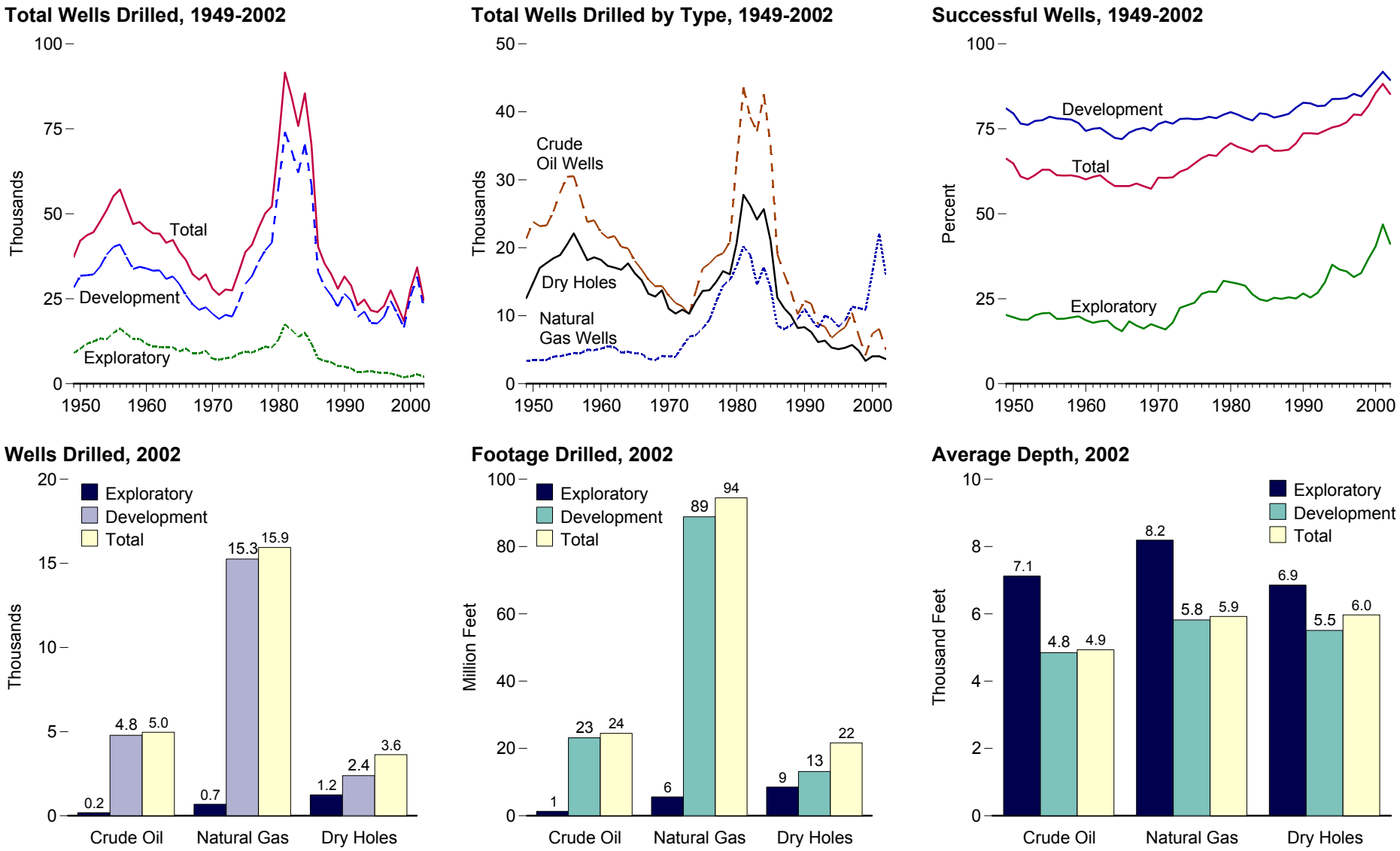
[1] Sum of rigs drilling for crude oil, rigs drilling for natural gas, and other rigs (not shown) drilling for miscellaneous purposes such as service wells, injection wells, and stratigraphic tests.

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.

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

Figure 4.4 Crude Oil and Natural Gas Exploratory and Development Wells



Sources: Tables 4.4–4.6.

Table 4.4 Crude Oil and Natural Gas Exploratory and Development Wells, 1949-2002

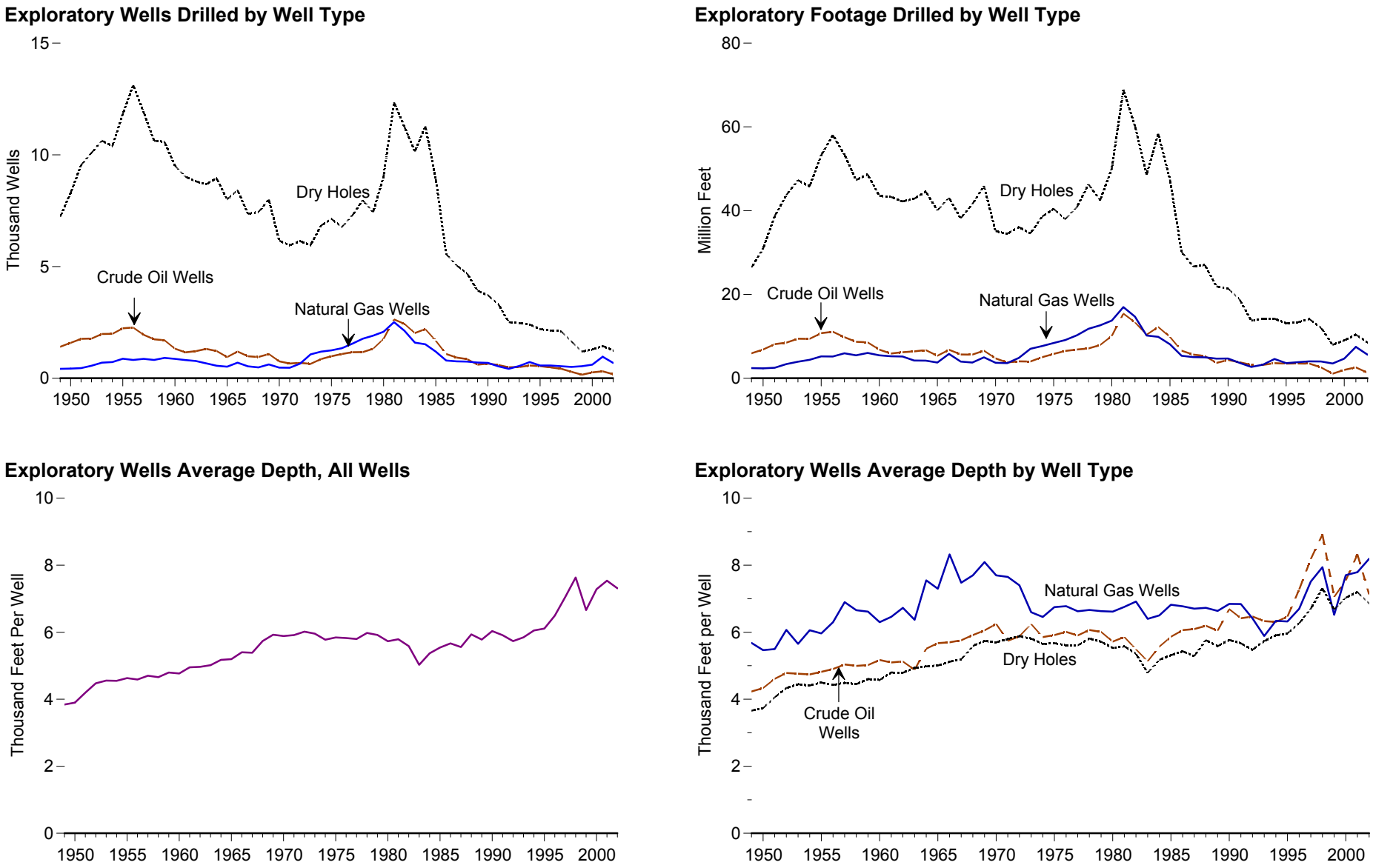
Year	Wells Drilled				Successful Wells (percent)	Footage Drilled (thousand feet)				Average Depth (feet per well)			
	Crude Oil	Natural Gas	Dry Holes	Total		Crude Oil	Natural Gas	Dry Holes	Total	Crude Oil	Natural Gas	Dry Holes	Total
1949	21,352	3,363	12,597	37,312	66.2	79,428	12,437	43,754	135,619	3,720	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
1951	23,179	3,438	17,026	43,643	61.0	95,106	13,947	63,093	172,146	4,103	4,056	3,706	3,944
1952	23,290	3,514	17,759	44,563	60.1	98,148	15,257	70,730	184,133	4,214	4,342	3,983	4,132
1953	25,323	3,968	18,449	47,740	61.4	102,136	18,248	73,862	194,245	4,033	4,599	4,004	4,069
1954	28,141	4,038	18,930	51,109	63.0	113,362	18,857	75,790	208,009	4,028	4,670	4,004	4,070
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
1956	30,528	4,531	22,111	57,170	61.3	120,352	22,738	90,190	233,280	3,942	5,018	4,079	4,080
1957	27,364	4,475	20,156	51,995	61.2	110,043	23,836	83,167	217,045	4,021	5,326	4,126	4,174
1958	23,774	5,005	18,162	46,941	61.3	93,105	25,555	74,643	193,304	3,916	5,106	4,110	4,118
1959	24,043	4,931	18,589	47,563	60.9	94,611	26,606	79,476	200,694	3,935	5,396	4,275	4,220
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
1961	21,437	5,486	17,331	44,254	60.8	85,626	29,292	74,716	189,633	3,994	5,339	4,311	4,285
1962	21,727	5,353	17,078	44,158	61.3	88,431	28,949	77,253	194,634	4,070	5,408	4,524	4,408
1963	20,135	4,570	16,762	41,467	59.6	81,809	24,533	76,307	182,649	4,063	5,368	4,552	4,405
1964	19,905	4,694	17,694	42,293	58.2	80,463	25,598	81,360	187,420	4,042	5,453	4,598	4,431
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
1966	16,780	4,377	15,227	36,384	58.1	67,340	25,948	69,636	162,924	4,013	5,928	4,573	4,478
1967	15,329	3,659	13,246	32,234	58.9	58,634	21,581	61,142	141,357	3,825	5,898	4,616	4,385
1968	14,331	3,456	12,812	30,599	58.1	59,517	20,716	64,737	144,970	4,153	5,994	5,053	4,738
1969	14,368	4,083	13,736	32,187	57.3	61,582	24,162	71,364	157,108	4,286	5,918	5,195	4,881
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[E]	7,064	[R]11,144	[R]4,840	[R]23,048	[R]79.0	[R]37,589	[R]74,349	[R]31,516	[R]143,454	[R]5,321	[R]6,672	[R]6,512	[R]6,224
1999[E]	[R]4,176	[R]10,877	3,364	[R]18,417	[R]81.7	[R]19,724	[R]58,660	[R]21,026	99,410	[R]4,723	[R]5,393	[R]6,250	[R]5,398
2000[E]	7,358	[R]16,455	4,025	[R]27,838	[R]85.5	[R]34,565	[R]83,636	[R]23,191	[R]141,392	[R]4,698	[R]5,083	[R]5,762	[R]5,079
2001[E]	[R]8,060	[R]22,083	[R]4,036	[R]34,179	[R]88.2	[R]41,899	[R]122,199	[R]25,870	[R]189,967	[R]5,198	[R]5,534	[R]6,410	[R]5,558
2002[E]	4,964	15,947	3,629	24,540	85.2	24,479	94,457	21,660	140,596	4,931	5,923	5,969	5,729

R=Revised. E=Estimate.

Notes: • This table depicts all wells; see Table 4.5 for exploratory wells and Table 4.6 for development wells. • 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. See Note 2 at end of section. • Totals may not equal sum of components due to independent rounding. Average depth may not equal average of components due to independent rounding.

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—Energy Information Administration (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, 1949-2002



Note: This figure depicts 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, 1949-2002

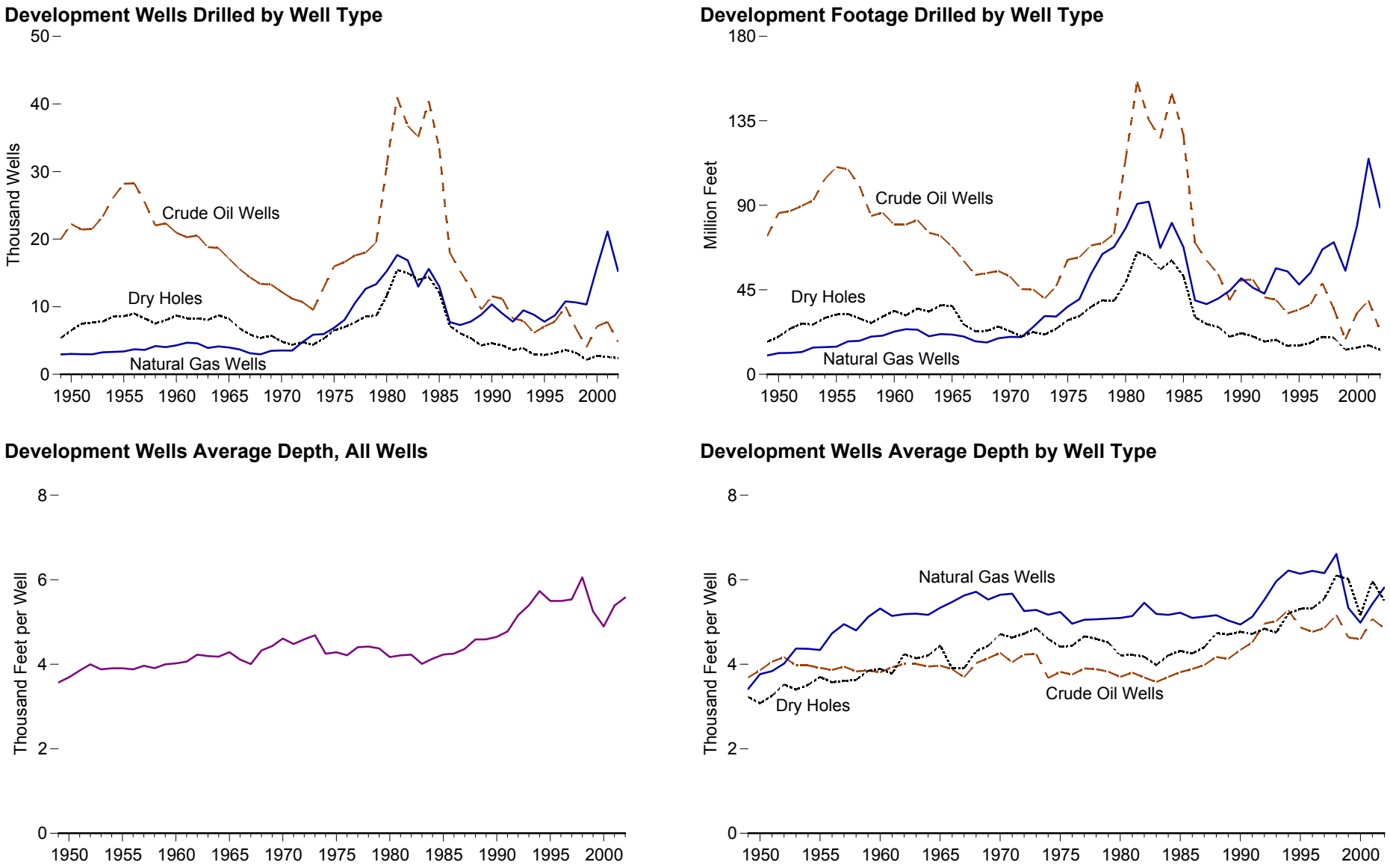
Year	Wells Drilled				Successful Wells (percent)	Footage Drilled (thousand feet)				Average Depth (feet per well)			
	Crude Oil	Natural Gas	Dry Holes	Total		Crude Oil	Natural Gas	Dry Holes	Total	Crude Oil	Natural Gas	Dry Holes	Total
1949	1,406	424	7,228	9,058	20.2	5,950	2,409	26,439	34,798	4,232	5,682	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
1951	1,763	454	9,539	11,756	18.9	8,125	2,496	38,723	49,344	4,609	5,497	4,059	4,197
1952	1,776	559	10,090	12,425	18.8	8,491	3,394	43,731	55,615	4,781	6,071	4,334	4,476
1953	1,981	699	10,633	13,313	20.1	9,432	3,952	47,280	60,664	4,761	5,654	4,447	4,557
1954	1,985	726	10,389	13,100	20.7	9,409	4,399	45,792	59,601	4,740	6,059	4,408	4,550
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
1956	2,267	822	13,118	16,207	19.1	11,111	5,179	58,047	74,337	4,901	6,301	4,425	4,587
1957	1,945	865	11,904	14,714	19.1	9,794	5,967	53,420	69,181	5,036	6,898	4,488	4,702
1958	1,745	822	10,632	13,199	19.4	8,712	5,472	47,300	61,484	4,993	6,657	4,449	4,658
1959	1,702	912	10,577	13,191	19.8	8,545	6,031	48,676	63,253	5,021	6,613	4,602	4,795
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
1961	1,157	813	9,022	10,992	17.9	5,900	5,250	43,293	54,442	5,099	6,457	4,799	4,953
1962	1,211	771	8,815	10,797	18.4	6,205	5,187	42,223	53,616	5,124	6,728	4,790	4,966
1963	1,314	664	8,686	10,664	18.5	6,409	4,230	42,847	53,485	4,878	6,370	4,933	5,016
1964	1,219	557	8,951	10,727	16.6	6,715	4,204	44,578	55,497	5,509	7,547	4,980	5,174
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
1966	1,196	698	8,419	10,313	18.4	6,817	5,808	43,084	55,709	5,700	8,321	5,117	5,402
1967	986	532	7,360	8,878	17.1	5,678	3,979	38,182	47,839	5,758	7,478	5,188	5,388
1968	954	486	7,439	8,879	16.2	5,642	3,741	41,575	50,958	5,914	7,697	5,589	5,739
1969	1,084	616	8,001	9,701	17.5	6,563	4,985	45,918	57,466	6,054	8,092	5,739	5,924
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[E]	291	504	1,647	2,442	32.6	[R]2,594	[R]4,002	[R]12,039	[R]18,635	[R]8,913	[R]7,941	[R]7,310	[R]7,631
1999[E]	154	[R]539	1,195	[R]1,888	[R]36.7	[R]1,086	[R]3,514	[R]7,977	[R]12,577	[R]7,051	[R]6,520	[R]6,675	[R]6,661
2000[E]	[R]264	[R]609	1,288	[R]2,161	[R]40.4	[R]1,992	[R]4,690	[R]9,058	[R]15,740	[R]7,544	[R]7,702	[R]7,033	[R]7,284
2001[E]	[R]310	[R]961	[R]1,444	[R]2,715	[R]46.8	[R]2,580	[R]7,488	[R]10,394	[R]20,462	[R]8,321	[R]7,791	[R]7,198	[R]7,536
2002[E]	184	685	1,243	2,112	41.1	1,311	5,612	8,520	15,443	7,126	8,193	6,855	7,312

R=Revised. E=Estimate.

Notes: • This table depicts exploratory wells only; see Table 4.4 for all wells and Table 4.6 for development wells only. • 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. See Note 2 at end of section. • Totals may not equal sum of components due to independent rounding. Average depth may not equal average of components due to independent rounding.

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—Energy Information Administration (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, 1949-2002



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, 1949-2002

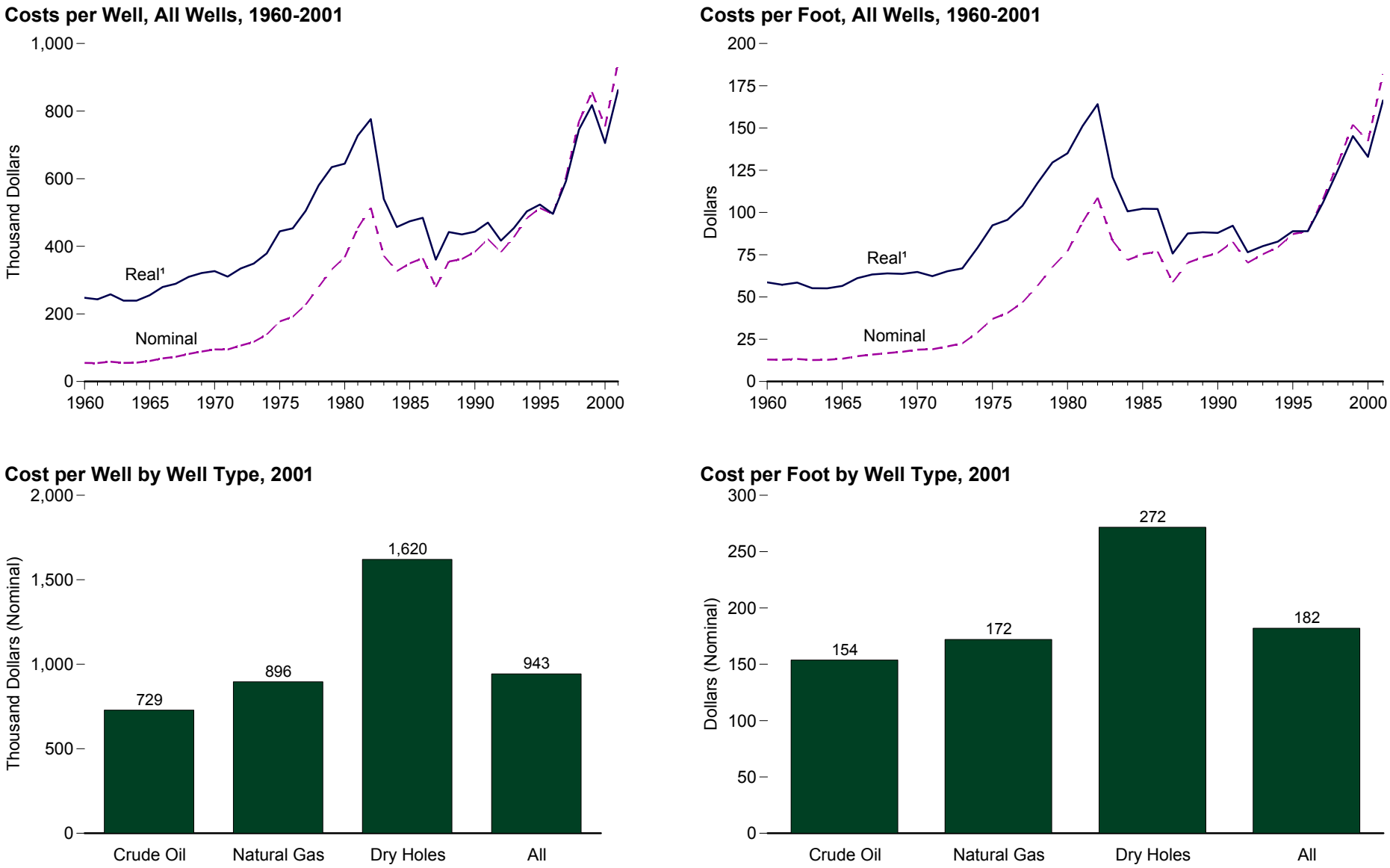
Year	Wells Drilled				Successful Wells (percent)	Footage Drilled (thousand feet)				Average Depth (feet per well)			
	Crude Oil	Natural Gas	Dry Holes	Total		Crude Oil	Natural Gas	Dry Holes	Total	Crude Oil	Natural Gas	Dry Holes	Total
1949	19,946	2,939	5,369	28,254	81.0	73,478	10,028	17,315	100,821	3,684	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
1951	21,416	2,984	7,487	31,887	76.5	86,981	11,451	24,370	122,802	4,061	3,837	3,255	3,851
1952	21,514	2,955	7,669	32,138	76.1	89,657	11,863	26,999	128,518	4,167	4,015	3,520	3,999
1953	23,342	3,269	7,816	34,427	77.3	92,704	14,296	26,582	133,581	3,972	4,373	3,401	3,880
1954	26,156	3,312	8,541	38,009	77.5	103,953	14,458	29,998	148,408	3,974	4,365	3,512	3,905
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
1956	28,261	3,709	8,993	40,963	78.0	109,241	17,559	32,143	158,943	3,865	4,734	3,574	3,880
1957	25,419	3,610	8,252	37,281	77.9	100,249	17,869	29,747	147,864	3,944	4,950	3,605	3,966
1958	22,029	4,183	7,530	33,742	77.7	84,393	20,083	27,343	131,820	3,831	4,801	3,631	3,907
1959	22,341	4,019	8,012	34,372	76.7	86,066	20,575	30,800	137,441	3,852	5,120	3,844	3,999
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
1961	20,280	4,673	8,309	33,262	75.0	79,726	24,042	31,423	135,191	3,931	5,145	3,782	4,064
1962	20,516	4,582	8,263	33,361	75.2	82,226	23,762	35,030	141,018	4,008	5,186	4,239	4,227
1963	18,821	3,906	8,076	30,803	73.8	75,400	20,303	33,460	129,164	4,006	5,198	4,143	4,193
1964	18,686	4,137	8,743	31,566	72.3	73,748	21,394	36,782	131,923	3,947	5,171	4,207	4,179
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
1966	15,584	3,679	6,808	26,071	73.9	60,523	20,140	26,552	107,215	3,884	5,474	3,900	4,112
1967	14,343	3,127	5,886	23,356	74.8	52,956	17,602	22,960	93,518	3,692	5,629	3,901	4,004
1968	13,377	2,970	5,373	21,720	75.3	53,875	16,975	23,162	94,012	4,027	5,716	4,311	4,328
1969	13,284	3,467	5,735	22,486	74.5	55,019	19,177	25,446	99,642	4,142	5,531	4,437	4,431
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[E]	6,773	[R]10,640	[R]3,193	[R]20,606	[R]84.5	[R]34,995	[R]70,347	[R]19,477	[R]124,819	[R]5,167	[R]6,612	[R]6,100	[R]6,057
1999[E]	[R]4,022	[R]10,338	2,169	[R]16,529	[R]86.9	[R]18,638	[R]55,146	[R]13,049	[R]86,833	[R]4,634	[R]5,334	[R]6,016	[R]5,253
2000[E]	[R]7,094	[R]15,846	2,737	[R]25,677	[R]89.3	[R]32,573	[R]78,946	[R]14,133	[R]125,652	[R]4,592	[R]4,982	[R]5,164	[R]4,894
2001[E]	[R]7,750	[R]21,122	[R]2,592	[R]31,464	[R]91.8	[R]39,319	[R]114,711	[R]15,476	[R]169,505	[R]5,073	[R]5,431	[R]5,971	[R]5,387
2002[E]	4,780	15,262	2,386	22,428	89.4	23,168	88,845	13,140	125,153	4,847	5,821	5,507	5,580

R=Revised. E=Estimate.

Notes: • This table depicts development wells only; see Table 4.4 for all wells and Table 4.5 for exploratory wells only. • 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. See Note 2 at end of section. • Totals may not equal sum of components due to independent rounding. Average depth may not equal average of components due to independent rounding.

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—Energy Information Administration (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



[1] In chained (1996) 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, 1960-2001

Year	Costs per Well (thousand dollars)					Costs per Foot (dollars)				
	Crude Oil (nominal)	Natural Gas (nominal)	Dry Holes (nominal)	All (nominal)	All (real) [1]	Crude Oil (nominal)	Natural Gas (nominal)	Dry Holes (nominal)	All (nominal)	All (real) [1]
1960	52.2	102.7	44.0	54.9	247.6	13.22	18.57	10.56	13.01	58.63
1961	51.3	94.7	45.2	54.5	243.0	13.11	17.65	10.56	12.85	57.26
1962	54.2	97.1	50.8	58.6	257.9	13.41	18.10	11.20	13.31	58.53
1963	51.8	92.4	48.2	55.0	239.2	13.20	17.19	10.58	12.69	55.17
1964	50.6	104.8	48.5	55.8	239.2	13.12	18.57	10.64	12.86	55.10
1965	56.6	101.9	53.1	60.6	255.0	13.94	18.35	11.21	13.44	56.52
1966	62.2	133.8	56.9	68.4	279.6	15.04	21.75	12.34	14.95	61.12
1967	66.6	141.0	61.5	72.9	289.2	16.61	23.05	12.87	15.97	63.35
1968	79.1	148.5	66.2	81.5	309.7	18.63	24.05	12.88	16.83	63.99
1969	86.5	154.3	70.2	88.6	321.0	19.28	25.58	13.23	17.56	63.65
1970	86.7	160.7	80.9	94.9	326.5	19.29	26.75	15.21	18.84	64.83
1971	78.4	166.6	86.8	94.7	310.3	18.41	27.70	16.02	19.03	62.35
1972	93.5	157.8	94.9	106.4	334.5	20.77	27.78	17.28	20.76	65.24
1973	103.8	155.3	105.8	117.2	348.7	22.54	27.46	19.22	22.50	66.96
1974	110.2	189.2	141.7	138.7	378.8	27.82	34.11	26.76	28.93	79.00
1975	138.6	262.0	177.2	177.8	444.1	34.17	46.23	33.86	36.99	92.41
1976	151.1	270.4	190.3	191.6	453.0	37.35	49.78	36.94	40.46	95.65
1977	170.0	313.5	230.2	227.2	504.6	41.16	57.57	43.49	46.81	103.98
1978	208.0	374.2	281.7	280.0	580.4	49.72	68.37	52.55	56.63	117.42
1979	243.1	443.1	339.6	331.4	634.2	58.29	80.66	64.60	67.70	129.57
1980	272.1	536.4	376.5	367.7	644.6	66.36	95.16	73.70	77.02	135.03
1981	336.3	698.6	464.0	453.7	727.4	80.40	122.17	90.03	94.30	151.19
1982	347.4	864.3	515.4	514.4	776.4	86.34	146.20	104.09	108.73	164.12
1983	283.8	608.1	366.5	371.7	539.7	72.65	108.37	79.10	83.34	120.99
1984	262.1	489.8	329.2	326.5	457.0	66.32	88.80	67.18	71.90	100.64
1985	270.4	508.7	372.3	349.4	474.1	66.78	93.09	73.69	75.35	102.25
1986	284.9	522.9	389.2	364.6	484.1	68.35	93.02	76.53	76.88	102.08
1987	246.0	380.4	259.1	279.6	360.4	58.35	69.55	51.05	58.71	75.68
1988	279.4	460.3	366.4	354.7	442.2	62.28	84.65	66.96	70.23	87.56
1989	282.3	457.8	355.4	362.2	435.0	64.92	86.86	67.61	73.55	88.33
1990	321.8	471.3	367.5	383.6	443.4	69.17	90.73	67.49	76.07	87.93
1991	346.9	506.6	441.2	421.5	470.1	73.75	93.10	83.05	82.64	92.17
1992	362.3	426.1	357.6	382.6	416.6	69.50	72.83	67.82	70.27	76.51
1993	356.6	521.2	387.7	426.8	453.8	67.52	83.15	72.56	75.30	80.06
1994	409.5	535.1	491.5	483.2	503.3	70.57	81.90	86.60	79.49	82.79
1995	415.8	629.7	481.2	513.4	523.4	78.09	95.97	84.60	87.22	88.91
1996	341.0	616.0	541.0	496.1	496.1	70.60	98.67	95.74	88.92	88.92
1997	445.6	728.6	655.6	603.9	592.4	90.48	117.55	115.09	107.83	105.77
1998	566.0	815.6	973.2	769.1	745.2	108.88	127.94	157.79	128.97	124.97
1999	783.0	798.4	1,115.5	856.1	R817.8	156.45	138.42	182.99	152.02	R145.21
2000	593.4	756.9	1,075.4	754.6	R705.9	125.96	138.39	181.83	142.16	R133.00
2001	729.1	896.5	1,620.4	943.2	862.0	153.72	172.05	271.63	181.94	166.28

[1] In chained (1996) dollars, calculated by using gross domestic product implicit price deflators. See Table D1.

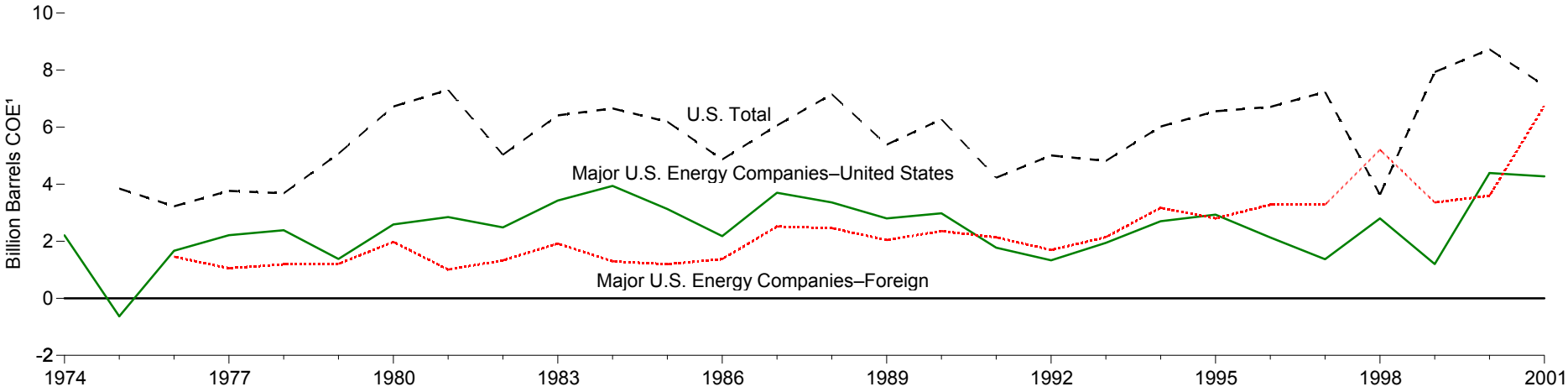
R=Revised.

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

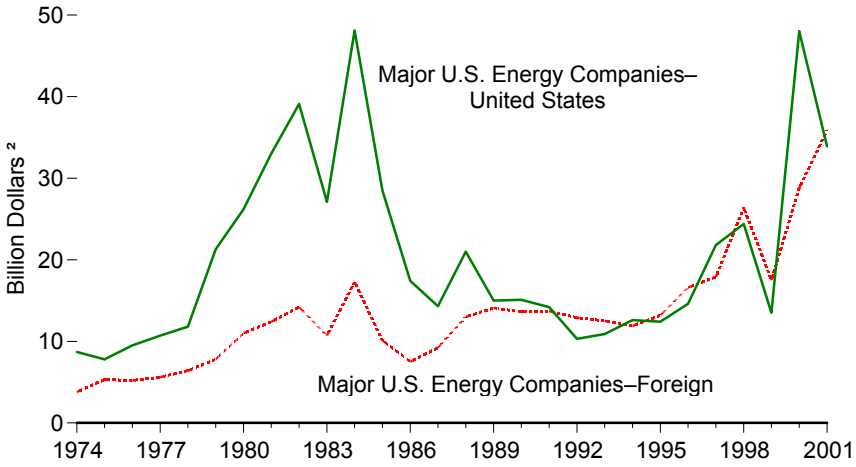
Source: American Petroleum Institute, Independent Petroleum Association of America, Mid-Continent Oil and Gas Association, *2002 Joint Association Survey on Drilling Costs.*

Figure 4.8 Gross Additions to Proved Reserves and Exploration and Development Expenditures by Geographic Area

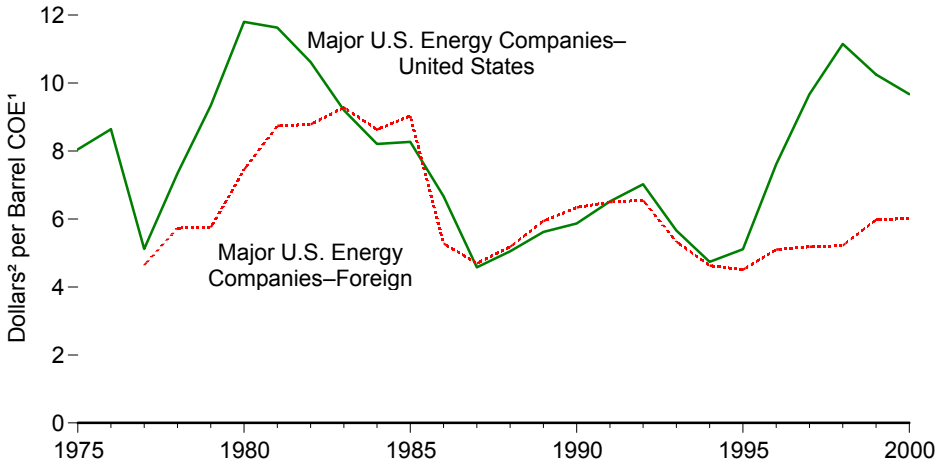
Gross Additions to Proved Reserves of Liquid and Gaseous Hydrocarbons, 1974-2001



Exploration and Development Expenditures, 1974-2001



Expenditures per Barrel of Reserve Additions, 1975-2000 Three-Year Moving Average



[1] Crude oil equivalent.
[2] Nominal dollars.

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 Gross Additions to Proved Reserves and Exploration and Development Expenditures by Geographic Area, 1974-2001

Year	Gross Additions to Proved Reserves [1] of Liquid and Gaseous Hydrocarbons [2] (million barrels COE [3])			Exploration and Development Expenditures (billion dollars [4])		Expenditures per Barrel of Reserve Additions, Three-Year Moving Average (dollars [4] per barrel COE [3])	
		Major U.S. Energy Companies [5]		Major U.S. Energy Companies [5]		Major U.S. Energy Companies [5]	
	U.S. Total	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	[6]1,208	21.3	7.8	9.34	[6]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	[7]10.62	[7]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	[7]8.21	[7]8.63
1985	6,190	[8]3,129	1,192	28.5	10.1	[8]8.27	9.03
1986	4,866	2,178	[6]1,375	17.4	7.5	6.67	[6]5.28
1987	6,059	[8]3,698	2,516	14.3	9.2	[8]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	[R]10.25	5.98
2000	8,725	[R]4,392	3,593	48.0	28.8	[R]9.67	[R]6.01
2001	7,449	4,271	6,744	33.9	35.9	NA	NA

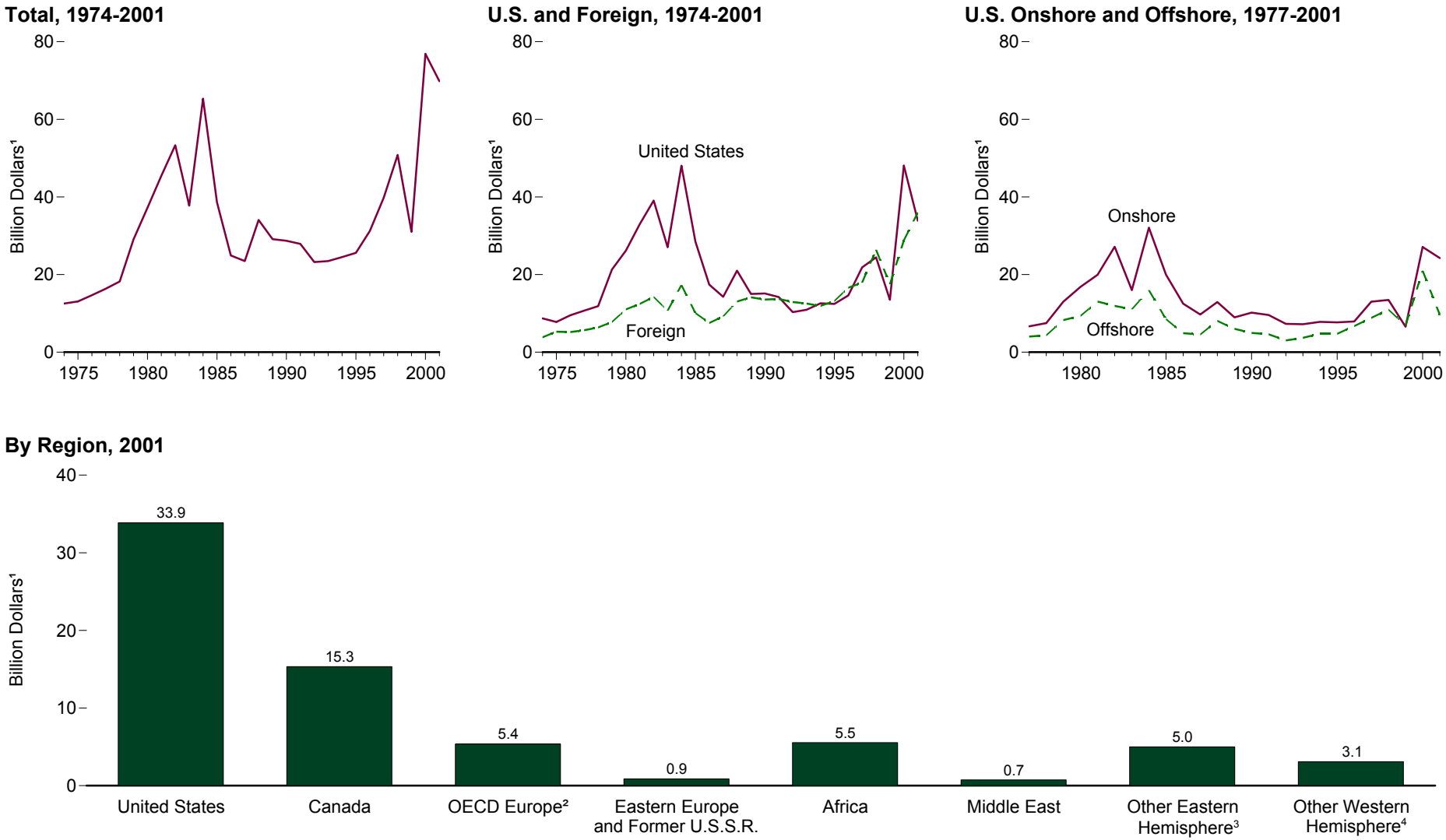
[1] Gross additions to proved reserves equal annual change in proved reserves plus annual production.
[2] Liquid and gaseous hydrocarbons include crude oil, natural gas liquids, and natural gas.
[3] Crude oil equivalent: converted to Btu on the basis of annual average conversion factors. See Appendix A.
[4] Nominal dollars.
[5] 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).
[6] 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.
[7] Data for 1982 and 1984 are adjusted to exclude purchases of proved reserves associated with mergers among the Financial Reporting System companies.
[8] 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: 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 of Liquid and Gaseous Hydrocarbons:** • 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 OECD Europe in Glossary.
[3] This region includes areas that are eastward of the Greenwich prime meridian to 180° longitude and that are not included in other specific 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 specific domestic or foreign classifications.

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 4.9.

Table 4.9 Major U.S. Energy Companies' Expenditures for Crude Oil and Natural Gas Exploration and Development by Region, 1974-2001

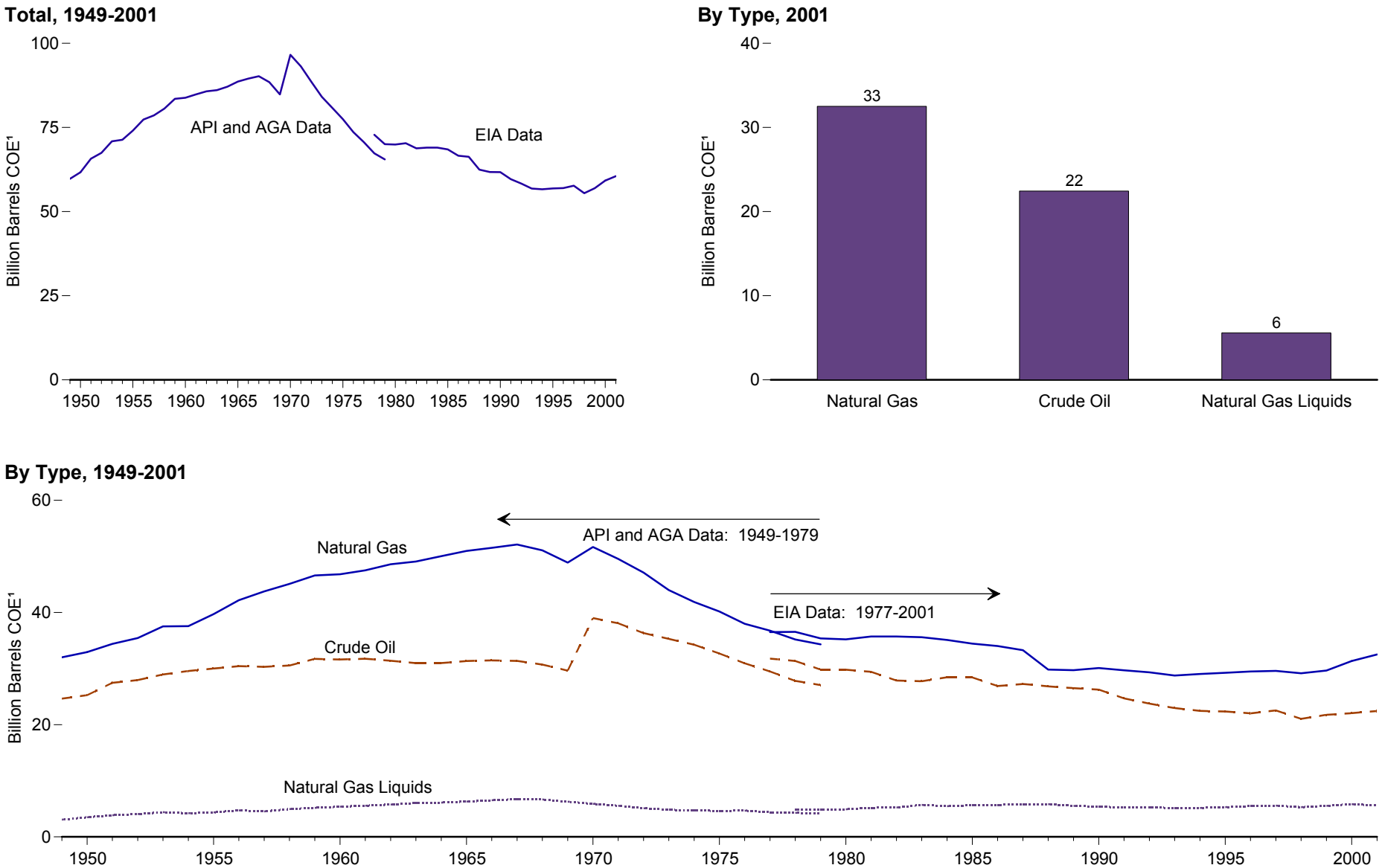
(Billion Dollars[1])

Year	United States			Foreign								Total
	Onshore	Offshore	Total	Canada	OECD [2] Europe	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

[1] Nominal dollars.
[2] Organization for Economic Cooperation and Development. See OECD Europe in 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.
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: 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 Liquid and Gaseous Hydrocarbon Proved Reserves



[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 Liquid and Gaseous Hydrocarbon Proved Reserves, 1949-2001

Year	Crude Oil	Natural Gas		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
1951	27.5	192.8	34.4	4.7	3.9	65.7
1952	28.0	198.6	35.4	5.0	4.1	67.5
1953	28.9	210.3	37.5	5.4	4.4	70.9
1954	29.6	210.6	37.6	5.2	4.2	71.3
1955	30.0	222.5	39.7	5.4	4.4	74.1
1956	30.4	236.5	42.2	5.9	4.7	77.3
1957	30.3	245.2	43.8	5.7	4.5	78.6
1958	30.5	252.8	45.1	6.2	5.0	80.6
1959	31.7	261.2	46.6	6.5	5.2	83.5
1960	31.6	262.3	46.8	6.8	5.4	83.8
1961	31.8	266.3	47.5	7.0	5.6	84.8
1962	31.4	272.3	48.6	7.3	5.8	85.7
1963	31.0	276.2	49.1	7.7	6.0	86.1
1964	31.0	281.3	50.0	7.7	6.1	87.1
1965	31.4	286.5	51.0	8.0	6.3	88.6
1966	31.5	289.3	51.5	8.3	6.5	89.5
1967	31.4	292.9	52.1	8.6	6.7	90.2
1968	30.7	287.3	51.1	8.6	6.7	88.5
1969	29.6	275.1	48.9	8.1	6.3	84.8
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

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

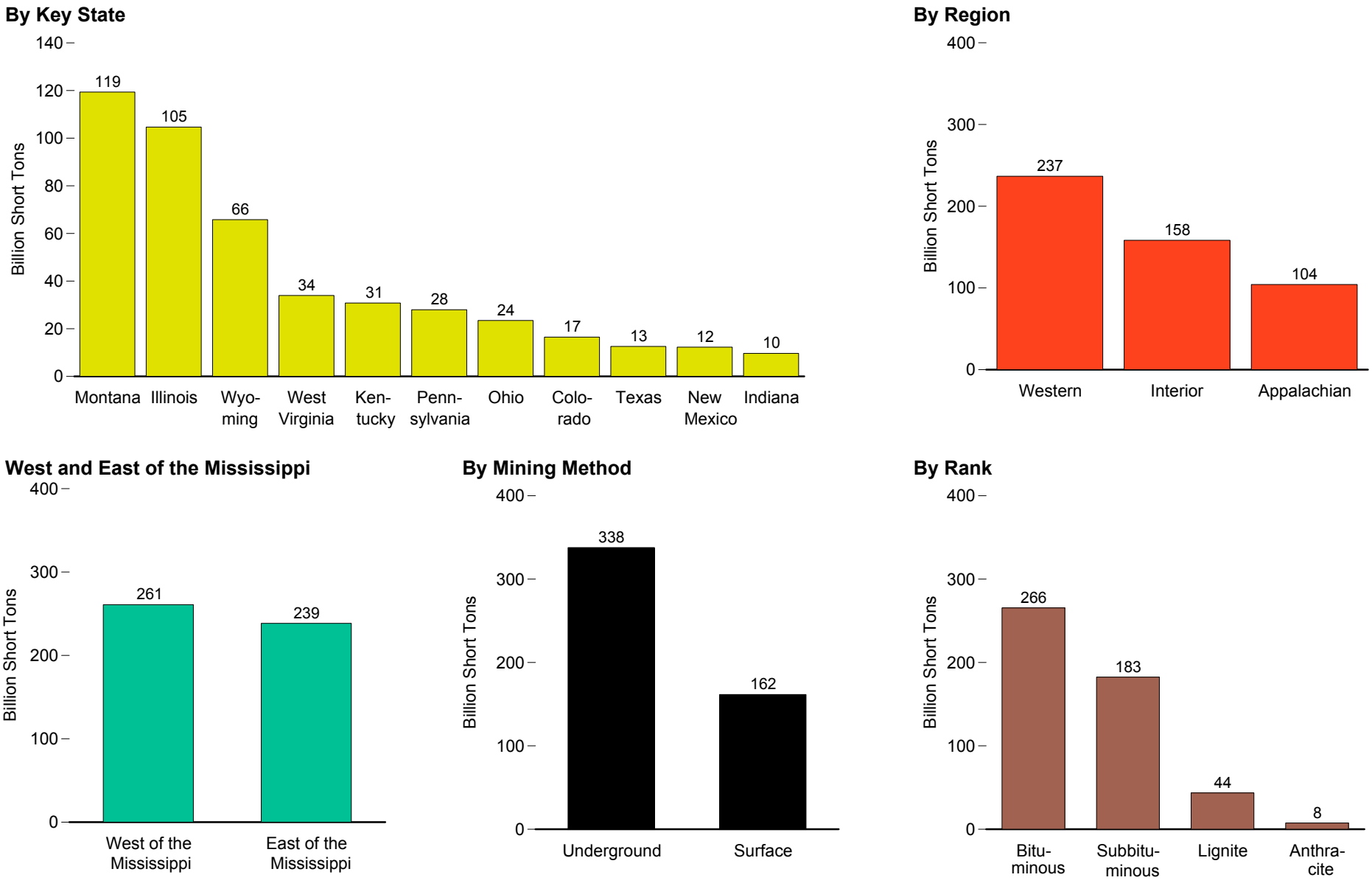
NA=Not available.

Note: Data are at end of year.

Web Page: http://www.eia.doe.gov/oil_gas/petroleum/pet_frame.html.

Sources: **API/AGA 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. **EIA 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 Annual Report 2001* (November 2002), Table 1.

Figure 4.11 Coal Demonstrated Reserve Base, January 1, 2002



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

Source: Table 4.11.

Table 4.11 Coal Demonstrated Reserve Base, January 1, 2002

(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**	**72.4**	**23.5**	**0.0**	**0.0**	**1.1**	**76.4**	**27.9**	**104.3**
Alabama	0.0	1.1	2.1	0.0	0.0	1.1	1.1	3.2	4.4
Kentucky, Eastern	0.0	1.6	9.5	0.0	0.0	0.0	1.6	9.5	11.1
Ohio	0.0	17.7	5.8	0.0	0.0	0.0	17.7	5.8	23.5
Pennsylvania	7.2	19.8	1.0	0.0	0.0	0.0	23.7	4.3	28.0
Virginia	0.1	1.2	0.6	0.0	0.0	0.0	1.3	0.6	1.9
West Virginia	0.0	29.9	4.1	0.0	0.0	0.0	29.9	4.1	34.0
Other [2]	0.0	1.1	0.3	0.0	0.0	0.0	1.1	0.3	1.5
Interior	**0.1**	**117.7**	**27.5**	**0.0**	**0.0**	**13.1**	**117.8**	**40.6**	**158.4**
Illinois	0.0	88.1	16.6	0.0	0.0	0.0	88.1	16.6	104.7
Indiana	0.0	8.8	0.9	0.0	0.0	0.0	8.8	0.9	9.7
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	3.7	0.0	0.0	0.0	16.0	3.7	19.7
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)**	**22.2**	**2.3**	**121.3**	**61.3**	**29.5**	**143.6**	**93.1**	**236.7**
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	16.5
Montana	0.0	1.4	0.0	69.6	32.7	15.8	71.0	48.5	119.4
New Mexico	(s)	2.7	0.9	3.5	5.2	0.0	6.2	6.1	12.3
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	5.6
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	22.8	0.0	42.5	23.3	65.8
Other [4]	0.0	0.1	0.0	(s)	(s)	0.4	0.1	0.4	0.5
U.S. Total	**7.5**	**212.3**	**53.3**	**121.3**	**61.3**	**43.7**	**337.8**	**161.6**	**499.4**
States East of the Mississippi River	7.3	185.5	44.6	0.0	0.0	1.1	189.5	49.0	238.5
States West of the Mississippi River	0.1	26.9	8.7	121.3	61.3	42.6	148.3	112.6	260.9

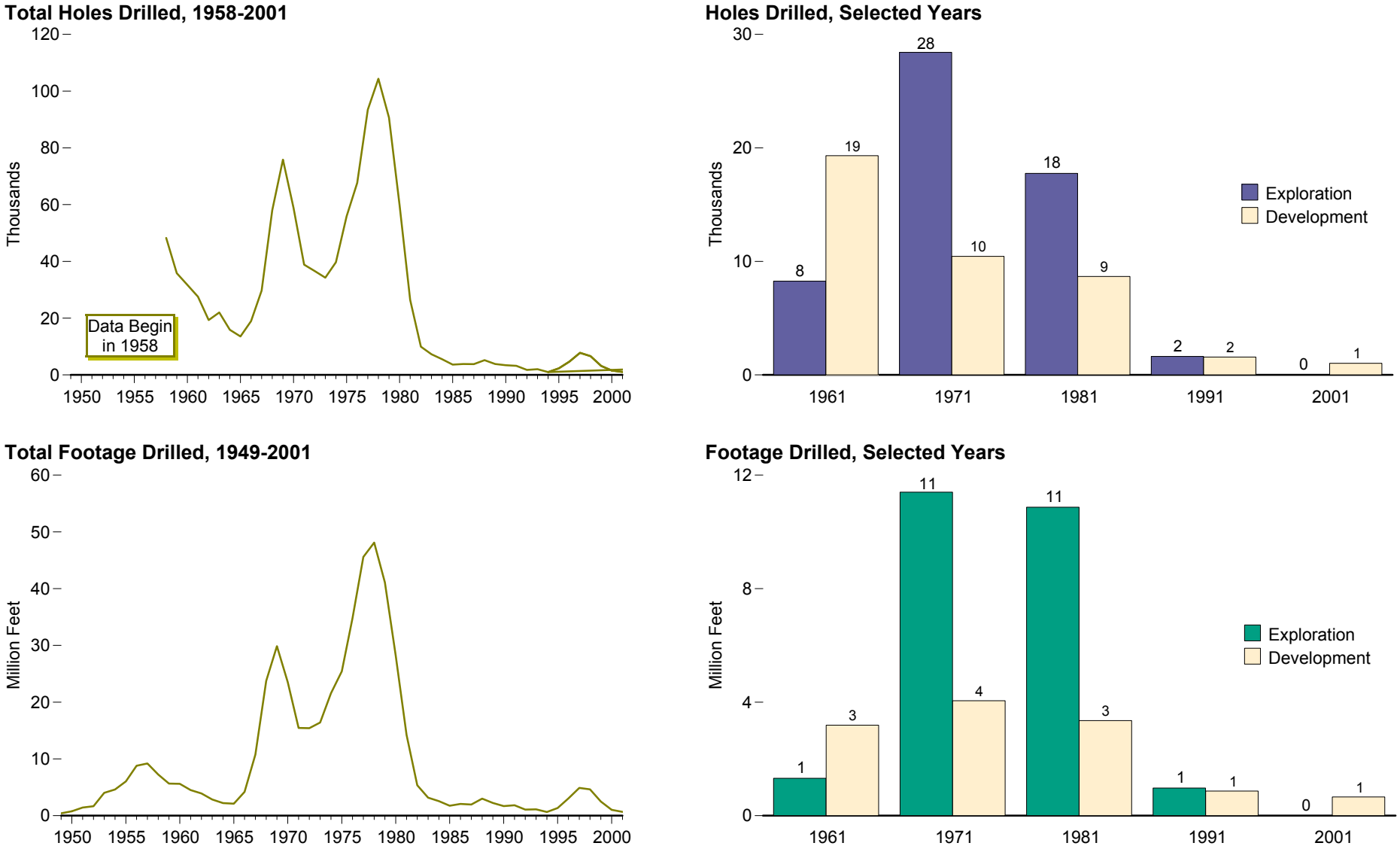
[1] Lignite resources are not mined underground in the United States.
[2] Georgia, Maryland, North Carolina, and Tennessee.
[3] Arkansas, Kansas, Louisiana, and Michigan.
[4] Arizona, Idaho, Oregon, and South Dakota.
(s)=Less than 0.05 billion short tons.

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, 2002. These coal resources are not totally recoverable. Net recoverability ranges from 0 percent 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: http://www.eia.doe.gov/fuelcoal.html.

Source: Energy Information Administration, Coal Reserves Database.

Figure 4.12 Uranium Exploration and Development Drilling



Source: Table 4.12.

Table 4.12 Uranium Exploration and Development Drilling, 1949-2002

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
1951	NA	1.08	NA	0.35	NA	1.43
1952	NA	1.36	NA	0.30	NA	1.66
1953	NA	3.65	NA	0.37	NA	4.02
1954	NA	4.06	NA	0.55	NA	4.61
1955	NA	5.27	NA	0.76	NA	6.03
1956	NA	7.29	NA	1.50	NA	8.79
1957	NA	7.35	NA	1.85	NA	9.20
1958	25.32	3.76	22.93	3.49	48.25	7.25
1959	16.25	2.37	19.59	3.28	35.84	5.65
1960	7.34	1.40	24.40	4.21	31.73	5.61
1961	8.26	1.32	19.31	3.19	27.57	4.51
1962	6.44	1.48	12.87	2.43	19.31	3.91
1963	8.47	0.88	13.53	1.98	22.01	2.86
1964	5.97	0.97	9.91	1.25	15.88	2.21
1965	6.23	1.16	7.33	0.95	13.56	2.11
1966	5.75	1.80	13.18	2.40	18.93	4.20
1967	12.79	5.44	16.95	5.33	29.74	10.76
1968	38.47	16.23	19.53	7.53	58.00	23.75
1969	47.85	20.47	28.01	9.39	75.86	29.86
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

[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.

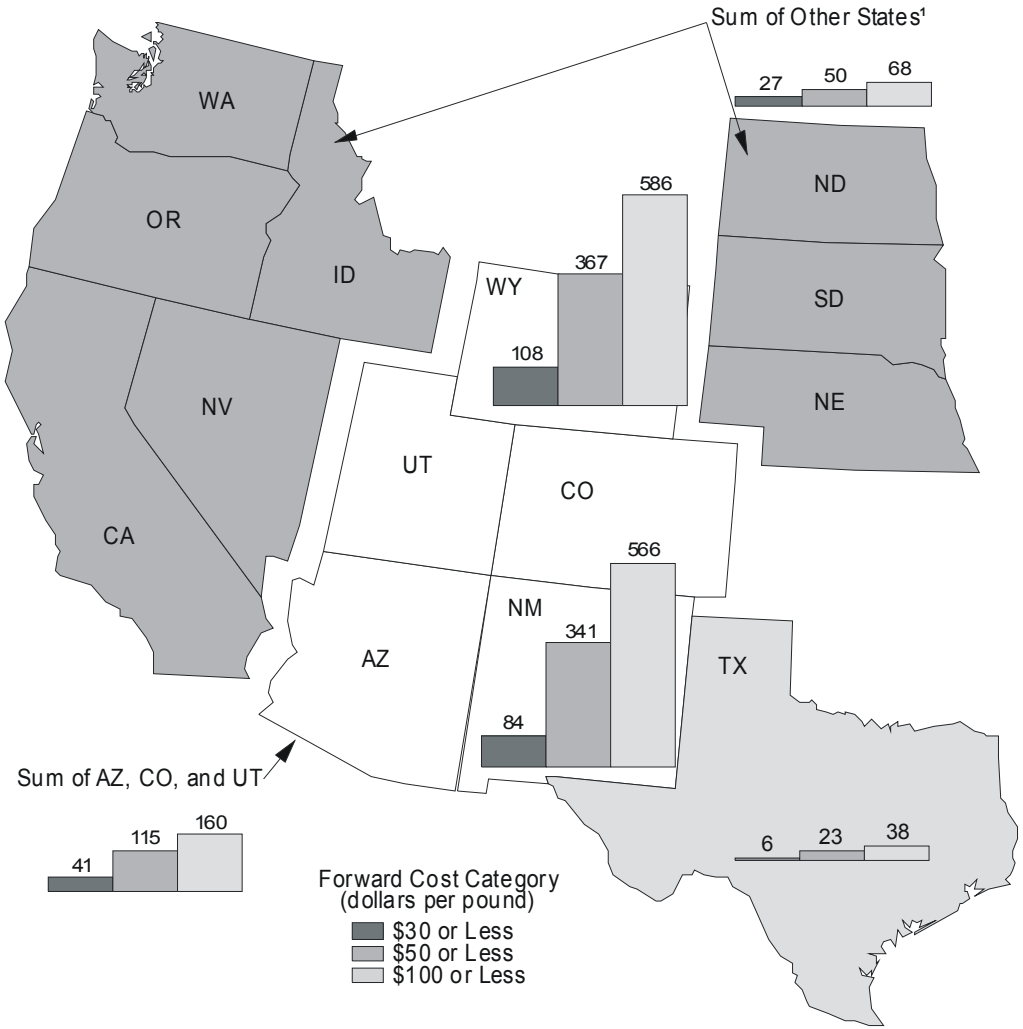
Note: Totals may not equal sum of components due to independent rounding.

Web Page: http://www.eia.doe.gov/fuelnuclear.html.

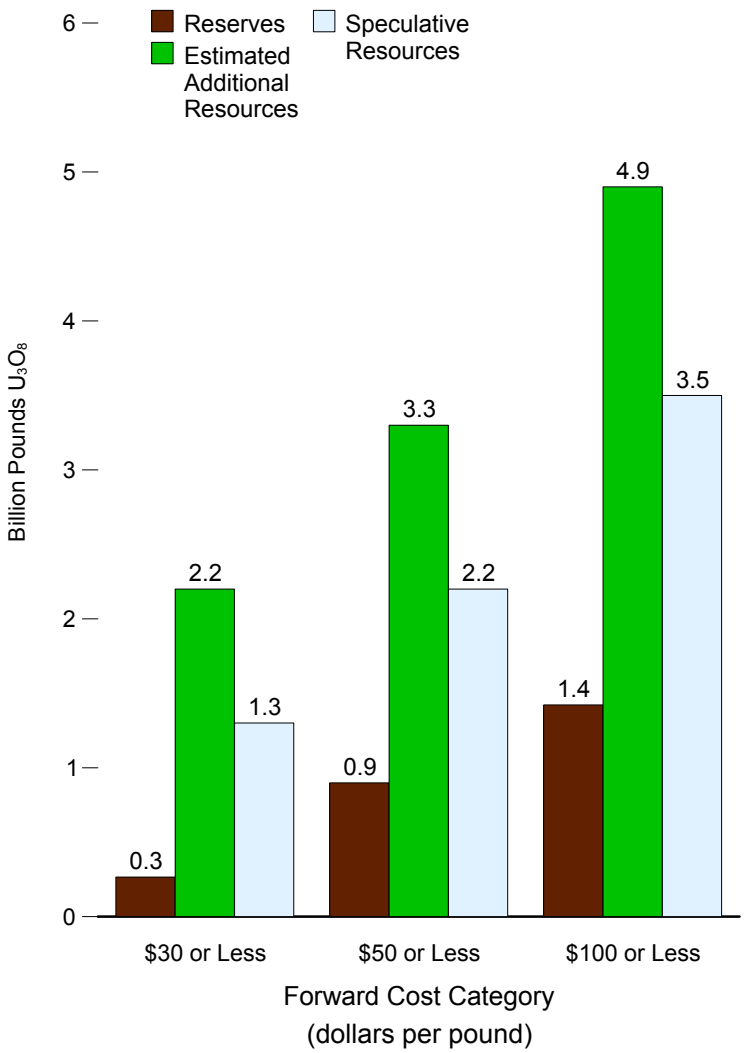
Sources: • 1949-1981—U.S. Department of Energy, Grand Junction Office, *Statistical Data of the Uranium Industry,* January 1, 1983, Report No. GJO-100 (1983), Table VIII-5. • 1982 forward—Energy Information Administration, *Uranium Industry Annual,* annual reports.

Figure 4.13 Uranium Reserves and Resources, 2002

Reserves, Million Pounds U_3O_8



Reserves and Resources



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

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

Table 4.13 Uranium Reserves and Resources, 2002

(Million Pounds U_3O_8)

Resource Category and State	Forward Cost Category (dollars per pound) [1]		
	$30 or Less	$50 or Less	$100 or Less
Reserves [2]	**266**	**896**	**1,418**
New Mexico	84	341	566
Wyoming	108	367	586
Texas	6	23	38
Arizona, Colorado, Utah	41	115	160
Others [3]	27	50	68
Potential Resources [4]			
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, Washington, and undisclosed.

[4] Shown are the mean values for the distribution of estimates for each forward-cost category, rounded to the nearest million pounds U_3O_8.

Note: Data are at end of year.

Web Page: http://www.eia.doe.gov/fuelnuclear.html.

Sources: • Forward Costs $30 or Less and $50 or Less—Energy Information Administration (EIA), *Uranium Industry Annual 2002* (May 2003), Tables B1 and B4. • Forward Costs $100 or Less—EIA, Office of Coal, Nuclear, Electric and Alternate Fuels database as of December 31, 2002.

Energy Resources

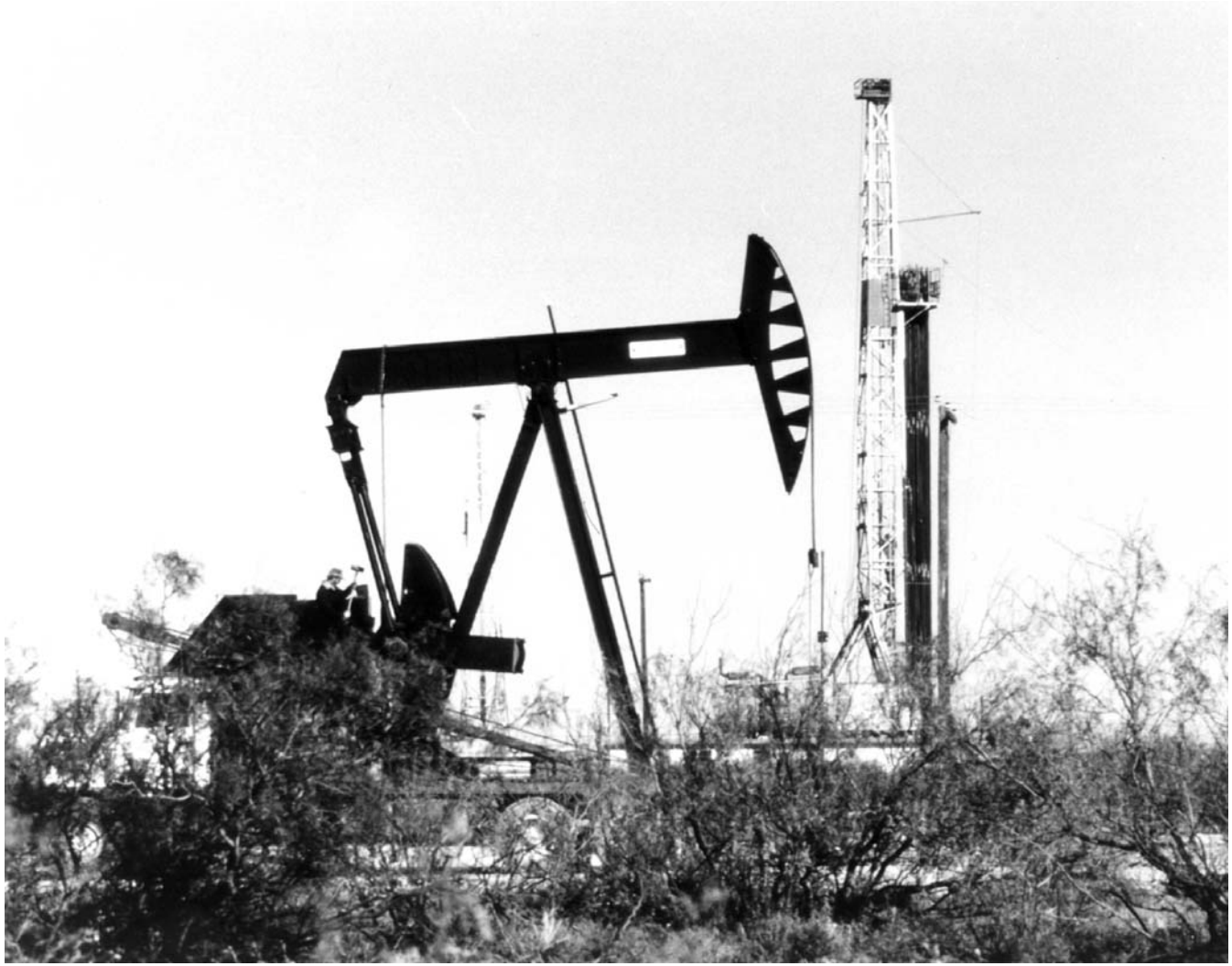
Note 1. These volumes are the sum of the respective mean estimates in United States Geological Survey, 1995 *National Assessment of United States Oil and Gas Resources*, Circular 1118 (Washington DC, 1995), pp. 2 and 17-19, for the onshore United States and State jurisdiction offshore waters, and in Minerals Management Services, *Outer Continental Shelf Petroleum Assessment, 2000* (Washington DC, 2001), for the Federal jurisdiction offshore (http://www.mms.gov/revaldiv/RedNatAssessment.htm).

Conventionally reservoired deposits are discrete subsurface accumulations of crude oil or natural gas usually defined, controlled, or limited by hydrocarbon/water contacts. 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. Ultimate recovery appreciation (reserve growth) is the volume by which the estimate of total recovery from a known oil or gas reservoir or aggregation of such reservoirs is expected to increase during the time between discovery and permanent abandonment.

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.

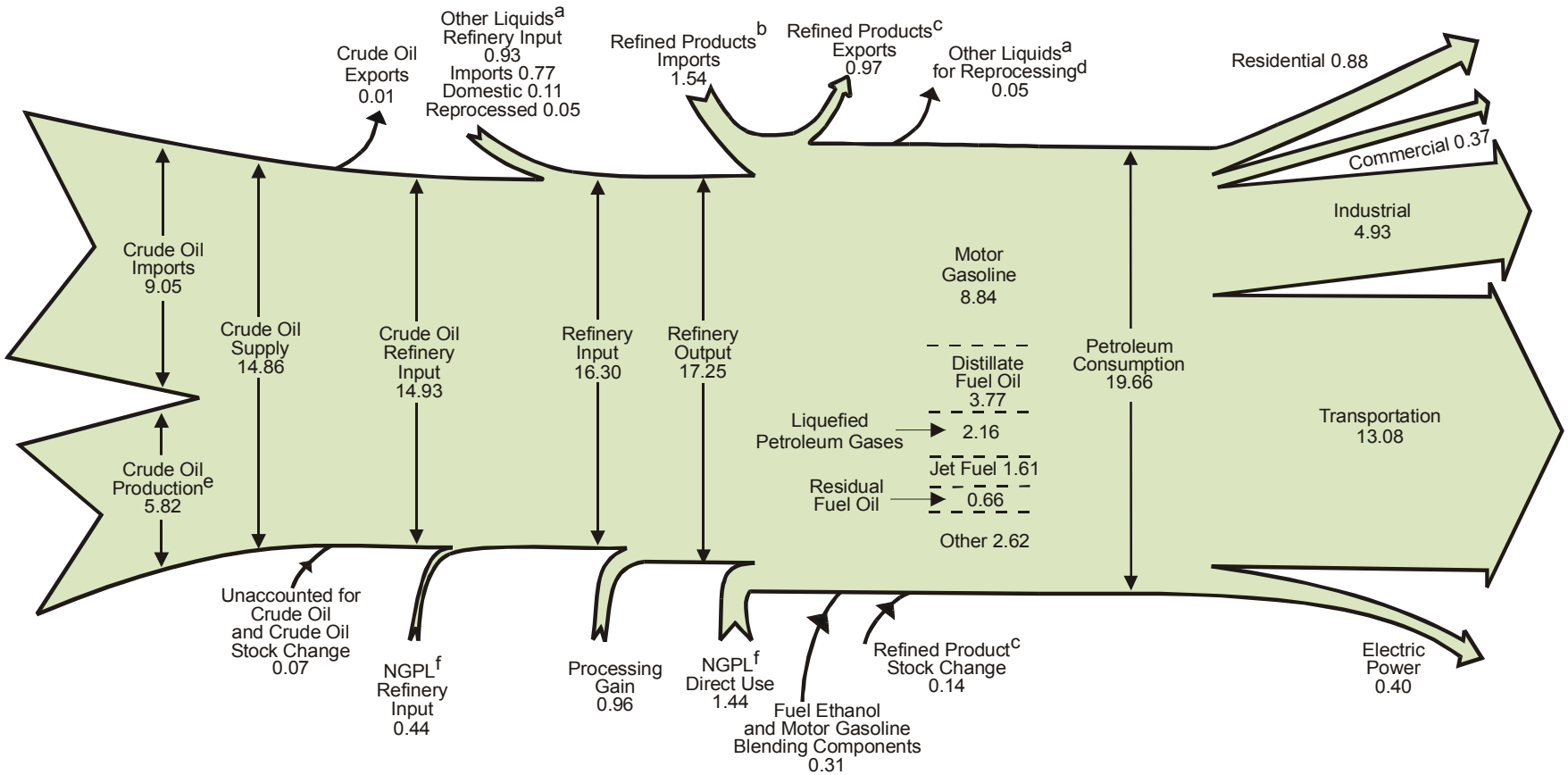
Note 2. For 1970 forward, annual well completions are estimated by the Energy Information Administration (EIA) based on individual well reports submitted to the American Petroleum Institute (1970-1994) and to Information Handling Services Energy Group (formerly Petroleum Information/Dwights LLC) (1995 forward). The as-received well completion data for recent years are incomplete due to delays in the reporting of wells drilled. EIA therefore statistically imputes the missing data to provided estimates of total well completions and footage where necessary.

5 Petroleum



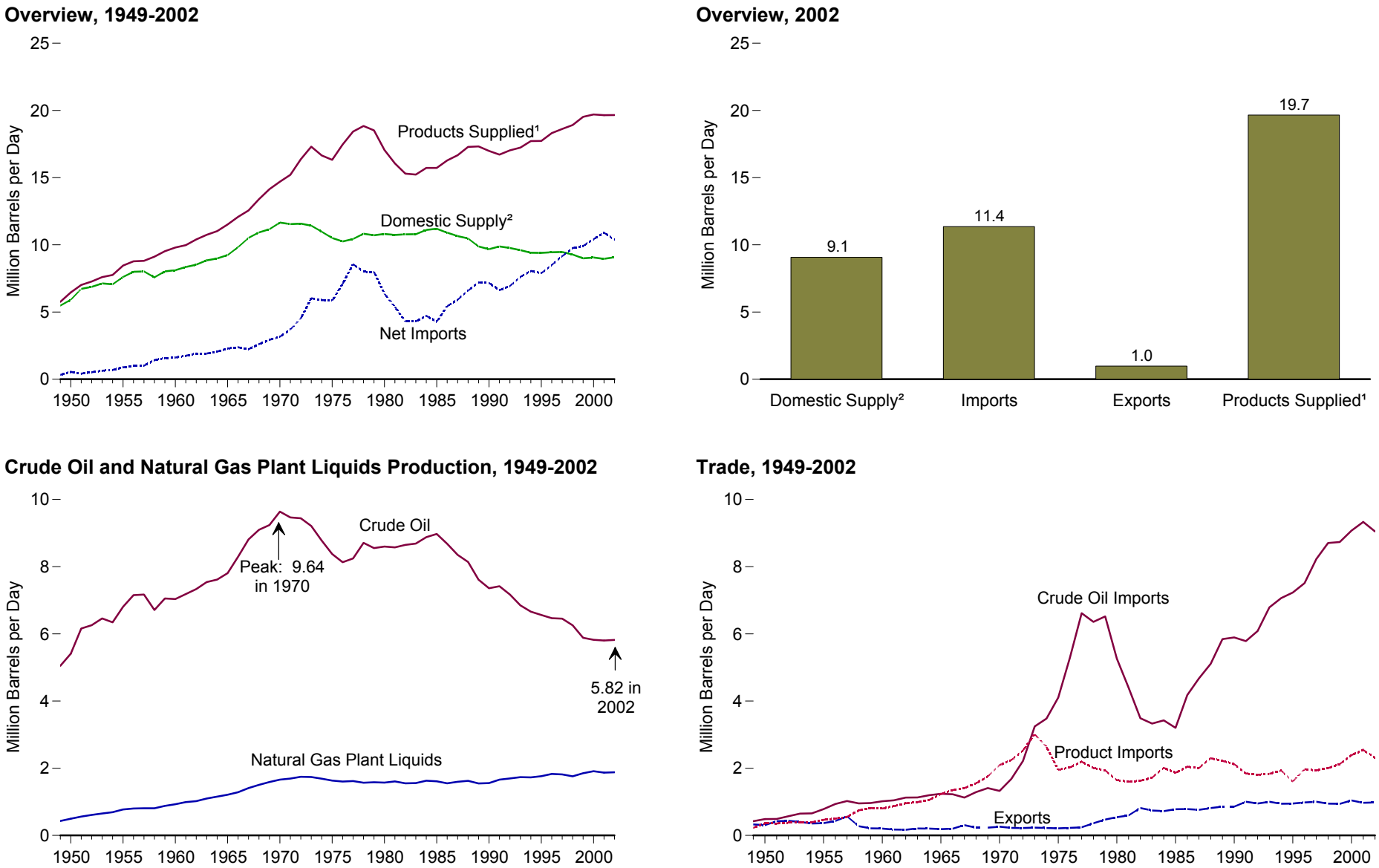
Oil pumping unit and drilling rig, Texas. Source: U.S. Department of Energy.

Diagram 2. Petroleum Flow, 2002
(Million Barrels per Day)



[a] Unfinished oils, motor gasoline blending components, aviation gasoline blending components, and other hydrocarbons and oxygenates.
[b] Finished petroleum products, liquefied petroleum gases, and pentanes plus.
[c] Finished petroleum products, liquefied petroleum gases, pentanes plus, and other liquids.
[d] Unfinished oils requiring further refinery processing, and aviation blending components.
[e] Includes lease condensate.
[f] 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, 5.12a-5.12d, 5.14, and *Petroleum Supply Monthly*, February 2003, Table 3.

Figure 5.1 Petroleum Overview



[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.

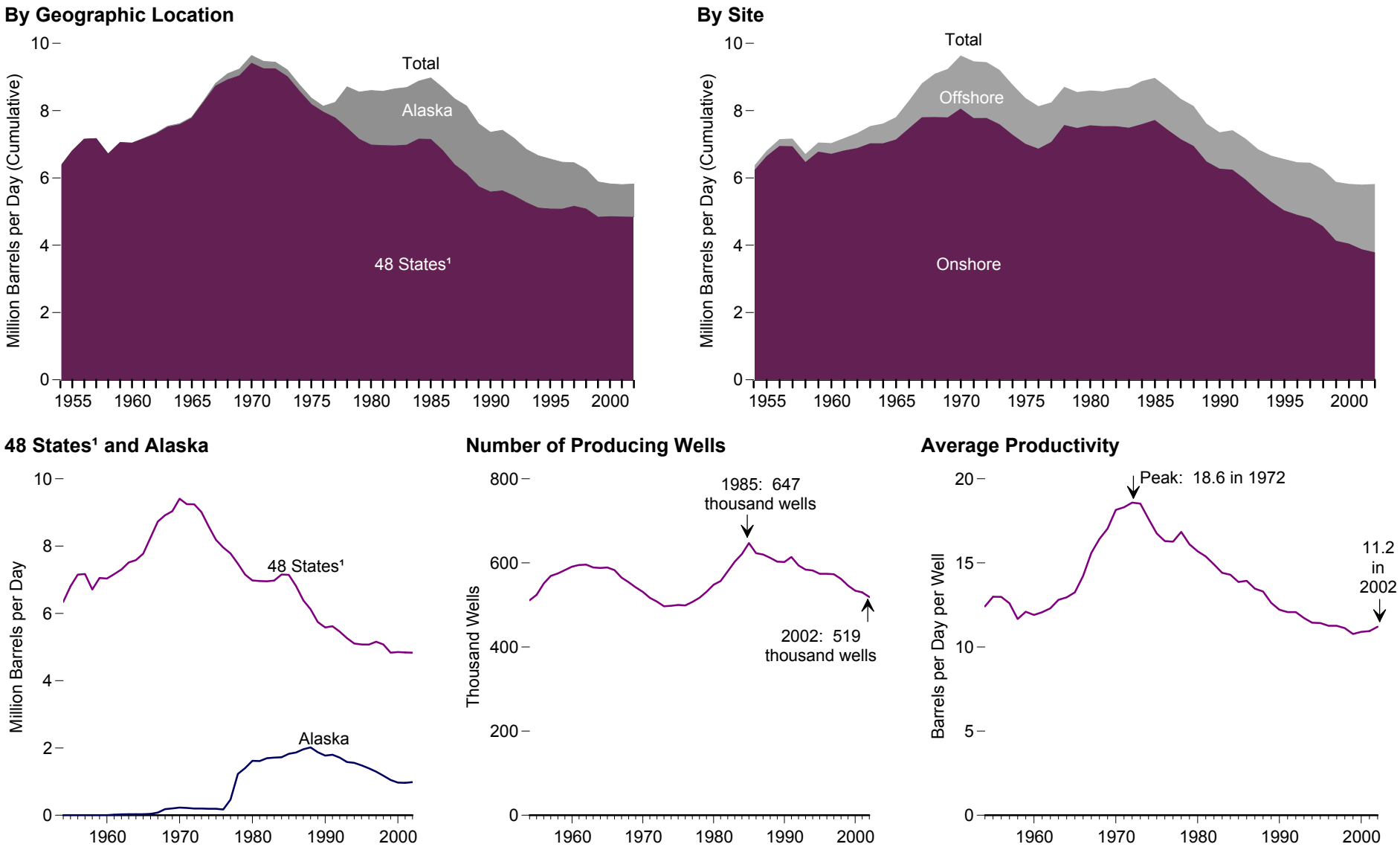
Table 5.1 Petroleum Overview, 1949-2002

(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
1951	6,158	0	6,158	561	6,719	7	844	422	422	101	31	7,016
1952	6,256	0	6,256	611	6,867	7	952	432	520	108	16	7,270
1953	6,458	0	6,458	654	7,111	20	1,034	402	633	142	22	7,600
1954	6,342	0	6,342	691	7,033	23	1,052	355	696	-29	26	7,756
1955	6,807	0	6,807	771	7,578	34	1,248	368	880	(s)	37	8,455
1956	7,151	0	7,151	800	7,951	43	1,436	430	1,006	179	46	8,775
1957	7,170	0	7,170	808	7,978	42	1,574	568	1,007	167	50	8,809
1958	6,710	0	6,710	808	7,517	64	1,700	276	1,425	-140	27	9,118
1959	7,053	1	7,054	879	7,932	86	1,780	211	1,569	51	10	9,527
1960	7,034	2	7,035	929	7,965	146	1,815	202	1,613	-83	8	9,797
1961	7,166	17	7,183	991	8,174	179	1,917	174	1,743	111	9	9,976
1962	7,304	28	7,332	1,021	8,353	175	2,082	168	1,913	32	9	10,400
1963	7,512	29	7,542	1,098	8,640	202	2,123	208	1,915	3	10	10,743
1964	7,584	30	7,614	1,154	8,769	217	2,259	202	2,057	10	10	11,023
1965	7,774	30	7,804	1,210	9,014	220	2,468	187	2,281	-8	10	11,512
1966	8,256	39	8,295	1,284	9,579	245	2,573	198	2,375	104	10	12,084
1967	8,730	80	8,810	1,409	10,220	292	2,537	307	2,230	173	9	12,560
1968	8,915	181	9,096	1,504	10,599	319	2,840	231	2,609	152	-17	13,393
1969	9,035	203	9,238	1,590	10,827	335	3,166	233	2,933	-48	7	14,137
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	R4,839	R963	R5,801	R1,868	R7,670	R1,287	R11,871	R971	R10,900	R325	R-117	R19,649
2002P	4,832	984	5,817	1,881	7,698	1,373	11,358	980	10,378	-96	-112	19,656

[1] United States excluding Alaska and Hawaii.
[2] Refinery processing gains and field production of other hydrocarbons, hydrogen, oxygenates (ethers and alcohols), gasoline blending components, and finished petroleum products.
[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. • For the definition of petroleum products supplied, see Notes 1, 2, and 3 at end of section. • Totals may not equal sum of components due to independent rounding.
Web Page: 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. • 1981-2001—EIA, *Petroleum Supply Annual,* annual reports. • 2002—EIA, *Petroleum Supply Monthly* (February 2003).

Figure 5.2 Crude Oil Production and Oil Well Productivity, 1954-2002



[1] United States excluding Alaska and Hawaii.
Note: Crude oil includes lease condensate.

Source: Table 5.2.

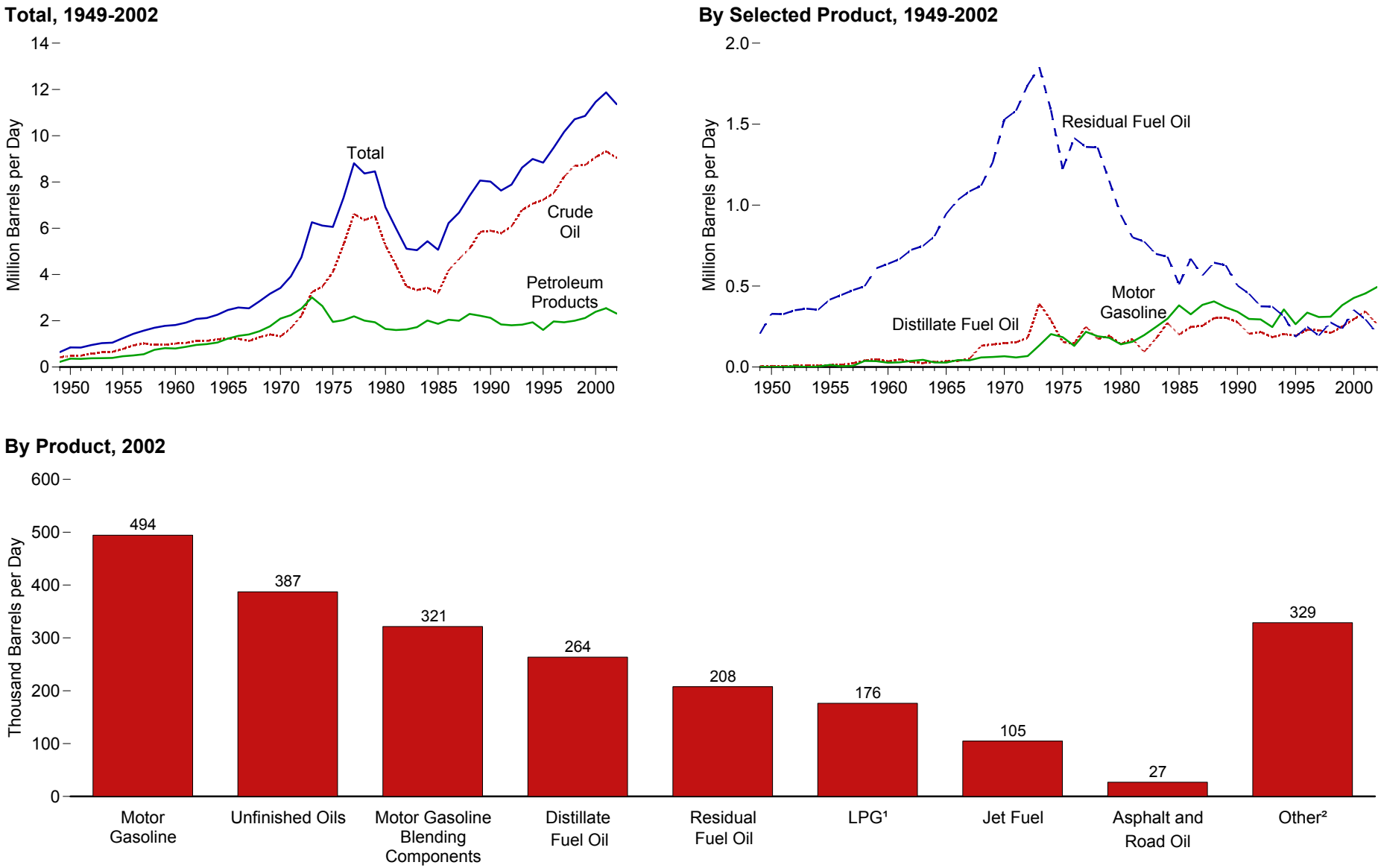
Table 5.2 Crude Oil Production and Oil Well Productivity, 1954-2002

(Thousand Barrels per Day, Except as Noted)

Year	Geographic Location		Site		Type		Total Production	Oil Well Productivity	
	48 States [1]	Alaska	Onshore	Offshore	Crude Oil	Lease Condensate		Producing Wells [2] (thousands)	Average Productivity [3] (barrels per day per well)
1954	6,342	0	6,209	133	6,342	([4])	6,342	511	12.4
1955	6,807	0	6,645	162	6,807	([4])	6,807	524	13.0
1956	7,151	0	6,951	201	7,151	([4])	7,151	551	13.0
1957	7,170	0	6,940	229	7,170	([4])	7,170	569	12.6
1958	6,710	0	6,473	236	6,710	([4])	6,710	575	11.7
1959	7,053	1	6,779	274	7,054	([4])	7,054	583	12.1
1960	7,034	2	6,716	319	7,035	([4])	7,035	591	11.9
1961	7,166	17	6,817	365	7,183	([4])	7,183	595	12.1
1962	7,304	28	6,888	444	7,332	([4])	7,332	596	12.3
1963	7,512	29	7,026	515	7,542	([4])	7,542	589	12.8
1964	7,584	30	7,027	587	7,614	([4])	7,614	588	12.9
1965	7,774	30	7,140	665	7,804	([4])	7,804	589	13.2
1966	8,256	39	7,473	823	8,295	([4])	8,295	583	14.2
1967	8,730	80	7,802	1,009	8,810	([4])	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	([4])	8,688	603	14.4
1984	7,157	1,722	7,596	1,283	8,879	([4])	8,879	621	14.3
1985	7,146	1,825	7,722	1,250	8,971	([4])	8,971	647	13.9
1986	6,814	1,867	7,426	1,254	8,680	([4])	8,680	623	13.9
1987	6,387	1,962	7,153	1,196	8,349	([4])	8,349	620	13.5
1988	6,123	2,017	6,949	1,191	8,140	([4])	8,140	612	13.3
1989	5,739	1,874	6,486	1,127	7,613	([4])	7,613	603	12.6
1990	5,582	1,773	6,273	1,082	7,355	([4])	7,355	602	12.2
1991	5,618	1,798	6,245	1,172	7,417	([4])	7,417	614	12.1
1992	5,457	1,714	5,953	1,218	7,171	([4])	7,171	594	12.1
1993	5,264	1,582	5,606	1,241	6,847	([4])	6,847	584	11.7
1994	5,103	1,559	5,291	1,370	6,662	([4])	6,662	582	11.4
1995	5,076	1,484	5,035	1,525	6,560	([4])	6,560	574	11.4
1996	5,071	1,393	4,902	1,562	6,465	([4])	6,465	574	11.3
1997	5,156	1,296	4,803	1,648	6,452	([4])	6,452	573	11.3
1998	5,077	1,175	4,560	1,692	6,252	([4])	6,252	562	11.1
1999	4,832	1,050	4,132	1,750	5,881	([4])	5,881	546	10.8
2000	4,851	970	4,049	1,773	5,822	([4])	5,822	534	10.9
2001	[R]4,839	[R]963	[R]3,879	[R]1,923	[R]5,801	([4])	[R]5,801	530	[R]10.9
2002	[P]4,832	[P]984	[E]3,789	[E]2,028	[P]5,817	([4])	[P]5,817	[P]519	[P]11.2

[1] United States excluding Alaska and Hawaii.
[2] As of December 31.
[3] For 1954-1976, average productivity is based on the average number of producing wells. For 1977 forward, average productivity is based on the number of wells producing at end of year.
[4] Included in crude oil.
R=Revised. P=Preliminary. E=Estimate.
Note: Totals may not equal sum of components due to independent rounding.
Web Page: http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html.
Sources: **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—Energy Information Administration (EIA), Energy Data Reports, *Petroleum Statement, Annual,* annual reports. • 1981-2001—EIA, *Petroleum Supply Annual,* annual reports. • 2002—EIA estimates. **Onshore:** • 1954-1975—Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual,* annual reports. • 1976-1980—EIA, Energy Data Reports, *Petroleum Statement, Annual,* annual reports. • 1981-2001—EIA, *Petroleum Supply Annual,* annual reports. • 2002—EIA estimates. **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 issue. **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. • 1981-2001—EIA, *Petroleum Supply Annual,* annual reports. • 2002—EIA, *Petroleum Supply Monthly* (February 2003).

Figure 5.3 Petroleum Imports by Type



[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, 1949-2002

(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]	Total	
					Propane [3]	Total							
1949	421	3	5	([6])	0	0	0	0	206	10	0	224	645
1950	487	5	7	([6])	0	0	(s)	([7])	329	21	1	363	850
1951	491	7	5	([6])	0	0	1	([7])	326	14	0	354	844
1952	573	7	7	([6])	0	0	5	([7])	351	9	0	380	952
1953	648	7	9	([6])	0	0	1	([7])	360	9	0	386	1,034
1954	656	9	9	([6])	0	0	3	([7])	354	21	(s)	396	1,052
1955	782	9	12	([6])	0	0	13	([7])	417	15	0	466	1,248
1956	934	10	14	21	0	0	5	([7])	445	7	(s)	502	1,436
1957	1,023	18	23	25	0	0	8	([7])	475	3	(s)	552	1,574
1958	953	20	41	57	0	0	38	([7])	499	92	(s)	747	1,700
1959	965	19	48	37	0	0	37	([7])	610	63	(s)	814	1,780
1960	1,015	17	35	34	NA	4	27	([7])	637	45	(s)	799	1,815
1961	1,045	18	48	28	NA	5	29	([7])	666	69	8	872	1,917
1962	1,126	18	32	30	NA	6	38	([7])	724	89	18	955	2,082
1963	1,131	17	25	41	NA	7	44	([7])	747	87	24	992	2,123
1964	1,198	16	32	33	NA	11	29	([7])	808	89	42	1,060	2,259
1965	1,238	17	36	81	NA	21	28	([7])	946	92	10	1,229	2,468
1966	1,225	17	38	86	NA	29	43	([7])	1,032	97	7	1,348	2,573
1967	1,128	18	51	89	11	27	42	([7])	1,085	97	2	1,409	2,537
1968	1,291	17	132	105	15	32	59	([7])	1,120	80	4	1,549	2,840
1969	1,409	13	139	125	14	35	62	([7])	1,265	106	12	1,757	3,166
1970	1,324	17	147	144	26	52	67	([7])	1,528	108	32	2,095	3,419
1971	1,681	20	153	180	32	70	59	([7])	1,583	124	56	2,245	3,926
1972	2,216	25	182	194	43	89	68	([7])	1,742	125	101	2,525	4,741
1973	3,244	23	392	212	71	132	134	([7])	1,853	137	129	3,012	6,256
1974	3,477	31	289	163	59	123	204	([7])	1,587	121	117	2,635	6,112
1975	4,105	14	155	133	60	112	184	([7])	1,223	36	95	1,951	6,056
1976	5,287	11	146	76	68	130	131	([7])	1,413	32	87	2,026	7,313
1977	6,615	4	250	75	86	161	217	([7])	1,359	31	95	2,193	8,807
1978	6,356	2	173	86	57	123	190	([7])	1,355	27	50	2,008	8,363
1979	6,519	4	193	78	88	217	181	([7])	1,151	59	54	1,937	8,456
1980	5,263	4	142	80	69	216	140	([7])	939	55	72	1,646	6,909
1981	4,396	4	173	38	70	244	157	24	800	112	48	1,599	5,996
1982	3,488	5	93	29	63	226	197	42	776	174	84	1,625	5,113
1983	3,329	7	174	29	44	190	247	47	699	234	94	1,722	5,051
1984	3,426	18	272	62	67	195	299	83	681	231	171	2,011	5,437
1985	3,201	35	200	39	67	187	381	67	510	318	130	1,866	5,067
1986	4,178	29	247	57	110	242	326	72	669	250	153	2,045	6,224
1987	4,674	36	255	67	88	190	384	60	565	299	146	2,004	6,678
1988	5,107	31	302	90	106	209	405	57	644	360	196	2,295	7,402
1989	5,843	31	306	106	111	181	369	66	629	348	183	2,217	8,061
1990	5,894	32	278	108	115	188	342	62	504	413	198	2,123	8,018
1991	5,782	28	205	67	91	147	297	36	453	413	198	1,844	7,627
1992	6,083	27	216	82	85	131	294	41	375	443	195	1,805	7,888
1993	6,787	32	184	100	103	160	247	27	373	491	219	1,833	8,620
1994	7,063	37	203	117	124	183	356	20	314	413	291	1,933	8,996
1995	7,230	36	193	106	102	146	265	48	187	349	276	1,605	8,835
1996	7,508	27	230	111	119	166	336	166	248	367	319	1,971	9,478
1997	8,225	32	228	91	113	169	309	200	194	353	360	1,936	10,162
1998	8,706	28	210	124	137	194	311	209	275	302	350	2,002	10,708
1999	8,731	34	250	128	122	182	382	217	237	317	375	2,122	10,852
2000	9,071	28	295	162	161	215	427	223	352	274	414	2,389	11,459
2001	[R]9,328	26	[R]344	[R]148	[R]140	[R]206	[R]454	[R]298	[R]295	[R]378	[R]393	[R]2,543	[R]11,871
2002[P]	9,047	27	264	105	136	176	494	321	208	387	329	2,311	11,358

[1] Includes any imports for the Strategic Petroleum Reserve, which began in 1977.
[2] Prior to 1965, imports of kerosene-type jet fuel were included with kerosene, which is listed under "Other Products."
[3] Includes propylene.
[4] Prior to 1964, motor gasoline data were for total gasoline, including motor gasoline, aviation gasoline, and special naphthas. After 1980, excludes motor gasoline blending components.
[5] Aviation gasoline, aviation gasoline blending components, other hydrocarbons/oxygenates (ethers and alcohols), kerosene, lubricants, pentanes plus, petrochemical feedstocks, petroleum coke, special naphthas, wax, and miscellaneous products.
[6] Included in motor gasoline.
[7] If applicable, included in motor gasoline.

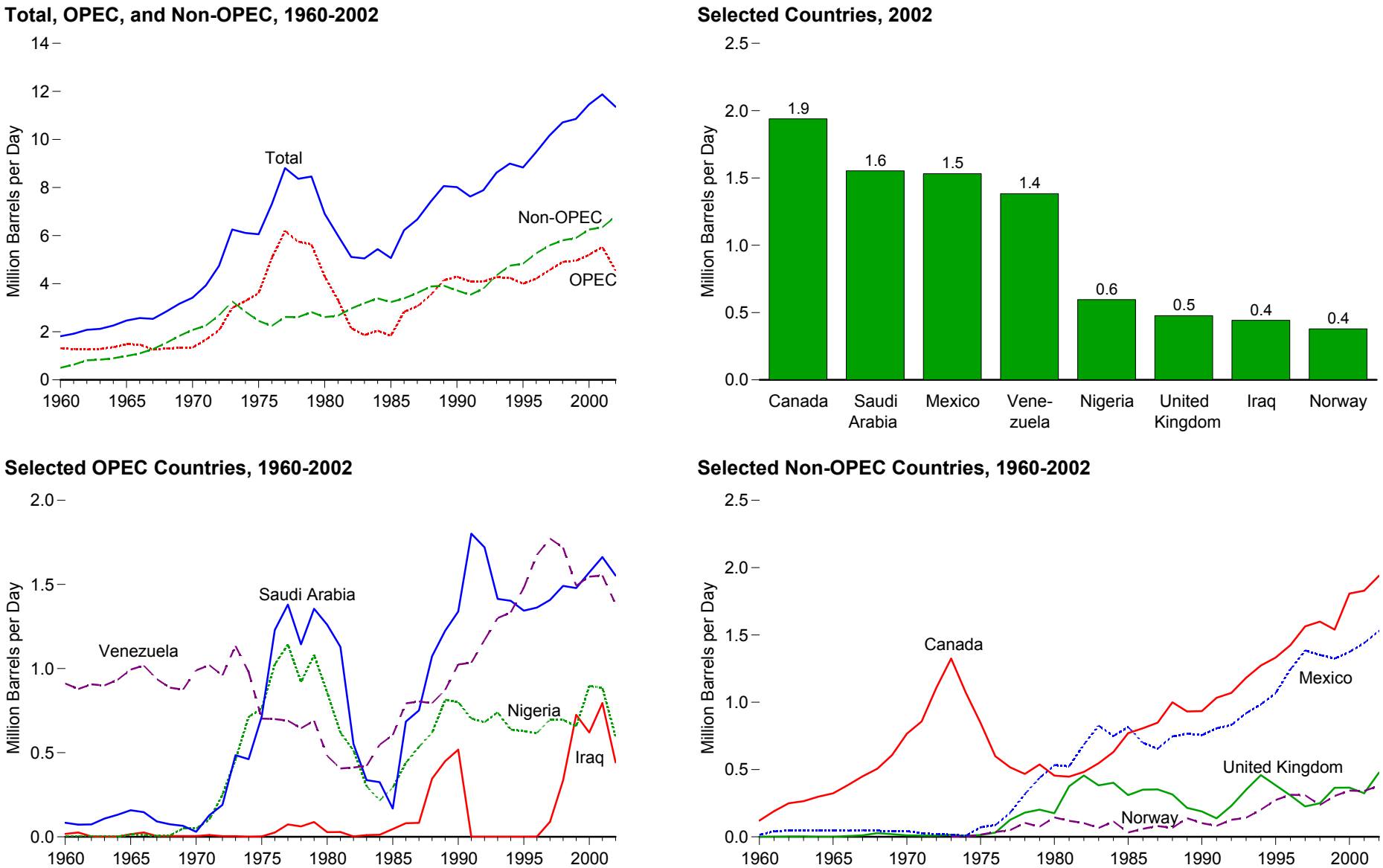
R=Revised. P=Preliminary. NA=Not available. (s)=Less than 500 barrels per day.

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

Web Page: 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. • 1981-2001—EIA, *Petroleum Supply Annual,* annual reports. • 2002—EIA, *Petroleum Supply Monthly* (February 2003).

Figure 5.4 Petroleum Imports by Country of Origin



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

Source: Table 5.4.

Table 5.4 Petroleum Imports by Country of Origin, 1960-2002

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			
	Thousand Barrels per Day													Percent	
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	R1	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	R5	9	74	886	1,302	506	33	45	0	28	1,538	2,840	7.1	45.9
1969	179	R5	49	65	875	1,336	608	43	43	0	20	1,830	3,166	5.7	42.2
1970	121	R5	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	R2,761	R795	R885	R1,662	R1,553	R5,528	R1,828	R296	R1,440	R341	R324	R6,343	R11,871	R23.3	R46.6
2002P	2,254	442	596	1,553	1,383	4,558	1,939	256	1,532	379	477	6,800	11,358	19.8	40.1

[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. Beginning in 1993, imports from Ecuador appear under "Non-OPEC." Gabon withdrew from OPEC on December 31, 1994. Beginning in 1995, imports from Gabon appear under "Non-OPEC."

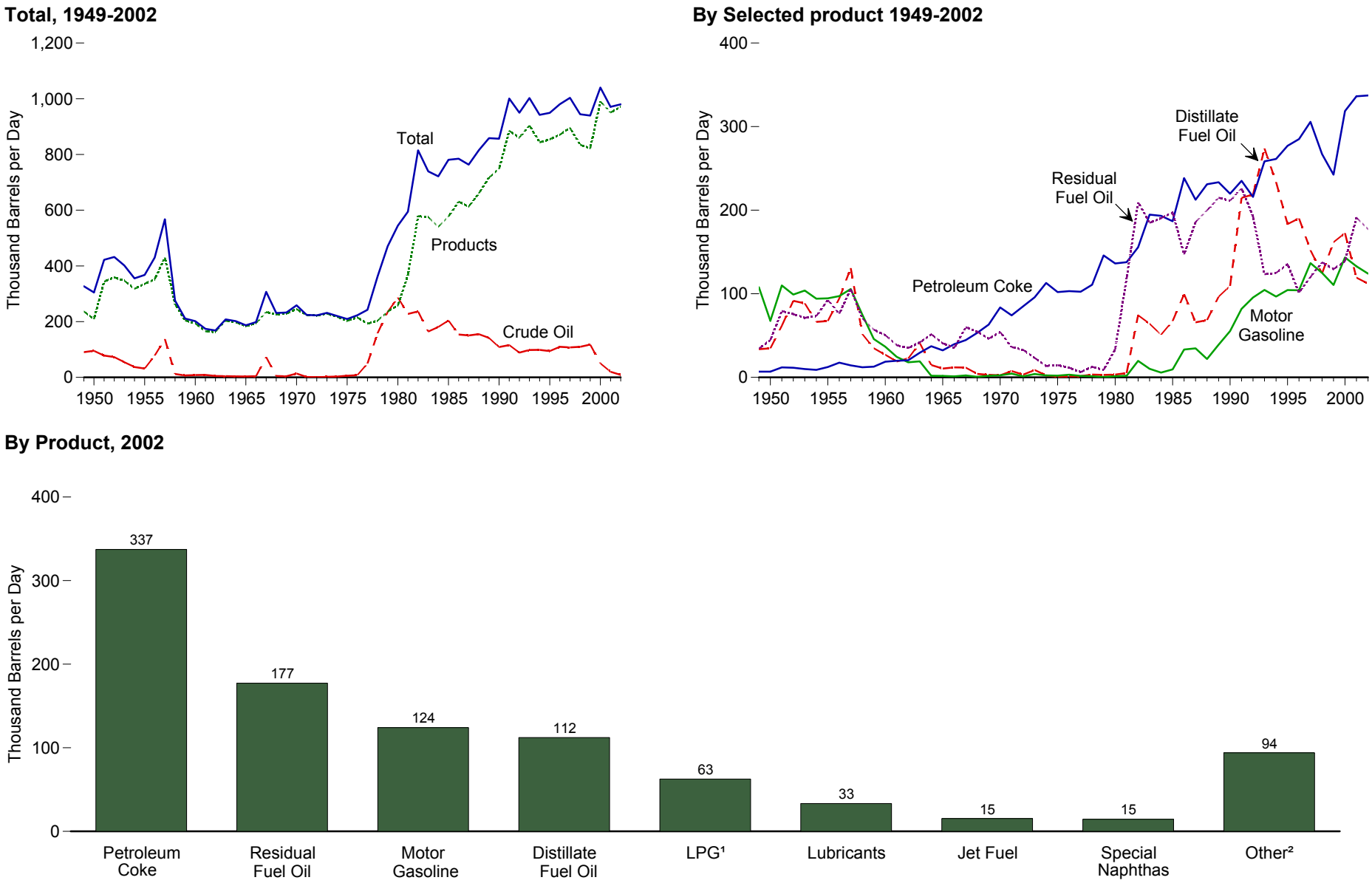
R=Revised. P=Preliminary. NA=Not available. (s)=Less than 500 barrels per day.

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: http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html.

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. • 1981-2001—EIA, *Petroleum Supply Annual,* annual reports. • 2002—EIA, *Petroleum Supply Monthly* (February 2003).

Figure 5.5 Petroleum Exports by Type



[1] Liquefied petroleum gases.
[2] Asphalt and road oil, aviation gasoline, keorsene, motor gasoline blending components, pentanes plus, wax, and miscellaneous products.

Note: Because vertical scales differ, graphs should not be compared.
Source: Table 5.5.

Table 5.5 Petroleum Exports by Type, 1949-2002

(Thousand Barrels per Day)

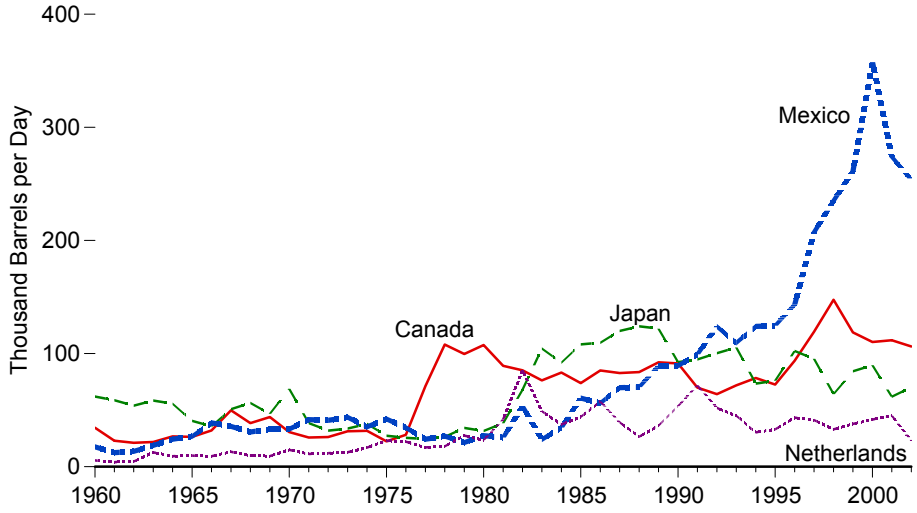
Year	Crude Oil	Petroleum Products												Total Petroleum
		Distillate Fuel Oil	Jet Fuel	Liquefied Petroleum Gases		Lubricants	Motor Gasoline [2]	Petroleum Coke	Petrochemical Feedstocks	Residual Fuel Oil	Special Naphthas	Other Products [3]	Total	
				Propane [1]	Total									
1949	91	34	([4])	NA	4	35	108	7	0	35	NA	15	236	327
1950	95	35	([4])	NA	4	39	68	7	0	44	NA	12	210	305
1951	78	62	([4])	NA	6	48	110	12	0	79	NA	27	344	422
1952	73	92	([4])	NA	7	44	99	11	0	76	NA	31	359	432
1953	55	89	1	NA	8	36	104	10	0	71	NA	28	347	402
1954	37	66	(s)	NA	11	41	94	9	0	73	NA	23	318	355
1955	32	67	(s)	NA	12	39	95	12	0	93	NA	18	336	368
1956	78	94	1	NA	12	38	97	18	0	76	NA	16	352	430
1957	138	131	(s)	NA	12	38	106	14	0	106	NA	23	430	568
1958	12	52	1	NA	8	36	75	12	0	71	NA	10	264	276
1959	7	35	1	NA	6	38	46	13	0	57	NA	8	204	211
1960	8	27	(s)	NA	8	43	37	19	0	51	NA	9	193	202
1961	9	19	(s)	NA	10	47	25	20	0	38	NA	7	165	174
1962	5	23	(s)	NA	11	48	18	20	0	35	NA	8	163	168
1963	5	41	1	NA	13	50	19	29	0	42	NA	8	203	208
1964	4	15	(s)	NA	15	50	2	37	0	52	5	23	198	202
1965	3	10	3	NA	21	45	2	32	5	41	4	20	184	187
1966	4	12	5	NA	22	47	1	40	7	35	6	19	194	198
1967	73	12	6	5	25	51	2	45	8	60	5	20	234	307
1968	5	4	6	7	29	49	1	53	8	55	7	15	226	231
1969	4	3	5	7	35	45	2	63	11	46	6	13	229	233
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	[R]20	[R]119	29	31	44	26	133	336	0	[R]191	23	50	[R]951	[R]971
2002[P]	9	112	15	51	63	33	124	337	0	177	15	94	971	980

[1] Includes propylene.
[2] Includes aviation gasoline for the years 1949-1963.
[3] Asphalt and road oil, aviation gasoline, kerosene, motor gasoline blending components, other hydrocarbons/oxygenates (ethers and alcohols), pentanes plus, wax, and miscellaneous products.
[4] Included in the products from which jet fuel was blended.
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 Page: 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. • 1981-2001—EIA, *Petroleum Supply Annual,* annual reports. • 2002—EIA, *Petroleum Supply Monthly* (February 2003).

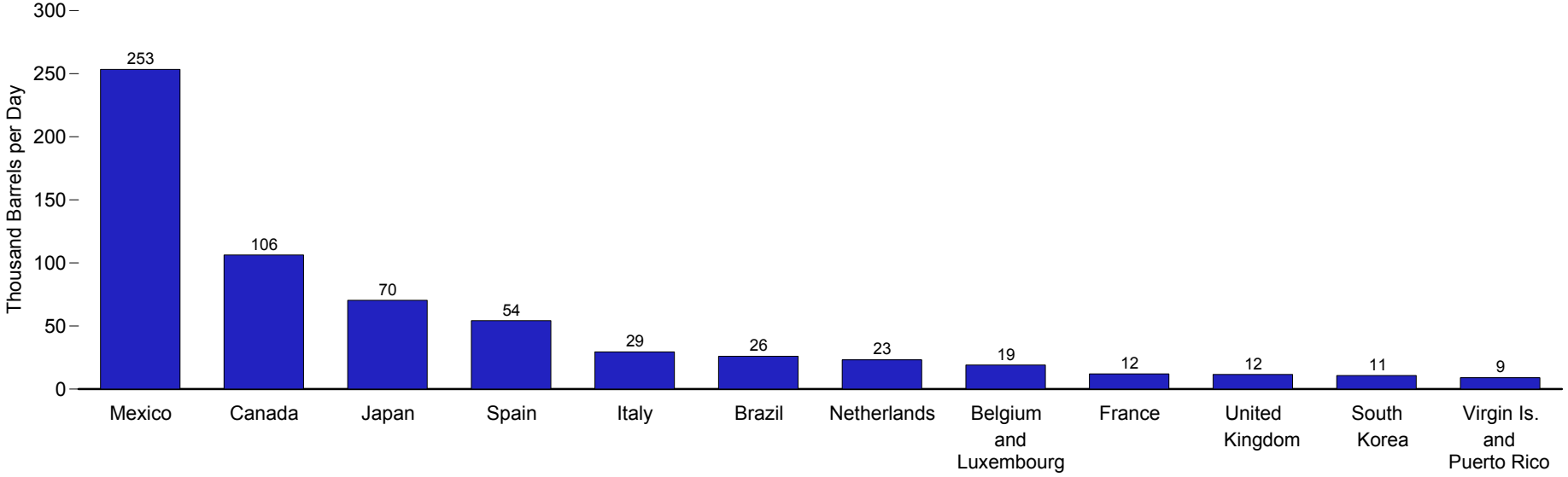
Figure 5.6 Petroleum Exports by Country of Destination

Total Exports and Exports to Canada and Mexico, 1960-2002

By Selected Country, 1960-2002



By Selected Country, 2002



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

Source: Table 5.6.

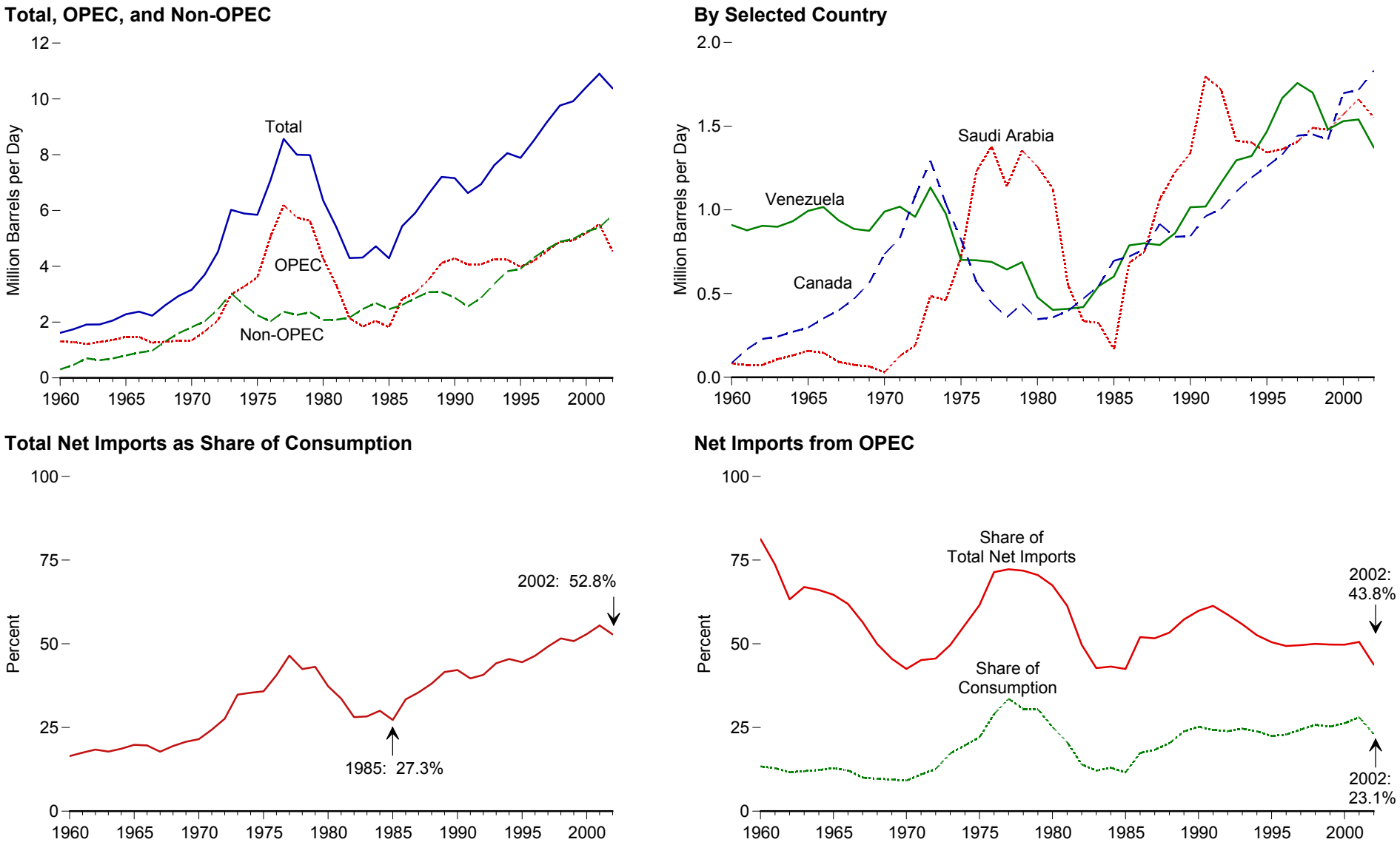
Table 5.6 Petroleum Exports by Country of Destination, 1960-2002

(Thousand Barrels per Day)

Year	Belgium and Luxembourg	Brazil	Canada	France	Italy	Japan	Mexico	Nether-lands	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	R23	R112	13	33	62	R274	R45	14	51	13	4	R312	R971
2002P	19	26	106	12	29	70	253	23	11	54	12	9	354	980

R=Revised. P=Preliminary. NA=Not available.
Note: Totals may not equal sum of components due to independent rounding.
Web Page: http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html.
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. • 1981-2001—EIA, *Petroleum Supply Annual,* annual reports. • 2002—EIA, *Petroleum Supply Monthly* (February 2003).

Figure 5.7 Petroleum Net Imports by Country of Origin, 1960-2002



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

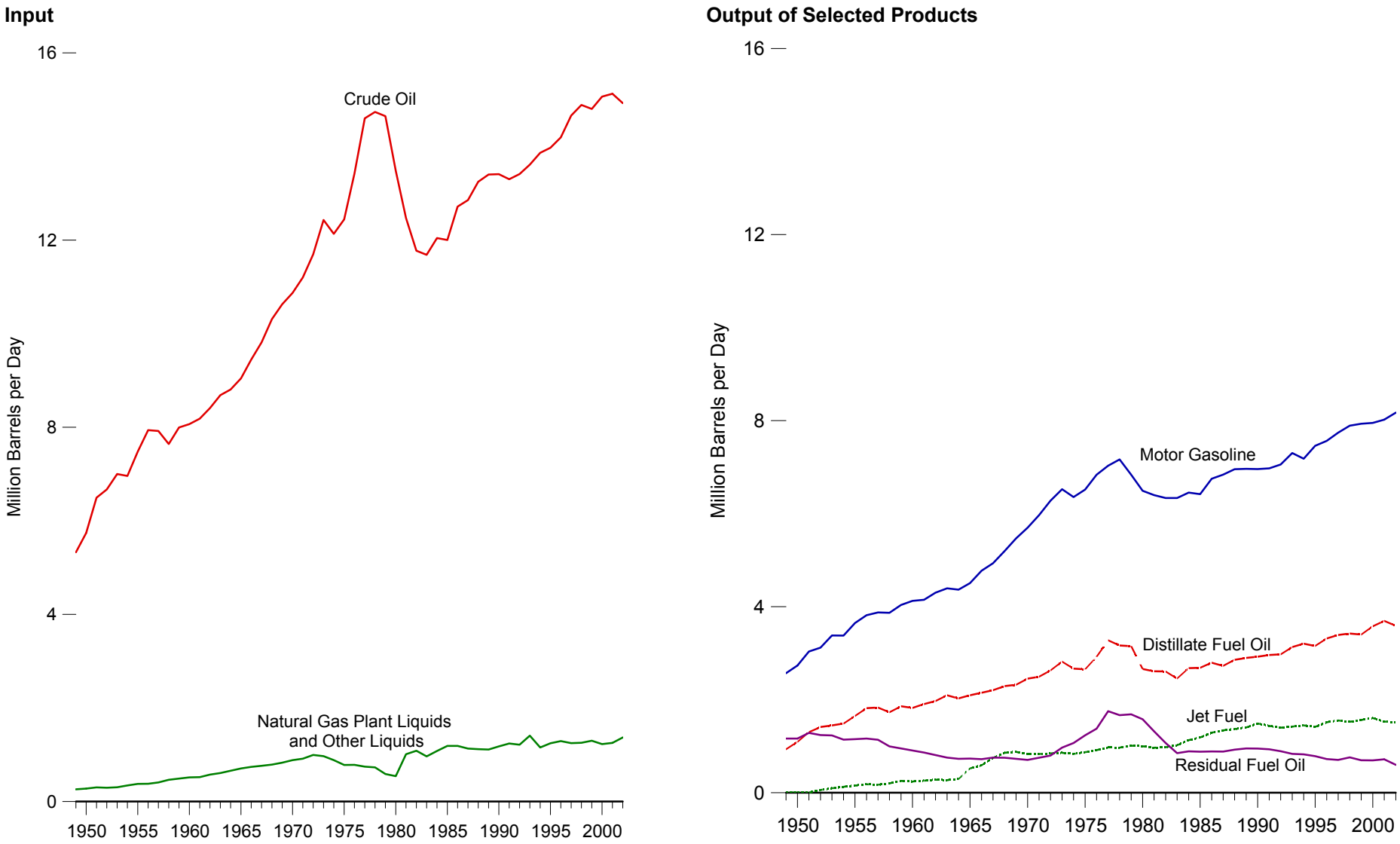
Source: Table 5.7.

Table 5.7 Petroleum Net Imports by Country of Origin, 1960-2002

Year	Persian Gulf Nations [2]	Selected OPEC [1] Countries					Selected Non-OPEC Countries					Total Net Imports	Total Net Imports as Share of Consumption [3]	Net Imports From OPEC	
		Algeria	Nigeria	Saudi Arabia	Venezuela	Total OPEC	Canada	Mexico	United Kingdom	U.S. Virgin Islands and Puerto Rico	Total Non-OPEC			Share of Total Net Imports [4]	Share of Consumption [5]
	Thousand Barrels per Day												Percent		
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	R2,758	R278	R884	R1,662	R1,540	R5,510	R1,717	R1,166	R311	R268	R5,390	R10,900	R55.5	R50.5	R28.0
2002P	2,251	269	595	1,552	1,371	4,541	1,833	1,279	465	227	5,837	10,378	52.8	43.8	23.1

[1] Organization of Petroleum Exporting Countries. See Glossary for membership.
[2] Bahrain, Iran, Iraq, Kuwait, Qatar, Saudi Arabia, and United Arab Emirates.
[3] Calculated by dividing total net petroleum imports by total U.S. petroleum products supplied (consumption).
[4] Calculated by dividing net petroleum imports from OPEC countries by total net petroleum imports.
[5] 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 are imports minus exports; negative numbers indicate that exports exceed 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: http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html.
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. • 1981-2001—EIA, *Petroleum Supply Annual,* annual reports. • 2002—EIA, *Petroleum Supply Monthly* (February 2003).

Figure 5.8 Refinery Input and Output, 1949-2002



Source: Table 5.8.

Table 5.8 Refinery Input and Output, 1949-2002

(Thousand Barrels per Day)

Year	Input				Output										Processing Gain
	Crude Oil	Natural Gas Plant Liquids	Other Liquids [1]	Total Input	Asphalt and Road Oil	Distillate Fuel Oil	Jet Fuel	Liquefied Petroleum Gases	Motor Gasoline [2]	Petroleum Coke	Residual Fuel Oil	Still Gas	Other Products [3]	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)
1951	6,494	271	32	6,797	198	1,304	([4])	91	3,037	52	1,286	264	573	6,805	7
1952	6,670	283	12	6,965	211	1,415	57	85	3,119	50	1,240	260	535	6,972	7
1953	7,000	304	(s)	7,306	216	1,447	98	91	3,381	59	1,233	280	520	7,325	20
1954	6,958	321	23	7,302	225	1,486	128	94	3,378	67	1,142	281	525	7,325	23
1955	7,480	345	32	7,857	251	1,651	155	119	3,648	78	1,152	319	518	7,891	34
1956	7,937	368	12	8,317	270	1,819	182	142	3,816	85	1,166	333	548	8,360	43
1957	7,919	411	(s)	8,326	254	1,832	173	146	3,878	92	1,139	344	509	8,368	42
1958	7,642	375	90	8,107	261	1,730	202	158	3,868	104	996	345	508	8,171	64
1959	7,994	419	72	8,485	285	1,860	255	188	4,037	113	953	348	532	8,571	86
1960	8,067	455	61	8,583	286	1,823	241	212	4,126	164	908	354	616	8,729	146
1961	8,184	464	59	8,706	295	1,907	261	216	4,149	206	865	349	638	8,886	179
1962	8,410	501	76	8,987	320	1,971	280	210	4,303	216	810	358	693	9,162	175
1963	8,687	521	88	9,295	325	2,095	271	261	4,394	221	756	377	798	9,497	202
1964	8,807	583	75	9,464	331	2,027	294	291	4,367	230	729	380	1,032	9,681	217
1965	9,043	618	88	9,750	357	2,096	[5]523	293	4,507	236	736	395	827	9,970	220
1966	9,444	645	95	10,185	375	2,150	590	291	4,774	241	723	399	887	10,430	245
1967	9,815	670	94	10,580	369	2,204	748	306	4,935	249	756	410	894	10,872	292
1968	10,312	709	81	11,102	389	2,293	860	323	5,197	260	754	436	909	11,421	319
1969	10,629	725	106	11,460	397	2,320	881	338	5,468	282	729	467	913	11,795	335
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	[R]429	[R]825	[R]16,382	485	3,695	1,530	[R]667	[R]8,022	767	721	670	729	[R]17,285	[R]903
2002[P]	14,926	444	926	16,297	493	3,589	1,513	673	8,172	783	599	668	763	17,253	956

[1] Prior to 1981, included unfinished oils (net), hydrogen, and hydrocarbons not included elsewhere; 1981 forward, included unfinished oils (net), motor gasoline blending components (net), aviation gasoline blending components (net), hydrogen, other hydrocarbons, and alcohol. See Note 1 at end of section.

[2] Prior to 1964, motor gasoline data were for total gasoline, including motor gasoline, aviation gasoline, and special naphthas.

[3] Kerosene, petrochemical feedstocks (excluding still gas), lubricants, wax, and miscellaneous products. Since 1964, aviation gasoline and special naphthas have been included.

[4] Included in the products from which jet fuel was blended: in 1952, 71 percent gasoline, 17 percent kerosene, and 12 percent distillate fuel.

[5] Prior to 1965, kerosene-type jet fuel was included in kerosene.

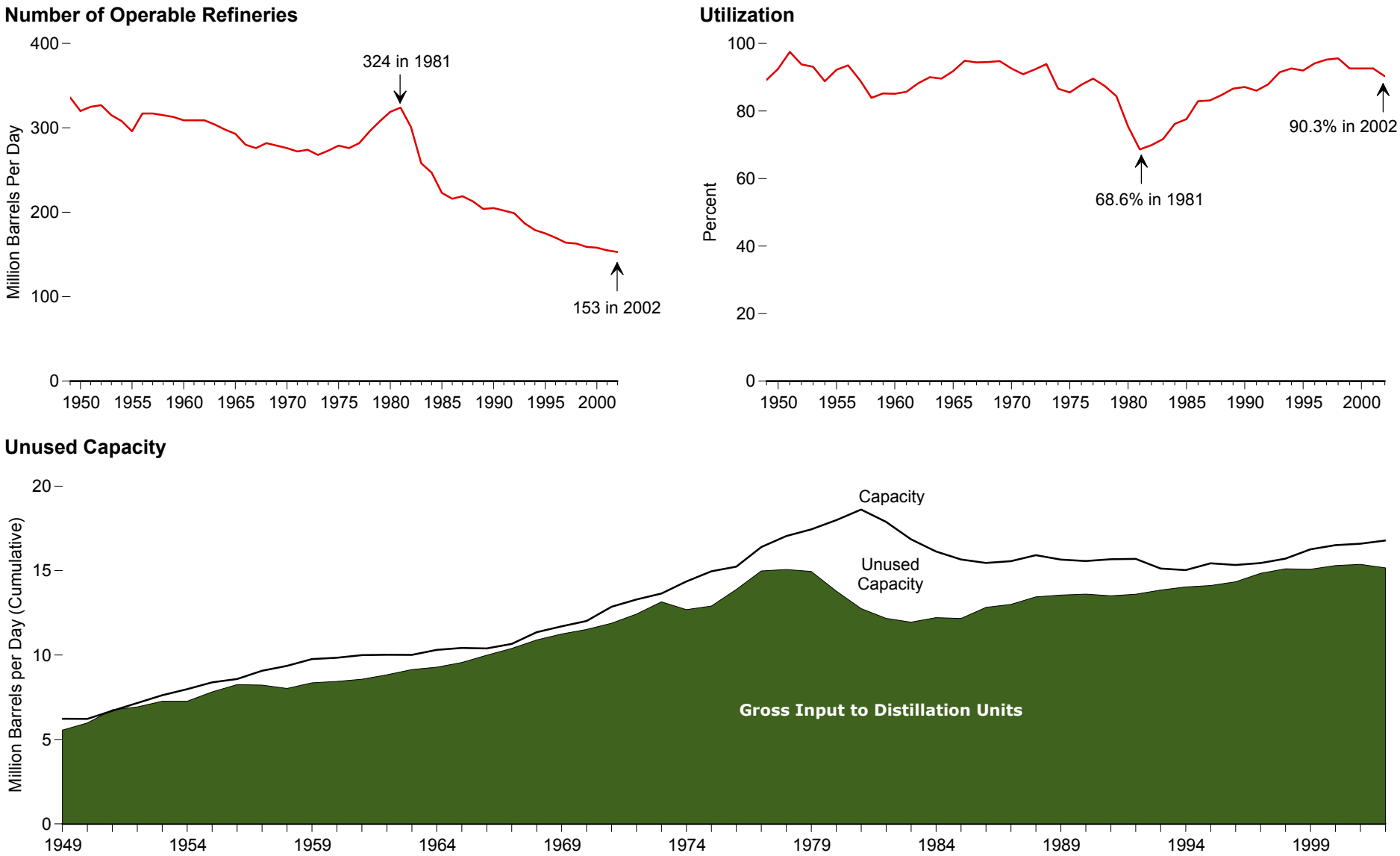
R=Revised. P=Preliminary. (s)=Less than 500 barrels per day.

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

Web Page: 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. • 1981-2001—EIA, *Petroleum Supply Annual,* annual reports. • 2002—EIA, *Petroleum Supply Monthly,* monthly reports.

Figure 5.9 Refinery Capacity and Utilization, 1949-2002



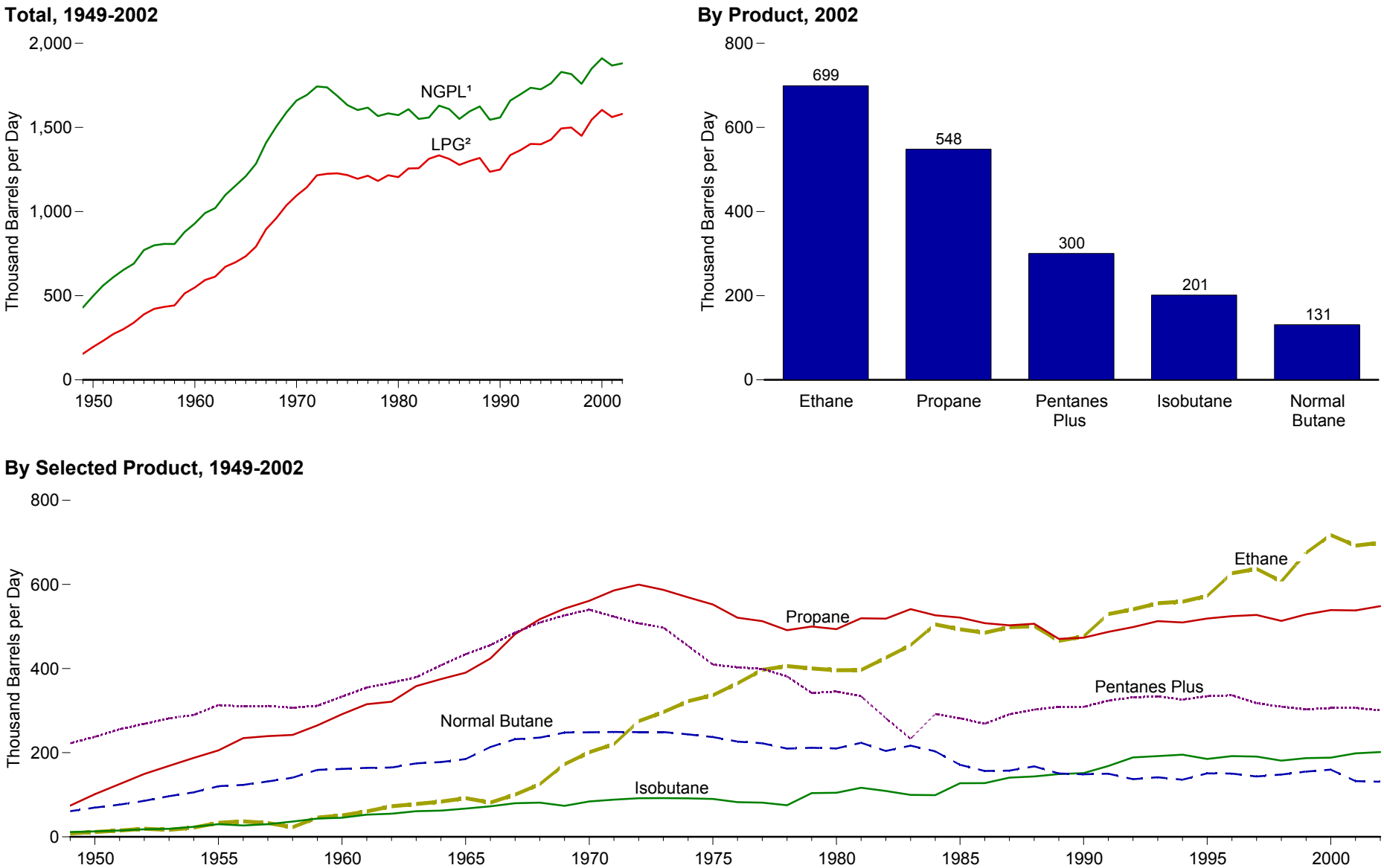
Source: Table 5.9.

Table 5.9 Refinery Capacity and Utilization, 1949-2002

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
1951	325	6,702	6,760	97.5
1952	327	7,161	6,929	93.8
1953	315	7,620	7,263	93.1
1954	308	7,984	7,266	88.8
1955	296	8,386	7,820	92.2
1956	317	8,583	8,250	93.5
1957	317	9,072	8,222	89.2
1958	315	9,358	8,024	83.9
1959	313	9,761	8,356	85.2
1960	309	9,843	8,439	85.1
1961	309	9,999	8,571	85.7
1962	309	10,015	8,830	88.2
1963	304	10,011	9,144	90.0
1964	298	10,306	9,283	89.6
1965	293	10,420	9,557	91.8
1966	280	10,394	9,990	94.9
1967	276	10,658	10,391	94.4
1968	282	11,353	10,894	94.5
1969	279	11,702	11,249	94.8
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	R92.6
2002P	153	16,785	15,167	90.3

[1] Prior to 1956, the number of refineries included only those in operation on January 1. For 1957 forward, the number of refineries has included all operable refineries on January 1. See Glossary.
[2] Capacity in million barrels per calendar day on January 1.
[3] See Note 4 at end of section.
[4] For 1949-1980, 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. For 1981 forward, utilization is derived by averaging reported monthly utilization.
R=Revised. P=Preliminary.
Web Page: 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.* • 1982-2001—EIA, *Petroleum Supply Annual,* annual reports. • 2002—EIA, *Petroleum Supply Monthly* (January 2002). **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.* • 1981-2001—EIA, *Petroleum Supply Annual,* annual reports. • 2002—EIA, *Petroleum Supply Monthly* (January-December 2002 issues). **Utilization:** • 1949-1980—Calculated. • 1981-2001—EIA, *Petroleum Supply Annual,* annual reports. • 2002—EIA, Calculated.

Figure 5.10 Natural Gas Plant Liquids Production



[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, 1949-2002

(Thousand Barrels per Day)

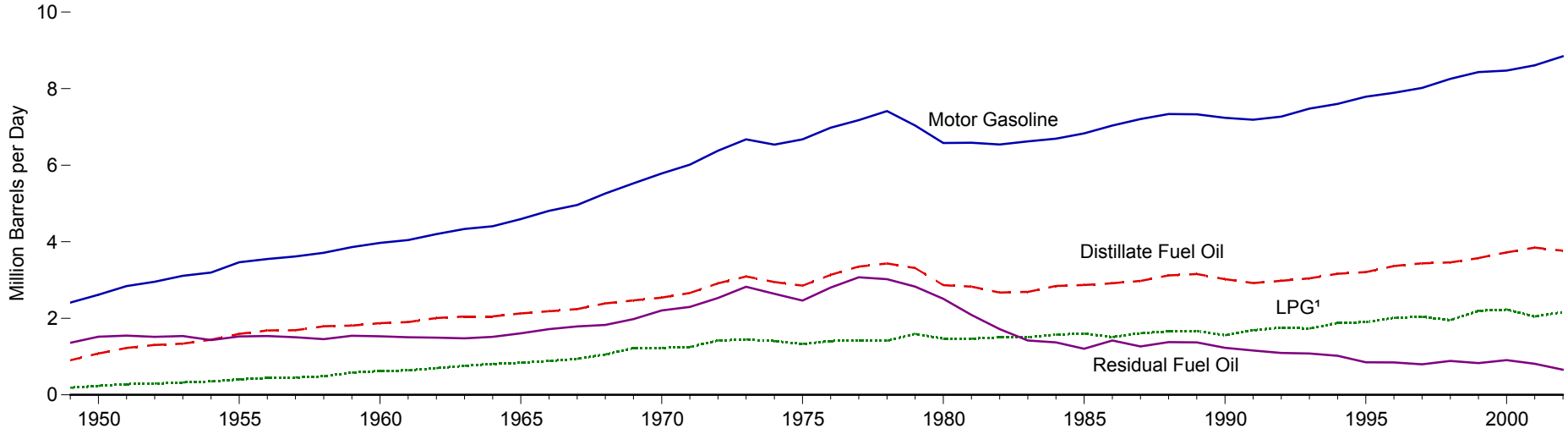
Year	Finished Petroleum Products [1]	Liquefied Petroleum Gases					Pentanes Plus [4]	Total
		Ethane [2]	Isobutane	Normal Butane [3]	Propane [2,3]	Total		
1949	53	8	11	61	74	155	223	430
1950	66	12	13	69	101	195	238	499
1951	73	15	15	77	125	232	256	561
1952	70	19	18	86	150	273	269	611
1953	71	17	19	97	169	301	282	654
1954	61	22	24	106	188	339	290	691
1955	68	34	30	120	205	390	313	771
1956	68	37	27	123	235	422	310	800
1957	63	33	30	132	239	434	311	808
1958	58	23	36	141	242	442	307	808
1959	54	46	43	159	265	514	312	879
1960	47	51	45	161	291	549	333	929
1961	43	61	53	164	315	593	355	991
1962	41	73	55	165	321	614	367	1,021
1963	47	78	61	175	358	672	380	1,098
1964	48	84	62	178	375	699	408	1,154
1965	41	92	67	185	390	734	434	1,210
1966	37	82	73	214	424	792	456	1,284
1967	29	101	80	232	482	895	486	1,409
1968	35	125	81	236	517	960	509	1,504
1969	27	173	74	248	543	1,037	526	1,590
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])	R692	198	R133	R538	R1,562	R307	R1,868
2002P	([5])	699	201	131	548	1,580	300	1,881

[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] Prior to 1984, this category was reported separately as natural gasoline, isopentane, and plant condensate.
[5] Beginning in 1989, data on finished petroleum products production from natural gas processing plants were no longer available.

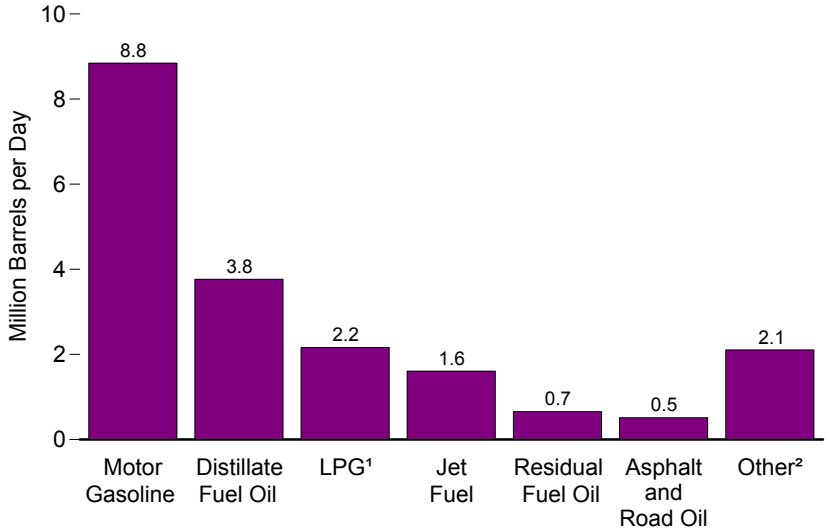
R=Revised. P=Preliminary.
Note: Totals may not equal sum of components due to independent rounding.
Web Page: http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html.
Sources: • 1949-1968—Bureau of Mines, *Minerals Yearbook,* "Crude Petroleum and Petroleum Products" chapter. • 1969-1975—Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual,* annual reports. • 1976-1980—Energy Information Administration (EIA), Energy Data Reports, *Petroleum Statement, Annual,* annual reports. • 1981-2001—EIA, *Petroleum Supply Annual,* annual reports. • 2002—EIA, *Petroleum Supply Monthly* (February 2003).

Figure 5.11 Petroleum Products Supplied by Type

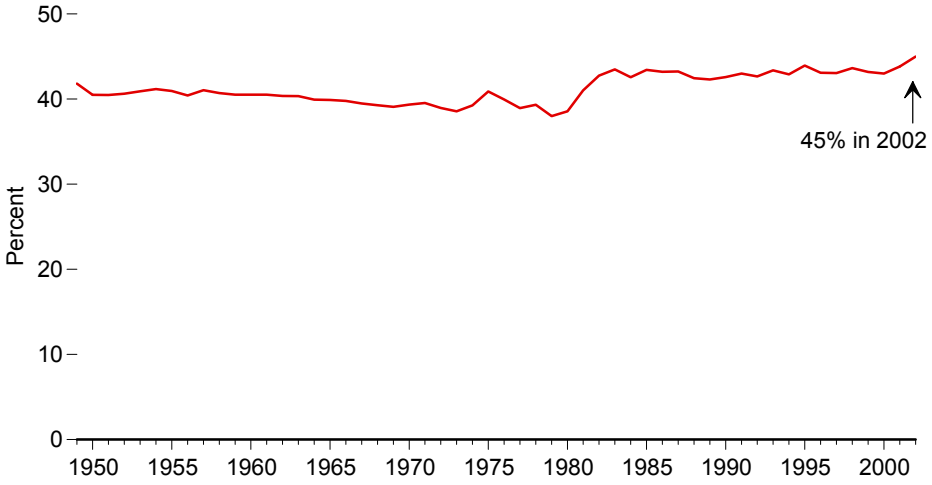
By Selected Product, 1949-2002



By Product, 2002



Motor Gasoline's Share of Total Petroleum Products Supplied, 1949-2002



[1] Liquefied petroleum gases.
[2] Aviation gasoline, kerosene, lubricants, petroleum coke, still gas (refinery gas), petrochemical feedstocks, waxes, natural gasoline, pentanes plus, and miscellaneous products.

Source: 5.11.

Table 5.11 Petroleum Products Supplied by Type, 1949-2002

(Thousand Barrels per Day)

Year	Asphalt and Road Oil	Aviation Gasoline	Distillate Fuel Oil	Jet Fuel	Kerosene	Liquefied Petroleum Gases		Lubricants	Motor Gasoline	Petroleum Coke	Residual Fuel Oil	Other [2]	Total	Percentage Change From Previous Year [3]
						Propane [1]	Total							
1949	157	93	902	([4])	281	NA	187	91	2,410	40	1,359	243	5,763	—
1950	180	108	1,082	([4])	323	NA	234	106	2,616	41	1,517	250	6,458	12.1
1951	198	145	1,225	([4])	338	NA	277	116	2,840	40	1,546	291	7,016	8.6
1952	213	169	1,303	55	331	NA	296	104	2,954	38	1,517	289	7,270	3.9
1953	216	194	1,337	94	314	NA	325	111	3,110	48	1,536	315	7,600	4.3
1954	230	178	1,442	126	324	NA	352	106	3,194	54	1,431	320	7,756	2.1
1955	254	192	1,592	154	320	NA	404	116	3,463	67	1,526	366	8,455	9.0
1956	272	204	1,683	197	321	NA	441	120	3,548	68	1,538	384	8,775	4.1
1957	263	201	1,688	216	279	NA	453	113	3,615	74	1,504	403	8,809	0.1
1958	280	223	1,790	275	294	NA	487	108	3,711	85	1,455	410	9,118	3.5
1959	298	209	1,808	325	262	NA	582	117	3,860	97	1,544	424	9,527	4.5
1960	302	161	1,872	371	271	NA	621	117	3,969	149	1,529	435	9,797	3.1
1961	311	158	1,902	415	266	NA	641	114	4,043	184	1,503	439	9,976	1.5
1962	332	143	2,007	489	269	NA	700	119	4,199	194	1,495	454	10,400	4.2
1963	340	137	2,047	522	266	NA	757	119	4,334	190	1,477	554	10,743	3.3
1964	346	127	2,050	558	253	NA	806	125	4,403	192	1,515	646	11,023	2.9
1965	368	120	2,126	602	267	NA	841	129	4,593	202	1,608	657	11,512	4.2
1966	386	105	2,185	670	277	NA	887	134	4,808	202	1,716	714	12,084	5.0
1967	379	90	2,242	824	274	618	944	121	4,958	206	1,786	737	12,560	3.9
1968	405	84	2,389	955	281	692	1,054	132	5,261	209	1,826	798	13,393	6.9
1969	417	70	2,466	991	275	784	1,221	134	5,526	221	1,978	838	14,137	5.3
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	R3,847	R1,655	72	R1,142	2,044	153	R8,610	R437	R811	R1,481	R19,649	R-0.5
2002P	513	18	3,766	1,608	43	1,251	2,163	151	8,844	458	657	1,435	19,656	0.0

[1] Includes propylene.
[2] Still gas (refinery gas), petrochemical feedstocks, waxes, natural gasoline, pentanes plus, and miscellaneous products. Beginning in 1964, 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.
[3] Percent change from previous year calculated from data in thousand barrels per year.
[4] Included in the products from which jet fuel was blended: in 1952, 71 percent gasoline, 17 percent kerosene, and 12 percent distillate fuel.

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

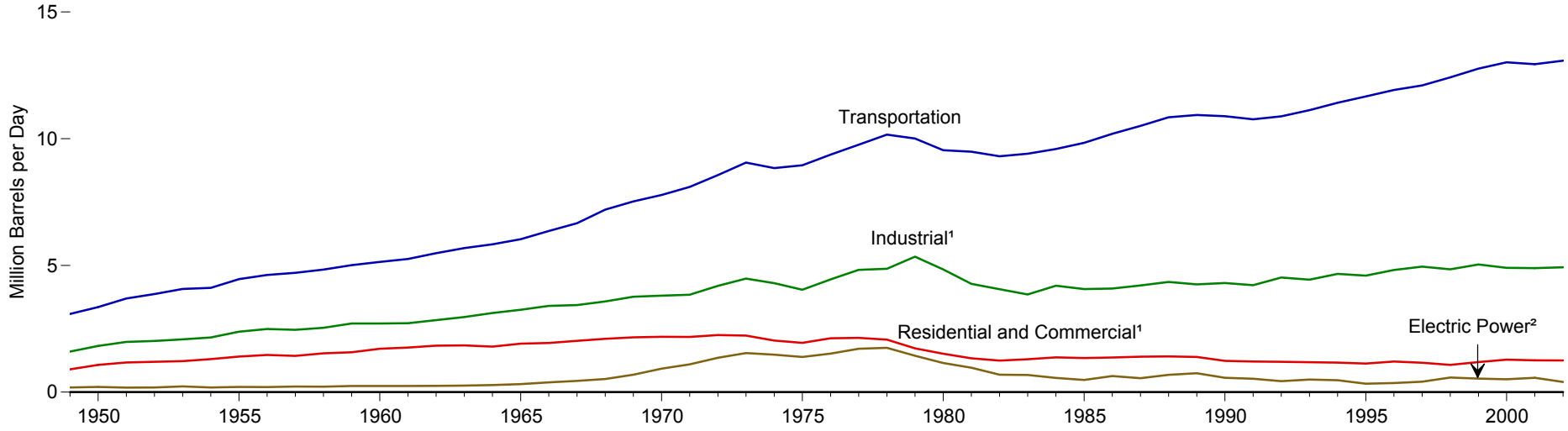
Notes: • For the definition of petroleum products supplied, see Notes 1, 2, and 3 at end of section. • Totals may not equal sum of components due to independent rounding.

Web Page: http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html.

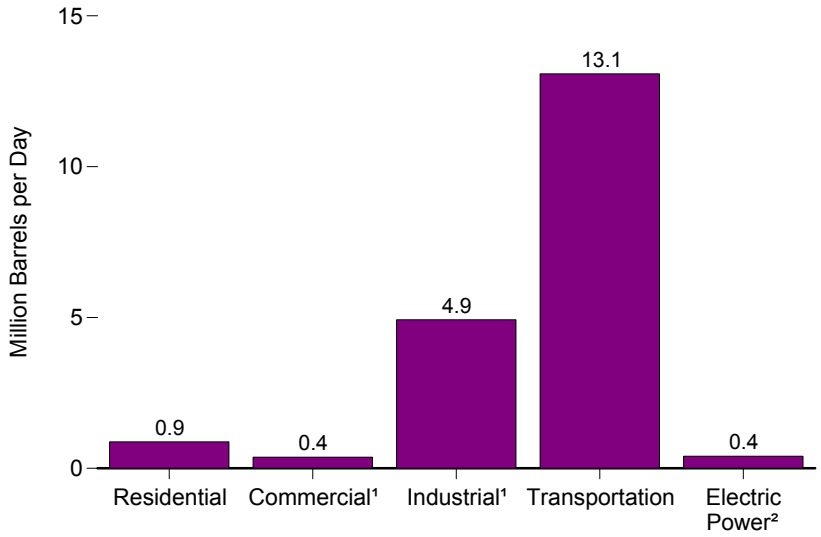
Sources: • 1949-1975—Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual,* annual reports. • 1976-1980—Energy Information Administration (EIA), Energy Data Reports, *Petroleum Statement, Annual,* annual reports. • 1981-2001—EIA, *Petroleum Supply Annual,* annual reports. • 2002—EIA, *Petroleum Supply Monthly* (February 2003).

Figure 5.12a Petroleum Consumption by Sector

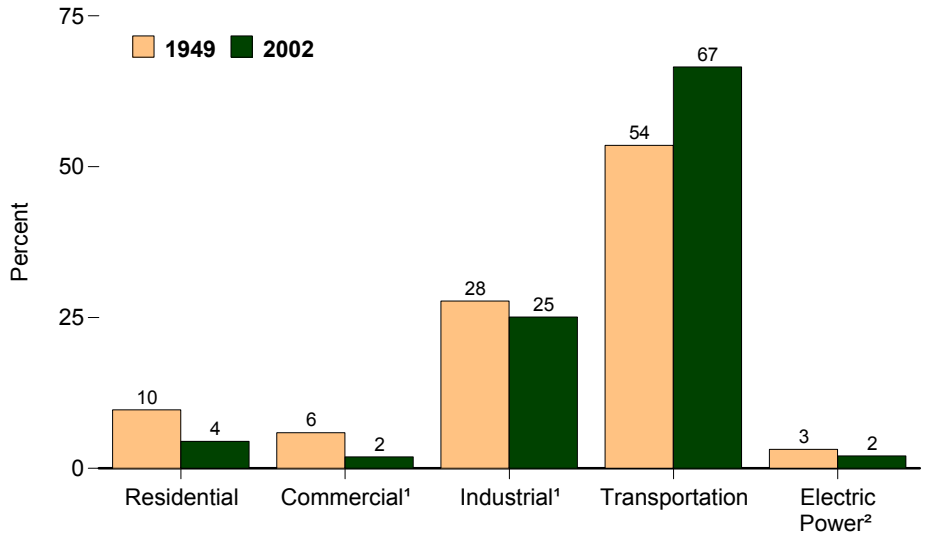
By Sector, 1949-2002



By Sector, 2002



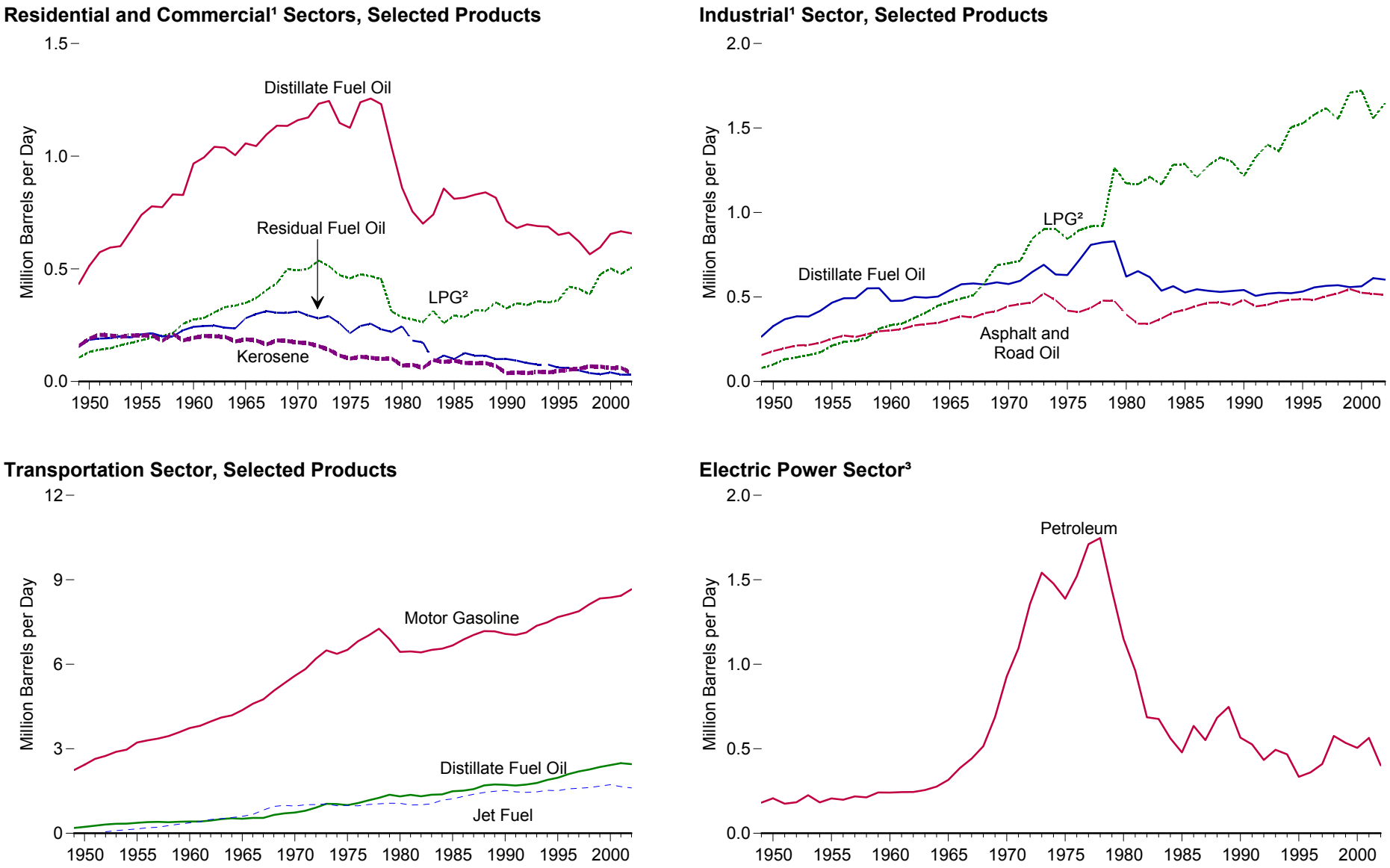
End Use and Electric Power Shares, 1949 and 2002



[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 5.12b.
Sources: Tables 5.12a–5.12d.

Figure 5.12b Petroleum Consumption by Product by Sector, 1949-2002



[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.

Notes: • See related Figure 5.12a. • Because vertical scales differ, graphs should not be compared.
Sources: Tables 5.12a–5.12d.

Table 5.12a Petroleum Consumption: Residential and Commercial Sectors, 1949-2002

(Thousand Barrels per Day)

	End-Use Sectors													
	Residential Sector				Commercial Sector									
					Distillate Fuel Oil						Residual Fuel Oil			
Year	Distillate Fuel Oil	Kerosene	Liquefied Petroleum Gases	Total	CHP [1]	Other [2]	Total	Kerosene	Liquefied Petroleum Gases	Motor Gasoline	CHP [1]	Other [2]	Total	Total [3]
1949	329	140	90	559	([4])	104	104	19	16	48	([4])	153	153	340
1950	390	168	112	670	([4])	123	123	23	20	52	([4])	185	185	403
1951	436	183	120	739	([4])	138	138	25	21	57	([4])	191	191	431
1952	452	181	125	758	([4])	143	143	25	22	59	([4])	192	192	440
1953	456	174	137	768	([4])	144	144	24	24	62	([4])	200	200	455
1954	508	180	146	834	([4])	161	161	25	26	64	([4])	195	195	470
1955	562	179	155	896	([4])	177	177	24	27	69	([4])	209	209	508
1956	591	182	166	938	([4])	187	187	25	29	71	([4])	214	214	526
1957	588	159	170	917	([4])	186	186	22	30	72	([4])	201	201	511
1958	631	186	183	1,000	([4])	199	199	25	32	74	([4])	200	200	531
1959	629	161	218	1,008	([4])	199	199	22	39	77	([4])	227	227	564
1960	736	171	234	1,140	([4])	232	232	23	41	35	([4])	243	243	573
1961	757	180	239	1,176	([4])	237	237	23	42	36	([4])	246	246	585
1962	794	179	261	1,234	([4])	247	247	22	46	38	([4])	248	248	601
1963	792	177	280	1,249	([4])	246	246	22	49	38	([4])	239	239	594
1964	766	155	286	1,207	([4])	239	239	23	51	38	([4])	236	236	586
1965	805	161	296	1,263	([4])	251	251	26	52	40	([4])	281	281	651
1966	796	153	315	1,264	([4])	249	249	29	56	41	([4])	299	299	674
1967	836	143	345	1,324	([4])	260	260	22	61	43	([4])	312	312	698
1968	866	154	371	1,392	([4])	269	269	29	66	43	([4])	305	305	712
1969	865	150	425	1,439	([4])	270	270	30	75	44	([4])	304	304	722
1970	883	144	420	1,447	([4])	276	276	30	74	45	([4])	311	311	736
1971	892	143	425	1,460	([4])	280	280	27	75	44	([4])	293	293	718
1972	936	131	456	1,523	([4])	296	296	27	81	45	([4])	280	280	729
1973	942	110	435	1,487	([4])	303	303	31	77	45	([4])	290	290	746
1974	867	89	401	1,357	([4])	280	280	26	71	43	([4])	259	259	679
1975	850	78	389	1,316	([4])	276	276	24	69	46	([4])	214	214	629
1976	932	89	404	1,425	([4])	308	308	21	71	50	([4])	247	247	697
1977	938	81	397	1,416	([4])	318	318	25	70	52	([4])	256	256	722
1978	917	74	386	1,377	([4])	313	313	26	68	56	([4])	232	232	695
1979	765	64	264	1,093	([4])	274	274	38	47	54	([4])	220	220	634
1980	617	51	242	911	([4])	243	243	20	43	56	([4])	245	245	606
1981	540	41	234	815	([4])	215	215	34	41	48	([4])	182	182	519
1982	494	46	224	764	([4])	207	207	15	40	46	([4])	174	174	480
1983	435	41	267	743	([4])	306	306	54	47	53	([4])	91	91	552
1984	R512	42	220	R774	([4])	R345	R345	45	39	56	([4])	115	115	R600
1985	R514	77	249	R839	([4])	R297	R297	16	44	50	([4])	99	99	R506
1986	R523	59	243	R825	([4])	R293	R293	24	43	55	([4])	126	126	R542
1987	R544	57	269	R870	([4])	R286	R286	24	48	58	([4])	114	114	R529
1988	R558	69	267	R894	([4])	R281	R281	13	47	57	([4])	115	115	R513
1989	R546	57	299	R901	3	R267	R270	13	53	53	2	R97	R99	R488
1990	R460	31	276	R767	3	R249	R252	6	49	58	R3	R97	R100	R465
1991	R438	35	295	R768	2	R241	R243	6	52	44	2	91	92	R438
1992	R460	31	288	R779	1	R236	R238	5	51	41	2	80	82	R418
1993	R458	37	303	R797	2	R230	R232	7	53	15	2	73	75	R383
1994	R451	31	298	R781	3	R233	R236	9	53	13	2	73	75	R386
1995	R426	36	306	R767	2	R223	R225	11	54	10	1	61	62	R361
1996	R434	43	358	835	2	R225	R227	10	63	14	1	58	60	R373
1997	R411	45	349	R805	3	206	209	12	62	22	1	47	48	353
1998	R363	52	329	R744	2	R199	R202	15	58	R20	3	35	37	R332
1999	R389	54	404	R847	2	R204	R206	13	71	R15	2	30	32	R338
2000	R424	R46	R427	R897	2	R228	R230	R14	R75	R23	2	38	40	R383
2001	R427	R46	R406	R879	R3	R236	R239	R15	R72	R20	2	R28	R30	R376
2002	E421	E27	E429	E878	P2	E234	E236	E9	E76	E20	P1	E29	E30	E371

[1] Commercial combined-heat-and-power (CHP) and a small number of commercial electricity-only plants. See Note 1 at end of Section 8.
[2] All commercial sector fuel use other than that in "CHP."
[3] Includes a small amount of petroleum coke, which is not separately displayed.
[4] Included in "Other."
R=Revised. P=Preliminary. E=Estimate.
Notes: • See Notes 1, 2, and 3 at end of section for comments on the calculation of consumption.
• Totals may not equal sum of components due to independent rounding.
Web Page: http://www.eia.doe.gov/emeu/sedr/contents.html.
Sources: **CHP:** Table 8.3b. **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* (Petroleum data released September 2003). • 2002—EIA estimates.

Table 5.12b Petroleum Consumption: Industrial Sector, 1949-2002

(Thousand Barrels per Day)

	End-Use Sectors															
	Industrial Sector															
		Distillate Fuel Oil							Petroleum Coke			Residual Fuel Oil				
Year	Asphalt and Road Oil	CHP [1]	Other [2]	Total	Kerosene	Liquefied Petroleum Gases	Lubricants	Motor Gasoline	CHP [1]	Other [2]	Total	CHP [1]	Other [2]	Total	Other Petroleum [3]	Total
1949	157	([4])	265	265	123	80	36	121	([4])	40	40	([4])	534	534	243	1,598
1950	180	([4])	328	328	132	100	43	131	([4])	41	41	([4])	617	617	250	1,822
1951	198	([4])	369	369	130	132	46	142	([4])	40	40	([4])	631	631	291	1,979
1952	213	([4])	386	386	126	143	42	148	([4])	38	38	([4])	634	634	289	2,018
1953	216	([4])	384	384	115	156	44	155	([4])	48	48	([4])	647	647	315	2,082
1954	230	([4])	418	418	119	173	42	160	([4])	54	54	([4])	641	641	320	2,157
1955	254	([4])	466	466	116	212	47	173	([4])	67	67	([4])	686	686	366	2,387
1956	272	([4])	493	493	114	235	48	177	([4])	68	68	([4])	699	699	384	2,490
1957	263	([4])	493	493	99	241	45	181	([4])	74	74	([4])	657	657	403	2,456
1958	280	([4])	551	551	82	260	43	186	([4])	85	85	([4])	644	644	410	2,541
1959	298	([4])	552	552	79	313	47	193	([4])	97	97	([4])	703	703	424	2,706
1960	302	([4])	476	476	78	333	48	198	([4])	149	149	([4])	689	689	435	2,708
1961	311	([4])	479	479	64	344	47	190	([4])	184	184	([4])	662	662	439	2,720
1962	332	([4])	501	501	68	376	54	193	([4])	194	194	([4])	669	669	454	2,840
1963	340	([4])	496	496	66	409	54	185	([4])	190	190	([4])	667	667	554	2,962
1964	346	([4])	502	502	75	449	56	177	([4])	192	192	([4])	677	677	646	3,123
1965	368	([4])	541	541	80	470	62	179	([4])	202	202	([4])	689	689	657	3,247
1966	386	([4])	575	575	95	491	64	168	([4])	202	202	([4])	709	709	714	3,404
1967	379	([4])	580	580	110	510	60	158	([4])	206	206	([4])	693	693	737	3,433
1968	405	([4])	574	574	99	586	65	159	([4])	209	209	([4])	682	682	798	3,576
1969	417	([4])	586	586	95	689	69	154	([4])	221	221	([4])	695	695	838	3,764
1970	447	([4])	577	577	89	699	70	150	([4])	203	203	([4])	708	708	866	3,808
1971	458	([4])	596	596	80	715	69	143	([4])	211	211	([4])	705	705	870	3,845
1972	468	([4])	648	648	77	846	73	132	([4])	233	233	([4])	765	765	949	4,191
1973	522	([4])	691	691	75	902	88	133	([4])	254	254	([4])	809	809	1,005	4,479
1974	481	([4])	633	633	61	901	85	123	([4])	230	230	([4])	753	753	1,034	4,301
1975	419	([4])	630	630	58	844	68	116	([4])	246	246	([4])	658	658	1,001	4,038
1976	411	([4])	717	717	59	895	75	110	([4])	242	242	([4])	792	792	1,145	4,447
1977	436	([4])	809	809	69	918	82	102	([4])	266	266	([4])	844	844	1,294	4,821
1978	479	([4])	823	823	75	921	88	93	([4])	250	250	([4])	748	748	1,391	4,867
1979	476	([4])	830	830	86	1,266	92	84	([4])	243	243	([4])	721	721	1,546	5,343
1980	396	([4])	621	621	87	1,172	82	82	([4])	234	234	([4])	586	586	1,581	4,842
1981	342	([4])	653	653	52	1,166	79	83	([4])	250	250	([4])	471	471	1,176	4,273
1982	342	([4])	617	617	68	1,211	72	72	([4])	246	246	([4])	456	456	973	4,058
1983	373	([4])	537	537	32	1,166	75	59	([4])	225	225	([4])	345	345	1,042	3,854
1984	408	([4])	R564	R564	28	1,283	80	83	([4])	244	244	([4])	386	386	1,120	R4,198
1985	425	([4])	R526	R526	21	1,285	75	114	([4])	261	261	([4])	326	326	1,032	R4,065
1986	448	([4])	R546	R546	16	1,207	73	108	([4])	264	264	([4])	321	321	1,105	R4,087
1987	467	([4])	R537	R537	14	1,279	83	107	([4])	294	294	([4])	253	253	1,176	R4,210
1988	468	([4])	R530	R530	14	1,326	80	100	([4])	306	306	([4])	237	237	1,286	R4,347
1989	453	5	R531	R536	14	1,300	82	104	5	295	300	58	R121	R178	1,284	R4,251
1990	483	R7	R534	R541	6	1,215	84	97	R25	R300	325	R64	R115	179	1,373	R4,304
1991	444	12	R495	R507	6	1,326	75	101	22	293	315	55	91	146	1,299	R4,219
1992	454	10	R509	R519	5	1,402	77	101	26	336	362	59	109	168	1,434	R4,522
1993	474	10	R515	R525	6	1,363	78	94	22	308	330	65	129	194	1,373	R4,438
1994	484	10	R513	R522	8	1,505	82	101	25	304	329	69	113	183	1,454	R4,667
1995	486	6	R526	R532	7	1,527	80	105	26	302	328	60	87	147	1,381	R4,594
1996	484	8	R549	R557	9	1,580	78	105	27	317	343	66	80	146	1,518	R4,819
1997	505	8	R558	R566	9	1,617	82	111	37	294	331	56	71	127	1,605	R4,953
1998	521	16	R554	R570	11	1,553	86	105	29	362	390	60	40	100	1,508	R4,844
1999	547	16	R542	R558	6	1,709	87	80	31	395	426	52	38	90	1,532	R5,035
2000	525	10	R553	R563	R8	R1,720	86	R79	19	342	361	48	57	105	1,458	R4,903
2001	519	R9	R602	R611	R11	R1,557	79	R155	R15	R375	R390	R46	R42	R89	R1,481	R4,892
2002	E513	P6	E597	E603	E7	E1,648	E78	E159	P19	E379	E398	P37	E50	E87	E1,435	E4,926

[1] Industrial combined-heat-and-power (CHP) and a small number of industrial electricity-only plants. See Note 1 at end of Section 8.
[2] All industrial sector fuel use other than that in "CHP."
[3] Still gas (refinery gas), petrochemical feedstocks, special naphthas, waxes, natural gasoline, pentanes plus, crude oil, and miscellaneous products.
[4] Included in "Other."
R=Revised. P=Preliminary. E=Estimate.

Notes: • See Notes 1, 2, and 3 at end of section for comments on the calculation of consumption. • Totals may not equal sum of components due to independent rounding.
Web Page: http://www.eia.doe.gov/emeu/sedr/contents.html.
Sources: **CHP:** Table 8.3b. **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* (Petroleum data released September 2003). • 2002—EIA estimates.

Table 5.12c Petroleum Consumption: Transportation Sector and End-Use Total, 1949-2002

(Thousand Barrels per Day)

	End-Use Sectors									
	Transportation									
			Jet Fuel							
Year	Aviation Gasoline	Distillate Fuel Oil	Kerosene Type	Total	Liquefied Petroleum Gases	Lubricants	Motor Gasoline [1]	Residual Fuel Oil	Total	End-Use Total
1949	93	190	0	([2])	1	54	2,241	504	3,084	5,581
1950	108	226	0	([2])	2	64	2,433	524	3,356	6,251
1951	145	271	0	([2])	4	70	2,641	562	3,692	6,841
1952	169	310	0	55	5	63	2,747	521	3,870	7,086
1953	194	336	0	94	7	67	2,892	479	4,069	7,374
1954	178	342	0	126	8	63	2,970	426	4,112	7,573
1955	192	372	0	154	9	70	3,221	440	4,458	8,249
1956	204	398	0	197	11	72	3,299	440	4,622	8,577
1957	201	405	16	216	12	68	3,362	444	4,707	8,591
1958	223	394	17	275	12	65	3,451	414	4,833	8,905
1959	209	411	40	325	13	70	3,590	389	5,007	9,285
1960	161	418	91	371	13	68	3,736	367	5,135	9,556
1961	158	419	129	415	15	67	3,817	361	5,252	9,733
1962	143	454	181	489	16	66	3,968	344	5,480	10,155
1963	137	502	206	522	18	66	4,112	326	5,683	10,488
1964	127	532	234	558	20	69	4,187	338	5,830	10,746
1965	120	514	334	602	23	67	4,374	336	6,036	11,197
1966	105	547	391	670	26	70	4,599	340	6,357	11,698
1967	90	545	518	824	28	61	4,757	359	6,663	12,118
1968	84	653	609	955	31	67	5,059	350	7,198	12,877
1969	70	705	694	991	33	65	5,328	332	7,524	13,449
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	[R]1,383	953	1,175	30	76	6,554	351	[R]9,592	15,163
1985	27	[R]1,491	1,005	1,218	21	71	6,667	342	[R]9,838	15,248
1986	32	[R]1,514	1,105	1,307	19	69	6,871	379	[R]10,191	15,645
1987	25	[R]1,568	1,181	1,385	15	78	7,041	392	[R]10,505	16,114
1988	27	[R]1,701	1,236	1,449	17	75	7,179	399	[R]10,846	16,600
1989	26	[R]1,734	1,284	1,489	16	77	7,171	[R]423	[R]10,937	16,577
1990	24	[R]1,722	1,340	1,522	16	80	7,080	[R]443	[R]10,888	[R]16,423
1991	23	[R]1,694	1,296	1,471	15	71	7,042	447	[R]10,763	16,188
1992	22	[R]1,728	1,310	1,454	14	72	7,125	465	[R]10,881	16,599
1993	21	[R]1,785	1,357	1,469	14	74	7,367	393	[R]11,124	16,743
1994	21	[R]1,896	1,480	1,527	24	77	7,487	385	[R]11,417	17,251
1995	21	[R]1,973	1,497	1,514	13	76	7,674	397	[R]11,668	17,390
1996	20	[R]2,096	1,575	1,578	11	73	7,772	370	[R]11,921	17,948
1997	22	[R]2,198	1,598	1,599	10	78	7,883	310	[R]12,099	18,211
1998	19	[R]2,263	1,623	1,622	13	81	[R]8,128	294	[R]12,420	18,341
1999	21	[R]2,352	1,675	1,673	10	82	[R]8,336	290	[R]12,765	18,984
2000	20	[R]2,422	1,725	1,725	[R]8	81	[R]8,370	386	[R]13,012	19,196
2001	19	[R]2,489	[R]1,656	[R]1,655	[R]10	74	[R]8,435	[R]255	[R]12,938	[R]19,085
2002[E]	18	2,455	1,615	1,608	10	73	8,665	250	13,079	19,254

[1] Includes ethanol blended into motor gasoline.
[2] Included in the products from which jet fuel was blended: in 1952, 71 percent gasoline, 17 percent kerosene, and 12 percent distillate fuel.
R=Revised. E=Estimate.
Notes: • See Notes 1, 2, and 3 at end of section for comments on the calculation of consumption. • Totals may not equal sum of components due to independent rounding.
Web Page: http://www.eia.doe.gov/emeu/sedr/contents.html.
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* (Petroleum data released September 2003). • 2002—EIA estimates.

Table 5.12d Petroleum Consumption: Electric Power Sector and Total, 1949-2002

(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
1951	13	NA	163	175	NA	NA	NA	NA	13	NA	163	175	7,016
1952	13	NA	170	184	NA	NA	NA	NA	13	NA	170	184	7,270
1953	16	NA	209	225	NA	NA	NA	NA	16	NA	209	225	7,600
1954	13	NA	170	183	NA	NA	NA	NA	13	NA	170	183	7,756
1955	15	NA	191	206	NA	NA	NA	NA	15	NA	191	206	8,455
1956	14	NA	184	199	NA	NA	NA	NA	14	NA	184	199	8,775
1957	16	NA	203	218	NA	NA	NA	NA	16	NA	203	218	8,809
1958	15	NA	197	213	NA	NA	NA	NA	15	NA	197	213	9,118
1959	17	NA	224	242	NA	NA	NA	NA	17	NA	224	242	9,527
1960	10	NA	231	241	NA	NA	NA	NA	10	NA	231	241	9,797
1961	10	NA	233	244	NA	NA	NA	NA	10	NA	233	244	9,976
1962	11	NA	234	245	NA	NA	NA	NA	11	NA	234	245	10,400
1963	12	NA	244	256	NA	NA	NA	NA	12	NA	244	256	10,743
1964	12	NA	265	276	NA	NA	NA	NA	12	NA	265	276	11,023
1965	14	NA	302	316	NA	NA	NA	NA	14	NA	302	316	11,512
1966	17	NA	369	386	NA	NA	NA	NA	17	NA	369	386	12,084
1967	20	NA	422	442	NA	NA	NA	NA	20	NA	422	442	12,560
1968	27	NA	489	515	NA	NA	NA	NA	27	NA	489	515	13,393
1969	41	NA	647	688	NA	NA	NA	NA	41	NA	647	688	14,137
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	R14	497	551	4	0	R10	R15	45	R14	R507	R566	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	R76	R25	R430	R531	R4	R22	R7	R33	R80	R47	R437	R564	R19,649
2002P	50	35	285	370	1	25	5	31	51	61	291	402	19,656

[1] Electricity-only and combined-heat-and-power (CHP) plants within the NAICS 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.

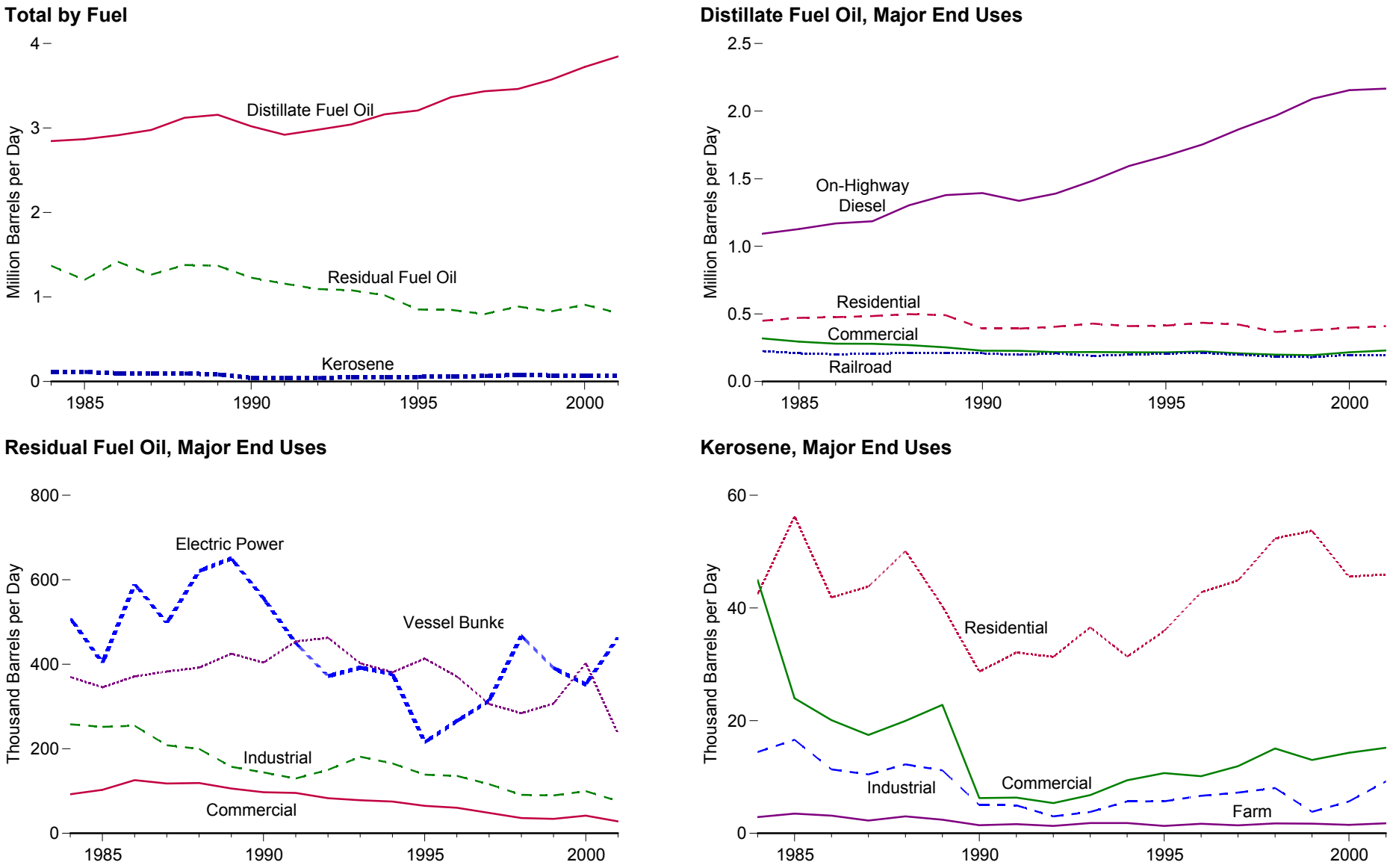
R=Revised. P=Preliminary. NA=Not available.

Notes: • See Notes 1, 2, and 3 at end of section for comments on the calculation of consumption. • See Tables 8.3c-8.3e for the amount of petroleum used to produce electricity and Table 8.3f for the amount of petroleum used to produce useful thermal output. • Totals may not equal sum of components due to independent rounding.

Web Page: http://www.eia.doe.gov/fuelelectric.html.

Sources: **Electric Power Sector:** Tables 8.3b, and 8.3d-8.3f. **Total Consumption:** Table 5.11, data for "Total."

Figure 5.13 Fuel Oil and Kerosene Adjusted Sales, 1984-2001



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

Source: Table 5.13.

Table 5.13 Fuel Oil and Kerosene Adjusted Sales, 1984-2001

(Thousand Barrels per Day)

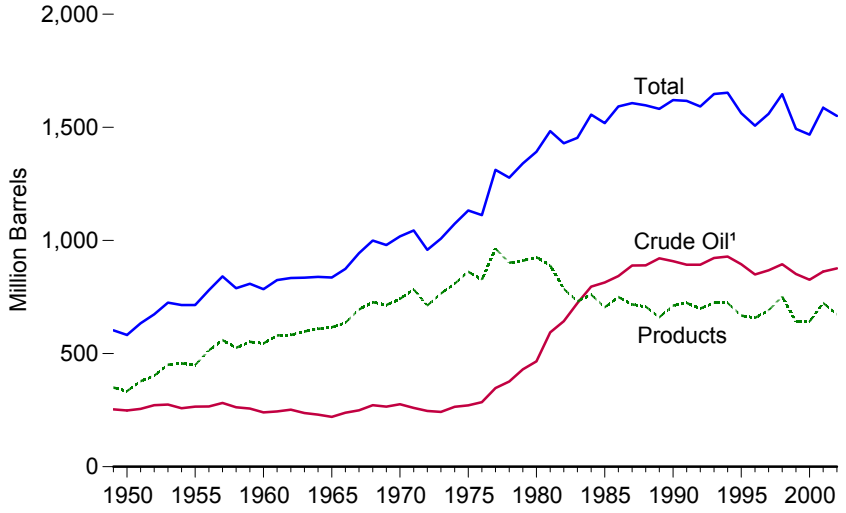
Year	Residential	Commercial	Industrial	Oil Company	Farm	Electric Power [1]	Railroad	Vessel Bunkering	On-Highway Diesel	Military	Off-Highway Diesel	Other	Total
						Distillate Fuel Oil							
1984	450	319	153	59	193	45	225	110	1,093	45	109	44	2,845
1985	471	294	169	57	216	34	209	124	1,127	50	105	12	2,868
1986	476	280	175	49	220	40	202	133	1,169	50	111	9	2,914
1987	484	279	190	58	211	42	205	145	1,185	58	113	5	2,976
1988	498	269	170	57	223	52	212	150	1,304	64	119	4	3,122
1989	490	252	168	55	209	[1]68	213	154	1,378	61	107	2	3,157
1990	391	228	159	63	214	[R]53	209	143	1,393	51	116	(s)	3,021
1991	391	226	152	59	214	39	197	141	1,336	54	110	(s)	2,921
1992	405	217	144	51	228	33	209	146	1,391	42	113	(s)	2,979
1993	428	218	128	50	211	41	189	133	1,485	31	127	(s)	3,041
1994	410	216	136	46	208	59	199	131	1,594	34	129	(s)	3,162
1995	413	215	131	36	210	47	207	128	1,668	24	126	—	3,207
1996	435	222	136	41	216	51	212	141	1,754	24	134	—	3,365
1997	421	209	140	41	214	53	199	136	1,867	22	135	—	3,435
1998	367	198	147	37	197	66	184	138	1,967	18	142	—	3,461
1999	380	195	141	38	188	66	181	134	2,091	19	139	—	3,572
2000	398	216	138	44	203	74	197	133	2,155	15	149	—	3,722
2001	409	229	152	54	224	95	193	137	2,167	23	164	—	3,847
						Residual Fuel Oil							
1984	—	92	258	76	—	509	([2])	370	—	14	—	50	1,369
1985	—	103	252	71	—	403	([2])	346	—	13	—	15	1,202
1986	—	126	254	51	—	590	([2])	371	—	[E]12	—	15	1,418
1987	—	118	208	42	—	498	([2])	383	—	12	—	3	1,264
1988	—	119	200	34	—	621	([2])	392	—	9	—	4	1,378
1989	—	106	158	22	—	[1]651	([2])	425	—	7	—	2	1,370
1990	—	97	[R]143	20	—	[R]560	([2])	[R]401	—	5	—	2	1,229
1991	—	95	130	20	—	450	([2])	454	—	8	—	1	1,158
1992	—	83	150	19	—	372	([2])	463	—	6	—	1	1,094
1993	—	78	181	20	—	392	([2])	403	—	6	—	(s)	1,080
1994	—	75	165	17	—	378	([2])	381	—	4	—	(s)	1,021
1995	—	65	139	15	—	216	([2])	413	—	4	—	(s)	852
1996	—	60	136	11	—	266	([2])	371	—	4	—	1	848
1997	—	48	116	10	—	314	([2])	306	—	3	—	(s)	797
1998	—	36	91	6	—	468	([2])	284	—	2	—	(s)	887
1999	—	34	89	7	—	391	([2])	307	—	1	—	(s)	830
2000	—	42	100	10	—	352	([2])	403	—	2	—	(s)	909
2001	—	28	76	6	—	464	([2])	236	—	1	—	(s)	811
						Kerosene							
1984	42	45	14	—	3	—	—	—	—	—	—	11	115
1985	56	24	17	—	3	—	—	—	—	—	—	14	114
1986	42	20	11	—	3	—	—	—	—	—	—	22	98
1987	44	17	10	—	2	—	—	—	—	—	—	21	95
1988	50	20	12	—	3	—	—	—	—	—	—	11	96
1989	40	23	11	—	2	—	—	—	—	—	—	8	84
1990	29	6	5	—	1	—	—	—	—	—	—	1	43
1991	32	6	5	—	2	—	—	—	—	—	—	1	46
1992	31	5	3	—	1	—	—	—	—	—	—	(s)	41
1993	37	7	4	—	2	—	—	—	—	—	—	1	50
1994	31	9	6	—	2	—	—	—	—	—	—	1	49
1995	36	11	6	—	1	—	—	—	—	—	—	(s)	54
1996	43	10	7	—	2	—	—	—	—	—	—	(s)	62
1997	45	12	7	—	1	—	—	—	—	—	—	(s)	66
1998	52	15	8	—	2	—	—	—	—	—	—	1	78
1999	54	13	4	—	2	—	—	—	—	—	—	1	73
2000	46	14	6	—	2	—	—	—	—	—	—	(s)	67
2001	46	15	9	—	2	—	—	—	—	—	—	(s)	72

[1] Electricity-only and combined-heat-and-power (CHP) plants within the NAICS 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] Included in "Other."

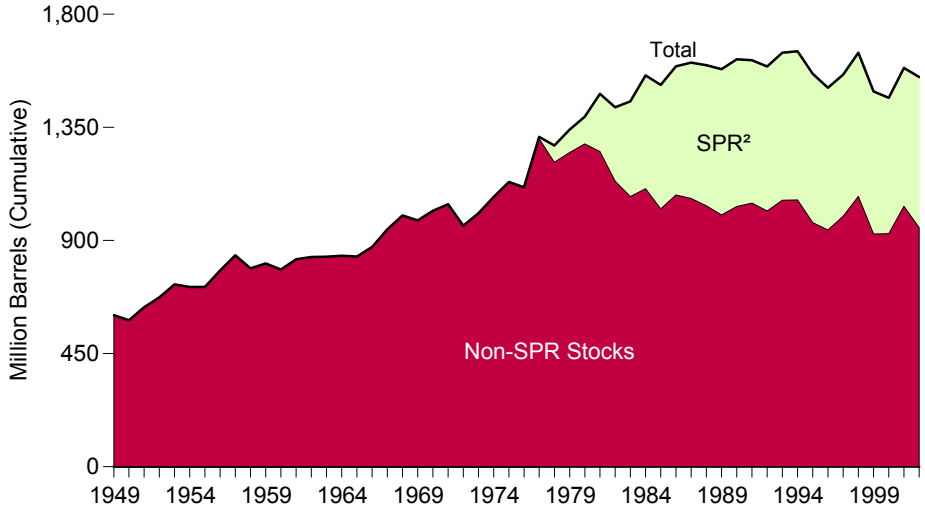
R=Revised. E = Annual estimate based on eleven months of data. — = Not applicable. (s)=Less than 0.5 thousand barrels per day.
Notes, Web Page, and Sources: See end of section.

Figure 5.14 Petroleum Primary Stocks by Type

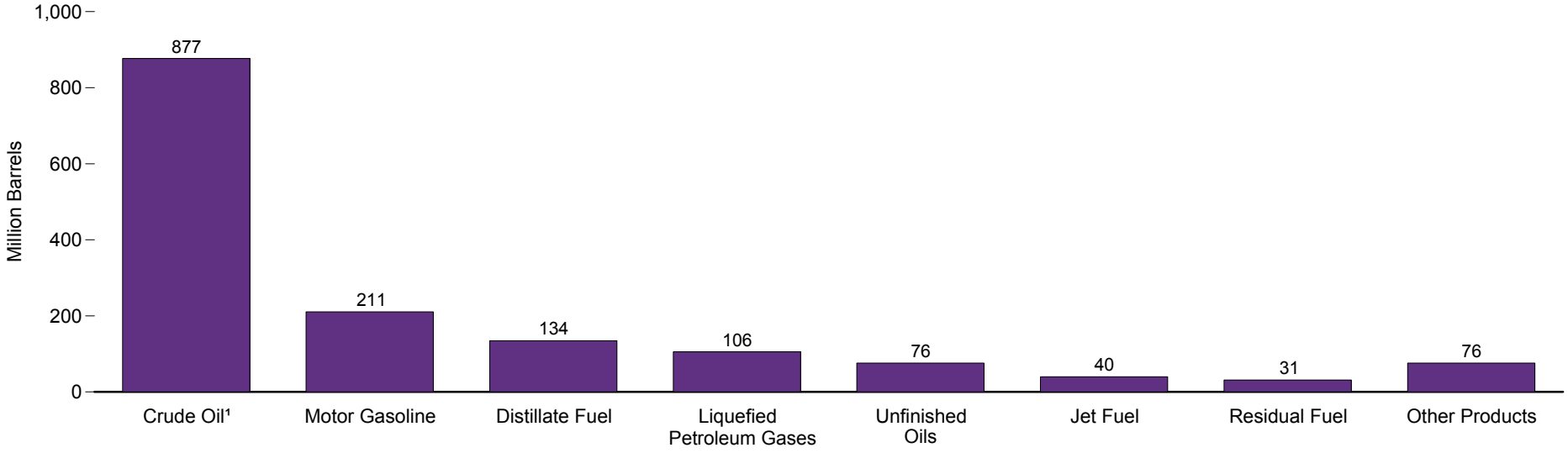
Total, Products, and Crude Oil,[1] 1949-2002



Total Stocks and the Strategic Petroleum Reserve, 1949-2002



By Type, 2002



[1] Includes lease condensate and crude oil stored in the Strategic Petroleum Reserve (SPR).
[2] See Figure 5.15 for additional Strategic Petroleum Reserve Information.

Notes: • Stocks are at end of year. • Because vertical scales differ, graphs should not be compared.
Sources: Tables 5.14 and 5.15.

Table 5.14 Petroleum Primary Stocks by Type, 1949-2002

(Million Barrels)

Year	Crude Oil and Lease Condensate			Petroleum Products										Total Petroleum
	Strategic Petroleum Reserve	Other Primary	Total	Distillate Fuel Oil		Jet Fuel	Liquefied Petroleum Gases		Motor Gasoline [3]	Residual Fuel Oil	Unfinished Oils	Other Products [4]	Total Products	
				Low Sulfur [1]	Total		Propane [2]	Total						
1949	0	253	253	NA	75	([5])	([6])	1	110	60	66	37	350	603
1950	0	248	248	NA	72	([5])	([6])	2	116	41	70	34	334	583
1951	0	256	256	NA	87	([5])	([6])	2	135	43	67	45	378	634
1952	0	272	272	NA	99	2	([6])	3	135	49	62	53	402	674
1953	0	274	274	NA	112	3	([6])	4	158	49	69	56	451	726
1954	0	258	258	NA	108	3	([6])	7	155	52	74	57	457	715
1955	0	266	266	NA	111	3	([6])	7	165	39	68	55	449	715
1956	0	266	266	NA	134	5	([6])	14	187	44	67	63	514	780
1957	0	282	282	NA	149	5	([6])	14	197	60	69	66	560	841
1958	0	263	263	NA	125	6	([6])	16	187	60	70	63	526	789
1959	0	257	257	NA	151	8	([6])	19	188	54	67	66	552	809
1960	0	240	240	NA	138	7	([6])	23	195	45	62	76	545	785
1961	0	245	245	NA	152	8	([6])	31	184	45	79	81	580	825
1962	0	252	252	NA	144	10	([6])	25	189	50	82	83	582	834
1963	0	237	237	NA	157	9	([6])	28	191	48	82	85	598	836
1964	0	230	230	NA	156	19	([6])	30	186	40	87	92	609	839
1965	0	220	220	NA	155	19	([6])	30	175	56	89	92	616	836
1966	0	238	238	NA	154	19	([6])	35	186	61	89	91	636	874
1967	0	249	249	NA	160	22	([6])	64	200	66	90	93	695	944
1968	0	272	272	NA	173	24	([6])	76	204	67	93	89	727	1,000
1969	0	265	265	NA	172	28	([6])	60	211	58	98	88	715	980
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	R82	R145	42	66	121	R210	41	88	78	R724	R1,586
2002P	599	278	877	81	134	40	53	106	211	31	76	76	674	1,550

[1] Sulfur content of 0.05 percent or less by weight.
[2] Includes propylene.
[3] Prior to 1964, motor gasoline data were for total gasoline,which included motor gasoline, aviation gasoline, and special naphthas. For 1981 forward, data include motor gasoline blending components.
[4] Kerosene, petrochemical feedstocks, lubricants, wax, petroleum coke, asphalt, road oil, pentanes plus, and miscellaneous products. Since 1964, aviation gasoline and special naphthas have been included. For 1981 forward, includes aviation gasoline blending components, hydrogen, other hydrocarbons, and alcohol.
[5] Included in the products from which jet fuel was blended: in 1952, 71 percent gasoline, 17 percent kerosene, and 12 percent distillate fuel.
[6] Included in liquefied petroleum gases total.

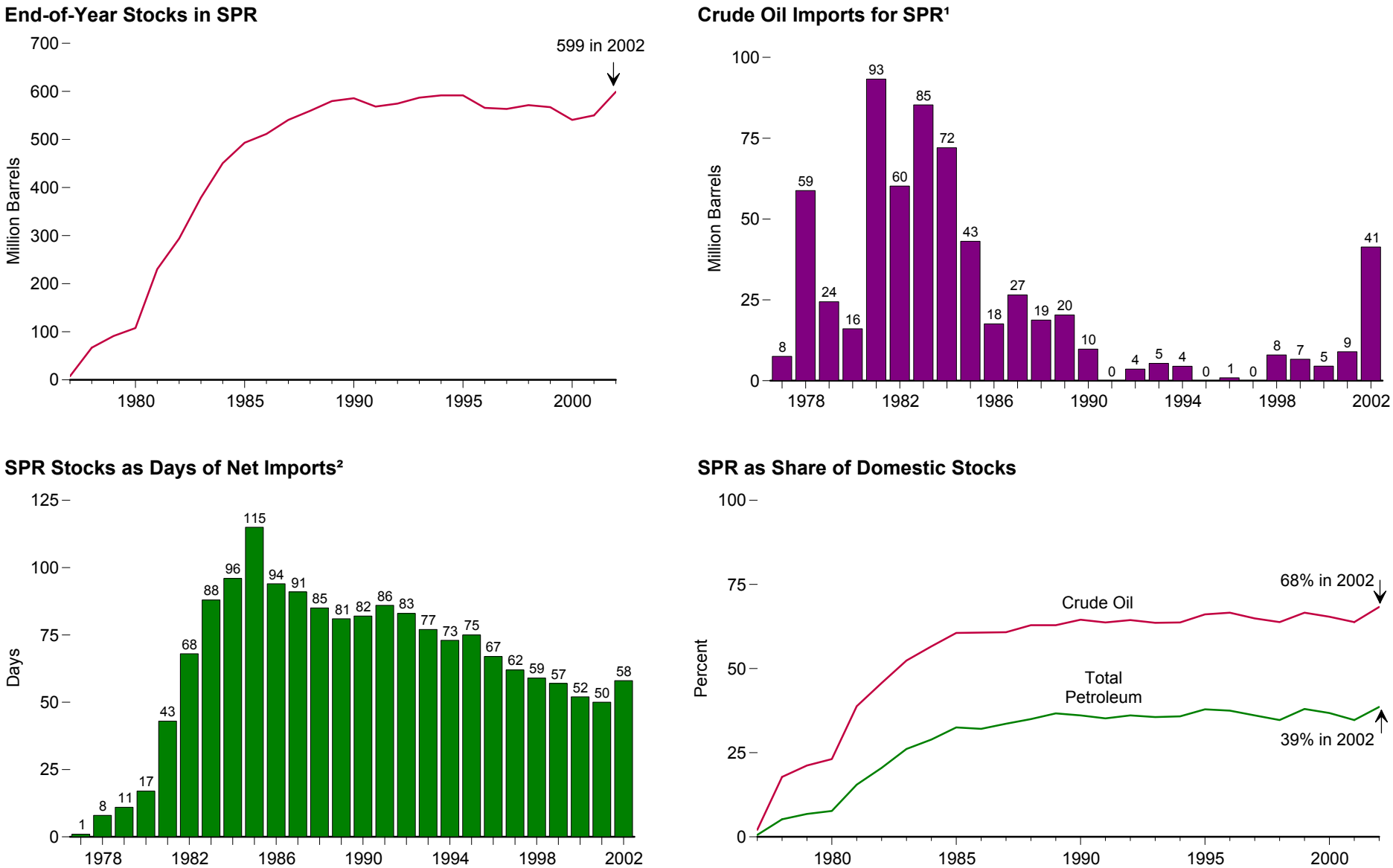
R=Revised. P=Preliminary. NA=Not available.

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 Page: 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. • 1981-2001—EIA, *Petroleum Supply Annual,* annual reports. • 2002—EIA, *Petroleum Supply Monthly* (February 2003).

Figure 5.15 Strategic Petroleum Reserve, 1977-2002



[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 5.15.

Table 5.15 Strategic Petroleum Reserve, 1977-2002

(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	[6]0.37	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	[7]33.35	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	[R]50
2002	5.77	35.59	0.00	7.64	0.00	0.00	599.09	68.3	38.6	58

[1] 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 1998-1999 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 1999-2000. Also, starting 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 shown in the column "Foreign Crude Oil, Imported by Others," while exchange barrels of domestic crude oil are shown under the column "Domestic Crude Oil Receipts, Exchanges."

[3] Stocks do not include imported quantities in transit to Strategic Petroleum Reserve terminals, pipeline fill, and above-ground storage.

[4] Including lease condensate stocks.

[5] Derived by dividing end-of-year Strategic Petroleum Reserve 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 2001-2002, as well as additional barrels to create a Northeast Home Heating Oil Reserve.

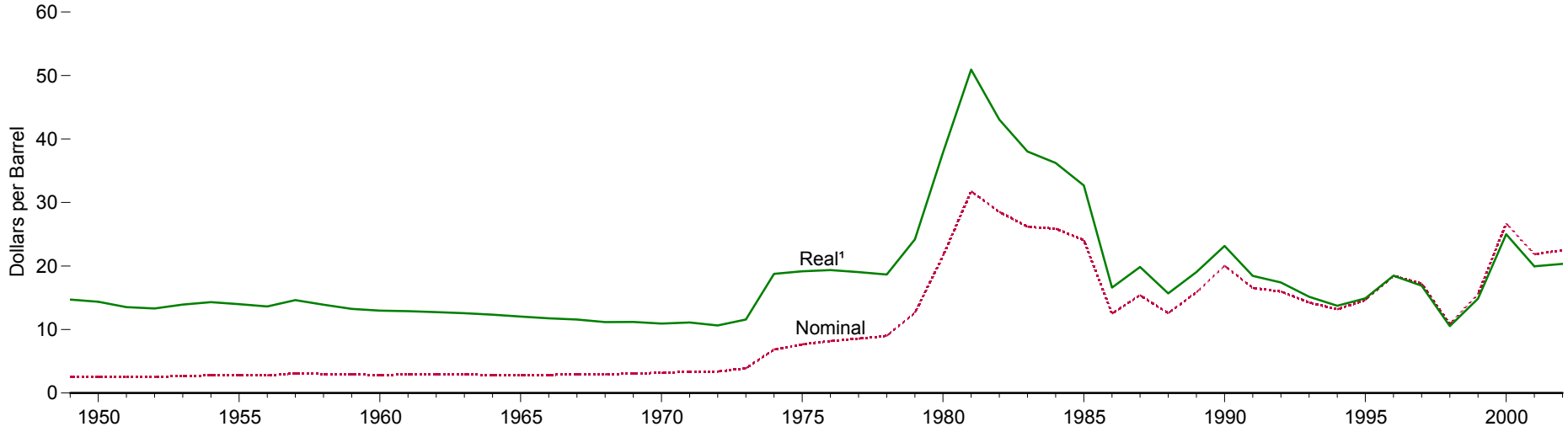
SPR=Strategic Petroleum Reserve. (s)=Less than 0.005 million barrels.

Web Page: http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html.

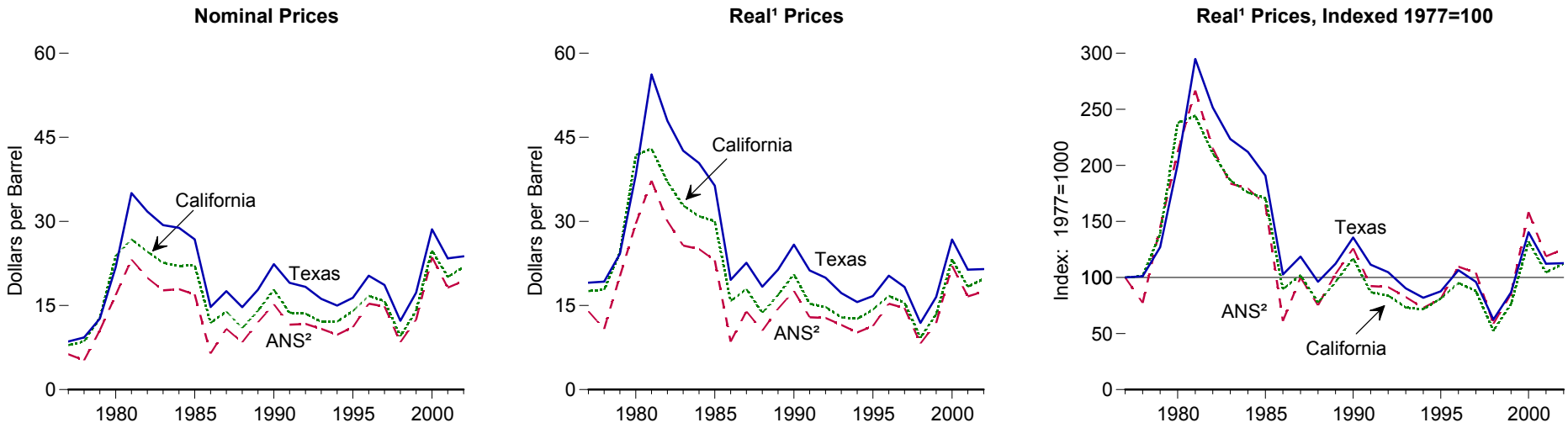
Sources: **Domestic Crude Oil Deliveries and Domestic Crude Oil Sales:** U.S. Department of Energy, Assistant Secretary for Fossil Energy, unpublished data. **All Other Data:** • 1977-1980—Energy Information Administration (EIA), Energy Data Report, *Petroleum Statement, Annual,* annual reports. • 1981-2001—EIA, *Petroleum Supply Annual,* annual reports. • 2002—EIA, *Petroleum Supply Monthly* (February 2003).

Figure 5.16 Crude Oil Domestic First Purchase Prices

U.S. Average Real[1] and Nominal Prices, 1949-2002



Alaska North Slope, California, and Texas 1977-2002



[1] In chained (1996) dollars, calculated by using gross domestic product implicit price deflators. See Table D1.
[2] Alaska North Slope.

Note: Because vertical scales differ, graphs should not be compared.
Source: Table 5.16.

Table 5.16 Crude Oil Domestic First Purchase Prices, 1949-2002

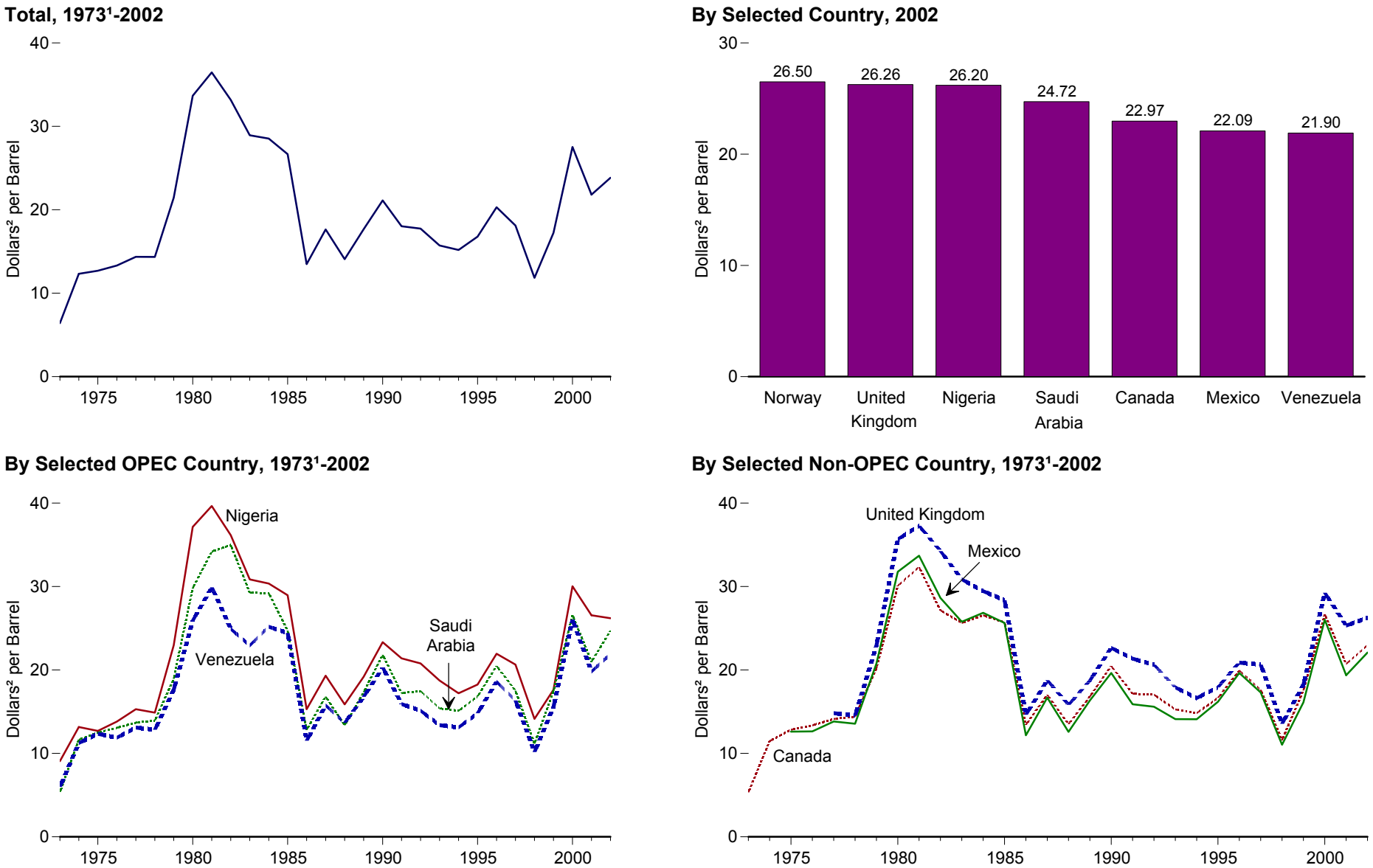
(Dollars per Barrel)

Year	Alaska North Slope		California		Texas		U.S. Average	
	Nominal	Real [1]	Nominal	Real [1]	Nominal	Real [1]	Nominal	Real [1]
1949	—	—	—	—	—	—	2.54	14.72
1950	—	—	—	—	—	—	2.51	14.38
1951	—	—	—	—	—	—	2.53	13.52
1952	—	—	—	—	—	—	2.53	13.32
1953	—	—	—	—	—	—	2.68	13.92
1954	—	—	—	—	—	—	2.78	14.30
1955	—	—	—	—	—	—	2.77	14.00
1956	—	—	—	—	—	—	2.79	13.64
1957	—	—	—	—	—	—	3.09	14.62
1958	—	—	—	—	—	—	3.01	13.91
1959	—	—	—	—	—	—	2.90	13.25
1960	—	—	—	—	—	—	2.88	12.98
1961	—	—	—	—	—	—	2.89	12.88
1962	—	—	—	—	—	—	2.90	12.75
1963	—	—	—	—	—	—	2.89	12.57
1964	—	—	—	—	—	—	2.88	12.34
1965	—	—	—	—	—	—	2.86	12.03
1966	—	—	—	—	—	—	2.88	11.77
1967	—	—	—	—	—	—	2.92	11.58
1968	—	—	—	—	—	—	2.94	11.18
1969	—	—	—	—	—	—	3.09	11.20
1970	—	—	—	—	—	—	3.18	10.94
1971	—	—	—	—	—	—	3.39	11.11
1972	—	—	—	—	—	—	3.39	10.65
1973	—	—	—	—	—	—	3.89	11.58
1974	—	—	—	—	—	—	6.87	18.76
1975	—	—	—	—	—	—	7.67	19.16
1976	—	—	—	—	—	—	8.19	19.36
1977	[2]6.29	[2]13.97	7.92	17.59	8.58	19.06	8.57	19.04
1978	5.21	10.80	8.58	17.79	9.29	19.26	9.00	18.66
1979	10.57	20.23	12.78	24.46	12.65	24.21	12.64	24.19
1980	16.87	29.58	23.87	41.85	21.84	38.29	21.59	37.85
1981	23.23	37.25	26.80	42.97	35.06	56.21	31.77	50.94
1982	19.92	30.07	24.58	37.10	31.77	47.95	28.52	43.05
1983	17.69	25.68	22.61	32.83	29.35	42.61	26.19	38.02
1984	17.91	25.07	22.09	30.92	28.87	40.41	25.88	36.23
1985	16.98	23.04	22.14	30.04	26.80	36.37	24.09	32.69
1986	6.45	8.56	11.90	15.80	14.73	19.56	12.51	16.61
1987	10.83	13.96	13.92	17.94	17.55	22.62	15.40	19.85
1988	8.43	10.51	10.97	13.68	14.71	18.34	12.58	15.68
1989	12.00	14.41	14.06	16.88	17.81	21.39	15.86	19.05
1990	15.23	17.60	17.81	20.59	22.37	25.86	20.03	23.15
1991	11.57	12.90	13.72	15.30	19.04	21.24	16.54	18.45
1992	11.73	12.77	13.55	14.75	18.32	19.95	15.99	17.41
1993	10.84	11.53	12.11	12.88	16.19	17.21	14.25	15.15
1994	9.77	10.18	12.12	12.62	14.98	15.60	13.19	13.74
1995	11.12	11.34	14.00	14.27	16.38	16.70	14.62	14.90
1996	15.32	15.32	16.72	16.72	20.31	20.31	18.46	18.46
1997	14.84	14.56	15.78	15.48	18.66	18.30	17.23	16.90
1998	8.47	8.21	9.55	9.25	12.28	11.90	10.87	10.53
1999	12.46	[R]11.90	14.08	13.45	17.29	16.52	15.56	[R]14.86
2000	23.62	[R]22.10	24.82	[R]23.22	28.60	[R]26.76	26.72	[R]25.00
2001	18.18	[R]16.61	20.11	[R]18.38	[R]23.41	[R]21.39	[R]21.84	[R]19.96
2002[P]	19.37	17.50	21.87	19.76	23.77	21.48	22.51	20.34

[1] In chained (1996) 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: For the definition of crude oil domestic first purchase prices, see Note 5 at end of section.
Web Page: 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 2003), Table 21.

Figure 5.17 Landed Costs of Crude Oil Imports From Selected Countries



[1] Based on October, November, and December data only.
[2] Nominal dollars.

Source: Table 5.17

Table 5.17 Landed Costs of Crude Oil Imports From Selected Countries, 1973-2002

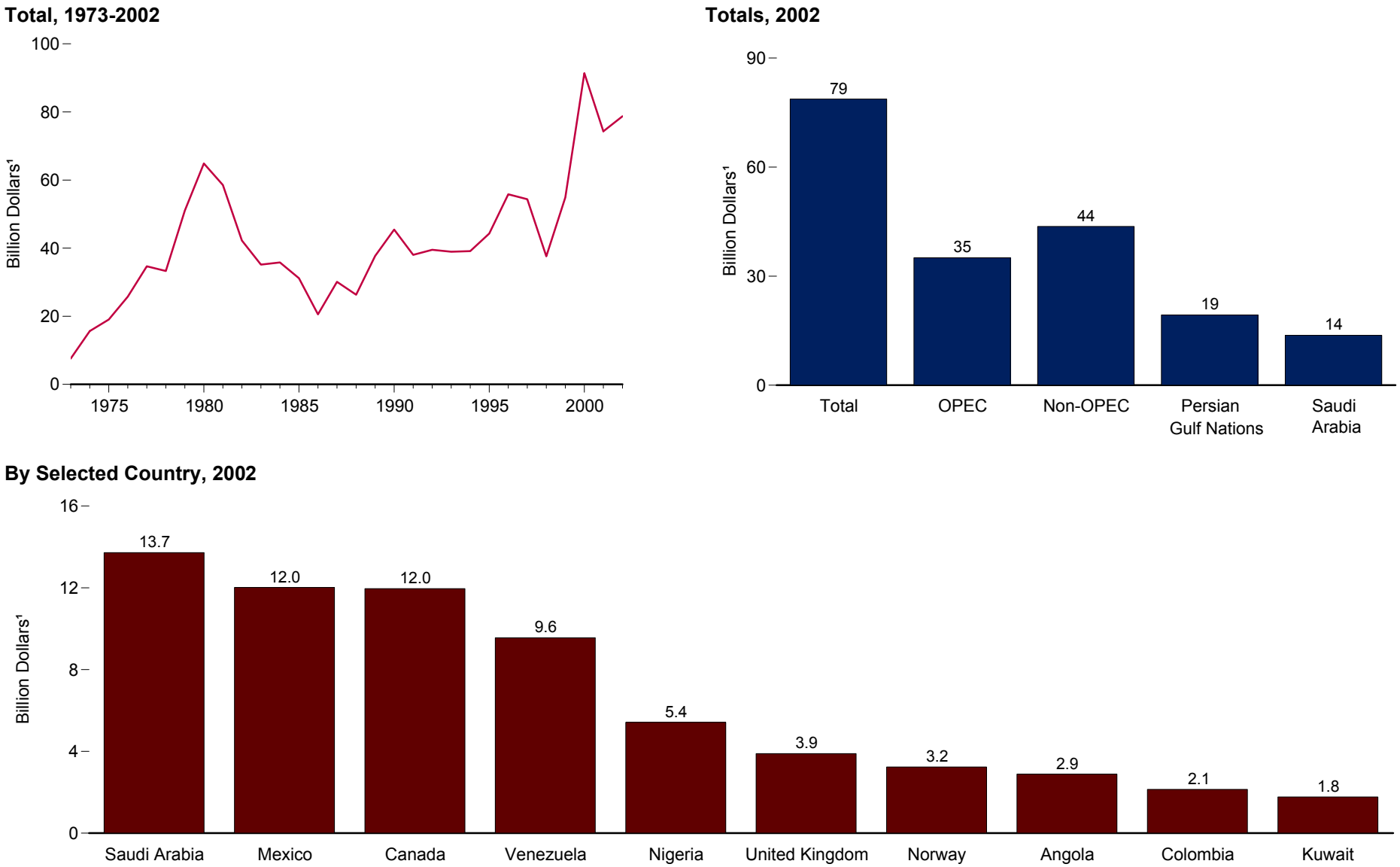
(Dollars[1] per Barrel)

Year	Persian Gulf Nations [3]	Selected OPEC [2] Countries					Selected Non-OPEC Countries							Total
		Kuwait	Nigeria	Saudi Arabia	Venezuela	Total OPEC [4]	Angola	Canada	Colombia	Mexico	Norway	United Kingdom	Total Non-OPEC	
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	20.44	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	R20.73	R19.66	R26.55	R20.98	R19.81	R21.52	R25.13	20.72	25.88	R19.37	R25.77	R25.32	R22.17	R21.82
2002P	24.09	22.89	26.20	24.72	21.90	23.76	25.11	22.97	25.18	22.09	26.50	26.26	23.92	23.84

[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. • Totals may not equal sum of components due to independent rounding.
Web Page: http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html.
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 5.18 Value of Crude Oil Imports



[1] Nominal dollars.

Notes: • OPEC=Organization of Petroleum Exporting Countries. • Because vertical scales differ, graphs should not be compared.

Source: Table 5.18.

Table 5.18 Value of Crude Oil Imports From Selected Countries, 1973-2002

(Billion Dollars[1])

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	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	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	R8.2	R12.3	9.3	R38.1	2.9	R10.3	R2.5	R9.9	R2.6	R2.3	R36.2	R74.3
2002P	19.3	1.8	5.4	13.7	9.6	35.0	2.9	12.0	2.1	12.0	3.2	3.9	43.7	78.7

[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.

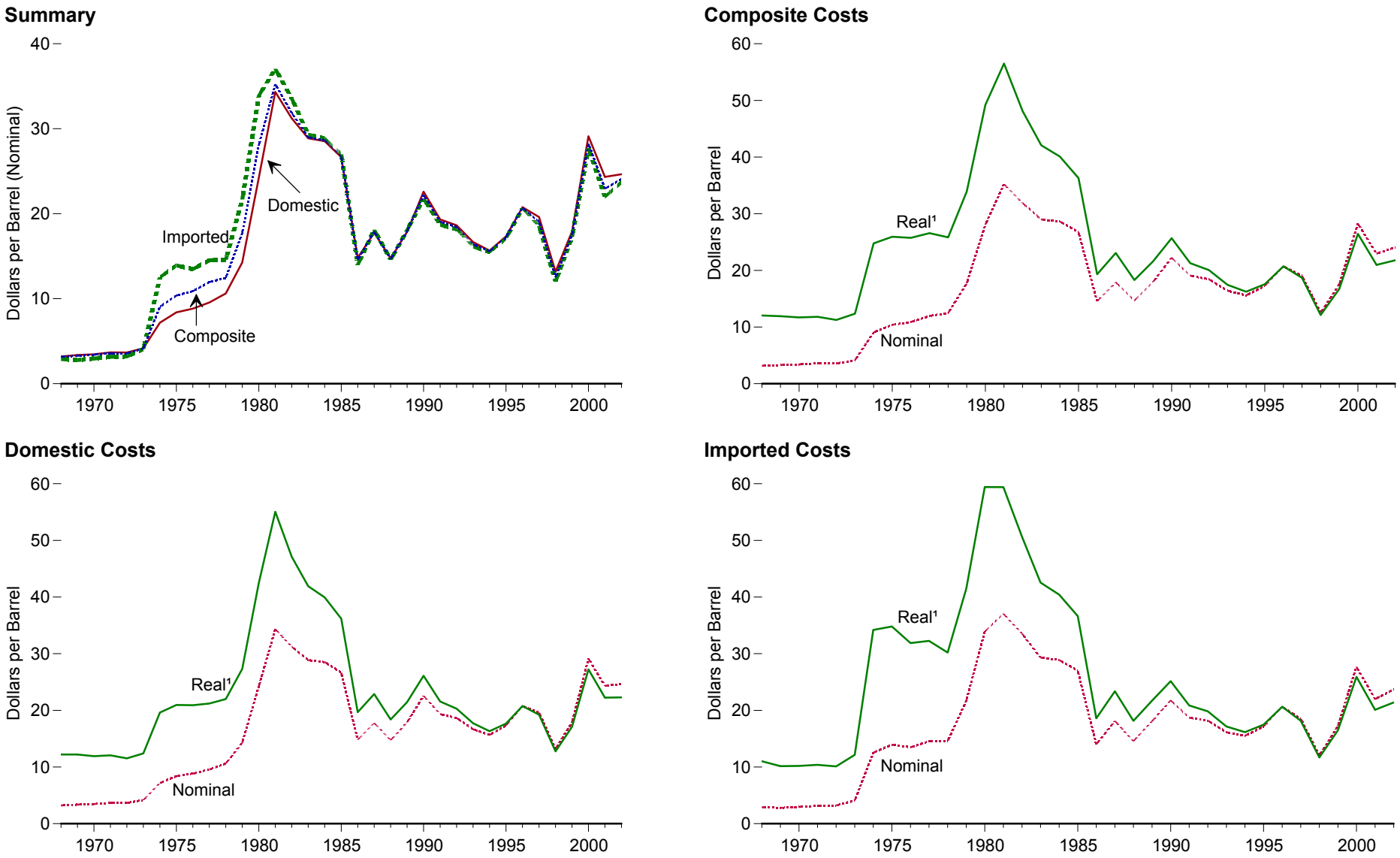
R=Revised. P=Preliminary. NA=Not available. (s)=Less than $0.05 billion. W=Value withheld to avoid disclosure of individual company data.

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: http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html.

Sources: Calculated by using prices on Table 5.17 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. • 1981-2001—EIA, *Petroleum Supply Annual,* annual reports. • 2002—EIA, *Petroleum Supply Monthly* (February 2003).

Figure 5.19 Crude Oil Refiner Acquisition Costs, 1968-2002



[1] In chained (1996) dollars, calculated by using gross domestic product implicit price delfators. See Table D1.

Note: Because vertical scales differ, graphs should not be compared.
Source: Table 5.19.

Table 5.19 Crude Oil Refiner Acquisition Costs, 1968-2002

(Dollars per Barrel)

Year	Domestic		Imported		Composite	
	Nominal	Real [1]	Nominal	Real [1]	Nominal	Real [1]
1968	3.21	12.21	2.90	11.03	3.17	12.05
1969	3.37	12.21	2.80	10.15	3.29	11.92
1970	3.46	11.91	2.96	10.19	3.40	11.70
1971	3.68	12.06	3.17	10.39	3.60	11.80
1972	3.67	11.53	3.22	10.12	3.58	11.25
1973	4.17	12.41	4.08	12.14	4.15	12.35
1974	7.18	19.61	12.52	34.19	9.07	24.77
1975	8.39	20.96	13.93	34.80	10.38	25.93
1976	8.84	20.90	13.48	31.87	10.89	25.74
1977	9.55	21.21	14.53	32.27	11.96	26.57
1978	10.61	22.00	14.57	30.21	12.46	25.83
1979	14.27	27.31	21.67	41.47	17.72	33.91
1980	24.23	42.48	33.89	59.41	28.07	49.21
1981	34.33	55.04	37.05	59.40	35.24	56.50
1982	31.22	47.12	33.55	50.64	31.87	48.11
1983	28.87	41.91	29.30	42.54	28.99	42.09
1984	28.53	39.94	28.88	40.43	28.63	40.08
1985	26.66	36.18	26.99	36.63	26.75	36.30
1986	14.82	19.68	14.00	18.59	14.55	19.32
1987	17.76	22.89	18.13	23.37	17.90	23.07
1988	14.74	18.38	14.56	18.15	14.67	18.29
1989	17.87	21.46	18.08	21.71	17.97	21.58
1990	22.59	26.11	21.76	25.15	22.22	25.68
1991	19.33	21.56	18.70	20.86	19.06	21.26
1992	18.63	20.29	18.20	19.82	18.43	20.07
1993	16.67	17.72	16.14	17.16	16.41	17.45
1994	15.67	16.32	15.51	16.15	15.59	16.24
1995	17.33	17.67	17.14	17.47	17.23	17.56
1996	20.77	20.77	20.64	20.64	20.71	20.71
1997	19.61	19.23	18.53	18.18	19.04	18.68
1998	13.18	12.77	12.04	11.67	12.52	12.13
1999	17.90	17.10	17.26	16.49	17.51	16.73
2000	29.11	[R]27.23	27.70	[R]25.91	28.26	[R]26.44
2001	[R]24.33	[R]22.24	[R]22.00	[R]20.11	[R]22.95	[R]20.97
2002[P]	24.65	22.28	23.68	21.40	24.09	21.77

[1] In chained (1996) dollars, calculated by using gross domestic product implicit price deflators. See Table D1.

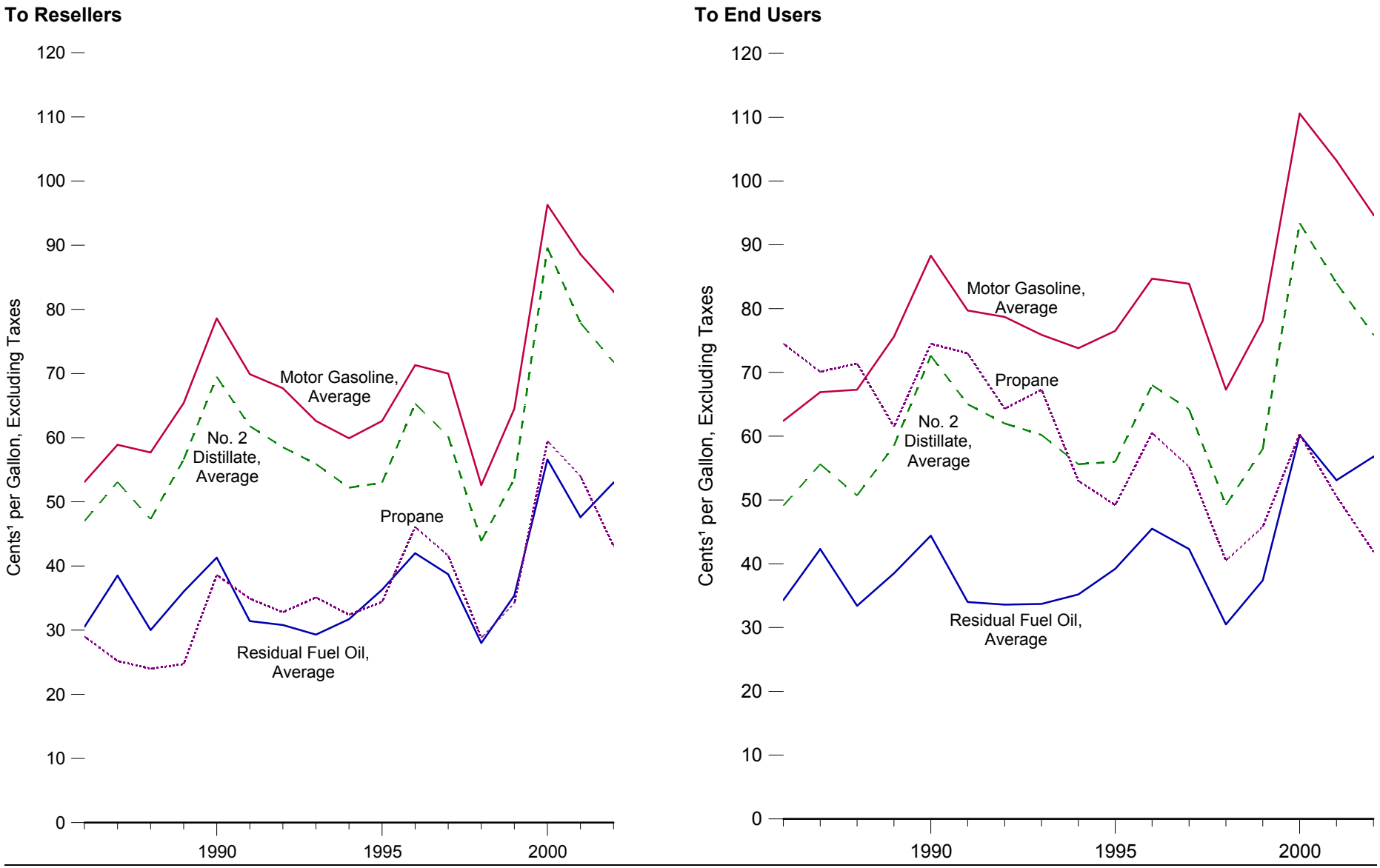
R=Revised. P=Preliminary.

Note: Refiner acquisition cost of crude oil 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: http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html.

Sources: • 1968-1973—Estimated. See Note 6 at end of section. • 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 2003), Table 1.

Figure 5.20 Refiner Sales Prices for Selected Petroleum Products, 1986-2002



[1] Nominal value.

Source: Table 5.20.

Table 5.20 Refiner Sales Prices and Refiner Margins for Selected Petroleum Products, 1986-2002

(Cents[1] per Gallon, Excluding Taxes)

Product	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002 P
Sales Prices to Resellers: [2]																	
Aviation Gasoline	91.2	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	R125.6	113.7
Motor Gasoline	53.1	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
Leaded Regular	50.1	56.5	54.8	63.1	75.4	65.7	69.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Unleaded Regular	52.2	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	0.0
Unleaded Midgrade	NA	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
Premium	61.0	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	R98.0	92.8
Kerosene	60.6	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	R82.1	76.3
Jet Fuel, Kerosene-Type	49.5	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	71.3
No. 1 Distillate	57.9	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	R88.3	80.3
No. 2 Distillate	47.0	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
No. 2 Fuel Oil	48.6	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	69.2
No. 2 Diesel Fuel	45.2	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	R77.5	72.2
No. 4 Fuel [3]	40.9	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	66.1
Residual Fuel Oil	30.5	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	R47.6	53.0
1% or Less Sulfur Content	32.8	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	R52.3	54.4
Greater Than 1% Sulfur Content	28.9	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	50.9
Propane (Consumer Grade)	29.0	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	R54.0	43.1
Sales Prices to End Users: [2]																	
Aviation Gasoline	101.1	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	R132.3	131.6
Motor Gasoline	62.4	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
Leaded Regular	57.3	61.8	61.9	71.0	83.1	71.5	78.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Unleaded Regular	61.6	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
Unleaded Midgrade	NA	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	R110.0	101.0
Premium	73.7	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	R117.5	108.8
Kerosene	79.0	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	R104.5	98.0
Jet Fuel, Kerosene-Type	52.9	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	R77.5	72.2
No. 1 Distillate	62.0	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
No. 2 Distillate	49.1	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
No. 2 Fuel Oil	56.0	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	73.6
No. 2 Diesel Fuel	47.8	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
No. 4 Fuel [3]	48.9	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
Residual Fuel Oil	34.3	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	R53.1	56.8
1% or Less Sulfur Content	37.2	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	R64.2	63.9
Greater Than 1% Sulfur Content	31.7	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	R49.2	54.4
Propane (Consumer Grade)	74.5	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
Refiner Margins [4]																	
Motor Gasoline	18.4	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	R34.0	25.4
Jet Fuel, Kerosene-Type	14.9	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	R21.7	13.9
No. 2 Distillate	12.4	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	R23.3	14.4
Residual Fuel Oil	-4.1	-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	R-7.0	-4.4
Composite [5]	15.8	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

[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.

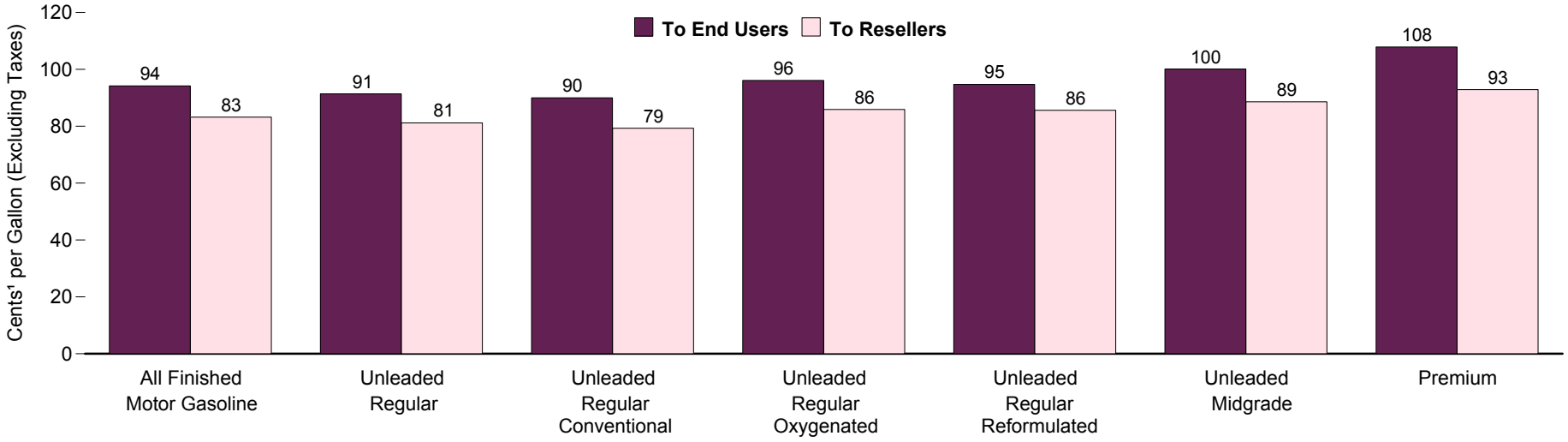
R=Revised. P=Preliminary. NA=Not available.

Web Page: http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html.

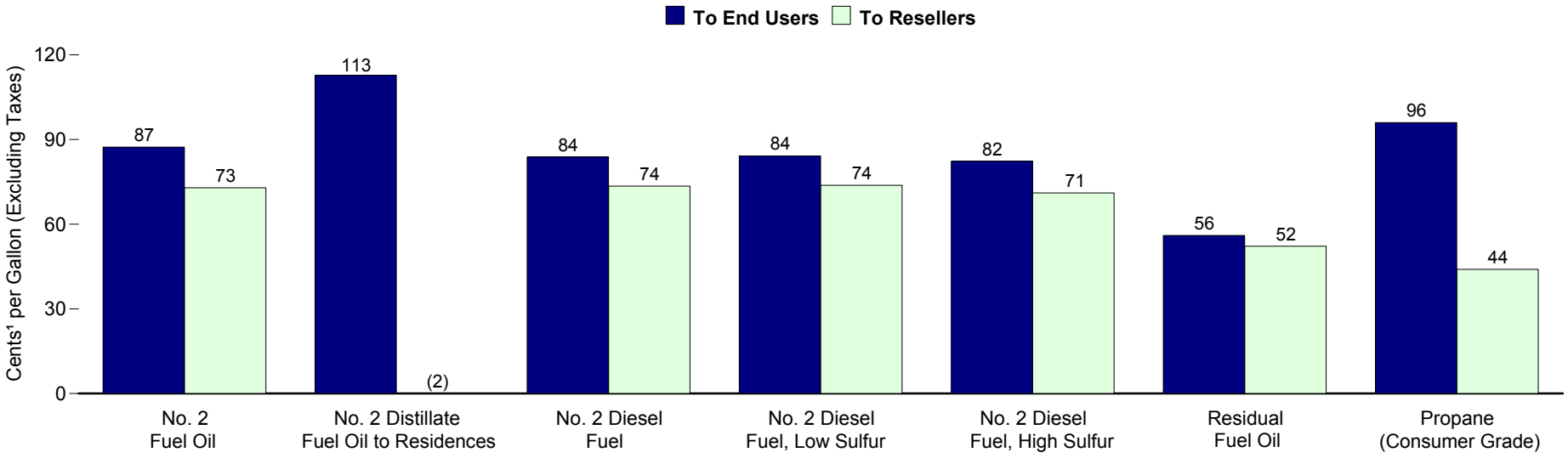
Sources: • 1986-2001—EIA, *Petroleum Marketing Annual,* annual reports. • 2002—EIA, *Petroleum Marketing Monthly* (March 2003).

Figure 5.21 All Sellers Sales Prices for Selected Petroleum Products, 2002

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 5.21.

Table 5.21 All Sellers Sales Prices for Selected Petroleum Products, 1986-2002

(Cents[1] per Gallon, Excluding Taxes)

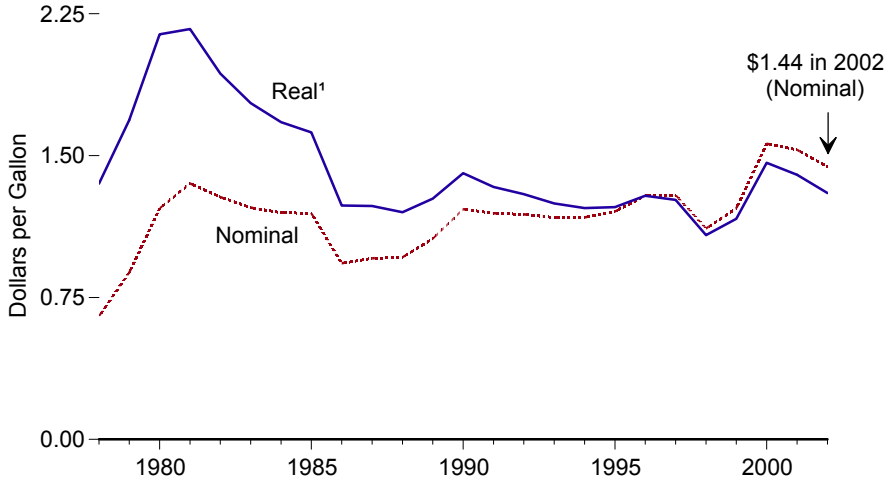
Product	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002 P
Sales Prices to Resellers [2]																	
Motor Gasoline	53.8	59.2	58.0	65.8	78.9	70.8	68.0	62.8	60.2	63.0	71.5	70.3	53.0	64.5	96.6	R88.8	83.2
Unleaded Regular	52.9	57.2	55.1	62.3	76.2	68.2	64.9	59.7	57.1	59.9	68.9	67.7	50.4	62.1	94.6	R86.8	81.2
Conventional	NA	NA	NA	NA	NA	NA	NA	NA	56.5	58.3	67.2	65.8	48.4	59.6	91.8	R83.8	79.3
Oxygenated	NA	NA	NA	NA	NA	NA	NA	NA	62.7	66.2	74.5	75.4	57.5	69.0	101.6	R94.7	85.9
Reformulated	NA	NA	NA	NA	NA	NA	NA	NA	63.2	64.6	73.3	72.5	55.1	67.6	100.6	R93.0	85.6
Unleaded Midgrade	NA	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	88.6
Conventional	NA	NA	NA	NA	NA	NA	NA	NA	63.3	65.1	73.7	72.3	55.0	65.8	97.7	R90.1	85.2
Oxygenated	NA	NA	NA	NA	NA	NA	NA	NA	68.9	71.1	78.9	79.1	59.9	69.5	102.1	96.5	88.7
Reformulated	NA	NA	NA	NA	NA	NA	NA	NA	72.2	71.9	80.2	80.1	63.2	75.8	108.0	R102.2	95.2
Premium	61.7	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	R98.0	92.9
Conventional	NA	NA	NA	NA	NA	NA	NA	NA	68.6	69.5	77.7	76.4	58.7	68.8	101.3	R93.3	89.7
Oxygenated	NA	NA	NA	NA	NA	NA	NA	NA	75.7	78.7	85.1	85.6	67.4	77.9	111.9	R102.0	95.5
Reformulated	NA	NA	NA	NA	NA	NA	NA	NA	76.9	77.9	85.1	84.5	67.1	78.7	111.7	R105.4	98.4
No. 2 Distillate	48.0	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	R78.5	72.9
No. 2 Diesel Fuel	NA	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
Low Sulfur	NA	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
High Sulfur	NA	NA	NA	NA	NA	NA	NA	NA	51.9	52.4	63.9	60.2	43.7	51.9	87.5	R77.1	71.1
Residual Fuel Oil	31.5	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	R49.6	52.2
1% or Less Sulfur Content	33.6	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	R54.2	54.1
Greater Than 1% Sulfur Content	29.5	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	R43.8	49.8
Propane (Consumer Grade)	NA	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
Sales Prices to End Users [2]																	
Motor Gasoline	63.7	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	R102.2	94.2
Unleaded Regular	63.0	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	R99.3	91.4
Conventional	NA	NA	NA	NA	NA	NA	NA	NA	68.5	71.4	80.1	78.5	61.0	70.8	104.4	R96.8	90.0
Oxygenated	NA	NA	NA	NA	NA	NA	NA	NA	73.7	77.3	86.1	88.7	69.4	78.2	111.8	R105.9	96.1
Reformulated	NA	NA	NA	NA	NA	NA	NA	NA	74.3	74.1	83.3	82.2	65.1	77.7	110.9	R105.1	94.7
Unleaded Midgrade	NA	NA	NA	NA	NA	NA	82.4	79.2	77.0	80.2	88.5	88.0	71.1	81.2	114.6	R108.6	100.1
Conventional	NA	NA	NA	NA	NA	NA	NA	NA	76.6	79.3	87.4	86.5	69.5	78.7	112.2	R105.2	98.5
Oxygenated	NA	NA	NA	NA	NA	NA	NA	NA	82.1	83.8	92.9	96.4	76.3	85.3	118.5	R112.0	102.7
Reformulated	NA	NA	NA	NA	NA	NA	NA	NA	85.1	82.9	91.6	91.5	74.8	86.9	119.7	R115.6	103.8
Premium	73.6	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	R115.4	107.9
Conventional	NA	NA	NA	NA	NA	NA	NA	NA	84.6	87.1	95.0	93.9	76.9	85.6	119.2	R111.9	106.2
Oxygenated	NA	NA	NA	NA	NA	NA	NA	NA	90.8	93.8	101.9	105.4	84.5	94.0	127.9	R121.8	112.0
Reformulated	NA	NA	NA	NA	NA	NA	NA	NA	93.7	91.4	99.1	98.8	82.2	93.1	126.7	R121.7	111.3
No. 2 Distillate	61.4	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	87.3
No. 2 Distillate to Residences [3]	83.6	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	R125.0	112.8
No. 2 Diesel Fuel	NA	NA	NA	NA	NA	NA	NA	NA	62.8	63.6	75.7	71.4	56.2	65.4	100.6	91.2	83.8
Low Sulfur	NA	NA	NA	NA	NA	NA	NA	NA	64.2	64.5	76.7	71.9	56.5	66.3	101.4	91.7	84.2
High Sulfur	NA	NA	NA	NA	NA	NA	NA	NA	59.8	61.4	73.2	69.8	55.5	62.0	98.1	R89.2	82.3
Residual Fuel Oil	35.8	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	R53.3	56.0
1% or Less Sulfur Content	38.9	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	60.8
Greater Than 1% Sulfur Content	32.8	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	R49.8	54.0
Propane (Consumer Grade)	NA	NA	NA	NA	NA	NA	NA	NA	77.6	76.6	88.6	87.8	77.4	78.1	104.8	R109.4	96.0

[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 7 at end of section for historical data.

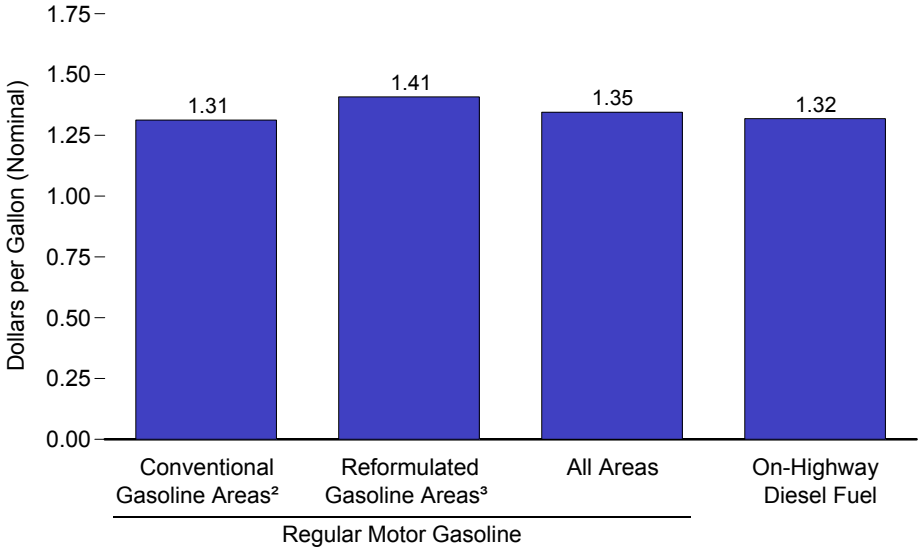
R=Revised. P=Preliminary. NA=Not available.
Web Page: http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html.
Sources: • 1986-2001—Energy Information Administration (EIA), *Petroleum Marketing Annual,* annual reports. • 2002—EIA, *Petroleum Marketing Monthly* (March 2003).

Figure 5.22 Retail Motor Gasoline and On-Highway Diesel Fuel Prices

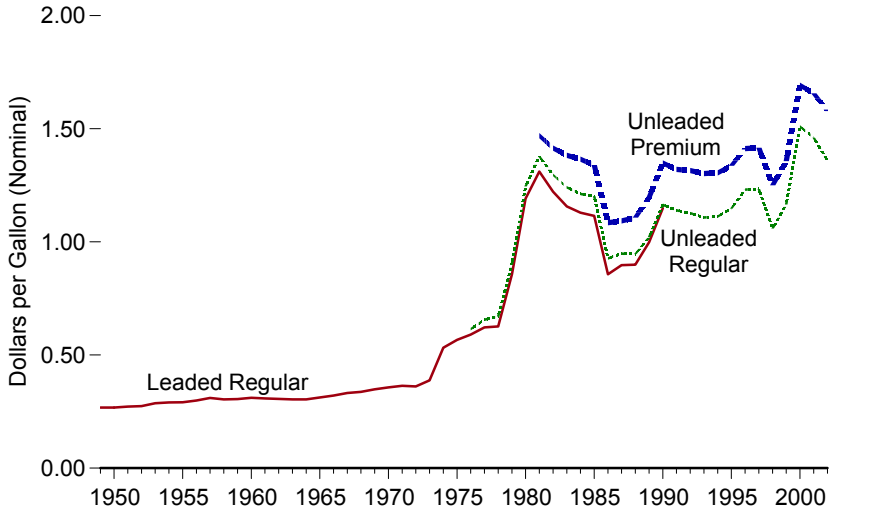
Motor Gasoline, All Grades, 1978-2002



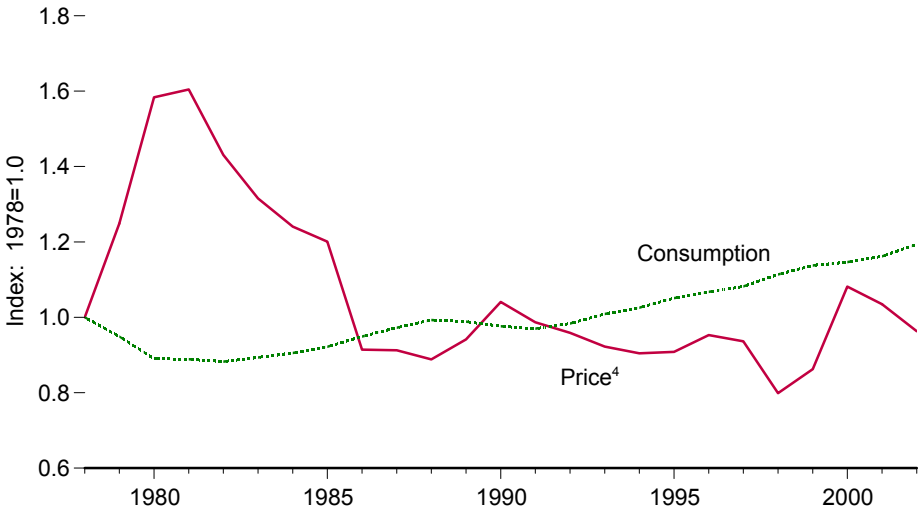
Regular Motor Gsoline by Area Type and On-Highway Diesel Fuel, 2002



Motor Gasoline by Grade, 1949-2002



Motor Gasoline Price and Consumption, 1978-2002, Indexed to 1978



[1] In chained (1996) 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 Agecny that require the use of reformulated gasoline.
[4] All grades, in chained (1996) dollars.
Note: Because vertical scales differ, graphs should not be compared.
Sources: Tables 5.11 and 5.22.

Table 5.22 Retail Motor Gasoline and On-Highway Diesel Fuel Prices, 1949-2002

(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]	Reformulated Gasoline Areas [4]	All Areas	
	Nominal	Real [2]	Nominal	Real [2]	Nominal	Real [2]	Nominal	Real [2]				
1949	0.27	1.55	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1950	0.27	1.54	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1951	0.27	1.45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1952	0.27	1.44	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1953	0.29	1.49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1954	0.29	1.49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1955	0.29	1.47	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1956	0.30	1.46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1957	0.31	1.47	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1958	0.30	1.41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1959	0.31	1.39	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1960	0.31	1.40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1961	0.31	1.37	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1962	0.31	1.35	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1963	0.30	1.32	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1964	0.30	1.30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1965	0.31	1.31	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1966	0.32	1.31	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1967	0.33	1.32	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1968	0.34	1.28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1969	0.35	1.26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1970	0.36	1.23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1971	0.36	1.19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1972	0.36	1.14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1973	0.39	1.16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1974	0.53	1.45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1975	0.57	1.42	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1976	0.59	1.40	0.61	1.45	NA	NA	NA	NA	NA	NA	NA	NA
1977	0.62	1.38	0.66	1.46	NA	NA	NA	NA	NA	NA	NA	NA
1978	0.63	1.30	0.67	1.39	NA	NA	0.65	1.35	NA	NA	NA	NA
1979	0.86	1.64	0.90	1.73	NA	NA	0.88	1.69	NA	NA	NA	NA
1980	1.19	2.09	1.25	2.18	NA	NA	1.22	2.14	NA	NA	NA	NA
1981	1.31	2.10	1.38	2.21	1.47	2.36	1.35	2.17	NA	NA	NA	NA
1982	1.22	1.85	1.30	1.96	1.42	2.14	1.28	1.93	NA	NA	NA	NA
1983	1.16	1.68	1.24	1.80	1.38	2.01	1.23	1.78	NA	NA	NA	NA
1984	1.13	1.58	1.21	1.70	1.37	1.91	1.20	1.68	NA	NA	NA	NA
1985	1.12	1.51	1.20	1.63	1.34	1.82	1.20	1.62	NA	NA	NA	NA
1986	0.86	1.14	0.93	1.23	1.09	1.44	0.93	1.24	NA	NA	NA	NA
1987	0.90	1.16	0.95	1.22	1.09	1.41	0.96	1.23	NA	NA	NA	NA
1988	0.90	1.12	0.95	1.18	1.11	1.38	0.96	1.20	NA	NA	NA	NA
1989	1.00	1.20	1.02	1.23	1.20	1.44	1.06	1.27	NA	NA	NA	NA
1990	1.15	1.33	1.16	1.35	1.35	1.56	1.22	1.41	NA	NA	NA	NA
1991	NA	NA	1.14	1.27	1.32	1.47	1.20	1.33	1.10	NA	1.10	NA
1992	NA	NA	1.13	1.23	1.32	1.43	1.19	1.30	1.09	NA	1.09	NA
1993	NA	NA	1.11	1.18	1.30	1.38	1.17	1.25	[5]1.07	NA	1.07	NA
1994	NA	NA	1.11	1.16	1.31	1.36	1.17	1.22	1.07	NA	1.08	NA
1995	NA	NA	1.15	1.17	1.34	1.36	1.21	1.23	1.10	[6]1.16	1.11	1.11
1996	NA	NA	1.23	1.23	1.41	1.41	1.29	1.29	1.19	1.28	1.22	1.24
1997	NA	NA	1.23	1.21	1.42	1.39	1.29	1.27	1.19	1.25	1.20	1.20
1998	NA	NA	1.06	1.03	1.25	1.21	1.12	1.08	1.02	1.08	1.03	1.04
1999	NA	NA	1.17	1.11	1.36	1.30	1.22	1.17	1.12	1.20	1.14	1.12
2000	NA	NA	1.51	1.41	1.69	1.58	1.56	1.46	1.46	1.54	1.48	1.49
2001	NA	NA	1.46	1.34	1.66	[R]1.51	1.53	1.40	1.38	1.50	1.42	1.40
2002	NA	NA	1.36	1.23	1.58	1.43	1.44	1.30	1.31	1.41	1.35	1.32

[1] Nominal dollars.
[2] In chained (1996) 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] Reformulated Gasoline (RFG) areas are ozone nonattainment areas designated by the Environmental Protection Agency that require the use of reformulated gasoline.
[5] Beginning in 1993 historical data for oxygenated areas collected between 1993 and 2000 are included with conventional areas.
[6] Beginning in 1995 historical data for combined oxygenated and reformulated areas (collected between 1995 and 2000) are included with reformulated gasoline areas.

R=Revised. NA=Not available.

Web Page: 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.* **Motor Gasoline by Area Type:** EIA, weighted, annual averages of data from Weekly Retail Gasoline Prices. **On-Highway Diesel:** EIA, weighted, annual averages of data from Weekly On-Highway Diesel Prices.

Petroleum

Note 1. 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 2. 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 5.12a-d. The sector allocation of product supplied in Tables 5.12a-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 Table 8.3b).

Note 3. 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. The methods of deriving Gross Input to Distillation Units (GIDU) in this report are as follows: 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. The Crude Oil Domestic First Purchase Prices were derived as follows: 1949-1973, weighted average Domestic First Purchase values as reported by State agencies and calculated by the Bureau of Mines; 1974 and 1975, weighted averages of a sample survey of major first purchasers' purchases; 1976 forward, weighted averages of all first purchasers' purchases.

Note 6. The Refiner Acquisition Cost of Crude Oil was estimated for 1968-1973. 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.

Note 7. Residential heating oil prices for 1956 through 1982 were formerly published in the *Annual Energy Review*. Those data, in cents per gallon, are: 15.2, 16.0, 15.1, 15.3, 15.0, 15.6, 15.6, 16.0, 16.1, 16.0, 16.4, 16.9, 17.4, 17.8, 18.5, 19.6, 19.7, 22.8, 36.0, 37.7, 40.6, 46.0, 49.0, 70.4, 97.4, 119.4, 116.0. 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 through September 1977—Federal Energy Administration, Form FEA-P112-M-1, "No. 2 Heating Oil Supply/Price Monitoring Report." October 1977 through December 1977—Energy Information Administration (EIA), Form EIA-9, "No. 2 Heating Oil Supply/Price Monitoring Report." 1978 forward—EIA, *Petroleum Marketing Monthly*, Table 18.

Note 8. In Tables 5.12a-d and 5.13, data for distillate fuel oil, residual fuel oil, and kerosene are derived from the same data sources. However, the data in Table 5.13 differ from those in Tables 5.12a-d for the following reasons:

Distillate Fuel Oil—In Table 5.13, distillate fuel oil sales data for the electric power sector equal distillate fuel oil consumption (see Table 8.3b) plus distillate fuel oil stock change (see Table 8.4); in Table 5.12d, distillate fuel oil data for the electric

power sector are for consumption only (see Table 8.3b). In Table 5.13, distillate fuel oil sales data for all years are adjusted to equal the Petroleum Administration for Defense (PAD) district-level product supplied totals; in Tables 5.12a-d, distillate fuel oil consumption data are adjusted at the national level to equal the total product supplied volumes (see Table 5.11).

Residual Fuel Oil—In Table 5.13, residual fuel oil sales data for the electric power sector equal residual fuel oil consumption (see Table 8.3b) plus residual fuel oil stock change (see Table 8.4); in Table 5.12d, residual fuel oil data for the electric power sector are for consumption only (see Table 8.3b). In Table 5.13, residual fuel oil sales data for 1984-1989 are adjusted to equal the PAD district-level product supplied totals, and for 1990 forward are adjusted at the national level to equal the total product supplied volumes; in Tables 5.12a-d, residual fuel oil consumption data for all years are adjusted at the national level to equal the total product supplied volumes (see Table 5.11).

Kerosene—In Table 5.13, kerosene sales data for 1984-1991 are adjusted to equal the PAD district-level product supplied totals, and for 1992 forward are adjusted at the national level to equal the total product supplied volumes; in Tables 5.12a-c, kerosene consumption data for all years are adjusted at the national level to equal the total product supplied volumes (see Table 5.11).

Table 5.13 Notes: • Fuel oil and kerosene sales data are collected by the Energy Information Administration (EIA) on Form EIA-821, "Annual Fuel and Kerosene Sales Report." For Table 5.13, the sales data are adjusted so that the total sales equals the total product supplied for each of the three petroleum products covered by the survey (distillate fuel oil, kerosene, and residual fuel oil). Product supplied data are developed by EIA from a different set of surveys (see Note 2 above) and are shown in Table 5.11. For all years, distillate fuel oil data are adjusted to equal the Petroleum Administration for Defense (PAD) district-level product supplied totals. Residual fuel oil data for 1984-1989 are adjusted to equal the PAD district-level product supplied totals; beginning in 1990, they are adjusted to equal the national product supplied totals. Kerosene data from 1984-1991 are adjusted to equal the PAD district-level product supplied totals; beginning in 1992, they are adjusted to equal the national product supplied level. • See Note 8 above. • Totals may not equal sum of components due to independent rounding.

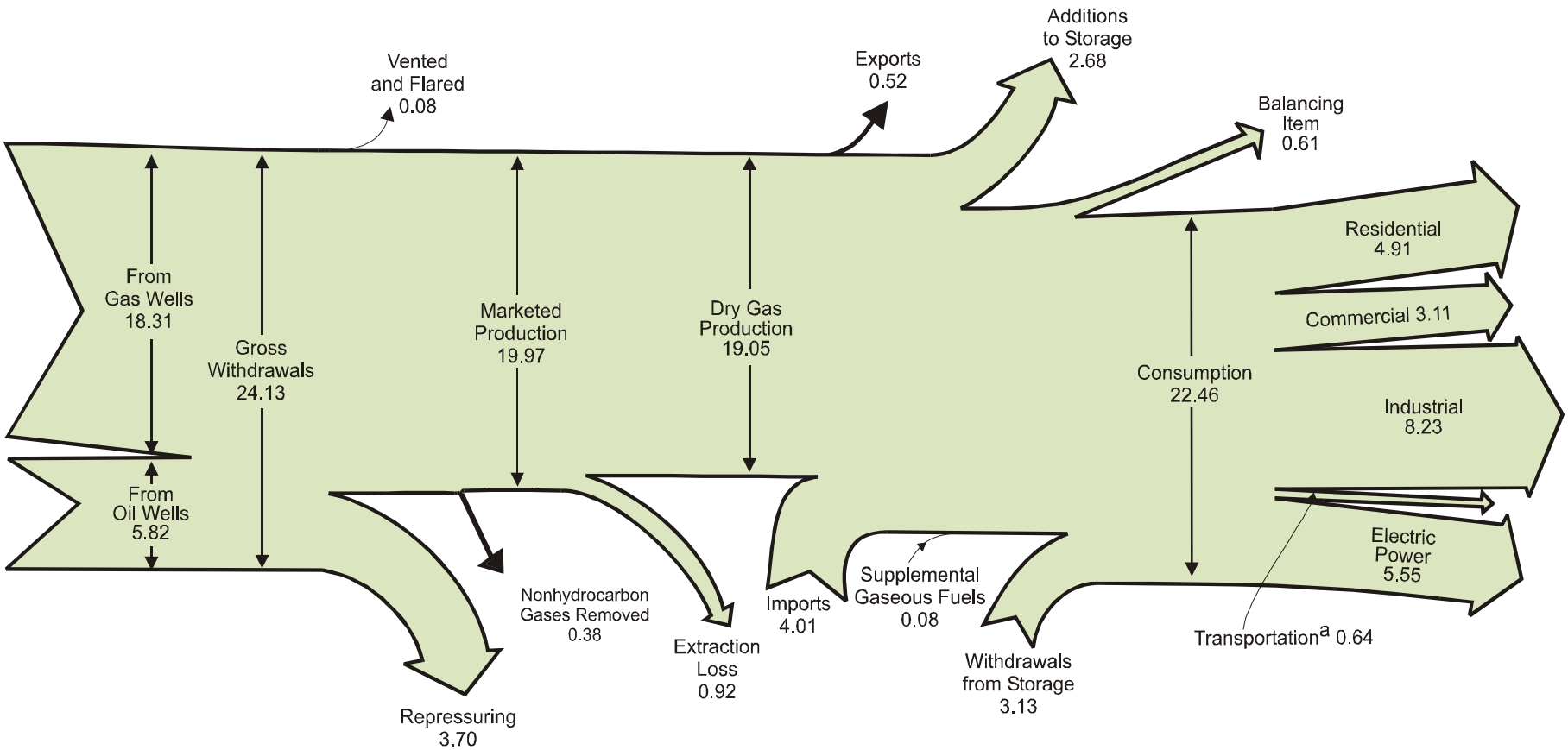
Table 5.13 Web Page:
http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html.

Table 5.13 Sources: Electric Power: • 1984-Energy Information Administration (EIA), *Petroleum Marketing Annual 1988* (October 1989), Tables A13, A14, and A15. • 1985-1988—EIA, *Fuel Oil and Kerosene Sales*, annual reports. • 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—EIA, Form EIA-860, "Annual Electric Generator Report" and Form EIA-906, "Power Plant Report." Other Data: • 1984—EIA, *Petroleum Marketing Annual 1988* (October 1989), Tables A13, A14, and A15. • 1985-1996—EIA, Fuel Oil and Kerosene Sales, annual reports • 1997 forward—EIA, *Fuel Oil and Kerosene Sales 2001*, (November 2002), Tables 13, 14, and 15.

6 Natural Gas

Natural gas pipeline, El Paso County, Texas. Source: U.S. Department of Energy.

Diagram 3. Natural Gas Flow, 2002
(Trillion Cubic Feet)

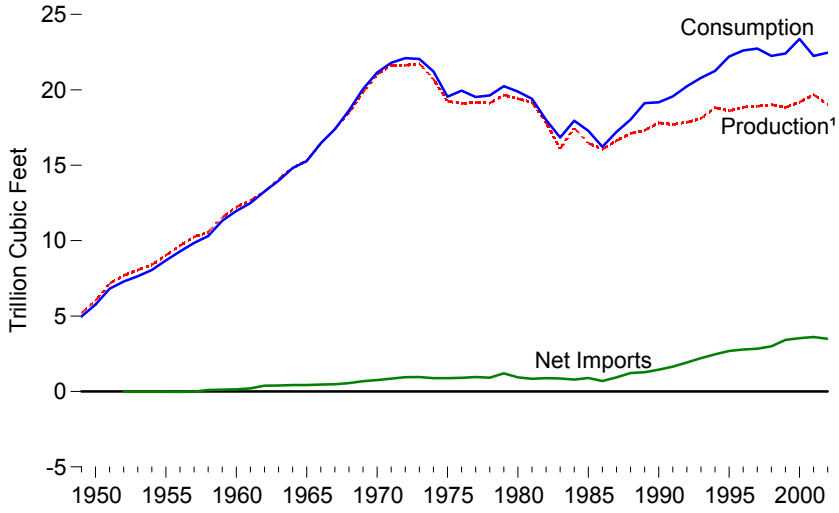


[a] Natural gas consumed in the operation of pipelines, primarily in compressors, and a small quantity used as vehicle fuel.

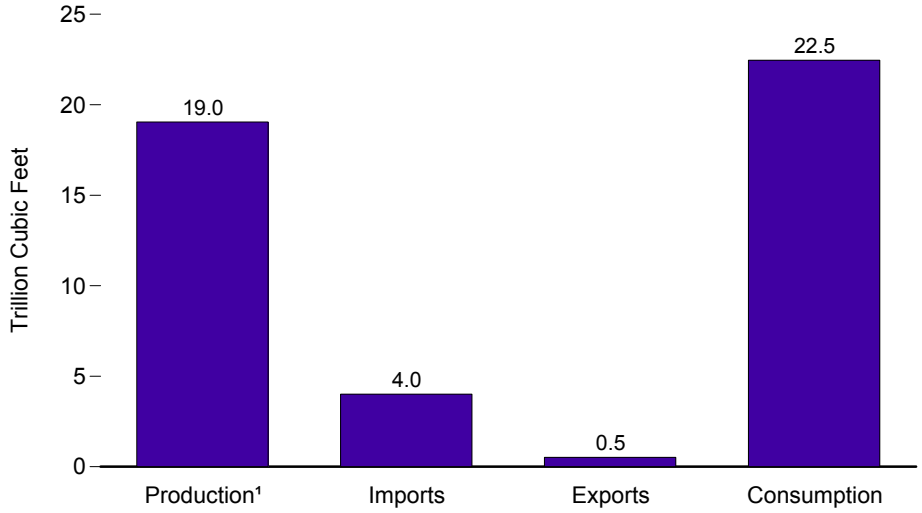
Notes: • Data are preliminary. • Totals may not equal sum of components due to independent rounding.
Sources: Tables 6.1, 6.2, and 6.5.

Figure 6.1 Natural Gas Overview

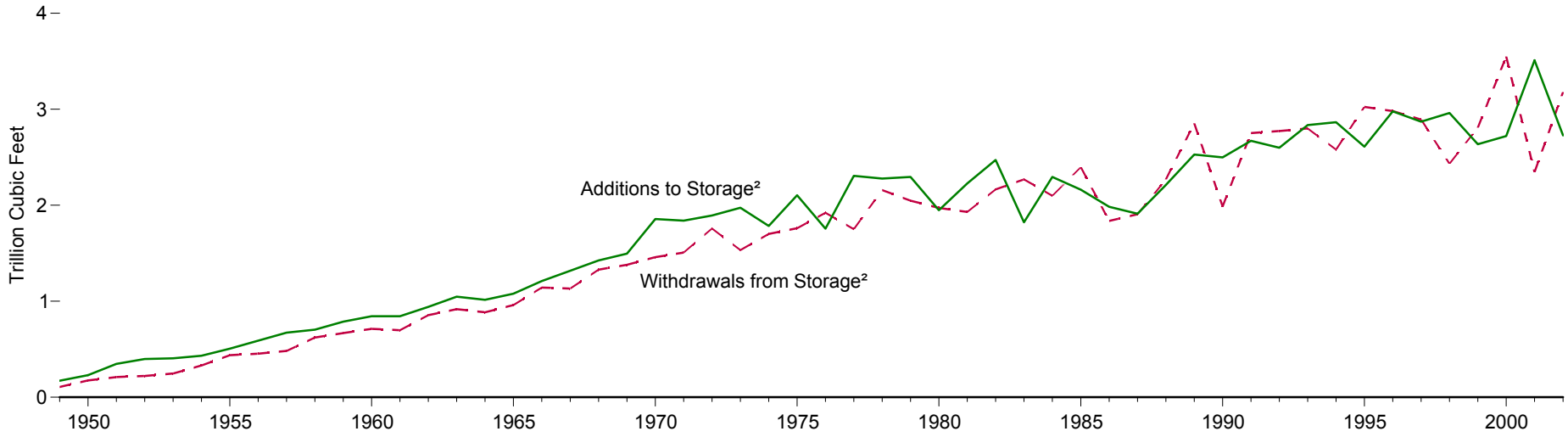
Overview, 1949-2002



Overview, 2002



Storage Additions and Withdrawals, 1949-2002



[1] Dry gas.
[2] Beginning with 1980, 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, 1949-2002

(Billion Cubic Feet)

Year	Dry Gas Production	Supplemental Gaseous Fuels	Imports	Exports	Withdrawals From Storage [1]	Additions to Storage [1]	Balancing Item [2]	Consumption
1949	5,195	NA	0	20	106	172	-139	4,971
1950	6,022	NA	0	26	175	230	-175	5,767
1951	7,165	NA	0	24	209	348	-192	6,810
1952	7,694	NA	8	27	222	399	-204	7,294
1953	8,057	NA	9	28	247	405	-240	7,639
1954	8,388	NA	7	29	330	432	-216	8,049
1955	9,029	NA	11	31	437	505	-247	8,694
1956	9,664	NA	10	36	453	589	-213	9,289
1957	10,247	NA	38	42	481	672	-205	9,846
1958	10,572	NA	136	39	621	704	-284	10,303
1959	11,548	NA	134	18	669	787	-223	11,321
1960	12,228	NA	156	11	713	844	-274	11,967
1961	12,662	NA	219	11	698	844	-235	12,489
1962	13,253	NA	402	16	854	941	-286	13,267
1963	14,076	NA	406	17	917	1,047	-365	13,970
1964	14,824	NA	443	20	885	1,015	-304	14,814
1965	15,286	NA	456	26	960	1,078	-319	15,280
1966	16,467	NA	480	25	1,142	1,210	-401	16,452
1967	17,387	NA	564	82	1,133	1,317	-296	17,388
1968	18,495	NA	652	94	1,330	1,425	-325	18,632
1969	19,832	NA	727	51	1,379	1,496	-334	20,056
1970	21,014	NA	821	70	1,459	1,857	-228	21,139
1971	21,610	NA	935	80	1,508	1,839	-339	21,793
1972	21,624	NA	1,019	78	1,757	1,893	-328	22,101
1973	21,731	NA	1,033	77	1,533	1,974	-196	22,049
1974	20,713	NA	959	77	1,701	1,784	-289	21,223
1975	19,236	NA	953	73	1,760	2,104	-235	19,538
1976	19,098	NA	964	65	1,921	1,756	-216	19,946
1977	19,163	NA	1,011	56	1,750	2,307	-41	19,521
1978	19,122	NA	966	53	2,158	2,278	-287	19,627
1979	19,663	NA	1,253	56	2,047	2,295	-372	20,241
1980	19,403	155	985	49	1,972	1,949	-640	19,877
1981	19,181	176	904	59	1,930	2,228	-500	19,404
1982	17,820	145	933	52	2,164	2,472	-537	18,001
1983	16,094	132	918	55	2,270	1,822	-703	16,835
1984	17,466	110	843	55	2,098	2,295	-217	17,951
1985	16,454	126	950	55	2,397	2,163	-428	17,281
1986	16,059	113	750	61	1,837	1,984	-493	16,221
1987	16,621	101	993	54	1,905	1,911	-444	17,211
1988	17,103	101	1,294	74	2,270	2,211	-453	18,030
1989	17,311	107	1,382	107	2,854	2,528	101	[3]19,119
1990	17,810	123	1,532	86	1,986	2,499	[R]307	[3,R]19,174
1991	17,698	113	1,773	129	2,752	2,672	27	[3]19,562
1992	17,840	118	2,138	216	2,772	2,599	176	[3]20,228
1993	18,095	119	2,350	140	2,799	2,835	401	20,790
1994	18,821	111	2,624	162	2,579	2,865	139	21,247
1995	18,599	110	2,841	154	3,025	2,610	396	[R]22,207
1996	18,854	109	2,937	153	2,981	2,979	[R]860	22,609
1997	18,902	103	2,994	157	2,894	2,870	[R]871	[R]22,737
1998	19,024	102	3,152	159	2,432	2,961	[R]657	[R]22,246
1999	18,832	98	3,586	163	2,808	2,636	[R]-119	[R]22,405
2000	[R]19,182	[R]90	3,782	244	3,550	2,721	[R]-271	[R]23,368
2001	[R]19,676	[R]86	[R]3,977	[R]373	[R]2,344	[R]3,509	[R]45	[R]22,246
2002[P]	19,047	80	4,008	516	3,126	2,679	-610	22,455

[1] For 1980-2001, includes liquefied natural gas stored in above-ground tanks.

[2] Quantities lost and imbalances in data due to differences among data sources. Since 1980, excludes intransit shipments that cross the U.S.-Canada border (i.e., natural gas delivered to its destination via the other country).

[3] 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 at end of section.

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

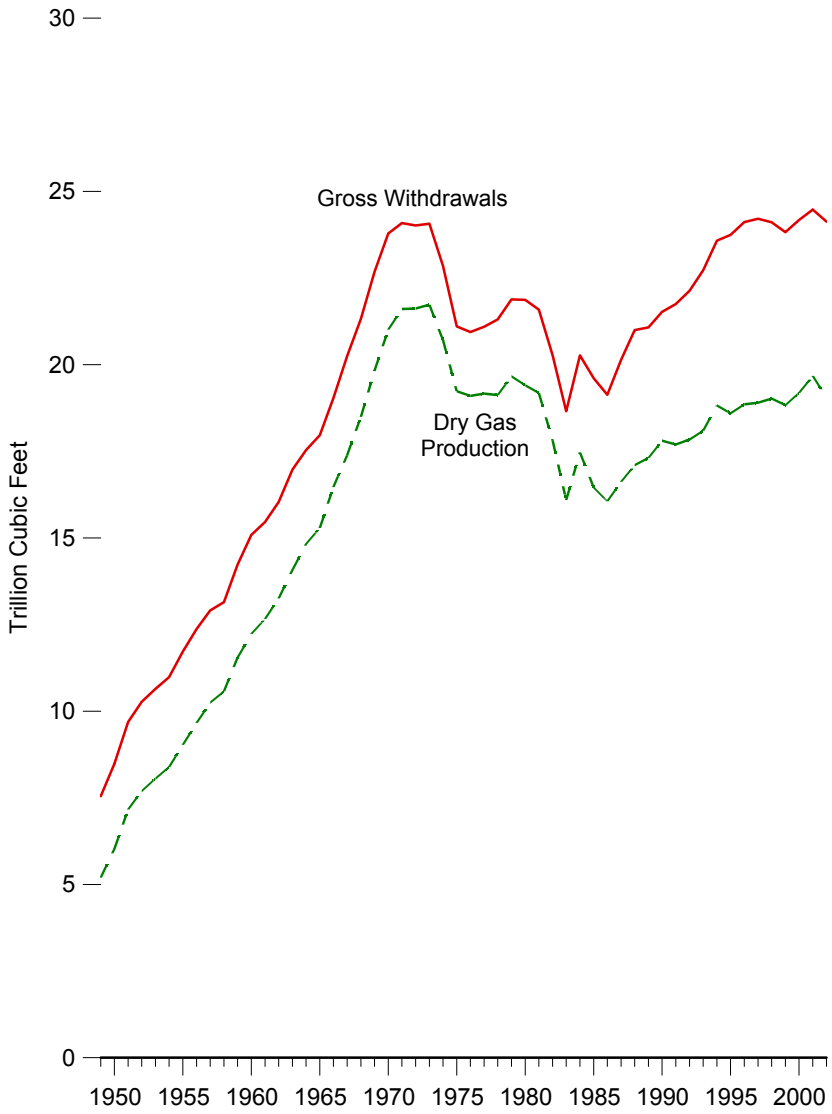
Notes: • Beginning with 1965, all volumes are shown on a pressure base of 14.73 p.s.i.a. at 60° F. For prior years, the pressure base was 14.65 p.s.i.a. at 60° F. • Totals may not equal sum of components due to independent rounding.

Web Page: http://www.eia.doe.gov/oil_gas/natural_gas/info_glance/natural_gas.html.

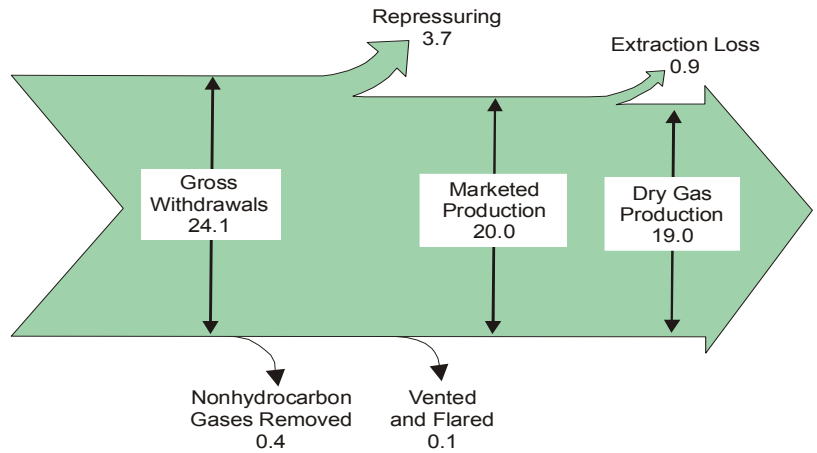
Sources: **Dry Gas Production:** Table 6.2. **Supplemental Gaseous Fuels:** • 1980-1996—Energy Information Administration (EIA), *Natural Gas Annual (NGA)*, annual reports. • 1997 forward—EIA, *Natural Gas Monthly (NGM)* (May 2003), Table 2. **Imports** and **Exports:** Table 6.3. **Withdrawals From Storage** and **Additions to Storage:** • 1949-1996—*NGA 2000* (November 2001), Table 94. • 1997-2001—*NGA 2001* (February 2003), Table 1. • 2002—*NGM* (May 2003), Table 9. **Balancing Item:** Calculated as the sum of consumption, exports, and additions to storage minus dry gas production, supplemental gaseous fuels, imports, and withdrawals from storage. **Consumption:** Table 6.5.

Figure 6.2 Natural Gas Production

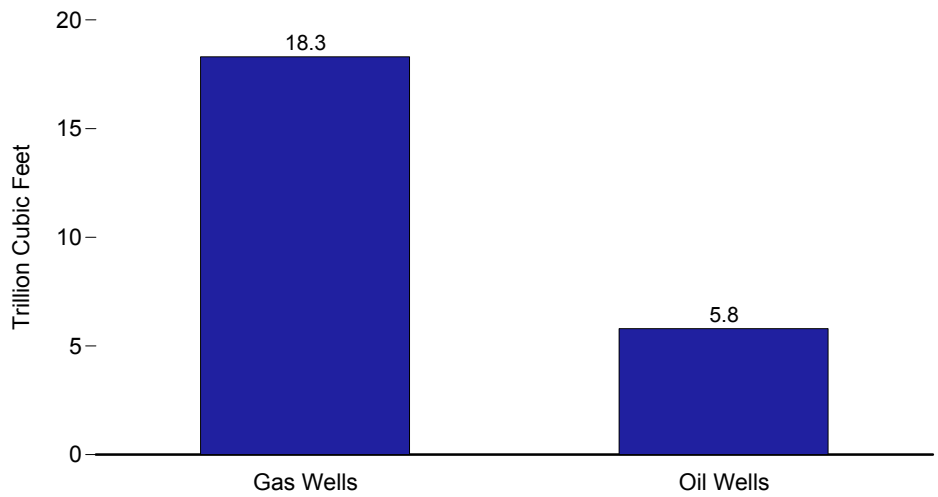
Gross Withdrawals and Dry Gas Production, 1949-2002



Production Flow, 2002
(Trillion Cubic Feet)



Gross Withdrawals by Well Type, 2002



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

Source: Table 6.2.

Table 6.2 Natural Gas Production, 1949-2002

(Billion Cubic Feet)

Year	Gross Withdrawals			Repressuring	Nonhydrocarbon Gases Removed	Vented and Flared	Marketed Production	Extraction Loss [1]	Dry Gas Production
	From Gas Wells	From 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
1951	6,481	3,208	9,689	1,439	NA	793	7,457	292	7,165
1952	6,839	3,433	10,273	1,411	NA	849	8,013	319	7,694
1953	7,095	3,551	10,646	1,439	NA	810	8,397	340	8,057
1954	7,466	3,519	10,985	1,519	NA	724	8,743	354	8,388
1955	7,842	3,878	11,720	1,541	NA	774	9,405	377	9,029
1956	8,307	4,066	12,373	1,427	NA	864	10,082	418	9,664
1957	8,717	4,190	12,907	1,417	NA	809	10,680	434	10,247
1958	9,154	3,993	13,147	1,483	NA	633	11,030	458	10,572
1959	10,102	4,128	14,229	1,612	NA	571	12,046	498	11,548
1960	10,853	4,234	15,088	1,754	NA	563	12,771	543	12,228
1961	11,195	4,265	15,460	1,683	NA	524	13,254	592	12,662
1962	11,702	4,337	16,039	1,737	NA	426	13,877	624	13,253
1963	12,606	4,367	16,973	1,843	NA	383	14,747	670	14,076
1964	13,106	4,429	17,536	1,647	NA	342	15,547	723	14,824
1965	13,524	4,440	17,963	1,604	NA	319	16,040	753	15,286
1966	13,894	5,140	19,034	1,452	NA	376	17,207	739	16,467
1967	15,345	4,906	20,252	1,591	NA	490	18,171	785	17,387
1968	16,540	4,785	21,325	1,486	NA	517	19,322	828	18,495
1969	17,489	5,190	22,679	1,455	NA	526	20,698	867	19,832
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	[R]17,726	[R]6,448	[R]24,174	[R]3,380	[R]505	[R]91	[R]20,198	1,016	[R]19,182
2001	[R]19,050	[R]5,426	[R]24,476	[R]3,296	[R]464	[R]86	[R]20,630	[R]954	[R]19,676
2002	[E]18,312	[E]5,817	[P]24,130	[P]3,699	[P]378	[P]84	[P]19,969	[P]922	[P]19,047

[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.

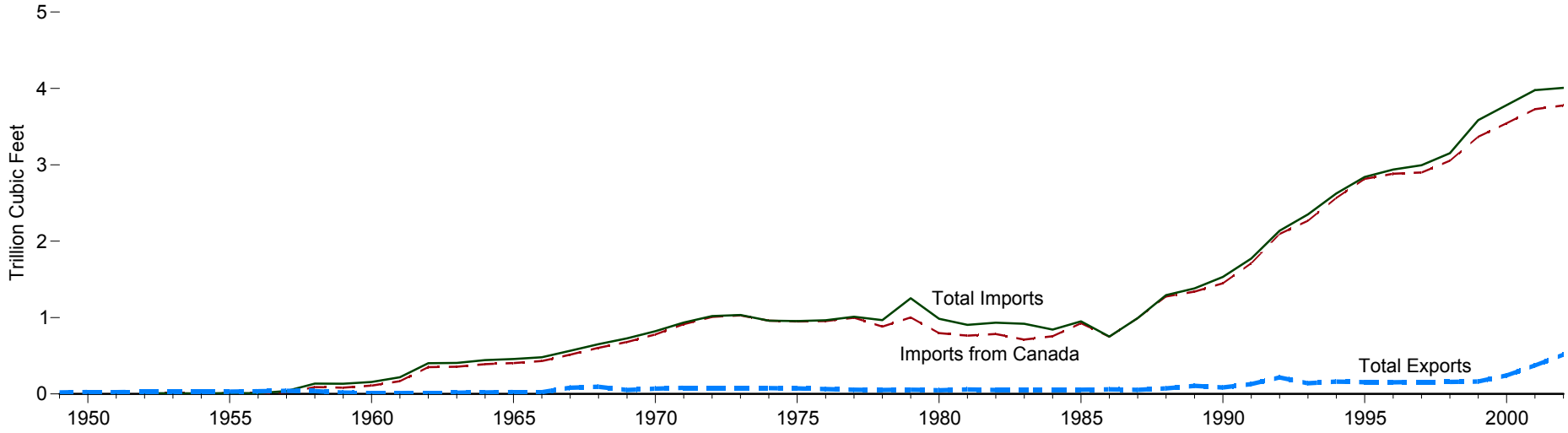
Notes: • Beginning with 1965 data, all volumes are shown on a pressure base of 14.73 p.s.i.a. at 60° F. For prior years, the pressure base was 14.65 p.s.i.a. at 60° F. • Totals may not equal sum of components due to independent rounding.

Web Page: http://www.eia.doe.gov/oil_gas/natural_gas/info_glance/natural_gas.html.

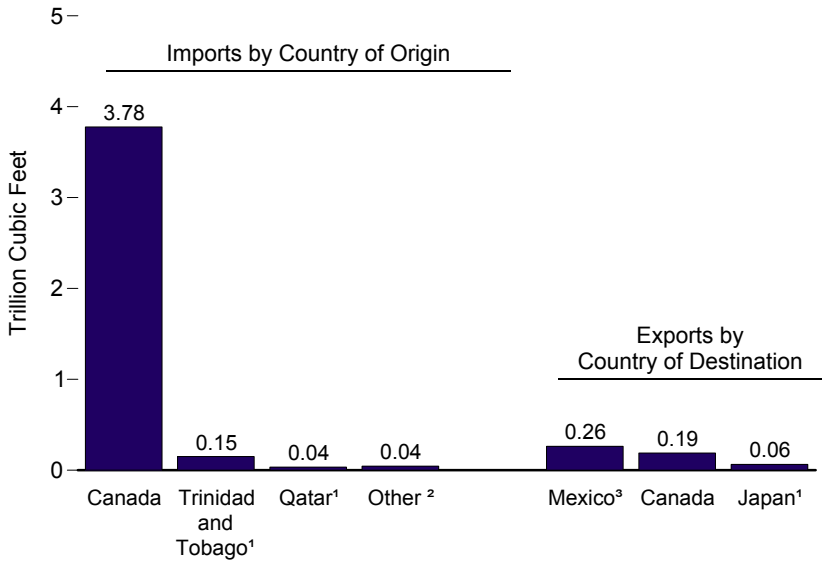
Sources: **From Gas Wells** and **From Oil Wells:** • 1949-1966—Bureau of Mines, *Minerals Yearbook*, "Natural Gas" chapter. • 1967-1996—Energy Information Administration (EIA), *Natural Gas Annual (NGA)*, annual reports. • 1997-2001—EIA, *NGA 2001* (February 2003), Table 3, and revisions (see the Web Page). • 2002—EIA estimates. **All Other Data:** • 1949-1996—EIA, *NGA 2000* (November 2001), Table 93.• 1997 forward—EIA, *Natural Gas Monthly* (May 2003), Table 1.

Figure 6.3 Natural Gas Imports, Exports, and Net Imports

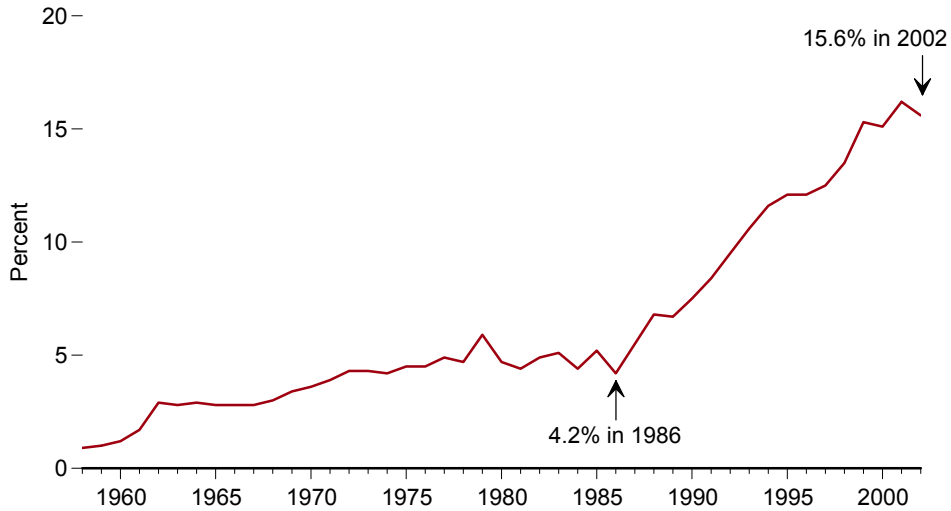
Trade Overview, 1949-2002



Trade, 2002



Net Imports as Share of Consumption, 1958-2002



[1] Liquefied natural gas.
[2] Algeria, Mexico, and Nigeria. Except for Mexico, other imports are liquefied natural gas.
[3] Pipeline and liquefied natural gas.
Source: Table 6.3.

Table 6.3 Natural Gas Imports, Exports, and Net Imports, 1949-2002

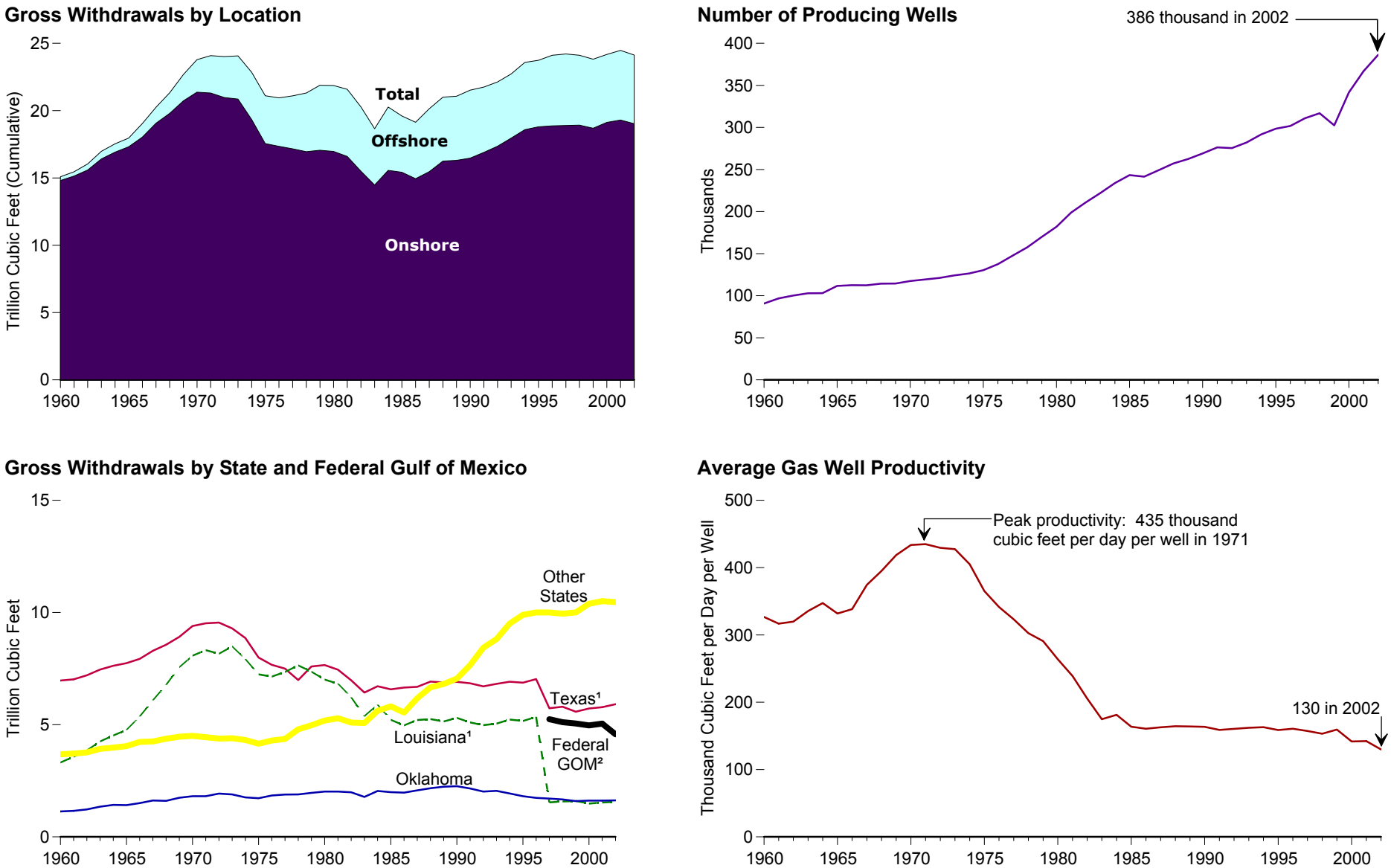
(Billion Cubic Feet, Except as Noted)

	Imports by Country of Origin									Exports by Country of Destination				Net Imports [1]	
Year	Algeria [2]	Australia [2]	Canada [3]	Mexico [3]	Nigeria [2]	Qatar [2]	Trinidad and Tobago [2]	United Arab Emirates [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])
1951	0	0	0	0	0	0	0	0	0	4	0	21	24	-24	([5])
1952	0	0	8	(s)	0	0	0	0	8	6	0	22	27	-20	([5])
1953	0	0	9	0	0	0	0	0	9	6	0	22	28	-19	([5])
1954	0	0	7	0	0	0	0	0	7	6	0	23	29	-22	([5])
1955	0	0	11	(s)	0	0	0	0	11	11	0	20	31	-20	([5])
1956	0	0	10	(s)	0	0	0	0	10	17	0	19	36	-26	([5])
1957	0	0	21	17	0	0	0	0	38	31	0	11	42	-4	([5])
1958	0	0	90	46	0	0	0	0	136	32	0	7	39	97	0.9
1959	0	0	83	51	0	0	0	0	134	12	0	7	18	116	1.0
1960	0	0	109	47	0	0	0	0	156	6	0	6	11	144	1.2
1961	0	0	167	52	0	0	0	0	219	6	0	5	11	208	1.7
1962	0	0	350	51	0	0	0	0	402	6	0	10	16	386	2.9
1963	0	0	356	50	0	0	0	0	406	7	0	10	17	389	2.8
1964	0	0	391	53	0	0	0	0	443	10	0	10	20	424	2.9
1965	0	0	405	52	0	0	0	0	456	18	0	8	26	430	2.8
1966	0	0	430	50	0	0	0	0	480	20	0	4	25	455	2.8
1967	0	0	513	51	0	0	0	0	564	70	0	11	82	483	2.8
1968	0	0	604	47	0	0	0	0	652	82	0	12	94	558	3.0
1969	0	0	680	47	0	0	0	0	727	35	3	13	51	676	3.4
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	5	2,937	52	68	34	153	2,784	[R]12.1
1997	66	10	2,899	17	0	0	0	2	2,994	56	62	38	157	2,837	12.5
1998	69	12	3,052	15	0	0	0	5	3,152	40	66	53	159	2,993	13.5
1999	76	12	3,368	55	0	20	51	3	3,586	39	64	61	163	3,422	15.3
2000	47	6	3,544	12	13	46	99	3	3,782	73	66	106	244	3,538	15.1
2001	65	2	[R]3,729	[R]10	38	23	[R]98	0	[R]3,977	[R]167	66	[R]141	[R]373	[R]3,604	[R]16.2
2002	[P]27	[P]0	[E]3,777	[E]2	[E]8	[E]35	[E]151	[E]0	[E]4,008	[E]189	[P]63	[E]263	[E]516	[E]3,491	[E]15.6

[1] Net imports equals 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, Malaysia in 1999 and 2002, Oman in 2000-2002, and Brunei in 2002.
[5] Not meaningful because there were net exports during this year.
R=Revised. P=Preliminary. E=Estimate. (s)=Less than 0.5 billion cubic feet.

Note: Totals may not equal sum of components due to independent rounding.
Web Page: http://www.eia.doe.gov/oil_gas/natural_gas/info_glance/natural_gas.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." • 1988-1996—EIA, *Natural Gas Annual,* annual reports. • 1997 forward—EIA, *Natural Gas Monthly* (May 2003), Tables 5 and 6.

Figure 6.4 Natural Gas Gross Withdrawals by State and Location and Gas Well Productivity, 1960-2002



[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 by State and Location and Gas Well Productivity, 1960-2002

(Billion Cubic Feet, Except as Noted)

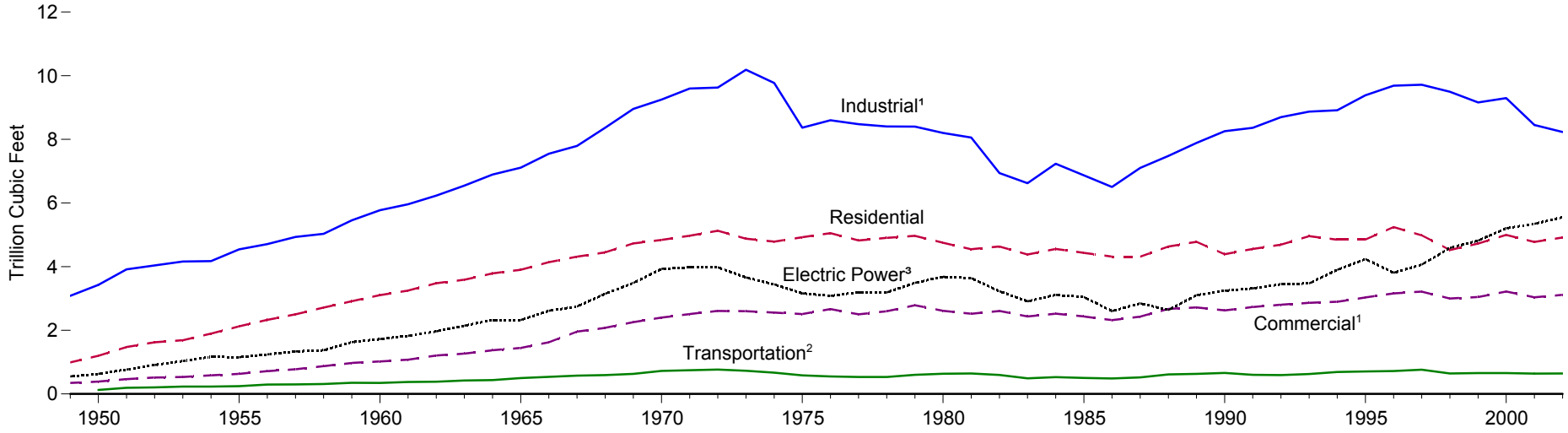
	State					Location			Gas Well [1] Productivity		
Year	Texas [2]	Louisiana [2]	Oklahoma	Other States [2]	Federal Gulf of Mexico [3]	Onshore [4]	Offshore [5]	Gross Withdrawals From Oil and Gas Wells	Gross Withdrawals From Gas Wells	Producing Wells [6] (thousands)	Average Productivity (thousand cubic feet per day)
1960	6,965	3,313	1,133	3,677	([3])	14,815	273	15,088	10,853	91	326.7
1961	7,020	3,571	1,160	3,710	([3])	15,142	318	15,460	11,195	97	316.8
1962	7,199	3,854	1,222	3,764	([3])	15,587	452	16,039	11,702	100	319.8
1963	7,452	4,250	1,347	3,924	([3])	16,409	564	16,973	12,606	103	335.4
1964	7,622	4,515	1,423	3,975	([3])	16,914	622	17,536	13,106	103	347.4
1965	7,741	4,764	1,414	4,044	([3])	17,318	646	17,963	13,524	112	331.8
1966	7,935	5,365	1,502	4,232	([3])	18,026	1,007	19,034	13,894	112	338.4
1967	8,292	6,087	1,621	4,252	([3])	19,065	1,187	20,252	15,345	112	374.3
1968	8,566	6,778	1,607	4,375	([3])	19,801	1,524	21,325	16,540	114	395.1
1969	8,915	7,561	1,742	4,462	([3])	20,725	1,954	22,679	17,489	114	418.6
1970	9,399	8,076	1,811	4,501	([3])	21,368	2,419	23,786	18,595	117	433.6
1971	9,519	8,319	1,809	4,442	([3])	21,311	2,777	24,088	18,925	119	434.8
1972	9,550	8,160	1,928	4,378	([3])	20,978	3,039	24,016	19,043	121	429.4
1973	9,290	8,491	1,890	4,396	([3])	20,856	3,212	24,067	19,372	124	427.4
1974	8,859	7,920	1,757	4,314	([3])	19,335	3,515	22,850	18,669	126	404.9
1975	7,989	7,242	1,721	4,152	([3])	17,555	3,549	21,104	17,380	130	365.3
1976	7,666	7,143	1,842	4,293	([3])	17,348	3,596	20,944	17,191	138	341.5
1977	7,496	7,351	1,888	4,362	([3])	17,165	3,932	21,097	17,416	148	323.1
1978	6,988	7,639	1,892	4,790	([3])	16,953	4,356	21,309	17,394	157	302.7
1979	7,594	7,359	1,958	4,973	([3])	17,061	4,822	21,883	18,034	170	290.8
1980	7,656	7,008	2,019	5,187	([3])	16,967	4,902	21,870	17,573	182	263.8
1981	7,452	6,830	2,019	5,287	([3])	16,597	4,991	21,587	17,337	199	238.9
1982	6,976	6,217	1,985	5,094	([3])	15,499	4,773	20,272	15,809	211	205.5
1983	6,429	5,379	1,780	5,071	([3])	14,477	4,182	18,659	14,153	222	174.7
1984	6,712	5,888	2,046	5,620	([3])	15,560	4,707	20,267	15,513	234	181.2
1985	6,577	5,218	1,993	5,818	([3])	15,421	4,186	19,607	14,535	243	163.6
1986	6,656	4,965	1,972	5,538	([3])	14,945	4,186	19,131	14,154	242	160.6
1987	6,688	5,205	2,073	6,174	([3])	15,468	4,672	20,140	14,807	249	162.8
1988	6,919	5,248	2,167	6,665	([3])	16,253	4,747	20,999	15,467	257	164.3
1989	6,881	5,143	2,237	6,813	([3])	16,303	4,771	21,074	15,709	262	164.0
1990	6,907	5,303	2,258	7,054	([3])	16,476	5,047	21,523	16,054	269	163.4
1991	6,846	5,100	2,154	7,651	([3])	16,900	4,850	21,750	16,018	276	158.8
1992	6,708	4,977	2,017	8,429	([3])	17,361	4,772	22,132	16,165	275	160.4
1993	6,817	5,047	2,050	8,812	([3])	17,960	4,766	22,726	16,691	282	162.1
1994	6,912	5,226	1,935	9,508	([3])	18,585	4,996	23,581	17,351	292	162.9
1995	6,873	5,163	1,812	9,896	([3])	18,802	4,942	23,744	17,282	299	158.6
1996	7,028	5,351	1,735	9,999	([3])	18,867	5,246	24,114	17,737	302	160.6
1997	[2,R]5,730	[2,R]1,538	1,704	[2,R]9,999	5,242	18,897	5,316	24,213	17,844	311	157.2
1998	[R]5,799	[R]1,579	1,669	[R]9,950	5,110	18,923	5,185	24,108	17,729	317	153.3
1999	[R]5,575	[R]1,599	1,594	[R]10,002	5,053	18,692	5,131	23,823	17,590	302	159.4
2000	[R]5,723	[R]1,485	1,613	[R]10,386	4,968	[R]19,130	[R]5,044	[R]24,174	[R]17,726	[R]342	[R]141.7
2001	[R]5,778	[R]1,532	[R]1,615	[R]10,506	5,045	[R]19,303	[R]5,173	[R]24,476	[R]19,050	[R]367	[R]142.3
2002	[E]5,909	[E]1,562	[E]1,623	[E]10,464	[E]4,572	[E]19,030	[E]5,100	[P]24,130	[E]18,312	[P]386	[E]129.9

[1] See Glossary.
[2] 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."
[3] Gross withdrawals from Federal offshore areas of the Gulf of Mexico. Through 1996, these gross withdrawals are included in "Texas," "Louisiana," and "Other States."
[4] Includes State offshore gross withdrawals.
[5] Excludes State offshore gross withdrawals; includes Federal offshore (Outer Continental Shelf) gross withdrawals.
[6] As of December 31 each year.
R=Revised. P=Preliminary. E=Estimate.
Web Page: http://www.eia.doe.gov/oil_gas/natural_gas/info_glance/natural_gas.html.

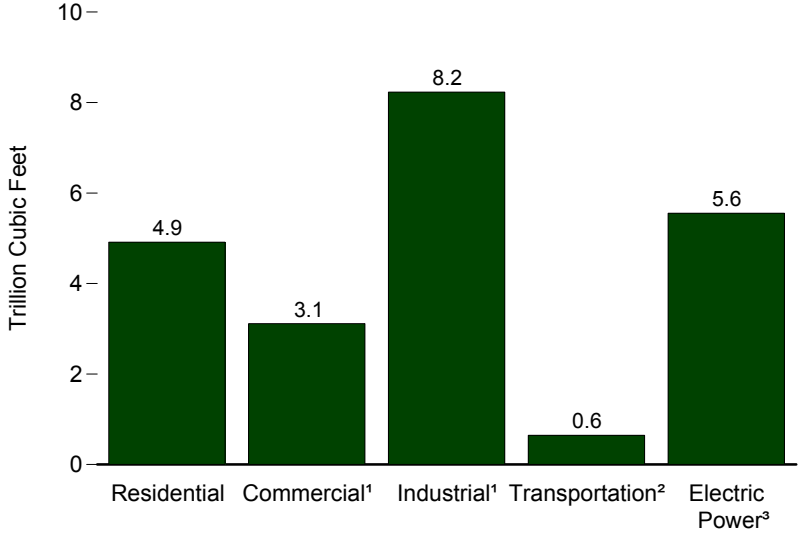
Sources: **Offshore** (Outer Continental Shelf): • 1960-1981—U.S. Geological Survey. • 1982-1985—U.S. Minerals Management Service, *Mineral Revenues - The 1989 Report on Receipts from Federal and Indian Leases,* and predecessor annual reports. • 1986-1996—Energy Information Administration (EIA), *Natural Gas Annual (NGA),* annual reports. • 1997-2001—EIA, *NGA 2001* (February 2003), Table 4. • 2002—EIA estimate. **Gross Withdrawals From Oil and Gas Wells:** • 1960-1996—EIA, *NGA 2000* (November 2001), Table 93. • 1997 forward—EIA, *Natural Gas Monthly* (May 2003), Table 1. **Number of Producing Wells:** • 1960-1966—Bureau of Mines, *Natural Gas Production and Consumption.* • 1967-1996—EIA, *NGA,* annual reports. • 1997-2001—EIA, *NGA 2001* (February 2003), Table 1. • 2002—EIA estimate. **Average Productivity:** Calculated. **All Other Data:** • 1960-1966—Bureau of Mines, *Natural Gas Production and Consumption.* • 1967-2001—EIA, *NGA,* annual reports, and revisions (see the Web Page). • 2002—EIA estimates.

Figure 6.5 Natural Gas Consumption by Sector

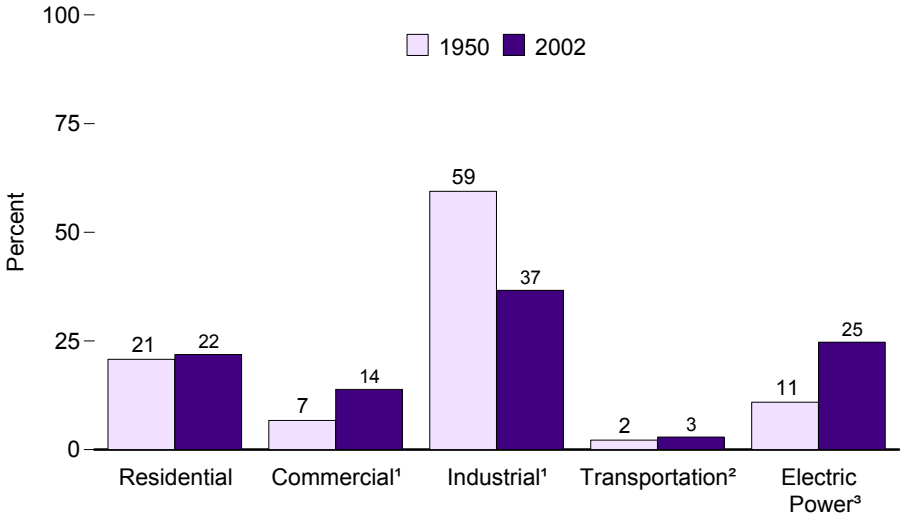
By Sector, 1949-2002



By Sector, 2002



End Use and Electric Power Shares, 1950 and 2002



[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 electrcity, or electricity and heat, to the public.
Source: Table 6.5.

Table 6.5 Natural Gas Consumption by Sector, 1949-2002

(Billion Cubic Feet)

	End-Use Sectors													Electric Power Sector [1]			
		Commercial			Industrial					Transportation							
						Other Industrial											
Year	Residential	CHP [2]	Other [3]	Total	Lease and Plant Fuel	CHP [4]	Non-CHP [5]	Total	Total	Pipeline Fuel [6]	Vehicle Fuel	Total	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
1951	1,475	([7])	464	464	1,149	([8])	2,765	2,765	3,915	192	NA	192	6,046	764	NA	764	6,810
1952	1,622	([7])	516	516	1,165	([8])	2,875	2,875	4,039	207	NA	207	6,384	910	NA	910	7,294
1953	1,686	([7])	531	531	1,131	([8])	3,028	3,028	4,159	230	NA	230	6,605	1,034	NA	1,034	7,639
1954	1,894	([7])	585	585	1,103	([8])	3,071	3,071	4,173	231	NA	231	6,883	1,165	NA	1,165	8,049
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
1956	2,328	([7])	717	717	1,003	([8])	3,707	3,707	4,709	296	NA	296	8,050	1,239	NA	1,239	9,289
1957	2,500	([7])	776	776	1,046	([8])	3,888	3,888	4,935	299	NA	299	8,510	1,336	NA	1,336	9,846
1958	2,714	([7])	872	872	1,146	([8])	3,885	3,885	5,032	312	NA	312	8,930	1,373	NA	1,373	10,303
1959	2,913	([7])	975	975	1,239	([8])	4,217	4,217	5,456	349	NA	349	9,693	1,629	NA	1,629	11,321
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
1961	3,249	([7])	1,077	1,077	1,289	([8])	4,672	4,672	5,961	378	NA	378	10,664	1,825	NA	1,825	12,489
1962	3,479	([7])	1,207	1,207	1,370	([8])	4,863	4,863	6,233	382	NA	382	11,301	1,966	NA	1,966	13,267
1963	3,589	([7])	1,268	1,268	1,411	([8])	5,134	5,134	6,545	424	NA	424	11,826	2,144	NA	2,144	13,970
1964	3,787	([7])	1,375	1,375	1,371	([8])	5,522	5,522	6,893	436	NA	436	12,491	2,323	NA	2,323	14,814
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
1966	4,138	([7])	1,623	1,623	1,033	([8])	6,513	6,513	7,546	535	NA	535	13,842	2,610	NA	2,610	16,452
1967	4,313	([7])	1,959	1,959	1,141	([8])	6,653	6,653	7,794	576	NA	576	14,642	2,746	NA	2,746	17,388
1968	4,450	([7])	2,076	2,076	1,237	([8])	7,130	7,130	8,367	591	NA	591	15,484	3,148	NA	3,148	18,632
1969	4,728	([7])	2,253	2,253	1,346	([8])	7,611	7,611	8,956	631	NA	631	16,569	3,488	NA	3,488	20,056
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	[9]5,903	[9]6,816	7,886	629	NA	629	16,014	[9]2,791	[9]315	[9]3,105	[9]19,119
1990	4,391	[R]46	[R]2,576	2,623	1,236	[R]1,055	[9,R]5,963	[9]7,018	8,255	660	(s)	660	15,929	[9]2,794	[9,R]451	[9,R]3,245	[9,R]19,174
1991	4,556	52	2,676	2,729	1,129	1,061	[9]6,170	[9]7,231	8,360	601	(s)	602	16,246	[9]2,822	[9]494	[9]3,316	[9]19,562
1992	4,690	62	2,740	2,803	1,171	1,108	[9]6,419	[9]7,527	8,698	588	2	590	16,780	[9]2,829	[9]619	[9]3,448	[9]20,228
1993	4,956	65	2,796	2,862	1,172	1,125	6,575	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	1,178	6,611	7,790	8,913	685	3	[R]689	[R]17,345	3,065	838	3,903	21,247
1995	4,850	78	2,953	3,031	1,220	1,260	6,904	8,164	9,384	700	[R]5	[R]705	17,970	3,288	949	4,237	[R]22,207
1996	5,241	82	3,076	3,158	1,250	1,289	7,146	8,435	9,685	711	[R]6	[R]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	[R]8	[R]760	[R]18,673	3,039	1,026	4,065	[R]22,737
1998	4,520	87	2,912	2,999	1,173	1,355	6,965	8,320	9,493	635	[R]9	[R]645	[R]17,658	3,544	1,044	4,588	[R]22,246
1999	4,726	84	2,961	3,045	1,079	1,401	6,678	8,079	9,158	645	[R]12	[R]657	[R]17,586	3,729	1,090	4,820	[R]22,405
2000	[R]4,996	85	3,133	3,218	[R]1,151	1,386	[R]6,757	[R]8,142	[R]9,293	[R]642	[R]13	655	[R]18,162	4,093	1,114	5,206	[R]23,368
2001	[R]4,776	[R]79	[R]2,959	[R]3,037	[R]1,089	[R]1,310	[R]6,053	[R]7,363	[R]8,452	[R]624	[R]15	[R]638	[R]16,904	[R]4,164	1,179	[R]5,342	[R]22,246
2002[P]	4,914	85	3,029	3,114	1,053	1,278	5,898	7,177	8,229	630	15	645	16,902	4,209	1,345	5,553	22,455

[1] Electricity-only and combined-heat-and-power (CHP) plants within the NAICS 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."

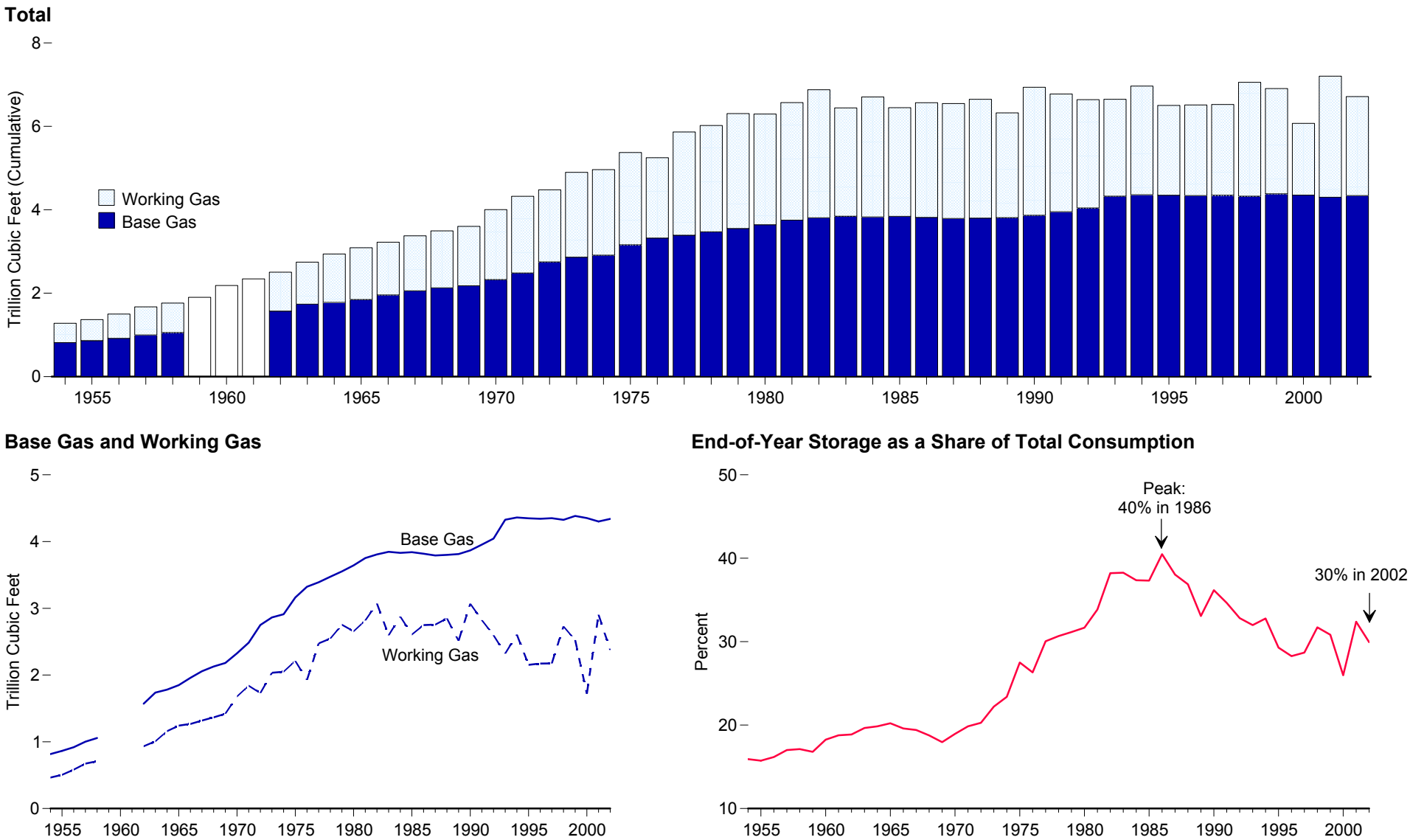
[8] Included in "Industrial Non-CHP."

[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 at end of section.

R=Revised. P=Preliminary. NA=Not available. (s)=Less than 0.5 billion cubic feet.

Notes, Web Page, and Sources: See end of section.

Figure 6.6 Natural Gas in Underground Storage, 1954-2002



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, 1954-2002

(Billion Cubic Feet)

Year	Base Gas [1]			Working Gas			Total		
	Traditonal Storage	Salt Caverns	Total	Traditonal Storage	Salt Caverns	Total	Traditonal 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	R4,224	R77	R4,301	R2,789	R115	R2,904	R7,013	R191	R7,204
2002E	4,265	75	4,340	2,273	102	2,375	6,539	177	6,715

[1] Includes native gas.

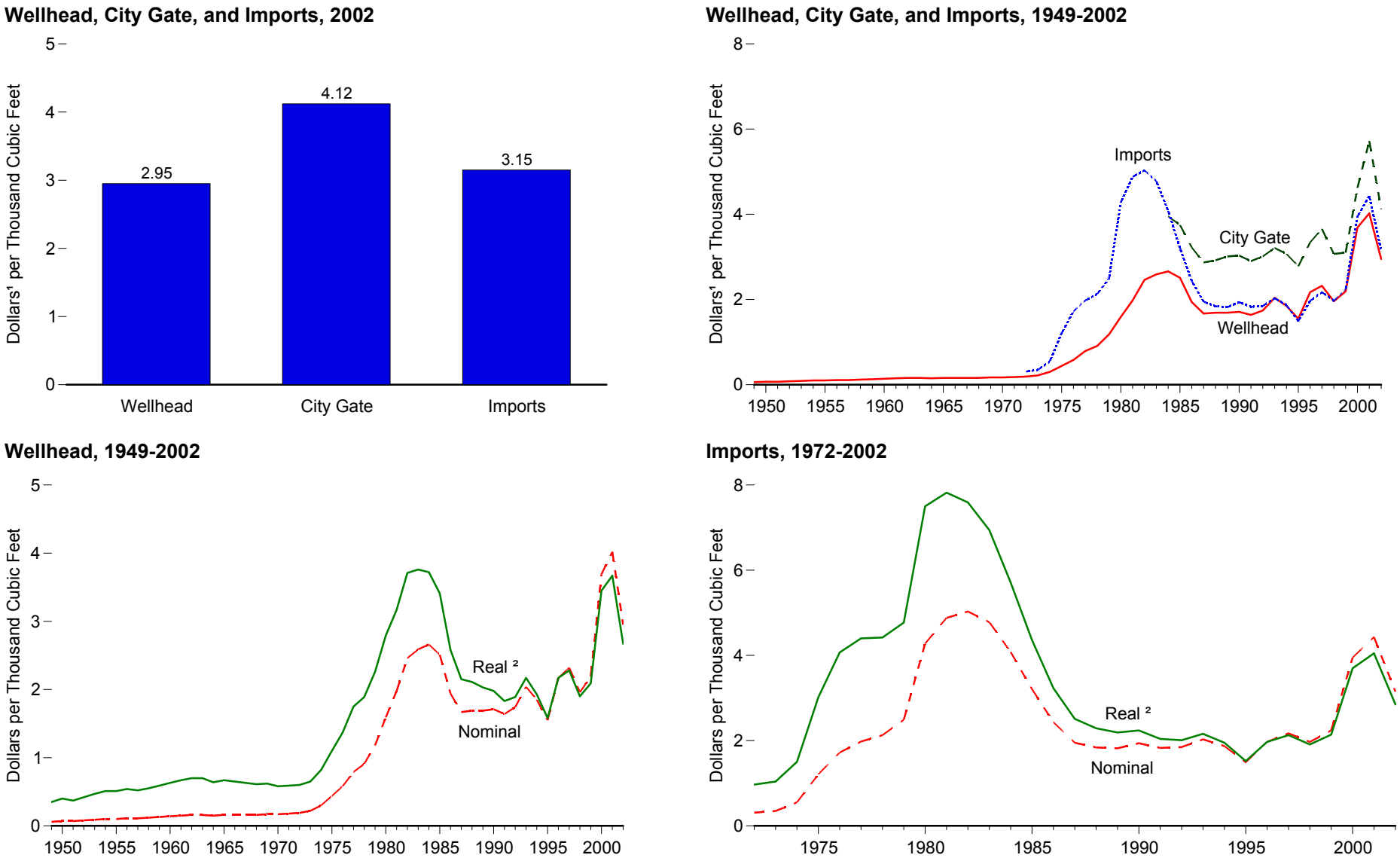
R=Revised. E=Estimate. NA=Not available.

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: http://www.eia.doe.gov/oil_gas/natural_gas/info_glance/natural_gas.html.

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." • 1985-2000—EIA, *Natural Gas Monthly (NGM),* monthly reports. • 2001 and 2002—EIA, *NGM* (May 2003), Tables 9, 11, and 12.

Figure 6.7 Natural Gas Wellhead, City Gate, and Imports Prices



[1] Nominal dollars.
[2] In chained (1996) 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.

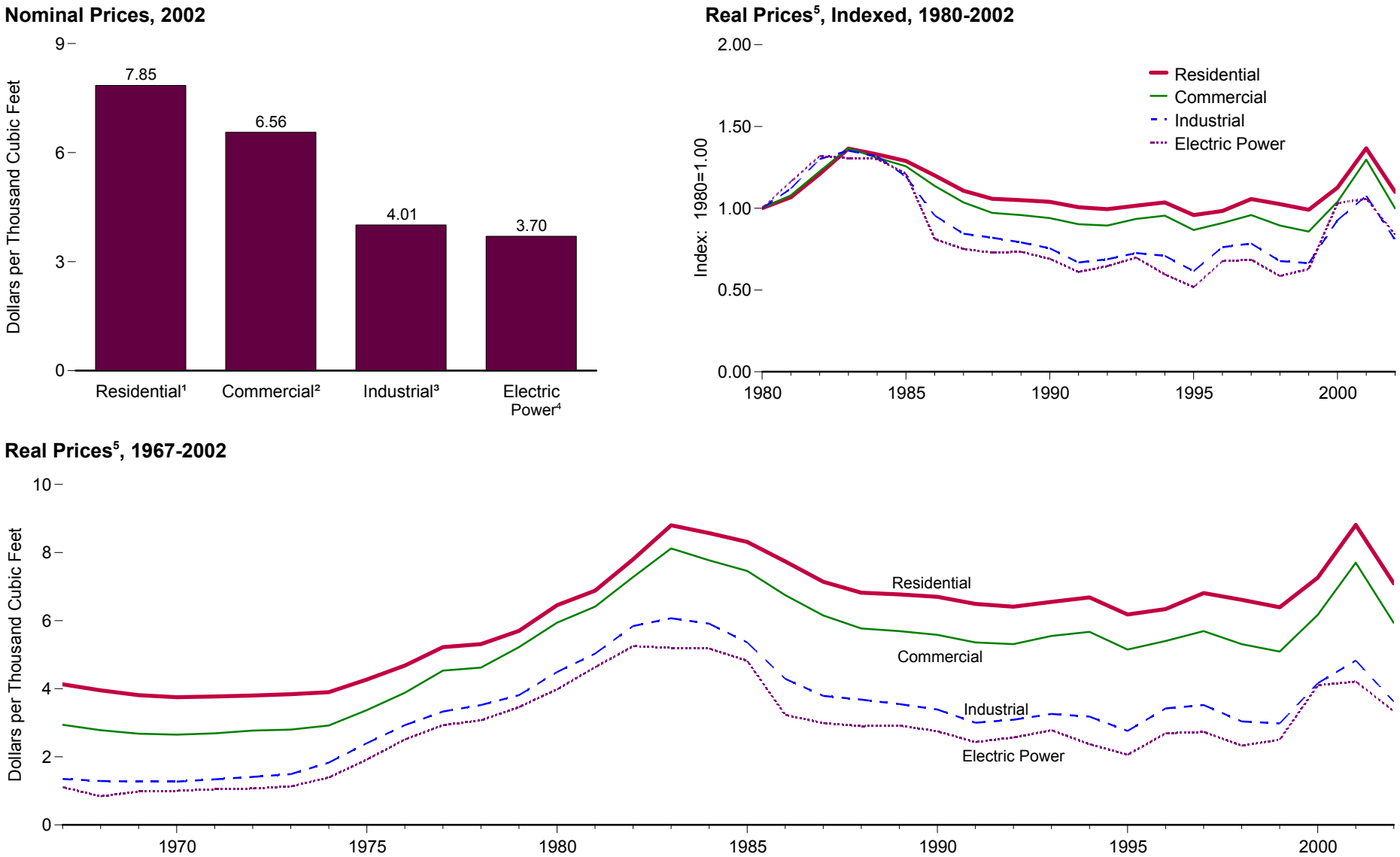
Table 6.7 Natural Gas Wellhead, City Gate, and Imports Prices, 1949-2002

(Dollars per Thousand Cubic Feet)

Year	Wellhead [1]		City Gate		Imports	
	Nominal	Real [2]	Nominal	Real [2]	Nominal	Real [2]
1949	0.06	0.35	NA	NA	NA	NA
1950	0.07	0.40	NA	NA	NA	NA
1951	0.07	0.37	NA	NA	NA	NA
1952	0.08	0.42	NA	NA	NA	NA
1953	0.09	0.47	NA	NA	NA	NA
1954	0.10	0.51	NA	NA	NA	NA
1955	0.10	0.51	NA	NA	NA	NA
1956	0.11	0.54	NA	NA	NA	NA
1957	0.11	0.52	NA	NA	NA	NA
1958	0.12	0.55	NA	NA	NA	NA
1959	0.13	0.59	NA	NA	NA	NA
1960	0.14	0.63	NA	NA	NA	NA
1961	0.15	0.67	NA	NA	NA	NA
1962	0.16	0.70	NA	NA	NA	NA
1963	0.16	0.70	NA	NA	NA	NA
1964	0.15	0.64	NA	NA	NA	NA
1965	0.16	0.67	NA	NA	NA	NA
1966	0.16	0.65	NA	NA	NA	NA
1967	0.16	0.63	NA	NA	NA	NA
1968	0.16	0.61	NA	NA	NA	NA
1969	0.17	0.62	NA	NA	NA	NA
1970	0.17	0.58	NA	NA	NA	NA
1971	0.18	0.59	NA	NA	NA	NA
1972	0.19	0.60	NA	NA	0.31	0.97
1973	0.22	0.65	NA	NA	0.35	1.04
1974	0.30	0.82	NA	NA	0.55	1.50
1975	0.44	1.10	NA	NA	1.21	3.02
1976	0.58	1.37	NA	NA	1.72	4.07
1977	0.79	1.75	NA	NA	1.98	4.40
1978	0.91	1.89	NA	NA	2.13	4.42
1979	1.18	2.26	NA	NA	2.49	4.77
1980	1.59	2.79	NA	NA	4.28	7.50
1981	1.98	3.17	NA	NA	4.88	7.82
1982	2.46	3.71	NA	NA	5.03	7.59
1983	2.59	3.76	NA	NA	4.78	6.94
1984	2.66	3.72	3.95	5.53	4.08	5.71
1985	2.51	3.41	3.75	5.09	3.21	4.36
1986	1.94	2.58	3.22	4.28	2.43	3.23
1987	1.67	2.15	2.87	3.70	1.95	2.51
1988	1.69	2.11	2.92	3.64	1.84	2.29
1989	1.69	2.03	3.01	3.61	1.82	2.19
1990	1.71	1.98	3.03	3.50	1.94	2.24
1991	1.64	1.83	2.90	3.23	1.83	2.04
1992	1.74	1.89	3.01	3.28	1.85	2.01
1993	2.04	2.17	3.21	3.41	2.03	2.16
1994	1.85	1.93	3.07	3.20	1.87	1.95
1995	1.55	1.58	2.78	2.83	1.49	1.52
1996	2.17	2.17	3.34	3.34	1.97	1.97
1997	2.32	2.28	3.66	3.59	2.17	2.13
1998	1.96	1.90	3.07	2.97	1.97	1.91
1999	2.19	2.09	3.10	2.96	2.24	2.14
2000	3.69	3.45	4.62	4.32	3.95	[R]3.70
2001	[R]4.02	[R]3.67	[R]5.72	[R]5.23	[R]4.43	[R]4.05
2002	[E]2.95	[E]2.67	4.12	3.72	[E]3.15	[E]2.85

[1] See Glossary for definition of "Natural Gas Wellhead Price."
[2] In chained (1996) dollars, calculated by using gross domestic product implicit price deflators. See Appendix Table D1.
R=Revised. E=Estimate. NA=Not available.
Web Page: http://www.eia.doe.gov/oil_gas/natural_gas/info_glance/natural_gas.html.
Sources: **Wellhead:** • 1949-1996—Energy Information Administration (EIA), *Natural Gas Annual (NGA) 2000* (November 2001), Table 93. • 1997 forward—EIA, *Natural Gas Monthly (NGM)* (May 2003), Table 4. **City Gate:** • 1984-1996—EIA, *NGA 2000* (November 2001), Table 96. • 1997 forward—EIA, *NGM* (May 2003), 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. • 1977-1996—EIA, *NGA,* annual reports. • 1997 forward—EIA, *NGM* (May 2003), Tables 5 and 6.

Figure 6.8 Natural Gas Prices by Sector



[1] Percent of volume delivered not available
[2] Based on 76.7 percent of volume delivered.
[3] Based on 19.9 percent of volume delivered.
[4] Based on 81.1 percent of volume delivered.

[5] In chained (1996) 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, 1967-2002

(Dollars per Thousand Cubic Feet)

Year	Residential			Commercial [1]			Industrial [2]			Vehicle Fuel [3]			Electric Power [4]		
	Prices		Percentage of Sector [6]	Prices		Percentage of Sector [6]	Prices		Percentage of Sector [6]	Prices		Percentage of Sector [6]	Prices		Percentage of Sector [6]
	Nominal	Real [5]		Nominal	Real [5]		Nominal	Real [5]		Nominal	Real [5]		Nominal	Real [5]	
1967	1.04	4.13	NA	0.74	2.94	NA	0.34	1.35	NA	NA	NA	NA	0.28	1.11	0.0
1968	1.04	3.95	NA	0.73	2.78	NA	0.34	1.29	NA	NA	NA	NA	0.22	0.84	0.0
1969	1.05	3.81	NA	0.74	2.68	NA	0.35	1.27	NA	NA	NA	NA	0.27	0.98	0.0
1970	1.09	3.75	NA	0.77	2.65	NA	0.37	1.27	NA	NA	NA	NA	0.29	1.00	0.0
1971	1.15	3.77	NA	0.82	2.69	NA	0.41	1.34	NA	NA	NA	NA	0.32	1.05	0.0
1972	1.21	3.80	NA	0.88	2.77	NA	0.45	1.41	NA	NA	NA	NA	0.34	1.07	0.0
1973	1.29	3.84	NA	0.94	2.80	NA	0.50	1.49	NA	NA	NA	NA	0.38	1.13	92.1
1974	1.43	3.90	NA	1.07	2.92	NA	0.67	1.83	NA	NA	NA	NA	0.51	1.39	92.7
1975	1.71	4.27	NA	1.35	3.37	NA	0.96	2.40	NA	NA	NA	NA	0.77	1.92	96.1
1976	1.98	4.68	NA	1.64	3.88	NA	1.24	2.93	NA	NA	NA	NA	1.06	2.51	96.2
1977	2.35	5.22	NA	2.04	4.53	NA	1.50	3.33	NA	NA	NA	NA	1.32	2.93	97.1
1978	2.56	5.31	NA	2.23	4.62	NA	1.70	3.52	NA	NA	NA	NA	1.48	3.07	98.0
1979	2.98	5.70	NA	2.73	5.22	NA	1.99	3.81	NA	NA	NA	NA	1.81	3.46	96.1
1980	3.68	6.45	NA	3.39	5.94	NA	2.56	4.49	NA	NA	NA	NA	2.27	3.98	96.9
1981	4.29	6.88	NA	4.00	6.41	NA	3.14	5.03	NA	NA	NA	NA	2.89	4.63	97.6
1982	5.17	7.80	NA	4.82	7.28	NA	3.87	5.84	85.1	NA	NA	NA	3.48	5.25	92.6
1983	6.06	8.80	NA	5.59	8.12	NA	4.18	6.07	80.7	NA	NA	NA	3.58	5.20	93.9
1984	6.12	8.57	NA	5.55	7.77	NA	4.22	5.91	74.7	NA	NA	NA	3.70	5.18	94.4
1985	6.12	8.31	NA	5.50	7.46	NA	3.95	5.36	68.8	NA	NA	NA	3.55	4.82	94.0
1986	5.83	7.74	NA	5.08	6.75	NA	3.23	4.29	59.8	NA	NA	NA	2.43	3.23	91.7
1987	5.54	7.14	NA	4.77	6.15	93.1	2.94	3.79	47.4	NA	NA	NA	2.32	2.99	91.6
1988	5.47	6.82	NA	4.63	5.77	90.7	2.95	3.68	42.6	NA	NA	NA	2.33	2.90	89.6
1989	5.64	6.77	99.9	4.74	5.69	89.1	2.96	3.55	36.9	NA	NA	NA	2.43	2.92	88.6
1990	5.80	6.70	99.3	4.83	5.58	86.6	2.93	3.39	35.2	3.39	3.92	NA	2.38	2.75	89.2
1991	5.82	6.49	99.2	4.81	5.36	85.1	2.69	3.00	32.7	3.96	4.42	NA	2.18	2.43	93.2
1992	5.89	6.41	99.1	4.88	5.31	83.2	2.84	3.09	30.3	4.05	4.41	NA	2.36	2.57	93.2
1993	6.16	6.55	99.1	5.22	5.55	83.9	3.07	3.26	29.7	4.27	4.54	87.8	2.61	2.78	93.4
1994	6.41	6.68	99.1	5.44	5.67	79.3	3.05	3.18	25.5	4.11	4.28	86.9	2.28	2.37	93.5
1995	6.06	6.18	99.1	5.05	5.15	76.7	2.71	2.76	24.5	3.98	4.06	86.6	2.02	2.06	92.0
1996	6.34	6.34	99.1	5.40	5.40	77.6	3.42	3.42	19.4	4.34	4.34	94.0	2.69	2.69	92.2
1997	6.94	6.81	98.8	5.80	5.69	70.8	3.59	3.52	18.1	4.44	4.36	89.7	2.78	2.73	91.0
1998	6.82	6.61	97.7	5.48	5.31	67.0	3.14	3.04	16.1	4.59	4.45	85.4	2.40	2.33	82.5
1999	6.69	6.39	95.2	5.33	5.09	[R]66.1	[R]3.12	[R]2.98	[R]18.8	4.34	4.15	85.6	2.62	2.50	75.3
2000	7.76	[R]7.26	[R]92.6	6.59	[R]6.17	62.9	[R]4.45	[R]4.16	[R]19.8	5.54	5.18	72.7	4.38	[R]4.10	64.3
2001	9.64	8.81	[R]92.3	[R]8.43	[R]7.70	[R]65.8	[R]5.28	[R]4.83	[R]19.3	[R]6.60	[R]6.03	NA	[R]4.61	[R]4.21	41.9
2002	[P]7.85	[P]7.09	NA	[P]6.56	[P]5.93	[E]76.7	[P]4.01	[P]3.62	[E]19.9	NA	NA	NA	[4,P]3.70	[4,P]3.34	[4,E]81.1

[1] Commercial sector, including commercial combined-heat-and-power (CHP) and commercial electricity-only plants. See Note 1 at end of Section 8.

[2] Industrial sector, including industrial combined-heat-and-power (CHP) and industrial electricity-only plants. See Note 1 at end of Section 8.

[3] 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.

[4] Electricity-only and combined-heat-and-power (CHP) plants within the NAICS 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 at end of section for plant coverage.

[5] In chained (1996) dollars, calculated by using gross domestic product implicit price deflators. See Table D1.

[6] 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: • Natural gas includes supplemental gaseous fuels. • Residential, commercial, and industrial price data represent prices of natural gas sold and delivered by local distribution companies to residential, commercial, and industrial consumers, respectively. The data do not reflect prices of natural gas transported for the account of others. • The average for each end-use sector is calculated by dividing the total value of the gas consumed by each sector by the total quantity consumed.

Web Page: http://www.eia.doe.gov/oil_gas/natural_gas/info_glance/natural_gas.html.

Sources: **Residential, Commercial,** and **Industrial:** • 1967-1996—Energy Information Administration (EIA), *Natural Gas Annual (NGA),* annual reports. • 1997 forward—EIA, *Natural Gas Monthly (NGM)* (May 2003), Table 4. **Vehicle Fuel:** 1990-2001—EIA, *NGA,* annual reports. **Electric Power:** • 1967-1996—EIA, *NGA,* annual reports. • 1997-2001—EIA, *NGM* (May 2003), Table 4. • 2002—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."

Natural Gas

Note 1. 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 through 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 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 CHP plants within the NAICS 22 category whose primary business is to sell electricity, or electricity and heat, to the public.

Note 3. Data for 1973–1982 cover all regulated electric generating plants at which the generator nameplate capacity of all steam-electric units combined totaled 25 megawatts or greater. From 1974–1982, peaking units were included in the data and counted towards the 25-megawatt-or-greater total. Data for 1983–1990 cover all regulated electric generating plants at which the generator nameplate capacity of all steam-electric units combined totaled 50 megawatts or greater. Data for 1991–2001 cover all regulated electric generating plants at which the generator nameplate capacity of all steam-electric units and combined-cycle units together totaled 50 megawatts or greater. Data for 2002 forward cover the aforementioned regulated generating plants plus unregulated generating plants (independent power producers, commercial plants, and industrial plants) whose total facility fossil-fueled nameplate generating capacity is 50 or more megawatts, regardless of unit type.

Table 6.5 Notes: • See Note 2 above. • See Tables 8.3c-8.3e for the amount of natural gas used to produce electricity and Table 8.3f for the amount of natural gas used to produce useful thermal output. • 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.

Table 6.5 Web Page
http://www.eia.doe.gov/oil_gas_/natural_gas/info_glance/natural_gas.html.

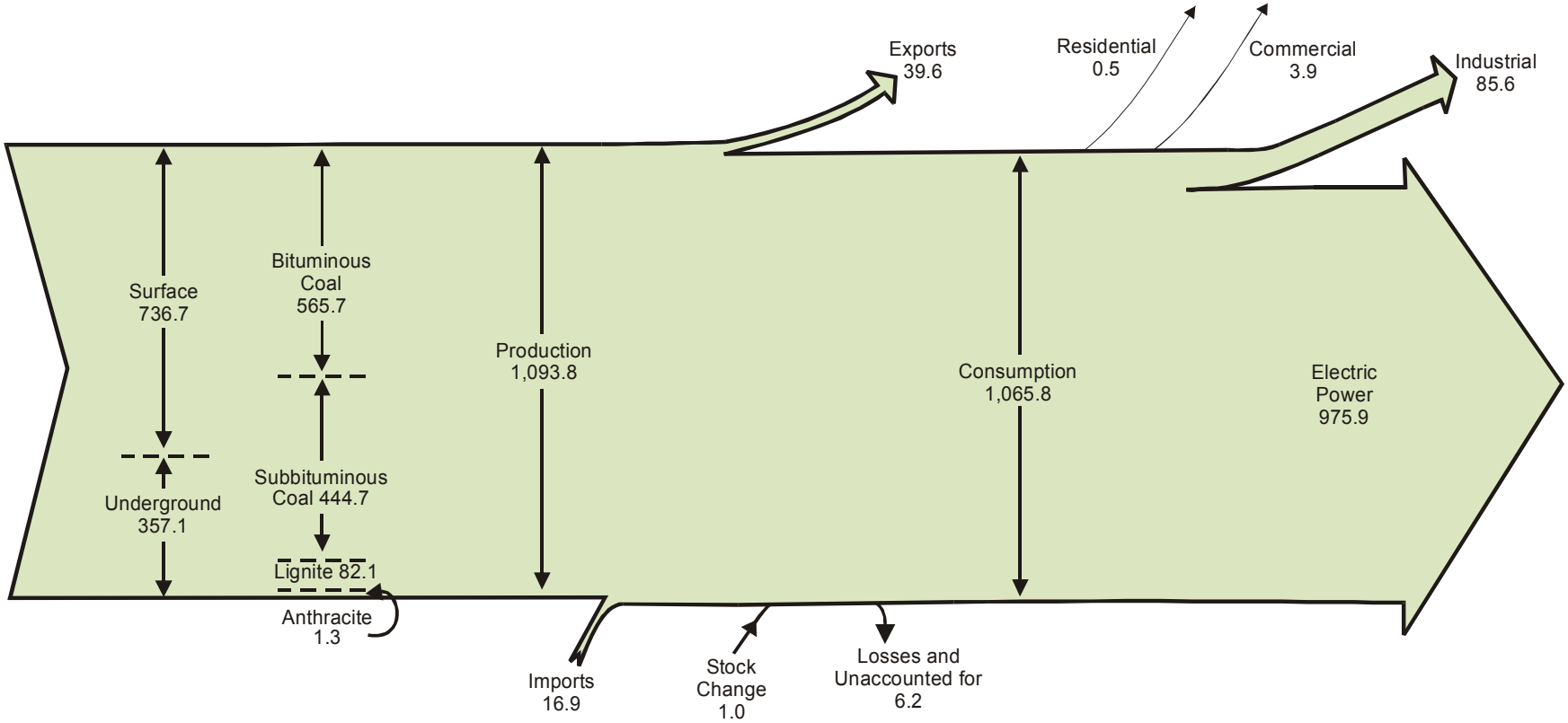
Table 6.5 Sources: Residential, Commercial Total, Lease and Plant Fuel, and Pipeline Fuel: • 1949-1996—Energy Information Administration (EIA), *Natural Gas Annual 2000* (*NGA*) (November 2001), Table 95 • 1997 forward—EIA, *Natural Gas Monthly* (*NGM*) (May 2003), Table 3. **Other Industrial Total:** • 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 forward—EIA, *NGM* (May 2003), 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 forward—EIA, *NGM (*May 2003), Table 3. **Commercial CHP, Industrial CHP, and Electric Power Sector:** Tables 8.3b, 8.3d, 8.3e, and 8.3f. **All Other Data:** Calculated.

7

Coal

Coal yard, Curtis Bay, Maryland. Source: U.S. Department of Energy.

Diagram 4. Coal Flow, 2002
(Million Short Tons)

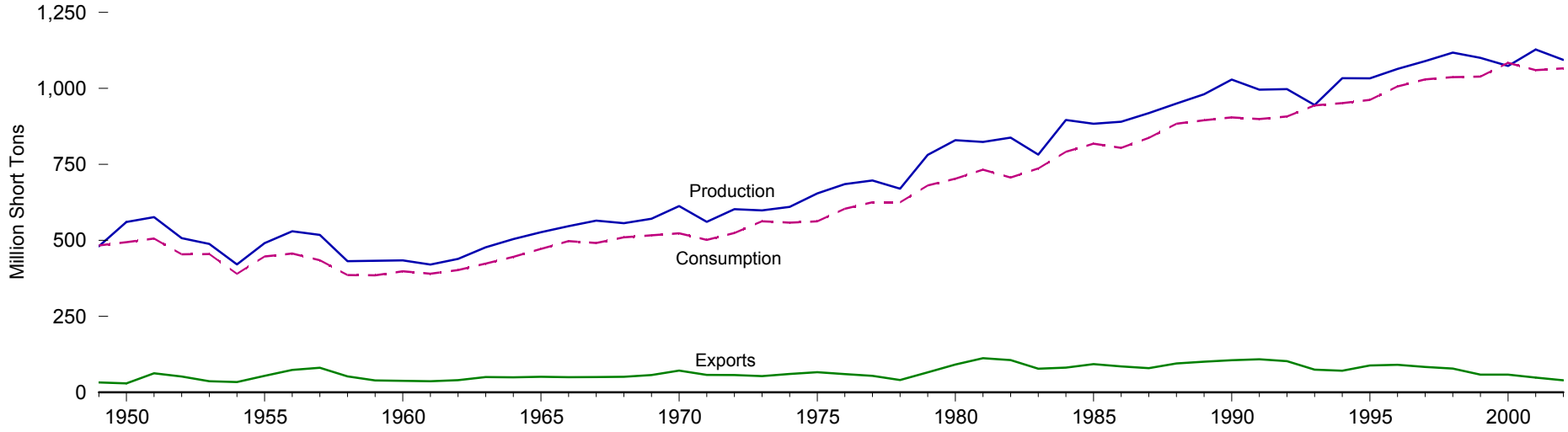


Notes: • Production categories are estimated; other data are preliminary. • Totals may not equal sum of components due to independent rounding.

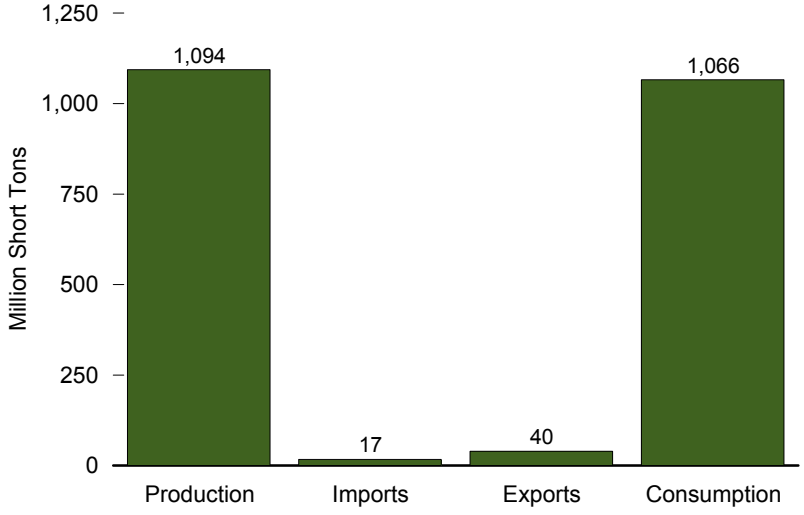
Sources: Tables 7.1, 7.2, and 7.3.

Figure 7.1 Coal Overview

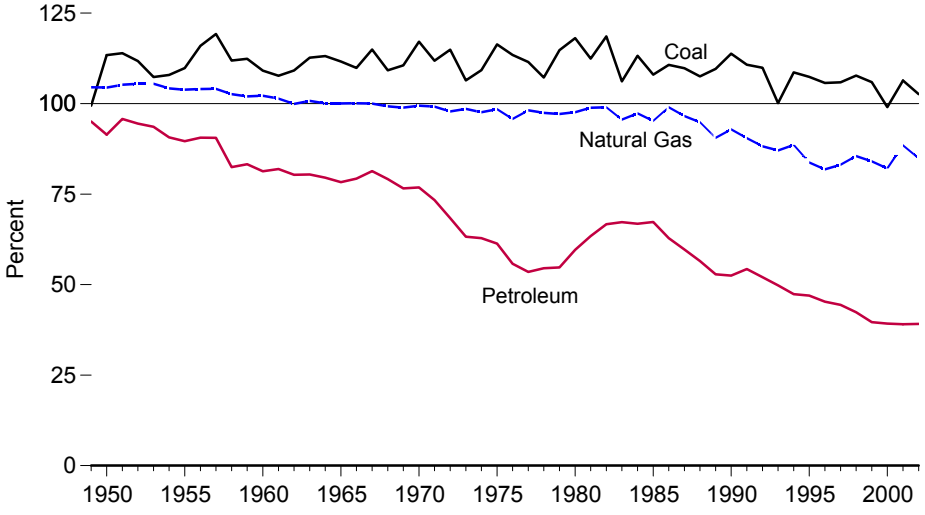
Overview, 1949-2002



Overview, 2002



Production as Share of Consumption by Type of Fossil Fuel, 1949-2002



Sources: Tables 5.1, 6.1, and 7.1.

Table 7.1 Coal Overview, 1949-2002

(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
1951	576.3	NA	0.3	62.7	([6])	[6]3.5	505.9
1952	507.4	NA	0.3	52.2	([6])	[6]0.8	454.1
1953	488.2	NA	0.3	36.5	([6])	[6]-6.9	454.8
1954	420.8	NA	0.2	33.9	([6])	[6]8.1	389.9
1955	490.8	NA	0.3	54.4	([6])	[6]-6.3	447.0
1956	529.8	NA	0.4	73.8	([6])	[6]-10.2	456.9
1957	518.0	NA	0.4	80.8	([6])	[6]0.8	434.5
1958	431.6	NA	0.3	52.6	([6])	[6]-1.3	385.7
1959	432.7	NA	0.4	39.0	([6])	[6]9.2	385.1
1960	434.3	NA	0.3	38.0	([6])	[6]1.7	398.1
1961	420.4	NA	0.2	36.4	([6])	[6]-4.0	390.4
1962	439.0	NA	0.2	40.2	([6])	[6]-1.5	402.3
1963	477.2	NA	0.3	50.4	([6])	[6]3.3	423.5
1964	504.2	NA	0.3	49.5	([6])	[6]4.0	445.7
1965	527.0	NA	0.2	51.0	([6])	[6]2.2	472.0
1966	546.8	NA	0.2	50.1	([6])	[6]2.2	497.7
1967	564.9	NA	0.2	50.1	([6])	[6]4.6	491.4
1968	556.7	NA	0.2	51.2	([6])	[6]3.5	509.8
1969	571.0	NA	0.1	56.9	([6])	[6]2.9	516.4
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	[R]3.3	2.7	105.8	26.5	[R]-1.7	[R]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	[R]24.0	[R]-2.9	1,038.6
2000	1,073.6	9.1	12.5	58.5	[R]-48.3	[R]0.9	1,084.1
2001	[1,R]1,127.7	([3])	19.8	48.7	[R]41.6	[R]-3.0	[R]1,060.1
2002[P]	1,093.8	([3])	16.9	39.6	-1.0	6.2	1,065.8

[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."

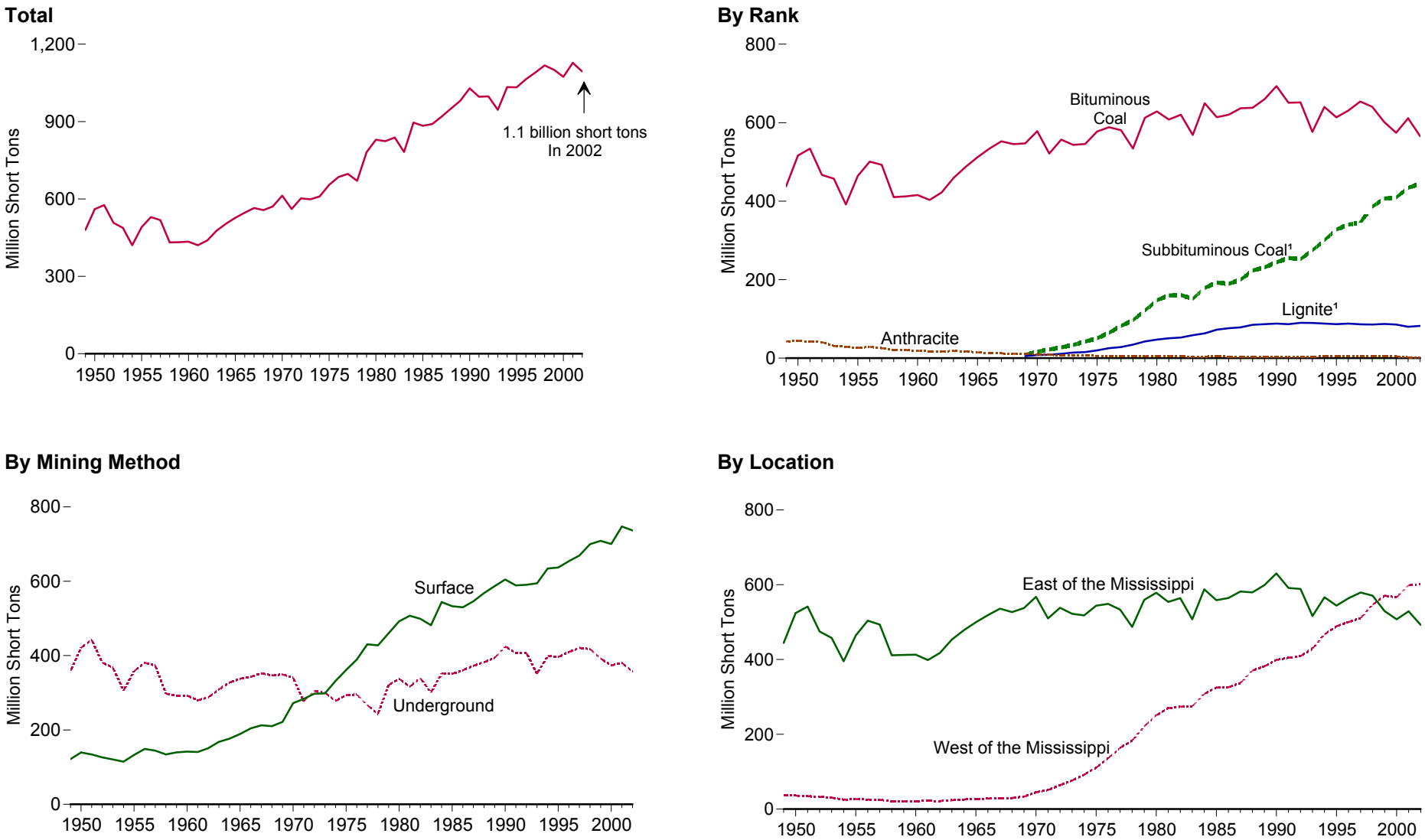
R=Revised. P=Preliminary. NA=Not available. (s)=Less than 0.05 million short tons.

Notes: • See Note 1 at end of section. • Totals may not equal sum of components due to independent rounding.

Web Page: 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:** • 1949-1995—U.S. Department of Commerce, Bureau of the Census, "Monthly Report IM145." • 1996 forward—EIA, *Quarterly Coal Report October-December 2002* (March 2003), 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, 1949-2002



¹ Included with bituminous coal prior to 1969.
Note: Because vertical scales differ, graphs should not be compared.

Source: Table 7.2.

Table 7.2 Coal Production, 1949-2002

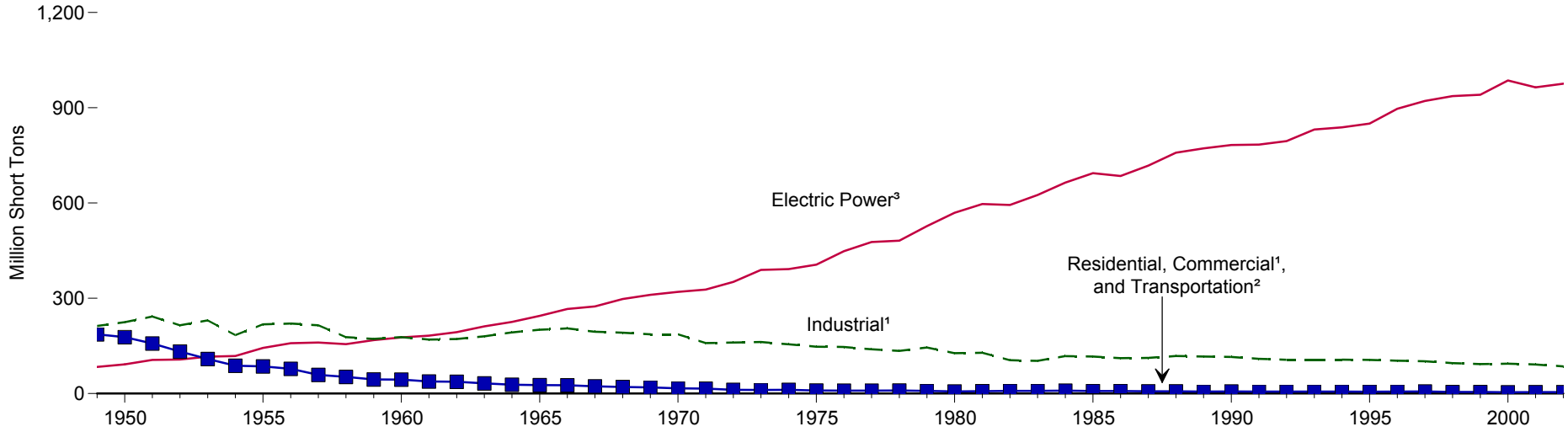
(Million Short Tons)

Year	Rank				Mining Method		Location		Total [1]
	Bituminous Coal [1]	Subbituminous Coal	Lignite	Anthracite [1]	Underground	Surface [1]	West of the Mississippi [1]	East of the Mississippi [1]	
1949	437.9	([2])	([2])	42.7	358.9	121.7	36.4	444.2	480.6
1950	516.3	([2])	([2])	44.1	421.0	139.4	36.0	524.4	560.4
1951	533.7	([2])	([2])	42.7	442.2	134.2	34.6	541.7	576.3
1952	466.8	([2])	([2])	40.6	381.2	126.3	32.7	474.8	507.4
1953	457.3	([2])	([2])	30.9	367.4	120.8	30.6	457.7	488.2
1954	391.7	([2])	([2])	29.1	306.0	114.8	25.4	395.4	420.8
1955	464.6	([2])	([2])	26.2	358.0	132.9	26.6	464.2	490.8
1956	500.9	([2])	([2])	28.9	380.8	148.9	25.8	504.0	529.8
1957	492.7	([2])	([2])	25.3	373.6	144.5	24.7	493.4	518.0
1958	410.4	([2])	([2])	21.2	297.6	134.0	20.3	411.3	431.6
1959	412.0	([2])	([2])	20.6	292.8	139.8	20.3	412.4	432.7
1960	415.5	([2])	([2])	18.8	292.6	141.7	21.3	413.0	434.3
1961	403.0	([2])	([2])	17.4	279.6	140.9	21.8	398.6	420.4
1962	422.1	([2])	([2])	16.9	287.9	151.1	21.4	417.6	439.0
1963	458.9	([2])	([2])	18.3	309.0	168.2	23.7	453.5	477.2
1964	487.0	([2])	([2])	17.2	327.7	176.5	25.7	478.5	504.2
1965	512.1	([2])	([2])	14.9	338.0	189.0	27.4	499.5	527.0
1966	533.9	([2])	([2])	12.9	342.6	204.2	28.0	518.8	546.8
1967	552.6	([2])	([2])	12.3	352.4	212.5	28.9	536.0	564.9
1968	545.2	([2])	([2])	11.5	346.6	210.1	29.7	527.0	556.7
1969	547.2	8.3	5.0	10.5	349.2	221.7	33.3	537.7	571.0
1970	578.5	16.4	8.0	9.7	340.5	272.1	44.9	567.8	612.7
1971	521.3	22.2	8.7	8.7	277.2	283.7	51.0	509.9	560.9
1972	556.8	27.5	11.0	7.1	305.0	297.4	64.3	538.2	602.5
1973	543.5	33.9	14.3	6.8	300.1	298.5	76.4	522.1	598.6
1974	545.7	42.2	15.5	6.6	278.0	332.1	91.9	518.1	610.0
1975	577.5	51.1	19.8	6.2	293.5	361.2	110.9	543.7	654.6
1976	588.4	64.8	25.5	6.2	295.5	389.4	136.1	548.8	684.9
1977	581.0	82.1	28.2	5.9	266.6	430.6	163.9	533.3	697.2
1978	534.0	96.8	34.4	5.0	242.8	427.4	183.0	487.2	670.2
1979	612.3	121.5	42.5	4.8	320.9	460.2	221.4	559.7	781.1
1980	628.8	147.7	47.2	6.1	337.5	492.2	251.0	578.7	829.7
1981	608.0	159.7	50.7	5.4	316.5	507.3	269.9	553.9	823.8
1982	620.2	160.9	52.4	4.6	339.2	499.0	273.9	564.3	838.1
1983	568.6	151.0	58.3	4.1	300.4	481.7	274.7	507.4	782.1
1984	649.5	179.2	63.1	4.2	352.1	543.9	308.3	587.6	895.9
1985	613.9	192.7	72.4	4.7	350.8	532.8	324.9	558.7	883.6
1986	620.1	189.6	76.4	4.3	360.4	529.9	325.9	564.4	890.3
1987	636.6	200.2	78.4	3.6	372.9	545.9	336.8	581.9	918.8
1988	638.1	223.5	85.1	3.6	382.2	568.1	370.7	579.6	950.3
1989	659.8	231.2	86.4	3.3	393.8	586.9	381.7	599.0	980.7
1990	693.2	244.3	88.1	3.5	424.5	604.5	398.9	630.2	1,029.1
1991	650.7	255.3	86.5	3.4	407.2	588.8	404.7	591.3	996.0
1992	651.8	252.2	90.1	3.5	407.2	590.3	409.0	588.6	997.5
1993	576.7	274.9	89.5	4.3	351.1	594.4	429.2	516.2	945.4
1994	640.3	300.5	88.1	4.6	399.1	634.4	467.2	566.3	1,033.5
1995	613.8	328.0	86.5	4.7	396.2	636.7	488.7	544.2	1,033.0
1996	630.7	340.3	88.1	4.8	409.8	654.0	500.2	563.7	1,063.9
1997	653.8	345.1	86.3	4.7	420.7	669.3	510.6	579.4	1,089.9
1998	640.6	385.9	85.8	5.3	417.7	699.8	547.0	570.6	1,117.5
1999	601.7	406.7	87.2	4.8	391.8	708.6	570.8	529.6	1,100.4
2000	574.3	409.2	85.6	4.6	373.7	700.0	566.1	507.5	1,073.6
2001	[1,R]611.3	[R]434.4	[R]80.0	[1,R]1.9	[R]380.6	[1,R]747.1	[1,R]598.9	[1,R]528.8	[1,R]1,127.7
2002	[E]565.7	[E]444.7	[E]82.1	[E]1.3	[E]357.1	[E]736.7	[E]601.4	[E]492.4	[P]1,093.8

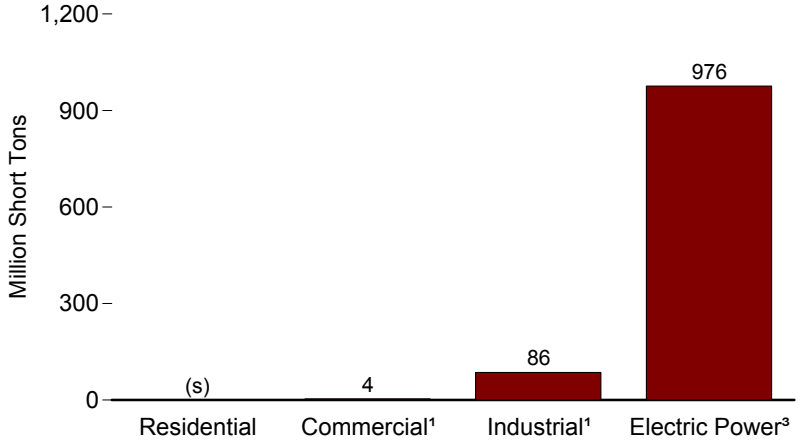
[1] Beginning in 2001, includes a small amount of refuse recovery.
[2] Included in "Bituminous Coal."
R=Revised. P=Preliminary. E=Estimate.
Note: Totals may not equal sum of components due to independent rounding.
Web Page: http://www.eia.doe.gov/fuelcoal.html.
Sources: • 1949-1975—Bureau of Mines, *Minerals 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—EIA, *Annual Coal Report 2001* (March 2003), Tables 1, 2, and 6. • 2002—EIA, *Quarterly Coal Report October-December* (March 2003), 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

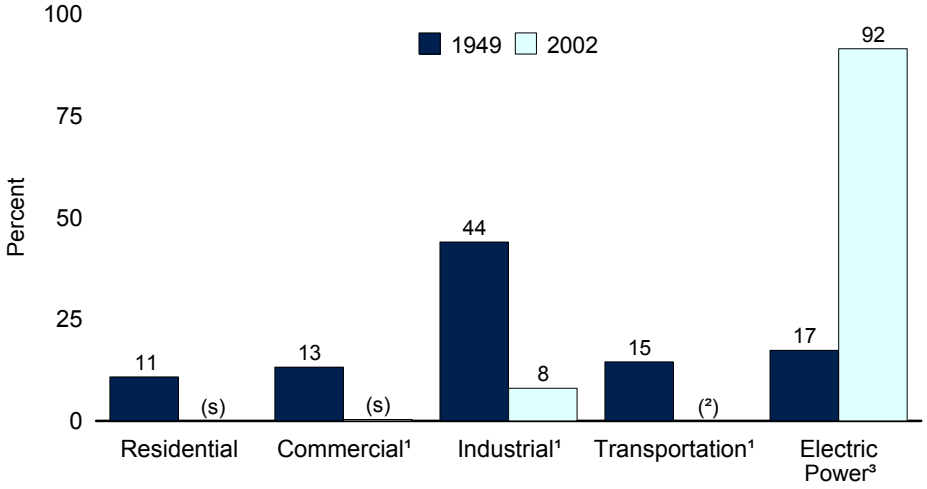
By Sector, 1949-2002



By Sector, 2002



Sector Shares, 1949 and 2002



[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, 1949-2002

(Million Short Tons)

	End-Use Sectors											Electric Power Sector [1]			
		Commercial			Industrial										
						Other Industrial									
Year	Residential	CHP [2]	Other [3]	Total	Coke Plants	CHP [4]	Non-CHP [5]	Total	Total	Transportation	Total	Electricity Only	CHP	Total	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
1951	R47.7	([6])	R53.8	R53.8	113.7	([7])	128.7	128.7	242.4	56.2	400.1	105.8	NA	105.8	505.9
1952	44.3	([6])	48.0	48.0	97.8	([7])	117.1	117.1	214.9	39.8	347.0	107.1	NA	107.1	454.1
1953	R39.6	([6])	R39.6	R39.6	113.1	([7])	117.0	117.0	230.1	29.6	338.9	115.9	NA	115.9	454.8
1954	35.2	([6])	33.8	33.8	85.6	([7])	98.2	98.2	183.9	18.6	271.6	118.4	NA	118.4	389.9
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
1956	R34.7	([6])	R29.5	R29.5	106.3	([7])	114.3	114.3	220.6	13.8	298.6	158.3	NA	158.3	456.9
1957	27.0	([6])	22.1	22.1	108.4	([7])	106.5	106.5	214.9	9.8	273.7	160.8	NA	160.8	434.5
1958	R27.3	([6])	R20.6	R20.6	76.8	([7])	100.5	100.5	177.4	4.7	230.0	155.7	NA	155.7	385.7
1959	23.7	([6])	17.1	17.1	79.6	([7])	92.7	92.7	172.3	3.6	216.6	168.4	NA	168.4	385.1
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
1961	22.0	([6])	15.3	15.3	74.2	([7])	95.9	95.9	170.1	0.8	208.2	182.2	NA	182.2	390.4
1962	R21.5	([6])	R15.0	R15.0	74.7	([7])	97.1	97.1	171.7	0.7	208.9	193.3	NA	193.3	402.3
1963	18.2	([6])	13.2	13.2	78.1	([7])	101.9	101.9	180.0	0.7	212.1	211.3	NA	211.3	423.5
1964	15.8	([6])	11.4	11.4	89.2	([7])	103.1	103.1	192.4	0.7	220.2	225.4	NA	225.4	445.7
1965	R14.6	([6])	R11.0	R11.0	95.3	([7])	105.6	105.6	200.8	0.7	227.2	244.8	NA	244.8	472.0
1966	14.6	([6])	11.0	11.0	96.4	([7])	108.7	108.7	205.1	0.6	231.3	266.5	NA	266.5	497.7
1967	12.6	([6])	9.5	9.5	92.8	([7])	101.8	101.8	194.6	0.5	217.2	274.2	NA	274.2	491.4
1968	R11.2	([6])	R8.8	R8.8	91.3	([7])	100.4	100.4	191.6	0.4	212.0	297.8	NA	297.8	509.8
1969	10.6	([6])	8.3	8.3	93.4	([7])	93.1	93.1	186.6	0.3	205.8	310.6	NA	310.6	516.4
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	R7.4	([6])	R7.8	R7.8	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	R1.7	([6])	R7.4	R7.4	44.0	([7])	73.7	73.7	117.8	([7])	126.9	664.4	NA	664.4	791.3
1985	R1.7	([6])	R6.1	R6.1	41.1	([7])	75.4	75.4	116.4	([7])	124.2	693.8	NA	693.8	818.0
1986	R1.8	([6])	R5.9	R5.9	35.9	([7])	75.6	75.6	111.5	([7])	119.2	685.1	NA	685.1	804.2
1987	R1.6	([6])	R5.3	R5.3	37.0	([7])	75.2	75.2	112.1	([7])	119.0	717.9	NA	717.9	836.9
1988	R1.6	([6])	R5.6	R5.6	41.9	([7])	76.3	76.3	118.1	([7])	125.3	758.4	NA	758.4	883.6
1989	R1.3	1.1	R3.7	R4.9	40.5	24.9	51.3	76.1	116.6	([7])	122.8	767.4	4.8	772.2	895.0
1990	R1.3	1.2	R4.2	R5.4	38.9	R27.8	R48.5	76.3	115.2	([7])	121.9	774.2	R8.4	R782.6	R904.5
1991	R1.1	1.2	R3.8	R5.0	33.9	27.0	48.4	75.4	109.3	([7])	115.4	773.2	10.7	783.9	899.2
1992	R1.1	1.2	3.9	R5.0	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	R3.7	R5.1	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	R1.4	R2.4	R3.9	26.1	R25.8	R39.5	R65.3	R91.3	([7])	R95.7	R946.1	R18.4	R964.4	R1,060.1
2002P	0.5	1.5	2.4	3.9	22.5	26.1	37.0	63.1	85.6	([7])	90.0	956.8	19.1	975.9	1,065.8

[1] Electricity-only and combined-heat-and-power (CHP) plants within the NAICS 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. See Note 1 at end of Section 8.

[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. See Note 1 at end of Section 8.

[5] All industrial sector fuel use other than that in "Coke Plants" and "Industrial CHP."

[6] Included in "Commercial Other."

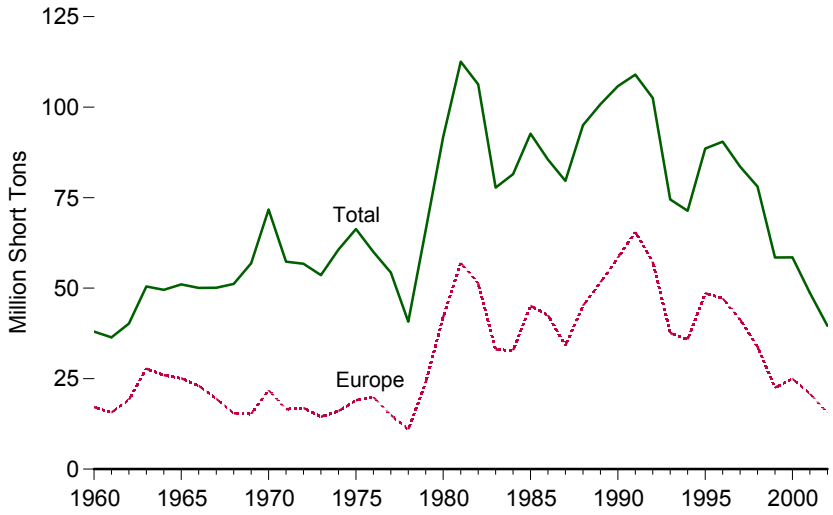
[7] Included in "Industrial Non-CHP."

R=Revised. P=Preliminary. NA=Not available. (s)=Less than 0.05 million short tons.

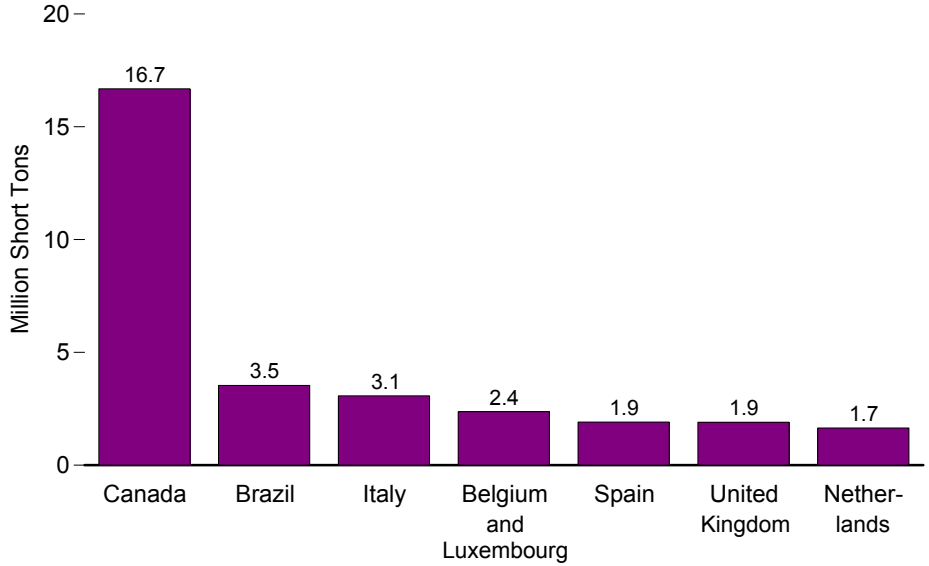
Notes, Web Page, and Sources: See end of section.

Figure 7.4 Coal Exports by Country of Destination

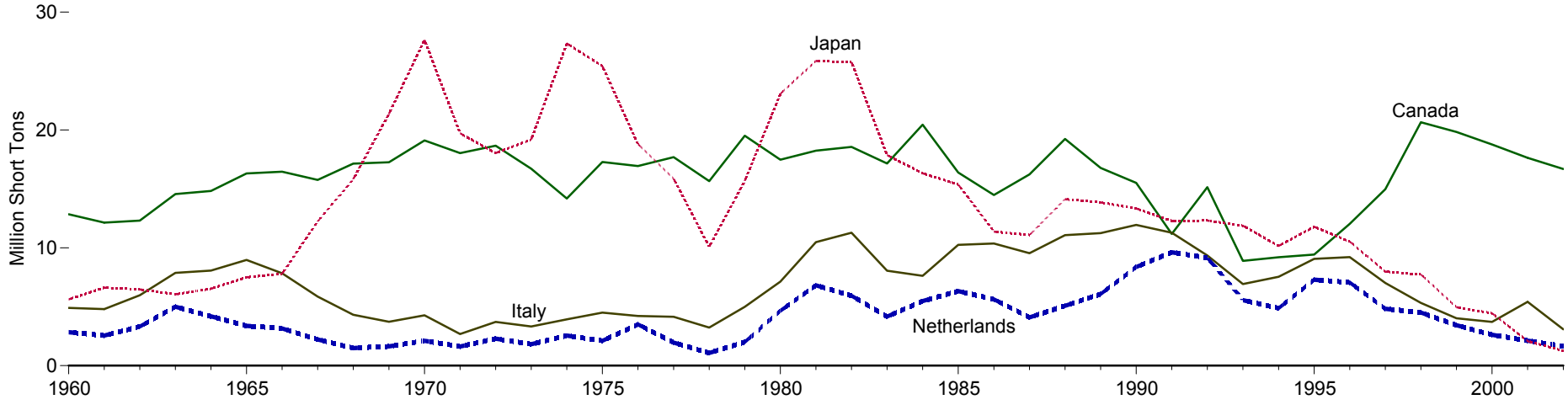
Total and Europe, 1960-2002



By Selected Country, 2002



By Selected Country, 1960-2002



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

Source: Table 7.4.

Table 7.4 Coal Exports by Country of Destination, 1960-2002

(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

[1] Through 1990, the data for Germany are for the former West Germany only. Beginning with 1991, the data for Germany are for the unified Germany, i.e., the former East Germany and West Germany.

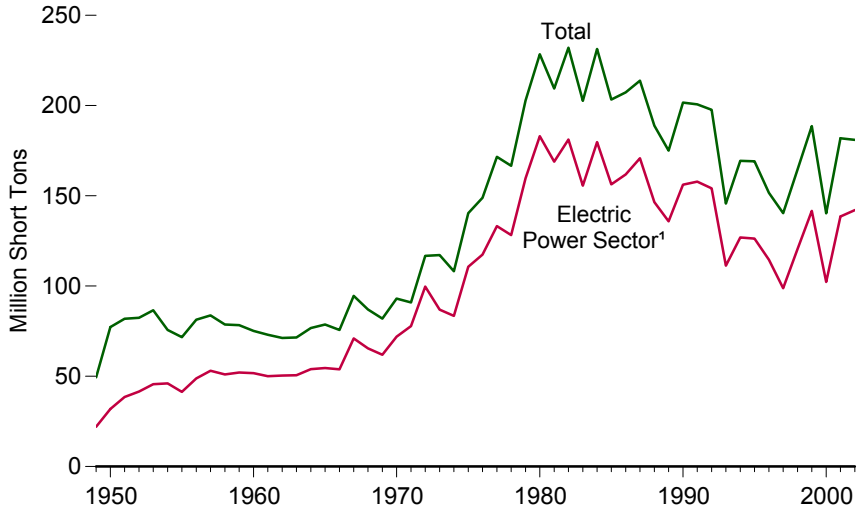
(s)=Less than 0.05 million short tons.

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

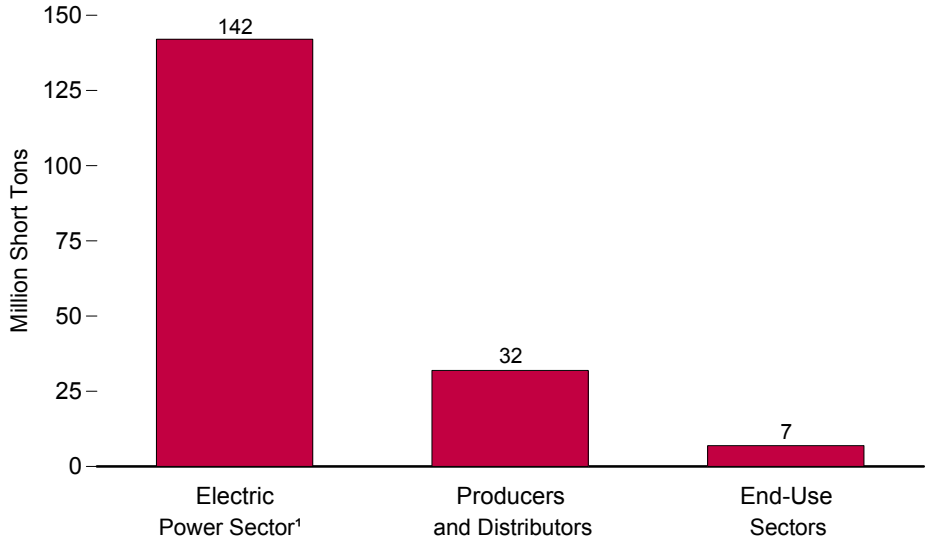
Sources: • 1960-1988—U.S. Department of Commerce, Bureau of the Census. *U.S. Exports by Schedule B Commodities, EM 522.* • 1989-2000—Energy Information Administration (EIA), *Coal Industry Annual,* annual reports. • 2001 and 2002—EIA, *Quarterly Coal Report October-December 2002* (March 2003), Table 10.

Figure 7.5 Coal Stocks

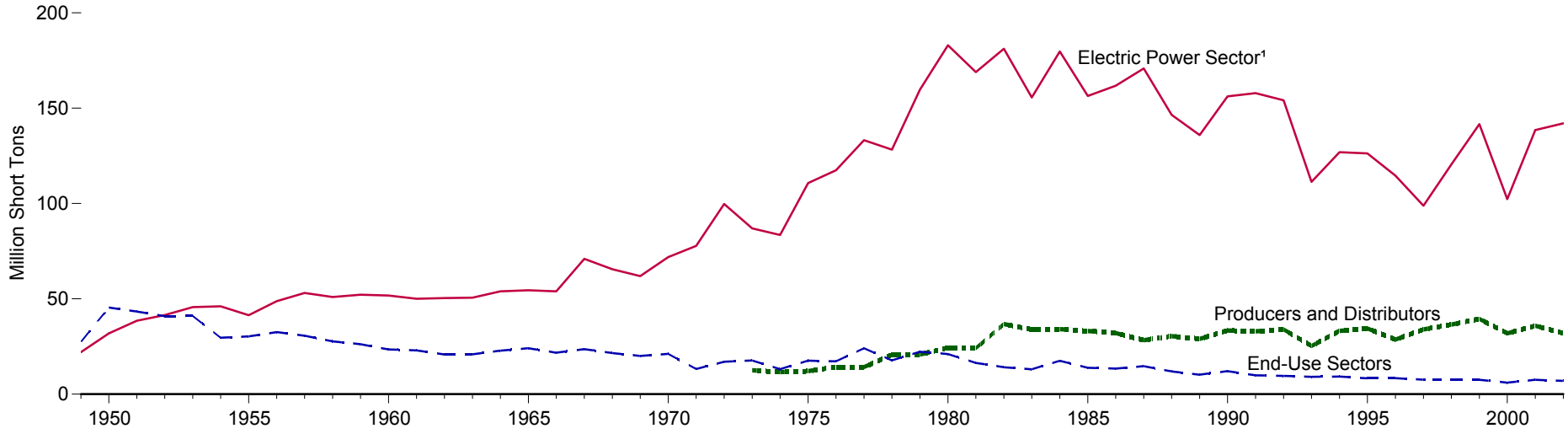
Total and Electric Power Sector Stocks, 1949-2002



By Holding Entity, 2002



By Holding Entity, 1949-2002



[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, 1949-2002

(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
1951	NA	1.8	15.3	26.2	41.6	43.3	38.5	81.8
1952	NA	1.7	14.5	24.7	39.2	40.9	41.5	82.4
1953	NA	1.5	16.6	22.8	39.4	40.9	45.6	86.6
1954	NA	0.8	12.4	16.4	28.8	29.6	46.1	75.7
1955	NA	1.0	13.4	15.9	29.3	30.3	41.4	71.7
1956	NA	1.1	14.0	17.4	31.5	32.6	48.8	81.3
1957	NA	0.9	14.2	15.5	29.7	30.7	53.1	83.7
1958	NA	0.9	13.1	13.7	26.7	27.7	51.0	78.7
1959	NA	1.0	11.6	13.6	25.2	26.2	52.1	78.4
1960	NA	0.7	11.1	11.6	22.8	23.4	51.7	75.2
1961	NA	0.5	10.5	11.9	22.4	22.9	50.1	73.0
1962	NA	0.5	8.4	12.0	20.4	20.9	50.4	71.3
1963	NA	0.5	8.1	12.3	20.4	20.9	50.6	71.5
1964	NA	0.4	10.2	12.2	22.5	22.8	53.9	76.7
1965	NA	0.4	10.6	13.1	23.8	24.1	54.5	78.6
1966	NA	0.2	9.3	12.2	21.5	21.7	53.9	75.6
1967	NA	0.2	11.1	12.3	23.4	23.6	71.0	94.6
1968	NA	0.2	9.7	11.7	21.3	21.5	65.5	87.0
1969	NA	0.2	9.1	10.8	19.9	20.0	61.9	81.9
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	R141.6	R188.6
2000	31.9	NA	1.5	4.6	6.1	6.1	R102.3	R140.3
2001	R35.9	NA	1.5	R6.0	R7.5	R7.5	R138.5	R181.9
2002P	32.0	NA	1.2	5.8	7.0	7.0	142.0	180.9

[1] Includes transportation sector.

[2] Electricity-only and combined-heat-and-power (CHP) plants within the NAICS 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.

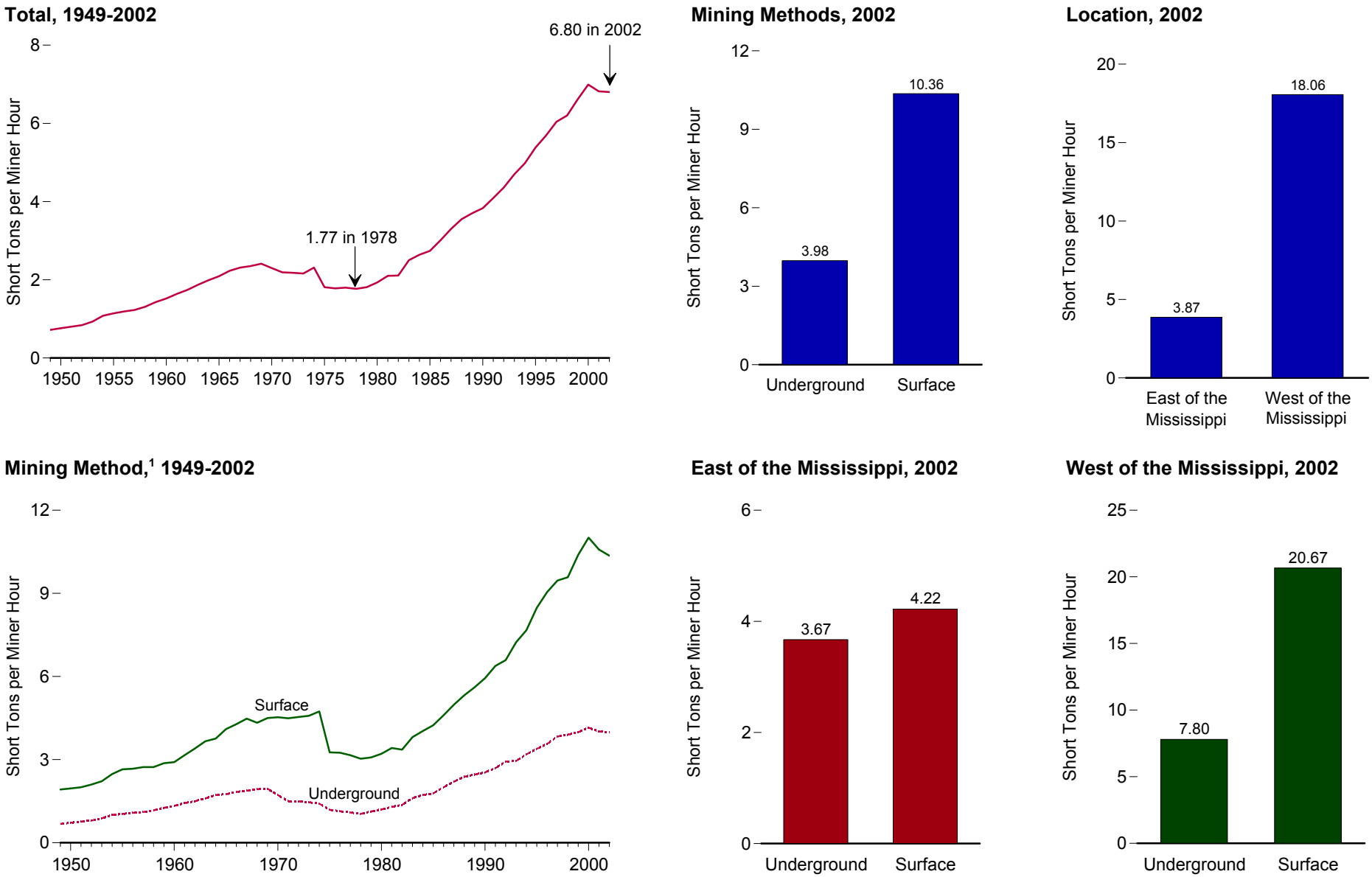
R=Revised. P=Preliminary. NA=Not available.

Notes: • Stocks are at end of year. • Totals may not equal sum of components due to independent rounding.

Web Page: 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.* • 1980-1995—EIA, *Quarterly Coal Report (QCR) October-December,* quarterly reports. • 1996 forward—EIA, *QCR October-December 2002* (March 2003), Table 34. **Electric Power Sector:** Table 8.4. **All Other Data:** Calculated.

Figure 7.6 Coal Mining Productivity



[1] For 1979 forward, includes all coal; prior to 1979, excludes anthracite.
Note: • 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, 1949-2002

(Short Tons per Miner Hour [1])

Year	Mining Method		Location						Total [2]
			East of the Mississippi			West of the Mississippi			
	Underground	Surface [2]	Underground	Surface [2]	Total [2]	Underground	Surface [2]	Total [2]	
1949	[3]0.68	[3]1.92	NA	NA	NA	NA	NA	NA	0.72
1950	[3]0.72	[3]1.96	NA	NA	NA	NA	NA	NA	0.76
1951	[3]0.76	[3]2.00	NA	NA	NA	NA	NA	NA	0.80
1952	[3]0.80	[3]2.10	NA	NA	NA	NA	NA	NA	0.84
1953	[3]0.88	[3]2.22	NA	NA	NA	NA	NA	NA	0.93
1954	[3]1.00	[3]2.48	NA	NA	NA	NA	NA	NA	1.08
1955	[3]1.04	[3]2.65	NA	NA	NA	NA	NA	NA	1.14
1956	[3]1.08	[3]2.67	NA	NA	NA	NA	NA	NA	1.19
1957	[3]1.11	[3]2.73	NA	NA	NA	NA	NA	NA	1.23
1958	[3]1.17	[3]2.73	NA	NA	NA	NA	NA	NA	1.31
1959	[3]1.26	[3]2.87	NA	NA	NA	NA	NA	NA	1.43
1960	[3]1.33	[3]2.91	NA	NA	NA	NA	NA	NA	1.52
1961	[3]1.43	[3]3.16	NA	NA	NA	NA	NA	NA	1.64
1962	[3]1.50	[3]3.40	NA	NA	NA	NA	NA	NA	1.74
1963	[3]1.60	[3]3.66	NA	NA	NA	NA	NA	NA	1.87
1964	[3]1.72	[3]3.76	NA	NA	NA	NA	NA	NA	1.99
1965	[3]1.75	[3]4.10	NA	NA	NA	NA	NA	NA	2.09
1966	[3]1.83	[3]4.28	NA	NA	NA	NA	NA	NA	2.23
1967	[3]1.88	[3]4.48	NA	NA	NA	NA	NA	NA	2.31
1968	[3]1.93	[3]4.33	NA	NA	NA	NA	NA	NA	2.35
1969	[3]1.95	[3]4.50	NA	NA	NA	NA	NA	NA	2.41
1970	[3]1.72	[3]4.53	NA	NA	NA	NA	NA	NA	2.30
1971	[3]1.50	[3]4.49	NA	NA	NA	NA	NA	NA	2.19
1972	[3]1.49	[3]4.54	NA	NA	NA	NA	NA	NA	2.18
1973	[3]1.46	[3]4.58	NA	NA	NA	NA	NA	NA	2.16
1974	[3]1.41	[3]4.74	NA	NA	NA	NA	NA	NA	2.31
1975	[3]1.19	[3]3.26	NA	NA	NA	NA	NA	NA	1.81
1976	[3]1.14	[3]3.25	NA	NA	NA	NA	NA	NA	1.78
1977	[3]1.09	[3]3.16	NA	NA	NA	NA	NA	NA	1.80
1978	[3]1.04	[3]3.03	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	[R]4.15	[R]11.01	[R]3.89	[R]4.82	[R]4.18	[R]7.66	[R]20.04	[R]17.62	[R]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[P]	3.98	10.36	3.67	4.22	3.87	7.80	20.67	18.06	6.80

[1] Data for bituminous, subbituminous, and lignite mines 1949-1973 and anthracite mines 1949-1978 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 the Total.

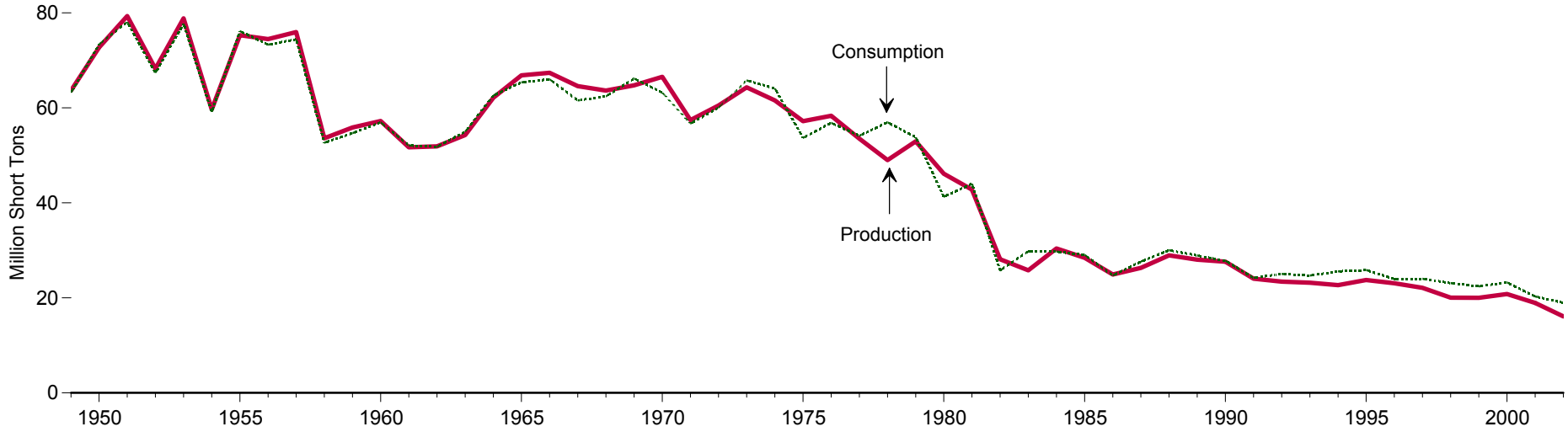
R=Revised. P=Preliminary. NA=Not available.

Web Page: http://www.eia.doe.gov/fuelcoal.html.

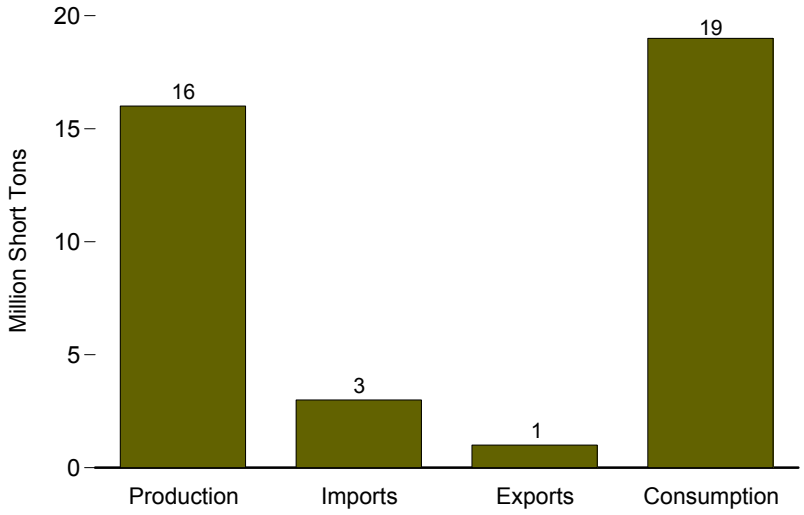
Sources: • 1949-1975—Bureau of Mines, *Minerals Yearbook,* "Coal-Bituminous and Lignite" and "Coal-Pennsylvania Anthracite" chapters. • 1976—Energy Information Administration (EIA), Energy Data Reports, *Coal-Bituminous and Lignite in 1976* and *Coal-Pennsylvania Anthracite 1976.* • 1977 and 1978—EIA, 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. • 1989-1999—EIA, *Coal Industry Annual,* annual reports. • 2000—EIA, *Annual Coal Report 2001* (March 2003), Table 22. • 2001 and 2002—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

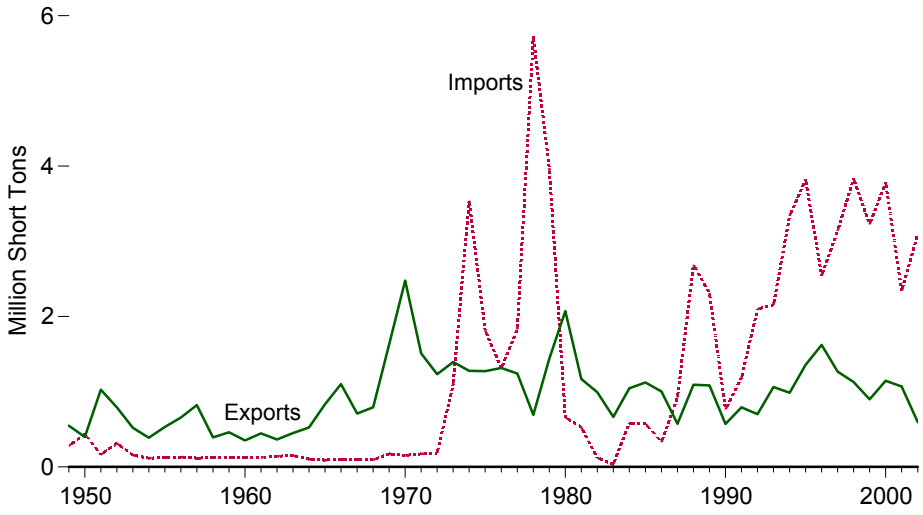
Production and Consumption, 1949-2002



Overview, 2002



Trade, 1949-2002



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

Source: Table 7.7.

Table 7.7 Coke Overview, 1949-2002

(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
1951	79.3	0.2	1.0	0.4	78.1
1952	68.3	0.3	0.8	0.4	67.4
1953	78.8	0.2	0.5	0.8	77.7
1954	59.7	0.1	0.4	0.3	59.1
1955	75.3	0.1	0.5	-1.2	76.1
1956	74.5	0.1	0.7	0.6	73.3
1957	76.0	0.1	0.8	0.8	74.4
1958	53.6	0.1	0.4	0.7	52.7
1959	55.9	0.1	0.5	0.9	54.7
1960	57.2	0.1	0.4	0.1	56.9
1961	51.7	0.1	0.4	-0.7	52.1
1962	51.9	0.1	0.4	-0.1	51.8
1963	54.3	0.2	0.5	-1.0	55.0
1964	62.1	0.1	0.5	-0.9	62.6
1965	66.9	0.1	0.8	0.7	65.4
1966	67.4	0.1	1.1	0.4	66.0
1967	64.6	0.1	0.7	2.4	61.6
1968	63.7	0.1	0.8	0.5	62.4
1969	64.8	0.2	1.6	-2.9	66.2
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	[R]1.6	(s)	[R]24.0
1997	22.1	3.1	[R]1.3	(s)	[R]24.0
1998	20.0	3.8	[R]1.1	-0.4	[R]23.1
1999	20.0	3.2	[R]0.9	-0.1	[R]22.4
2000	20.8	3.8	[R]1.1	0.2	[R]23.2
2001	18.9	2.3	[R]1.1	-0.1	[R]20.3
2002[P]	16.1	3.1	0.6	-0.4	19.0

[1] Producer and distributor stocks at end of year. A negative value indicates a net decrease in stocks; a positive value indicates a net increase in stocks.

[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.

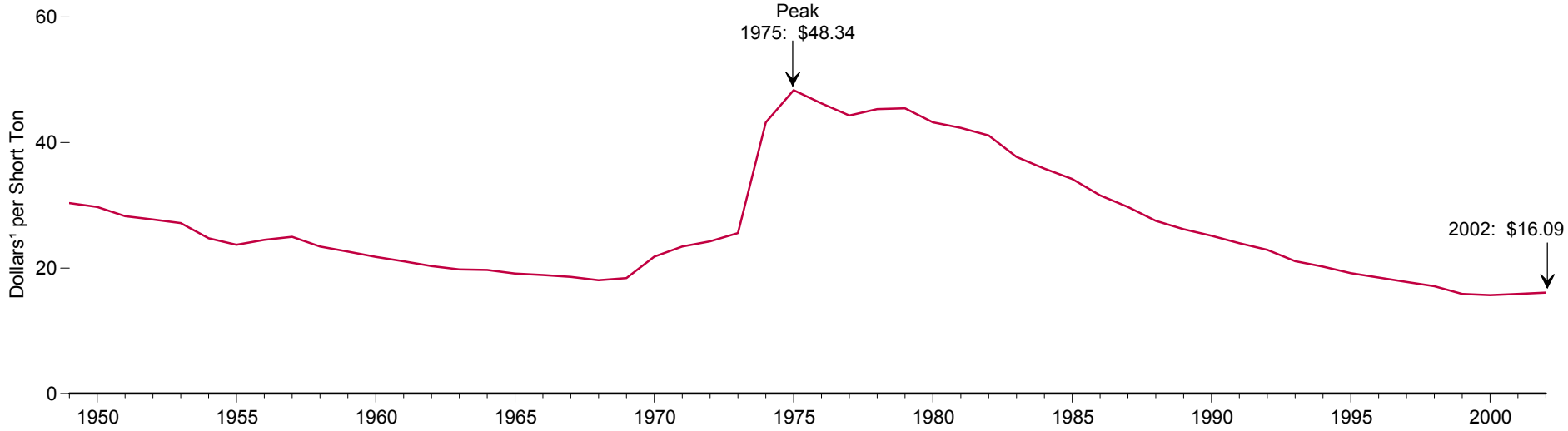
Note: Totals may not equal sum of components due to independent rounding.

Web Page: http://www.eia.doe.gov/fuelcoal.html.

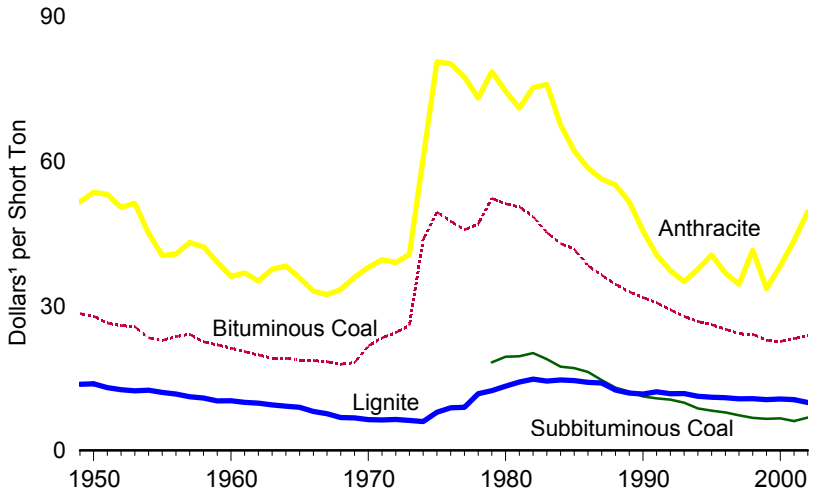
Sources: • 1949-1975—Bureau of Mines, *Minerals Yearbook,* "Coke and Coal Chemicals" chapter. • 1976-1980—Energy Information Administration (EIA), Energy Data Report, *Coke and Coal Chemicals,* annual reports. • 1981-1995—EIA, *Quarterly Coal Report (QCR) October-December,* quarterly reports. • 1996 forward—EIA, *QCR October-December 2002* (March 2003), Table 2.

Figure 7.8 Coal Prices

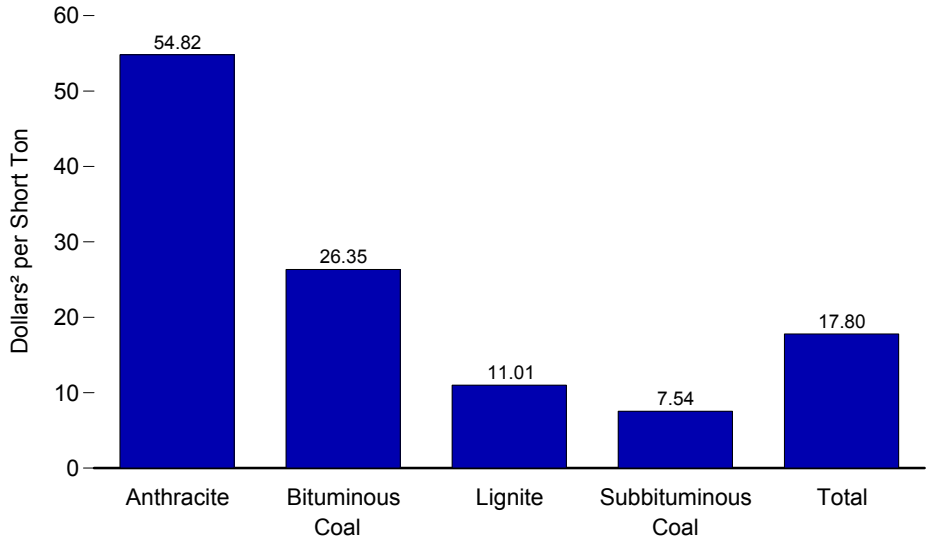
Total, 1949-2002



By Type, 1949-2002



By Type, 2002



[1] In chained (1996) 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, 1949-2002

(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	[3]4.90	[3]28.39	([3])	([3])	2.37	13.73	8.90	51.56	5.24	30.36
1950	[3]4.86	[3]27.85	([3])	([3])	2.41	13.81	9.34	53.52	5.19	29.74
1951	[3]4.94	[3]26.40	([3])	([3])	2.44	13.04	9.94	53.13	5.29	28.27
1952	[3]4.92	[3]25.89	([3])	([3])	2.39	12.58	9.58	50.42	5.27	27.74
1953	[3]4.94	[3]25.66	([3])	([3])	2.38	12.36	9.87	51.27	5.23	27.17
1954	[3]4.54	[3]23.35	([3])	([3])	2.43	12.50	8.76	45.06	4.81	24.74
1955	[3]4.51	[3]22.80	([3])	([3])	2.38	12.03	8.00	40.44	4.69	23.71
1956	[3]4.83	[3]23.62	([3])	([3])	2.39	11.69	8.33	40.73	5.01	24.50
1957	[3]5.09	[3]24.09	([3])	([3])	2.35	11.12	9.11	43.11	5.28	24.99
1958	[3]4.87	[3]22.50	([3])	([3])	2.35	10.86	9.14	42.24	5.07	23.43
1959	[3]4.79	[3]21.89	([3])	([3])	2.25	10.28	8.55	39.08	4.95	22.62
1960	[3]4.71	[3]21.23	([3])	([3])	2.29	10.32	8.01	36.10	4.83	21.77
1961	[3]4.60	[3]20.50	([3])	([3])	2.24	9.98	8.26	36.81	4.73	21.08
1962	[3]4.50	[3]19.79	([3])	([3])	2.23	9.81	7.99	35.14	4.62	20.32
1963	[3]4.40	[3]19.13	([3])	([3])	2.17	9.43	8.64	37.57	4.55	19.78
1964	[3]4.46	[3]19.11	([3])	([3])	2.14	9.17	8.93	38.26	4.60	19.71
1965	[3]4.45	[3]18.71	([3])	([3])	2.13	8.96	8.51	35.79	4.55	19.13
1966	[3]4.56	[3]18.64	([3])	([3])	1.98	8.09	8.08	33.03	4.62	18.89
1967	[3]4.64	[3]18.41	([3])	([3])	1.92	7.62	8.15	32.33	4.69	18.60
1968	[3]4.70	[3]17.87	([3])	([3])	1.79	6.81	8.78	33.38	4.75	18.06
1969	[3]5.02	[3]18.19	([3])	([3])	1.86	6.74	9.91	35.92	5.08	18.41
1970	[3]6.30	[3]21.68	([3])	([3])	1.86	6.40	11.03	37.96	6.34	21.82
1971	[3]7.13	[3]23.36	([3])	([3])	1.93	6.32	12.08	39.58	7.15	23.43
1972	[3]7.78	[3]24.45	([3])	([3])	2.04	6.41	12.40	38.97	7.72	24.26
1973	[3]8.71	[3]25.92	([3])	([3])	2.09	6.22	13.65	40.62	8.59	25.57
1974	[3]16.01	[3]43.72	([3])	([3])	2.19	5.98	22.19	60.60	15.82	43.20
1975	[3]19.79	[3]49.44	([3])	([3])	3.17	7.92	32.26	80.59	19.35	48.34
1976	[3]20.11	[3]47.54	([3])	([3])	3.74	8.84	33.92	80.19	19.56	46.24
1977	[3]20.59	[3]45.74	([3])	([3])	4.03	8.95	34.86	77.43	19.95	44.31
1978	[3]22.64	[3]46.94	([3])	([3])	5.68	11.78	35.25	73.09	21.86	45.32
1979	27.31	52.27	9.55	18.28	6.48	12.40	41.06	78.58	23.75	45.45
1980	29.17	51.14	11.08	19.42	[R]7.60	[R]13.32	42.51	74.53	24.65	43.22
1981	31.51	50.52	12.18	19.53	[R]8.85	[R]14.19	44.28	71.00	26.40	42.33
1982	32.15	48.53	13.37	20.18	[R]9.79	[R]14.78	49.85	75.25	27.25	41.13
1983	31.11	45.17	13.03	18.92	[R]9.91	[R]14.39	52.29	75.91	25.98	37.72
1984	30.63	42.88	12.41	17.37	10.45	14.63	48.22	67.50	25.61	35.85
1985	30.78	41.77	12.57	17.06	10.68	14.49	45.80	62.15	25.20	34.20
1986	28.84	38.30	12.26	16.28	10.64	14.13	44.12	58.58	23.79	31.59
1987	28.19	36.34	11.32	14.59	10.85	13.99	43.65	56.26	23.07	29.74
1988	27.66	34.48	10.45	13.03	10.06	12.54	44.16	55.06	22.07	27.52
1989	27.40	32.91	10.16	12.20	9.91	11.90	42.93	51.56	21.82	26.20
1990	27.43	31.71	9.70	11.21	10.13	11.71	39.40	45.54	21.76	25.15
1991	27.49	30.66	9.68	10.80	10.89	12.15	36.34	40.53	21.49	23.97
1992	26.78	29.16	9.68	10.54	10.81	11.77	34.24	37.28	21.03	22.90
1993	26.15	27.80	9.33	9.92	11.11	11.81	32.94	35.02	19.85	21.11
1994	25.68	26.75	8.37	8.72	10.77	11.22	36.07	37.57	19.41	20.22
1995	25.56	26.06	8.10	8.26	10.83	11.04	39.78	40.55	18.83	19.19
1996	25.17	25.17	7.87	7.87	10.92	10.92	36.78	36.78	18.50	18.50
1997	24.64	24.17	7.42	7.28	10.91	10.70	35.12	34.45	18.14	17.79
1998	[R]24.87	[R]24.10	[R]6.96	[R]6.74	[R]11.08	[R]10.74	42.91	41.58	17.67	17.12
1999	[R]23.92	[R]22.85	[R]6.87	[R]6.56	[R]11.04	[R]10.55	35.13	33.56	16.63	[R]15.88
2000	[R]24.15	[R]22.59	[R]7.12	6.66	[R]11.41	[R]10.67	40.90	38.26	16.78	[R]15.70
2001	25.36	23.18	6.67	6.10	11.52	10.53	47.67	43.57	17.38	15.88
2002[P]	26.35	23.81	7.54	6.81	11.01	9.95	54.82	49.54	17.80	16.09

[1] In years past, some lignite prices were withheld to protect company confidentiality. Consequently, prices for 1955 through 1977 excluded Texas lignite and prices for 1974 through 1978 excluded Montana lignite. As a result, lignite prices for the period 1974 through 1977 are based on North Dakota only.

[2] In chained (1996) 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. P=Preliminary.

Note: Prices are free-on-board (f.o.b.) mine prices. See Glossary.

Web Page: 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—EIA, *Annual Coal Report 2001* (March 2003), Table 32. • 2002—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. 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. 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 2002. 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 2.8)), 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 2002; and the other missing years' shares are interpolated.

Table 7.3 Notes: • See Notes 1 and 2 above. • See Tables 8.3c-8.3e for the amount of coal used to produce electricity and Table 8.3f for the amount of coal used to produce useful thermal output. • For the method for splitting residential and commercial coal consumption see Note 2 above. • Totals may not equal sum of components due to independent rounding.

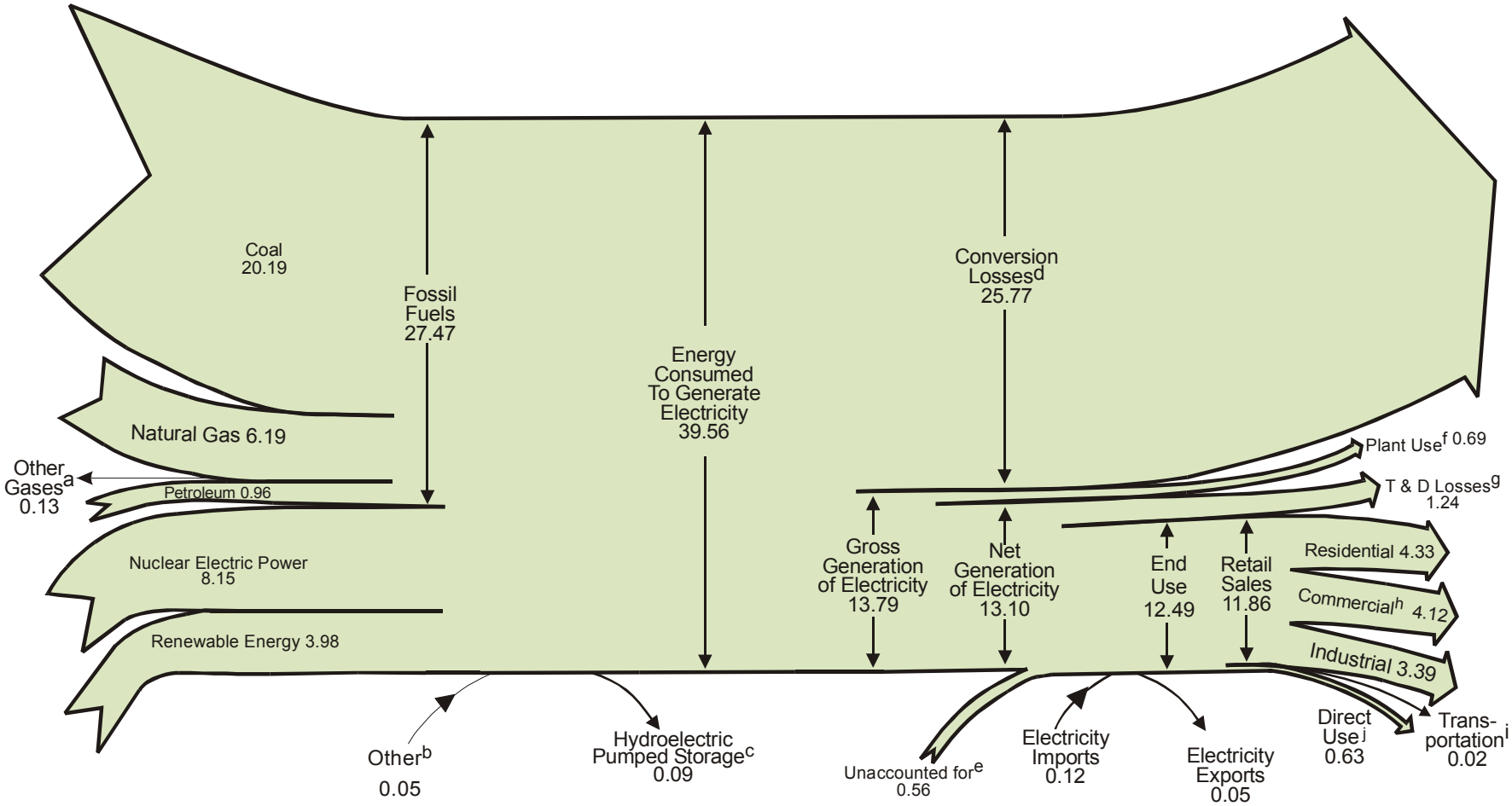
Table 7.3 Web Page: http://www.eia.doe.gov/fuelcoal.html.

Table 7.3 Sources: Residential, Commercial Total, Coke Plants, Other Industrial Total, and **Transportation**: • 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 and 1980—EIA, Energy Data Report, *Weekly Coal Report*. • 1981–1995—EIA, *Quarterly Coal Report (QCR) October-December*, quarterly reports. • 1996 forward—EIA, *QCR October-December 2002* (March 2003), Table 29. • **Commercial CHP, Industrial CHP,** and **Electric Power Sector:** Tables 8.3b, 8.3d, 8.3e, and 8.3f. • **All Other Data:** Calculated.

8 Electricity

High-tension power lines and towers. Source: U.S. Department of Energy.

Diagram 5. Electricity Flow, 2002
(Quadrillion Btu)



[a] Blast furnace gas, propane gas, and other manufactured 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 at end of Section 2.

[e] Data collection frame differences and non-sampling error.

[f] Electric energy used in the operation of power plants, estimated as 5 percent of gross generation. See note at end of Section 2.

[g] Transmission and distribution losses, estimated as 9 percent of gross generation. See note at end of Section 2.

[h] Commercial retail sales plus approximately 95 percent of "Other" retail sales from Table 8.5.

[i] Approximately 5 percent of "Other" retail sales from Table 8.5.

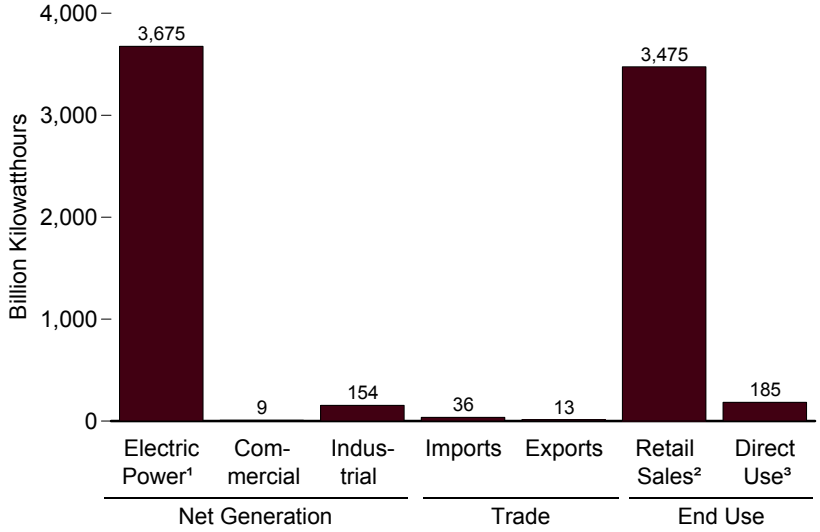
[j] Commercial and industrial facility use of onsite net electricity generation; and electricity sales among adjacent or co-located facilities for which revenue information is not available.

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

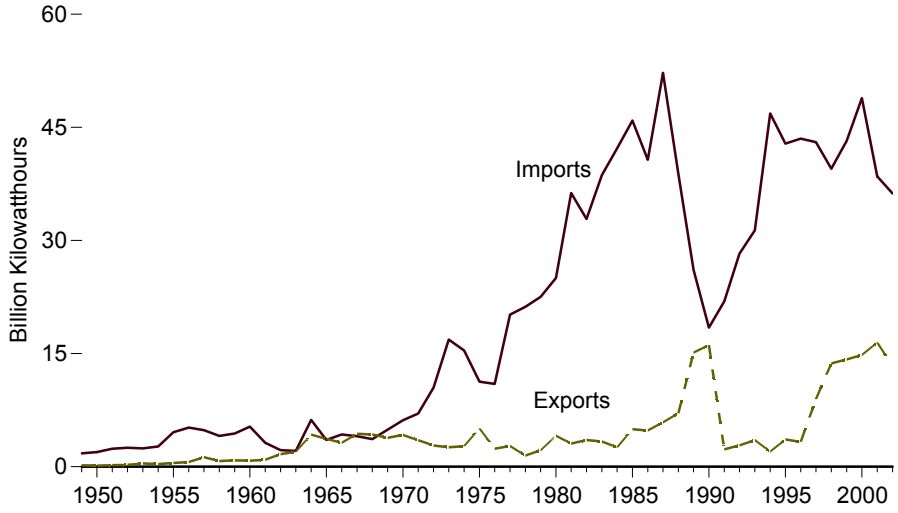
Sources: Tables 2.2a, 8.1, 8.5, and A6.

Figure 8.1 Electricity Overview

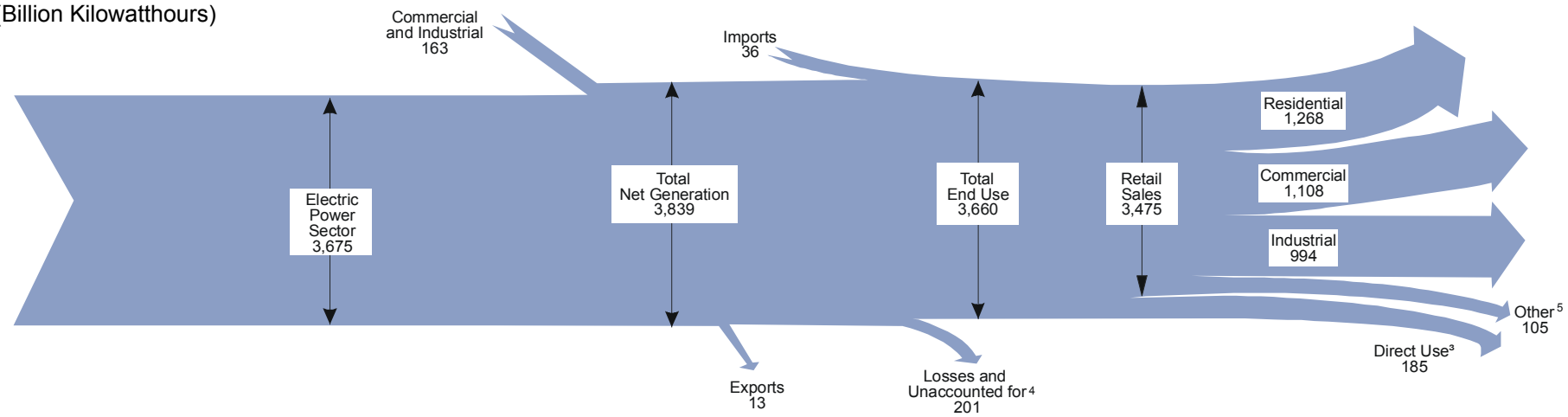
Overview, 2002



Electricity Trade, 1949-2002



Net-Generation-to-End-Use Flow, 2002
(Billion Kilowatthours)



[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] Energy losses that occur between the point of generation and delivery to the customer, and data collection frame differences and nonsampling error.
[5] 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 8.5.

Table 8.1 Electricity Overview, 1949-2002

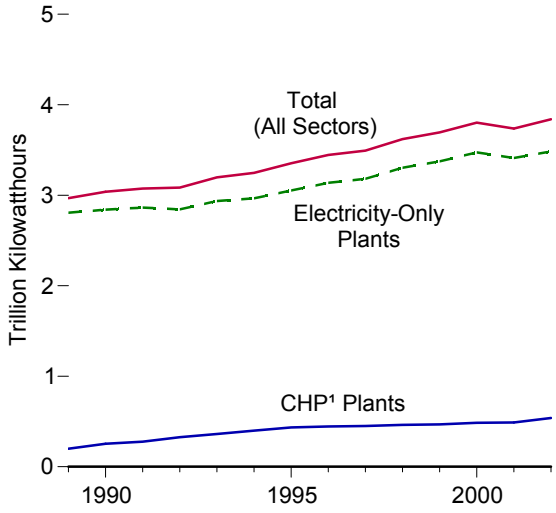
(Billion Kilowatthours)

Year	Net Generation				Imports [1]		Exports [1]		Losses and Unaccounted for [5]	End Use		
	Electric Power Sector [2]	Commercial Sector [3]	Industrial Sector [4]	Total	From Canada	Total	To Canada	Total		Retail Sales [6]	Direct Use [7]	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
1951	371	NA	5	375	NA	2	NA	(s)	47	330	NA	330
1952	399	NA	5	404	NA	3	NA	(s)	50	356	NA	356
1953	443	NA	4	447	NA	2	NA	(s)	53	396	NA	396
1954	472	NA	5	476	NA	3	NA	(s)	54	424	NA	424
1955	547	NA	3	550	NA	5	NA	(s)	58	497	NA	497
1956	601	NA	3	604	NA	5	NA	1	62	546	NA	546
1957	632	NA	3	635	NA	5	NA	1	62	576	NA	576
1958	645	NA	3	648	NA	4	NA	1	64	588	NA	588
1959	710	NA	3	713	NA	4	NA	1	70	647	NA	647
1960	756	NA	4	759	NA	5	NA	1	76	688	NA	688
1961	794	NA	3	797	NA	3	NA	1	77	722	NA	722
1962	855	NA	3	858	NA	2	NA	2	81	778	NA	778
1963	917	NA	3	920	NA	2	NA	2	88	833	NA	833
1964	984	NA	3	987	NA	6	NA	4	93	896	NA	896
1965	1,055	NA	3	1,058	NA	4	NA	4	104	954	NA	954
1966	1,144	NA	3	1,148	NA	4	NA	3	113	1,035	NA	1,035
1967	1,214	NA	3	1,218	NA	4	NA	4	118	1,099	NA	1,099
1968	1,329	NA	3	1,333	NA	4	NA	4	129	1,203	NA	1,203
1969	1,442	NA	3	1,445	NA	5	NA	4	133	1,314	NA	1,314
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	[2,R]2,848	4	[4]115	[R]2,967	NA	26	NA	15	[R]223	2,647	108	2,755
1990	[R]2,901	6	[R]131	[R]3,038	16	18	16	16	[R]214	2,713	[R]114	2,827
1991	[R]2,936	6	[R]133	[R]3,074	20	22	2	2	[R]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	[R]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	[R]3,580	7	[R]149	[R]3,737	38	[R]39	16	[R]16	[R]205	[R]3,370	[R]184	[R]3,554
2002[P]	3,675	9	154	3,839	36	36	13	13	201	3,475	185	3,660

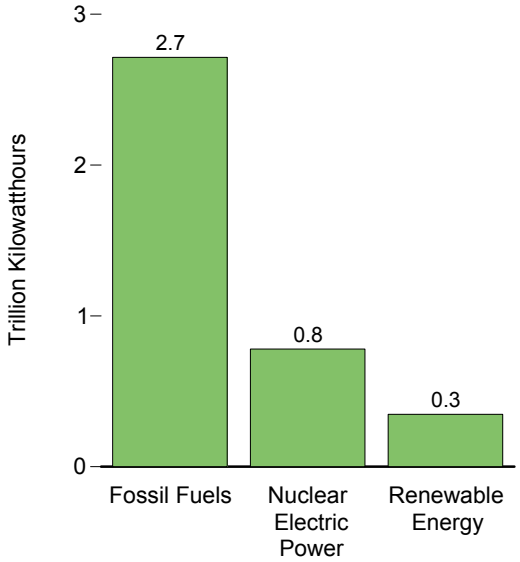
[1] Electricity transmitted across U.S. borders with Canada and Mexico.
[2] Electricity-only and combined-heat-and-power (CHP) plants within the NAICS 22 category whose primary business is to sell electricity, or electricity and heat, to the public. Through 1988, data are for electric utilities only; beginning in 1989, data are for electric utilities and independent power producers.
[3] Commercial combined-heat-and-power (CHP) and commercial electricity-only plants. See Note 1 at end of section.
[4] Industrial combined-heat-and-power (CHP) and industrial electricity-only plants. See Note 1 at end of section. Through 1988, data are for industrial hydroelectric power only.
[5] Energy losses that occur between the point of generation and delivery to the customer, and data collection frame differences and nonsampling error. See note at end of Section 2 for discussion on electrical system energy losses.
[6] Electricity retail sales to ultimate customers reported by electric utilities and other energy service providers.
[7] 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 2 at end of section. • Totals may not equal sum of components due to independent rounding.
Web Page: http://www.eia.doe.gov/fuelelectric.html.
Sources: See end of section.

Figure 8.2a Electricity Net Generation

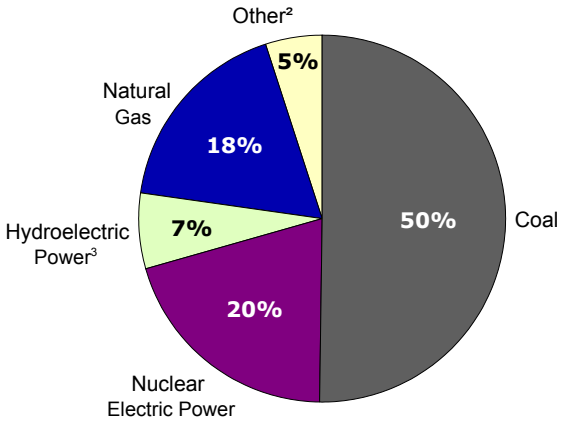
Total and by Plant Type, 1989-2002



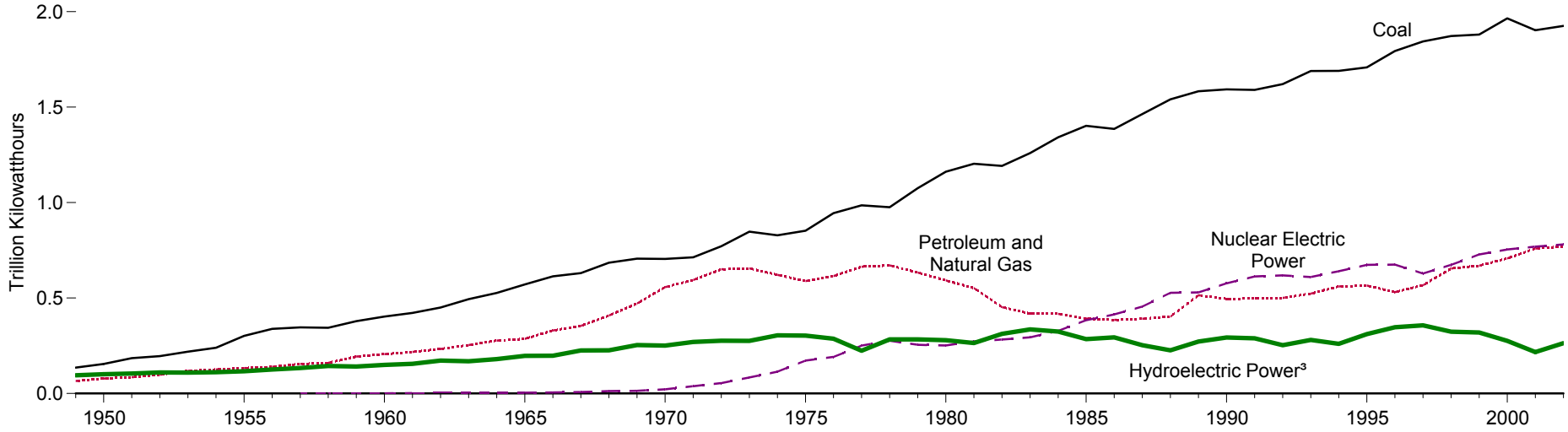
Total by Source Category, 2002



Total by Source, 2002



Total by Major Sources, 1949-2002

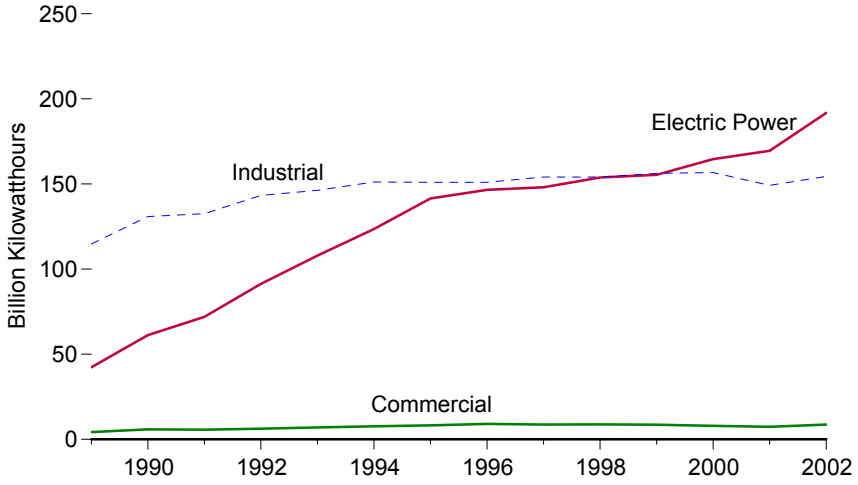


[1] Combined-heat-and-power.
[2] Petroleum, other gases, wood, waste, geothermal, solar, wind, and other.
[3] Conventional hydroelectric power and pumped-storage.

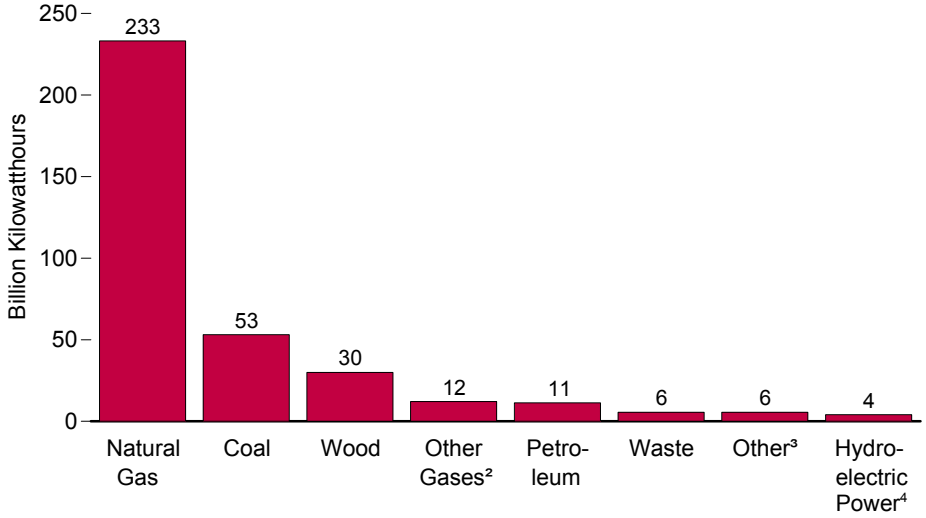
Note: Because vertical scales differ, graphs should not be compared.
Sources: Tables 8.2a, 8.2b, and 8.2c.

Figure 8.2b Electricity Net Generation and Useful Thermal Output at Combined-Heat-and-Power Plants

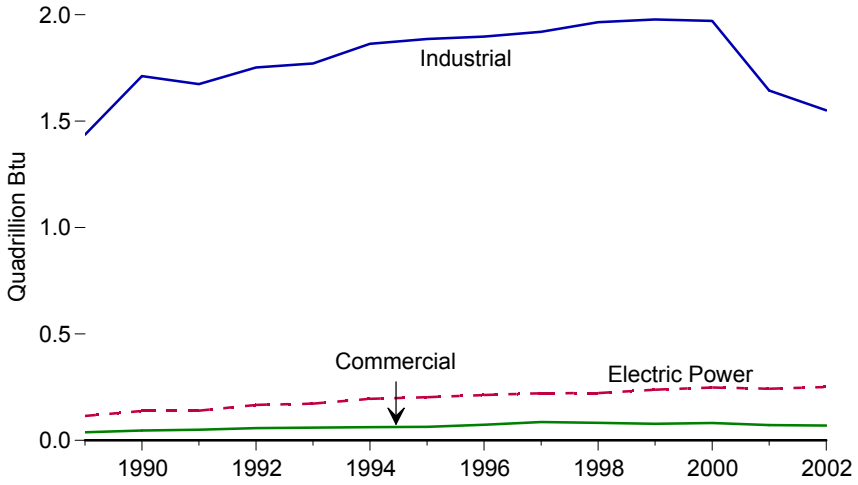
Net Generation at CHP[1] Plants by Sector, 1989-2002



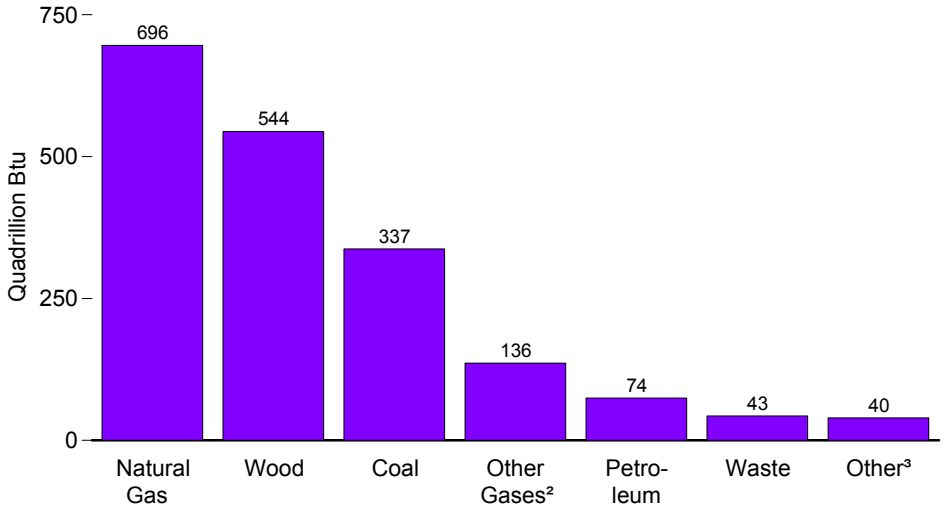
Sources of Net Generation at CHP[1] Plants, 2002



Useful Thermal Output at CHP[1] Plants by Sector, 1989-2002



Sources of Useful Thermal Output at CHP[1] Plants, 2002



[1] Combined-heat-and-power.
[2] Blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels.
[3] Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.
[4] Conventional hydroelectric power.
Note: Because vertical scales differ, graphs should not be compared.
Sources: Tables 8.2c and 8.2d.

Table 8.2a Electricity Net Generation: Total (All Sectors), 1949-2002

(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
1951	185.2	28.7	56.6	NA	270.5	0.0	([10])	104.4	0.4	NA	NA	NA	NA	104.8	NA	375.3
1952	195.4	29.7	68.5	NA	293.6	0.0	([10])	109.7	0.5	NA	NA	NA	NA	110.2	NA	403.8
1953	218.8	38.4	79.8	NA	337.0	0.0	([10])	109.6	0.4	NA	NA	NA	NA	110.0	NA	447.0
1954	239.1	31.5	93.7	NA	364.4	0.0	([10])	111.6	0.3	NA	NA	NA	NA	111.9	NA	476.3
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
1956	338.5	35.9	104.0	NA	478.5	0.0	([10])	125.2	0.2	NA	NA	NA	NA	125.4	NA	603.9
1957	346.4	40.5	114.2	NA	501.1	(s)	([10])	133.4	0.2	NA	NA	NA	NA	133.5	NA	634.6
1958	344.4	40.4	119.8	NA	504.5	0.2	([10])	143.6	0.2	NA	NA	NA	NA	143.8	NA	648.5
1959	378.4	46.8	146.6	NA	571.9	0.2	([10])	141.2	0.2	NA	NA	NA	NA	141.3	NA	713.4
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
1961	421.9	48.5	169.3	NA	639.7	1.7	([10])	155.5	0.1	NA	0.1	NA	NA	155.8	NA	797.1
1962	450.2	48.9	184.3	NA	683.4	2.3	([10])	172.0	0.1	NA	0.1	NA	NA	172.2	NA	857.9
1963	493.9	52.0	201.6	NA	747.5	3.2	([10])	169.0	0.1	NA	0.2	NA	NA	169.3	NA	920.0
1964	526.2	57.0	220.0	NA	803.2	3.3	([10])	180.3	0.1	NA	0.2	NA	NA	180.7	NA	987.2
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
1966	613.5	78.9	251.2	NA	943.6	5.5	([10])	197.9	0.3	NA	0.2	NA	NA	198.5	NA	1,147.5
1967	630.5	89.3	264.8	NA	984.6	7.7	([10])	224.9	0.3	NA	0.3	NA	NA	225.6	NA	1,217.8
1968	684.9	104.3	304.4	NA	1,093.6	12.5	([10])	225.9	0.4	NA	0.4	NA	NA	226.7	NA	1,332.8
1969	706.0	137.8	333.3	NA	1,177.1	13.9	([10])	253.5	0.3	NA	0.6	NA	NA	254.4	NA	1,445.5
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])	R272.0	27.2	9.2	R14.6	0.3	R2.1	R325.3	3.8	R2,967.3
1990	R1,594.0	R126.6	R372.8	R10.4	R2,103.8	576.9	-3.5	R292.9	R32.5	R13.3	R15.4	0.4	R2.8	R357.2	3.6	R3,038.0
1991	1,590.6	119.8	381.6	11.3	2,103.3	612.6	-4.5	R289.0	33.7	15.7	R16.0	0.5	R3.0	R357.8	4.7	R3,073.8
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	R601.0	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	R124.9	R639.1	R9.0	R2,677.0	768.8	-8.8	R217.0	R35.2	R21.8	R13.7	0.5	R6.7	R294.9	R4.7	R3,736.6
2002P	1,926.4	89.9	685.8	12.1	2,714.3	780.1	-8.8	263.6	36.5	22.9	13.4	0.5	10.5	347.5	5.6	3,838.6

[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, including a small amount of supplemental gaseous fuels.
[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 killowatthours.

Notes: • See Note 2 at end of section. • Totals may not equal sum of components due to independent rounding.

Web Page: http://www.eia.doe.gov/fuelelectric.html.

Sources: Tables 8.2b and 8.2c.

Table 8.2b Electricity Net Generation at Electricity-Only Plants: Electric Power Sector, 1949-2002

(Billion Kilowatthours)

	Fossil Fuels							Renewable Energy								
Year	Coal [1]	Petroleum [2]	Natural Gas [3]	Other Gases [4]	Total	Nuclear Electric Power	Hydro-electric Pumped Storage [5]	Conventional Hydroelectric Power	Wood [6]	Waste [7]	Geo-thermal	Solar [8]	Wind	Total	Other [9]	Total
1949	135.5	28.5	37.0	NA	201.0	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	([10])	95.9	0.4	NA	NA	NA	NA	96.3	NA	329.1
1951	185.2	28.7	56.6	NA	270.5	0	([10])	99.8	0.4	NA	NA	NA	NA	100.1	NA	370.7
1952	195.4	29.7	68.5	NA	293.6	0	([10])	105.1	0.5	NA	NA	NA	NA	105.6	NA	399.2
1953	218.8	38.4	79.8	NA	337.0	0	([10])	105.2	0.4	NA	NA	NA	NA	105.6	NA	442.7
1954	239.1	31.5	93.7	NA	364.4	0	([10])	107.1	0.3	NA	NA	NA	NA	107.3	NA	471.7
1955	301.4	37.1	95.3	NA	433.8	0	([10])	113.0	0.3	NA	NA	NA	NA	113.3	NA	547.0
1956	338.5	35.9	104.0	NA	478.5	0	([10])	122.0	0.2	NA	NA	NA	NA	122.2	NA	600.7
1957	346.4	40.5	114.2	NA	501.1	(s)	([10])	130.2	0.2	NA	NA	NA	NA	130.4	NA	631.5
1958	344.4	40.4	119.8	NA	504.5	0.2	([10])	140.3	0.2	NA	NA	NA	NA	140.4	NA	645.1
1959	378.4	46.8	146.6	NA	571.9	0.2	([10])	137.8	0.2	NA	NA	NA	NA	137.9	NA	710.0
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
1961	421.9	48.5	169.3	NA	639.7	1.7	([10])	152.2	0.1	NA	0.1	NA	NA	152.4	NA	793.8
1962	450.2	48.9	184.3	NA	683.4	2.3	([10])	168.6	0.1	NA	0.1	NA	NA	168.8	NA	854.5
1963	493.9	52.0	201.6	NA	747.5	3.2	([10])	165.8	0.1	NA	0.2	NA	NA	166.1	NA	916.8
1964	526.2	57.0	220.0	NA	803.2	3.3	([10])	177.1	0.1	NA	0.2	NA	NA	177.4	NA	984.0
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
1966	613.5	78.9	251.2	NA	943.6	5.5	([10])	194.8	0.3	NA	0.2	NA	NA	195.3	NA	1,144.4
1967	630.5	89.3	264.8	NA	984.6	7.7	([10])	221.5	0.3	NA	0.3	NA	NA	222.2	NA	1,214.4
1968	684.9	104.3	304.4	NA	1,093.6	12.5	([10])	222.5	0.4	NA	0.4	NA	NA	223.3	NA	1,329.4
1969	706.0	137.8	333.3	NA	1,177.1	13.9	([10])	250.2	0.3	NA	0.6	NA	NA	251.1	NA	1,442.2
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]	1,554.0	158.3	266.9	0	1,979.3	529.4	([10])	R269.2	4.2	6.9	R14.6	0.3	R2.1	R297.3	0	R2,805.9
1990	1,560.2	R117.6	R264.7	(s)	R1,942.4	576.9	-3.5	R289.8	R5.6	R10.4	R15.4	0.4	R2.8	R324.3	0	R2,840.0
1991	1,551.9	112.2	267.8	(s)	1,931.9	612.6	-4.5	R286.0	6.0	12.2	R16.0	0.5	R3.0	R323.7	0	R2,863.6
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	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	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	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	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	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	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	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	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	3,472.9
2001	R1,851.8	R113.2	R427.0	(s)	R2,392.0	768.8	-8.8	R213.7	R6.6	R17.2	R13.7	0.5	R6.7	R258.6	0	R3,410.5
2002P	1,873.3	78.6	452.6	(s)	2,404.5	780.1	-8.8	259.5	6.6	17.3	13.4	0.5	10.5	307.9	(s)	3,483.7

[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, including a small amount of supplemental gaseous fuels.
[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: • Data are for 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. • See Note 2 at end of section. • Totals may not equal sum of components due to independent rounding.

Web Page: http://www.eia.doe.gov/fuelelectric.html.

Sources: See end of section.

Table 8.2c Electricity Net Generation at Combined-Heat-and-Power Plants by Sector, 1989-2002

(Billion Kilowatthours)

Year	Fossil Fuels					Renewable Energy				Other	Total
	Coal [1]	Petroleum [2]	Natural Gas [3]	Other Gases [4]	Total	Conventional Hydroelectric Power [5]	Wood [6]	Waste [7]	Total	Other [8]	Total
					Electric Power Sector [9]						
1989	8.4	0.7	30.4	0.5	39.9	0.0	1.3	0.9	2.2	0.3	42.3
1990	R11.9	R1.3	R44.8	0.6	R58.7	0.0	1.4	1.1	2.6	(s)	R61.3
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	R31.0	R6.0	R128.0	R0.6	R165.5	0.0	R1.7	R2.3	R4.0	0.0	R169.5
2002P	31.4	6.0	147.9	1.4	186.8	0.0	1.7	2.8	4.5	0.5	191.7
					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	R3.3	0.1	R4.8	0.1	0.1	0.8	R1.1	0.0	R5.8
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	R0.4	R4.4	(s)	R5.9	0.1	(s)	R1.5	R1.5	(s)	7.4
2002P	1.0	0.4	5.4	(s)	6.9	0.1	(s)	1.8	1.9	(s)	8.7
					Industrial Sector [11]						
1989	20.7	5.0	53.2	7.3	86.1	R2.7	21.6	0.9	R25.2	3.5	R114.8
1990	R21.1	R7.2	R60.0	R9.6	R97.9	R3.0	R25.4	0.9	R29.3	3.6	R130.8
1991	21.0	6.5	60.6	10.5	98.6	R2.8	25.9	0.9	R29.6	4.3	R132.6
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	R20.1	R5.3	R79.8	R8.5	R113.6	R3.1	R26.9	R0.8	R30.8	R4.7	R149.2
2002P	20.7	4.9	79.9	10.7	116.1	4.0	28.2	1.0	33.3	5.1	154.4

[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, including a small amount of supplemental gaseous fuels.
[4] Blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels.
[5] Includes combined-heat-and-power (CHP) plants that use multiple sources of energy including hydropower.
[6] Wood, black liquor, and other wood waste.
[7] Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.
[8] Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.
[9] 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 on Table 8.2b.
[10] Commercial combined-heat-and-power (CHP) and a small number of commercial electricity-only plants. See Note 1 at end of section.
[11] Industrial combined-heat-and-power (CHP) and a small number of industrial electricity-only plants. See Note 1 at end of section.

R=Revised. P=Preliminary. (s)=Less than 0.05 billion kilowatthours.

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

Web Page: 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—EIA, Form EIA-860, "Annual Electric Generator Report" and Form EIA-906, "Power Plant Report." • 2002—EIA, Form EIA-906, "Power Plant Report."

Table 8.2d Useful Thermal Output at Combined-Heat-and-Power Plants by Sector, 1989-2002

(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		
					Electric Power Sector [8]					
1989	13	8	67	2	90	19	5	24	1	114
1990	R21	R9	R80	4	R114	18	6	25	(s)	R138
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	R52	R6	R164	R5	R226	8	R8	R16	0	R243
2002P	39	6	189	6	240	4	7	11	(s)	251
					Commercial Sector [9]					
1989	14	4	10	(s)	27	(s)	10	10	0	38
1990	15	R5	R16	(s)	R36	(s)	10	R11	0	R46
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	R18	R4	R35	0	R58	1	R13	R14	0	R72
2002P	19	2	32	0	54	(s)	16	16	0	70
					Industrial Sector [10]					
1989	297	84	385	90	856	527	15	542	38	1,437
1990	R327	R113	R443	R137	R1,019	R632	20	R652	R40	R1,711
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	1,056	653	23	676	39	1,771
1994	333	119	502	138	1,093	707	21	729	41	1,863
1995	329	105	541	140	1,116	706	20	726	44	1,886
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	R284	R80	R542	R128	R1,034	R548	R20	R567	R42	R1,644
2002P	280	66	475	130	950	540	21	561	40	1,550

[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, including a small amount of supplemental gaseous fuels.
[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] 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.
[9] Commercial combined-heat-and-power (CHP) plants. See Note 1 at end of section.
[10] Industrial combined-heat-and-power (CHP) plants. See Note 1 at end of section.

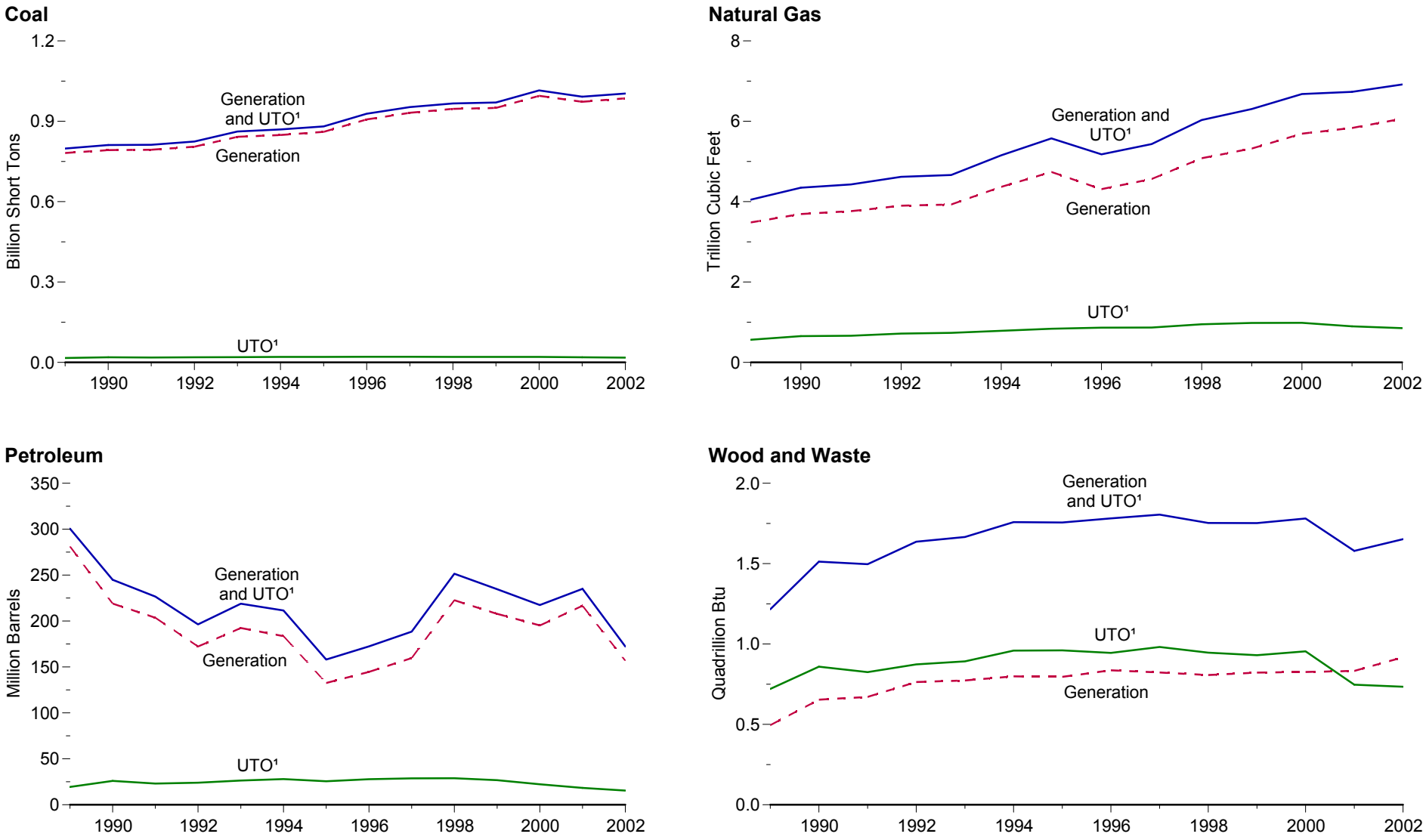
R=Revised. P=Preliminary. (s)=Less than 0.5 trillion Btu.

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

Web Page: 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—EIA, Form EIA-860, "Annual Electric Generator Report" and Form EIA-906, "Power Plant Report." • 2002—EIA, Form EIA-906, "Power Plant Report."

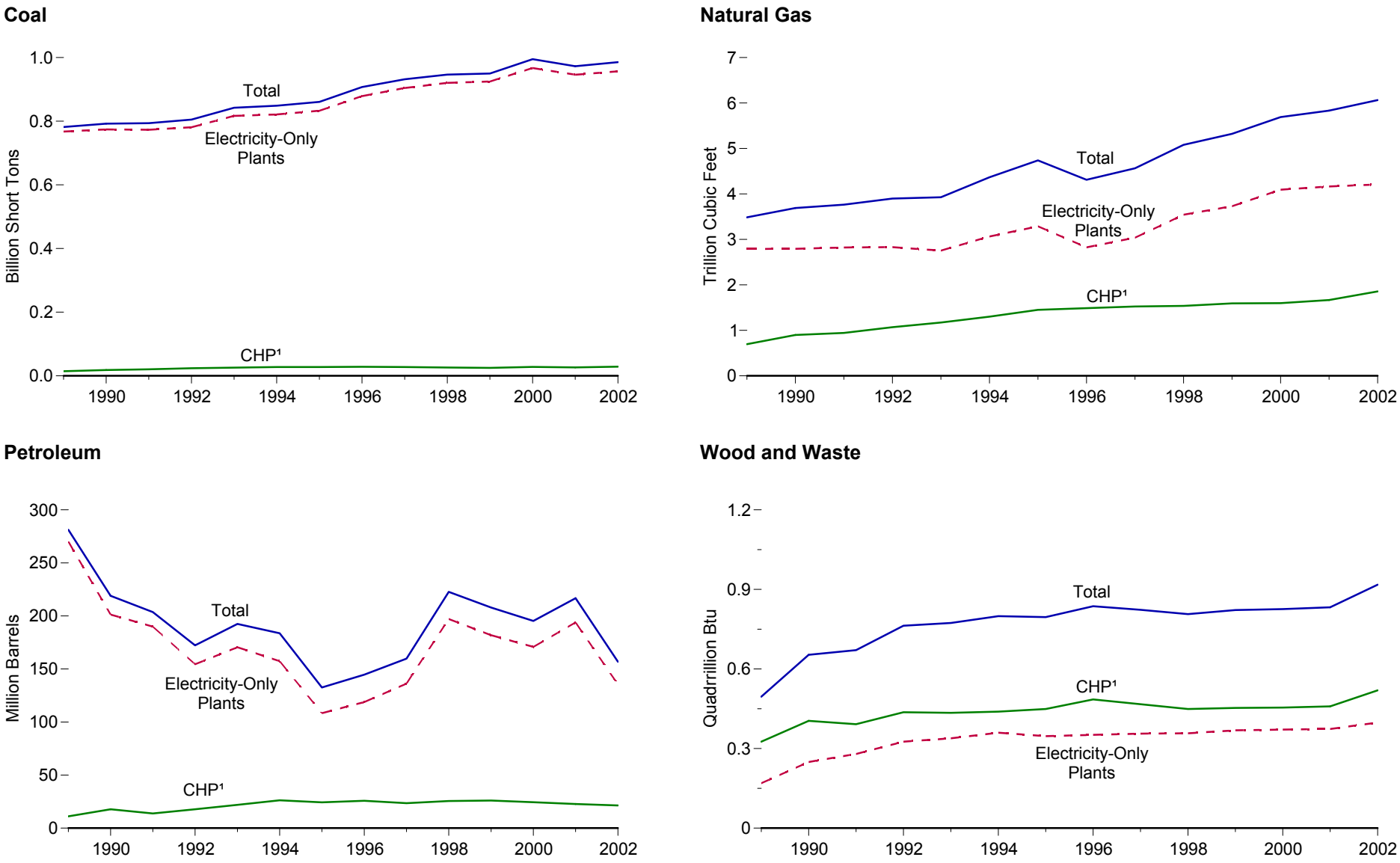
Figure 8.3a Consumption of Combustible Fuels for Electricity Generation and Useful Thermal Output, 1989-2002



[1] Useful thermal output.
Note: Because vertical scales differ, graphs should not be compared.

Sources: Tables 8.3a, 8.3c, and 8.3f.

Figure 8.3b Consumption of Combustible Fuels for Electricity Generation, 1989-2002



[1] Combined-heat-and-power plants.
Note: Because vertical scales differ, graphs should not be compared.

Sources: Tables 8.3c, 8.3d, and 8.3e.

Table 8.3a Consumption of Combustible Fuels for Electricity Generation and Useful Thermal Output at Electricity-Only and Combined-Heat-and-Power Plants: Total (All Sectors), 1989-2002

	Fossil Fuels								Renewable Energy		
		Petroleum									
	Coal [1]	Distillate Fuel Oil [2]	Residual Fuel Oil [3]	Other Liquids [4]	Petroleum Coke [5]	Total [5]	Natural Gas [6]	Other Gases [7]	Wood [8]	Waste [9]	Other [10]
Year	Thousand Short Tons	Thousand Barrels			Thousand Short Tons	Thousand Barrels	Billion Cubic Feet	Trillion Btu	Trillion Btu		Trillion Btu
1989	798,181	29,143	266,211	656	915	300,583	4,049	206	1,028	189	88
1990	811,538	20,194	209,314	1,332	2,832	244,998	4,346	288	1,256	257	86
1991	812,124	19,591	193,073	1,215	2,566	226,708	4,429	311	1,204	292	114
1992	824,512	16,852	160,941	1,695	3,366	196,318	4,618	341	1,303	333	92
1993	861,904	19,293	176,992	1,589	4,200	218,873	4,663	314	1,322	344	85
1994	869,405	25,177	164,051	1,539	4,157	211,551	5,153	316	1,401	357	92
1995	881,012	21,697	112,168	1,322	4,590	158,140	5,574	313	1,382	374	97
1996	928,015	22,444	124,607	2,468	4,596	172,499	5,178	346	1,389	392	91
1997	952,955	22,893	134,623	526	6,095	188,517	5,434	307	1,397	407	103
1998	966,615	30,006	189,267	1,230	6,196	251,486	6,030	334	1,349	404	95
1999	970,175	30,616	172,319	1,812	5,989	234,694	6,305	350	1,352	400	101
2000	1,015,398	34,572	156,673	2,904	4,669	217,494	6,677	356	1,380	401	109
2001	991,635	33,724	177,137	1,418	4,532	234,940	6,731	263	1,182	398	94
2002[P]	1,003,393	21,213	119,875	2,027	5,832	172,274	6,917	302	1,236	416	98

[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, including a small amount of supplemental gaseous fuels.
[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: • In 2001, data on this table exclude consumption at some combined-heat-and-power plants that produced only useful thermal output. Consumption at these plants is included on Table 8.3f. • Totals may not equal sum of components due to independent rounding.
Web Page: http://www.eia.doe.gov/fuelelectric.html.
Source: Table 8.3b.

Table 8.3b Consumption of Combustible Fuels for Electricity Generation and Useful Thermal Output at Electricity-Only and Combined-Heat-and-Power Plants by Sector, 1989-2002

	Fossil Fuels								Renewable Energy		
		Petroleum									
	Coal [1]	Distillate Fuel Oil [2]	Residual Fuel Oil [3]	Other Liquids [4]	Petroleum Coke [5]	Total [5]	Natural Gas [6]	Other Gases [7]	Wood [8]	Waste [9]	Other [10]
Year	Thousand Short Tons	Thousand Barrels			Thousand Short Tons	Thousand Barrels	Billion Cubic Feet	Trillion Btu	Trillion Btu		Trillion Btu
					Electric Power Sector [11]						
1989	772,190	26,156	244,179	10	517	R272,931	3,105	9	100	132	3
1990	R782,567	R16,567	R184,915	26	R1,008	R206,550	R3,245	11	R129	R188	(s)
1991	783,874	14,359	172,625	59	974	R191,911	3,316	11	126	229	4
1992	795,094	12,623	138,726	128	1,494	R158,948	3,448	18	140	262	5
1993	831,645	14,849	152,481	239	2,611	R180,625	3,473	16	150	265	5
1994	838,354	20,612	138,222	771	2,315	R171,178	3,903	19	152	282	3
1995	850,230	18,553	90,023	499	2,674	R122,447	4,237	24	125	296	2
1996	896,921	18,780	99,951	653	2,642	R132,593	3,807	20	138	300	2
1997	921,364	18,989	113,669	152	3,372	R149,668	4,065	24	137	309	1
1998	936,619	23,300	166,528	431	4,102	R210,769	4,588	29	137	308	2
1999	940,922	24,058	152,493	544	3,735	R195,769	4,820	19	138	315	1
2000	985,821	30,016	138,513	454	3,275	R185,358	5,206	25	134	318	1
2001	R964,433	R29,274	R159,504	R377	R3,427	R206,291	R5,342	R15	R126	R324	0
2002P	975,858	18,471	106,044	1,092	4,441	147,810	5,553	25	135	331	1
					Commercial Sector [12]						
1989	1,125	1,085	883	0	0	R1,967	30	1	2	22	0
1990	1,191	R969	R1,087	(s)	0	R2,056	R46	1	2	28	0
1991	1,228	786	551	(s)	0	R1,337	52	1	2	26	(s)
1992	1,175	548	675	(s)	2	R1,235	62	1	2	32	(s)
1993	1,373	656	828	6	5	R1,515	65	1	2	33	(s)
1994	1,344	1,015	588	0	4	R1,625	72	1	1	35	0
1995	1,419	812	413	(s)	4	R1,245	78	0	1	40	(s)
1996	1,660	682	545	(s)	4	R1,246	82	0	2	53	(s)
1997	1,738	1,053	509	0	4	R1,584	87	(s)	2	58	0
1998	1,443	854	932	0	4	R1,807	87	(s)	2	54	0
1999	1,490	759	834	0	4	R1,613	84	0	1	54	0
2000	1,547	908	676	3	6	R1,615	85	(s)	1	47	(s)
2001	R1,448	R1,026	R773	R2	6	R1,832	R79	0	1	R39	0
2002P	1,469	694	455	1	9	1,197	85	0	1	47	0
					Industrial Sector [13]						
1989	24,867	1,903	21,150	646	397	R25,685	914	195	926	35	85
1990	R27,781	R2,657	R23,312	1,305	R1,824	R36,392	R1,055	R275	R1,125	41	R86
1991	27,021	4,446	19,897	1,156	1,592	R33,460	1,061	298	1,076	37	110
1992	28,244	3,680	21,540	1,567	1,870	R36,135	1,108	322	1,161	39	87
1993	28,886	3,788	23,684	1,343	1,583	R36,733	1,125	297	1,170	46	80
1994	29,707	3,550	25,242	768	1,838	R38,748	1,178	296	1,248	41	89
1995	29,363	2,333	21,732	823	1,912	R34,448	1,260	290	1,255	38	95
1996	29,434	2,983	24,111	1,815	1,950	R38,661	1,289	325	1,249	39	89
1997	29,853	2,851	20,445	374	2,719	R37,265	1,282	283	1,259	41	102
1998	28,553	5,852	21,807	800	2,090	R38,910	1,355	305	1,211	42	93
1999	27,763	5,799	18,993	1,268	2,251	R37,312	1,401	331	1,213	31	99
2000	28,031	3,648	17,483	2,448	1,388	R30,520	1,386	331	1,244	35	108
2001	R25,755	R3,424	R16,860	R1,039	R1,099	R26,817	R1,310	R248	R1,054	R35	R94
2002P	26,066	2,049	13,376	934	1,382	23,267	1,278	277	1,101	38	97

[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 (assigned to "Electric Power Sector") also include small amounts of kerosene and jet fuel.
[3] Fuel oil nos. 5 and 6. Through 2000, electric utility data (assigned to "Electric Power Sector") 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, including a small amount of supplemental gaseous fuels.
[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 and combined-heat-and-power (CHP) plants within the NAICS 22 category whose primary business is to sell electricity, or electricity and heat, to the public.
[12] Commercial combined-heat-and-power (CHP) and commercial electricity-only plants. See Note 1 at end of section.
[13] Industrial combined-heat-and-power (CHP) and industrial electricity-only plants. See Note 1 at end of section.

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

Notes: • In 2001, data on this table exclude consumption at some combined-heat-and-power plants that produced only useful thermal output. Consumption at these plants is included on Table 8.3f. • Totals may not equal sum of components due to independent rounding.

Web Page: http://www.eia.doe.gov/fuelelectric.html.

Sources: See sources for Tables 8.3d, 8.3e, and 8.3f.

Table 8.3c Consumption of Combustible Fuels for Electricity Generation: Total (All Sectors), 1949-2002

	Fossil Fuels								Renewable Energy		
		Petroleum									
	Coal [1]	Distillate Fuel Oil [2]	Residual Fuel Oil [3]	Other Liquids [4]	Petroleum Coke [5]	Total [5]	Natural Gas [6]	Other Gases [7]	Wood [8]	Waste [9]	Other [10]
Year	Thousand Short Tons	Thousand Barrels			Thousand Short Tons	Thousand Barrels	Billion Cubic Feet	Trillion Btu	Trillion Btu		Trillion Btu
1949	83,963	4,767	61,534	NA	NA	66,301	550	NA	6	NA	NA
1950	91,871	5,423	69,998	NA	NA	75,421	629	NA	5	NA	NA
1951	105,768	4,598	59,347	NA	NA	63,945	764	NA	5	NA	NA
1952	107,071	4,833	62,385	NA	NA	67,218	910	NA	6	NA	NA
1953	115,897	5,913	76,325	NA	NA	82,238	1,034	NA	5	NA	NA
1954	118,385	4,799	61,946	NA	NA	66,745	1,165	NA	3	NA	NA
1955	143,759	5,412	69,862	NA	NA	75,274	1,153	NA	3	NA	NA
1956	158,279	5,228	67,483	NA	NA	72,711	1,239	NA	2	NA	NA
1957	160,769	5,730	73,963	NA	NA	79,693	1,336	NA	2	NA	NA
1958	155,724	5,584	72,083	NA	NA	77,667	1,373	NA	2	NA	NA
1959	168,423	6,346	81,917	NA	NA	88,263	1,629	NA	2	NA	NA
1960	176,685	3,824	84,371	NA	NA	88,195	1,725	NA	2	NA	NA
1961	182,185	3,708	85,204	NA	NA	88,912	1,825	NA	1	NA	NA
1962	193,316	3,910	85,384	NA	NA	89,294	1,966	NA	1	NA	NA
1963	211,332	4,233	89,081	NA	NA	93,314	2,144	NA	1	NA	NA
1964	225,425	4,310	96,831	NA	NA	101,141	2,323	NA	2	NA	NA
1965	244,788	4,928	110,274	NA	NA	115,203	2,321	NA	3	NA	NA
1966	266,477	6,311	134,638	NA	NA	140,949	2,610	NA	3	NA	NA
1967	274,185	7,393	153,886	NA	NA	161,278	2,746	NA	3	NA	NA
1968	297,779	9,830	178,812	NA	NA	188,642	3,148	NA	4	NA	NA
1969	310,641	14,961	236,066	NA	NA	251,027	3,488	NA	3	NA	NA
1970	320,182	24,123	311,381	NA	636	338,686	3,932	NA	1	2	NA
1971	327,301	34,283	362,187	NA	605	399,496	3,976	NA	1	2	NA
1972	351,768	53,465	440,294	NA	627	496,895	3,977	NA	1	2	NA
1973	389,212	47,058	513,190	NA	507	562,781	3,660	NA	1	2	NA
1974	391,811	53,128	483,146	NA	625	539,399	3,443	NA	1	2	NA
1975	405,962	38,907	467,221	NA	70	506,479	3,158	NA	(s)	2	NA
1976	448,371	41,843	514,077	NA	68	556,261	3,081	NA	1	2	NA
1977	477,126	48,837	574,869	NA	98	624,193	3,191	NA	3	2	NA
1978	481,235	47,520	588,319	NA	398	637,830	3,188	NA	2	1	NA
1979	527,051	30,691	492,606	NA	268	524,636	3,491	NA	3	2	NA
1980	569,274	29,051	391,163	NA	179	421,110	3,682	NA	3	2	NA
1981	596,797	21,313	329,798	NA	139	351,806	3,640	NA	3	1	NA
1982	593,666	15,337	234,434	NA	149	250,517	3,226	NA	2	1	NA
1983	625,211	16,512	228,984	NA	261	246,804	2,911	NA	2	2	NA
1984	664,399	15,190	189,289	NA	252	205,736	3,111	NA	5	4	NA
1985	693,841	14,635	158,779	NA	231	174,571	3,044	NA	8	7	NA
1986	685,056	14,326	216,156	NA	313	232,046	2,602	NA	5	7	NA
1987	717,894	15,367	184,011	NA	348	201,116	2,844	NA	8	7	NA
1988	758,372	18,769	229,327	NA	409	250,141	2,636	NA	10	8	NA
1989[11]	781,672	27,733	249,820	303	667	281,192	3,485	90	345	151	39
1990	R792,457	R18,143	R190,849	437	R1,914	R218,997	R3,692	R112	R442	R211	R36
1991	793,666	16,564	177,780	380	1,789	203,669	3,765	125	425	247	59
1992	805,140	14,493	144,467	759	2,504	172,241	3,900	141	481	283	40
1993	842,153	16,845	159,059	715	3,169	192,462	3,929	136	485	288	34
1994	848,796	22,365	145,225	929	3,020	183,618	4,367	136	498	301	40
1995	860,594	19,615	95,507	680	3,355	132,578	4,738	133	480	316	42
1996	907,209	20,252	106,055	1,712	3,322	144,626	4,312	159	513	324	37
1997	931,949	20,309	118,741	237	4,086	159,715	4,565	119	484	339	36
1998	946,295	25,062	172,728	549	4,860	222,640	5,081	125	475	332	36
1999	949,802	25,951	158,187	974	4,552	207,871	5,322	126	490	332	41
2000	994,933	31,675	143,381	1,450	3,744	195,228	5,691	126	496	330	46
2001	R972,691	R31,150	R165,312	R855	R3,871	R216,672	R5,832	R97	R486	R347	R41
2002P	985,374	19,787	110,523	1,450	5,010	156,809	6,065	132	556	362	48

[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, including a small amount of supplemental gaseous fuels.
[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, Web Page, and Sources: See end of section.

Table 8.3d Consumption of Combustible Fuels for Electricity Generation at Electricity-Only Plants: Electric Power Sector, 1949-2002

	Fossil Fuels								Renewable Energy		
		Petroleum									
	Coal [1]	Distillate Fuel Oil [2]	Residual Fuel Oil [3]	Other Liquids [1]	Petroleum Coke [4]	Total [4]	Natural Gas [1]	Other Gases [1]	Wood [1]	Waste [1]	Other [1]
Year	Thousand Short Tons	Thousand Barrels			Thousand Short Tons	Thousand Barrels	Billion Cubic Feet	Trillion Btu	Trillion Btu		Trillion Btu
1949	83,963	4,767	61,534	NA	NA	66,301	550	NA	6	NA	NA
1950	91,871	5,423	69,998	NA	NA	75,421	629	NA	5	NA	NA
1951	105,768	4,598	59,347	NA	NA	63,945	764	NA	5	NA	NA
1952	107,071	4,833	62,385	NA	NA	67,218	910	NA	6	NA	NA
1953	115,897	5,913	76,325	NA	NA	82,238	1,034	NA	5	NA	NA
1954	118,385	4,799	61,946	NA	NA	66,745	1,165	NA	3	NA	NA
1955	143,759	5,412	69,862	NA	NA	75,274	1,153	NA	3	NA	NA
1956	158,279	5,228	67,483	NA	NA	72,711	1,239	NA	2	NA	NA
1957	160,769	5,730	73,963	NA	NA	79,693	1,336	NA	2	NA	NA
1958	155,724	5,584	72,083	NA	NA	77,667	1,373	NA	2	NA	NA
1959	168,423	6,346	81,917	NA	NA	88,263	1,629	NA	2	NA	NA
1960	176,685	3,824	84,371	NA	NA	88,195	1,725	NA	2	NA	NA
1961	182,185	3,708	85,204	NA	NA	88,912	1,825	NA	1	NA	NA
1962	193,316	3,910	85,384	NA	NA	89,294	1,966	NA	1	NA	NA
1963	211,332	4,233	89,081	NA	NA	93,314	2,144	NA	1	NA	NA
1964	225,425	4,310	96,831	NA	NA	101,141	2,323	NA	2	NA	NA
1965	244,788	4,928	110,274	NA	NA	115,203	2,321	NA	3	NA	NA
1966	266,477	6,311	134,638	NA	NA	140,949	2,610	NA	3	NA	NA
1967	274,185	7,393	153,886	NA	NA	161,278	2,746	NA	3	NA	NA
1968	297,779	9,830	178,812	NA	NA	188,642	3,148	NA	4	NA	NA
1969	310,641	14,961	236,066	NA	NA	251,027	3,488	NA	3	NA	NA
1970	320,182	24,123	311,381	NA	636	338,686	3,932	NA	1	2	NA
1971	327,301	34,283	362,187	NA	605	399,496	3,976	NA	1	2	NA
1972	351,768	53,465	440,294	NA	627	496,895	3,977	NA	1	2	NA
1973	389,212	47,058	513,190	NA	507	562,781	3,660	NA	1	2	NA
1974	391,811	53,128	483,146	NA	625	539,399	3,443	NA	1	2	NA
1975	405,962	38,907	467,221	NA	70	506,479	3,158	NA	(s)	2	NA
1976	448,371	41,843	514,077	NA	68	556,261	3,081	NA	1	2	NA
1977	477,126	48,837	574,869	NA	98	624,193	3,191	NA	3	2	NA
1978	481,235	47,520	588,319	NA	398	637,830	3,188	NA	2	1	NA
1979	527,051	30,691	492,606	NA	268	524,636	3,491	NA	3	2	NA
1980	569,274	29,051	391,163	NA	179	421,110	3,682	NA	3	2	NA
1981	596,797	21,313	329,798	NA	139	351,806	3,640	NA	3	1	NA
1982	593,666	15,337	234,434	NA	149	250,517	3,226	NA	2	1	NA
1983	625,211	16,512	228,984	NA	261	246,804	2,911	NA	2	2	NA
1984	664,399	15,190	189,289	NA	252	205,736	3,111	NA	5	4	NA
1985	693,841	14,635	158,779	NA	231	174,571	3,044	NA	8	7	NA
1986	685,056	14,326	216,156	NA	313	232,046	2,602	NA	5	7	NA
1987	717,894	15,367	184,011	NA	348	201,116	2,844	NA	8	7	NA
1988	758,372	18,769	229,327	NA	409	250,141	2,636	NA	10	8	NA
1989[5]	767,378	25,574	241,960	3	517	270,125	2,791	0	59	111	0
1990	774,213	14,956	181,231	17	R1,008	201,246	2,794	(s)	R87	R162	0
1991	773,183	13,822	171,157	51	974	189,898	2,822	(s)	85	195	0
1992	781,186	11,998	135,779	48	1,320	154,428	2,829	(s)	94	232	0
1993	816,558	13,460	149,287	11	1,553	170,521	2,755	(s)	101	237	0
1994	821,209	16,693	134,666	52	1,193	157,375	3,065	(s)	112	248	0
1995	832,928	16,169	86,584	133	1,082	108,297	3,288	(s)	84	262	0
1996	878,825	17,361	96,386	50	1,010	118,848	2,824	(s)	94	258	0
1997	904,245	17,702	109,989	30	1,687	136,156	3,039	1	91	266	0
1998	920,353	22,293	163,541	295	2,202	197,137	3,544	1	95	263	0
1999	924,692	22,877	149,193	380	1,891	181,905	3,729	1	105	264	0
2000	967,080	28,001	135,419	94	1,457	170,799	4,093	2	105	267	0
2001	R946,068	R27,695	R157,090	R26	R1,827	193,945	R4,164	(s)	R96	R277	0
2002P	956,762	18,178	104,117	228	2,586	135,451	4,209	(s)	109	289	(s)

[1] See Table 8.3a for fuel components.
[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] Petroleum coke is converted from short tons to barrels by multiplying by 5.
[5] 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.
Notes, Web Page, and Sources: See end of section.

Table 8.3e Estimated Consumption of Combustible Fuels for Electricity Generation at Combined-Heat-and-Power Plants by Sector, 1989-2002

	Fossil Fuels								Renewable Energy		
		Petroleum									
	Coal [1]	Distillate Fuel Oil [2]	Residual Fuel Oil [3]	Other Liquids [4]	Petroleum Coke [5]	Total [5]	Natural Gas [6]	Other Gases [7]	Wood [8]	Waste [9]	Other [10]
Year	Thousand Short Tons	Thousand Barrels			Thousand Short Tons	Thousand Barrels	Billion Cubic Feet	Trillion Btu	Trillion Btu		Trillion Btu
	Electric Power Sector [11]										
1989	4,173	462	747	6	0	1,215	233	7	16	16	2
1990	R7,088	R1,438	R2,054	7	0	R3,499	R353	6	18	18	(s)
1991	9,470	433	473	7	0	912	394	6	20	22	4
1992	12,204	471	1,902	69	170	3,291	496	12	25	20	3
1993	13,293	R1,098	2,120	202	1,018	8,513	589	12	28	18	3
1994	14,904	3,548	2,531	615	1,063	12,011	694	12	22	22	2
1995	14,926	1,898	2,311	307	1,370	11,366	806	18	22	20	2
1996	15,575	1,111	2,410	517	1,456	11,320	836	15	24	22	2
1997	14,764	944	2,434	100	1,514	11,046	864	14	26	26	1
1998	13,773	872	2,334	117	1,797	12,310	872	21	30	24	2
1999	13,197	998	2,728	134	1,716	12,440	915	14	20	26	1
2000	15,634	1,721	2,627	310	1,698	13,147	921	17	21	28	1
2001	R15,455	R1,360	R2,059	R347	R1,482	R11,175	R979	R9	R20	R37	0
2002P	16,942	234	1,374	850	1,705	10,982	1,112	17	21	34	1
	Commercial Sector [12]										
1989	414	882	282	0	0	1,165	18	1	2	9	0
1990	417	R580	R372	(s)	0	R953	R28	1	R2	15	0
1991	403	430	146	(s)	0	576	27	1	2	15	(s)
1992	371	289	137	(s)	1	429	33	1	1	16	(s)
1993	404	384	279	4	1	672	37	1	1	16	0
1994	404	481	209	0	1	694	41	1	1	17	0
1995	569	493	152	(s)	1	649	43	0	1	21	(s)
1996	656	422	218	(s)	1	645	42	0	1	31	(s)
1997	630	583	200	0	1	790	39	(s)	1	34	0
1998	440	436	359	0	1	802	41	(s)	1	32	0
1999	481	506	421	0	1	931	39	0	(s)	33	0
2000	514	505	310	1	1	823	37	0	(s)	26	(s)
2001	R532	R520	R469	R2	R6	R1,023	R36	0	(s)	R22	0
2002P	513	474	272	1	2	758	45	0	(s)	27	0
	Industrial Sector [13]										
1989	9,707	815	6,830	294	150	8,688	444	83	267	15	37
1990	R10,740	R1,169	R7,192	412	R905	R13,299	R517	R104	R335	16	R36
1991	10,610	1,879	6,004	322	815	12,283	522	118	318	14	55
1992	11,379	1,735	6,650	642	1,013	14,093	542	128	359	15	37
1993	11,898	1,902	7,373	498	597	12,755	547	123	355	17	31
1994	12,279	1,644	7,818	263	762	13,537	568	123	364	14	38
1995	12,171	1,056	6,460	239	902	12,265	601	114	373	13	40
1996	12,153	1,359	7,042	1,145	853	13,813	610	143	394	13	35
1997	12,311	1,079	6,118	107	884	11,723	623	105	367	14	36
1998	11,728	1,461	6,494	137	860	12,392	625	102	349	13	35
1999	11,432	1,571	5,845	460	944	12,595	639	112	364	8	39
2000	11,706	1,448	5,024	1,046	588	10,459	640	107	369	10	45
2001	R10,636	R1,574	R5,693	R479	R557	R10,530	R654	R88	R370	R10	R41
2002P	11,157	902	4,759	371	717	9,618	699	115	426	12	47

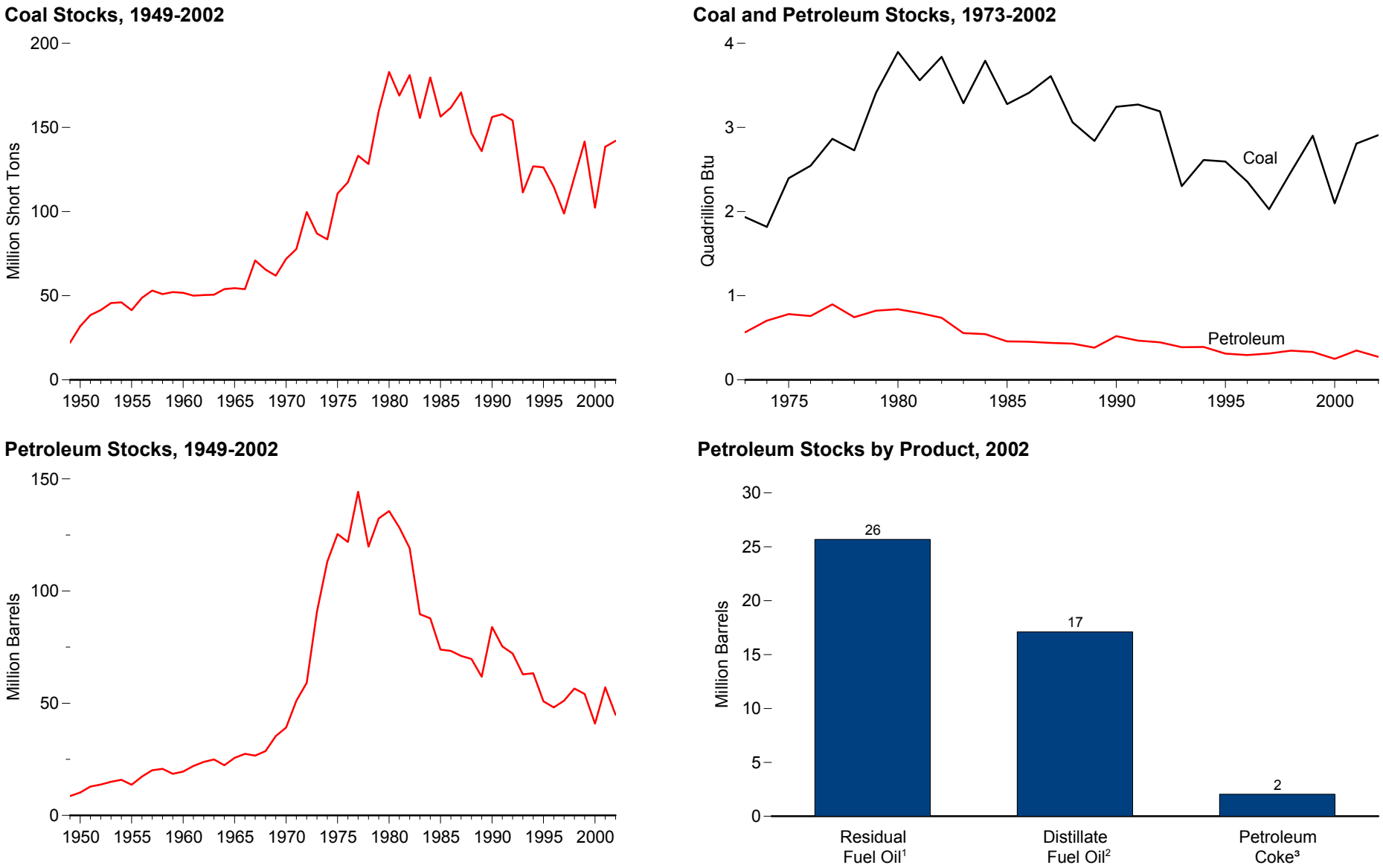
[1] Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal.
[2] Fuel oil nos. 1, 2, and 4.
[3] Fuel oil nos. 5 and 6.
[4] Jet fuel, kerosene, other petroleum liquids, and waste oil.
[5] Petroleum coke is converted from short tons to barrels by multiplying by 5.
[6] Natural gas, including a small amount of supplemental gaseous fuels.
[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] 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 on Table 8.3d.
[12] Commercial combined-heat-and-power (CHP) and a small number of commercial electricity-only plants. See Note 1 at end of section.
[13] Industrial combined-heat-and-power (CHP) and a small number of industrial electricity-only plants. See Note 1 at end of section.
R=Revised. P=Preliminary. (s)=Less than 0.5.
Notes, Web Page, and Sources: See end of section.

Table 8.3f Estimated Consumption of Combustible Fuels for Useful Thermal Output at Combined-Heat-and-Power Plants by Sector, 1989-2002

	Fossil Fuels								Renewable Energy		
		Petroleum									
	Coal [1]	Distillate Fuel Oil [2]	Residual Fuel Oil [3]	Other Liquids [4]	Petroleum Coke [5]	Total [5]	Natural Gas [6]	Other Gases [7]	Wood [8]	Waste [9]	Other [10]
Year	Thousand Short Tons	Thousand Barrels			Thousand Short Tons	Thousand Barrels	Billion Cubic Feet	Trillion Btu	Trillion Btu		Trillion Btu
	Electric Power Sector [11]										
1989	639	120	1,471	1	0	1,591	82	3	24	6	1
1990	R1,266	R173	R1,630	2	0	R1,805	R97	5	23	8	(s)
1991	1,221	104	995	1	0	1,101	100	5	21	11	1
1992	1,704	154	1,045	10	4	1,229	123	6	21	10	2
1993	1,794	290	1,074	27	40	1,591	129	4	21	10	2
1994	2,241	371	1,024	104	58	1,791	144	6	18	12	1
1995	2,376	486	1,127	58	222	2,784	143	5	19	15	(s)
1996	2,520	308	1,155	86	175	2,424	147	5	20	21	(s)
1997	2,355	343	1,246	23	171	2,466	162	10	20	17	(s)
1998	2,493	134	653	19	103	1,322	172	6	12	20	(s)
1999	3,033	183	572	30	128	1,423	176	4	13	25	(s)
2000	3,107	294	467	51	120	1,412	192	7	8	24	(s)
2001	R2,910	R220	R432	R3	119	R1,250	R200	R6	R10	R10	0
2002P	2,154	59	553	13	150	1,377	232	8	5	8	(s)
	Commercial Sector [12]										
1989	711	202	601	0	0	803	12	(s)	(s)	13	0
1990	773	R389	R715	(s)	0	R1,104	R19	(s)	(s)	13	0
1991	826	356	405	(s)	0	761	25	(s)	(s)	11	(s)
1992	804	259	538	(s)	2	807	30	(s)	1	16	(s)
1993	968	272	548	2	4	843	28	(s)	(s)	17	(s)
1994	940	534	379	0	4	931	31	(s)	(s)	17	0
1995	850	319	261	(s)	3	596	35	0	(s)	19	(s)
1996	1,005	260	328	(s)	3	601	40	0	1	22	(s)
1997	1,108	470	309	0	3	794	48	(s)	1	24	0
1998	1,002	418	573	0	3	1,006	47	(s)	1	22	0
1999	1,009	254	412	0	3	682	45	0	1	21	0
2000	1,034	403	366	2	4	792	48	0	1	21	0
2001	R919	R507	R304	0	0	R811	R42	0	1	R17	0
2002P	956	220	183	1	7	439	40	0	(s)	20	0
	Industrial Sector [13]										
1989	15,160	1,088	14,320	352	247	16,997	470	113	659	19	48
1990	R17,041	R1,488	R16,120	893	R918	R23,093	R539	R171	R790	25	R50
1991	16,412	2,567	13,893	834	777	21,177	539	180	758	23	55
1992	16,864	1,945	14,891	925	856	22,041	565	194	801	24	50
1993	16,988	1,887	16,312	846	987	23,977	578	174	816	29	49
1994	17,428	1,906	17,423	505	1,075	25,211	610	173	884	27	52
1995	17,192	1,277	15,272	584	1,010	22,182	659	175	882	25	55
1996	17,281	1,624	17,069	670	1,097	24,848	679	182	855	26	53
1997	17,542	1,772	14,328	267	1,835	25,541	659	178	892	27	67
1998	16,824	4,391	15,313	662	1,230	26,518	730	202	862	29	58
1999	16,330	4,228	13,148	808	1,307	24,718	762	219	849	23	60
2000	16,325	2,200	12,459	1,402	800	20,062	745	223	875	25	63
2001	R15,122	R1,859	R11,181	R563	R545	R16,328	R656	R160	R685	R25	R53
2002P	14,909	1,147	8,617	563	665	13,649	580	162	675	26	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, including a small amount of supplemental gaseous fuels.
[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] 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.
[12] Commercial combined-heat-and-power (CHP) plants. See Note 1 at end of section.
[13] Industrial combined-heat-and-power (CHP) plants. See Note 1 at end of section.
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. • In 2001, data on this table include consumption at some combined-heat-and-power plants that produced only useful thermal output. Consumption at these plants is excluded from Tables 8.3a and 8.3b. • Totals may not equal sum of components due to independent rounding.
Web Page: http://www.eia.doe.gov/fuelelectric.html.
Sources: See end of section.

Figure 8.4 Stocks of Coal and Petroleum: Electric Power Sector



[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 8.4, A3, and A5.

Table 8.4 Stocks of Coal and Petroleum: Electric Power Sector, 1949-2002

Year	Coal [1]	Petroleum			
		Distillate Fuel Oil [2]	Residual Fuel Oil [3]	Petroleum Coke [4]	Total [4]
	Thousand Short Tons	Thousand Barrels		Thousand Short Tons	Thousand Barrels
1949	22,054	NA	NA	NA	8,604
1950	31,842	NA	NA	NA	10,201
1951	38,524	NA	NA	NA	12,836
1952	41,492	NA	NA	NA	13,746
1953	45,640	NA	NA	NA	14,961
1954	46,096	NA	NA	NA	15,885
1955	41,391	NA	NA	NA	13,671
1956	48,765	NA	NA	NA	17,328
1957	53,087	NA	NA	NA	20,122
1958	50,989	NA	NA	NA	20,775
1959	52,125	NA	NA	NA	18,548
1960	51,735	NA	NA	NA	19,572
1961	50,069	NA	NA	NA	22,036
1962	50,406	NA	NA	NA	23,821
1963	50,608	NA	NA	NA	24,940
1964	53,908	NA	NA	NA	22,383
1965	54,525	NA	NA	NA	25,647
1966	53,893	NA	NA	NA	27,430
1967	70,987	NA	NA	NA	26,669
1968	65,493	NA	NA	NA	28,685
1969	61,894	NA	NA	NA	35,335
1970	71,908	NA	NA	239	39,151
1971	77,778	NA	NA	291	51,101
1972	99,722	NA	NA	287	59,090
1973	86,967	10,095	79,121	312	90,776
1974	83,509	15,199	97,718	35	113,091
1975	110,724	16,432	108,825	31	125,413
1976	117,436	14,703	106,993	32	121,857
1977	133,219	19,281	124,750	44	144,252
1978	128,225	16,386	102,402	198	119,778
1979	159,714	20,301	111,121	183	132,338
1980	183,010	30,023	105,351	52	135,635
1981	168,893	26,094	102,042	42	128,345
1982	181,132	23,369	95,515	41	119,090
1983	155,598	18,801	70,573	55	89,652
1984	179,727	19,116	68,503	50	87,870
1985	156,376	16,386	57,304	49	73,933
1986	161,806	16,269	56,841	40	73,313
1987	170,797	15,759	55,069	51	71,084
1988	146,507	15,099	54,187	86	69,714
1989	135,860	13,824	47,446	105	61,795
1990	156,166	16,471	67,030	94	83,970
1991	157,876	16,357	58,636	70	75,343
1992	154,130	15,714	56,135	67	72,183
1993	111,341	15,674	46,770	89	62,890
1994	126,897	16,644	46,344	69	63,333
1995	126,304	15,392	35,102	65	50,821
1996	114,623	15,216	32,473	91	48,146
1997	98,826	15,456	33,336	469	51,138
1998	120,501	16,343	37,451	559	56,591
1999[5]	R141,604	17,995	34,256	372	54,109
2000	R102,296	R15,127	24,748	211	R40,932
2001	R138,496	R20,486	R34,594	R390	R57,031
2002P	142,026	17,104	25,689	409	44,837

[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] Petroleum coke is converted from short tons to barrels by multiplying by 5.
[5] 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.

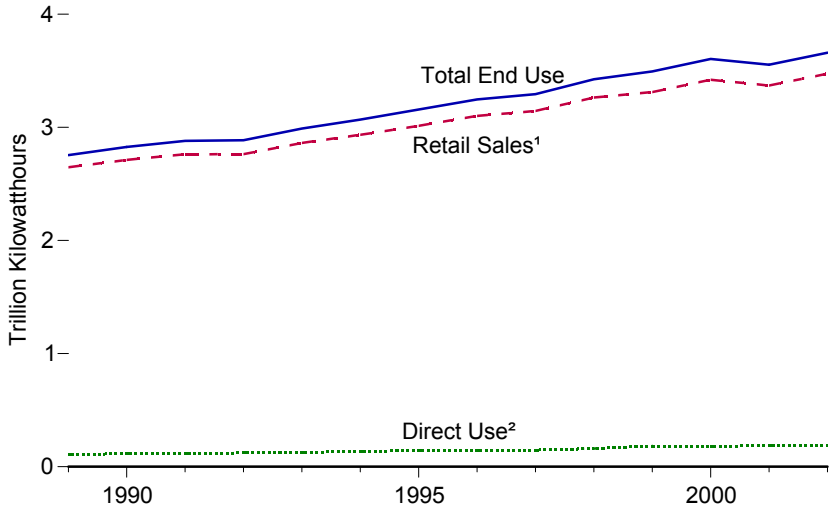
Notes: • Data are for electricity-only and combined-heat-and-power (CHP) plants within the NAICS 22 category whose primary business is to sell electricity, or electricity and heat, to the public. • Stocks are at end of year. • Totals may not equal sum of components due to independent rounding.

Web Page: http://www.eia.doe.gov/fuelelectric.html.

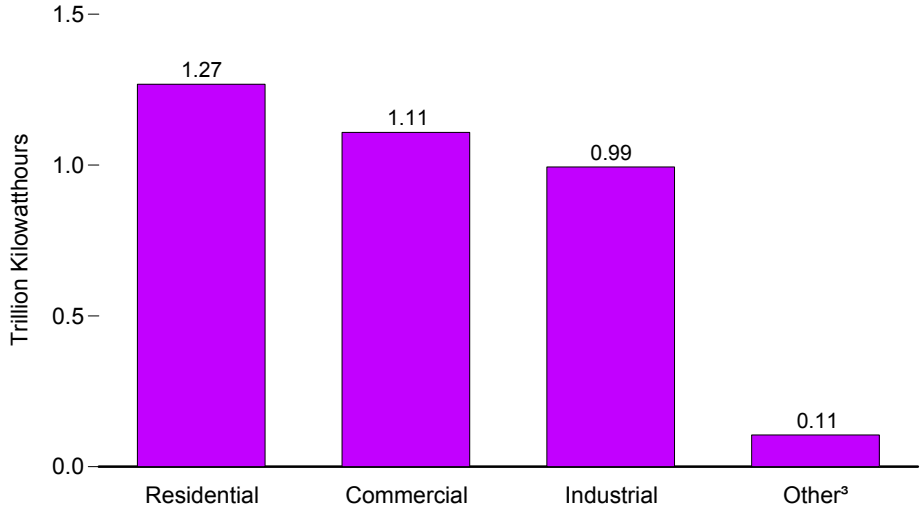
Sources: See end of section.

Figure 8.5 Electricity End Use

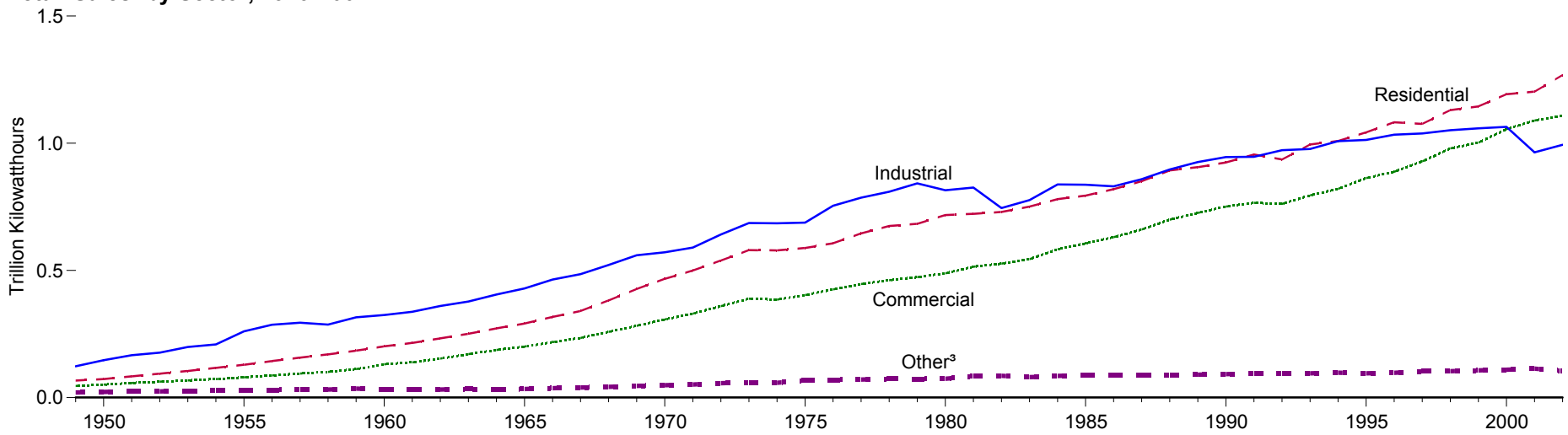
Overview, 1989-2002



Retail Sales¹ by Sector, 2002



Retail Sales¹ by Sector, 1949-2002



[1] Electricity retail sales to ultimate customers by electric utilities and 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 8.5.

Table 8.5 Electricity End Use, 1949-2002

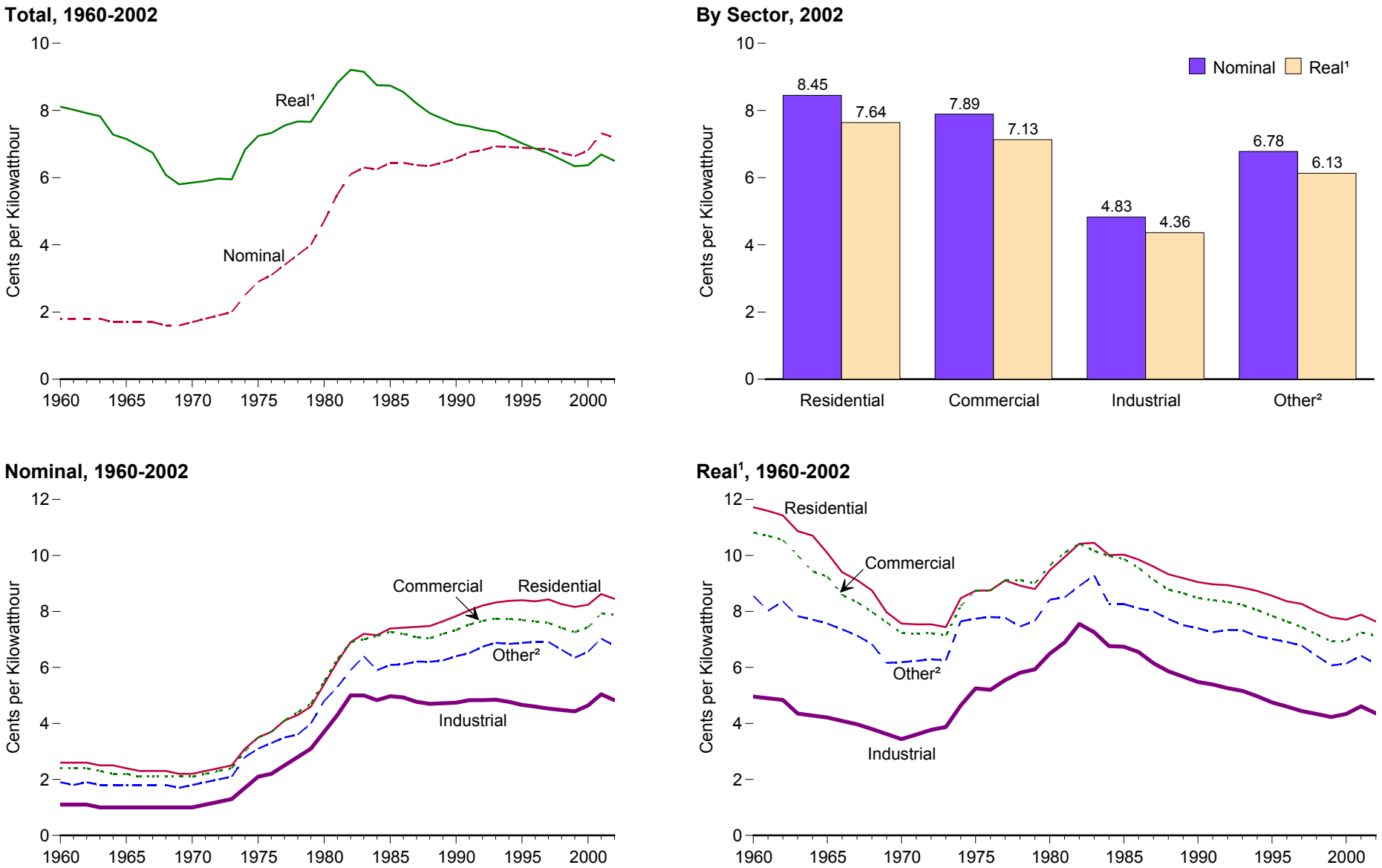
(Billion Kilowatthours)

Year	Retail Sales [1]					Direct Use [3]	Total
	Residential	Commercial	Industrial	Other [2]	Total		
1949	67	45	123	20	255	NA	255
1950	72	51	146	22	291	NA	291
1951	83	57	166	24	330	NA	330
1952	94	62	176	24	356	NA	356
1953	104	67	199	26	396	NA	396
1954	116	72	208	27	424	NA	424
1955	128	79	260	29	497	NA	497
1956	143	87	286	30	546	NA	546
1957	157	94	294	31	576	NA	576
1958	169	100	287	32	588	NA	588
1959	185	112	315	36	647	NA	647
1960	201	131	324	32	688	NA	688
1961	214	138	337	32	722	NA	722
1962	233	153	360	32	778	NA	778
1963	251	171	377	34	833	NA	833
1964	272	187	405	32	896	NA	896
1965	291	200	429	34	954	NA	954
1966	317	218	464	37	1,035	NA	1,035
1967	340	234	485	40	1,099	NA	1,099
1968	382	258	521	42	1,203	NA	1,203
1969	427	282	559	46	1,314	NA	1,314
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	R114	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	R1,203	R1,089	R964	R114	R3,370	RE184	R3,554
2002	P1,268	P1,108	P994	P105	P3,475	E185	P3,660

[1] Electricity retail sales to ultimate customers reported by electric utilities and other energy service providers.
[2] Public street and highway lighting, other sales to public authorities, sales to railroads and railways, and interdepartmental sales.
[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.
R=Revised. P=Preliminary. E=Estimate. NA=Not available.
Note: Totals may not equal sum of components due to independent rounding.
Web Page: 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* (May 2003), 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 and 2002—EIA, Form EIA-861, "Annual Electric Power Industry Report."

Figure 8.6 Average Retail Prices of Electricity



[1] In chained (1996) 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 8.6.

Table 8.6 Average Retail Prices of Electricity, 1960-2002

(Cents per Kilowatthour)

Year	Residential		Commercial		Industrial		Other [1]		Total	
	Nominal	Real [2]	Nominal	Real [2]	Nominal	Real [2]	Nominal	Real [2]	Nominal	Real [2]
1960	2.6	11.7	2.4	10.8	1.1	5.0	1.9	8.6	1.8	8.1
1961	2.6	11.6	2.4	10.7	1.1	4.9	1.8	8.0	1.8	8.0
1962	2.6	11.4	2.4	10.6	1.1	4.8	1.9	8.4	1.8	7.9
1963	2.5	10.9	2.3	10.0	1.0	4.4	1.8	7.8	1.8	7.8
1964	2.5	10.7	2.2	9.4	1.0	4.3	1.8	7.7	1.7	7.3
1965	2.4	10.1	2.2	9.2	1.0	4.2	1.8	7.6	1.7	7.2
1966	2.3	9.4	2.1	8.6	1.0	4.1	1.8	7.4	1.7	7.0
1967	2.3	9.1	2.1	8.3	1.0	4.0	1.8	7.1	1.7	6.7
1968	2.3	8.8	2.1	8.0	1.0	3.8	1.8	6.8	1.6	6.1
1969	2.2	8.0	2.1	7.6	1.0	3.6	1.7	6.2	1.6	5.8
1970	2.2	7.6	2.1	7.2	1.0	3.4	1.8	6.2	1.7	5.8
1971	2.3	7.5	2.2	7.2	1.1	3.6	1.9	6.2	1.8	5.9
1972	2.4	7.5	2.3	7.2	1.2	3.8	2.0	6.3	1.9	6.0
1973	2.5	7.4	2.4	7.1	1.3	3.9	2.1	6.2	2.0	6.0
1974	3.1	8.5	3.0	8.2	1.7	4.6	2.8	7.6	2.5	6.8
1975	3.5	8.7	3.5	8.7	2.1	5.2	3.1	7.7	2.9	7.2
1976	3.7	8.8	3.7	8.8	2.2	5.2	3.3	7.8	3.1	7.3
1977	4.1	9.1	4.1	9.1	2.5	5.6	3.5	7.8	3.4	7.6
1978	4.3	8.9	4.4	9.1	2.8	5.8	3.6	7.5	3.7	7.7
1979	4.6	8.8	4.7	9.0	3.1	5.9	4.0	7.7	4.0	7.7
1980	5.4	9.5	5.5	9.6	3.7	6.5	4.8	8.4	4.7	8.2
1981	6.2	9.9	6.3	10.1	4.3	6.9	5.3	8.5	5.5	8.8
1982	6.9	10.4	6.9	10.4	5.0	7.6	5.9	8.9	6.1	9.2
1983	7.2	10.4	7.0	10.2	5.0	7.3	6.4	9.3	6.3	9.2
1984	7.15	10.01	7.13	9.98	4.83	6.76	5.90	8.26	6.25	8.75
1985	7.39	10.03	7.27	9.87	4.97	6.74	6.09	8.26	6.44	8.74
1986	7.42	9.85	7.20	9.56	4.93	6.55	6.11	8.11	6.44	8.55
1987	7.45	9.60	7.08	9.13	4.77	6.15	6.21	8.00	6.37	8.21
1988	7.48	9.33	7.04	8.78	4.70	5.86	6.20	7.73	6.35	7.92
1989	7.65	9.19	7.20	8.65	4.72	5.67	6.25	7.51	6.45	7.75
1990	7.83	9.05	7.34	8.48	4.74	5.48	6.40	7.40	6.57	7.59
1991	8.04	8.97	7.53	8.40	4.83	5.39	6.51	7.26	6.75	7.53
1992	8.21	8.94	7.66	8.34	4.83	5.26	6.74	7.34	6.82	7.43
1993	8.32	8.85	7.74	8.23	4.85	5.16	6.88	7.32	6.93	7.37
1994	8.38	8.73	7.73	8.05	4.77	4.97	6.84	7.12	6.91	7.20
1995	8.40	8.56	7.69	7.84	4.66	4.75	6.88	7.01	6.89	7.02
1996	8.36	8.36	7.64	7.64	4.60	4.60	6.91	6.91	6.86	6.86
1997	8.43	8.27	7.59	7.44	4.53	4.44	6.91	6.78	6.85	6.72
1998	8.26	8.00	7.41	7.18	4.48	4.34	6.63	6.42	6.74	6.53
1999	8.16	R7.79	7.26	R6.93	4.43	4.23	6.35	6.07	R6.64	R6.34
2000	8.24	R7.71	7.43	R6.95	4.64	R4.34	6.56	R6.14	6.81	R6.37
2001	R8.62	R7.88	R7.93	R7.25	R5.04	R4.61	R7.03	R6.42	R7.32	R6.69
2002	8.45	7.64	7.89	7.13	4.83	4.36	6.78	6.13	7.19	6.50

[1] Public street and highway lighting, other sales to public authorities, sales to railroads and railways, and interdepartmental sales.

[2] In chained (1996) dollars, calculated by using gross domestic product implicit price deflators. See Table D1.

R=Revised.

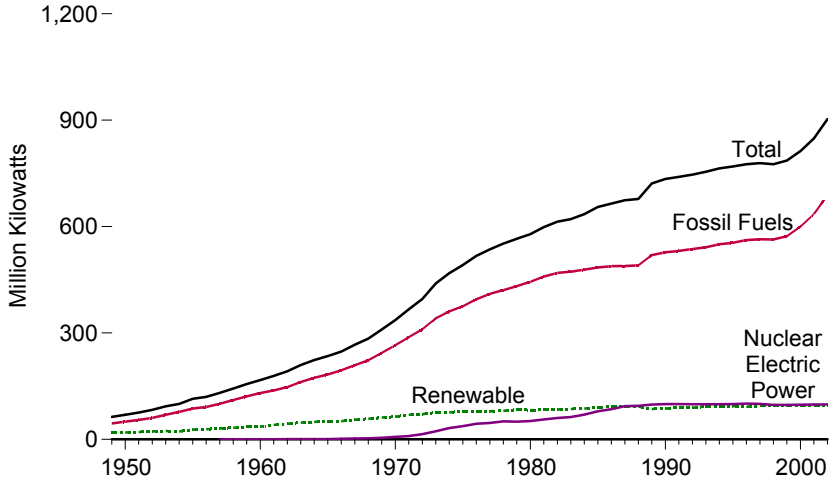
Notes: • Data represent revenue from electricity retail sales divided by electricity retail sales. • Through 1979, data are for Classes A and B privately owned electric utilities only. For 1980-1982, data are for selected Class A utilities whose electric operating revenues were $100 million or more during 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: http://www.eia.doe.gov/fuelelectric.html.

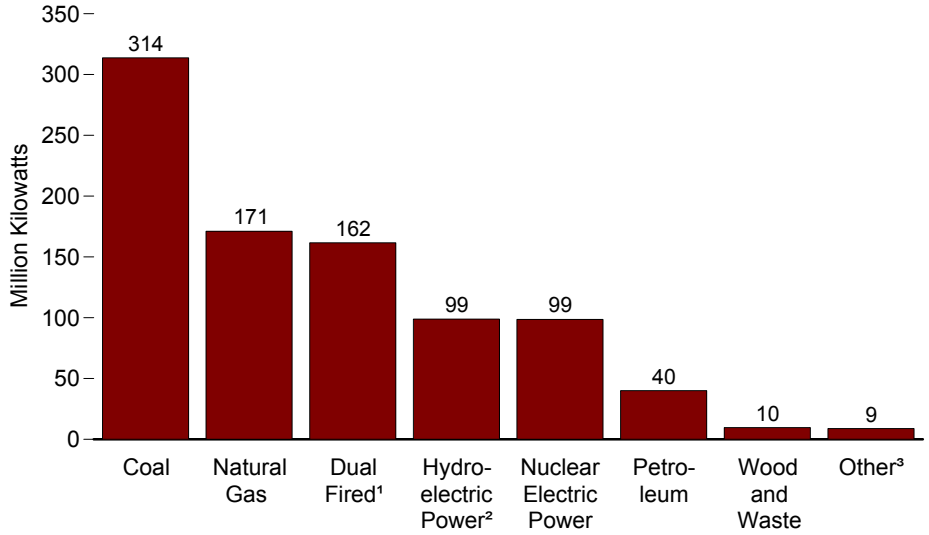
Sources: • 1960-September 1977—Federal Power Commission, Form FPC-5, "Monthly Statement of Electric Operating Revenues and Income." • October 1977-February 1980—Federal Energy Regulatory Commission (FERC), Form FPC-5, "Monthly Statement of Electric Operating Revenues and Income." • March 1980-1982—FERC, 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* (May 2003), Table 5.3.

Figure 8.7 Electric Net Summer Capacity

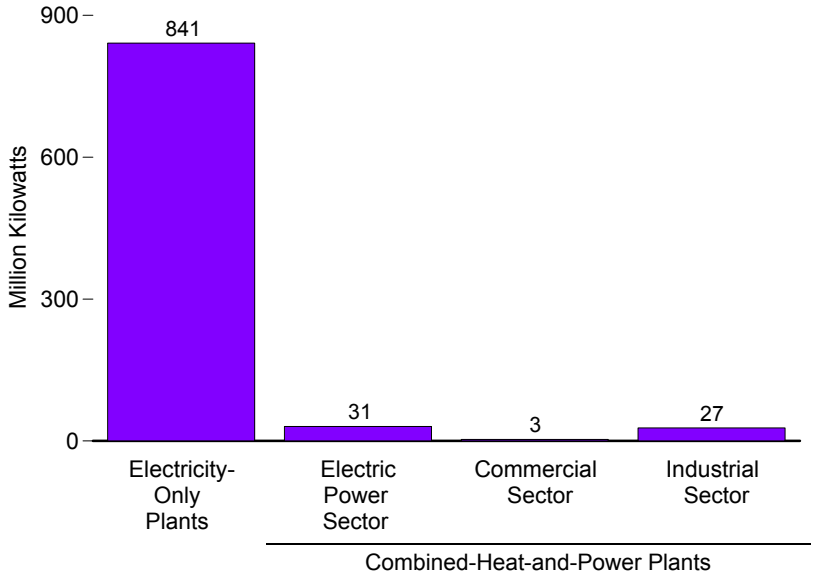
Total (All Sectors), 1949-2002



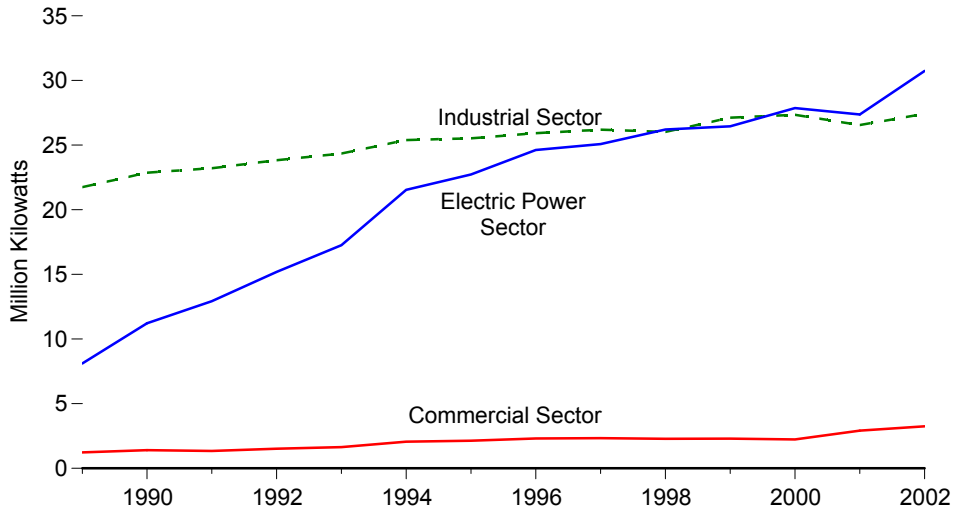
Total (All Sectors) by Major Sources, 2002



Electricity-Only and Combined-Heat-and-Power Plants, 2002



Combined-Heat-and-Power Plants, 1989-2002



[1] Petroleum and natural gas.
[2] Conventional and pumped storage.
[3] Wind, geothermal, other gases, solar, and other.

Note: Because vertical scales differ, graphs should not be compared.
Sources: Tables 8.7a, 8.7b, and 8.7c.

Table 8.7a Electric Net Summer Capacity: Total (All Sectors), 1949-2002

(Million Kilowatts)

	Fossil Fuels								Renewable Energy								
Year	Coal [1]	Petroleum [2]	Natural Gas [3]	Dual Fired [4]	Other Gases [5]	Total	Nuclear Electric Power	Hydro-electric Pumped Storage	Conventional Hydroelectric Power	Wood [6]	Waste [7]	Geo-thermal	Solar [8]	Wind	Total	Other [9]	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
1951	NA	NA	NA	NA	NA	55.0	0.0	([10])	20.5	(s)	([11])	NA	NA	NA	20.5	NA	75.5
1952	NA	NA	NA	NA	NA	60.8	0.0	([10])	22.4	(s)	([11])	NA	NA	NA	22.4	NA	83.2
1953	NA	NA	NA	NA	NA	69.5	0.0	([10])	23.8	(s)	([11])	NA	NA	NA	23.8	NA	93.3
1954	NA	NA	NA	NA	NA	77.5	0.0	([10])	22.5	(s)	([11])	NA	NA	NA	22.5	NA	100.0
1955	NA	NA	NA	NA	NA	86.8	0.0	([10])	27.4	(s)	([11])	NA	NA	NA	27.4	NA	114.2
1956	NA	NA	NA	NA	NA	91.2	0.0	([10])	28.5	(s)	([11])	NA	NA	NA	28.5	NA	119.7
1957	NA	NA	NA	NA	NA	100.3	0.1	([10])	30.7	0.1	([11])	NA	NA	NA	30.8	NA	131.1
1958	NA	NA	NA	NA	NA	110.7	0.1	([10])	32.5	0.1	([11])	NA	NA	NA	32.6	NA	143.3
1959	NA	NA	NA	NA	NA	121.0	0.1	([10])	34.8	0.1	([11])	NA	NA	NA	34.9	NA	155.9
1960	NA	NA	NA	NA	NA	130.8	0.4	([10])	35.8	0.1	([11])	(s)	NA	NA	35.9	NA	167.1
1961	NA	NA	NA	NA	NA	137.8	0.4	([10])	40.7	0.1	([11])	(s)	NA	NA	40.8	NA	179.0
1962	NA	NA	NA	NA	NA	147.3	0.7	([10])	44.0	0.1	([11])	(s)	NA	NA	44.1	NA	192.1
1963	NA	NA	NA	NA	NA	161.8	0.8	([10])	47.0	0.1	([11])	(s)	NA	NA	47.1	NA	209.7
1964	NA	NA	NA	NA	NA	173.4	0.8	([10])	49.4	0.1	([11])	(s)	NA	NA	49.5	NA	223.7
1965	NA	NA	NA	NA	NA	182.9	0.8	([10])	51.0	0.1	([11])	(s)	NA	NA	51.1	NA	234.8
1966	NA	NA	NA	NA	NA	194.5	1.7	([10])	51.2	0.1	([11])	(s)	NA	NA	51.3	NA	247.5
1967	NA	NA	NA	NA	NA	208.9	2.7	([10])	55.0	0.1	([11])	0.1	NA	NA	55.1	NA	266.7
1968	NA	NA	NA	NA	NA	223.2	2.7	([10])	57.9	0.1	([11])	0.1	NA	NA	58.0	NA	284.0
1969	NA	NA	NA	NA	NA	243.6	4.4	([10])	61.6	0.1	([11])	0.1	NA	NA	61.7	NA	309.8
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	R48.8	R54.1	R111.8	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	316.0	36.0	95.7	149.8	2.3	599.8	97.9	19.5	79.4	6.1	3.9	2.8	0.4	2.4	94.9	0.5	812.7
2001	R314.2	R39.7	R125.8	R153.5	R1.7	R634.9	R98.2	R19.1	R79.5	R5.9	R3.8	R2.2	0.4	R3.9	R95.7	R0.4	R848.3
2002P	313.8	40.1	171.1	161.7	1.8	688.5	98.6	19.1	79.8	5.9	3.8	2.2	0.4	[14]4.0	96.2	0.4	902.7

[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, including a small amount of supplemental gaseous fuels.
[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.
[14] Wind capacity in 2002 will be revised upward to at least 4.4 million kilowatts, as the Energy Information Administration continues to identify new wind facilities.

R=Revised. P=Preliminary. NA=Not available. (s)=Less than 0.05 million kilowatts.

Notes: • For plants that use multiple sources of energy, capacity is assigned to the predominant energy source. • Data are at end of year. • Totals may not equal sum of components due to independent rounding.

Web Page and Sources: See end of section.

Table 8.7b Electric Net Summer Capacity at Electricity-Only Plants: Electric Power Sector, 1949-2002

(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	([10])	18.5	(s)	([11])	NA	NA	NA	18.5	NA	63.4
1950	NA	NA	NA	NA	NA	50.0	0	([10])	19.2	(s)	([11])	NA	NA	NA	19.2	NA	69.2
1951	NA	NA	NA	NA	NA	55.0	0	([10])	20.5	(s)	([11])	NA	NA	NA	20.5	NA	75.5
1952	NA	NA	NA	NA	NA	60.8	0	([10])	22.4	(s)	([11])	NA	NA	NA	22.4	NA	83.2
1953	NA	NA	NA	NA	NA	69.5	0	([10])	23.8	(s)	([11])	NA	NA	NA	23.8	NA	93.3
1954	NA	NA	NA	NA	NA	77.5	0	([10])	22.5	(s)	([11])	NA	NA	NA	22.5	NA	100.0
1955	NA	NA	NA	NA	NA	86.8	0	([10])	27.4	(s)	([11])	NA	NA	NA	27.4	NA	114.2
1956	NA	NA	NA	NA	NA	91.2	0	([10])	28.5	(s)	([11])	NA	NA	NA	28.5	NA	119.7
1957	NA	NA	NA	NA	NA	100.3	0.1	([10])	30.7	0.1	([11])	NA	NA	NA	30.8	NA	131.1
1958	NA	NA	NA	NA	NA	110.7	0.1	([10])	32.5	0.1	([11])	NA	NA	NA	32.6	NA	143.3
1959	NA	NA	NA	NA	NA	121.0	0.1	([10])	34.8	0.1	([11])	NA	NA	NA	34.9	NA	155.9
1960	NA	NA	NA	NA	NA	130.8	0.4	([10])	35.8	0.1	([11])	(s)	NA	NA	35.9	NA	167.1
1961	NA	NA	NA	NA	NA	137.8	0.4	([10])	40.7	0.1	([11])	(s)	NA	NA	40.8	NA	179.0
1962	NA	NA	NA	NA	NA	147.3	0.7	([10])	44.0	0.1	([11])	(s)	NA	NA	44.1	NA	192.1
1963	NA	NA	NA	NA	NA	161.8	0.8	([10])	47.0	0.1	([11])	(s)	NA	NA	47.1	NA	209.7
1964	NA	NA	NA	NA	NA	173.4	0.8	([10])	49.4	0.1	([11])	(s)	NA	NA	49.5	NA	223.7
1965	NA	NA	NA	NA	NA	182.9	0.8	([10])	51.0	0.1	([11])	(s)	NA	NA	51.1	NA	234.8
1966	NA	NA	NA	NA	NA	194.5	1.7	([10])	51.2	0.1	([11])	(s)	NA	NA	51.3	NA	247.5
1967	NA	NA	NA	NA	NA	208.9	2.7	([10])	55.0	0.1	([11])	0.1	NA	NA	55.1	NA	266.7
1968	NA	NA	NA	NA	NA	223.2	2.7	([10])	57.9	0.1	([11])	0.1	NA	NA	58.0	NA	284.0
1969	NA	NA	NA	NA	NA	243.6	4.4	([10])	61.6	0.1	([11])	0.1	NA	NA	61.7	NA	309.8
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]	296.5	47.9	43.2	R106.2	0.4	494.2	98.2	18.1	73.6	0.9	1.5	2.6	0.2	1.5	80.3	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	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	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	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	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	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	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	305.8	34.5	67.6	141.8	0.1	549.7	97.9	19.5	78.2	1.5	2.8	2.8	0.4	2.4	88.1	(s)	755.2
2001	R305.2	R38.1	R93.5	R148.3	0.1	R585.1	R98.2	R19.1	R78.4	1.5	R3.0	R2.2	0.4	R3.6	R89.1	(s)	R791.4
2002P	304.8	38.5	134.3	156.4	0.1	634.1	98.6	19.1	78.8	1.5	3.0	2.2	0.4	3.7	89.6	(s)	841.3

[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, including a small amount of supplemental gaseous fuels.
[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.

P=Preliminary. NA=Not available. (s)=Less than 0.05 million kilowatts.

Notes: • Data are for 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. • For plants that use multiple sources of energy, capacity is assigned to the predominant energy source. • Data are at end of year. • Totals may not equal sum of components due to independent rounding.

Web Page and Sources: See end of section.

Table 8.7c Electric Net Summer Capacity at Combined-Heat-and-Power Plants by Sector, 1989-2002

(Million Kilowatts)

Year	Fossil Fuels						Renewable Energy				Other	Total
	Coal [1]	Petroleum [2]	Natural Gas [3]	Dual Fired [4]	Other Gases [5]	Total	Conventional Hydroelectric Power [6]	Wood [7]	Waste [8]	Total	Other [9]	Total
						Electric Power Sector [10]						
1989	1.5	0.1	[R]2.8	[R]3.3	0	7.7	0	0.2	0.2	0.4	0	8.1
1990	2.4	0.1	3.9	4.4	0	10.7	0	0.2	0.2	0.5	0	11.2
1991	2.9	0.3	4.5	4.8	0	12.5	0	0.2	0.2	0.5	0	12.9
1992	3.5	0.3	4.3	6.6	(s)	14.7	0	0.2	0.2	0.5	0	15.2
1993	3.8	0.3	6.3	6.4	0	16.8	0	0.2	0.2	0.5	0	17.3
1994	4.5	0.3	9.6	6.8	0	21.0	0	0.3	0.2	0.5	0	21.5
1995	4.8	0.3	10.0	7.0	0	22.1	0	0.4	0.2	0.6	0	22.7
1996	5.0	0.3	11.5	7.2	0	24.0	0	0.3	0.3	0.6	0	24.6
1997	4.9	0.3	11.6	7.6	(s)	24.4	0	0.3	0.4	0.7	0	25.1
1998	5.0	0.4	14.1	6.0	0	25.5	0	0.4	0.4	0.7	0	26.2
1999	5.2	0.2	11.8	8.4	0	25.7	0	0.4	0.4	0.7	0	26.5
2000	5.2	0.4	15.1	6.1	0.3	27.1	0	0.2	0.5	0.7	0	27.9
2001	[R]4.6	[R]0.4	[R]17.5	[R]3.7	0.3	[R]26.5	(s)	[R]0.1	[R]0.4	[11,R]0.8	(s)	[11,R]27.4
2002[P]	4.6	0.4	20.9	3.7	0.3	29.9	(s)	0.1	0.4	[11]0.8	(s)	[11]30.7
						Commercial Sector [12]						
1989	0.3	0.1	0.1	0.6	0	1.0	(s)	(s)	0.2	0.2	0	1.2
1990	0.3	0.2	0.2	0.6	0	1.2	(s)	(s)	0.2	0.2	0	1.4
1991	0.2	0.1	0.2	0.6	0	1.1	(s)	(s)	0.2	0.3	0	1.3
1992	0.2	0.1	0.3	0.6	0	1.2	(s)	(s)	0.2	0.3	0	1.5
1993	0.3	0.1	0.3	0.6	0	1.3	(s)	(s)	0.3	0.3	0	1.6
1994	0.3	0.2	0.3	0.9	0	1.7	(s)	(s)	0.3	0.3	0	2.1
1995	0.3	0.2	0.3	1.0	0	1.8	(s)	(s)	0.3	0.3	0	2.1
1996	0.3	0.2	0.4	0.9	0	1.8	(s)	(s)	0.4	0.5	0	2.3
1997	0.3	0.2	0.4	0.9	0	1.9	(s)	(s)	0.4	0.5	0	2.3
1998	0.3	0.2	0.6	0.7	0	1.8	(s)	(s)	0.5	0.5	0	2.3
1999	0.3	0.3	0.5	0.8	0	1.8	(s)	(s)	0.5	0.5	0	2.3
2000	0.3	0.3	0.6	0.6	0	1.8	(s)	(s)	0.4	0.4	0	2.2
2001	0.3	[R]0.3	[R]1.4	0.6	0	[R]2.5	(s)	(s)	[R]0.3	0.4	0	[13,R]2.9
2002[P]	0.3	0.3	1.7	0.6	0	2.9	(s)	(s)	0.3	0.4	0	[13]3.3
						Industrial Sector [14]						
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	[R]4.2	[R]1.0	[R]13.3	[R]0.9	[R]1.3	[R]20.7	[R]1.0	[R]4.2	[R]0.1	[R]5.4	[R]0.4	26.6
2002[P]	4.1	1.0	14.2	0.9	1.4	21.6	1.0	4.2	0.1	5.4	0.4	27.4

[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, including a small amount of supplemental gaseous fuels.
[4] Petroleum and natural gas.
[5] Blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels.
[6] Includes combined-heat-and-power (CHP) plants that use multiple sources of energy including hydropower.
[7] Wood, black liquor, and other wood waste.
[8] Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.
[9] Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.
[10] 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 on Table 8.7b.
[11] Includes a small amount of wind and geothermal, which are not separately displayed.
[12] Commercial combined-heat-and-power (CHP) and a small number of commercial electricity-only plants. See Note 1 at end of section.
[13] Includes a small amount of hydroelectric pumped storage, which is not separately displayed.
[14] Industrial combined-heat-and-power (CHP) and a small number of industrial electricity-only plants. See Note 1 at end of section.

R=Revised. P=Preliminary. (s)=Less than 0.05 million kilowatts.

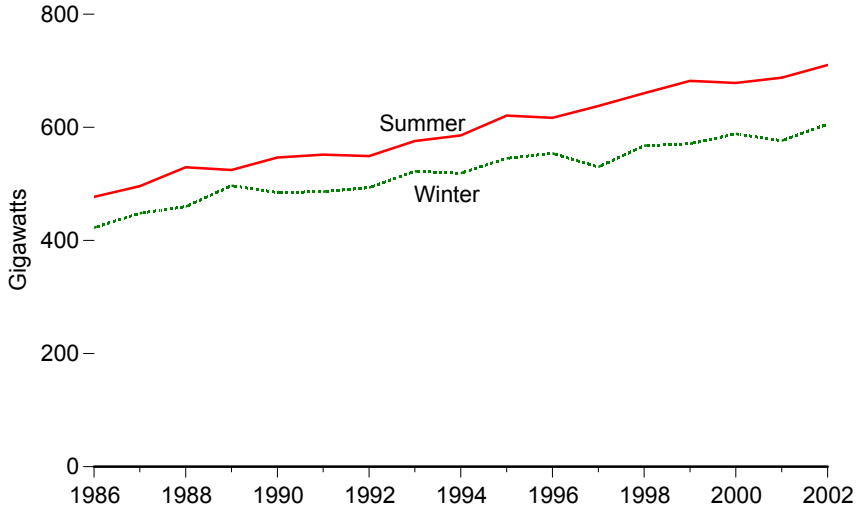
Notes: • For plants that use multiple sources of energy, capacity is assigned to the predominant energy source. • Data are at end of year. • Totals may not equal sum of components due to independent rounding.

Web Page: http://www.eia.doe.gov/fuelelectric.html.

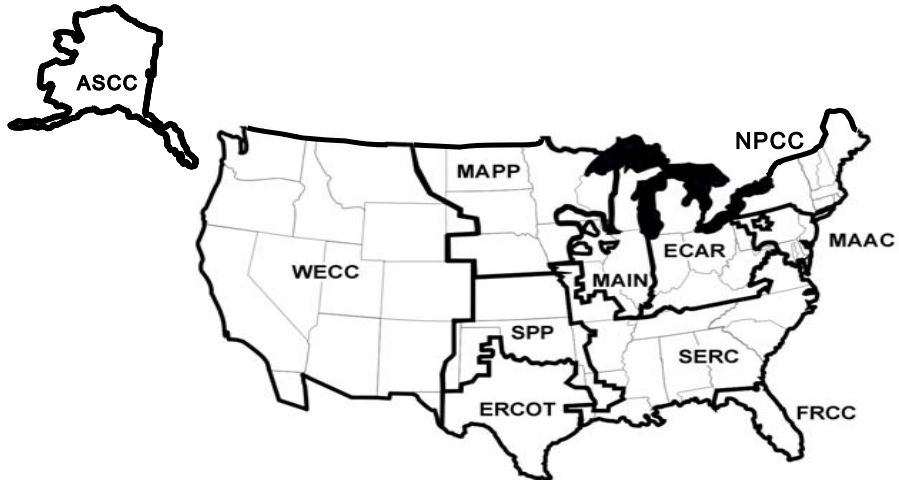
Sources: See end of section.

Figure 8.8 Electric Noncoincident Peak Load and Capacity Margin

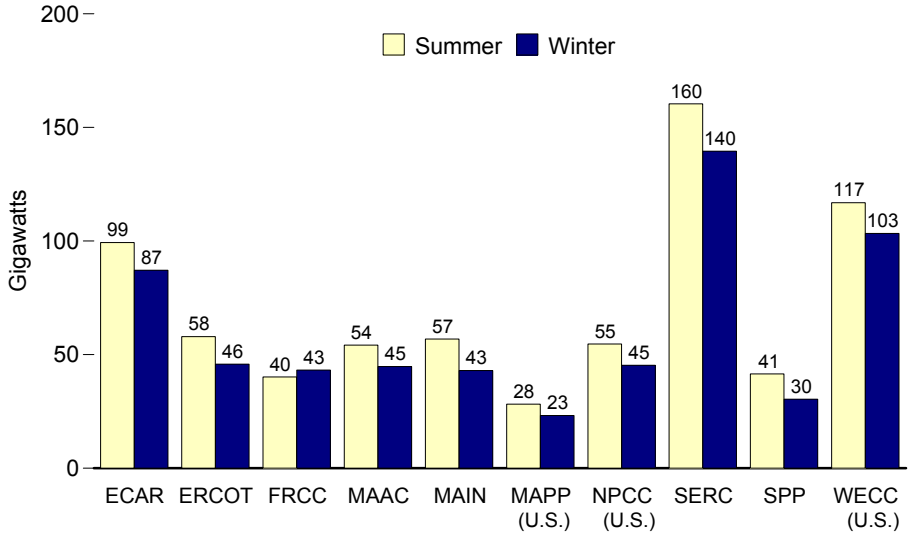
U.S. Peak Load, 1986-2002



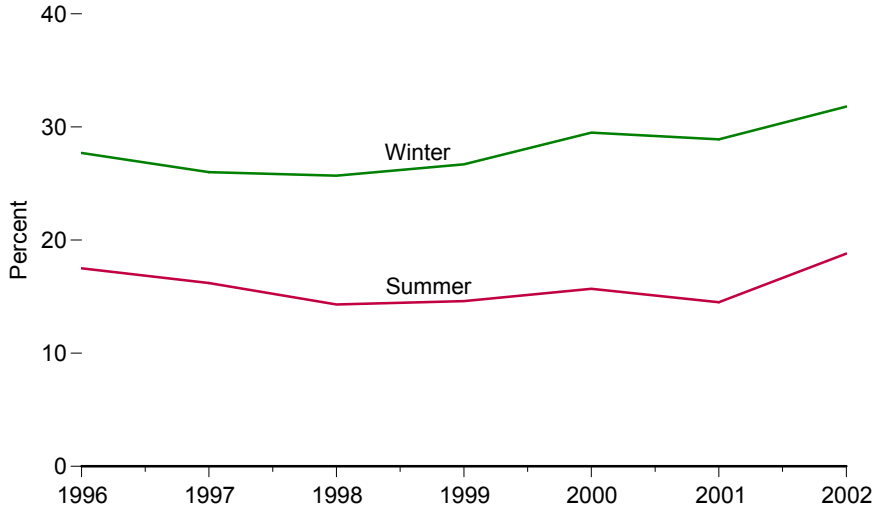
North American Electric Reliability Council Map for the United States



By NERC Region, 2002



Capacity Margin, 1996-2002



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 8.8.

Table 8.8 Electric Noncoincident Peak Load and Capacity Margin, 1986-2002

(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	[R]24,336	45,031	[R]117,729	49,439	90,657	[R]524,110	[R]456	([5])	[R]524,566	NA
1990	79,258	42,737	—	42,613	40,740	24,994	44,116	[R]121,943	52,541	97,389	[R]546,331	463	([5])	[R]546,794	[R]21.6
1991	[R]81,224	41,870	—	45,937	41,598	25,498	46,594	[R]124,716	51,885	92,096	[R]551,418	471	([5])	[R]551,889	[R]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	[R]20.5
1993	[R]80,930	44,255	—	46,494	41,956	24,396	46,706	[R]135,704	57,106	97,809	[R]575,356	511	([5])	[R]575,867	[R]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	[R]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	[R]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	[R]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	[R]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	[R]149,685	38,609	113,629	[R]682,122	([5])	([5])	[R]682,122	[R]14.6
2000	[R]92,033	[R]57,606	[R]37,194	[R]49,477	[R]52,552	[R]28,605	[R]50,057	[R]156,088	[R]40,199	[R]114,602	[R]678,413	([5])	([5])	[R]678,413	[R]15.7
2001	[R]100,235	[R]55,201	[R]39,062	[R]54,015	[R]56,344	[R]28,321	[R]55,949	[R]149,293	[R]40,273	[R]109,119	[R]687,812	([5])	([5])	[R]687,812	[R]14.5
2002[F]	99,346	57,898	40,145	54,188	56,888	28,191	54,675	160,384	41,483	116,852	710,050	([5])	([5])	710,050	18.8
	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	[R]21,360	42,588	121,995	42,268	84,768	[R]496,378	626	([5])	[R]497,004	NA
1990	67,097	35,815	—	36,551	32,461	21,113	40,545	[R]117,448	38,949	94,252	[R]484,231	613	([5])	[R]484,844	NA
1991	71,181	35,448	—	37,983	33,420	21,432	[R]41,866	119,575	38,759	86,097	[R]485,761	622	([5])	[R]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	[R]44,624	94,890	[R]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	[R]27.7
1997	[R]75,670	37,966	33,076	37,217	34,973	25,390	41,338	122,649	27,437	94,158	[R]529,874	([5])	([5])	529,874	[R]26.0
1998	84,401	41,876	39,975	36,532	37,410	26,080	[R]44,199	127,416	27,847	101,822	[R]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	[R]26.7
2000	[R]84,546	[R]44,641	[R]38,606	[R]43,256	[R]41,943	[R]24,536	[R]43,852	[R]139,146	[R]30,576	[R]97,324	[R]588,426	([5])	([5])	[R]588,426	[R]29.5
2001	[R]85,485	[R]44,015	[R]40,922	[R]39,458	[R]40,529	[R]21,815	[R]42,670	[R]135,182	[R]29,614	[R]96,622	[R]576,312	([5])	([5])	[R]576,312	[R]28.9
2002[F]	87,133	45,818	43,199	44,747	43,028	23,234	45,308	139,527	30,382	103,314	605,690	([5])	([5])	605,690	31.8

[1] See Glossary for information on the North American Electric Reliablility Council (NERC) Regions. Data include the U.S. portion of NERC only. See Figure 8.8 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.

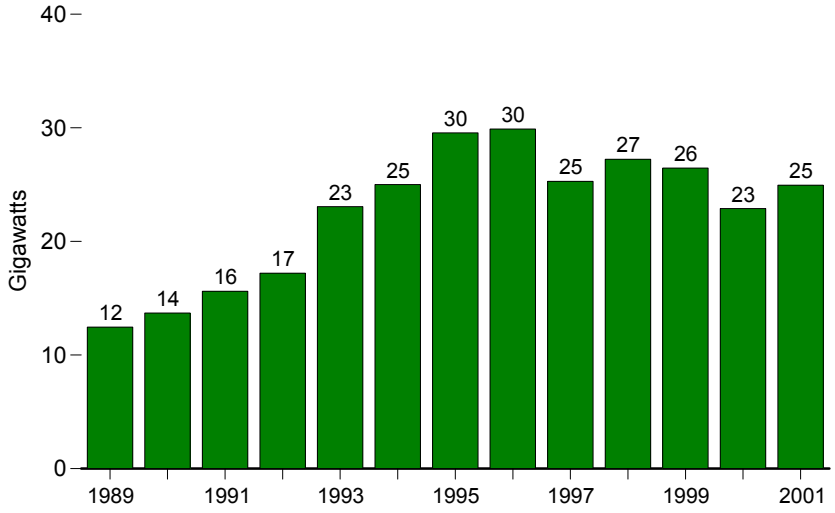
Note: Noncoincident peak load is the sum of two or more peak loads on individual systems that do not occur at the same time interval.

Web Page: http://www.eia.doe.gov/fuelelectric.html.

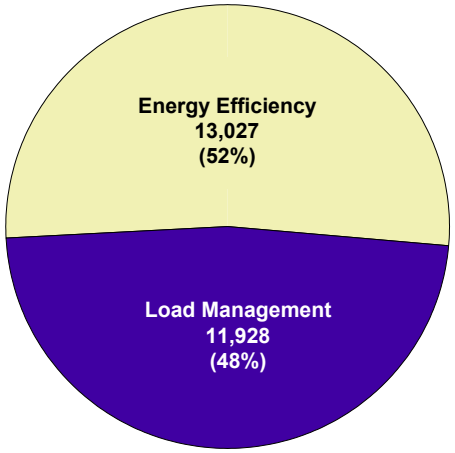
Sources: Energy Information Administration (EIA), *Electric Power Annual 2001* (March 2003), Tables 3.1-3.4; and EIA, Form EIA-411, "Coordinated Bulk Power Supply Program Report" and predecessor forms.

Figure 8.9 Electricity Utility Demand-Side Management Programs

Actual Peakload Reductions Total, 1989-2001

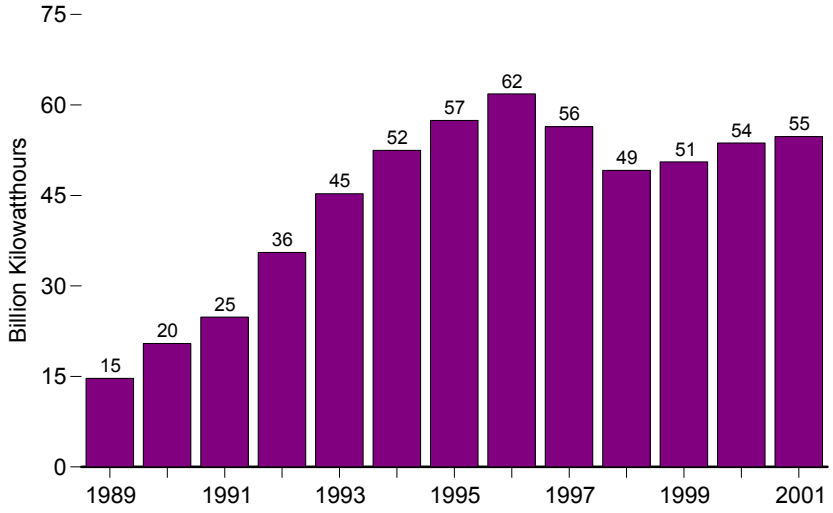


Actual Peakload Reductions, 2001

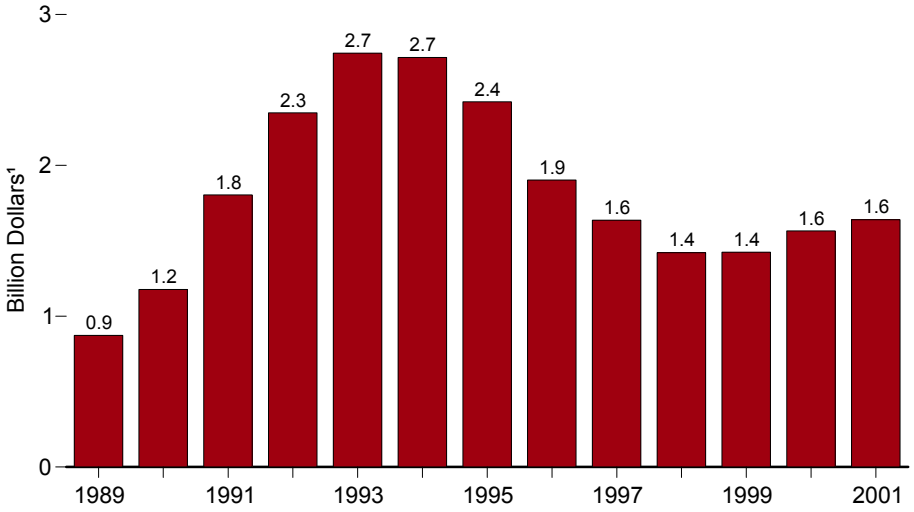


Total: 24,955 Megawatts

Energy Savings, 1989-2001



Costs, 1989-2001



[1] Nominal dollars.

Source: Table 8.9.

Table 8.9 Electric Utility Demand-Side Management Programs, 1989-2001

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	R7,890	R9,314	17,204	35,563	2,348,094
1993	R10,368	R12,701	23,069	45,294	2,743,533
1994	R11,662	R13,340	25,001	52,483	2,715,657
1995	R13,212	R16,347	29,561	57,421	2,421,261
1996	R14,243	R15,650	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	1,639,424

[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 demand-side management (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 demand-side management (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: http://www.eia.doe.gov/fuelelectric.html.

Sources: • 1989—Energy Information Administration (EIA), Form EIA-861, "Annual Electric Utility Report." • 1990 forward—EIA, *Electric Power Annual 2001* (March 2003), Tables 9.1, 9.6, and 9.7.

Electricity

Note 1. Classification of Power Plants Into Energy-Use SectorsThe 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 2. Prior to 1985, electric utility statistics included data reported by institutions (such as universities) and military facilities that generated electricity primarily for their own use. Beginning in 1985, electric utility statistics exclude data for these facilities.

Table 8.1 Sources: Net Generation: Tables 8.2b and 8.2c. **Imports** and **Exports:** • 1949-September 1977—unpublished Federal Power Commission 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, data for total sales (firm and interruptible; which exclude non-revenue, inadvertent, and service) from Canada to the United States, and data for total purchases (which exclude non-revenue, inadvertent, and service) by Canada from the United States; and DOE, Fossil Energy, Office of Fuels Programs, Form FE-781R, "Annual Report of International Electrical Export/Import Data." • **Losses and Unaccounted for:** Calculated as the sum of total net generation and imports minus total end use and exports. **End Use:** Table 8.5.

Table 8.2b 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—EIA, Form EIA-860, "Annual Electric Generator Report" and Form EIA-906, "Power Plant Report" • 2002—EIA, Form EIA-906, "Power Plant Report."

Table 8.3c 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 2 above. • Totals may not equal sum of components due to independent rounding.

Table 8.3c Web Page: http://www.eia.doe.gov/fuelelectric.html.

Table 8.3c Sources: Tables 8.3d and 8.3e.

Table 8.3d Notes: • Data are for 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 • 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 CHP plants.• See Note 2 above. • Totals may not equal sum of components due to independent rounding.

Table 8.3d Web Page: Http://www.eia.doe.gov/fuelelectric.html

Table 8.3d 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—EIA, Form EIA-860, "Annual Electric Generator Report" and Form EIA-906 "Power Plant Report" • 2002—EIA, Form EIA-906, "Power Plant Report."

Table 8.3e Notes: • Estimates are for fuels consumed to produce electricity; they

exclude fuels consumed to produce useful thermal output. • Totals may not equal sum of components due to independent rounding.

Table 8.3e Web Page: Http://www.eia.doe.gov/fuelelectric.html

Table 8.3e 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—EIA, Form EIA-860, "Annual Electric Generator Report" and Form EIA-906, "Power Plant Report." • 2002—EIA, Form EIA-906, "Power Plant Report."

Table 8.3f 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—EIA, Form EIA-860, "Annual Electric Generator Report" and Form EIA-906, "Power Plant Report." • 2002—EIA, Form EIA-906, "Power Plant Report."

Table 8.4 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—EIA, Form EIA-860, "Annual Electric Generator Report" and Form EIA-906, "Power Plant Report" • 2002—EIA, Form EIA-906, "Power Plant Report."

Table 8.7a Web Page: http://www.eia.doe.gov/fuelelectric.html.

Table 8.7a Sources: See sources for Tables 8.7b and 8.7c.

Table 8.7b Web Page: http://www.eia.doe.gov/fuelelectric.html.

Table 8.7b 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, 2002—EIA, Form EIA-860, "Annual Electric Generator Report."

Table 8.7c 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, 2002—EIA, Form EIA-860, "Annual Electric Generator Report."

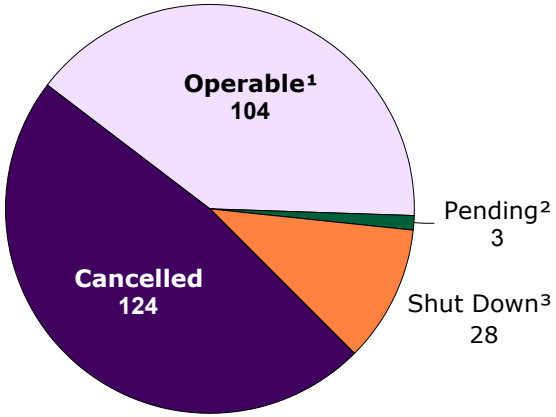
9

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.

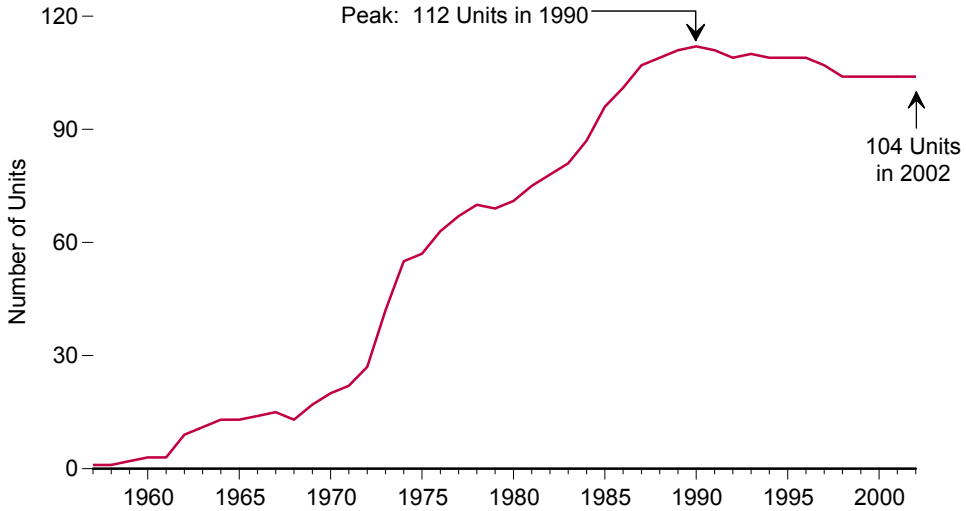
Figure 9.1 Nuclear Generating Units

Status of All Ordered Units, 1953-2002

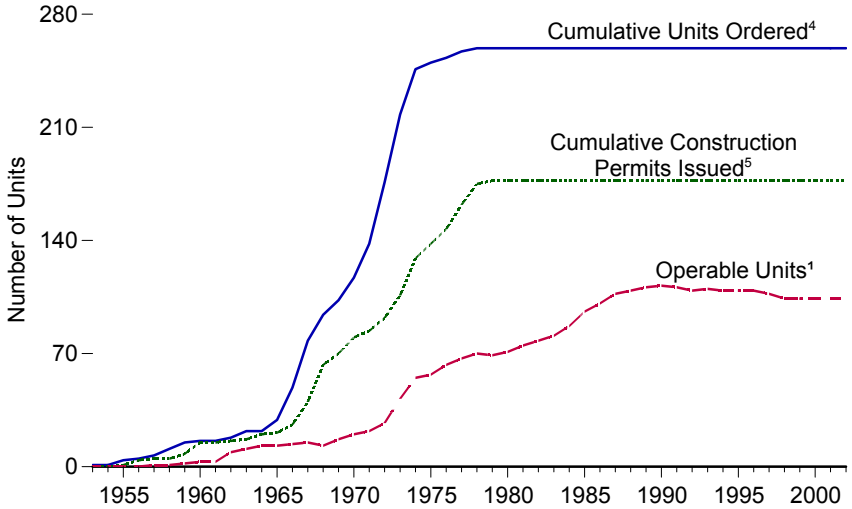


Total Units Ordered: 259

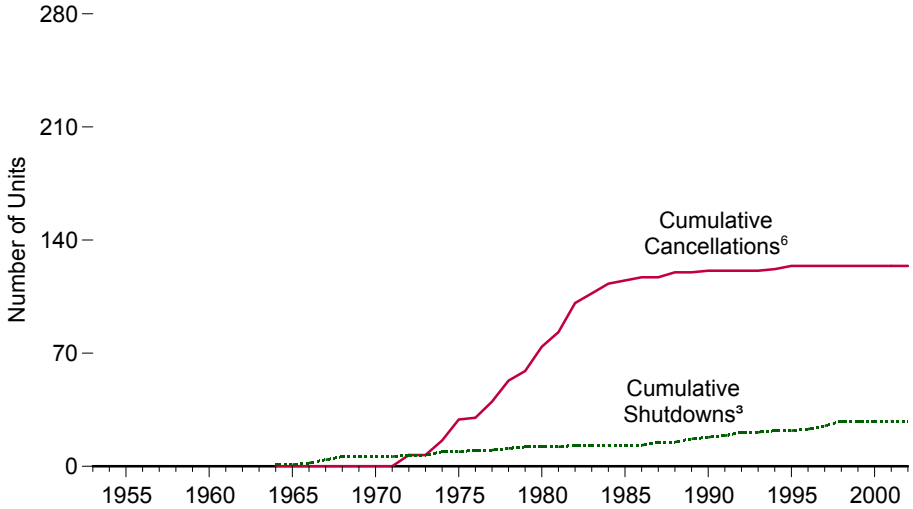
Operable Units,¹ 1957-2002



Orders, Permits, and Operable Units, 1953-2002



Cancellations and Shutdowns, 1953-2002



[1] Issuance by a regulatory authority of full-power operating license, or equivalent permission to operate.
[2] Ordered but not completed or cancelled.
[3] Ceased operation permanently.
[4] Placement of an order by a utility for a nuclear steam supply system.
[5] Issuance by a regulatory authority of a permit, or equivalent permission, to begin construction.
[6] Cancellation of ordered units.
Note: Data are at end of year.
Source: Table 9.1.

Table 9.1 Nuclear Generating Units, 1953-2002

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	0	0	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
Total	259	124	177	132	132	28	—

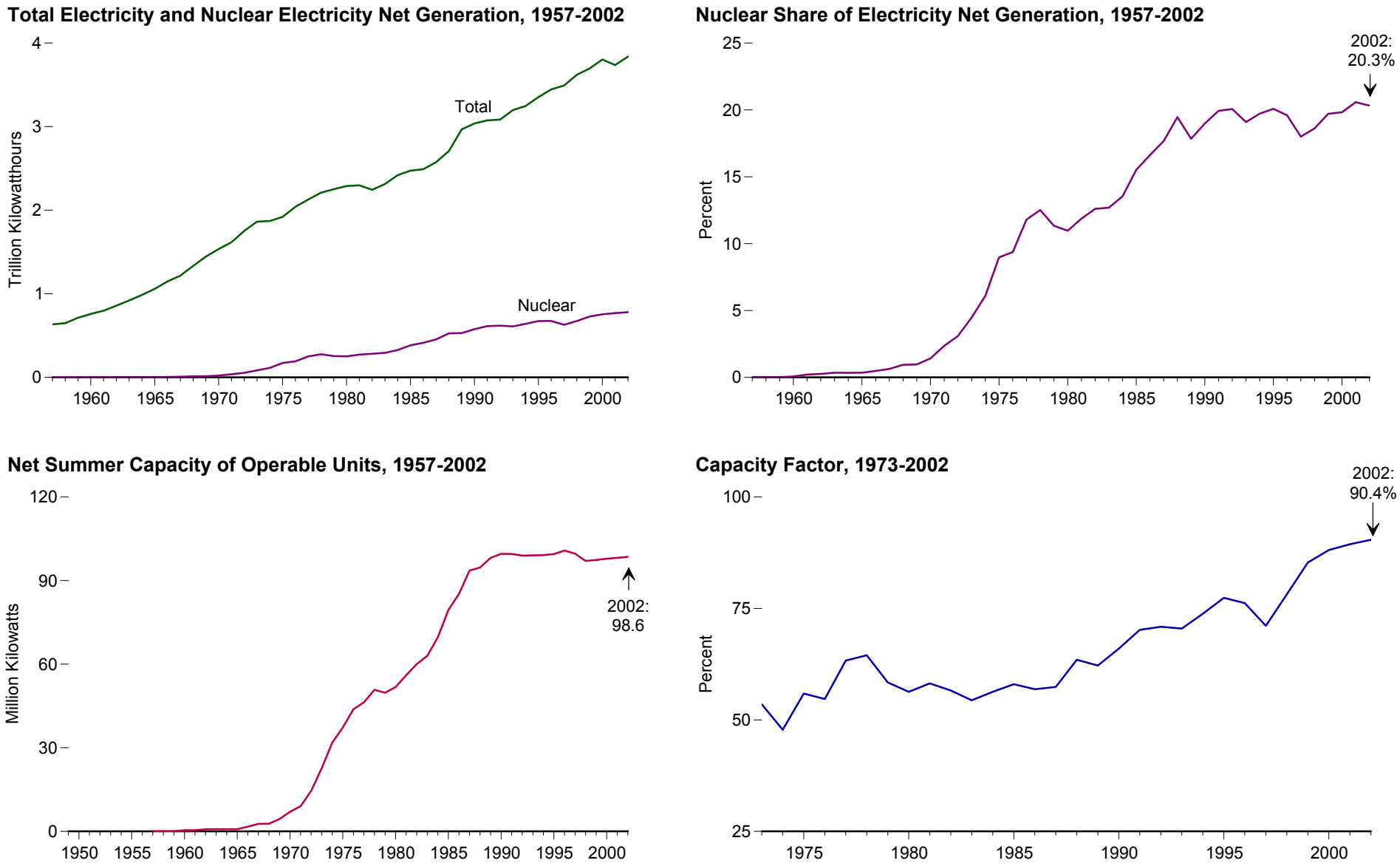
[1] Placement of an order by a utility or government agency for a nuclear steam supply system.
[2] Cancellation by utilities of ordered units. Does not include three units (Bellefonte 1 and 2 and Watts Bar 2) where construction has been stopped indefinitely.
[3] Issuance by regulatory authority of a 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. See note at end of section.
[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—see note at end of section. 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—see note at end of section.

— = Not applicable.

Web Page: 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. For a list of currently operable units, see http://eia.doe.gov/cneaf/nuclear/page/nuc_reactors/operational.xls. **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;* Nuclear Regulatory Commission, *Information Digest* (1997 and 1998) and "Plant Status Report"; and various utility, Federal, and contractor officials. • 1998 forward—http://www.nrc.gov/reactors.html.

Figure 9.2 Nuclear Power Plant Operations



Sources: Tables 8.1 and 9.2.

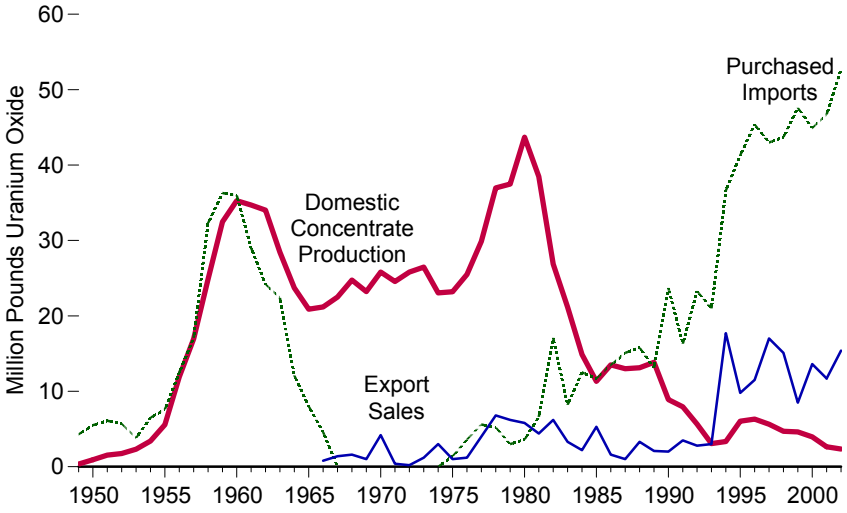
Table 9.2 Nuclear Power Plant Operations, 1957-2002

Year	Nuclear Electricity Net Generation	Nuclear Share of Electricity Net Generation	Net Summer Capacity of Operable Units [1]	Capacity Factor
	Billion Kilowatthours	Percent	Million Kilowatts	Percent
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	R17.8	98.2	62.2
1990	576.9	R19.0	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	R20.6	R98.2	89.4
2002P	780.1	20.3	98.6	90.4

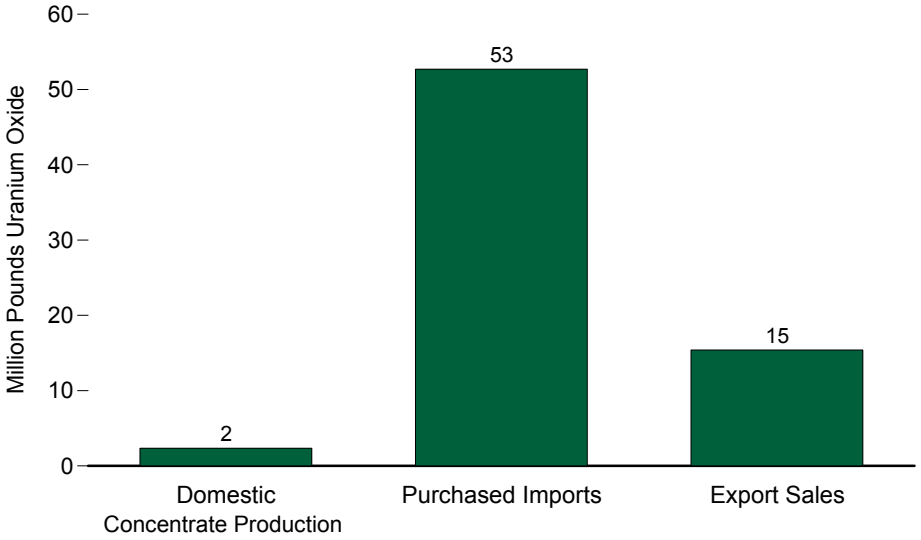
[1] At end of year.
R=Revised. P=Preliminary. NA=Not available. (s)=Less than 0.05.
Note: See note at end of section for discussion of reactor unit coverage.
Sources: **Nuclear Electricity Net Generation** and **Nuclear Share of Electricity Net Generation:** Table 8.2a. **Net Summer Capacity of Operable Units:** Table 8.7a. **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

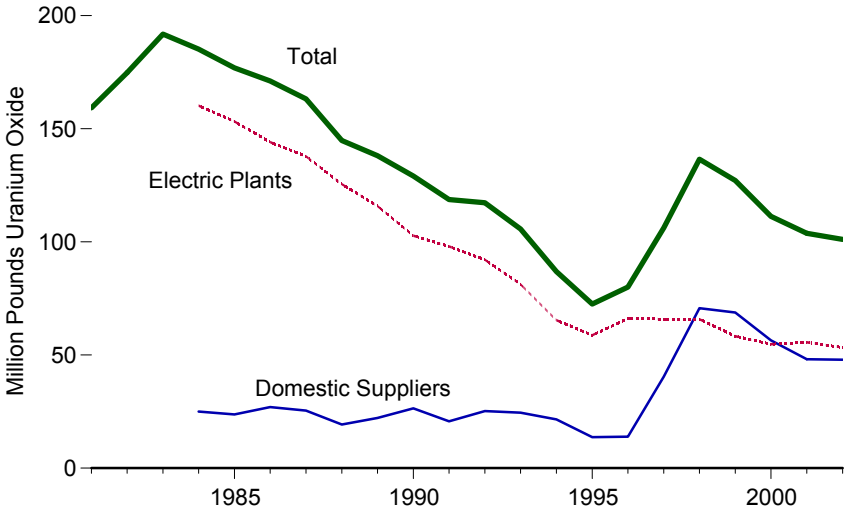
Production and Trade, 1949-2002



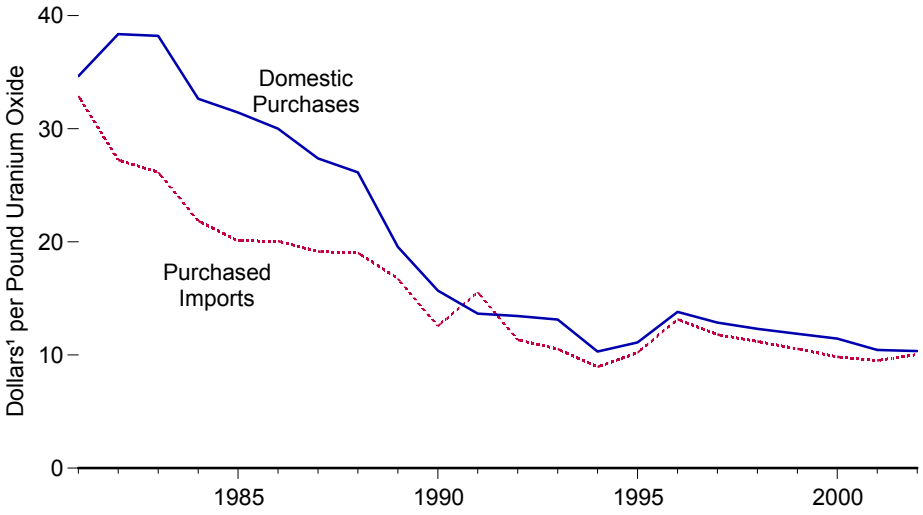
Production and Trade, 2002



Inventories, End of Year 1981-2002



Average Prices, 1981-2002



[1] Nominal dollars.
Note: Because vertical scales differ, graphs should not be compared.

Source: Table 9.3.

Table 9.3 Uranium Overview, 1949-2002

Year	Domestic Concentrate Production	Purchased Imports [1]	Export [1] Sales	Electric Plant Purchases From Domestic Suppliers	Loaded Into U.S. Nuclear Reactors [2]	Inventories			Average Price	
						Domestic Suppliers	Electric Plants	Total	Purchased Imports	Domestic Purchases
	Million Pounds U_3O_8								U.S. Dollars[3] per Pound U_3O_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
1951	1.54	6.1	0.0	NA	NA	NA	NA	NA	NA	NA
1952	1.74	5.7	0.0	NA	NA	NA	NA	NA	NA	NA
1953	2.32	3.8	0.0	NA	NA	NA	NA	NA	NA	NA
1954	3.40	6.5	0.0	NA	NA	NA	NA	NA	NA	NA
1955	5.56	7.6	0.0	NA	NA	NA	NA	NA	NA	NA
1956	11.92	12.5	0.0	NA	NA	NA	NA	NA	NA	NA
1957	16.96	17.1	0.0	NA	NA	NA	NA	NA	NA	NA
1958	24.88	32.3	0.0	NA	NA	NA	NA	NA	NA	NA
1959	32.48	36.3	0.0	NA	NA	NA	NA	NA	NA	NA
1960	35.28	36.0	0.0	NA	NA	NA	NA	NA	NA	NA
1961	34.70	29.0	0.0	NA	NA	NA	NA	NA	NA	NA
1962	34.02	24.2	0.0	NA	NA	NA	NA	NA	NA	NA
1963	28.44	22.4	0.0	NA	NA	NA	NA	NA	NA	NA
1964	23.70	12.1	0.0	NA	NA	NA	NA	NA	NA	NA
1965	20.88	8.0	0.0	NA	NA	NA	NA	NA	NA	NA
1966	21.18	4.6	0.8	NA	NA	NA	NA	NA	NA	NA
1967	22.51	0.0	1.4	NA	NA	NA	NA	NA	—	NA
1968	24.74	0.0	1.6	NA	NA	NA	NA	NA	—	NA
1969	23.22	0.0	1.0	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	R 48.1	R 55.6	R 103.8	9.51	10.45
2002	2.34	52.7	15.4	22.7	P 57.3	P 47.9	P 53.3	P 101.1	10.05	10.35

[1] Import quantities through 1970 are reported for fiscal years. Prior to 1968, the Atomic Energy Commission was the sole purchaser of all imported U_3O_8. 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.
[2] Does not include any fuel rods removed from reactors and later reloaded.
[3] Nominal dollars.

R=Revised. P=Preliminary. NA=Not available. — = Not applicable.
Web Page: 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 forward—Energy Information Administration, *Uranium Industry Annual,* annual reports.

Nuclear Energy

Note. 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.

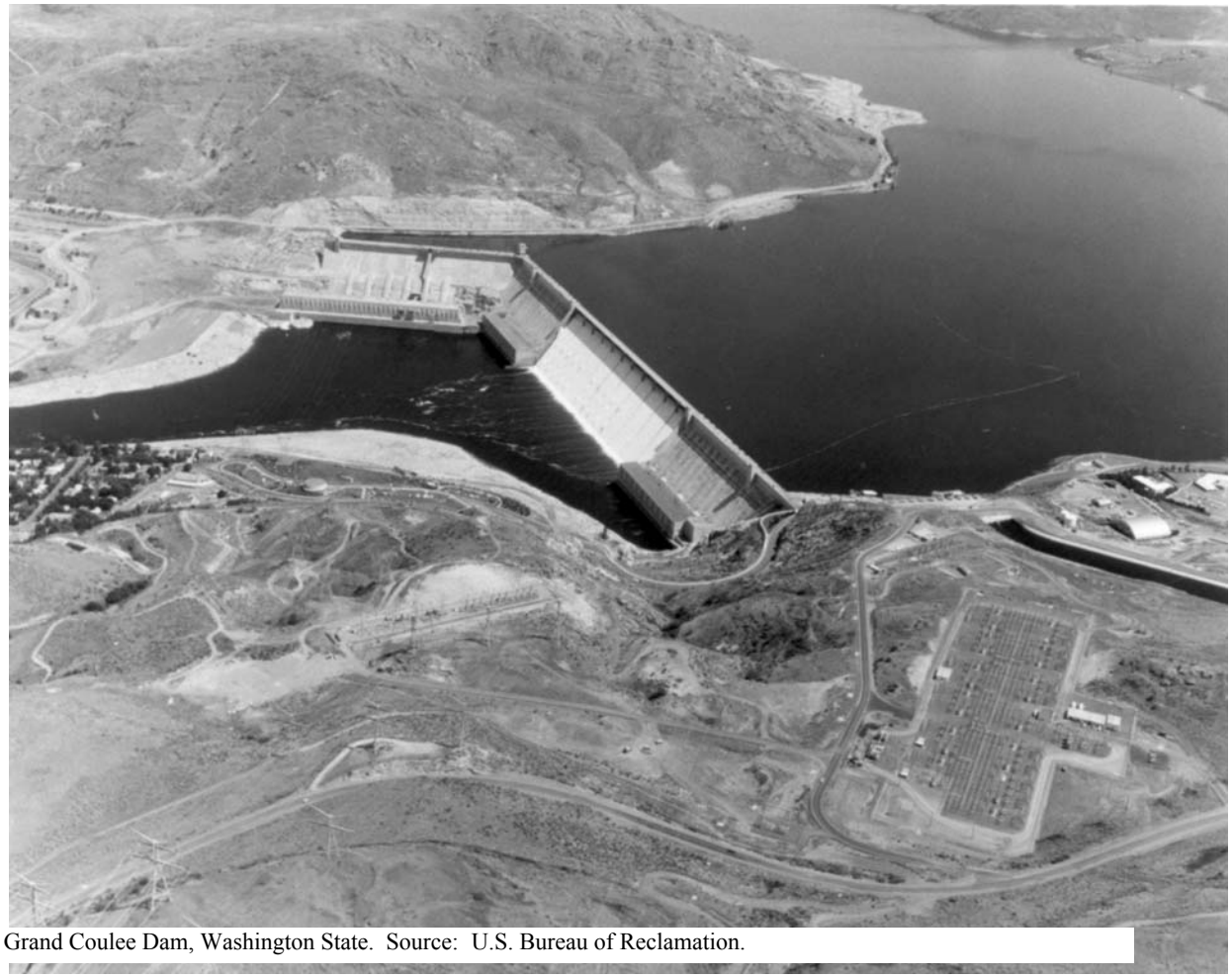
The data in Table 9.1 apply to commercial nuclear power units, which means that the units contributed power to the commercial electricity grid. A total of 259 units ever ordered was identified. Although most orders were placed by electric utilities, several units are or were ordered, owned, and operated 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 shut-downs. 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.

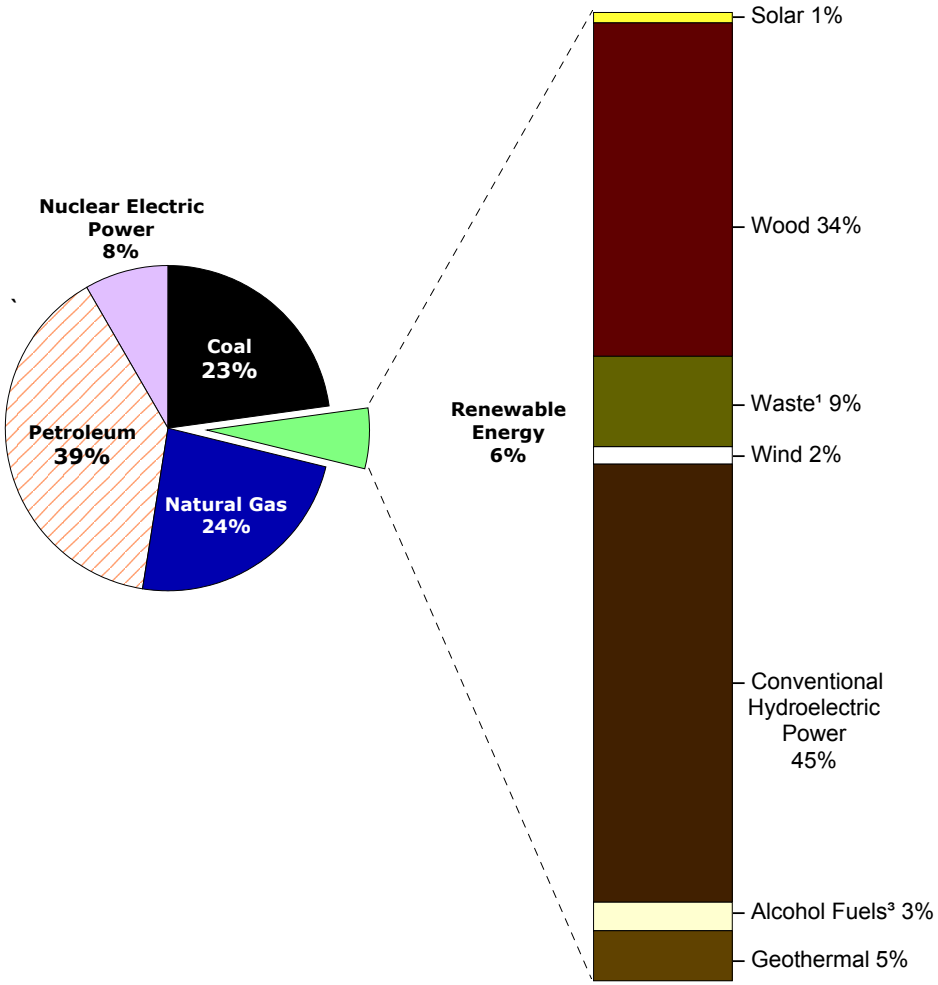
10 Renewable Energy



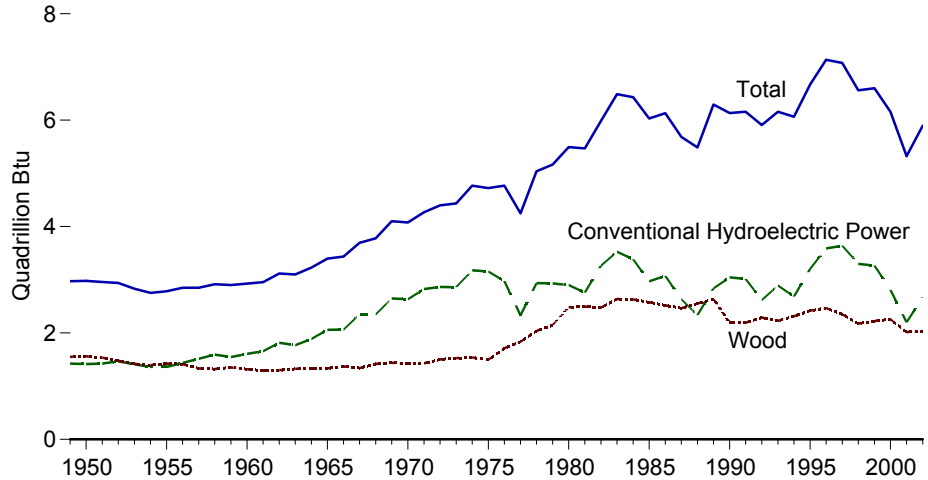
Grand Coulee Dam, Washington State. Source: U.S. Bureau of Reclamation.

Figure 10.1 Renewable Energy Consumption by Source

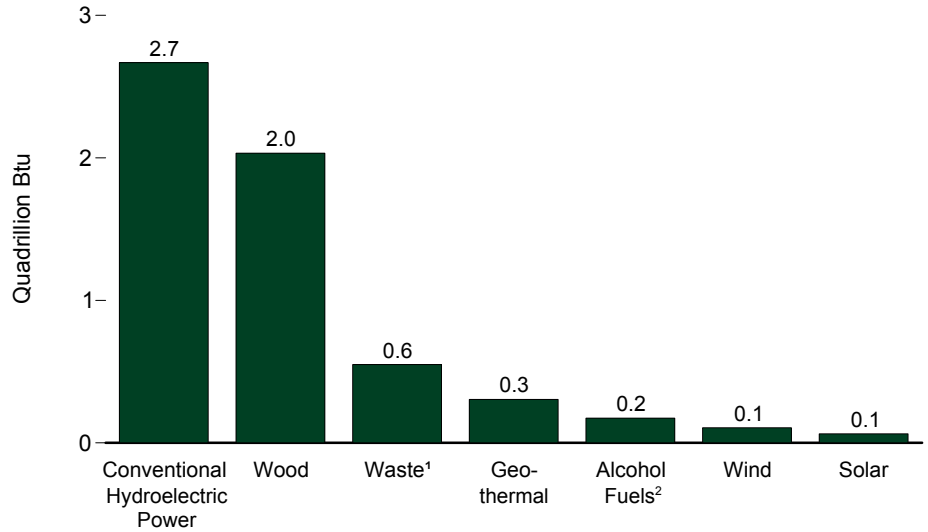
Renewable Energy as Share of Total Energy, 2002



Major Sources of Renewable Energy Consumption, 1949-2002



Renewable Energy Consumption by Source, 2002



[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.

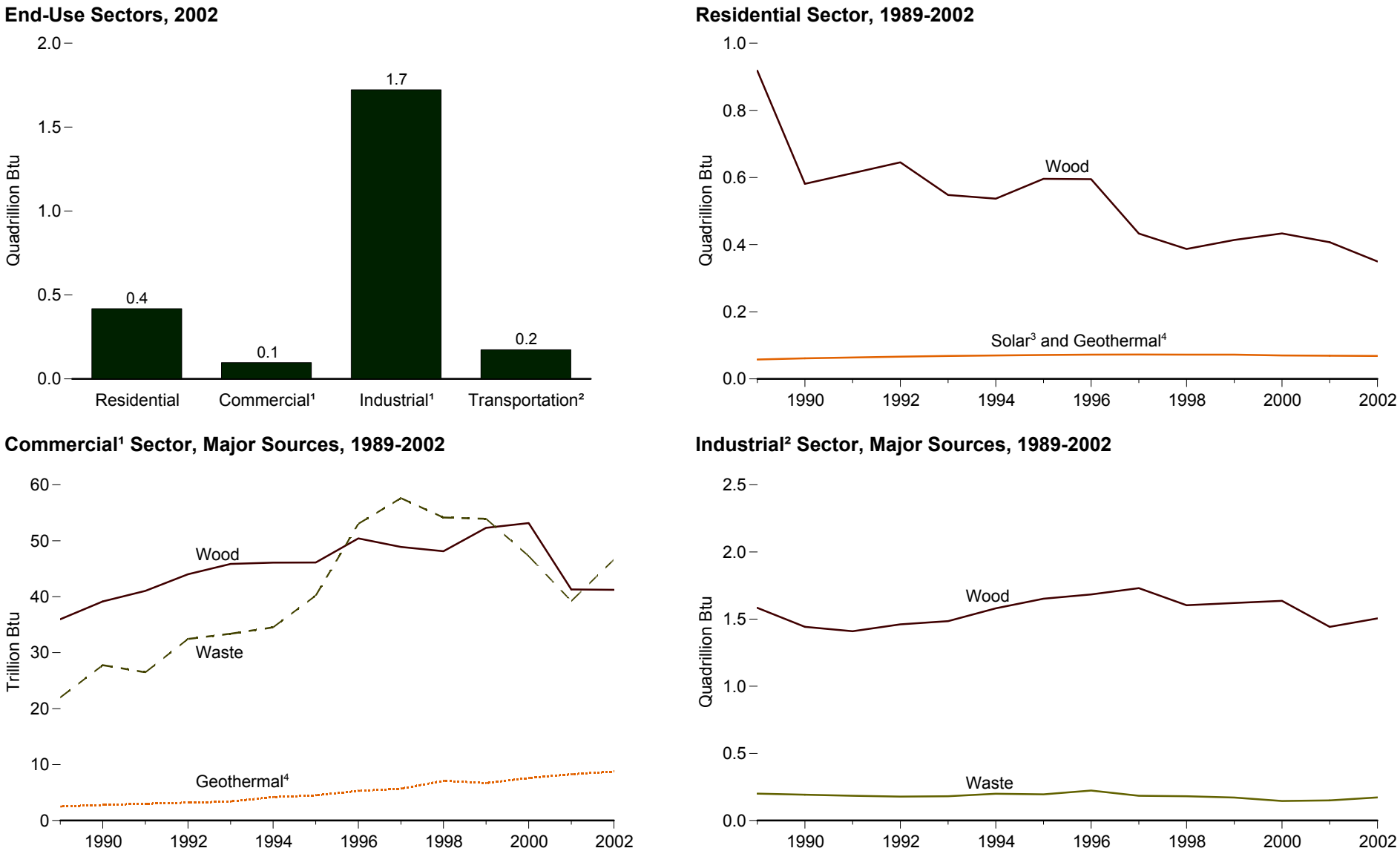
Table 10.1 Renewable Energy Consumption by Source, 1949-2002

(Trillion Btu)

Year	Conventional Hydroelectric Power [1,2]	Wood [3]	Waste [4]	Alcohol Fuels [5]	Geothermal [2,6]	Solar [7]	Wind [8]	Total [2]
1949	R1,425	1,549	NA	NA	NA	NA	NA	R2,974
1950	R1,415	1,562	NA	NA	NA	NA	NA	R2,978
1951	R1,424	1,535	NA	NA	NA	NA	NA	R2,958
1952	R1,466	1,474	NA	NA	NA	NA	NA	R2,940
1953	R1,413	1,419	NA	NA	NA	NA	NA	R2,831
1954	R1,360	1,394	NA	NA	NA	NA	NA	R2,754
1955	R1,360	1,424	NA	NA	NA	NA	NA	R2,784
1956	R1,435	1,416	NA	NA	NA	NA	NA	R2,851
1957	R1,516	1,334	NA	NA	NA	NA	NA	R2,849
1958	R1,592	1,323	NA	NA	NA	NA	NA	R2,915
1959	R1,548	1,353	NA	NA	NA	NA	NA	R2,901
1960	R1,608	1,320	NA	NA	1	NA	NA	R2,929
1961	R1,656	1,295	NA	NA	2	NA	NA	R2,953
1962	R1,816	1,300	NA	NA	2	NA	NA	R3,119
1963	R1,771	1,323	NA	NA	4	NA	NA	R3,098
1964	R1,886	1,337	NA	NA	5	NA	NA	R3,228
1965	R2,059	1,335	NA	NA	4	NA	NA	R3,398
1966	R2,062	1,369	NA	NA	4	NA	NA	R3,435
1967	R2,347	1,340	NA	NA	7	NA	NA	R3,694
1968	R2,349	1,419	NA	NA	9	NA	NA	R3,778
1969	R2,648	1,440	NA	NA	13	NA	NA	R4,102
1970	R2,634	1,429	2	NA	11	NA	NA	R4,076
1971	R2,824	1,430	2	NA	12	NA	NA	R4,268
1972	R2,864	1,501	2	NA	31	NA	NA	R4,398
1973	R2,861	1,527	2	NA	43	NA	NA	R4,433
1974	R3,177	1,538	2	NA	53	NA	NA	R4,769
1975	R3,155	1,497	2	NA	70	NA	NA	R4,723
1976	R2,976	1,711	2	NA	78	NA	NA	R4,768
1977	R2,333	1,837	2	NA	77	NA	NA	R4,249
1978	R2,937	2,036	1	NA	64	NA	NA	R5,039
1979	R2,931	2,150	2	NA	84	NA	NA	R5,166
1980	R2,900	2,483	2	NA	110	NA	NA	R5,494
1981	R2,758	2,495	88	7	123	NA	NA	R5,471
1982	R3,266	2,477	119	19	105	NA	NA	R5,985
1983	R3,527	2,639	157	35	129	NA	(s)	R6,488
1984	R3,386	2,629	208	43	165	(s)	(s)	R6,431
1985	R2,970	2,576	236	52	198	(s)	(s)	R6,033
1986	R3,071	2,518	263	60	219	(s)	(s)	R6,132
1987	R2,635	2,465	289	69	229	(s)	(s)	R5,687
1988	R2,334	2,552	315	70	217	(s)	(s)	R5,489
1989	R2,837	2,637	354	71	317	55	R22	R6,294
1990	R3,046	R2,191	408	63	R336	60	R29	R6,133
1991	R3,016	2,190	440	73	R346	63	R31	R6,158
1992	R2,617	2,290	473	83	R349	64	30	R5,907
1993	R2,892	2,228	479	97	R364	66	31	R6,157
1994	R2,683	2,315	515	109	R338	69	36	R6,065
1995	R3,205	2,420	531	117	R294	70	33	R6,669
1996	R3,590	2,467	577	84	R316	71	33	R7,137
1997	R3,640	R2,350	551	106	325	70	34	R7,075
1998	R3,297	2,175	542	117	R328	70	31	R6,561
1999	R3,268	R2,224	540	122	R331	69	46	R6,599
2000	R2,811	2,257	R511	139	317	66	57	R6,158
2001	R2,201	R2,017	R514	147	R311	R65	R68	R5,324
2002P	2,668	2,032	550	174	304	64	106	5,899

[1] Hydroelectricity generated by pumped storage is not included in renewable energy.
[2] Beginning with the *Annual Energy Review 2002,* 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). The change results in a 0.0-to-0.5 quadrillion Btu drop in total renewable energy consumption from 1949 forward. See Note 1 at end of Section 1.
[3] Wood, black liquor, and other wood waste.
[4] Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.
[5] Ethanol blended into motor gasoline.
[6] Geothermal electricity net generation, heat pump, and direct use energy.
[7] Solar thermal and photovoltaic electricity net generation, and solar thermal direct use energy.
[8] Wind electricity net generation.
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: http://www.eia.doe.gov/fuelrenewable.html.
Sources: Tables 10.2a and 10.2b.

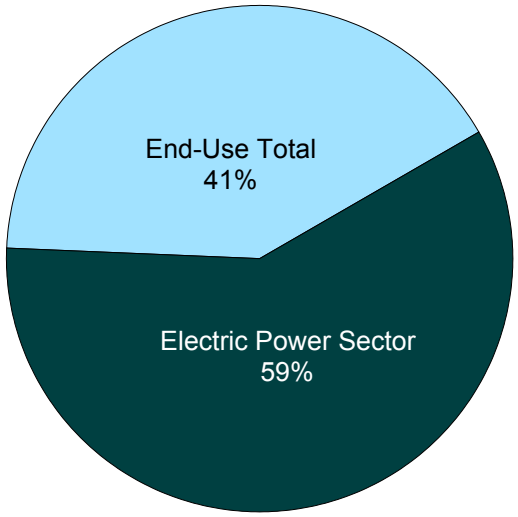
Figure 10.2a Renewable Energy Consumption: End-Use Sectors



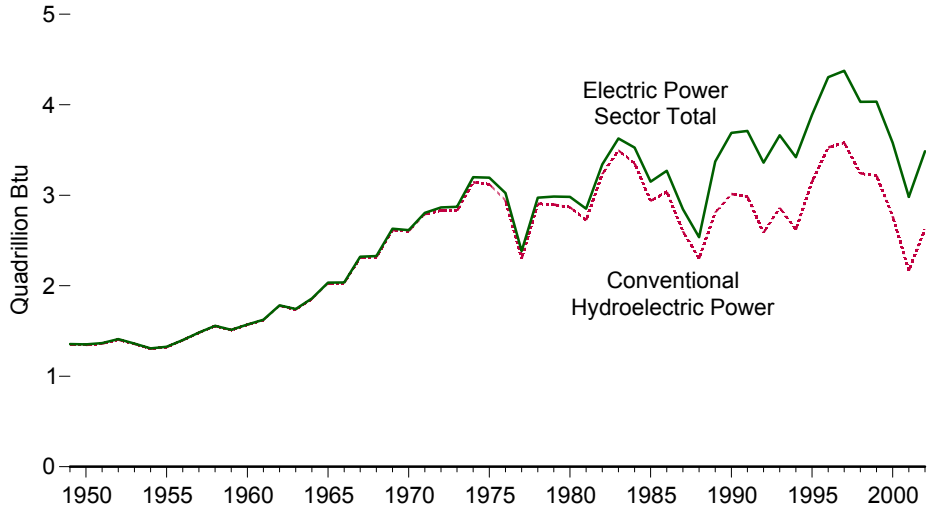
[1] Includes fuel used at combined-heat-and-power plants and a small number of electricity-only plants.
[2] Ethanol blended into motor gasoline.
[3] Solar thermal direct use energy and photovoltaic electricity generation. Includes small amounts of commercial sector use.
[4] Geothermal heat pump and direct use energy.
Note: Because vertical scales differ, graphs should not be compared.
Source: Table 10.2a.

Figure 10.2b Renewable Energy Consumption: Electric Power Sector

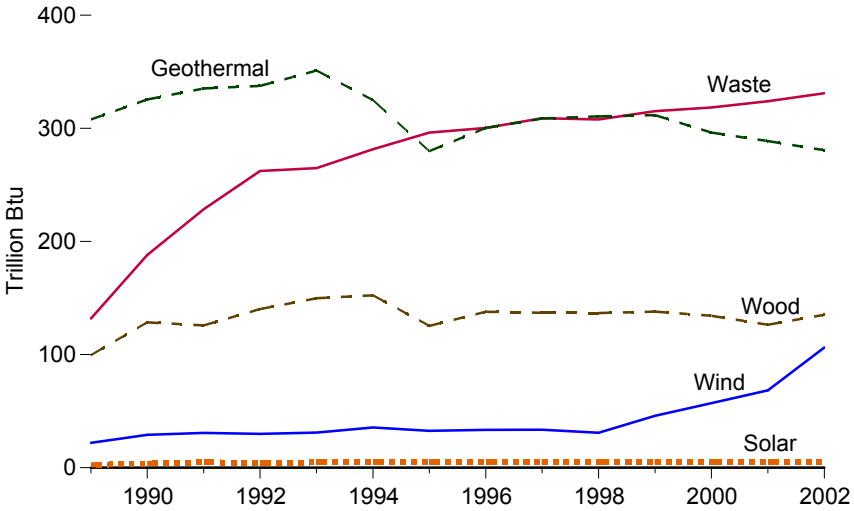
Electric Power Share of Total Renewable Energy Consumption, 2002



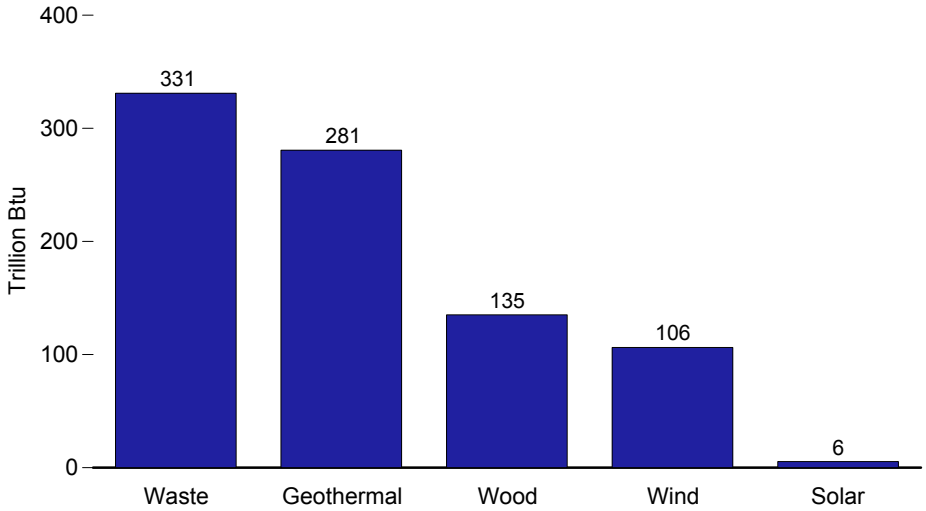
Electric Power Sector Total and Hydroelectric Power, 1949-2002



Non-Hydroelectric Power Sources, 1989-2002



Non-Hydroelectric Power Sources, 2002



Note: 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, 1949-2002

(Trillion Btu)

	Residential				Commercial [1]					Industrial [2]					Transportation	
Year	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]	End-Use Total
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
1951	958	NA	NA	958	NA	18	NA	NA	18	63	553	NA	NA	616	NA	1,592
1952	899	NA	NA	899	NA	17	NA	NA	17	62	552	NA	NA	613	NA	1,529
1953	832	NA	NA	832	NA	16	NA	NA	16	57	566	NA	NA	622	NA	1,470
1954	800	NA	NA	800	NA	15	NA	NA	15	56	576	NA	NA	632	NA	1,447
1955	775	NA	NA	775	NA	15	NA	NA	15	38	631	NA	NA	669	NA	1,459
1956	739	NA	NA	739	NA	14	NA	NA	14	37	661	NA	NA	698	NA	1,451
1957	702	NA	NA	702	NA	13	NA	NA	13	36	616	NA	NA	652	NA	1,367
1958	688	NA	NA	688	NA	13	NA	NA	13	37	620	NA	NA	657	NA	1,358
1959	647	NA	NA	647	NA	12	NA	NA	12	37	692	NA	NA	729	NA	1,388
1960	627	NA	NA	627	NA	12	NA	NA	12	39	680	NA	NA	719	NA	1,357
1961	587	NA	NA	587	NA	11	NA	NA	11	36	695	NA	NA	731	NA	1,329
1962	560	NA	NA	560	NA	11	NA	NA	11	36	728	NA	NA	764	NA	1,335
1963	537	NA	NA	537	NA	10	NA	NA	10	34	775	NA	NA	809	NA	1,356
1964	499	NA	NA	499	NA	9	NA	NA	9	34	827	NA	NA	861	NA	1,369
1965	468	NA	NA	468	NA	9	NA	NA	9	33	855	NA	NA	888	NA	1,365
1966	455	NA	NA	455	NA	9	NA	NA	9	33	902	NA	NA	935	NA	1,399
1967	434	NA	NA	434	NA	8	NA	NA	8	36	895	NA	NA	930	NA	1,373
1968	426	NA	NA	426	NA	8	NA	NA	8	35	982	NA	NA	1,017	NA	1,451
1969	415	NA	NA	415	NA	8	NA	NA	8	34	1,014	NA	NA	1,048	NA	1,471
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	R28	1,584	200	2	R1,814	71	R2,922
1990	581	6	56	642	1	39	28	3	71	R31	R1,442	R192	2	R1,667	63	R2,444
1991	613	6	58	677	1	41	26	3	72	R30	1,410	185	2	R1,626	73	R2,448
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	1,484	181	2	1,697	97	2,495
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	R1,620	171	4	R1,843	122	R2,565
2000	433	9	61	503	1	53	47	8	109	42	1,636	R145	4	R1,828	139	R2,579
2001	407	9	R60	R476	1	R41	R39	8	R89	R32	R1,443	R150	5	R1,630	147	R2,342
2002P	350	10	58	419	1	41	47	9	98	41	1,506	172	5	1,724	174	2,414

[1] Commercial sector, including commercial combined-heat-and-power (CHP) and commercial electricity-only plants. See Note 1 at end of Section 8.
[2] Industrial sector, including industrial combined-heat-and-power (CHP) and industrial electricity-only plants. See Note 1 at end of Section 8.
[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. Small amounts of commercial sector use are included in the residential sector.
[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.
Note: Totals may not equal sum of components due to independent rounding.
Web Page: http://www.eia.doe.gov/fuelrenewable.html.
Sources: See end of section.

Table 10.2b Renewable Energy Consumption: Electric Power Sector and Total, 1949-2002

(Trillion Btu)

Year	Electric Power Sector [1]							Renewable Energy Consumption Total [2]
	Conventional Hydroelectric Power [2]	Wood [3]	Waste [4]	Geothermal [2,5]	Solar [6]	Wind [7]	Total [2]	
1949	1,349	6	NA	NA	NA	NA	1,355	R2,974
1950	1,346	5	NA	NA	NA	NA	1,351	R2,978
1951	1,361	5	NA	NA	NA	NA	1,366	R2,958
1952	1,404	6	NA	NA	NA	NA	1,411	R2,940
1953	1,356	5	NA	NA	NA	NA	1,361	R2,831
1954	1,304	3	NA	NA	NA	NA	1,307	R2,754
1955	1,322	3	NA	NA	NA	NA	1,325	R2,784
1956	1,398	2	NA	NA	NA	NA	1,400	R2,851
1957	1,480	2	NA	NA	NA	NA	1,482	R2,849
1958	1,555	2	NA	NA	NA	NA	1,557	R2,915
1959	1,511	2	NA	NA	NA	NA	1,513	R2,901
1960	1,569	2	NA	1	NA	NA	1,571	R2,929
1961	1,621	1	NA	2	NA	NA	1,624	R2,953
1962	1,780	1	NA	2	NA	NA	1,784	R3,119
1963	1,737	1	NA	4	NA	NA	1,743	R3,098
1964	1,853	2	NA	5	NA	NA	1,859	R3,228
1965	2,026	3	NA	4	NA	NA	2,033	R3,398
1966	2,028	3	NA	4	NA	NA	2,036	R3,435
1967	2,311	3	NA	7	NA	NA	2,321	R3,694
1968	2,313	4	NA	9	NA	NA	2,327	R3,778
1969	2,614	3	NA	13	NA	NA	2,630	R4,102
1970	2,600	1	2	11	NA	NA	2,615	R4,076
1971	2,790	1	2	12	NA	NA	2,806	R4,268
1972	2,829	1	2	31	NA	NA	2,864	R4,398
1973	2,827	1	2	43	NA	NA	2,873	R4,433
1974	3,143	1	2	53	NA	NA	3,199	R4,769
1975	3,122	(s)	2	70	NA	NA	3,194	R4,723
1976	2,943	1	2	78	NA	NA	3,024	R4,768
1977	2,301	3	2	77	NA	NA	2,383	R4,249
1978	2,905	2	1	64	NA	NA	2,973	R5,039
1979	2,897	3	2	84	NA	NA	2,986	R5,166
1980	2,867	3	2	110	NA	NA	2,982	R5,494
1981	2,725	3	1	123	NA	NA	2,852	R5,471
1982	3,233	2	1	105	NA	NA	3,341	R5,985
1983	3,494	2	2	129	NA	(s)	3,627	R6,488
1984	3,353	5	4	165	(s)	(s)	3,527	R6,431
1985	2,937	8	7	198	(s)	(s)	3,150	R6,033
1986	3,038	5	7	219	(s)	(s)	3,270	R6,132
1987	2,602	8	7	229	(s)	(s)	2,846	R5,687
1988	2,302	10	8	217	(s)	(s)	2,536	R5,489
1989	1,R2,808	1100	1132	1,R308	13	1,R22	1,R3,372	R6,294
1990	R3,014	R129	R188	R326	4	R29	R3,689	R6,133
1991	R2,985	126	229	R335	5	R31	R3,710	R6,158
1992	2,586	140	262	338	4	30	3,360	R5,907
1993	2,861	150	265	351	5	31	3,662	R6,157
1994	2,620	152	282	325	5	36	3,420	R6,065
1995	3,149	125	296	280	5	33	3,889	R6,669
1996	3,528	138	300	300	5	33	4,305	R7,137
1997	3,581	137	309	309	5	34	4,375	R7,075
1998	3,241	137	308	311	5	31	4,032	R6,561
1999	3,218	138	315	312	5	46	4,034	R6,599
2000	2,768	134	318	296	5	57	3,579	R6,158
2001	R2,169	R126	R324	R289	R6	R68	R2,982	R5,324
2002P	2,626	135	331	281	6	106	3,485	5,899

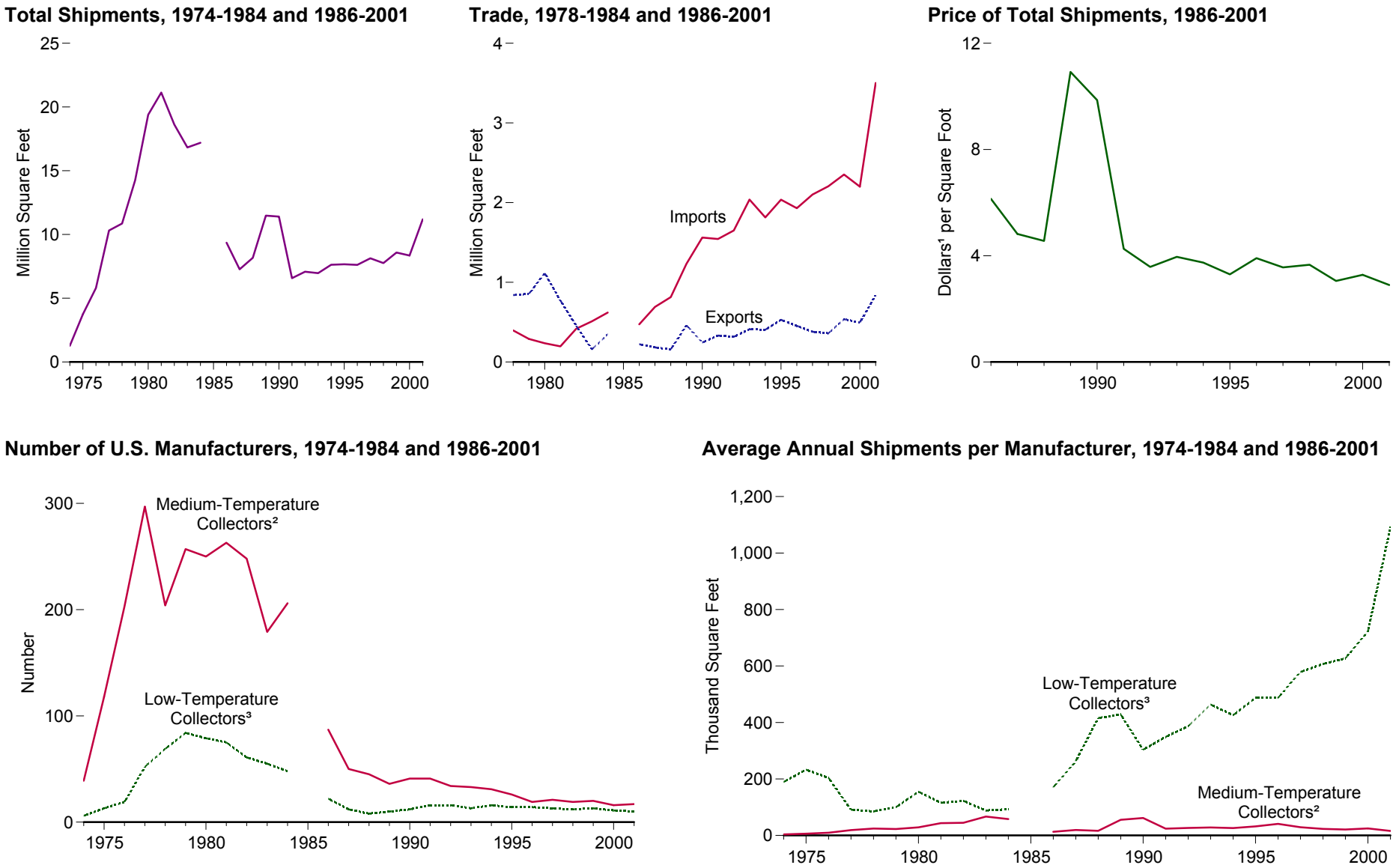
[1] Electricity-only and combined-heat-and-power (CHP) plants within the NAICS 22 category whose primary business is to sell electricity, or electricity and heat, to the public. Through 1988, data are for electric utilities only; beginning in 1989, data are for electric utilities and independent power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

[2] Beginning with the *Annual Energy Review 2002,* 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). The change results in a 0.0-to-0.5 quadrillion Btu drop in total renewable energy consumption from 1949 forward. See Note 1 at end of Section 1.

[3] Wood, black liquor, and other wood waste.
[4] Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.
[5] Geothermal electricity net generation.
[6] Solar thermal and photovoltaic electricity net generation.
[7] Wind electricity net generation.

R=Revised. P=Preliminary. NA=Not available. (s)=Less than 0.5.
Note: Totals may not equal sum of components due to independent rounding.
Web Page and Sources: See end of section.

Figure 10.3 Solar Thermal Collector Shipments by Type, Price, and Trade



[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. • Medium-temperature collectors include special collectors. • 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, 1974-2001

(Thousand Square Feet, Except as Noted)

Year	Low-Temperature Collectors [1]				Medium-Temperature Collectors [2]				High-Temperature Collectors [3]		Total Shipments [4]		Imports	Exports
	Number of U.S. Manu-facturers	Quantity Shipped	Shipments per Manu-facturer	Price [5] (dollars per square foot)	Number of U.S. Manu-facturers	Quantity Shipped	Shipments per Manu-facturer	Price [5] (dollars per square foot)	Quantity Shipped	Price [5] (dollars per square foot)	Quantity Shipped	Price [5] (dollars per square foot)		
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

[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.

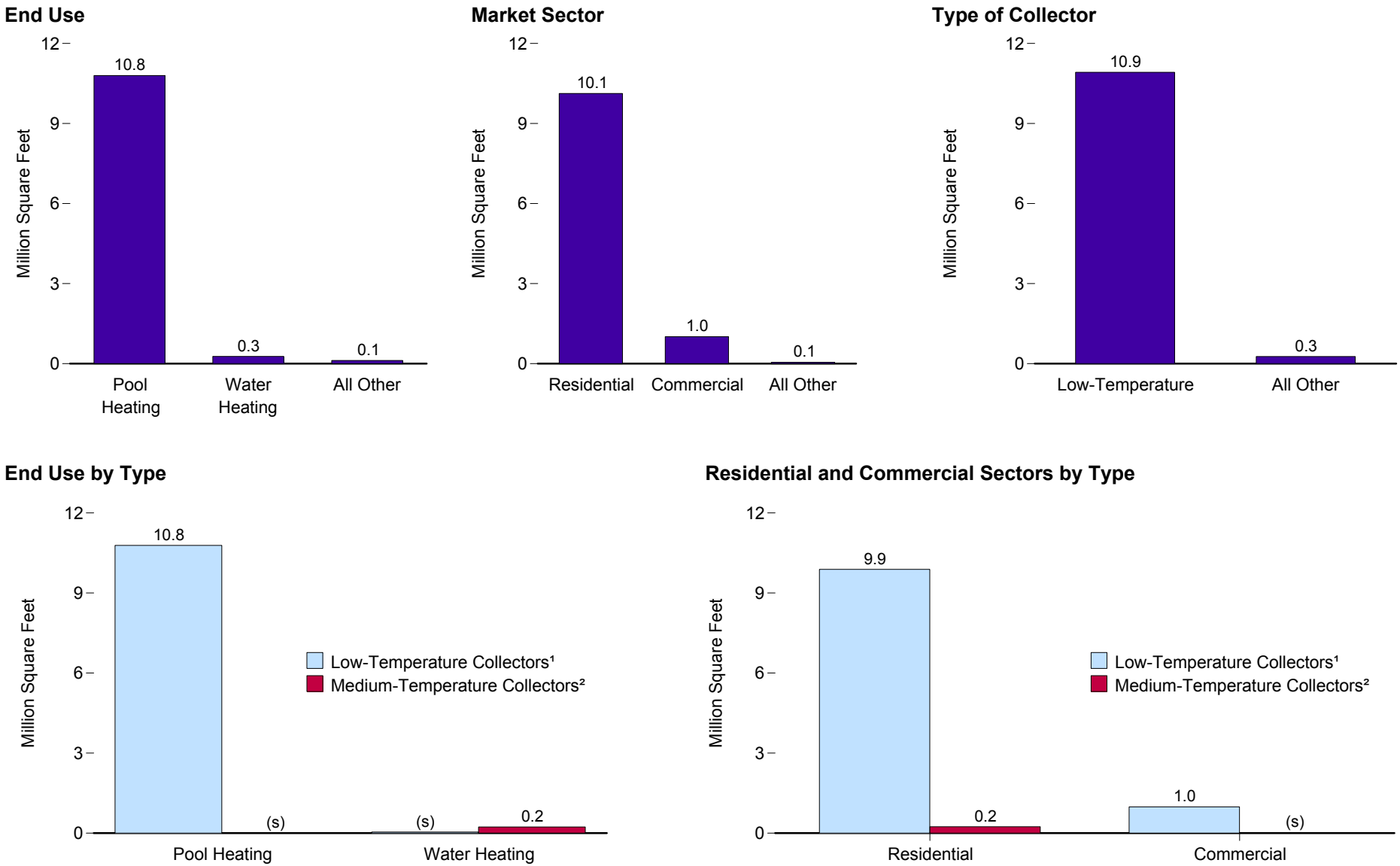
NA=Not available.

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: 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, 2001



[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, 2001

(Thousand Square Feet)

End Use	Low-Temperature Collectors [1]	Medium-Temperature Collectors [2]	High-Temperature Collectors [3]	Total
End-Use Total	**10,919**	**268**	**2**	**[4]11,189**
Pool Heating	10,782	16	0	10,797
Water Heating	42	232	0	274
Space Heating	61	9	0	70
Space Cooling	0	0	0	0
Combined Space and Water Heating	0	12	0	12
Process Heating	34	0	0	34
Electricity Generation	0	0	2	[4] 2
Other [5]	0	0	0	0
Market Sector Total	**10,918**	**270**	**2**	**[4]11,190**
Residential	9,885	240	0	10,125
Commercial	987	24	1	1,012
Industrial [6]	12	5	0	17
Electric Utility	0	0	1	[4] 1
Other [7]	34	1	0	35

[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, desalinization, distilling, etc.

[6] Includes all independent power producers.

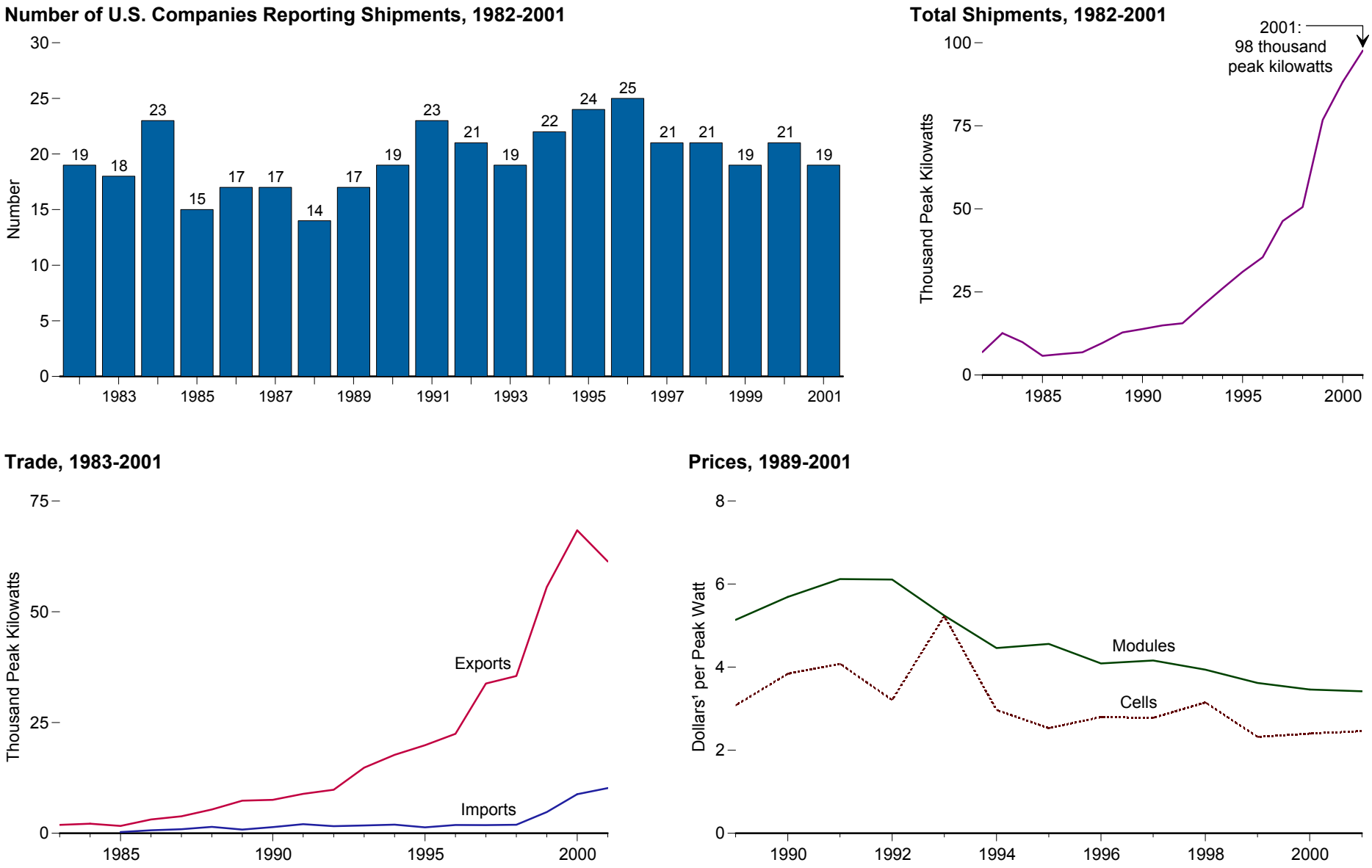
[7] "Other" includes shipments of solar thermal collectors to other sectors, such as government, including the military but excluding space applications.

Notes: • Data represent shipments from U.S. manufacturers only. • Totals may not equal sum of components due to independent rounding.

Web Page: http://www.eia.doe.gov/fuelrenewable.html.

Source: Energy Information Administration, *Renewable Energy Annual 2002.*

Figure 10.5 Photovoltaic Cell and Module Shipments, Trade, and Prices



[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, 1982-2001

Year	Number of U.S. Companies Reporting Shipments	Shipments			Imports	Exports	Prices [1]	
		Crystalline Silicon	Thin-Film Silicon	Total [2]			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

[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.

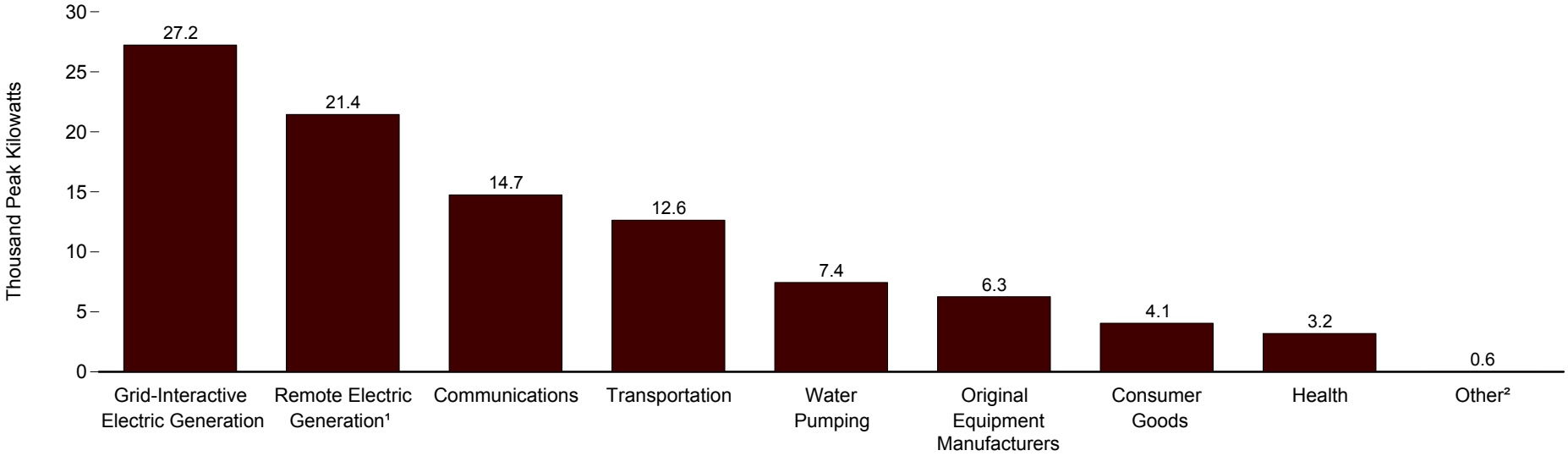
NA=Not available.

Web Page: http://www.eia.doe.gov/fuelrenewable.html.

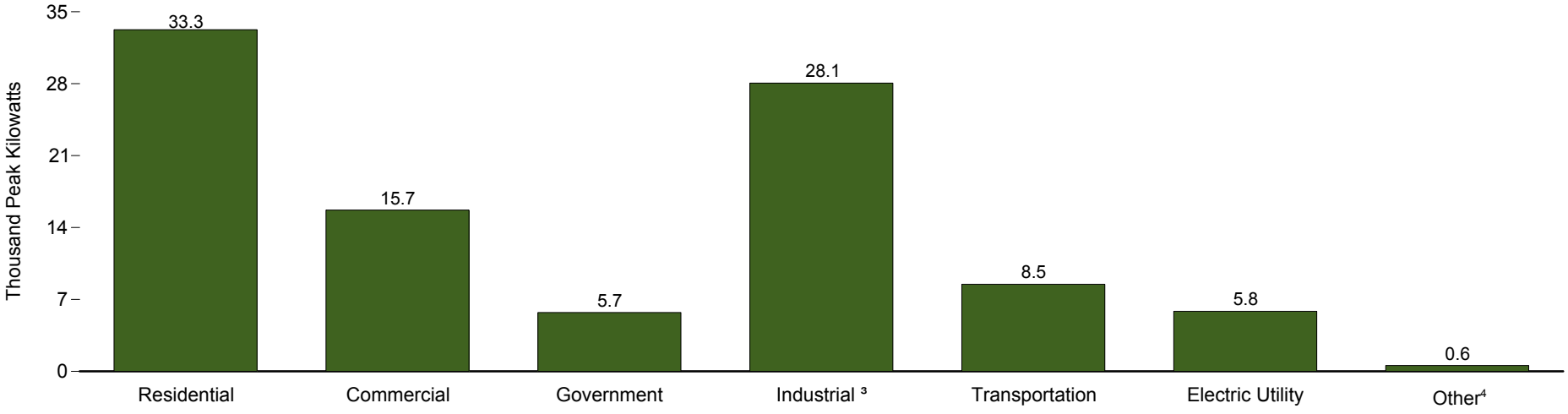
Sources: • 1982-1992—Energy Information Administration (EIA), *Solar Collector Manufacturing Activity,* annual reports. • 1993 forward—EIA, *Renewable Energy Annual,* annual reports.

Figure 10.6 Photovoltaic Cell and Module Shipments by End Use and Market Sector, 2001

By End Use



By Market Sector



[1] Units designed for installations that are not grid-interactive.
[2] Represents such applications as cooking food, desalinization, 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, 1989-2001

Year	End Use									Market Sector							Total
			Electric Generation [1]														
	Communications	Consumer Goods	Grid-Interactive	Remote	Health	Original Equipment Manufacturers [2]	Transportation	Water Pumping	Other [3]	Residential	Commercial	Government	Industrial [4]	Transportation	Electric Utility	Other [5]	
	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
	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

[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, desalinization, and distilling.

[4] Includes all independent power producers.

[5] Shipments to foreign governments and for specialty purposes.

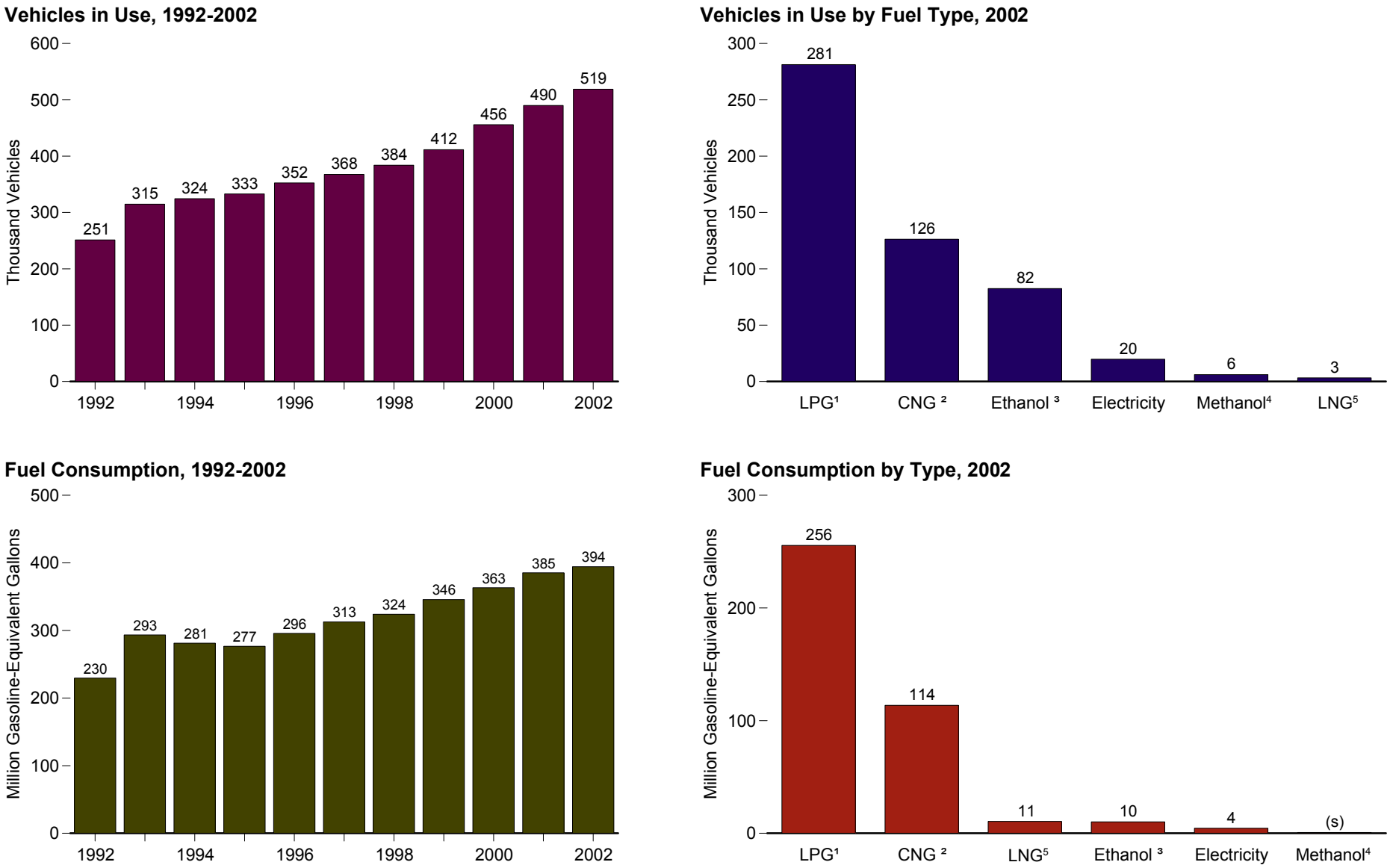
(s)=Less than 0.05 percent.

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

Web Page: 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 Fuel Consumption by Type



[1] Liquefied petroleum gases.
[2] Compressed natural gas.
[3] Ethanol, 85 percent, and ethanol, 95 percent.
[4] Methanol, 85 percent, and methanol, neat.
[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 Fuel Consumption by Type, 1992-2002

Year	Liquefied Petroleum Gases [1]	Compressed Natural Gas	Liquefied Natural Gas	Methanol, 85 Percent [2]	Methanol, Neat	Ethanol, 85 Percent [2]	Ethanol, 95 Percent [2]	Electricity	Total
	Number of Vehicles in Use								
1992	221,000	23,191	90	4,850	404	172	38	1,607	251,352
1993	269,000	32,714	299	10,263	414	441	27	1,690	314,848
1994	264,000	41,227	484	15,484	415	605	33	2,224	324,472
1995	259,000	50,218	603	18,319	386	1,527	136	2,860	333,049
1996	263,000	60,144	663	20,265	172	4,536	361	3,280	352,421
1997	263,000	68,571	813	21,040	172	9,130	347	4,453	367,526
1998	266,000	78,782	1,172	19,648	200	12,788	14	5,243	383,847
1999	R267,833	R91,267	1,681	18,964	198	R24,604	14	6,964	R411,525
2000	R272,193	R100,738	R2,090	R10,426	R0	R58,621	R4	R11,834	R455,906
2001	R276,597	R113,835	R2,576	R7,827	R0	R71,336	R0	R17,848	R490,019
2002P	281,286	126,341	3,187	5,873	0	82,477	0	19,755	518,919
	Fuel Consumption (Thousand Gasoline-Equivalent Gallons)								
1992	208,142	16,823	585	1,069	2,547	21	85	359	229,631
1993	264,655	21,603	1,901	1,593	3,166	48	80	288	293,334
1994	248,467	24,160	2,345	2,340	3,190	80	140	430	281,152
1995	232,701	35,162	2,759	2,023	2,150	190	995	663	276,643
1996	239,158	46,923	3,247	1,775	347	694	2,699	773	295,616
1997	238,356	65,192	3,714	1,554	347	1,280	1,136	1,010	312,589
1998	241,583	R72,412	5,343	1,212	449	1,727	59	1,202	R323,987
1999	R242,750	R89,476	R6,820	1,073	447	R3,802	R58	R1,384	R345,810
2000	R247,062	R98,351	R7,121	R585	437	R7,074	R13	R2,670	R363,313
2001	R251,353	R111,797	R8,786	R440	406	R8,736	R0	R3,903	R385,421
2002P	255,515	113,554	10,504	330	0	10,075	0	4,460	394,438

[1] Vehicles in use represent lower bound estimates, rounded to the nearest thousand.
[2] Remaining portion is motor gasoline.
R=Revised. P=Preliminary.
Note: Totals may not equal sum of components due to independent rounding.
Web Page: http://www.eia.doe.gov/fuelalternate.html.

Sources: • 1992-1995—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. • 1996 forward—EIA, Office of Coal, Nuclear, Electric, and Alternate Fuels.

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 2002* (August 2003), 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 2002* (August 2003), 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 2002* (August 2003), 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 2002* (August 2003), 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 2002* (August 2003), Table B1. **Solar**: • 1989 forward—EIA, *Renewable Energy Trends 2002* (August 2003), Table B1.

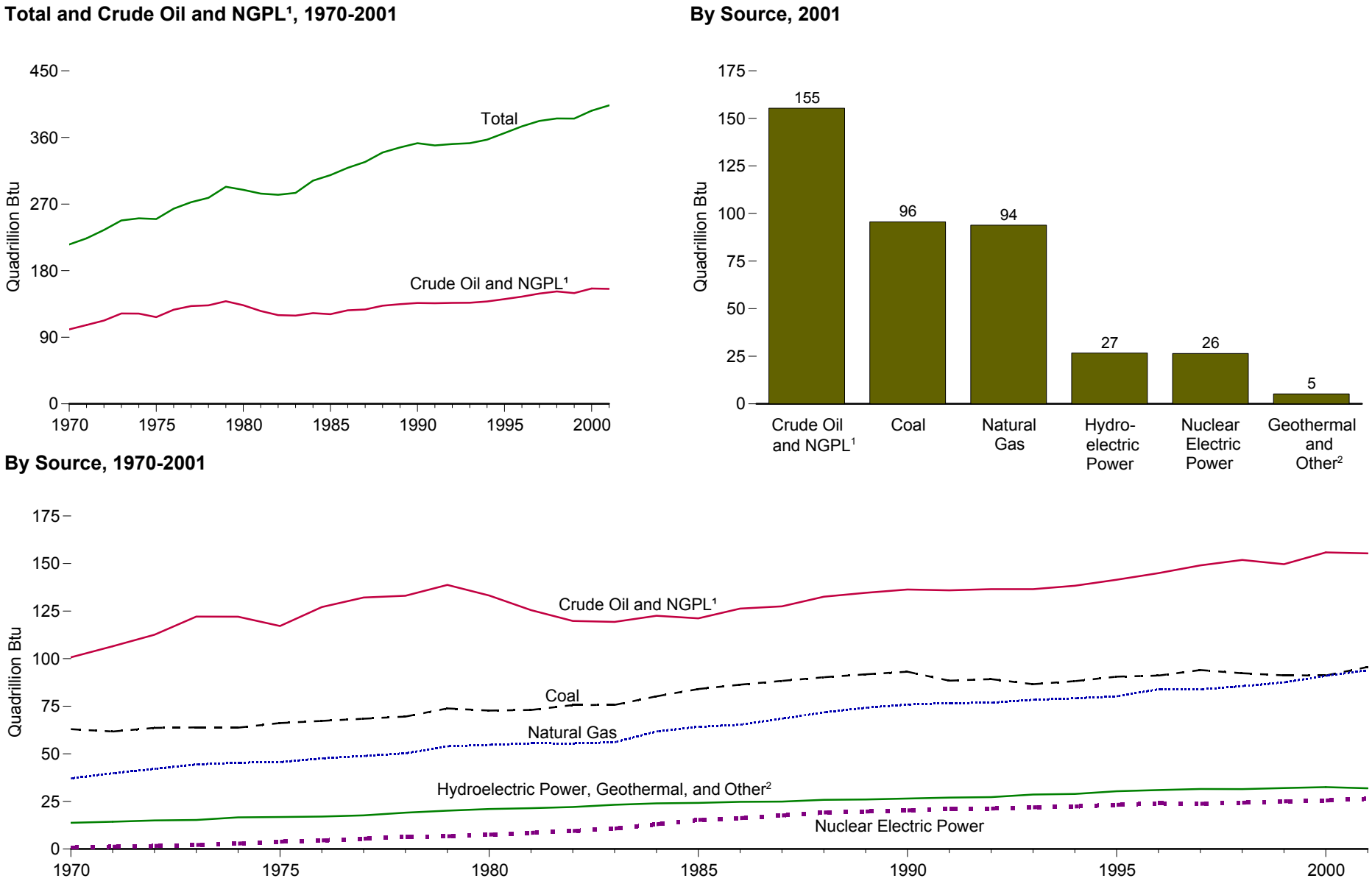
Table 10.2b Web Page: Http://www.eia.doe.gov/fuelrenewable.html.

Tables 10.2b Sources: Tables 8.2b, 8.2c, 8.3b, 8.3c, and A6.

11 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



[1]Natural gas plant liquids.
[2]Net 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, 1970-2001

(Quadrillion Btu)

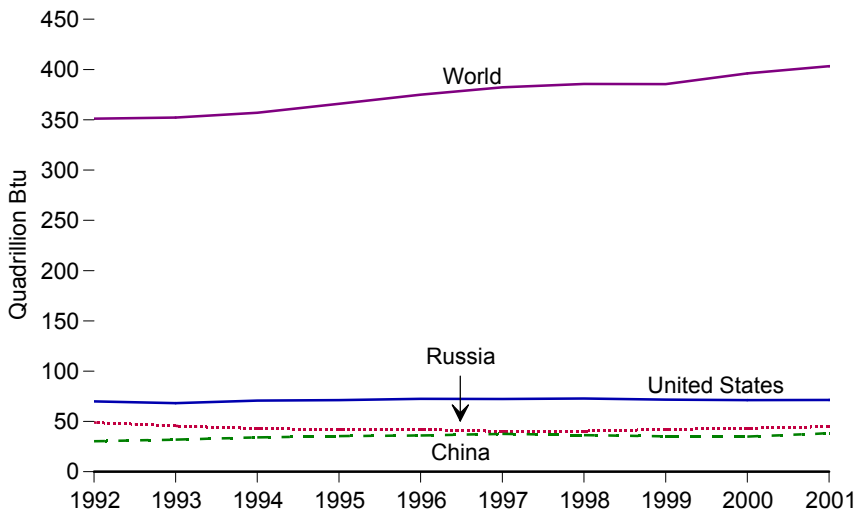
Year	Coal	Natural Gas [1]	Crude Oil [2]	Natural Gas Plant Liquids	Nuclear Electric Power [3]	Hydroelectric Power [3]	Geothermal [3] and Other [4]	Total
1970	62.96	37.09	97.09	3.61	0.90	12.15	1.59	215.39
1971	61.72	39.80	102.70	3.85	1.23	12.74	1.61	223.64
1972	63.65	42.08	108.52	4.09	1.66	13.31	1.68	234.99
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	72.72	54.73	128.12	5.10	7.58	18.06	2.95	289.26
1981	73.04	55.56	120.16	5.36	8.53	18.35	3.09	284.09
1982	75.64	55.49	114.51	5.34	9.51	R18.82	3.24	R282.55
1983	75.70	56.12	113.97	5.34	10.72	R19.72	3.51	R285.09
1984	80.21	61.78	116.86	5.71	13.00	R20.34	3.64	301.54
1985	84.09	64.22	115.40	5.82	15.30	R20.56	3.67	R309.05
1986	86.33	65.32	120.24	6.12	16.25	21.03	3.73	319.03
1987	88.34	68.48	121.16	6.32	17.64	21.10	3.79	326.84
1988	90.26	71.80	125.93	6.63	19.23	R21.89	3.94	R339.69
1989	91.78	74.24	127.98	6.67	19.74	R21.74	R4.29	R346.44
1990	R93.17	R75.87	129.50	6.85	20.31	R22.56	R3.95	R352.22
1991	R88.47	R76.69	128.77	7.13	21.13	22.97	R4.04	R349.21
1992	R89.25	76.90	129.13	7.38	21.23	R22.91	R4.33	R351.13
1993	R86.60	78.41	128.86	7.68	21.96	R24.28	R4.36	R352.14
1994	R88.23	R79.18	130.46	7.85	22.36	R24.39	R4.56	R357.02
1995	R90.59	R80.24	133.32	8.16	23.21	R25.61	R4.77	R365.91
1996	R91.14	R83.94	136.64	8.31	24.05	R26.07	R4.89	R375.04
1997	R94.03	R83.89	140.52	8.51	23.82	R26.59	R4.94	R382.30
1998	R92.36	R85.58	143.15	8.75	24.34	R26.63	R4.85	R385.65
1999	R91.23	R87.51	140.79	8.89	25.08	R26.92	R5.08	R385.50
2000	R91.17	R91.02	R146.50	R9.36	25.51	R27.25	R5.29	R396.11
2001P	95.63	93.92	145.48	9.86	26.45	26.68	5.22	403.24

[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.

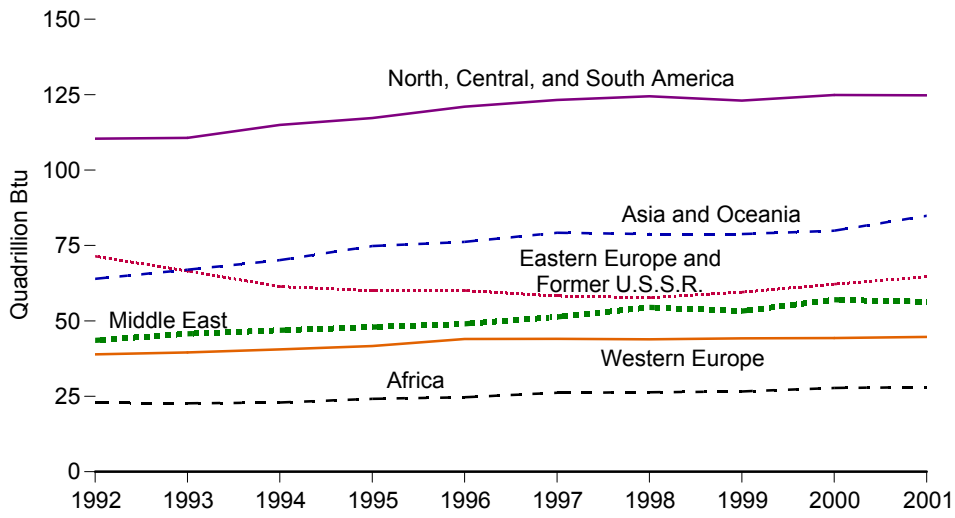
Notes: • See Note 1 at end of section. • Totals may not equal sum of components due to independent rounding.
Web Page: http://www.eia.doe.gov/international.
Sources: • 1970-1991—Energy Information Administration (EIA), International Energy Database. • 1992 forward—EIA, *International Energy Annual 2001* (March 2003), Tables F1-F8, and the International Energy Database.

Figure 11.2 World Primary Energy Production by Region and Country

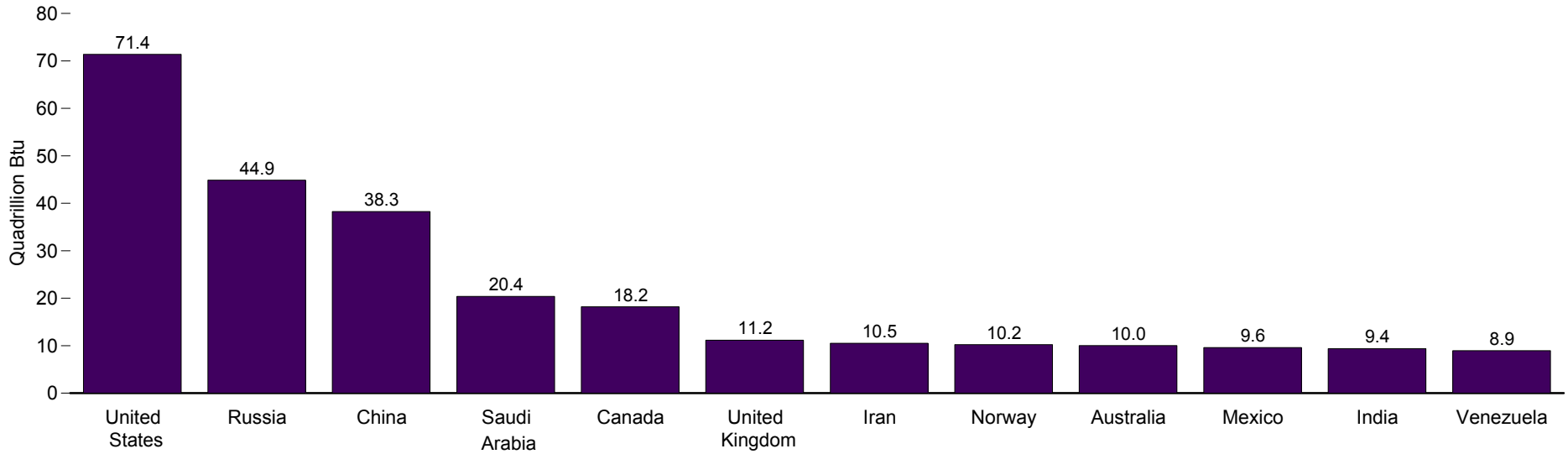
World and Leading Producers, 1992-2001



World Areas, 1992-2001



Top Producing Countries, 2001



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

Source: Table 11.2.

Table 11.2 World Primary Energy Production by Region, 1992-2001

(Quadrillion Btu)

Region and Country	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001[P]
North, Central, and South America	**[R]110.38**	**[R]110.69**	**[R]114.98**	**[R]117.23**	**[R]121.01**	**[R]123.22**	**[R]124.48**	**[R]123.03**	**[R]124.88**	**124.77**
Brazil	4.01	4.15	4.31	4.51	4.87	5.14	5.56	[R]5.96	[R]6.46	6.20
Canada	14.48	15.40	16.36	16.85	17.24	17.54	17.50	17.73	[R]18.18	18.20
Mexico	8.01	8.11	8.10	8.04	8.74	9.07	9.31	9.06	[R]9.35	9.59
United States	69.93	68.26	70.68	[R]71.16	[R]72.47	72.39	72.79	[R]71.65	[R]71.22	71.37
Venezuela	6.96	7.27	7.70	8.08	8.62	9.49	[R]9.46	[R]8.55	[R]9.38	8.94
Other	[R]6.99	[R]7.50	[R]7.82	[R]8.59	[R]9.06	[R]9.59	[R]9.87	[R]10.08	[R]10.28	10.46
Western Europe	**[R]38.92**	**39.52**	**[R]40.57**	**[R]41.69**	**[R]44.01**	**[R]44.07**	**[R]43.87**	**[R]44.22**	**[R]44.31**	**44.70**
France	4.63	4.84	4.87	4.97	5.04	4.91	4.80	[R]4.94	[R]5.03	5.14
Germany	6.17	5.84	5.71	5.58	5.49	5.56	5.26	[R]5.31	[R]5.25	5.21
Netherlands	2.93	2.98	2.91	2.91	3.25	2.89	2.78	2.58	[R]2.48	2.64
Norway	7.09	7.28	7.65	8.36	9.29	9.61	9.37	9.55	[R]10.27	10.22
United Kingdom	9.07	9.40	10.19	10.76	[R]11.51	[R]11.28	[R]11.54	[R]11.91	[R]11.15	11.16
Other	[R]9.04	[R]9.18	[R]9.24	[R]9.10	[R]9.43	[R]9.81	[R]10.12	[R]9.93	[R]10.12	10.34
Eastern Europe and Former U.S.S.R.	**71.40**	**66.52**	**61.40**	**[R]60.04**	**[R]60.09**	**[R]58.27**	**[R]57.68**	**[R]59.55**	**[R]62.19**	**64.65**
Kazakhstan	3.77	3.39	2.57	2.28	2.36	2.44	2.38	2.33	2.94	3.28
Poland	3.68	3.70	3.75	3.60	3.25	3.86	3.35	3.20	3.05	3.08
Russia	48.98	45.53	42.87	41.87	[R]42.04	[R]40.15	[R]40.43	[R]42.08	[R]43.28	44.88
Ukraine	4.38	4.00	3.50	3.63	3.45	3.40	3.41	[R]3.51	3.49	3.52
Other	10.59	9.90	8.71	8.66	8.99	[R]8.42	8.10	[R]8.43	[R]9.44	9.89
Middle East	**43.57**	**45.76**	**46.94**	**47.97**	**49.03**	**51.33**	**54.50**	**53.30**	**[R]57.04**	**56.28**
Iran	8.53	8.83	9.16	9.35	9.65	9.84	9.90	10.00	[R]10.40	10.50
Iraq	1.02	1.21	1.33	1.35	1.39	2.60	4.71	[R]5.48	5.62	5.31
Kuwait	2.44	4.28	4.73	4.81	4.94	4.85	5.02	4.60	[R]5.04	4.85
Saudi Arabia	20.39	20.11	20.00	20.25	20.39	20.82	21.00	19.64	21.12	20.37
United Arab Emirates	6.11	5.78	5.84	6.14	6.34	6.50	6.61	6.25	[R]6.77	6.95
Other	5.08	5.54	5.88	6.06	6.32	6.72	7.27	7.33	[R]8.09	8.30
Africa	**[R]22.91**	**[R]22.70**	**[R]22.96**	**[R]24.15**	**[R]24.71**	**[R]26.16**	**[R]26.34**	**[R]26.61**	**[R]27.79**	**28.01**
Algeria	5.06	4.87	4.79	5.13	5.28	5.63	5.75	6.03	[R]6.29	6.24
Libya	3.34	3.17	3.21	3.23	3.28	3.39	3.26	3.07	3.30	3.21
Nigeria	4.43	4.45	4.37	4.53	4.57	4.85	4.90	4.89	[R]5.18	5.49
South Africa	[R]4.21	[R]4.30	[R]4.60	[R]4.84	[R]4.86	[R]5.44	[R]5.52	[R]5.43	[R]5.56	5.59
Other	[R]5.87	[R]5.90	[R]6.00	[R]6.43	[R]6.73	[R]6.86	[R]6.91	[R]7.19	7.46	7.49
Asia and Oceania	**[R]63.94**	**[R]66.94**	**[R]70.17**	**[R]74.83**	**[R]76.18**	**[R]79.24**	**[R]78.78**	**[R]78.77**	**[R]79.90**	**84.83**
Australia	[R]6.57	[R]6.61	[R]6.91	[R]7.43	[R]7.57	[R]8.33	[R]8.67	[R]8.85	[R]9.69	10.02
China	30.33	31.85	34.08	35.47	36.02	37.63	36.38	[R]35.32	34.90	38.26
India	7.17	7.37	7.63	9.01	[R]8.75	[R]8.96	[R]9.01	[R]9.06	[R]9.34	9.37
Indonesia	5.99	6.29	6.63	[R]6.97	[R]7.42	[R]7.40	[R]7.48	[R]7.94	[R]7.80	8.12
Japan	3.54	3.90	3.81	4.19	4.29	4.55	4.60	4.39	4.32	4.49
Malaysia	2.26	2.35	2.41	2.59	2.84	3.01	3.14	3.16	3.20	3.56
Other	[R]8.08	[R]8.58	[R]8.71	[R]9.16	[R]9.30	[R]9.36	[R]9.51	[R]10.05	[R]10.63	11.01
World	**[R]351.13**	**[R]352.14**	**[R]357.02**	**[R]365.91**	**[R]375.04**	**[R]382.30**	**[R]385.65**	**[R]385.50**	**[R]396.11**	**403.24**

R=Revised. P=Preliminary.

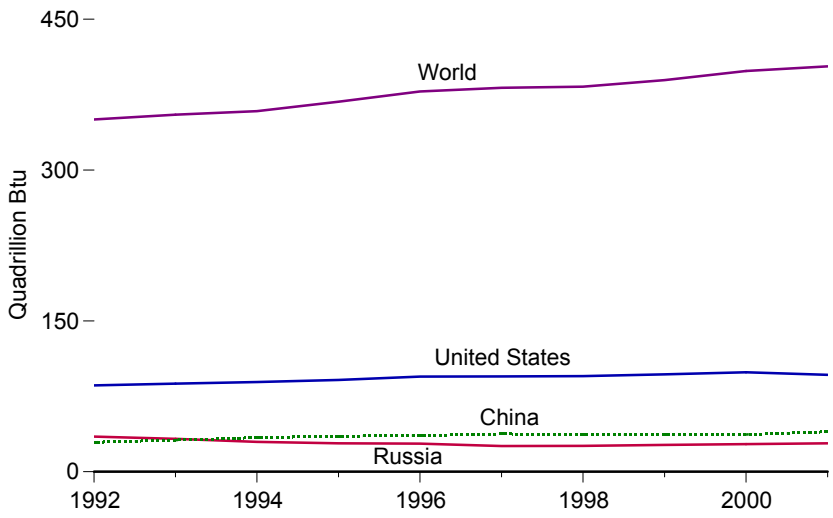
Notes: • See Note 1 at end of section. • World primary energy production includes production of crude oil (including lease condensate), natural gas plant liquids, dry natural gas, and coal; and net electricity generation from nuclear electric power, hydroelectric power, wood, waste, geothermal, solar, 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: http://www.eia.doe.gov/international.

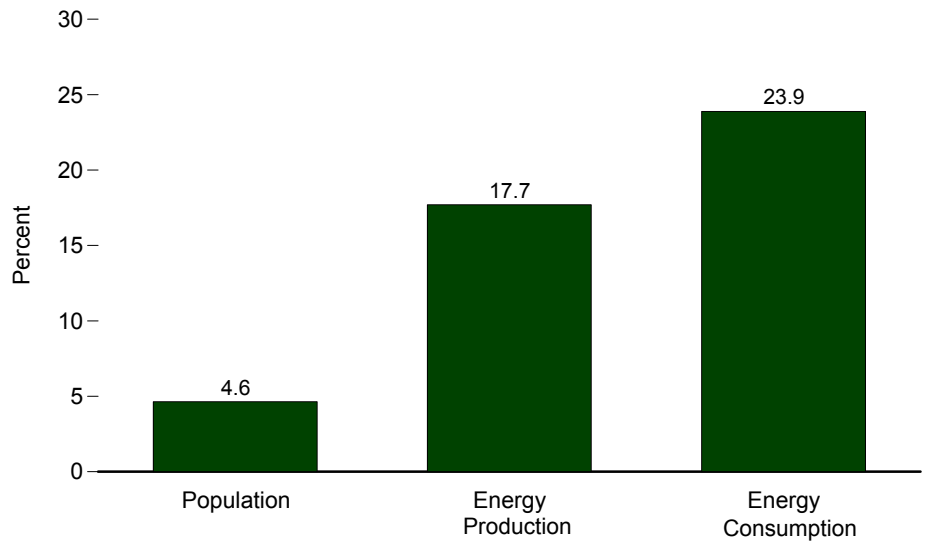
Sources: **United States:** Table 1.2. **All Other Data:** Energy Information Administration, *International Energy Annual 2001* (March 2003), Table F1, and the International Energy Database.

Figure 11.3 World Primary Energy Consumption

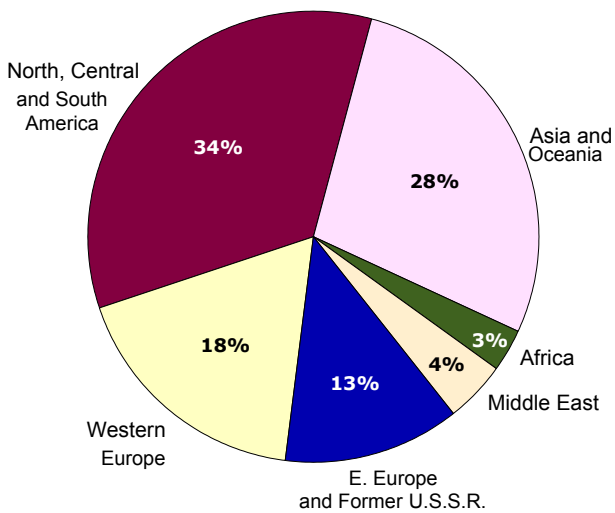
World and Leading Consumers, 1992-2001



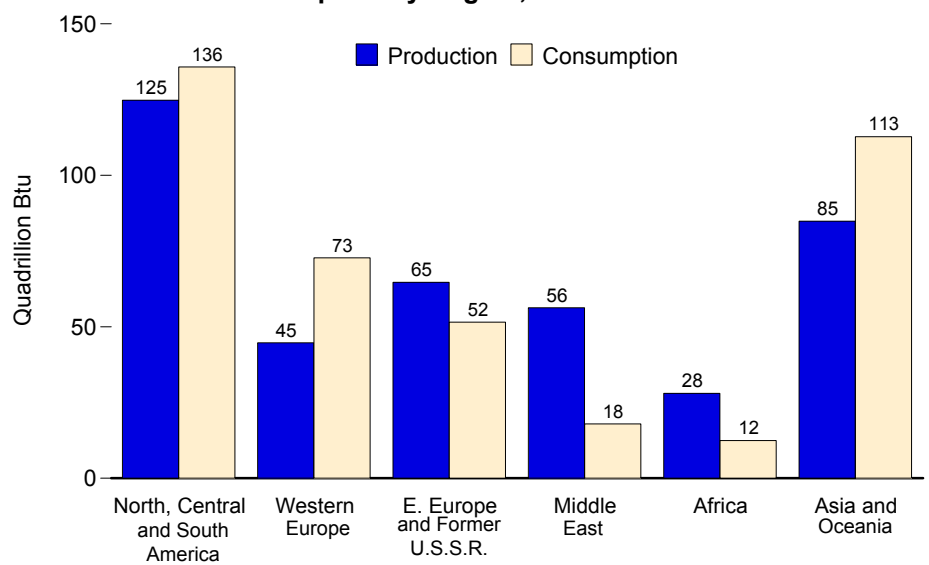
U.S. Share of World, 2001



Regional Consumption Shares, 2001



Production and Consumption by Region, 2001



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, 1992-2001

(Quadrillion Btu)

Region and Country	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001[P]
North, Central, and South America	**[R]117.29**	**[R]120.29**	**[R]123.08**	**[R]125.84**	**[R]130.40**	**[R]132.15**	**[R]133.26**	**[R]135.95**	**[R]139.29**	**135.77**
Argentina	2.12	2.29	[R]2.25	[R]2.33	[R]2.41	[R]2.50	[R]2.63	[R]2.64	[R]2.68	2.66
Brazil	6.30	6.58	6.89	7.30	7.76	8.19	8.45	[R]8.70	[R]9.03	8.78
Canada	10.94	11.46	11.74	11.75	[R]12.12	12.37	[R]12.05	12.74	[R]13.15	12.51
Mexico	5.12	5.13	5.30	5.31	5.55	5.65	5.93	6.06	[R]6.19	6.00
United States	[R]85.87	[R]87.58	[R]89.25	[R]91.22	[R]94.22	[R]94.73	[R]95.15	[R]96.77	[R]98.94	96.32
Venezuela	2.22	2.29	2.42	2.47	2.58	2.66	[R]2.86	[R]2.74	[R]2.78	2.95
Other	[R]4.71	[R]4.97	[R]5.22	[R]5.46	[R]5.77	6.05	[R]6.18	[R]6.30	[R]6.51	6.53
Western Europe	**[R]64.24**	**[R]64.65**	**[R]64.71**	**[R]66.71**	**[R]68.46**	**[R]68.94**	**[R]70.30**	**[R]70.36**	**[R]71.54**	**72.76**
Belgium	2.24	2.26	2.31	2.36	2.55	2.63	2.66	2.61	[R]2.71	2.77
France	9.41	9.37	9.28	9.54	9.92	9.87	[R]10.18	[R]10.28	[R]10.36	10.52
Germany	14.00	14.06	14.01	14.32	14.30	14.30	14.33	[R]14.12	[R]14.18	14.35
Italy	7.22	7.05	6.97	7.56	7.64	7.45	7.73	7.77	[R]7.97	8.11
Netherlands	3.53	3.60	3.57	3.70	3.82	3.83	3.81	3.83	[R]3.92	4.23
Spain	4.12	4.04	4.22	4.48	4.39	4.72	5.02	5.21	[R]5.48	5.70
Sweden	2.17	2.18	2.19	2.34	2.28	2.18	2.28	2.23	[R]2.26	2.22
Turkey	2.13	2.33	2.23	2.47	2.74	2.96	3.02	2.92	[R]3.01	2.89
United Kingdom	9.33	9.65	9.64	9.60	[R]10.09	[R]9.81	[R]9.77	[R]9.74	[R]9.77	9.81
Other	[R]10.09	[R]10.11	[R]10.29	[R]10.32	[R]10.73	[R]11.19	[R]11.51	[R]11.66	[R]11.87	12.15
Eastern Europe and Former U.S.S.R.	**65.16**	**60.75**	**[R]54.68**	**[R]53.25**	**52.47**	**[R]49.82**	**[R]48.81**	**[R]49.49**	**[R]50.48**	**51.54**
Poland	3.87	4.00	3.84	3.69	3.55	4.09	3.83	3.68	[R]3.71	3.54
Russia	34.88	32.67	29.63	28.24	27.92	25.52	[R]25.63	[R]26.69	[R]27.40	28.20
Ukraine	[R]8.88	8.58	7.31	7.21	6.73	6.44	6.26	[R]6.33	[R]6.14	6.08
Uzbekistan	1.66	2.04	1.76	1.85	1.91	1.89	1.84	1.87	[R]1.94	2.08
Other	15.87	13.45	[R]12.14	[R]12.25	[R]12.35	[R]11.88	[R]11.25	[R]10.92	[R]11.29	11.66
Middle East	**[R]12.03**	**[R]12.73**	**[R]13.37**	**[R]13.93**	**[R]14.61**	**[R]15.44**	**[R]16.19**	**[R]16.61**	**[R]17.28**	**17.92**
Iran	3.35	3.47	3.66	3.81	[R]3.96	4.44	[R]4.64	[R]4.94	[R]5.05	5.18
Saudi Arabia	3.39	3.52	3.64	3.85	4.05	4.08	4.27	4.35	[R]4.71	4.91
Other	[R]5.30	[R]5.74	[R]6.07	[R]6.26	[R]6.60	[R]6.92	[R]7.28	[R]7.32	7.51	7.82
Africa	**[R]9.92**	**[R]9.96**	**[R]10.43**	**[R]10.64**	**[R]10.91**	**[R]11.40**	**[R]11.30**	**[R]11.61**	**[R]11.95**	**12.45**
Egypt	1.43	1.51	1.55	1.58	1.73	[R]1.79	[R]1.85	[R]1.89	[R]2.02	2.13
South Africa	[R]3.75	[R]3.72	[R]4.06	[R]4.09	[R]4.12	[R]4.51	[R]4.33	[R]4.51	[R]4.55	4.60
Other	4.75	4.73	[R]4.82	[R]4.97	[R]5.06	[R]5.10	[R]5.12	[R]5.21	[R]5.38	5.72
Asia and Oceania	**[R]81.60**	**[R]86.71**	**[R]92.25**	**[R]97.61**	**[R]100.77**	**[R]104.05**	**[R]103.04**	**[R]105.36**	**[R]107.98**	**112.76**
Australia	[R]3.80	[R]3.91	[R]3.94	[R]4.09	[R]4.16	[R]4.53	[R]4.57	[R]4.78	[R]4.84	4.97
China	29.31	31.36	34.04	35.21	36.04	37.61	37.07	[R]36.84	[R]36.95	39.67
India	8.71	9.10	9.59	11.10	[R]11.17	[R]11.47	[R]11.76	[R]12.16	12.67	12.80
Indonesia	2.54	2.87	[R]3.05	[R]3.25	[R]3.51	[R]3.64	[R]3.48	[R]3.86	[R]4.05	4.63
Japan	19.14	19.41	20.18	20.83	21.48	21.78	21.43	21.57	[R]21.75	21.92
North Korea	3.02	3.12	3.08	3.04	2.97	2.82	2.72	2.71	2.85	2.84
South Korea	4.79	5.55	6.01	[R]6.63	6.95	[R]7.41	6.82	[R]7.32	[R]7.89	8.06
Taiwan	2.21	2.43	[R]2.66	[R]2.93	[R]3.19	[R]3.21	[R]3.48	[R]3.64	[R]3.99	4.07
Thailand	1.47	1.68	1.87	2.25	[R]2.45	[R]2.59	[R]2.44	[R]2.64	[R]2.75	2.90
Other	[R]6.62	[R]7.28	[R]7.83	[R]8.29	[R]8.85	[R]9.00	[R]9.27	[R]9.83	[R]10.24	10.90
World	**[R]350.25**	**[R]355.08**	**[R]358.52**	**[R]367.97**	**[R]377.63**	**[R]381.80**	**[R]382.90**	**[R]389.38**	**[R]398.51**	**403.19**

R=Revised. P=Preliminary.

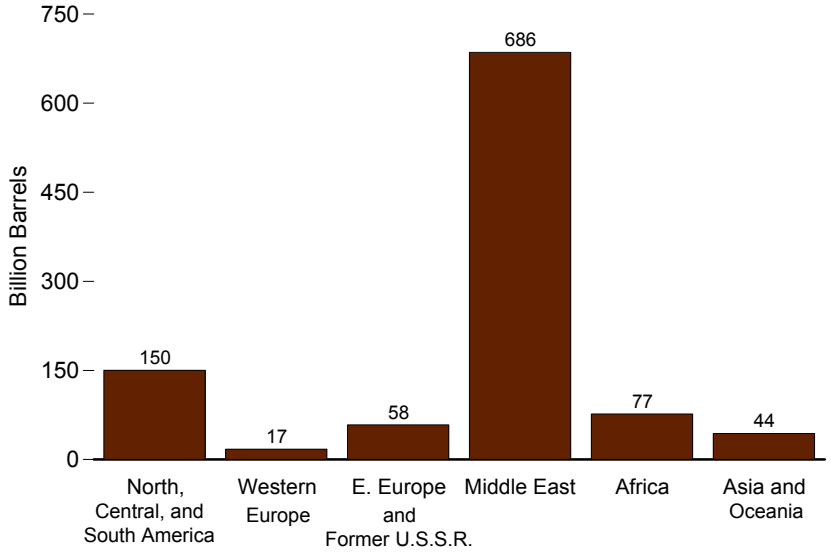
Notes: • World primary energy consumption includes consumption of petroleum products (including natural gas plant liquids, and crude oil burned as fuel), dry natural gas, and coal (including net imports of coal coke); and the consumption of net electricity generated from nuclear electric power, hydroelectric 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.

Web Page: http://www.eia.doe.gov/international.

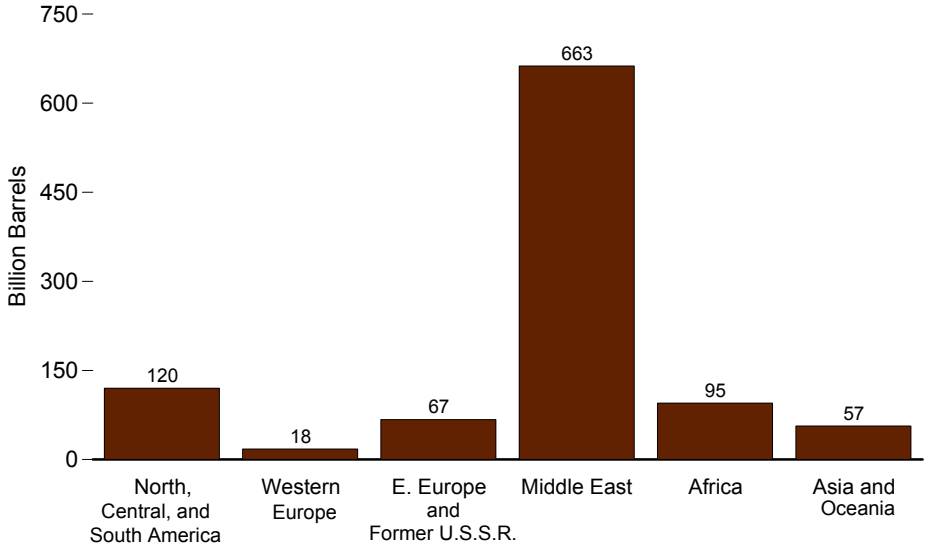
Sources: **United States:** Table 1.3. **All Other Data:** Energy Information Administration, *International Energy Annual 2001* (March 2003), Table E1, and the International Energy Database.

Figure 11.4 World Crude Oil and Natural Gas Reserves, January 1, 2002

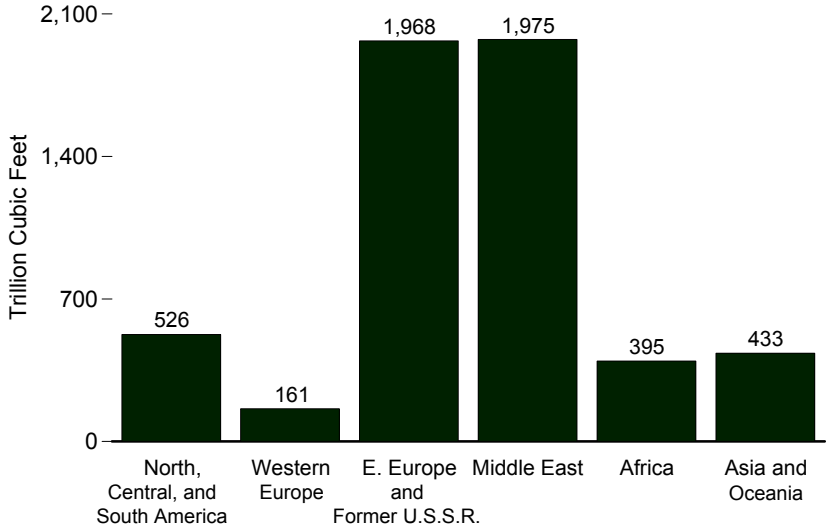
Crude Oil Reserves: *Oil and Gas Journal*



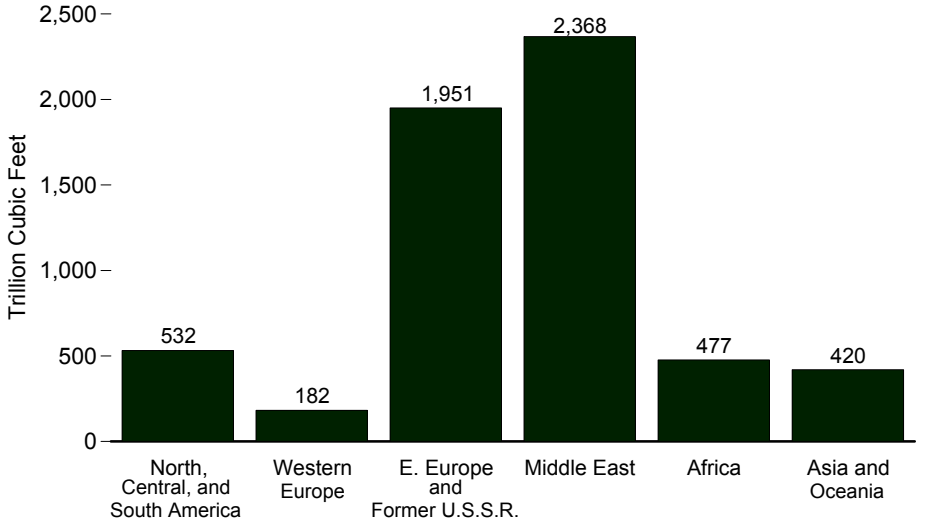
Crude Oil Reserves: *World Oil*



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, 2002

Region and Country	Crude Oil (billion barrels)		Natural Gas (trillion cubic feet)	
	Oil & Gas Journal	*World Oil*	*Oil & Gas Journal*	*World Oil*
North America	**54.2**	**50.9**	**272.7**	**282.1**
Canada	4.9	5.4	59.7	59.7
Mexico	26.9	23.1	29.5	39.0
United States	22.4	22.4	183.5	183.5
Central and South America	**96.0**	**69.1**	**253.0**	**250.2**
Argentina	3.0	2.9	27.5	26.8
Bolivia	0.4	0.5	24.0	27.4
Brazil	8.5	8.6	7.8	7.9
Colombia	1.8	1.9	4.3	5.0
Ecuador	2.1	2.6	3.7	3.9
Peru	0.3	0.9	8.7	8.7
Trinidad and Tobago	0.7	0.7	23.5	19.7
Venezuela	77.7	50.2	147.6	149.2
Other	1.5	0.9	6.1	1.8
Western Europe	**17.3**	**17.7**	**160.7**	**182.4**
Denmark	1.1	1.3	2.7	3.1
Germany	0.4	0.3	12.1	9.0
Italy	0.6	0.6	8.1	6.7
Netherlands	0.1	0.1	62.5	57.0
Norway	9.4	10.3	44.0	77.2
United Kingdom	4.9	4.6	26.0	24.5
Other	0.7	0.7	5.3	4.9
Eastern Europe and Former U.S.S.R.	**58.4**	**67.1**	**1,967.9**	**1,950.5**
Hungary	0.1	0.1	1.3	2.3
Kazakhstan	5.4	NA	65.0	NA
Romania	1.0	1.2	3.6	4.3
Russia	48.6	53.9	1,680.0	1,700.0
Other [1]	3.3	12.0	218.1	244.0
Middle East	**685.6**	**662.5**	**1,974.6**	**2.367.9**
Bahrain	0.1	NA	3.2	NA
Iran	89.7	99.1	812.3	939.4
Iraq	112.5	115.0	109.8	112.6
Kuwait	96.5	98.9	52.7	56.6
Oman	5.5	5.9	29.3	30.5
Qatar	15.2	13.8	508.5	757.7
Saudi Arabia	261.8	261.7	219.5	228.2
Syria	2.5	2.3	8.5	8.5
United Arab Emirates	97.8	62.8	212.1	204.1
Yemen	4.0	2.4	16.9	17.0
Other	(s)	0.7	1.7	13.4
Africa	**76.7**	**94.9**	**394.8**	**477.1**
Algeria	9.2	17.0	159.7	175.0
Angola	5.4	6.0	1.6	4.0
Cameroon	0.4	NA	3.9	NA
Congo	1.5	1.6	3.2	4.2
Egypt	2.9	3.7	35.2	54.1
Libya	29.5	30.0	46.4	46.9
Nigeria	24.0	30.0	124.0	159.0
Tunisia	0.3	0.5	2.8	2.7
Other	3.4	6.1	18.1	31.1
Asia and Oceania	**43.8**	**56.5**	**433.3**	**419.9**
Australia	3.5	3.8	90.0	80.0
Brunei	1.4	1.2	13.8	8.5
China	24.0	29.5	48.3	42.8
India	4.8	3.8	22.9	15.4
Indonesia	5.0	9.2	92.5	87.5
Malaysia	3.0	4.5	75.0	82.5
New Zealand	0.1	0.1	2.1	2.1
Pakistan	0.3	0.3	25.1	24.1
Papua New Guinea	0.2	0.5	12.2	15.0
Thailand	0.5	0.6	12.7	13.3
Other	0.9	3.1	38.8	48.8
World	**1,032.0**	**1,018.7**	**5,457.1**	**5,930.2**

[1] 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.

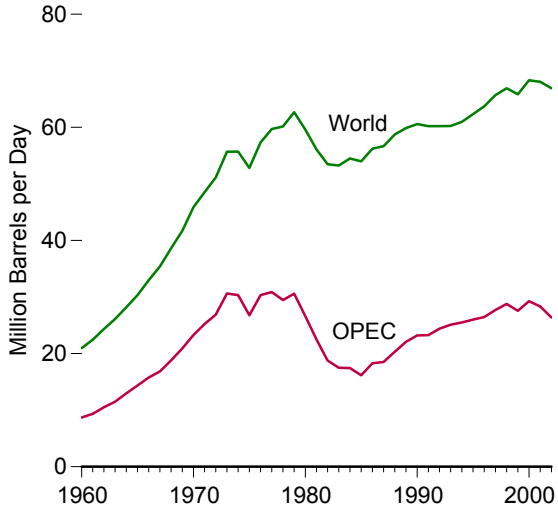
Notes: • Data for Kuwait and Saudi Arabia include one-half of the reserves in the Neutral Zone between Kuwait and Saudi Arabia. • All reserve figures except those for the former U.S.S.R. and natural gas reserves in Canada are proved reserves recoverable with present technology and prices at the time 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.

Web Page: http://www.eia.doe.gov/international.

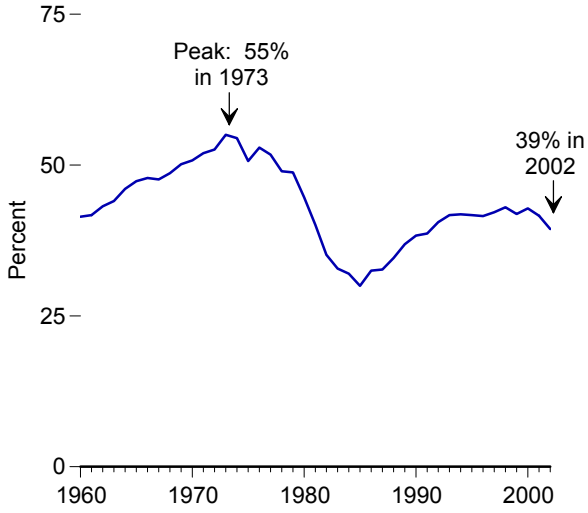
Sources: **United States:** Energy Information Administration, *U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves* (November 2002). **All Other Data:** PennWell Corporation, *Oil & Gas Journal,* December 24, 2001 and Gulf Publishing Company, *World Oil,* August 2002.

Figure 11.5 World Crude Oil Production

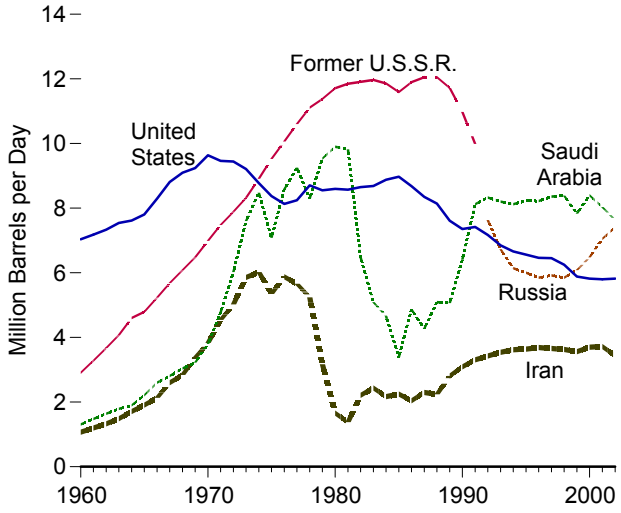
World and OPEC, 1960-2002



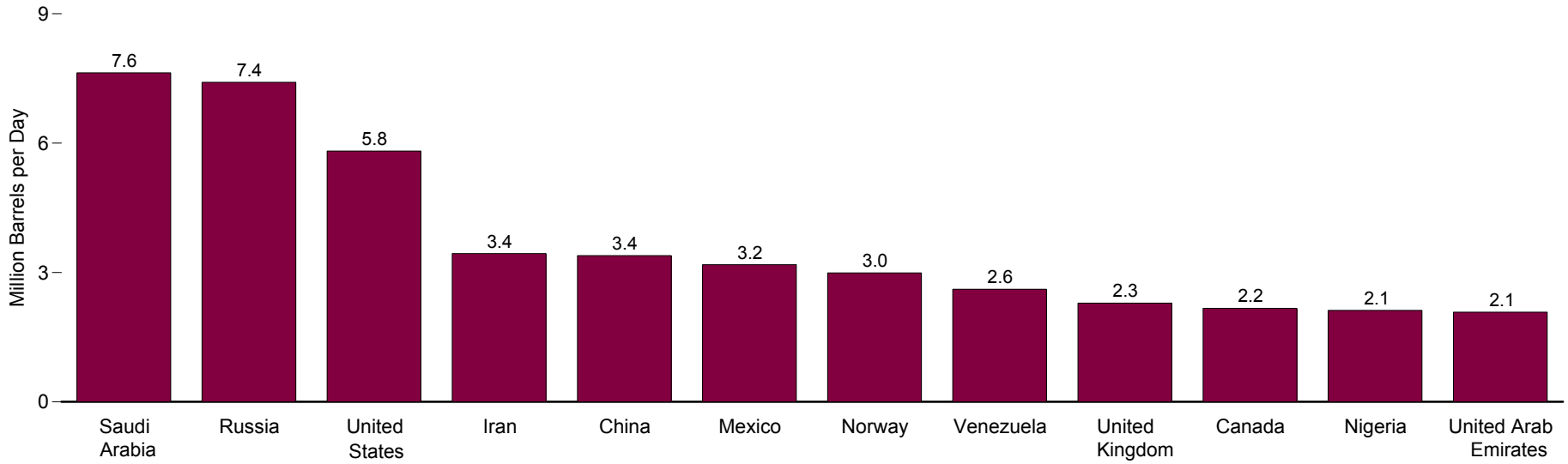
OPEC's Share of World, 1960-2002



Leading Producers, 1960-2002



Selected Producing Countries, 2002



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

Source: Table 11.5.

Table 11.5 World Crude Oil Production, 1960-2002

(Million Barrels per Day)

		Selected OPEC [1] Producers								Selected Non-OPEC Producers									
Year	Persian Gulf Nations [2]	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]	World
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	R19.89	3.70	2.57	R2.08	R2.17	8.40	2.37	R3.16	R29.26	1.98	3.25	3.01	3.20	—	6.48	2.28	5.82	R39.08	R68.34
2001	R19.21	3.72	2.43	R2.00	2.26	8.03	R2.28	2.88	R28.32	2.03	3.30	R3.16	R3.12	—	7.05	2.28	R5.80	R39.74	R68.06
2002P	17.79	3.44	2.02	1.89	2.12	7.63	2.08	2.61	26.37	2.17	3.39	3.18	2.99	—	7.41	2.29	5.82	40.55	66.92

[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.

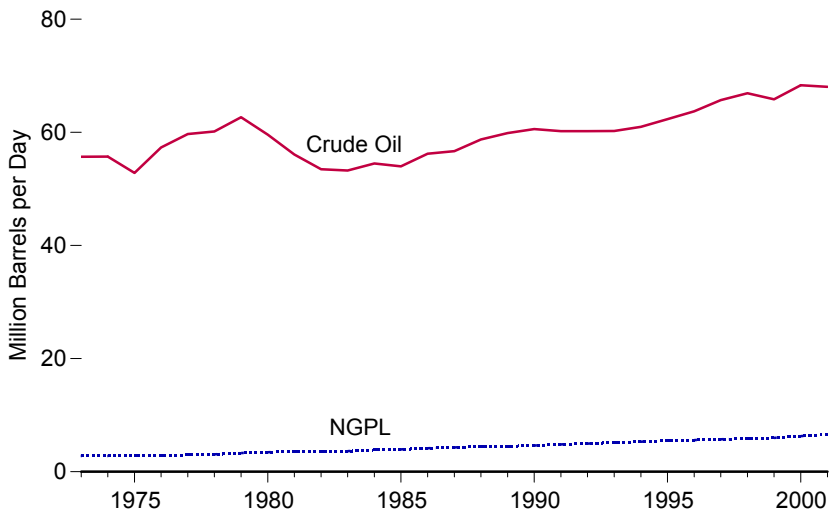
Notes: • Includes lease condensate, excludes natural gas plant liquids. • Totals may not equal sum of components due to independent rounding.

Web Page: http://www.eia.doe.gov/international.

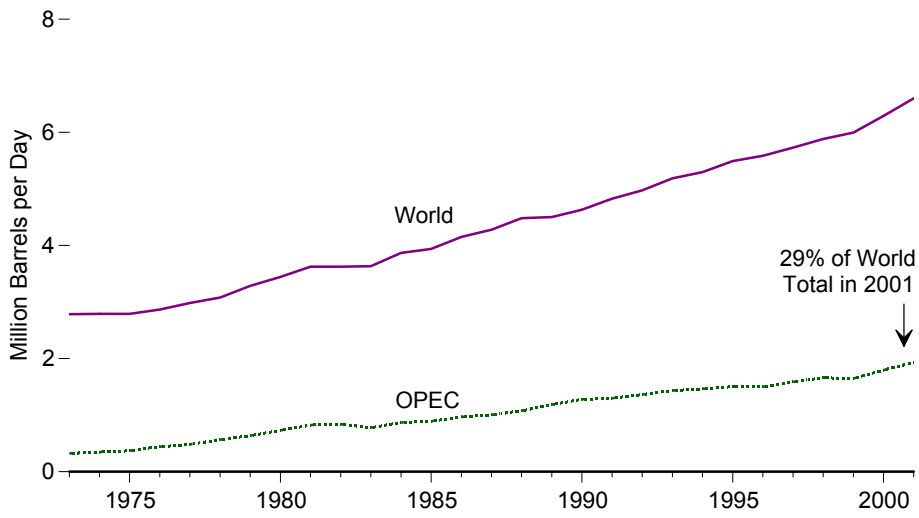
Sources: **China:** • 1960-1972—Central Intelligence Agency, unpublished data. • 1973-2001—Energy Information Administration (EIA), *International Energy Annual,* annual reports, and the International Energy Database. • 2002—EIA, *Monthly Energy Review* (March 2003), Table 10.1b. **United States:** • 1960-1975—Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual.* • 1976-1980—EIA, Energy Data Reports, *Petroleum Statement, Annual.* • 1981-2001—EIA, *Petroleum Supply Annual.* • 2002—EIA, *Petroleum Supply Monthly* (February 2003). **Former U.S.S.R.:** • 1960-1969—U.S.S.R. Central Statistical Office, *Narodnoye Khozyaystvo SSSR* (National Economy USSR). • 1970-1991—EIA, *International Petroleum Monthly,* February 2001, Table 4.1c. **Russia:** • 1992-2001—EIA, *International Petroleum Monthly,* February 2003. • 2002—EIA, *Monthly Energy Review* (March 2003), Table 10.1b. **OPEC Nations:** • 1960-1972—Organization of Petroleum Exporting Countries, *Annual Statistical Bulletin 1979.* • 1973-2001—EIA, *International Energy Annual,* annual reports, and the International Energy Database. • 2002—EIA, *Monthly Energy Review* (March 2003), Table 10.1a. **All Other Countries:** • 1960-1969—Bureau of Mines, *International Petroleum Annual, 1969.* • 1970-1972—EIA, *International Petroleum Annual, 1978.* • 1973-2001—EIA, *International Energy Annual,* annual reports, and the International Energy Database. • 2002—EIA, *Monthly Energy Review* (March 2003), Tables 11.1a and 11.1b.

Figure 11.6 World Natural Gas Plant Liquids Production

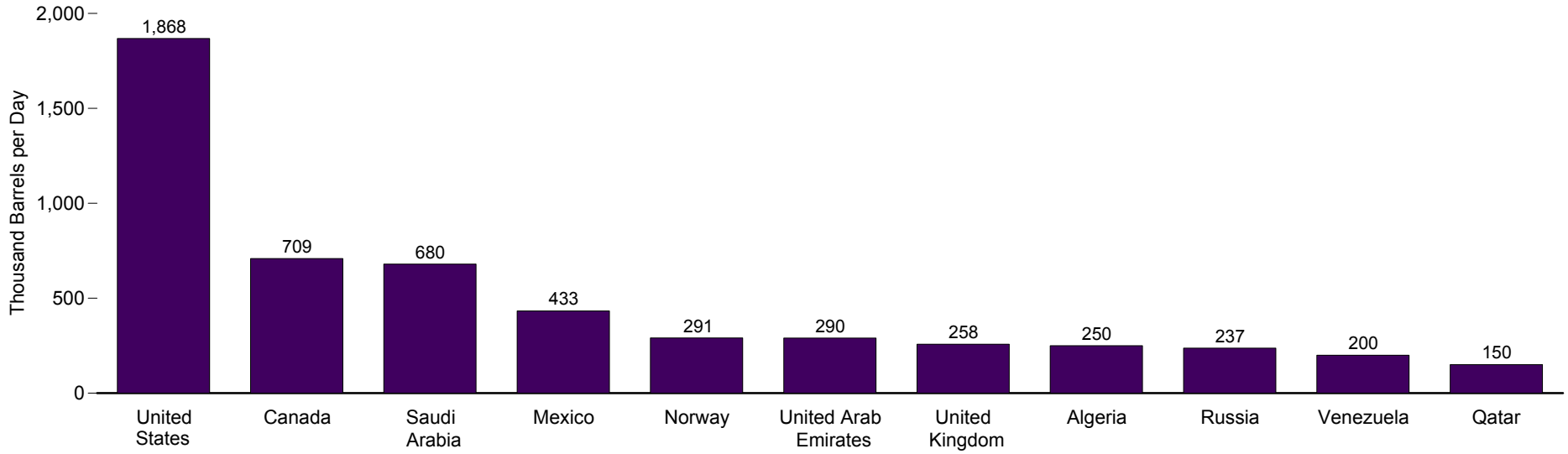
Crude Oil and NGPL Production, 1973-2001



World and OPEC NGPL Production, 1973-2001



Top NGPL Producing Countries, 2001



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, 1973-2001

(Thousand Barrels per Day)

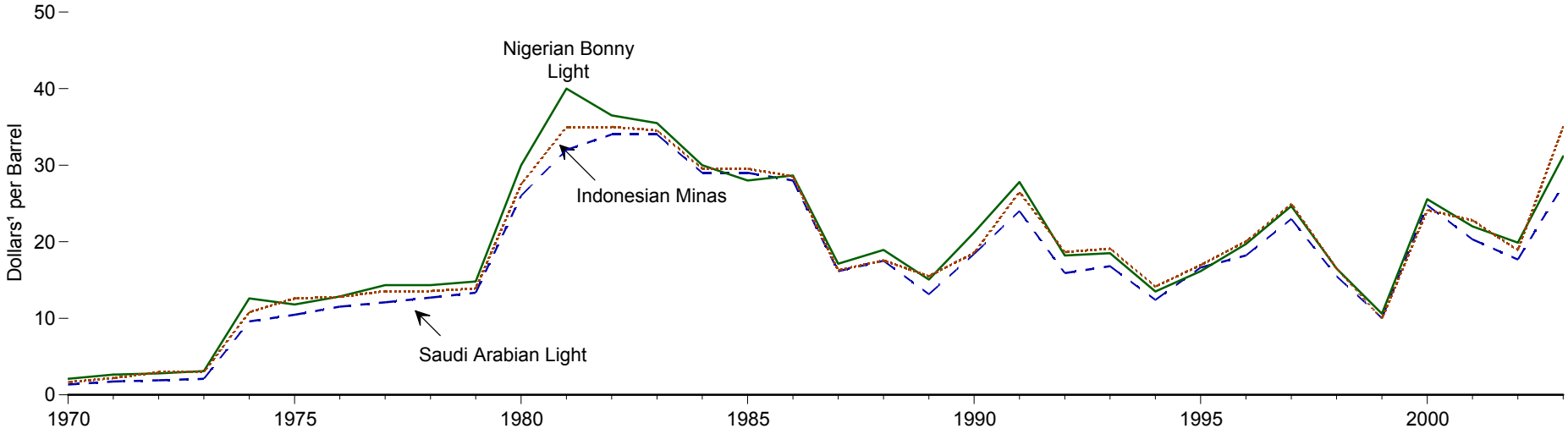
	Selected OPEC [1] Producers								Selected Non-OPEC Producers										
Year	Algeria	Indonesia	Kuwait [2]	Qatar	Saudi Arabia [2]	United Arab Emirates	Venezuela	Total OPEC	Australia	Canada	Malaysia	Mexico	Norway	Former U.S.S.R.	Russia	United Kingdom	United States	Total Non-OPEC [3]	World
1973	9	(s)	60	(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	3,832	5,297
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	R4,221	R5,883
1999	190	87	115	111	666	160	170	1,648	72	653	85	439	121	—	231	238	1,850	R4,347	R5,995
2000	R230	90	115	133	705	200	R175	R1,798	70	699	65	438	120	—	232	233	1,911	R4,491	R6,289
2001P	250	82	120	150	680	290	200	1,933	74	709	70	433	291	—	237	258	1,868	4,668	6,601

[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.

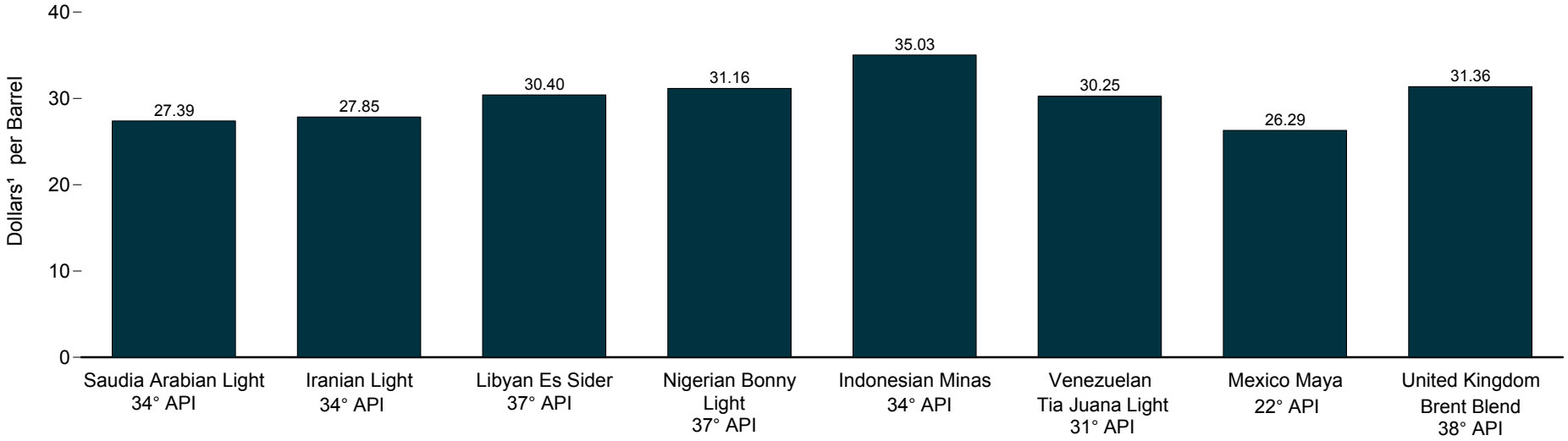
Note: Totals may not equal sum of components due to independent rounding.
Web Page: http://www.eia.doe.gov/international.
Sources: • 1973-1989—Energy Information Administration (EIA), *International Energy Annual,* annual reports, and the International Energy Database. • 1990 forward—EIA, *International Energy Annual 2001* (March 2003), Table 2.3, and the International Energy Database.

Figure 11.7 Crude Oil Prices by Selected Type

Selected Types, 1970-2003



Selected Types, 2003



[1]Nominal 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, 1970-2003

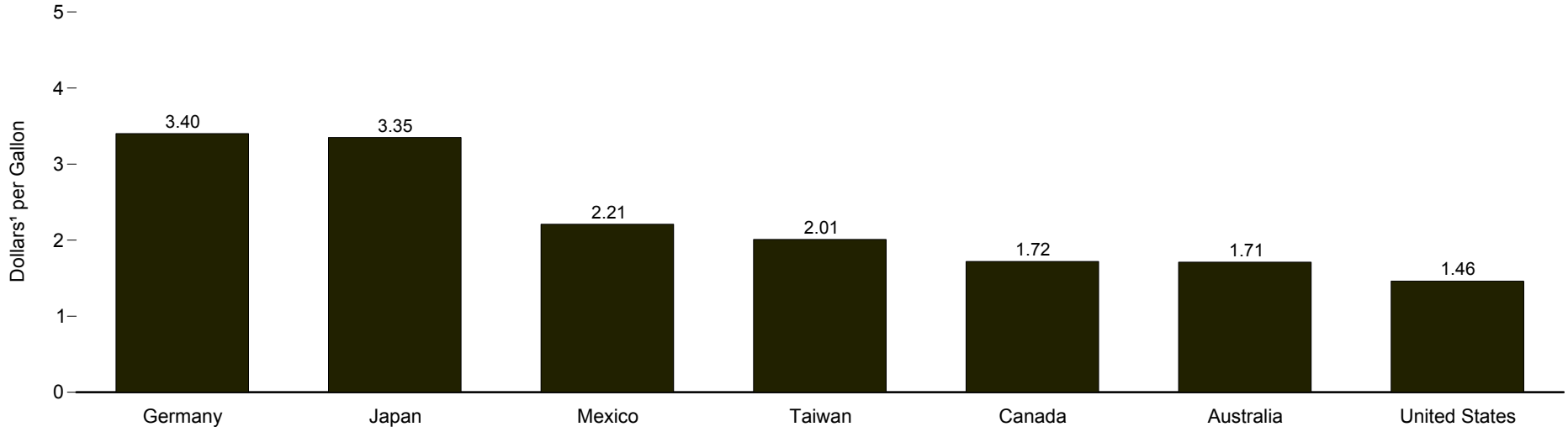
(Dollars[1] per Barrel)

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	[5]30.37	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

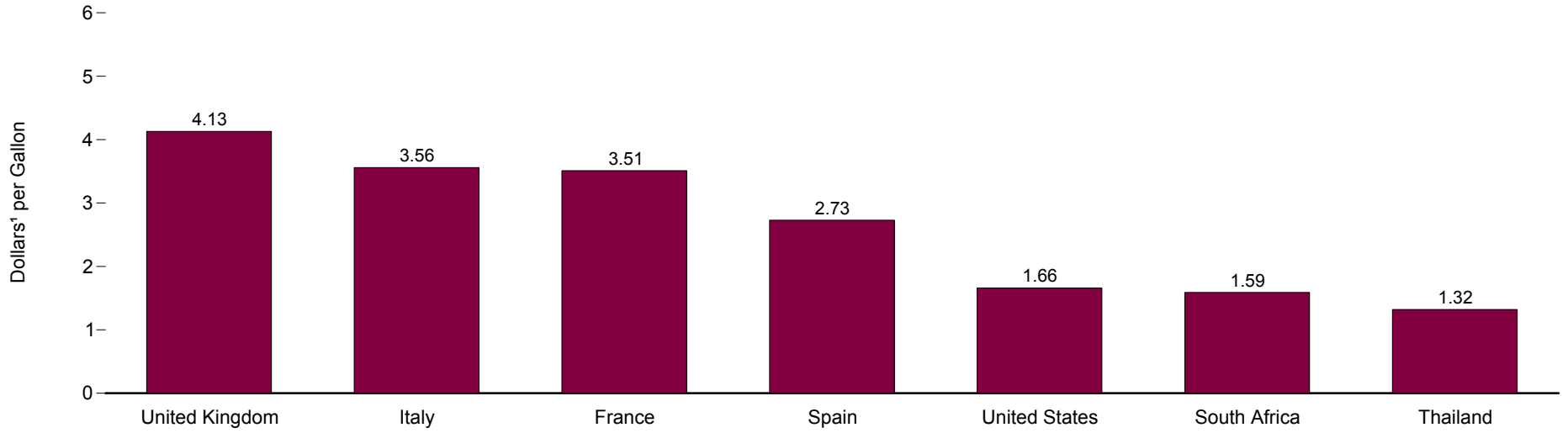
[1] Nominal dollars.
[2] Prices for 1974 and 1975 are for crude oil with 40° API gravity. Prices for 1980 include $4.72 in retroactive charges and market premiums.
[3] Prices from 1977 forward include 2 cents per barrel harbor dues.
[4] 1970-1985—26° API; 1986 forward—31° API.
[5] Price for 1980 includes $1.87 market premiums and credit charges.
API=API gravity. R=Revised. 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 5.16, 5.17, and 5.19 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: 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, 2001

Regular Unleaded



Premium Unleaded[2]



[1] Nominal dollars.
[2] Research Octane Number (RON) of 95.

Source: Table 11.8.

Table 11.8 Retail Motor Gasoline Prices in Selected Countries, 1990-2001

(Dollars[1] per Gallon)

	Regular Unleaded									Premium Unleaded [2]							
Year	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	R1.26	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	R1.49	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	R1.26	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	R1.09	4.06	1.25
1999	1.72	NA	1.51	NA	3.42	3.27	1.80	1.86	1.17	3.85	3.87	R1.56	NA	2.82	R1.22	4.29	1.36
2000	1.94	NA	1.86	NA	3.45	3.74	2.02	2.15	1.51	3.80	3.77	R1.78	NA	2.86	R1.38	4.58	1.69
2001	1.71	NA	1.72	NA	3.40	3.35	2.21	2.01	1.46	3.51	3.56	1.59	NA	2.73	1.32	4.13	1.66

[1] Nominal dollars.
[2] Research Octane Number (RON) of 95.
R=Revised. NA=Not available.

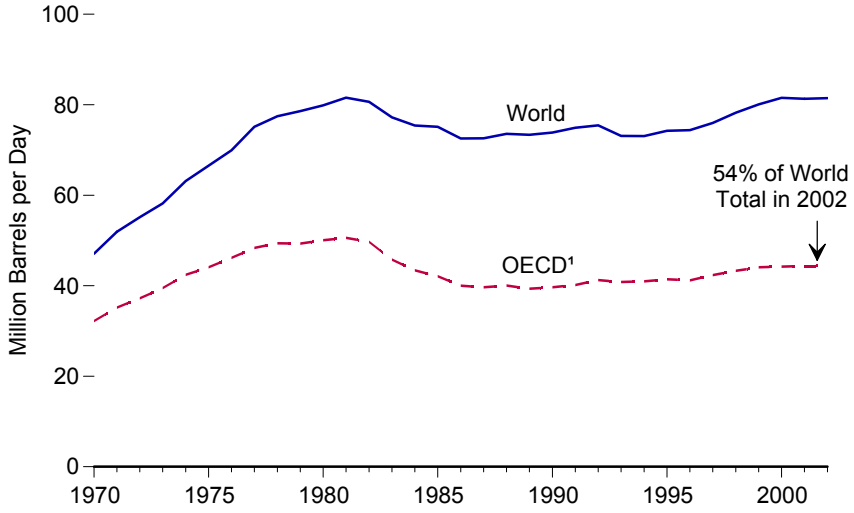
Notes: • Prices are those actually paid, i.e., net of rebates, and include transport costs and taxes which are not refundable. Prices in national currencies are converted to U.S. dollars using exchange rates published by the International Monetary Fund. • Prices for all countries, except the United States, 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.

Web Page: http://www.eia.doe.gov/international.

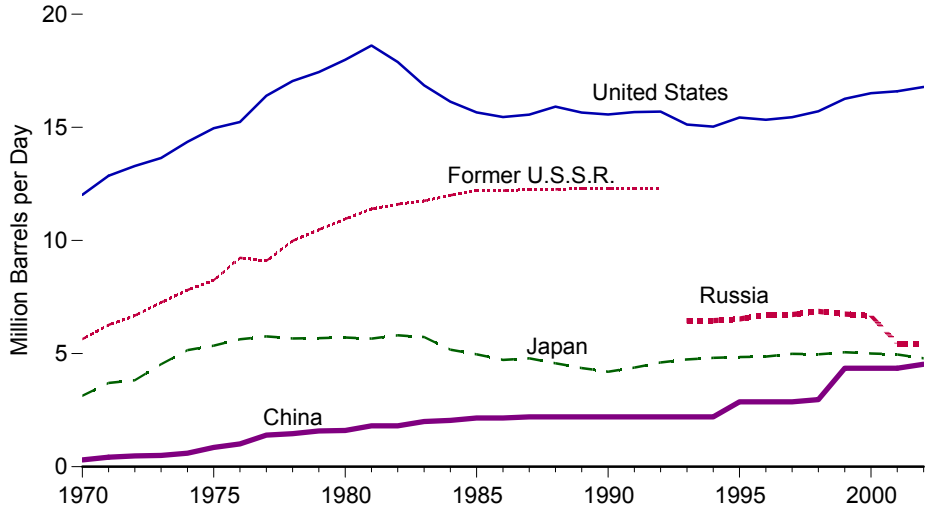
Sources: • **United States:** Table 5.22. • **All Other Data:** International Energy Agency, Organization for Economic Cooperation and Development, *Energy Prices and Taxes, Part II, Section D, and Part III, Section B,* quarterly reports.

Figure 11.9 World Crude Oil Refining Capacity

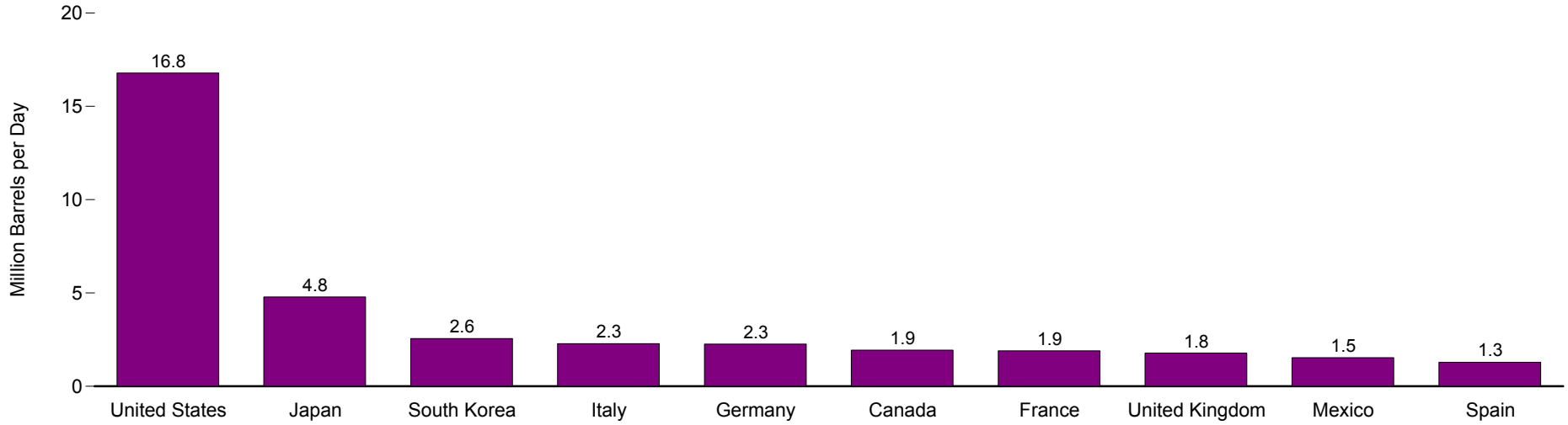
World and OECD,[1] 1970-2002



Leading Countries, 1970-2002



Selected OECD[1] Countries, 2002



[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, 1970-2002

(Million Barrels per Day)

	Selected OECD [1] Countries											Selected Non-OECD Countries							
Year	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	World
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

[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.

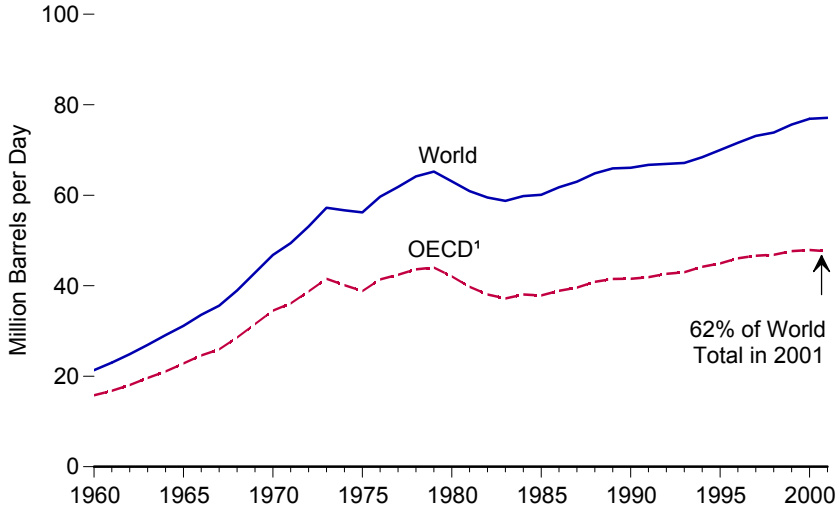
Notes: • Capacity data represent distillation capacity. • Capacity for all years is as of January 1. • Totals may not equal sum of components due to independent rounding.

Web Page: http://www.eia.doe.gov/international.

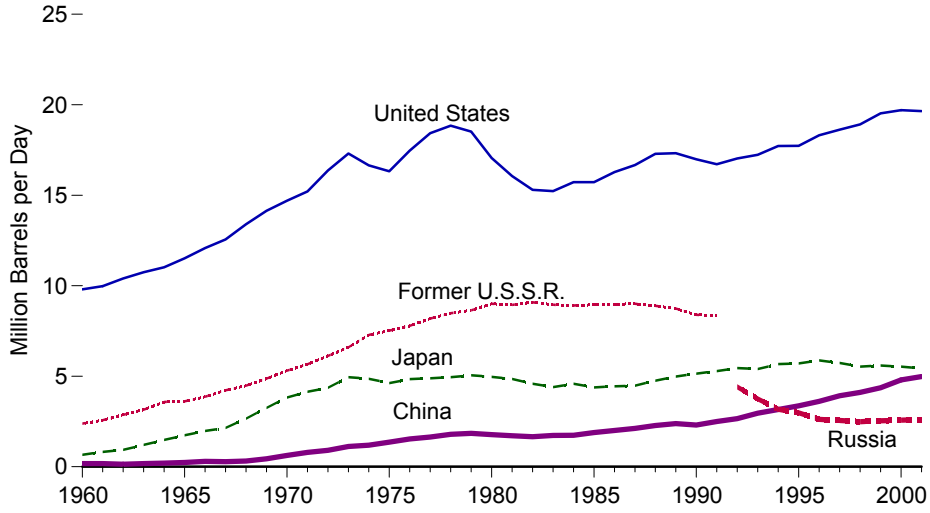
Sources: **United States:** • 1970-1977—Bureau of Mines, Mineral Industry Surveys, *Petroleum Refineries, Annual,* annual reports. • 1978-1981—Energy Information Administration (EIA), Energy Data Reports, *Petroleum Refineries in the United States and U.S. Territories.* • 1982 forward—EIA, *Petroleum 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

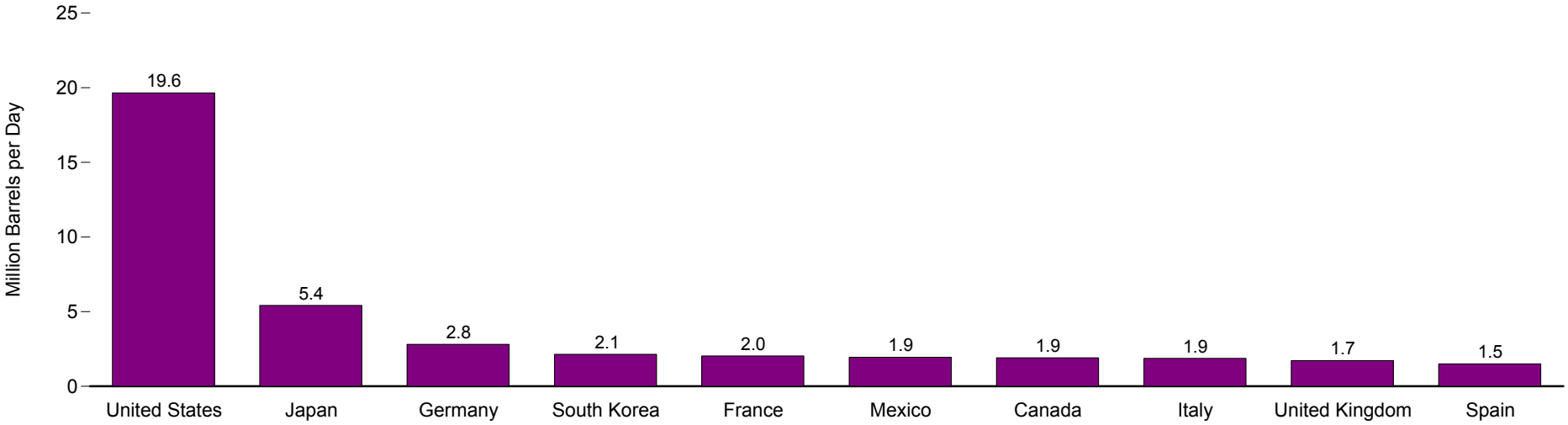
World and OECD,[1] 1960-2001



Leading Consumers, 1960-2001



Selected OECD[1] Consumers, 2001



[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, 1960-2001

(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	R42.06	1.15	1.77	0.64	9.00	—	R21.01	63.07
1981	1.77	2.02	2.80	1.87	4.85	1.40	0.54	0.94	1.59	16.06	R39.78	1.09	1.71	0.73	8.94	—	R21.12	60.90
1982	1.58	1.88	2.74	1.78	4.58	1.48	0.53	1.00	1.59	15.30	R38.05	1.06	1.66	0.74	9.08	—	R21.45	59.50
1983	1.45	1.84	2.66	1.75	4.40	1.35	0.56	1.01	1.53	15.23	R37.17	0.98	1.73	0.77	8.95	—	R21.57	58.74
1984	1.47	1.75	2.66	1.65	4.58	1.45	0.59	0.91	1.85	15.73	R38.07	1.03	1.74	0.82	8.91	—	R21.76	R59.83
1985	1.50	1.78	2.70	1.72	4.38	1.47	0.57	0.85	1.63	15.73	R37.86	1.08	1.89	0.90	8.95	—	R22.23	R60.09
1986	1.51	1.77	2.86	1.74	4.44	1.49	0.61	0.88	1.65	16.28	R38.88	1.24	2.00	0.95	8.98	—	R22.88	61.76
1987	1.55	1.79	2.77	1.86	4.48	1.52	0.64	0.90	1.60	16.67	R39.59	1.26	2.12	0.99	9.00	—	R23.41	63.00
1988	1.69	1.80	2.74	1.84	4.75	1.55	0.73	0.98	1.70	17.28	R40.87	1.30	2.28	1.08	8.89	—	R23.95	64.82
1989	1.73	1.86	2.58	1.93	4.98	1.64	0.84	1.03	1.74	17.33	R41.51	1.32	2.38	1.15	8.74	—	R24.41	65.92
1990	1.69	1.82	2.66	1.87	5.14	1.68	R1.02	1.01	1.75	16.99	R41.52	R1.47	2.30	1.17	8.39	—	R24.56	R66.08
1991	1.62	1.94	2.83	1.86	5.28	R1.69	1.20	1.07	1.80	16.71	R41.88	1.48	2.50	1.19	8.35	—	R24.84	R66.72
1992	1.64	1.93	2.84	1.94	5.45	1.72	1.46	1.11	1.80	17.03	42.64	1.52	2.66	R1.27	—	4.42	R24.29	R66.93
1993	1.69	1.88	2.90	1.85	5.40	1.71	1.69	1.06	R1.81	17.24	R42.98	1.58	2.96	1.31	—	3.75	R24.14	R67.12
1994	1.73	1.83	2.88	1.84	5.67	1.80	1.86	1.13	1.84	17.72	R44.17	1.67	3.16	1.41	—	3.18	R24.25	R68.42
1995	1.76	1.90	2.88	2.05	5.71	1.72	2.01	1.26	R1.84	17.72	R44.92	1.79	3.36	R1.57	—	2.98	R25.07	R69.99
1996	1.80	R1.93	2.91	2.06	5.87	1.76	R2.15	1.18	1.85	18.31	R46.04	1.90	3.61	1.68	—	2.62	R25.54	R71.58
1997	1.92	1.96	R2.91	1.91	5.73	R1.85	2.26	1.28	R1.80	18.62	R46.61	2.03	3.92	1.77	—	2.56	R26.49	R73.10
1998	1.95	2.03	2.92	1.95	5.53	1.95	1.93	1.38	1.79	18.92	R46.84	2.10	4.11	1.84	—	2.49	R27.02	R73.86
1999	2.03	2.03	2.84	1.84	5.59	2.00	R2.07	1.43	1.74	19.52	R47.65	2.13	4.36	R2.03	—	2.54	R27.96	R75.61
2000	R2.07	2.02	R2.78	1.87	5.53	1.99	2.15	1.46	1.72	19.70	R47.88	R2.17	R4.80	R2.13	—	R2.58	R29.02	R76.90
2001P	1.91	2.03	2.81	1.87	5.42	1.94	2.14	1.50	1.72	19.65	47.63	2.20	4.98	2.13	—	2.60	29.49	77.12

[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. The Czech Republic, which joined the OECD on December 21, 1995, is included in Total OECD beginning in 1993, the year that it came into existence.

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

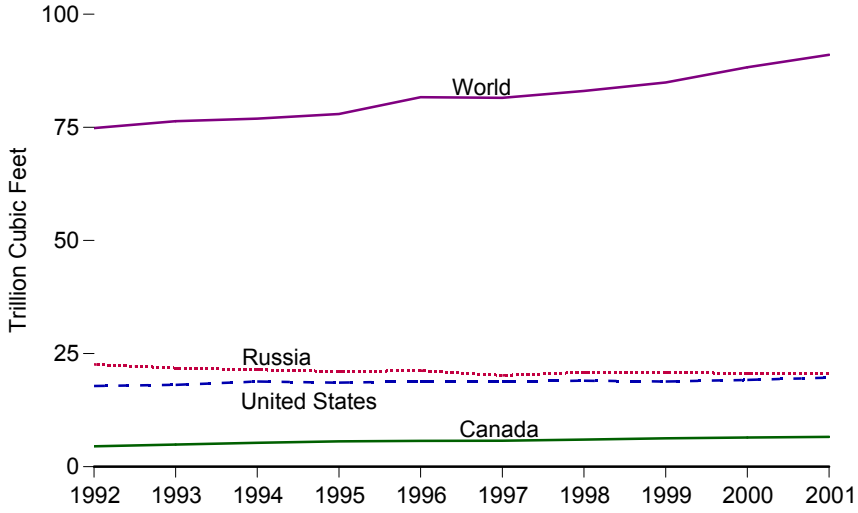
Note: Totals may not equal sum of components due to independent rounding.

Web Page: http://www.eia.doe.gov/international.

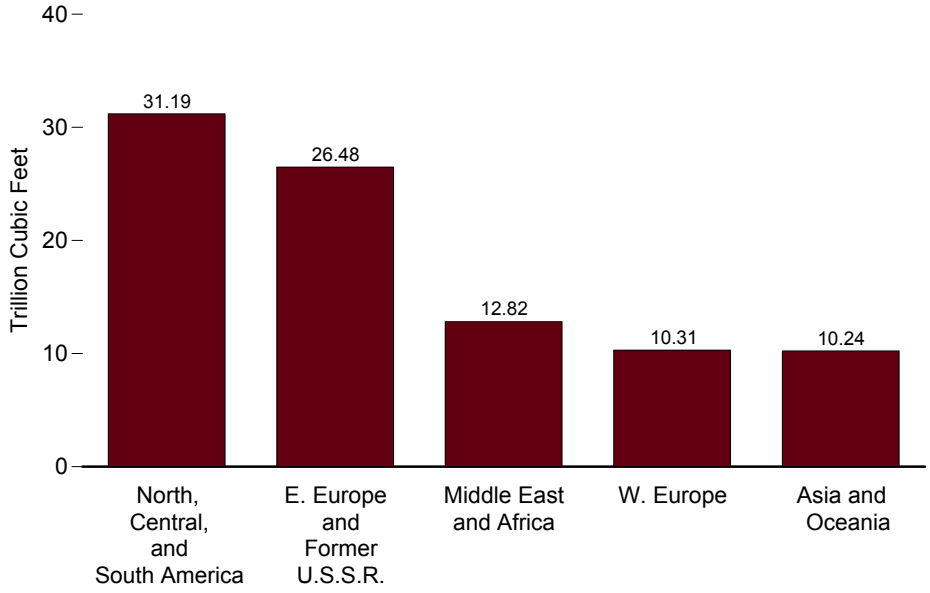
Sources: • 1960-1979—Energy Information Administration (EIA), International Energy Database. • 1980 forward—EIA, *International Energy Annual,* annual reports, and the International Energy Database.

Figure 11.11 World Dry Natural Gas Production

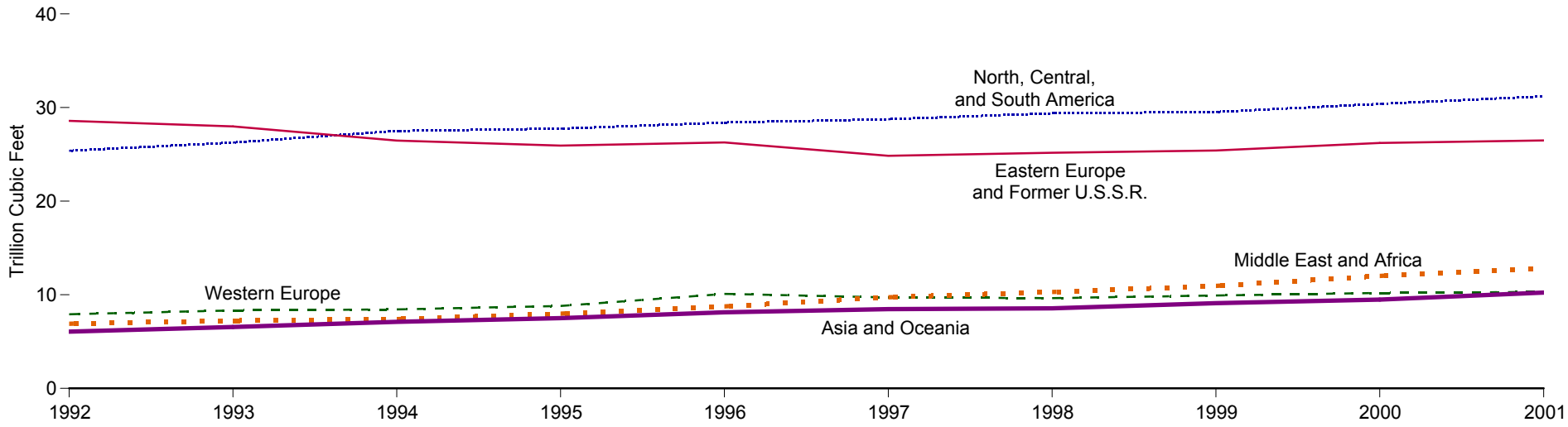
World and Leading Producers, 1992-2001



World Areas, 2001



World Areas, 1992-2001



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

Source: Table 11.11.

Table 11.11 World Dry Natural Gas Production, 1992-2001

(Trillion Cubic Feet)

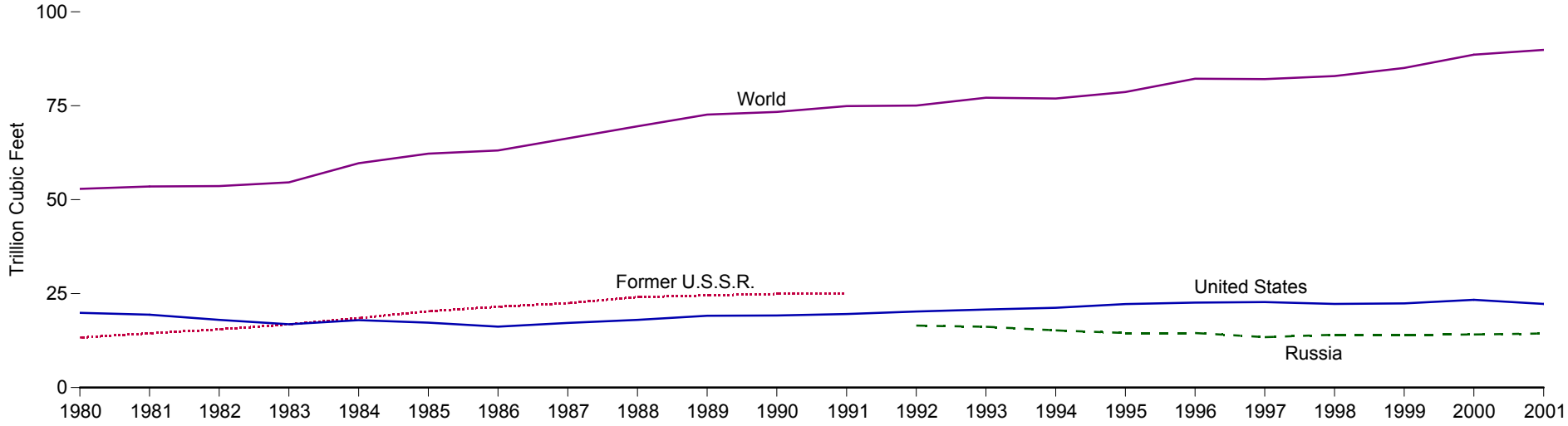
Region and Country	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001 P
North, Central, and South America	**25.38**	**26.26**	**27.50**	**27.74**	**28.39**	**28.75**	**29.39**	**29.53**	R**30.39**	**31.19**
Argentina	0.71	0.76	0.79	0.88	0.94	0.97	1.04	1.22	1.32	1.31
Canada	4.52	4.91	5.27	5.60	5.71	5.76	5.98	6.26	6.47	6.60
Mexico	0.88	0.95	0.97	0.96	1.06	1.17	1.27	1.29	R1.31	1.30
United States	17.84	18.10	18.82	18.60	18.85	18.90	19.02	18.83	R19.18	19.68
Venezuela	0.76	0.82	0.88	0.89	0.96	0.99	1.11	0.95	0.96	1.12
Other	0.66	0.73	0.78	0.81	0.86	0.96	0.96	0.98	1.15	1.17
Western Europe	**7.92**	**8.33**	**8.44**	**8.80**	**10.09**	**9.71**	**9.64**	**9.92**	R**10.19**	**10.31**
Germany	0.68	0.68	0.70	0.74	0.80	0.79	0.77	0.82	0.78	0.78
Italy	0.64	0.69	0.73	0.72	0.71	0.68	0.67	0.62	R0.59	0.55
Netherlands	3.06	3.11	2.95	2.98	3.37	2.99	2.84	2.67	R2.56	2.75
Norway	1.04	0.97	1.04	1.08	1.45	1.62	1.63	1.76	R1.87	1.93
United Kingdom	1.96	2.31	2.47	2.67	3.18	3.03	3.14	3.49	3.83	3.74
Other	0.54	0.57	0.55	0.61	0.59	0.60	0.58	0.57	R0.57	0.57
Eastern Europe and Former U.S.S.R.	**28.58**	**27.99**	**26.47**	**25.93**	**26.28**	**24.85**	**25.17**	**25.41**	R**26.22**	**26.48**
Romania	0.78	0.75	0.69	0.68	0.63	0.61	0.52	0.50	R0.48	0.51
Russia	22.62	21.81	21.45	21.01	21.23	20.17	20.87	20.83	20.63	20.51
Turkmenistan	2.02	2.29	1.26	1.14	1.31	0.90	0.47	0.79	1.64	1.70
Ukraine	0.74	0.68	0.64	0.62	0.64	0.64	0.64	0.63	0.64	0.64
Uzbekistan	1.51	1.59	1.67	1.70	1.70	1.74	1.94	1.96	1.99	2.23
Other	0.92	0.87	0.76	0.79	0.76	0.79	0.74	0.70	0.84	0.89
Middle East and Africa	**6.91**	**7.24**	**7.41**	**7.99**	**8.76**	**9.74**	**10.30**	**10.95**	R**12.01**	**12.82**
Algeria	1.97	1.90	1.81	2.05	2.19	2.43	2.60	2.88	2.94	2.84
Egypt	0.35	0.40	0.42	0.44	0.47	0.48	0.49	0.52	0.65	0.75
Iran	0.88	0.96	1.12	1.25	1.42	1.66	1.77	2.04	2.13	2.17
Qatar	0.40	0.48	0.48	0.48	0.48	0.61	0.69	0.78	1.03	1.14
Saudi Arabia	1.20	1.27	1.33	1.34	1.46	1.60	1.65	1.63	1.76	1.90
United Arab Emirates	1.02	0.94	0.91	1.11	1.19	1.28	1.31	1.34	R1.36	1.59
Other	1.08	1.30	1.34	1.33	1.53	1.67	1.79	1.76	2.15	2.44
Asia and Oceania	**6.06**	**6.55**	**7.11**	**7.50**	**8.13**	**8.47**	**8.55**	**9.10**	R**9.48**	**10.24**
Australia	0.80	0.86	0.93	1.03	1.06	1.06	1.10	1.10	R1.16	1.17
China	0.53	0.56	0.59	0.60	0.67	0.75	0.78	0.85	0.96	1.07
India	0.48	0.53	0.59	0.63	0.70	0.72	0.76	0.75	0.79	0.80
Indonesia	1.79	1.97	2.21	2.24	2.35	2.37	2.27	2.51	2.36	2.44
Malaysia	0.80	0.88	0.92	1.02	1.23	1.36	1.37	1.42	1.50	1.90
Pakistan	0.55	0.58	0.63	0.65	0.70	0.70	0.71	0.78	0.86	0.83
Other	1.10	1.16	1.23	1.33	1.42	1.52	1.56	1.69	R1.86	2.04
World	**74.84**	**76.36**	**76.93**	**77.96**	**81.65**	**81.52**	**83.03**	**84.91**	R**88.28**	**91.05**

R=Revised. P=Preliminary.
Note: Totals may not equal sum of components due to independent rounding.
Web Page: http://www.eia.doe.gov/international.

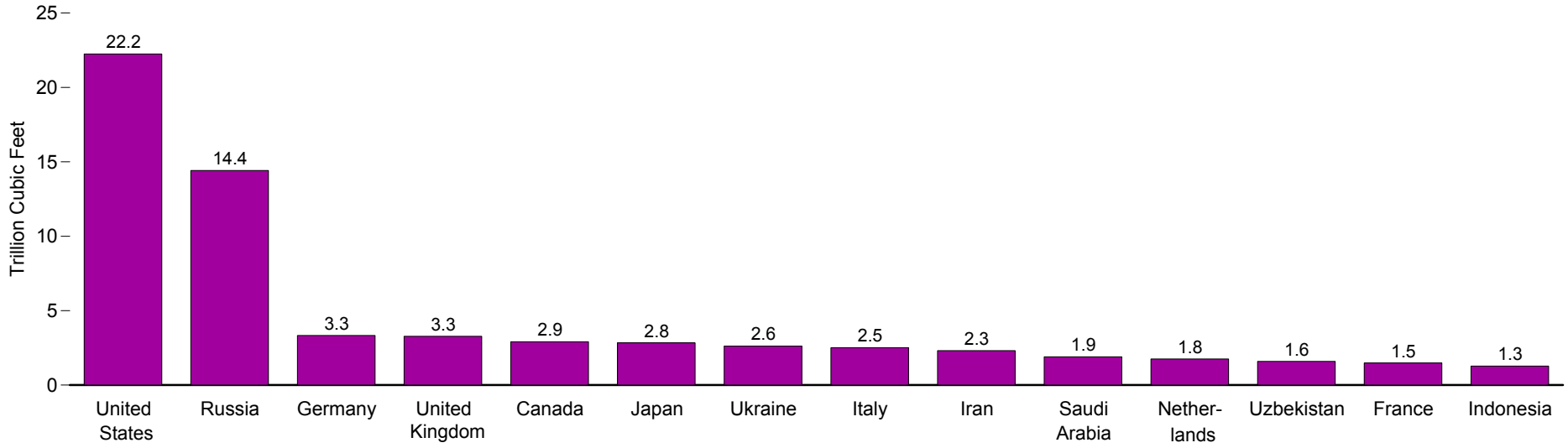
Sources: **United States:** Table 6.1. **All Other Data:** Energy Information Administration, *International Energy Annual 2001* (March 2003), Table 2.4, and the International Energy Database.

Figure 11.12 World Dry Natural Gas Consumption

World and Leading Consumers, 1980-2001



Selected Consuming Countries, 2001



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

Source: Table 11.12.

Table 11.12 World Dry Natural Gas Consumption, 1980-2001

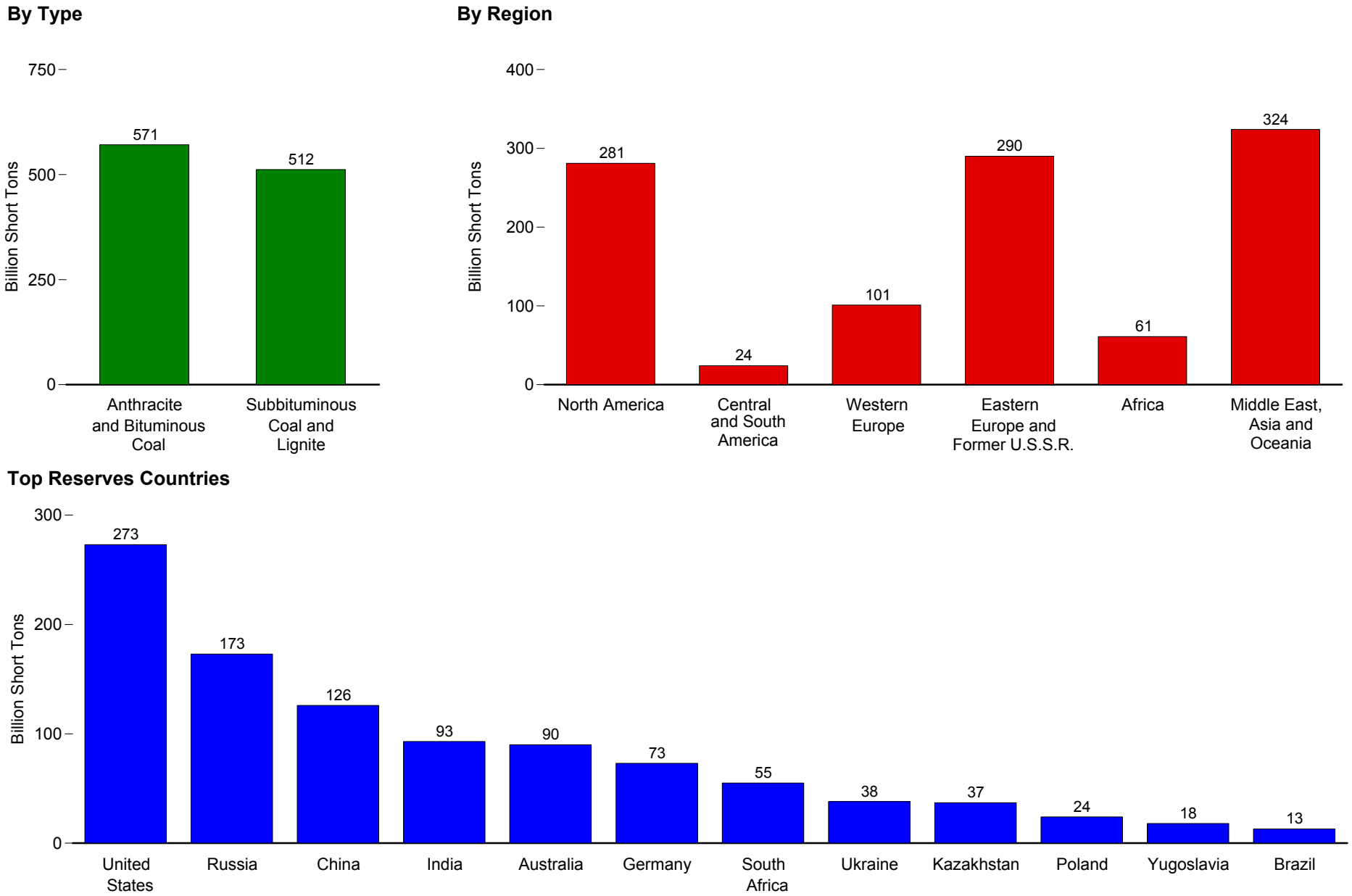
(Billion Cubic Feet)

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	R19,174	—	13,625	73,372
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	77,149
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	R22,207	1,349	18,317	78,660
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	82,201
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	R22,737	1,455	20,794	R82,103
1998	2,794	1,313	3,130	983	1,828	2,205	2,535	1,752	—	14,045	1,653	2,606	3,072	R22,246	1,409	21,341	R82,912
1999	3,105	1,382	3,151	1,124	2,112	2,396	2,646	1,705	—	14,013	1,632	2,755	3,259	R22,405	1,423	21,966	R85,074
2000	R3,283	R1,420	R3,195	1,081	2,221	R2,498	2,753	R1,725	—	14,130	1,759	2,779	R3,373	R23,368	1,511	R23,504	R88,600
2001P	2,905	1,484	3,332	1,278	2,316	2,514	2,840	1,756	—	14,412	1,896	2,617	3,279	22,246	1,596	25,410	89,881

[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: http://www.eia.doe.gov/international.

Sources: **United States:** Table 6.1. **All Other Data:** • 1980-1990—Energy Information Administration (EIA), *International Energy Annual,* annual reports, and the International Energy Database. • 1991 forward—EIA, *International Energy Annual 2001* (March 2003), Table 1.3, and the International Energy Database.

Figure 11.13 World Recoverable Reserves of Coal



Notes: • Recoverable reserves are as of December 31, 2000, except for U.S. recoverable reserves, which are as of December 31, 2001. • 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	**R131,101**	**R150,351**	**R 281,451**
Canada	3,826	3,425	7,251
Greenland	0	202	202
Mexico	948	387	1,335
United States [1]	R126,326	R146,337	R 272,664
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	**R570,746**	**R511,520**	**R1,082,266**

[1] U.S. data are more current than other data on this table. They represent recoverable reserves as of December 31, 2001; data for the other countries are as of December 31, 2000, the most recent period for which they are available.

R=Revised.

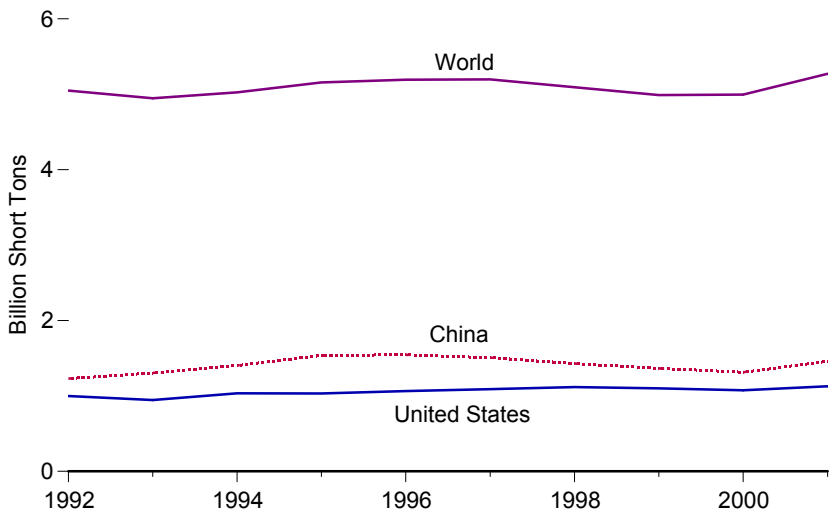
Notes: • World Energy Council data represent "Proved Recoverable Reserves," which are the tonnage within the "Proved Amount in Place" that can be recovered (extracted from the earth in raw form) under present and expected local economic conditions with existing, available technology. • The EIA does not 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: http://www.eia.doe.gov/international.

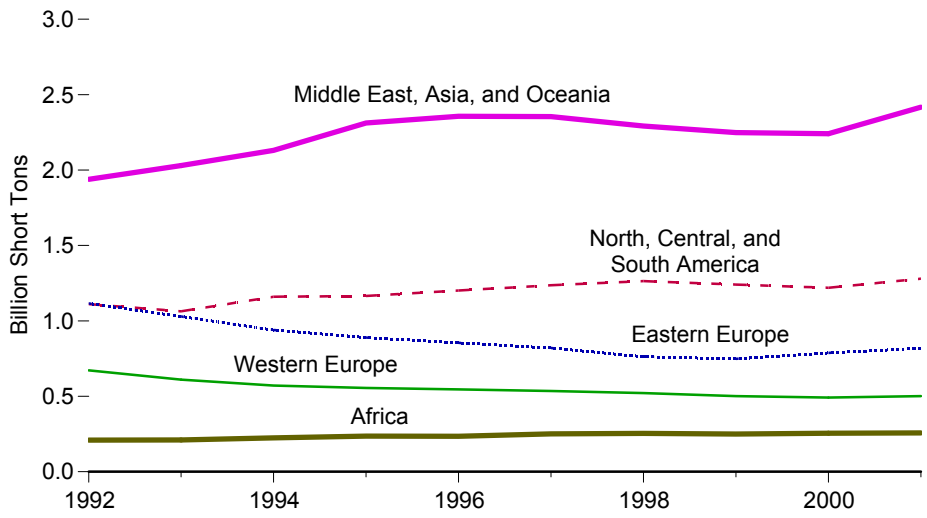
Sources: **United States:** Energy Information Administration, Coal Reserves Database (April 2003), data are as of December 31, 2001. **All Other Data:** World Energy Council, *Survey of Energy Resources 2001,* data are as of December 31, 1999.

Figure 11.14 World Coal Production

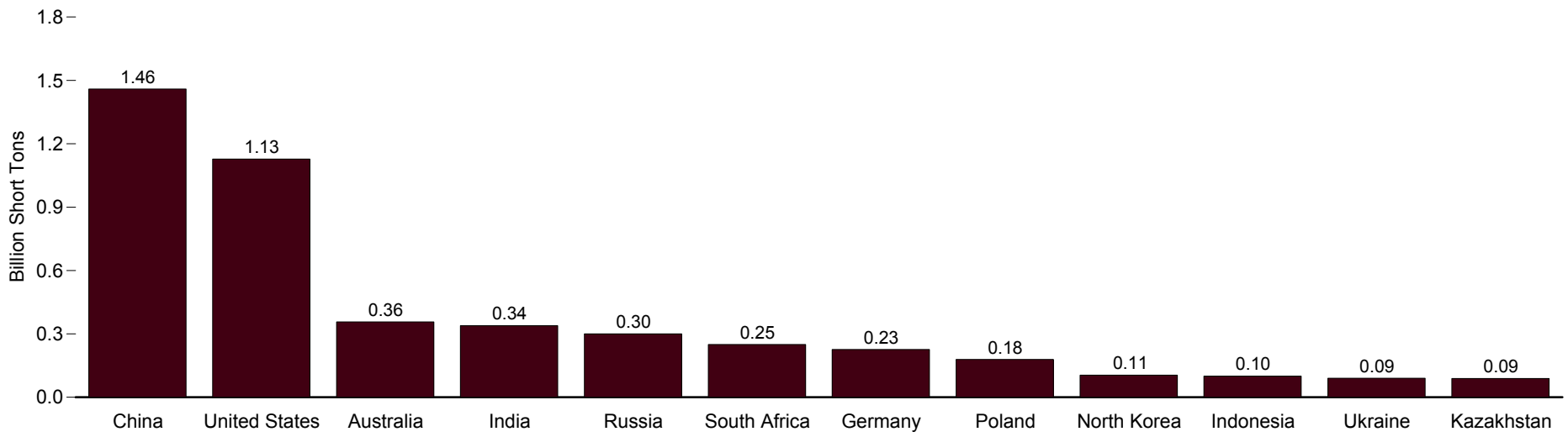
World and Leading Producers, 1992-2001



World Areas, 1992-2001



Top Producing Countries, 2001



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

Source: Table 11.14.

Table 11.14 World Coal Production, 1992-2001

(Million Short Tons)

Region and Country	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001[P]
North, Central, and South America	**1,111**	**1,064**	**1,160**	**1,165**	**1,201**	**1,236**	**[R]1,264**	**1,241**	**[R]1,219**	**1,280**
Canada	72	76	80	83	83	87	83	80	76	78
Colombia	24	23	25	28	33	36	37	36	42	48
Mexico	7	8	10	10	11	11	12	11	[R]13	13
United States	998	945	1,034	1,033	1,064	1,090	1,118	1,100	1,074	1,128
Other	10	11	11	11	[R]10	12	14	13	[R]15	14
Western Europe	**672**	**611**	**571**	**555**	**[R]546**	**[R]535**	**521**	**[R]501**	**[R]492**	**501**
France	13	12	11	11	9	8	7	6	[R]4	3
Germany	346	315	292	274	265	252	233	226	225	226
Greece	61	60	62	64	66	65	67	68	[R]70	74
Macedonia	8	8	8	8	8	8	9	8	8	8
Slovenia	6	6	5	5	5	6	5	5	5	5
Spain	37	35	33	31	31	29	29	27	26	25
Turkey	57	54	60	61	62	66	74	74	[R]70	73
United Kingdom	94	75	54	52	[R]54	[R]52	44	40	[R]34	35
Yugoslavia	44	41	42	44	42	45	49	37	38	39
Other	7	6	5	5	4	4	4	[R]10	[R]12	13
Eastern Europe and Former U.S.S.R.	**1,115**	**1,030**	**939**	**889**	**854**	**821**	**762**	**[R]748**	**[R]788**	**818**
Bulgaria	33	32	32	34	34	33	34	[R]31	[R]33	31
Czech Republic	—	94	85	82	84	81	74	65	72	73
Hungary	17	16	16	16	17	17	17	17	[R]16	16
Kazakhstan	139	123	115	92	85	80	77	64	[R]80	89
Poland	218	218	220	220	193	222	196	188	[R]178	179
Romania	42	44	45	45	46	37	29	25	32	33
Russia	406	364	313	296	304	258	241	259	[R]279	300
Ukraine	147	128	104	95	83	85	85	91	90	90
Uzbekistan	5	4	4	3	3	3	3	3	3	3
Other	106	7	[R]6	5	5	5	5	5	5	4
Africa	**[R]210**	**[R]211**	**[R]224**	**[R]236**	**[R]235**	**[R]251**	**[R]254**	**[R]250**	**[R]255**	**257**
South Africa	[R]201	[R]203	[R]216	[R]227	[R]227	[R]244	[R]247	[R]243	[R]248	250
Zimbabwe	6	6	6	6	5	4	5	[R]5	5	5
Other	3	3	3	3	2	2	[R]2	[R]2	[R]2	2
Middle East, Asia, and Oceania	**1,939**	**2,030**	**2,131**	**2,312**	**2,357**	**2,354**	**2,292**	**[R]2,248**	**[R]2,241**	**2,417**
Australia	249	248	248	267	272	292	317	[R]321	[R]338	357
China	1,229	1,304	1,404	1,537	1,545	1,507	1,429	1,365	1,314	1,459
India	270	281	280	298	315	326	322	[R]327	[R]343	339
Indonesia	25	30	34	46	55	60	66	[R]79	[R]84	100
Mongolia	7	6	6	6	6	5	6	5	6	6
North Korea	105	109	108	107	106	105	99	100	[R]106	105
South Korea	13	10	8	6	5	5	5	5	5	4
Thailand	17	17	19	20	24	26	22	20	20	22
Vietnam	5	7	6	9	11	13	12	10	[R]11	11
Other	19	18	18	17	17	15	14	15	[R]14	15
World	**[R]5,048**	**[R]4,947**	**[R]5,026**	**[R]5,157**	**[R]5,193**	**[R]5,196**	**[R]5,093**	**[R]4,988**	**[R]4,995**	**5,272**

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

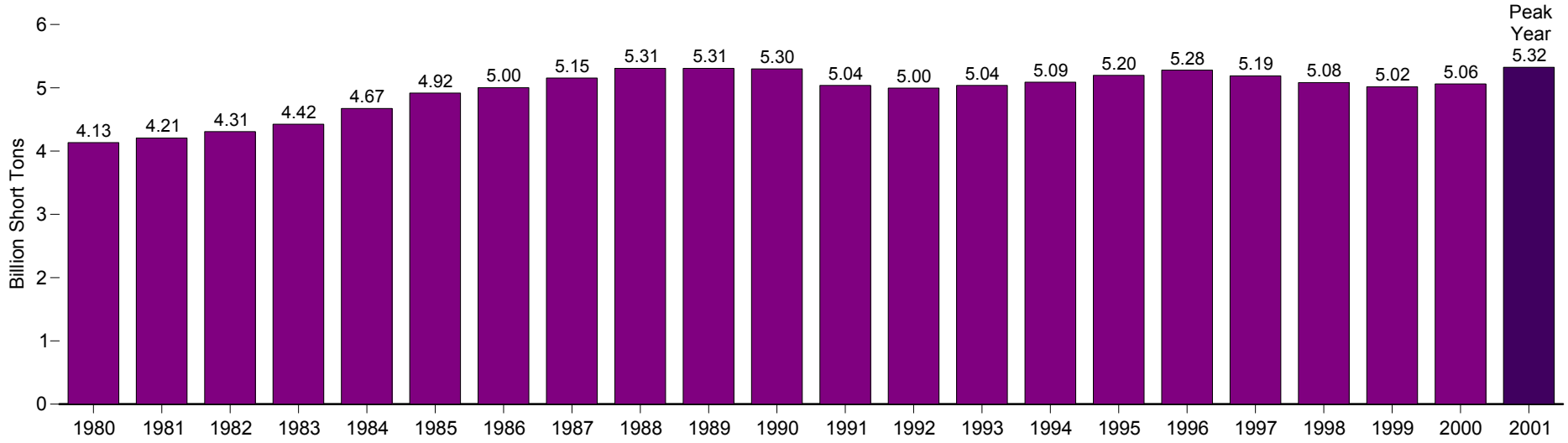
Notes: • Coal includes anthracite, subanthracite, bituminous coal, subbituminous coal, lignite, and brown coal. • Totals may not equal sum of components due to independent rounding.

Web Page: http://www.eia.doe.gov/international.

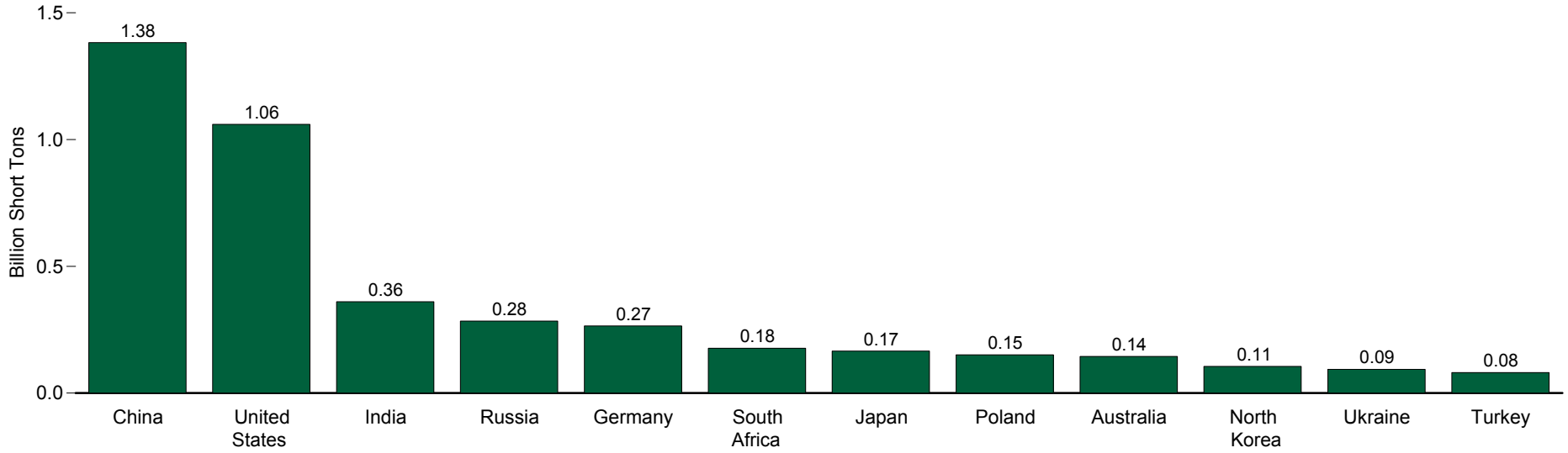
Sources: **United States:** Table 7.1. **All Other Data:** Energy Information Administration, *International Energy Annual 2001* (March 2003), Table 2.5, and the International Energy Database.

Figure 11.15 World Coal Consumption

World Total, 1980-2001



Top Consuming Countries, 2001



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

Source: Table 11.15.

Table 11.15 World Coal Consumption, 1980-2001

(Million Short Tons)

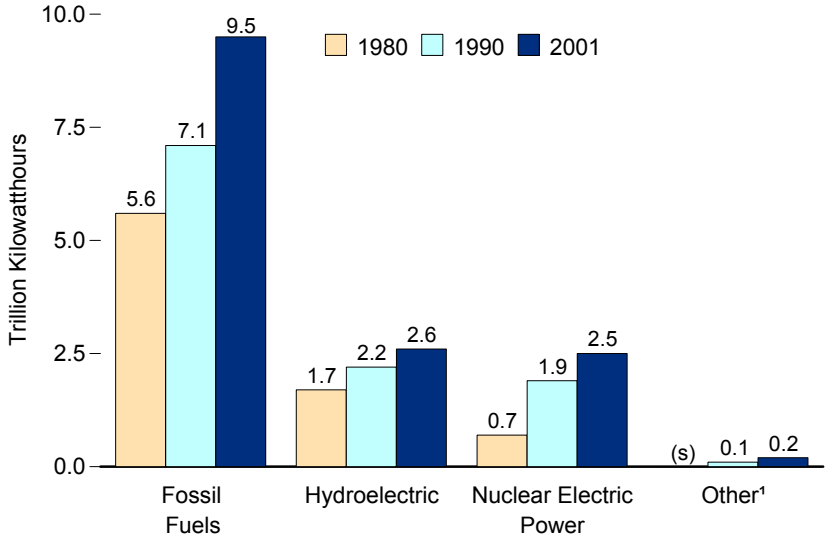
Year	Australia	China	Germany [1]	Greece	India	Japan	North Korea	Poland	Former U.S.S.R.	Russia	South Africa	Turkey	Ukraine	United Kingdom	United States	Other	World
1980	74	679	535	26	130	98	40	221	751	—	105	20	—	134	703	618	4,133
1981	75	680	544	30	139	106	40	200	748	—	116	23	—	130	733	641	4,206
1982	79	726	548	31	147	105	41	208	771	—	124	26	—	122	707	673	4,307
1983	78	768	549	36	160	100	44	213	764	—	127	29	—	123	737	R697	R4,425
1984	81	845	573	36	178	113	61	227	770	—	137	35	—	88	791	737	4,672
1985	86	921	579	42	193	119	66	238	779	—	142	46	—	116	818	772	4,917
1986	84	962	576	44	209	109	71	247	803	—	145	54	—	123	804	770	5,002
1987	93	1,027	565	49	208	111	80	258	807	—	148	54	—	129	837	789	5,155
1988	96	1,098	562	56	215	123	91	253	821	—	151	51	—	123	884	785	5,308
1989	104	1,113	553	59	226	123	96	242	777	—	140	60	—	126	895	R791	R5,306
1990	104	1,124	528	59	242	125	102	202	848	—	R139	60	—	119	R904	R742	R5,299
1991	108	1,165	408	59	252	128	105	202	672	—	R144	64	—	118	899	R715	R5,039
1992	111	1,199	362	62	274	126	107	192	—	375	R147	66	R151	111	908	R804	R4,995
1993	109	1,276	335	62	286	128	112	194	—	361	R146	61	135	96	944	793	R5,039
1994	110	1,390	314	66	291	133	110	184	—	316	R161	66	109	91	951	R797	R5,089
1995	112	1,498	298	64	312	140	109	184	—	296	R162	67	110	79	962	R805	R5,197
1996	120	1,517	296	66	333	143	108	160	—	317	R164	73	95	R77	1,006	803	R5,279
1997	127	1,450	280	66	343	147	107	182	—	258	R172	80	92	R69	1,030	R785	R5,189
1998	138	1,392	269	68	340	143	102	168	—	238	R161	86	92	R66	1,037	R782	R5,082
1999	R141	R1,343	257	R68	R343	149	R100	161	—	R247	R170	84	R94	R61	1,039	R760	R5,017
2000	R141	R1,282	R264	R72	R359	R160	R106	R158	—	R267	R173	R80	R94	R64	1,084	R757	R5,061
2001P	144	1,383	265	76	360	166	105	151	—	284	177	81	94	71	1,060	907	5,324

[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: http://www.eia.doe.gov/international.

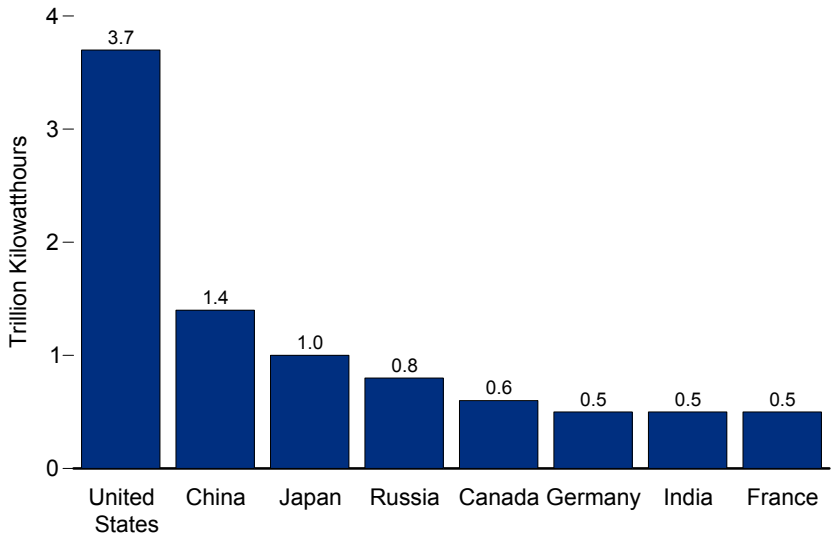
Sources: **United States:** Table 7.1. **All Other Data:** • 1980-1990—Energy Information Administration (EIA), *International Energy Annual,* annual reports, and the International Energy Database. • 1991 forward—EIA, *International Energy Annual 2001* (March 2003), Table 1.4, and the International Energy Database.

Figure 11.16 World Net Generation of Electricity

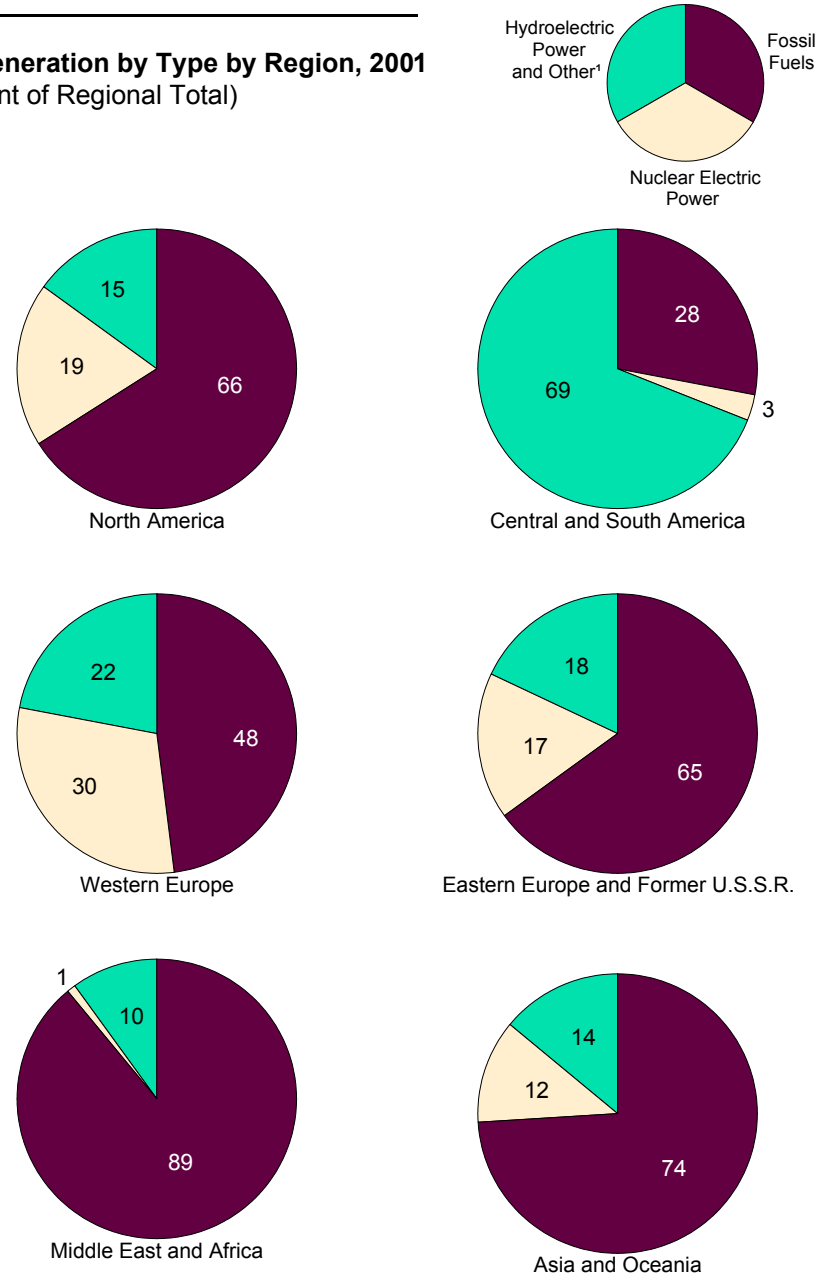
Net Generation by Type–1980, 1990, and 2001



Net Generation in Leading Countries, 2001



Net Generation by Type by Region, 2001
(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 2001

(Billion Kilowatthours)

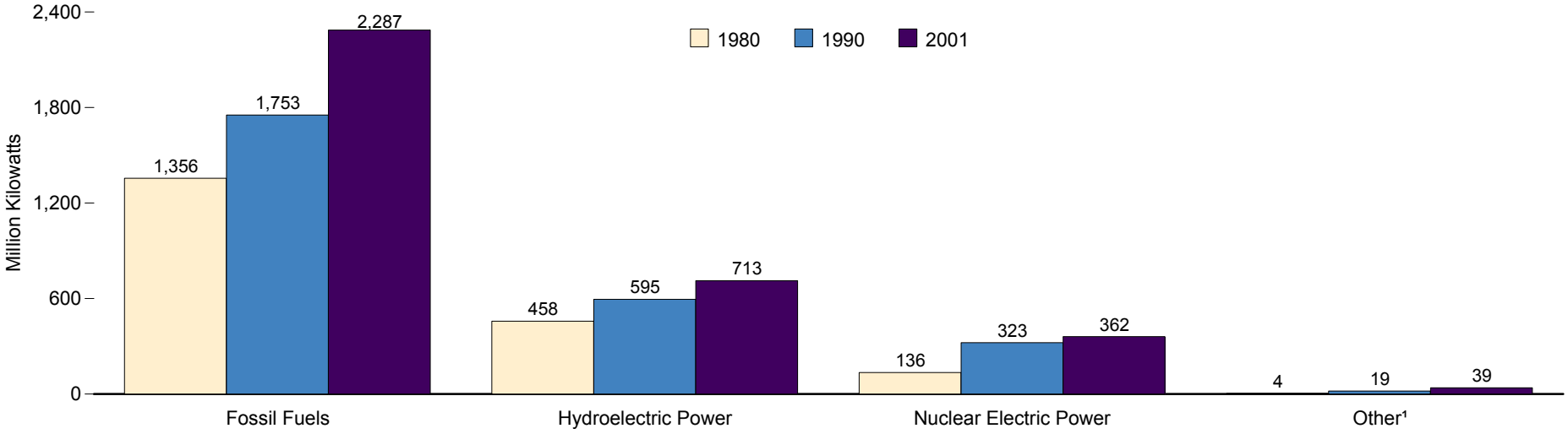
Region and Country	Fossil Fuels			Nuclear Electric Power			Hydroelectric Power [1]			Total [2]		
	1980	1990	2001 P	1980	1990	2001 P	1980	1990	2001 P	1980	1990	2001 P
North America	**1,880.1**	R**2,292.1**	**2,992.6**	**287.0**	**648.9**	**850.0**	**546.9**	R **606.5**	**564.3**	**2,721.6**	R **3,623.9**	**4,502.4**
Canada	79.8	R 101.9	158.4	35.9	69.2	72.9	251.0	293.9	327.9	367.9	R 468.6	566.3
Mexico	46.0	85.7	156.3	0.0	2.8	8.3	16.7	23.2	28.2	63.6	116.6	198.6
United States	1,753.8	R2,103.8	2,677.0	251.1	576.9	768.8	279.2	R 289.4	208.2	2,289.6	R 3,038.0	3,736.6
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	R **99.8**	R **114.8**	**219.5**	**2.2**	**9.0**	**20.8**	**201.5**	R **365.0**	**513.4**	**308.2**	R **496.9**	**774.3**
Argentina	22.2	20.9	50.8	2.2	7.0	6.5	17.3	20.2	39.7	R 41.8	48.3	97.2
Brazil	7.5	8.1	26.6	0.0	1.9	14.3	128.4	204.6	265.5	138.3	219.6	321.2
Paraguay	(s)	(s)	(s)	0.0	0.0	0.0	0.7	26.9	44.9	R 0.8	27.0	44.9
Venezuela	17.6	21.0	27.7	0.0	0.0	0.0	14.4	36.6	59.8	32.0	57.6	87.6
Other	52.4	R 64.7	114.4	0.0	0.0	0.0	40.6	R 76.5	103.6	R 95.3	R 144.4	223.5
Western Europe	**1,180.1**	R**1,171.6**	**1,383.6**	**219.2**	**707.5**	**875.4**	**431.7**	**453.4**	**554.1**	**1,844.5**	R **2,351.7**	**2,895.5**
Belgium	38.3	R 25.0	28.5	11.9	40.6	44.0	0.3	0.3	0.4	50.8	R 66.5	74.3
Finland	22.0	22.8	27.8	6.6	18.3	21.7	10.1	10.8	13.3	38.7	51.8	71.2
France	118.0	R 44.3	42.7	63.4	298.4	400.9	68.3	52.8	72.7	250.8	R 397.6	520.1
Germany	390.3	358.9	336.7	55.6	145.1	162.6	18.8	17.2	22.9	469.9	526.0	544.8
Italy	125.5	R 167.5	203.4	2.1	0.0	0.0	45.0	31.3	47.7	176.4	R 202.1	258.8
Netherlands	58.0	R 63.2	79.4	3.9	3.3	3.8	0.0	0.1	0.1	62.9	R 67.6	88.3
Norway	0.1	R 0.2	0.4	0.0	0.0	0.0	82.7	119.9	119.2	82.9	R 120.4	120.1
Spain	74.5	R 66.5	112.3	5.2	51.6	60.5	29.2	25.2	40.6	109.2	R 143.9	222.5
Sweden	10.1	R 3.2	6.1	25.3	64.8	65.8	58.1	71.8	77.6	94.3	R 141.5	152.9
Switzerland	0.9	R 0.6	0.9	12.9	22.4	25.5	32.5	29.5	40.9	46.4	R 53.0	68.7
Turkey	12.0	32.3	92.4	0.0	0.0	0.0	11.2	22.9	23.8	23.3	55.2	116.6
United Kingdom	228.9	R 230.0	266.5	32.3	58.7	85.6	3.9	5.1	3.2	265.1	R 295.2	360.9
Other	101.4	R 157.0	186.6	0.0	4.4	5.0	71.7	66.6	91.7	173.8	R 230.8	296.2
Eastern Europe and Former U.S.S.R.	**1,309.3**	**1,471.5**	**1,046.4**	**83.2**	**251.3**	**277.3**	**211.3**	**253.6**	**271.5**	**1,604.1**	**1,976.6**	**1,599.8**
Czech Republic	—	—	53.3	—	—	14.0	—	—	2.0	—	—	70.0
Kazakhstan	—	—	44.2	—	—	0.0	—	—	8.2	—	—	52.4
Poland	111.1	125.0	132.4	0.0	0.0	0.0	3.2	3.3	2.0	114.7	128.5	135.0
Romania	51.4	49.7	31.8	0.0	0.0	5.0	12.5	10.9	14.0	63.9	60.6	50.9
Russia	—	—	544.6	—	—	125.4	—	—	173.5	—	—	846.5
Ukraine	—	—	80.1	—	—	71.7	—	—	13.0	—	—	164.7
Other	1,146.8	1,296.7	160.0	83.2	251.3	61.3	195.5	239.4	58.8	1,425.6	1,787.5	280.3
Middle East	**82.8**	**216.3**	**448.4**	**0.0**	**0.0**	**0.0**	**9.6**	R **12.5**	**14.3**	**92.4**	**228.9**	**462.7**
Iran	15.7	49.8	121.0	0.0	0.0	0.0	5.6	6.0	3.6	21.3	55.9	124.6
Saudi Arabia	20.5	64.9	122.4	0.0	0.0	0.0	0.0	0.0	0.0	20.5	64.9	122.4
Other	46.6	101.6	205.1	0.0	0.0	0.0	4.1	6.5	10.7	50.7	108.1	215.8
Africa	**129.1**	R **243.8**	**341.4**	**0.0**	**8.4**	**10.7**	R **60.1**	R **54.9**	**73.1**	R **189.2**	R **307.5**	**425.7**
Egypt	8.6	31.5	61.0	0.0	0.0	0.0	9.7	9.9	14.3	18.3	41.4	75.2
South Africa	92.1	146.6	182.9	0.0	8.4	10.7	1.0	1.0	2.1	93.1	156.0	195.6
Other	28.4	65.6	97.6	0.0	0.0	0.0	R 49.4	R 44.0	56.8	R 77.8	R 110.1	154.8
Asia and Oceania	**907.7**	**1,626.8**	**3,096.0**	**92.7**	**279.9**	**486.5**	**275.2**	**420.9**	**579.8**	**1,280.5**	R **2,354.5**	**4,207.7**
Australia	74.5	131.8	180.0	0.0	0.0	0.0	12.8	R 14.0	16.5	87.7	146.4	198.2
China	227.9	465.2	1,139.0	0.0	0.0	16.7	57.6	125.1	263.4	285.5	590.3	1,420.3
India	69.7	198.9	435.8	3.0	5.6	18.2	46.5	70.9	77.4	119.3	275.5	533.3
Indonesia	10.6	35.3	83.3	0.0	0.0	0.0	3.0	10.1	10.1	13.5	46.5	95.8
Japan	381.6	524.0	621.7	78.6	192.2	309.0	87.8	88.4	87.0	549.1	822.1	1,036.8
South Korea	29.8	45.5	181.4	3.3	50.2	106.5	1.5	4.6	2.3	34.6	100.4	290.7
Taiwan	31.3	43.6	107.9	7.8	31.6	34.1	2.9	8.2	9.1	42.0	83.3	151.1
Thailand	12.3	38.7	89.1	0.0	0.0	0.0	1.3	4.9	6.2	13.6	43.7	97.6
Other	70.1	143.8	257.8	(s)	0.4	2.0	61.8	94.5	107.9	135.3	R 246.3	383.8
World	**5,588.8**	R**7,136.8**	**9,528.0**	**684.4**	R **1,905.0**	**2,520.7**	R**1,736.3**	R**2,166.8**	**2,570.6**	R**8,040.5**	R**11,340.1**	**14,868.1**

[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 billion kilowatthours.
Note: • Totals may not equal sum of components due to independent rounding.

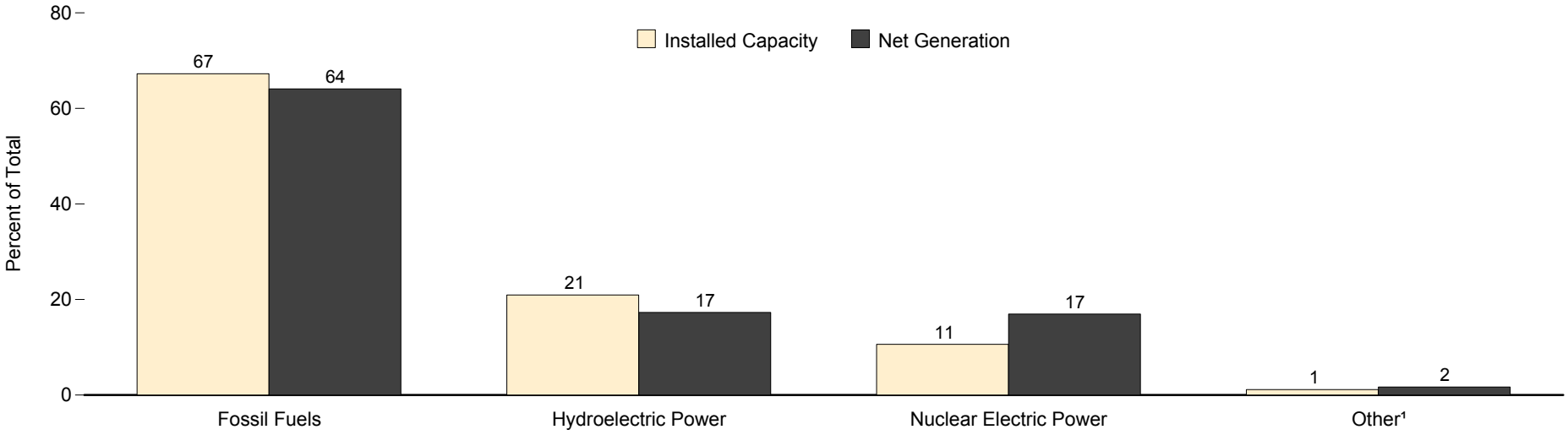
Web Page: http://www.eia.doe.gov/international.
Sources: **United States:** Tables 1.2 and 8.2a. **All Other Data:** • 1980 and 1990—Energy Information Administration (EIA), International Energy Database. • 2001—EIA, *International Energy Annual 2001* (March 2003).

Figure 11.17 World Electrical Installed Capacity by Type

By Type–1980, 1990, and 2001



Installed Capacity and Net Generation Shares by Type, 2001



[1] Wood, waste, geothermal, solar, wind, batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous.

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 2001

(Million Kilowatts)

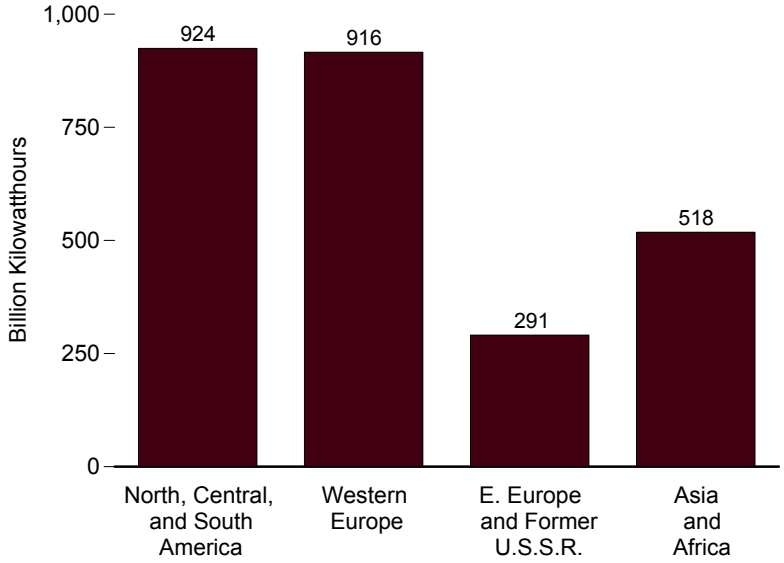
Region and Country	Fossil Fuels			Nuclear Electric Power			Hydroelectric Power [1]			Total [2]		
	1980	1990	2001 P	1980	1990	2001 P	1980	1990	2001 P	1980	1990	2001 P
North America	**482.4**	**578.0**	**697.0**	**57.7**	**112.2**	**110.2**	**135.7**	**159.1**	**175.5**	**676.9**	**863.3**	**1,000.2**
Canada	27.4	30.9	33.2	5.9	11.9	10.6	47.9	57.9	67.2	81.1	100.7	111.1
Mexico	10.8	19.1	28.6	0.0	0.7	1.4	6.1	7.8	9.6	17.0	28.2	40.5
United States	444.1	527.8	634.9	51.8	99.6	98.2	81.7	93.4	98.6	578.6	734.1	848.3
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**	**68.1**	**0.4**	**1.7**	**3.0**	**43.0**	**84.1**	**115.0**	**81.2**	**132.8**	**189.3**
Argentina	8.0	9.5	15.3	0.4	1.0	1.0	3.6	6.6	9.6	12.0	17.2	25.9
Brazil	4.1	4.7	6.8	0.0	0.7	2.0	27.5	44.8	61.9	33.4	52.1	73.4
Paraguay	0.1	(s)	(s)	0.0	0.0	0.0	0.2	5.8	7.4	0.2	5.8	7.4
Venezuela	5.8	8.5	8.0	0.0	0.0	0.0	2.7	10.0	13.2	8.5	18.5	21.2
Other	18.0	22.1	37.9	0.0	0.0	0.0	9.0	16.9	22.9	27.1	39.2	61.2
Western Europe	**294.9**	**318.2**	**359.9**	**44.7**	**117.7**	**127.7**	**126.7**	**141.0**	**146.9**	**467.0**	**578.2**	**648.2**
Belgium	8.2	7.2	8.5	1.7	5.5	5.7	0.7	0.1	0.1	10.6	12.8	14.4
Finland	6.3	7.8	10.6	2.2	2.4	2.6	2.4	2.6	2.9	11.0	12.7	16.2
France	30.0	22.8	26.8	14.4	52.5	63.2	16.4	20.3	21.1	61.0	95.9	111.3
Germany	84.0	88.2	80.8	10.4	24.5	22.4	7.9	8.7	4.3	102.4	121.4	113.7
Italy	29.1	37.6	54.0	1.4	0.0	0.0	15.8	12.6	13.4	46.8	50.6	68.5
Netherlands	16.8	16.8	20.1	0.5	0.5	0.4	0.0	(s)	(s)	17.3	17.3	21.1
Norway	0.2	0.3	0.3	0.0	0.0	0.0	19.8	25.7	27.7	20.0	26.0	27.9
Spain	15.4	20.0	25.5	1.1	7.5	7.5	13.5	11.6	12.9	29.9	39.1	47.8
Sweden	7.9	7.9	6.7	4.6	9.9	9.5	14.9	15.8	16.4	27.4	33.5	32.8
Switzerland	0.7	0.8	0.9	1.9	3.0	3.2	11.5	10.1	11.6	14.1	13.9	15.7
Turkey	3.0	9.2	16.1	0.0	0.0	0.0	2.1	6.6	11.2	5.1	15.8	27.3
United Kingdom	64.7	58.8	62.0	6.5	11.4	12.5	2.5	1.4	1.5	73.6	71.6	76.3
Other	28.4	41.0	47.6	0.0	0.7	0.7	19.3	25.5	24.0	47.7	67.6	75.4
Eastern Europe and Former U.S.S.R.	**261.1**	**313.5**	**299.0**	**14.2**	**45.8**	**49.2**	**61.6**	**78.3**	**80.4**	**336.9**	**437.6**	**428.7**
Czech Republic	—	—	11.5	—	—	2.8	—	—	1.0	—	—	15.2
Kazakhstan	—	—	15.0	—	—	0.0	—	—	2.2	—	—	17.2
Poland	23.4	28.8	28.4	0.0	0.0	0.0	1.3	2.0	2.2	24.7	30.8	30.6
Romania	12.7	17.3	15.9	0.0	0.0	0.7	3.5	5.6	6.1	16.1	22.9	22.6
Russia	—	—	139.5	—	—	21.2	—	—	43.4	—	—	204.2
Ukraine	—	—	36.1	—	—	12.9	—	—	4. 7	—	—	53.7
Other	225.0	267.4	52.7	14.2	45.8	11.6	56.9	70.7	20.9	296.1	384.0	85.2
Middle East	**27.9**	**68.2**	**97.1**	**0.0**	**0.0**	**0.0**	**2.6**	**4.8**	**4.1**	**30.4**	**73.0**	**101.2**
Iran	9.4	15.5	28.6	0.0	0.0	0.0	1.8	2.0	2.0	11.2	17.4	30.6
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	44.7	0.0	0.0	0.0	0.8	2.8	2.1	13.3	36.5	46.8
Africa	**30.5**	**57.4**	**82.1**	**0.0**	**1.8**	**1.8**	**13.9**	**18.5**	**19.9**	**44.5**	**77.8**	**103.9**
Egypt	2.4	8.7	14.9	0.0	0.0	0.0	2.4	2.7	2.8	4.9	11.5	17.7
South Africa	17.8	28.6	42.2	0.0	1.8	1.8	0.5	0.6	0.7	18.4	31.0	44.7
Other	10.3	20.1	25.0	0.0	0.0	0.0	10.9	15.2	16.5	21.2	35.4	41.5
Asia and Oceania	**223.1**	**372.9**	**683.5**	**18.5**	**43.9**	**69.6**	**74.4**	**109.3**	**170.6**	**316.7**	**527.6**	**928.7**
Australia	18.1	29.3	36.5	0.0	0.0	0.0	6.2	7.3	6.2	24.2	36.5	42.7
China	45.6	92.1	236.8	0.0	0.0	2.2	20.3	34.6	79.4	65.9	126.6	318.3
India	20.7	51.9	82.5	0.9	1.6	2.9	11.8	18.3	25.1	33.3	71.8	111.8
Indonesia	3.9	9.6	17.2	0.0	0.0	0.0	1.0	3.0	3.0	4.9	12.7	20.8
Japan	98.1	125.0	166.6	15.7	29.4	45.2	19.6	20.4	22.0	133.4	175.1	234.5
South Korea	6.5	11.0	36.8	0.6	7.6	13.7	0.8	1.3	1.5	7.9	20.0	52.1
Taiwan	6.9	10.2	20.1	1.3	5.1	5.1	1.4	2.6	4.4	9.6	17.9	29.6
Thailand	2.6	6.0	17.9	0.0	0.0	0.0	1.3	2.3	2.9	3.8	8.3	20.8
Other	20.8	37.8	69.1	0.1	0.1	0.5	12.1	19.6	26.0	33.6	58.6	98.0
World	**1,355.9**	**1,753.2**	**2,286.7**	**135.5**	**323.1**	**361.5**	**457.9**	**595.1**	**712.5**	**1,953.7**	**2,690.4.**	**3,400.1**

[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.

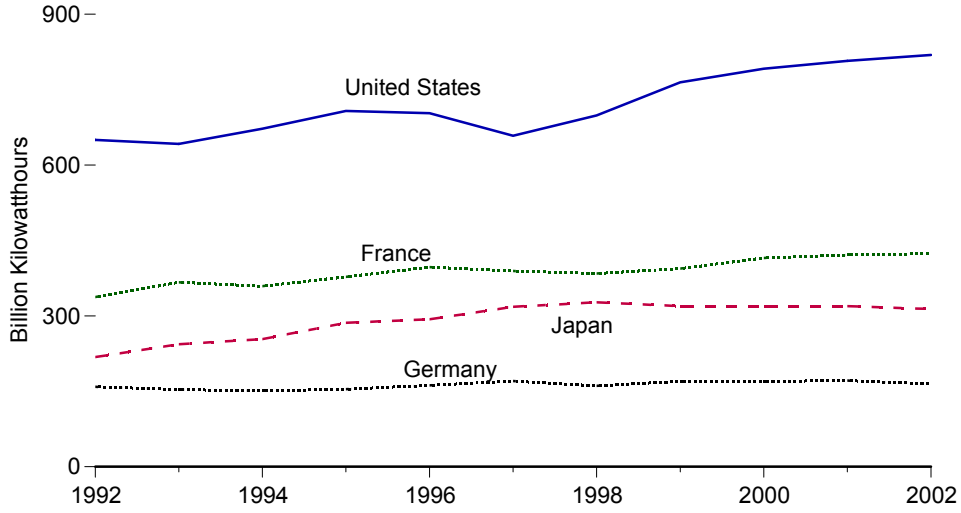
Web Page: http://www.eia.doe.gov/international.
Sources: **United States:** Table 8.7a **All Other Data:** • 1980 and 1990—Energy Information Administration (EIA), International Energy Database. • 2001—EIA, *International Energy Annual 2001* (March 2003), Table 6.4, and the International Energy Database.

Figure 11.18 World Nuclear Electricity Gross Generation

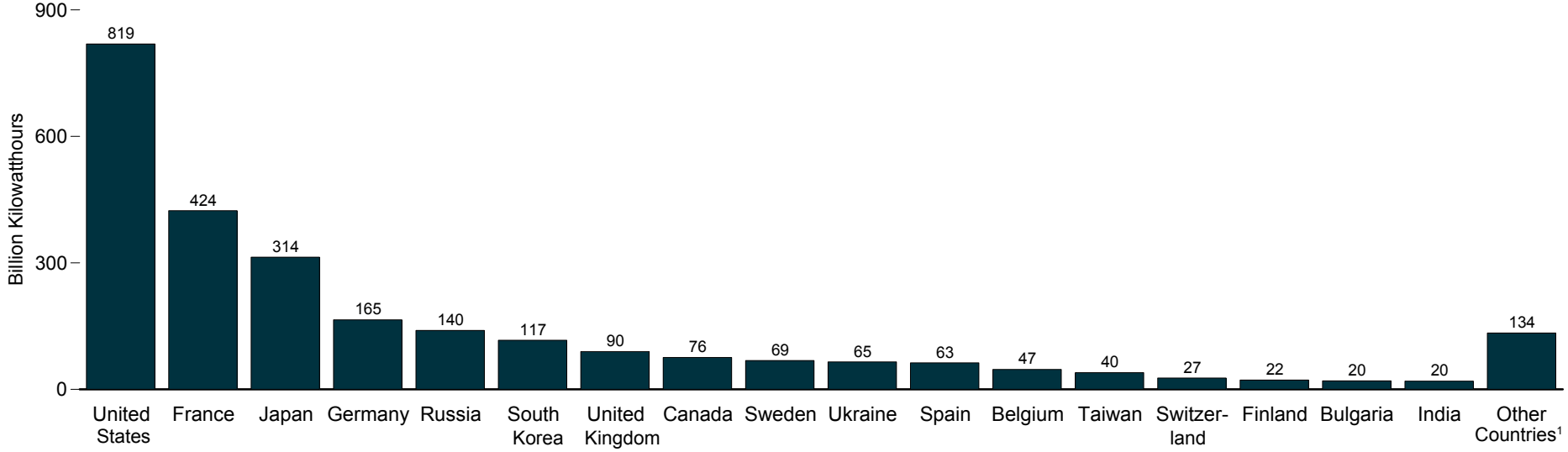
By Region, 2002



By Major Producer, 1992-2002



By Country, 2002



[1] Argentina, Armenia, Brazil, China, Czech Republic, Hungary, Lithuania, Mexico, Netherlands, Pakistan, Romania, Slovakia, Slovenia, and South Africa.

Note: Because vertical scales differ, graphs should not be compared.
Source: Table 11.18.

Table 11.18 World Nuclear Electricity Gross Generation, 1992-2002

(Billion Kilowatthours)

Region and Country	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
North America	**735.2**	**744.6**	**787.3**	E**816.1**	E**806.4**	E**752.8**	E**781.0**	RE**849.0**	RE**873.6**	RE**893.5**	E**904.7**
Canada	81.3	97.6	110.7	100.4	95.2	84.1	E72.7	R74.3	73.8	R77.5	75.9
Mexico	3.9	4.9	4.2	7.9	7.9	10.4	9.5	10.0	8.2	8.7	9.7
United States [1]	650.0	642.0	672.4	E707.7	E703.3	E658.3	E698.7	RE764.7	RE791.6	RE807.3	E819.1
Central and South America	**8.8**	**8.1**	**8.2**	**9.6**	**9.8**	**11.1**	**10.8**	**11.1**	R**12.2**	R**21.4**	**19.7**
Argentina	7.1	7.7	8.2	7.1	7.4	8.0	7.5	7.1	R6.2	R7.1	5.8
Brazil	1.8	0.4	0.0	2.5	2.4	3.2	3.3	4.0	R6.1	R14.4	13.8
Western Europe	E**787.8**	**820.9**	**820.2**	E**835.7**	E**879.5**	E**886.5**	E**884.2**	RE**895.2**	R**893.6**	R**923.8**	**916.2**
Belgium	43.5	41.9	40.6	41.4	43.3	47.4	46.1	49.0	R48.2	R46.3	47.4
Finland	19.0	19.6	19.1	18.9	19.5	20.9	21.9	23.0	22.5	22.8	22.3
France	337.6	366.7	359.1	377.6	397.0	389.3	E384.4	R394.2	415.2	421.1	424.0
Germany	158.8	153.5	151.1	154.3	161.7	170.4	161.0	R169.9	R169.7	171.3	164.8
Netherlands	3.8	3.9	4.0	4.0	4.2	3.1	3.8	3.8	3.9	4.0	3.9
Slovenia	E4.0	4.0	4.6	4.8	4.6	5.4	5.3	E4.7	R4.8	5.3	5.5
Spain	55.8	56.1	55.1	54.5	59.1	55.4	E58.6	58.9	R62.2	63.7	63.0
Sweden	63.5	61.4	72.8	69.9	76.2	E70.6	73.8	R73.2	R57.3	R72.2	68.5
Switzerland	23.4	23.3	24.2	24.8	25.0	25.3	25.7	24.8	26.3	26.7	27.1
United Kingdom	78.5	90.4	89.5	E85.5	E88.8	E98.8	E103.7	R93.7	R83.6	R90.5	89.6
Eastern Europe [2] and Former U.S.S.R.	E**267.5**	E**259.0**	E**227.8**	E**234.9**	E**261.6**	E**247.1**	E**248.9**	RE**266.3**	RE**284.6**	RE**294.8**	**290.8**
Armenia	—	—	—	NA	NA	1.4	1.6	R2.2	R1.8	R1.7	2.3
Bulgaria	E12.2	14.0	14.9	17.2	18.7	E15.5	E19.2	E19.0	18.2	19.6	20.2
Czech Republic	E12.9	E13.2	E12.7	E12.8	E13.5	NA	7.6	13.4	R13.6	14.8	13.3
Hungary	E13.8	13.8	14.0	14.0	14.2	14.0	13.9	R14.1	14.2	R14.1	14.0
Kazakhstan	E0.5	E0.4	E0.4	E0.4	E0.1	E0.3	NA	0.0	0.0	0.0	0.0
Lithuania	E16.4	E12.9	E7.0	E9.7	E13.6	12.1	13.5	9.9	E8.7	R11.4	13.2
Romania	—	—	—	—	E1.0	3.9	5.1	5.2	5.5	5.4	5.0
Russia	E125.6	120.4	97.7	98.3	108.8	108.1	103.7	R119.8	128.9	R134.5	139.7
Slovakia	E11.7	E11.6	E12.7	E12.0	E11.8	11.0	10.3	10.5	R16.5	R17.1	18.1
Ukraine	E74.6	E72.7	68.4	70.4	80.0	80.8	E74.0	E72.2	R77.3	RE76.2	65.1
Africa	**9.9**	**7.7**	**10.3**	**11.9**	E**12.5**	**13.3**	**14.3**	**13.5**	E**13.6**	**11.3**	**12.6**
South Africa	9.9	7.7	10.3	11.9	E12.5	13.3	14.3	13.5	E13.6	11.3	12.6
Asia	**315.2**	E**345.2**	E**366.7**	E**407.0**	E**426.4**	E**456.2**	E**477.2**	RE**479.6**	RE**497.9**	E**504.9**	**505.6**
China	—	E2.6	E14.2	E13.0	E14.3	E11.4	E14.5	E14.6	E14.7	R16.7	E14.6
India	6.3	6.2	5.0	E8.0	8.3	E11.0	E11.2	R13.0	R15.5	19.2	19.5
Japan	218.0	243.5	253.8	286.1	293.2	318.0	326.9	R319.3	319.8	R319.3	313.5
Pakistan	0.6	0.4	0.6	0.5	0.4	0.4	0.4	0.1	0.4	2.2	1.9
South Korea	56.4	58.1	58.3	64.0	72.5	78.9	87.3	R94.2	R109.0	R112.1	116.5
Taiwan	33.8	34.3	34.8	35.3	37.8	36.6	36.9	R38.4	38.5	35.5	39.6
World	E**2,124.5**	E**2,185.6**	E**2,220.4**	E**2,315.1**	E**2,396.3**	E**2,367.0**	E**2,416.4**	RE**2,514.6**	RE**2,575.6**	RE**2,649.7**	E**2,649.5**

[1] See Note 2 at end of section.

[2] The gross generation estimates for 1992 through 1997 for Eastern European countries are calculated as 5 percent more than the annual net nuclear generation reported by the International Atomic Energy Agency and published annually in *Nuclear Power Reactors in the World.*

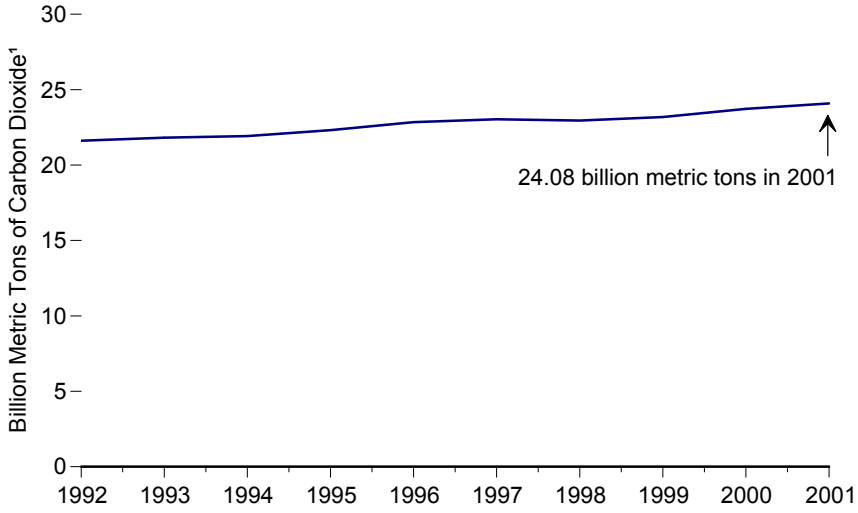
R=Revised. E=Estimate. NA=Not available. — = Not applicable.

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

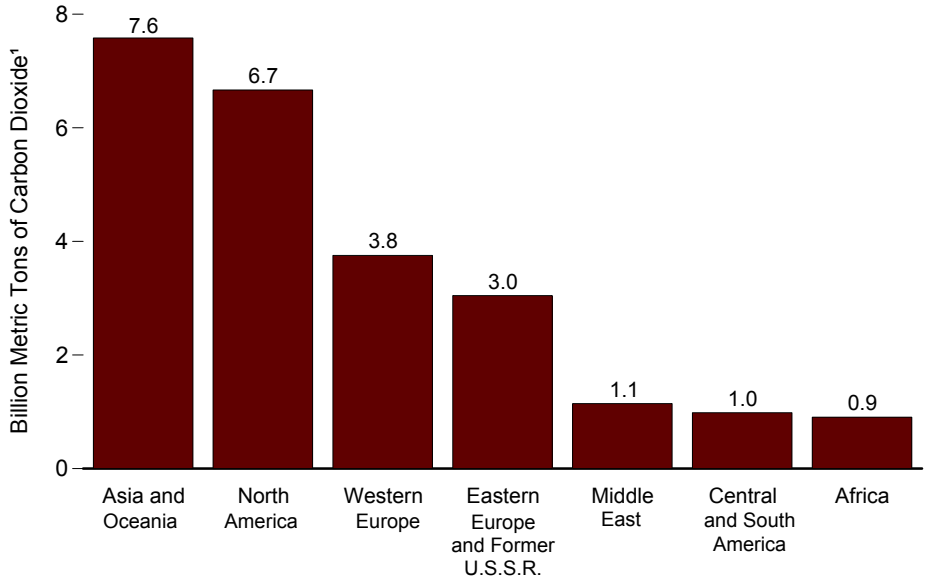
Sources: **France:** • 1999-2002—Ministry of Industry, General Directorate for Energy and Raw Material. **Bulgaria 2000 and 2001: Czech Republic 2001:** NucNet, an on-line service. Used with permission. **China:** • 2001—International Atomic Energy Agency, *Energy, Electricity, and Nuclear Power Estimates for the Period up to 2020.* **All Other Data:** *Nucleonics Week,* a copyrighted publication of The McGraw-Hill Publishing Companies, Inc. Used with permission.

Figure 11.19 World Carbon Dioxide Emissions from Energy Consumption

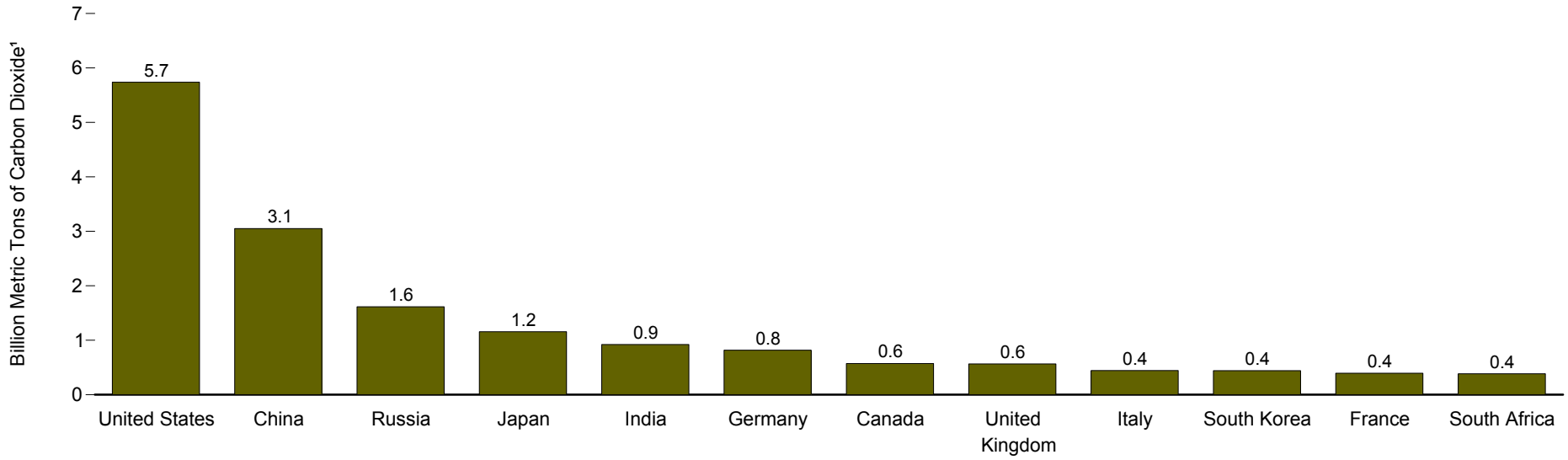
World, 1992-2001



World by Region, 2001



Leading Countries, 2001



[1] Metric tons of carbon dioxide can be converted to metric tons of carbon equivalent by multiplying by 12/44.

Notes: Data include emissions from natural gas flaring. • Because vertical scales differ, graphs should not be compared.
Source: Table 11.19.

Table 11.19 World Carbon Dioxide Emissions From Energy Consumption, 1992-2001

(Million Metric Tons of Carbon Dioxide [1])

Region and Country	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001[P]
North America	**5,834**	**5,942**	**6,057**	**6,105**	**6,325**	**6,433**	**6,484**	**6,578**	**6,771**	**6,666**
Canada	457	478	494	494	507	536	531	561	585	573
Mexico	317	310	330	319	338	347	383	382	374	352
United States [2]	5,059	5,153	5,232	5,292	5,479	5,549	5,569	5,634	5,811	5,739
Other	1	1	1	1	1	1	1	1	1	1
Central and South America	**766**	**799**	**822**	**865**	**902**	**937**	**963**	**969**	**982**	**984**
Argentina	113	122	119	122	129	129	135	135	135	128
Brazil	265	273	285	302	309	320	321	339	347	351
Venezuela	112	114	120	123	132	134	141	129	133	141
Other	277	290	298	318	332	354	366	365	367	363
Western Europe	**3,541**	**3,511**	**3,494**	**3,567**	**3,663**	**3,684**	**3,684**	**3,674**	**3,732**	**3,754**
Belgium	123	124	128	130	138	141	146	137	143	144
France	381	367	356	369	388	380	403	402	401	396
Germany	886	883	867	875	879	877	863	830	828	819
Italy	416	403	395	434	431	414	420	432	443	445
Netherlands	214	220	220	223	228	236	228	217	228	248
Spain	241	229	236	245	235	266	272	295	307	303
Turkey	138	144	139	151	168	181	182	179	184	184
United Kingdom	574	578	570	560	583	561	542	545	556	566
Other	567	564	584	579	613	627	627	637	641	649
Eastern Europe and Former U.S.S.R.	**4,121**	**3,791**	**3,352**	**3,221**	**3,155**	**2,957**	**2,900**	**2,927**	**3,006**	**3,046**
Former Czechoslovakia	240	—	—	—	—	—	—	—	—	—
Kazakhstan	242	198	157	146	138	117	113	105	111	122
Poland	326	338	320	304	287	335	311	300	302	288
Romania	127	124	117	123	125	120	100	87	90	95
Russia	2,103	1,964	1,750	1,630	1,632	1,447	1,450	1,522	1,570	1,614
Ukraine	570	531	442	447	400	375	367	375	360	354
Other	513	636	566	571	572	564	558	537	574	572
Middle East	**819**	**857**	**893**	**920**	**949**	**998**	**1,032**	**1,084**	**1,105**	**1,144**
Iran	235	239	249	260	261	288	304	313	321	330
Saudi Arabia	236	240	246	255	266	263	257	287	299	310
Other	348	377	398	406	422	447	471	485	485	504
Africa	**756**	**774**	**809**	**820**	**837**	**860**	**849**	**864**	**879**	**905**
Egypt	94	96	99	98	107	111	113	114	120	126
South Africa	317	317	344	344	349	380	362	374	378	386
Other	344	361	366	378	380	369	374	376	381	394
Asia and Oceania	**5,775**	**6,138**	**6,493**	**6,816**	**7,014**	**7,165**	**7,036**	**7,092**	**7,249**	**7,583**
Australia	276	282	282	292	298	329	331	351	354	363
China	2,449	2,610	2,816	2,888	2,945	3,022	2,952	2,900	2,861	3,050
India	645	681	697	830	829	844	858	866	919	922
Indonesia	174	197	204	213	235	244	235	259	275	319
Japan	1,048	1,038	1,095	1,092	1,130	1,131	1,101	1,117	1,138	1,158
North Korea	261	270	268	264	259	245	236	235	247	246
South Korea	284	334	364	401	410	432	369	383	425	443
Taiwan	130	156	165	187	207	208	230	224	253	261
Thailand	101	115	128	156	169	169	167	169	169	178
Other	407	453	474	494	531	540	555	588	609	643
World	**21,611**	**21,812**	**21,920**	**22,314**	**22,846**	**23,035**	**22,948**	**23,189**	**23,725**	**24,082**

[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 2001,* (March 2003), Table H1.

[2] Data in this table may differ from the values shown for the United States in Table 12.1 due to: the inclusion of emissions from bunker fuels consumption; the exclusion of emissions from geothermal, cement production, other industrial sources, and waste combustion; and the exclusion of data for the U.S. Territories.

P=Preliminary. — = Not applicable.

Notes: • All historical data are revised due to a change in units from carbon to carbon dioxide. • Data include emissions from natural gas flaring, which accounted for 0.2 percent of total U.S. emissions during the period 1980-2001, and about one percent of total world emissions during the period 1992-2001. • See Note 3 at end of section. • Totals may not equal sum of components due to independent rounding.

Web Page: http://www.eia.doe.gov/international.

Source: Energy Information Administration, International Energy Database.

International Energy

Note 1. 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. Nuclear electricity generation data in Table 11.18 are for gross output of electricity (measured at the generator terminals). Data on the gross generation of electricity in the United States are derived from data for net generation, which is gross output of electricity minus power plant use.

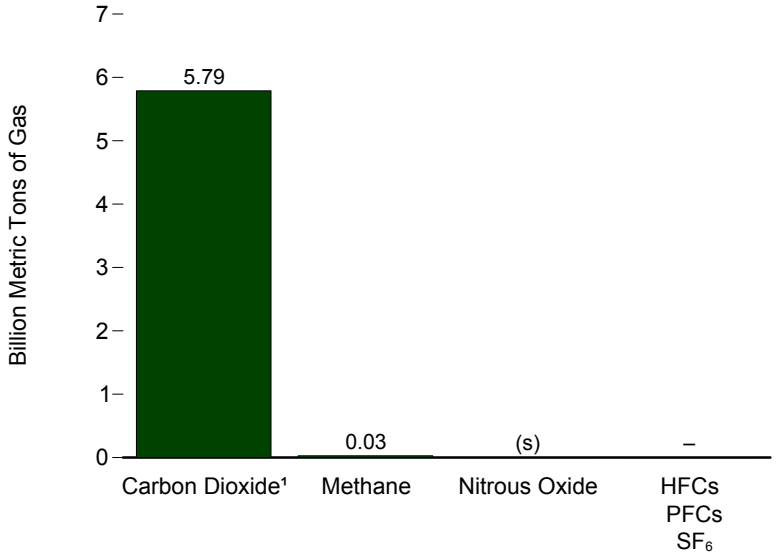
Note 3. Data for carbon dioxide emissions include anthropogenic (human-caused) emissions from the consumption of petroleum, natural gas, and coal, and the flaring of natural gas. They do not include carbon dioxide emissions from cement production and other industrial sources. Hydrocarbon consumption and 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, natural gas, and flared gas are from Energy Information Administration, *Emissions of Greenhouse Gases in the United States 2001*, DOE/EIA-0573(2001), December 2002, Table B1. Carbon emission coefficients for coal are from Energy Information Administration, *Emissions of Greenhouse Gases in the United States 1985-1990*, DOE/EIA-0573, October 1993, Table 11.

12 Environmental Indicators

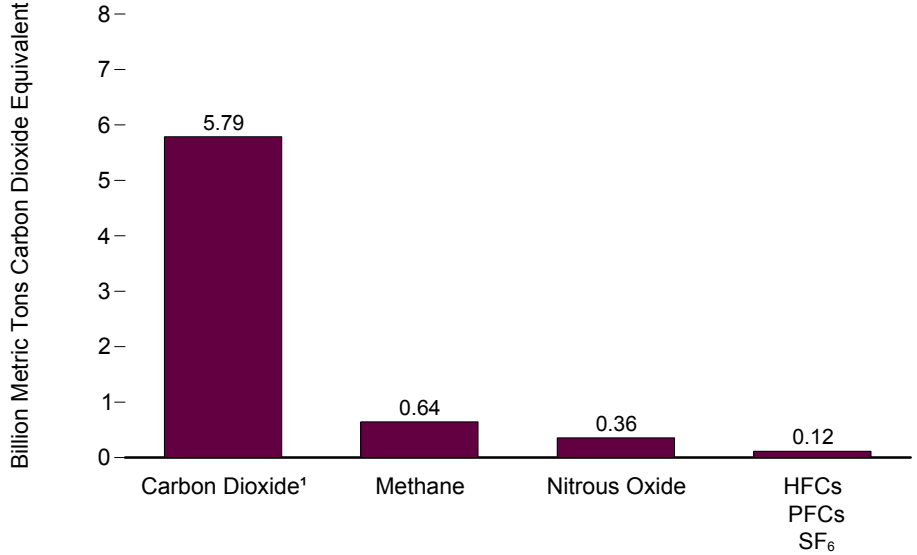
"Harpers Ferry, Junction of the Rivers Shenandoah and Potomac." Engraving by W. Goodacre and James Archer, published in *The History and Topography of the United States of North America*, by John Howard Hinton, 1852. From the collection of the National Park Service, Harpers Ferry National Historical Park, Accession #1297.

Figure 12.1 Estimated Emissions of Greenhouse Gases

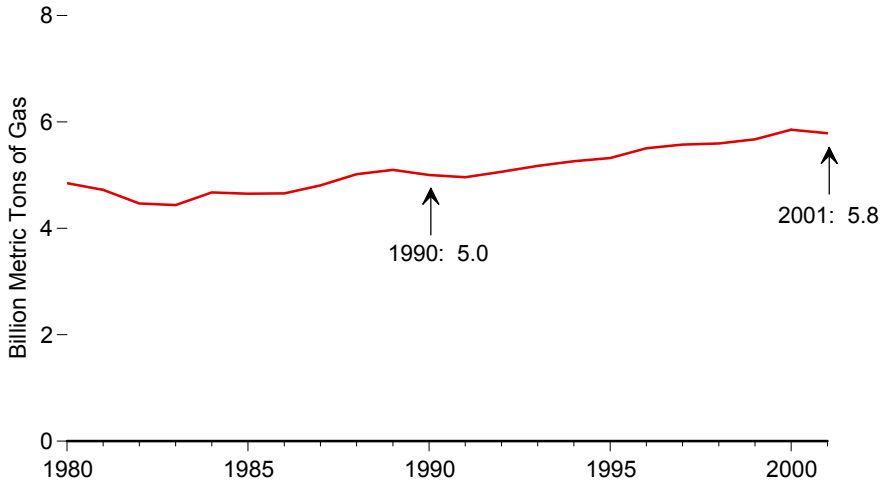
Emissions by Type of Gas, 2001



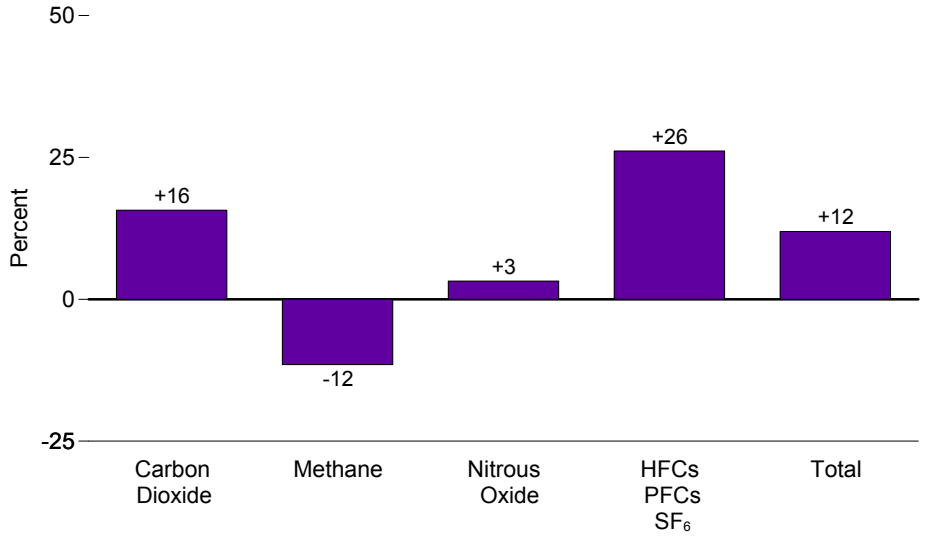
Emissions, Based on Global Warming Potential, by Type of Gas, 2001



Carbon Dioxide¹ Emissions, 1980-2001



Change 1990-2001 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.
(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 SF_6=sulfur hexafluoride.
• Because vertical scales differ, graphs should not be compared.
Source: Table 12.1.

Table 12.1 Estimated Emissions of Greenhouse Gases, 1980-2001

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	[R]4,848.8	[R]17.4	[R]0.9	—	4,848.8	400.0	271.0	70.4	5,568.3
1981	[R]4,723.7	[R]18.0	[R]0.9	—	4,723.7	413.2	276.2	74.0	5,464.2
1982	[R]4,469.1	[R]17.7	[R]0.9	—	4,469.1	408.1	266.9	55.4	5,176.6
1983	[R]4,436.4	[R]18.4	[R]0.8	—	4,436.4	423.4	250.5	67.1	5,152.4
1984	[R]4,675.8	[R]18.9	[R]0.9	—	4,675.8	433.7	270.2	75.5	5,430.4
1985	[R]4,651.1	[R]23.8	[R]1.0	—	4,651.1	547.1	304.9	70.5	5,540.4
1986	[R]4,656.3	[R]23.9	[R]1.0	—	4,656.3	548.7	294.4	75.0	5,540.6
1987	[R]4,808.4	[R]24.1	[R]1.0	—	4,808.4	555.2	290.1	77.8	5,697.0
1988	[R]5,019.2	[R]24.5	[R]0.9	—	5,019.2	563.5	276.9	91.3	5,915.3
1989	[R]5,098.2	[R]24.9	[R]1.0	—	5,098.2	573.6	291.8	94.5	6,022.1
1990	[R]5,002.8	31.7	1.2	—	5,002.8	728.5	346.3	91.5	6,169.2
1991	[R]4,960.6	31.9	1.2	—	4,960.6	733.9	352.3	85.8	6,132.6
1992	[R]5,063.9	[R]31.9	1.2	—	5,063.9	733.3	360.6	88.0	6,245.7
1993	[R]5,175.4	31.0	1.2	—	5,175.4	713.0	361.3	92.6	6,342.3
1994	[R]5,260.2	[R]31.1	1.3	—	5,260.2	714.5	388.0	91.5	6,454.2
1995	[R]5,320.9	31.1	1.3	—	5,320.9	716.0	372.6	98.4	6,507.9
1996	[R]5,505.0	29.9	1.2	—	5,505.0	688.5	369.1	113.3	6,676.0
1997	[R]5,573.0	[R]29.5	1.2	—	5,573.0	678.6	363.3	117.2	6,732.1
1998	[R]5,596.4	[R]29.0	1.2	—	5,596.4	667.7	361.9	129.5	6,755.4
1999	[R]5,672.8	28.7	1.2	—	5,672.8	661.1	366.5	123.3	6,823.6
2000	[R]5,855.1	[R]28.3	1.2	—	5,855.1	651.8	360.9	124.9	6,992.6
2001[P]	5,788.5	28.0	1.2	—	5,788.5	644.6	357.4	115.4	6,905.9

[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 may differ from the values shown for the United States in Table 11.19 due to: the exclusion of emissions from bunker fuels consumption; the inclusion of emissions from geothermal, cement production, other industrial sources, and waste combustion; and the inclusion of data for the U.S. Territories.

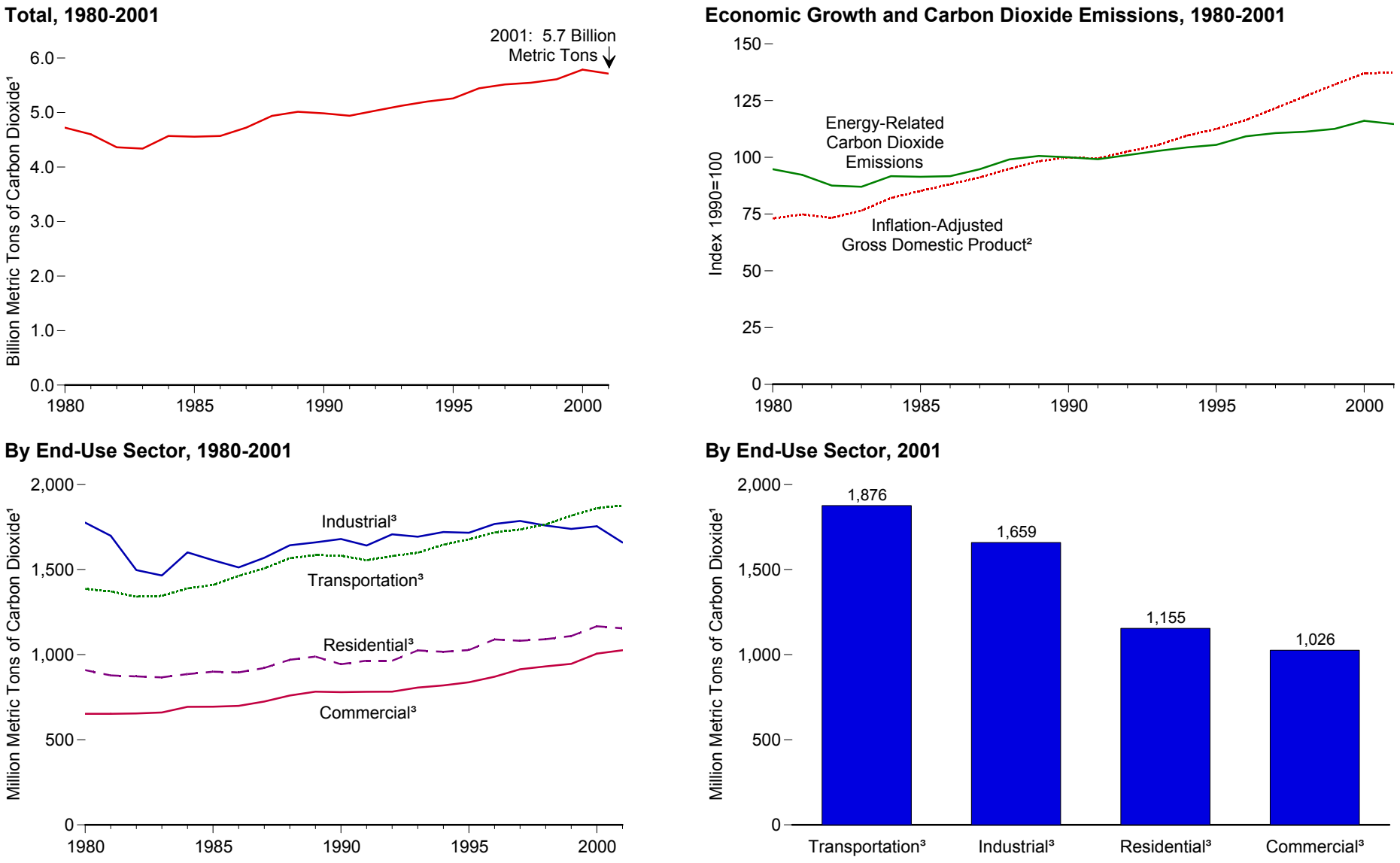
R=Revised. P=Preliminary. — = Not applicable because these gases cannot be summed in native units.

Notes: • Historical data in columns 5-9 are revised due to a change in units from carbon to carbon dioxide. • HFCs = hydrofluorocarbons; PFCs = perfluorocarbons; and SF_6 = 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 estimation methods for greenhouse gases are currently being developed, data are frequently revised on an annual basis in keeping with the latest findings of the international scientific community. For some of the gases, such as carbon dioxide, revisions are a small percentage of the total (on the order of 1 percent), but for other gases, such as nitrous oxide, they may be on the order of 100 percent.

Web Page: 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 2001* (December 2002), Tables ES1 and ES2 (data converted from carbon to carbon dioxide).

Figure 12.2 Carbon Dioxide Emissions From Energy Consumption by Sector



[1] Metric tons of carbon dioxide can be converted to metric tons of carbon equivalent by multiplying by 12/44.
[2] Based on chained (1996) 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, 1980-2001

(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]	Primary [5]	
1980	385.2	909.0	244.6	652.5	1,180.5	1,775.5	1,383.9	1,386.2	1,529.0	4,723.2
1981	360.8	877.8	225.8	652.3	1,107.7	1,698.7	1,369.4	1,371.8	1,536.7	4,600.5
1982	359.2	872.2	226.1	654.2	972.9	1,496.7	1,338.3	1,340.5	1,467.1	4,363.6
1983	340.5	866.4	225.7	660.5	921.6	1,465.2	1,343.1	1,345.3	1,506.5	4,337.4
1984	348.9	885.9	236.3	693.6	1,023.9	1,600.6	1,387.2	1,389.6	1,573.5	4,569.7
1985	351.6	899.8	217.9	694.0	977.4	1,555.1	1,406.3	1,409.0	1,604.6	4,557.8
1986	342.7	895.4	216.2	698.8	952.0	1,512.4	1,460.3	1,462.9	1,598.2	4,569.4
1987	346.0	922.1	220.0	724.6	987.5	1,568.8	1,504.4	1,506.9	1,664.5	4,722.4
1988	367.0	969.9	230.2	760.0	1,037.0	1,642.4	1,564.1	1,566.8	1,740.8	4,939.1
1989	371.9	988.1	229.9	782.3	1,029.3	1,659.2	1,581.6	1,584.3	1,801.3	5,013.9
1990	329.2	944.0	221.5	779.7	1,050.3	1,679.4	1,579.1	1,581.8	1,805.0	4,985.0
1991	340.0	964.2	222.3	781.6	1,022.9	1,641.4	1,552.2	1,554.9	1,804.7	4,942.1
1992	348.7	964.4	222.8	782.4	1,067.3	1,707.1	1,576.9	1,579.5	1,817.7	5,033.5
1993	367.7	1,025.2	221.1	806.6	1,047.0	1,692.9	1,596.3	1,598.9	1,891.5	5,123.5
1994	358.0	1,016.4	222.8	819.0	1,062.4	1,720.5	1,642.8	1,646.0	1,916.0	5,201.9
1995	358.8	1,027.2	226.9	838.0	1,066.9	1,716.1	1,673.8	1,677.0	1,931.8	5,258.3
1996	388.9	1,089.2	236.4	870.4	1,101.5	1,768.0	1,714.8	1,718.0	2,003.9	5,445.6
1997	372.0	1,081.5	237.1	914.1	1,104.3	1,785.4	1,731.7	1,734.9	2,070.8	5,515.9
1998	339.1	1,091.1	219.5	931.1	1,064.8	1,758.3	1,761.4	1,764.7	2,160.3	5,545.2
1999	357.7	1,109.0	221.7	946.1	1,044.5	1,738.9	1,812.9	1,816.2	2,173.5	5,610.2
2000	372.4	1,166.3	234.4	1,006.3	1,045.7	1,754.2	1,856.6	1,860.1	2,277.8	5,787.0
2001[P]	361.8	1,154.8	235.9	1,025.7	1,002.4	1,658.8	1,872.2	1,875.9	2,242.8	5,715.1

[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. See Note 1 at end of Section 8.

[3] Industrial sector, including industrial combined-heat-and-power (CHP) and industrial electricity-only plants. See Note 1 at end of Section 8.

[4] Electricity-only and combined-heat-and-power (CHP) plants within the NAICS 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.

[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.

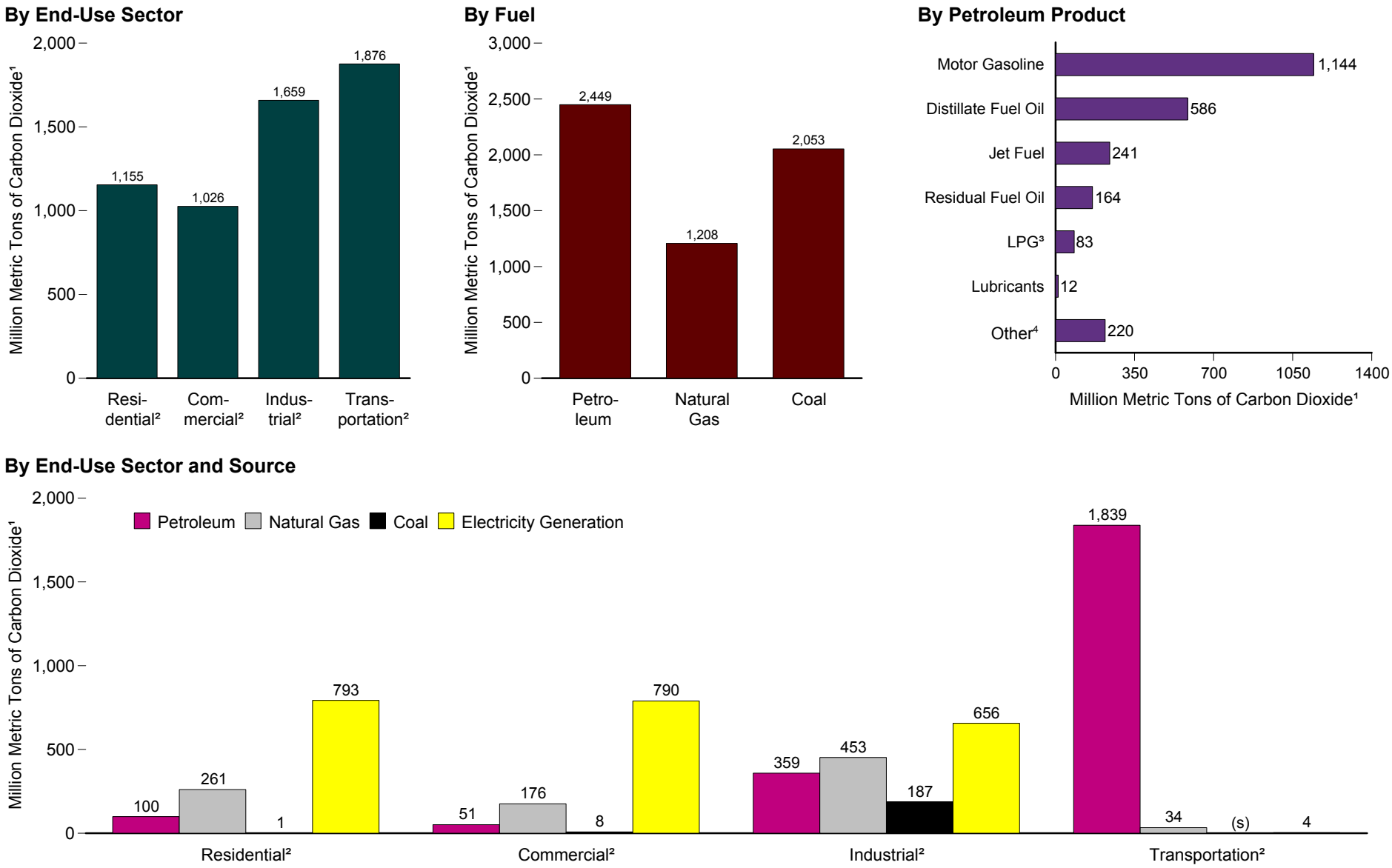
P=Preliminary.

Notes: • All historical data are revised due to a change in units from carbon to carbon dioxide. • Totals may not equal sum of components due to independent rounding.

Web Page: 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 2001* (December 2002), Tables 6-10 (data converted from carbon to carbon dioxide).

Figure 12.3 Carbon Dioxide Emissions From Energy Consumption by Sector by Energy Source, 2001



[1] Metric tons of carbon dioxide can be converted to metric tons of carbon equivalent by multiplying by 12/44.
[2] Emissions in the elelctric power sector are distributed across the end-use sectors.
[3] Liquefied petroleum gases.
[4] Aviation gasoline, kerosene, petroleum coke, and other products.
(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, 2001

(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	99.7	51.3	359.0	1,838.5	2,348.5	100.8	2,449.3
Aviation Gasoline	—	—	—	2.6	2.6	—	2.6
Distillate Fuel Oil	60.9	34.1	83.6	394.2	572.7	12.8	585.6
Jet Fuel	—	—	—	240.5	240.5	—	240.5
Kerosene	8.1	1.8	0.7	—	10.6	—	10.6
Liquefied Petroleum Gases	31.2	5.5	45.8	0.7	83.2	—	83.2
Lubricants	—	—	6.2	5.9	12.1	—	12.1
Motor Gasoline	—	3.3	10.8	1,129.3	1,143.8	—	1,143.8
Petroleum Coke	—	—	—	—	—	11.0	11.0
Residual Fuel Oil	—	6.6	15.4	65.3	87.3	76.6	163.9
Other	—	—	195.8	—	195.8	—	195.8
Natural Gas	260.7	176.0	452.5	33.7	922.9	284.9	1,207.8
Coal	1.1	8.4	187.0	(s)	196.5	1,856.8	2,053.3
Coal Coke Net Imports	—	—	4.0	—	4.0	—	4.0
Geothermal	—	—	—	—	—	0.4	—
Primary	**361.8**	**235.9**	**1,002.4**	**1,872.2**	**3,472.4**	**2,242.8**	**5,715.1**
Electric Power Sector Generation [5]	793.0	789.7	656.4	3.7	2,242.8	—	—
Total	**1,154.8**	**1,025.7**	**1,658.8**	**1,875.9**	**5,715.1**	**—**	**5,715.1**

[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. See Note 1 at end of Section 8.

[3] Industrial sector, including industrial combined-heat-and-power (CHP) and industrial electricity-only plants. See Note 1 at end of Section 8.

[4] Electricity-only and combined-heat-and-power (CHP) plants within the NAICS 22 category whose primary business is to sell electricity, or electricity and heat, to the public.

[5] 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.

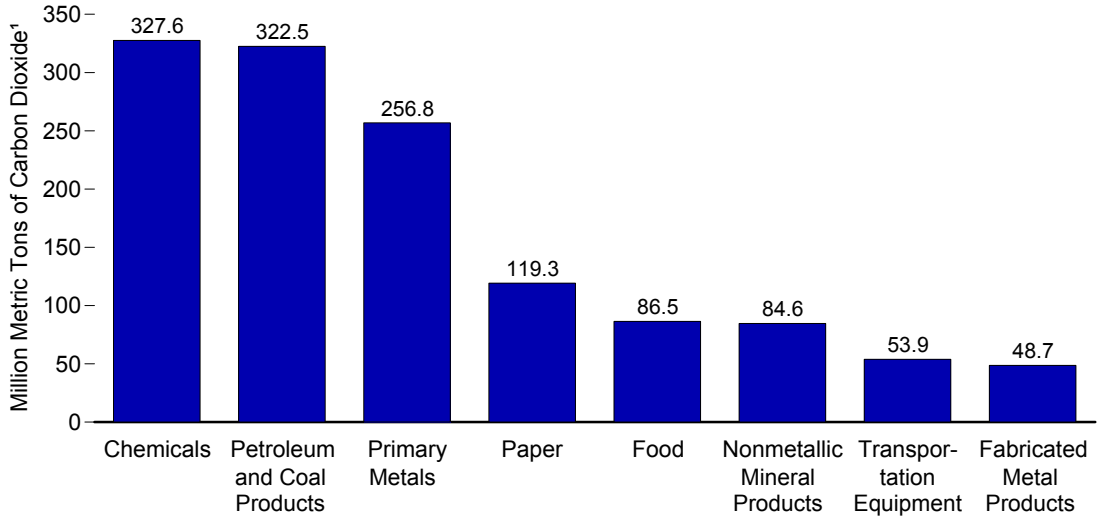
Notes: • Data are preliminary. • Totals may not equal sum of components due to independent rounding.

Web Page: http://www.eia.doe.gov/environment.html.

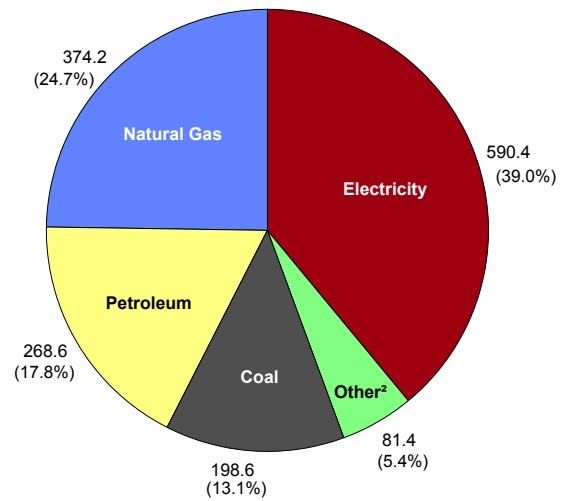
Source: Energy Information Administration (EIA), *Emissions of Greenhouse Gases in the United States 2001* (December 2002), Tables 6-10 (data converted from carbon to carbon dioxide).

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

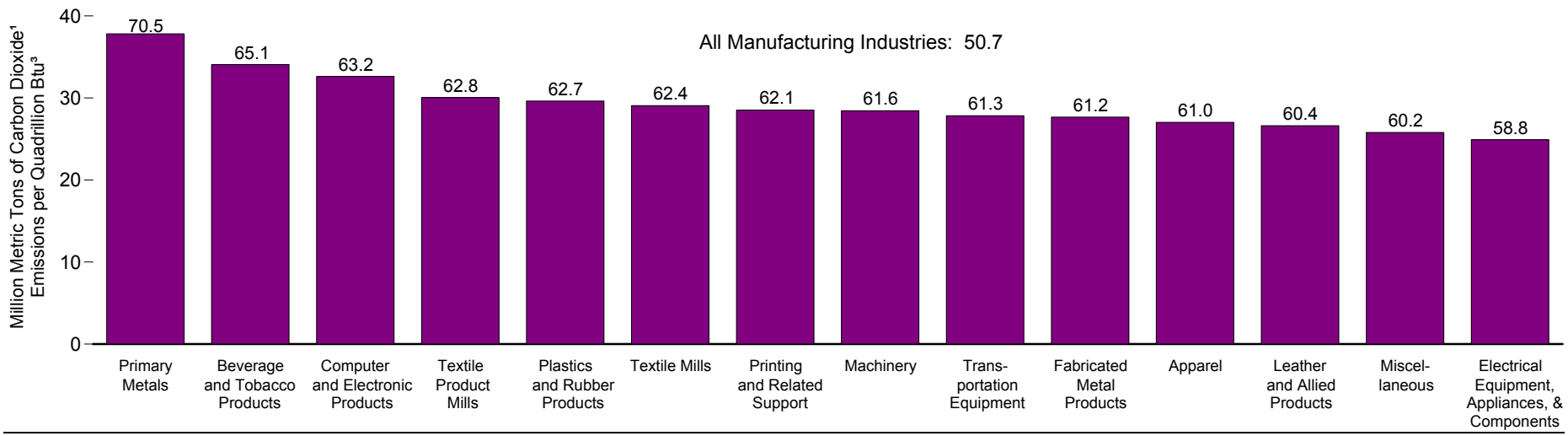


Carbon Dioxide Emissions by Energy Source



Total Emissions:
1,513.2 million metric tons carbon dioxide[1]

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.
[2] All other types of energy that respondents indicated were consumed.
[3] Including allocated electricity losses.
Source: Table 12.4.

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 share of the electric power sector's total carbon dioxide emissions weighted by electricity retail sales to (receipts by) the manufacturing subsector.

[4] Includes all other types of energy that respondents indicated were consumed or allocated, such as asphalt and road oil, lubricants, naphtha < 401° F, other oils >= 401° 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.

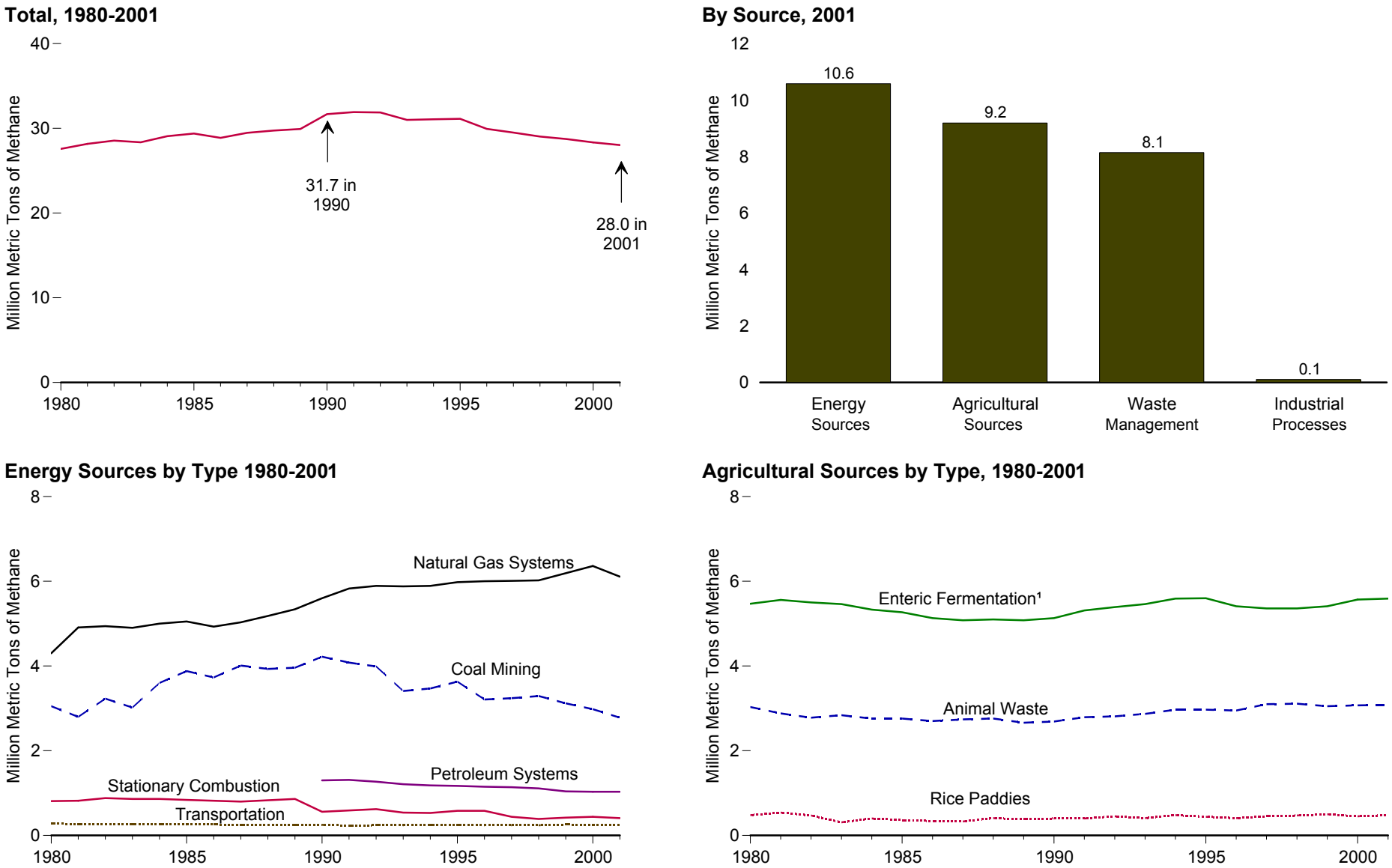
(s)=Less than 0.05 million metric tons. Q=Data withheld because the relative standard error was greater than 50 percent.

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 2.3 for manufacturing energy use. • Totals may not equal sum of components due to independent rounding.

Web Page: 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 2001* (December 2002).

Figure 12.5 Methane Emissions



[1] Animals such as cattle, buffalo, sheep, goats, and camels emit methane as a product of digestion.

Note: Because vertical scales differ, graphs should not be compared.
Source: Table 12.5.

Table 12.5 Methane Emissions, 1980-2001

(Million Metric Tons of Methane)

Year	Energy Sources						Waste Management			Agricultural Sources					Industrial Processes	Total
	Natural Gas System	Petroleum System	Coal Mining	Transportation	Stationary Combustion	Total	Landfills	Wastewater Treatment	Total	Enteric Fermentation [1]	Animal Waste	Rice Paddies	Crop Residue Burning	Total		
1980	4.30	NA	3.05	0.28	0.81	R8.44	9.85	0.14	9.99	5.47	3.03	0.48	0.04	9.02	0.13	R27.58
1981	4.91	NA	2.80	0.27	0.82	R8.80	10.07	0.14	10.20	5.56	2.88	0.54	0.04	9.03	0.14	R28.17
1982	4.94	NA	3.23	0.27	0.88	R9.31	10.21	0.14	10.35	5.50	2.78	0.47	0.04	8.79	0.10	R28.55
1983	4.90	NA	3.02	0.27	0.86	R9.05	10.41	0.14	10.55	5.46	2.84	0.31	0.03	8.64	0.11	R28.35
1984	5.00	NA	3.60	0.26	0.86	R9.73	10.55	0.14	10.70	5.33	2.76	0.40	0.04	8.53	0.11	R29.07
1985	5.05	NA	3.88	0.26	0.84	R10.03	10.67	0.14	10.81	5.27	2.76	0.36	0.04	8.43	0.11	R29.38
1986	4.93	NA	3.73	0.26	0.82	R9.74	10.69	0.15	10.83	5.13	2.70	0.34	0.04	8.20	0.10	R28.88
1987	5.03	NA	4.01	0.25	0.80	R10.09	10.92	0.15	11.07	5.08	2.74	0.33	0.04	8.19	0.11	R29.47
1988	5.18	NA	3.93	0.25	0.83	R10.19	10.98	0.15	11.13	R5.10	2.76	0.41	0.03	R8.30	0.12	R29.74
1989	5.34	NA	3.96	0.25	0.86	R10.41	11.08	0.15	11.23	R5.08	2.66	0.38	0.04	R8.16	0.12	R29.92
1990	5.60	1.30	4.22	0.25	0.56	R11.94	11.21	0.15	11.36	R5.13	2.69	0.40	0.04	R8.26	0.12	R31.68
1991	5.83	1.31	4.08	0.23	0.59	R12.04	11.07	0.15	11.23	R5.31	2.79	0.40	0.04	R8.53	0.11	R31.91
1992	5.89	1.27	3.99	0.24	0.62	R12.01	10.91	0.15	11.07	5.39	2.81	R0.45	0.04	R8.69	0.12	R31.88
1993	5.88	1.21	3.41	0.24	0.54	R11.27	10.68	0.16	10.84	5.46	2.87	R0.41	0.04	8.77	0.12	R31.00
1994	5.89	1.18	3.47	0.24	0.53	R11.31	10.39	0.16	10.55	5.59	R2.97	R0.48	0.05	R9.09	0.13	R31.07
1995	5.98	1.17	3.63	0.25	0.58	R11.62	10.17	0.16	10.33	R5.60	R2.97	0.44	0.04	R9.05	0.13	R31.13
1996	6.00	1.15	R3.21	0.24	0.58	R11.18	9.65	0.16	R9.80	R5.41	R2.95	R0.41	0.04	R8.81	0.13	R29.93
1997	6.01	1.14	3.24	0.24	0.44	R11.07	9.19	0.16	9.35	R5.36	R3.10	R0.45	0.04	R8.95	0.13	R29.50
1998	6.02	1.11	R3.29	0.24	0.39	R11.05	8.70	0.16	8.86	R5.36	R3.11	R0.47	0.04	R8.99	0.13	R29.03
1999	6.19	1.04	R3.12	0.26	0.42	R11.02	8.42	0.16	8.59	R5.41	R3.05	R0.50	0.04	9.00	0.13	R28.74
2000	6.36	1.03	R2.98	0.25	0.44	R11.06	R7.85	0.17	R8.02	R5.57	R3.07	R0.45	0.05	R9.13	R0.13	R28.34
2001P	6.11	1.03	2.78	0.25	0.41	10.58	7.97	0.17	8.14	5.59	3.08	0.48	0.04	9.19	0.11	28.03

[1] Animals such as cattle, buffalo, sheep, goats, and camels emit methane as a product of digestion.

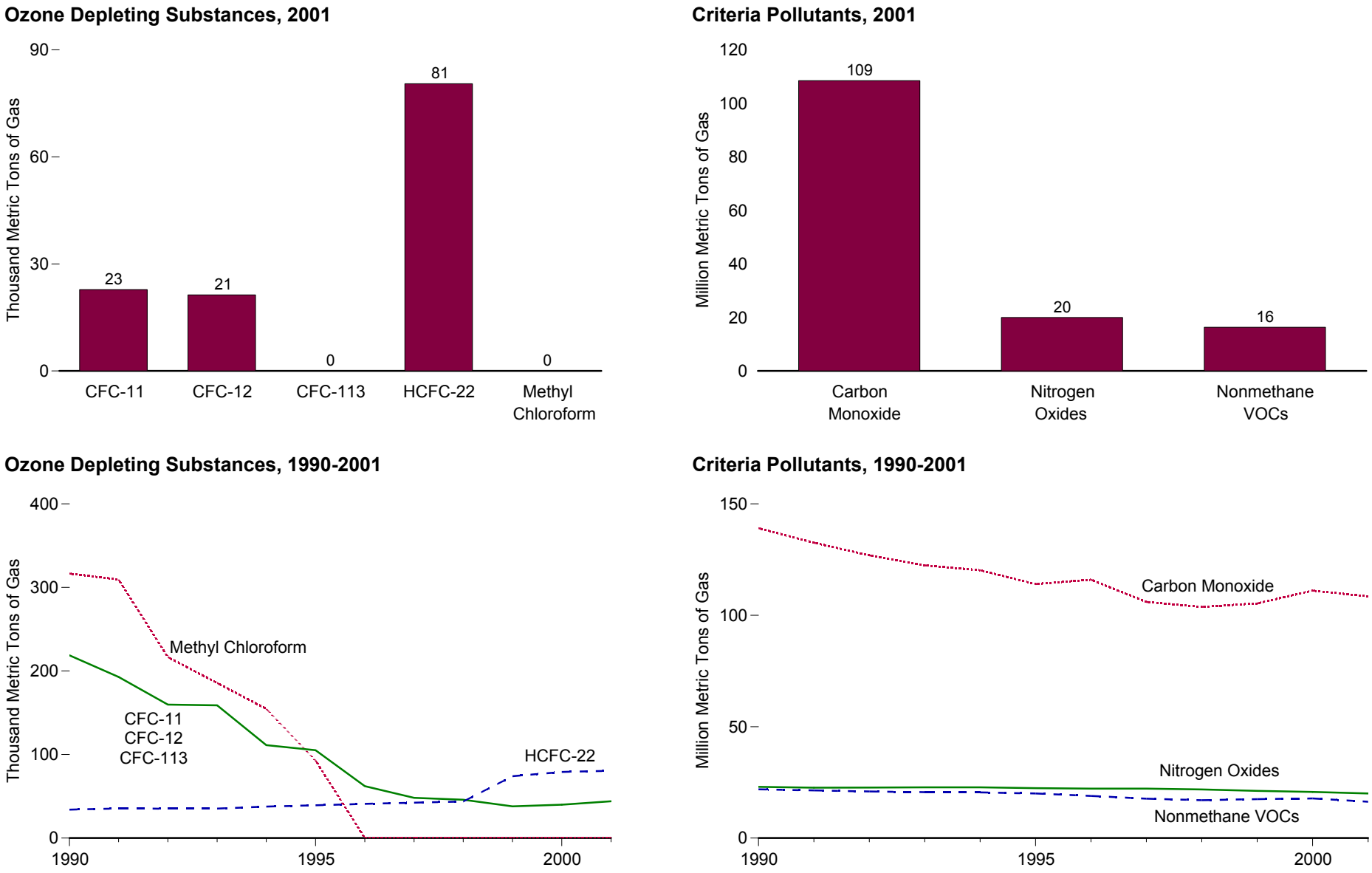
R=Revised. P=Preliminary. NA=Not available.

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. • Estimates of methane emissions are, in general, highly uncertain. The level of precision is probably on the order of 30 to 50 percent. For additional information, see Appendix C, "Tier 1 Uncertainty Analysis of Emissions Estimates," in the source report. • Under certain conditions, methane may be produced via anaerobic decomposition of organic materials in landfills, animal wastes, and rice paddies. • Because inventory methods for greenhouse gases are currently being developed, 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: 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 2001* (December 2002), Table 13.

Figure 12.6 Ozone Depleting Substances and Criteria Pollutants



Notes: • CFC=chlorofluorocarbons; HCFC=chlorodifluoromethane; VOCs=volatile organic compounds. • Because vertical scales differ, graphs should not be compared.

Source: Table 12.6.

Table 12.6 Ozone Depleting Substances and Criteria Pollutants, 1990-2001

Year	Ozone Depleting Substances (thousand metric tons of gas)					Criteria Pollutants (million metric tons of gas)		
	CFC-11	CFC-12	CFC-113	HCFC-22	Methyl Chloroform	Carbon Monoxide	Nitrogen Oxides	Nonmethane VOCs
1990	53.5	112.6	52.7	34.0	316.6	[R]139.1	[R]23.0	[R]21.9
1991	48.3	103.5	41.1	35.4	309.4	[R]132.6	[R]22.6	[R]21.4
1992	45.1	80.5	34.2	35.2	216.6	[R]126.9	[R]22.7	[R]20.9
1993	45.4	79.3	34.2	35.3	185.7	[R]122.4	[R]22.8	[R]20.6
1994	36.6	57.6	17.1	37.7	154.7	[R]120.2	[R]22.8	[R]20.5
1995	36.2	51.8	17.1	39.3	92.8	[R]114.0	[R]22.4	[R]20.0
1996	26.6	35.5	0.0	41.0	0.0	[R]116.0	[R]22.2	[R]18.9
1997	25.1	23.1	0.0	42.4	0.0	[R]106.0	[R]22.2	[R]17.7
1998	24.9	21.0	0.0	[R]43.8	0.0	[R]103.8	[R]21.8	[R]17.0
1999	24.0	14.0	0.0	74.1	0.0	[R]105.3	[R]21.2	[R]17.5
2000	22.8	17.2	0.0	79.1	0.0	[R]111.1	[R]20.7	[R]17.8
2001[P]	22.8	21.3	0.0	80.5	0.0	108.5	20.0	16.3

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

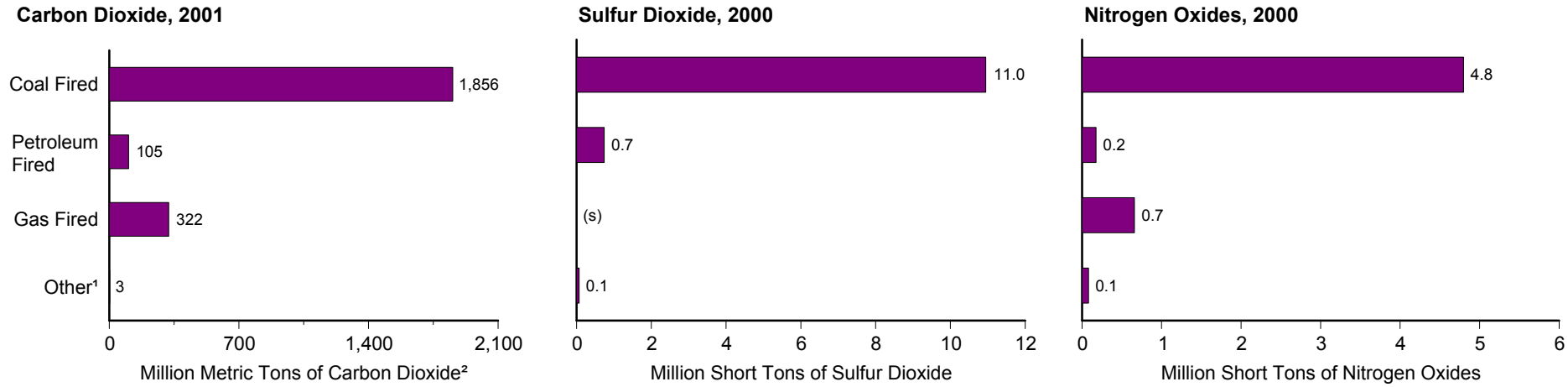
Notes: • CFC = chlorofluorocarbons; HCFC = chlorodifluoromethane; and VOCs = volatile organic compounds. • Ozone depleting substances are gases containing chlorine that are being controlled under the Montreal Protocol because they deplete the earth's stratospheric ozone layer. They are also powerful greenhouse gases that have direct and indirect impacts on the earth's climate. • CFC-113, carbon tetrachloride, and methyl chloroform were primarily used as solvents until the production of these ozone depleting compounds ended in 1995. Emissions of these compounds will eventually end completely when all stockpiles are used. • Criteria pollutants are regulated as urban air pollutants. They are also powerful greenhouse gases that have direct and indirect impacts on Earth's climate. • Because estimation methods for greenhouse gases are currently being developed, data are frequently revised on an annual basis in keeping with the latest findings of the international scientific community.

Web Page: http://www.eia.doe.gov/environment.html.

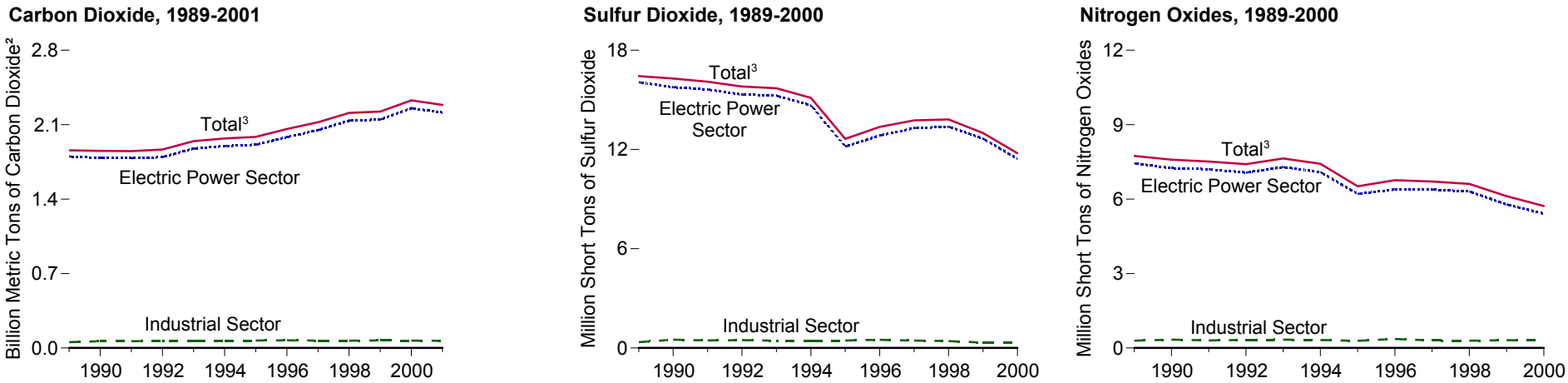
Sources: **Ozone Depleting Substances:** Estimates from the U.S. Environmental Protection Agency (EPA). **Criteria Pollutants:** Energy Information Administration, Office of Integrated Analysis and Forecasting, estimates based on data in EPA, *Air Pollutant Emission Trends Summaries* (May 2003), Summary Tables A2, A4, and A5.

Figure 12.7 Emissions From Energy Consumption for Electricity and Useful Thermal Output at Electricity-Only and Combined-Heat-and-Power Plants

Emissions by Type of Generating Unit



Emissions by Sector



[1] Other gases derived from fossil fuels; wood; waste; and 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 and Useful Thermal Output at Electricity-Only and Combined-Heat-and-Power Plants, 1989-2001

Year	Carbon Dioxide					Sulfur Dioxide					Nitrogen Oxides				
	Coal [1]	Petroleum [2]	Natural Gas [3]	Other [4]	Total	Coal [1]	Petroleum [2]	Natural Gas [3]	Other [4]	Total	Coal [1]	Petroleum [2]	Natural Gas [3]	Other [4]	Total
	Million Metric Tons of Carbon Dioxide [5]					Thousand Short Tons of Sulfur Dioxide					Thousand Short Tons of Nitrogen Oxides				
	Electric Power Sector [6]														
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
2001P	1,833.4	99.6	279.1	2.7	2,214.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Industrial Sector [7]														
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
2001P	21.3	5.2	40.7	(s)	67.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Total [8]														
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
2001P	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, including a small amount of supplemental gaseous fuels.
[4] Other gases derived from fossil fuels; wood; waste; and other.
[5] Metric tons of carbon dioxide can be converted to metric tons of carbon equivalent by multiplying by 12/44.
[6] Electricity-only and combined-heat-and-power (CHP) plants within the NAICS 22 category whose primary business is to sell electricity, or electricity and heat, to the public.
[7] Industrial combined-heat-and-power (CHP) and industrial electricity-only plants. See Note 1 at end of Section 8.
[8] Includes commercial combined-heat-and-power (CHP) and commercial electricity-only plants. See Note 1 at end of Section 8.

R=Revised. P=Preliminary. NA=Not available. (s)=Less than 0.05 million metric tons or less than 500 short tons.

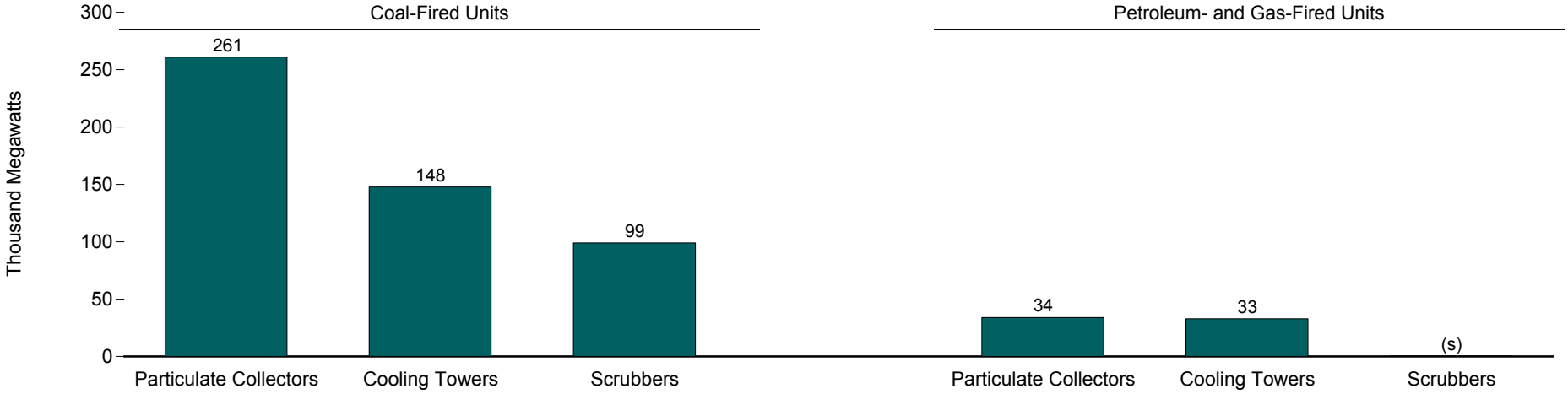
Note: The data in this table are in different units than in prior publications.

Web Page: http://www.eia.doe.gov/fuelelectric.html.

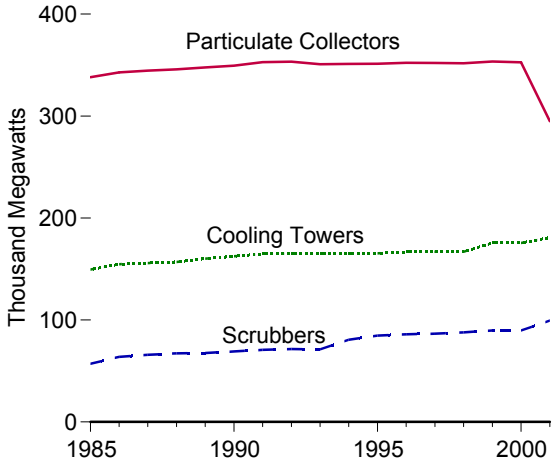
Sources: **Carbon Dioxide:** Energy Information Administration (EIA), Form EIA-906, "Power Plant Report" and predecessor forms. **Sulfur Dioxide** and **Nitrogen Oxides:** EIA, Form EIA-767, "Steam-Electric Plant Operation and Design Report." Data were adjusted by the Environmental Protection Agency's Continuous Emission Monitoring System.

Figure 12.8 Installed Nameplate Capacity of Steam-Electric Generators With Environmental Equipment

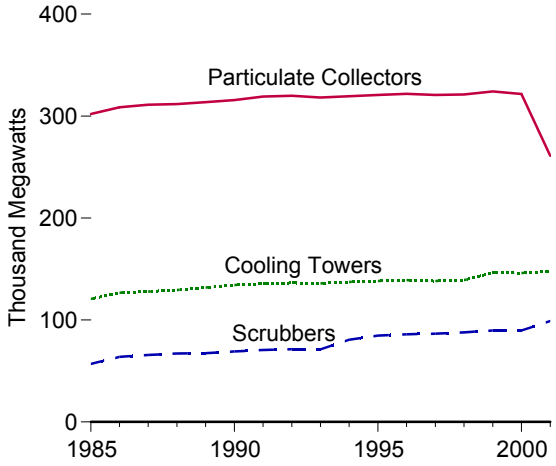
By Fuel and Equipment Type, 2001



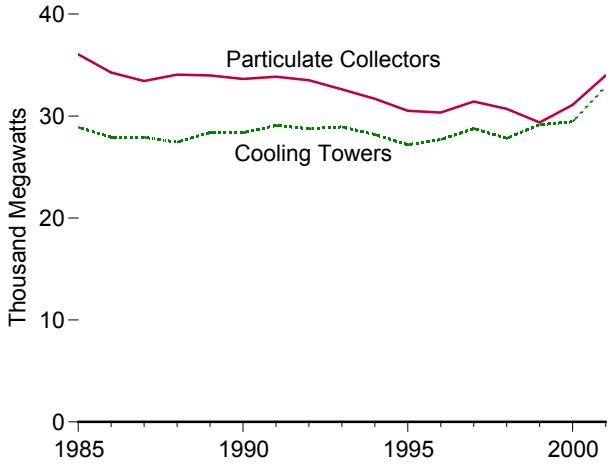
Total Units by Equipment Type, 1985-2001



Coal-Fired Units by Equipment Type, 1985-2001



Petroleum- and Natural Gas-Fired Units by Equipment Type, 1985-2001



(s)=Less than 0.5 thousand megawatts.
Note: 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, 1985-2001

(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	R313,680	R131,701	R67,469	R315,521	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	R319,046	R135,565	R70,474	R319,110	33,864	29,067	260	59,773	R352,910	R164,632	R70,734	R378,883
1992	R319,856	R136,266	R71,336	R319,918	33,509	28,764	195	59,116	R353,365	R165,030	R71,531	R379,034
1993	R318,188	R135,885	R71,106	R318,251	32,620	28,922	0	58,580	R350,808	R164,807	R71,106	R376,831
1994	R319,485	137,266	80,617	R319,776	31,695	28,186	0	57,123	351,180	165,452	80,617	376,899
1995	R320,685	R138,108	R84,677	R320,749	30,513	27,187	0	54,942	351,198	165,295	84,677	375,691
1996	R321,805	139,065	R85,842	R321,869	30,349	27,685	0	55,275	R352,154	166,749	R85,842	R377,144
1997	R320,646	138,120	86,605	R320,710	31,422	28,766	0	56,485	R352,068	166,886	86,605	R377,195
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
2001P	261,025	147,752	99,011	415,397	33,983	32,882	406	62,767	295,008	180,634	99,417	478,164

[1] Components are not additive because some generators are included in more than one category.

P=Preliminary.

Note: Through 2000, data are for electric utilities with fossil-fueled steam-electric capacity of 100 megawatts or greater. Beginning in 2001, data are for electric utilities and unregulated generating plants (independent power producers, commercial plants, and industrial plants) with fossil-fueled or combustible renewable steam-electric capacity of 100 megawatts or greater.

Web Page: http://www.eia.doe.gov/fuelelectric.html.

Sources: • 1985-1989—Energy Information Administration (EIA), Form EIA-767, "Steam-Electric Plant Operation and Design Report." • 1990 forward—EIA, *Electric Power Annual 2001* (March 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

[1]See Table A3 for motor gasoline annual weighted averages beginning in 1994.

[2]Fuel 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: http://www.eia.doe.gov/aer/append.html

Source: See "Thermal Conversion Factor Source Documentation," which follows Table A6.

Table A2. Approximate Heat Content of Crude Oil, Total Petroleum, and Natural Gas Plant Liquids, 1949-2002

(Million Btu per Barrel)

Year	Crude Oil [1]			Total Petroleum [2]		Natural Gas Plant Liquids Production
	Production	Imports	Exports	Imports	Exports	
1949	5.800	5.952	5.800	6.059	5.692	4.544
1950	5.800	5.943	5.800	6.080	5.766	4.522
1951	5.800	5.938	5.800	6.075	5.762	4.495
1952	5.800	5.938	5.800	6.067	5.774	4.464
1953	5.800	5.924	5.800	6.052	5.742	4.450
1954	5.800	5.931	5.800	6.052	5.745	4.415
1955	5.800	5.924	5.800	6.040	5.768	4.406
1956	5.800	5.916	5.800	6.024	5.754	4.382
1957	5.800	5.918	5.800	6.023	5.780	4.369
1958	5.800	5.916	5.800	5.993	5.779	4.366
1959	5.800	5.916	5.800	6.020	5.829	4.311
1960	5.800	5.911	5.800	6.021	5.834	4.295
1961	5.800	5.900	5.800	5.991	5.832	4.283
1962	5.800	5.890	5.800	6.004	5.841	4.273
1963	5.800	5.894	5.800	6.002	5.840	4.264
1964	5.800	5.882	5.800	5.998	5.844	4.268
1965	5.800	5.872	5.800	5.997	5.743	4.264
1966	5.800	5.863	5.800	5.993	5.729	4.259
1967	5.800	5.838	5.800	5.999	5.777	4.232
1968	5.800	5.836	5.800	5.977	5.763	4.218
1969	5.800	5.825	5.800	5.974	5.714	4.170
1970	5.800	5.822	5.800	5.985	5.810	4.146
1971	5.800	5.824	5.800	5.961	5.775	4.117
1972	5.800	5.809	5.800	5.935	5.741	4.070
1973	5.800	5.817	5.800	5.897	5.752	4.049
1974	5.800	5.827	5.800	5.884	5.774	4.011
1975	5.800	5.821	5.800	5.858	5.748	3.984
1976	5.800	5.808	5.800	5.856	5.745	3.964
1977	5.800	5.810	5.800	5.834	5.797	3.941
1978	5.800	5.802	5.800	5.839	5.808	3.925
1979	5.800	5.810	5.800	5.810	5.832	3.955
1980	5.800	5.812	5.800	5.796	5.820	3.914
1981	5.800	5.818	5.800	5.775	5.821	3.930
1982	5.800	5.826	5.800	5.775	5.820	3.872
1983	5.800	5.825	5.800	5.774	5.800	3.839
1984	5.800	5.823	5.800	5.745	5.850	3.812
1985	5.800	5.832	5.800	5.736	5.814	3.815
1986	5.800	5.903	5.800	5.808	5.832	3.797
1987	5.800	5.901	5.800	5.820	5.858	3.804
1988	5.800	5.900	5.800	5.820	5.840	3.800
1989	5.800	5.906	5.800	5.833	5.857	3.826
1990	5.800	5.934	5.800	5.849	5.833	3.822
1991	5.800	5.948	5.800	5.873	5.823	3.807
1992	5.800	5.953	5.800	5.877	5.777	3.804
1993	5.800	5.954	5.800	5.883	5.779	3.801
1994	5.800	5.950	5.800	5.861	5.779	3.794
1995	5.800	5.938	5.800	5.855	5.746	3.796
1996	5.800	5.947	5.800	5.847	5.736	3.777
1997	5.800	5.954	5.800	5.862	5.734	3.762
1998	5.800	5.953	5.800	5.861	5.720	3.769
1999	5.800	5.942	5.800	5.840	5.699	3.744
2000	5.800	5.959	5.800	5.849	5.658	3.733
2001	5.800	5.976	5.800	[R]5.862	[R]5.752	3.735
2002[P]	5.800	5.975	5.800	5.865	5.695	3.730

[1] Crude oil, including lease condensate.
[2] Crude oil, including lease condensate, and petroleum products.

R=Revised. P=Preliminary.
Source: See "Thermal Conversion Factor Source Documentation," which follows Table A6.

Table A3. Approximate Heat Content of Petroleum Product Weighted Averages, 1949-2002

(Million Btu per Barrel)

Year	Consumption						Imports	Exports	Liquefied Petroleum Gases Consumption	Motor Gasoline Consumption
	End-Use Sectors				Electric Power Sector [1]	Total				
	Residential	Commercial	Industrial	Transportation						
1949	5.493	5.858	R5.946	5.465	6.254	5.649	6.261	5.651	4.011	5.253
1950	5.482	5.865	5.940	5.461	6.254	5.649	6.263	5.751	4.011	5.253
1951	5.492	5.856	R5.912	5.458	6.254	5.634	6.265	5.753	4.011	5.253
1952	5.488	5.849	R5.907	5.442	6.254	5.621	6.261	5.768	4.011	5.253
1953	5.465	5.845	R5.895	5.426	6.254	5.608	6.268	5.732	4.011	5.253
1954	5.475	5.832	5.883	5.412	6.254	5.595	6.252	5.738	4.011	5.253
1955	5.480	5.832	R5.867	5.408	6.254	5.591	6.234	5.765	4.011	5.253
1956	5.474	5.828	R5.855	5.406	6.254	5.585	6.225	5.744	4.011	5.253
1957	5.462	5.813	R5.840	5.405	6.254	5.577	6.219	5.774	4.011	5.253
1958	5.465	5.802	R5.831	5.393	6.254	5.567	6.091	5.778	4.011	5.253
1959	5.408	5.803	R5.810	5.389	6.254	5.557	6.142	5.830	4.011	5.253
1960	5.430	5.849	5.800	5.388	6.267	5.555	6.161	5.835	4.011	5.253
1961	5.432	5.847	R5.796	5.386	6.268	5.552	6.102	5.833	4.011	5.253
1962	5.418	5.835	5.784	5.386	6.267	5.545	6.138	5.842	4.011	5.253
1963	5.396	5.818	5.759	5.384	6.266	5.534	6.126	5.841	4.011	5.253
1964	5.375	5.811	R5.730	5.388	6.267	5.528	6.129	5.845	4.011	5.253
1965	5.380	5.837	5.728	5.387	6.267	5.532	6.123	5.742	4.011	5.253
1966	5.354	5.839	R5.723	5.388	6.266	5.532	6.112	5.728	4.011	5.253
1967	5.291	5.818	R5.683	5.391	6.266	5.515	6.128	5.758	[2]3.838	5.253
1968	5.272	5.797	R5.647	5.394	6.263	5.504	6.095	5.762	3.818	5.253
1969	5.213	5.769	R5.602	5.394	6.259	5.492	6.093	5.713	3.805	5.253
1970	5.216	5.773	R5.603	5.393	6.252	5.503	6.088	5.811	3.779	5.253
1971	5.212	5.758	R5.598	5.389	6.245	5.504	6.062	5.775	3.772	5.253
1972	5.193	5.733	R5.563	5.388	6.233	5.500	6.045	5.741	3.760	5.253
1973	5.205	5.749	R5.569	5.395	6.245	5.515	5.983	5.752	3.746	5.253
1974	5.196	5.740	5.538	5.394	6.238	5.504	5.959	5.773	3.730	5.253
1975	5.192	5.704	R5.527	5.392	6.250	5.494	5.935	5.747	3.715	5.253
1976	5.215	5.726	R5.536	5.395	6.251	5.504	5.980	5.743	3.711	5.253
1977	5.213	5.733	R5.554	5.400	6.249	5.518	5.908	5.796	3.677	5.253
1978	5.213	5.716	R5.554	5.404	6.251	5.519	5.955	5.814	3.669	5.253
1979	5.298	5.769	R5.419	5.428	6.258	5.494	5.811	5.864	3.680	5.253
1980	5.245	5.803	R5.374	5.440	6.254	5.479	5.748	5.841	3.674	5.253
1981	5.191	5.751	R5.312	5.432	6.258	5.448	5.659	5.837	3.643	5.253
1982	5.167	5.751	5.263	5.422	6.258	5.415	5.664	5.829	3.615	5.253
1983	5.022	5.642	R5.275	5.415	6.255	5.406	5.677	5.800	3.614	5.253
1984	R5.184	R5.705	5.223	R5.418	6.251	5.395	5.613	5.867	3.599	5.253
1985	R5.153	R5.661	R5.215	R5.422	6.247	5.387	5.572	5.819	3.603	5.253
1986	R5.169	R5.694	R5.283	R5.425	6.257	5.418	5.624	5.839	3.640	5.253
1987	R5.144	R5.661	R5.248	R5.429	6.249	5.403	5.599	5.860	3.659	5.253
1988	R5.165	R5.661	R5.241	R5.433	6.250	5.410	5.618	5.842	3.652	5.253
1989	R5.105	R5.621	5.234	R5.437	[1]6.240	5.410	5.641	5.869	3.683	5.253
1990	R5.027	R5.621	R5.270	R5.442	6.244	5.411	5.614	5.838	3.625	5.253
1991	R4.968	R5.599	R5.186	R5.440	6.246	5.384	5.636	5.827	3.614	5.253
1992	R5.004	R5.589	R5.185	R5.442	6.238	5.378	5.623	5.774	3.624	5.253
1993	R4.975	R5.580	R5.196	R5.436	6.230	5.379	5.620	5.777	3.606	5.253
1994	R4.983	R5.592	R5.166	R5.424	6.213	5.361	5.534	5.777	3.635	[3]5.230
1995	R4.940	R5.554	R5.137	R5.417	6.188	5.341	5.483	5.740	3.623	5.215
1996	4.869	R5.498	R5.133	R5.420	6.195	5.336	5.468	5.728	3.613	5.216
1997	R4.859	5.459	R5.138	R5.416	6.199	5.336	5.469	5.726	3.616	5.213
1998	R4.837	R5.446	R5.155	R5.413	6.210	5.349	5.462	5.710	3.614	5.212
1999	R4.761	R5.369	R5.113	R5.413	6.205	5.328	5.421	5.684	3.616	5.211
2000	R4.761	R5.394	R5.082	R5.421	6.189	5.326	5.432	5.651	3.607	5.210
2001	R4.796	R5.403	R5.164	R5.412	R6.199	R5.345	R5.443	R5.751	3.614	5.210
2002P	4.738	5.373	5.132	5.405	6.189	5.322	5.434	5.694	3.612	5.208

[1] Electricity-only and combined-heat-and-power (CHP) plants within the NAICS 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] 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.

[3] 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.

Note: Weighted averages of the products included in each category are calculated by using heat content values shown in Table A1.

Source: See "Thermal Conversion Factor Source Documentation," which follows Table A6.

Table A4. Approximate Heat Content of Natural Gas, 1949-2002

(Btu per Cubic Foot)

Year	Production		Consumption			Imports	Exports
	Marketed	Dry	End-Use Sectors	Electric Power Sector [1]	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
1951	1,114	1,035	1,035	1,035	1,035	—	1,035
1952	1,115	1,035	1,035	1,035	1,035	1,035	1,035
1953	1,116	1,035	1,035	1,035	1,035	1,035	1,035
1954	1,115	1,035	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
1956	1,116	1,035	1,035	1,035	1,035	1,035	1,035
1957	1,113	1,035	1,035	1,035	1,035	1,035	1,035
1958	1,110	1,035	1,035	1,035	1,035	1,035	1,035
1959	1,109	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
1961	1,108	1,035	1,035	1,035	1,035	1,035	1,035
1962	1,107	1,035	1,035	1,035	1,035	1,035	1,035
1963	1,103	1,031	1,031	1,031	1,031	1,031	1,031
1964	1,102	1,032	1,032	1,032	1,032	1,032	1,032
1965	1,101	1,032	1,032	1,032	1,032	1,032	1,032
1966	1,103	1,033	1,033	1,033	1,033	1,033	1,033
1967	1,105	1,032	1,032	1,032	1,032	1,032	1,032
1968	1,115	1,031	1,031	1,031	1,031	1,031	1,031
1969	1,103	1,031	1,031	1,031	1,031	1,031	1,031
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	[1]1,028	1,031	1,004	1,019
1990	[R]1,105	[R]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	[R]1,026	1,027	1,021	1,026	1,021	1,011
1996	1,109	[R]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	[R]1,105	[R]1,028	[R]1,029	[R]1,025	[R]1,028	1,023	[R]1,010
2002	[E]1,105	[E]1,027	[E]1,029	[P]1,020	[E]1,027	[E]1,023	[E]1,010

[1] Electricity-only and combined-heat-and-power (CHP) plants within the NAICS 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. P=Preliminary. E=Estimate. — = Not applicable.
Source: See "Thermal Conversion Factor Source Documentation," which follows Table A6.

Table A5. Approximate Heat Content of Coal and Coal Coke, 1949-2002

(Million Btu per Short Ton)

	Coal								Coal Coke
		Consumption							
		End-Use Sectors							
			Industrial						
Year	Production	Residential and Commercial	Coke Plants	Other [1]	Electric Power Sector [2]	Total	Imports	Exports	Imports and 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
1951	25.019	24.281	26.796	24.521	23.701	24.813	25.034	26.848	24.800
1952	25.096	24.371	26.796	24.724	23.885	24.901	25.040	26.859	24.800
1953	25.147	24.383	26.796	24.785	23.964	25.006	25.048	26.881	24.800
1954	25.054	24.362	26.795	24.788	23.996	24.913	25.012	26.865	24.800
1955	25.201	24.373	26.794	24.821	24.056	24.982	25.000	26.907	24.800
1956	25.117	24.195	26.792	24.664	23.943	24.843	25.000	26.886	24.800
1957	25.213	24.238	26.792	24.707	23.980	24.905	25.001	26.914	24.800
1958	24.983	24.287	26.794	24.606	23.897	24.716	25.005	26.931	24.800
1959	24.910	24.224	26.790	24.609	23.924	24.719	25.003	26.927	24.800
1960	24.906	24.226	26.791	24.609	23.927	24.713	25.003	26.939	24.800
1961	24.849	24.248	26.792	24.580	23.904	24.653	25.002	26.937	24.800
1962	24.828	24.173	26.788	24.562	23.911	24.627	25.013	26.928	24.800
1963	24.831	24.033	26.784	24.509	23.897	24.588	25.007	26.894	24.800
1964	24.840	24.037	26.785	24.477	23.864	24.602	25.000	26.949	24.800
1965	24.775	24.028	26.787	24.385	23.780	24.537	25.000	26.973	24.800
1966	24.629	23.915	26.786	24.226	23.648	24.396	25.000	26.976	24.800
1967	24.475	23.685	26.781	24.040	23.506	24.243	25.000	26.981	24.800
1968	24.445	23.621	26.780	24.014	23.486	24.186	25.000	26.984	24.800
1969	24.280	23.474	26.779	23.724	23.240	23.976	25.000	26.982	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,R]20.898	[R]21.307	25.000	26.160	24.800
1990	21.822	23.137	26.799	22.457	[R]20.779	[R]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]20.443	[R]24.905	27.426	[R]23.209	[R]20.279	[R]20.655	25.000	[R]25.998	24.800
2002[P]	20.620	24.836	27.426	23.361	20.479	20.814	25.000	26.062	24.800

[1] Includes transportation.
[2] Electricity-only and combined-heat-and-power (CHP) plants within the NAICS 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. P=Preliminary.
Source: Energy Information Administration, Office of Coal, Nuclear, Electric and Alternate Fuels. See "Thermal Conversion Factor Source Documentation," which follows Table A6.

Table A6. Approximate Heat Rates for Electricity, 1949-2002

(Btu per Kilowatthour)

Year	Electricity Net Generation			Electricity Consumption [5]
	Fossil-Fueled Steam-Electric Plants [1,2]	Nuclear Steam-Electric Plants [3]	Geothermal Energy Plants [4]	
1949	15,033	—	—	3,412
1950	14,030	—	—	3,412
1951	13,641	—	—	3,412
1952	13,361	—	—	3,412
1953	12,889	—	—	3,412
1954	12,180	—	—	3,412
1955	11,699	—	—	3,412
1956	11,456	—	—	3,412
1957	11,365	11,629	—	3,412
1958	11,085	11,629	—	3,412
1959	10,970	11,629	—	3,412
1960	10,760	11,629	23,200	3,412
1961	10,650	11,629	23,200	3,412
1962	10,558	11,629	23,200	3,412
1963	10,482	11,877	22,182	3,412
1964	10,462	11,912	22,182	3,412
1965	10,453	11,804	22,182	3,412
1966	10,415	11,623	22,182	3,412
1967	10,432	11,555	21,770	3,412
1968	10,398	11,297	21,606	3,412
1969	10,447	11,037	21,606	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	[2,R]10,146	10,442	21,017	3,412
2002[P]	10,119	10,442	21,017	3,412

[1] Used as the thermal conversion factor for hydroelectric, solar, and wind electricity net generation.
[2] Through 2000, data are for electric utilities only. Beginning in 2001, data are for 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.
Source: 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 by weighting the thermal conversion factor of each type of crude oil imported by the quantity imported. Thermal conversion factors for each type were calculated on a foreign country basis, by determining the average American Petroleum Institute (API) gravity of crude imported from each foreign country from Form ERA-60 in 1977 and converting average API gravity to average Btu content 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. • 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 a weighted average by multiplying the

quantity consumed of each of the component products by each product's conversion factor, listed in this appendix, and dividing the sum of those heat contents by the sum of the quantities consumed. The component products 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. • 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 (shown in appendix 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 the 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 of each natural gas plant liquid produced, weighted by the quantity of each natural gas plant liquid 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 Products, Consumption, Commercial. 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 quantity of each petroleum product consumed in the commercial sector. The quantity of petroleum products consumed is estimated in the State Energy Data System as documented in EIA's *State Energy Data Report*.

Petroleum Products, 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 quantity of each petroleum product consumed in the electric power sector.

Petroleum Products, Consumption, Industrial. Calculated annually by EIA as the average of the thermal conversion factors for all petroleum products consumed in the industrial sector, weighted by the estimated quantity of each petroleum product consumed in the industrial sector. The quantity of petroleum products consumed is estimated in the State Energy Data System as documented in EIA's *State Energy Data Report*.

Petroleum Products, Consumption, Residential. 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 quantity of each petroleum product consumed in the residential sector. The quantity of petroleum products consumed is estimated in the State Energy Data System as documented in EIA's *State Energy Data Report*.

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

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

products consumed is estimated in the State Energy Data System as documented in EIA's *State Energy Data Report*.

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

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

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 each petroleum product and crude oil exported weighted by the quantity of each petroleum product and crude oil 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 petroleum product and type of crude oil imported weighted by the quantity of each petroleum product and type of crude oil 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 (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 of natural gas consumed by the electric power sector.

Natural Gas, Consumption, End-Use Sectors. Calculated annually by EIA by dividing the heat content of natural gas consumed by the end-use sectors by the quantity of natural gas consumed by the end-use sectors.

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 of natural gas consumed.

Natural Gas, Exports. • 1949-1972: Assumed by EIA to be equal to the thermal conversion factor for the consumption of dry natural gas. (See **Natural Gas, Consumption, Total**). • 1973 forward: Calculated annually by EIA by dividing the heat content of natural gas exported by the quantity of natural gas exported.

Natural Gas Imports. • 1949-1972: Assumed by EIA to be equal to the thermal conversion factor for the consumption of dry natural gas. (See **Natural Gas, Consumption, Total)**. • 1973 forward: Calculated annually by EIA by dividing the heat content of natural gas imported by the quantity of natural gas imported.

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

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

Approximate Heat Content of Coal and Coal Coke

Coal, Consumption, Electric Power Sector. Calculated annually by dividing the heat content of coal consumed by the electric power sector by the quantity of coal consumed by the electric power sector.

Coal, Consumption, End-Use Sectors. Calculated annually by EIA by dividing the heat content of coal consumed by the end-use sectors by the quantity of coal consumed by the end-use sectors.

Coal, Consumption, Total. Calculated annually by EIA by dividing the total heat content of coal consumed by the total quantity of coal consumed.

Coal, Exports. Calculated annually by EIA by dividing the heat content of coal exported by the quantity of coal exported.

Coal, Imports. Calculated annually by EIA by dividing the heat content of coal imported by the quantity of coal imported.

Coal, Production. Calculated annually by EIA by dividing the heat content of coal produced by the quantity of coal produced.

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

Approximate Heat Rates for Electricity

Electricity Net Generation, Fossil-Fueled Steam-Electric Plants. There is no generally accepted practice for measuring the thermal conversion rates for power plants that generate electricity from hydroelectric, 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 steam-electric power plants in the United States. By using that factor, it is possible to evaluate fossil fuel requirements for replacing those sources during periods of interruption, such as droughts. The heat content of a kilowatthour of electricity produced, regardless of the generation process, is 3,412 Btu. • 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 EIA-860A, EIA-860B, and EIA-867), and the generation on Form EIA-906, "Power Plant Report" (and predecessor forms).

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 Steam-Electric 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. The factors for 1982 through 1984 were published in the following EIA reports-1982: *Historical Plant Cost and Annual Production Expenses for Selected Electric Plants 1982*, page 215. 1983 and 1984: *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" (and predecessor forms).

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 is the equivalent of 453.6 metric tons (500 short tons x 0.9071847 metric tons/short ton = 453.6 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 is the equivalent of 420 U.S. gallons (10 barrels x 42 gallons/barrel = 420 gallons).

Table B1. Metric Conversion Factors

U.S. Unit	*Multiplied by*	Conversion Factor	*equals*	Metric Unit
Mass				
short tons (2,000 lb)	x	0.907 184 7	=	metric tons (t)
long tons	x	1.016 047	=	metric tons (t)
pounds (lb)	x	0.453 592 37[a]	=	kilograms (kg)
pounds uranium oxide (lb U_3O_8)	x	0.384 647b	=	kilograms uranium (kgU)
ounces, avoirdupois (avdp oz)	x	28.349 52	=	grams (g)
Length				
miles (mi)	x	1.609 344[a]	=	kilometers (km)
yards (yd)	x	0.914 4[a]	=	meters (m)
feet (ft)	x	0.304 8[a]	=	meters (m)
inches (in)	x	2.54[a]	=	centimeters (cm)
Energy				
British Thermal Units (Btu)	x	1,055.055 852 62[a,c]	=	joules (J)
calories (cal)	x	4.186 8[a]	=	joules (J)
kilowatthours (kWh)	x	3.6[a]	=	megajoules (MJ)
Volume				
barrels of oil (bbl)	x	0.158 987 3	=	cubic meters (m^3)
cubic yards (yd3)	x	0.764 555	=	cubic meters (m^3)
cubic feet (ft3)	x	0.028 316 85	=	cubic meters (m^3)
U.S. gallons (gal)	x	3.785 412	=	liters (L)
ounces, fluid (fl oz)	x	29.573 53	=	milliliters (mL)
cubic inches (in3)	x	16.387 06	=	milliliters (mL)
Area				
acres	x	0.404 69	=	hectares (ha)
square miles (mi2)	x	2.589 988	=	square kilometers (km_2)
square yards (yd2)	x	0.836 127 4	=	square meters (m_2)
square feet (ft2)	x	0.092 903 04[a]	=	square meters (m_2)
square inches (in2)	x	6.451 6a	=	square centimeters (cm_2)
Temperature				
degrees Fahrenheit (°F)	x	5/9 (after subtracting 32)[a,d]	=	degrees Celsius (°C)

[a]Exact conversion.

[b]Calculated by the Energy Information Administration.

[c]The Btu used in this table is the International Table Btu adopted by the Fifth International Conference on Properties of Steam, London, 1956.

[d]To convert degrees Celsius (°C) to degrees Fahrenheit (°F) exactly, multiply by 9/5, then add 32.

Notes: • Spaces have been inserted after every third digit to the right of the decimal for ease of reading. • Most metric units shown 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, contact Dr. Barry Taylor at Building 221, Room B610, National Institute of Standards and Technology, Gaithersburg, MD 20899, or on telephone number 301–975–4220.

Sources: General Services Administration, Federal Standard 376B, *Preferred Metric Units for General Use by the Federal Government* (Washington, DC, January 27, 1993), pp. 9–11, 13, and 16. 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

Metric Prefixes	Prefix	Symbol	Unit Multiple	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

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.

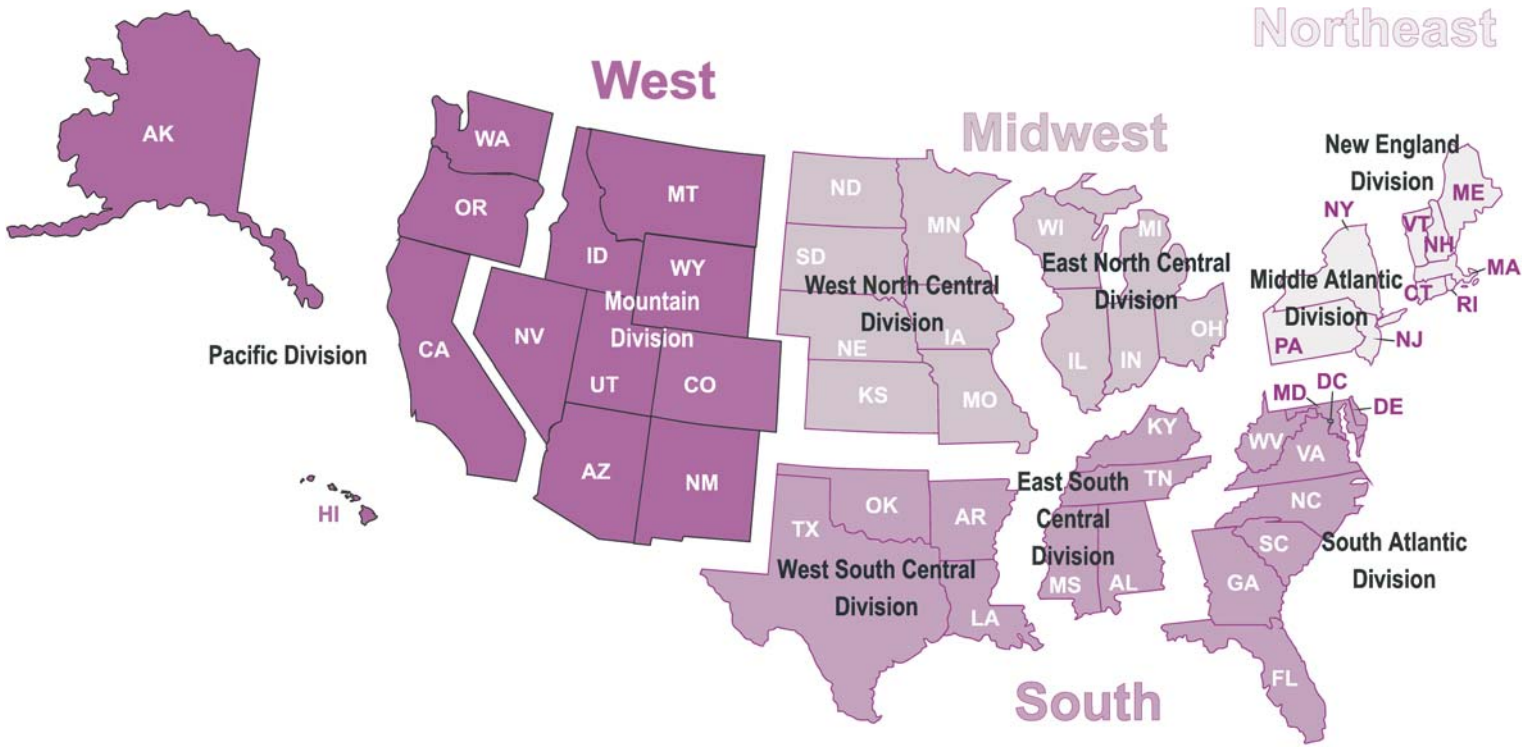
Table B3. Other Physical Conversion Factors

Energy Source	Original Unit	*multiplied by*	Conversion Factor	*equals*	Final Unit
Petroleum	Barrels (bbl)	x	42[a]	=	U.S. gallons (gal)
Coal	short tons	x	2,000[a]	=	pounds (lb)
	long tons	x	2,240[a]	=	pounds (lb)
	metric tons (t)	x	1,000[a]	=	kilograms (kg)
Wood	cords (cd)	x	1.25[b]	=	short tons
	cords (cd)	x	128[a]	=	cubic feet (ft^3)

[a]Exact conversion.
[b]Calculated by the Energy Information Administration.
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, 2002* (Washington, DC, February 2003).

Appendix D

Table D1. Population and U.S. Gross Domestic Product, 1949-2002

Year	Population		U.S. Gross Domestic Product		
	United States [1]	World			
	Million People		Billion Nominal Dollars	Billion Chained (1996) Dollars	Implicit Price Deflator [2] (1996 = 1.0000)
1949	148.7		267.7	1,550.9	0.1726
1950	151.3	R2,555.4	294.3	1,686.6	0.1745
1951	154.0	R2,593.1	339.5	1,815.1	0.1871
1952	156.4	R2,635.2	358.6	1,887.3	0.1900
1953	159.0	R2,680.5	379.9	1,973.9	0.1925
1954	161.9	R2,728.5	381.1	1,960.5	0.1944
1955	165.1	R2,780.0	415.2	2,099.5	0.1978
1956	168.1	R2,832.9	438.0	2,141.1	0.2045
1957	171.2	R2,888.8	461.5	2,183.9	0.2113
1958	174.1	R2,945.3	467.9	2,162.8	0.2164
1959	177.1	R2,997.6	507.4	2,319.0	0.2188
1960	179.3	R3,039.7	527.4	2,376.7	0.2219
1961	183.0	R3,080.5	545.7	2,432.0	0.2244
1962	185.7	R3,136.6	586.5	2,578.9	0.2274
1963	188.4	R3,206.1	618.7	2,690.4	0.2300
1964	191.1	R3,277.2	664.4	2,846.5	0.2334
1965	193.5	R3,346.2	720.1	3,028.5	0.2378
1966	195.5	R3,416.5	789.3	3,227.5	0.2446
1967	197.4	R3,486.2	834.1	3,308.3	0.2521
1968	199.3	R3,558.1	911.5	3,466.1	0.2630
1969	201.3	R3,632.8	985.3	3,571.4	0.2759
1970	203.3	R3,708.1	1,039.7	3,578.0	0.2906
1971	206.8	R3,785.7	1,128.6	3,697.7	0.3052
1972	209.3	R3,862.4	1,240.4	3,898.4	0.3182
1973	211.4	R3,938.6	1,385.5	4,123.4	0.3360
1974	213.3	R4,014.2	1,501.0	4,099.0	0.3662
1975	215.5	R4,087.5	1,635.2	4,084.4	0.4003
1976	217.6	R4,159.3	1,823.9	4,311.7	0.4230
1977	219.8	R4,231.6	2,031.4	4,511.8	0.4502
1978	222.1	R4,303.8	2,295.9	4,760.6	0.4823
1979	224.6	R4,378.9	2,566.4	4,912.1	0.5225
1980	226.5	R4,454.6	2,795.6	4,900.9	0.5704
1981	229.5	R4,530.5	3,131.3	5,021.0	0.6237
1982	231.7	R4,610.5	3,259.2	4,919.3	0.6625
1983	233.8	R4,690.6	3,534.9	5,132.3	0.6888
1984	235.8	R4,769.7	3,932.7	5,505.2	0.7144
1985	237.9	R4,850.1	4,213.0	5,717.1	0.7369
1986	240.1	R4,932.3	4,452.9	5,912.4	0.7531
1987	242.3	R5,017.4	4,742.5	6,113.3	0.7758
1988	244.5	R5,103.0	5,108.3	6,368.4	0.8021
1989	246.8	R5,188.7	5,489.1	6,591.8	0.8327
1990	248.8	R5,275.4	5,803.2	6,707.9	0.8651
1991	253.0	R5,359.3	5,986.2	6,676.4	0.8966
1992	256.5	R5,443.2	6,318.9	6,880.0	0.9184
1993	259.9	R5,524.5	6,642.3	7,062.6	0.9405
1994	263.1	R5,604.7	7,054.3	7,347.7	0.9601
1995	266.3	R5,685.3	7,400.5	7,543.8	0.9810
1996	269.4	R5,764.5	7,813.2	7,813.2	1.0000
1997	272.6	R5,844.3	8,318.4	8,159.5	1.0195
1998	275.9	R5,923.1	8,781.5	8,508.9	1.0320
1999	279.0	R6,001.6	R9,274.3	R8,859.0	R1.0469
2000	281.4	R6,078.7	R9,824.6	R9,191.4	R1.0689
2001	R285.3	R6,154.0	R10,082.2	R9,214.5	R1.0942
2002	288.4	6,228.4	10,446.2	9,439.9	1.1066

[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: • http://www.census.gov/. • http://www.bea.doc.gov/.
Sources: See next page.

Appendix D

Table D1. 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.

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	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	—	13.212
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	R0.659	1.688	R 2.347	0.002	17.734
1920	15.504	0.813	2.676	18.993	R0.738	1.610	R2.348	0.003	21.344
1925	14.706	1.191	4.280	20.177	R0.668	1.533	R2.201	0.004	22.382
1930	13.639	1.932	5.897	21.468	R0.752	1.455	R2.207	0.005	23.680
1935	10.634	1.919	5.675	18.228	R0.806	1.397	R2.203	0.005	20.436
1940	12.535	2.665	7.760	22.960	R0.880	1.358	R2.238	0.007	25.205
1945	15.972	3.871	10.110	29.953	R1.442	1.261	R2.703	0.009	32.665

R=Revised. NA=Not available. — = Not applicable. (s)=Less than 0.0005 quadrillion Btu.

Notes: • See Note 1 at end of Section 1. • No data are available for years not shown. • See Tables 1.3 and 10.1 for continuation of these data series from 1949 forward. There is a discontinuity in the "Wood" time series between 1945 and 1949 due to changes in definitions: through 1945, data are for fuelwood only; beginning in 1949, data also include wood-derived fuel and wood byproducts burned as fuel. • See end of section for discussion of geographic coverage of data.

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. See note at end of section for estimation methodology. • 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.

Geographic Coverage Note

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

Account of Others (Natural Gas): Natural gas deliveries for the account of others are deliveries to customers by transporters that do not own the natural gas but deliver it for others for a fee. Included are quantities covered by long-term contracts and quantities involved in short-term or spot market sales.

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: CH_3-(CH_2)n-OH (e.g., **methanol**, **ethanol**, and tertiary butyl alcohol). See **Fuel Ethanol**.

Alternative-Fuel Vehicle (AFV): A vehicle designed to operate on an alternative fuel (e.g., compressed **natural gas**, **methane** blend, **electricity**). The vehicle could be either a dedicated vehicle designed to operate exclusively on alternative fuel or a nondedicated vehicle designed to operate on alternative fuel and/or a traditional fuel.

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.

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 Processors 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 Polices 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. 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." See **Well.**

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. See **Well.**

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 1961–1990). 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. See **Well.**

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**. See **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 **primer 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** 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**.

Eliminations: 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.

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, 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.

Ethanol: See **Fuel Ethanol.**

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. See **Well**.

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. See **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.

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.

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 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.

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 ½ to 1½ miles apart. Indicated coal is projected to extend as a ½-mile-wide belt that lies more than ¼ 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. 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-83133D (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 52.8º 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.

Major Energy Producers: The top publicly-owned **crude oil** and **natural gas** producers and **petroleum** refiners that form the Financial Reporting System. See **Financial Reporting System**.

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.

Marketed Production: See **Natural Gas Marketed (Wet) Production.**

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 coalbeds, the points of observation are no greater than ½ mile apart. Measured coal is

projected to extend as a belt ¼ 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, $(CH_3)_3COCH_3$, 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 122ºF to 158ºF at the 10-percent recovery point to 365ºF to 374ºF 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 400º 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**.) See **Well.**

Natural Gas Well Productivity: Derived annually by dividing **natural gas gross withdrawals** from **natural gas wells** by the number of producing natural gas wells on December 31 and then dividing the quotient by the number of days in the year.

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 Income: Operating income plus other income and extraordinary income less operating expenses, taxes, interest charges, other deductions, and extraordinary deductions.

Net Investment in Place: Net property, plant, and equipment plus investments and advances to unconsolidated affiliates.

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.

Nontraceables: 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.

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, 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 flourine 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 intracompany 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.**

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 (SO_2): 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 (SF_6): 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 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.

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.

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 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.

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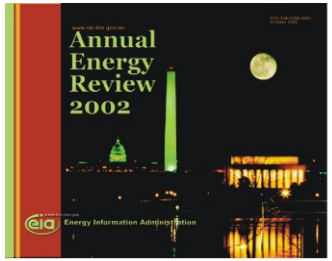
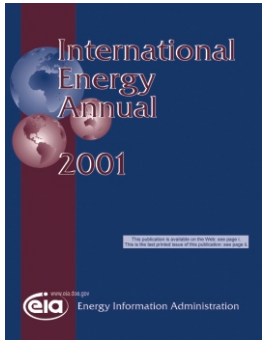
10/03

Integrated Historical Energy Data Sources
...from the Energy Information Administration

Monthly Energy Review
Current monthly data on production, consumption, stocks, trade, and prices of the principal energy commodities in the United States.
http://eia.doe.gov/mer
Also available in print.

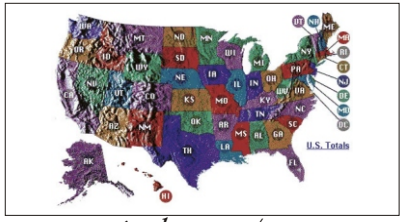
Annual Energy Review
Long-term historical annual data on U.S. energy production, consumption, stocks, trade, and prices. Most series begin in 1949.
http://eia.doe.gov/aer
Also available in print.
The introductory, graphics-rich section entitled "Energy Perspectives" is available as a separate booklet.





International Energy Annual
Annual data for production, consumption, and trade of primary energy commodities in more than 220 countries, dependencies, and areas of special sovereignty.
Also included are prices of crude oil and petroleum products in selected countries.
http://eia.doe.gov/iea

On the Web



eia.doe.gov/states

State Energy Data
Annual energy consumption, price, and expenditure estimates at the State and national levels by energy source and by major sector (residential, commercial, industrial, transportation, and electric utilities). Consumption data begin with 1960; price and expenditure data begin with 1970.
http://eia.doe.gov/states

EIA has many other data products. For more information, contact the National Energy Information Center at 202-586-8800 or infoctr@eia.doe.gov, or access EIA's Home Page (http://www.eia.doe.gov).